

# **SoftView Plus<sup>TM</sup>**

## **Emulation Software Operators Manual**

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## 1.0 Getting Started

SoftView Plus™ is an Optical Time Domain Reflectometer (OTDR) emulation software package that allows PC processing of saved trace and power meter information, maximizing valuable OTDR time by allowing traces taken in the field to be saved for future processing.

### 1.1 What's New in SoftView Plus™ Version 2.11a?

SoftView Plus v2.11a contains all of the features of SoftView v1.18b along with the following features

- SoftView Plus v2.11a reads Multitester 500 trace files (T6 format) and converts them to 340 OTDR trace files (T5 format) for internal processing.
- SoftView Plus v2.11a reads Multitester 500/LTS Power Meter files (P6 format) and converts them to 340 OTDR Power Meter/Light Source files (P5 format) for internal processing.

---

#### NOTE

SoftView Plus v2.11a cannot write Multitester 500 OTDR trace files or Multitester 500 LTS Power Meter files.

---

### 1.2 Manual Overview

This manual details all the program features for SoftView Plus emulation software. The terminology and processes described assume familiarity with standard Windows operating procedures.

Chapter Two is an overview of the SoftView Plus display screen and gives information on the various components of the display. The chapter also contains information on setting the display preferences.

Chapter Three details working with traces, trace lists, setting the view mode, performing manual loss measurements, and other SoftView Plus program elements.

Chapter Four describes the various print and print preview options.

Chapter Five details Power Meter File Processing.

Chapters Six through Ten explain in detail the advanced functions of SoftView Plus, and Chapter Eleven provides an example of these functions using sample traces provided with the software.

This manual includes six appendices that provide information on Special Keypresses, Graphical Printout Examples, Report Examples, Report File Formats, basic Trace Collection information, and Data Preparation.

References to 340 OTDR throughout the manual refer to the Corning 340 OTDR Plus™ Multitester II and references to the Multitester 500 refer to the Corning Optical Multitester 500 equipped with an OTDR module.

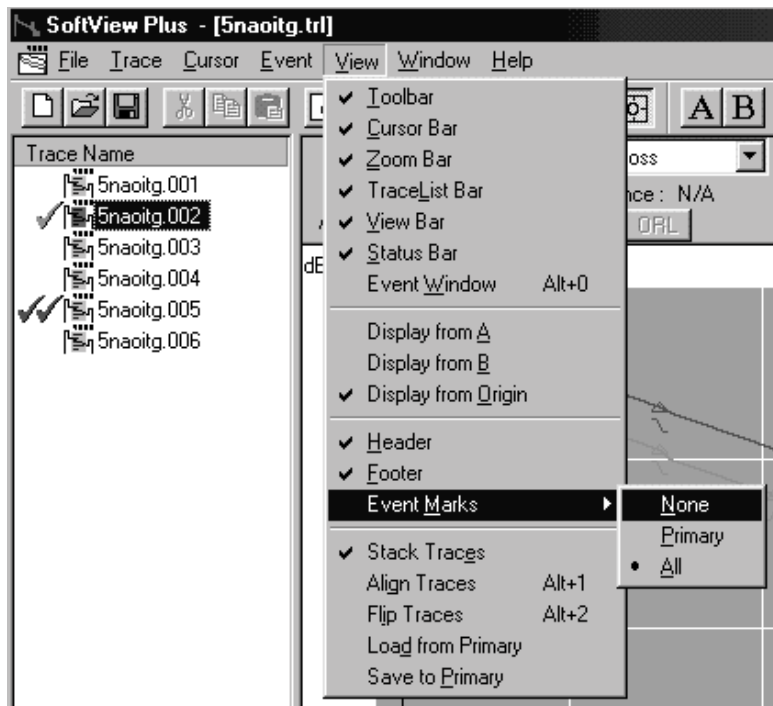
### 1.2.1 Manual Conventions

The term *context menu* refers to the menu accessed by clicking the right mouse button.

The following is an example of the notation used in this manual to indicate stepping through the SoftView Plus menu structure.

- Select View>Event Marks>None

This indicates that *View* is selected from the menu bar. The chevrons “>” indicate that *Event Marks* is to be selected from the View menu, and *None* is to be selected from the Event Marks submenu as shown in Figure 1-1.



*Figure 1-1: Menu Selection Example*

## 1.3 System Requirements

### 1.3.1 System Requirements

The following are the recommended system requirements for a PC system to operate SoftView Plus software:

- Pentium® class processor
- Windows 95/98/2000/NT 4.0+/XP
- 32MB RAM
- 20MB free hard-drive space
- VGA display
- CD-ROM drive

### 1.3.2 Installation

To install SoftView Plus:

1. Insert the CD-ROM into the CD-ROM drive.
2. Select **Start>Run** from the desktop.
3. Type `x:\setup` in the Run dialog box, where x is the CD-ROM drive. and then click **OK**.

From this point the program will prompt requiring any necessary information.

4. Read and follow the display screen. Click **Next** to continue.
5. Click **Yes** to accept the Software License Agreement and continue.
6. Enter the appropriate name, company and serial number in the SoftView Plus Registration screen. (The serial number is printed on the software registration card.)
7. Verify that the suggested directory for installation is acceptable and click **Next**.
8. Click **Finish** in the setup dialog box that indicates installation is complete.

---

#### NOTE

If InstallShield® finds a previous installation of SoftView it will prompt the user to run the uninstall routine. Upon completion of the uninstall routine, re-start the SoftView Plus installation routine.

---

### 1.3.3 Loading Sample Traces

The SoftView Plus software CD-ROM contains a directory with sample traces for use in running through the examples in Chapter 11.0 and various procedures described throughout the manual.

To load the sample files:

1. Create a sample trace directory on the computer's hard drive. C:\TRACES\ITGNAO is recommended.

2. Copy the traces from the Sample Traces directory on the CD-ROM to the sample traces directory on the computer's hard drive.



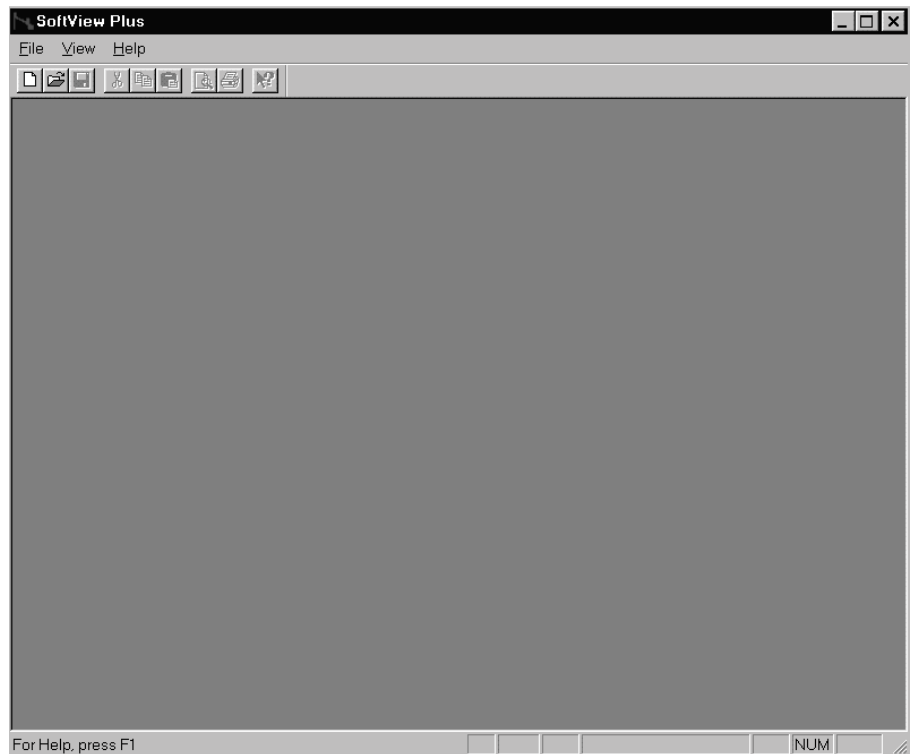


## 2.0 SoftView Plus™ Window

This chapter contains an overview of the components of the SoftView Plus display screen. More detailed information on working with traces and menu functions is contained in Chapter 3.

### 2.1 SoftView Plus Start-up Window

Upon start-up of the SoftView Plus program, a SoftView Plus window with no trace grid or trace list pane is displayed. File and View menus with only those menu selections applicable to opening trace files and setting display parameters are available (See “SoftView Plus Start-up Menus” on page 8.) All Help menu selections are also available.



*Figure 2-1: SoftView Plus Start-up Screen with No Trace Displayed.*

2.1.1 SoftView Plus Start-up Menus

Menu	Menu Selections	Function
File	New	Displays an icon to create a new Trace List or Header Template
	Open	Displays the standard Windows dialog box for opening the following file types: Trace List, Trace, Power Meter, or Header Template
	Preferences	Displays dialog box for selection of preferences of program parameters
	Exit	Closes all windows and exit program
View	Toolbar	Displays/hides toolbar. Check mark indicates item selected for display.
	Status Bar	Displays/hides status bar. Check mark indicates item selected for display.
Help	Help Topics	Displays application help system
	About SoftView Plus	Displays software information including version, serial number and registration information

2.2 SoftView Plus Graph Window

Once a trace file or trace list file is opened, the SoftView Plus window display changes to include Trace List and Graph panes as shown in Figure 2-2. Some of the window components seen in Figure 2-2 may be hidden by deselection in the View menu.

As traces and trace lists are opened, and different modes and views selected, various menu and toolbars become available/unavailable. Unavailable options are grayed out.

The various components of the SoftView Plus window, while in trace display mode, are described in the following sections.

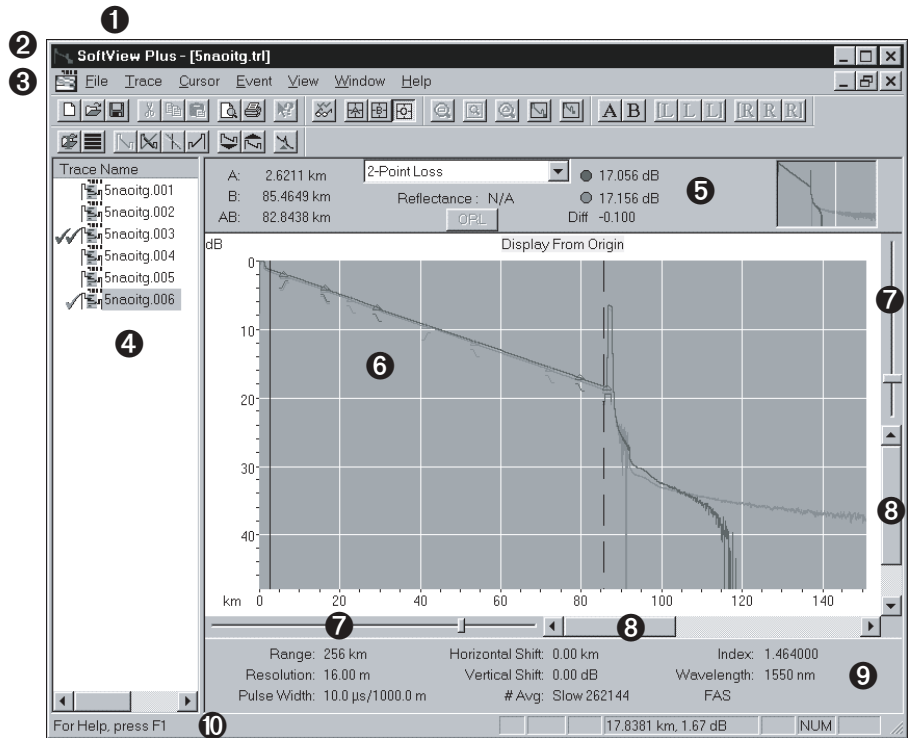


Figure 2-2: SoftView Plus Screen with Fully Expanded Graph Window

- |   |                         |  |
|---|-------------------------|--|
| 1 | SoftView Plus Title Bar | Displays current trace list filename.  |
| 2 | Menu Bar                | Displays available menus. (Available selections are mode dependent.)                   |
| 3 | Toolbars                | Contains buttons for save, print, display, zoom, trace and cursor functions.           |
| 4 | Trace List Pane         | Lists the traces contained in the currently open trace list.                           |
| 5 | Graph Header            | Displays cursor, loss mode and loss information.                                       |
| 6 | Trace Graph             | Displays grid, trace waveform, A/B cursors, X & Y axes, and informative mouse cursors. |

7	Trackbars	Expands and contracts the trace graph view vertically and horizontally.
8	Scroll Bars	Scrolls the trace graph view vertically and horizontally.
9	Graph Footer	Displays key parameters for the <i>primary trace</i> .
10	Status Bar	Left end displays function of highlighted menu selection when scrolling through a menu. Right end contains a readout of the current distance and dB value of the mouse cursor in the graph.

The Graph Pane includes the Graph Header and Footer, Trace Graph, Trackbars and Scroll Bars.

### 2.2.1 Trace List Pane

The *trace list pane* is displayed once a *trace list* is opened or created.

The trace list pane displays the trace filenames for the current trace list, sorted as defined in Preferences>Display>Sort Mask. The default view shows only the trace filenames; however, the full device/directory path can be viewed by increasing the trace list pane's width.

Traces displayed in the graph pane are designated with a check mark the same color as the plotted data. The *primary* trace has *two red* check marks.

For more information on trace files and trace lists, refer to Chapter 3 of this manual.

---

#### NOTE

The trace list and graph panes may be sized by grabbing the dividing frame edge with the mouse cursor and dragging it to the left or right. As one pane decreases in size, the other will increase to fill the viewing area.

---

### 2.2.2 Graph Header

Select View>Header from the menu bar to view/hide the graph header.

When displayed, the graph header appears above the graph and contains:

- *A and B cursor locations* and the distance between them.
- *Selection of one of the following Loss Modes:* Splice Loss, Two-point Loss, Two-point Loss LSA, Two-point Attenuation Corrected, dB/km Loss, dB/km Loss LSA, or Optical Return Loss (ORL) using a drop-down menu.

---

#### NOTE

It is necessary to *also* click the ORL button to compute the ORL value for the primary trace. All other loss mode values are automatically computed.

---

- *Two computed loss values* (for the primary and a second trace, indicated by colored dots) *at the A/B cursor locations* for the current loss mode. If the *second trace is flipped* (See “Flip” on page 48.) and:
  - the *loss mode is Splice Loss*, then the Splice Loss LSA cursors are flipped around the A cursor to compute the second trace loss
  - the *loss mode is 2-Point Loss, 2-Point Loss LSA, 2-Point Attenuation Corrected, dB/km Loss, or dB/km Loss LSA*, the loss calculation is from the B to the A cursors for the second trace.
- The *difference between the primary and second trace loss values* if the second trace is not flipped; or, *the average between the primary and second trace loss values* if the second trace is flipped. The average value is a bi-directional average for the current Loss Mode.
- The *reflectance of the primary trace at the A/B cursor locations* (See “Reflectance Calculations” on page 16. for available reflectance calculations methods.)
- A *thumbnail graph of the full data region*. If the trace graph shows a zoomed-in region, then the thumbnail shows a rectangle indicating the region shown in the trace graph.

### 2.2.3 Trace Graph

The trace graph is displayed when a trace list is opened. Once a trace(s) is selected for display, the trace waveform(s) is displayed on a grid, along with X & Y axes and A & B cursors.

**Trace Waveform**

SoftView Plus can display up to eight traces in the trace graph, each as a different color. The displayed traces are identified in the trace list with a check mark of the same color as the displayed trace data.

If the maximum number of traces are displayed, then one must be hidden before another can be displayed.

If the *primary trace is hidden*, SoftView Plus automatically selects the next displayed trace to be the primary.

**Grid and Axes Scales**

The grid X-axis scale indicates current distance in units (km, mi, etc.) as selected in Preferences>Units.

The grid Y-axis scale indicates dB loss.

**A/B Cursors**

The SoftView Plus trace graph contains A and B cursors which may be used for manual loss measurements. (Example: If the current Loss Mode is Splice Loss, then the Splice Loss value is computed at the A cursor location.)

The A cursor is displayed as a solid vertical line while the B cursor is dashed and always to the right of the A cursor.

**2.2.4 Graph Footer**

View/hide the graph footer by selecting View>Footer from the menu bar.

The graph footer shows the value of certain key parameters for the primary trace.

### 2.2.5 Scroll Bars

After zooming in on a region, use the scroll bars to move the graph view region horizontally left/right or vertically up/down.




### 2.2.6 Trackbars

Move the slider on the trackbars to magnifying/demagnifying the graph view region.



## 2.3 Mouse Cursors

When the mouse cursor is in the graph, it conveys information about the usage or mode of the cursor. The cross-hair mouse cursor  is the default cursor. When cursor or event toolbar buttons are selected, the cursor will change to reflect the icon on the button selected. The complete listing can be found in Appendix A-2.

## 2.4 Shortcut Keys

SoftView Plus contains a comprehensive set of shortcut keys, or special keypresses, in order to enhance the users effectiveness. The complete listing can be found in Appendix A.

## 2.5 Event Window

The Event window contains information about the event selected on the trace waveform.

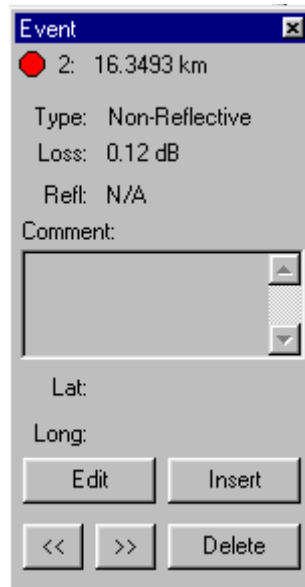


Figure 2-3: Event Window

- Select View>Event to view/hide the Event window.
- The colored dot indicates the displayed trace's color. The number indicates the event number.
- To display an event in the Event window, double-click the *left* mouse button on its *event mark* on the trace graph.

More detailed information on using the Event window is contained Section 3.8 of this manual.

## 2.6 Modifying Preferences

Preferences defines and stores program display parameters for Analysis, Display, Units, Time/Date, and Language. These parameters can be set prior to trace display, or modified while traces are displayed.



SoftView Plus has a default set of preferences if none are selected.

### Setting Preferences other than default:

1. Select File>Preferences to access the Preferences dialog box.
2. Click on the page tab for the desired category.
3. Modify preferences by option selection and value modification.
4. Click OK to save any parameter changes for current and future program execution. If not, all changes will be lost.

#### 2.6.1 Analysis

The Analysis Page contains various analysis parameters:

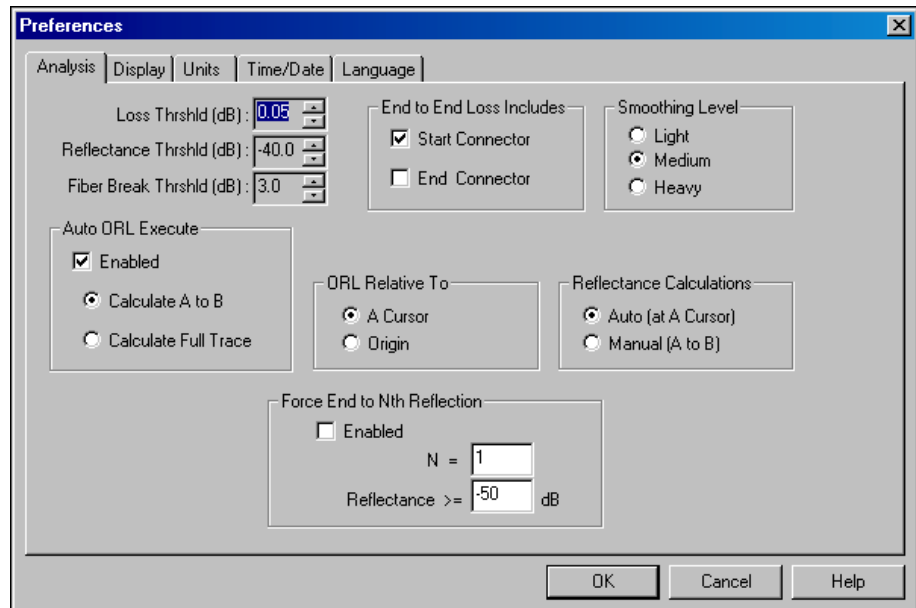


Figure 2-4: Preferences Analysis Page

### Threshold

The (Event) Loss Threshold, Reflectance Threshold, and Fiber Break Threshold minimum, maximum, incremental, and initial default values are shown below:

**Table 2-1:**

Threshold	Minimum	Maximum	Incremental	Default
Event Loss	0	5.0	0.01	0.05
Reflectance	-10	-70	-1	-40
Fiber Break	0.2	15.0	0.2	3.0

### Auto ORL Execute

With Auto ORL Execute enabled, ORL will automatically be calculated when a trace is Analyzed.

The Auto ORL Calculation can be set to be performed either from the A to B cursor positions, or over the full trace (start to end). Manual ORL Calculation invoked from the graph header will always be performed from the A to B cursor positions.

The default parameters are *Enabled* and *Calculate A to B*.

### ORL Relative To

The ORL calculation can be selected to be relative to the current A cursor position or the trace origin. This selection applies to both auto and manual ORL calculation.

The default setting is *Relative to A*.

### End to End Loss Calculation

The End to End Loss calculation can be set up to include or exclude fiber under test Start and End Connectors.

### Reflectance Calculations

Reflectance calculations may be either Auto (at the A cursor position) or Manual (from the A to the B cursor position).

The default setting is *Auto*.

### Smooth

Analysis has a Smooth function which smooths (or filters) the trace data. Select a Smoothing Level of Light, Medium, or Heavy. (See “Smooth” on page 54.)

The default setting is *Medium*.

### Force End to N<sup>th</sup> Reflection

With Force End to Nth Reflection enabled, the end event is set to the N<sup>th</sup> reflective event with reflectance greater than or equal to the specified reflectance dB value, after trace analysis. If there is no such N<sup>th</sup> reflective event, then the end remains unchanged.

The warning message, “*Force End to Nth reflection is enabled.*”, will be displayed the first time (and only the first time) analysis is executed during a SoftView Plus usage session.

## 2.6.2 Display

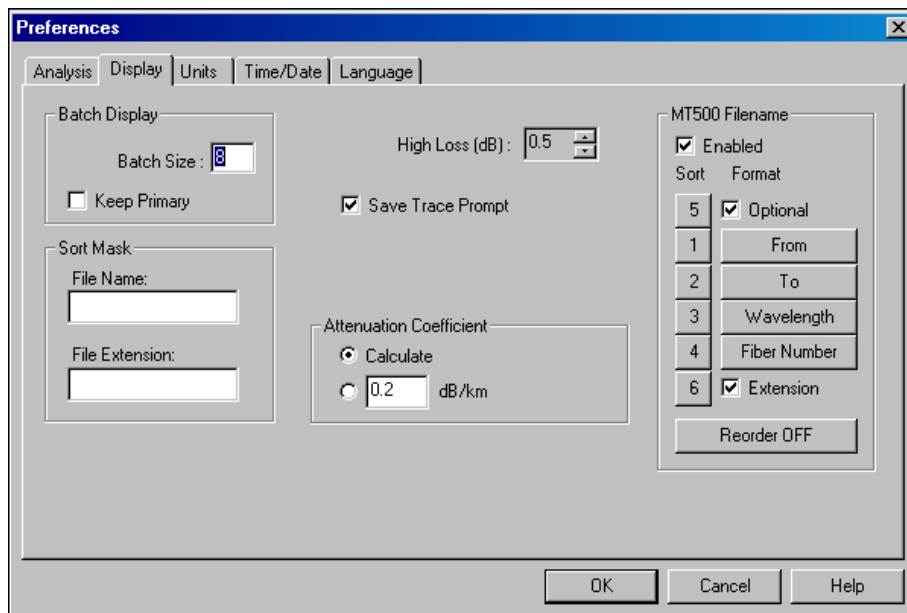


Figure 2-5: Preferences Display Page

**Batch Display Group Box**

Batch Display allows sequential display of the next or previous set of traces (up to the Batch Size) from the trace list. Batch Size value must be between 1 and 8.

Check Keep Primary to continue displaying the primary trace while displaying the next or previous trace(s).

**EXAMPLE** Set Batch Size = 2 and check Keep Primary; then command SoftView Plus to plot the next batch of traces from the trace list. The primary trace remains displayed, the other trace is removed from the graph, and the next trace is displayed.

**Sort Mask Group Box**

The Sort Mask controls the order of traces filenames in the trace list. There is a separate file name and file extension mask. The masks may be null or contain a sequence of digits from 1 through 9. A null mask indicates an alphanumeric sort.

The digit value of 1 in the sort mask indicates the primary sort character position; i.e. filenames with the same characters in these character positions will appear consecutively in the trace list, sorted from low to high.

Each group of filenames with the same characters in the sort mask 1 digits position will be sorted by the 2 digits position, which in turn will be subsorted by the 3 digits position, etc. The displayed trace list is sorted from low to high. Since a trace list may contain 2 trace files with the same filename; in the case of equal filenames, the full device/directory path (sorted alphanumerically) will determine position.

**EXAMPLE** Assume the trace filenames are:

```
AAABBB3.001
BBBAAA3.001
AAABBB3.002
BBBAAA3.002
AAABBB5.001
BBBAAA5.001
AAABBB5.002
BBBAAA5.002
```

To sort first by fiber number, then wavelength, then To Location Code (BBB), then From Location Code (AAA), use a File Name and Extension Sort Mask of 4443332 and 111. If a Batch Size of 2 is specified, and Keep Primary is unchecked, then the Batch Display feature will display Fiber 001's 1310 wavelength traces, Fiber 001's 1550 wavelength traces next, Fiber 002's 1310 wavelength traces next, etc. resulting in the indicated displayed order:

```
BBBAAA3.001
AAABBB3.001
BBBAAA5.001
AAABBB5.001
BBBAAA3.002
AAABBB3.002
BBBAAA5.002
AAABBB5.002
```

### **High Loss**

Any event with a loss greater than or equal to the set High Loss (dB) parameter value will be highlighted on the trace waveform. By suitably defining this value and using the batch display feature, splices which are “bad” (i.e. have excessively high loss) can be found quickly.

A value of 0 turns this function off (no events will be highlighted, regardless of their loss).

### **Save Trace Prompt**

If checked, the message “Save changes to Trace Filename?” is displayed before a modified trace is closed. If unchecked, no reminder is given to save a modified trace.

### **Attenuation Coefficient Group Box**

The Attenuation Coefficient is the attenuation loss estimate, in dB/km, used in the 2-Point Attenuation Corrected loss measurement. (See “Manual Loss Mode Calculation” on page 49.) SoftView Plus can calculate the attenuation coefficient using the trace waveform, or the value from the cable manufacturer's spec sheet can be entered manually.

### MT500 Filename Group Box

When working with traces from a Multitester 500/OTDR (T6 format) use the MT500 Filename group box (see Figure 2-5) instead of the Sort Mask to control the order of trace filenames in a trace list.

The Multitester 500/OTDR Auto Filename convention contains up to 6 component fields, separated by “.”:

Optional	(optional and first if present)
From	(required)
To	(required)
Wavelength	(required)
Fiber Number	(required)
Extension	(optional and last if present)

The list of filename component fields (Optional, From, To, etc.) in the Format column indicates the sequence of the fields in the Multitester 500 filename.

- Check *Enabled* to use the Multitester 500/OTDR Auto Filename convention (instead of the Sort Mask).
- Check *Optional* if the first filename field is the Optional field.
- Check *Extension* if the last filename field is the Extension field.

To indicate the order of the other filename fields:

1. Click Reorder OFF, the legend changes to Reorder ON.
2. Click the following buttons in the Format column:
  - From
  - To
  - Wavelength
  - Fiber Number
3. Click Reorder ON, the legend changes to Reorder OFF.

To indicate the sort order of the various filename fields displayed in the Trace List:

1. Click Reorder OFF, the legend changes to Reorder ON.

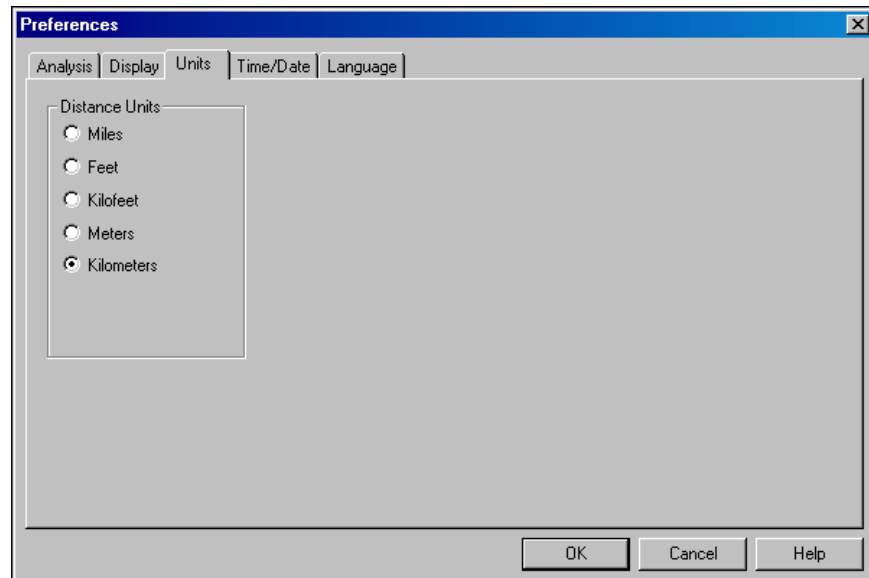
2. Click the numeric button aligned with the first desired sort position in the Format column. The number on the button changes to “1”.
3. Click the numeric button aligned with the second desired sort position in the Format column. The number on the button changes to “2”.
4. Continue until all buttons in the Sort column are aligned with the desired positions in the Format column.
5. Click Reorder ON, the legend changes to Reorder OFF.

**WARNING**

Make a copy of any Multitester 500 (T6) trace files before using them with SoftView Plus v2.11a. SoftView Plus v2.11a cannot write a T6 trace file. Because of the T6 to T5 format convention limitations, it is not recommended that an original T6 file be overwritten with a T5 trace format.

**2.6.3 Units**

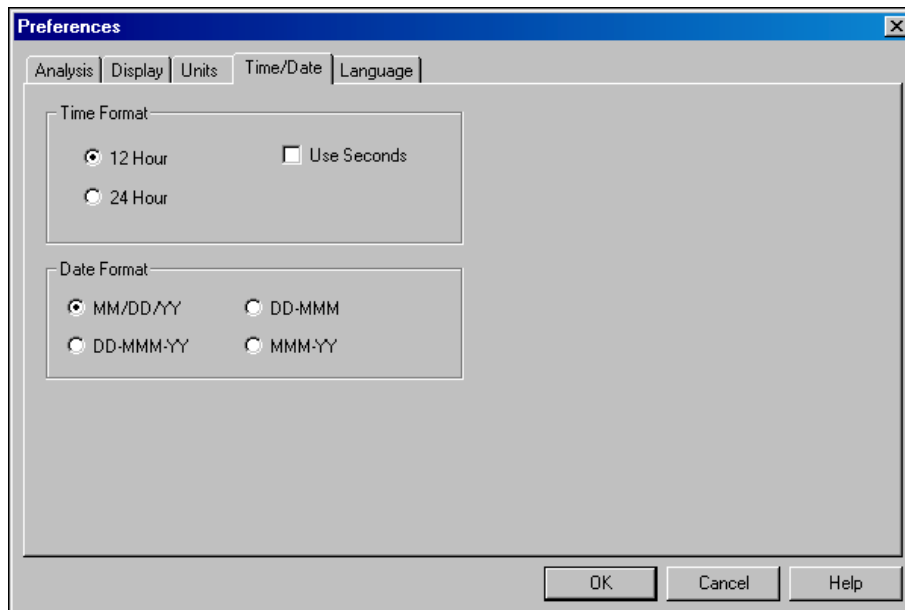
Select distance units for all distance values on the Units page.



*Figure 2-6: Preferences Units Page*

### 2.6.4 Time/Date

Select the desired Time and Date formats.

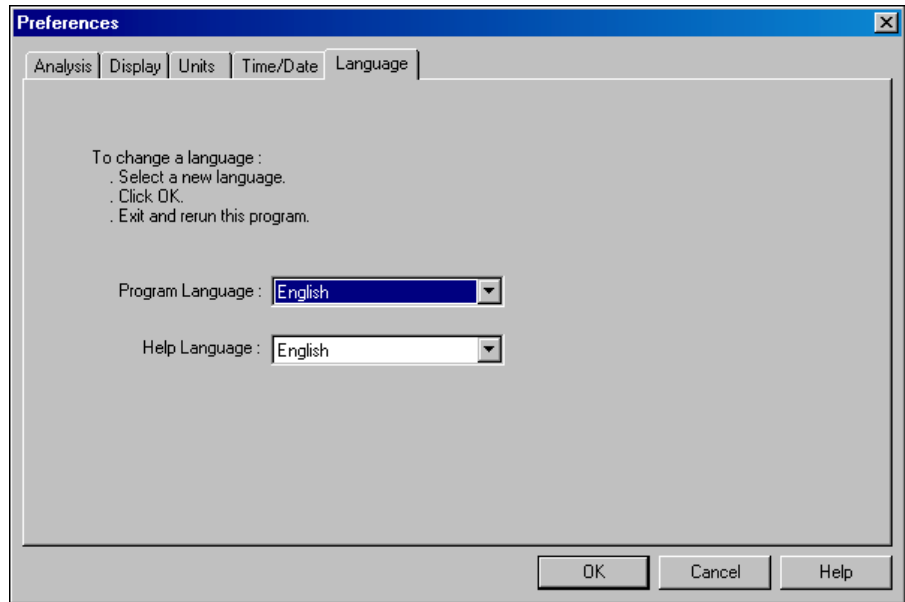


*Figure 2-7: Time/Date Preferences Page*



## 2.6.5 Language

SoftView Plus v2.11a currently supports English only.



*Figure 2-8: Language Preference Page*

To change a language:

1. Select the desired Program and Help languages.
2. Click OK.
3. Exit and then return to SoftView Plus to use the selected language.



## 3.0 Working with Traces

### 3.1 Trace File

Optical Time Domain Reflectometers (OTDRs) store a fiber's trace in a *trace file* which contains the trace data, OTDR parameters, user supplied text (such as notes and comments), and trace events.

**SoftView Plus™ emulation software can read and display data from the following Trace File formats:**

T6	from the Corning Optical Multitester 500/OTDR module
T5	from the Corning Cable Systems 340 OTDR Plus™ Multitester II.
383	from the Siecor 383 OTDR.
K2310	from the Siemens K2310 OTDR.
Bellcore/ Telcordia	GR-196-CORE Data Standard Description (Issue 1,9/95)
PK7500	from the PK7500 OTDR.
Anritsu	MW9070A format from the Anritsu OTDR
TEK WFM	106-109 formats from the TEK OTDR.

**SoftView Plus can write the following Trace File formats:**

T5	for the Corning Cable Systems 340 OTDR Plus Multitester II.
383	for the Siecor 383 OTDR/Siemens K2310 OTDR.
Bellcore/ Telcordia	GR-196 CORE Data Standard Description (Issue 1, 9/95)

In addition, SoftView Plus can write Trace Files in NetTest T4 format and read NetTest T1 through T5 traces.

**WARNING**

SoftView Plus v2.11a cannot write a T6 trace file. Make a copy of any Multitester 500 (T6) trace files before using them with SoftView Plus v2.11a. Because of the T6 to T5 format convention limitations, it is not recommended that an original T6 file be overwritten with a T5 trace format.

---

### 3.2 Using Multitester 500/OTDR Trace Files (T6 format)

When reading a T6 file, SoftView Plus automatically recognizes the file as a T6 file and converts the file to the required T5 format. Since a T6 trace is more advanced than a T5 trace, the conversion is not exact. In particular, when a T6 trace contains more trace data than can fit in a T5 trace, the T6 data is sampled (using every Nth data point), resulting in a T5 trace with a lower resolution than the original T6 trace.

As previously noted (see the “WARNING” above), SoftView Plus v2.11a cannot write a T6 trace file. To prevent losing the original T6 files copy the desired Multitester 500 trace files, save the original source files, and use the copies while working in SoftView Plus. To convert the T6 file copies to T5 files, use the Batch Process feature to save the traces as T5 traces. See “Executing Batch Process” on page 71 for details.

### 3.3 Trace Lists

SoftView Plus accesses (reads) a trace file via a *trace list*, which contains *trace files* grouped together according to criteria determined by the user. For example, a trace list may be created for all the traces taken on a cable's fiber at a certain wavelength, in one direction, and at initial installation.

When a trace file is added to a trace list, the full path including device, directory, and filename must be identified. For example:

C:\CABLE53\INSTALL\AAABBB3.009.

Additionally:

- Trace lists preserve the path to all the traces in the list with one exception. A trace list does not preserve the path for individual trace files residing within the same directory as the trace list file. Therefore, if a trace list is copied to a different directory, the individual trace files in that directory must also be copied to the new directory.
- The same trace file name can occur more than once in a trace list, but the full path must always be unique. For example, Cable 53 on Dec 06, 96 would appear as, C:\CABLE53\961206\AAABBB3.009.
- A trace *file* may be inserted into more than one trace *list*.
- *Individual trace files* may be opened through the File>Open dialog by changing the file type to All Files (\*.\*), then using standard Windows selection procedures. A *trace list* will be automatically created when the file is opened.

### 3.3.1 Creating a New Trace List

1. Select **File>New** or Press **Ctrl+N** to display the New selection box.

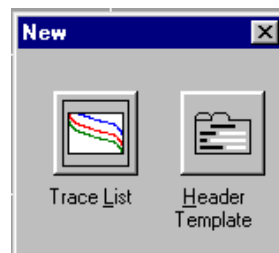


Figure 3-1: New Selection Box

2. Click on the **Trace List** button.

### 3.3.2 Adding Traces to the Trace List

1. With the focus in the trace list pane, press the **Insert** key on the keyboard **or** select **Trace>Add** (or **Context>Add**).
2. Select the trace files to add in the Add Traces to Trace List dialog box.
3. Click **Open**.

### 3.3.3 Sorting Traces

SoftView Plus emulation software sorts the traces in the trace list pane according to the Sort Mask defined in the Preferences Display Page.

### 3.3.4 Selecting Traces

Select traces in the trace list using standard Windows list item(s) selection methods.

Select all traces in the trace list by clicking the **Select All** toolbar icon *or* select **Trace>Select All**.

### 3.3.5 Saving Traces

#### **WARNING**

Make a copy of any Multitester 500 (T6) trace files before using them with SoftView Plus v2.11a. SoftView Plus v2.11a cannot write a T6 trace file. Because of the T6 to T5 format convention limitations, it is not recommended that an original T6 file be overwritten with a T5 trace format.

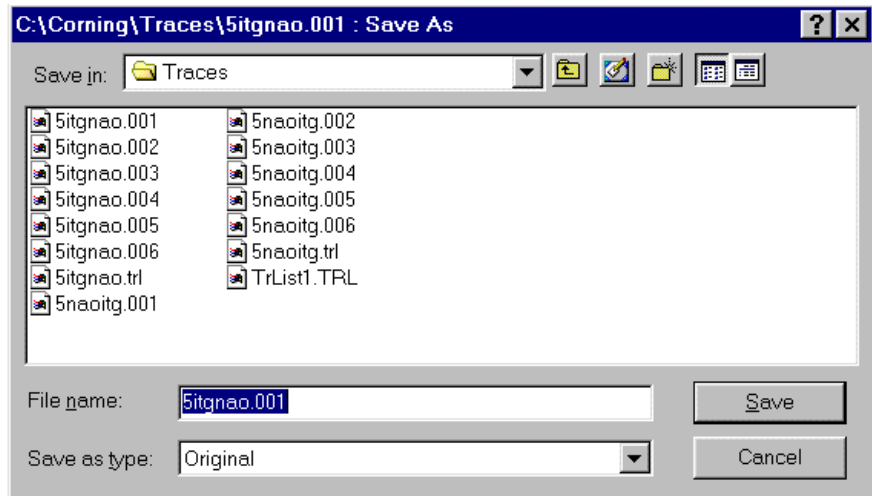
---

To save traces which are currently displayed in the trace list:

1. Select the traces to be saved.
2. Select **Trace>Save**.

To save traces which are currently displayed in the trace list *to another file and different format*:

1. Select the trace(s).
2. Select **Trace>Save As**. The Save As dialog box (Figure 3-2) will be displayed.
3. Select a new folder and/or enter a different trace filename. The selected trace's full file specification is shown in the dialog header line.
4. Select the type of file the trace is to be saved as. The default is Original but T5, T4, or Bellcore/Telcordia format may be selected from the pull down list.
5. Click **Save** to save the trace in the specified folder/file.



*Figure 3-2: Save As Dialog Box*

Traces are saved one at a time. If more than one is selected, specify the file name and click Save for each file as it is displayed in the dialog header line.

#### **WARNING**

Do not save the trace back into the same file with a different format unless the file is a duplicate of the original or backed up. Format conversions can result in the loss of some parameter information and data!

### **3.3.6 Removing Traces**

This procedure only removes trace files from the trace list; it does not delete them from the disk.

1. Use standard Windows methods to select one or more traces in the trace list pane.
2. Press **Delete** *or* select **Trace>Remove**.

### 3.3.7 Saving a Trace List

Select **File>Save** to save the current trace list.

To save the current trace list in a new or separate trace list file:

1. Select **File>Save As**.
2. Identify the filename for the newly saved trace list.
3. Click **Save**.

### 3.4 Trace Property Dialog Box

A trace file contains various parameters, analysis results, and user defined/supplied header information which may be viewed in the Trace Property dialog box.

To access the Trace Property dialog box:

- Use standard Windows methods to select one or more traces in the trace list pane and press Enter.

The Trace Property dialog box contains tabbed pages for information on Parameters, Analysis, and Header, which are explained in following sections.



3.4.1 Parameters

The Trace Parameters page (Figure 3-3) displays information about the currently selected trace.

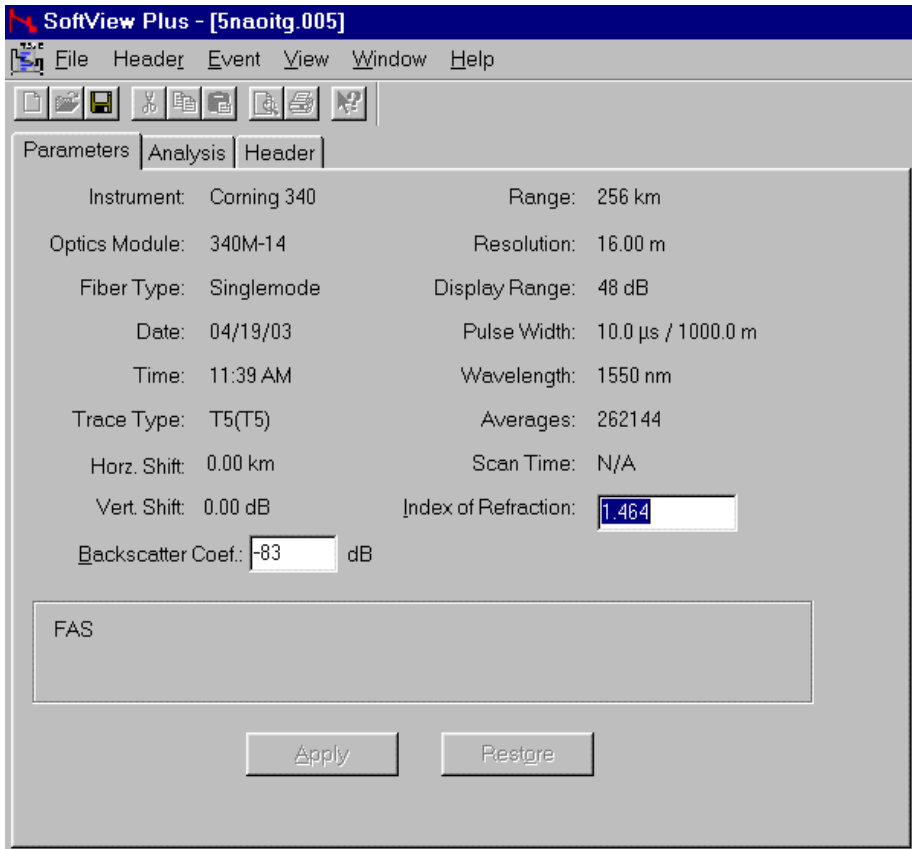


Figure 3-3: Trace Parameters Page

Most of the parameters are self-explanatory. Only data in the white text fields may be edited.

Additional Parameter field information follows.

Date/Time	Indicate when the trace was originally saved on the OTDR
-----------	--

<b>Trace Type</b>	If the current trace type is T5, trace type in () indicates prior trace type. Example: T5(T4) = Current trace type T5, Prior trace type T4
<b>Backscatter Coefficient</b>	A characteristic of the fiber under test; relates the optical backscatter power to laser power and pulsewidth. If a trace does not contain a backscatter coefficient, the program assumes a default value based on fiber type and wavelength. A backscatter coefficient value is normally supplied with fiber specifications. This value is assumed to be based on a one nanosecond pulse, with a valid range of -40 to -90 dB. If your cable's Fiber Spec Sheet indicates its backscatter coefficient is based on a one micro-second pulse, then enter the specified value minus 30dB. The value affects reflectance and ORL calculations.
<b>Scan Time</b>	The duration of a timed scan in minutes and seconds.
<b>Index of Refraction</b>	A new value may be specified in the range of 1.4 to 1.699999
<b>Trace Flag Status Info</b>	<p>The rectangular region at the bottom of the Parameters page indicates the ON state of various <i>trace status info flags</i>:</p> <p>FAS - Trace has been analyzed by FAS</p> <p>Smooth - Trace has been smoothed</p> <p>Template - Trace is a Splice Template trace</p> <p>Attenuated - Trace has been attenuated</p> <p>Abort - Trace has been aborted (averaging stopped)</p> <p>Two-way Average - Trace is a two-way averaging resultant</p> <p>Delta Compare - Trace is a Delta Compare resultant</p>
<b>Apply Button</b>	Accepts the parameter changes
<b>Restore Button</b>	Restores the parameters to their previous state

3.4.2 Analysis

The Trace Analysis page (Figure 3-4) contains the Thresholds as set at the time of analysis, analysis summary information, and event information (in the white box).

Press **Analyze** to analyze the trace using the current Analysis parameters.

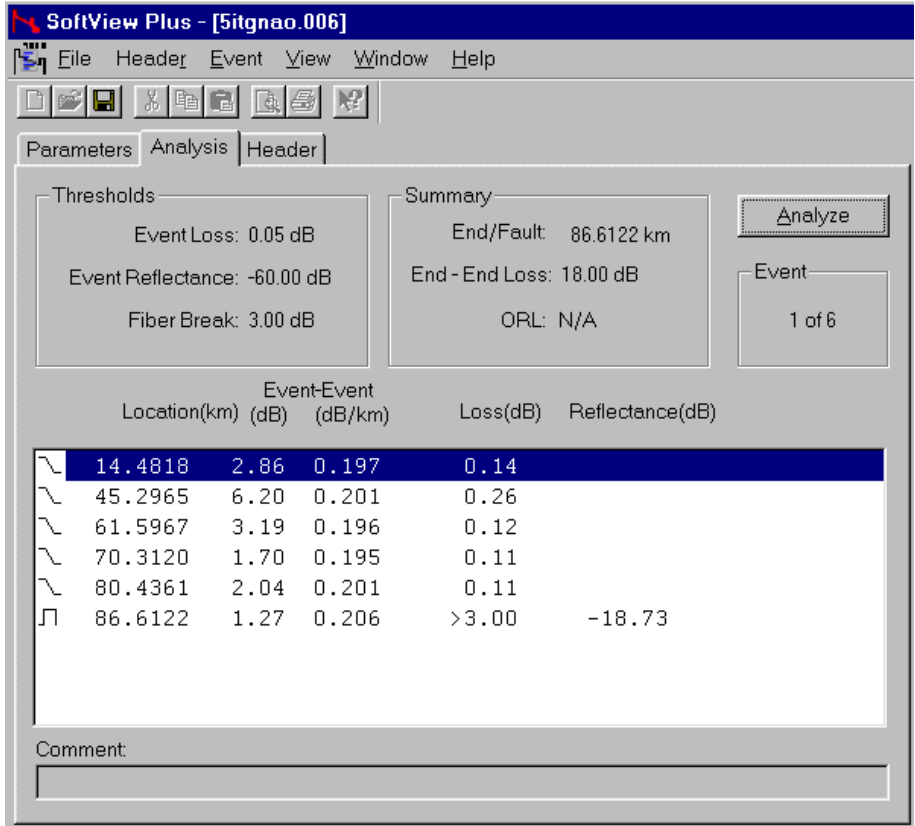


Figure 3-4: Trace Analysis Page

3.4.3 Trace Headers

A trace header contains valuable, user-specified information about the trace file. For example, when recalling a trace for comparison with a new trace acquired for fault location, information such as the type of OTDR used, the serial number of the unit, the patchcord length used, and any other pertinent data, could save hours in determining the exact location of the fiber break.

When collecting a trace, an OTDR allows selection of a *standard* or *custom* header.

Standard Header

Figure 3-5 shows an example of the Header page for a *standard header*. Text may be entered or edited in the text fields.

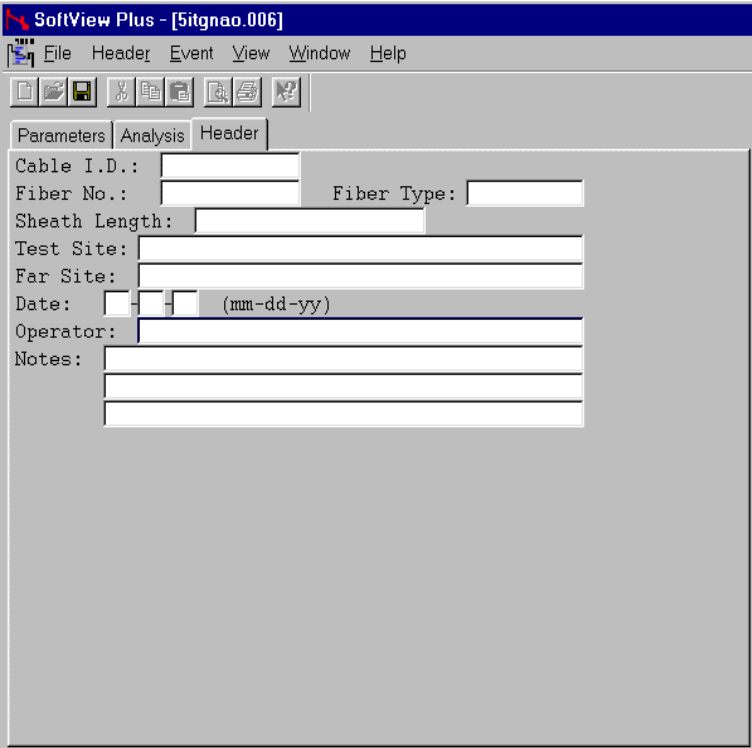


Figure 3-5: Standard Header Dialog Box

## Custom Headers

A *custom header* can be created using any text editor or SoftView Plus emulation software.

### Using a text editor to create a Custom Header:

1. Start your text editing application.
2. Enter the custom header template text using the following guidelines:
  - Line length limited to 50 characters
  - Maximum of 12 lines of text per page
  - Maximum of 10 pages
  - The text “.P” forces a new page
  - Any text entered appears on screen each time the header is used
  - The symbol “@” creates an editable field in the header template. The symbol appears every time the header template is used and can be changed only by typing over it.
  - The symbol “\$” creates a blank text field on the header template; new information can be entered in the template.

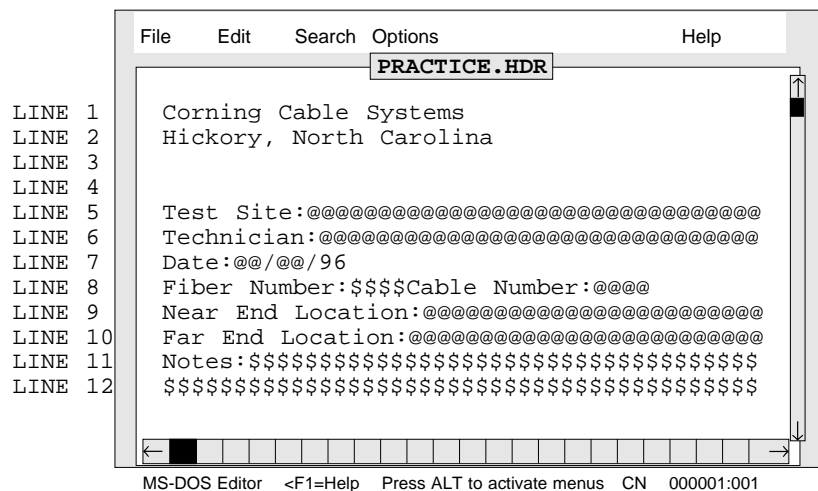


Figure 3-6: Custom Header Template Screen

3. Save the new header template to a disk. File names can be a maximum of eight characters and must contain a three character extension (.HDR) so the filename will be recognizable to the SoftView Plus or Corning Cable Systems 340 OTDR Plus Multitester II Select New Header mode.

**Using SoftView Plus to create a Custom Header:**

Select **File>New** or press **Ctrl+N** and then click the **Header Template** button (see Figure 3-1: New Selection Box). A new header template will open and custom header information can be entered.

**Opening a Custom Header:**

Select **File>Open** or press **Ctrl+O**. Find and select the **custom header** file in the standard Windows Open dialog box.

With focus in the Trace Property dialog box, the trace's current header can be replaced with a standard, custom, or the current primary trace's header. Note that when the primary trace's Header is copied, all field definitions and text will be copied.

**Replacing the current Header from the Trace Property Sheet:**

1. Click the *right* mouse button to bring up the context menu or select Header from the menu bar.
2. Select the desired replacement header style.

If a Custom Header is selected, then the standard Windows Open dialog box will appear for identifying the custom header template file.



## 3.5 Viewing Trace Data on the Trace Graph

### 3.5.1 Displaying and Hiding Traces

Trace file waveform data can be displayed on the trace graph.

There are two methods for displaying and hiding traces:

- Double-click a trace filename in the trace list to display its waveform on the trace graph. If a trace is already displayed, double-clicking the trace filename hides the waveform.

- Highlight one or more filenames in the trace list and click either the *display* icon  or the *hide* icon  in the toolbar to display/hide the traces.

### 3.5.2 Primary Trace

The first trace selected for display is by default the *primary* trace and identified by red trace data and a double red check mark.

The primary trace is unique in that:

- Its parameter values appear in the graph footer.
- It defines the LSA cursors.
- The A/B cursor positions, axis scale, saved views, zoom stack, and LSA cursor positions are dependent on its Index of Refraction (IOR). However, if the primary trace's IOR is modified, the A/B cursor positions (and other related settings) will be automatically adjusted so that they retain their positions relative to the data points.
- Manual loss measurements can be performed on it.
- It can be shifted horizontally or vertically.
- It can be permanently displayed during batch display (see “Batch Display” on page 46).
- Some features require a primary trace (e.g. Smart Splice Template).

#### Changing the Primary Trace

Select a new primary trace in the trace list and press **Ctrl+R**; or, select **Primary** from the Trace or context menu.

---

#### NOTE

If the primary trace is hidden, SoftView Plus emulation software automatically selects the next displayed trace to be the primary.

---




3.5.3 Viewing Modes

Four View Modes are available for viewing the graph of a trace: Display from A, Display from B, Display from Origin, and Display from Anywhere.

Each of the modes has its own individual locations and magnifications which may be saved to the primary trace or loaded from it. The Display from Anywhere view is not available on the Corning Cable Systems 340 OTDR Plus Multitester II but can be restored on SoftView Plus emulation software.

Set the view mode using the toolbar icons shown in the following table or from the View menu on the menu bar.

Table 3-1:

View Mode	Toolbar Icon	Description
Display from A		Always displays the A (or B) cursor intercept with the <i>primary</i> trace data in the center of the graph view region. As operations are performed that move the A (or B) cursor, the intercept point remains in the center of the graph view region and the displayed data, event markers, and axes change.
Display from B		
Display from Origin		Keeps the origin (0 distance and 0 dB) in the upper left corner of the graph.
Display from Anywhere	<i>Deselect all view mode toolbar icons.</i>	Allows zooming in on any region of the trace; regardless of the A/B cursor location or origin.

NOTE


OTDRs magnify/demagnify in powers of two and SoftView Plus has an analog magnification. Therefore, when these files are saved, SoftView Plus will decrease the magnification to the largest power of two greater than the current magnification.



**EXAMPLE** Using Display from A:

1. Select and display a *primary* trace which has events.
2. Set the A cursor location at an event location.
3. Set the view mode to Display from A.
4. Zoom in on the event using the trackbars.
5. Set the loss mode to Splice Loss; the Splice Loss LSA cursors appear.
6. Press **Ctrl+A** to move Cursor A via the keyboard.
7. Press and hold the right/left arrow keys to shift the A cursor, noting the graph view region movement.

**3.5.4 Loading View from Primary**

To load the view from the *primary* trace, click the toolbar icon  or select **View>Load** from Primary.

This feature will update the graph pane with the following settings from the primary trace:

- Display From A/B/Origin/Anywhere views
- A and B cursor locations
- Loss Mode

---

**NOTE**

Making a new trace primary does not affect the current graph views; **View>Load** from Primary must be selected.

---

**3.5.5 Saving View to Primary**



To update the primary trace with the current view, select **View>Save** to Primary.

When a view is saved, the following trace information is updated:

- Display From A/B/Origin/Anywhere views
- A and B cursor locations
- Loss Mode

### 3.6 Changing A and B Cursor Location

#### Moving the A and B cursors:

- Grab the A or B cursor with the mouse cursor and drag it to the desired location.
- Click the  or  toolbar icon, and move the mouse cursor to the location on the graph where the A (or B) cursor is to be placed, and click the *left* mouse button.
- Put the mouse cursor at the graph location where you want the A or B cursor and select from the context menu, Set A cursor or Set B cursor.
- Press **Ctrl + A (or B)** then use the left/right arrows to move the A (or B) cursor 10 display pixels and use the **Ctrl + left/right** arrows to move the A (or B) cursor one display pixel.

#### Moving the Cursors and keeping the same distance apart:

- Select **Lock A&B** Cursors from the context or Cursor menu *or* press **Ctrl+K** (toggles cursor lock). Then:
  - Drag the B cursor to move both.
  - Drag the A cursor to move just the A cursor.

#### Moving the Graph viewing area to the A or B Cursor location

While in Display from Anywhere, select **Cursor>Go to A (or B)**.

### 3.7 Zoom

Zoom toolbar icons allow zooming in and out on a graph region.

- Click one of the following icons to activate its zoom feature. The icon remains active until deselected with a second click.

---

#### NOTE

The first three icons are available only in Display From Anywhere mode.

---



Magnifies a region. Once activated:

- Move the mouse cursor to one of the rectangle's corners and hold down the *left* mouse button, then drag the rectangle to the opposite corner location. Release the left button; the graph view will change to the selected rectangle's view.
- Move the mouse cursor to the center of the area to be magnified and *left-click* to *zoom in* (magnify).
- Move the mouse cursor to the center of the area to be demagnified and *right-click* to *zoom out* (demagnify).



Zooms out to the previous zoom view.



Centers the zoom region on an event.

- Click this icon and then click an event marker to zoom in on an event. The zoom region will be centered on the event and will be sized to encompass the currently defined *splice loss LSA intervals* used for *splice loss measurement*.



Sets graph view region to enclose all currently displayed trace data.










Sets graph view region from 0 to 60 dB Loss and 0 to 400 km. (Available only in Display from Origin or Anywhere View Modes.)

## 3.8 Event Processing

### 3.8.1 Event Marks

Event marks appear at the event location for each trace displayed on the graph. A triangle indicates the location of the event on the data points; one of the following symbols below the triangle indicates the type of event.

	Non-reflective Loss
	Non-reflective Gain
	Reflective Loss
	Reflective Gain
	Grouped
	End
	Questionable End

If an event is selected (e.g. displayed in the Event window) a rectangle encompasses its event mark on the graph. Any events with a loss or gain greater than or equal to the High Loss value (selected on the Preferences Display page) will be shaded with a rectangle.

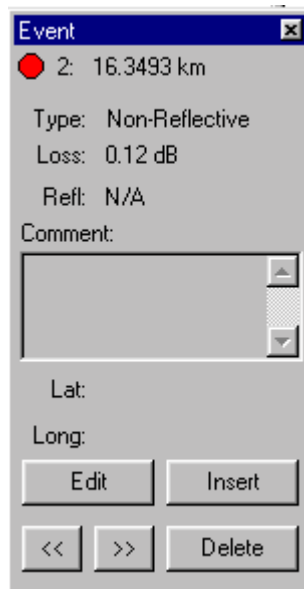
### 3.8.2 Displaying/Hiding Event Marks

- Select **View>Event Marks>None** to inhibit the display of any event marks.
- Select **View>Event Marks>Primary** to display event marks for the primary trace only.
- Select **View>Event Marks>All** to display event marks for all traces.
- Double-click the *left* mouse button on an event mark on the graph to display the event in the Event window (see Figure 3-7).

More detailed information on using the Event window is contained in the following sections.

### 3.8.3 Deleting an Event

Click **Delete** in the Event window to delete the event currently displayed in the window.



*Figure 3-7: Event Window*

---

#### NOTE

A trace with events must always have an end event. A warning is displayed if an attempt is made to delete an end event.

---

### 3.8.4 Editing an Event

Click **Edit** in the Event window to display the Edit Event dialog box (Figure 3-8: Edit Event Dialog Box) and edit information for the event currently displayed in the Event window.

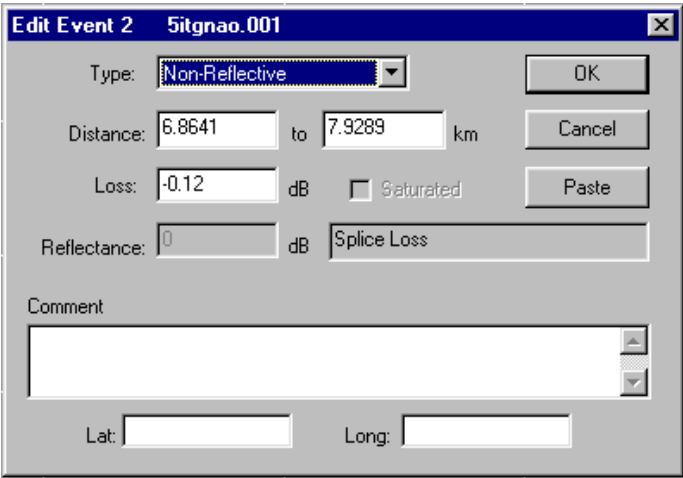


Figure 3-8: Edit Event Dialog Box

**Edit Event Dialog Box Fields**

<b>Type</b>	End and Questionable (End Events only); Group, Non-Reflective, and Reflective.
<b>Distance</b>	The start and end distances of the event
<b>Loss</b>	User defined loss values may be entered.
<b>Reflectance</b>	Event Reflectance ( <b>NOTE:</b> Field to the right contains non-editable Event Loss information.)
<b>Saturated</b>	Toggles the saturation state for a reflective event on or off.
<b>Comments</b>	User specified comment field.
<b>Latitude</b>	Input <i>requires</i> the following format: N 23 42 15.82
<b>Longitude</b>	Input <i>requires</i> the following format: E 105 57 1.23
<b>Paste</b>	Use to replace Splice Loss, 2-Point Attenuation Corrected, 2-Point Loss, and 2-Point Loss LSA measurements only. Edits the event as follows: <ul style="list-style-type: none"><li>• Sets the Start Distance to the current A Cursor position.</li><li>• Sets the End Distance = current B Cursor position for a 2-Point Attenuation Corrected, 2- Point Loss, or 2-Point Loss LSA measurement; or = Start Distance + Pulse Width for Splice Loss measurement.</li><li>• Sets the Loss to the Graph Header Loss value.</li><li>• Sets the Reflectance to the Graph Header Reflectance value.</li></ul>

### 3.8.5 Inserting an Event

Click **Insert** to insert an event into the Event Table. The Insert Event dialog box will pop-up with the event parameters set to a Paste of the current measurement (refer to prior section). The Insert Event dialog box follows the same procedure as the Edit Event dialog box (“Editing an Event” on page 43).

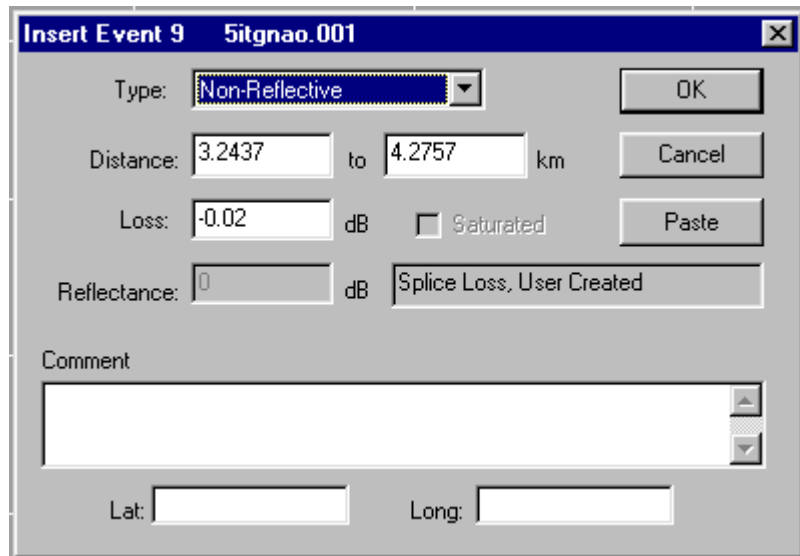


Figure 3-9: Insert Event Dialog Box

### 3.8.6 Next/Prior Event

Click the >> (**or** <<) button in the Event window to view the next (or prior) event on the trace in the Event window.

### 3.8.7 Zoom to Next/Prior Event

Use the >> **or** << button to zoom to the next or prior event as follows:

1. Select and display a *primary* trace which has events.
2. Set the A cursor location at an event location.
3. Set the view mode to Display from A (or B).
4. Zoom in on the event (use the trackbars).

- 5. Display the Event window.
- 6. Click the >> (**or** <<) button to view the next (or prior) event on the trace in the Event window and zoom to the next (or prior) event.

**3.9 Batch Display**

The Batch Display feature allows sequential display of the next or previous Batch (group) of up to eight traces from the trace list.

Batch size is determined by the number of traces displayed. If no traces are displayed, Batch size is determined by the Batch Size setting in the Preferences Display page.

If the Keep Primary checkbox is selected in the Preferences Display page, the current primary trace will always remain displayed and is included as one of the batch.


Batch Display is a loop function and cycles through the trace list, returning to the beginning/end of the list to fulfill a batch size requirement. For example: if a trace list contains twelve traces, Batch Size is eight and the first eight traces are displayed; when the Next Batch icon is clicked, the last four traces and the first four traces in the list will be displayed.

The Batch Display starting point is determined by the status of the trace display and the trace list as follows:

Trace List/Trace Graph Status	Start of Next/Previous Group
Traces <i>displayed in graph</i> , but <i>none selected in the trace list</i>	First <i>undisplayed</i> trace in list, <i>after/prior</i> to displayed traces.
Traces <i>selected</i> in trace list	First trace selected
<i>No traces displayed</i> in graph window, and <i>no traces selected</i> from trace list	First trace in the trace list



### 3.9.1 Displaying the Next/Previous Batch

Click the toolbar *next batch* icon  or *previous batch* icon .

An alternative method is to select **Next Batch** or **Previous Batch** from the Trace or context menu.

#### Example

1. Set Batch Size = 6 and check **Keep Primary** in **Preferences>Display**.
2. With no traces selected in the trace list or displayed, click the next batch icon. Six traces will be displayed with one as primary.
3. Click **Next Batch** again to plot the next batch of traces. The *primary trace will remain displayed*, the *other five traces removed* from the graph, and the *next five traces from the list displayed*.

## 3.10 Shift

Primary trace data can be horizontally or vertically shifted to adjust the view and event location.

### 3.10.1 Shifting the Primary Trace

To enable/disable shifting of the primary trace, press **Ctrl+T** or select **Shift** from the Trace menu. Once enabled:

- Use left/right/up/down arrow keys to shift the primary trace 10 pixels.
- Use Ctrl+left/right/up/down arrow keys to shift the primary trace one pixel.
- To reset the primary trace shift value to zero, select **Trace>Reset Shifts** and then:
  - Select **Horizontal** to set the horizontal shift to zero.
  - Select **Vertical** to set the vertical shift to zero.
  - Select **Both** to set the horizontal and vertical shifts to zero.

---

#### NOTE

Horizontal and Vertical Shift values are displayed in the graph footer.

---


### 3.11 Stack

Trace lists typically contain traces of fibers from the same cable; therefore, data from multiple traces will frequently overlap and be difficult to view. The Stack feature displays the *primary trace* at its true distance and loss location, but displays *non-primary traces* offset (by a fixed number of pixels) downward on the graph.

- To toggle the stack feature, select **View>Stack Traces**, *or* place the cursor in the trace graph, right-click the mouse and select **Stack Traces** from the context menu.

### 3.12 Align

The Align feature displays each non-primary trace with a vertical offset so that the trace waveform intersects the A cursor at the same point as the primary trace waveform.

- To toggle the Align feature ON and OFF, click the **Align** icon  *or* select **View>Align Traces**.

Align ON temporarily shuts the Stack feature OFF and Align OFF restores the Stack feature state.

---


#### NOTE

Flipped traces may be aligned to facilitate waveform/cursor positioning for bidirectional splice loss measurements.

---

### 3.13 Flip

The Flip feature flips the trace waveform of each displayed non-primary trace containing an end event. The flipped waveform is drawn with the end event data point at location 0 and preceding data drawn in reverse order.

- To toggle the Flip feature ON and OFF, click the **Flip** icon  *or* select **View>Flip Traces**.

Flip ON temporarily shuts the Stack feature OFF and Flip OFF restores the previously shut off Stack feature state.

Flip ON affects the loss measurements in the graph header as a bidirectional average is computed (see “Graph Header” on page 10).

Flipped traces may be aligned to facilitate waveform/cursor positioning for bidirectional splice loss measurements.

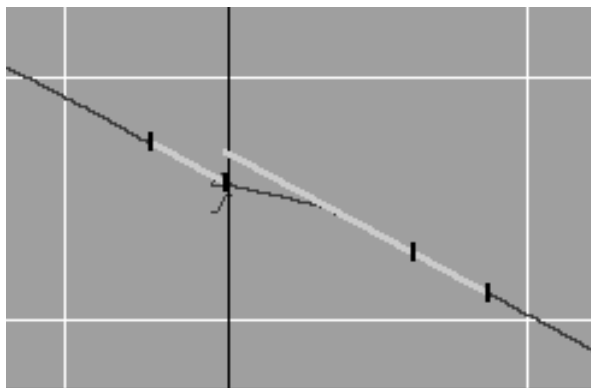
In the Event and Edit Event windows, a flipped trace event location value is identical to the event location value if the trace wasn't flipped.

3.14 Manual Loss Mode Calculation

SoftView Plus emulation software allows seven types of *manual loss mode* measurements on the *primary* trace data:

Table 3-2: Manual Loss Mode

Loss Mode	Measures
Splice	(Splice Loss Left LSA Interval line projected to A cursor) - (Figure 3-10) (Splice Loss Right LSA Interval Line project to A cursor)
2-Point	(Loss at cursor A intercept with data) - (Loss at cursor B intercept with data)
2-Point LSA (Figure 3-11)	(2-Point Loss Left LSA Interval line projected to A cursor)- (2-Point Loss Right LSA Interval line projected to B cursor)
2-Point Attenuation Corrected	2-Point Loss - (distance in km from A to B cursor) * Attenuation Coefficient
dB/km	(2-Point) / (distance in km from A to B cursor)
dB/km LSA	[(dB/km Loss Left LSA Interval line projected to A cursor)- (dB/km Loss Right LSA Interval line projected to B cursor)] / (distance in km from A to B cursor)
ORL	Optical Return Loss from the A cursor to the B cursor, relative to the A cursor or the original (refer to Preferences).
<b>NOTE</b>	
The only way to compute and display the ORL value is to click the ORL button in the Graph Header	



*Figure 3-10: Splice Loss Measurement*



*Figure 3-11: 2-Point LSA Measurement*

---

**NOTE**

2-Point Attenuation Corrected Loss provides a good estimate of the splice loss (without the use of LSA cursors) if the A cursor is positioned just before a splice point and the B cursor is positioned just after the splice deadzone.

---

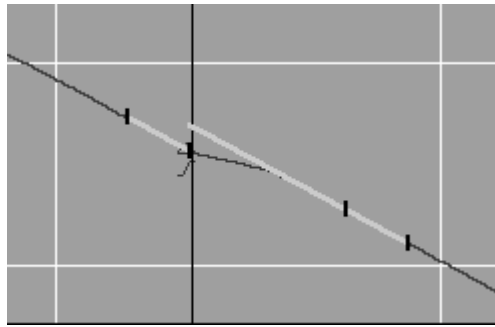
### 3.15 LSA Cursor Sets

There are three sets of LSA (Least Squares Analysis) cursors defined by the primary trace: one set each for the Splice, 2-Point LSA, and dB/km LSA Loss Mode calculations.

Each LSA cursor set consists of two pairs of locations. SoftView Plus optimally fits the trace data between the locations in each pair with a straight line. Projecting the line to either the A or B cursor, an estimate of the data is obtained at the cursor location from the linear extrapolation of the data within the LSA Interval between the two locations.

#### 3.15.1 Splice Loss Cursor Set

One LSA interval is to the left of the A cursor; the other to the right. SoftView Plus projects the two LSA lines to the A cursor position to obtain a splice loss estimate. By suitably placing the A cursor and Splice Loss LSA cursors, an excellent loss estimate can be computed.



*Figure 3-12: Splice Loss Cursor Setup with A Cursor at the Splice*

In Figure 3-12, the two black tick marks to the left of the A cursor enclose the data used to compute the left LSA line which is projected to the A cursor. The two black tick marks to the right of the A cursor enclose the data used to compute the right LSA line which is projected to the A cursor.

The difference between the two cursor intercept points provides an estimate of the splice loss.

---

**NOTE**

If splices are so close together that the splice loss measurement is inaccurate, use the 2-Point Attenuation Corrected loss measurement to obtain an estimate of the splice Loss, rather than the LSA cursors.

---

**3.15.2 2-Point LSA Loss Cursor Sets**







One LSA cursor is associated with the A cursor; the other with the B cursor. SoftView Plus emulation software projects each LSA line to its associated A/B cursor and the dB loss difference is an estimate of the loss between the A and B cursors.

**3.15.3 dB/km LSA Loss Cursor Sets**


LSA cursor association, usage and loss computation is equivalent to 2-Point LSA, except the resultant loss is divided by the distance (km) between the A and B cursors.

**3.15.4 Adjusting the LSA Cursor limits**


To move an LSA cursor or an LSA cursor end point, click the appropriate icon, position the mouse cursor where you want to relocate it, and click the *left* mouse button.

Cursor Icon	Function
	new left end of wholly shifted Left LSA cursor
	new left end of wholly shifted Right LSA cursor
	new left end of Left LSA cursor
	new right end of Left LSA cursor
	new left end of Right LSA cursor
	new right end of Right LSA cursor

**Moving the LSA Cursor**

1. Position the mouse cursor over an LSA cursor line. The mouse cursor will change to .
2. Click and drag the LSA cursor along the trace.

**Resizing the LSA Cursor**

1. Position the mouse cursor over an LSA tick mark. The mouse cursor will change to .
2. Click and drag to resize the LSA cursor.

To initialize the LSA cursors to a computed value based on pulsewidth and resolution, select **Cursor>Set LSA Defaults** from the menu bar.

**3.16 Trace Analysis**

SoftView Plus emulation software has built-in trace analysis capabilities designed to locate, classify, and measure events on an OTDR trace. Thresholds may be set (**Select File>Preferences>Analysis**) so that only events having a loss or reflectance above these threshold settings will be reported.

When analysis is enabled for selected traces, the current events are discarded and the algorithm locates, classifies, and measures features, storing the threshold results as new events. The Parameters page of the Properties dialog box will indicate if analysis has been applied to a trace.

**To analyze a selected set of traces:**

- Click the **Analyze** icon or **Select Trace>Analyze**.

Analysis results are placed in the trace event table which may be viewed by selecting **Trace>Properties>Analysis**.

A trace's individual events can be displayed in the Event window.

**CAUTION**

---

Once a trace is analyzed, the previous memory copy of the events is destroyed. If the trace is saved back into its file, the previous events in the file are overwritten and only recoverable from a backup file.

---

### 3.17 Smooth

The Smooth function alters the data by applying a digital filter to the linear portions of a trace, between reflective events. This digital filtering may help to reduce the random noise on linear portions of the trace with the adverse effect of distorting the trace near reflective events. The smoothing algorithm requires analysis results in order to determine where the linear portions of the trace are located. If analysis results are not available for the trace, then analysis is run at the start of the smoothing algorithm.

If the previously stored analysis results were obtained with a reflectance threshold greater than -60 dB for a 50 microsecond or greater pulse (-70 dB for less than 50 microsecond pulse), the analysis will automatically be rerun at the start of the smoothing algorithm, with a lower threshold value.

Three levels of smoothing, Light, Medium, and Heavy, are available. The different levels correspond to the cutoff frequency of the applied filter. The Heavy level applies a filter with the lowest cutoff frequency.

#### 3.17.1 Smoothing a Selected Trace

To smooth a selected trace:

- Select **Trace>Smooth**.

To set the level of smoothing:

- Select **File>Preferences>Analysis>Smoothing Level** (see “Analysis” on page 15).

The Parameters page of the Trace Properties dialog box indicates whether smoothing has been performed (see “Parameters” on page 31).

#### CAUTION

---

Saving a trace that has been smoothed overwrites the original (noisy) data in the trace file. The original data can only be restored from a backup file.

---

Figure 3-13 and Figure 3-14 show a trace waveform before and after medium smoothing has been applied.



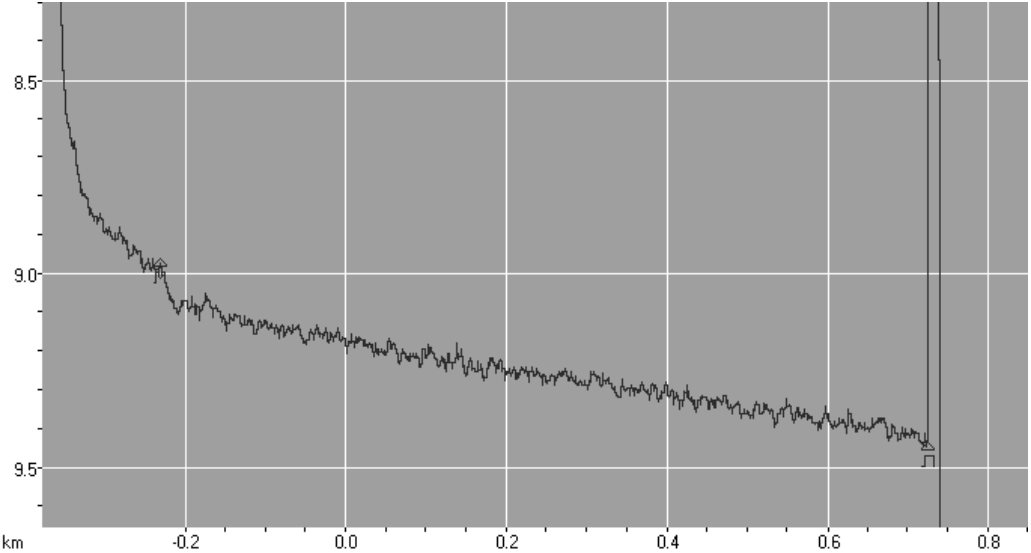


Figure 3-13: Trace before Smoothing

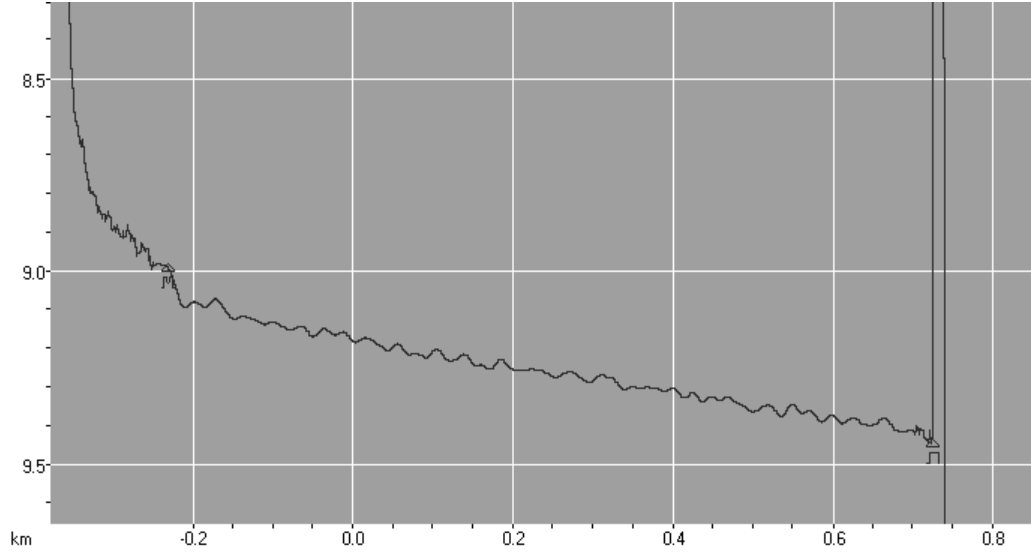
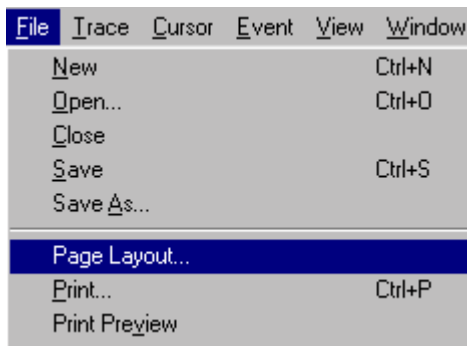


Figure 3-14: Trace with Medium Smoothing Applied



## 4.0 Printing Options

SoftView Plus™ emulation software printing options are accessed from the File menu as shown in Figure 4-1.



*Figure 4-1: File Menu Options*

### 4.1 Page Layout

Page Layout allows selection of options, format and information to be included in each type of printout: View (current), Batch, Frame and Bi-Directional.

To select printout options:

1. Select **File>Page Layout**.
2. Click on the tab for the desired printout type and select the desired options.
3. Click **OK** to save the changes and return to the graph view screen.

Information on selections for each printout type is detailed in the following sections.

#### 4.1.1 Current View

The View printout is based on the traces *currently* displayed on the trace graph.

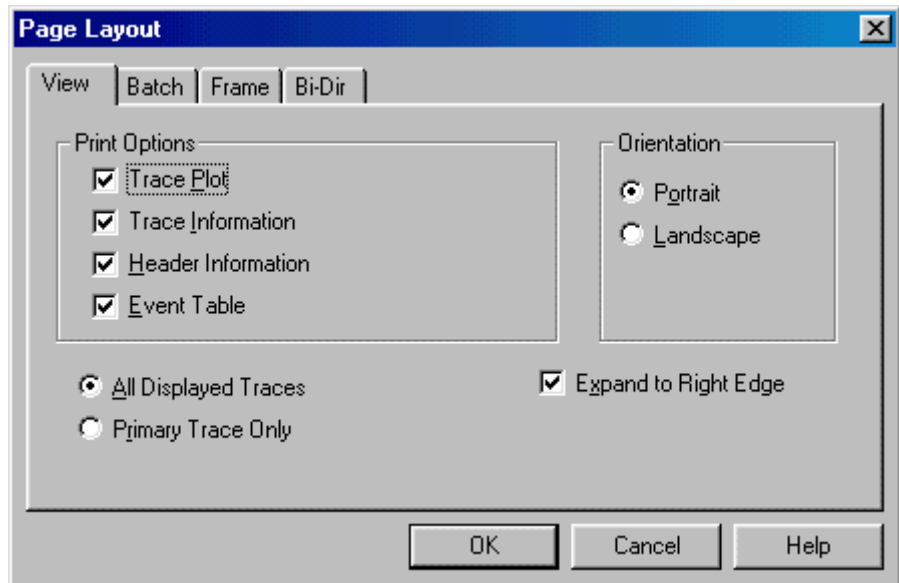


Figure 4-2: View Printout Page Layout Dialog

Select **View** printout options as desired:

- Check desired print selections in the Print Options group box.
- Select the *All Displayed Traces* radio button to show all displayed traces in the printout **or** select *Primary Trace Only* to printout only the primary trace.
- Check *Expand to the Right Edge* to expand the trace plot to use the full paper width.

#### 4.1.2 Batch

The Batch printout prints selected trace information for the currently selected trace(s). Refer to the Batch printout example in Appendix B.

**HINT** By suitably setting up the trace list and defining the Sort Mask, two traces of the same fiber taken at different wavelengths, directions, dates, etc., can be printed on one page.

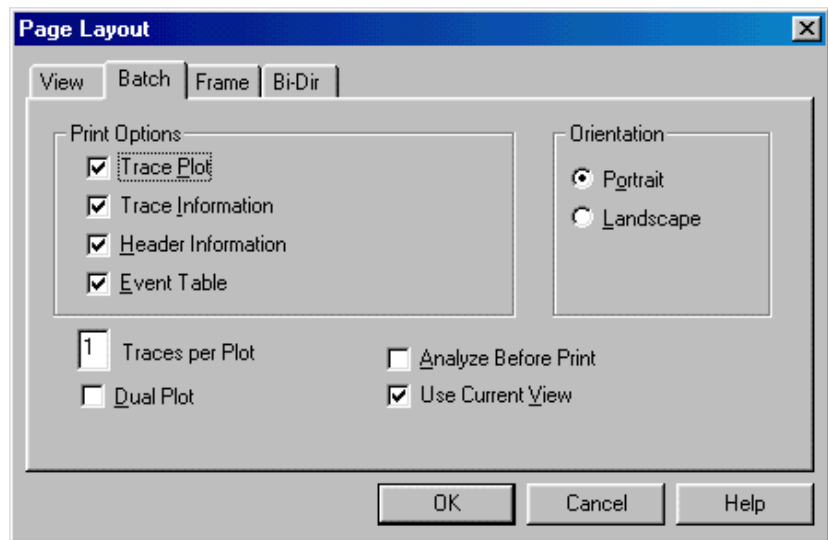


Figure 4-3: Page Layout Dialog - Batch Report

Select **Batch** printout options as desired:

- Check desired print selections in the Print Options group box.
- Enter the number of traces to be shown in each plot (up to 8).
- Check *Dual Plot* to show two trace plots per page, rather than one.
- Check *Analyze Before Print* to analyze each trace at current thresholds.
- Check *Use Current View* to use the current graph view region (including Stack, Align and Flip state) on all trace plots; otherwise, the first trace file in each plot will define the view.

### 4.1.3 Frame

The Frame printout contains a separate trace plot with an optional *primary trace* parameter summary for the currently selected traces. The plots can be printed in an N column by M row format, for a total of NxM plots per page (16 plots per page). Refer to the Frame printout example in Appendix B.

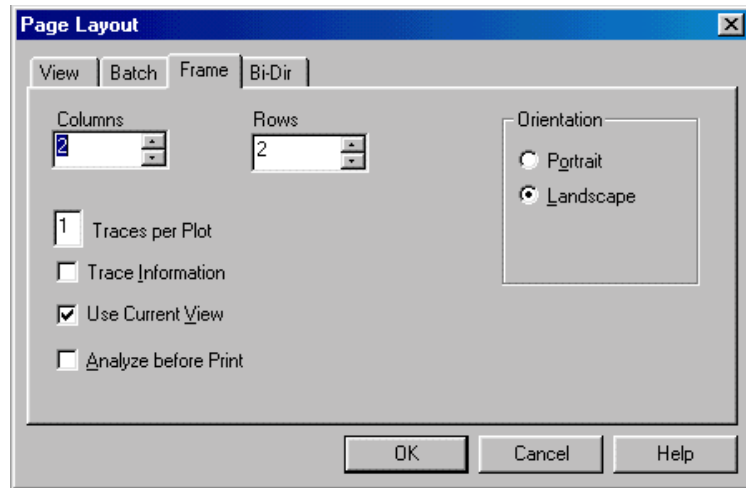


Figure 4-4: Page Layout Dialog Box - Frame Printout

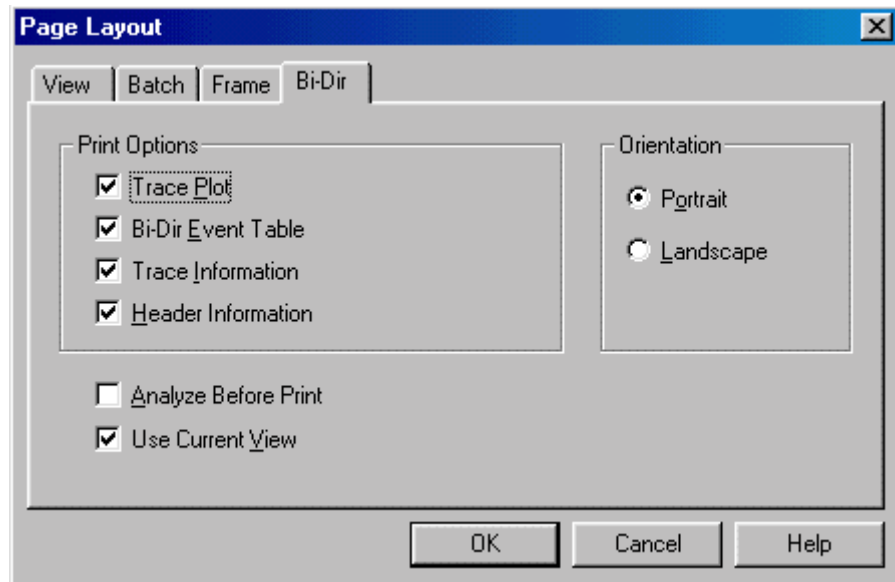
Set the **Frame** printout generation options as desired:

- Set the number of columns (usually 1 or 2) to a maximum of 4.
- Set the number of rows from 1 - 4.
- Enter the number of traces to be shown in each plot (from 1-8).
- Check *Trace Information* to print primary trace and view parameters.
- Check *Use Current View* to use the current graph view region (including Stack, Align and Flip state) on *all* trace plots; otherwise, the first trace file in each plot will define the view.
- Check *Analyze Before Print* to analyze traces using current thresholds.

#### 4.1.4 Bi-Directional

The Bi-Directional printout assumes that pairs of selected traces are bidirectional traces taken on the same fiber. The printout format (refer to Appendix B-4) is similar to the Batch Print except for:

- Traces are graphed two per plot, with the second trace flipped, and a reverse distance scale for the second trace drawn at the top of the graph.
- One graph is drawn per page.
- The printed Event Table is a bidirectional table showing pairs of events from the two traces that correspond to the same fiber location (normally a splice) on one line.



*Figure 4-5: Bi-Directional Printout Page Layout Dialog Box*

## 4.2 Print/Print Preview Options

1. Select **File>Print** or **Print Preview** to display the Select Print Preview dialog box.

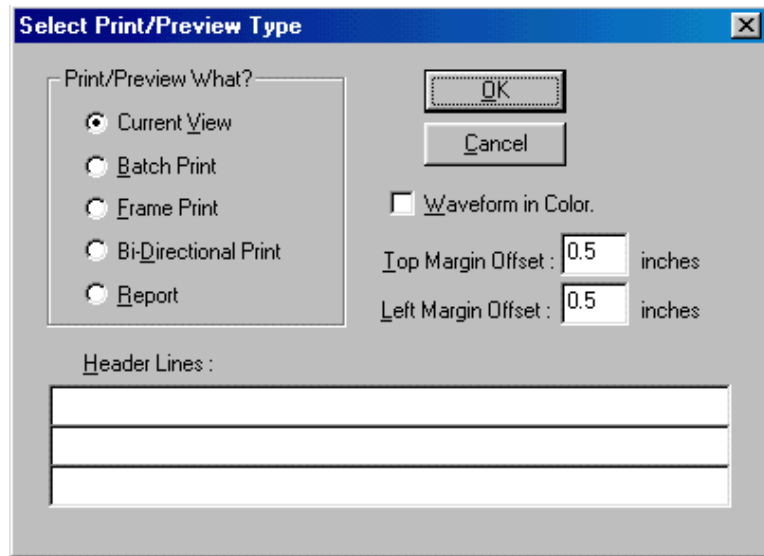


Figure 4-6: Select Print/Preview Type Dialog Box

2. Select the type of printout: *Current View*, *Batch Print*, *Frame Print*, *Bi-Directional Print*, or *Report*.
3. Enter up to three *Header Lines* of text to be printed on the printouts or report.
4. Check *Waveform in Color* to print trace waveforms in color.
5. Set *Top* and *Left Margin Offset*. The default is 0.5 inches.
6. Click **OK** to either display the preview or send the printout to the printer, depending on the selection made in the File menu.

---

### NOTE

If Bi-Directional Print (see Section 4.3 or Chapter 10) is selected, an additional dialog box is displayed before the preview or printing.

---



4.2.1 Print Preview

If Print Preview was selected from the File menu, a preview of the printout is displayed. Menu bar buttons allow printing and zooming from this screen. Press **Close** to return to the SoftView Plus graph view window.

4.3 Bi-Directional Print Specification Dialog Box

If Bi-Directional Print is selected in the Select Print/Preview Type dialog box, a Bi-Directional Print Specification dialog box is displayed following the Print dialog box.

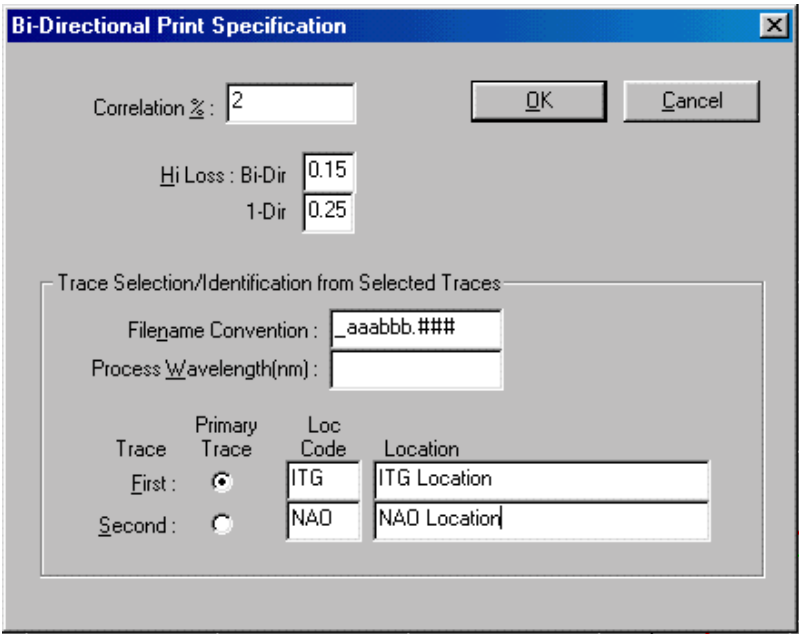


Figure 4-7: Bi-Directional Print Specification Dialog Box

The Bi-Directional printout requires the bidirectional correlation of two traces’ events. Two events are said to “correlate” if the sum of the locations of the *primary trace* event and a *secondary trace* event are within the *correlation window* of the primary trace end event location.

The width of the correlation window is defined to be the primary trace end event location multiplied by the Correlation % set in the dialog box.

**EXAMPLE** A Correlation % of 2 and a primary trace end event location of 100 km result in a correlation window of 2 km. If a primary trace event exists at 10 km and a secondary trace event at 89.9 km, the sum of the two is 99.9 km. This falls within 2 km of 100 km; therefore, the two are said to correlate.

The Bi-Directional printout table shows all primary and secondary trace events. For each primary trace event, the closest correlating secondary trace event is assumed to be the same event (usually a splice) seen from the other direction and is printed on the same line.

### **Correlation %**

The default setting is 2. This provides excellent splice event correlation for practically all bidirectional traces. However, if two bidirectional splice events do not correlate, then increase the correlation %. If bidirectional splice events incorrectly correlate then decrease the %.

In the case of non-correlation or incorrect correlation of splice events, a splice event location may be incorrect and require adjustment.

### **Hi Loss: Bi-Dir, 1-Dir**

In the various printouts, if a bidirectional event loss is greater than or equal to the Hi Loss : Bi-Dir value, then the loss is shown with a bold font. Also, if a 1-directional event loss is greater than or equal to the Hi Loss : 1-Dir value, then the loss is shown with a bold font.

### **Process Wavelength(nm)**

The Process Wavelength(nm) field value indicates the wavelength of the traces to be processed for the Bi-Directional printout. If the value is not specified then only the first selected trace wavelength will be processed.

### **Reference Trace Radio Buttons**

For the Bi-Directional printout, the selected Reference Trace radio button indicates whether the first or second trace of each pair of bidirectional traces is to be graphed as the primary trace with the other trace flipped.

The Location Code and Location indicate the near location information for the first and second traces of each pair of bidirectional traces.

## 5.0 Power Meter File Processing

### 5.1 Power Meter File

A Power Meter File is created when a set of power meter readings is saved in the LTS (Loss Test Set) mode on a Multitester 500. Each reading is indexed by an item number and one or more wavelengths. The values for a particular wavelength have either dB units relative to a reference value, or absolute dBm units if there is no reference. The file also contains user supplied header information and reading date/time.

Although not necessary, power meter filenames usually have a “pmt” extension to allow easy identification.

### 5.2 Viewing a Power Meter File

1. Select **File>Open** to view a power meter file.
2. Select **Power Meter (\*.pmt)** from the *Files of type* field in the Open dialog box to find power meter files with a .pmt extension, or **All Files (\*.\*)** to find files with a different extension.

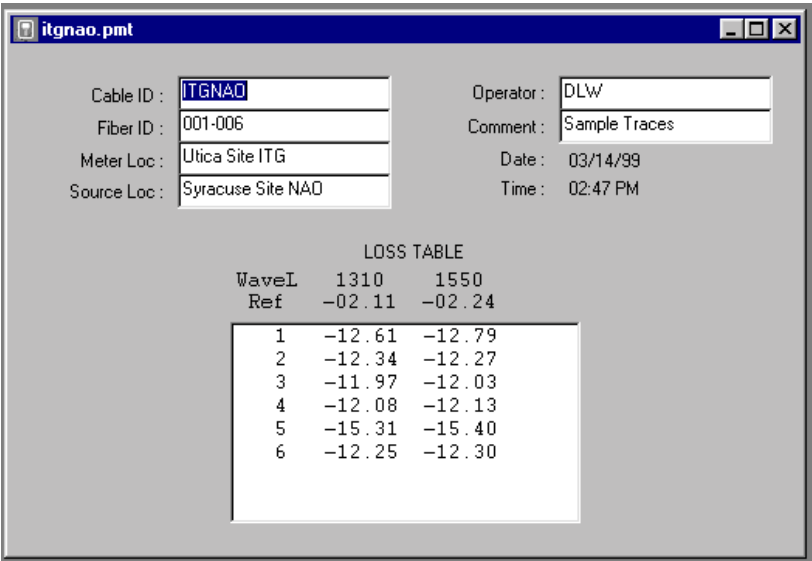


Figure 5-1: Power Meter Window

**Power Meter Window Fields**

Cable ID, Fiber ID, Meter Location, Source Location, Operator, and Comment fields, which are limited by the file format to 10, 10, 20, 20, 3, and 20 characters respectively, may be edited.

If a file is edited, changes can be saved back into the file.

**Loss Table**

Wavelength (WaveL) header line indicates the wavelength of each column of readings.

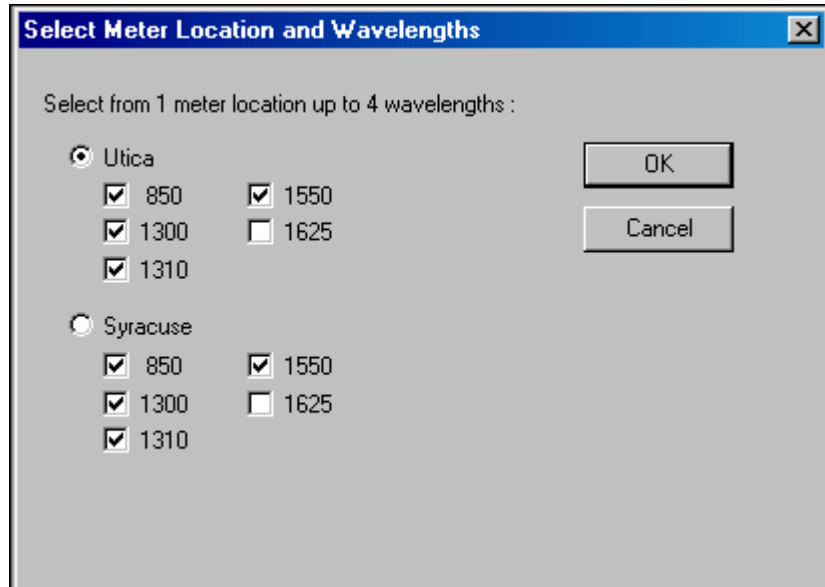
Reference Value (Ref) header line indicates the Reference Value or None.

The list of readings each contains the item number followed by the readings for each wavelength. An entry will be blank if no reading exists.

**5.3 Working with Multitester 500/LTS Power Meter Files (P6 format)****WARNING**

SoftView Plus v2.11a cannot write a P6 file. Make a copy of any Multitester 500/LTS Power Meter (P6) files before working with them in SoftView Plus v2.11a. Because of the P6 to P5 format convention limitations, it is not recommended that an original P6 Power Meter file be overwritten with a P5 format.

P6 Power Meter files may contain readings for 2 directions and several wavelengths, but the P5 Power Meter format can only contain readings for 1 direction and up to 4 wavelengths. SoftView Plus v2.11a automatically recognizes P6 files. The following dialog box (see Figure 5-2: Select Meter Location and Wavelength Dialog Box) appears when opening a P6 file that contains 2 directions or more than 4 wavelengths for 1 direction.



*Figure 5-2: Select Meter Location and Wavelength Dialog Box*

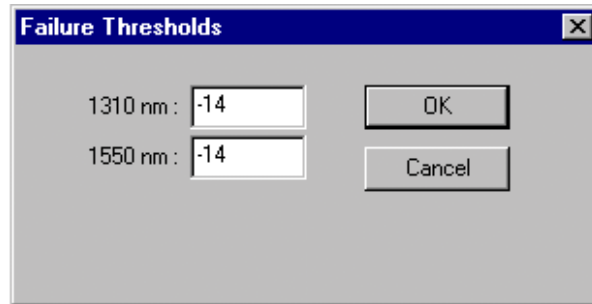
Select the desired direction and wavelengths. The file is then converted from P6 to the P5 format. P6 header information cannot be converted. In addition the P5 format has only 1 reference value per wavelength, unlike the P6 format where a separate reference can be set for each reading.

As previously noted (see “WARNING” on page 66), SoftView Plus v2.11a cannot write a P6 Power Meter file. To prevent losing the original P6 files copy the desired Multitester 500/LTS Power Meter files, save the original source files, and use the copies while working in SoftView Plus.

## 5.4 Printing a Power Meter File

When the power meter window has focus, the power meter file can be printed or previewed.

1. Select **File>Print** or **File>Print Preview**.
2. Enter a Failure Threshold between -60 and +20 for each wavelength in the dialog box and click **OK** to print or preview.



*Figure 5-3: Failure Threshold Dialog Box*

---

### NOTE

The failure threshold units are assumed to be the same units (dB or dBm) as the data.

---

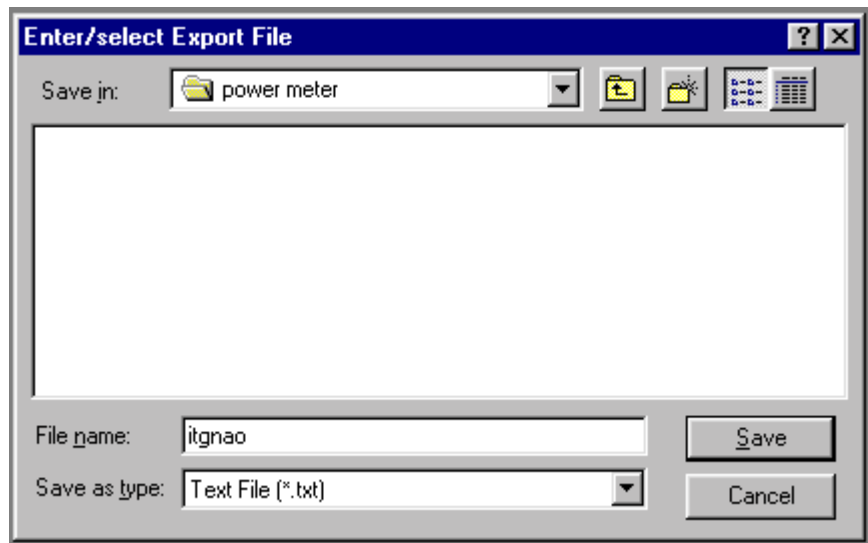
The failure threshold values are printed in the Loss Table header. Readings at or below the appropriate failure threshold will be printed in bold. The minimum, maximum, and average readings for each wavelength are printed at the end of the Loss Table.

Appendix C contains a Power Meter Report example.

## 5.5 Exporting a Power Meter Report

A Power Meter Report can be exported to an ASCII text file, with comma delimited fields, that can then be imported into a spreadsheet.

1. Select **File>Export**.
2. Specify the File name in the Enter/select Export File dialog box.



*Figure 5-4: Enter/Select Export File Dialog Box*

---

### NOTE

The default filename is the same filename as the power meter file or the previously specified filename (if a previous export occurred). If no extension is specified, a “txt” extension will be added.

---

The export file format contains the same header information, readings (1 set per line), and min/max/average readings as found in the printed report. The threshold values are the same as the last printed or previewed Power Meter Report.

**Sample Power Meter Export File**

“Power Meter Report”

“Corning SoftView Plus- Version 2.11a”

“D:\pmtfiles\Corning 340\itgnao.pmt”

“Cable ID : ITGNAO”

“Fiber ID : 001-006”

“Meter Loc : Utica Site ITG”

“Source Loc : Syracuse Site NAO”

“Operator : DLW”

“Comment : Sample Traces”

“Date : 03/14/99”

“Time : 02/47:00 PM”

“WavL”,1310,1550

“Ref”, -02.11, -02.24

“Thres”, -14.00, -14.00

1, -12.61, -12.79

2, -12.34, -12.27

3, -11.97, -12.03

4, -12.08, -12.13

5, -15.31, -15.40

6, -12.25, -12.30

Min, -15.31, -15.40

Max, -11.97, -12.03

Avg, -12.76, 12.82



## 6.0 Batch Process

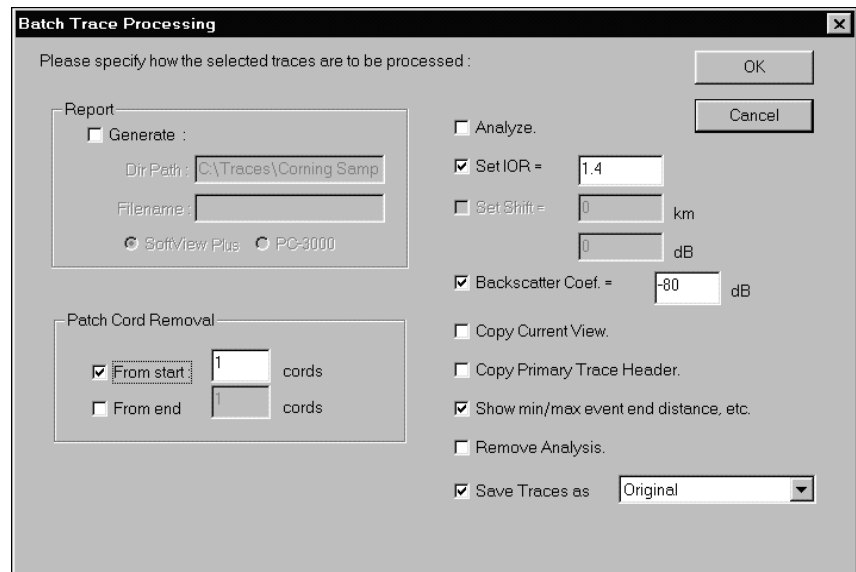
Batch Processing allows modification of selected traces according to options selected in the Batch Trace Processing dialog box. It can also generate two different types of trace event ASCII report files: SoftView Plus™ emulation software and PC-3000. These report files may be imported into a spreadsheet program and viewed with text editors or word processing software.

### NOTE

The ASCII text lines in a report file may be quite long; 200 or more characters in a single line may be generated for each event.

### 6.1 Executing Batch Process

1. Select the traces that are to be processed from the trace list pane according to standard Windows procedure.
2. Select **Trace>Batch Process**. The Batch Process dialog box is displayed.



*Figure 6-1: Batch Trace Processing Dialog Box*

3. Select the desired check boxes and enter any required parameters for checked options. As check boxes for the various options are selected, different radio buttons and text fields become available/unavailable for selection and editing.

---

#### NOTE

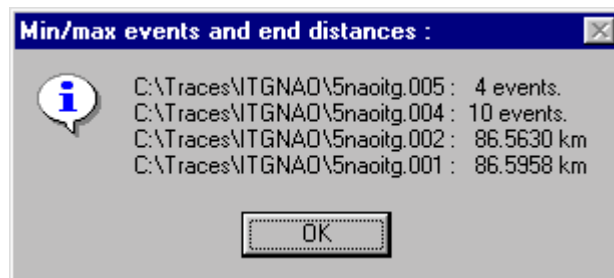
The Copy Current View and Copy Primary Trace Header controls will only be available for selection if a primary trace is displayed.

---

4. Click **OK** to complete the selected functions.

### 6.2 Show Min/Max Event end Distance

1. Check the Show min/max event end distance, etc., to determine which traces have the minimum and maximum end distance and number of events.
2. Click **OK** to display the results in a pop-up window.



*Figure 6-2: Min/Max Events Window*

3. Click OK to close the window.

### 6.3 Patch Cord Removal

The Patch Cord Removal group box automatically removes *start patch cords* (or launch cords and pulse suppressors) and *end patch cords* from the selected traces.

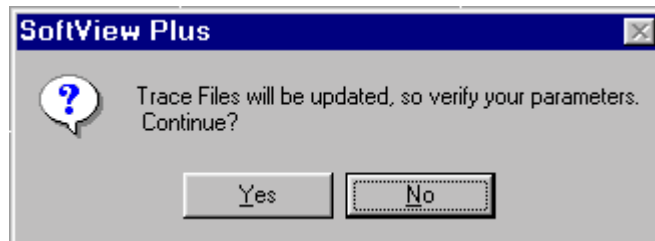
Remove Patch Cords by checking the appropriate remove box(es) and specifying the number of patch cords to remove.

Batch Process removes  $N$  *start* patch cords by horizontally shifting the selected traces so that the  $N$ th event location is slightly greater than 0. The start connector event is visible.

Batch Process removes  $N$  *end* patch cords by deleting the last  $N$  Events and identifying the last remaining event as an end event leaving the event data (loss, reflectance, etc.,) intact.

## 6.4 Saving Traces

Changes made to the selected trace files can be saved to the file by checking the Save Traces As box. Many traces can be updated; therefore, when the Save Traces check box is selected, the pop-up dialog box in Figure 6-3 appears prompting verification of the save.



*Figure 6-3: Save Trace File Verification Box*

SoftView Plus emulation software can currently write traces in T5 (Corning Cable Systems 340 OTDR Plus Multitester II), 383 (Siecor 383/Siemens K2310 OTDR), T4 (TD-1000 and TD-2000), and Bellcore/Telcordia GR-196 formats. If "Save Traces as Original" is specified, each trace will be saved in its original format if possible. Otherwise it will be saved as a T5 trace, destroying the original format.

---

### NOTE

It is important to back up traces prior to updating or to update only a working version as selected traces will be overwritten.

---



## 7.0 Smart Splice Template

A *Smart Splice Template Trace* is a specially generated trace that contains an event at each splice (or connector) location on a cable that can be applied (see Chapter 9.0) to all cable fiber traces in the same direction to obtain an estimate of the loss at each splice (or connector) in each trace.

Where the SoftView Plus™ “Build Template” feature (see Chapter 8.0) requires user-selection and analysis of a single trace suitable for use as a template trace, *smart splice template* automatically builds a splice template based on a set of traces from a cable. The more traces available to analyze, the better the process works, and the more complete and accurate the resultant Splice Template.

The Smart Splice Template function combines event information from all the traces in the set so that any event found on any fiber may qualify to be included as an event in the template.

The combined event information at a given distance on the cable (or set of traces) is termed a *cable event* and is represented by a vertical bar on the *smart splice template trace waveform*. The height of a cable event indicates the number of traces that include a detectable event at that location. The flat areas between the cable events indicate backscatter signal which is suitable for LSA cursor placement, required to make splice loss measurements.

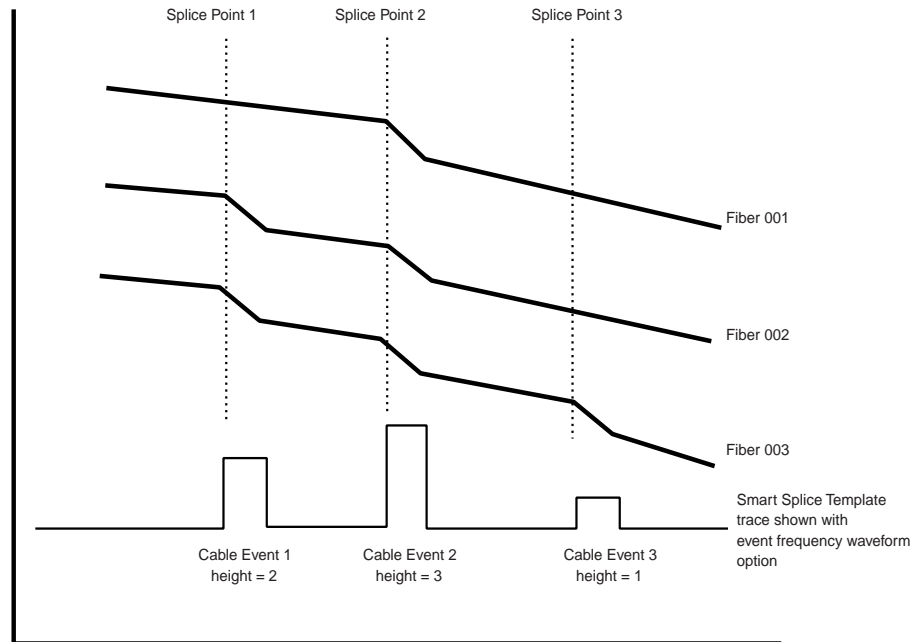
---

### NOTE

The term *cable event* will be used throughout this section when referring to the combined event information at a given distance.

---

Figure 7-1 is a graphic representation of a smart splice template trace generated from the traces of three (3) fibers within a cable containing three (3) splice points. The representative trace for Fiber 001 has one detectable event at splice point 2; Fiber 002 has detectable events at splice points 1 and 2; and Fiber 003 includes events at all three splice points. The resultant smart splice template shows three cable events. Note that the height of each is representative of the frequency of the number of traces that have a detectable event at that location.



*Figure 7-1: Smart Splice Template Trace*

*Smart* splice template is the preferred method for obtaining a splice template; however, this process is not recommended for data sets containing fewer than 6 traces. Also, knowledge of the *build template* feature is still required as some templates may require event or LSA cursor modification.

**The Smart Splice Template feature performs the following functions:**

- Removes all events (except the end event) from the current primary trace.
- Estimates splice (connector) locations from the cable event information contained in the selected traces.
- Inserts an event for each estimated splice location into the primary trace.

- For each inserted event, sets the event start and end location, optimal LSA cursors for loss measurements, type (non-reflective, reflective, or grouped), loss, and loss mode (Splice Loss or 2-Point).
- Optionally replaces the *primary trace waveform* with a *cable event waveform*. The cable events shown are computed from the analysis tables stored in the individual traces, and the Number of Splices, Loss Threshold, and Min Frequency settings currently selected in the Smart Splice Template dialog box.
- Optionally prints a report with tabulated cable event information.
- Allows operator control over processing parameters and options.

**CAUTION**

Before beginning the smart splice template procedure, it is important to have a thorough understanding of the information in Appendix F.

## 7.1 Executing Smart Splice Template

1. Select a trace in the required direction and copy it, using **Trace>Save As**, into a new file that will become the smart splice template trace. It is recommended to give it a .sst extension.
2. Select **Trace>Add** to add the smart splice template trace to the trace list.
  - a. In the Open dialog box it will be necessary to select **All Files (\*.\*)** in the *Files of type* field to view files with .sst extensions.
  - b. Select the smart template trace and click **Open**. The trace will be added to the trace list.
3. Display the smart splice template trace as the *primary trace*.
4. Verify that the end event is positioned correctly. If not, set it to the correct location.
5. Select the cable's traces at the same wavelength and in the same direction to be processed to create the smart splice template trace (normally all such traces should be used).

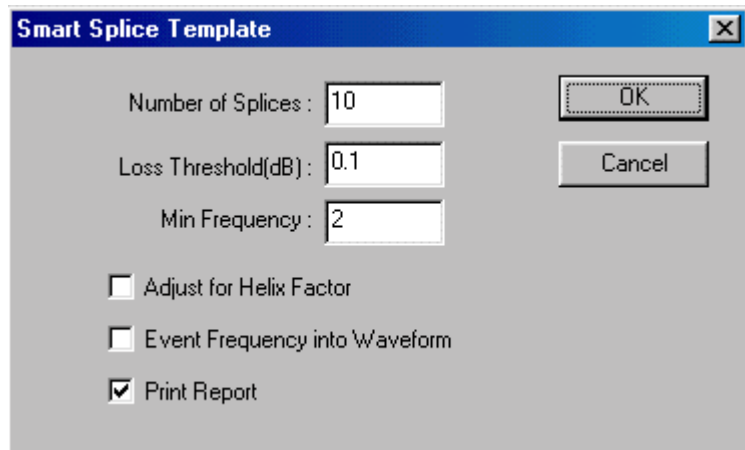
6. Select **Trace>Smart Template** to display the Smart Splice Template dialog box shown in Figure 7-2.
7. Select the various options and set parameters as described in the following sections.
8. Click **OK** to run this feature.

---

**NOTE**

A splice template trace is required for each direction; therefore, *two* smart splice template traces must be created based on the traces in each direction.

---



*Figure 7-2: Smart Splice Template Dialog Box*

## 7.2 Smart Splice Template Dialog Box

### Number of Splices

This is the maximum number of events to be inserted into the primary trace. If the number of splices in the cable is known, enter the value; otherwise, enter a number greater than the possible number of splice points (20 or 25).



**Loss Threshold(dB)**

Only selected trace events with an absolute loss greater than or equal to this value will be processed. A value greater than the Analysis Loss Threshold is recommended as a larger loss reduces the probability that the event corresponds to noise. A value of 0.1 dB works well in most cases, as most splice points will have some splices that are 0.1 or greater.

**Min Frequency**

This is the minimum height (frequency) required for a cable event to be included in the smart template trace. Only events that occur with a frequency greater than or equal to the Min Frequency will qualify as an event in the splice template.

If the number of cable events that qualify is greater than N (Number of Splices set in the dialog box), SoftView Plus emulation software will use the N cable events with the largest frequencies above the Min Frequency setting to create splice events and the rest will be discarded.

**Adjust for Helix Factor**

Select to automatically adjust event positions on each selected trace to compensate for the helix factor (see “Distance Helix Factor Adjustment Group Box” on page 97). When selected, event positions on each selected trace are automatically adjusted relative to where they would occur using the end of fiber distance from the template trace. In other words, as each trace is processed, it is expanded or contracted in proportion to the template trace.

**Event Frequency into Waveform**

Select to replace the primary trace waveform with an *event frequency waveform* (see Figure 7-3) which indicates the selected traces event distribution and frequency (refer to Section 7.3 for more information).

---

**NOTE**

The event frequency waveform does not look like a fiber trace.

---

**Print Report**

Select to print a report which tabulates information on each cable event (refer to Section 7.4 for more information).

### 7.3 Event Frequency Waveform

The Event Frequency Waveform is a waveform which indicates the selected traces' event distribution and frequency through the use of vertical bars called *cable events*. Each cable event also doubles as a template event so the smart template can be applied directly to the traces that were used to generate it.

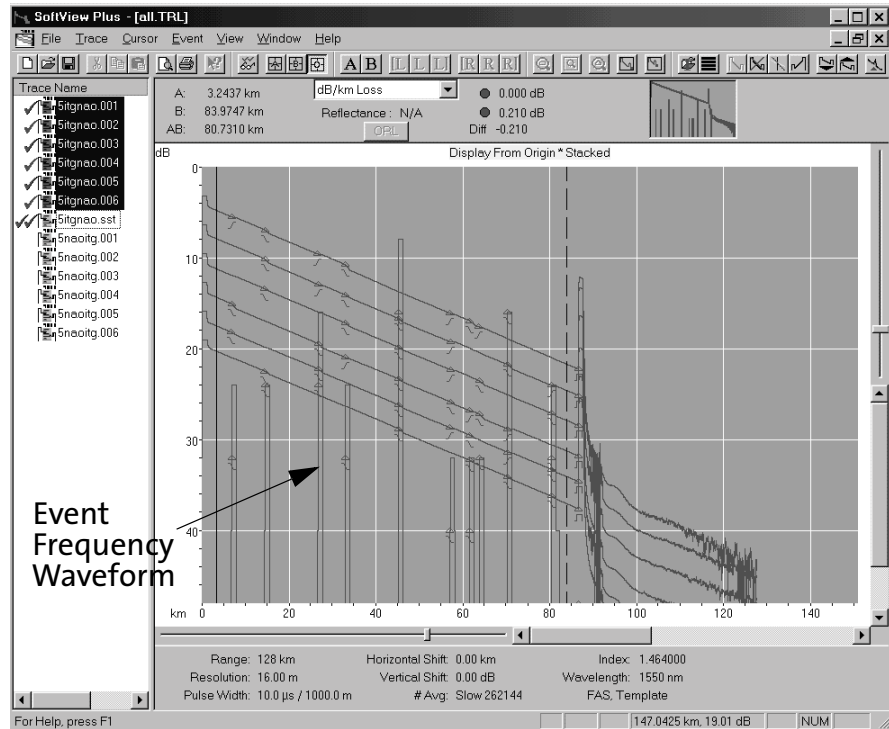


Figure 7-3: Trace Graph with Event Frequency Waveform Displayed

Each data point within a cable event represents the relative frequency of the occurrence of that data point in the selected traces' events. Only selected trace events with an absolute loss greater than or equal to the Loss Threshold are considered. Visually this representation appears as a vertical bar above the waveform base. A data point at base value indicates that no selected trace events above the threshold occur at that data point.

A higher cable event implies more traces in the set contain qualifying events at that relative position. A very low cable event might indicate a set of false events. Also, an extremely spread out (in distance) cable event can indicate two close but overlapping sets of events or a non-splice event overlapping a group of splice events.

The *cable event frequency* is the maximum data point frequency of all data points in the cable event. A cable event with no event symbol may be a missed splice or a false event which should be inspected (refer to Section 7.4).

Visual inspection of the event frequency waveform provides valuable information to validate the smart splice template trace event setup.

If a splice was missed, regenerate the smart splice template with either a lower Min Frequency or higher Number of Splices. Another alternative is to manually insert the splice event (see “Updating Events” on page 89).

After an acceptable smart splice template is generated, run the feature again with the original waveform and the *Event Frequency into Waveform* option *OFF*.

### 7.3.1 Event Insertion

Events (up to the Number of Splices set in the Smart Template dialog box) are inserted into the template for the cable events with the largest frequency above the Loss Threshold.

For each inserted event:

- The event start location is set to a location slightly inside the cable event, to more closely correspond to the actual splice location.
- The event end location is set to the end of the cable event.
- The LSA Cursors are calculated slightly offset and not overlapping any cable events with frequency at or above the Min Frequency.
- If there is insufficient data between two adjacent events to accurately calculate the splice loss then both event loss modes will be 2-Point Loss (which will result in a 2-Point Attenuation Corrected Loss Measurement in the *apply splice template* process).

- The event loss times 500 indicates the percentage of selected traces which have events at the cable event. (This is used for diagnostic purposes only.)
- If any of the events comprising a cable event is a reflective event, then the inserted event is reflective.
- If any of the events comprising a cable event is a grouped event, then the inserted event is grouped.

## 7.4 Report Description

The *Smart Splice Template Report* (Appendix C-8) contains extremely useful information for validating the generated *smart splice template trace*.

### CAUTION

---

Never accept a smart splice template trace without reviewing this report.

---

The report contains three sections: Header, Cable Event Table, and Shortest/Longest Trace Table.

The Header Section shows the smart splice template trace filename, date, time, and Smart Splice Template dialog box settings.

The Cable Event Table shows the following information, reading from left to right, for each cable event:

- The Event Number (if an event was created) or NONE.
- Event Loss Mode (if an event was created): Splice Loss or 2-Point.
- Event Type (if an event was created) non-reflective, reflective, or grouped.
- Cable Event Location and Width in distance units.
- Cable Event Frequency.
- Three sets of selected trace events that are part of the cable event:
  - Up to three trace events at the closest location.
  - Up to three trace events with the highest loss.
  - Up to three trace events at the farthest location.

If no event was created from a cable event, then these trace events should be inspected to determine if the cable events correspond to a splice or a group of false events.

The Shortest/Longest Trace Table shows the length of the 10 shortest and 10 longest traces. The difference between the shortest and longest traces indicates the Helix Factor and also whether a fiber is broken or has an incorrect end event.

Refer to Section 10.2 for an example of the smart splice template feature.

## 7.5 Saving the Smart Splice Template Trace

After the smart splice template trace has been created in memory, *save the trace* into the smart splice template trace file. A smart splice template trace should be saved in T5 (Corning Cable Systems 340 OTDR Plus<sup>TM</sup> Multitester II) format since T5 is the only format that retains each events' LSA cursor information.



## 8.0 Building a Splice Template Trace

---

### NOTE

This chapter details the steps for manually building a Splice Template Trace. This process can be automated using the Smart Template feature described in “Smart Splice Template” on page 75.

---

A Splice Template Trace contains an event for each splice location and associates each with a unique set of LSA cursors.

Splices with low loss may not be detected in some fibers; therefore, if trace data from the fibers in a spliced cable is displayed, some traces will not have events at some splice locations.

To get an estimate of the loss of every splice in a cable's traces:

1. *Build* a Splice Template Trace.
2. *Apply* the Splice Template Trace (Chapter 9.0) to all traces taken in the same direction.

This procedure inserts events which are at splice locations into the target traces. If an event is added to a target trace, then a loss estimate is calculated using the event's unique LSA cursors.

---

### NOTE

If splice losses are required for all splices in a set of bidirectional traces, then two separate splice template traces must be generated, one for each direction.

---

### 8.1 Selecting a Trace

The splice template trace should be a modified copy of a trace taken in the required direction. Ideally, the trace file with the most events should be used to build the template and can be determined as follows:

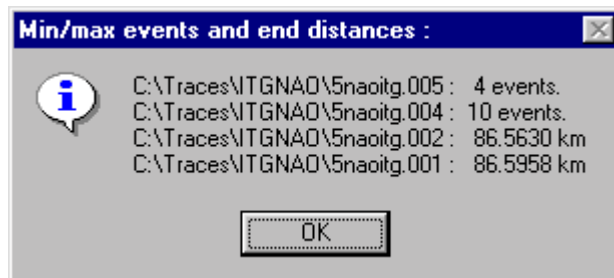
---

**NOTE**

Setting up the **Preferences>Display>Sort Mask** to have these traces listed consecutively before doing this will make selection easier.

---

1. Select all a cable's traces taken in the same direction from the trace list pane.
2. Select **Trace>Batch Process**. The Batch Process dialog box will be displayed.
3. Select only **Show min/max event end distance, etc.**, then click OK. The Min/max events dialog box will indicate the traces with the minimum and maximum number of events and event end distances.



*Figure 8-1: Min/max events and end distances Dialog Box*

4. Note the minimum and maximum end distances. If these values are not close to the optical cable distance, there may be a fiber break or an incorrectly determined end. Also, if the cable has N splices, there should be at most, N+1 events, one for each splice, plus the end event. If a problem is suspected, inspect the trace(s), take the appropriate corrective action, and repeat this process.

If the minimum and maximum end distances are “good,” then the difference shows the effect of fiber coiling within the cable. The difference between the minimum and maximum fiber length could be as much as 2-3%. The difference in length between the straight and coiled cables is referred to as the Helix Factor.

5. Click **OK** to close the dialog box.



6. Copy the trace with the most events into a new trace file designated as the Splice Template Trace.

---

**NOTE**

Use a consistent DOS 8.3 filename convention for Splice Template Traces. For example: STAAABBB.TRC indicates a Splice Template (ST) Trace from the AAA to BBB direction.

---

7. Add the newly created Splice Template Trace to the Trace List.

## 8.2 Splice Locations

After the Splice Template Trace has been created, it is important to set the location of all splices on this trace.

1. Generate a list of splice locations using one of the following methods:
  - Use Batch Display to sequentially graph up to 8 traces in the required direction, noting the unique event locations. Stacking the traces on the graph improves readability and the A cursor can be positioned to determine proper event alignment.

---

**NOTE**

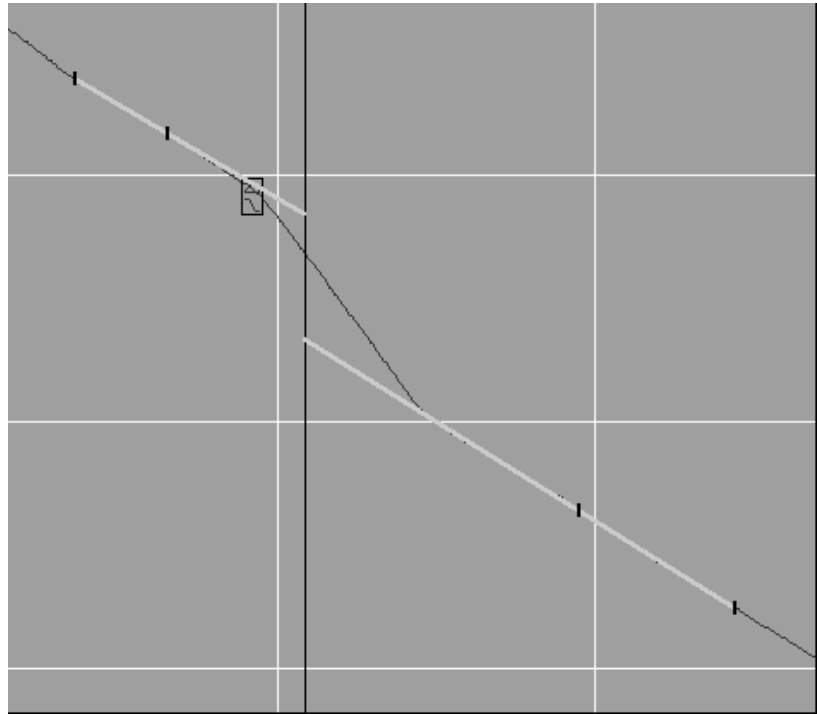
Because of the Helix Factor, the same splice detected on different traces will be at approximately, but not exactly, the same location.

---

- Use Batch Process to generate a report in ASCII format. This file contains event information for all the selected traces, one event per line. The event start distance value begins at character position 48 so the following DOS command may be used to sort the events by distance:
 

```
D:\> SORT /+48 <IN_FILE > OT_FILE
```
  - If the length of each cable span or section is known, then the optical distance for each splice can be estimated based on the Helix Factor.
2. Using the list of splice locations, reduce each location by a “slight” amount to improve span loss estimation. If the location of a Splice Template event occurs within the target trace knee, then the span loss

estimate will be offset by the amount of loss from the start of the target event to the knee intercept location.



*Figure 8-2: Offset of Splice Template Event Cursor*

---

**NOTE**

Later, each Splice Template event's LSA cursors will be offset from the start and end of the event; therefore, the Splice Template event may be located within the knee of the target trace splice, but the LSA cursor offset will allow correct event loss estimation. This is shown in Figure 8-2.

---

Assume that the event start location in the above graph is at the interception of the A cursor with the trace. Since the LSA cursors are offset from the event, as long as the LSA cursors remain outside the knee, the Splice Loss estimate will still be accurate. The A cursor can be moved back

and forth within the event knee and obtain about the same Splice Loss reading. However, if the span loss is computed from the intercept point to the start of the next event, the dB value at the start of the intercept point is not the same as the true start of the event, resulting in an incorrect span loss estimate.

### 8.3 Modifying the Splice Template Trace

Prior to modifying the Splice Template Trace events, it is necessary to:

1. Display only the splice template trace (which makes it the primary trace).
2. Select **Trace>Build Splice Template**. In the graph footer, the primary trace is now identified as a *template* trace.

Internally, a template trace is different from a non-template trace as each event has its own set of LSA cursors; this is crucial to the *Apply* Splice Template process. Also, when the template trace's new internal format is created, the Left and Right Splice Loss LSA cursors associated with each event are offset to the left and right, respectively.

#### 8.3.1 Updating Events

The events in the splice template need to be updated to have one event at each splice location.

To update the events:

1. Delete any events which do not correspond to splice locations.
2. Move the events which are at splice points slightly to the left (decreased distance) as follows:
  - a. Set the Loss Mode to Splice Loss.
  - b. Hold the mouse cursor over the first event symbol and double click the *left* mouse button. The Event window is displayed showing the first event.
  - c. Set the display Mode to Display from A and do not lock the A & B cursors.
  - d. In the Event window, click >>, then <<. This forces the A cursor to the first event location and displays the event's LSA cursor.

- e. Using the horizontal and vertical trackbars, zoom in on the event.
  - f. In the Event window, click **Edit**.
  - g. In the Edit window slightly decrease the Start Distance and click **OK**.
3. Perform the following steps for each non-end event:
    - a. In the Event window, click >> (moves to the next event) and then click **Edit**.
    - b. In the Edit Event window, slightly decrease the Start Distance and click **OK**.
  4. Insert events into the trace for the missing splices as follows:
    - a. Move the A cursor to the approximate splice location.
    - b. Adjust the LSA cursors offset from the start and end event location, if required.
    - c. In the Event window, click **Insert**.
    - d. In the Edit Event window, slightly decrease the Start Distance and click **OK**.

---

**NOTE**

The end event location should be left unchanged if the “merge with trace priority” and “snap to trace end” options will be selected in the Apply Splice Template Dialog Box. (These options are only appropriate when the traces have low noise and the fibers' splices and ends are correctly detected.)

---

5. If the Splice Template end location is to be inserted into the target traces in the Apply Splice Template Dialog Box, decrease the end event location to less than the minimum trace end event location (so that the target end will not reside in the noise tail).

### 8.3.2 LSA Cursors

Inspect each event's LSA cursors:

1. In the Event window, repeatedly click >> until the first event is shown. Inspect the LSA cursors for this event, which should be positioned as follows:
  - The *left* LSA cursor is offset to the left of the start of the event.
  - The *right* LSA cursor is offset to the right of the end of the event.
  - If the trace data has a high level of noise, lengthen the LSA cursors to obtain a better loss estimate (on application to the target traces).
  - LSA cursors should not overlap and should not be close to adjacent events.
2. If it is necessary to adjust and save an event's LSA cursors, continue with the following steps:
  - a. Adjust the length and location of the LSA cursors by dragging the LSA cursor end tick mark or line segment with the mouse cursor.
  - b. In the event window, click **Edit**.
  - c. In the Edit Event window, click **Paste**, then click **OK**.

---

#### NOTE

Be sure to save the modified Splice Template trace back into its original file.

---

## 8.4 Saving the Template Trace

When a modified copy of the trace has been created in memory, save the modified trace into the Splice Template Trace File. A splice template trace should be saved in T5 (Corning Cable Systems 340 OTDR Plus<sup>TM</sup> Multitester II) format as T5 is the only format that retains each event's LSA cursor information.

If generating a Bi-Directional Report, a Splice Template Trace must be built for each direction. Because of the offset of the event start locations and the LSA cursors, Bi-Directional Splice Loss Traces will not be symmetrical.



## 9.0 Applying a Splice Template Trace

To get an estimate of the loss at each splice in each trace, the *splice template trace* must be applied to all the traces in the same direction, and the results saved back into each target trace. The trace event tables will be modified; therefore, it is advisable to back up the traces before starting.

For *bidirectional* traces, each of the two splice template traces must be applied to the traces in the same direction.

1. Display only the splice template trace as the primary trace.
2. Set up the **Preferences>Display Page>Sort Mask** to list the traces in the same direction consecutively.
3. In the trace list, select all traces in the same direction as the displayed splice template trace.
4. Select **Trace>Apply Splice Template**. The Apply Splice Template dialog box (Figure 9-1) is displayed.

Figure 9-1: Apply Splice Template Dialog Box

5. Set the desired parameters in the Apply Splice Template dialog box and click **OK** (see Section 9.1 for an explanation of the options and controls within the dialog box).

## 9.1 Apply Splice Template Dialog Box

The Apply Splice Template dialog box (Figure 9-1) allows selection of various settings and parameters that determine how traces are to be processed.

### 9.1.1 Analyze with Current Thresholds

The “Analyze with current thresholds” check box will analyze the target trace prior to correlation.

### 9.1.2 Save Results into Trace

The “Save results into trace” check box will save the resultant target trace into the target trace file. This function permanently updates the trace file.

#### **CAUTION**

The apply splice template function has many warning messages. To view the warnings and take any corrective action necessary, it is recommended that results are not saved until after an apply with no save is performed.

### 9.1.3 Report Group Box

The apply splice template function generates an ASCII Report File in either FORMS or PC-3000 format.

The ASCII Report File contains one line of information per trace event after application of the splice template trace to each target trace. The FORMS and PC-3000 file formats are described in Appendices D-1 and D-2. Both files may be imported into a spreadsheet program, and the FORMS format may be imported into the FORMS program.

If a report filename is entered, the file will be created on the specified directory path.

- Select the radio button for the desired report format.



### 9.1.4 Event Determination Group Box

The Event Determination group box controls how the splice template trace events will be applied to the original target trace.

#### Template Radio Button

The Template radio button *copies* the template trace events to the target trace, discarding the original target trace events.

#### Merge Radio Button

The Merge radio button *merges* the splice template and target trace events. This process merges correlated target trace events with the splice template events, inserts non-correlated splice template events, and leaves non-correlated target trace events unchanged.

#### Trace Priority Check Box

The Trace Priority check box gives the target trace event location priority over correlated events from the splice template when Merge is selected. If checked, only non-correlated splice template events are inserted into the target trace, and all other events are left unchanged.

If not checked, non-correlated splice template events are inserted into the target trace, correlated splice template events replace the correlating target trace events, and all other target trace events are left unchanged.

---

#### NOTE

Correlation of events is determined by the *correlation window* which is based on the Percent Distance and Absolute Distance settings. If more than one target trace event falls within the correlation window of a splice template event, the closest event is considered correlated.

---

For each template non-end event that is propagated to the target trace, the target trace event's loss value is computed using the adjusted *template* event distance and LSA cursors.

“Table 9-1 Resultant Target Trace Events” on page 96 shows examples of resultant target trace events for the three merge/priority states: Template On/Merge Off, Merge On/Trace Priority Off, Merge On/Trace Priority On.

Table 9-1 Resultant Target Trace Events

Template Trace Event Location	Target Trace Event Location	<-----result----->		
		Template=On	Merge=On Trace Priority = Off	Merge=On Trace Priority = On
10.0	NONE	10.0	10.0	10.0
20.0	20.1	20.0	20.0	20.1
NONE	30.1	NONE	30.1	30.1
40.0	40.1	40.0	40.0	40.1 <-----end event

**Percent Distance and Absolute Distance**

The Percent Distance and Absolute Distance define the size of the correlation window which determines how close together events must be to correlate.

The size of the window is defined to be:

*MINIMUM (Percent \* Splice Template Event Distance, Absolute Distance).*

**9.1.5 Patch Cord Removal Group Box**

The Patch Cord Removal group box allows automatic removal of start patch cords (or launch cords and pulse suppressors) and end patch cords from the target traces after updating the events.

If the target traces have already been horizontally shifted to remove a start patch cord, it is not necessary to perform another remove at this time.

- To remove patch cords, check the appropriate remove box(es) and specify the number of patch cords to remove.

The apply process removes N start patch cords by horizontally shifting the target traces so that the N<sup>th</sup> event location is slightly greater than 0. Note that the start connector event is visible.

The apply process removes N end patch cords by deleting the last N events and identifying the last remaining event as an end event leaving the event data (loss, reflectance, etc.,) intact.

### 9.1.6 Distance Helix Factor Adjustment Group Box

Events in the *splice template* trace and the *target* trace may not align perfectly due to the differences in length of the fibers within a single cable. Distance Helix Factor Adjust options compensate for the difference in length and also obtain improved splice location and loss estimation.

Select one of the three options:

- None

The splice template and target trace event locations will be used as is, without Distance Helix Factor Adjustment.

- Snap to Template End

All template event locations will be converted to proportional (relative to target end) target event locations prior to correlation. For example, if a template event is located at a distance which is 43.21% from the template end event location, then the location will be temporarily converted to a distance 43.21% from the target trace end event. After correlation, all events will be converted to proportional template end locations and stored in the target trace.

- Snap to Trace End

All template event locations will be converted to proportional (relative to target end) target event locations prior to correlation and left as is after correlation.

The “Snap to” options should only be used if all traces have correct fiber end events.

## 9.2 Error Conditions

The Apply Splice Template process tests for and prompts for the following error conditions:

- The target trace is a template trace.
- Target trace number of averages  $\leq 256$ .
- Template and target traces have different IORs.
- Template and target traces have different Pulse Widths.
- Template and target traces have significantly different ( $> 2\%$ ) Horizontal Shifts.
- Merge requested but no target trace events.
- “Snap to” requested but no target trace events.
- Target trace has questionable end.
- Template end event to be inserted into target trace and template end event  $>$  target trace end event.
- Template LSA cursor overlaps a target trace event.
- Resultant target trace has no events.

## 10.0 Reports

SoftView Plus™ emulation software can generate six different Report types:

- |                                      |  |
|--------------------------------------|--|
| • Trace Summary                      | A list of significant trace parameters   |
| • Exception                          | A list of traces and events which exhibit selected exception criteria (e.g. no events) |
| • Bi-Directional Splice Loss         | Bidirectional event correlation with average loss                                      |
| • Bi-Directional Splice Loss Summary | A matrix of fibers versus splices with the average bidirectional splice loss shown     |
| • 1-Directional Splice Loss Summary  | A matrix of fibers versus splices with the splice loss shown for one direction         |
| • Fiber Acceptance                   | Shows bidirectional average end-to-end loss, length, average event loss and ORL.       |

All reports are based on the traces selected in the trace list. Appendix C contains a sample of each of these reports generated from the example outlined in Chapter 11.

The Bi/1-Directional reports are generated for one wavelength at a time, either user-specified or at the wavelength of the first selected trace. These reports do not require that the traces have an event at every splice; however, if it is necessary to show the loss at each splice in the reports, then the *smart* or *build* splice template and *apply* splice template processes must be performed to have an event at every splice.

For the Bi-Directional and Fiber Acceptance reports, sort and select traces in the Trace List so that consecutive pairs of traces correspond to sequential fiber numbers.

For the 1-Directional reports, sort and select traces in the Trace List so that consecutive traces correspond to sequential fiber numbers for the same direction.

The Bi/1-Directional Splice Loss Summary Reports use the events in the currently displayed Primary Trace to define the location of each splice, therefore the appropriate splice template trace should be made the primary trace prior to generating these reports.

## 10.1 Printing or Previewing a Report

To print or print preview a report:

1. For a Bi/1-Directional Splice Loss Summary Report, set the primary trace to the appropriate Splice Template Trace.
2. Select the traces to sequentially process from the Trace List. (It is important to select the required fiber number sequence.)
3. Select **File>Print (or Print Preview)**. The Print/Preview dialog box shown in Figure 10-1 will be displayed.
4. Use the Top and Left Margin Offset fields to create blank space for a company header or 3 hole punch, if desired.
5. Check **Waveform in Color** to print trace in color, if desired.
6. Enter information in the Header Lines text box
7. Select the **Report** button, then click **OK**. The Report Specification Dialog Box shown in Figure 10-2 will be displayed.
8. Set the parameters in the Report Specification dialog box (see “Report Specification Dialog Box” on page 102), then click **OK** to print or preview the selected Report.

Select Print/Preview Type

Print/Preview What?

☒ Current View

☐ Batch Print

☐ Frame Print

☐ Bi-Directional Print

☐ Report

OK

Cancel

☐ Waveform in Color.

Top Margin Offset : 0.5 inches

Left Margin Offset : 0.5 inches

Header Lines :

Figure 10-1: Select Print/Preview Type Dialog Box

Report Specification

Cable : ITGNAO

Correlation % : 2

Hi Loss : Bi-Dir 0.2

1-Dir 0.3

OK

Cancel

Report Type

Trace Summary

Trace Selection/Identification from Selected Traces

Filename Convention : \_aaabbb.###

Process Wavelength(nm) :

Fibers Per Group :

Trace	Reference Trace	Loc Code	Location
First :	<input checked="" type="radio"/>	ITG	ITG Location
Second :	<input type="radio"/>	NAO	NAO Location

Figure 10-2: Report Specification Dialog Box

## 10.2 Report Specification Dialog Box

In the Report Specification dialog box, the following fields are copied directly into the various reports for informational purposes only: Cable name, Location Codes, and full Location Names.

### Correlation %

In the Bi/1-Directional Splice Loss Summary Reports, the *primary trace* event locations define the *splice* locations. For these two reports, a selected trace event that *correlates* with a primary trace event is assumed to be at the corresponding splice location and reported as such.

In the Bi-Directional Splice Loss Report, if a second trace event is the closest event within the correlation window distance to a first trace event, then the two events are assumed to be the same splice seen from each direction.

### Hi Loss : Bi-Dir, 1-Dir

In the various reports, if a bidirectional event loss is greater than or equal to the Hi Loss : Bi-Dir value then the loss is shown with a bold font. Also, if a 1-directional event loss is greater than or equal to the Hi Loss : 1-Dir value, then the loss is shown with a bold font.

### 10.2.1 Trace Selection/Identification Group Box

#### Filename Convention

Enter text identical in format to the trace filename, using the following characters:

- A indicates a From location code character
- B indicates a To location code character
- \_ indicates a Wavelength character
- # indicates a Fiber Number character

All other characters in this field will be ignored.

**EXAMPLE** For trace filename 5ITGNAO.001, enter \_AAABBB.### in the Filename Convention field.



**Process Wavelength(nm)**

The Process Wavelength(nm) field value indicates the wavelength of the traces to be processed for Splice Loss Report generation. If the value is not specified then only the first selected trace wavelength will be processed.

**Fibers Per Group**

Enter a value of N to insert a blank line after fiber number N, 2N, 3N, etc., in the Bi/1-Directional Splice Loss Summary and Fiber Acceptance Reports.

**EXAMPLE** If N is 12, a blank line appears after fiber numbers 12, 24, 36, etc.

**Loc Code and Location**

The First Trace Loc Code (and Location) indicate the *from location code* (and *location description*) of the first trace in the trace list to be processed.

The Second Trace Loc Code (and Location) indicate the *to location code* (and *location description*) of the first trace in the trace list to be processed. This is equivalent to the *from location code* (and *location description*) of the traces taken in the opposite direction as the first trace to be processed.

**Reference Trace Radio Buttons**

Select according to the following:

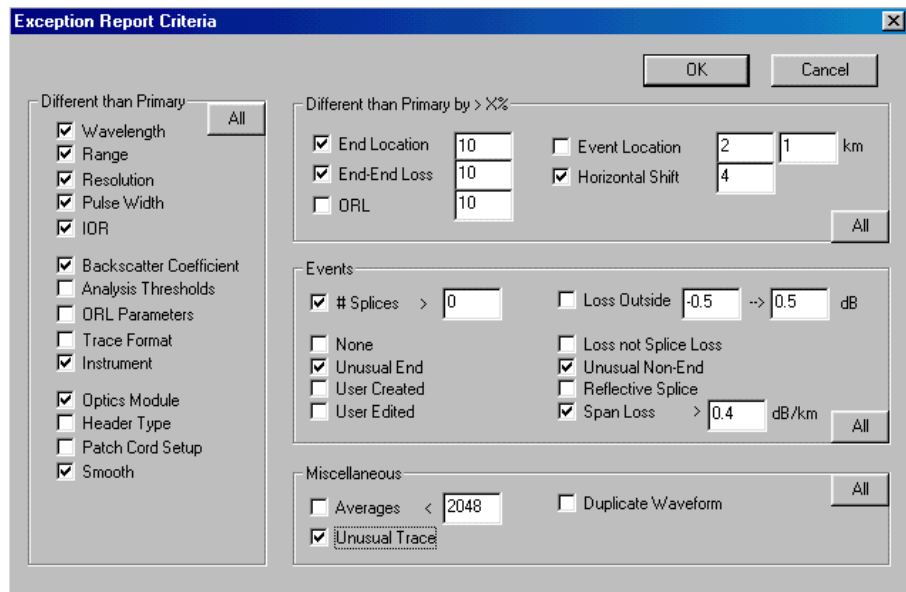
Report Type	Radio Button Indicates:
1-Directional Splice Loss Summary	From Location Code of the Reference (primary) trace and all traces to be processed
Bi-Directional Splice Loss Summary	Which trace (first or second) in each bidirectional pair that has the same From Location Code as the Reference (primary) trace.
Bi-Directional Splice Loss and Fiber Acceptance	Which trace (first or second) in each bidirectional pair to print first (reading from left to right) in the report.

### 10.2.2 Report Type Group Box

Select the **Report** type using the pull-down menu in the Report Type group box.

### 10.3 Exception Report Criteria Dialog Box

If the Exception Report type is selected in the Report Specification dialog box, an Exception Report Criteria dialog box (Figure 10-3) is displayed after **OK** is selected.



*Figure 10-3: Exception Report Criteria Dialog Box*

This dialog box contains four group boxes: Different than Primary, Different than Primary by > X%, Events, and Miscellaneous. Each contains several options available for selection; some require entering a parameter value.

---

**NOTE**

The Different than Primary and Different than Primary by >X% options are only available if a primary trace is displayed.

---

1. Select options individually or click **All** to select all options within each group box. When clicked, **All** toggles to **None**. **None** deselects all options.
2. Click **OK** to generate an Exception Report.

If an exception occurs, the trace filename, exception criteria, and complete exception information is printed in the Exception Report. For example, for an event related exception, the event location is printed.

Appendix C-2 contains an Exception Report example.

**10.3.1 Different than Primary Group Box**

An exception is reported if a selected option is different than that option for the displayed primary trace.

**10.3.2 Different than Primary by > X% Group Box**

Enter the desired percentage into each selected option to generate and report an exception if the selected trace parameter is different than the primary trace parameter value by more than X%.

The Event Location option also requires a distance value. For example, if the distance is set at Y km, an *event location exception* occurs for an event in a selected trace if the non-connector and non-end event location (which is greater than 0) is not within X% and Y km of any primary trace event location.

**10.3.3 Events Group Box**

The Events options do not require a primary trace.

An Unusual End exception occurs if a selected trace end event is Out of Range, Out of Distance, non-reflective, at an incorrect location on the waveform (e.g., on a Fresnel), or the event loss is a gainer.

A User Edited exception occurs if an event is both User Edited and not User Created.

An Unusual Non-End exceptions occurs if an event is Grouped, Saturated, a Ghost event, or has a Questionable Loss or Rising Edge.

#### **10.3.4 Miscellaneous Group Box**

The Miscellaneous options do not require a primary trace.

An Unusual Trace exception occurs if the trace is Attenuated, Aborted, or resultant of a 2-Way Average or a Delta Compare (performed in the OTDR).

A Duplicate Waveform exception occurs if a trace has an identical waveform to a previously selected trace (in this case, the first trace with a duplicate waveform is reported).

### **10.4 Processing Start and End Patch Cords**

When generating a report, the following information is important to the processing of Start (or Launch) and End Patch Cords and will be reflected in the Report:

- The first event with a location  $\geq 0$  is assumed to be at a start patch cord if the trace has a horizontal shift  $< 0$  and the location is  $\leq$  to the minimum of 200 meters and  $(2\% * \text{end location})$ .
- The end event is assumed to be at an end patch cord if the event loss is less than the fiber break threshold.
- In the Bi/1-Directional Splice Loss Summary Reports, if an event corresponds to a connector then the column of loss values for the event is labeled CONN. Also, the fiber average, minimum, and maximum splice loss values do not include the connector losses.
- The End-to-End Loss values include or exclude the Start/End Patch Cord values as specified in the Preferences>Analysis Page.

## 10.5 Exporting a Report

SoftView Plus emulation software can export Trace Summary, Bi/1-Directional Splice Loss Summary, and Fiber Acceptance Reports to an ASCII text file, with comma delimited fields, which can then be imported into a spreadsheet.

1. Display and select traces as if the report were to be printed.
2. Select **File>Export Report** and set up the Report Specification dialog box fields as described in “Report Specification Dialog Box” on page 102.
3. Click **OK** and specify the Export File name, then click **Save**.



*Figure 10-4: Enter/Select Export File Dialog Box*

The export file format contains the same header information and tabular values as found in the printed report with the following differences:

- All table values corresponding to one trace or fiber will appear on one line, whereas the printed values may appear on two or more lines.
- For reports based on fiber number, the trace name(s) are appended at the end of each line of tabular values.

**A Sample Bi-Directional Splice Loss Summary Export File follows:**

```

"Bi-Dir Splice Loss Summary Report"
"Corning SoftView Plus - Version 2.11a"
"Cable : ITGNAO"
"Trace List : all.trl"
"Sample Traces"
"header line 2"
"header line 3"
"ITG <--> NAO"
"Utica Site ITG <--> Syracuse Site NAO"
"Correlation % : 4.00"
"Reference : stitgano.trc ITG --> NAO"
"Length : 86.6122 km"
"Wavelength(nm) : 1550"
"Splice Number / ITG --> NAO Loc(km) / NAO --> ITG Loc(km)"
".001"."002",".003",".004",".005",".006",".007",".008",".009",".010"
"Fiber",6.80,14.40,26.70,33.00,45.20,57.10,61.50,63.70,70.30,80.40,,,,End-
"Number",79.81,72.21,59.91,53.61,41.41,29.51,25.11,22.91,16.31,6.21,Avg,Min,
Max,End(dB),Trace,Trace
"001",0.05,0.28,0.04,0.10,0.12,0.07,0.06,0.05,0.02,0.01,0.08,0.01,0.28,18.47,"5it
gnao.001","5naoitg.001"
"002",0.01,0.09,0.04,0.04,0.06,0.07,0.04,0.04,0.04,0.11,0.06,0.01,0.11,17.98,"5it
gnao.002","5naoitg.002"
"003",0.02,0.02,0.02,0.08,0.04,0.04,0.05,0.15,0.09,0.03,0.05,0.02,0.15,17.83,"5it
gnao.003","5naoitg.003"
"004",0.07,0.24,0.04,0.14,0.04,0.03,0.10,0.10,0.06,0.05,0.09,0.03,0.24,18.11,"5it
gnao.004","5naoitg.004"
"005",0.04,0.04,0.13,0.04,0.08,0.03,0.10,0.03,0.02,0.03,0.05,0.02,0.13,17.83,"5it
gnao.005","5naoitg.005"
"006",0.02,0.13,0.02,0.03,0.05,0.02,0.07,0.03,0.12,0.02,0.05,0.02,0.13,17.99,"5it
gnao.006","5naoitg.006"
"Average",0.04,0.13,0.05,0.07,0.07,0.04,0.07,0.07,0.06,0.04,0.06,,,18.03
"Min",0.01,0.02,0.02,0.03,0.04,0.02,0.04,0.03,0.02,0.01,,0.01,,17.83
"Max",0.07,0.28,0.13,0.14,0.12,0.07,0.10,0.15,0.12,0.11,,,0.28,18.47

```

## 10.6 Warning Messages

In generating or exporting any of the three Splice Loss or Fiber Acceptance Reports, a warning message will be displayed for the following conditions:

- No trace to process
- No visible event
- Number of averages  $\leq 256$
- Questionable end
- Different IORs
- Different Wavelengths
- Different Ranges
- Different Resolutions
- Different Pulse Widths
- Different Fiber Types
- Significantly different Horizontal Shifts
- Significantly different Vertical Shifts
- Significantly different end locations

In generating any of the Bi/1-Directional Splice Loss Summary Reports, a warning message will be displayed for the following conditions:

- No second trace for the Bi-Directional Report
- No splice (event) loss for a splice
- A selected trace event does not correlate with a splice





## 11.0 Example

This chapter steps through an example of Report Generation using the traces found in the SoftView Plus™ Sample Traces directory. The trace files 5ITGNAO.001-006 and 5NAOITG.001-006 are actual traces of six fibers on the Cable ITG-NAO. The example includes:

- Obtaining a Bi-Directional Splice Loss Measurement
- Generating a Smart Splice Template Trace
- Building and Applying a Splice Template to target traces
- Generating Trace Summary, Exception, Bi-Directional Splice Loss, Bi-Directional Splice Loss Summary, 1-Directional Splice Loss Summary, and Fiber Acceptance Reports.

---

**NOTE**

The procedures in these examples assume familiarity with SoftView Plus program functionality.

---

Appendix C contains copies of the reports generated by these examples.

**Setup for the example:**

1. Copy the files from the SoftView Plus Sample Traces directory on the CD-ROM to the directory C:\TRACES\ITGNAO.
2. Open SoftView Plus software and create a new trace list.
3. Insert the 12 trace files from C:\TRACES\ITGNAO into the new list.
4. Save the list as C:\TRACES\ITGNAO\ALL.TRL.

Approximate splice locations (in km optical distance units) for the cable:

ITG to NAO	NAO to ITG
6.8	79.8
14.4	72.1
26.7	59.9
33.0	53.6
45.2	41.3
57.1	29.4
61.5	24.9
63.7	22.8
70.3	16.3
80.4	6.1
86.5	86.5 <-----ends

### 11.1 Obtaining Bi-Directional Measurements

Perform the following steps to obtain Bi-Directional Splice Loss and 2-Point Attenuation Loss measurements on a pair of bidirectional traces:

1. Open the cable ITG-NAO Trace List, ALL.TRL, created in the prior section.
2. Display traces 5ITGNAO.001 (as primary trace) and 5NAOITG.001.
3. Set the Loss Mode to Splice Loss in the graph header.
4. Move the A cursor to approximately 26.6 km.
5. Click the toolbar icons: Align, Flip, and Display from A.
6. Zoom in.
7. Move the A cursor to 26.6266 km.
8. Set the B cursor at 27.9955 km.
9. Lengthen and offset the *primary trace* LSA cursors.

The SoftView Plus window should now be very similar to Figure 11-1 and show the Splice Loss measurements at approximately:

5ITGNAO.001	-0.124
5NAOITG.001	0.229
Bidirectional average	0.053

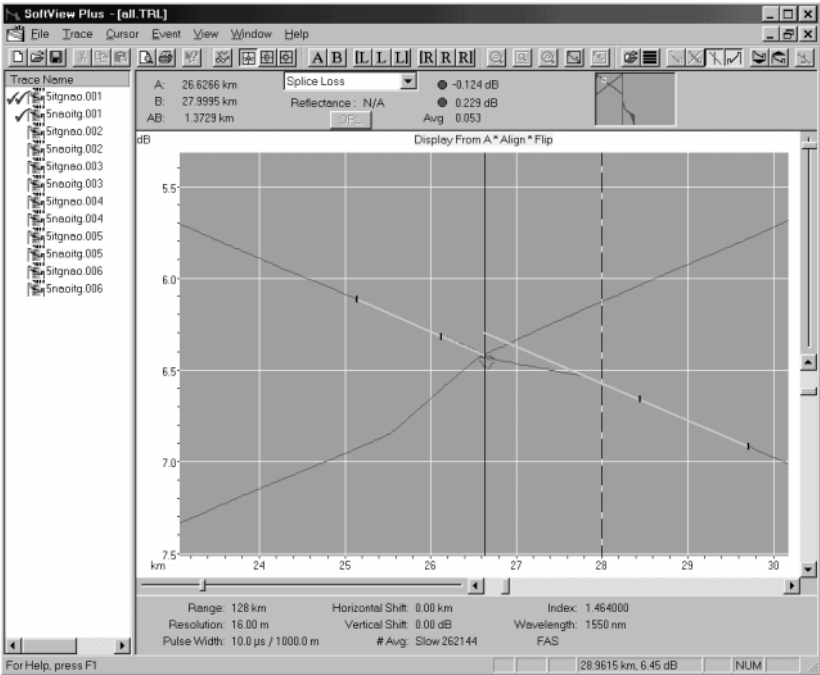


Figure 11-1: Bi-Directional Splice Loss Measurement Set-up

10. Set the Loss Mode to 2-Point Attenuation Corrected.

11. The measurements should be approximately:

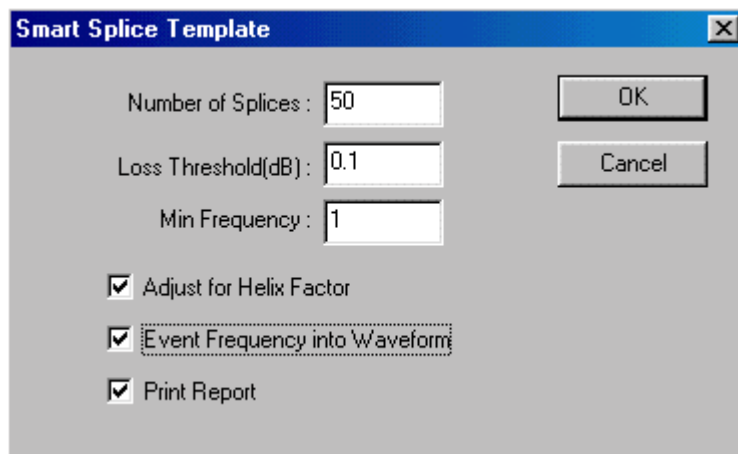
5ITGNAO.001	-0.120
5NAOITG.001	0.205
Bidirectional average	0.042

The Splice Loss and 2-Point Attenuation Corrected measurements are close in value. A 2-Point Attenuation Corrected measurement should be used in place of splice loss measurement when the LSA cursors cannot be set up with enough data points to obtain an accurate measurement, such as when two splices are extremely close together.

## 11.2 Generating a Smart Splice Template Trace

Perform the following steps to generate a *smart splice template* trace from the sample traces 5ITGNAO.001 through 5ITGNAO.006.

1. Open the trace list ALL.TRL just created in Section 11.0 from the sample traces.
2. Select **Preferences>Display**, clear the Display page Sort Mask Filename and Extension fields and click **OK**. The trace files for each direction will be grouped together.
3. Select trace file 5ITGNAO.001.
4. Select **Trace>Save As** and save the trace as 5ITGNAO.SST.
5. Select **Trace>Add** and add 5ITGNAO.SST to the trace list.
6. Display 5ITGNAO.SST as the primary trace and also display traces 5ITGNAO.001 through 5ITGNAO.006.
7. Select **Trace>Smart Splice Template** to display the Smart Splice Template dialog box.
8. Set up the dialog box as shown in Figure 11-2.



*Figure 11-2: Smart Splice Template Dialog Box*

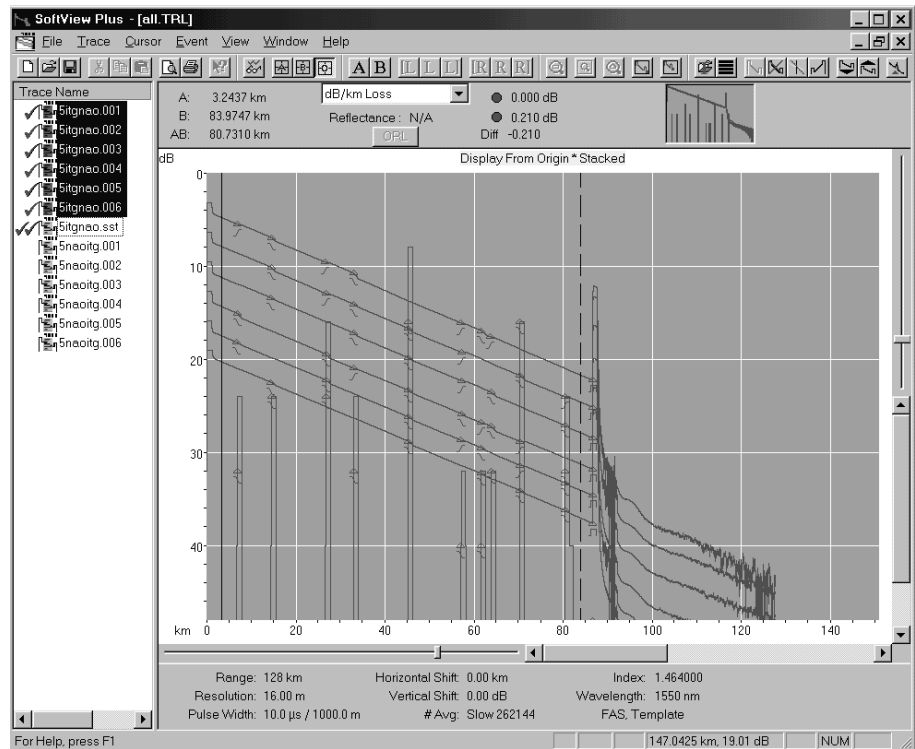
---

**NOTE**

The minimum frequency is set to 1 as there are only six traces selected. When there is a large number of traces selected, the value should be larger.

---

9. Click **OK** to create the smart template trace, as shown in Figure 11-3. The printed report is shown in Appendix C.



*Figure 11-3: Smart Splice Template Trace*

### 11.3 Building A Splice Template Trace

To build a Splice Template Trace, STITGNAO.TRC, for the ITG to NAO traces with an event at each splice, perform the following procedure:

1. Open the ITGNAO trace list, ALL.TRL.
2. Select **Trace>Preferences>Display**.
3. Clear the Sort Mask and click **OK**. The trace list now shows all the ITG to NAO traces, fibers 1 through 6, followed by the NAO to ITG traces, fibers 1 through 6.
4. Select and plot the first six traces.
5. Select **View>Stack Traces**. Note that each trace has its own unique set of events and no single trace has events for all splices. Drag the A

cursor from left to right to determine the detection of each splice over the traces and the absence of any extraneous non-splice events.

6. Set the Display Mode to Anywhere, then zoom in on the primary trace end. Observe that all fiber ends are correctly detected.
7. Hide the currently displayed traces and repeat the previous steps to plot the next six traces (from the other direction). Again, note that all splices are not detected in any one trace, the absence of non-splice events, and good fiber end detection.
8. Determine which traces for each direction have the most events, as the splice template traces will be created from the traces having the most events to minimize event insertion for splices not detected.
  - a. Select the six ITG to NAO traces.
  - b. Select **Trace>Batch Process**.
  - c. Shut off all options in the Batch Process dialog box, except for **Show min/max event end distance, etc.**, then click **OK**.

A pop-up dialog box will be displayed showing trace 5ITGNAO.004 has the most events, nine.
  - d. Repeat Steps a-c for the six NAO to ITG traces and the display will show trace 5NAOITG.004 has the most events, ten.
9. Create the splice template files STITGNAO.TRC and STNAOITG.TRC as copies of the traces 5ITGNAO.004 and 5NAOITG.004, respectively. Add these two files to the trace list.
10. Hide all currently displayed traces and display STITGNAO.TRC. Internally, a splice template trace is different from a non-template trace as each event has its own set of LSA cursors. At this point STITGNAO.TRC is not internally a template trace, its just a copy of 5ITGNAO.004.
11. Select **Trace>Build Splice Template** to make STITGNAO.TRC a splice template trace. In the graph footer, the *primary* trace is now identified as a *template* trace.

12. Update the events in STITGNAO.TRC so there is one event at each splice. First, the current events which are at splice points must be edited to the splice locations.
  - a. Set the loss mode to Splice Loss and do not lock the A & B cursors.
  - b. Place the cursor over the first event symbol and double click. The Event window is displayed showing the first event.
  - c. Set the Display Mode to Display from “A”.
  - d. Press “>>” then “<<” in the Event window. This action forces the A cursor to the first event location and displays the event's LSA cursors.
  - e. Zoom in on the event using the horizontal and vertical trackbars.
  - f. Click **Edit** in the Event window and change the Start Distance from 6.9296 to 6.8 km in the Edit window.
  - g. Click **OK**.
13. Perform the following steps for the each splice event at locations 26.7, 33.0, 45.2, 57.1, 61.5, 63.7, and 70.3:
  - a. Click “>>” in the Event window, and then click **Edit**.
  - b. Change the Start Distance to the appropriate splice location value in the Edit window and click **OK**.
14. Insert 2 events into the template trace for the missing splice events at 14.4 and 80.4 km as follows:
  - a. Move the “A” cursor to approximately 14.4 km.
  - b. Click “**Insert**” in the Event window.
  - c. In the Edit Event window, change the Start Distance to 14.4 and click **OK**.
  - d. Repeat Steps 14 a-c to insert an event at 80.4 km.

The end event location is unchanged because in the Apply Splice Template dialog box the “**merge with trace priority**” and “**snap to trace end**” options will be selected (because the traces have low noise and the fibers' splices and ends are correctly detected).



15. Inspect each event's LSA cursors. In the Event window, repeatedly click ">>" until the first event is shown. Inspect the LSA cursors for this event, which should be positioned as follows:
  - The *left* LSA cursor is offset to the left of the start of the event.
  - The *right* LSA cursor is offset to the right of the end of the event.
  - If the trace data has a high level of noise, you should lengthen the LSA cursors to obtain a better loss estimate (on application to the target traces).
  - Ensure that the LSA cursors do not overlap and are not close to adjacent events.
16. Repeat Step 15 for each event.

---

**NOTE**

This process has modified only a memory copy of the trace; it is very important to perform the next two steps to save the modified trace into the trace file, STITGNAO.TRC:

---

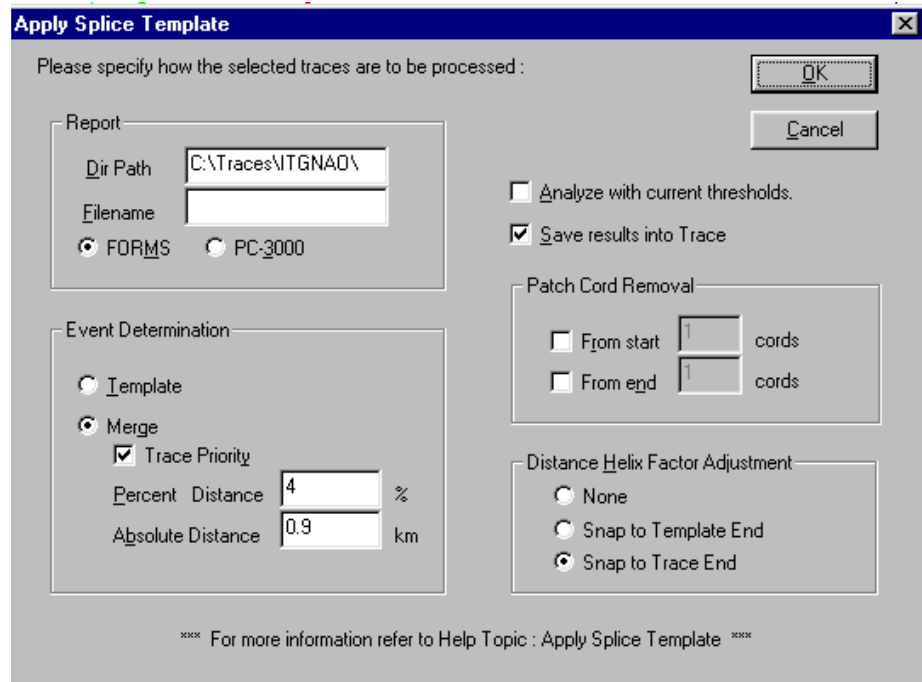
17. Select STITGNAO.TRC in the trace list.
18. Select **Trace>Save**.

The setup of STITGNAO.TRC is complete and the trace should be hidden. The setup of STNAOITG.TRC is analogous, so the details will be omitted.

## 11.4 Applying a Splice Template Trace

To obtain for each trace an estimate of the loss at each splice, you must apply the splice template trace to all the traces in the same direction, saving the results back into each target trace. Since the trace event tables will be modified, it is better to apply the Splice Templates in a working directory or backup the traces before starting.

1. Display only STITGNAO.TRC so that it is the primary trace.
2. In the trace list, select traces 5ITGNAO.001 through 006.
3. Select **Trace>Apply Splice Template**.
4. Set up the Apply Splice Template dialog box as shown in Figure 11-4.



*Figure 11-4: Apply Splice Template Dialog Box*

The *trace* and *template* events will be merged. Trace Priority is enabled, therefore if a *target* trace event correlates with a *template* event (is within minimum of  $4\% \times \text{distance of the template event}$  and 0.9km), then the trace event will stay intact and the template event discarded.

Also, the *splice template trace* events will be adjusted to a location the same relative distance from the *trace end*; i.e., if a template event is located 20.15% from the template end event, then prior to correlation its distance will be adjusted to 20.15% from the target trace end event.

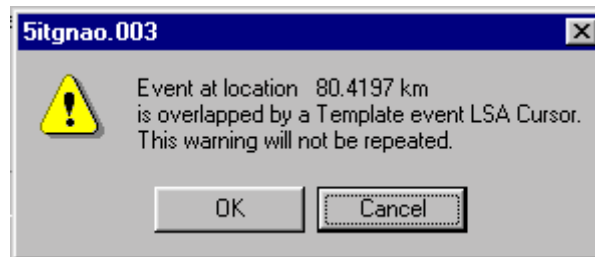
---

**NOTE**

Apply the splice template initially *without* updating the target traces to determine potential problems.

---

5. Click **OK** to apply the splice template *without saving the traces*. The warning in Figure 11-5 may now appear indicating that the event at 80.4197 on trace 5ITGNAO.003 overlaps a template LSA cursor.



*Figure 11-5: Warning Dialog*

6. Look at the *template* event at 80.4 km LSA cursor, while in Display from A mode, using the Event window >> button.
7. Display trace 5ITGNAO.003 and double click its event at 80.4197 to display the event in the Event window.
8. Click **Edit** and note the event end distance is 82.402 km which overlaps the *template right* LSA cursor, then click **Cancel**.
9. Shift the *template right* LSA cursor a little to the right, then double click the template event symbol.

10. Click **Edit** in the Event window.
11. Click **Paste**, then **OK**, in the Edit Event window to update the event's LSA cursor.
12. Select the *splice template trace* and save it.
13. Hide 5ITGNAO.003, select the 6 5ITGNAO traces and apply the splice template again (with no save). There should be no warnings.
14. Apply the splice template *with* the “Save results into Trace” option *selected*.

Repeat Steps 1-16 above, applying the STNAOITG.TRC Splice Template Trace to the six 5NAOITG Traces.

## 11.5 Generating Reports

To begin report generation:

1. Select **File>Preferences>Display** and enter the following:

Sort Mask File Name 222222

File Extension 111

2. Click **OK**.

The trace list now displays the traces in fiber number sequence so each pair of traces corresponds to a bidirectional pair, e.g. 5ITGNAO.001 and 5NAOITG.001. (Bi-Directional and Fiber Acceptance Report Generation require this pairing sequence.)

3. Display only the trace STITGNAO.TRC (which is required for the Bi/1-Directional Splice Loss Summary Reports).
4. Continue with the following procedures to generate each type of report.

### 11.5.1 Trace Summary Report

1. Select the 12 traces 5ITGNAO.001 through 5NAOITG.006.
2. Select **File>Print Preview**. The Select Print/Preview Type dialog box will be displayed.
3. Select **Report** then click the **OK** button.
4. Set up the Report Specification dialog box as shown in Figure 11-6.

The dialog box is titled "Report Specification" and contains the following fields and controls:

- Cable:** ITG-NAO
- Correlation %:** 2
- Hi Loss:** Bi-Dir 0.15, 1-Dir 0.25
- Report Type:** Trace Summary (dropdown menu)
- Trace Selection/Identification from Selected Traces:**
  - Filename Convention:** \_aaabbb.###
  - Process Wavelength(nm):** (empty field)
  - Fibers Per Group:** (empty field)
- Reference Table:**

Trace	Reference Trace	Loc Code	Location
First:	<input checked="" type="radio"/>	ITG	ITG Location
Second:	<input type="radio"/>	NAO	NAO Location

Buttons: OK, Cancel

*Figure 11-6: Report Specification Dialog Box*

5. Click **OK** to preview the Trace Summary Report.
6. Click **Print** in the Preview window to print the report.

### 11.5.2 Exception Report

1. Display only trace 5ITGNAO.001 so it is the *primary* trace.
2. Select the 12 traces 5ITGNAO.001 through 5NAOITG.006.
3. Select **File>Print Preview**. The Select Print/Preview Type dialog box will be displayed.
4. Select **Report** and click **OK**.
5. Using the same Report Specification dialog box parameters previously shown, select the Exception Report. The Exception Report Criteria dialog box will be displayed.
6. Set up the Exception Report Criteria dialog box as shown in Figure 11-7.

**Exception Report Criteria**

OK Cancel

Different than Primary None

- ☒ Wavelength
- ☒ Range
- ☒ Resolution
- ☒ Pulse Width
- ☒ IQR
- ☒ Backscatter Coefficient
- ☒ Analysis Thresholds
- ☒ ORL Parameters
- ☒ Trace Format
- ☒ Instrument
- ☒ Optics Module
- ☒ Header Type
- ☒ Patch Cord Setup
- ☒ Smooth

Different than Primary by > X%

☐ End Location  ☐ Event Location   km

☒ End-End Loss  ☐ Horizontal Shift

☐ ORL  None

Events

☐ # Splices >  ☒ Loss Outside  -->  dB

☐ None ☒ Loss not Splice Loss

☒ Unusual End ☒ Unusual Non-End

☐ User Created ☒ Reflective Splice

☐ User Edited ☐ Span Loss >  dB/km All

Miscellaneous

☐ Averages <  ☒ Duplicate Waveform None

☒ Unusual Trace

Figure 11-7: Exception Report Criteria Dialog Box

7. Click **OK** to Preview the report (See Appendix C-2).

### 11.5.3 Bi-Directional Splice Loss Report

1. Select the 12 traces 5ITGNAO.001 through 5NAOITG.006.
2. Select **File>Print Preview**. The Select Print/Preview Type dialog box is displayed.
3. Select **Report** then click **OK**.
4. Using the Report Specification dialog box parameters shown in Figure 11-6, select the **Bi-Dir Splice Loss Report**.
5. Click **OK** to preview the report.

Note and ignore the warning message about different ranges.

### 11.5.4 Bi-Directional Splice Loss Summary Report

1. Display only trace STITGNAO.TRC.
2. Select the 12 traces 5ITGNAO.001 through 5NAOITG.006.
3. Select **File>Print Preview**. The Select Print/Preview Type dialog box is displayed.
4. Select **Report** then click **OK**.
5. Using the Report Specification dialog box parameters shown in Figure 11-6, select the **Bi-Dir Splice Loss Summary Report**.
6. Click **OK** to Preview the report.

### 11.5.5 1-Directional Splice Loss Summary Report

1. Display only trace STITGNAO.TRC.
2. Select the 6 ITG to NAO traces, 5ITGNAO.001 through 5ITGNAO.006.
3. Select **File>Print Preview**. The Select Print/Preview Type dialog box is displayed.
4. Select **Report** then click **OK**.
5. Using the same Report Specification dialog box parameters shown in Figure 11-6, select the **1-Dir Splice Loss Summary Report**.
6. Click **OK** to preview the report.

### 11.5.6 Fiber Acceptance Report

1. Select the 12 traces 5ITGNAO.001 through 5NAOITG.006.
2. Select **File>Print Preview**. The Select Print/Preview Type dialog box is displayed.
3. Select **Report** then click **OK**.
4. Using the same Report Specification dialog box parameters shown in Figure 11-6, select the **Fiber Acceptance Report**.
5. Click **OK** to preview the report.

This example used just six fibers from a cable, but the effort and time required for a larger fiber count cable would be about the same.



## Appendix A: Special Keypresses & Symbols

### A-1 Special Keypresses

The following special keyboard presses, or shortcut keys, are available:

**Regardless of the Keyboard Focus, the following Shortcut Key applies:**

F1	Help Topics
----	-------------

**When no Trace List nor Header Template File is opened, the Shortcut Keys are:**

Ctrl+N	New File (Trace List or Header Template)
--------	--

Ctrl+O	Open File
--------	-----------

**When the Trace List Pane has Keyboard Focus, the Shortcut Keys are:**

Insert	Add traces to the Trace List
--------	------------------------------

Delete	Remove selected traces from the Trace List
--------	--

Enter	Show the Trace Property Sheet Window(s) for the selected trace(s)
-------	---

**When the Trace List Pane or Graph Pane has Keyboard Focus, the Shortcut keys are:**

Alt+0	Toggle the display of the Event Window
-------	--

Alt+1	Toggle for Align
-------	------------------

Alt+2	Toggle for Flip
-------	-----------------

Ctrl+A	Toggle for shift Cursor A
--------	---------------------------

Ctrl+B	Toggle for shift Cursor B
--------	---------------------------

Ctrl+C	Calculate ORL (must be in ORL Loss Mode)
--------	--

Ctrl+D	Display selected traces
--------	-------------------------

Ctrl+F	Zoom Full
--------	-----------

Ctrl+H	Hide selected traces
--------	----------------------

Ctrl+K	Toggle for Lock A/B Cursors
--------	-----------------------------

Ctrl+L	Cycle thorough Left LSA Cursor (Left End, Line, Right End) and Right LSA Cursor (Left End, Line, Right End) allowing ← → keypress shifts
Ctrl+M	Next Loss Mode
Ctrl+Shift+M	Previous Loss Mode
Ctrl+N	New File (Trace List or Header template)
Ctrl+O	Open File
Ctrl+P	Print Trace Printouts and Reports
Ctrl+R	Make selected Trace Primary
Ctrl+S	Save Trace List
Ctrl+T	Toggle shift Primary Trace
F4	Next Batch Display
Shift+F4	Previous Batch Display
F6	Next Window Pane
Shift+F6	Previous Window Pane
F8	View next event in the Event Window
Shift+F8	View previous event in the Event Window
Ctrl+Z	Equivalent to clicking the Window (Zoom) Icon

**When the Graph Pane has Keyboard Focus:**

Alt+→	Horizontal Expand (Zoom-In, Magnify) 2X
Alt+←	Horizontal Contract (Zoom-Out, DeMagnify) 2X
Alt+↑	Vertical Expand (Zoom-In, Magnify) 2X
Alt+↓	Vertical Contract (Zoom-Out, DeMagnify) 2X
←	Large Left move for Scroll, Shift A/B, Trace Shift, LSA Shift
→	Large Right move for Scroll, Shift A/B, Trace Shift, LSA Shift

↑	Large Up move for Scroll, Trace Shift, LSA Shift
↓	Large Down move for Scroll, Trace Shift, LSA Shift
Ctrl+←	Small Left move for Scroll, Shift A/B, Trace Shift, LSA Shift
Ctrl+→	Small Right move for Scroll, Shift A/B, Trace Shift, LSA Shift
Ctrl+↑	Small Up move for Scroll, Trace Shift, LSA Shift.
Ctrl+↓	Small Down move for Scroll, Trace Shift, LSA Shift.

**When the Trace Window Analysis Page Event Table has Keyboard Focus, the Shortcut keys are:**

Delete	Delete currently selected event
Insert	Insert event

**When the Header Template Window has Keyboard Focus, the Shortcut Keys are:**

Ctrl+A	Edit: Select All
Ctrl+C	Edit: Copy
Ctrl+F	Edit: Find
Ctrl+H	Edit: Replace
Ctrl+N	New File (Trace List or Header Template)
Ctrl+O	Open File
Ctrl+P	Print
Ctrl+S	Save File
Ctrl+V	Edit: Paste
Alt+Bckspace	Edit: Undo
F3	Edit: Find Next
Ctrl+Insert	Edit: Copy

Shift+Insert	Edit: Paste
Ctrl+X	Edit: Cut
Ctrl+Z	Edit: Undo

**When the Power Meter Window has Keyboard Focus, the Shortcut Keys are:**

Ctrl+O	Open File
Ctrl+P	Print
Ctrl+S	Save File

## A-2 Mouse Cursors

When the mouse cursor is in the graph, it conveys information about the usage or mode of the cursor. The mouse cursor formats are as follows:



Default.



Zoom to Event activated, cursor over event. Can now define selection rectangle, event selection, left-click to zoom-in, right-click to zoom-out.



Zoom to Event activated, but mouse cursor not over an event.



Drag A or B cursor.



Click to define new A cursor location.



Click to define new B cursor location.



Drag LSA cursor tic mark.



Drag LSA cursor line.



Click to shift left LSA cursor line, defines the left tic mark location.



Click to define new left tic mark location for left LSA cursor.



Click to define new right tic mark location for the left LSA Cursor.



Click to shift right LSA cursor line, defines the left tic mark location.



Click to define new left tic mark location for right LSA cursor.



Click to define new right tic mark location for right LSA cursor.



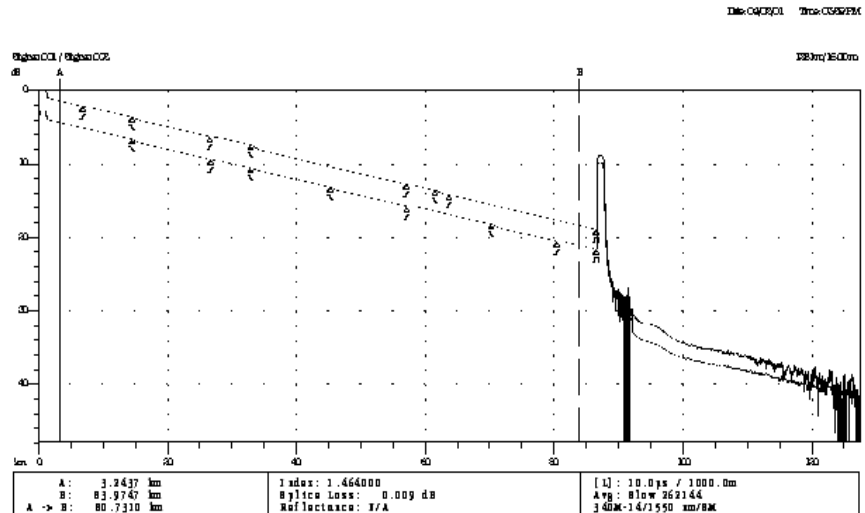
## **Appendix B: Trace Printout Examples**

This Appendix illustrates examples, using the sample trace, of the Trace Printouts available from SoftView Plus™ emulation software for the Current View (or View), Batch, Frame, and Bi-Directional options.

Information about the Trace Printout Page Layout and Print functions can be found in Chapter 4.0, “Printing Options”.

**APPENDIX B-1**  
**CURRENT VIEW**  
**EXAMPLE**

The following printout shows the Trace Plot, Trace Information, Header Information, and Event Table Information for two Traces, with the Trace Plot Expanded to the Right Edge for the View Print option:



Page 1

```

[Cable I.D.:
[Fiber No.:
[Sheath Length:
[Test Site:
[Far Site:
[Date:
[Operator:
[Notes:
  
```

Page 1

```

[Cable I.D.:
[Fiber No.:
[Sheath Length:
[Test Site:
[Far Site:
[Date:
[Operator:
[Notes:
  
```

Primary Trace: 511gno.001    Trace Parameters:

Date: 05/08/95    Mode: N/A

Time: 11:06 AM    Range: 128 km

Product Type: Corning 340    Resolution: 16.00 m

Opt. Module: 340M-14    Pulse Width: 10000 ns

Fiber Type: Singlemode    Wavelength: 1550 nm

FAS Thresholds:    Index: 1.464000

Loss: 0.05 dB    Horiz. Shift: 0.00 km

Reflectance: -60.00 dB    Vert. Shift: 0.00 dB

Fiber Break: 3.00 dB    No. Averages: 262144

Backscatter: -83.0

Trace Flags: FAS

Overlay Trace: 511gno.002    Trace Parameters:

Date: 04/25/95    Mode: N/A

Time: 07:25 AM    Range: 128 km

Product Type: Corning 340    Resolution: 16.00 m

Opt. Module: 340M-14    Pulse Width: 10000 ns

Fiber Type: Singlemode    Wavelength: 1550 nm

FAS Thresholds:    Index: 1.464000

Loss: 0.05 dB    Horiz. Shift: 0.00 km

Reflectance: -60.00 dB    Vert. Shift: 0.00 dB

Fiber Break: 3.00 dB    No. Averages: 262144

Backscatter: -83.0

Trace Flags: FAS

Analysis Results -- 511gno.001

Feature #/Type	Location (km)	Event-Event (dB)(dB/Km)	Loss (dB)	Ref (dB)
1/N	6.8641	1.41	0.206	-0.12
2/N	14.4982	1.55	0.203	0.24
3/N	26.7028	2.43	0.199	-0.13
4/N	33.0263	1.29	0.203	0.40
5/N	57.1080	4.96	0.206	-0.10
6/N	61.6131	0.91	0.203	0.22
7/N	63.7264	0.44	0.210	-0.06
8/B	86.6122	4.71	0.206	>5.00 -22.89

Overall (End-to-End) Loss: 18.15 dB  
ORL : N/A

Analysis Results -- 511gno.002

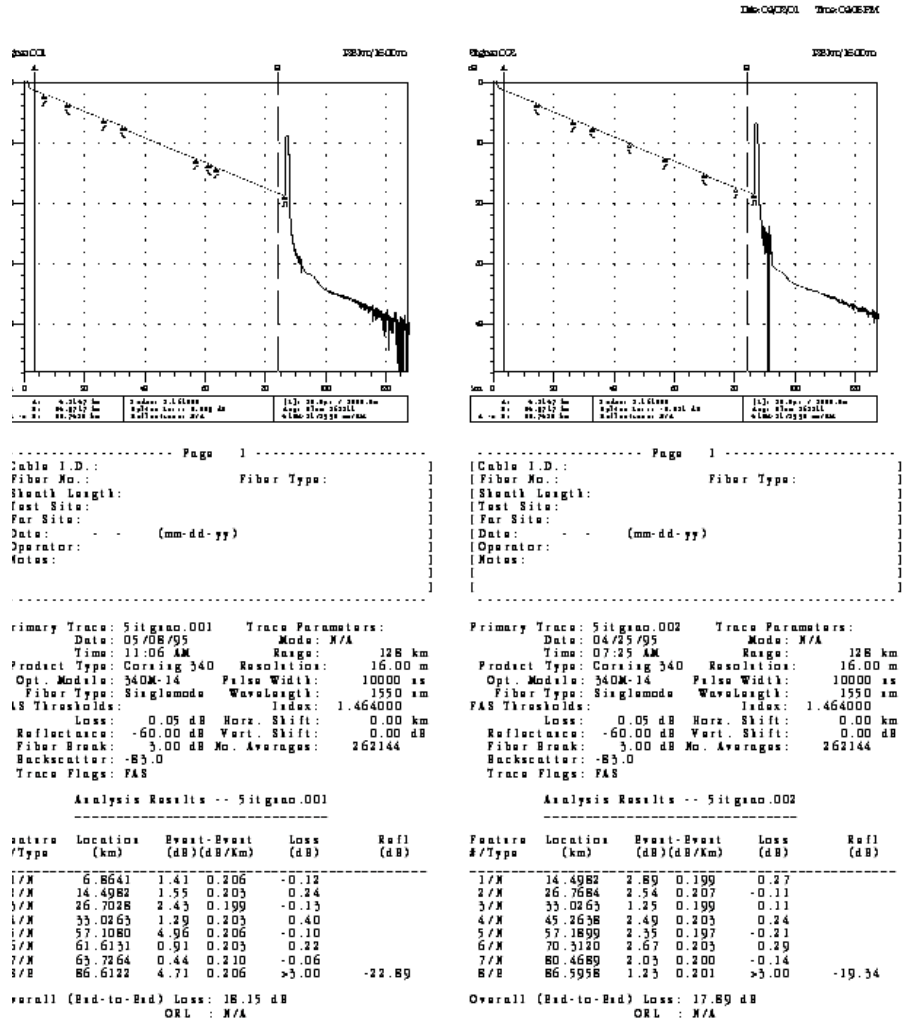
Feature #/Type	Location (km)	Event-Event (dB)(dB/Km)	Loss (dB)	Ref (dB)
1/N	14.4982	2.89	0.199	0.27
2/N	26.7684	2.54	0.207	-0.11
3/N	33.0263	1.25	0.199	0.11
4/N	45.2638	2.49	0.203	0.24
5/N	57.1899	2.35	0.197	-0.21
6/N	70.3120	2.67	0.203	0.29
7/N	80.4689	2.03	0.200	-0.14
8/B	86.5958	1.23	0.201	>5.00 -19.34

Overall (End-to-End) Loss: 17.89 dB  
ORL : N/A



APPENDIX B-2  
BATCH PRINT  
EXAMPLE

The following printout shows the Trace Plot, Trace Information, Header Information, and Events Table, in Dual Plot mode, for two selected traces, one per plot:



Page 1

Cable I.D.:  
Fiber No.:  
Sheath Length:  
Test Site:  
Far Site:  
Date: (mm-dd-yy)  
Operator:  
Notes:

Fiber Type:

Primary Trace: 51150002

Trace Parameters:

Date: 04/25/95  
Time: 07:25 AM  
Range: 128 km  
Product Type: Corning 340  
Resolution: 16.00 m  
Opt. Model: 340M-14  
Pulse Width: 10000 ns  
Fiber Type: Singlmode  
Wavelength: 1550 nm  
FAS Threshold: 1.464000  
Loss: 0.05 dB  
Horr. Shift: 0.00 km  
Reflectance: -60.00 dB  
Vert. Shift: 0.00 dB  
Fiber Break: 3.00 dB  
No. Averages: 262144  
Backscatter: -85.0  
Trace Flags: FAS

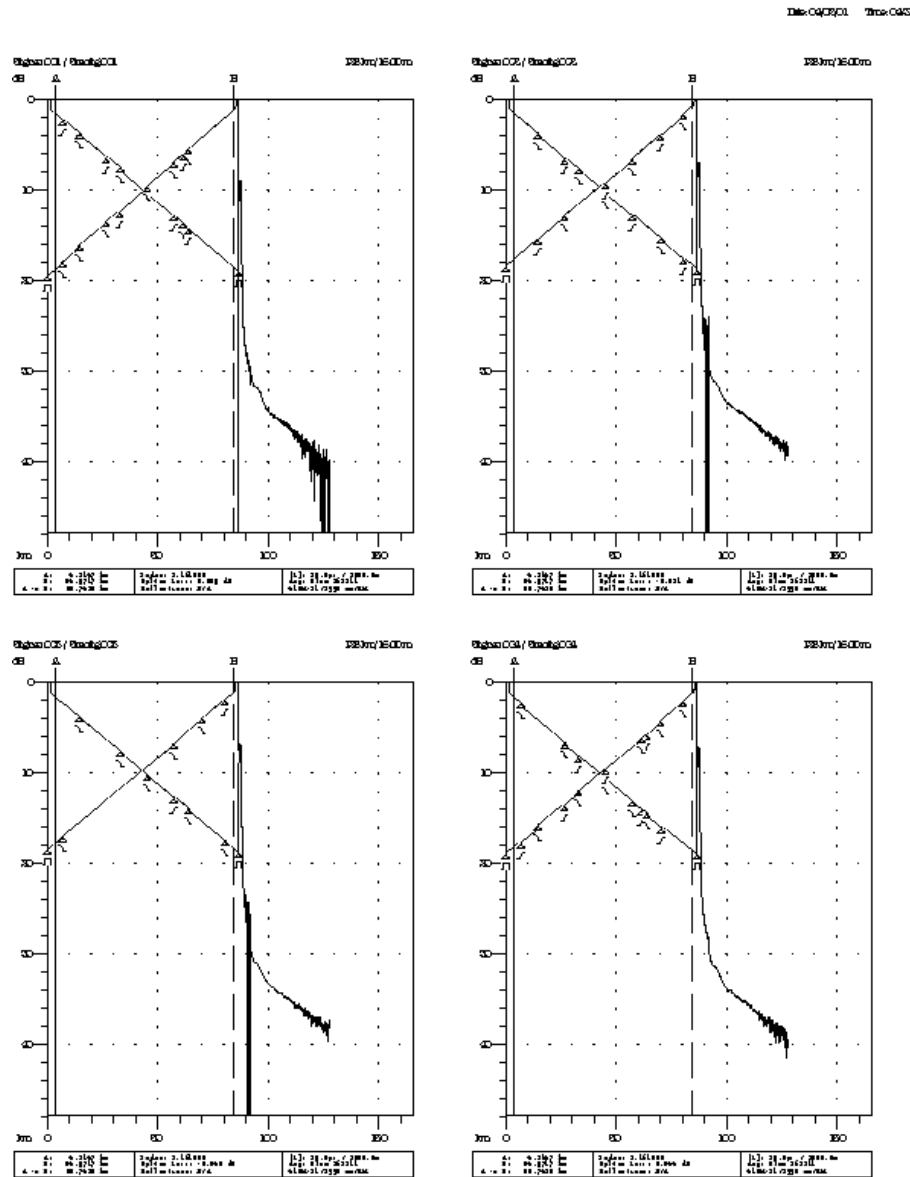
Analysis Results -- 51150002

Feature #/Type	Location (km)	Event-Event (dB)(dB/Km)	Loss (dB)	Ref (dB)
1/X	14.4982	2.89 0.199	-0.27	
2/X	26.7684	2.54 0.207	-0.11	
3/X	33.0263	1.25 0.199	-0.11	
4/X	45.2638	2.49 0.203	-0.24	
5/X	57.1899	2.35 0.197	-0.21	
6/X	70.3120	2.67 0.203	-0.29	
7/X	80.4689	2.03 0.200	-0.14	
8/B	86.5958	1.23 0.201	>3.00	-19.34

Overall (End-to-End) Loss: 17.89 dB  
ORL : N/A

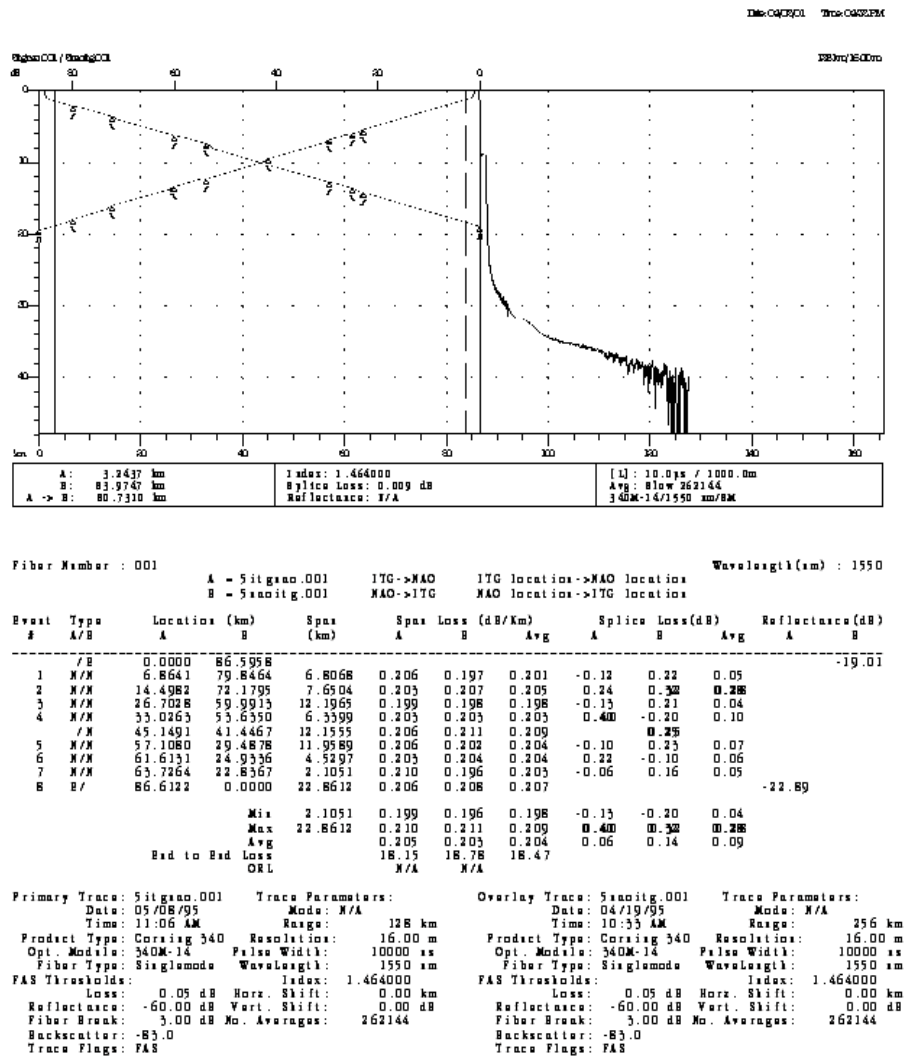
**APPENDIX B-3**  
**FRAME PRINT**  
**EXAMPLE**

The following printout shows Trace Information, with a 2-Column x 2-Row format in Portrait mode, for 8 selected traces, 2 per plot, current view with Flip ON:



APPENDIX B-4  
BI-DIRECTIONAL  
PRINT EXAMPLE

The following printout shows Trace Plot, Bi-Directional Event Table, and Trace Information for 2 selected sample traces with Use Current View OFF, and the Bi-Directional Print Specification parameter settings shown in Figure 4-7.





## Appendix C: Report Examples

- C-1 Trace Summary Report
- C-2 Exception Report
- C-3 Bi-Directional Splice Loss Report
- C-4 Bi-Directional Splice Loss Summary Report
- C-5 1-Directional Splice Loss Summary Report
- C-6 Fiber Acceptance Report
- C-7 Power Meter Report
- C-8 Smart Splice Template Report

# Appendix C-1: Trace Summary Report

Sample Traces				Trace Summary Report				Cable : ITG-NAO Trace List : all.trf 20-Oct-00			
Cable : ITG-NAO		ITG <--> NAO		Utica Site ITG <--> Syracuse Site NAO							
Trace	Wave-length (nm)	Range (km)	Pulse Width (nsec)	Reso (m)	# Avgs	Date	Time	Instrument	Optics Module	Fiber Type	
5itgnao.001	1550	128	10000	16.00	242144	08-May-95	11:06:10 AM	Corning 340	340M-14	Singlemode	
5naoitg.001	1550	256	10000	16.00	242144	19-Apr-95	10:33:40 AM	Corning 340	340M-14	Singlemode	
5itgnao.002	1550	128	10000	16.00	242144	25-Apr-95	07:25:41 AM	Corning 340	340M-14	Singlemode	
5anaoitg.002	1550	256	10000	16.00	242144	19-Apr-95	10:52:32 AM	Corning 340	340M-14	Singlemode	
5itgnao.003	1550	128	10000	16.00	242144	25-Apr-95	07:33:30 AM	Corning 340	340M-14	Singlemode	
5naoitg.003	1550	256	10000	16.00	242144	19-Apr-95	11:08:31 AM	Corning 340	340M-14	Singlemode	
5itgnao.004	1550	128	10000	16.00	242144	25-Apr-95	07:42:34 AM	Corning 340	340M-14	Singlemode	
5anaoitg.004	1550	256	10000	16.00	242144	19-Apr-95	11:23:57 AM	Corning 340	340M-14	Singlemode	
5itgnao.005	1550	128	10000	16.00	242144	25-Apr-95	07:51:54 AM	Corning 340	340M-14	Singlemode	
5naoitg.005	1550	256	10000	16.00	242144	19-Apr-95	11:39:24 AM	Corning 340	340M-14	Singlemode	
5itgnao.006	1550	128	10000	16.00	242144	25-Apr-95	07:59:51 AM	Corning 340	340M-14	Singlemode	
5anaoitg.006	1550	256	10000	16.00	242144	19-Apr-95	11:57:04 AM	Corning 340	340M-14	Singlemode	

Sample Traces		Trace Summary Report					Cable : ITG-NAO		Trace List : all.trl		
										20-Oct-00	
Cable : ITG-NAO    ITG <--> NAO											
Utica Site ITG <--> Syracuse Site NAO											
Trace	End (km)	End-End Loss(dB)	ORL (dB)	IOR	Horizontal Shift (km)	Vertical Shift (dB)	Back Scatter Coeff(dB)	Trace Flags	Type		
5itgnao.001	86.6122	18.15	N/A	1.464000			-83.0	F	T5(T5)		
5naoitg.001	86.5958	18.78	N/A	1.464000			-83.0	F	T5(T5)		
5itgano.002	86.5958	18.89	N/A	1.464000			-83.0	F	T5(T5)		
5naoitg.002	86.5630	18.06	N/A	1.464000			-83.0	F	T5(T5)		
5itgnao.003	86.6122	17.90	N/A	1.464000			-83.0	F	T5(T5)		
5naoitg.003	86.5794	17.76	N/A	1.464000			-83.0	F	T5(T5)		
5itgnao.004	86.6122	18.11	N/A	1.464000			-83.0	F	T5(T5)		
5naoitg.004	86.5794	18.11	N/A	1.464000			-83.0	F	T5(T5)		
5itgnao.005	86.6122	17.82	N/A	1.464000			-83.0	F	T5(T5)		
5naoitg.005	86.5630	17.84	N/A	1.464000			-83.0	F	T5(T5)		
5itgnao.006	86.6122	18.00	N/A	1.464000			-83.0	F	T5(T5)		
5naoitg.006	86.5794	17.99	N/A	1.464000			-83.0	F	T5(T5)		

# Appendix C-2: Exception Report

Sample Traces	Exception Report		Cable : Trace List : all.TRL 18-Oct-00
Primary Trace: 5itgnao.001			
<hr/>			
Different than Primary			
X Wavelength	X Backscatter Coefficient	X Optics Module	
X Range	X Analysis Thresholds	X Header Type	
X Resolution	X ORL Parameters	X Patch Cord Setup	
X Pulse Width	X Trace Format	X Smooth	
X IOR	X Instrument		
Different than Primary by > X%			
End Location 2.00	Event Location 2.00 1.0000 km		
X End-to-End Loss 10.00	Horizontal Shift 4.00		
ORL 10.00			
Events			
# Splices >0	X Loss Outside -0.25 -> 0.25 dB		
None	X Loss not Splice Loss		
X Unusual End	X Unusual Non-End		
User Created	X Reflective Splice		
User Edited	Span Loss > 0.40 dB/1m		
Miscellaneous			
Averages <2048	X Duplicate Waveform		
X Unusual Traces			
Trace	Exception	Information	
<hr/>			
5itgnao.001	Events : Loss Outside	33.0263(0.40)	
5naoitg.001	Range	256 km	
5naoitg.001	Events : Loss Outside	41.4467(0.25)	
5naoitg.001	Events : Loss Outside	72.1795(0.32)	
5itgnao.002	Events : Loss Outside	14.4982(0.27)	
5naoitg.002	Events : Loss Outside	70.3120(0.29)	
5itgnao.002	Range	256 km	
5naoitg.002	Events : Loss Outside	6.2907(0.36)	
5naoitg.002	Events : Loss Outside	29.4550(0.35)	
5naoitg.003	Events : Loss Outside	63.8411(0.27)	
5itgnao.003	Range	256 km	
5naoitg.004	Events : Loss Outside	6.9296(0.34)	
5itgnao.004	Events : Loss Outside	26.7356(0.29)	
5naoitg.004	Events : Loss Outside	63.8411(0.37)	
5itgnao.004	Range	256 km	
5naoitg.004	Events : Loss Outside	16.3821(0.35)	
5itgnao.004	Events : Loss Outside	25.0482(0.28)	
5naoitg.004	Events : Loss Outside	53.6186(0.33)	
5itgnao.004	Events : Loss Outside	72.1959(0.49)	
5naoitg.005	Range	256 km	
5itgnao.006	Events : Loss Outside	45.2965(0.26)	
5naoitg.006	Range	256 km	



Appendix C-3: Bi-Directional Splice Loss Report

Sample Traces		Bi-Directional Report						Cable : ITG-NAO				
		Correlation % : 4.00						Trace List : all.trl				
								20-Oct-00				
Cable : ITG-NAO		ITG <--> NAO										
		Utica Site ITG <--> Syracuse Site NAO										
Fiber Number : 001		5ITGNAO.001						5NAOITG.001				
		ITG --> NAO						NAO --> ITG				
								Wavelength(nm) : 1550				
Event #	Event Type	Loc (km)	Splice Loss(dB)	Span Loss (dB/km)	Reflect (dB)	Event Type	Loc (km)	Splice Loss(dB)	Span Loss (dB/km)	Reflect (dB)	Average Splice Loss(dB)	
1	N	6.8641	-0.12	0.206		E	86.5958	0.197	0.197	-19.01	0.05	
2	N	14.4982	0.24	0.203		N	79.8464	0.22	0.207		0.28	
3	N	26.7028	-0.13	0.199		N	72.1795	<b>0.32</b>	0.198		0.04	
4	N	33.0263	<b>0.40</b>	0.203		N	59.9913	0.21	0.203		0.10	
5	N	45.2000	-0.01	0.213		N	53.6350	-0.20	0.211		0.12	
6	N	57.1080	-0.10	0.200		N	41.4467	<b>0.25</b>	0.202		0.07	
7	N	61.6131	0.22	0.203		N	29.4878	0.23	0.204		0.06	
8	N	63.7264	-0.06	0.210		N	24.9336	-0.10	0.196		0.05	
9	N	70.3000	0.04	0.205		N	22.8367	0.16	0.207		0.02	
10	N	80.4000	0.04	0.202		N	16.3031	0.00	0.212		0.01	
11	N	86.6122		0.200	-22.89	N	6.1012	-0.02	0.204			
Column Average		0.05										0.08
End to End Loss		18.15										18.47
ORL		N/A										N/A



Appendix C-4: Bi-Directional Splice Loss Summary Report

Sample Test Traces		Bi-Dir Splice Loss Summary Report										Cable : ITG-NAO	
												Trace List : all.trl	
Reference : stitgano.trc		ITG --> NAO		Correlation % : 4.00		20-Oct-00		Wavelength(nm) : 1550					
		Utica Site		ITG <--> Syracuse Site		NAO							
Splice Number / ITG-->NAO Loc(km) / NAO-->ITG Loc(km)													
Fiber Number	001	002	003	004	005	006	007	008	009	010			
	6.80	14.40	26.70	33.00	45.20	57.10	61.50	63.70	70.30	80.40		End-	
	79.81	72.21	59.91	53.61	41.41	29.51	25.11	22.91	16.31	6.21	Avg	Max	
001	0.05	<b>0.28</b>	0.04	0.10	0.12	0.07	0.06	0.05	0.02	0.01	0.08	<b>0.28</b>	
002	0.01	0.09	0.04	0.04	0.06	0.07	0.04	0.04	0.04	0.11	0.06	0.01	
003	0.02	0.02	0.02	0.08	0.04	0.04	0.05	<b>0.15</b>	0.09	0.03	0.05	0.02	
004	0.07	<b>0.24</b>	0.04	0.14	0.04	0.03	0.10	0.10	0.06	0.05	0.09	0.03	
005	0.04	0.04	0.13	0.04	0.08	0.03	0.10	0.03	0.02	0.03	0.05	0.02	
006	0.02	0.13	0.02	0.03	0.05	0.02	0.07	0.03	0.12	0.02	0.05	0.02	
Average	0.04	0.13	0.05	0.07	0.07	0.04	0.07	0.07	0.06	0.04	0.06		
Min	0.01	0.02	0.02	0.03	0.04	0.02	0.04	0.03	0.02	0.01	0.01		
Max	0.07	<b>0.28</b>	0.13	0.14	0.12	0.07	0.10	<b>0.15</b>	0.12	0.11		<b>0.28</b>	
												18.47	
												17.98	
												17.83	
												18.11	
												17.83	
												17.99	
												18.03	
												17.83	
												18.47	

Sample Test Traces	Bi-Dir Splice Loss Summary Report	Cable : ITG-NAO
		Trace List : all.trl
		20-Oct-00
Reference : stitgano.trc	ITG → NAO	Wavelength(nm) : 1550

Fiber Number to Trace File Mapping

- 001 : 5itgnao.001
- 5naoitg.001
- 002 : 5itgnao.002
- 5naoitg.002
- 003 : 5itgnao.003
- 5naoitg.003
- 004 : 5itgnao.004
- 5naoitg.004
- 005 : 5itgnao.005
- 5naoitg.005
- 006 : 5itgnao.006
- 5naoitg.006

Appendix C-5: 1-Directional Splice Loss Summary Report

Sample Test Traces	1-Dir Splice Loss Summary Report	Cable : ITG-NAO
		Trace List : all.trl
		20-Oct-00
Reference : stigano.trc	ITG → NAO	Wavelength(nm) : 1550
	Correlation % : 4.00	
	Length : 86.6122 km	

Cable : ITG-NAO    ITG <→ NAO  
Utica Site ITG <→ Syracuse Site NAO

Splice Number / ITG→NAO Loc(km)													
Fiber Number	001	002	003	004	005	006	007	008	009	010	Avg	Min	Max
001	-0.12	0.24	-0.13	<b>0.40</b>	-0.01	-0.10	0.06	-0.06	0.04	0.04	0.05	-0.13	<b>0.40</b>
002	-0.02	<b>0.27</b>	-0.11	0.11	0.24	-0.21	0.04	0.04	<b>0.29</b>	-0.14	0.05	-0.21	<b>0.29</b>
003	-0.06	0.06	-0.04	0.21	0.11	-0.10	0.05	<b>0.27</b>	0.03	0.11	0.06	-0.10	<b>0.27</b>
004	<b>0.34</b>	-0.01	<b>0.29</b>	-0.05	0.15	0.09	0.10	<b>0.37</b>	-0.23	-0.03	0.08	-0.23	<b>0.37</b>
005	0.10	-0.01	0.23	0.03	0.14	-0.08	0.10	0.05	-0.16	0.09	0.05	-0.16	0.23
006	-0.01	0.14	0.01	-0.04	<b>0.26</b>	-0.04	0.07	-0.07	0.11	0.11	0.06	-0.07	<b>0.26</b>
Average	0.04	0.11	0.04	0.11	0.15	-0.07	0.07	0.10	0.01	0.03	0.06		
Min	-0.12	-0.01	-0.13	-0.05	-0.01	-0.21	0.04	-0.07	-0.23	-0.14		-0.23	
Max	<b>0.34</b>	<b>0.27</b>	<b>0.29</b>	<b>0.40</b>	<b>0.26</b>	0.09	0.10	<b>0.37</b>	<b>0.29</b>	0.11			<b>0.40</b>

End-End(dB)	18.15	17.89	17.90	18.11	17.82	18.00		17.98	17.82	18.15
-------------	-------	-------	-------	-------	-------	-------	--	-------	-------	-------

Sample Test Traces	1-Dir Splice Loss Summary Report	Cable : ITG-NAO
Reference : stitgano.trc	ITG → NAO	Trace List : all.trl
		20-Oct-00
	Correlation % : 4.00	Wavelength(nm) : 1550
	Length : 86.6122 km	

Fiber Number to Trace File Mapping

- 001 : 5itgnao.001
- 002 : 5itgnao.002
- 003 : 5itgnao.003
- 004 : 5itgnao.004
- 005 : 5itgnao.005
- 006 : 5itgnao.006

Appendix C-6: Fiber Acceptance Report

Sample Traces		Fiber Acceptance Report						Cable : ITG-NAO	
		Wavelength(nm) : 1550						Trace List : all.trl	
								20/10/00	
Cable : ITG-NAO    ITG <--> NAO									
Utica Site ITG <--> Syracuse Site NAO									
A=ITG    B=NAO									
Fiber Number	End-to-End			Avg Length (km)	Avg Loss dB/km	Non-Connector Event Average		ORL	ORL
	Loss	Loss	Loss			Loss	Loss		
	Avg	A->B	B->A	Abs Diff		A->B	B->A	A->B	B->A
001	18.46	18.15	18.78	0.64	0.213	0.05	0.11	N/A	N/A
002	17.98	17.89	18.06	0.17	0.208	0.05	0.06	N/A	N/A
003	17.83	17.90	17.76	0.14	0.206	0.06	0.05	N/A	N/A
004	18.11	18.11	18.11	0.00	0.209	0.08	0.09	N/A	N/A
005	17.83	17.82	17.84	0.02	0.206	0.05	0.06	N/A	N/A
006	18.00	18.00	17.99	0.01	0.208	0.06	0.05	N/A	N/A
Average	18.04	17.98	18.09	0.16	0.208	0.06	0.07		0.06
Min	17.83	17.82	17.76	0.00	0.206	0.05	0.04		0.05
Max	18.46	18.15	18.78	0.64	0.213	0.08	0.11		0.09

Sample Traces	Fiber Acceptance Report	Cable : ITG-NAO
	Wavelength(nm) : 1550	Trace List : all.tr
		20/10/00

Fiber Number to Trace File Mapping

- 001 : 5itgnao.001
- 5naoitg.001
- 002 : 5itgnao.002
- 5naoitg.002
- 003 : 5itgnao.003
- 5naoitg.003
- 004 : 5itgnao.004
- 5naoitg.004
- 005 : 5itgnao.005
- 5naoitg.005
- 006 : 5itgnao.006
- 5naoitg.006



Appendix C-7: Power Meter Report

Power Meter Report		
D:\traces\itgnao\itgnao.pmt		
20/10/00		
Cable ID : ITGNAO		Operator : DLW
Fiber ID : 001-006		Comment : Sample Traces
Meter Loc : Utica Site ITG		Date : 10/10/00
Source Loc : Syracuse Site NAO		Time : 02:47:00 PM

WaveL	1310	1550
Ref	-02.11	-02.24
Thres	-14.00	-14.00
1	-12.61	-12.79
2	-12.34	-12.27
3	-11.97	-12.03
4	-12.08	-12.13
5	<b>-15.31</b>	<b>-15.40</b>
6	-12.25	-12.30
Min	<b>-15.31</b>	<b>-15.40</b>
Max	-11.97	-12.03
Avg	-12.76	-12.82

WaveL	1310	1550
Ref	-02.11	-02.24
Thres	-14.00	-14.00

WaveL	1310	1550
Ref	-02.11	-02.24
Thres	-14.00	-14.00

# Appendix C-8: Smart Splice Template Report

Smart Splice Template Report

Date: 25-Oct-00 Time: 07:50:44 AM

Smart Splice Template Trace : C:\ITGNAO\5itgnao.sst

Number of Splices : 50  
 Loss Threshold(dB) : 0.100  
 Min Frequency : 1

X Adjust for Helix Factor  
 X Event Frequency into Waveform

Event Number	Loss Mode	Event Type	Cable Event		Frequency	Trace	Location (km)	Width (km)	Loss (dB)
			Location (km)	Width (km)					
1	Splice Loss	Non-Reflective	6.8313	1.1631	3	5itgnao.005	6.8313	1.0648	0.10
						5itgnao.001	6.8641	1.0648	-0.12
						5itgnao.004	6.9296	1.0648	0.34
2	Splice Loss	Non-Reflective	14.4818	1.0812	3	5itgnao.006	14.4818	1.0648	0.14
						5itgnao.001	14.4982	1.0648	0.24
						5itgnao.002	14.5009	1.0650	0.27
3	Splice Loss	Non-Reflective	26.7028	1.1304	4	5itgnao.001	26.7028	1.0648	-0.13
						5itgnao.005	26.7356	1.0648	0.23
						5itgnao.004	26.6356	1.0648	0.29
						5itgnao.002	26.7734	1.0650	-0.11
4	Splice Loss	Non-Reflective	33.0263	1.0976	3	5itgnao.001	33.0263	1.0648	0.40
						5itgnao.002	33.0326	1.0650	0.11
						5itgnao.003	33.0591	1.0648	0.21
5	Splice Loss	Non-Reflective	45.2310	1.1304	5	5itgnao.005	45.2310	1.0648	0.14
						5itgnao.003	45.2474	1.0648	0.11
						5itgnao.004	45.2638	1.0648	0.15
						5itgnao.002	45.2723	1.0650	0.24
						5itgnao.006	45.2965	1.0648	0.26
6	Splice Loss	Non-Reflective	57.1080	1.1467	2	5itgnao.001	57.1080	1.0648	-0.10
						5itgnao.002	57.2007	1.0650	-0.21
7	Splice Loss	Non-Reflective	61.5967	1.0812	2	5itgnao.006	61.5967	1.0648	0.12
						5itgnao.001	61.6131	1.0648	0.22
8	Splice Loss	Non-Reflective	63.8411	1.0648	2	5itgnao.003	63.8411	1.0648	0.27
						5itgnao.004	63.8411	1.0648	0.37
9	Splice Loss	Non-Reflective	70.2956	1.0812	4	5itgnao.004	70.2956	1.0648	-0.23
						5itgnao.005	70.2956	1.0648	-0.16
						5itgnao.006	70.3120	1.0648	0.11
						5itgnao.002	70.3253	1.0650	0.29
10	Splice Loss	Non-Reflective	80.4197	1.9822	3	5itgnao.003	80.4197	1.9822	0.11
						5itgnao.006	80.4361	1.0648	0.11
						5itgnao.002	80.4841	1.0650	-0.14

10 Shortest and 10 Longest Traces

End Location	Trace
86.5958	5itgnao.002
86.6122	5itgnao.001
86.6122	5itgnao.003
86.6122	5itgnao.004
86.6122	5itgnao.005
86.6122	5itgnao.006

## Appendix D: Report File Formats

- D-1 PC-3000 Splice Template and Batch Process Report File
- D-2 FORMS Splice Template Report File
- D-3 Batch Process SoftView Plus<sup>™</sup> Emulation Software Report File

# Appendix D-1: PC-3000 Splice Template and Batch Process Report File

The PC-3000 Report File, generated by the Batch Process and Apply Splice Template features, is an ASCII file that you can import into a spreadsheet. It contains an identification header on the first line followed by information for each trace event, one line per event (which may be extremely long):

Trace Filename	
Date	Date the trace was taken.
Time	Time the trace was taken.
Event Number	1,2,3...
Event Type	"N" for Non-reflective.
	"R" for Reflective.
	"G" for Group.
	"E" for End.
Start Distance	in Km.
End Distance	in Km (= 0 for a non-grouped event).
Attenuation Loss	Loss of the fiber section, up to the event, in dB.
Attenuation Loss per Km	Loss of the fiber section, up to the event, in dB/Km.
Splice Loss	Loss of the event, in dB.
Reflectance	Reflectance of the event, in dB.
Cumulative Loss	Total Loss up to the event, in dB.
Flags	">S" for saturated reflectance.
	">" for potentially inaccurate or clamped reflectance.
	"?" for end of fiber out of distance or dynamic range.
	"2" for 2-Point loss.
Comment	

The following example shows a three line sample from a PC-3000 Report File (with line wrap).

```
"Trace Name","Date","Time","No","Type","Start","End","Atten Loss",  
"A L dB/Km","Splice Loss","Refl","Cum Loss","Flags","Comments"  
"5itgnao.001","05/08/95","11:06 AM",1,"N", 6.8800, 0.0000,1.40,0.20,  
-0.12,0.00,1.40,"",""  
"5itgnao.001","05/08/95","11:06 AM",2,"N", 14.4500, 0.0000,1.54,0.20,  
0.23,0.00,2.82,"",""
```

## Appendix D-2: FORMS Splice Template Report File

The Apply FAS Template FORMS Report File is an ASCII file that you can import into the FORMS Program or a spreadsheet. It contains the following information for each trace, on one line per event (which may be extremely long):

Trace Filename	
Date	Date the trace was taken.
Time	Time the trace was taken.
Event Number	1,2,3...
Event Type	"N" for Non-reflective. "R" for Reflective. "G" for Group. "E" for End.
Start Distance	in Km.
End Distance	in Km (= 0 for a non-grouped event).
Attenuation Loss	Loss of the fiber section, up to the event, in dB.
Attenuation Loss per Km	Loss of the fiber section, up to the event, in dB/Km.
Splice Loss	Loss of the event, in dB.
Reflectance	Reflectance of the event, in dB.
Cumulative Loss	Total Loss up to the event, in dB.
Flags	">S" for saturated reflectance. ">" for potentially inaccurate or clamped reflectance. "? " for end of fiber out of distance or dynamic range. "2" for 2-Point loss.
Comment	
Latitude	
Longitude	

Range	OTDR range setting, in Km.
Resolution	OTDR resolution setting, in meters.
Pulse Width	in nanoseconds.
Wavelength	in nanometers.
Index of Refraction	
Averages	Number of samples averaged.
ORL Clip Indicator	"<" indicates clipped.
ORL	Optical Return Loss.
ORL Saturation Indicator	"S" indicates saturation.
OTDR Product Name	

The following example shows a three line sample FORMS Report File (three lines shown per file line).

```
"5itgnao.001","05/08/95","11:06 AM", 1,"N", 6.8800, 0.0000,1.40,0.20,
-0.12,0.00,1.40,"","","","",128.0,16.0000,10000,1550,1.464000,262144,
"< ",32.66,"S","Corning 340"
```

```
"5itgnao.001","05/08/95","11:06 AM", 2,"N", 14.4500,0.0000,1.54,0.20,
0.23,0.00,2.82,"","","","",128.0,16.0000,10000, 1550,1.464000,262144,
"< ",32.66,"S","Corning 340"
```

```
"5itgnao.001","05/08/95","11:06 AM", 3,"N", 26.7300, 0.0000,2.44,
0.20,-0.11,0.00,5.50,"","","","",128.0,16.0000,10000,1550,1.464000,
262144,"< ",32.66,"S","Corning 340"
```

---

## NOTE

Note that the report format is exactly the same as the FORMS/PC-3000 FAS Template Report File format.

---

# Appendix D-3: Batch Process SoftView Plus Emulation Software Report File

The Batch Process SoftView Plus Emulation Software Report File is an ASCII file that can be imported to a spreadsheet. It contains the following information for each trace event, one line per event (which may be extremely long):

Trace Filename	
Date	Date the trace was taken.
Time	Time the trace was taken.
Event Number	1,2,3...
Event Type	"N" for Non-reflective. "R" for Reflective. "G" for Group. "E" for End.
Start Distance	in Km.
End Distance	in Km (= 0 for a non-grouped event).
Attenuation Loss	Loss of the fiber section, up to the event, in dB.
Attenuation Loss per Km	Loss of the fiber section, up to the event, in dB/Km.
Splice Loss	Loss of the event, in dB.
Reflectance	Reflectance of the event, in dB.
Cumulative Loss	Total Loss up to the event, in dB.
Flags	">S" for saturated reflectance. ">" for potentially inaccurate or clamped reflectance. "? " for end of fiber out of distance or dynamic range. "2" for 2-Point loss.
Comment	
Latitude	
Longitude	



Range	OTDR range setting, in km.
Resolution	OTDR resolution setting, in meters.
Pulse Width	in nanoseconds.
Wavelength	in nanometers.
Index of Refraction	
Averages	Number of samples averaged.

The following example shows a three line sample from a Batch Process SoftView Plus Emulation Software Report File.

```
"5itgnao.001","05/08/95","11:06 AM", 1,"N", 6.8641, 0.0000,1.40,0.20,
- 0.12,0.00,1.40,"", "", "", "",128.0,16.0000,10000,1550,1.464000,262144

"5itgnao.001","05/08/95","11:06 AM", 2,"N", 14.4982, 0.0000,1.55,0.20,
0.23,0.00,2.83,"", "", "", "",128.0,16.0000,10000,1550,1.464000,262144

"5itgnao.001","05/08/95","11:06 AM", 3,"N", 26.7028, 0.0000,2.43,0.20,
-0.13,0.00,5.49,"", "", "", "",128.0,16.0000,10000,1550,1.464000,262144
```

---

#### **NOTE**

Note that the report format is exactly the same as the FORMS/PC-3000 FAS ASCII Report File format.

---



## Appendix E: Collecting Traces

The accuracy of various splice loss reports depends on the selection of OTDR (e.g. Corning Optical Multitester 500 with an OTDR module, or Corning Cable Systems 340 OTDR Plus™ Multitester II) parameters which provide low noise and good analysis results. It is also important to use the same “optimal” OTDR settings for all the traces taken on a cable's fibers.

Prior to taking any traces, it is recommended that you do the following:

- Use a consistent DOS base 8.3 filename convention such that the filename includes from/to location codes, wavelength, and fiber number. The fiber number should always have the same number of decimal characters (use leading 0s). Fiber numbering should begin with 1 and increase by 1 for each additional fiber. For example, 5ITGNAO.006 indicates a trace taken at 1550 wavelength from ITG to NAO, on fiber number 6.
- Look up and use the correct index of refraction and backscatter coefficient for the cable.
- If known, record the cable's splice locations.
- Make sure all connectors are clean.
- If you want to report connector losses or detect close in events, then consider using a start and/or end patch cord.

To begin the trace collection process, do the following:

1. Determine the optimal test parameters for the cable, relative to your goals. Reduce trace noise as much as possible. Find the range, resolution, pulse width, and number of averages that work the best for your requirements. Set up your analysis parameters to provide good event and end detection.
2. Set up the view, A/B cursor locations, and loss mode to be saved. Ideally, save traces with the view at display from origin, showing the full trace, the “A” cursor just after the launch, the “B” cursor just before the fiber end, and the loss mode set to **Splice** or **2-Point Loss**.
3. If you use a start patch cord, be sure to horizontally shift it out. If you want to view the connector loss, then shift the trace so that the

connector event is close to, but greater than, 0 distance. Otherwise, shift the connector event to just below 0 distance.

---

**NOTE**

Use the same parameter settings for all traces on fibers of the same type in a cable, including wavelength, range, resolution, pulse width, index of refraction, horizontal/vertical shift, view, A/B cursor locations, loss mode, analysis parameters, backscatter coefficient, filename convention, and header.

---

Some trace parameters, such as IOR and horizontal shift, may be modified using the SoftView Plus<sup>™</sup> emulation software batch process function. However, if traces are shot with an inappropriate wavelength, pulse width, range, resolution, or patch cord setup, then the only option is to reshoot the traces.

## Appendix F: Data Preparation

### Data Consistency and the Exception Report

Data used in any batch or automated process (such as Bi-Directional Splice Loss Summary Report generation) must be consistent. Traces taken at different settings, using different patch cord lengths, etc., can adversely affect the process.

#### CAUTION

---

Mixing wavelengths and direction causes unpredictable results.

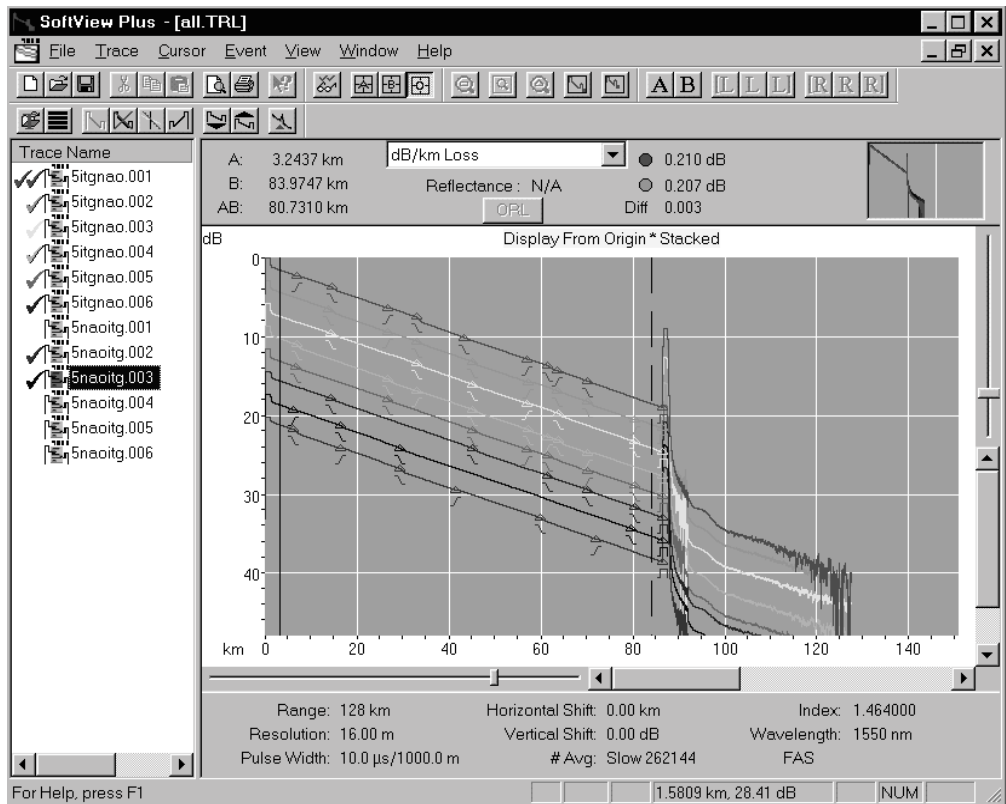
---

It is very important to perform *visual inspection* and run an Exception Report (both detailed in this appendix) before proceeding with the smart template or any other batch analysis function. This insures that the data used is complete and consistent.

### Visual Inspection

Visual inspection of each and every trace in a trace list is an easy process with SoftView Plus<sup>™</sup> emulation software.

1. Select **File>Preferences>Display**.
2. Set the batch size to 8, check **Keep Primary**, and click **OK**.
3. With no traces displayed, click the **Next Batch** icon. The first 8 traces will be displayed and traces 2-8 can be visually compared to the *Primary* trace (which is assumed to be a “golden” trace).
4. Click the **Next Batch** icon again to see the next seven traces and visually compare them to the Primary.
5. Repeat this process until all traces have been inspected. Remove or replace any traces that have obvious problems from the trace list by using the Trace/Remove menu item.



*Figure F-1: Visual Inspection of Traces in a Trace List*

Visual inspection of trace data is very important - traces shown are “stacked” to show individual detail. Viewing traces without the “stack” option is also useful when comparing the launch level of each trace to a “golden” trace.

## Exception Report

The SoftView Plus Emulation Software Exception Report (see Section 10.3 ) should be run on all traces and any traces reported as exceptions can be removed from the list of selected files.

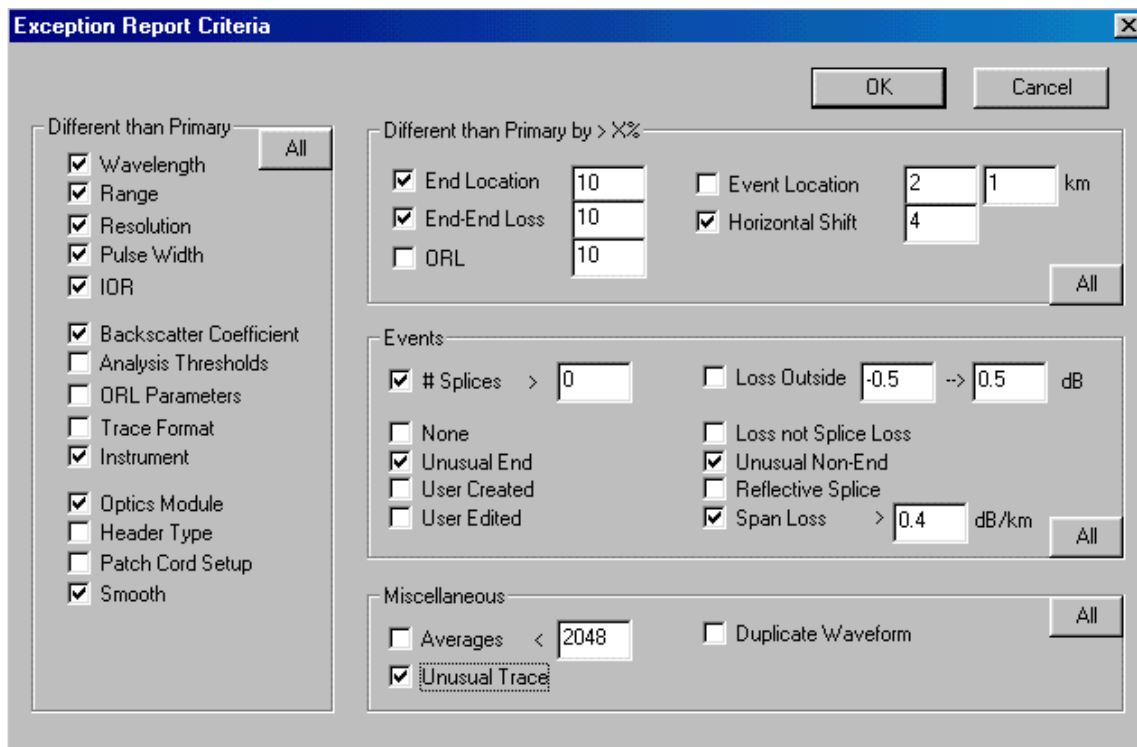
1. Make the first trace in the list the *primary* trace.
2. Verify that this trace is representative of the cable and that it was obtained with the proper OTDR settings as this trace will be used as the basis of comparison for all other selected traces.
3. Click the **Select All** icon to select (highlight) all traces.
4. Select **File>Print** (or **Print Preview**).
5. Select **Report** and click **OK**.
6. Select **Exception Report** and click **OK**.
7. Select the desired criteria in the Exception Report dialog box (Figure F-2) and click **OK**.

---

### NOTE

For some tests, the Exception Report assumes the current primary trace is a “golden” trace and all other traces are compared to the primary trace. Other tests, such as span loss, are compared to an absolute number and do not make use of the primary trace.

---



*Figure F-2: Exception Report Dialog Box*

### CAUTION

Any traces reported by the Exception Report as exceptions should be reviewed and can be removed from the trace list before proceeding with automated processing.



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