User Guide

FastReporter 3

Post-Processing Software

www.EXFO.com

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1 Introducing FastReporter 3

FastReporter 3 is an advanced management, analysis, and reporting tool for many types of optical tests, including the following:

- optical loss
- optical return loss (ORL)
- optical time-domain refractometer (OTDR)
- polarization mode dispersion (PMD)
- chromatic dispersion (CD)
- optical and PON power meters (OPM/PPM)
- fiber inspection probe (FIP)
- intelligent optical link mapper (iOLM)
- optical fiber multimeter (OFM)

Note: *Depending on the platform you are using, some test modes may not be available.*

Available Features

Depending on the plan you have purchased, you can access two application levels: Basic, which has limited features, and Plus, which has the features of the Basic version, plus includes fiber characterization loopback, and the Validator. Depending on which version you are using, the features in the table below are available or not.

Note: *For clarity purposes, only the Plus plan is mentioned in this user documentation, but the Enterprise and Ultimate TestFlow plans also allow access to the Plus version features.*

Note: *A feature with an "*" mark indicates that the modification is allowed for single measurements.*

The table below lists the features available for the Basic and Plus TestFlow plans. If you are using a USB license, the Validator and TestFlow options are not available. If you remove your USB key dongle, only the Basic mode features are available.

Feature	OTDR	iOLM	OFM	OLTS	FIP	PPM	CD	PMD
Basic Version								
Analyzing or reanalyzing measurements*	✔	✔	–	–	–	–	–	–
Applying sorting to other windows	✔	✔	✔	✔	✔	✔	✔	✔
Changing analysis range	–	–	–	–	–	–	✔	–
Changing event marker position on existing events	✔	–	–	–	–	–	–	–
Changing fiber length	–	–	–	–	–	–	✔	✔
Changing fiber type	–	–	–	✔	–	–	✔	–
Changing number of connections in link definition	–	–	–	✔	–	–	–	–
Changing number of splices in link definition	–	–	–	✔	–	–	–	–
Changing graphic display options	✔	–	–	–	✔	–	–	–
Editing measurement identification and summary information*	✔	✔	✔	✔	✔	✔	✔	✔
Exporting file to other file format*	✔	–	–	–	–	–	–	–
Generating reports using the application's format	✔	✔	–	–	✔	–	–	–
Managing OTDR events	✔	–	–	–	–	–	–	–
Managing power meter results	–	✔	✔	–	–	✔		

Feature	OTDR	iOLM	OFM	OLTS	FIP	PPM	CD	PMD
Matching link elements with and without reference	–	✔	✔	–	–	–	–	–
Merging measurement files	–	–	–	✔	–	–	–	–
Retrieving marker position from file	✔	–	–	–	–	–	–	–
Saving measurement files	✔	✔	✔	✔	✔	✔	✔	✔
Setting FasTesT pass/fail thresholds	–	–	–	✔	–	–	–	–
Setting FIP results table options	–	–	–	–	✔	–	–	–
Setting FIP thresholds table options	–	–	–	–	✔	–	–	–
Setting ORL pass/fail thresholds (singlemode only)	–	–	–	✔	–	–	–	–
Setting OTDR event table options	✔	–	–	–	–	–	–	–
Setting spans position to modify the IOR value*	✔	–	–	–	–	–	–	–
Setting span positions with absolute length*	✔	–	–	–	–	–	–	–
Toggling between curve types	–	–	–	–	–	–	✔	–
Using custom identifiers	–	–	–	✔	✔	–	–	–
Using zoom functions	✔	–	–	–	–	–	–	–
Viewing failed measurements only	✔	✔	–	–	–	–	–	–
Viewing FasTesT results	–	–	–	✔	–	–	–	–
Viewing files in the Identifier tab								
Viewing measurement information	✔	✔	✔	✔	✔	✔	✔	✔
Viewing power meter result files	–	–	–	✔	–	–	–	–

Feature	OTDR	iOLM	OFM	OLTS	FIP	PPM	CD	PMD
Viewing thresholds	✔	✔	✔	✔	–	–	–	–
Viewing and sorting files or measurements	✔	✔	✔	✔	✔	✔	✔	✔
Working with multimode fibers	–	✔	–	–	–	–	–	–
Working with PMD statistic measurements	–	–	–	–	–	–	–	✔

Feature	OTDR	iOLM	OFM	OLTS	FIP	PPM	CD	PMD
Plus Version								
Applying an OTDR reference as a template	✔	–	–	–	–	–	–	–
Changing correction factor	–	–	–	–	–	✔	–	–
Changing fiber core size*	✔	✔	–	–	–	–	–	–
Changing main measurements	✔	–	–	–	–	–	–	–
Changing identifier labels	–	✔	✔	–	–	–	–	–
Changing iOLM thresholds	–	✔	–	–	–	–	–	–
Changing settings	✔	✔	–	✔	–	✔	✔	✔
Creating bidirectional files	✔	✔	–	–	–	–	–	–
Creating configuration files	–	✔	–	–	–	✔	–	–
Creating unidirectional files from a bidirectional file	✔	–	–	–	–	–	–	–
Generating SOR file from iOLM measurement	–	✔	–	–	–	–	–	–
Generating text file from measurement	✔	✔	–	–	–	–	–	–
Managing iOLM elements	–	✔	✔	–	–	–	–	–
Managing measurement files	✔	✔	✔	✔	✔	✔	✔	✔
Managing projects and project templates	✔	✔	✔	✔	✔	✔	✔	✔
Managing reports and report templates	✔	✔	✔	✔	✔	✔	✔	✔
Matching files	✔	✔	✔	✔	✔	✔	✔	✔
Performing loopback tests	✔	–	–	–	–	–	–	–

Feature	OTDR	iOLM	OFM	OLTS	FIP	PPM	CD	PMD
Setting launch fiber and receive fiber on element*	–	✔	–	–	–	–	–	–
Setting reference file or measurement	✔	✔	✔	✔	✔	✔	✔	✔
Using Auto template mode	✔	✔	_	–	–	–	–	–
Using clipboard	✔	✔	✔	✔	✔	✔	✔	✔
Using EXFO Connect to manage files								
Using the Validator for measurement and file compliance (not available for USB licenses)	✔	✔	_	–	✔	–	–	–
Viewing and editing TestFlow job files and measurements (not available for USB licenses)	–	✔	_	–	✔	✔	–	–
Viewing files in FTTx mode	–	✔	_	–	–	–	–	–
Viewing iOLM settings	–	✔	_	–	–	–	–	–

Note: *Files coming from older OTDR modules may not be compatible with the 64-bit version.*

Note: *OLTS file management is not available for FTB-1v2. Files earlier than those coming from the MAX-900 series may not be compatible with the 64-bit version.*

Note: *FTB-5800 files are not available for FTB-1v2.*

Note: *FTB-5500 files are not available for FTB-1v2 or compatible with the 64-bit version.*

Conventions

Before using the product described in this guide, you should understand the following conventions:

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in *death or serious injury*. Do not proceed unless you understand and meet the required conditions.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in *minor or moderate injury*. Do not proceed unless you understand and meet the required conditions.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in *component damage*. Do not proceed unless you understand and meet the required conditions.

IMPORTANT

Refers to information about this product you should not overlook.

2 Getting Started with FastReporter 3

If you are using FastReporter 3 on a platform, it is usually pre-installed on your unit. If it is not already installed, you can install it yourself through Update Manager. Refer to the Update Manager documentation for details.

If you are using FastReporter 3 on a computer, the latter needs to meet the requirements, depending on which operation system you are using:

System Element	Particulars
Processor	Minimum 1 Ghz
OS	Windows 10 and Windows 11
Internet Browser	Microsoft Edge Browser (Chromium)
RAM	➤ Minimum 1 GB for 32-Bit FastReporter ➤ Minimum 2 GB for 64-bit FastReporter We recommend 4 GB for 64 bit FastReporter
Disk Space	➤ Minimum 16 GB for 32-Bit FastReporter ➤ Minimum 20 GB for 64-Bit FastReporter
Other requirements	Microsoft Office 2007 or later to open .xlsx files

Installing and Uninstalling FastReporter 3 on a PC

The installation wizard will guide you through the installation step by step. The application is available in two versions:

- 32-bit: Contains all test modes and file formats.
- 64-bit: Allows you to process more measurements and reports, but older files formats, such as power meter (FOT-930), CD, and PMD (FTB-5500, FTB-5700 and FTB-5800) are not supported.You can let the wizard install the complete package, or you can select a custom installation if you want to skip installing the USB key management system.

To install FastReporter 3:

1. Download the application from the EXFO website if you have not done so already, then locate the setup.exe application and double-click on it to start the process.

2. Agree the license agreement and then click **Next** to start the installation.
3. Follow the on-screen instructions. Click **Finish** once the installation is done.

Note: *If you are installing the 64-bit version, the application may ask you to restart your system.*

To uninstall FastReporter 3:

Use the add/remove programs(Apps and Features) to uninstall FastReporter 3

Note: *The FastReporter 3 application is also available for the EXFO testing devices. Use the Update Manager tool on the testing device to search and install the latest FastReporter 3 application.*

Using the Software Customization Wizard

The Software Customization Wizard helps you to set the application according to each user's needs. You can change the following settings:

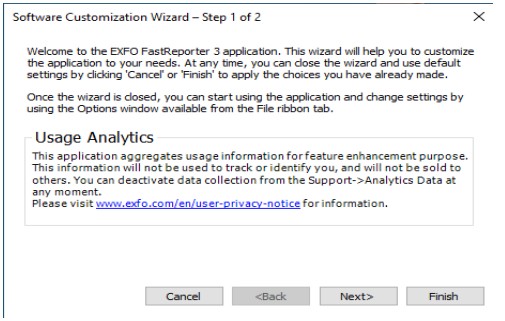
- Language
- Distance units

Note: *The Software Customization Wizard is displayed only once when the application is started by the current Windows user for the first time.*

Note: *At any time you can apply the default settings by clicking **Cancel**. To apply the changes you have made, click **Finish**. To return to the previous page, click **Back**.*

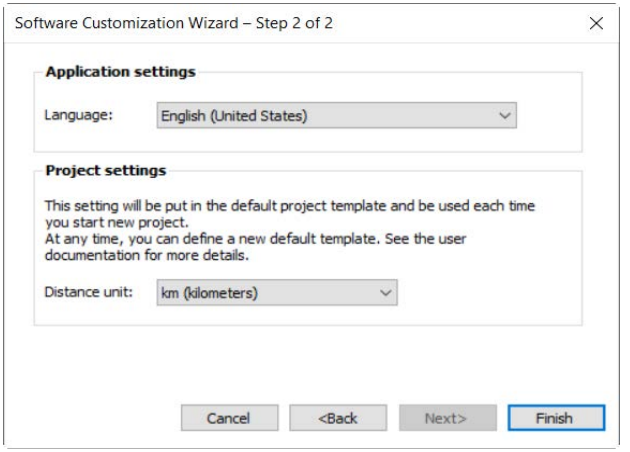
To customize the FastReporter 3 application:

1. You will be notified that your usage data will be collected for product improvement purpose. Select **OK** if you agree and allow this.



You can also deactivate this later if you do not want to provide the data usage analysis. Refer, the *How to deactivate the usage analytics permission* on page 16 to know how to deactivate this.

2. Select the required language and the distance unit that should appear in the application. Select **Finish** after done.



Note: *These settings can also be modified in the* ***File*** *>* ***Options*** *menu,.*

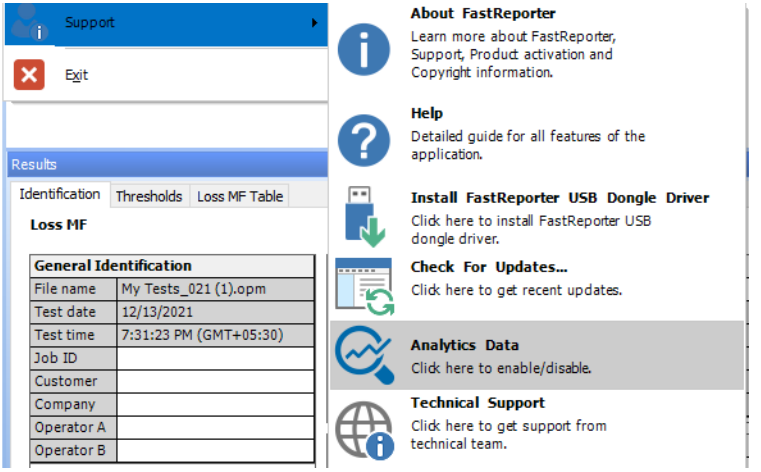
Note: *You can view the supported test types in the* ***File*** *>* ***Support*** *>* ***About FastReporter 3*** *menu.*

How to deactivate the usage analytics permission

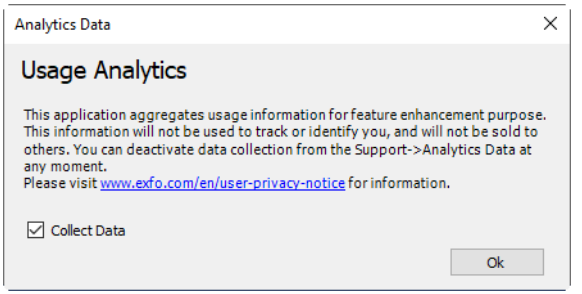
You can deactivate the Usage Analytics permission if required which you have allowed while installing FastReporter.

To deactivate the usage analytics permission:

1. Go to the **File** > **Support**, and then select the **Analytics Data** option.



2. On the **Analytics Data** window, clear the **Collect Data** checkbox and then select **OK.** The permission will be revoked.



Starting FastReporter 3

Once installed, all you need to do is double-click the FastReporter 3 shortcut corresponding to the version you want to use.

Note: *You can also access FastReporter 3 through the start menu of Windows, under the EXFO folder. The access path differs depending on the operating system you are using.*

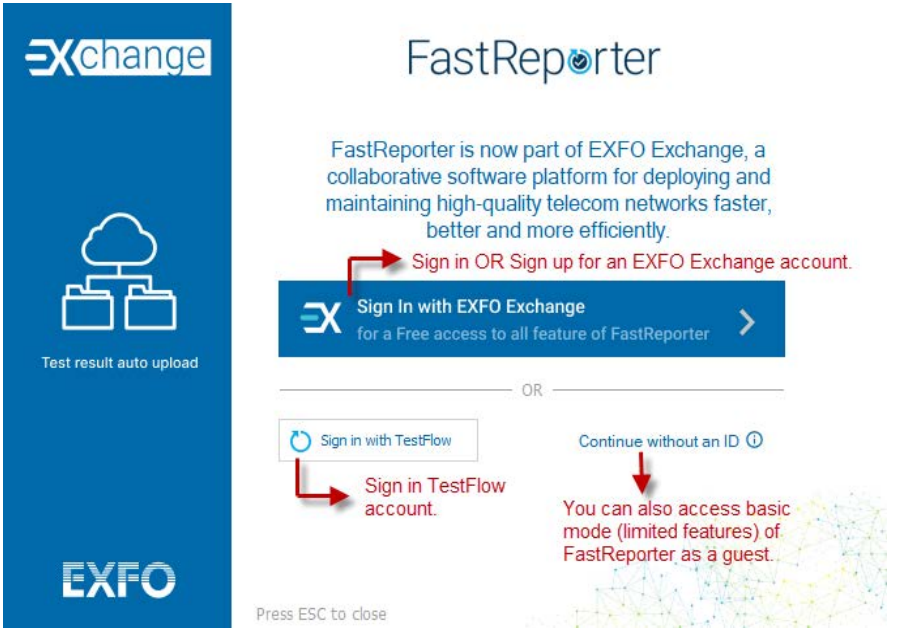
If you are using a perpetual license on a USB key, your application starts with the options you have purchased. If you are using a TestFlow account, you have several choices available.

Log in FastReporter

You can access FastReporter using EXFO Exchange or TestFlow accounts. You can also continue without any ID with limited features.

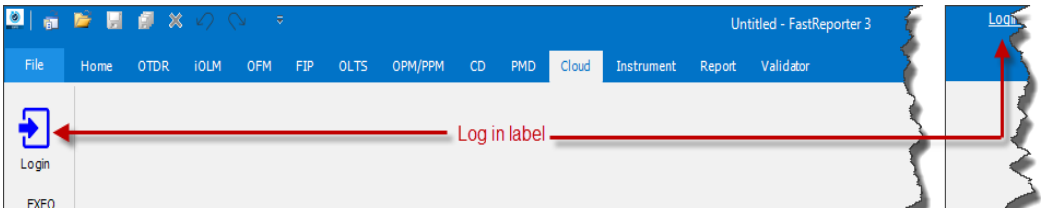
Note: *Sign up/Sign in FastReporter using an free EXFO Exchange account to access all FastReporter features without any restrictions.*

The log in screen appears at the start of the application.

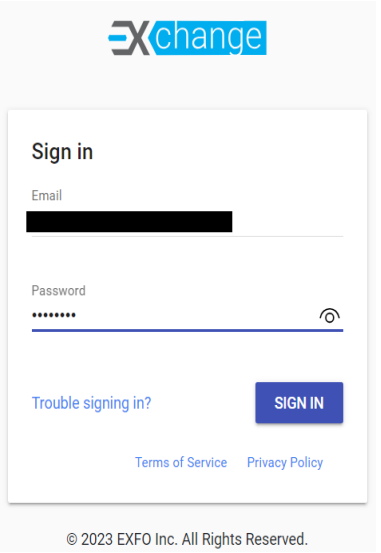


To Logging in to FastReporter with EXFO Exchange account

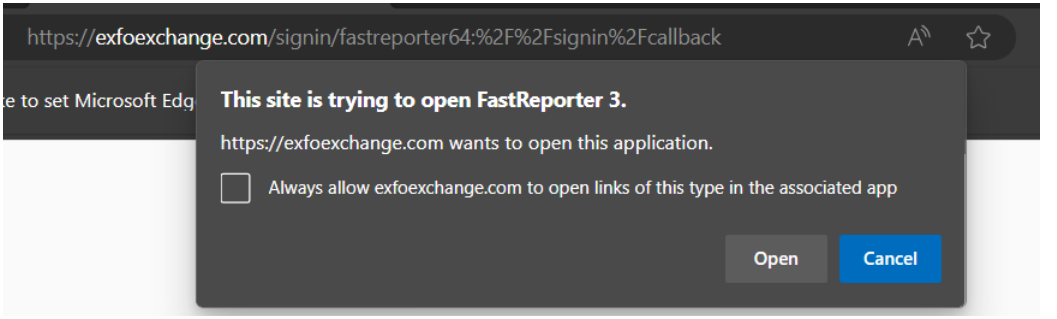
1. If you have not logged in the application and want to log in, click the **Login** label on the title bar or click the **Cloud** tab, and then select the **Login** icon.



2. You will be redirected to the Edge Browser. Enter your EXFO EXCHANGE credentials to logging into the FastReporter.

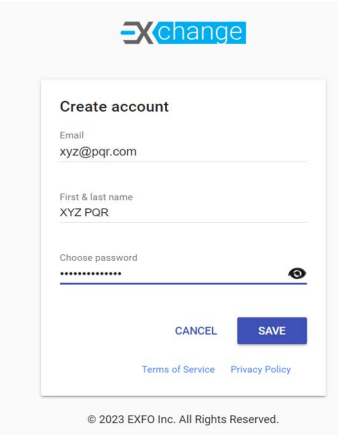


3. Select **Open**, you should allow EXFO Exchange to redirect you to the FastReporter app on your system.
   You will be redirected to the FastReporter application.



Note: *Select the check box if you want to always allow this request. This provides the permission to always direct you to the FastReporter app on your system after logging in to the EXFO Exchange.*

Note: *Enter the name and the password of your choice if you do not have the EXFO Exchange account and want to create one.*



Log out FastReporter (EXFO Exchange account)

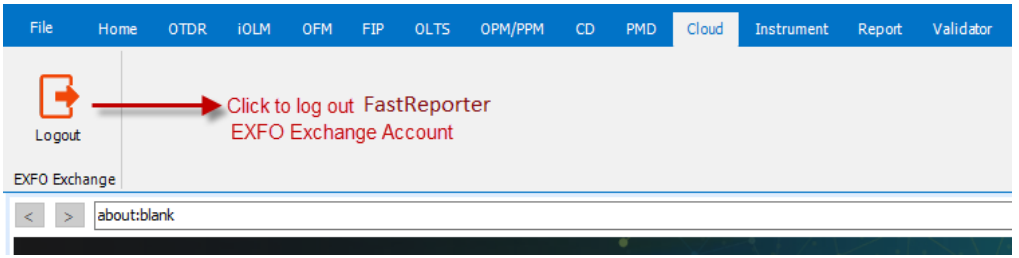
The FastReporter remembers your credentials. You do not need to relogin for every session. However, if required, you can log out from the FastReporter.

Note: *Logging out from the FastReporter will not log you out from other standalone or web applications using EXFO Exchange account.*

Note: *If there are unsaved changes to the project or project files, you will be prompted to save them when you are logging out from the EXFO Exchange account.*

To log out from FastReporter (EXFO Exchange account):

Click the **Cloud** tab, and then click the **Logout** icon.



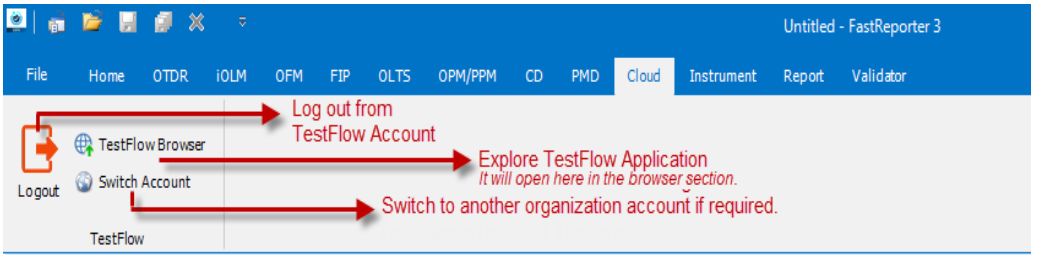
Log out from TestFlow Account/Change Organization/Start TestFlow in a Browser

You can Log out from the TestFlow, Start TestFlow in a Browser, or Switch your organization account

Note: *If there are unsaved changes to the project or project files, you will be prompted to save them when you log out from the TestFlow account.*

To log out from TestFlow account:

Click the **Cloud** tab, and then click the **Logout** icon.



You can shift to another Organization account or start TestFlow in a browser if required. Refer the above image.

Activating the FastReporter 3 Software Options for TestFlow account users

The software options access will depend on the plan you have purchased and the way you use to connect to FastReporter 3. You can connect to your application in the following ways:

- Using your TestFlow account credentials and connecting to the server through the Internet.
- Using a USB dongle key that will allow you to use your purchased options on several units or computer, but on one location at a time.

Note: *The Validator is not available on the USB dongle keys. You need a TestFlow plan to access this feature.*

If you have not purchased a plan, or if your USB dongle key is not in place, you will be in Basic mode, with limited actions available to you. Purchase a plan, such as Plus, Enterprise or Ultimate, to activate additional features, or use your valid USB dongle key to use your subscription license.

In the case of a subscription license, FastReporter 3, it will verify if a valid dongle key is connected, and if so, will continue to validate the presence of said key every 10 minutes. If no dongle key is installed, you will be only able to access the Basic mode features.

Note: *For more informations about the accounts and purchasing options, refer to the TestFlow user documentation.*

Working in Disconnected Mode

If you are connecting to FastReporter 3 through TestFlow, you are using an Internet connection to validate your credentials and options. If the Internet connection is cut for some reason (for example, if you are in a location where Wi-Fi is not available), your credentials and options will be kept active for a period of seven days.

When you reconnect to the Internet, FastReporter 3 will reconnect automatically so that you can continue working using your plan. If you are disconnected from the Internet for more than seven days, FastReporter 3 will revert to Basic mode until you can validate your credentials and plan again.

Checking for Updates

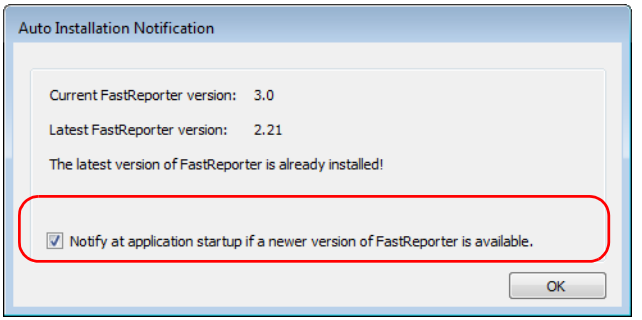
Install the updates for your application to benefit from the latest features.

To check for updates and install them:

1. From the **File** ribbon tab, select **Support**, then **Check for Updates**.

2. If a new version is available, you will notice a link to start the download and installation process. Click on it to install the newest version of the application.

Note: *If you want to be notified when new versions are available, select the corresponding option.*



Customizing the Main Window

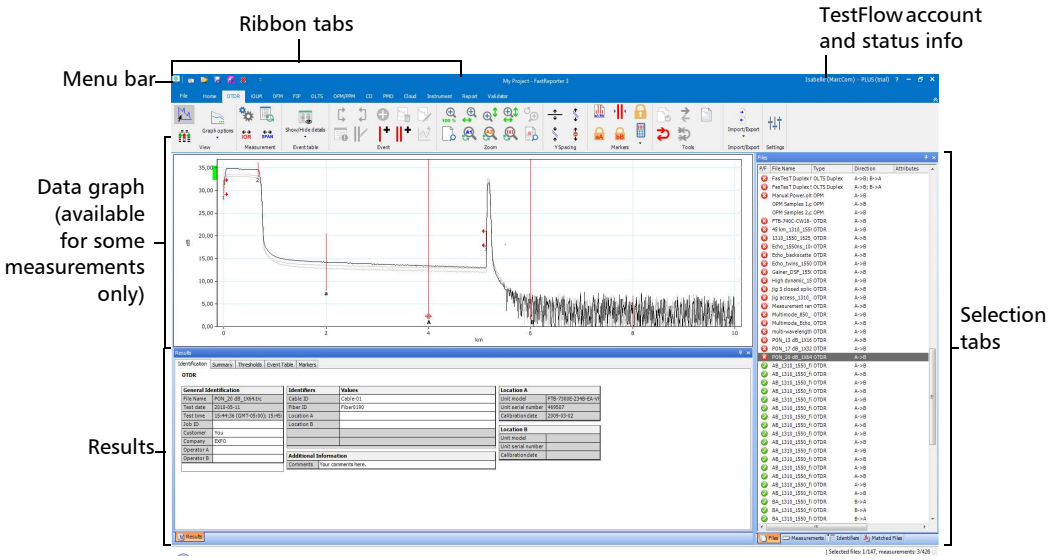
When you start FastReporter 3, the main window appears. In the graphics area of the main window, the application displays the EXFO Web page with information related to FastReporter 3.

You can access any other Web page by entering the URL in the address bar; you can also select any other website as the default opening page.

For more information, see *Changing FastReporter 3 Options* on page 31.

Note: *FastReporter 3 was meant to be operated to its full potential using a mouse and keyboard. Therefore the instructions herein imply that both peripherals are connected to your unit.*

Note: *The appearance of your application may differ from the illustrations in this user documentation depending on the resolution and platform you are using.*



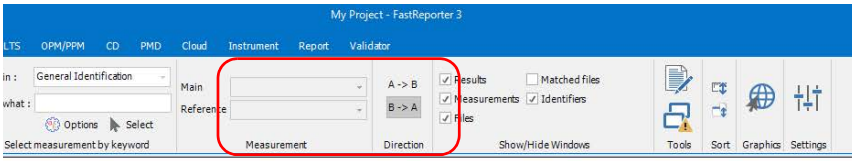
This window can be customized. You can add or remove toolbars, resize the panes as needed and move them around, or even auto-hide panes when they are not in use and reopen them later for as needed.

To display or hide the ribbon:

Use the button in the top right corner of the window.

To display the various panes:

1. Select the **Home** tab.
2. Under **Show/Hide Windows**, select which panes you want to see.



To resize a pane:

Use the split bars enclosing the pane you want to resize.

To close a pane:

Click the **X** button in the upper right corner.

To auto-hide a pane or tab:

Click the vertical pushpin ( ) in the upper right corner of the pane.

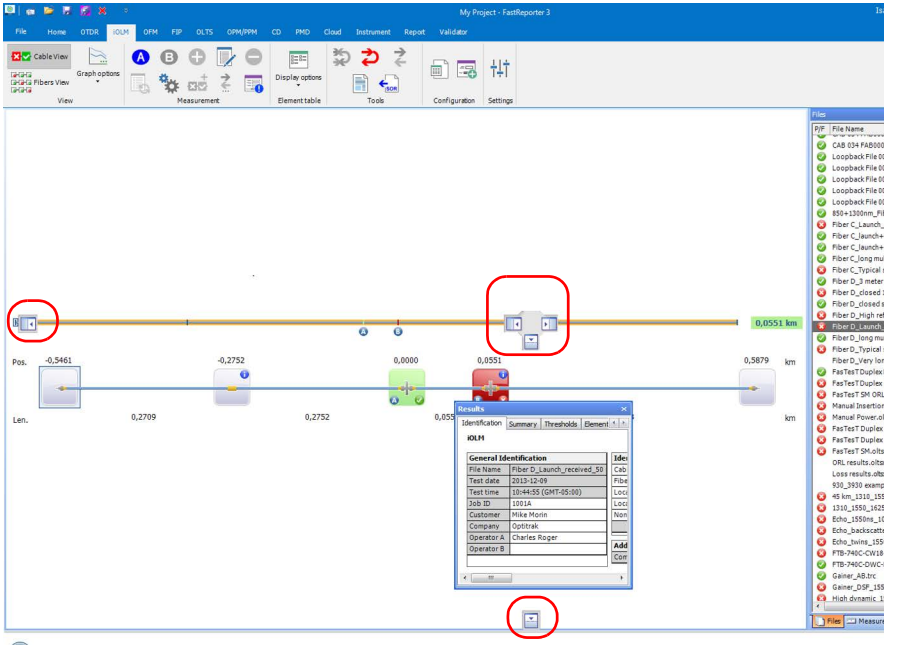
To show the pane again, move the mouse pointer over the desired hidden pane or tab. Select the tab containing its name.

To turn off the auto-hide feature, click the horizontal pushpin ( ).

To move a pane or tab:

1. Click and hold the selected pane title bar or tab to select it.

Anchor points indicate where the selected item can be moved.



2. Drag the item from its current location to the desired anchor point, then release the mouse button.

Working with Two Monitors (Only for PC)

If your computer is equipped with two monitors, you can use one of the monitors to view the trace files, and the other monitor to view the results or the tabs you work most with. For more information on setting two monitors on your computer, refer to the instructions provided with your monitors, computer and video card.

To move an item to the other monitor:

Drag the item and release it when it appears on the desktop of the secondary monitor.

FastReporter 3 will remember the size and position of the window the next time you start the application.

Another way of increasing workspace is to open Windows Explorer and drag it onto the desktop of the secondary monitor. You can then use the FastReporter 3 drag-and-drop feature to add measurement files to your projects simply by dragging them into the main FastReporter 3 window and releasing the mouse button.

Selecting Items From Lists and Menus

When selecting items in a list or menu, you can in many cases use the Ctrl and Shift keys on your keyboard to make multiple selections, as you would in other Windows-based applications.

Also, the same command can often be performed from the ribbon, keyboard shortcuts, or by right-clicking into the pane where you want to perform an action. For readability reasons, the ribbon method is privileged in the explanations in this user documentation.

You can find a list of the shortcuts in *Keyboard Shortcuts* on page 568.

Changing FastReporter 3 Options

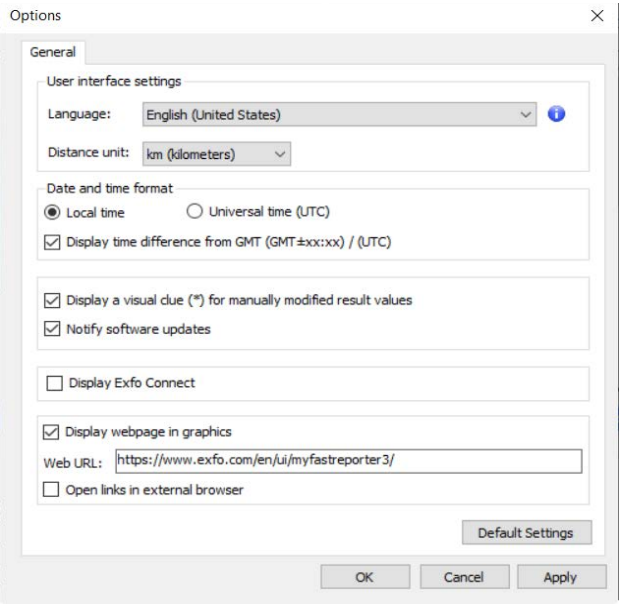
You can change the general options including the user interface language, field of application and supported measurement types, or the display options including date and time formats. You can also narrow down the supported measurement types to simplify the user interface.

IMPORTANT

You cannot open files corresponding to a file type that you have not selected as supported.

To change the Project Settings

1. Select the **File** menu, then go to **Options**.
2. Select the required options.



3. Click **Apply** to save your change and continue configuring FastReporter 3 or **OK** to save your change and exit the window.

Note: *You need to restart FastReporter if you change the working language.*

4. lTo revert to the default settings, click **Default Settings**, then **OK** to apply the default settings and exit the window.

3 Working with Projects (Plus Mode)

Projects are the files that you require in your analysis or post-processing activity. You can select one or many files, from different sources, and save the project for later consultation.

You can also manage project templates, to help you quicken your work.

Managing Projects

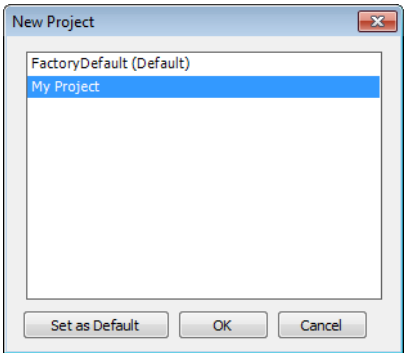
Each time you start FastReporter 3, a project is created automatically using the default project template. You can also create a new project from scratch.

Once a project is created, you can add files to it, or remove them.

When you save a project in FastReporter 3, the project settings and *references* to the files you added to the project are saved. When you open the project file, the project settings you modified and the files you added will still be part of the project file, unless you moved or renamed any of the files. Any changes to the measurement files themselves, however, are not saved in the project file.

To create a project from scratch:

1. In the **File** ribbon tab, select **New**, then **Project**.
2. In the list, click the template you want to use.



3. Click **OK**.
4. In the **File** ribbon tab, click **Open**, then select **File**.
5. Select the desired files to include in the project.
6. Click **Open** to add the files to the project.
7. On **File** ribbon tab, click **Save**, then **Project**.
8. Click the folder where you want to save the project file.
9. In the **File name** box, type a name for the project file.

Note: *FastReporter 3 automatically adds the .prj extension to the file name when you save the file.*

10. Click **Save**.

To open an existing project:

1. On the **File** ribbon tab, click **Open**, then **Project**.
2. Select and open the folder where your project file is located.
3. Select the project file and click **Open**.

Note: *If your project includes files that come from the EXFO Connect server, you will be prompted to either check them out, or view them in read-only mode.* *See* Managing Files *on page 119 for details.*

To save a project file:

On the **File** ribbon tab, click **Save**, then **Project**.

To save the project file and the measurement files in the project, click **Save All**.

Note: *If your project includes files that come from the EXFO Connect server, you will be prompted to either check them in, or discard them. See* Managing Files *on page 119 for details.*

To save a project file as a template:

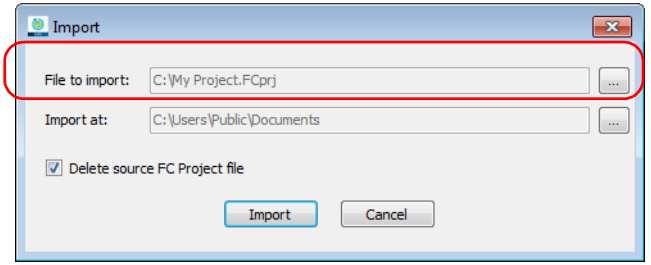
On the **File** ribbon tab, click **Save As**, then **Project As Template**.

To save a project file under a new file name:

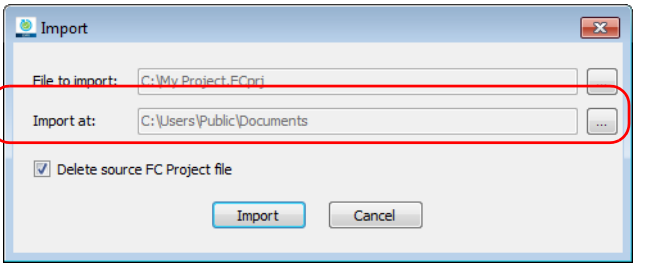
1. On the **File** ribbon tab, click **Save**, then **Project As**.
2. Type a new file name for the project.
3. Click **Save**.

To import a Fiber Characterization (FC) project:

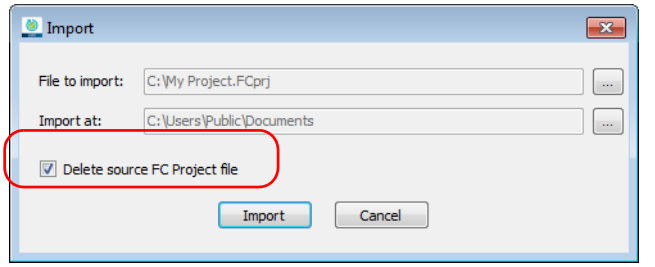
1. If you have not done so already, select the **Home** tab.
2. Under **Files**, select **Import FC Project (settings + files)**.
3. Select the file you want to import and its original location.



4. Select the destination where you want to import the file.



5. If you want to delete the file from the original location once the import is complete, select the corresponding option.



6. Click **Import** to confirm your action.

   The project is opened as the default project and all of the corresponding settings are displayed accordingly.

Note: *When you import a project, all of the files included in it are copied to the selected location as well.*

To export a Fiber Characterization (FC) project:

1. Under **Files**, go to the **Export** and then select the **Export FC Project (settings + files) option**.
2. If needed, enter a name for your project, and select a location.
3. Click **Save** to confirm your action.

Note: *Exporting the project also exports the corresponding project files. The default name for the exported project is the name of the project.*

Adding and Removing Measurement Files

A FastReporter 3 project can contain files from different tests, and different formats. For more information about the available formats, see the sections corresponding to the format you want to use.

To add measurement files to a project:

1. From the **File** ribbon tab, click **Open**, then **File**.
2. If needed, select a desired file type to filter the available choices.

Note: *You can set the direction in OTDR and FIP files by selecting the direction when you add the files. For example, to set the direction of the selected OTDR files to A->B, select OTDR A->B in the* ***Files of type*** *list.*

3. Select the measurement files to add.
4. Click **Open** to add the selected files to the project.

When you open an OTDR file generated using the iOLM application, or a file received from an OTDR manufacturer other than EXFO, a warning message appears with the file name, indicating possible limitations or consequences. You can choose not to see the message again, if you already are aware of those limitations.

Note: *When you open any read-only file in the application, it is indicated in the **Attributes** column of the **Files** tab.*

To remove measurement files from a project:

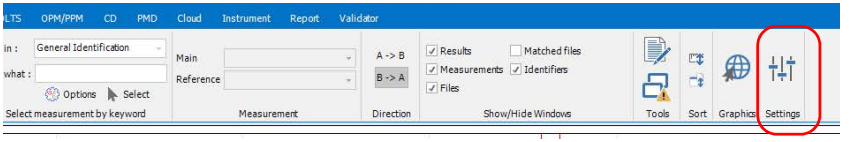
1. In the **Files** window, select the files you wish to remove.
2. Select the **Home** ribbon tab. Under **Clipboard**, select **Delete**.
3. Confirm your choice by clicking **OK**.

Changing General Project Properties

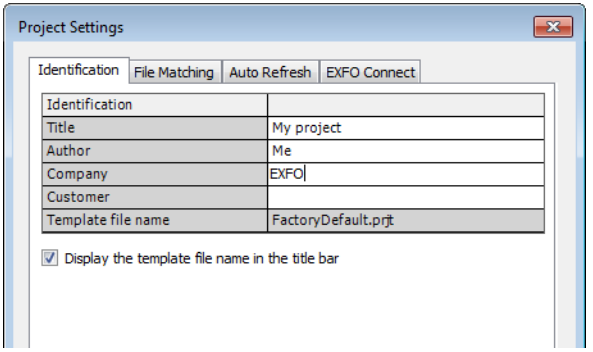
You can provide a descriptive title for a project and identify the author, company and customer.

To change general project properties:

1. Select the **Home** ribbon tab, then **Settings**.



2. Select the **Identification** tab, then click in the column to the right of the property you want to change and enter the information.



Note: *The template file name for the project is displayed automatically according to the template you selected when you created the project.*

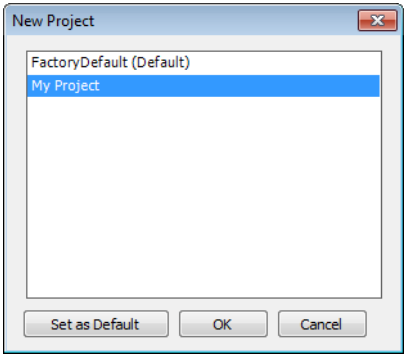
3. Click **Apply** to apply the changes without closing the dialog box.
4. Click **OK** to close the **Project Settings** window.

Managing Project Templates

You can save the properties and settings you often use when creating projects in a project template.

To create a project template:

1. On the **File** ribbon tab, select **New**, then **Project**.
2. In the list, select a template. If there is an existing template that already has properties and settings that you want to use in the new template, you can use it as a starting point.



3. Click **OK**.
4. Change the properties and settings to suit the projects you want to create with the new template.

Note: *Changes made to the display (for example, showing/hiding windows and the ribbon) or to program options are saved when you end your work session. They are not saved in project templates.*

5. On the **File** ribbon tab, click **Save**, then **Project As Template**.

6. In the **File name** box, type a name for the project template file.

   FastReporter 3 automatically selects the folder where to save the project template.

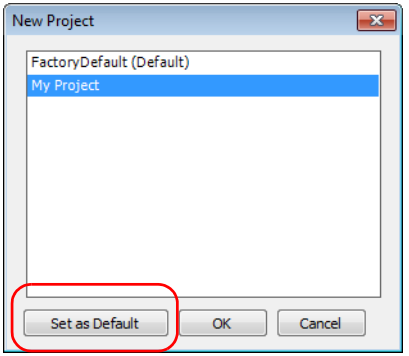
7. Click **Save**.

IMPORTANT

FastReporter 3 automatically saves project templates in the Project Template folder. If you change the location, the template will not be available for selection in the New Project dialog box when you start a new project.

To change the default template file:

1. On the **File** ribbon tab, select **New**, then **Project**.
2. To set the new project template as the default template, click the file name, and click **Set as Default**.



3. Click **OK** to start a new project or **Cancel** if you do not wish to start a new project at this time.

To rename a project template:

To rename a project template, rename the project template file as you would any other file while leaving the .prjt file extension intact. The template will be listed on the **New Project** dialog box with the new name.

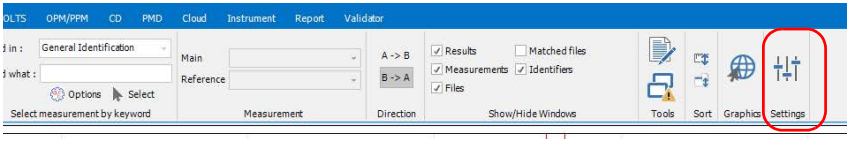
To remove a project templates:

To permanently remove a project template, simply delete the project template file in the Project Template folder. To remove a project template so that it is no longer listed on the **New Project** dialog box, remove it from C:\ProgramData\EXFO\FastReporter 3\Standard\Project Template, and put it in another folder.

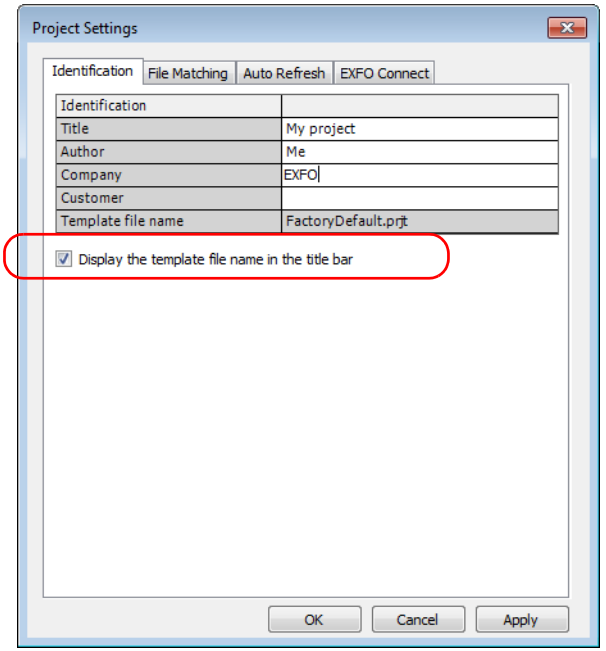
If you later need to use the template, you can simply move it back to the Project Template folder.

To display the project template name in the application title bar:

1. Select the **Home** ribbon tab, then **Settings**.



2. Under the **Identification** tab, select the corresponding option at the bottom of the identification table.



3. Click **Apply** to apply the changes without closing the dialog box.
4. Click **OK** to close the **Project Settings** window.

Changing File Direction

Changing the direction for your measurement is useful when you create your reports. For OTDR and iOLM test files, changing the file direction can be useful to create bidirectional and virtual bidirectional files.

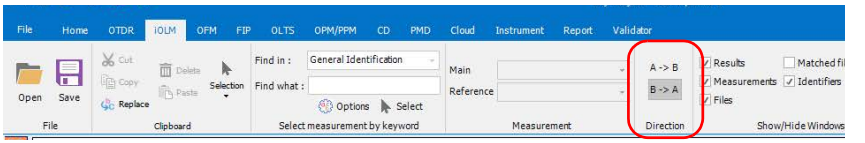
Note: *You cannot change the direction on MAX-900 series OLTS files or iOLM FTTx files.*

To change the direction of the measurement or file:

1. Select the required measurement or file from the **Measurement** or **Files** window.

Note: *You can select multiple measurements change the direction if the direction is supported by the measurements.*

2. Select the **Home** ribbon tab.
3. Under **Direction**, select **A->B** or **B->A** to set the direction.



Matching Files

FastReporter 3 provides three options for matching files in projects:

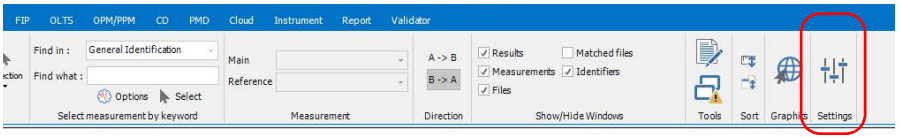
- File matching based on information present in the file (for example, matching fiber IDs and cable IDs). This is the default setting for projects.
- File matching based on file name. You can have FastReporter 3 ignore expressions in the file names. For example, if you select “A_B” as the expression to ignore, a file named fiber1A_B.trc and a file named fiber1.trc are considered as matching.
- Manual file matching.

Note: *When working with TestFlow job files, the matching based on file name or manual matching are not available.*

Matching Files Based on Information

Depending on which identifiers you select, the automated matching process will look for the corresponding information in your file to pair the measurements.

The application allows you to add custom identifiers for OTDR, iOLM, OPM, and PPM measurements. This option is available only if the OTDR, iOLM, OPM/PPM plug-in is selected from the **Home** ribbon tab, under **Settings**.



Note: *Only the selected identifiers are displayed in the **Measurements** window and **Matched Files** window. By default, the custom identifiers added in the **Identification** tab are considered for file matching, even if they are not available in the identifiers list under the **File Matching** window.*

For this type of file matching, the file type is the first priority for each measurement and the direction of the file is the second priority. The file type priority and the direction priority is listed in the following tables.

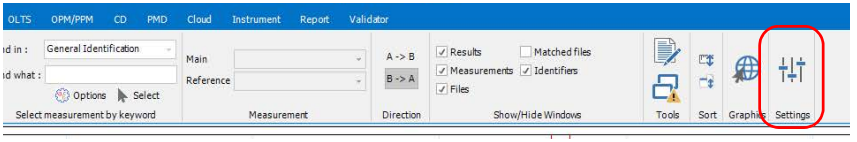
File Type	Priority
iOLM	1
OTDR	2
FIP	3
OLTS	4
OPM	5
PPM	6
PMD	7
CD	8

Direction	Priority
A -> B	1
B -> A	2
Bidir	3
None	4

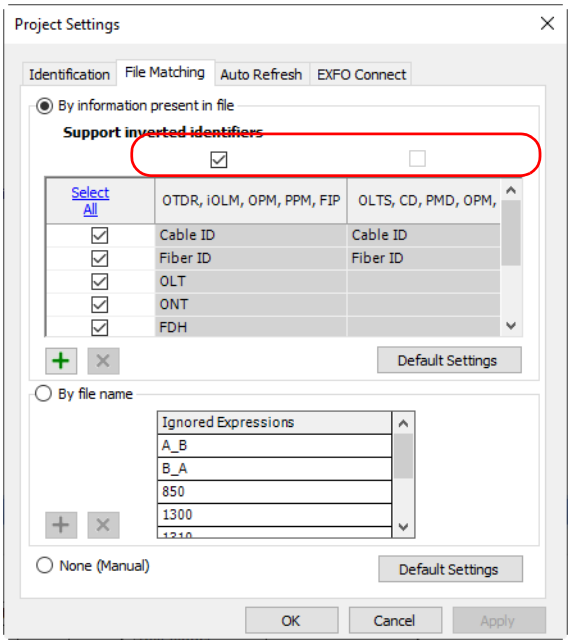
Note: *The matching function is not case sensitive and will match actual numbers (for example, 001 and 1 are both considered as the same number).*

To automatically match files based on information:

1. Select the **Home** ribbon tab, then **Settings**.



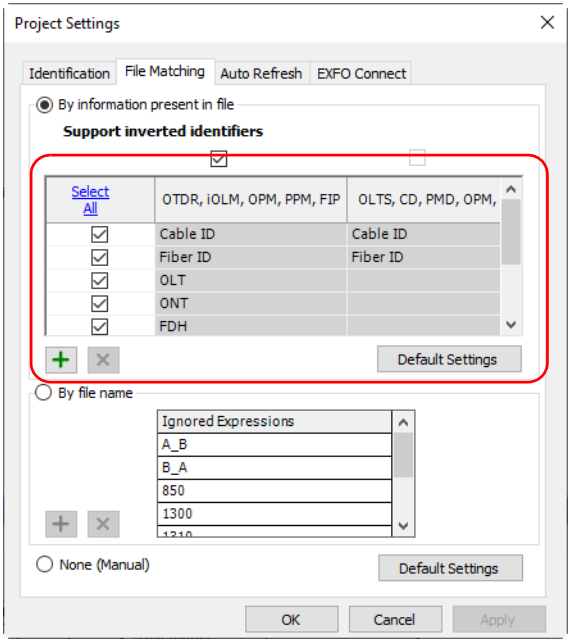
2. Under the **File Matching** tab, select **By information present on file**.
3. If you want to perform inverted matching for your iOLM and power meter files, select the corresponding option.



IMPORTANT

If you want to perform inverted matching for the iOLM and power meter measurements, you must select Support Inverted Identifiers. Otherwise, this action will not be possible.

4. Select the required identifiers type to use them for file matching.



5. To apply the changes without closing the dialog box, click **Apply**.

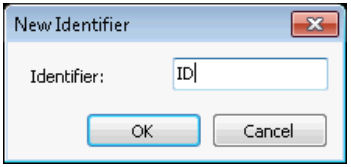
6. Click **OK** to close the **Project Settings** window.

To add an identifier:

1. Select the **Home** ribbon tab, then **Settings**.

2. Under the **File Matching** tab, click [+].

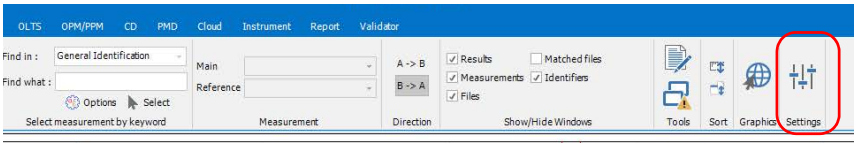
3. Enter a name for your identifier.



4. Click **OK**.

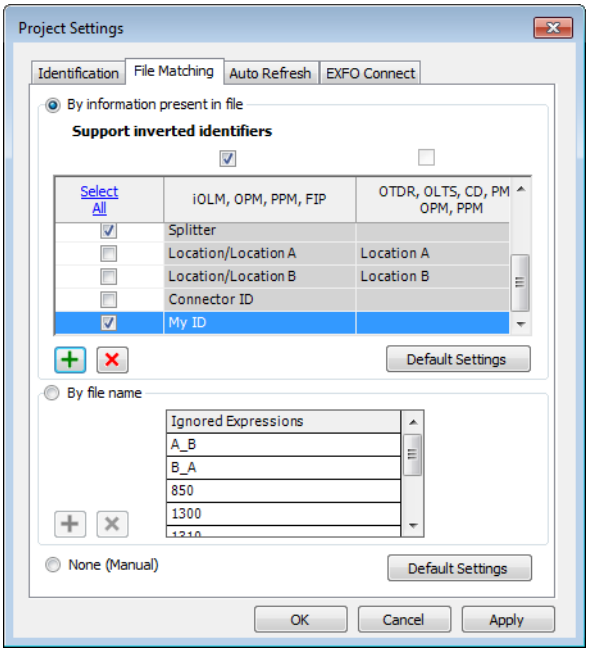
To delete identifiers:

1. Select the **Home** ribbon tab, then **Project Settings**.



2. Select the **File Matching** tab.

3. Select the required identifiers that you want to delete.



4. Click ✕ to delete the identifiers. The application displays the confirmation message to delete the identifiers.

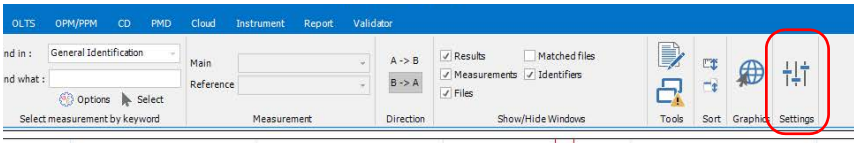
Note: *You cannot delete the default identifiers.*

Matching Files Based on their File Names

The automated matching based on file name can be optimized by adding expressions or terms to ignore, so that the matching is as specific as possible.

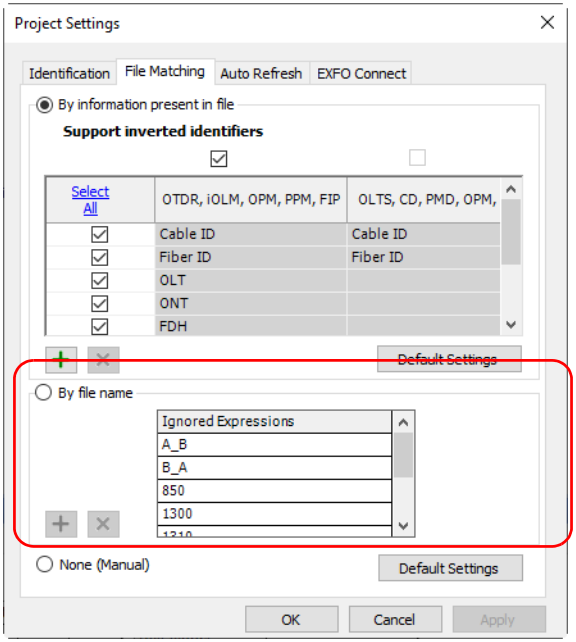
To automatically match files by file name:

1. Select the **Home** ribbon tab, then **Settings**.



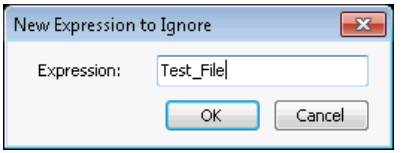
2. Click the **File Matching** tab.

3. Select **By filename**.



4. If needed, add or remove items.

   ➤ Click [+], then type the expression to add to the list and click **OK**.



   ➤ Select an expression from the **Ignored Expression** list, then click [×] to remove it.

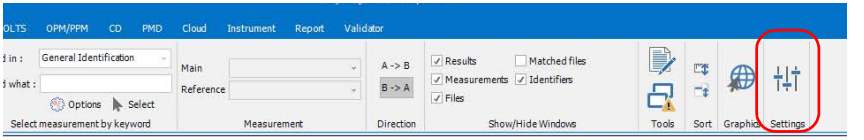
5. Click **OK** to exit the window.

Matching Files Manually

The manual file matching mode allows you to decide which files to match in your list.

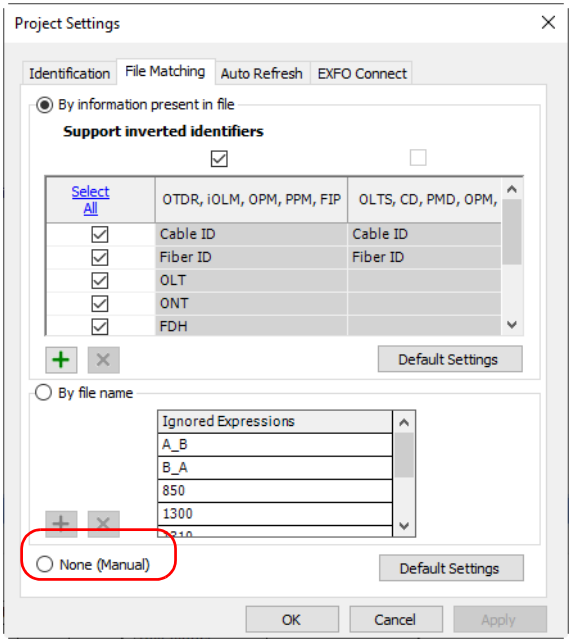
To match files manually:

1. Select the **Home** ribbon tab, then **Settings**.



2. Click the **File Matching** tab.

3. Click **None (Manual)**.

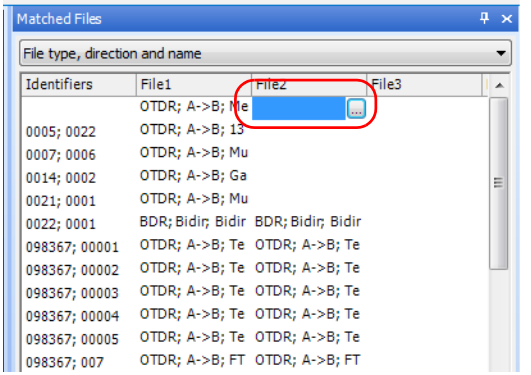


4. Click **OK**.

5. In the **Matched Files** window, select a file in the **File 1** column and drag it into the **File 2** column beside the file to match it to.

OR

Click in the **File 2** column and click ... to display the **File Selection** dialog box, which lists the files that have not yet been matched.



If you attempt to match files manually when one of the two automated modes are selected (by information or by file name), FastReporter 3 will ask if you want to change the matching mode.

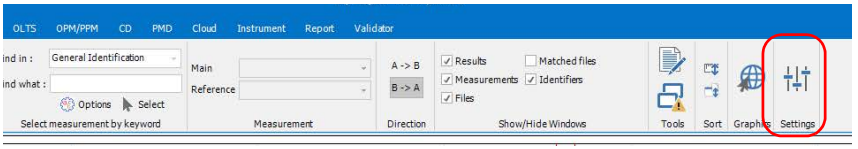
Setting Auto Refresh in a Specific Folder

The auto refresh option updates the **Files** and **Measurement** tabs for a specified duration whenever you add files to a specified auto refresh folder. You can specify the auto refresh folder on your computer, platform, USB storage, or network drive.

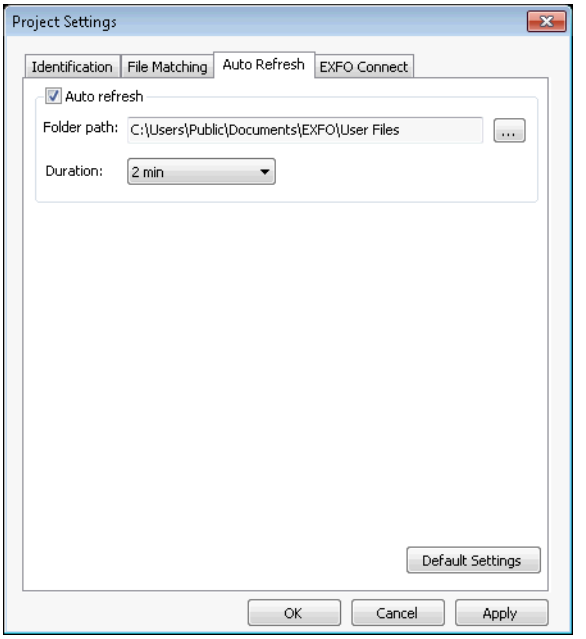
Note: *When the application is running, if the specified auto refresh folder is modified or deleted, the application displays a warning message and the default folder is selected.*

To specify the auto refresh folder:

1. Select the **Home** ribbon tab, then **Settings**.



2. Under the **Auto Refresh** tab, enable the **Auto refresh** option.



3. Click ... to locate the desired folder.
4. Select the auto refresh duration that suits your needs.
5. Click **Apply** to apply the changes without closing the dialog box.
6. Click **OK** to close the **Project Settings** window.

Working in Loopback Mode (Plus Mode)

The loopback mode allows you to test both A -> B and B -> A, and Tx and Rx at once, which saves time and manipulations. You can set the loop length yourself, or let the application find it automatically with a default loop length.

This mode is available for both OTDR and iOLM measurement files.

If you have activated the loopback option for your application, it is ready to use when needed. You can use the loopback mode that fits your needs:

- Unidirectional: Will split the measurement file into two directions, with the corresponding verdict.
- Bidirectional: Will split two unidirectional files set as a virtual bidirectional file each their two directions.

Note: *Files created using the loopback mode cannot be used again to perform a bidirectional loopback, but you can redo a loopback with the unidirectional mode result files.*

Note: *You cannot perform bidirectional loopback tests on iOLM multimode files.*

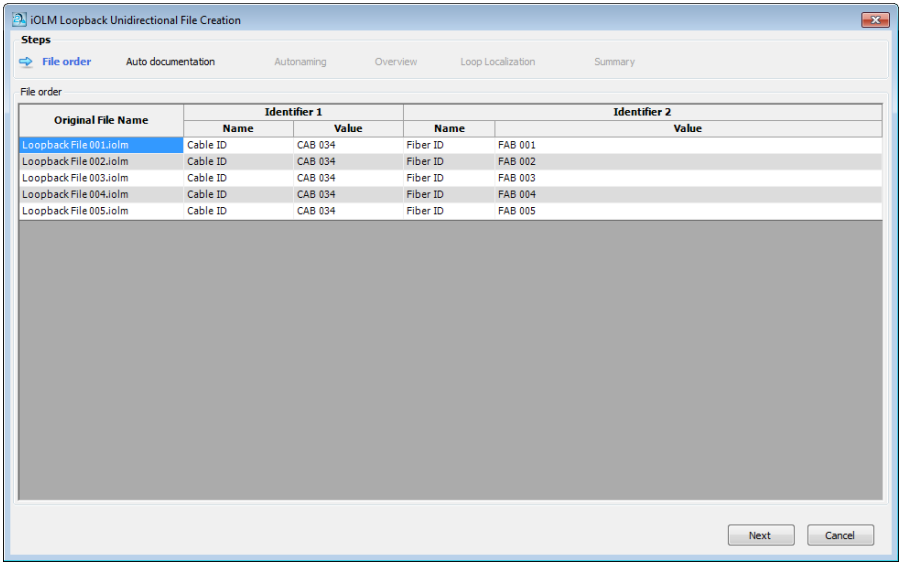
Performing Unidirectional Loopback Measurements

The unidirectional loopback mode is available as soon as you select one file. The steps are quite similar for the iOLM and OTDR modes; the iOLM steps will be shown here for illustration purposes.

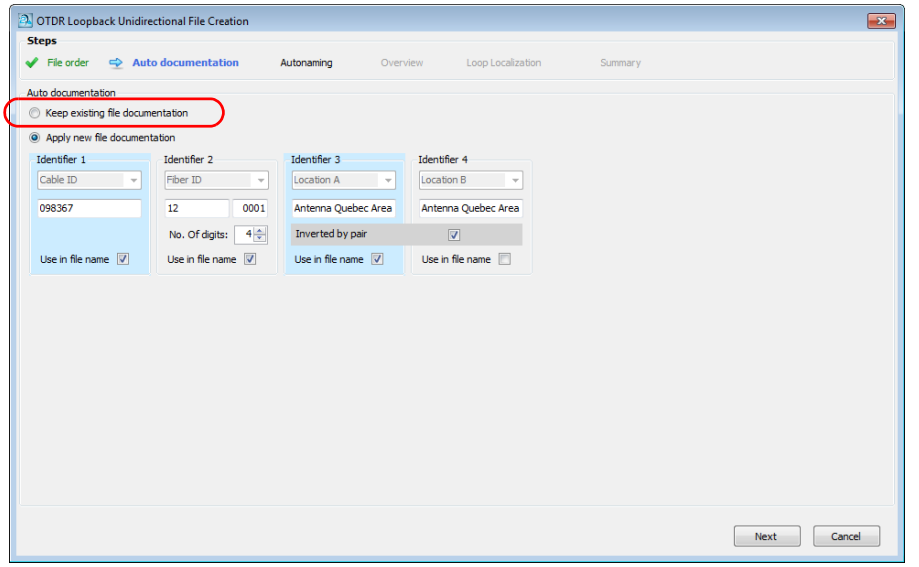
To perform a unidirectional loopback measurement:

1. Select the file or files that will be included in the test.
2. Depending on the measurements you are using, select either the **OTDR** or **iOLM** tab, then under **Tools** select the corresponding button.

3. If needed, rearrange the files in the list. Since they appear in the same order as they are in the **Files tab**, they may not be in the order that you need them. You can sort the files using the headers in the table, or you can drag the files manually in the list. Once you are done, click **Next** to proceed to the next step.



4. Set the automated documentation for your resulting files. If you have done a loopback operation on them before, you may keep the documentation information you had set then by selecting the corresponding option.

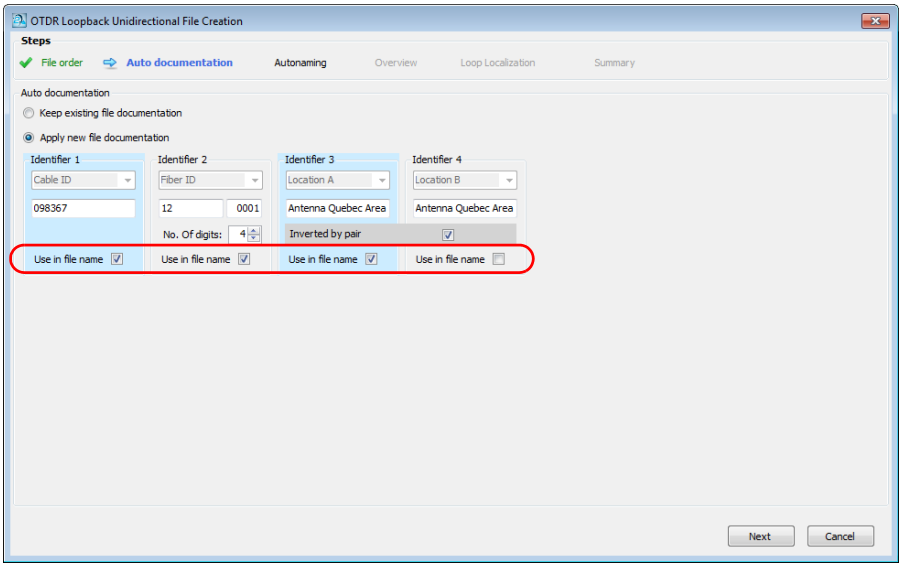


If you want to use new information, proceed as follows:

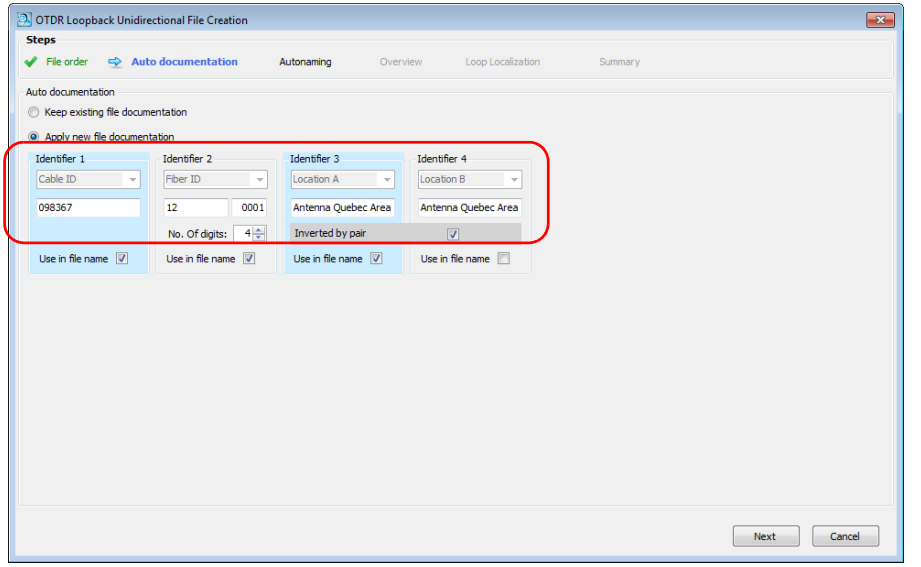
4a. Select which identifiers will be used for the documentation. In OTDR mode, you cannot change the identifier types. In iOLM mode, you need at least two identifiers, either from the list of available choices, or you can enter a new identifier of your choice. The first identifier will be the one with the highest occurrence rate in the corresponding identifiers of the selected files. If no values were set, the first two default identifiers are Cable ID and Fiber ID.

Note: *You can have four identifiers for OTDR files, and up to five identifiers for iOLM files.*

To use the identifiers in the file name, select the corresponding option.



4b. Set the value you want to show for each identifier.



➤ Enter how many digits you want to use to increment the second identifier automatically. The numbers will be incremented automatically.

➤ If you are using identifiers 3 and 4, you can have the application to automatically invert them for the second file of the loopback. Select the **Inverted by Pairs** option to use the automatic inversion. The Overview page will reflect your choice as follows:

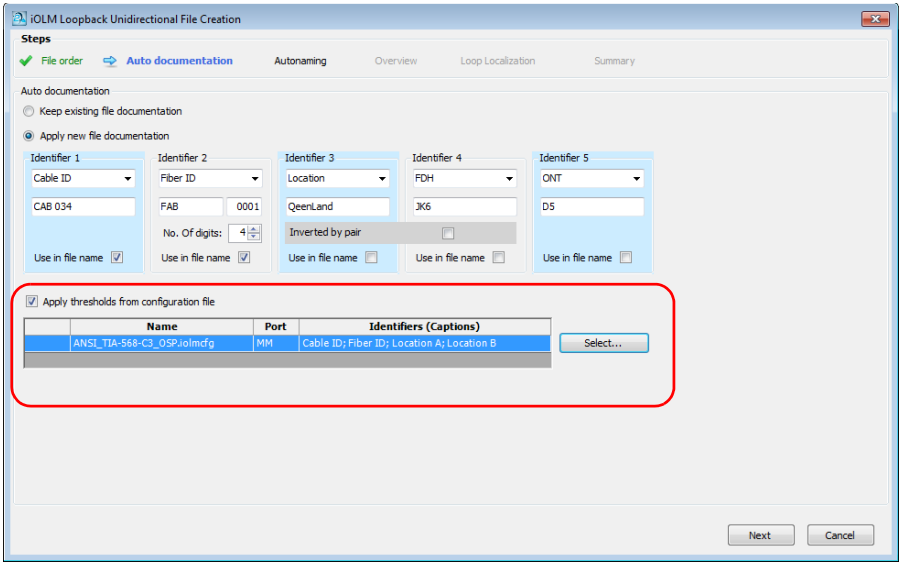
Inverted by Pairs Status	Corresponding Locations A and B Information
Not selected	Row 1: Fiber 0001, Location A, Location B Row 2: Fiber 0002, Location A, Location B Row 3: Fiber 0003, Location A, Location B Row 4: Fiber 0004, Location A, Location B And so on.
Selected	Row 1: Fiber 0001, Location A, Location B Row 2: Fiber 0002, Location B, Location A Row 3: Fiber 0003, Location A, Location B Row 4: Fiber 0004, Location B, Location A And so on.

➤ In the case of identifier 3 for iOLM, you can set a predefined list of two or four items to use for each section of the measurement. The items must be separated by a semi-colon (for example, “RX;TX”). If you are using four items, they must all be different, or inverted pairs (“AA;BB;CC;DD” or “AA;BB;BB;AA”). Depending on your sequence for identifier 3, the output in the Overview page will change.

Identifier 3 Sequence	Corresponding Fiber ID and Direction in the Overview Page
RX;TX	Row 1: Fiber 0001, RX Row 2: Fiber 0001, TX Row 3: Fiber 0002, RX Row 4: Fiber 0002, TX And so on.
AA;BB;CC;DD	Row 1: Fiber 0001, AA Row 2: Fiber 0001, BB Row 3: Fiber 0001, CC Row 4: Fiber 0001, DD Row 5: Fiber 0002, AA Row 6: Fiber 0002, BB Row 7: Fiber 0002, CC Row 8: Fiber 0002, DD And so on.

➤ If you are testing iOLM files, you can use a configuration file to set the threshold values by enabling the corresponding option. Click **Select** to open the Apply Configuration File window, where you can select the desired configuration. Click **OK** when you are done and the selected configuration will be applied.

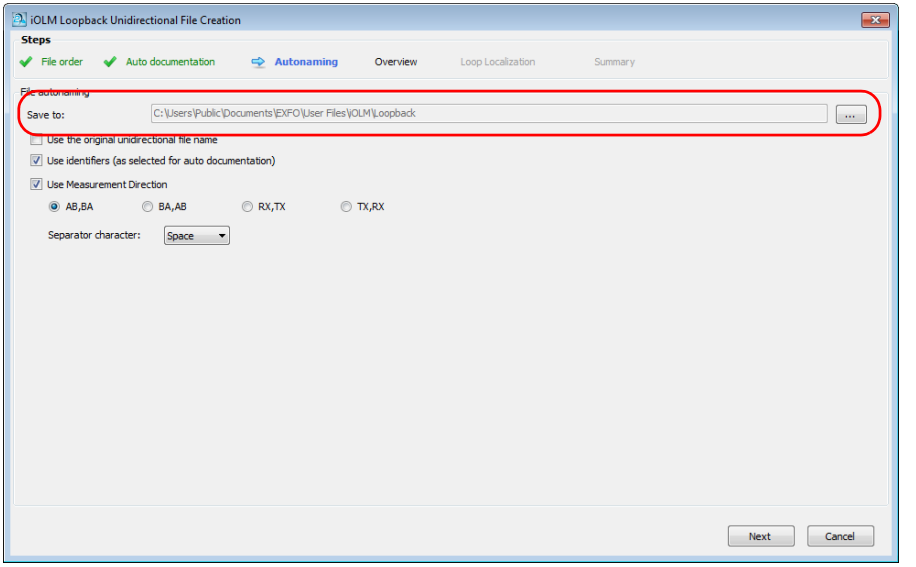
For more information about configurations files, see *Managing Configuration Files (Plus Mode)* on page 282.



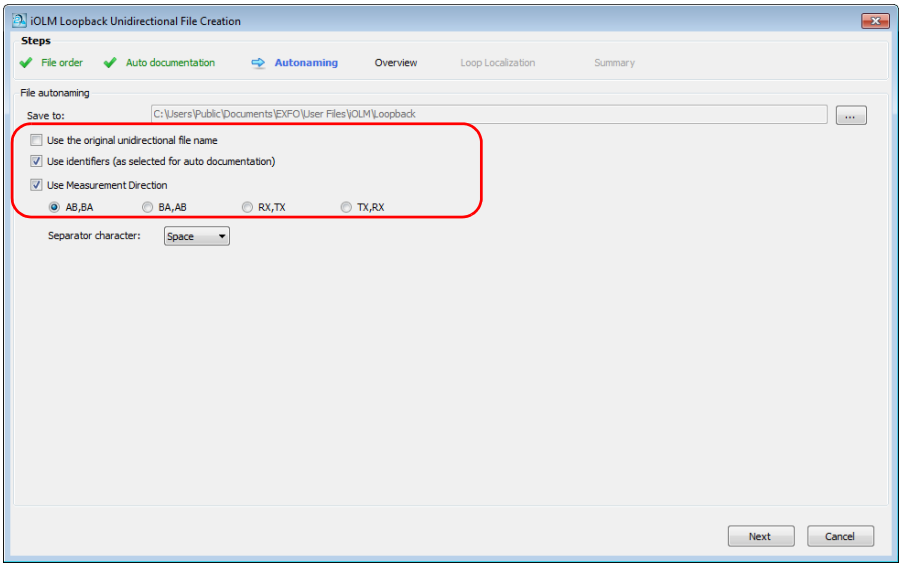
Once you are done, click **Next** to proceed to the next step.

5. Set how you want the resulting files named.

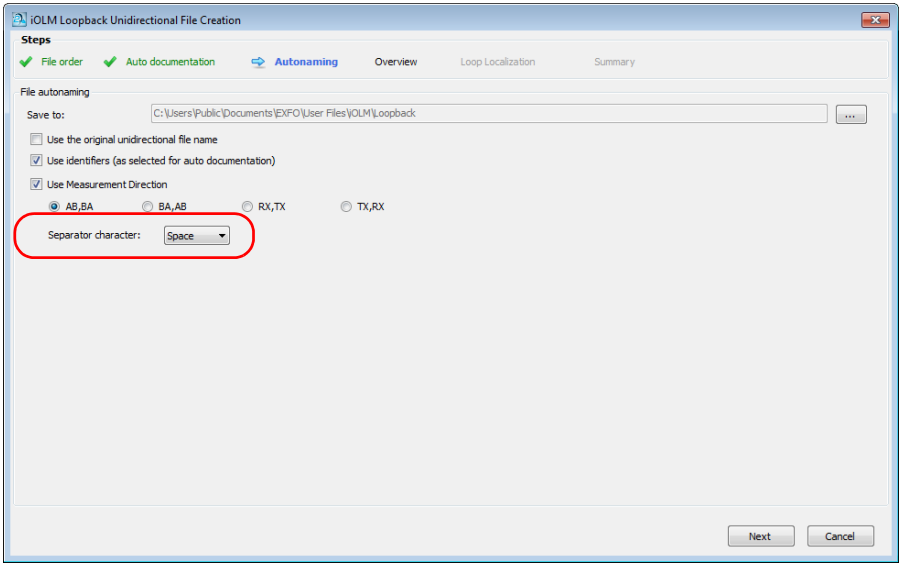
5a. If desired, change the location where the files will be saved.



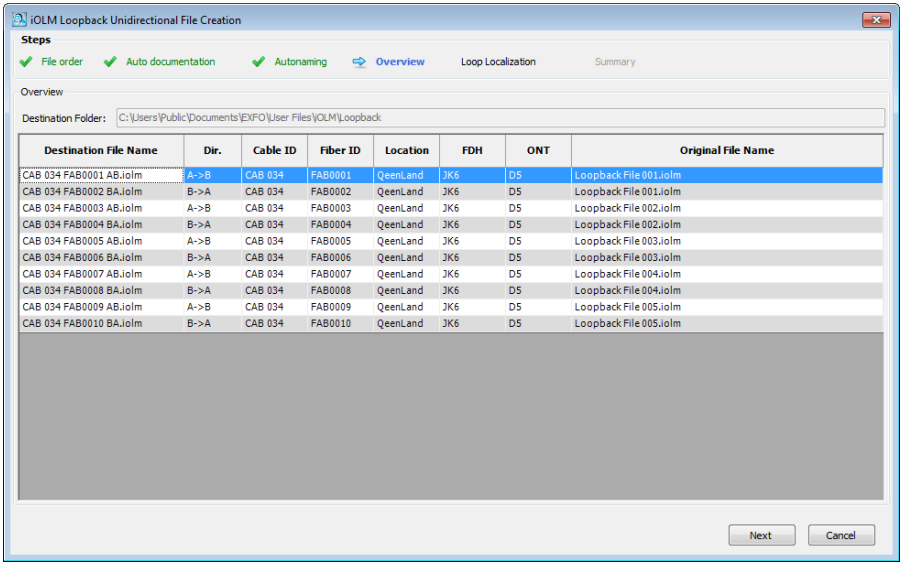
5b. Select which items to use in the file name. If you include the measurement direction, select which nomenclature to use (AB, BA; BA, AB; RX, TX or TX, RX).



5c. Select which type of separator you want to use between the items. Click **Next** to proceed to the next step.

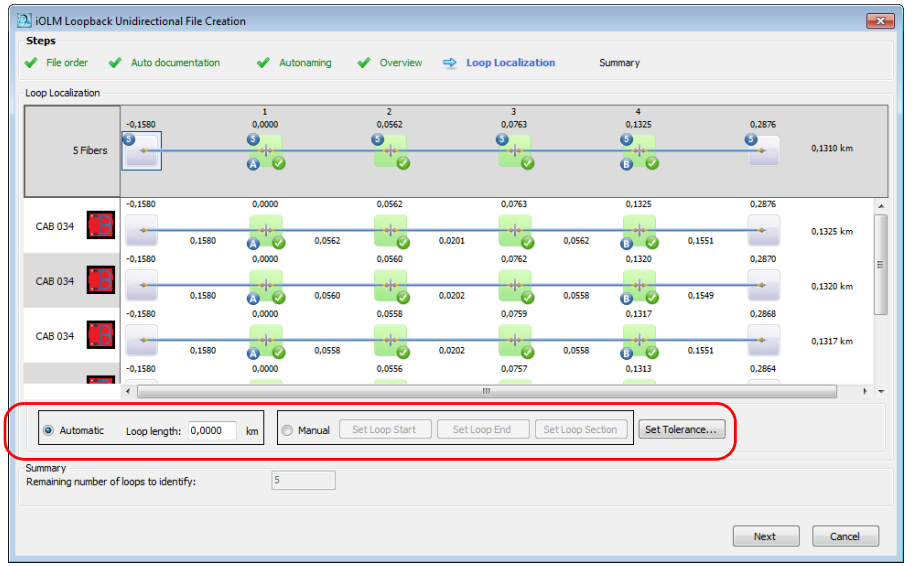


6. In the **Overview** step, you can see the resulting files. The remaining identification and threshold data other than the identifiers will be from the original file.



7. Click **Next** to select the test mode.

8. Select whether the loop will be automatically detected, or if you want to do so manually. If you select the automated mode, enter a length value for the loop.

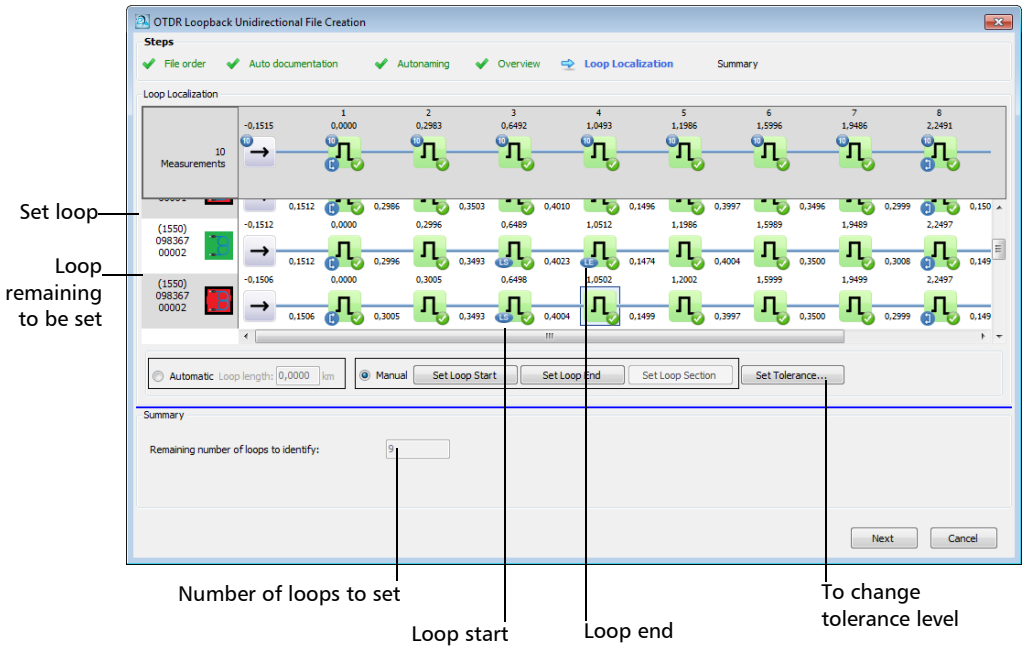


9. If you are in Manual mode, set the loopback start and end elements:

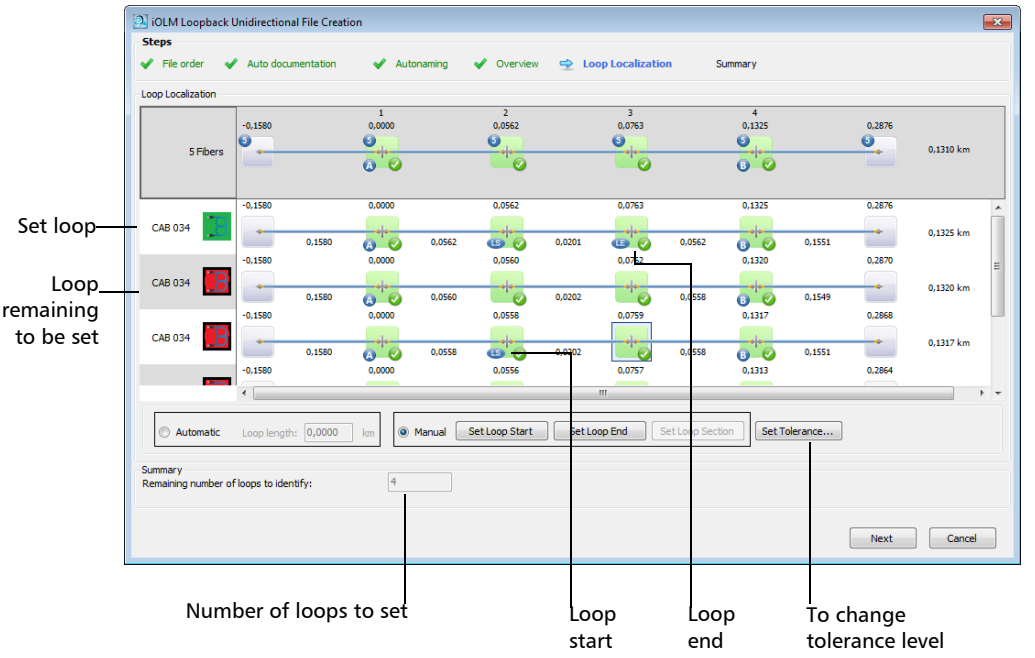
- ➤ Click on the element that you want to use as the start element, then click **Set Loop Start**. The selected elements will bear *LS* to indicate their statuses.
- ➤ Click on the element that you want to use as the end element, then click **Set Loop End**. The selected elements will bear *LE* to indicate their statuses.
- ➤ If you want to use a section to set the loop start and end values, select it, then click **Set Loop Section**. The loop start and end will be placed on the event before and after the section.

Note: *If you select an item in the cable view, all of the corresponding items in the links are set as loop start or end at once.*

OTDR


OTDR Loopback Unidirectional File Creation
Steps
File order
Auto documentation
Autonaming
Overview
Loop Localization
Summary
Loop Localization
10 Measurements
Automatic
Loop length:
0,0000
km
Manual
Set Loop Start
Set Loop End
Set Loop Section
Set Tolerance...
Summary
Remaining number of loops to identify:
9
Next
Cancel
Set loop
Loop remaining to be set
Number of loops to set
Loop start
Loop end
To change tolerance level

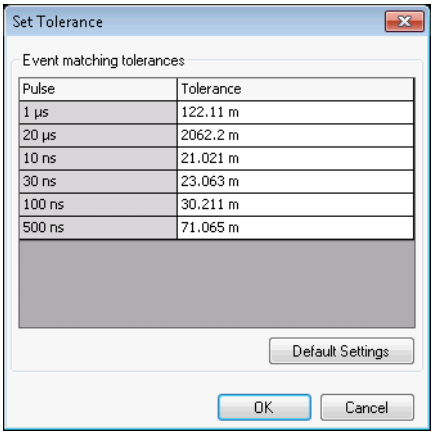
iOLM


iOLM Loopback Unidirectional File Creation
Steps
File order
Auto documentation
Autonaming
Overview
Loop Localization
Summary
Loop Localization
5 Fibers
CAB 034
CAB 034
CAB 034
Automatic
Loop length:
0,0000
km
Manual
Set Loop Start
Set Loop End
Set Loop Section
Set Tolerance...
Summary
Remaining number of loops to identify:
4
Next
Cancel
Set loop
Loop remaining to be set
Number of loops to set
Loop start
Loop end
To change tolerance level

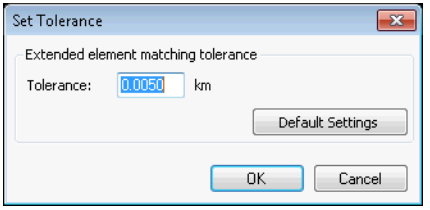
10. If needed, you can change the tolerance levels by clicking the corresponding button, and you will be taken to the iOLM or OTDR **Set Tolerance** window to set the new value. Click **OK** to close the window, and the values will be updated accordingly in the **Loop Localization** window.

Note: *For more information about setting tolerances, see Setting Event Matching Tolerances* on page 154.

OTDR



iOLM



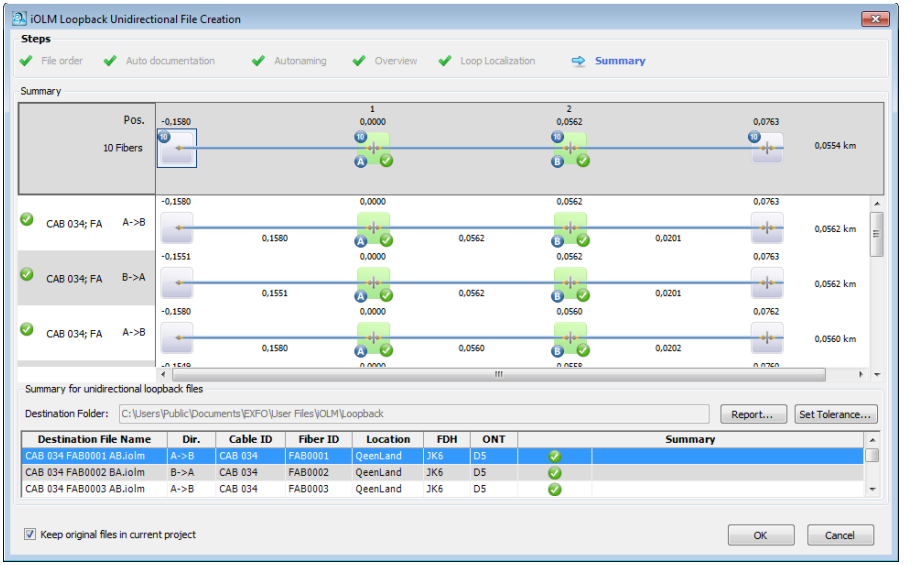
11. Click **Next** to proceed to the **Summary** step.

12. The result files and their statuses appear in the **Summary** step. If there was something preventing the file from being generated, you can see an explanation in the corresponding line.

You can select to keep the original files in your current project by selecting the corresponding option at the bottom of the window.

You also have the opportunity to change the tolerance settings in this window, as explained in step 10.

If you want to generate a report of your results, click the **Report** button to open the corresponding window.



13. Click **OK** to complete the loopback process. The resulting files appear in the **Files** tab.

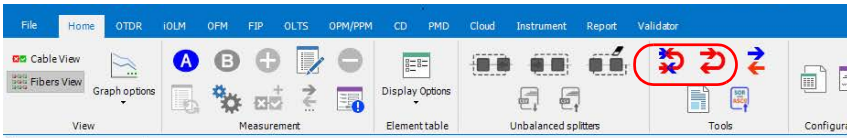
If you have selected to keep the original files in your project, they will stay in the **Files** list. Otherwise, all of the files for which the loopback was successfully created will be removed from the list. The resulting OTDR loopback files will have the same number of measurements as the original files.

Performing Bidirectional Loopback Measurements

The bidir loopback mode is available when you select at least two files. The steps are quite similar for the iOLM and OTDR modes; the iOLM steps will be shown here for illustration purposes.

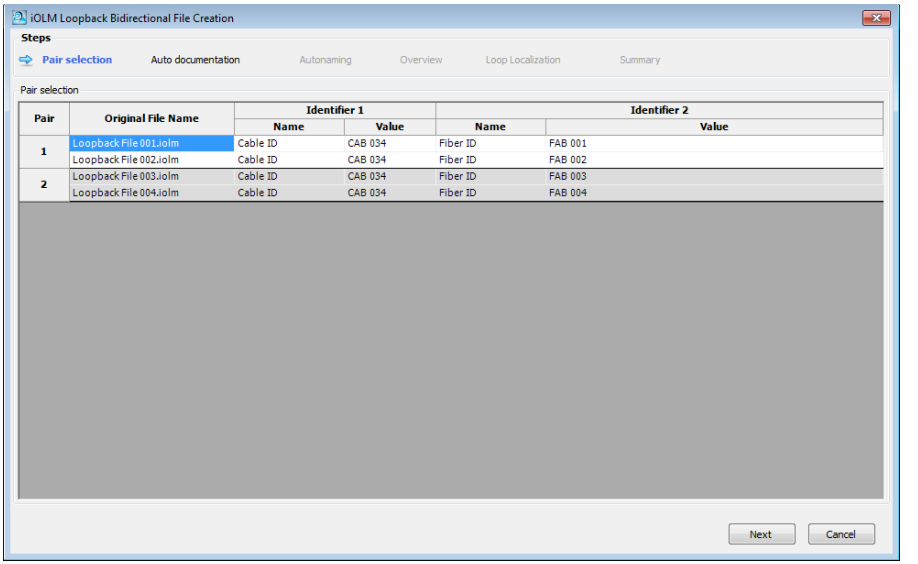
To perform a bidirectional loopback measurement:

1. Select the files that will be paired up.
2. Depending on the measurements you are using, select either the **OTDR** or **iOLM** tab, then under **Tools** select the corresponding button.

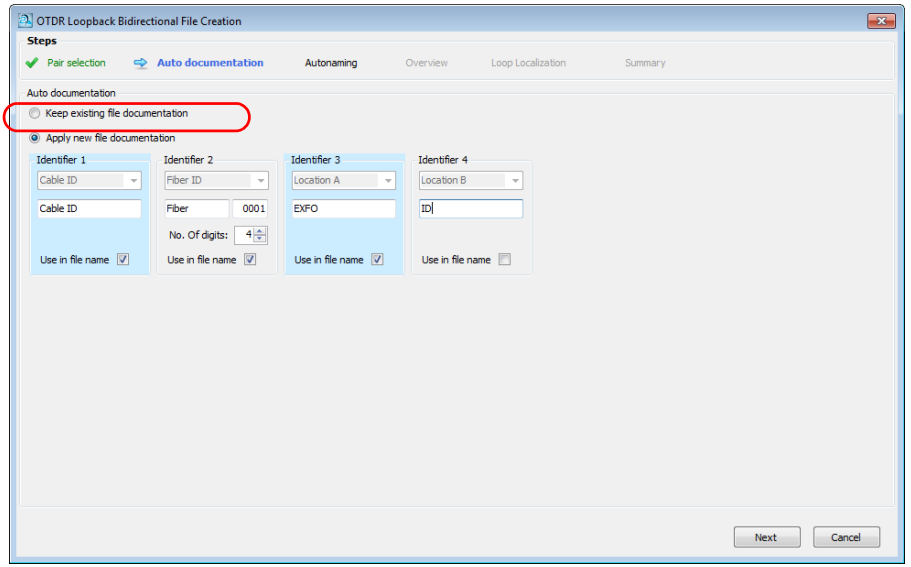


3. If needed, rearrange the files in the list. Since they appear in the same order as they are in the **Files tab**, they may not be paired as you need them. You can sort the files using the headers in the table, or you can drag the files manually in the list. Once you are done, click **Next** to proceed to the next step.

If you swap a pair, the application will ask you if you want to automatically swap the other pairs in the same way.



4. Set the automated documentation for your resulting files. If you have done a loopback operation on them before, you may keep the documentation information you had set then by selecting the corresponding option.

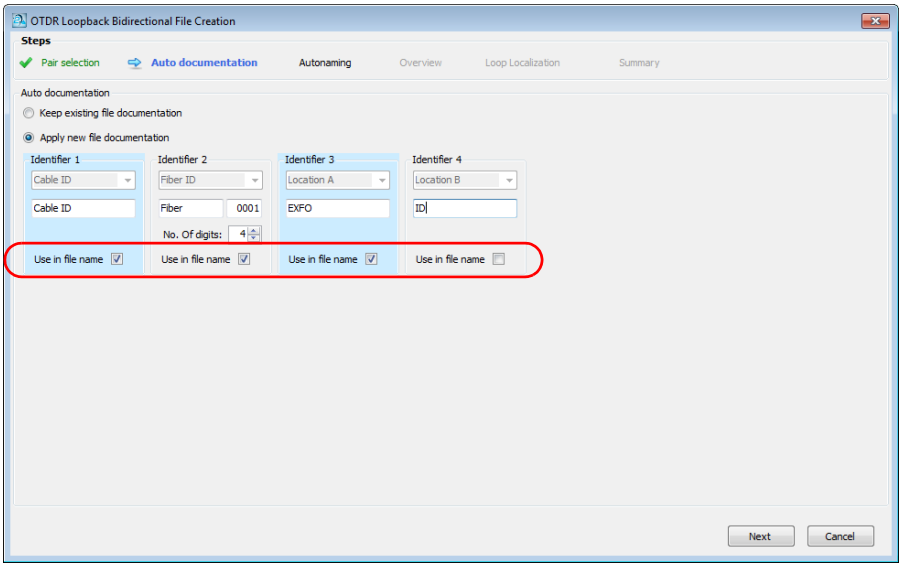


If you want to use new information, proceed as follows:

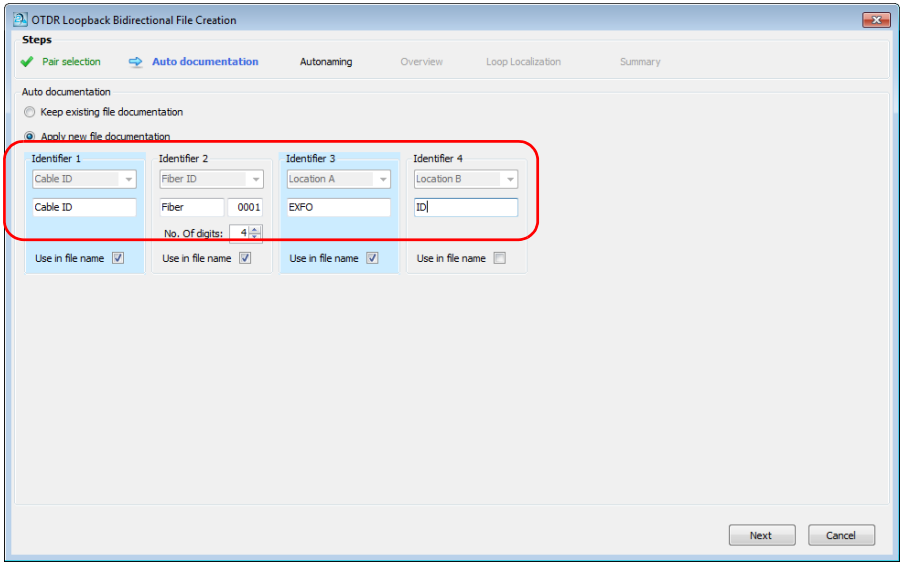
4a. Select which identifiers will be used for the documentation. In OTDR mode, you cannot change the identifier types. In iOLM mode, you need at least two identifiers, either from the list of available choices, or you can enter a new identifier of your choice. The first identifier will be the one with the highest occurrence rate in the corresponding identifiers of the selected files. If no values were set, the first two default identifiers are Cable ID and Fiber ID.

Note: *You can have four identifiers for OTDR files, and up to five identifiers for iOLM files.*

To use the identifiers in the documentation, select the corresponding **Use in file name** option.

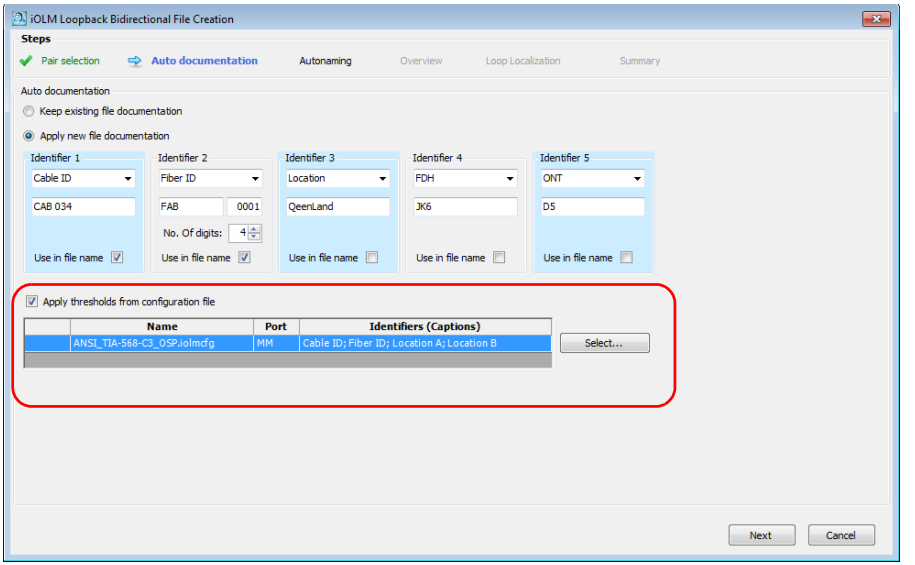


4b. Set the value you want to show for each identifier. Enter also how many digits you want to use to increment the second identifier automatically. The numbers will be incremented automatically.



If you are testing iOLM files, you can use a configuration file to set the threshold values by enabling the corresponding option. Click **Select** to open the Apply Configuration File window, where you can select the desired configuration. Click **OK** when you are done and the selected configuration will be applied.

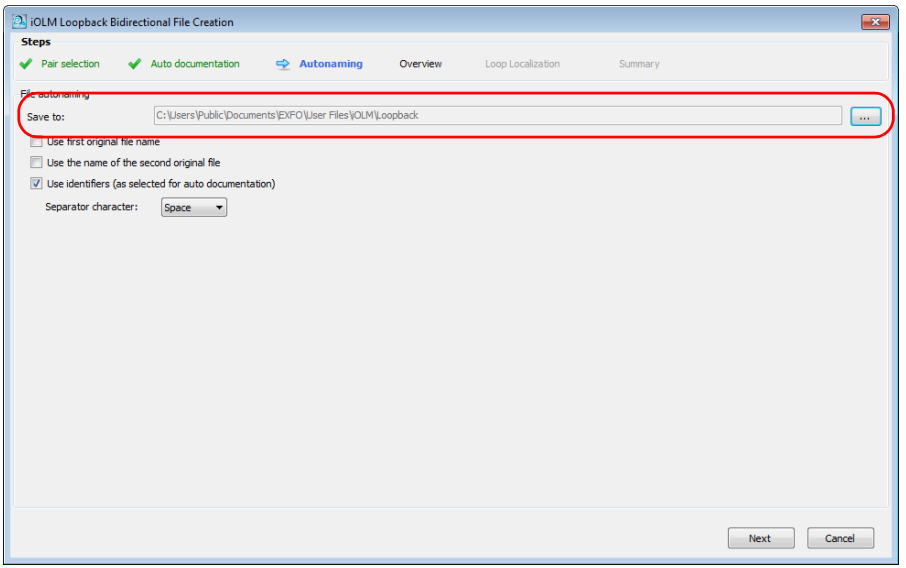
For more information about configurations files, see *Managing Configuration Files (Plus Mode)* on page 282.



5. Click **Next** to proceed to the next step.

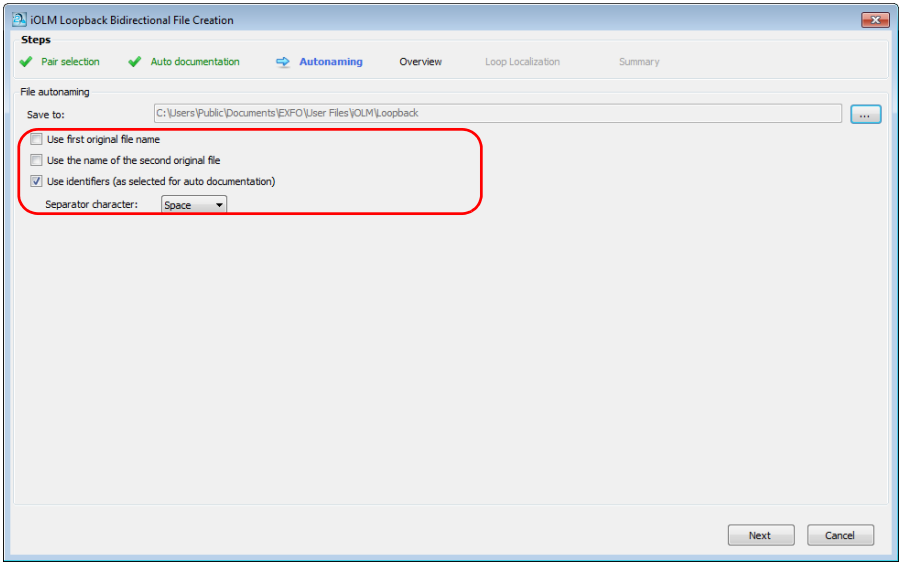
6. Set how you want the resulting files named.

6a. If desired, change the location where the files will be saved.

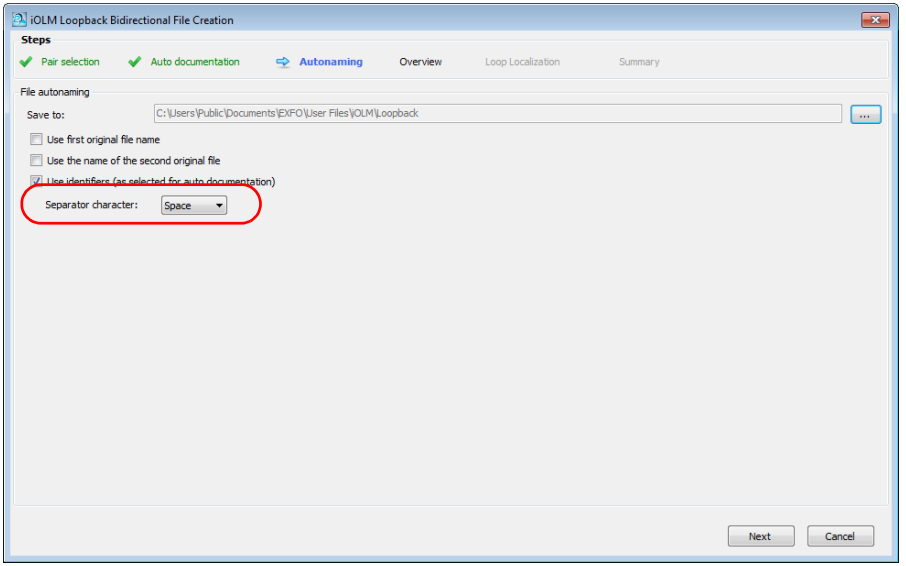


6b. Select which items to use in the file name.

Note: *The **Use the measurement wavelength** option is available for the OTDR files only.*

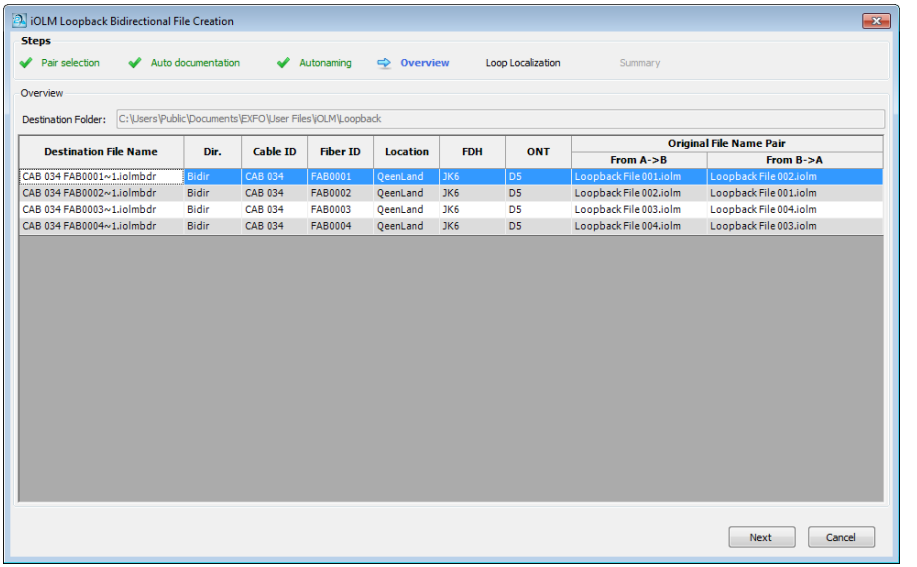


6c. Select which type of separator you want to use between the items. Click **Next** to proceed to the next step.



7. In the **Overview** step, you can see the resulting bidirectional files. The remaining identification and threshold data other than the identifiers will be of the first file in the pair.

Note: *In the case of OTDR files, a different file is displayed for each matched wavelength.*

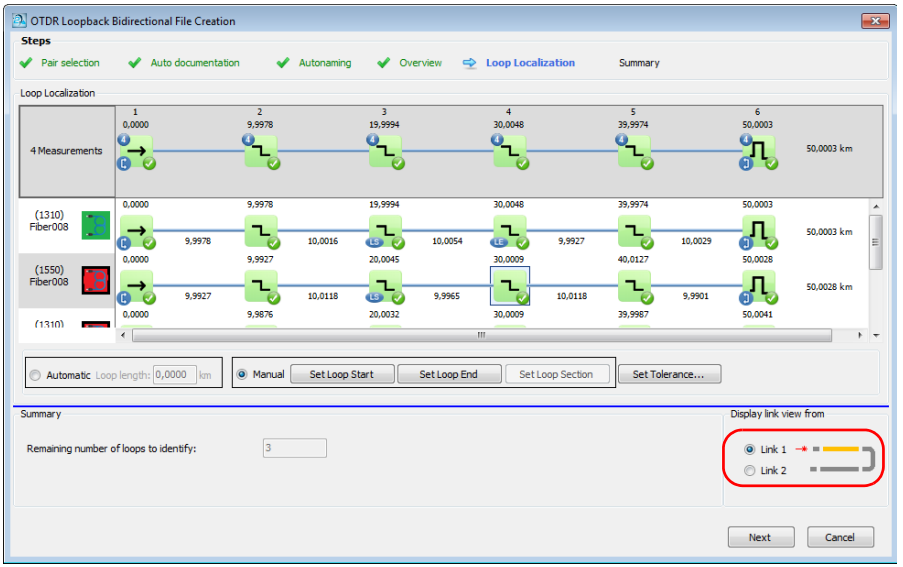


8. Click **Next** to select the test mode.

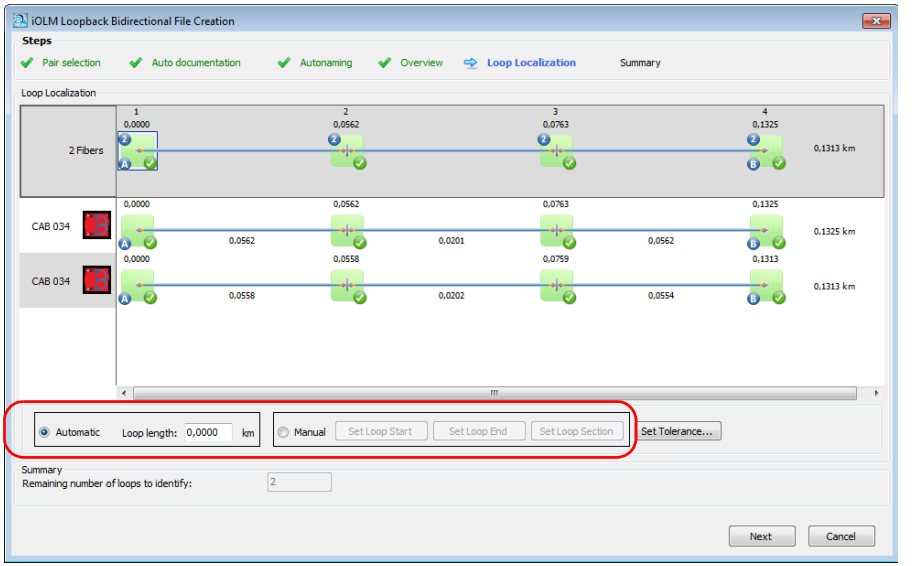
9. In the case of OTDR files, select the perspective from which you want to display the link view using the corresponding radio buttons. At this point in the loopback process, the bidirectional traces shown are virtual and created from two measurements composed of the two links that are not cut yet.

When you select one of the links as the view direction, that link will be considered as the A -> B unidirectional trace and the application ensures that the resulting unidirectional elements of the selected link is correctly aligned. The resulting unidirectional file on the other link will however remain uncertain.

Switching from one view to the other makes sure that you can verify that the two resulting unidirectional traces are adequate with perfectly aligned elements after the traces are cut. It is important to perform this verification before proceeding to the Overview step, where the final results are produced and you cannot go back.



10. Select whether the loop will be automatically detected, or if you want to do so manually. If you select the automated mode, enter a length value for the loop.



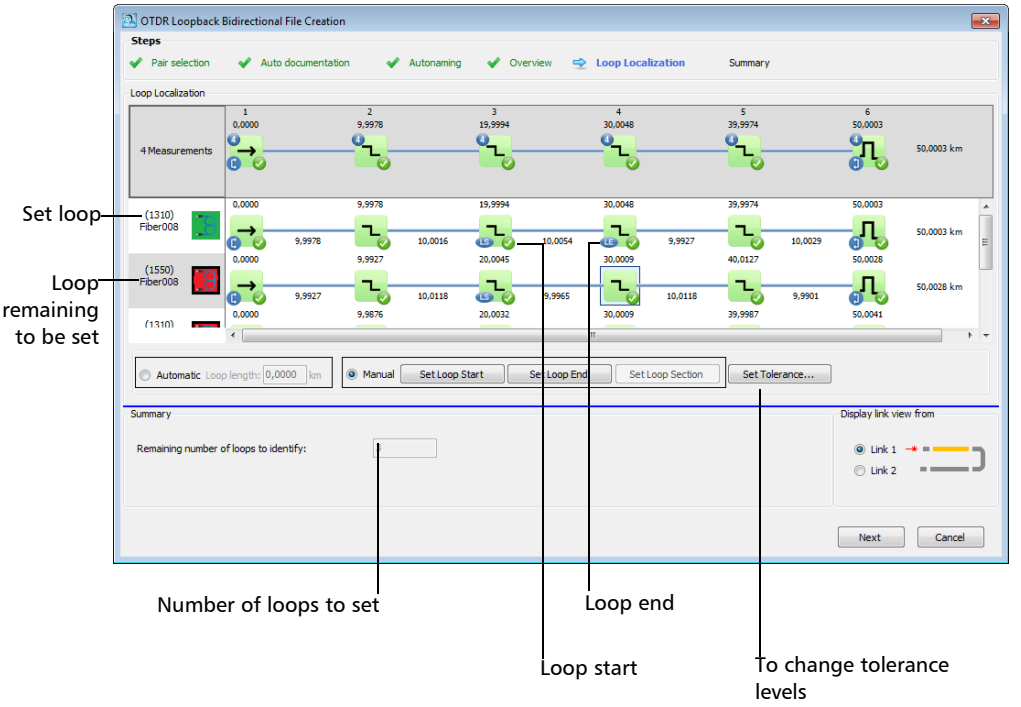
11. If you are in Manual mode, set the loopback start and end elements:

- Click on the element or section that you want to use as the start element, then click **Set Loop Start**. The selected elements will bear *LS* to indicate their statuses.
- Click on the element or section that you want to use as the end element, then click **Set Loop End**. The selected elements will bear *LE* to indicate their statuses.
- If you want to use a section to set the loop start and end values, select it, then click **Set Loop Section**. The loop start and end will be placed on the event before and after the section.

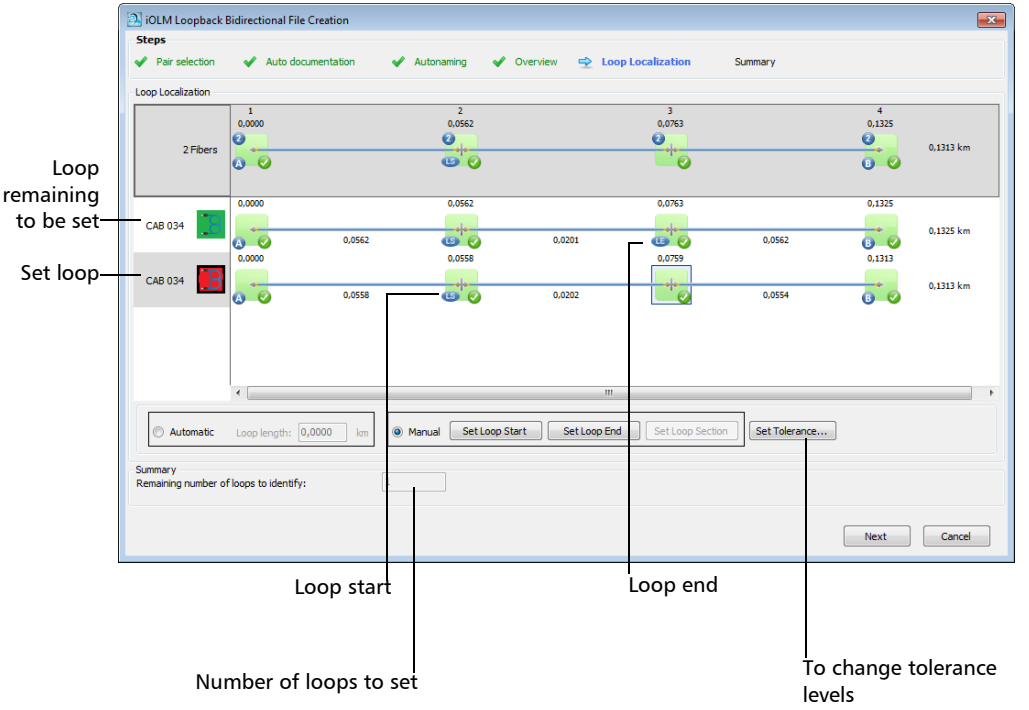
In OTDR mode, you can display the error table at the bottom of the window using the corresponding button. This table indicates if there are problems with the selected measurement files, and provides information about the errors.

Note: *If you select the element in the cable view, all of the corresponding elements in the links are set as loop start or end at once.*

OTDR



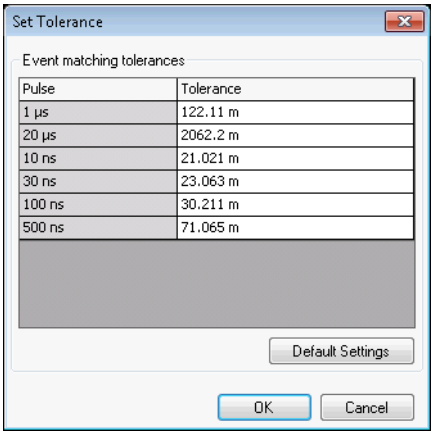
iOLM


iOLM Loopback Bidirectional File Creation
Steps
Pair selection
Auto documentation
Autonaming
Overview
Loop Localization
Summary
Loop Localization
2 Fibers
CAB 034
CAB 034
Automatic
Loop length:
0,0000
km
Manual
Set Loop Start
Set Loop End
Set Loop Section
Set Tolerance...
Summary
Remaining number of loops to identify:
Next
Cancel
Loop remaining to be set
Set loop
Loop start
Loop end
Number of loops to set
To change tolerance levels

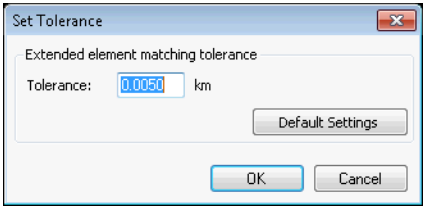
12. If needed, you can change the tolerance levels by clicking the corresponding button, and you will be taken to the iOLM or OTDR **Set Tolerance** window to set the new value. Click **OK** to close the window, and the values will be updated accordingly in the **Loop Localization** window.

Note: *For more information about setting tolerances, see Setting Event Matching Tolerances* on page 154.

OTDR



iOLM



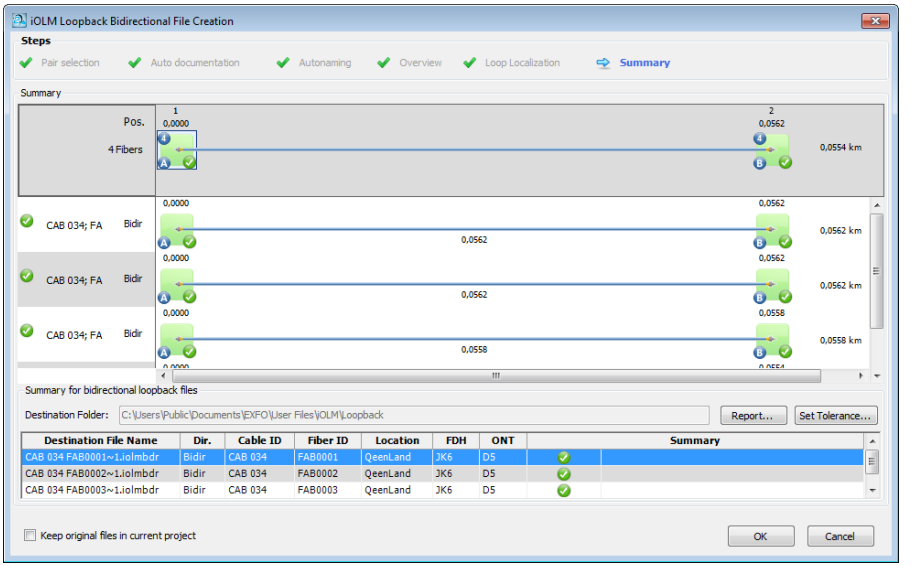
13. Click **Next** to proceed to the **Summary** step.

14. The result files and their statuses appear in the **Summary** step. If there was something preventing the file from being generated, you can see an explanation in the corresponding line.

You can select to keep the original files in your current project by selecting the corresponding option at the bottom of the window.

You also have the opportunity to change the tolerance settings in this window, as explained in step 12.

If you want to generate a report of your results, click the **Report** button to open the corresponding window.



15. Click **OK** to complete the loopback process. The resulting files appear in the **Files** tab.

The result files and their statuses appear in the **Summary** step. If there was something preventing the file from being generated, you can see an explanation in the corresponding line.

In the case of iOLM files, separate bidirectional files will be created for each wavelength with a matching measurement pair.

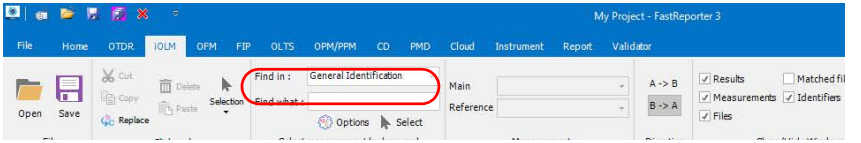
If you have selected to keep the original files in your project, they will stay in the **Files** list. Otherwise, all of the files for which the loopback was successfully created will be removed from the list.

Changing the Main Measurement

FastReporter 3 allows you to select which wavelength is the main measurement for your files.

To change the main measurement:

1. Select the file for which you want to set the main measurement.
2. Select the **Home** ribbon tab.
3. Under **Measurement**, in the **Main** list, select the wavelength that you want to use as the main measurement in the corresponding list.



Note: *When you hover the mouse pointer over the selection area of a trace which is not the main measurement, a tooltip with the fiber ID and measurement wavelength is displayed.*

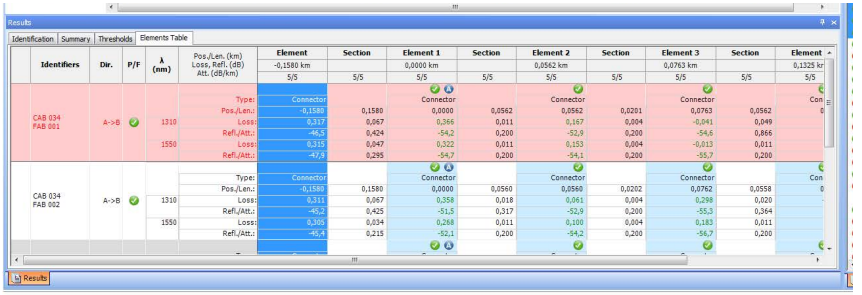
Setting a Reference Measurement

When any measurement is selected as reference measurement, all of the items in the reference measurement are considered as reference items.

To set a reference measurement:

1. Select the measurement that you want to use as the reference, either in the **Measurement** tab or the event table.
2. Select the **File** ribbon tab, then **Set as Reference File**.

   The measurement changes color in the table to indicate its new status and the corresponding row is blocked at the top of the table so that you always see it even when scrolling down the list of other measurements.



4 Using Cloud Applications

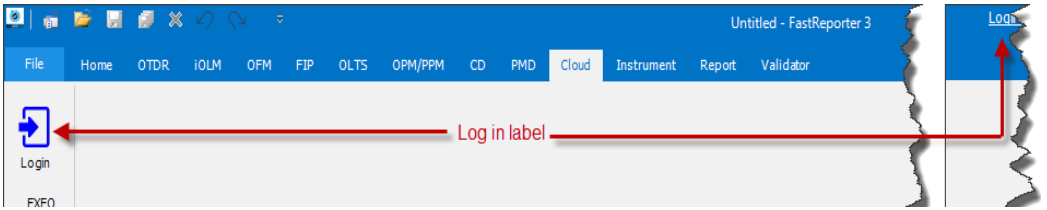
The following cloud applications are available for post-processing with FastReporter 3:

- EXFO Connect, to manage your files
- TestFlow, to enable your software options and view and manage your jobs.
- Using EXFO Exchange

You can login/logout from the EXFO Exchange Account or TestFlow account using the Cloud menu. You can also perform various activities like changing the Workspace, TestFlow options, and upload the test results to your Workspace.

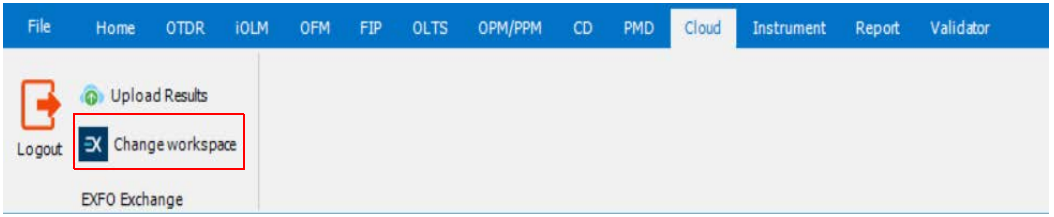
Logging in to the EXFO Exchange account

If you have not logged in the application and want to log in, click the **Login** label on the title bar or click the **Cloud** tab, and then select the **Login** icon.



Changing Workspace

You can change the workspace if you have access to multiple workspaces.



In the **Cloud** menu, select **Change workspace** sub-menu, and then select the required workspace.

Uploading Results

As an EXFO Exchange user, you can upload the test result files available on your system to your workspaces. The files that are not supported to upload will be listed with an error message. To upload, you should have the administrator rights of the selected workspace. Members cannot use this feature. if you are not sure about your role for the selected workspace, verify your role, go to **File** > **Support** > **About FastReporter**.

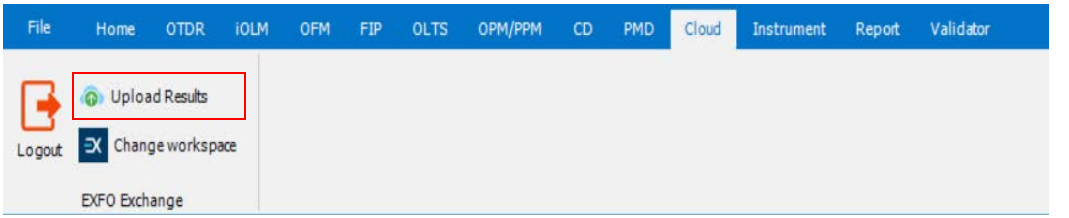
Note: *This feature is not available in basic mode.*

Note: *At present, only the SOR measurement files are supported.*

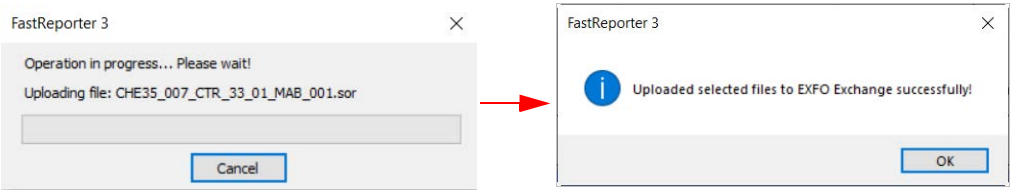
To upload the results to the workspace:

1. Go to **Files** > **Open**, and then select the test result files from your system that you want to upload.
   The selected files are added to the **Files** section.

2. Go to the **Cloud** menu, select the test measurement files you want to upload from your system, and then select the **Upload Results** sub-menu.



The files will be uploaded to your selected workspace. You will be notified once done.


FastReporter 3
Operation in progress... Please wait!
Uploading file: CHE35_007_CTR_33_01_MAB_001.sor
Cancel
FastReporter 3
Uploaded selected files to EXFO Exchange successfully!
OK

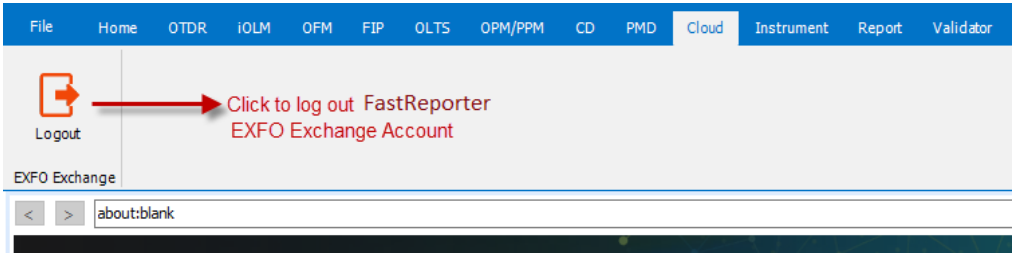
Log out from EXFO Exchange account

You can Log out from the EXFO Exchange account if required.

Note: *If there are unsaved changes to the project or project files, you will be prompted to save them when you are logging out from the EXFO Exchange account.*

To log out from EXFO Exchange account:

Click the **Cloud** tab, and then click the **Logout** icon.



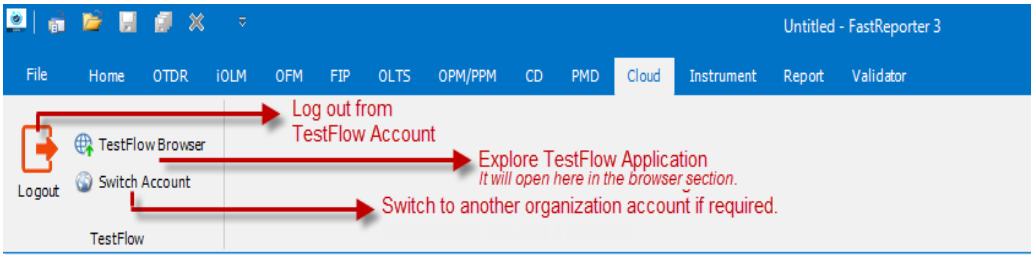
Log out from TestFlow Account/Change Organization/Start TestFlow in a Browser

You can Log out from the TestFlow, Start TestFlow in a Browser, or Switch your organization account

Note: *If there are unsaved changes to the project or project files, you will be prompted to save them when you log out from the TestFlow account.*

To log out from TestFlow account:

Click the **Cloud** tab, and then click the **Logout** icon.



You can shift to another Organization account or start TestFlow in a browser if required. Refer the above image.

Using FastReporter 3 with EXFO Connect

You can use FastReporter 3 conjointly with EXFO Connect to manage your files. This active link let you check out the files you need using specific search criteria, work on them, then check them in back into your server.

You can also download copies of your files if you want to work on them without modifying your source files.

Note: *When you log in to the EXFO Connect server for the first time, you will be asked to read and accept the license agreement and change the default password to one of your choice.*

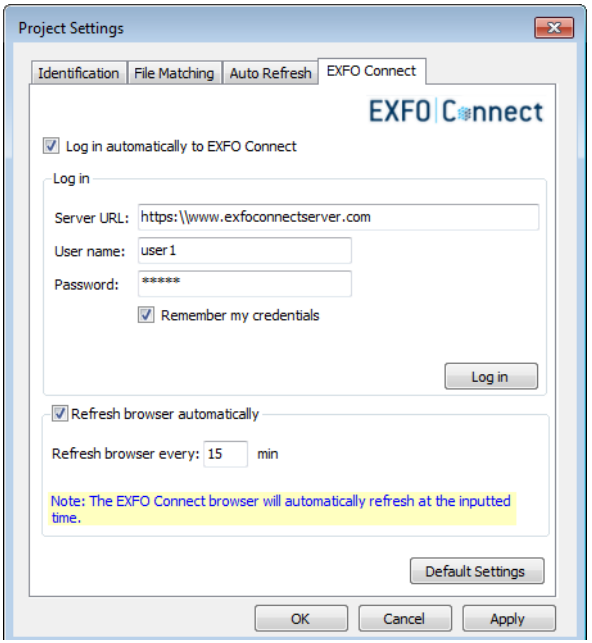
Setting Up the Connection to the Server

You can have the connection to the server done automatically, or you can connect manually as needed.

To set up the connection information:

1. Select the **Cloud** tab, then under **EXFO Connect**, select **Settings**.

2. Select the **EXFO Connect** tab.



3. Under **Login**, enter the server and identification information to connect the application to the server. You can have the application remember your credentials and connect automatically to the server for quicker access. This connection is automatic for that user only.

To log in to EXFO Connect:

Select the **Cloud** ribbon tab, then under **EXFO Connect** use the corresponding button in the toolbar (

).

When you are logged in successfully, you will notice your identifier at the top right part of the main window.

To log out of EXFO Connect:

Select the **Cloud** tab, then under **EXFO Connect** use the corresponding button in the toolbar (

).

Using the EXFO Connect Browser

The EXFO Connect browser features the search tools you need to retrieve the files required for your analyses. As it is the case for the full EXFO Connect application, you can check in and check out files, as well as work on copies of your files so as not to compromise your data.

Note: *The files you can process with this browser include optical test types only. The transport and datacom, or access type files are not available.*

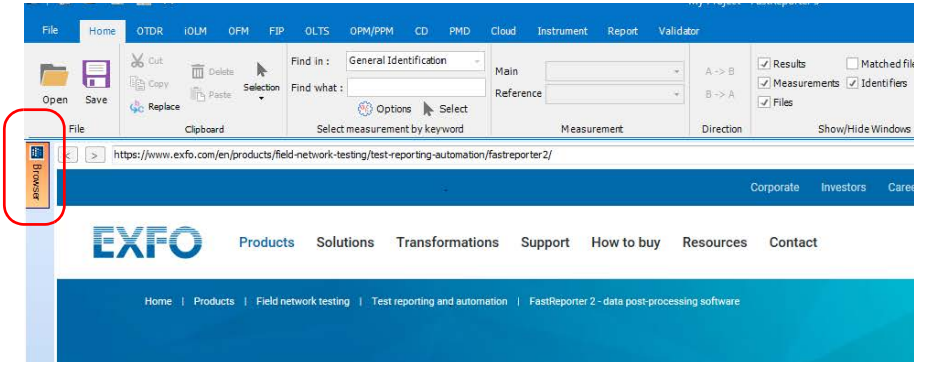
Note: *The browser included with FastReporter 3 only have limited features. For a complete use of the EXFO Connect features and options, use the actual application.*

You can have the list of files in the server refresh automatically at set intervals of time to make sure that you have the latest data to work with.

To display the browser on-screen:

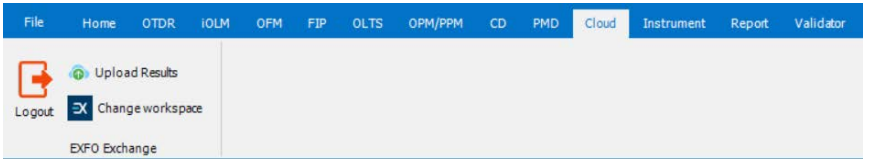
From the main window, click the corresponding tab on the left part of the screen. Drag the browser window to the desired size.

Note: *The EXFO Connect Browser must be enabled under the **Show/Hide Windows** menu of the **Home** tab to see the tab.*

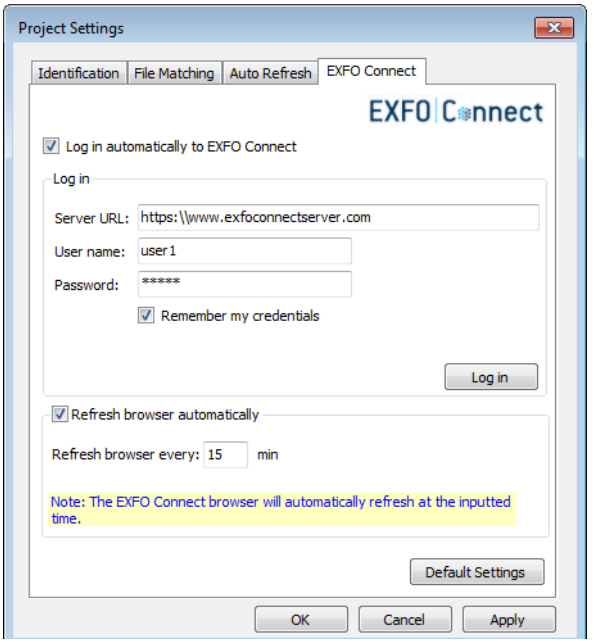


To activate the automatic refresh for the browser:

1. Select the **Cloud** tab, then under **EXFO Connect**, select **Settings**.



2. Select the **EXFO Connect** tab.



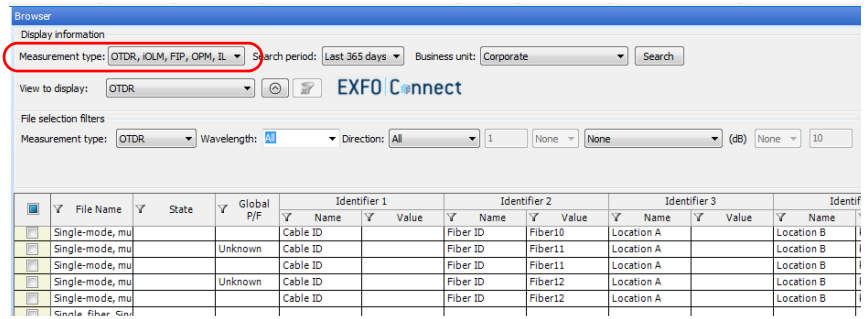
3. Select the **Refresh browser automatically** option to activate it.
4. Set the desired refresh rate, in minutes. The minimum value is 5 minutes, and the maximum value is 60 minutes.

Searching for Files in the Browser

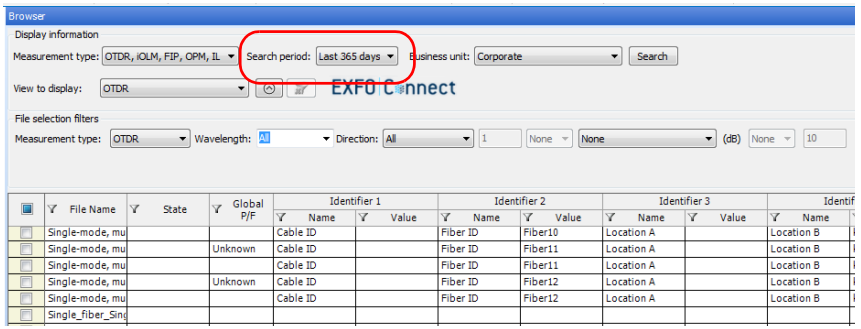
You can include different file types in your search, but any advanced search on a specific file type has to be done individually.

To search for files in the browser:

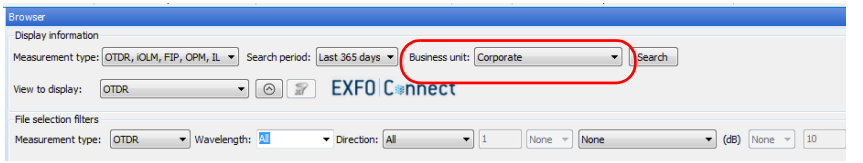
1. In the browser window, select which types of files you want to include in your search.



2. Select the period for which you want to perform your search. You can select a preset value, or select the Custom range item and enter your own value.

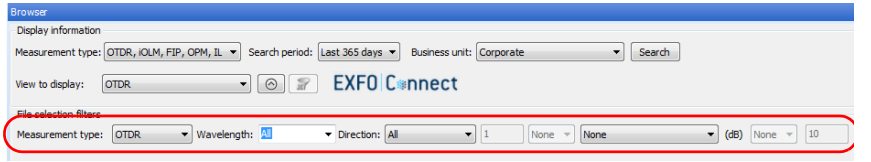


3. If desired, select the business unit or units from where you want to retrieve the data. The list of available business units will vary depending on which business unit is available on the EXFO Connect server.



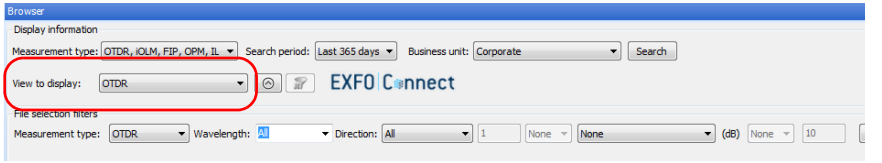
4. If you want to add additional search criteria, select the corresponding file type, then select more details.

Note: *The available criteria will change depending on the type you select.*



5. Select if you want to show a display view specific to the type of files you are listing. This view will give you access to specific columns for each type and help you in your search.

Note: *You can only show one type of viewer at a time, or use the general view.*



6. Click **Search** to start the search.

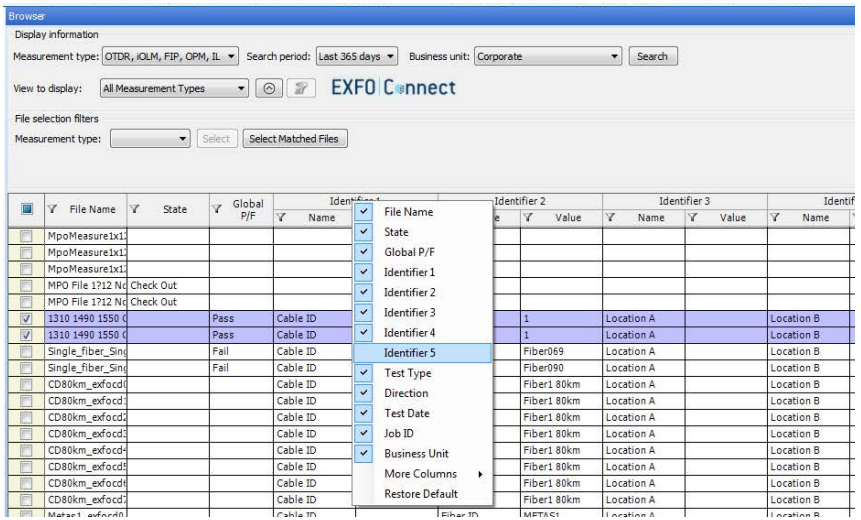
Applying Filters to Your Search Results

You can use filters in your browser so as to only see the files you want. Both the column of the table and the actual contents of the columns can be filtered.

You can also stretch or narrow the column width as needed.

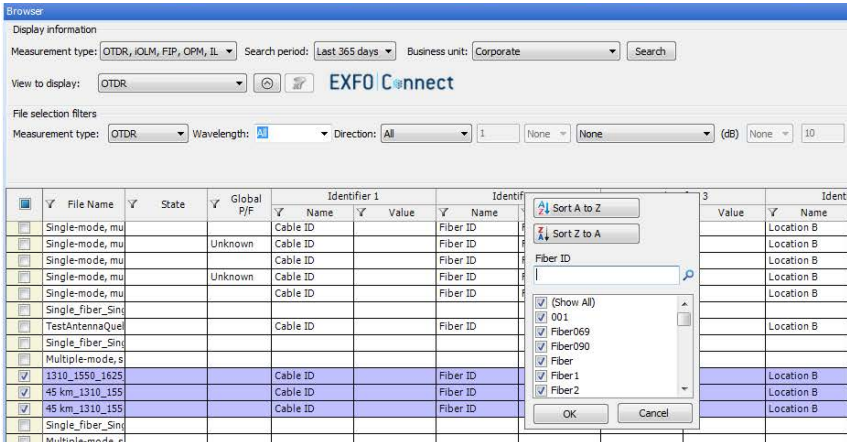
To filter the columns you want to see:

1. In the browser, right-click on the columns.
2. Select which headers you want to display.



To filter the items in each column:

1. In the browser, click in the column for which you want to use a filter.
2. Select which items you want to view.



3. To perform an even more detailed filter search, you can type a term directly in the search box to reduce the list of available choices, and click **OK**.

Managing Files

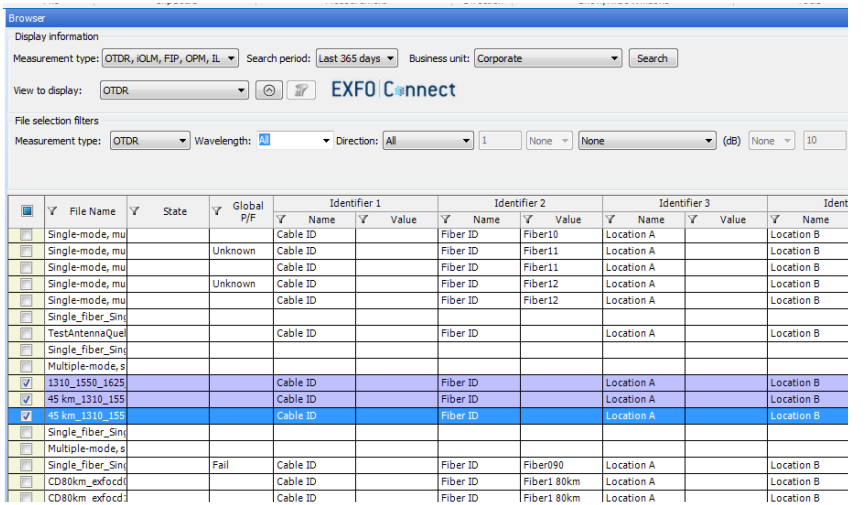
Managing the files is achieved through the available actions below:

- *Checking out files:* allows you to retrieve files from the server where they are stored, and perform analyses and modifications on them. When files are checked out, they are “reserved” by the user and cannot be modified by another user.
- *Discarding checked out files*: If you change your mind about working on some files and want to free them for other users, you can undo your check out. Any change done to the files will be lost.
- *Checking in files:* Once you are done working with the files, you must check them back in the server so that other users can consult them. Any change done to the files you are checking in is saved into the database.
- *Uploading files*: You can add new files to the server.
- *Viewing files*: You can get a read-only copy of the files from the server for consultation purposes.
- *Exporting files*: You can obtain a local copy of a file that is not linked with the server. This file is writable.

You can perform those actions directly in the browser by right-clicking on the selected measurements, or in the **Cloud** ribbon tab under **EXFO Connect**.

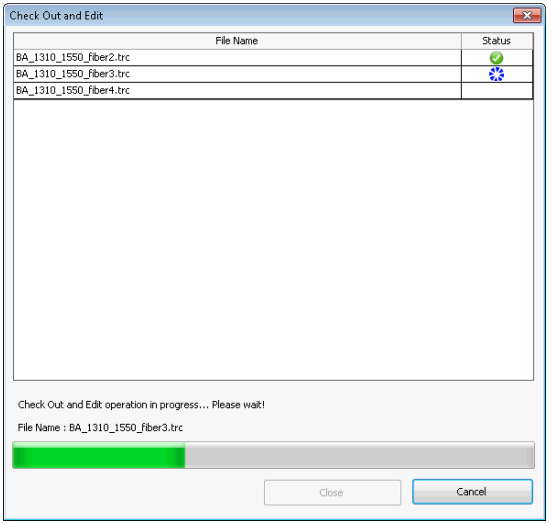
To check out files:

1. In the EXFO Connect browser, select which files you want to check out. You can select more than one file.



2. Select the **Cloud** tab, then under **EXFO Connect**, select **Check out and Edit**.

3. Once the check-out operation is complete, click **Close** to open the files.

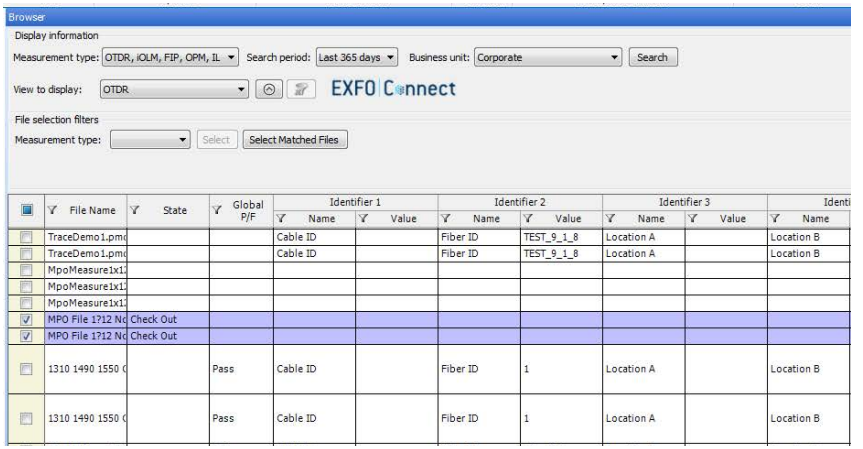


You can see the progress as the files are downloaded to their local folder. If there was a problem with any of the files, you will be notified with an icon next to the file and a description of the problem. The selected files are now identified as checked out in the browser and are added in the **Files** tab.

To undo a check out of your files:

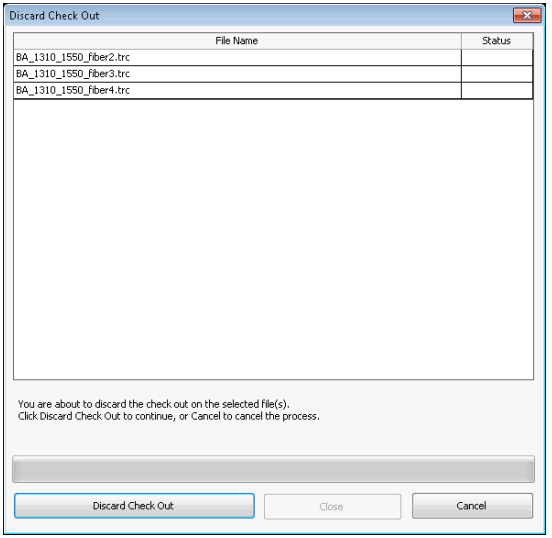
1. In the EXFO Connect browser, select which files for which you want to remove the check out. You can select more than one file.

Note: *You can only remove a check-out status on files that you have checked out.*



2. Select the **Cloud** tab, then under **EXFO Connect**, select **Discard Check Out**.

3. Confirm that you want to discard your checked out file from your local folder.

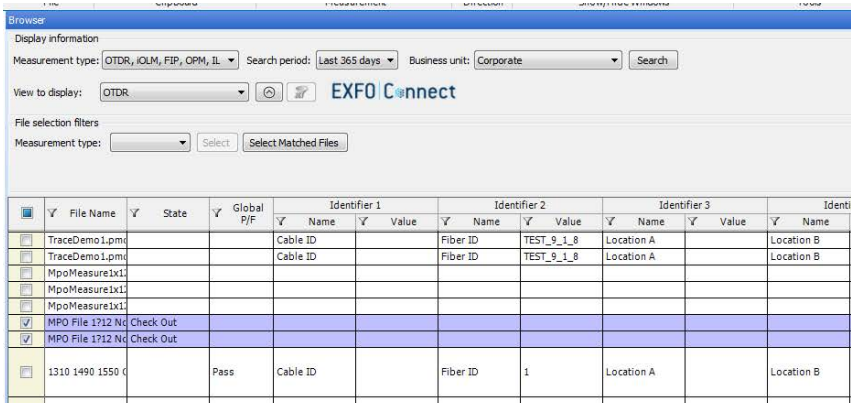


You can see the progress as the files are removed from the local folder. If there was a problem with any of the files, you will be notified on-screen.

To check in files:

1. In the EXFO Connect browser, select which files you want to check in. You can select more than one file.

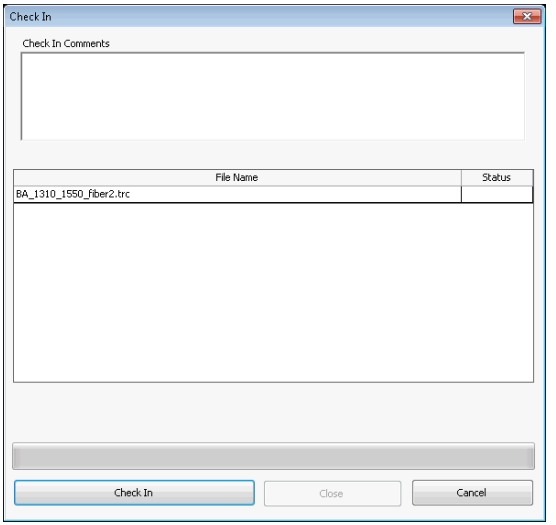
Note: *To find all of the files with a check-out status, you can use a filter search. See* Applying Filters to Your Search Results *on page 117 for details.*



2. Select the **Cloud** tab, then under **EXFO Connect**, select **Check In**.

Note: *If your files were modified, you will be prompted to save them.*

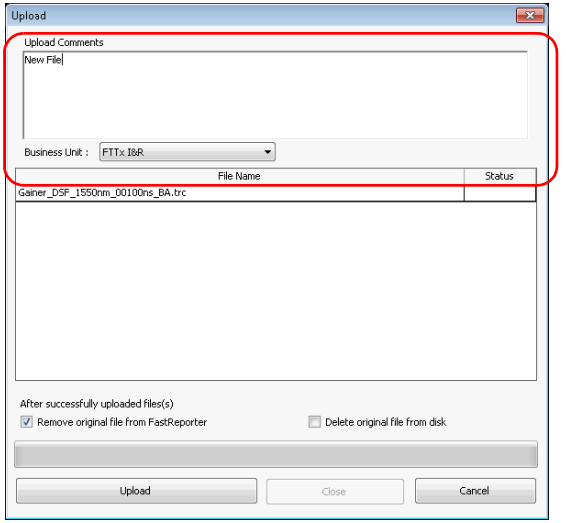
3. If desired, enter a comment for your check-in.



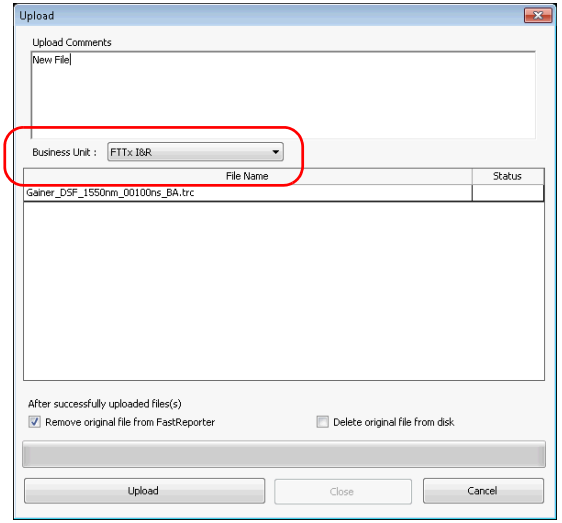
You can see the progress as the files are uploaded to the server. If there was a problem with any of the files, you will be notified on-screen. The selected files are removed from the application as they are successfully uploaded.

To upload files:

1. In the **Files** tab, select which files you want to upload to the server. You can select more than one file.
2. Select the **Cloud** tab, then under **EXFO Connect**, select **Upload Files**.
3. If desired, enter a comment for your upload.



4. Select which business unit the uploaded files belong to in the list, if desired.



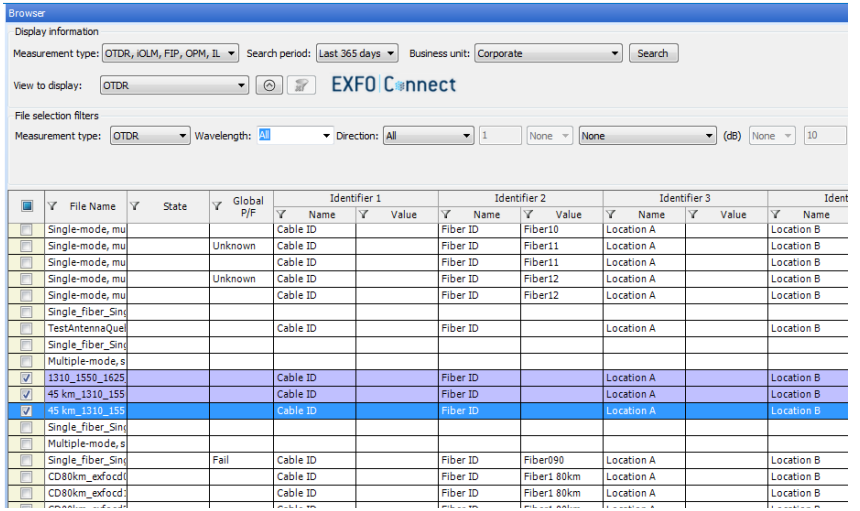
5. Click **Upload** to complete the transfer.

You can see the progress as the files are uploaded to the server. If there was a problem with any of the files, you will be notified on-screen. The selected files are left in the application.

Note: *The files will appear in the EXFO Connect browser the next time the latter is refreshed.*

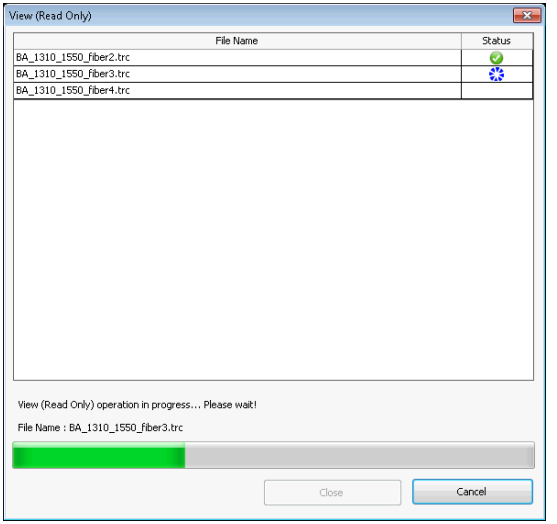
To view files in read-only mode:

1. In the EXFO Connect browser, select which files you want to download. You can select more than one file.



2. Select the **Cloud** tab, then under **EXFO Connect**, select **View (Read Only)**.

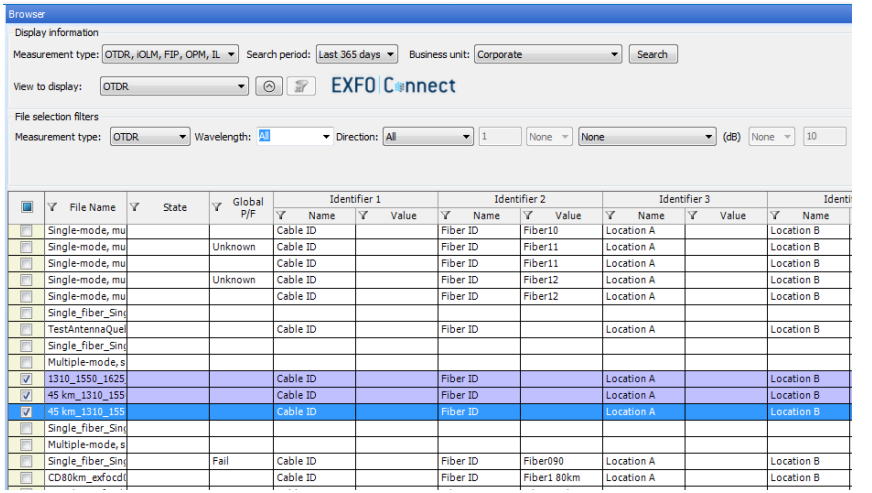
3. Once the download operation is complete, click **Close** to open the files.



You can see the progress as the files are copied to their local folder. If there was a problem with any of the files, you will be notified on-screen. The selected files are now identified as read-only in the browser and are added in the **Files** tab.

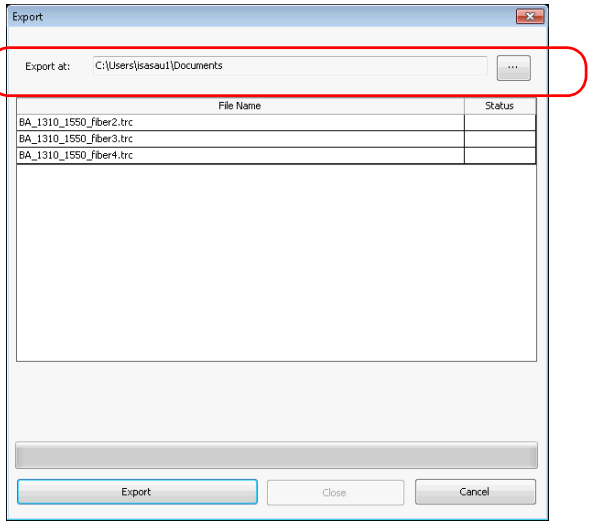
To export a file:

1. In the EXFO Connect browser, select which files you want to copy. You can select more than one file.

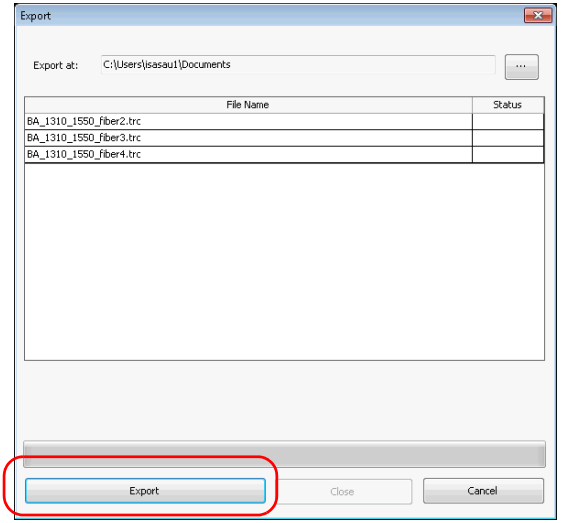


2. Select the **Cloud** tab, then under **EXFO Connect**, select **Export**.

3. If desired, select a location for your copy.



4. Click **Export** to confirm the transfer.

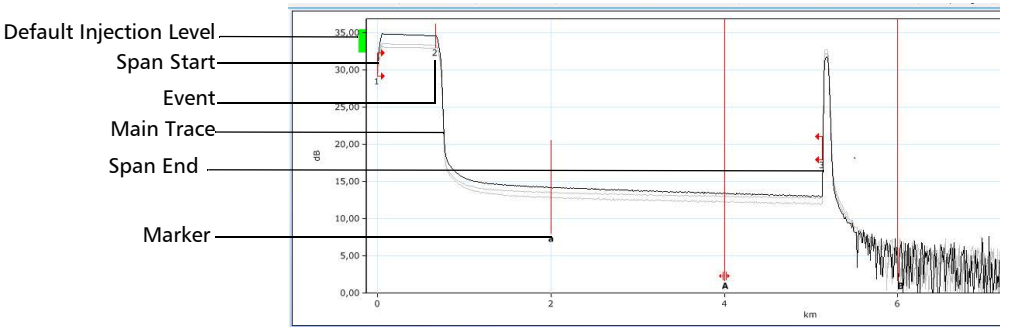


You can see the progress as the files are copied to their local folder. If there was a problem with any of the files, you will be notified on-screen. The selected files are now identified as read-only in the browser and are added in the **Files** tab.

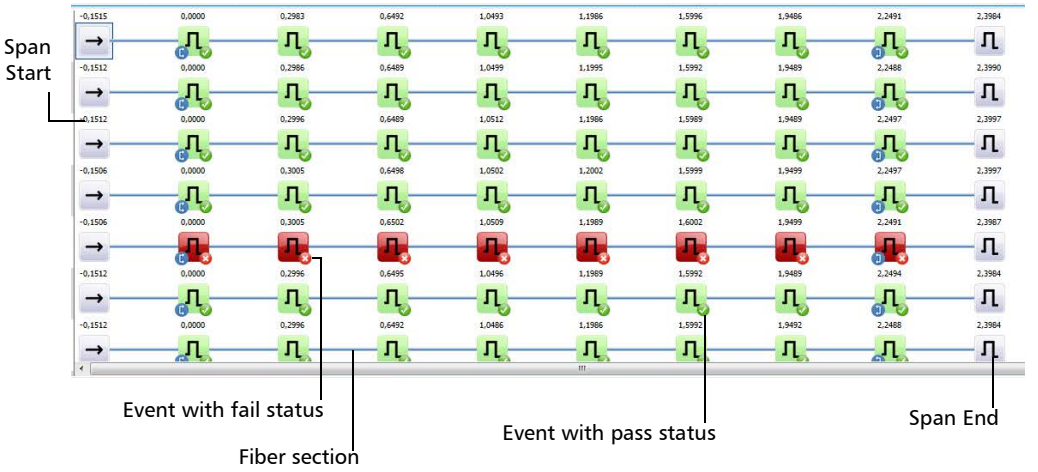
5 Working with OTDR Files

The application shows the result of the OTDR analysis in the graph area. You can view the OTDR traces in two different manners:

➤ Graph view: This is the standard OTDR view. You can see the events along the trace marked by red vertical lines.

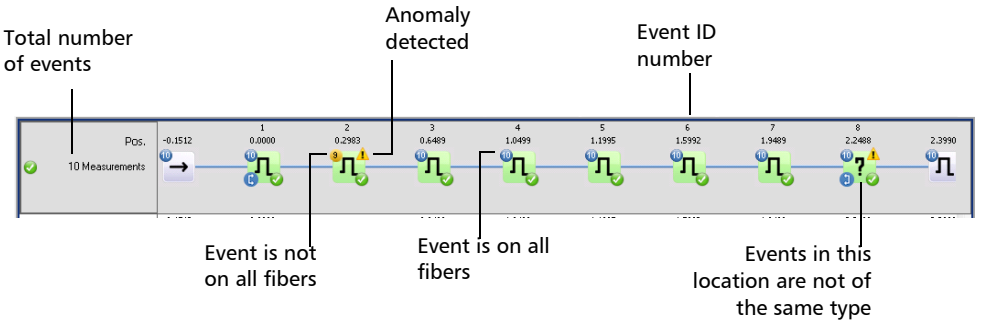


➤ Linear view: The linear view is a graphical representation of the link, where each event is displayed as a box containing the symbol corresponding to the event type.



When you are working with more than one measurements in the Linear view, you can also display the Cable view at the top of the list. It shows all of the measurements grouped into one link, with the link overview. The total number of selected fibers is indicated on the left and each event has its own identification number.

When matched events are of the same type, you can see how many there are on the upper left corner of the event icon. If the number is blue, all fibers contain this event. If the number is yellow, at least one fiber does not have this event. If events at the same position are not of the same type, a question mark icon replaces the event type.

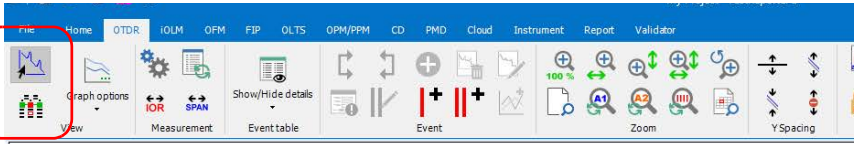


Note: *When viewing grouped fibers, the Span End event (B) is set according to the reference measurement if there is one; if there is no reference measurement, it is set according to the shortest fiber. The events located between the Span Start and Span End events (including both A and B) are numbered.*

You can perform the same actions (adding, modifying and deleting events, setting span start and end) on single fiber and multiple fibers; the main difference is that if you perform the actions on the cable at the top of the linear view, all of the included fibers are modified accordingly.

To select the viewing method:

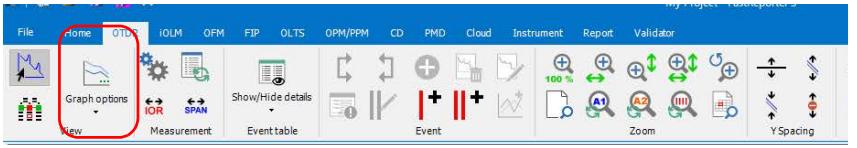
1. If you have not done so already, select the **OTDR** tab.
2. Under **View**, select whether you want to view the linear or graphic view.



Note: *When in linear view, the zoom and marker features are not available. However, you can add, delete, and change events from the linear view.*

To display the Cable view:

1. If you have not done so already, select the **OTDR** tab.
2. Select the linear viewing method.
3. Under **View**, select **Graph Options**, then **Display Cable View Section**.



Depending on the file format, you can perform different operations. See the table below for details:

Action	EXFO Native[a,b] (.trc, .bdr)	Telcordia 100 EXFO (.sor)	Telcordia 200 EXFO (.sor)	Telcordia 200 EXFO iOLM (.sor)	Telcordia 100 Non-EXFO (.sor)	Telcordia 200 Non-EXFO [c,d](.sor)
Changing job information (such as Fiber ID, Job ID, Cable ID, and so on)	✔	✔	✔	✔	✔	✔
Editing events	✔	✔	✔	-	-	✔
Inserting events	✔	✔	✔	-	-	✔
Deleting events	✔	✔	✔	-	-	✔
Managing span	✔	✔	✔	-	-	✔
RBS, event detection, thresholds	✔	✔	✔	-	-	-
Managing bidir	✔	✔	✔	-	-	✔
Managing templates	✔	✔	✔	-	-	✔
IOR, Helix	✔	✔	✔	-	-	✔
Event Detection (reanalysis)	✔	✔	✔	-	-	-
Pass/Fail thresholds	✔	✔	✔	✔	✔	✔

a. The native formats also include FTB-100 version 2.7 (.ftb100) and FTB-300 (.ftb300).

b. The 64-bit version of FastReporter 3 may not support all file formats. To view files that come from older OTDR modules, save them first in a newer *.trc format using the 32-bit version of the application.
c. The actions are valid only if the event markers are properly saved. If not, the files are considered as the same thing as viewing Telcordia 100 N on-EXFO files.
d. Providing that the manufacturer complies with the Bellcore standard.

Changing OTDR Settings

When viewing your OTDR files, you can change general properties, pass/fail thresholds for selected wavelengths, event matching tolerances, and automatic file matching rules for the OTDR projects.

Changing General Settings

General options include items such as the pulse baseline, visual settings, and event calculation and threshold settings.

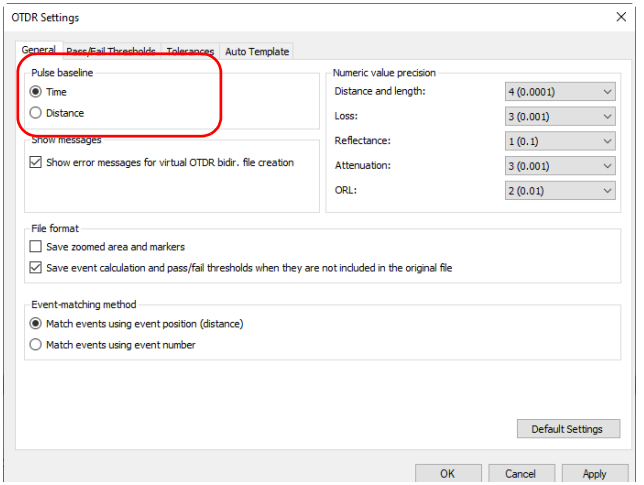
To change OTDR general settings:

1. If you have not done so already, select the **OTDR** tab.
2. Select **Settings**.

3. Click the **General** tab.

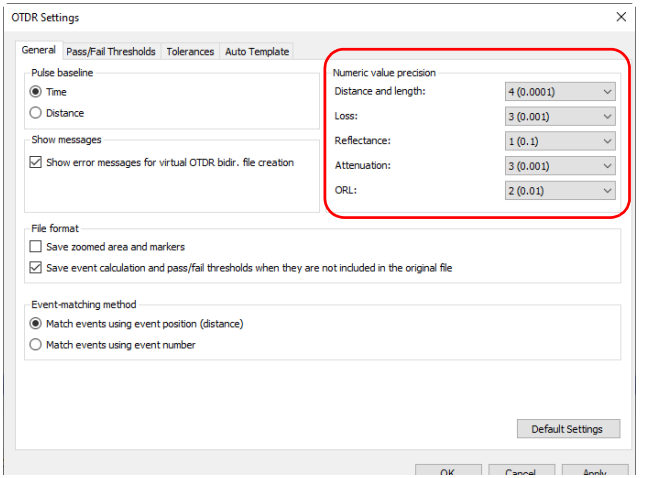
4. Select if you want the pulse baseline to be based on time or distance.

Note: *The pulse baseline distance is always given in meters.*



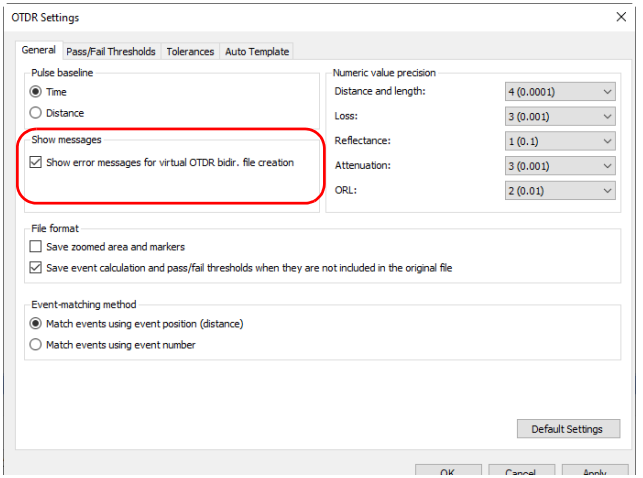
5. Change the numeric value precision settings for distance and length, loss, reflectance, attenuation, or ORL, if desired.

These settings also affect span loss, average loss, average splice loss and maximum splice loss.

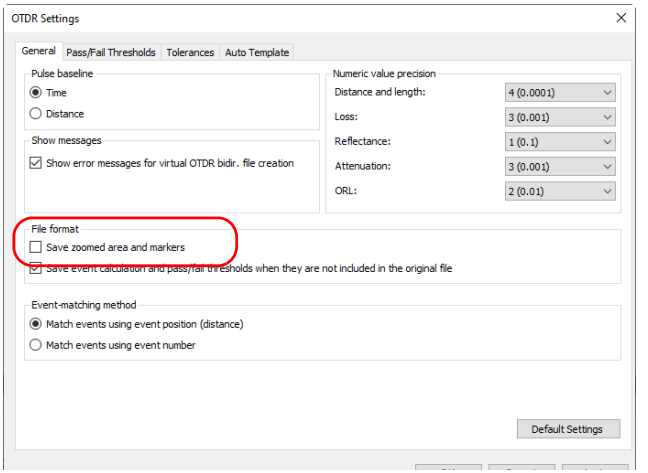


Note: *The numeric precision in the linear view does not apply if the selected units are meters or feet.*

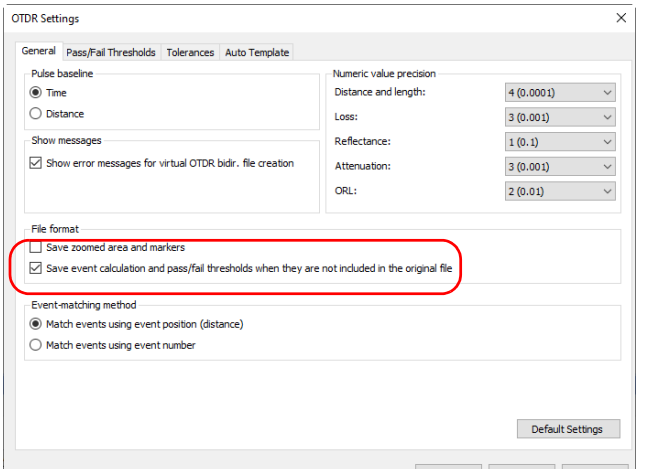
6. Indicate whether you want to display the error messages when creating virtual bidirectional files. This option will let FastReporter 3 notify you when a bidirectional file cannot be created, and indicate the reason why.



7. If you want the zoom area and marker positions to be saved in your OTDR file, enable the corresponding option. By default, this option is not selected.

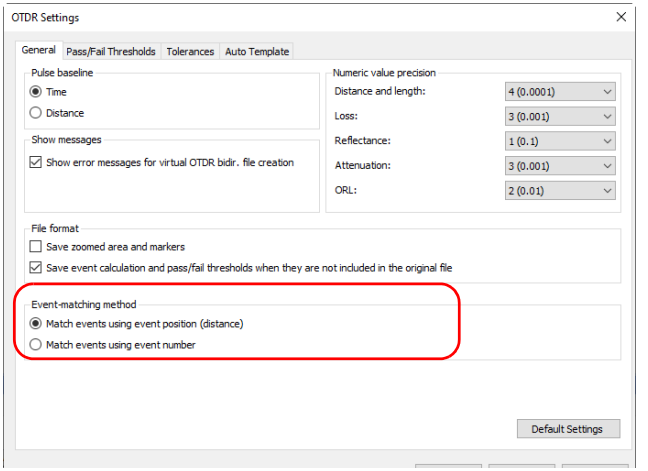


8. If you want the event calculations and pass/fail thresholds to be saved when they are not included in the original file, select the corresponding option. Otherwise, the default values are used.



9. Select how the events will be matched, either using the position (the distance on the fiber), or the event number. The span start is considered as event number 1, or the start position.

Note: *Some operations, such as delete, add, and add to other measurements are not available when the events are matched by number.*



10. To apply the changes without closing the dialog box, click **Apply**. To return the general settings back to their original values, click **Default Settings**.

Changing Pass/Fail Thresholds

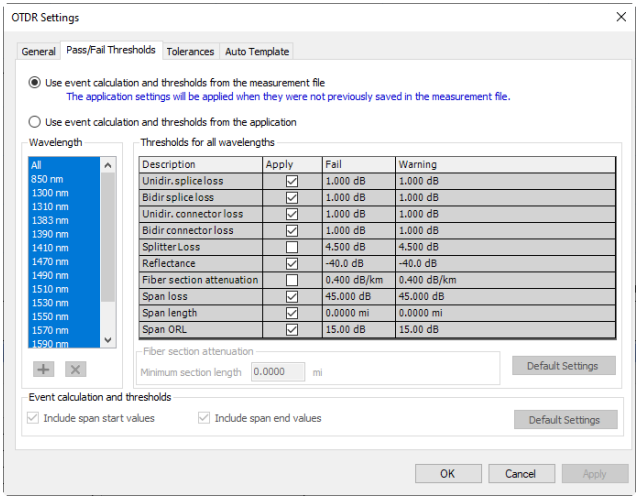
You can change the pass/fail threshold values for one, or many wavelengths at a time.

You can also change the threshold values for the current measurement.

To change OTDR Pass/Fail Thresholds:

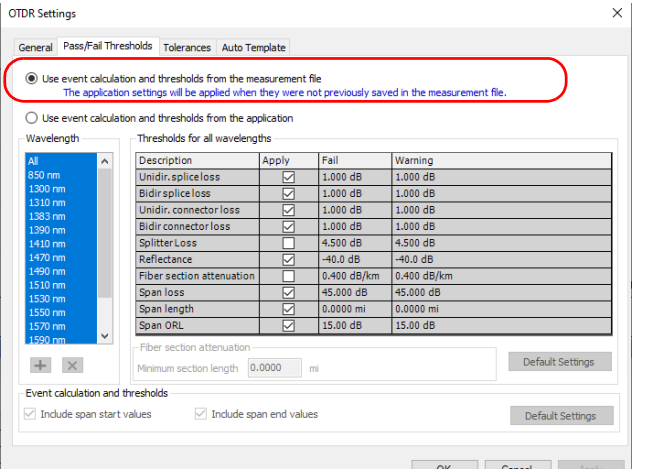
1. If you have not done so already, select the **OTDR** tab.
2. Select **Settings**.

3. Click the **Pass/Fail Thresholds** tab.



4. Select how you want to set the thresholds:

➤ If you want to use the threshold values from the measurement file, select the corresponding option. However, if you are working with older file versions, the threshold values may not be available.



➤ If you want to use the threshold values from the application, proceed as follows:

Select one or several wavelengths to modify.

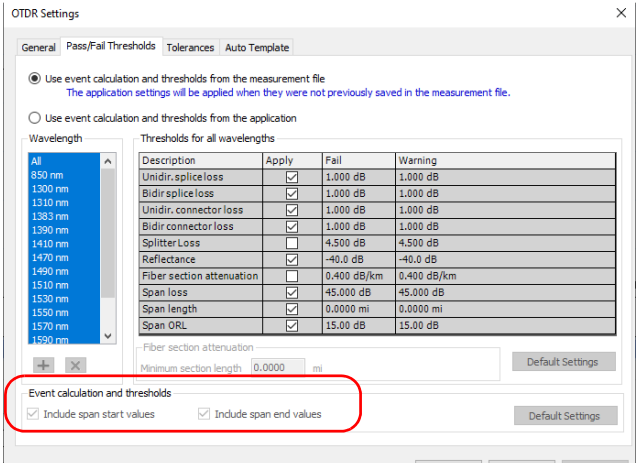
If you do not see a wavelength, you can add it by clicking the + button, entering the wavelength value, and clicking **OK**.

Modify the thresholds associated with the wavelengths needed, by clicking in the desired threshold value and modifying it in the table. The **Apply** option must be enabled for the threshold to be active and modifiable.

Note: *If you are using the fiber attenuation section threshold, you can specify the minimum section length at the bottom of the table. This can be useful when testing short links, as attenuation measurements on them can be unreliable. The fiber section threshold will not be applied to fiber sections shorter than the length you have set as a minimum value.*

If you have selected more than one wavelength, all of them will be modified at the same time.

Select whether you want to include the span start and end values in your threshold calculations.



Note: *When the span start and span end values are included, the corresponding events are included in the ORL calculation. The span start and end loss values, and the span ORL values are updated when the span start and span end inclusion settings are modified. The maximum splice loss is also impacted by the fact that the span start and end values are included or not.*

Note: *When span start and span end values are excluded, pass/fail thresholds are no longer applied to the corresponding span start or span end events.*

5. To apply the changes without closing the dialog box, click **Apply**. To apply the changes and close the window, click **OK**.

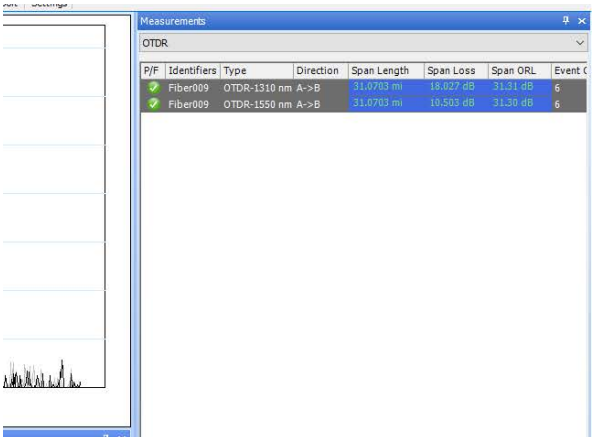
Note: *If the measurement contains connector loss and splice loss for a merged event, the loss value status and measurement status is calculated on the basis of the selected thresholds. If thresholds are applied and the status is pass, the measurement status is indicated as pass. If thresholds are applied and the status is fail, the measurement status is indicated as unknown. If none of the thresholds are applied, the measurement status is indicated as unknown.*

Note: *When the span ORL value is preceded by a "<" and the ORL threshold is smaller than or equal to the value, the global pass/fail status for the measurement will be unknown or fail.*

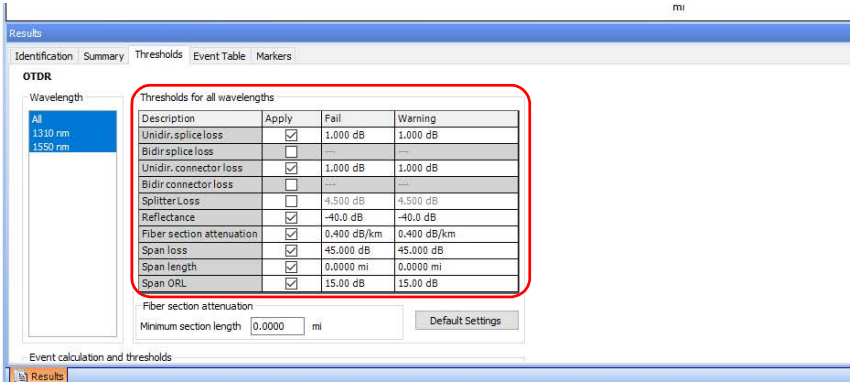
To view and modify a threshold value for the current measurement:

1. From the **Files** or **Measurement** tab, select the measurement or measurements as desired.

   The current pass/fail threshold statuses are indicated in the list: green for pass, yellow for warning and red for fail.



2. In the **Results** window, select the **Thresholds** tab.
3. If you want to modify a threshold at this point, double-click in the corresponding field, and enter the new value.

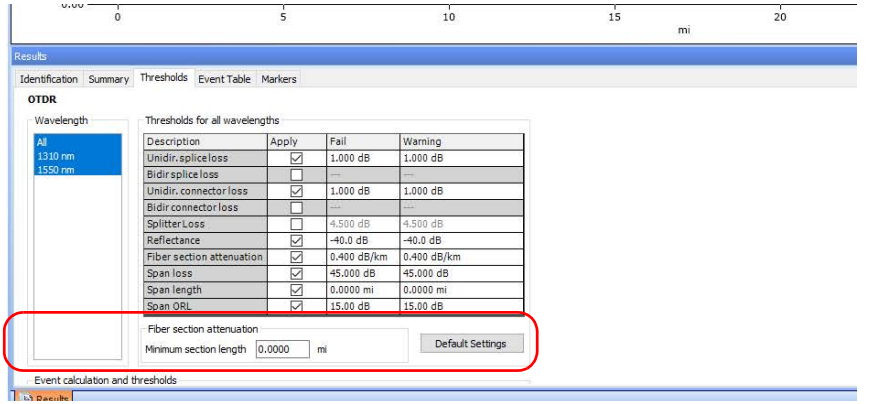


Note: *If you are using the fiber attenuation section threshold, you can specify the minimum section length at the bottom of the table. This can be useful when testing short links, as attenuation measurements on them can be unreliable. The fiber section threshold will not be applied to fiber sections shorter than the length you have set as a minimum value.*

Note: *If there are more than one threshold value for a given wavelength, they are separated by a semicolon.*

Note: *Select required wavelengths or you can select **All** to select all wavelengths.*

4. If you are using the application's event calculations and thresholds, you can also select whether you want to include the span start and end values.



Note: *Some threshold values may not be available for older file versions.*

Setting Macrobend Tolerances

FastReporter 3 can locate macrobends by comparing the loss of events occurring at a certain wavelength (for example, 1310 nm) with the loss of the corresponding events at a greater wavelength (for example, 1550 nm).

FastReporter 3 will identify a macrobend when comparing two events if:

- Of the two events, the greater loss occurred at the greater wavelength.

  AND

- The difference between the loss of two events exceed the defined delta loss value. The default delta loss value is 0.5 dB (which is suitable for most fibers), but you can modify it.

Changes made to event matching tolerances will affect macrobends.

To set macrobend tolerances:

1. If you have not done so already, select the **OTDR** tab.
2. Select **Settings**.

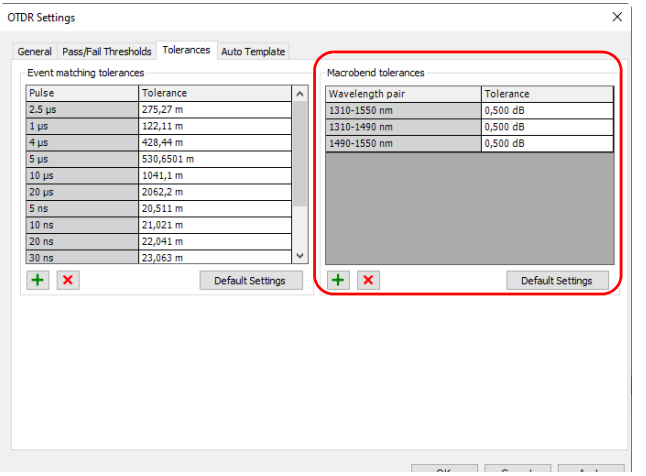
3. Click the **Tolerances** tab.

4. Under **Macrobend tolerances**, change the tolerance value for wavelength pairs as needed.

   ➤ To add a wavelength pair, click the + button, enter the wavelength values, and click **OK**.

   ➤ To remove unwanted pairs, select the values in the **Wavelength Pair** list, and click the × button.

Note: *If you select more than one wavelength in the list, any modification to the thresholds will apply to all of the selected wavelengths.*

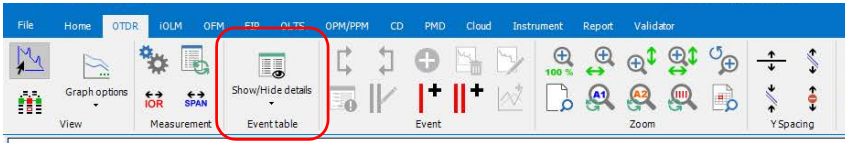


Note: *To remove all added wavelength pairs and set all tolerance values back to their original settings, click* ***Default Settings****.*

5. Click **OK** to exit the window.

To view macrobends:

1. If you have not done so already, select the **OTDR** tab.
2. Under **Event Table**, select **Show/Hide Details**, then **Macrobends**.



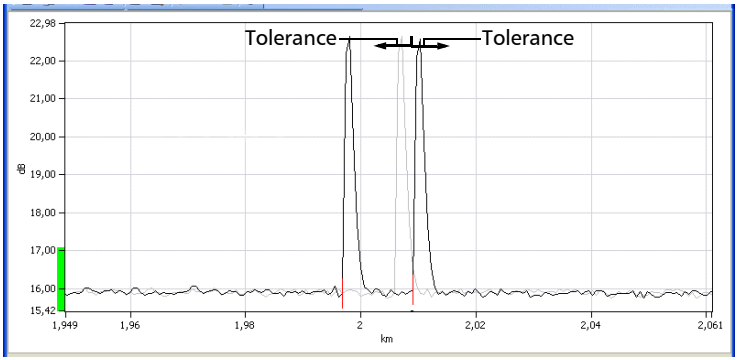
Macrobends are identified in the OTDR Event Table by the following symbol: .

In the case where you have multiple files with a single wavelength (this often occurs for Telcordia type files), you must first match those files in order to see the possible macrobends in the **Matched Files** tab, then select these matched files to view the macrobends in the event table.

Setting Event Matching Tolerances

The OTDR Event Table is built by matching events from selected measurements according to the tolerance. To be matched, the distance between events from the different measurements must be within the tolerance.

You can force the matching of two events or separate them by changing the event matching tolerance accordingly. The tolerance is applied to all operations related to the event table including apply reference as template and macrobends.

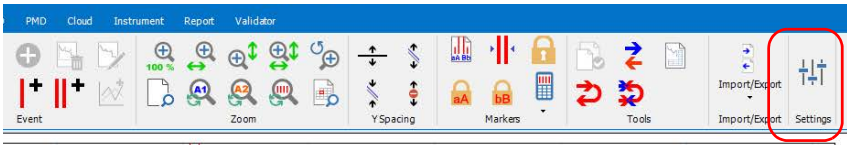


Although you can set the event matching tolerance to as little as 20 meters for each pulse width, the results may differ due to *cursor aliasing*. Cursor aliasing checks if markers A and B for two events overlap. These markers are set during analysis. Marker A represents the beginning of a measured event while marker B represents its end.

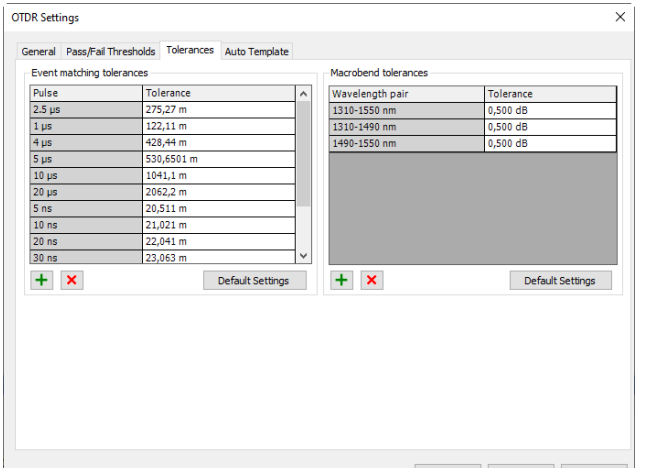
This means that two events could be matched in the event table even if their markers A are farther apart than the tolerance if there is an overlap between the spans created by their markers A and B. Cursor aliasing becomes more important with larger pulse widths since these traces have greater A-B spans.

To change OTDR event matching tolerances:

1. If you have not done so already, select the **OTDR** tab.
2. Select **Settings**.



3. Click the **Tolerances** tab.

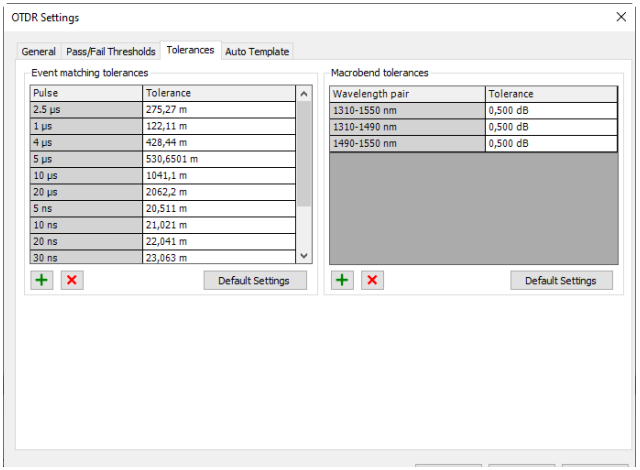


4. Under **Event matching tolerances**, change the tolerance value for pulses as needed.

➤ To add a pulse, click the + button, enter the pulse value, and click **OK**.

➤ To remove unwanted pulses, select the values in the **Pulse** list, and click the × button.

Note: *If you select more than one pulse in the list, any modification to the thresholds will apply to all of the selected pulses.*



Note: *To remove all added pulses and set all tolerance values back to their original settings, click* ***Default Settings****.*

5. To apply the changes without closing the dialog box, click **Apply**. To apply the changes and close the dialog box, click **OK**.

See *Setting Macrobend Tolerances* on page 151 for instructions on using the **Macrobend tolerances** section on the **Tolerances** tab.

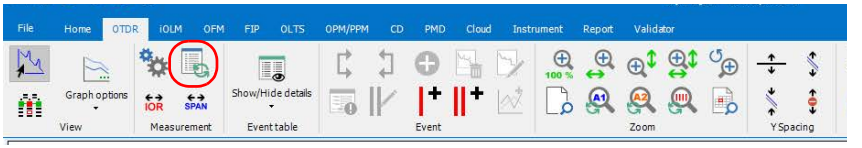
Using the Auto Template (Plus Mode)

The auto template lets you add and remove events on links based on their occurrence on the total group of selected links. You can set a percentage value that will indicate whether an event should be added or removed. The auto template is particularly useful for obtaining uniformity when testing many traces on a same fiber.

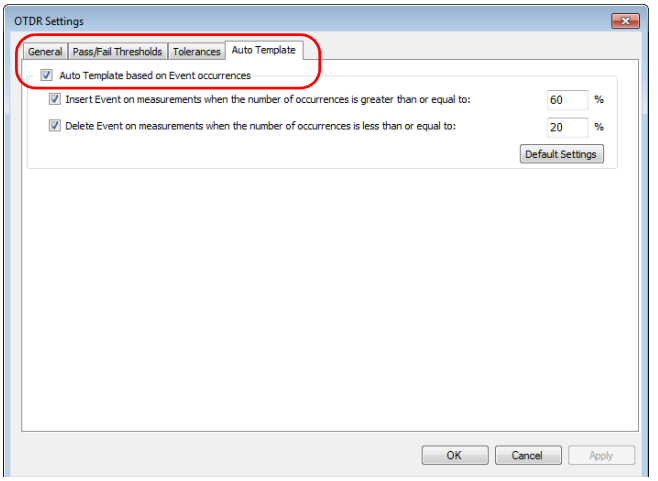
Once the auto template is used, you can analyze the results; if there are issues with some of the elements, you can view them in a descriptive summary.

To enable and use the auto template in your project:

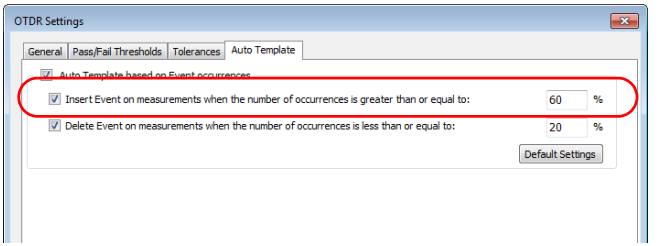
1. If you have not done so already, select the **OTDR** tab.
2. Under **Measurement**, select the corresponding button.



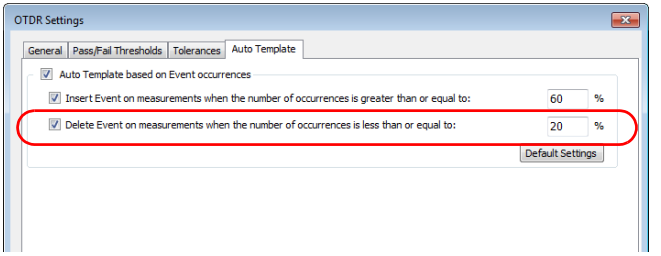
3. Enable the option to be able to set the preferences.



4. If you want to add events, select the corresponding option and enter the minimum percentage value of occurrences required to add the event to the remaining links.



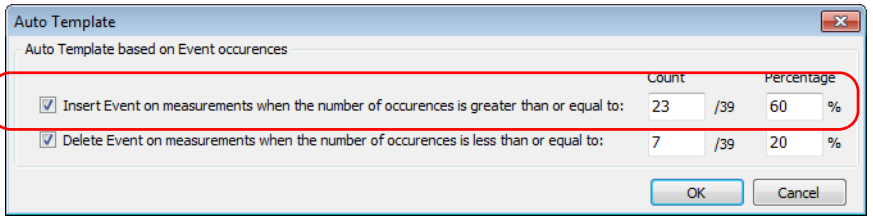
5. If you want to remove events, select the corresponding option and enter the percentage value of occurrences under which the event must fall to be remove it from the measurement.



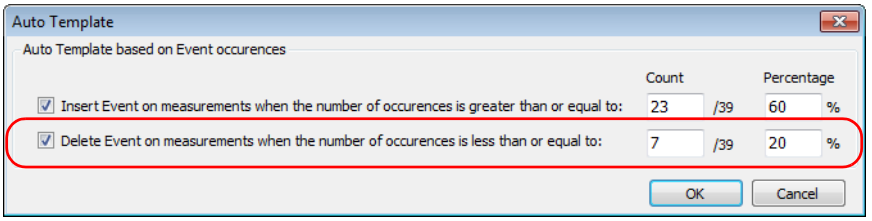
6. To apply the changes without closing the dialog box, click **Apply**. To apply the changes and close the window, click **OK**.

To apply auto template settings to the current measurements:

1. Open the measurements you want to include in the auto template operation.
2. From the **Measurement** menu, select **OTDR**, then Event and **Auto Template**.
3. If you want to add events, select the corresponding option and enter the minimum value of occurrences required to add the event to the remaining links.



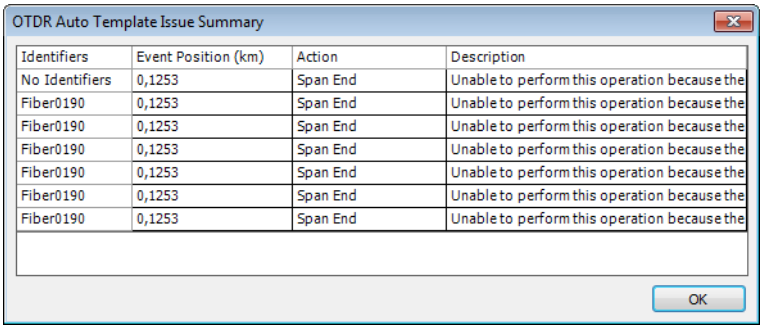
4. If you want to remove events, select the corresponding option and enter the value of occurrences under which the event must fall to be remove it from the measurement.



5. Click **OK** to confirm your choice and start the operation.

Note: *The values modified in the window will not be kept for future applications of the auto template. They are for the current measurements only.*

The events will be added or deleted according to the Auto template settings. The results will be updated in the **Event Table**. If some issues occur during the process, a summary will indicate which event is concerned.



Managing the OTDR Event Table View

The OTDR event table can be customized to show only the items that are relevant for your tests. The items you can display or hide include the following:

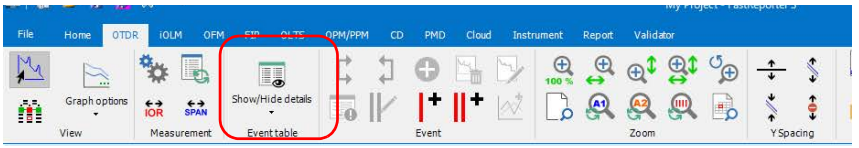
- Fiber ID
- Fiber Pass/Fail Status
- Wavelength
- Direction
- Event
- Section
- Event Loss
- Event/Section statistics
- Fiber statistics
- Bidir. details (direction, average)
- Reflectance
- Merge details

- Macrobends
- Event position
- Span start/end events
- B -> A position from B (if the bidir details and event position are displayed in the window, this will display the event positions according to B, for example, the last event will be identified as the first event).
- Display the event type as text or as an image
- Section loss
- Attenuation
- Section length
- Values relative to the reference file

OTDR events can be edited if the file format supports modification.

To customize the Event Table view:

1. If you have not done so already, select the **OTDR** tab.
2. Under **Event Table**, select **Show/Hide Details**, then select or clear any of the event or segment views as desired.



Note: *You can also select the items by right-clicking into the event table itself. The available items depend on where you click in the table.*

To edit OTDR events:

1. If you have not done so already, select the **OTDR** tab.
2. Under **Events**, select any of the following edit options:

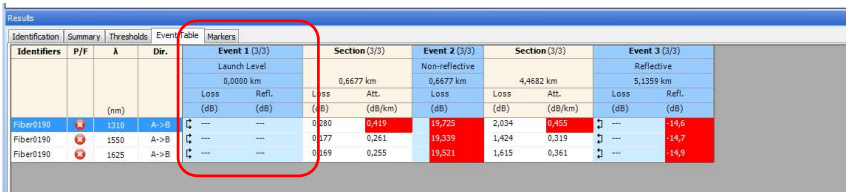
Edit Option	Description
	Displays a dialog box to confirm deletion of the selected event. Click **Yes** to delete or **No** to cancel. An event can be deleted only if the file format supports modification. You cannot delete the Span Start event if it is the same as the Launch level and you cannot delete the Span End event if it is also the End of fiber, End of analysis or if it is a Continuous fiber (no End of fiber event).
	Sets the selected event as the span start.
	Sets the selected event as the span end.

Edit Option	Description
	Adds the selected event to other selected OTDR measurements. An event can be added to other measurements only if the file format supports modification.
	Displays the **OTDR Event Properties** dialog box, where you can edit properties for the selected events or sections.

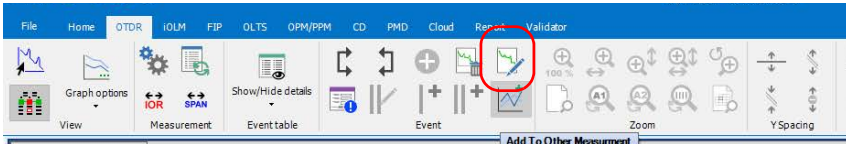
You can edit the properties for OTDR events and sections. Event properties that cannot be edited are shaded.

To edit OTDR event properties:

1. In the **Measurements** window, select an OTDR measurement file.
2. In the **Event** table, select the events or sections to modify.



3. If you have not done so already, select the **OTDR** ribbon tab.
4. Under **Event**, select the corresponding button.



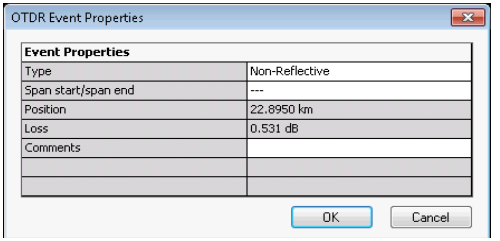
5. Modify the properties as needed. The editable values are shown in a white background.

6. You can change the event types in two ways, a normal way and a quick way:

6a. **From the Ribbon bar (Menu items - Normal way):**

➤ Select the **Change Event Type** icon.

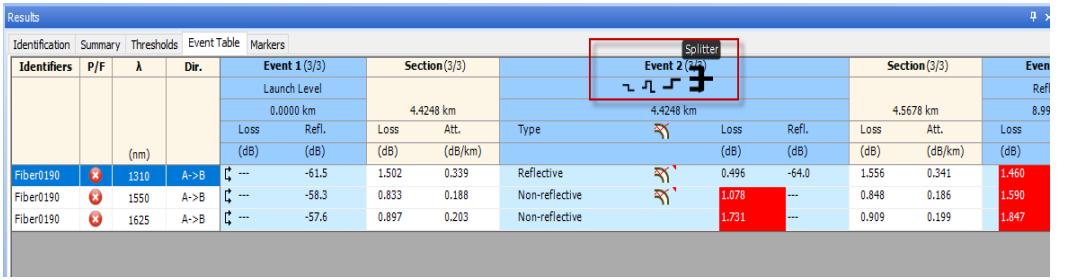
➤ On the Event properties window that appears, change the event type from the **Type** drop-down list.The comment you type will be displayed as a tool-tip when you hover a cursor over the event.



➤ Click **OK** to confirm your changes.

6b. From the Results section, Event Table (Quick way):

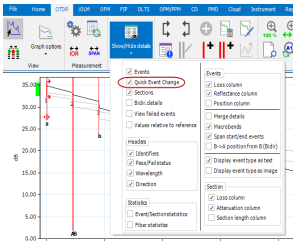
➤ On the **Event Table** tab, go to the event columns (Event 1, Event 2, and so on), hover the cursor over the event type (Reflective, Non-Reflective, Splitter and so on.), and then select the respective event type icon that pops-up after hovering.



After selection, the selected icon will be highlighted, and the Event type name appears after moving away the cursor from the event type. This is the quickest way to change the event type.

Note: *Use the normal way of changing the event if you want to add a comment to the event type.*

Note: *You can disable/enable the* ***Quick Event change*** *mode from the* ***OTDR*** *>* ***Show/Hide details*** *menu.*

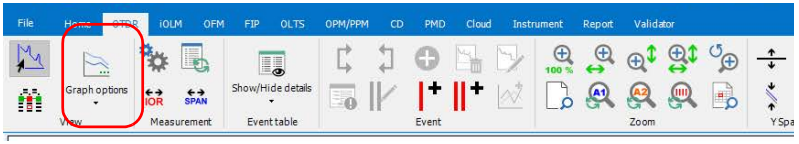


Setting the OTDR Graphic Display Options

You can change the display of graphics for OTDR measurements.

To change OTDR graphic display options:

1. If you have not done so already, select the **OTDR** tab.
2. Under **View**, select **Graph Options**, then select or clear any of the following OTDR graphic display options:
   - **Outside Spans** to display or hide information outside the measurement spans on the graph, when the zoom level is set to 100 % (1:1).
   - **Markers** to display or hide markers on the graph.
   - **Invert B->A dB Axis** to invert B to A along the dB axis on the graph.



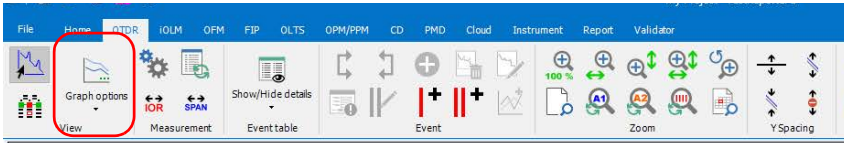
Note: *Some options might not be available if you are in linear view mode.*

Viewing Section Length for the Linear View

When in linear view, the application displays the section length between the events. You can also choose to hide it.

To view or hide the section length:

1. If you have not done so already, select the **OTDR** tab.
2. Under **View**, select **Graph Options**, then **View Section Length**.



Using the Zoom Functions

Various zoom options can help you to view specific portion of the graph window.

To select the OTDR zoom options:

1. If you have not done so already, select the **OTDR** tab.
2. Under **Zoom**, select one of the following OTDR zoom options:

Icon	Description	Shortcuts
	100 % (1:1) to display the full graph for the measurement (default setting).	Ctrl + Home
	Horizontal zoom to zoom and view the graph horizontally. You can do the horizontal zoom in the following ways. ➤ Press Ctrl + Alt, then scroll the mouse wheel forward or backward. ➤ Press Ctrl + Alt and drag the mouse over the part of the graph that you want to magnify, forming a rectangle. When you release the mouse button, the new zoomed area corresponds to the rectangle size and position. ***Note:*** *If you press Ctrl + Alt but do not select a rectangle size, the graph is zoomed by a 2X factor.*	Ctrl + Alt

Icon	Description	Shortcuts
	Vertical zoom to zoom and view the graph vertically. ➤ Press Ctrl + Shift, then scroll the mouse wheel forward or backward. ➤ Press Ctrl + Shift and drag the mouse over the part of the graph that you want to magnify, forming a rectangle. When you release the mouse button, the new zoomed area corresponds to the rectangle size and position. ***Note:*** *If you press Ctrl + Shift but do not select a rectangle size, the graph is zoomed by a 2X factor.*	Ctrl + Shift
	Horizontal + vertical zoom to zoom and view the horizontal as well as vertical details of the graph for the selected measurement. ➤ Pres Ctrl, then scroll the mouse wheel forward or backward. ➤ Press Ctrl and drag the mouse over the part of the graph that you want to magnify, forming a rectangle. When you release the mouse button, the new zoomed area corresponds to the rectangle size and position. ***Note:*** *If you press Ctrl but do not select a rectangle size, the graph is zoomed by a 2X factor.*	Ctrl
	Selected event from file to zoom to a selected event saved in the file, if present, auto zoom (event splice level) is applied.	None

Icon	Description	Shortcuts
	Manual zoom from file to manually zoom using the information saved in the file. Once this option is selected, it displays the saved zoomed area even if you change the measurement selection.	None
	Undo last zoom operation.	None
	Auto-zoom on Event Splice	None
	Auto-zoom on Event Reflectance	None
	Auto-zoom on the 4 markers to focus where the analysis was used to calculate the event loss. Submarkers a and b are placed where the analysis was used to calculate the event loss, and markers A and B are placed where the analysis was used to calculate the event section loss	None

Managing Markers

FastReporter 3 allows you to set four markers (A, a, B, and b) for manual measurement purposes. You can move the markers independently, or you can also lock or unlock the distance between the four markers and move them as a block. You can lock or unlock the distance between the A and a marker pair, as well as the B and b marker pair and move them. Below you can see the list of the lock options.

- Lock All: All the markers are locked and can be moved as a group.
- Lock a, A: The distance between marker a and A are locked and can be moved as a group.
- Lock b, B: The distance between 'b' and 'B' are locked and can be moved as a group.

To lock and unlock the marker position:

1. If you have not done so already, select the **OTDR** tab.
2. Under **Markers**, click on the required lock option.

Note: *When none of the markers are in a locked mode, you can temporarily lock the distance between all markers and move them as a block by pressing the Shift key on the keyboard and dragging them around with your mouse.*

To modify the marker position:

Select the marker from the graph area and drag it to the desired position to modify the marker position.

OR

Select the marker from the graph area and move the marker by scrolling the mouse wheel forward and backward.

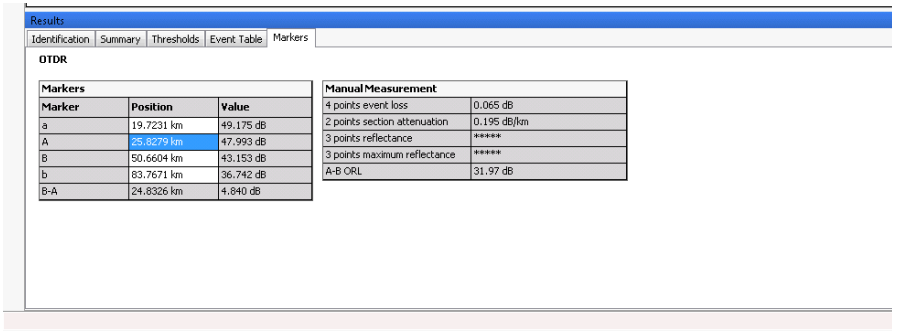
OR

Modify the marker position in the **Markers** table by entering a new marker position value direct input from the keyboard.

OR

Select the required marker(s) and move the selected marker(s) by clicking the left and right arrow keys of the keyboard.

Note: *You can select the next visible marker by pressing the Ctrl + Tab keys.*



Performing Manual Measurements with Markers

The information related to the markers is displayed in the **Markers** and **Manual measurement** table under the **Markers** tab.

Various options of the **Manual Measurement** table are described below.

Option	Description
4-point event loss	In the 4-point event loss, four markers (a, A, b, and B) are visible. This least square approximation method is used to fit a straight line to the backscatter data within the two regions defined by markers a, A and b, B, that is over the regions to the left and to the right of the event bordered by markers A and B, respectively.
A-B LSA loss	This loss of event bordered by the markers A and B is obtained by fitting a straight line to the backscatter data between these two markers.
2-point section attenuation	In the 2-point section attenuation, two markers (A and B) are visible. This measurement gives the reduction in Rayleigh backscatter level as a function of distance (always expressed in dB/km to follow the standards of the fiber-optic industry) between two selected points. Only those two points are used to perform the calculation and there is no averaging.
A-B LSA attenuation	This LSA attenuation is obtained by fitting a straight line between two points in the backscatter data between markers A and B.
A-B ORL	This displays the ORL between markers A and B.
3-point reflectance	In the 3-point reflectance, three markers (a, A, and B) are visible. This measurement displays the reflectance pointed by marker a, A, and B.
3-point maximum reflectance	This measurement displays maximum reflectance for the selected event.

To display and hide the marker-related features:

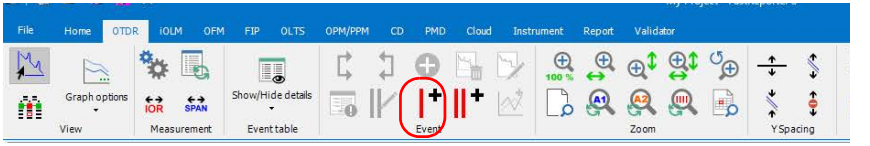
1. If you have not done so already, select the **OTDR** tab.
2. Under **Markers**, select the corresponding button, then select the desired features.

Adding an OTDR Event with one Marker

FastReporter 3 allows you to add a new OTDR event according to the position of marker A. It automatically repositions the markers other than A at the best position to characterize the most probable event in the area. It automatically selects the appropriate event type according to the measurement characteristics such as reflective event, non-reflective event, or positive event.

To add an OTDR event with one marker:

1. On the graph, place marker A where you want to add an event.
2. In the **OTDR** tab under **Events** select the corresponding button.



Note: *You cannot perform this operation if the origin of the selected file does not allow modifications. For example, you cannot perform this operation on "Telcordia 100" files from other OTDR manufacturers.*

Note: *You cannot add an event using marker A on bidirectional OTDR files.*

Note: *The manually modified events are displayed with an asterisk (*) mark. For more information on changing display options, see* Changing FastReporter 3 Options *on page 31*.

Adding an OTDR Event with all Markers

The application allows you to add a new OTDR event according to the position of all the markers. It selects the most appropriate event type according to the measurement characteristics such as reflective event, non-reflective event, or positive event.

To add an OTDR event with all markers:

1. On the graph, place all of the markers where you want to add an event.
2. In the **OTDR** tab under **Events**, select the corresponding button.

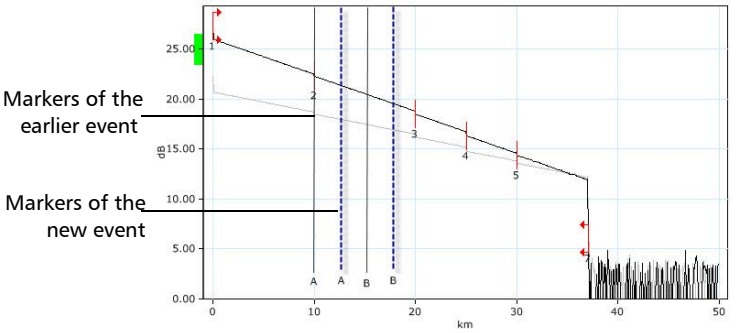
Note: *You cannot perform this operation if the origin of the selected file does not allow modifications. For example, you cannot perform this operation on "Telcordia 100" files from other OTDR manufacturers.*

Note: *You cannot add an event using all markers on bidirectional OTDR files.*

When an event cannot be created in the specified position, an error message is displayed. You cannot create any event in following conditions:

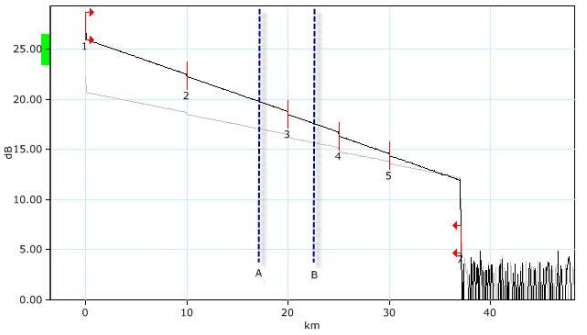
➤ If the marker from any event is present in between markers A and B.

For example: In the below image the gray markers indicate the position of the earlier event and the blue lines indicate the position where you are trying to add new event. In this condition the application displays an error message, to indicate that you cannot insert new event.



➤ If any event is present between two markers.

For example: In the below image, the blue lines indicate the position of the marker for the new event which you are trying to add. Event 3 is shown between these two markers. In this condition the application displays an error message, to indicate that you cannot insert new event.



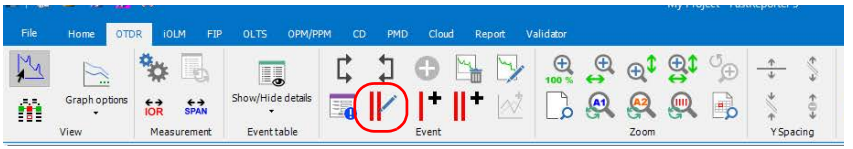
Note: *The manually modified events are displayed with an asterisk (*) mark. For more information on changing display options, see* Changing FastReporter 3 Options *on page 31.*

Modifying Event Marker Positions on Existing Events

FastReporter 3 allows you to reposition the existing events.

To modify the event markers position on an existing event:

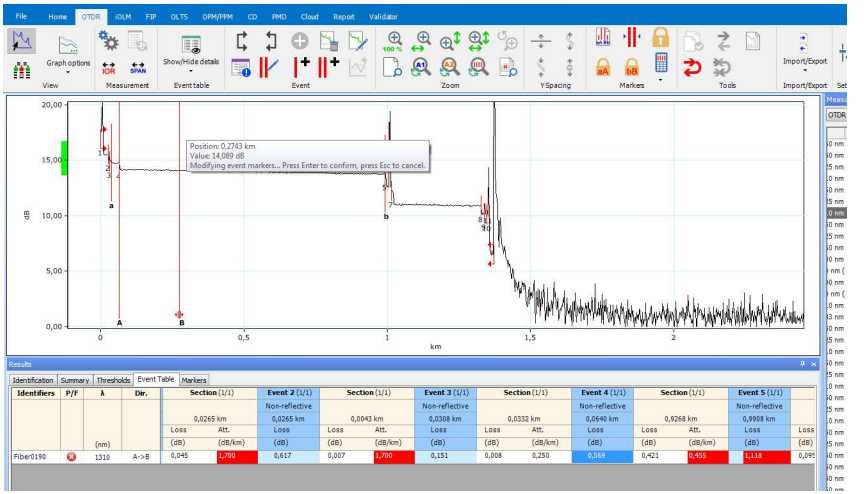
1. On the graph, select the event for which you want to modify the marker position.
2. In the **OTDR** ribbon tab under **Events**, select the corresponding button.



3. Modify the marker position from the graph window.

Note: *When the event marker repositioning operation is initiated, the four manual markers position are set to match the selected events own markers. Once the event marker's new position is confirmed, then all the information related to the event is updated.*

4. Press Enter to confirm the repositioning or Esc to cancel the process.



Note: *If marker repositioning is not possible in the particular position, a notification message is displayed.*

Note: *You cannot perform this operation if the origin of the selected file does not allow modifications. For example, you cannot perform this operation on "Telcordia 100" files from other OTDR manufacturers.*

Note: *You cannot modify event markers on bidirectional OTDR files.*

Note: *The manually modified events are displayed with an asterisk (*) mark. For more information on changing display options, see* Changing FastReporter 3 Options *on page 31.*

Retrieving Marker Position from File

The application allows you to retrieve the marker position to the original values when the file was last opened or saved.

To retrieve the marker position from file:

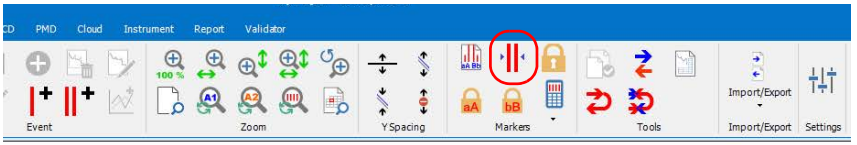
1. On the **Measurements** window select the required measurement.
2. If you have not done so already, select the **OTDR** ribbon tab.
3. Under **Markers**, select the corresponding button.

Note: *If there are no marker positions for the measurements, the application sets the marker position with a spacing value of 1/5 of the span length.*

Bringing All Markers to the Current View

If you have zoomed into a graph, you might not be able to see the markers anymore unless you move the trace. You can quickly bring all of the markers in view so that you can reposition them as needed.

4. On the **Measurements** window select the required measurement.
5. If you have not done so already, select the **OTDR** ribbon tab.
6. Under **Markers**, select the corresponding button.



Setting and Applying OTDR/OTDR Bidir Reference as Template (Plus Mode)

The **Apply Reference as Template** tool allows you to analyze measurements and compare them to a reference file. The template concept is to set a reference file (template), add comments about the events, and compare each measurement to the reference file. FastReporter 3 will mark and measure any missing event. Inserted events are indicated by an asterisk (*). Event matching tolerances will affect template results. Events not present in the reference appear as white columns. Comments for events in the reference file are automatically copied to the selected files.

Note: *The measurement file format must support this feature.*

Note: *DWDM OTDR files cannot be used to set a reference as a template.*

Singlemode measurements will be compared to singlemode measurements; multimode measurements will be compared to multimode measurements.

The measurement files must meet the following criteria:

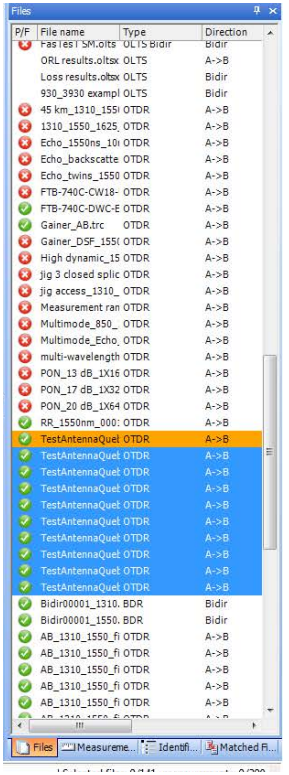
- It must have at least two events.
- It must have a span start and a span end.
- It must have a fiber section.

To set and apply OTDR and bidirectional OTDR files as a reference template:

1. In the **Files** tab, select the OTDR or bidirectional OTDR file that you want to use as the reference.
2. Under **Files**, select **Set as Reference File**.

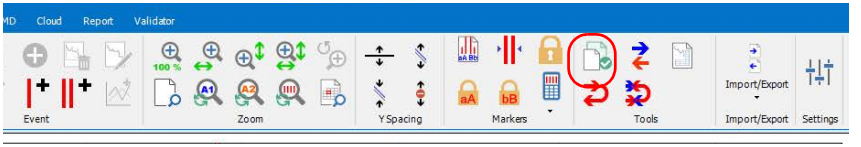
Note: *You can also set the virtual OTDR bidirectional file as reference from the **Measurements** tab and **Event Table**.*

3. In the **Files** window, select the OTDR files to which you want to apply the reference file as a template.

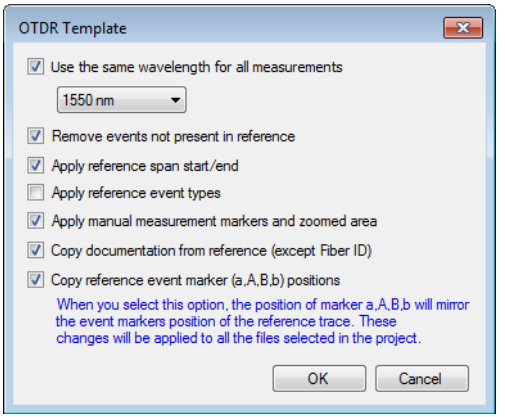


4. Select the **OTDR** ribbon tab.

5. Under **Tools**, select the corresponding button.



6. Set the parameters for the OTDR template.



➤ **Use same wavelength for all measurements**: to apply the same wavelength to all measurements. If a file with multiple wavelength files is used as a reference and the option is not selected, the measurements will be compared to the same wavelength (1310 nm with 1310 nm, 1550 nm with 1550 nm).

➤ **Remove events not present in reference**: to remove the events not present in the reference file from the selected files.

➤ **Apply reference spans start/end**: to apply the reference measurement's spans to the selected files.

- **Apply reference event types**: to apply the events between the span start and span end events. This option is active for the current working session only and will be reset when the application is started again.
- **Apply manual measurement markers and zoomed area**: to apply the reference's marker position and zoom to the selected files. If the marker positions is outside the range of the trace destination, the operation will be aborted and the destination trace keeps its original zoom factor.
- **Copy documentation from reference (except Fiber ID):** to include all of the available documentation to the selected files. The fiber ID will not be copied.
- **Copy reference event markers (a,A,B,b) position:** to apply the reference file markers to the selected files.

Note: *You are notified when the zoom is not applied.*

Note: *This option is available only if the **Markers** item is enabled from the **Graph Options** button under **View**.*

- **Copy documentation from reference (except Fiber ID)**: to apply the documentation from the reference file to the selected files. The documentation includes job ID, customer, company, operator A, operator B, cable ID, location A, location B, and comments.
- **Copy reference events markers (a,A,B,b) position**: to copy the events markers (a, A, B, b) from the reference measurement to the selected files.

Note: *When an event marker position from the reference measurement cannot be copied to the selected measurement due to length constrain or any other reason, the application does not display any error message.*

7. Click **OK**.

Analyzing Measurements

FastReporter 3 lets you analyze the unidirectional and bidirectional OTDR measurements at any time.

The bidirectional measurements are reanalyzed when A->B or B->A measurements are reanalyzed, and in case of the following modifications:

- Event addition
- Event deletion
- Change in event type
- Change in span start position
- Change in span end position
- IOR
- Helix Factor
- Splice Loss Threshold
- Reflectance Threshold
- End-of-Fiber Threshold

Analyzing measurements will:

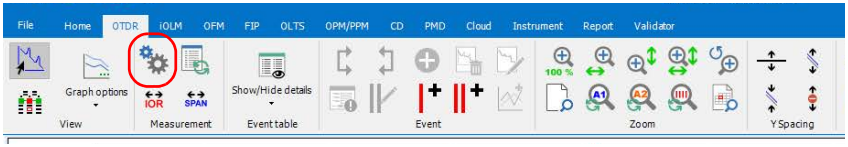
- analyze measurements acquired from different sources or with other products.
- recreate the original event table if it was modified.
- reset the span start to zero and the span end to end-of-fiber, if desired.

To analyze measurements:

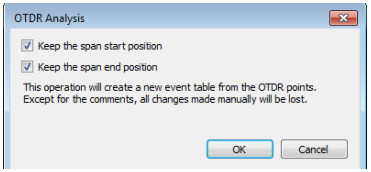
1. In the **Measurements** tab, select the measurements to analyze.

Note: *You can analyze the multiple measurements of the unidirectional and bidirectional OTDR file, only if the Plus option or trial option is activated in the application.*

2. If you have not done so already, select the **OTDR**, tab.
3. Under **Measurement**, select the corresponding button.



4. Select whether you want to keep the span start and end positions, or if you want to reset them to zero.



5. Click **OK**.

   Once the analysis is performed, the window is refreshed automatically. Information such as IOR, Helix factor, splice loss threshold, reflectance threshold, end-of-fiber threshold are analyzed.

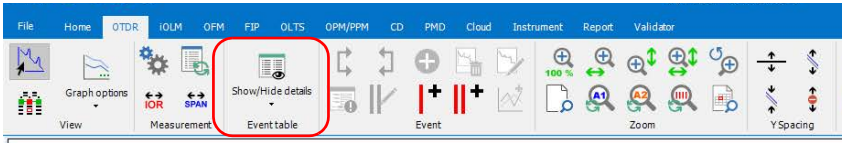
Note: *A->B and B->A are re-analyzed when a real bidirectional file is re-analyzed.*

Using the Failed Items Filter

In order to quickly see which events are faulty, you can apply a specific filter to show only the failed items.

To activate the failed item filter:

1. If you have not done so already, select the **OTDR** tab.
2. Under **Event Table**, select **Show/Hide Details**, then **View Failed Items**.



Displaying Statistics for Measurements

When displaying matched measurements, it might be useful to view statistics for them. The statistics are displayed for:

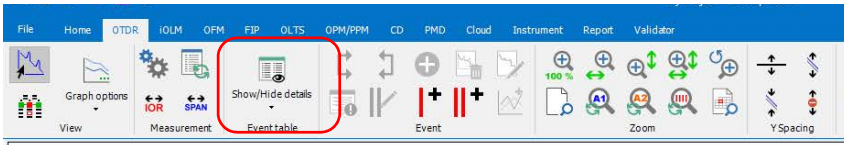
- Fibers (includes loss for splices, connectors and sections, reflectance for connectors, and attenuation data for sections), which are displayed on the far right of the **Events Table** tab.
- Events and Sections (includes event position, loss and reflectance, section length, loss and attenuation), which are displayed at the bottom of the **Events Table** tab.

The statistics displayed are the minimum value, the maximum value, and an average for the selected files. If you click on the minimum and maximum values, the corresponding event is highlighted in the Graph or Linear views, and in the events table.

Note: *You must have enabled the corresponding item for the statistic to appear. For example, if you chose not to display the positions, the corresponding statistic is also hidden.*

To display the statistics:

1. Select the multiple measurements for which you want to view the statistics.
2. If you have not done so already, select the **OTDR** tab.
3. Under **Event Table**, select **Show/Hide Details**, then select the type of statistics you want to view.



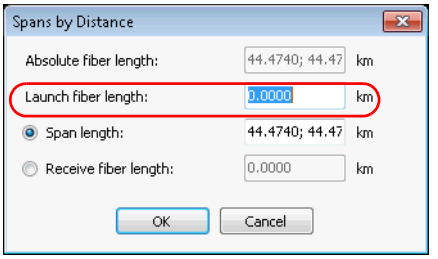
Setting Span Positions with Absolute Lengths

The application allows you to set the span start and span end positions using definite values.

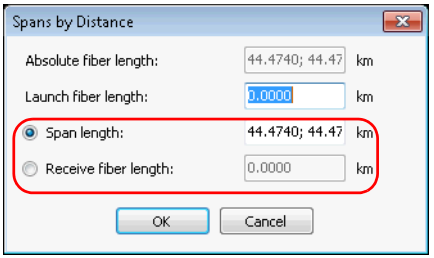
To set the span positions:

1. In the **Measurements** window, select the measurements for which you want to set the span.
2. If you have not done so already, select the **OTDR** ribbon tab.
3. Under **Measurement**, select the corresponding button.

4. Set the launch fiber length as required. Once you set the launch fiber length, the application updates the span start position and span length value based on the new position of the span start. If no event is present at the new position of the span start, it automatically creates a new event.



5. Select whether you want to enter the span length or the receive fiber length, then enter the appropriate value. The other value is updated automatically according to the value you have entered. If no event is present at the new position of the span end then, it automatically creates a new event.



6. Click **OK** to save the change or **Cancel** to discard it.

Note: *When a new event is created, the exact event position, event type, and measured values are automatically determined to have the best characterization for the most probable event present in the area. When a new event is successfully created, the event is marked with an asterisk (*).*

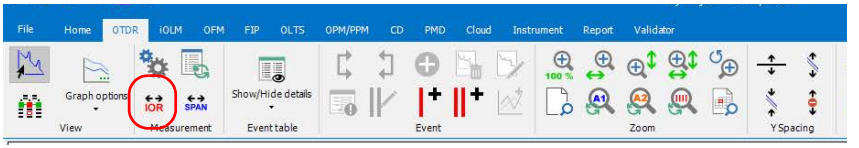
Note: *If the origin of the selected file does not allow modification, an error message is displayed.*

Setting the IOR Value by Distance

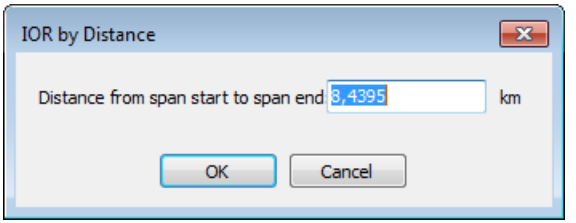
The application allows you to modify the IOR value for each selected measurement by modifying the distance from span start to span end.

To modify the IOR value:

1. On the **Measurements** tab select the measurements you want to modify.
2. If you have not done so already, select the **OTDR** tab.
3. Under **Measurement**, select the corresponding button.



4. Enter the distance of span start to span end.



Note: *When the distance values from the selected measurements are not the same, the values are displayed with a semicolon. Once the new IOR values are calculated, the values related to the position and distance and the OTDR graph are updated.*

5. Click **OK** to save the changes or **Cancel** to discard them.

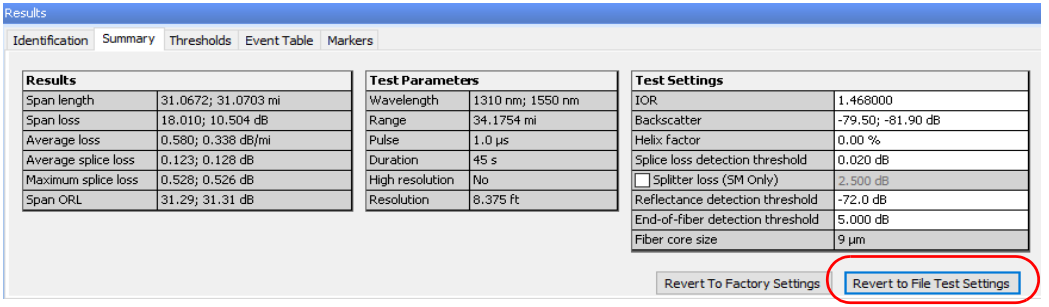
Changing the Fiber Core Size (Plus Mode)

The FastReporter 3 application displays the core size of the fiber for the selected measurement in the **Test Settings** table of the **Summary** tab. When multiple measurements are selected and the fiber core sizes are not similar, they are separated with a semicolon.

Note: *The application allows you to change the fiber core size only for the multimode files.*

To change the fiber core size:

1. On the **Measurements** tab, select the multimode measurement for which you want to modify the fiber core size.
2. From the **Summary** tab, select the required fiber core size in the list of available values.



3. The application prompts you to confirm the change. Click **Yes** to set the default values for result and test settings. If you click **No,** the fiber core size value changes, but the default values are not applied for result and test settings.

Note: *You cannot perform this operation if the origin of the selected file does not allow modifications. For example, you cannot perform this operation on "Telcordia 100" files from other OTDR manufacturers.*

Note: *You can revert the changes to factory settings by selecting the* ***Revert To Factory Settings*** *button if you do not want to continue with the changes done.*

Reverting to File Test Settings

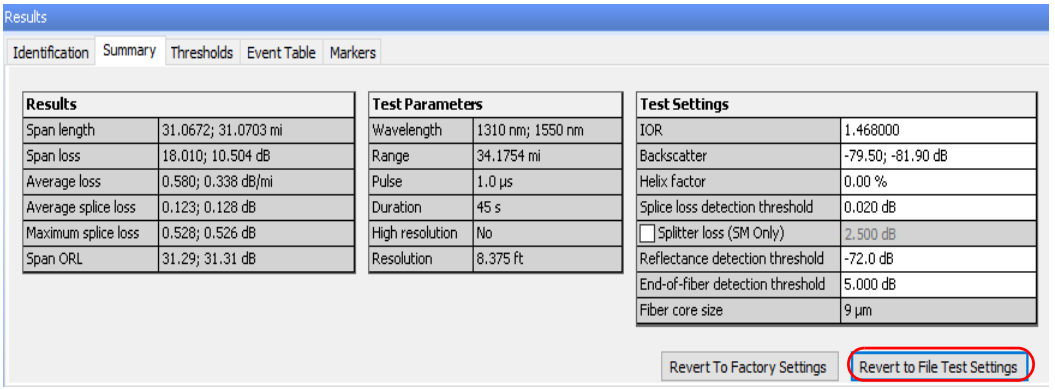
The application allows you to revert the test settings parameters values to the file original values. The retrieved values are IOR, backscatter, Helix factor, splice loss threshold, reflectance threshold, end-of-fiber threshold and fiber core size. The result values are automatically updated to reflect the change.

Note: *You can revert to file test settings for multiple files only if the Plus option is activated.*

Note: *You cannot use this feature when you open SOR files that are not tested on the EXFO devices and iOLM generated SOR files.*

To revert to file test settings:

1. On the **Files** tab select the OTDR files you want to modify.
2. From the **Summary** tab, click the **Revert to File Test Settings** button, then confirm your choice.



Managing Bidirectional OTDR Files (Plus Mode)

FastReporter 3 can be used to analyze bidirectional OTDR files, and create them using unidirectional files and combining them.

Analyzing Bidirectional Measurements

If two OTDR measurements were acquired in opposite directions on the same fiber span, you can use the Create Bidirectional Files tool to match the corresponding events. FastReporter 3 performs a bidirectional analysis and generates an event table with the averaged loss for each event; that is, the average of the losses obtained from both directions.

Bidirectional analysis is the recommended method for splice loss measurements on singlemode fibers by the Telecommunications Industry Association (test procedure *EIA/TIA FOTP-61 Measurement of Fiber or Cable Attenuation Using an OTDR*).

This method removes the so-called “gainers” (increase in the optical power) and exaggerated losses and provides accurate measurements. This analysis is particularly useful to test the quality of a link, especially if it comprises several sections with different types of fibers or fiber from different manufacturers.

Gainers and exaggerated losses result from the joining of two fibers of different mode-field diameters (MFD). The mode-field diameter of a fiber corresponds to the size of the area where light is dispersed across its core and cladding.

Mismatch of MFDs will contribute to differences in back reflected signals that are not related to the loss at the splice point, that is to the true loss seen in transmission. In this case, a unidirectional OTDR measurement will show an apparent increase (gainer) or decrease (exaggerated loss) in signal, depending on the direction of measurement.

Bidirectional averaging of OTDR splice loss measurements provides the most accurate splice loss results.

Creating Bidirectional Measurement Files

You can combine unidirectional measurements into a bidirectional measurement file. It is possible to use both single-wavelength and multi-wavelength measurements. FastReporter 3 matches the wavelengths.

The A->B and B->A measurement files must respect the following criteria:

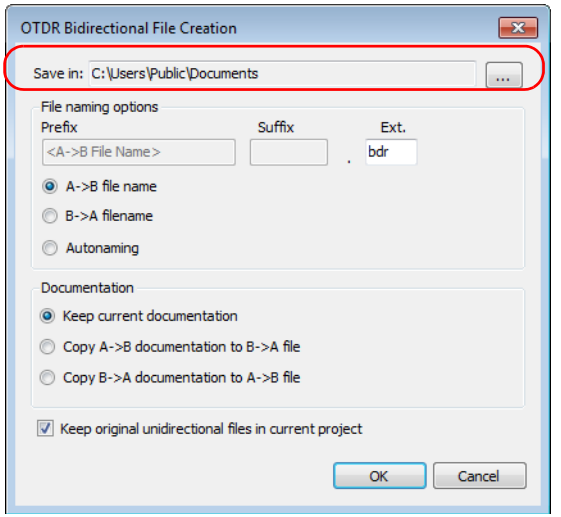
Item	To be Valid
Pulse width	Must be identical for both measurement files.
Fiber types	Use only measurements acquired using singlemode fibers.
Wavelengths	Must be identical for both measurements.
Measurement file	Both must be unidirectional files.

To create bidirectional files in FastReporter 3, you must first match A->B files with B->A files. For information on file matching, see *Matching Files* on page 55. Changes made to event matching tolerances will affect bidirectional event table results.

To create a bidirectional file:

1. Select two matched OTDR files of opposite directions.
2. If you have not done so already, select the **OTDR** tab.
3. Under **Tools**, select the corresponding button.

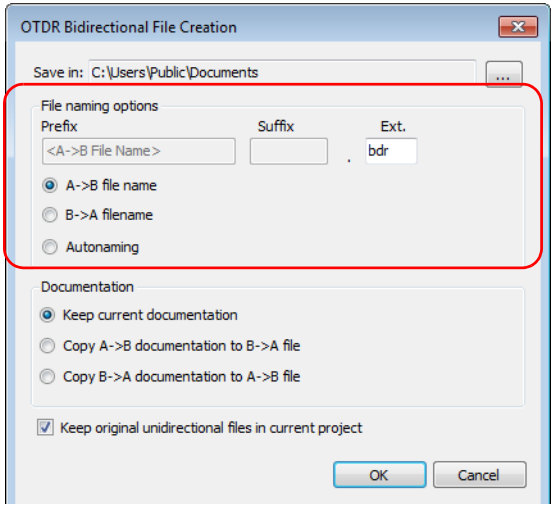
4. Select the location where you want to save the bidirectional file.



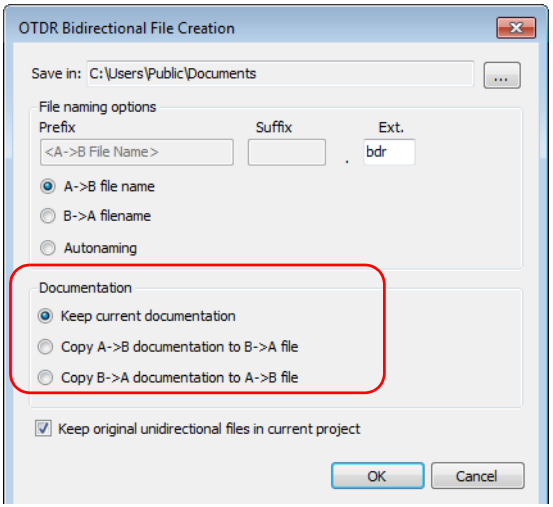
5. Select the desired file naming options.

➤ Select **A->B filename** or **B->A filename** to use the selected A->B or B->A file name.

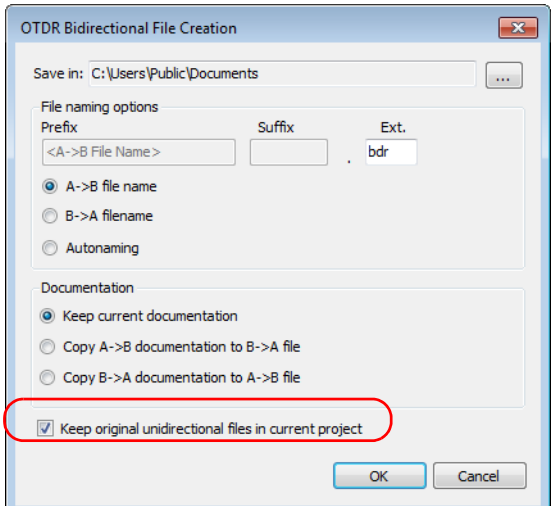
➤ Select **Autonaming** to enter a prefix and a suffix to create the file name.



6. Select which documentation will be used for the bidirectional measurement.



7. Select whether you want to keep the original unidirectional files in your project once the bidirectional files are created.



8. Click **OK**.

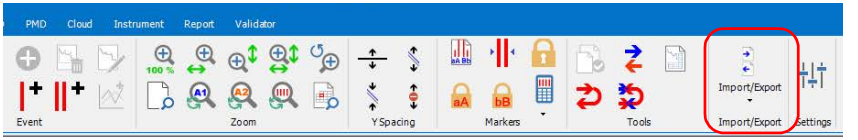
Note: *Bidirectional (.bdr) files do not support multiple wavelengths in the same file. When you save the bidirectional files, separate files will be created for each wavelength. The wavelengths are automatically added.*

Creating Unidirectional Files From a Bidirectional File

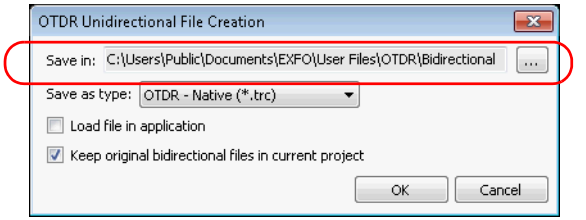
Using FastReporter 3, you can take a bidirectional file and extract the two unidirectional files that were originally used to create it. The resulting files will have the same name as the bidirectional one, but with the direction automatically added.

To extract the unidirectional files:

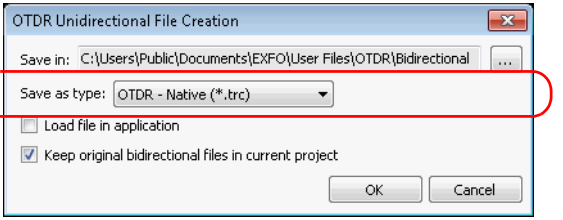
1. If you have not done so already, select the **OTDR** tab.
2. Under **Import/Export**, select **Export - Create OTDR Unidir File**.



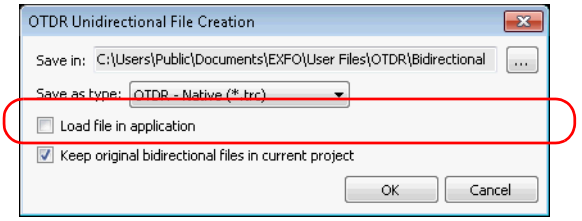
3. If desired, select where you want to save the extracted files. The default location is where the original bidirectional file is located.



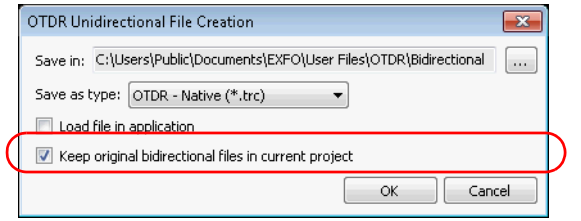
4. Select the format for the extracted files.



5. Select whether you want to open the files in the application.



6. Select whether you want to keep the original bidirectional files in your project.



7. Click **OK** to extract the files and return to the main window.

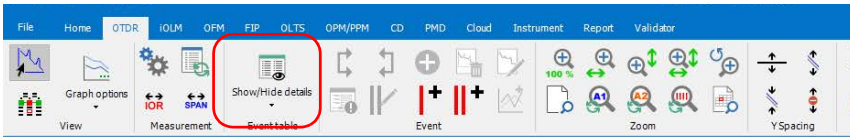
Managing Unidirectional Markers Within a Bidirectional File

Bidirectional files are made of two separate traces in opposite directions. In FastReporter 3, you can see and manage the markers for each A->B and B->A traces. This allows you to calculate loss, ORL and other values for each unidirectional trace.

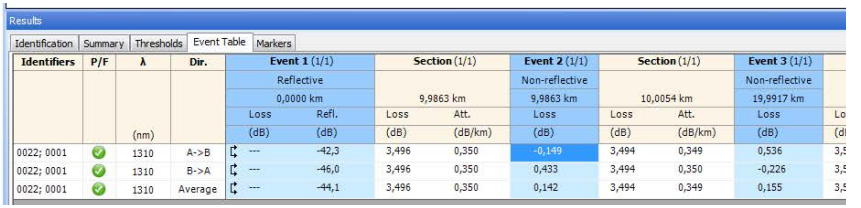
To access the unidirectional markers for a bidirectional file:

1. Open the desired bidirectional file.
2. If you have not done so already, select the **OTDR** ribbon tab.
3. If required, switch to the Graph display, as explained in *To select the viewing method:* on page 135.

4. Under **Event Table**, select **Bidir. details**.



5. In the **Event Table** tab, select the A->B or B->A event for which you want to manage the markers.



Identifiers	P/F	λ	Dir.	Event 1 (1/1)		Section (1/1)		Event 2 (1/1)	Section (1/1)		Event 3 (1/1)	
				Reflective				Non-reflective			Non-reflective	
				0,0000 km		9,9863 km		9,9863 km	10,0054 km		19,9917 km	
				Loss	Refl.	Loss	Att.	Loss	Loss	Att.	Loss	Lo
		(nm)		(dB)	(dB)	(dB)	(dB/km)	(dB)	(dB)	(dB/km)	(dB)	(d
0022; 0001	✓	1310	A->B	---	-42,3	3,496	0,350	-0,149	3,494	0,349	0,536	3,5
0022; 0001	✓	1310	B->A	---	-46,0	3,496	0,350	0,433	3,494	0,350	-0,226	3,5
0022; 0001	✓	1310	Average	---	-44,1	3,496	0,350	0,142	3,494	0,349	0,155	3,5

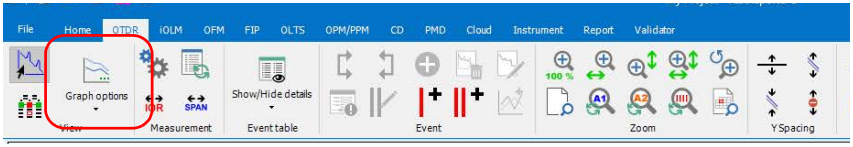
6. In the **Markers** tab, modify the marker as needed. For more information, see *Managing Markers* on page 174.

Working with Virtual Bidirectional Files

Virtual bidirectional files are a way to preview the resulting measurement when you select two matching unidirectional measurements without going through the process of fully creating the bidirectional file. The display in the graph and linear views, and the **Event Table** tab are the same as they would if you are viewing an actual bidirectional measurement. The order of display for the events depend of the A -> B measurement.

To activate the virtual bidirectional file mode:

1. If you have not done so already, select the **OTDR** tab.
2. Under **View**, select **Graph Options**, then **Display Virtual OTDR Bidir**.



Creating Batch Documentation

FastReporter 3 includes a tool that can be used to batch document or analyze large numbers of OTDR test files. All identification information, with the exception of fiber ID, is copied from the reference file to the selected files. The automated documentation tool can also be used to automatically assign fiber IDs to selected files.

For details on using the automated documentation tool, see *Adding and Removing Measurement Files* on page 47.

Saving an OTDR File in a New File Format

You can save OTDR measurement files in a new file format.

To save OTDR files in a new file format:

1. In the **Measurement** or **Files** window, select the OTDR file or files that you want to save.
2. Select the **File** ribbon tab, then **Save As**, and **Selected Files As**.
3. When saving a single file, type a name for the file in the **File name** box.

   OR

   When saving multiple files, click ... on the **Save As** dialog box and select an output folder on the **Browse for Folder** dialog box.
4. In the **Save as type** list, select the appropriate file format.
5. Click **Save**.

Note: *Some file formats (for example, Telcordia and FTB-300) do not support multiple wavelengths in the same file. When saving to those formats, separate files will be created for each wavelength.*

IMPORTANT

If you save an OTDR file in an older format than it was originally in, you will lose the type of data that is not supported by the older file format.

Modifying Space Between Traces on the Graph

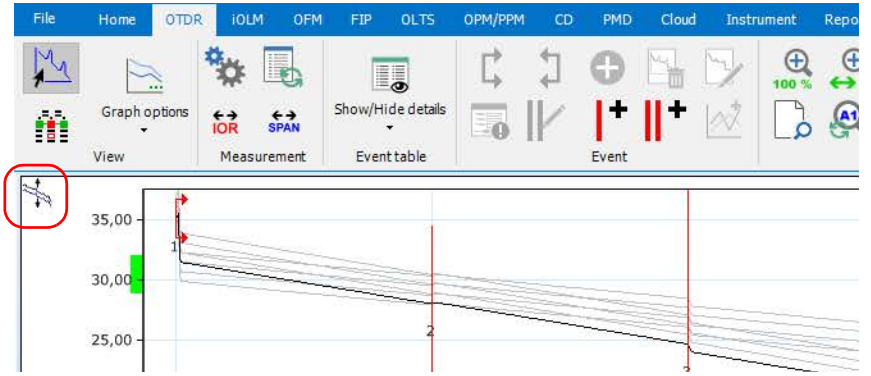
For easier viewing of the traces appearing on the graph, you can increase or decrease the vertical space between each of them.

To increase or decrease the space between the traces:

1. If you have not done so already, select the **OTDR** tab.
2. Under **Y Spacing**, select the buttons to increase or decrease the space between the traces.

Button	Action
	Activates Y spacing.
	Increases spacing.
	Decreases spacing.
	Removes spacing.

An indicator on the left of the graph shows that an offset is applied.



If you are using a keyboard and mouse, you can press and hold the Shift key to select the trace, then use the arrow buttons, or the mouse to drag it to the desired location.

6 Working with iOLM files

Accepted File Formats

FastReporter 3 lets you work with measurement files saved in the following formats, but does not necessarily permit all operations on them.

File Format	File Extension	Display	Modification	Reanalysis
iOLM	.iolm	✔	✔	✔
	.iolmcfg	✔	✔	–
	.iolmbdr	✔	✔	✔

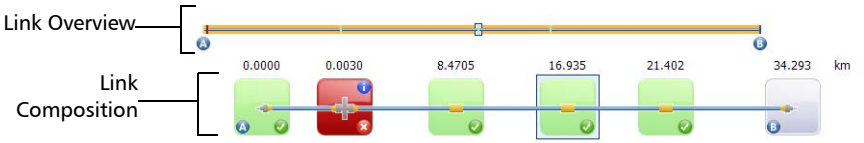
Note: *The iOLM files also include the CWDM and DWDM formats.*

Understanding the Link View

The iOLM Link View is an intuitive representation, which combines several measurement results and values into a single view.

The link view is divided into two different regions.

- Link overview
- Link composition



In the link overview, you can quickly see the status for each element with the corresponding color code:

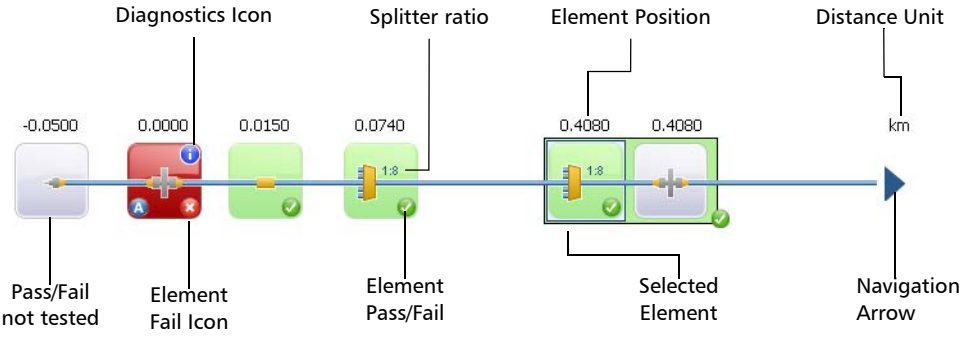
- Red: The element is fail.
- Green: The element is pass.
- Blue: The element is not tested for Pass/Fail.

The pass/fail status also depends on the threshold values specified. The link overview representing all the elements discovered on the link is described below.

- Length of the measured link: Length of the measured link excluding the launch and receive fibers.
- Selected element: Rectangle representing the selected element.
- Visible region: The colored background represent the visible region in the link composition view.
- Beginning of the link: Beginning of the link under test.
- End of the link: End of the link under test.

Elements before A and after B are referred to as out-of-span elements. Elements out of the span are not tested for pass/fail status, but can have diagnostics on them. If the launch fiber is not defined, the element marked as "A" will not be tested for pass/fail and if the receive fiber is not defined, the element marked as "B" will not be tested for pass/fail.

The link composition is described below.



- Element position: The distance of the element from the beginning of the link under test.
- Navigation arrow: The navigation arrow is only displayed when more items are available on the particular side. It indicates that the you have to scroll to view those items. This arrow can also appear on the left side.
- Selected element: The gray background represents the currently selected element.
- Letter A: The beginning of the link under test.
- Letter B: The end of the link under test.

Note: *An arrow ( ) icon is displayed on the element if the start and the end of the link is represented by the same element.*

- Element Pass/Fail: The status of the element whether it is pass ( ), fail ( ), or unknown. If you are viewing multiple measurements in Cable view (see *Managing Multiple Measurements* on page 215 for details), the status depends on the statuses of the corresponding matched elements. If at least one of the elements has a fail status, then the cable combined element status is also fail.
- Pass/Fail not tested: A gray background indicates that the element is unknown. If there is no icon at the right side corner, it indicates that thresholds are not applied on the element and the element is not tested for Pass/Fail. If you are viewing multiple measurements in Cable view (see *Managing Multiple Measurements* on page 215 for details), the status depends on the statuses of the corresponding matched elements. If at least one of the elements has a status of fail, then the combined element status is also fail. If the statuses are a combination of pass and unknown, then the cable combined element status is set to unknown.
- Diagnostics icon: This icon specifies that some diagnostic is present on the element. See *Understanding Diagnostics* on page 294 for more details.
- Distance Unit: The distance unit you have selected.
- Splitter Ratio: The splitter ratio is displayed on the element, if the element type is splitter.

Note: *The number of elements displayed in the composition view varies according to the available space, number of elements, and section size.*

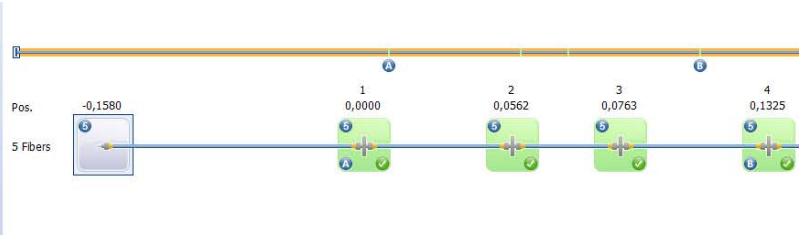
Note: *When the link length is large, not all of the elements are visible; you may need to scroll on the link using the navigation arrow.*

Note: *The distance between the elements is not 100 % proportional. To have a proportional representation of the element, look at the link overview.*

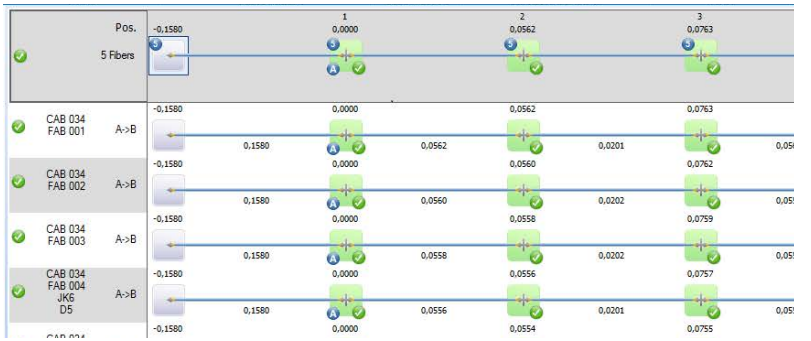
Managing Multiple Measurements

When you are working with more than one measurements, you can view the links in two different manners:

➤ The *Cable* view shows all of the measurements grouped into one link, with the link overview. The total number of selected fibers is indicated on the left, and each element has its own identification number. When matched elements are of the same type, you can see how many there are on the upper left corner of the element icon. If the number is blue, all fibers contain this element. If the number is yellow, at least one fiber does not have this element. If elements at the same position are not of the same type, a question mark icon replaces the element type.



➤ The *Fiber* view shows the grouped links at the top of the window, then details each fiber with its corresponding elements. You can perform changes to individual fibers in this view.

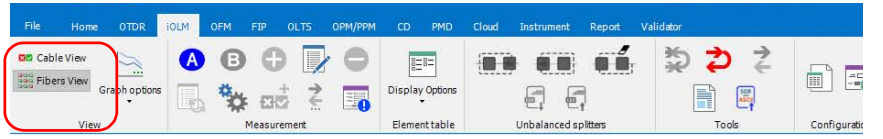


Note: *When viewing grouped fibers, the End of fiber element (B) is set according to the reference measurement if there is one; if there is no reference measurement it is set according to the shortest fiber. The elements located between the grouped A and B positions (including both A and B) are numbered.*

You can perform the same actions (adding, modifying and deleting elements, setting span start and end) on single fiber and multiple fibers; the main difference is that if you perform the actions in the cable view or on the cable at the top of the Fiber view, all of the included fibers are modified accordingly.

To select the viewing method for multiple fibers:

1. If you have not done so already, select the **iOLM** tab.
2. Under **View**, select the method you want to use.



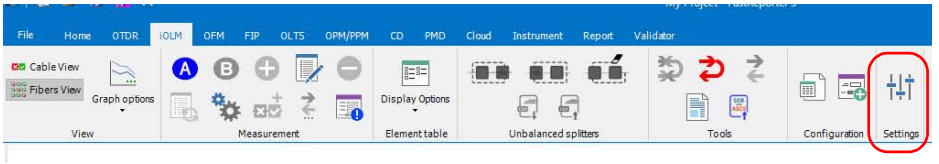
Selecting Element Alignment Type

Elements can be matched either using the position (the distance on the fiber), or the element number. The span start is considered as element number 1, or the start position.

Note: *Some operations, such as delete, add, and add to other measurements are not available when the elements are matched by number.*

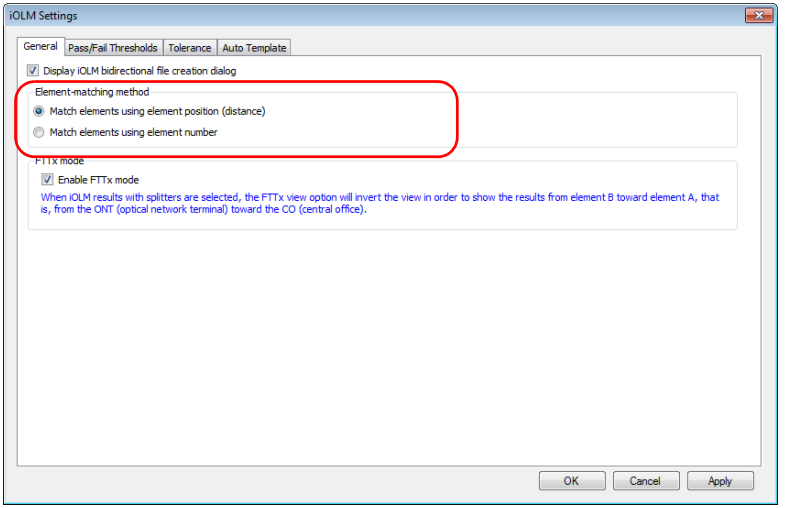
To select the element alignment type:

1. If you have not done so already, select the **iOLM** tab.
2. Click **Settings**.



3. Select the **General** tab.

4. Select how the elements will be matched.



5. Click **OK**.

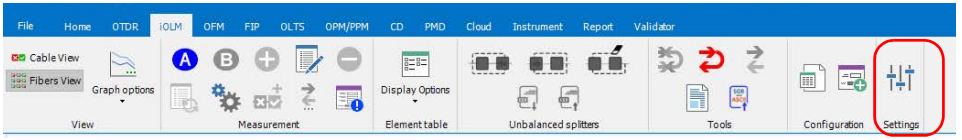
Modifying Tolerance and Bidirectional Settings

You can allow the creation of iOLM bidirectional files for your analyses.

You can also set the extended element matching tolerance. The main purpose to edit the tolerance is to match two elements that are not matching with the intrinsic element tolerance value fixed by signal processing.

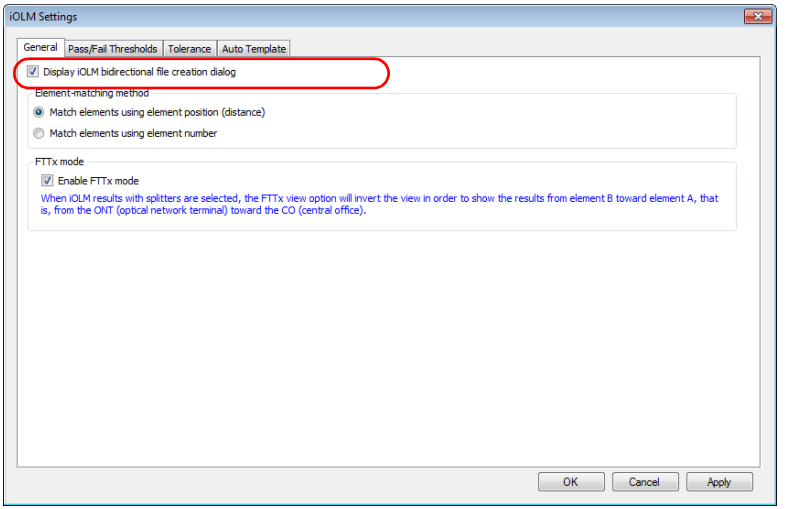
To enable the iOLM bidirectional file creation:

1. If you have not done so already, select the **iOLM** tab.
2. Click **Settings**.



3. Select the **General** tab.

4. Enable the **Display iOLM bidirectional file creation dialog** option.

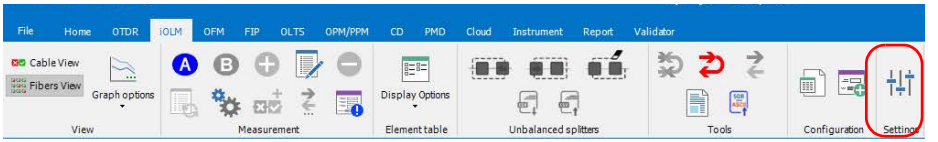


5. Click **OK**.

To change the extended element matching tolerance:

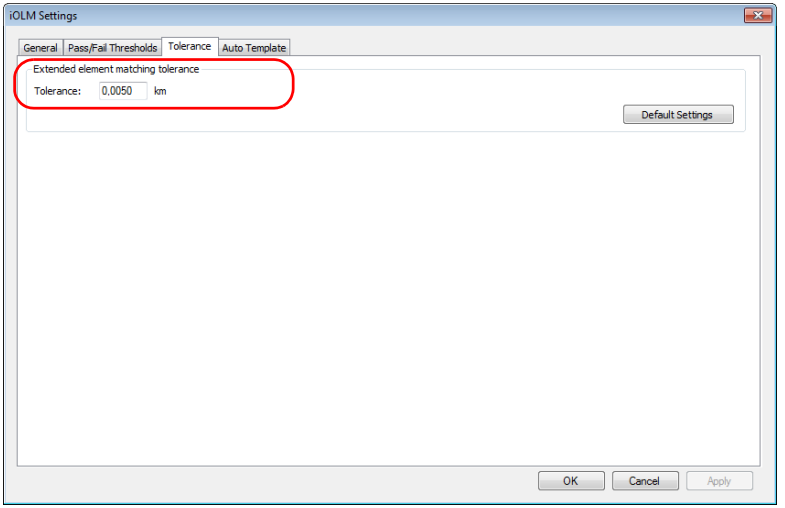
1. If you have not done so already, select the **iOLM** tab.

2. Click **Settings**.



3. Select the **Tolerance** tab.

4. Enter the tolerance value to match the element.



5. To save your settings, click **OK**.

Note: *If you want to apply the default settings, click* ***Default Settings****.*

Modifying iOLM Thresholds

The types of thresholds that you can view and modify are link and element.

Note: *Since you cannot have splitters in multimode measurements and bidirectional measurements, the corresponding threshold table will not appear in the tab if you are working with this type of file. This also applies if you have selected both monomode and multimode files.*

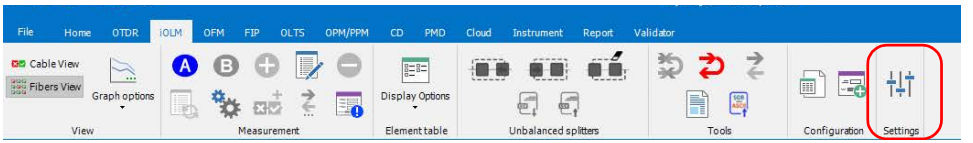
Changing Pass/Fail Thresholds

You can change the pass/fail threshold values for a specific, or all wavelengths at a time.

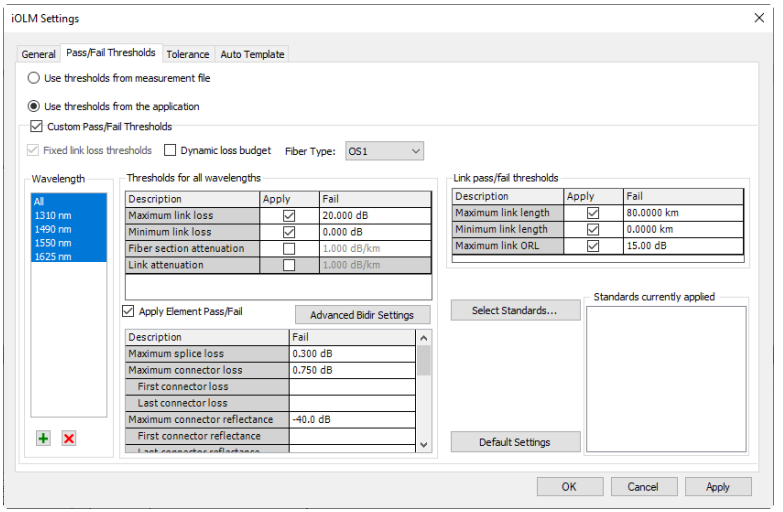
You can also change the threshold values for the current measurement.

To change iOLM Pass/Fail Thresholds:

1. If you have not done so already, select the **iOLM** tab.
2. Click **Settings**.

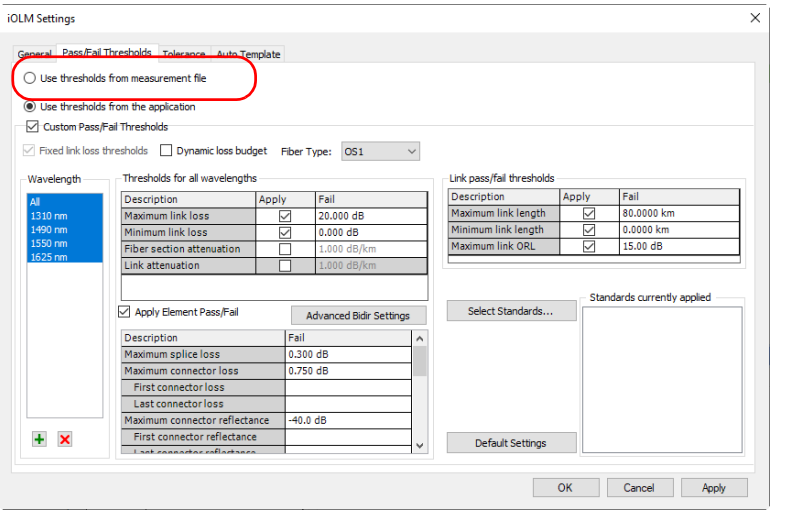


3. Click the **Pass/Fail Thresholds** tab.



4. Select how you want to set the thresholds:

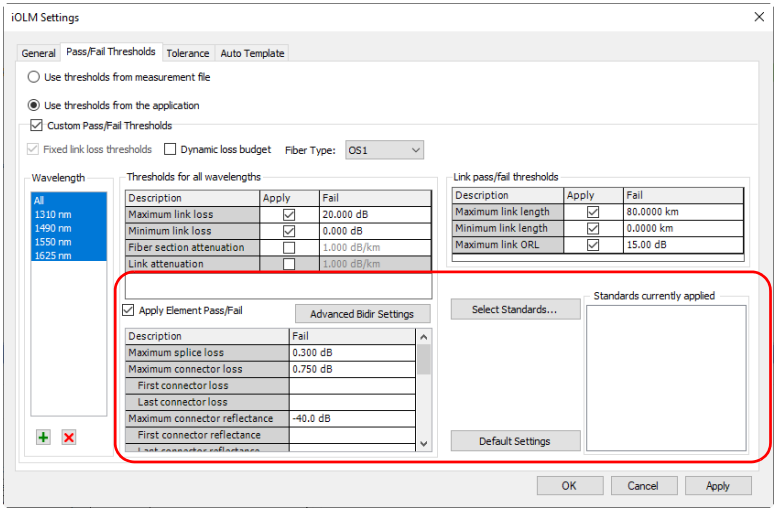
➤ If you want to use the threshold values from the measurement file, select the corresponding option.



➤ If you want to use the threshold values from the application, proceed as follows:

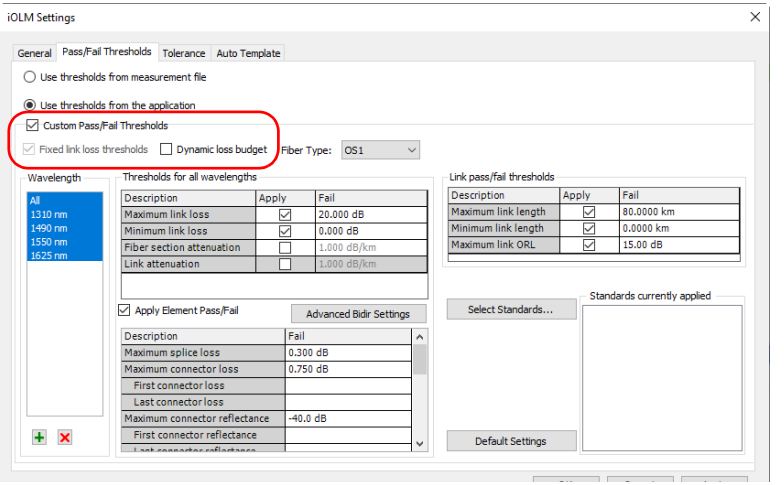
Select if you want to use thresholds associated with specific certification standards, or you can set a custom configuration.

Note: *You can use both certification standards and custom configurations at the same time.*

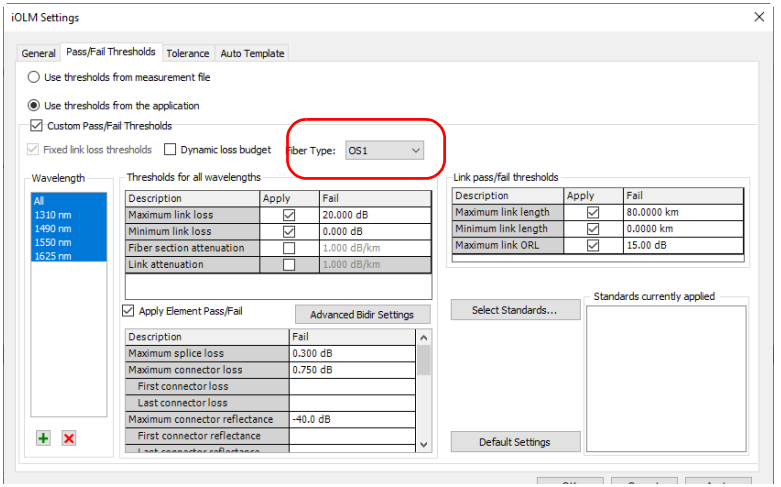


If you are using a custom configuration, select how you want to set the thresholds:

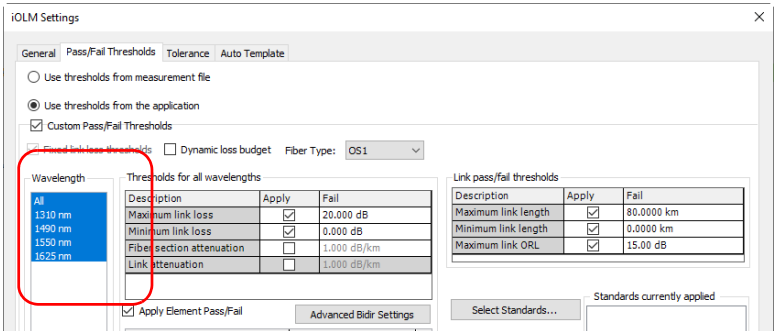
Select if you will use fixed link loss thresholds or a dynamic loss budget (in the case of iCERT files) or both. The threshold values that you can modify will change accordingly in the table. If the measurements include a dynamic loss value, it will appear in the table.



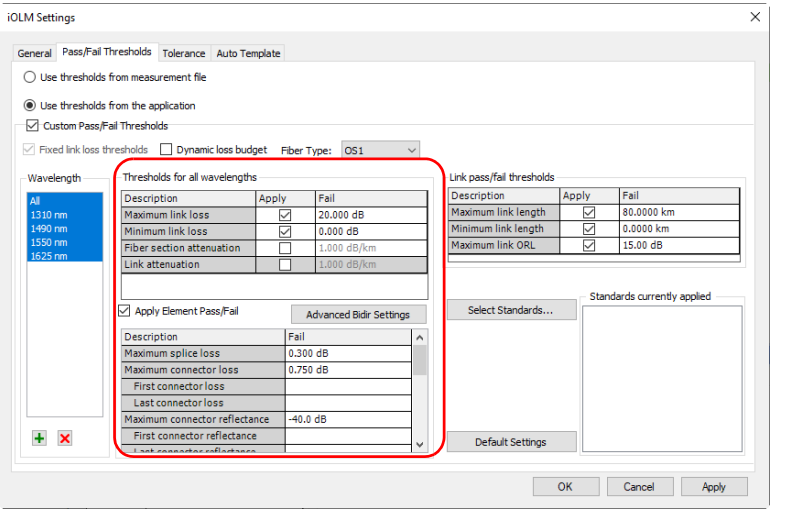
In the case of iCERT files, select the fiber type used in the setting. If you have selected a specific fiber type, not all fiber types may be available.



Select one or several wavelengths to modify. If you do not see the wavelength you want to use, you can add it by clicking the + button, entering the wavelength value, and clicking **OK**.



Modify the thresholds associated with the wavelengths needed, by clicking in the desired threshold value and modifying it in the table. The **Apply** option must be enabled for the threshold to be active and modifiable.



If you have selected more than one wavelength, their maximum and minimum link loss, as well as maximum attenuation will be modified at the same time.

5. To apply the changes without closing the dialog box, click **Apply**. To apply the changes and close the window, click **OK**.

6. Select the **Advanced Bidir Settings** button, and then select the required option from the **Advanced Bidir Settings** window that appears.
   Refer Page 231 to know the details of the advanced Bidir settings.

Note: *When the span ORL value is preceded by a "<" and the ORL threshold is smaller than or equal to the value, the global pass/fail status for the measurement will be unknown or fail.*

Setting Pass/Fail Thresholds for the Current Measurements

Depending on the type of threshold you have selected for your files, you can adjust some of the values on the current measurements to better fit your needs.

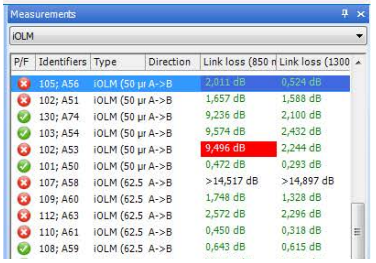
Note: *You can use one or several of the types at a same time.*

- Fixed link thresholds: this setting will use the link pass/fail threshold value, the maximum link length and link loss value as the thresholds.
- Dynamic loss budget: this setting will use the link pass/fail threshold value, and the fiber attenuation, as well as the splice loss and connector loss values as the thresholds. The first and last connectors will also be used in the calculation.
- Certification standards: this setting allows you to determine which certification standards will be taken into account for the cabling or the application.

To modify the iOLM thresholds for the current measurement:

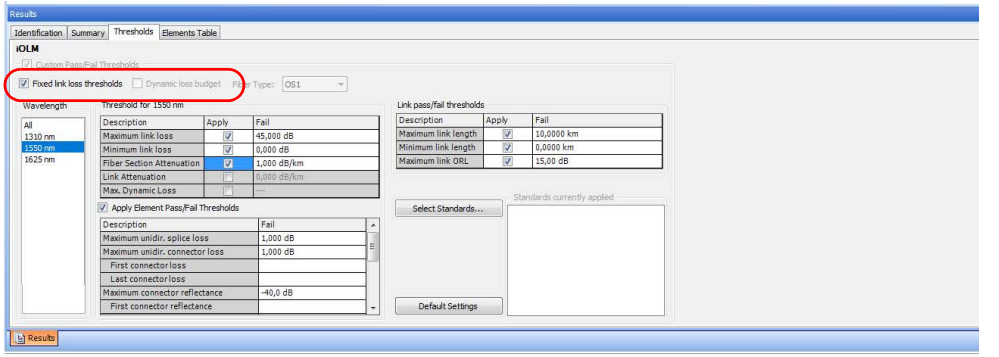
1. Open an iOLM file.
2. Select the measurements for which you want to view or modify the thresholds.

   The current pass/fail threshold statuses are indicated in the list: green for pass and red for fail.

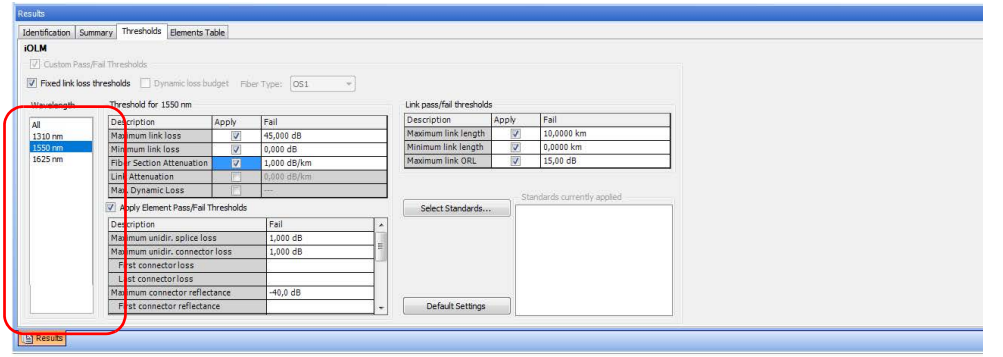


3. In the **Results** window, select the **Thresholds** tab.

4. Select the type of budget you want to use for the results.

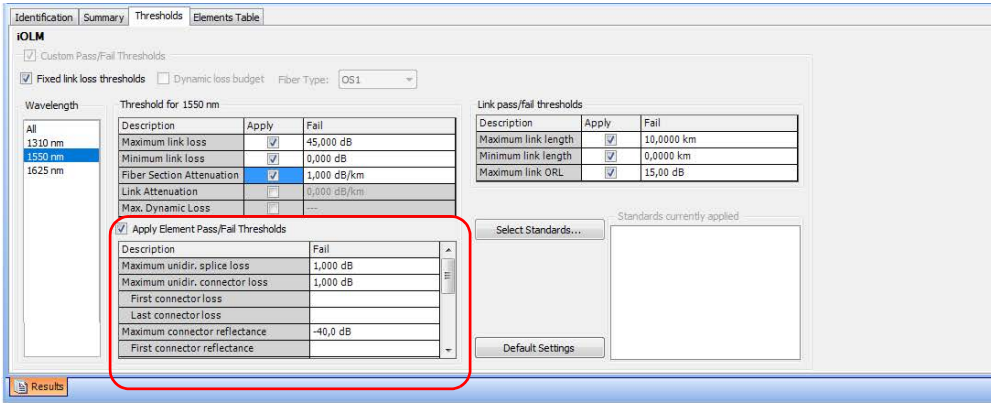


5. Select the wavelengths for which you want to view or modify the maximum and minimum loss, and maximum attenuation loss values, then change the values as needed.



6. Enable the element pass/fail thresholds option to be able to modify them and apply them, then change the values as needed. Depending on the element type, this list will display different items (for example, if you are using standard splitters, the maximum splitter loss for 1:n will be in the list, whereas if you are using unbalanced splitters, you will see the ratios included in your measurement according to the corresponding splitters and ports).

Note: *If you are using the application threshold settings (as opposed to the measurement file settings), you can still change the unbalanced splitter values and custom element thresholds.*



7. If the files are iCERT, you can select one or more certifications, as explained in the procedures following this one. This will display the threshold values associated with this particular type of certification. You cannot modify the thresholds displayed for them.

   If no certification is available, the configuration name is set to Custom, and you can modify the thresholds as needed by clicking the corresponding **Apply** box, then modifying the value in the table.

Note: *If you have selected more than one or all wavelengths, all selected will be modified simultaneously.*

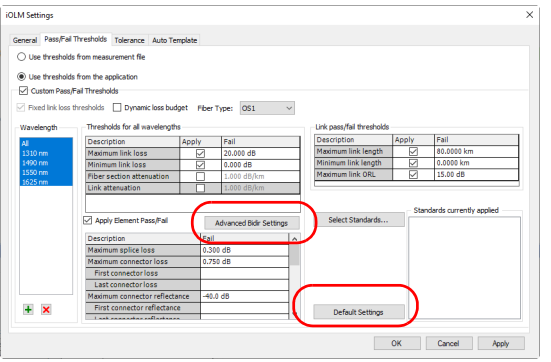
8. If you want to change the splitter loss ratio values, proceed in the same manner as you have for the thresholds.

9. If you want to apply the default values for all thresholds and standards, click **Default Settings**.

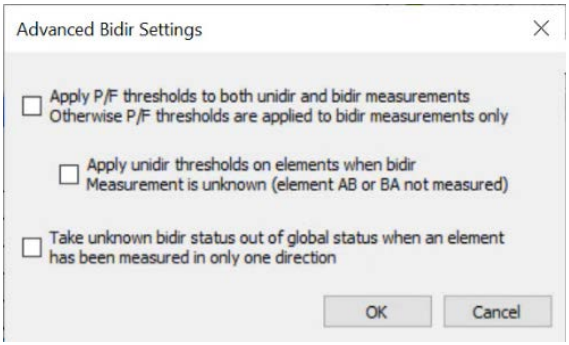
To apply advanced Bidir setting:

1. Select the required iOLM Bidir measurement file or files to apply advanced settings.

2. Select the Thresholds tab, then click the **Advanced Bidir Settings** button.



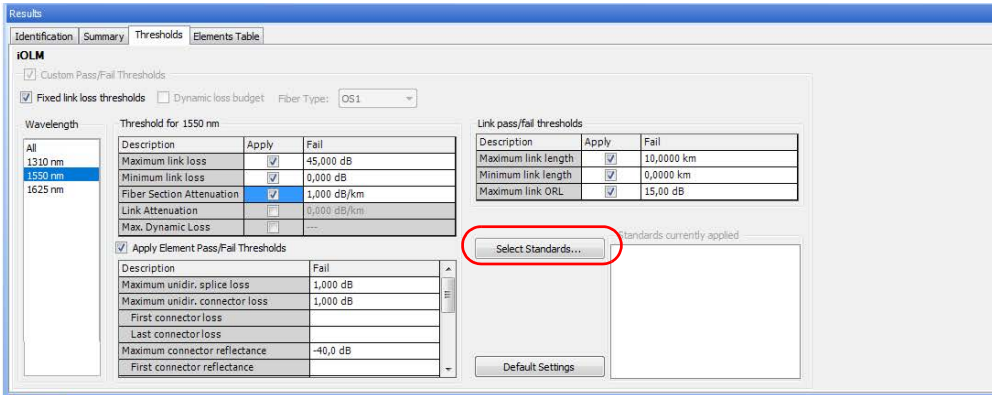
3. Select the options from the settings window and then select **OK**. The Pass/Fail status of the selected Bidir files will be updated accordingly.



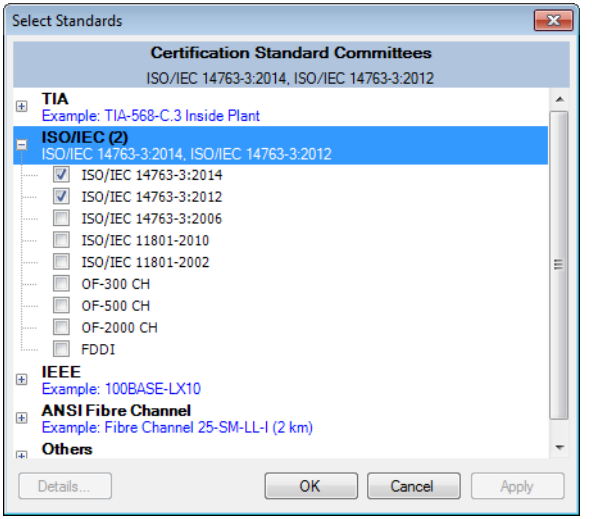
Note: *Select the **Default Settings** button to revert the modified advanced settings. It will reset the values to the original values and its status.*

To apply specific certification standards:

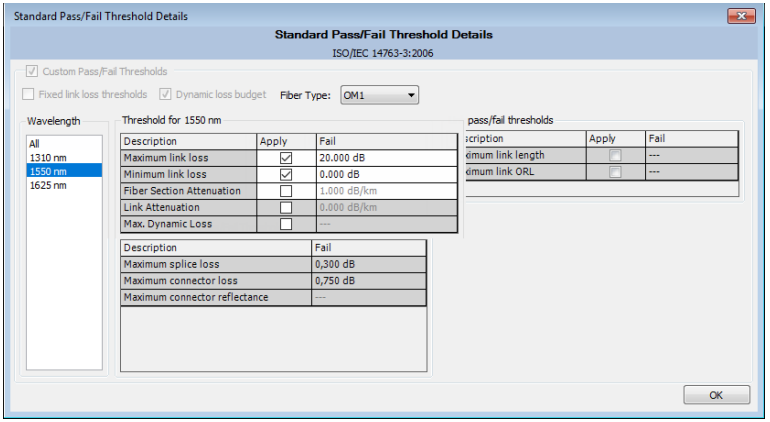
1. Select the file or files for which you want to apply standards.
2. Select the **Thresholds** tab, then click **Select Standards**.



3. Navigate in the application and cabling standard lists to select the items you need. Use the + button to show the detailed available choices.



4. If you want to see the threshold details for a specific standard, select it, then use the **Details** button at the bottom of the window.

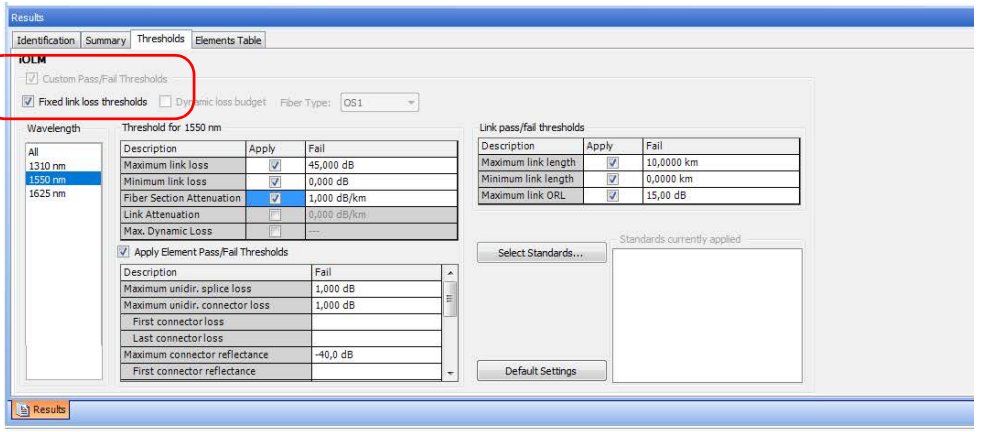


Click **OK** when you are done to return to the list of standards.

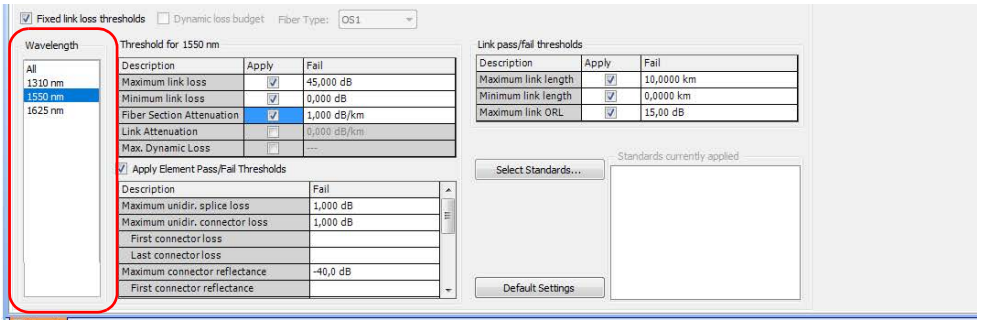
5. Once you are done, click **OK** to confirm the addition of the standards. The tab is updated accordingly.

To select and modify the custom thresholds:

1. Select the file or files for which you want to change the threshold type.
2. Select the **Thresholds** tab, then the custom thresholds option.



3. Select the wavelengths for which you want to modify threshold values. Select **All** to modify the threshold values of all available wavelengths.



4. Change the threshold values as needed.

Note: *If the unit used to take the measurements was not a Fiber Certifier (iCERT model), you cannot select the dynamic loss budget option or any of the certification standards and the maximum dynamic loss value is not displayed in the tab.*

To show the certification standards applied to a specific measurement file:

In the **Files tab**, right-click on the measurement or measurements for which you want to view the standard, and select **Global Pass/Fail Status**.

The result will appear in a tooltip. If you have selected more than one measurements, the standards will be applied to all of them.

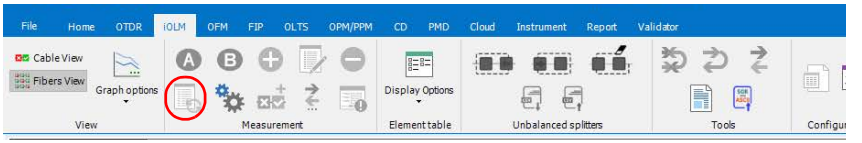
Using the Auto Template (Plus Mode)

The auto template lets you add and remove elements on links based on their occurrence on the total group of selected links. You can set a percentage value that will indicate whether an element should be added or removed.

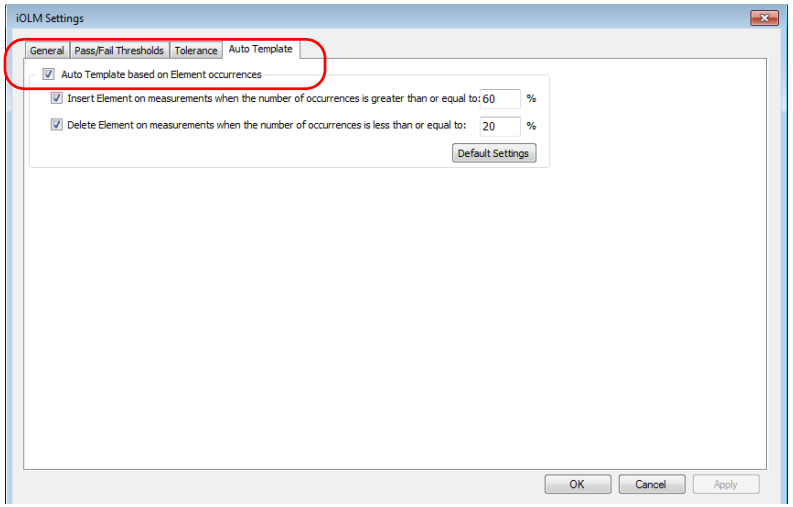
Once the auto template is used, you can analyze the results; if there are issues with some of the elements, you can view them in a descriptive summary.The auto template is particularly useful for obtaining uniformity when testing many traces on a same fiber.

To enable and use the auto template in your project:

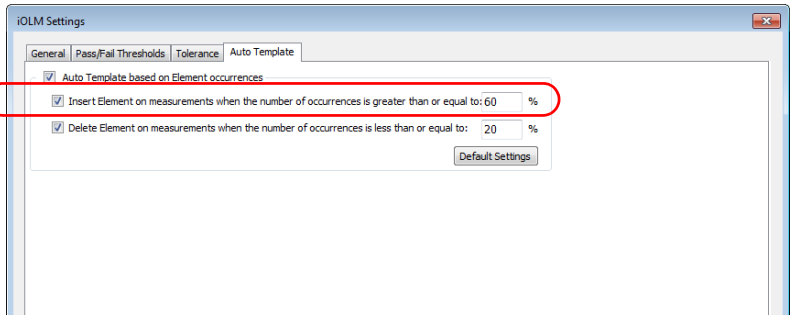
1. If you have not done so already, select the **iOLM** tab.
2. Under **Measurement**, select the corresponding button.



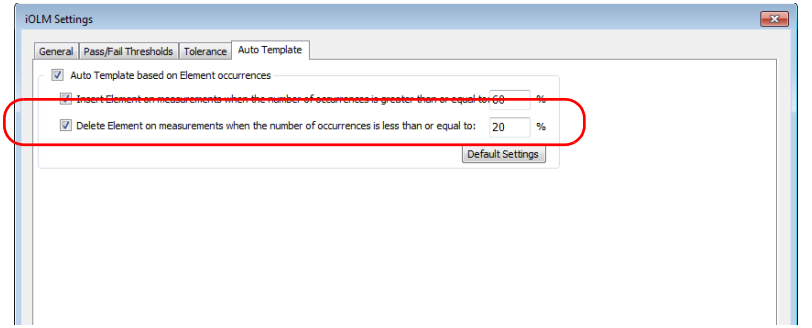
3. Enable the option to be able to set the preferences.



4. If you want to add elements, select the corresponding option and enter the minimum percentage value of occurrences required to add the element to the remaining links.



5. If you want to remove elements, select the corresponding option and enter the percentage value of occurrences under which the element must fall to be remove it from the measurement.

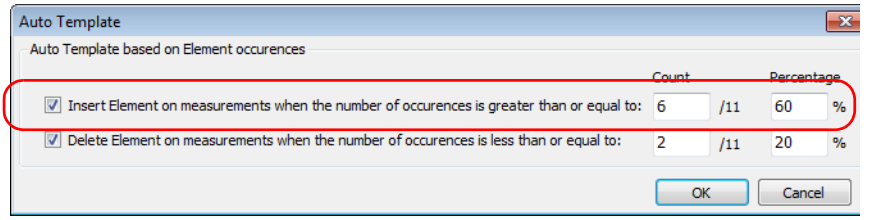


6. To apply the changes without closing the dialog box, click **Apply**. To apply the changes and close the window, click **OK**.

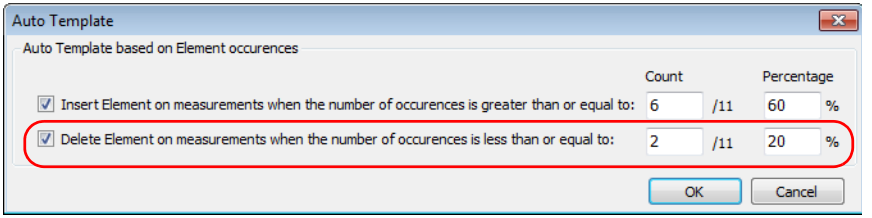
To apply auto template settings to the current measurements:

1. Open the measurements you want to include in the auto template operation.
2. If you have not done so already, select the **iOLM** tab.
3. Under **Measurement**, select the corresponding button.

4. If you want to add elements, select the corresponding option and enter the minimum value of occurrences required to add the element to the remaining links.



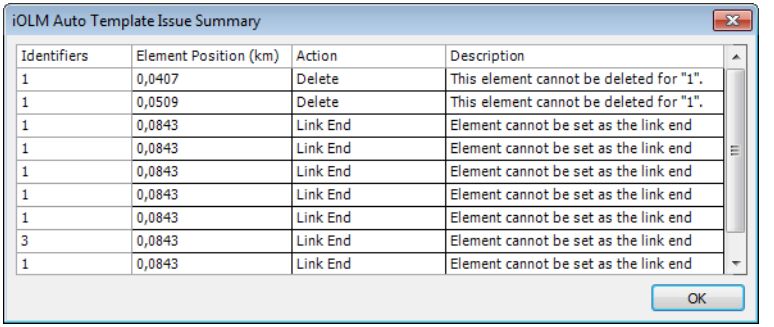
5. If you want to remove elements, select the corresponding option and enter the value of occurrences under which the element must fall to be remove it from the measurement.



6. Click **OK** to confirm your choice and start the operation.

Note: *The values modified in the window will not be kept for future applications of the auto template. They are for the current measurements only.*

The elements will be added or deleted according to the Auto template settings. The results will be updated in the **Element Table**. If some issues occur during the process, a summary will indicate which element is concerned.

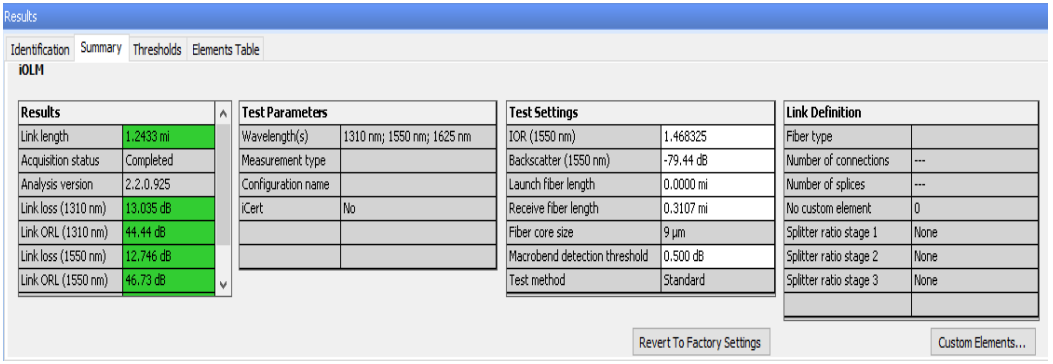


Modifying iOLM Result Settings (Plus Mode)

In the **Summary** tab you can view and modify the IOR and backscatter value for your iOLM measurements.

To modify iOLM settings in the Summary tab:

1. Open an iOLM file.
2. Select the measurement for which you want to view or modify the iOLM settings.
3. In the **Results** window, select the **Summary** tab.

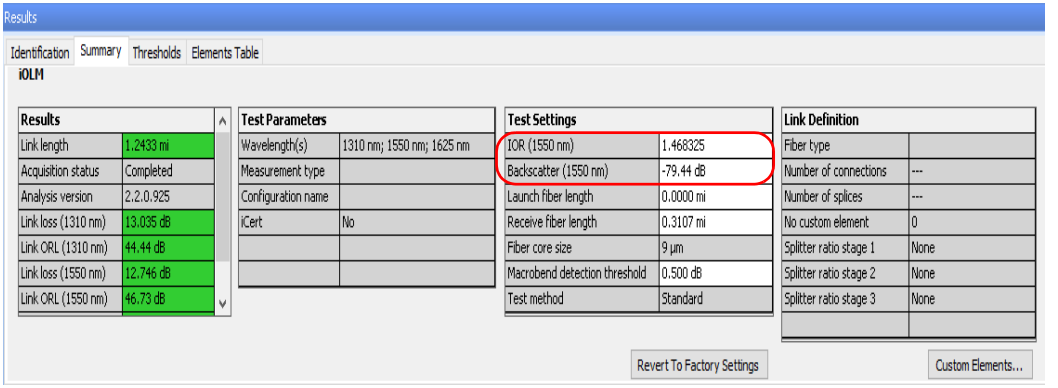


4. In the **Results** table you can see all the result components:

- Link length: Displays the Link length.
- Acquisition Status: Displays the status of the acquisition (taken normally or interrupted).
- Link loss: Displays the Link loss for the indicated wavelength.
- Link ORL: Displays the Link ORL value for the indicated wavelength.
- Analysis version: Displays the version of the application used to analyze the link. If the measurement is analyzed with FastReporter 3, the analysis version is replaced by the FastReporter 3 version number. This version is saved only if the file is saved. If the version is not available, the field remains empty.
- Prop. Delay: Displays the propagation delay for the indication wavelength.

Note: *If the link ORL value is saturated (displayed with a < symbol), the test is still performed to obtain a pass/fail status. However, you can only determine that the status is fail and the pass status cannot be specified.*

5. In the **Test Settings** table, modify the IOR and the Backscatter values as needed.



Note: *The values set for 1550 nm are automatically computed for other wavelengths. You can only edit the IOR and backscatter values for the 1550 nm wavelength, even if other wavelengths are available in the selected iOLM measurement.*

Note: *When the IOR value is changed, the position and length of the section will be updated, and when the backscatter value is changed it triggers a reanalysis of the whole link.*

Note: *You can revert the changes to factory settings by selecting the **Revert To Factory Settings** button if you do not want to continue with the changes done.*

Modifying the Splitter Ratio Information

The **Link Definition** table displays the information about the expected number of splitters on the link and their respective splitter ratio. You can modify the splitter ratios so that they are no longer included in the pass/fail calculation and have the application discover the ratios automatically.

The splint ratios are sequential, in the sense that if you set the first in sequence to None, any subsequent splitter ratio is automatically set to None as well.

Note: *Link definition on an iOLM measurement is available for display, but it is in read-only mode.*

To modify the splitter ratio information:

1. Open an iOLM configuration file.
2. In the **Results** window, select the **Summary** tab.
3. You can view and modify the splitter ratio stage 1, 2, and 3 fields in the **Link Definition** table.
4. Select 1:? if you know that a splitter is present, but you do not know its splitter ratio. The iOLM discovers the splitter ratio automatically and the element will not be tested for pass/fail.

Note: *The splitter ratios are defined stage wise, depending on how they are defined in the network.*

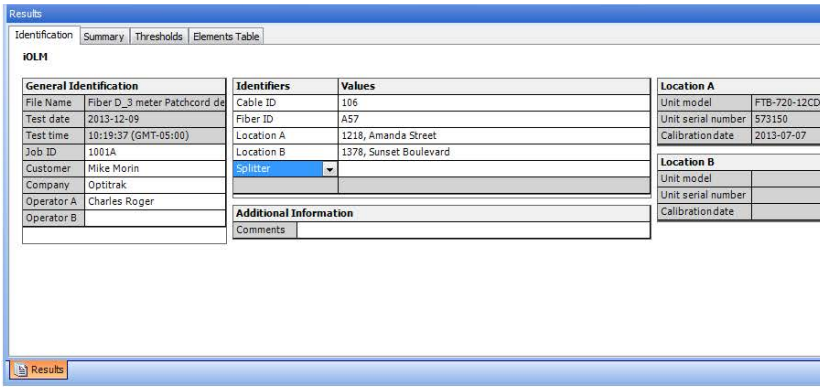
Modifying Identifier Labels (Plus Mode)

You can view and modify the identifier labels for your iOLM measurement files.

Note: *When multiple iOLM measurements are selected, you will see the information for all selected measurements. If the values are the same, they are displayed once; if not, they are separated by semicolons.*

To modify the identifier labels:

1. Open an iOLM file.
2. Select the measurements for which you want to view or modify the Identifier labels.
3. In the **Results** window, select the **Identification** tab.



4. Select the identifier from the list of available choices in the **Identifiers** table to modify it. You can also rename the identifier by selecting it. As needed, you can change the corresponding value.

Note: *The identifiers label is not editable if the iOLM measurements are selected with any other type of measurements such as CD or OTDR.*

Note: *When the Identifier label is selected as None, the values are not editable.*

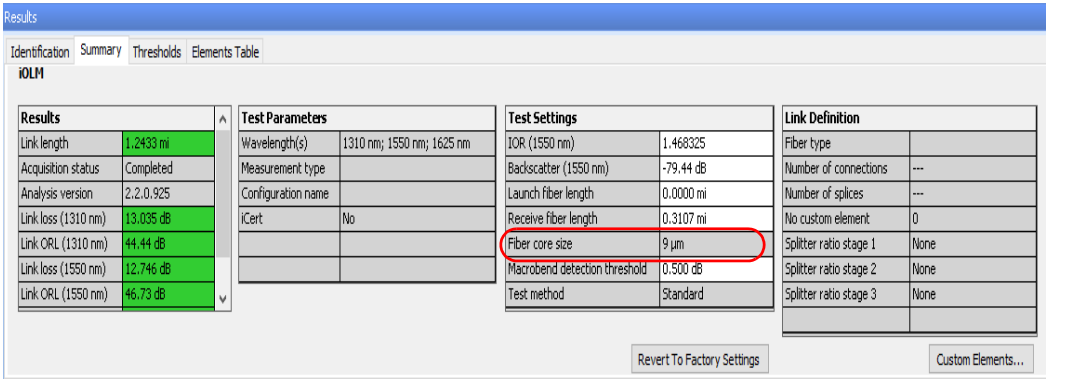
Changing Fiber Core Size (Plus Mode)

The FastReporter 3 application displays the core size of the fiber for the selected measurement in the **Test Settings** table of the **Summary** tab. When multiple measurements are selected and the fiber core sizes are not similar, they are separated with a semicolon.

Note: *The application allows you to change the fiber core size only for the multimode files.*

To change the fiber core size:

1. On the **Measurements** tab, select the multimode measurement for which you want to modify the fiber core size.
2. From the **Summary** tab, select the required fiber core size in the list of available values.



3. The application prompts you to confirm the change. Click **Yes** to set the default values for result and test settings. If you click **No,** the fiber core size value changes, but the default values are not applied for result and test settings.

Changing the iOLM Fiber Type

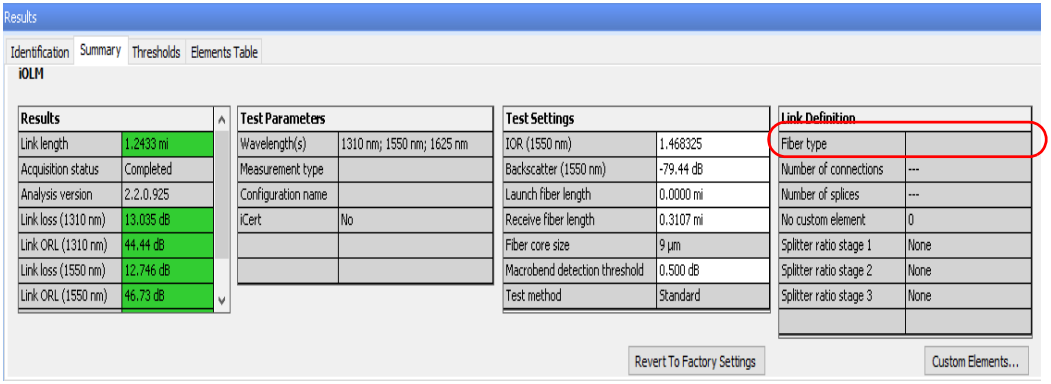
When working with iOLM files, you can select a specific fiber type. Different fiber types are available depending on the type of mode you are working with (singlemode or multimode).

To change the fiber type:

1. Open the file or files you want to modify.

Note: *You can only change the fiber type of multiple files if they are of the same mode.*

2. In the **Summary** tab, under **Link Definition**, use the corresponding drop-down list to select the desired fiber type.

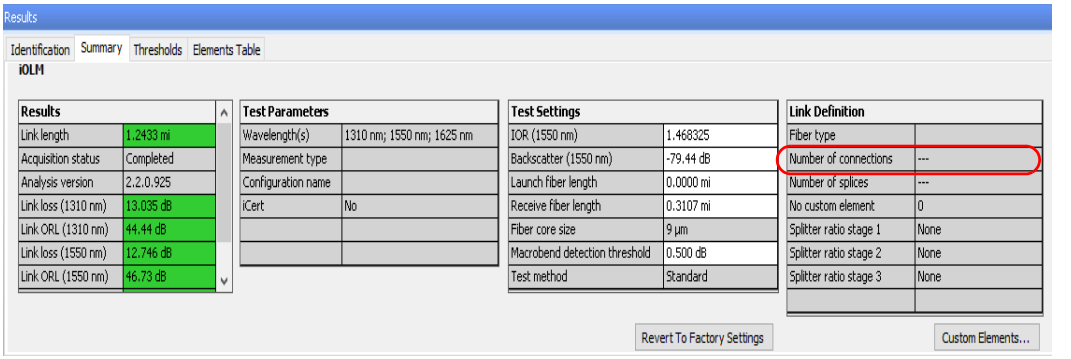


Changing the Number of Connections in the Link Definition

You can modify the number of connections in the link to see the impact of adding or removing connections on the dynamic loss budget thresholds. The threshold status will be modified accordingly.

To change the number of connections:

1. Open the file or files you want to modify.
2. In the **Summary** tab, under **Link Definition**, click into the corresponding box to enter the desired value.



Note: *When you change the link definition parameters, the pass/fail thresholds will be recalculated.*

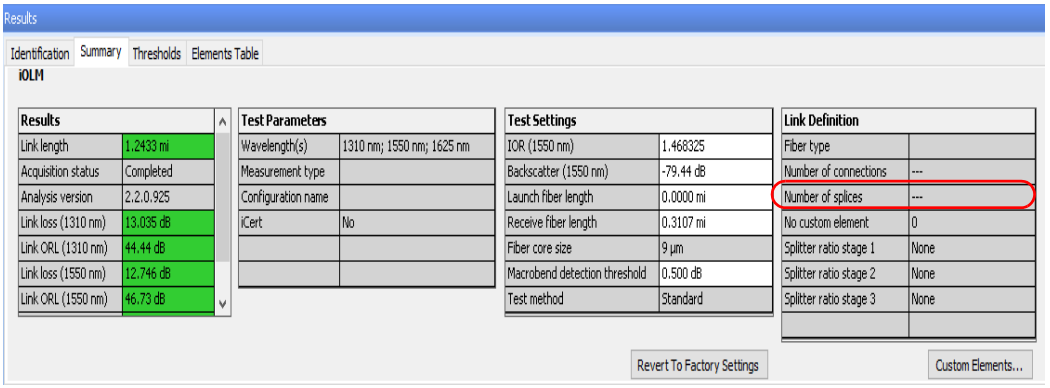
Changing the Number of Splices in the Link Definition

You can modify the number of splices in the link to see the impact of adding or removing splices on the dynamic loss budget thresholds. The threshold status will be modified accordingly.

If you are working with iCERT files, you can change the number used to calculate the dynamic loss budget. If you have selected multiple iCERT files or if there are more than one custom elements, you will see how many of each are in the links.

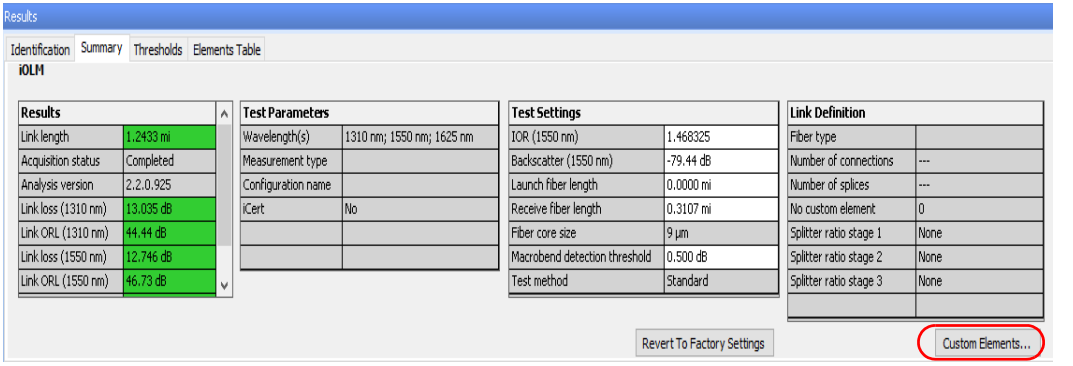
To change the number of splices:

1. Open the file or files you want to modify.
2. In the **Summary** tab, under **Link Definition**, double-click into the corresponding box to enter the desired value.



To change the number used to calculate the dynamic loss budget:

1. Open an iOLM file.
2. Under the **Summary** tab, select which custom element you want to modify.



3. Change the value as needed.

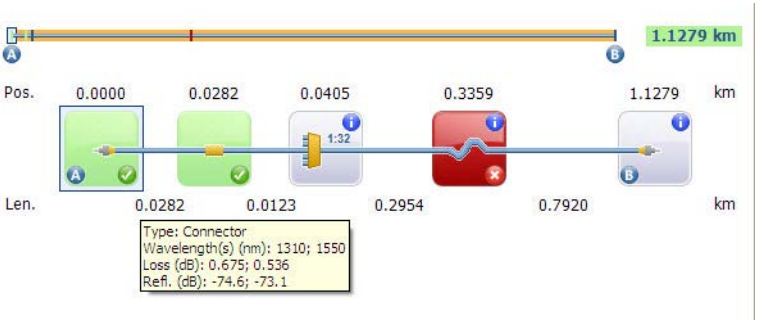
Managing Elements

When an element or a section is selected from the link view, the details of the corresponding element or section are displayed in **Elements Table** tab. The loss, reflectance, wavelength, and corresponding pass/fail status for loss and reflectance will be displayed.

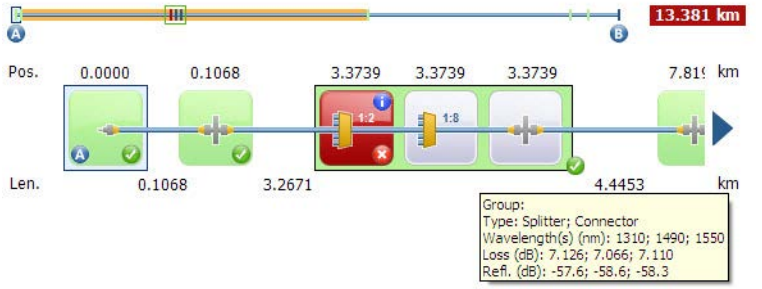
When you hover the mouse over any element, the application displays the corresponding details of the element, such as: type, wavelengths, loss, and reflectance.

Note: *Inversely, if you select an item in the **Elements Table** tab, the corresponding item is highlighted in the link view.*

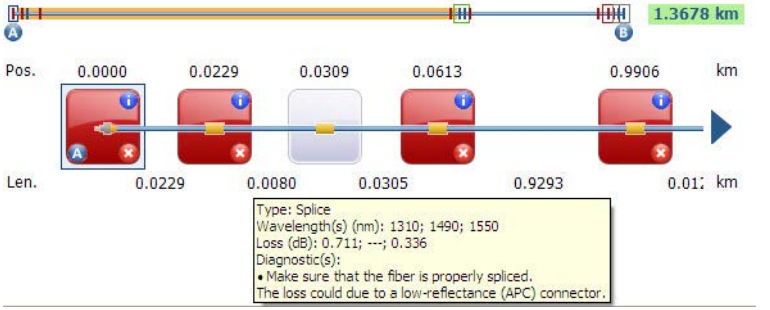
Note: *Reflectance is not displayed if you hover the mouse over a non-reflective element.*



When you hover the mouse over any element groups, the application displays the group details separated by semicolons.



When you hover the mouse over any element with a diagnostic label, the application displays the description.



Note: *It is possible to underestimate the loss or reflectance value if the noise level is too high (for instance, after a lot of loss on the link, the noise levels increase). In that case, it is possible for the signal processing algorithms to detect an element, and to estimate the loss/reflectance values, but since the measured signal does not completely clear the noise floor, the loss or reflectance values are likely to be underestimated. If the loss or reflectance value is underestimated, the value is displayed with a > symbol.*

The elements that you could see on the link are described in the table below:

Element Name	Element Icon	Element Description
Macrobend		Displayed in the link view when more than one wavelength is present in the measurement. The macrobend will always be displayed as a failed element.
Out of Range		Displayed when the end of fiber could not be detected by the module because the dynamic range is not large enough.
Standard Splitter		Passive fiber optic coupler that divides light from a single fiber into two or more fiber channels. The splitter ratio is displayed above the icon. (Splitters are not available on multimode or bidirectional files.)
Unbalanced Splitter		Passive fiber optic coupler that divides light from a single fiber into two or more fiber channels, but dividing the light signal unevenly between two ports. The ratio can vary. ➤ The top symbol indicates a splitter going through the trunk cable. ➤ The middle symbol indicates a splitter going through the output port. ➤ The bottom symbol indicates a coupler type splitter.
Splice		Indicates the junction of two fiber sections having different fiber backscatter characteristics.
Connector		Used to join two fibers.
Mismatch		The elements on a matching location in the link are not of the same type.

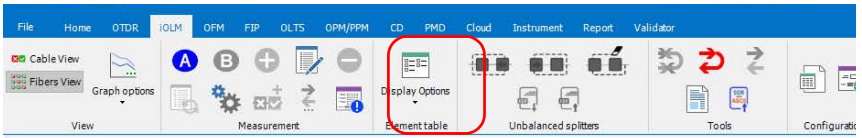
Element Name	Element Icon	Element Description
Fault		No splitter was detected on the fiber. This element type is always considered as a fault.
Switch		The switch element is used for multifiber MPO switch automated acquisitions.
Coupler		A coupler port is an optical fiber device with one or more input fibers and one or several output fibers.
Custom	Can vary.	An element that you will specify yourself. You can add your own icon for this element.

Customizing the Elements Table Tab

When viewing measurements, you can customize what is displayed in the **Elements Table** tab to better reflect what you want to see about the elements, the sections, or both.

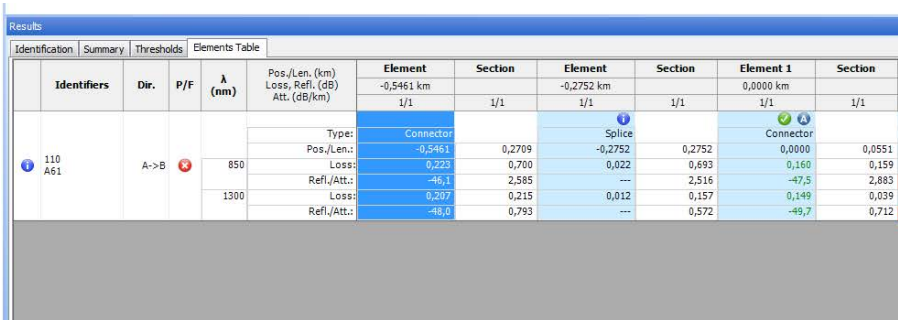
To customize the Elements Table tab:

1. If you have not done so already, select the **iOLM** tab.
2. Under **Element Table**, click **Display Options**, then select the items you want to display.



Note: *You can also right-click on the fixed column of the **Elements**/**Section Details** tab and customize the view.*

The corresponding view is displayed in the **Elements Table** tab.



You can see the attributes below in the tab:

- Type: The type of element selected in the link view. You can modify the element type by selecting it from the drop-down menu. If an element is modified as a custom element, the name of the custom element shows in the tool tip.

  You can also change the splitter ratio if the selected element is a splitter, including 2:N splitters if the measurement supports them.

Note: *The items available in the list depend on the characteristics of the selected element. It may not be possible to change the element type.*

Note: *If the type of an element is modified, an asterisk (*) is displayed in the* ***Type*** *column.*

- Position/Length: The position of the element on the link and section length. Position 0.00 is set on the first element after the launch fiber.
- Loss (dB): The loss at different wavelengths.
- Reflectance (dB): The reflectance at different wavelengths.
- Attenuation (dB/km): The attenuation value for each wavelength.

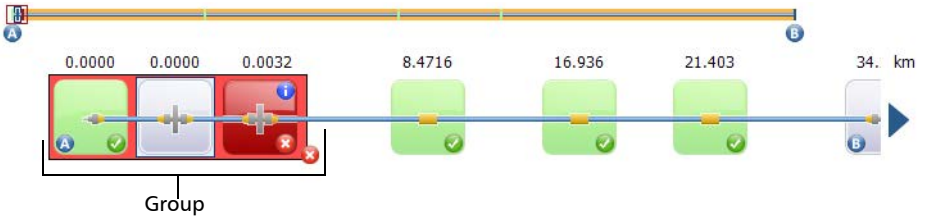
Note: *The attenuation detail is displayed for the section and the field is displayed only when* ***View Section Details*** *is selected.*

Viewing Grouped Elements

Link elements will be displayed as groups when the iOLM analysis detects that several elements are too close to be independently characterized. When this occurs, as much information as possible is displayed for each individual sub-element. The pass/fail status is applied to each sub-element whenever possible, and a global status is also displayed for the group.

Groups can also be displayed when a link element (such as a splitter) is found to have wavelength dependant loss. In that case, the link element is grouped with a macrobend element. In this particular case, there might not

be a physical macrobend next to the link element, but the macrobend icon is used to highlight the presence of the wavelength dependent loss. When elements are grouped, the group loss and group reflectance value is also displayed in the **Element** tab.



Each sub-element is directly displayed as if they were normal elements.

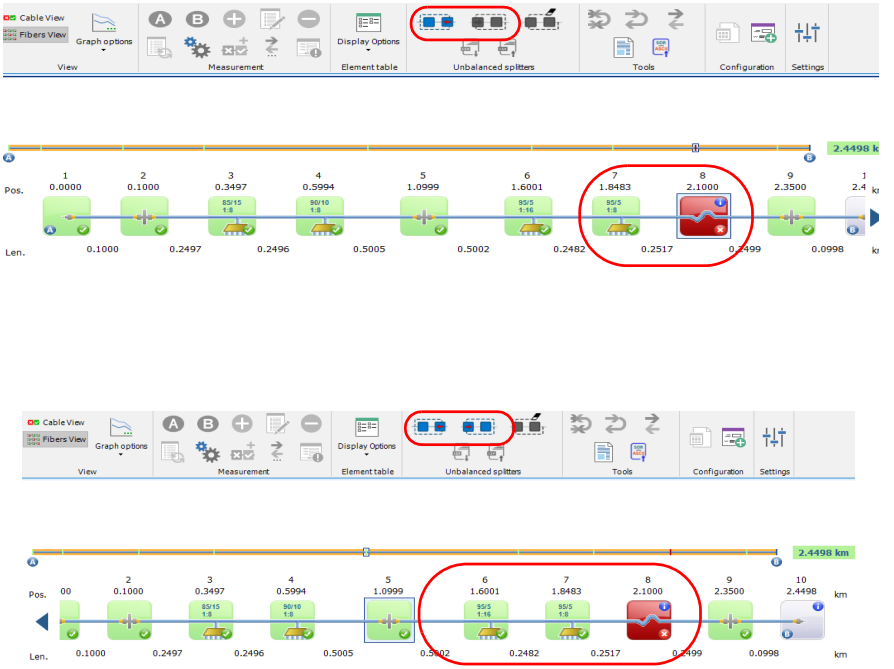
Note: *For grouped elements, some values may not be available individually but are available at the group level, such as loss and reflectance.*

Note: *If elements are grouped, the total group loss value is compared with the addition of the thresholds defined for each element in the group. If the total group loss value is greater than the addition of the thresholds defined for each element in group, the grouped element will show a fail status. You can individually select grouped elements as any other standalone element. When elements are grouped at the beginning of the link, icon A is displayed on one of the sub-elements. When elements are grouped at the end of the link, icon B is displayed on one of the sub-elements.*

Grouping Unbalanced Splitter

You can group the unbalanced splitter element with macrobend, splice, or connector elements.

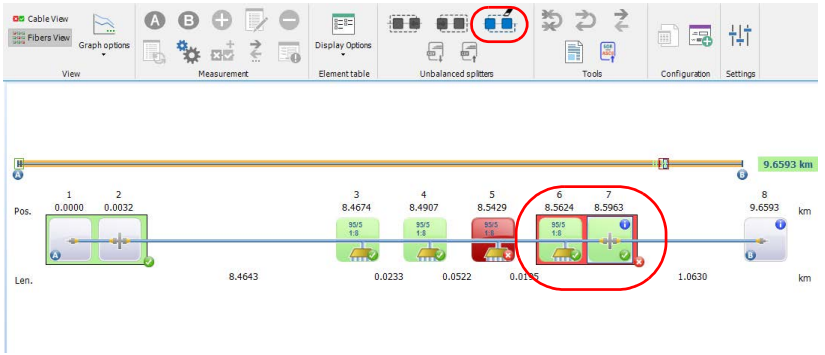
The macrobend/splice/connector elements can be grouped to the right side or left side according to your need. Select the macrobend/splice/connector and select the required left grouping or right grouping icon.



Note: *The right and left grouping icons will be enabled according to the position of these macrobend/splice/connector with respect to the unbalanced splitter.*

Ungrouping Unbalanced Splitter Group

You can ungroup the unbalanced splitter group according to your requirement. To ungroup the unbalanced splitter connected group, select the group which you want to ungroup, and then select the Ungrouping icon.



Note: *You can group/ungroup the unbalanced splitter and the macrobend/splice/connector elements by right clicking these elements and then selecting the* ***Group****/****Ungroup*** *menu.*

Importing/Exporting the CSV file to create/update the iOLM Config file

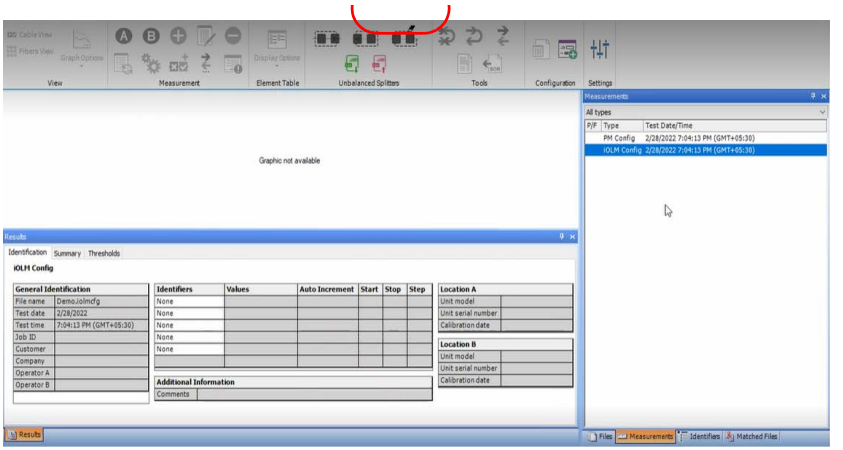
You can create and update the iOLM Config file for the unbalanced splitter by importing the required configurations in the CSV format.

This will allow you to create unbalanced splitter of your choice and define them in the topology instead of using currently defined unbalanced splitters.

If you do not have the required CSV file format, create a blank CSV file for the selected iOLM Config file by using the **Export CSV** icon in the **Unbalanced Splitter** section. You can also update the existing config file in CSV format and update the values.

The new or updated CSV file for the unbalanced splitter - iOLM Config file, can be imported using the **Import CSV** to update the required Config file.

This imported (updated) Config file then can be utilized in the iOLM application to modify and update the unbalanced splitter element values.



Note: *The imported values from the CSV will also update the unbalanced splitter elements in the* ***Unbalanced Splitter*** *section.*

Adding Elements

The application allows you to add elements in iOLM and iOLM Bidir files in the link view by selecting any element or section.

You can add elements in both the Fiber and Cable views as well as the **Elements Table** tab. Adding an element to the cable (whether you do it in Cable view, or on the cable at the top of the Fiber view) adds it to all of the fibers. You can also take one element from one fiber and add it to the other fibers.

The added element supports the following scenarios depending on the distance or position of the element:

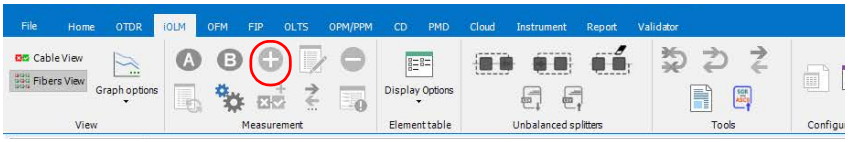
- The new element is added in a section of the link between two existing elements.
- The new element is added as a sub element in existing element group.
- The new element is added as a sub element to a single element to create a new element group.

Note: *You cannot add any element before Element A or after Element B.*

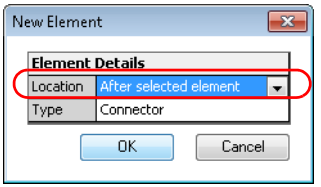
Note: *You cannot add splitters on multimode or bidirectional measurements.*

To add an element:

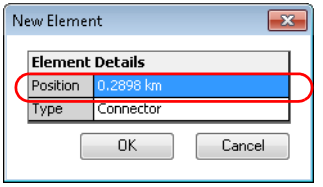
1. Open an iOLM or iOLM bidir file.
2. If you have not done so already, select the **iOLM** ribbon tab.
3. Under **Measurement**, click the corresponding button.



4. Select whether the new element will be located before or after the element you have selected. If you are adding an element to a section, indicate the position of the element.

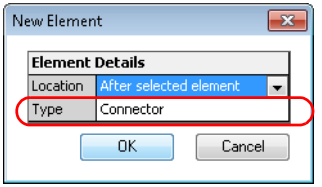


Element

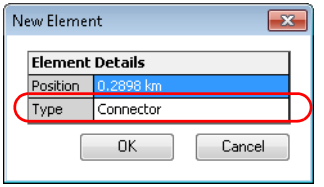


Section

5. Select the type of the new element as required.



Element



Section

Note: *You can change the splitter ratio to 2:N, if the measurement supports it.*

Note: *The splitter element type is not available for iOLM bidirectional files.*

6. Click **OK** to apply the changes or **Cancel** to discard them.

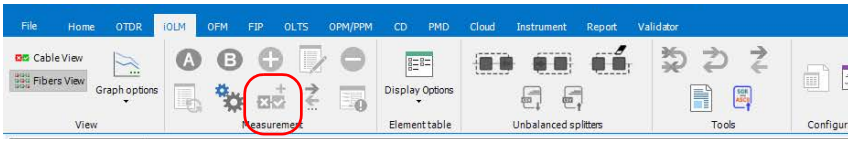
Note: *If an element is added, an asterisk (*) is displayed in the **Position** and **Type** columns.*

Note: *When an element is added to another element with no sub-elements, the current element will become a merged/group element. You can view the details in the **Elements Table** tab.*

Note: *When you add an element to a group of elements, it impacts the pass/fail status of the grouped elements.*

To add an existing element to other fibers:

1. Select the element you want to add.
2. If you have not done so already, select the **iOLM** ribbon tab.
3. Under **Measurement**, click the corresponding button.



Note: *The application displays a warning message when the element cannot be inserted at the specified location.*

Note: *The **Add to Other Measurement** feature is not available if you cannot use it (for example, if you are trying to use it while being in Cable view, and that the element is already present in all of the fibers).*

Modifying Element Types

You can view and modify element types that you see in the link view. You can change the type while being in either Fiber view or Cable view, as well as the **Elements Table** tab. Changes done in the Cable view or on the cable at the top of the Fiber view are done on each fiber included in the cable.

Note: *For iOLM bidirectional files and multimode files, the splitter element type is not available.*

Note: *You cannot modify the type of the element if they are out of range or if they are macrobends.*

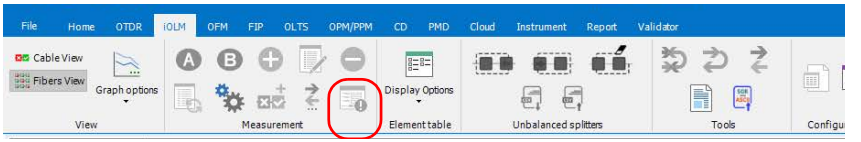
Note: *If an element type is changed, an asterisk (*) is displayed in the **Type** column.*

Note: *The items available in the list depend on the characteristics of the selected element. It may not be possible to change the element type.*

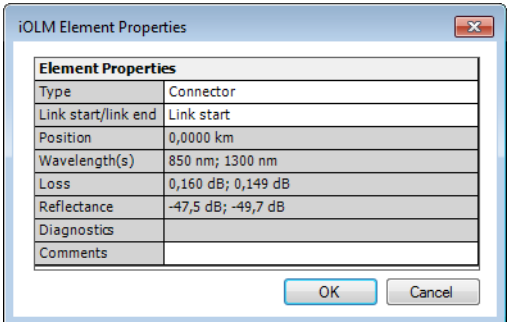
You can edit the properties for iOLM elements and sections. Event properties that cannot be edited are shaded.

To edit iOLM element properties:

1. Click on the element or section for which you want to change the properties.
2. If you have not done so already, select the **iOLM** ribbon tab.
3. Under **Measurement**, click the corresponding button.



4. Modify the properties as needed. The editable values are shown in a white background.



Note: *The comment that you enter in the **Comments** field is displayed as a tooltip when you hover the mouse pointer over the element in the graph area and element table.*

5. Click **OK** to confirm your changes.

Deleting Elements

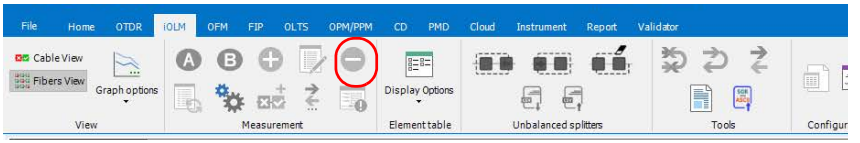
The application allows you to delete the manually added elements as well as the elements found by analysis. You can delete the elements either the Fiber view, the Cable view, or the **Element Table** tab, the procedure is the same. An element removed from the Cable or on the cable at the top of the Fiber view is removed from all fibers included in the cable.

The application does not allow you to delete the following type of elements:

- Splitters 1:N and 2:N
- First connector
- End of fiber
- Out of range
- Link start element
- Link end element

To delete an element:

1. Open an iOLM file.
2. Select the element or elements which you want to delete.
3. If you have not done so already, select the **iOLM** ribbon tab.
4. Under **Measurement**, click the corresponding button.



5. A confirmation message is displayed. Click **Yes** to continue or **No** to cancel it.

Managing Custom Elements

On a given link topology, it is possible to have different types of splices, connectors, unbalanced splitter and other kinds of elements. For this reason FastReporter 3 lets you create custom elements as per your requirements. You can also configure the details such as pass/fail thresholds.

The application allows you to add, modify or delete custom elements in the test configuration. You can also add the custom element in the iOLM configuration file and apply it to the selected measurement.

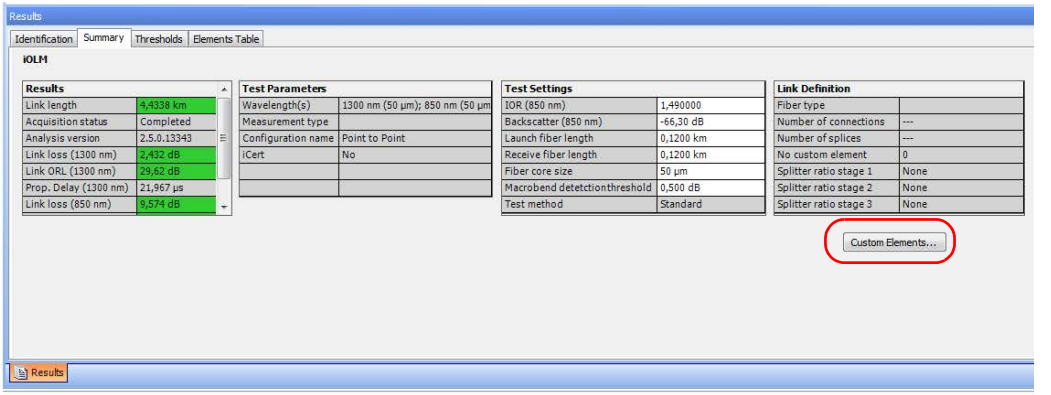
You can add custom elements of two types: splice or connector. Each custom element must have its unique name.

Note: *When more than one iOLM measurements are selected, the new custom element will be added to the test configuration in all selected measurements.*

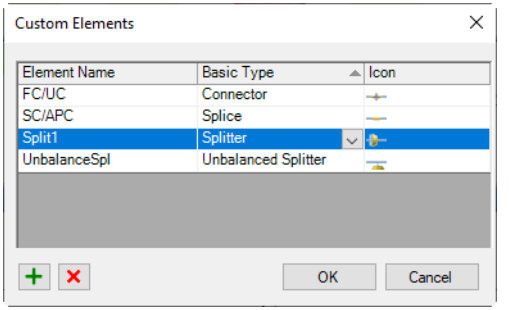
Note: *When more than one iOLM measurements are selected, the application displays all custom elements included in the test configuration for each iOLM measurement selected.*

To add a custom element:

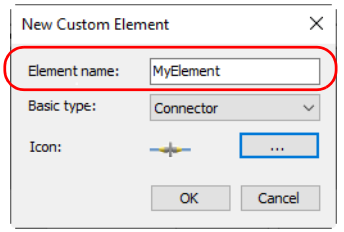
1. Open an iOLM file.
2. Click on **Custom Elements** under the **Summary** tab.



3. Click [+] in to add a new custom element.

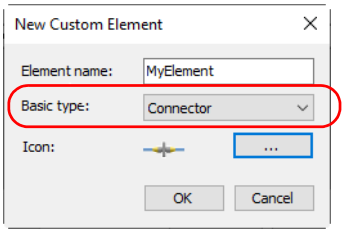


4. Enter a name for the element.

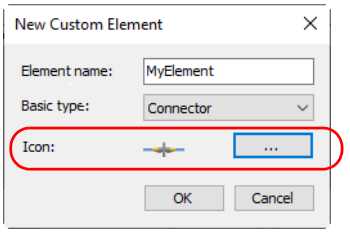


5. Select the custom element type. from the drop-down. You have to provide a unique name for the type of element you select.

Note: *The Unbalanced Splitter custom element is available only for the singlemode and the unidirectional test result only.*



6. If you want to select a different icon to represent the custom element, use the **...** button to locate and select your image, then press **Open** to confirm your choice.



7. Press **OK** to save the changes and close the dialog box, or press **Cancel** to exit without saving.

Once your custom elements are added, they become available in the list of available element types. You can find information about changing the element type in *Modifying Element Types* on page 266.

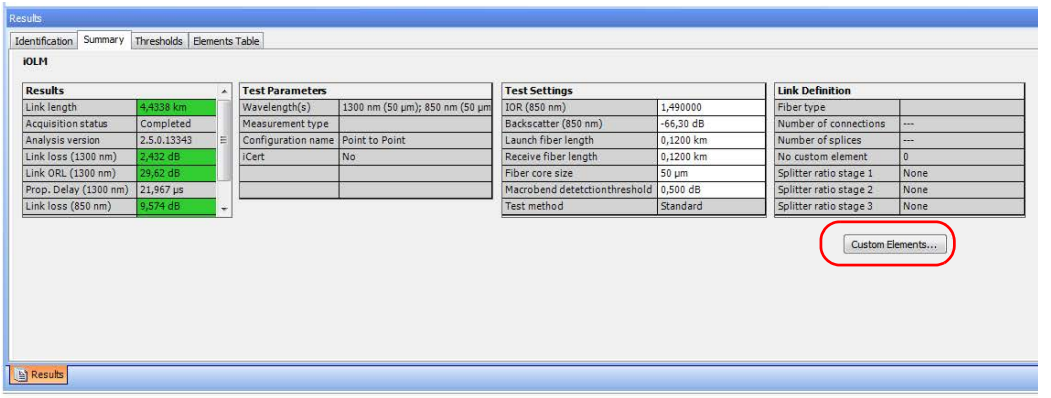
The application allows you to view the pass/fail threshold for each custom element of the test configuration even if the Plus option is not activated. If multiple iOLM measurements are selected, the application displays the pass/fail threshold for each custom element included in each test configuration of the selected iOLM measurements.

If the same custom element is included in more than one iOLM measurements and the threshold values are different, the application displays all different threshold values separated with a semicolon.

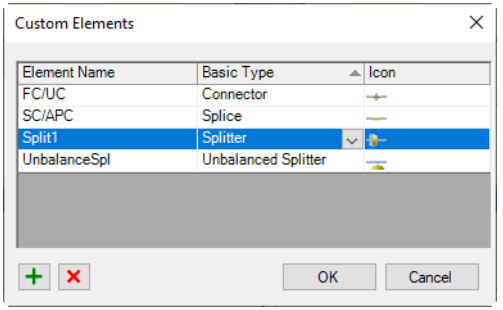
Note: *You can edit the loss pass/fail thresholds for each custom element only when the Plus option or the trial is activated.*

To modify a custom element:

1. Open an iOLM file.
2. Click on **Custom Elements** under the **Summary** tab.



3. Click on the custom element name under the **Element Name** column and modify it as needed.

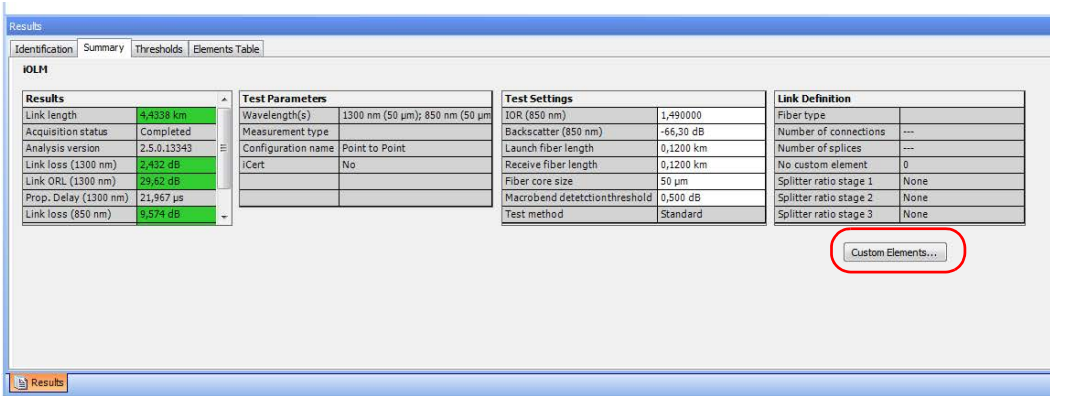


Note: *If the element is in use, you cannot modify it.*

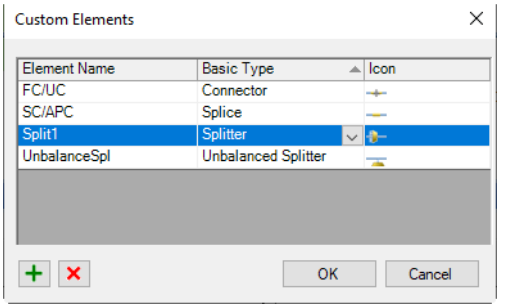
4. Press **OK** to save the changes and close the dialog box, or press **Cancel** to exit without saving

To delete the custom element:

1. Open an iOLM file.
2. Click on **Custom Elements** under the **Summary** tab.



3. Select the custom element that you want to delete.



4. Press ✕ to delete the custom element.

Note: *If the element is in use, you cannot modify it.*

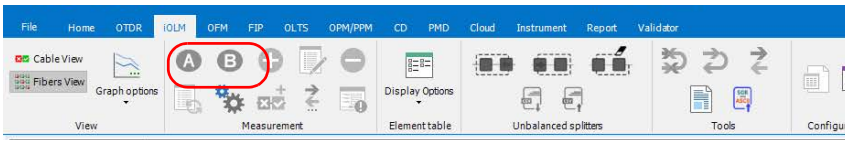
Setting Launch and Receive Fibers on Elements

You can change Link Start Element (A) and Link End Element (B) on the link. The application also allows you to change the launch fiber length and receive fiber length on both new and existing elements. If no element is located in this position, a new element is created.

You can set the launch and receive fibers in both Fiber and Cable views, as well as the **Elements Table** tab. However, if you are setting them in Cable view, or on the cable at the top of the Fiber view, the operation must be possible on all of the fibers included in the cable.

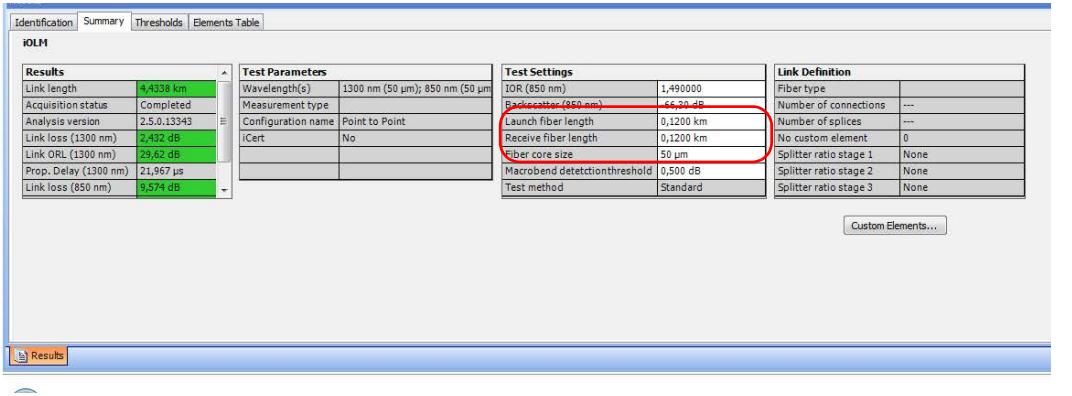
To set the Launch fiber and Receive fiber on an existing element:

1. Open the iOLM file.
2. Select the element that you want to set as the launch/receive fiber element from the link or fiber views.
3. If you have not done so already, select the **iOLM** ribbon tab.
4. Under **Measurement**, click the corresponding buttons.



To change the launch fiber and receive fiber positions:

1. Open the iOLM file.
2. Enter the launch fiber length and receive fiber length in the **Test Settings** table under the **Summary** tab.



When the launch fiber length and receive fiber length are changed, a partial analysis is performed. In this partial analysis, the values for link length, link loss, link ORL, element position, element section length, and diagnostics are recalculated. This partial analysis does not change the elements you have added or the elements you have changed in the link.

Note: *If the entered launch fiber length and receive fiber length are not valid, the application prompts an error message. If no element is present at the position, then a new element is automatically inserted in that place.*

Note: *If a macrobend is set either as link start or link end, a new connector is added and that element will be set as link start or link end.*

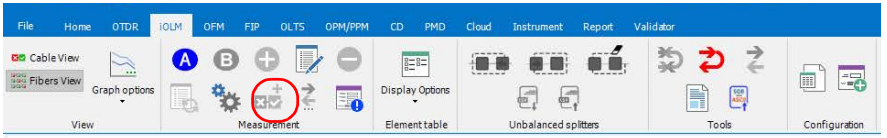
Analyzing Measurements (Plus Mode)

You can recalculate the acquisition results. However, when the trace is analyzed, the manually added elements will be removed from the link and the element details table is refreshed accordingly.

Note: *You cannot analyze the unidirectional files created by the loop back process.*

To analyze measurements:

1. In the **Measurements** tab, select the measurements to analyze.
2. If you have not done so already, select the **iOLM** tab.
3. Under **Measurement**, select the corresponding button.

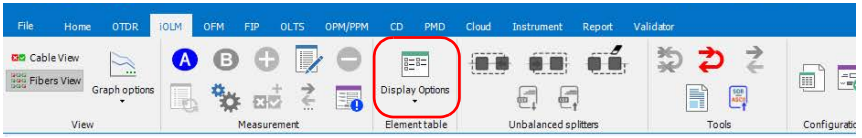


Using the Failed Element Filter

In order to quickly see which measurements are faulty, you can apply a specific filter to show only the failed element.

To activate the failed elements filter:

1. If you have not done so already, select the **iOLM** tab.
2. Under **Element Table**, select **Display Options**, then the corresponding option.



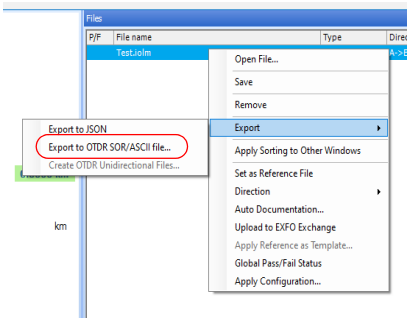
Generating (Exporting) a .sor File From iOLM Measurements (Plus Mode)

With FastReporter 3, you can generate OTDR .sor files from iOLM files for each measurement.

To generate an OTDR .sor file:

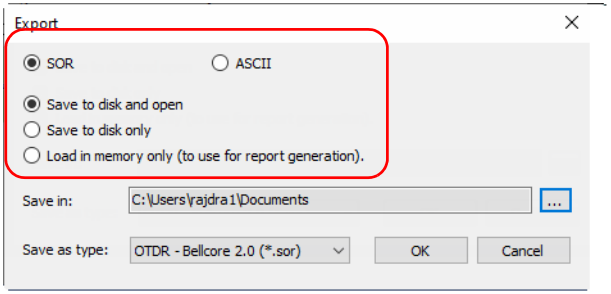
1. Select single or multiple iOLM files from the **Files** Window.
2. If you have not done so already, select the **iOLM** tab.
3. Under **Tools**, select the corresponding button.

OR Right click the file, go to **Export**, and then select the **Export to SOR/ASCII file** option.

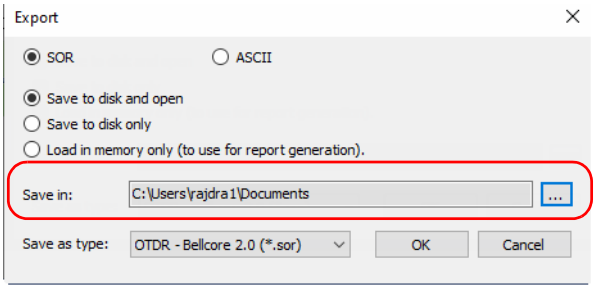


4. Select what you want to do with the resulting file:
   - ➤ Export it to the desired location and open it.
   - ➤ Export it to the desired location only.

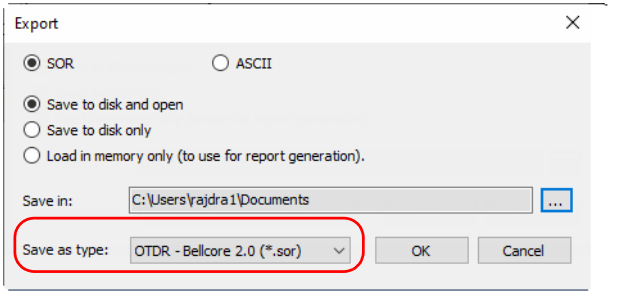
➤ Create a temporary file, kept in memory only. This is useful if you want to create reports, for example.



5. If you choose to export the file, select a location for it.



6. Select the type of file you want to as the result of the export.



7. Click **OK**.

Note: *If a .sor file with the same name already exists on disk, a confirmation message is displayed to overwrite the existing file.*

Note: *The wavelength is automatically appended to the file name when the iOLM measurement contains more than one wavelength.*

Note: *When you attempt to generate a .sor file and the iOLM measurement does not contain the necessary intermediate OTDR measurement, the .sor file is not generated.*

When an attempt to generate the .sor file is done and the iOLM acquisition state is not completed or interrupted, the application prompts an error message explaining the origin of the problem and the solution to avoid it.

Managing Configuration Files (Plus Mode)

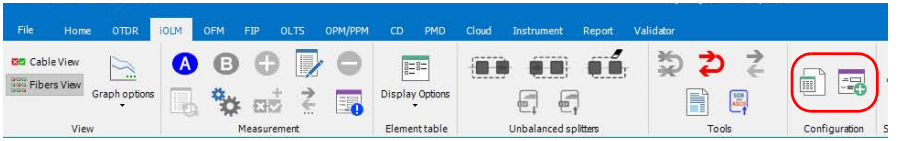
You can create a new configuration file as well as apply configuration settings to existing measurement files.

Creating Configuration File

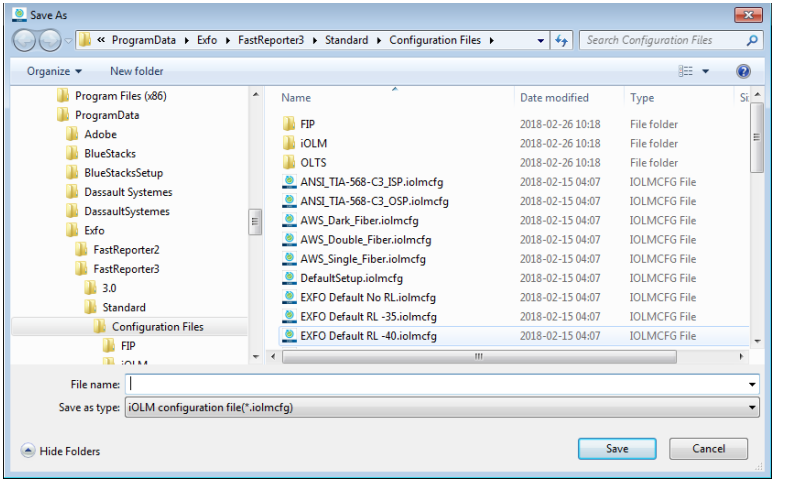
The **File** menu allows you to create a configuration file and the created file is saved in the configuration file list. You can customize this configuration to fit your needs.

To create a configuration file:

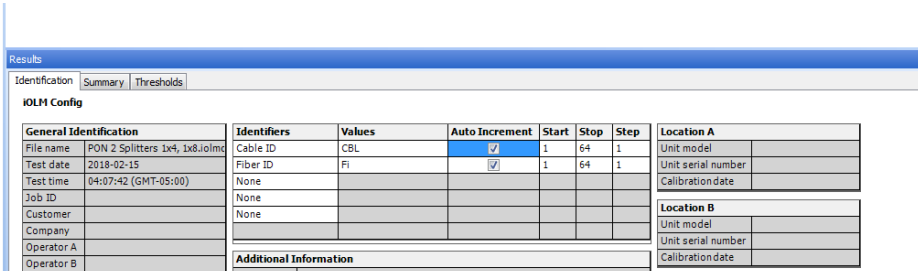
1. If you have not done so already, select the **iOLM** tab.
2. Under **Configuration**, select the corresponding button.



3. Enter the desired file name in the **Save As** dialogue box and click **Save**.



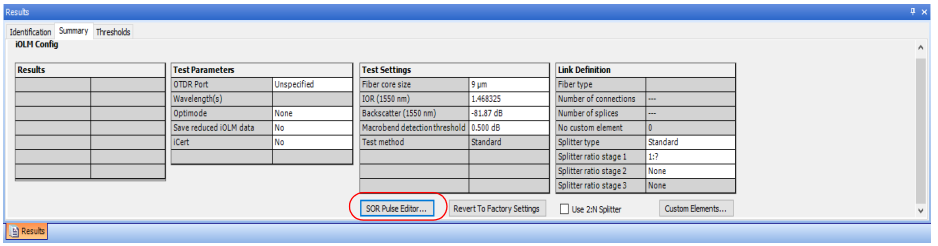
4. In the **Identification** tab, enter the desired identifiers for your files, as well as the auto-incrementation scheme you want to use.



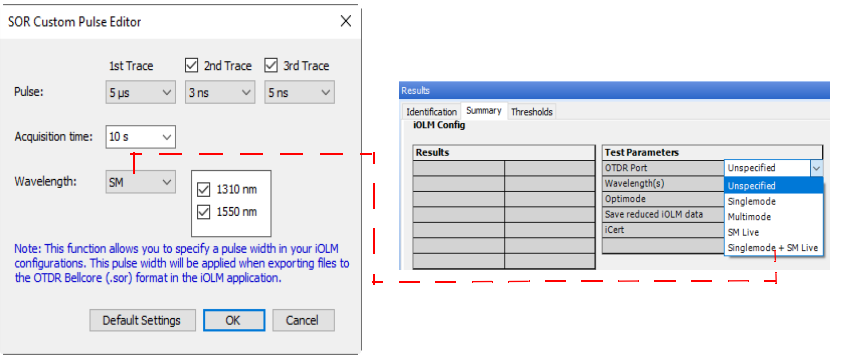
5. In the **Summary** tab, select the various information for your test settings and link information. Select the OTDR Port to a specific port if required. If your files were acquired using an iCERT-enabled unit, you can select the fiber type here. If your files were acquired with an Optimode, you can select it here as well.

If you have two core sizes in your configuration, you can enter different IOR and backscatter values for both.

Under **Test Parameters**, you can select whether you want to save the reduced iOLM data. This option is used when working with TestFlow.



If you want to change the SOR pulse and acquisition time, click **SOR Pulse Editor**, then enter the new **Pulses** (1st Trace, 2nd Trace, 3rd Trace) according to the requirement. And also the **Acquisition time** values to use. You can enter a specific value or select the required values from the drop down list.



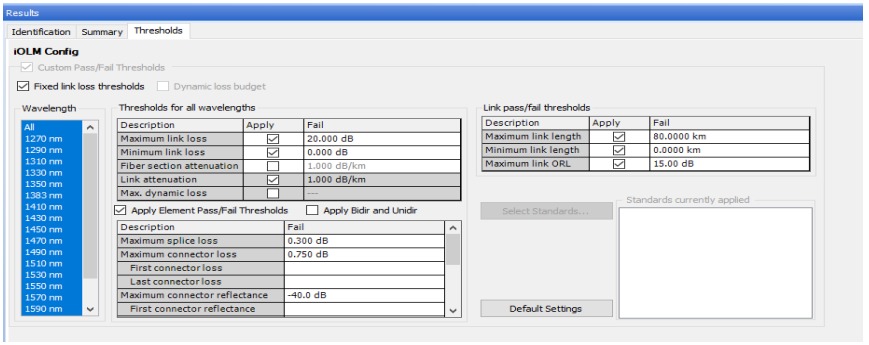
6. To set the wavelength, select the wavelengths ports SM (Singlemode) and MM (Multimode) from the **Wavelength** drop down list, and then select the required wavelengths (check boxes) available.

Note: *The **Wavelengths** are available according to the **OTDR Port** value in the **Test Parameters** section. If you want to select other port than available options, modify the **OTDR Port** to **Unspecified** or to the required value.*

Note: *You can choose to set the pulses and acquisition time, and Wavelength to "Auto" and let the application use the most appropriate pulse on the link.*

Note: *Select **Default Settings** button, if you want revert the values to default.*

7. In the **Thresholds** tab, enter the threshold values according to your needs. If you want to include specific certification standards for your iCERT files, you can do it here.



8. Save your changes once you are done.

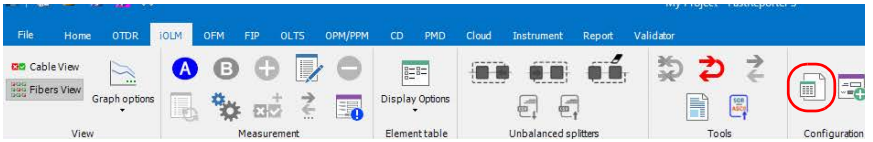
Applying Configuration Settings

You can use the settings of a configuration file, such as identifier labels and thresholds, and apply them to a file you select in the list.

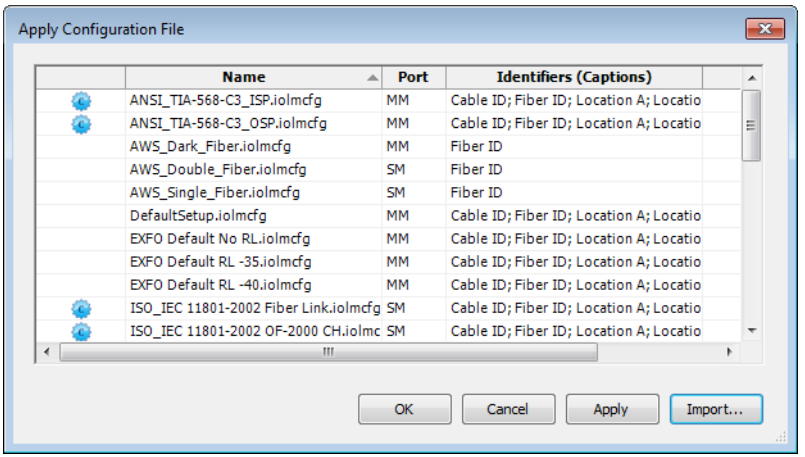
The configuration files are saved in the following location in your computer:
C:\ProgramData\Exfo\FastReporter2\Standard\Configuration Files

To apply the configuration settings:

1. Select an iOLM file from the **Files** tab.
2. If you have not done so already, select the **iOLM** tab.
3. Under **Configuration**, select the corresponding button.



4. Select the desired configuration file, click **Apply**, and **OK**.



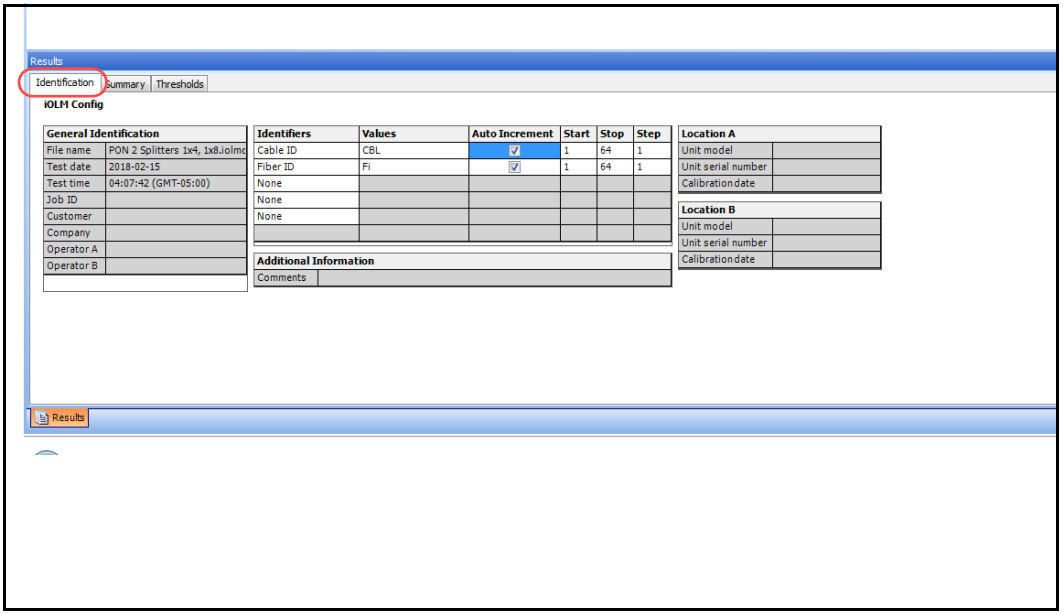
Note: *If the configuration you want to use is not in the list, you can use the* ***Import*** *button to add it.*

Note: *If the configuration file is TIA certification compliant, it will be indicated at the beginning of the row.*

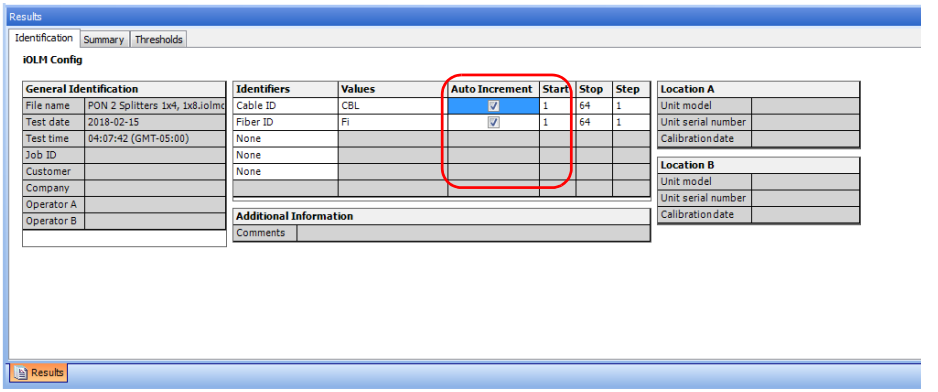
Modifying Auto-Increment values You can set auto-increment values for several items in your iOLM measurement files.

To modify the auto-Increment values:

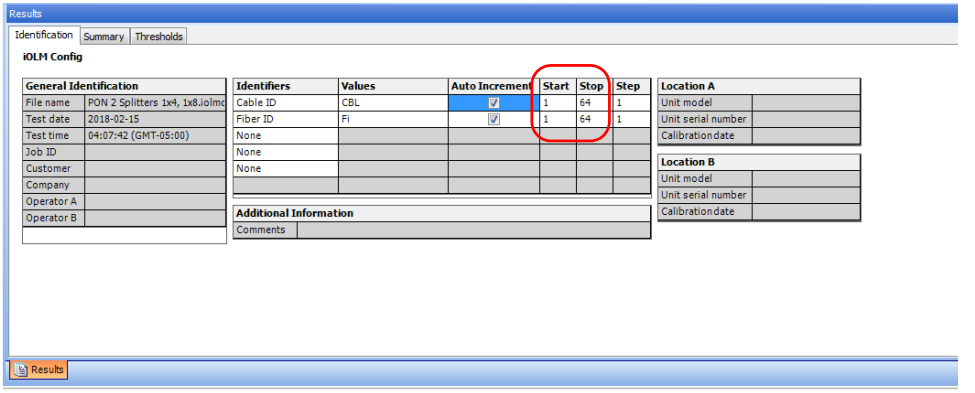
1. Open an iOLM configuration file.
2. Select the measurements for which you want to modify the auto increment values.
3. In the **Results** window, select the **Identification** tab.



4. For each item that you want to include in the auto-increment process, enable the **Auto-Increment** option.



5. Modify the start, stop, and step values for the items as needed.



Note: *The step value must be smaller than the difference between the start and stop values. If the start is greater than the stop, then the identifier value begins* decrementing *by the specified step.*

Enabling 2:N Splitters

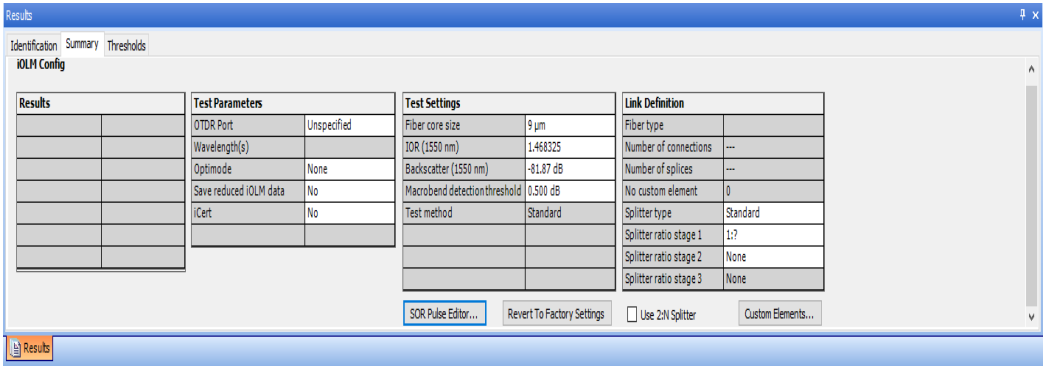
The splitters of type 2:N can be used to create network redundancy. If a network break occurs, you can still connect through the other network branch. This ensures active communication while the repairing of the broken network is in progress.

Note: *The application allows you to use the 2:N splitter feature in the iOLM configuration file and you can only use the 2:N splitter feature for splitter ratio stage 1.*

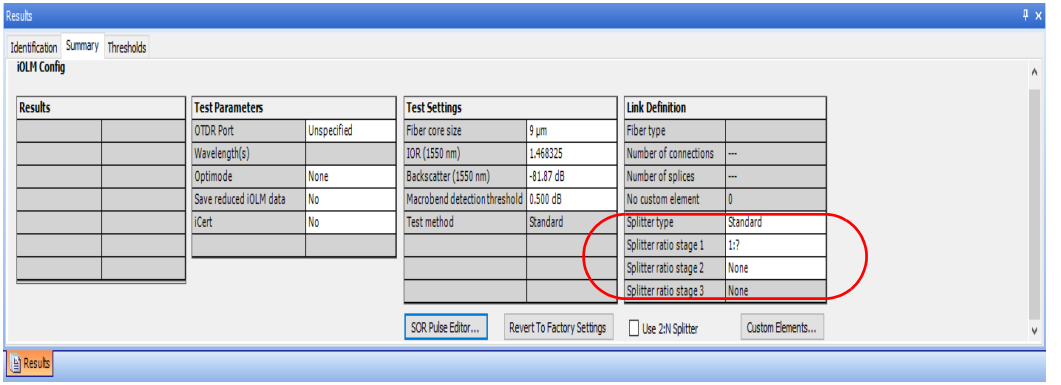
In the splitter ratio stage 1 field, if 1:? or None is selected and you enabled the 2:N splitter option, the 1:? and None are replaced by a 2:2 splitter value.

To enable a 2:N splitter:

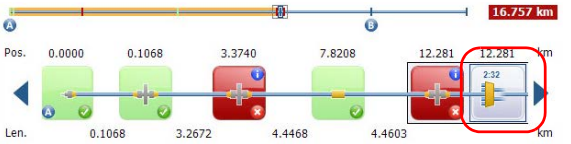
1. Open the iOLM configuration file.
2. From the **Summary** tab, enable the **2:N Splitter** option.



3. Select the desired ratio for stages 1, 2 and 3.



In the iOLM file, you can view the 2:N splitter value in the Link composition, and select the element type as 2:N splitter if the selected measurement supports the 2:N splitter values.



Setting up Unbalanced Splitter Ratios

The splitters used to work on unbalanced PON networks divide the light signal unevenly between two splitter ports. By default, the first splitter in a sequence has a 1:8 ratio and is represented by 90/10.

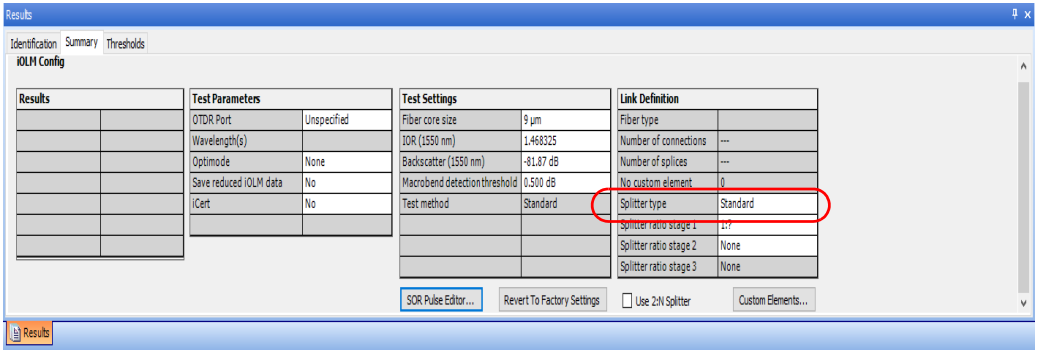
This means that 90% of the light is going through the cable and continues to the next splitter in the cascade of splitters along the cable. The other 10% is used for either one or several customers under this specific splitter port.

The ratio of all splitters in the cascade can change (for example 80/20, 85/15) depending on the amount of light necessary for each customer.

You can have a sequence of 12 unbalanced splitters representing the network you want to test, but it is also possible to use a standard splitter at the beginning and at the end of the sequence of cascaded splitters. All sequences of unbalanced splitters start from the CO/OLT (Central Office/Optical Line Terminal).

To set up the ratio values for your unbalanced splitters:

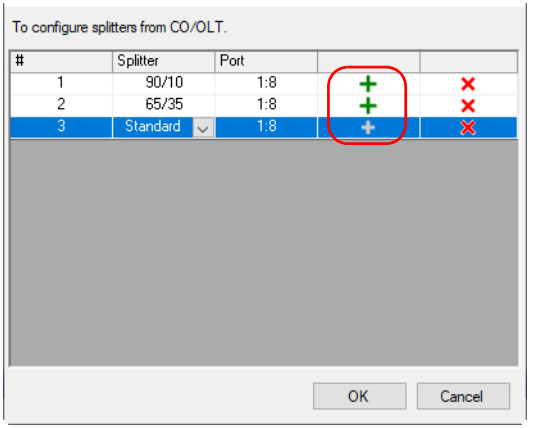
1. Open the iOLM configuration file.
2. From the **Summary** tab, select the Unbalanced splitter type.



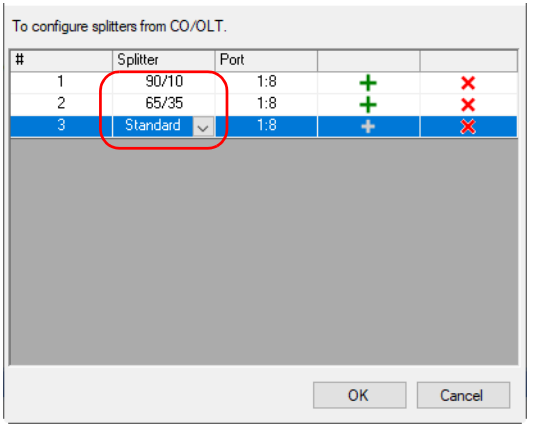
3. Click the now available **Unbalanced Splitter** button.

Note: *If the Splitter type is selected as **Unbalanced**, the **Unbalanced Splitter** type will be available while adding or modifying the **Custom element**.*

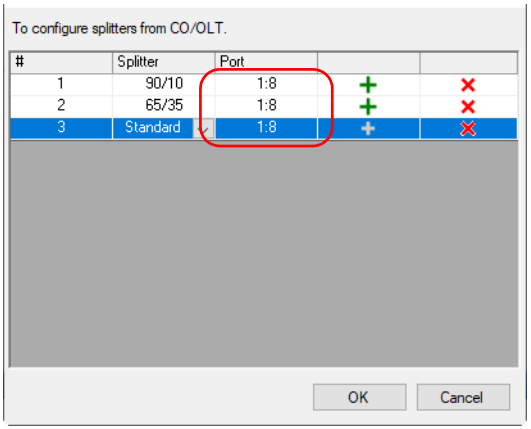
4. Click + to add a row below the currently selected one.



5. Select the ratio you want to use either by selecting a value in the list or typing it directly.



6. Select the port to use for this ratio in the list of available values.



7. Add row as needed (up to 12 total).

8. Once you are done, click **OK** to close the window.

Understanding Diagnostics

This section explains the diagnostics feature available in the intelligent Optical Link Mapper application.

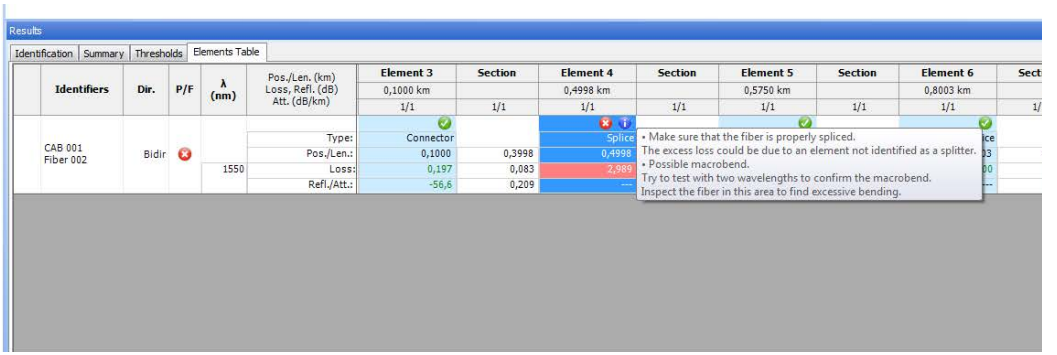
Diagnostics are used to provide additional information about detected problems or ambiguous measurement situations, such as root cause possibilities for the fail status of a link element. The diagnostics provide help to troubleshoot faulty connectors, understand why link elements are tagged as fail or unknown, indicate unexpected instrument or test conditions and so forth.

Link elements with an associated diagnostic are marked with an **i** icon, and the diagnostics are displayed in the **Element** tab. More than one diagnostic can be associated with any given element.

If you are viewing multiple measurements in the Cable view and the elements present an anomaly (for example, the elements are not of the same type or do not have the same threshold values), you will notice a **!** icon on the upper right-hand corner of the element instead.

Element diagnostics are associated with specific link elements issues. Each failed link element will have associated diagnostics to assist in troubleshooting. Some elements, such as macrobends, will have associated diagnostics even with a pass status.

You can see the details about the diagnostics in the **Elements Table** tab.



Viewing Power Meter Results

Power meter results are displayed in the OPM and PPM table. For more details, see *Viewing Power Meter Results* on page 377.

Managing Bidirectional iOLM Files

FastReporter 3 allows you to view and create bidirectional iOLM files. Selecting each unidirectional file or the resulting bidirectional file displays the corresponding data in the **Results** window.

Creating a Bidirectional iOLM File

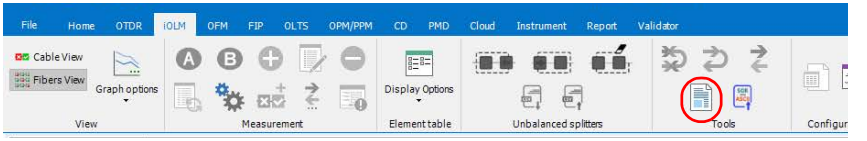
The application allows you to create a bidirectional iOLM file from two matched iOLM measurements of opposite directions. You can create more than one file at once, providing that each have their matching file.

The measurement files must meet the following criteria:

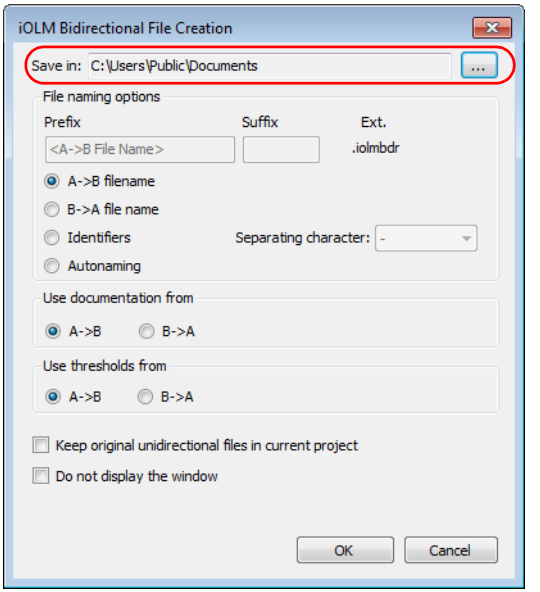
- The measurement lengths in both direction are the same.
- There are no splitters in the link elements.

To create a bidirectional iOLM file:

1. If you have not done so already, activate the iOLM bidirectional file creation option, as explained in *Modifying Tolerance and Bidirectional Settings* on page 219.
2. Select two matched iOLM files of opposite directions.
3. If you have not done so already, select the **iOLM** tab.
4. Under **Tools**, select the corresponding button.

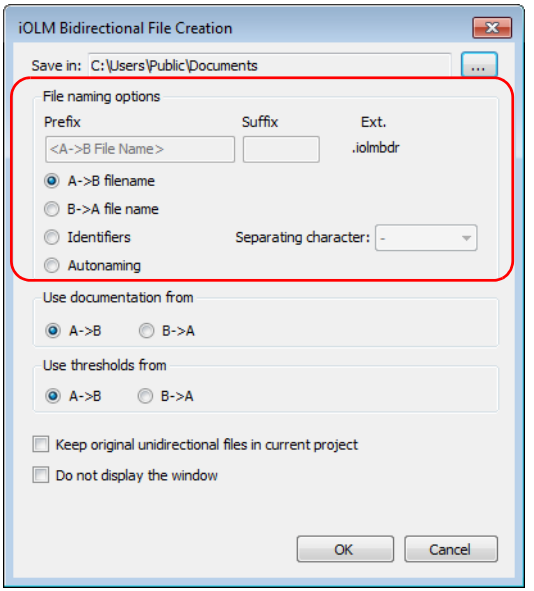


5. Select the location where you want to save the bidirectional file.

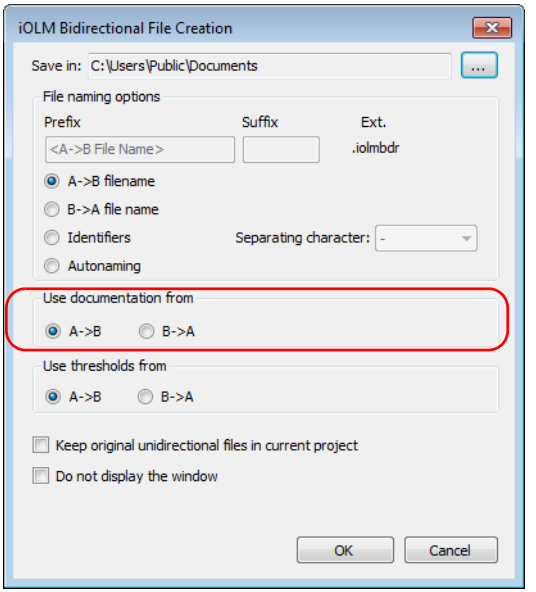


6. Select the desired file naming options.

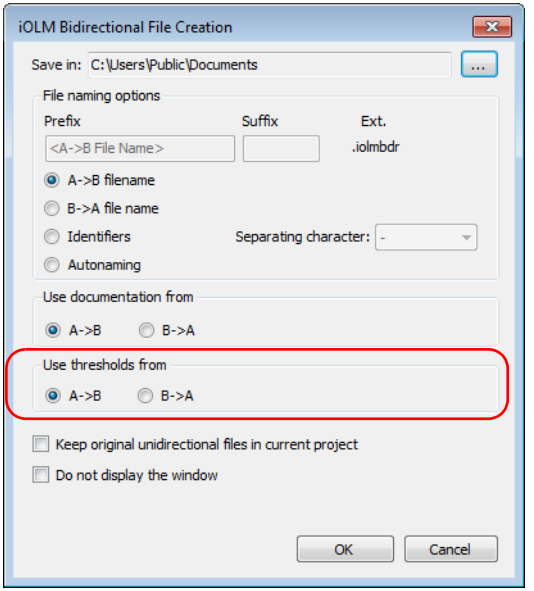
- Select **A->B filename** or **B->A filename** to use the selected A->B or B->A file name.
- Select **Identifiers** to save the bidirectional file as per the matched identifiers. The identifiers name is formed from the identifiers order displayed in the **Matched Files** tab, separated by the separating character you have selected.
- Select **Autonaming** to enter a prefix and a suffix to create the file name.



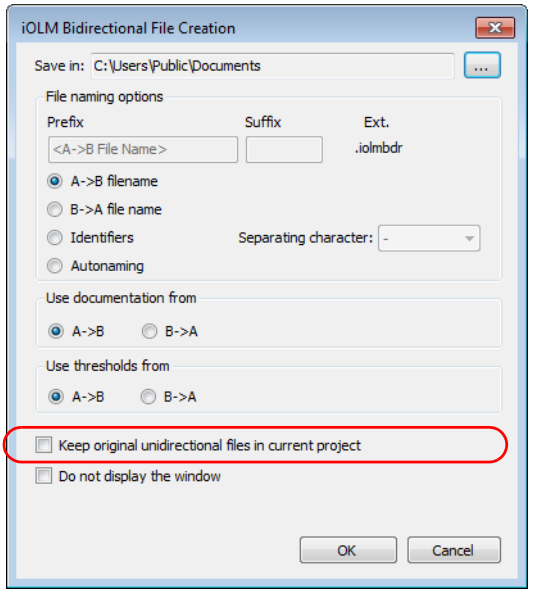
7. Select which documentation will be used for the bidirectional measurement.



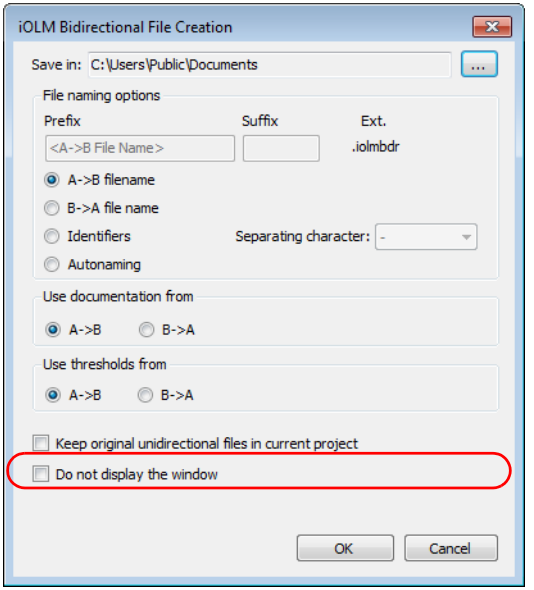
8. Select which thresholds you will use in the bidirectional measurement.



9. If you want to keep the original unidirectional files open after creating the bidirectional file, select the corresponding option.



10. If you want bidirectional files created automatically using the current settings, select **Do not display the dialog**. Any future bidirectional file creation will use these settings.



Note: *To enable the iOLM Bidirectional File Creation window again, follow the instructions in* Modifying Tolerance and Bidirectional Settings *on page 219.*

11. Click **OK** to save your settings.

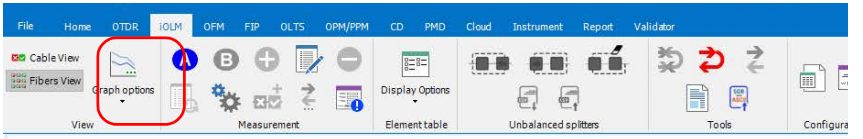
Working with Virtual Bidirectional Files

Virtual bidirectional files are a way to preview the resulting measurement when you select two matching unidirectional measurements without going through the process of fully creating the bidirectional file. The display in the link view, **Threshold**, **Elements** and **Results** tables are the same as they would if you are viewing an actual bidirectional measurement. The order of display for the elements depend of the A -> B measurement. Since this is a viewing option only, you cannot perform operations such as adding or removing elements when the virtual bidirectional mode is active.

Note: *You cannot create bidirectional files with multimode measurements.*

To activate the virtual bidirectional file mode:

1. If you have not done so already, select the **iOLM** tab.
2. Under **View**, select **Graph Options**, then the corresponding option.



Viewing Bidirectional File Element Properties

You can view the information for a bidirectional element at a glance, including both direction and the average.

To view the bidirectional file element properties:

1. Select the element for which you want to see the information.
2. If you have not done so already, select the **iOLM** tab.
3. Under **Measurement**, select the corresponding button.

Viewing Elements Before A and After B

You might want to see the elements before the link start and end, even if they are not included in the calculations. You can select to see only the elements before A, only those before B, or both.

To view the elements before A and after B:

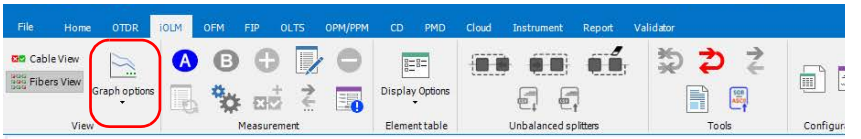
1. If you have not done so already, select the **iOLM** ribbon tab.
2. Under **View**, select **Graph Options**, then select the corresponding options as needed.

Viewing Section Length for Multiple Measurements

When multiple measurements are opened, the application displays the section length on the graph. You can also choose to hide it.

To view or hide the section length:

1. If you have not done so already, select the **iOLM** tab.
2. Under **View**, select **Graph Options**, then select the corresponding option.



Matching Link Elements Without a Reference

When multiple measurements are selected, the elements from different measurements are matched according to their position (the position of the elements can be slightly different). The application uses a algorithm with tolerances to match these elements. For more information of setting the tolerance, see *Modifying iOLM Result Settings (Plus Mode)* on page 243.

When no reference measurement is selected, all elements of the first measurement are considered as the reference elements. In the remaining traces, if some elements are not matching, they are also included as reference elements.

Matching is always done from left to right in accordance with the element location. If elements are present before the link start (A), the matching will be done from right to left.

Displaying Statistics for Matched Measurements

When displaying matched measurements, it might be useful to view statistics for them. The statistics are displayed for:

- Fibers (includes loss, reflection and attenuation data for splices, connectors and sections), which are displayed on the far right of the **Elements Table** tab.
- Elements and Sections (includes for loss, reflection and attenuation data for each wavelength for each event and sections), which are displayed at the bottom of the **Elements Table** tab.

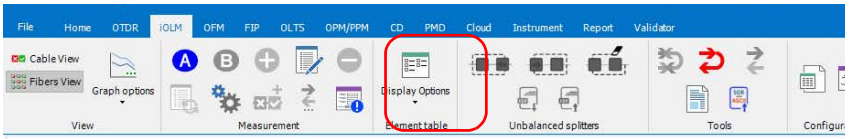
The statistics displayed are the minimum value, the maximum value, and an average for the selected files. If you click on the minimum and maximum values, the corresponding element is highlighted in the Fiber or Cable views.

Note: *In the case of Fiber statistics, the highlighted element is based on the loss value.*

Note: *You must have enabled the corresponding item for the statistic to appear. For example, if you chose not to display the positions, the corresponding statistic is also hidden.*

To display the statistics:

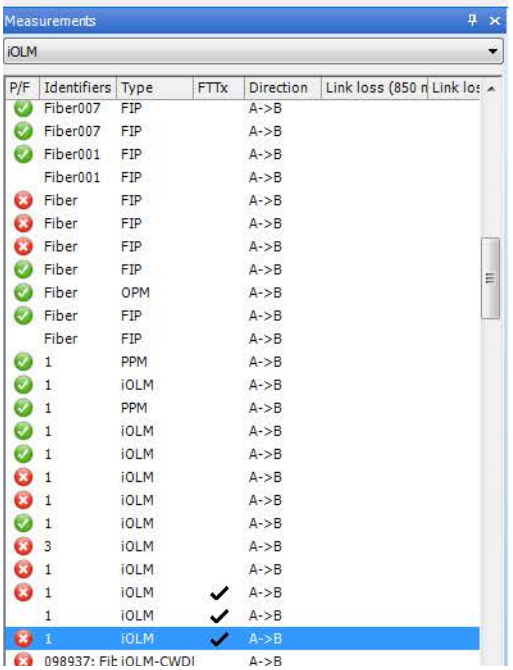
1. Select the multiple measurements for which you want to view the statistics.
2. If you have not done so already, select the **iOLM** tab.
3. Under **Element Table**, select **Display Options**, then the corresponding option.



Using the FTTx Mode

If you are working with files that include splitter elements, the FTTx view can help you better visualize your results. This type of view will invert the links so that the results are displayed from event B to event A, that is, from the optical network terminal (ONT) to the central office (CO).

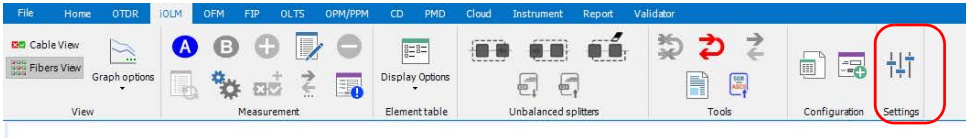
In the **Measurements** tab, measurement files containing at least one splitter element are identified by a mark in the FTTx column.



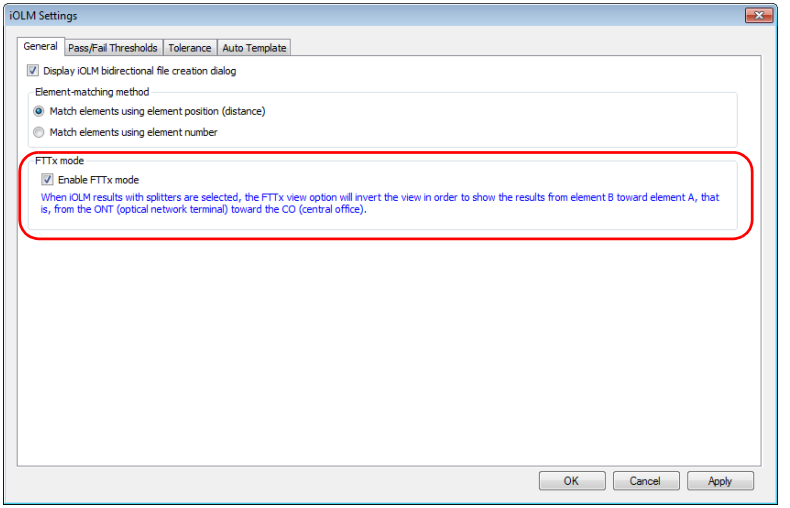
Note: *While in FTTx mode, you cannot create bidirectional files, loopback files, or generate application-based reports.*

To enable the FTTx mode:

1. If you have not done so already, select the **iOLM** tab.
2. Select **Settings**.



3. Select the **General** tab.
4. Enable the mode.

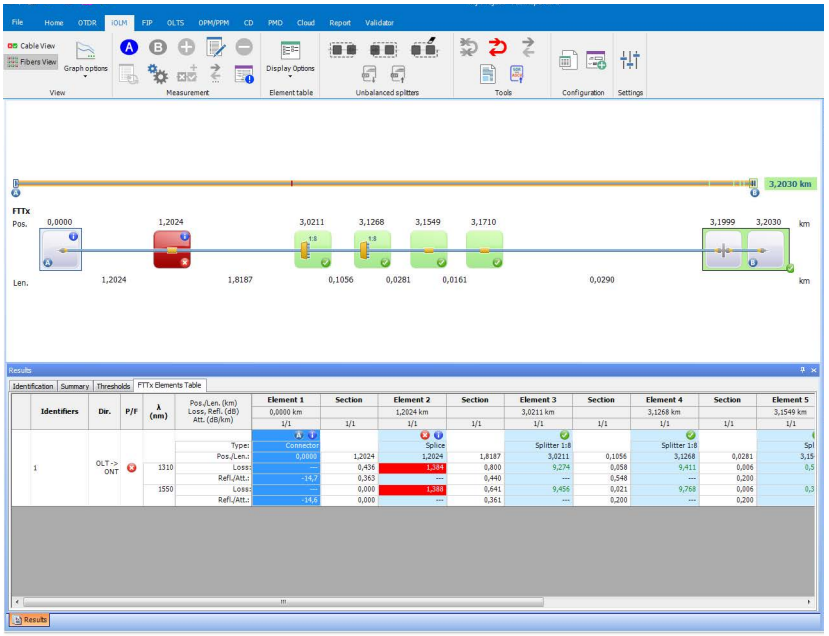


5. Click **OK**.

To display the FTTx view:

1. If you have not done so already, select the **iOLM** tab.
2. Under **View**, select **Graph Options**, then select the corresponding option.

The FTTx links will be identified with specific icons in the Link view, and has its own tab in the result table.



Note: *The FTTx Results table appears only if you select FTTx measurements. As soon as you include a regular iOLM measurement, the tab will be hidden.*

7 Working with OFM Files

Accepted File Formats

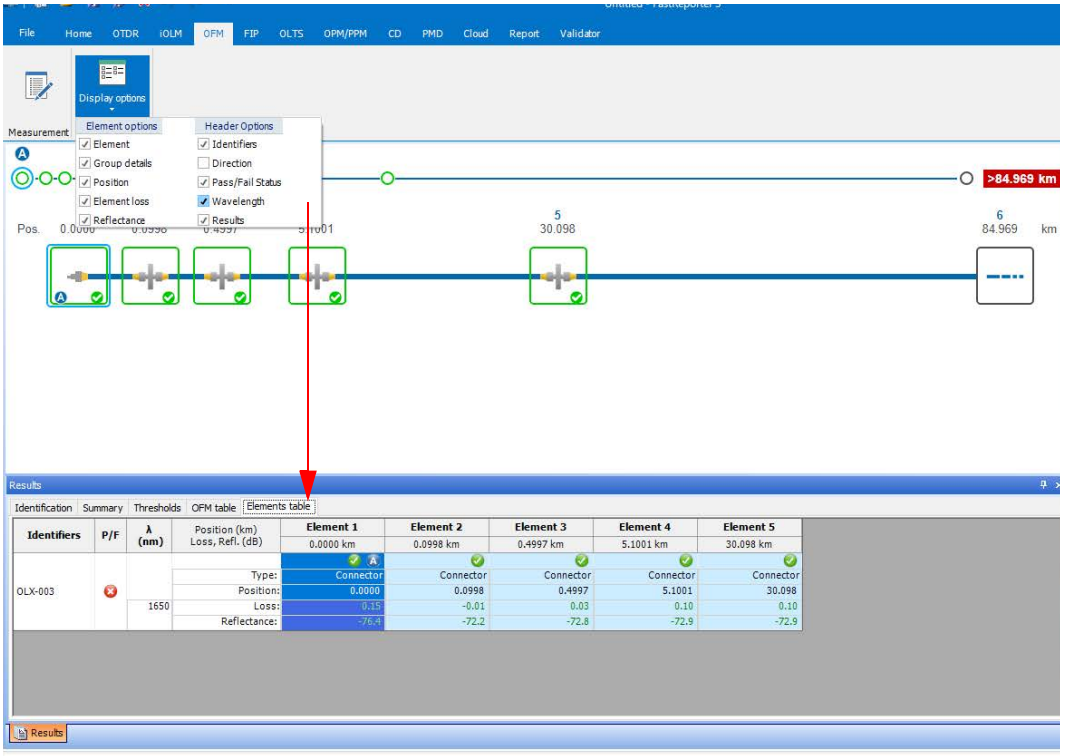
FastReporter 3 lets you work with measurement files saved in different formats, but does not necessarily permit all operations on them.

File Format	File Extension	Display	Modification
OLX	.olx	✔	✔

Selecting Display Options for Elements Table

You can select the parameters that needs to be displayed or hidden in the Results section's Element table.

To view/hide the parameters in the **Elements table** (**Results** > **Elements table**), select/clear the **Element Options** or **Header Options** from the **Display options** sub-menu**.**



Modifying Identifiers

You can modify the identifier's properties for the selected measurement.

To know how to modify Identifiers, refer the *Viewing and Sorting Files or Measurements* on page 505

Modifying Test Measurement Summary

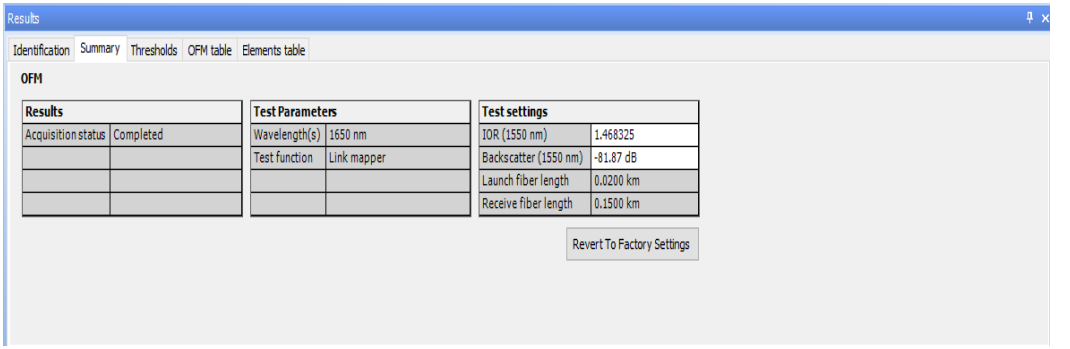
You can modify the Test Settings and Test Parameters.

To modify the summary of test measurement:

1. Select the test measurement from the list in **Files** section.

Note: *If the required test measurement is not available in the **Files** section, browse and open the file from the main **File** menu.*

2. The graphic format will be displayed if available for the selected test measurement and the details of it appear in the **Results** section.
3. Select the **Summary** tab from the **Results** section.



4. Modify/Add the values for the Test Parameters and Test Settings.

Note: *You cannot modify/add the grayed out parameter-values.*

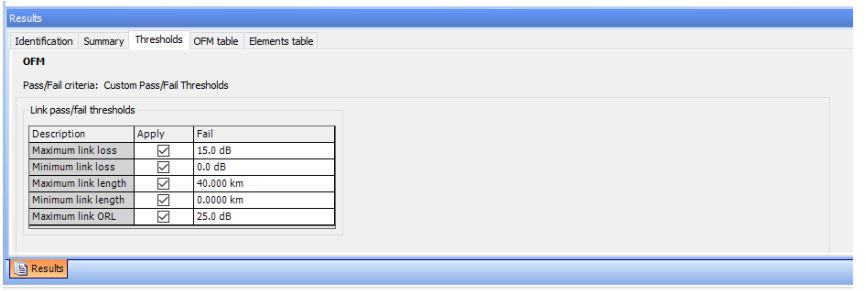
Note: *The **Revert to Factory Settings** button will revert the changes to the default settings.*

Configuring thresholds

You can change the thresholds and analyze the selected OFM test measurements for the analysis:

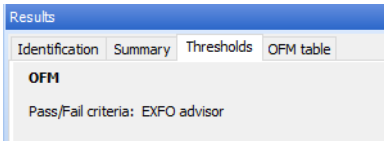
To change OFM thresholds:

1. On the ribbon, select the **OFM** tab if it is not selected already.
2. Select the required measurement file(s)
3. In the **Results** table at the bottom, and then select the **Thresholds** tab.

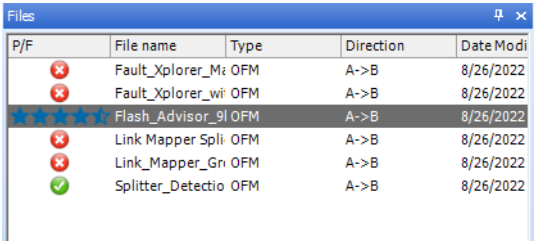


4. Modify the Link pass/fail threshold values according to your requirement. The pass/fail status of the selected tests will be updated accordingly.

Note: *The threshold values for the star rated files are set according to the EXFO Advisor ratings thus cannot be edited.*



Note: *For the EXFO Advisor rating status measurements, the stars indicate the values that met the set threshold values.*



For example, 5 stars indicates a good quality fiber and 1 star indicates a poor quality fiber.

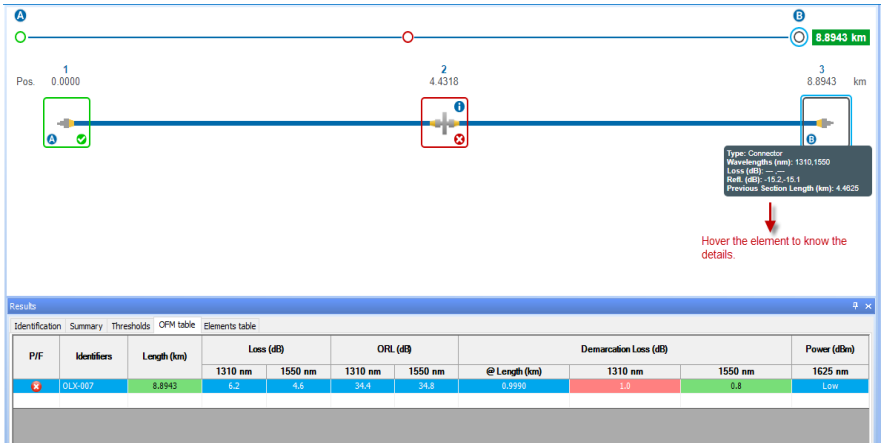
Viewing the OFM test measurement values

You can view the fault xplorer, link mapper, splitter detection values and its details of the selected OFM test measurements in the OFM table and the viewer section.

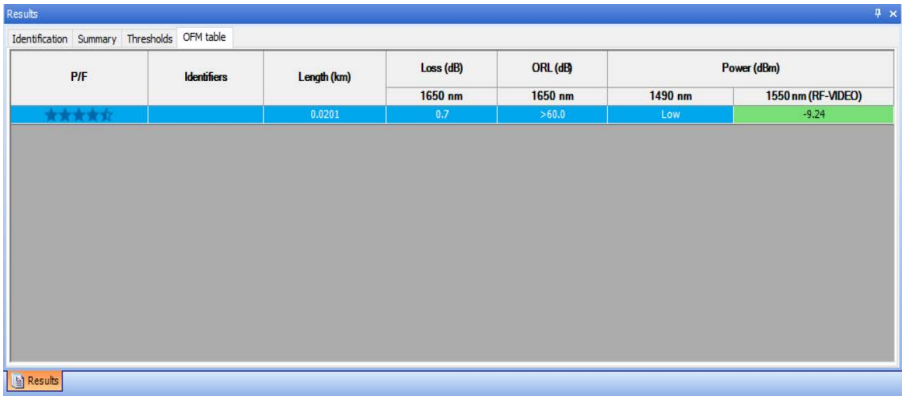
Hover the mouse on the elements in the viewer section to know more details about the microbends, splitters, connector, and other elements for the individual tests.

To view the OFM test details:

Select the test measurement, and then select the **OFM Table** tab in the **Results** section.



Note: *The viewer section is not available for the files having the status as EXFO Advisor (stars) and also for the multiple file selection.*

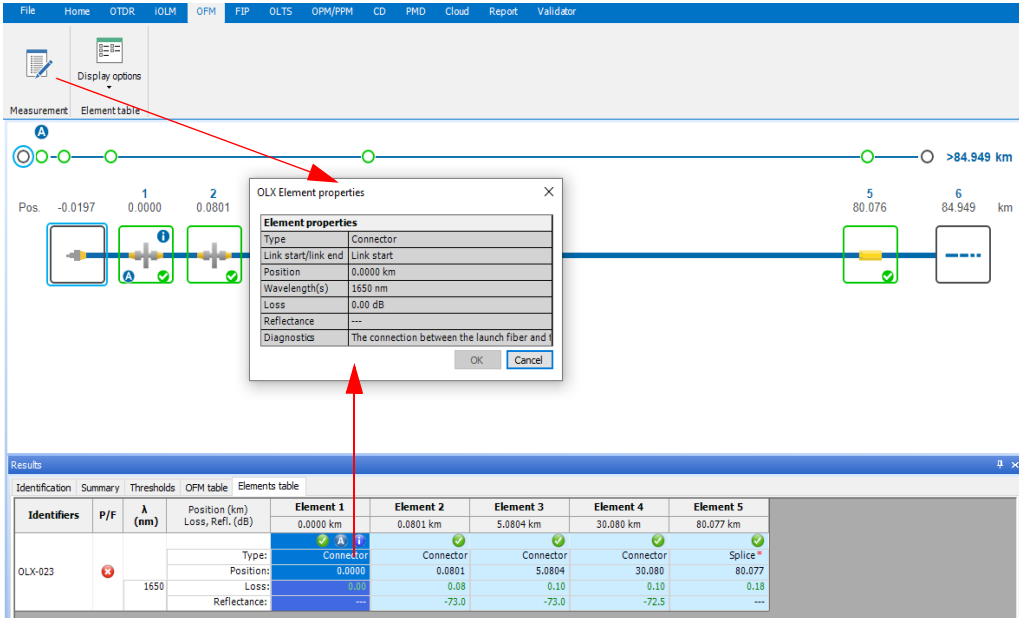


The PON standards are shown if available for the OFM measurements.

Also, you can see the PON elements and its values in the measurements section.

Viewing Element Properties

You can view the element properties of the selected measurements. Select the **Measurements** sub-menu. You can modify the parameter values from the **Results** section too.



On the Element properties window that appears, change the element properties as required, and then select **OK.** The properties will be set accordingly for the selected test measurements.

You can also view the **Element Properties** for the selected test element from the **Results** > **Elements table**. Select the **Element 1**, **Element 2,** and so on, edit its respective properties. For example, you can change the **Type** of element accordingly if available.

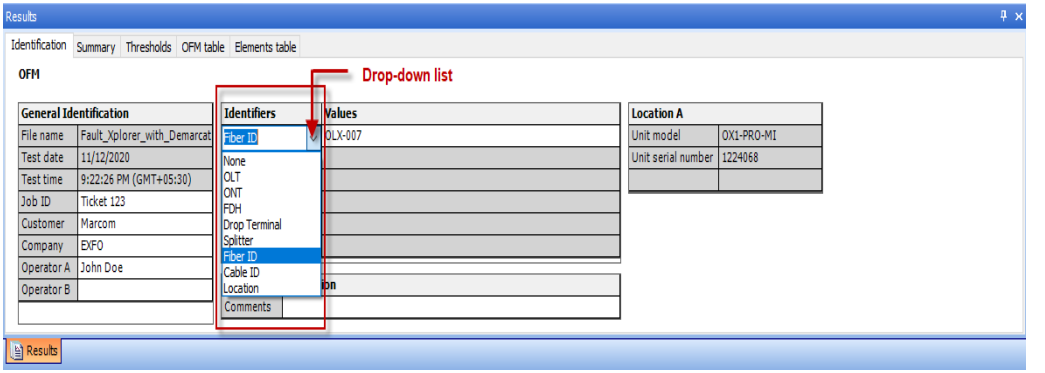
Note: *The Element table information and details in the viewers section are not available for the EXFO Advisor measurement files.*

Using Custom Identifiers

You can add up to five custom identifiers for your FIP files. The custom identifiers are displayed in the Identification tab, in the Identifiers table. You can find more information on how to manage custom identifiers in Matching Files Based on Information on page 53.

To use a custom identifier:

1. Select the measurement for which you want to change the identifier.
2. From the Identifiers table of the Identification tab, use the drop-down list to select the identifier type.
   OR
   Type to search and sort.



The Frame identifier type cannot be modified. Enter the information that describes the groups of connectors included in the frames, as needed.

Note: *The maximum character limit for the identifiers is 30.*

8 Working with Fiber Inspection Probe (FIP) files

Accepted File Formats

FastReporter 3 lets you work with measurement files saved in different formats, but does not necessarily permit all operations on them.

File Format	File Extension	Display	Modification
FIP (ConnectorMax)	.cmax	✔	✔ [a]
FIP (ConnectorMax2)	.cmax2	✔	✔
FIP-500	.json .json.gz .fip	✔	✔

a. Modified cmax files can only be saved as cmax2 format.

Theses file formats include:

- Inspection of single-fiber connectors
- Analysis of single-fiber connectors
- Inspection of multiple-fiber connectors

Modifying Unit Model and Serial Number

The application allows you to change the unit model as well as the unit serial number for your FIP measurements on .cmax format files. You can change the unit model and unit serial number of multiple measurements at a time. The entered unit model and unit serial number are also displayed in the FIP report.

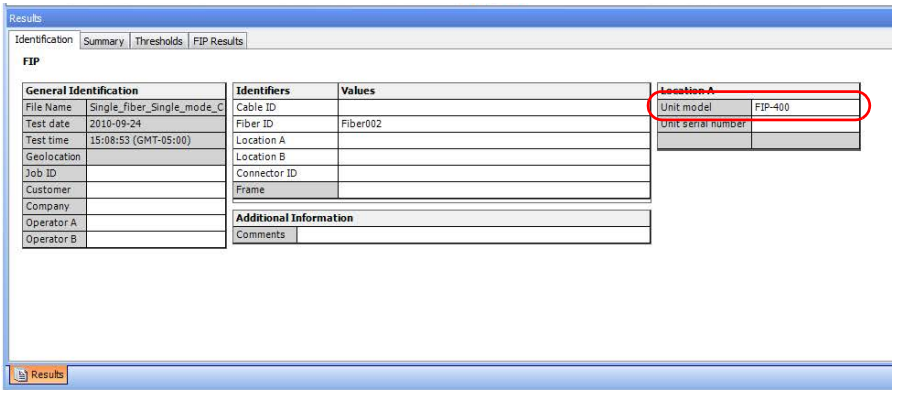
Note: *In .cmax2 format files, the unit model and serial number cannot be modified.*

To change the unit model:

1. Open the FIP measurements to change.
2. On the **Results** window, in the **Identification** tab, double-click on the **Unit model** field and enter the required unit model number.

Note: *You cannot enter special characters (?,/, <, >, ",:, *, |, \).*

Note: *You can enter a maximum of twenty five characters.*

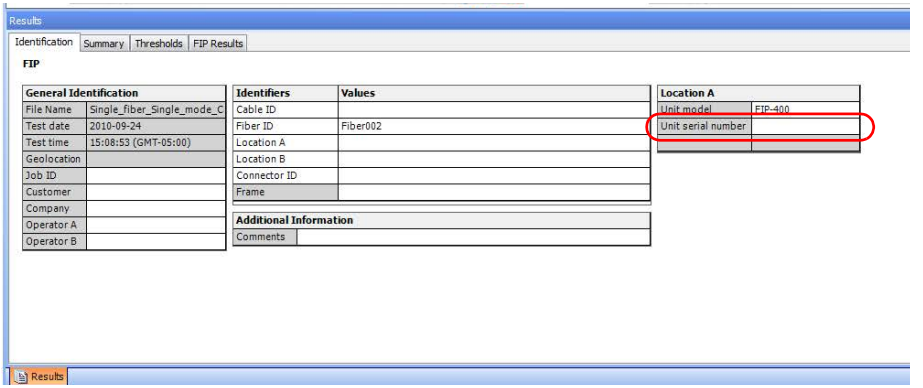


To change the unit serial number:

1. Open the FIP measurements to change.
2. On the **Results** window, in the **Identification** tab, double-click on the **Unit serial number** filed and enter the required unit serial number.

Note: *You cannot enter special characters (?,/,<,>,",:,*, |,\).*

Note: *You can enter a maximum of twenty five characters.*



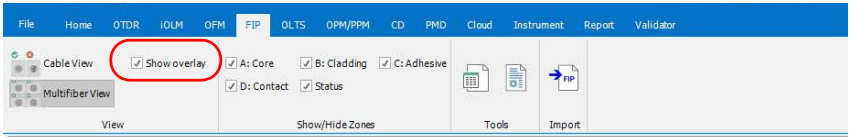
Showing or Hiding Threshold and Result Information

You can hide threshold and result information for zones that are not useful for your analysis.

Note: *You cannot modify the information. This is for viewing purposes only.*

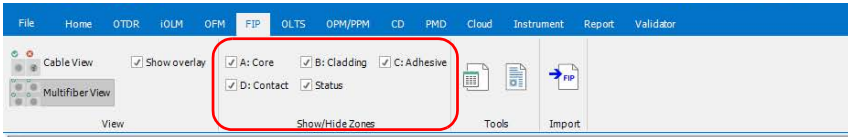
To show the overlay for the analysis and zones:

1. If you have not done so already, select the **FIP** tab.
2. Under **View**, select the corresponding option.



To select the zones to display:

1. If you have not done so already, select the **FIP** tab.
2. Under **Show/Hide Zones**, select which zones you want to see:

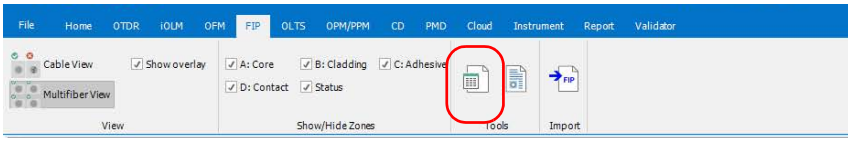


Applying a Configuration File to Selected FIP Files

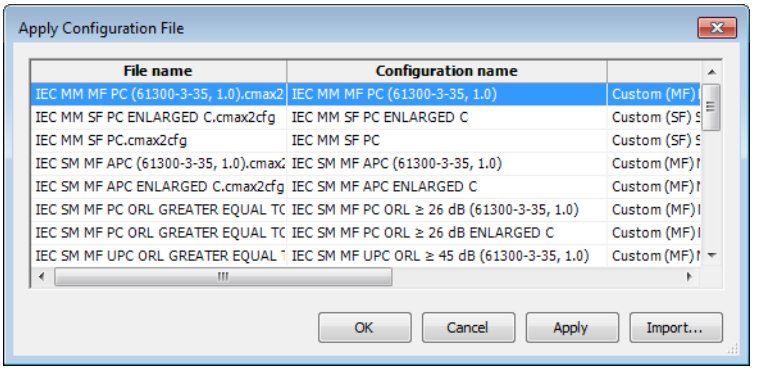
You can select FIP files, and apply preset configuration data that you have in a configuration file. You can use a configuration file you have on your unit, or import it from another location.

To import a set configuration and apply it to your FIP files:

1. If you have not done so already, select the **FIP** tab.
2. Under **Tools**, select **Apply Configuration**.



3. Select which configuration you want to use in the list of available choices. If you want to import a configuration file from another location, use the **Import** button.



4. Click **OK** to confirm your choice.

FIP Graphic Display Options

The FastReporter 3 application displays the FIP overlay in the graph window along with the FIP Image. An overlay highlights the inconsistencies in your FIP with different colors described below.

Color Legend	Analysis Anomaly Highlighting
Aqua	PASS Scratch
Green	PASS Defect
Red	FAIL Anomaly

- FAIL Anomaly: the presence of this anomaly implies automatically a FAIL result.
- PASS Scratch: the presence of this anomaly is not sufficient to confirm a FAIL, the anomaly count in this case is relevant.

If you select more than one FIP files and enable the appropriate viewing option, you can have the corresponding graphic displays appear all at once on-screen. This feature is available for both single fibers and multiple fibers.

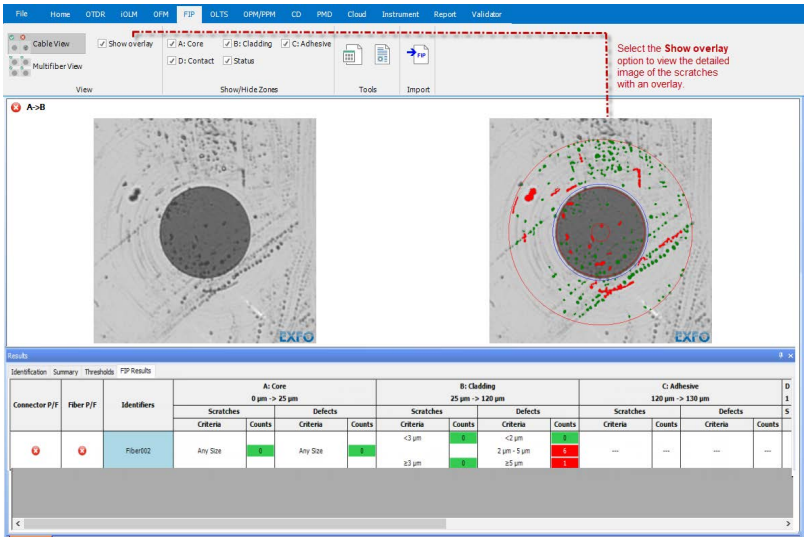
You can also select to see the images according to the cable connector view. The fibers included in a same cable are grouped, and the cable is identified in the graph view.

You can copy the FIP images and/or overlays and paste them to the clipboard. You can also change the display setting of the graph for FIP measurements so that you can see both the overlay and the graph side by side.

To change FIP graphic display options:

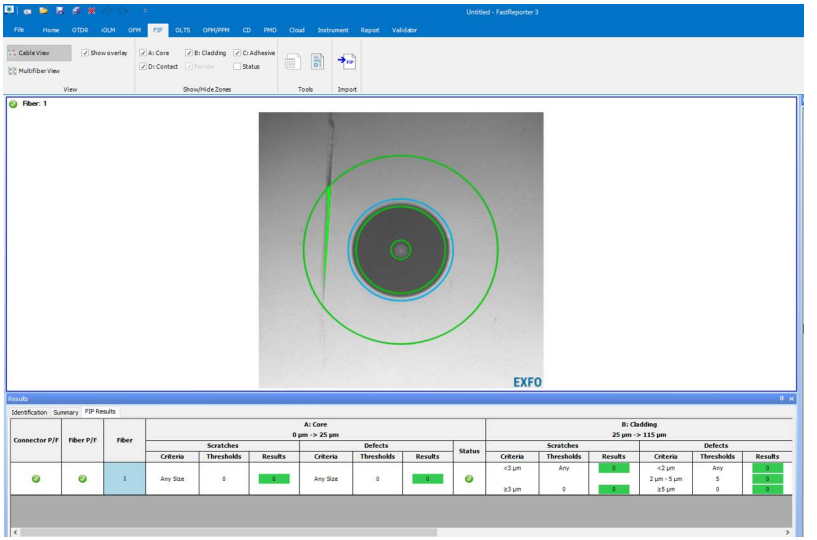
1. If you have not done so already, select the **FIP** tab.
2. Under **View**, select the cable or multifiber view according to the single fiber test or multifiber test.:
   - ➤ **Cable View** to display the corresponding mode.
   - ➤ **Multifiber View** to display an image of all fibers for the selected test.

   Following are the examples for the FIP-400 and FIP-500 test measurement files:



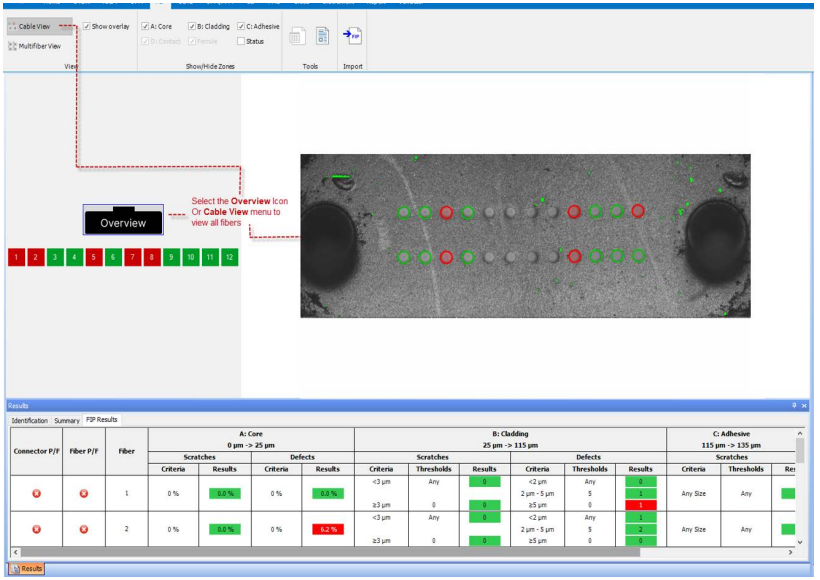
FIP-400 Single Fiber

The selection of the A,B,C,D options relatively show the detailed Core, Cladding, Adhesive, Contact, and Status information in the **FIP Results** table.



FIP-500 Single Fiber

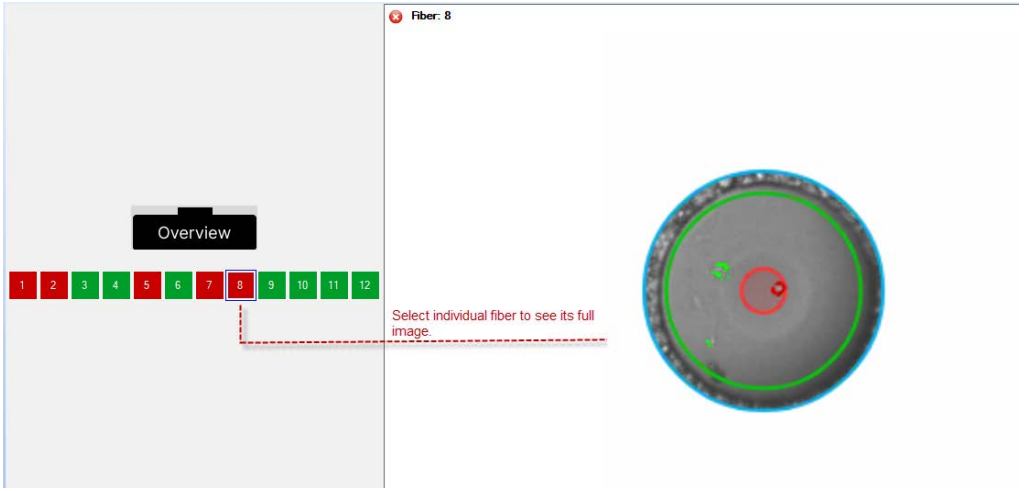
The selection of the A,B,C,D options relatively show the detailed Core, Cladding, Adhesive, Contact, and Status information in the **FIP Results** table.

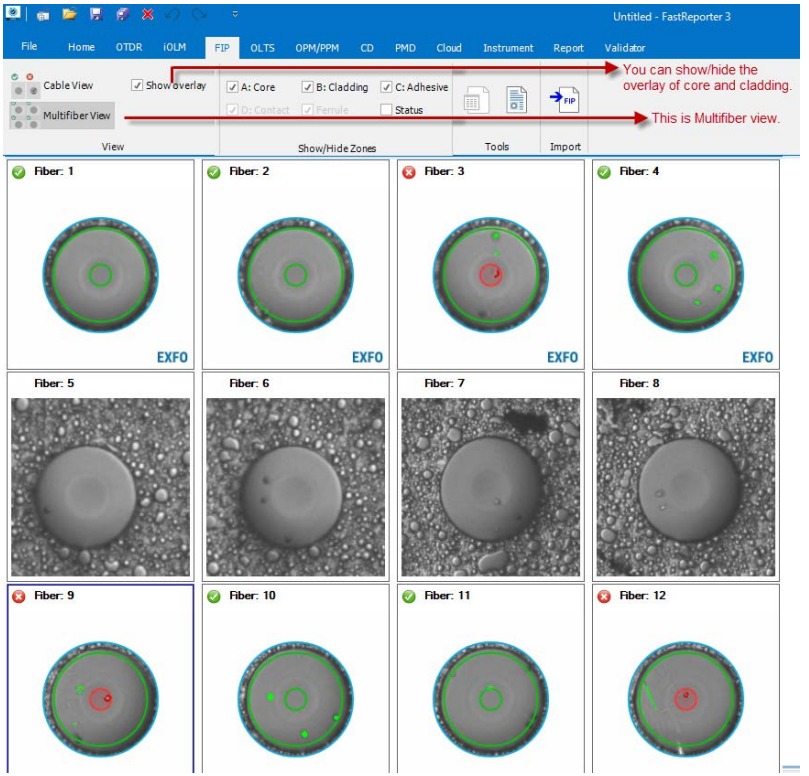


FIP-500 MultiFiber

The selection of the A,B,C,D options relatively show the detailed Core, Cladding, and Status information in the **FIP Results** table.

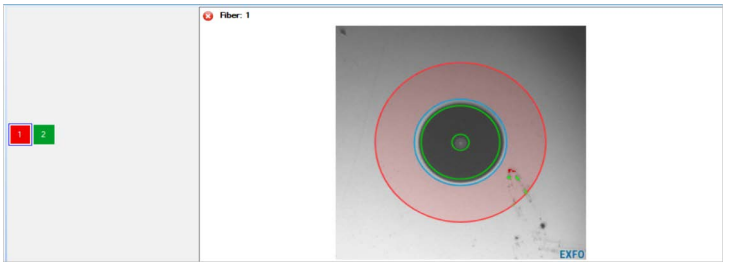
The order of the images is the same as the order of the files in the **Matched Files** tab.

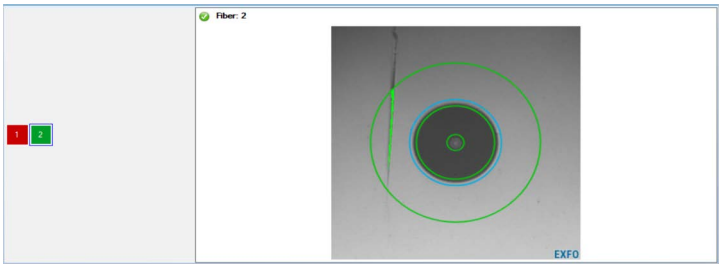




FIP-500 MultiFiber

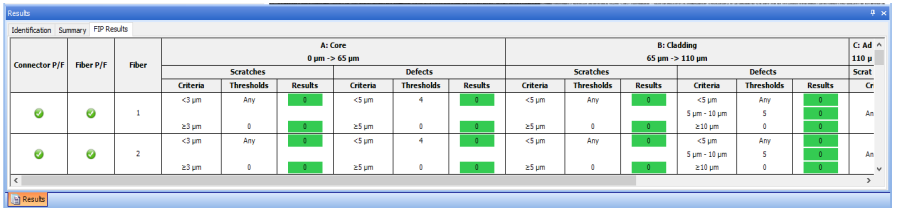
The selection of the A,B,C,D options relatively show the detailed Core, Cladding, and Status information in the **FIP Results** table.





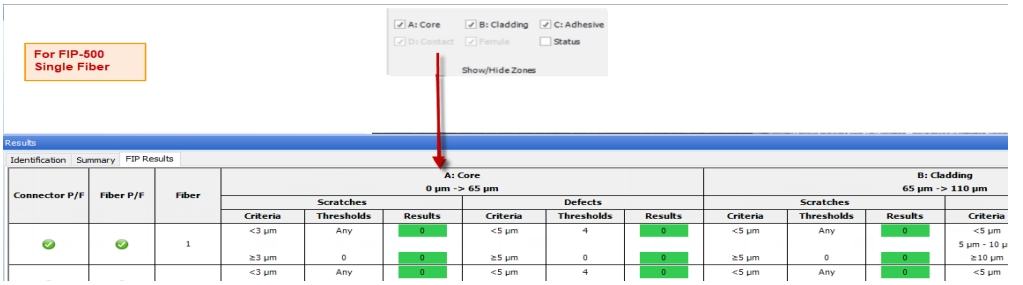
FIP-500 Duplex Fiber

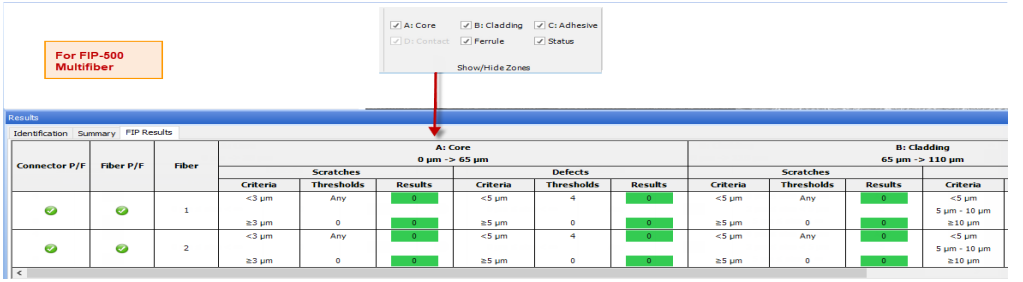
For duplex mode, the view of combined overview image is not available. You can only view the multi-fiberview .



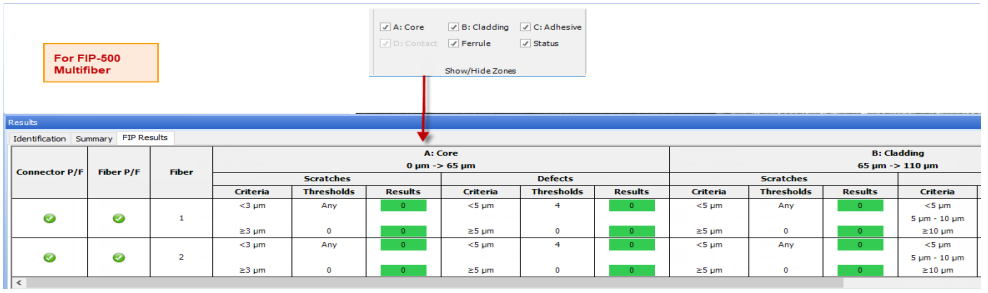
FIP-500 Results table information

The FIP-500 Results table shows the detailed information related to the selected fiber. For FIP-500 tests, the threshold value is available in this table instead of the separate **Thresholds** table as for the FIP-400 tests.
The Core, Cladding, and Status information is available in this table according to the options selected for the multifiber tests. And additional Adhesive and Contact information for single fiber tests.



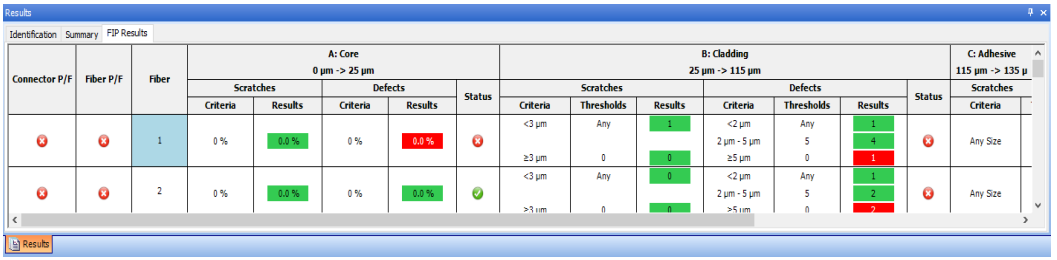


The following example shows that the Threshold value is zero, and the defect count is 4 which meets the Criteria set and thus the result is fail.



Note: *It will show the Ferrule and Status values too if available. Select/Unselect to show/hide its value in table and its core in the individual fiber image.*

You can view the tests with Surface Pass/Fail Criteria. The test is determined to be passed or failed from the surface defects percentage.



Saving JSON and JSON.gz files to FIP extension:

You can now save the JSON and the JSON.gz files to the FIP (.fip) files.

To save json.gz file as FIP:

1. Open the required file.
2. Go to **File** > **Save As**, and then select the **Selected File As** option.

3. Select the **FIP Files (*.fip)** extension form the **Save as type...**, and then click **Save**.
   The newly converted FIP file replaces the file in the **Files** section.

Note: *You can also export the FIP file to JSON format. Refer the section Exporting the measurements to JSON extension* on page 527 *to know the procedure to do it..*

Using Custom Identifiers

You can add up to five custom identifiers for your FIP files. The custom identifiers are displayed in the **Identification** tab, in the **Identifiers** table.

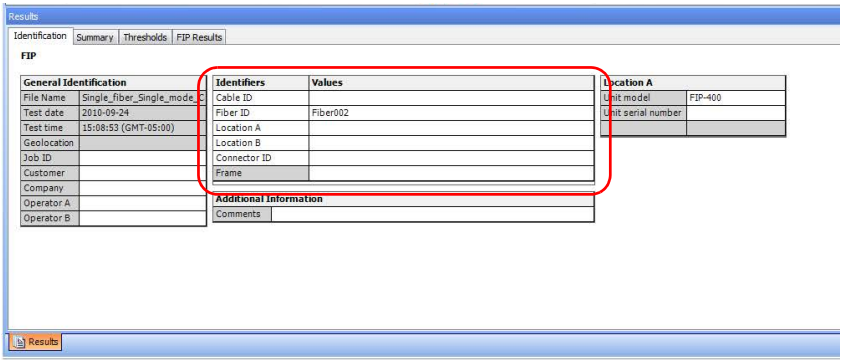
You can find more information on how to manage custom identifiers in *Matching Files Based on Information* on page 55.

To use a custom identifier:

1. Select the measurement for which you want to change the identifier.
2. From the **Identifiers** table of the **Identification** tab, use the drop-down list to select the identifier type.

   OR

   Type the new type directly on-screen.



   The Frame identifier type cannot be modified. Enter the information that describes the groups of connectors included in the frames, as needed.

Note: *The maximum character limit for these identifiers is 30.*

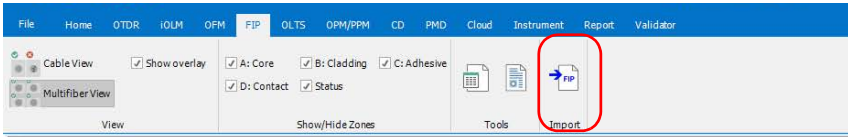
Saving Legacy FIP Files in .cmax2 File Format

You can import and view legacy image files (.jpg, .jpeg and .bmp formats) using FastReporter 3. Once the image file is open, it is displayed in the graphic window. and is converted and saved in .cmax2 format.

Note: *When opening .cmax legacy files (ConnectorMax format), they will also be automatically converted to the .cmax 2 format and can only be saved as such if you modify them.*

To import an image file:

1. If you have not done so already, select the **FIP** tab.
2. Under **Import**, select the corresponding button.



3. Select the required image and click **Open**.

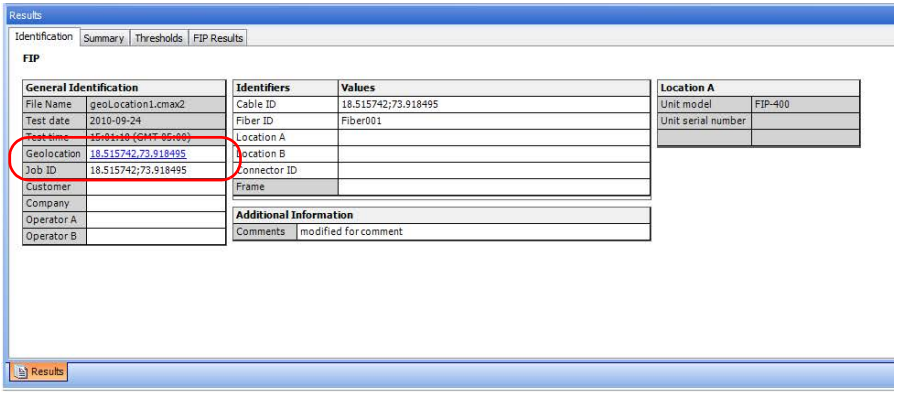
Note: *Under the **Identification** tab, the application displays the file name, test date, and the test time of the image. The rest of the fields remains empty but is editable.*

Viewing Power Meter and OLTS Results

Your .cmax2 file could contain both FIP and power meter data, or FIP and loss data in a single file. Power meter and OLTS results are displayed in their respective tables. For more details, see *Viewing Power Meter Results* on page 377 and *Working with OLTS Files* on page 338.

Viewing Geolocation Information

Your fiber inspection probe files can include GPS coordinate data that pinpoints where the test was performed. This information is displayed in the **Identification** tab when you open your file.



The information is the latitude, a separator character, and the longitude. If you have more than one locations, they will be separated by a semi-colon.

Note: *If you are using FastReporter 3 on a computer and have selected a single file, the geolocation information becomes a hyperlink that will take you to the corresponding location on Google Maps, using the default Web browser.*

9 Working with OLTS Files

Accepted File Formats

FastReporter 3 lets you work with measurement files saved in different formats, but does not necessarily permit all operations on them.

File Format	File Extension	Display	Modification
FOT-920, FOT-930, FTB-3930	.olts	✔	✔
	.olts2	✔	✔
	.dat	✔	✔
	.oltsx	✔	✔
MAX-900	.olts	✔	✔
ConnectorMax 2	.cmax2	✔	✔

Note: *The .oltsx format includes both single- and multi-wavelength measurements.*

Note: *The 64-bit version of FastReporter 3 may not support all file formats. To view .olts files that come from FOT-930s or FTB-3930 modules, save them first in a newer .olts format using the 32-bit version of the application.*

Changing OLTS Settings

Depending on the type of files you are working with (whether they come from FTB-3930 and FOT-930 units, or the MAX-900 series), some settings can be modified.

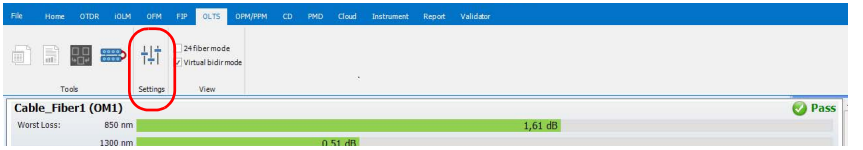
You can change the identification settings for your FTB-3930 and FOT-930 files, as well as the pass/fail threshold values, which can come from different sources:

- From the measurement file
- From the application

In the case of files coming from the MAX-900 series, you can select the unit to display the reference value.

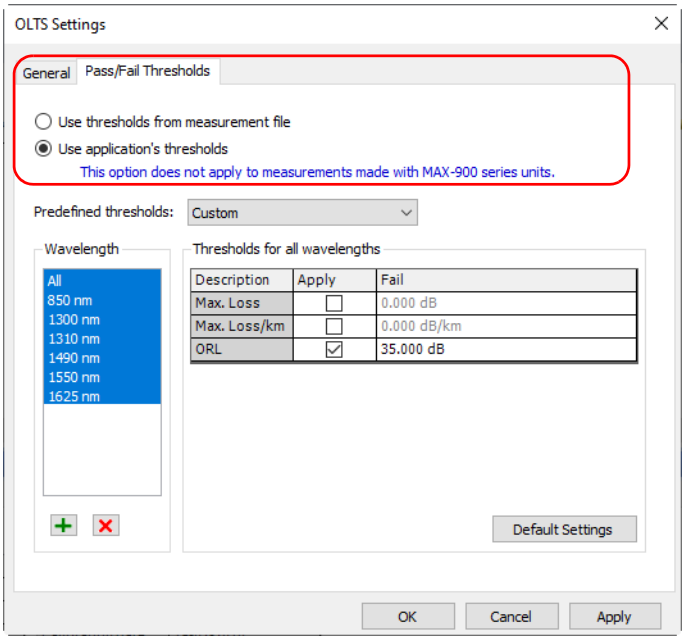
To change OLTS threshold settings:

1. From the ribbon, select the **OLTS** tab if it is not selected already.
2. Select **Settings**.



3. Select the **Pass/Fail Thresholds** tab.

4. Select the type of threshold to use for your analysis.



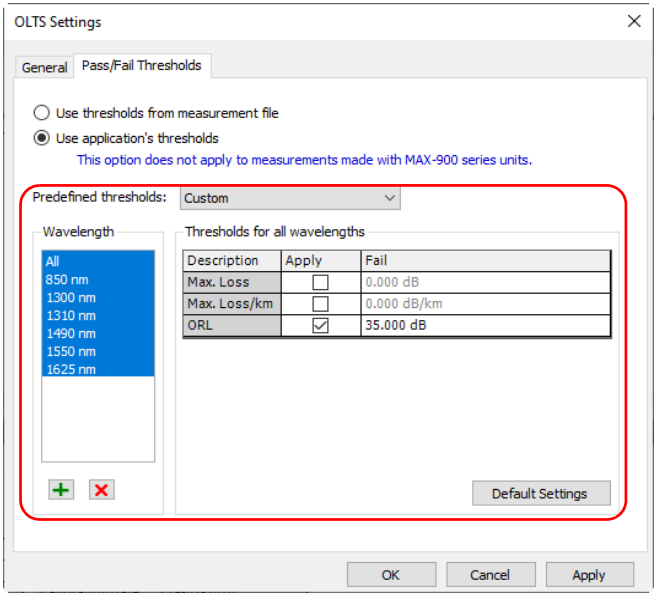
5. Set the wavelength list as needed if you are using the thresholds from the application:

   ➤ To add a wavelength, click the + button, enter the wavelength value, and click **OK**.

   ➤ To remove one or more wavelengths, select the values in the **Wavelength** list and click the × button.

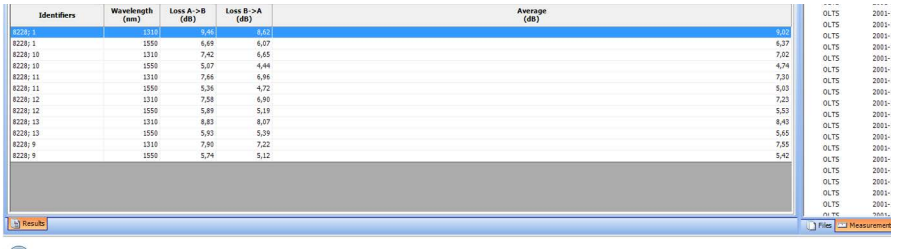
   Each wavelength can have different thresholds. If you have selected the custom thresholds, you can modify the values. The **Apply** option must be enabled for the values to be active and modifiable.

   If you select more than one wavelength in the list, any modification to the thresholds will apply to all of the selected wavelengths. You can select **All** if you want to add custom thresholds for all available wavelengths.



6. To apply the changes without closing the dialog box, click **Apply**. To apply the changes and close the dialog box, click **OK**.

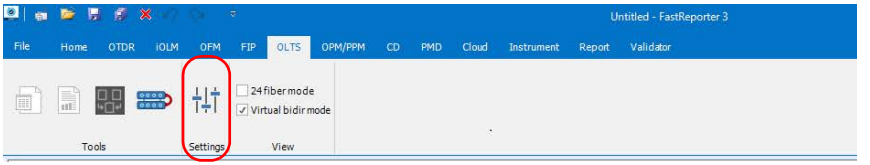
You can view the results in the **OLTS Table** tab in the main window.



Note: *In the case of multi-wavelength files, the reference unit may show dB and/or dBm depending on the measurement.*

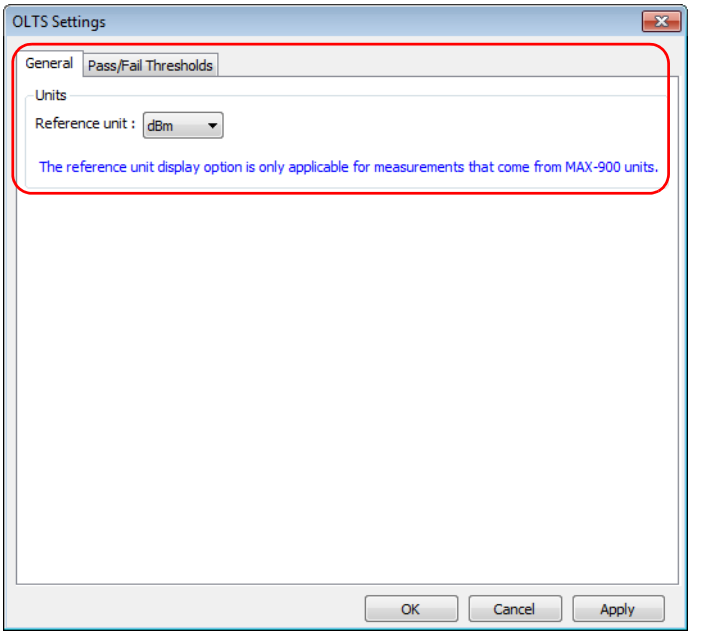
To select the display unit for the reference value on MAX-900 files:

1. From the ribbon, select the **OLTS** tab if it is not selected already.
2. Select **Settings**.



3. Select the **General** tab.

4. Select the desired unit.



The reference unit will be displayed in the **FasTesT Table** tab between parentheses.

5. To apply the changes without closing the dialog box, click **Apply**. To apply the changes and close the dialog box, click **OK**.

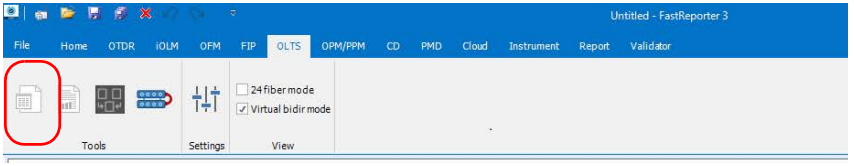
Applying a Configuration File to Selected OLTS Files

You can select OLTS files and apply preset configuration data that you have in a configuration file. You can use a configuration file you have on your unit, or import it from another location.

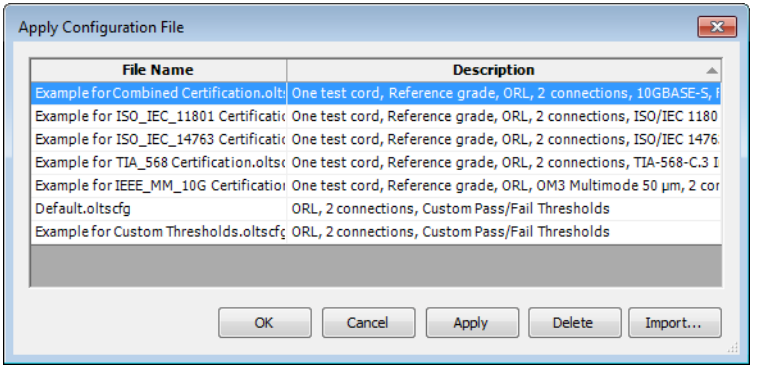
Note: *This feature is available for MAX-900 files only.*

To import a set configuration and apply it to your files:

1. From the ribbon, select the **OLTS** tab if it is not selected already.
2. Under **Tools**, select **Apply Configuration**.



3. Select which configuration you want to use in the list of available choices. If you want to import a configuration file from another location, use the **Import** button.



4. Click **OK** to confirm your choice.

Using Custom Identifiers

You can add up to five custom identifiers for your OLTS files. The custom identifiers are displayed in the **Identification** tab, in the **Identifiers** table.

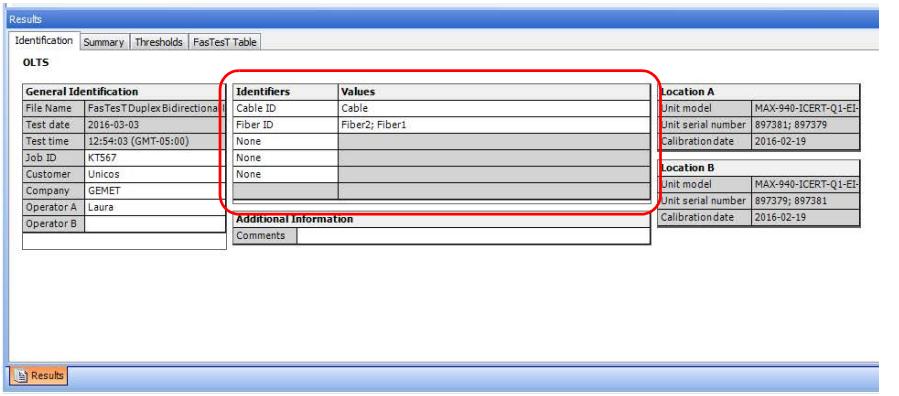
You can find more information on how to manage custom identifiers in *Matching Files Based on Information* on page 55.

To use a custom identifier:

1. Select the measurement for which you want to change the identifier.
2. From the Identifiers table of the Identification tab, use the drop-down list to select the identifier type.

   OR

   Type the new type directly on-screen.



Changing the OLTS Fiber Type

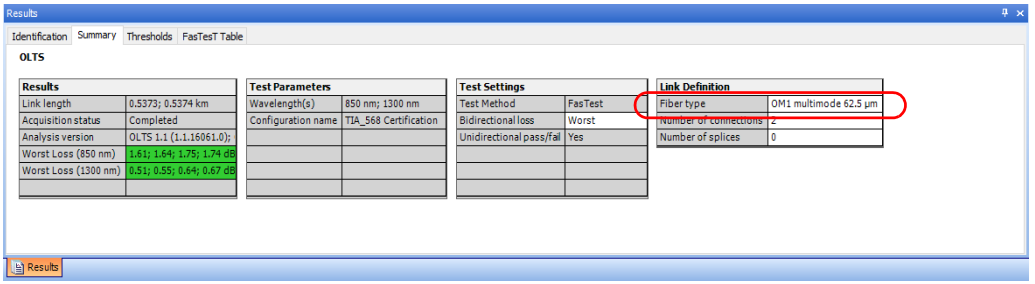
When working with OLTS files, you can select a specific fiber type. Different fiber types are available depending on the type of mode you are working with (singlemode or multimode).

To change the fiber type:

1. Open the file or files you want to modify.

Note: *You can only change the fiber type of multiple files if they are of the same mode.*

2. In the **Summary** tab, under **Link Definition**, use the corresponding drop-down list to select the desired fiber type.

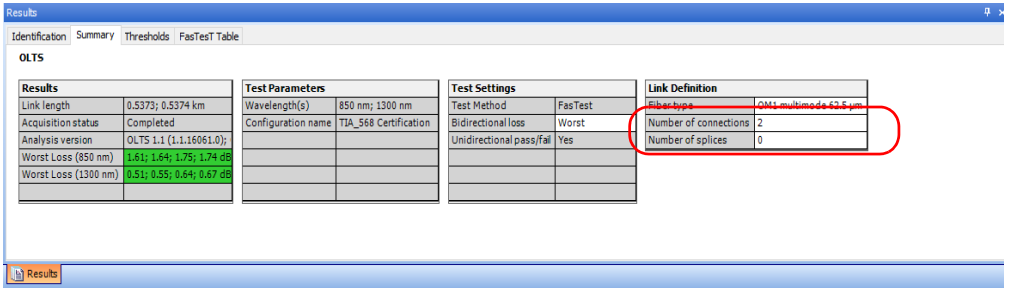


Changing the Number of Connections in the Link Definition

You can modify the number of connections in the link to see the impact of adding or removing connections on the dynamic loss budget thresholds. The threshold status and link view will be modified accordingly.

To change the number of connections:

1. Open the file or files you want to modify.
2. In the **Summary** tab, under **Link Definition**, click into the corresponding box to enter the desired value.



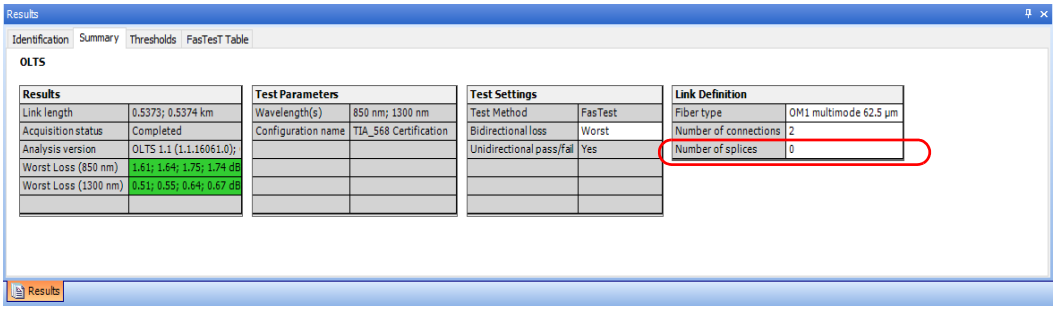
Note: *When you change the link definition parameters, the pass/fail thresholds will be recalculated.*

Changing the Number of Splices in the Link Definition

You can modify the number of splices in the link to see the impact of adding or removing splices on the dynamic loss budget thresholds. The threshold status and link view will be modified accordingly.

To change the number of splices:

1. Open the file or files you want to modify.
2. In the **Summary** tab, under **Link Definition**, double-click into the corresponding box to enter the desired value.



Changing the Loss Calculation Method for Bidirectional Files

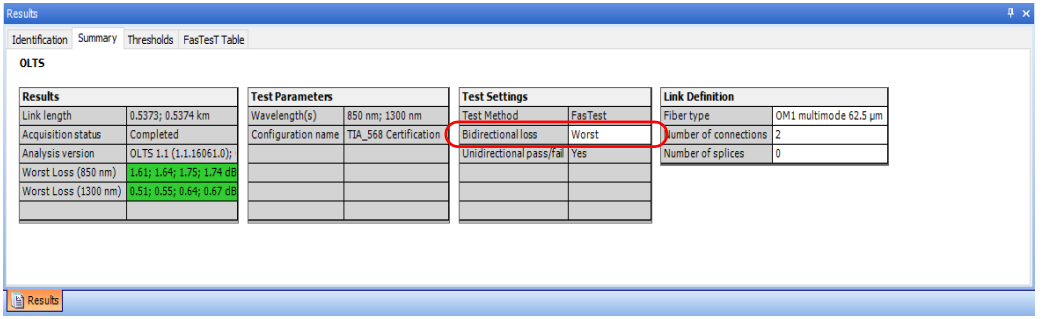
If you select at least one direction of a bidirectional file, the application will show you the calculation method used to calculate loss:

- Average
- Worst value
- Average; Worst (when at least one value in the selected files is of each type)

You can change this value for the selected files.

To change the loss calculation method:

1. Open the file or files you want to modify.
2. In the **Summary** tab, under **Test Settings**, click into the **Bidirectional Loss** box to select the desired value.



The changes will be automatically reflected in the **FasTesT** tab and the cable view.

Setting Unidirectional Pass/Fail

You can set the **Unidirectional Pass/Fail** value to **Yes/No** to show the verdict indicators (fonts) of the **Average Loss**, **Loss A>B** and **Loss B>A** information in the FasTesT table.

Setting of the **Unidirectional Pass/Fail** value depends on the **Bidirectional loss** value.

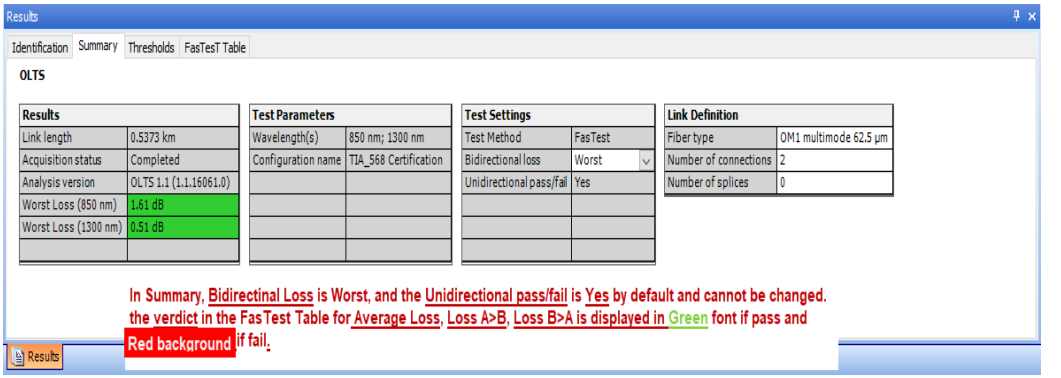
If the **Bidirectional loss** value is set to **Worst**, the default value for the **Unidirectional Pass/Fail** is always **Yes**.

If the **Bidirectional loss** value is set to **Average**, the **Unidirectional Pass/Fail** value can be set to **Yes/No**.

The following examples explain the scenarios for the **Unidirectional Pass/Fail** values set:

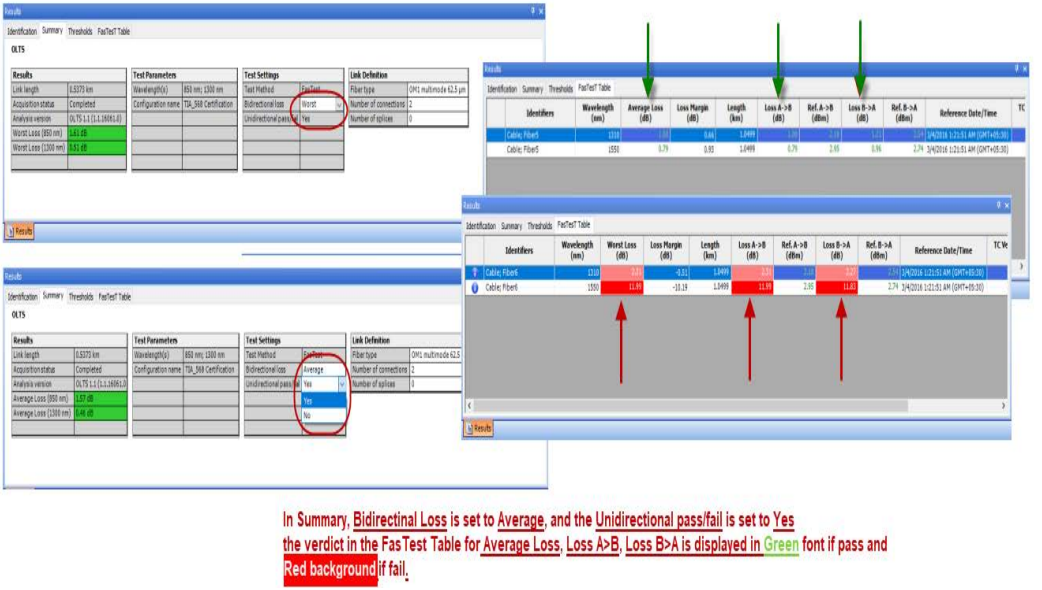
Example 1:

1. Expand the required test file from **Files** section, and then select the individual measurement.
2. Set the **Bidirectional loss** to **Worst,** the **Unidirectional Pass/Fail** will automatically set to the default value **Yes** and is not changeable.
3. Go to the **FastTesT table** to view the verdicts.
   The verdicts of the **Average Loss**, **Loss A>B** and **Loss B>A** values are displayed accordingly. The green font indicates pass and highlighted red indicates fail.



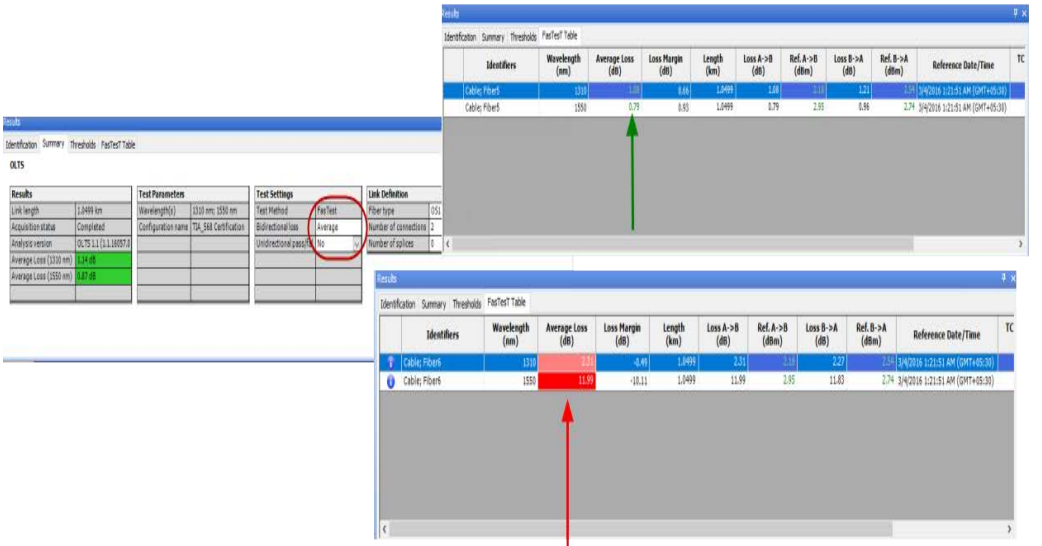
Example 2:

1. Expand the required test file from **Files** section, and then select the individual measurement.
2. Set the **Bidirectional loss** to **Average.**
3. Set the **Unidirectional Pass/Fail** value to **Yes**.
4. Go to the **FastTesT table** to view the verdicts.
   The verdicts of the **Average Loss**, **Loss A>B** and **Loss B>A** values are displayed accordingly. The green font indicates pass and highlighted red indicates fail.



Example 3:

1. Expand the required test file from **Files** section, and then select the individual measurement.
2. Set the **Bidirectional loss** to **Average.**
3. Select the **Unidirectional Pass/Fail** value to **No**.
4. The verdicts in the FastTesT table are not shown for **Loss A>B** and **Loss B>A** values. However, the verdicts for **Average Loss** values are shown accordingly. The green font indicates pass and highlighted red indicates fail.



In Summary, Bidirectional Loss is set to Average, and the Unidirectional pass/fail is set to No
the verdict in the FasTest Table for Average Loss is displayed in Green font if pass and Red background if fail.
The Loss A>B, Loss B>A is displayed in the default font if pass and fail.

Setting FasTesT Pass/Fail Thresholds

Depending on the type of threshold you have selected for your files, you can adjust some of the values on the current measurements to better fit your needs.

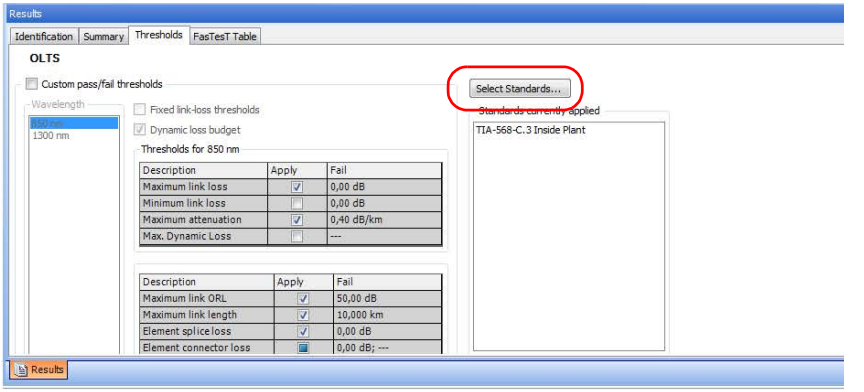
Note: *You can use one or several of the types at a same time.*

Note: *If you set a maximum ORL threshold value, it will apply to all wavelengths.*

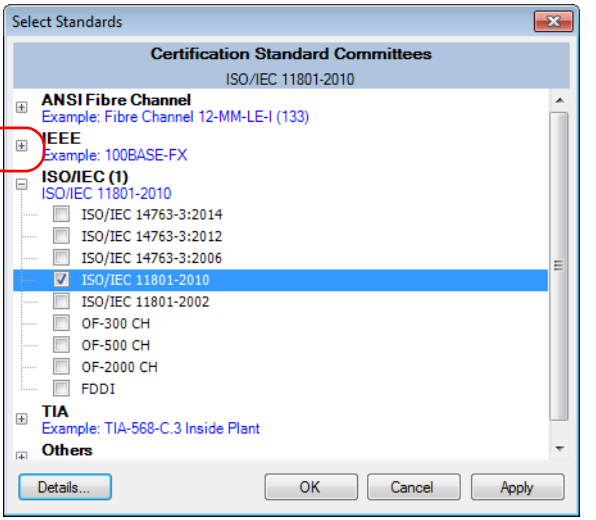
- Fixed link thresholds: this setting will use the link pass/fail threshold value, the maximum link length and link loss value as the thresholds.
- Dynamic loss budget: this setting will use the link pass/fail threshold value, and the fiber attenuation, as well as the splice loss and connector loss values as the thresholds. The first and last connectors will also be used in the calculation.
- Certification standards: this setting allows you to determine which certification standards will be taken into account for the cabling or the application.

To apply specific certification standards:

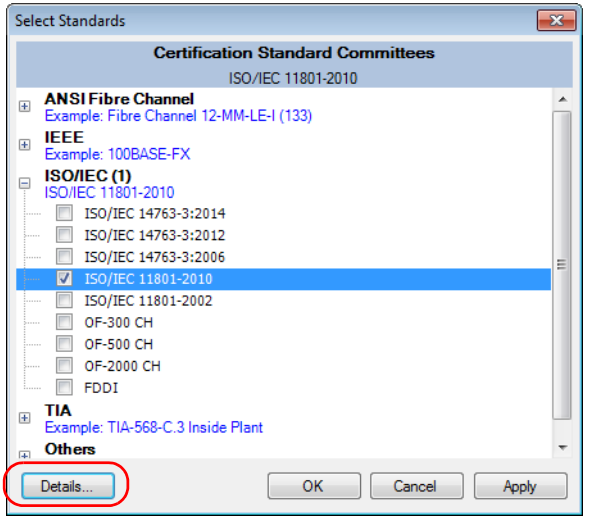
1. Select the file or files for which you want to change the threshold type.
2. Select the **Thresholds** tab, then click **Select Standards**.



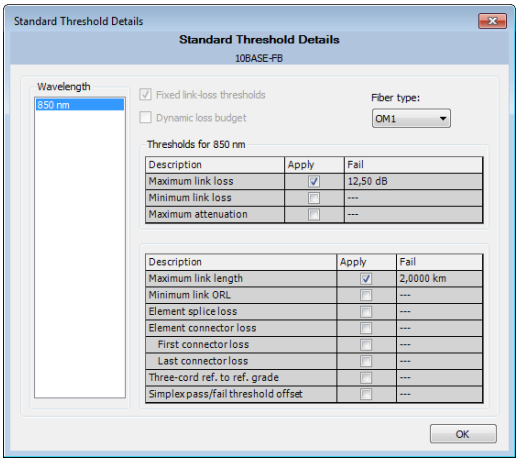
3. Navigate in the application and cabling standard lists to select the items you need. Use the + button to show the detailed available choices.



4. If you want to see the threshold details for a specific standard, select it, then click **View Threshold Details** at the bottom of the window.



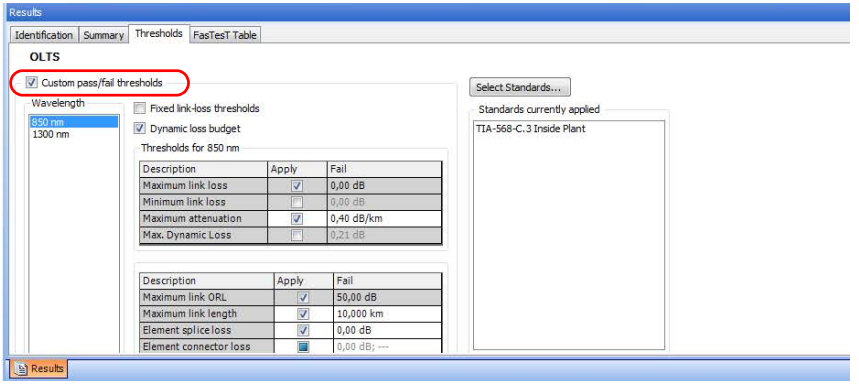
The maximum and minimum link loss, as well as the maximum attenuation values will depend on the wavelength you select on the left. The fiber type selected will also display different values. Click **OK** when you are done to return to the list of standards.



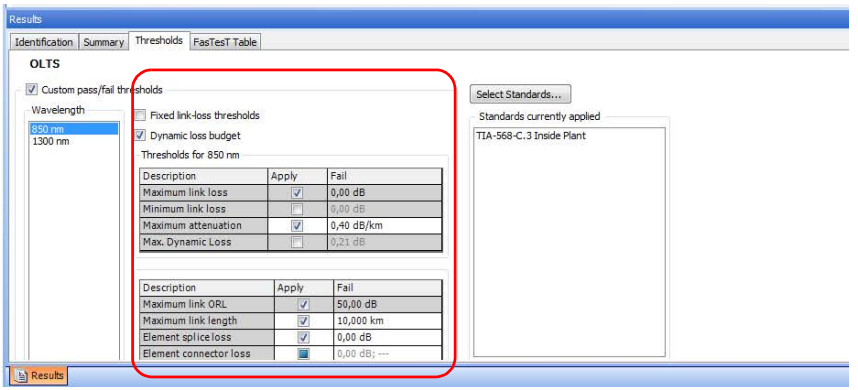
5. Once you are done, click **OK** to confirm the addition of the standards. The tab is updated accordingly.

To select and modify the custom thresholds:

1. Select the file or files for which you want to change the threshold type.
2. Select the **Thresholds** tab, then the custom thresholds option.



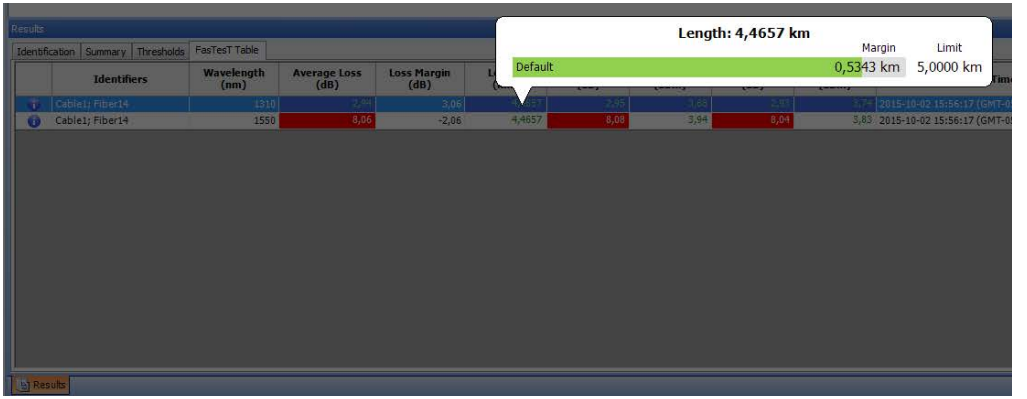
3. Select whether you want to set fixed link loss thresholds, or a dynamic loss budget, then modify the values as needed.



Note: *If the unit used to take the measurements was not a Fiber Certifier (iCERT model), you cannot select the dynamic loss budget option or any of the certification standards and the maximum dynamic loss value is not displayed in the tab.*

Viewing FasTesT Results

When you display FasTesT result files, you can see the details in the **FasTesT Table**. Click on the loss value of any result (in the table, link view or **Measurement** tab) to see detailed information about the margin, test configuration used, wavelength, limit and result.



When working with bidirectional files, the loss will be indicated as the average or worst value, depending on what setting is selected.

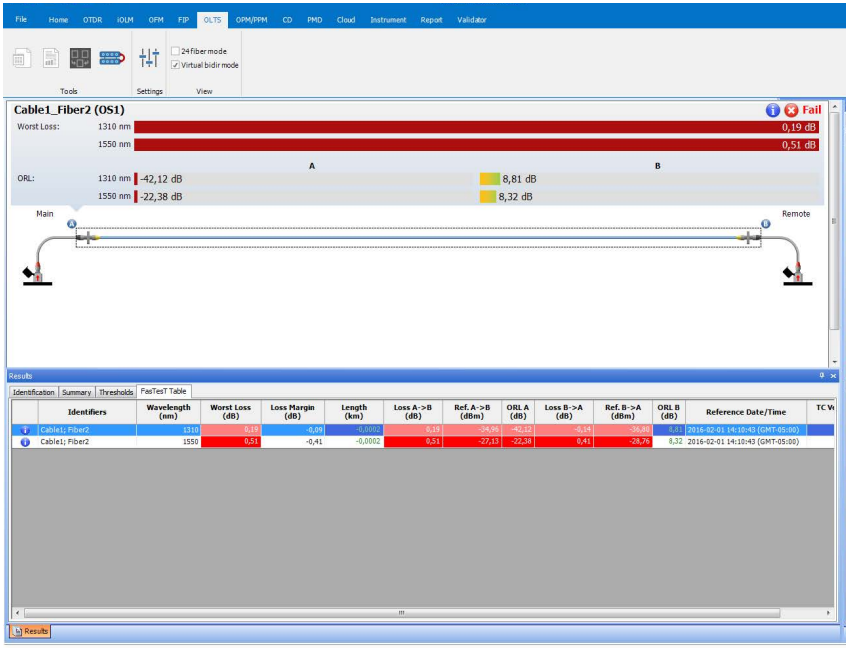
Note: *The Identification, Summary, Thresholds, and FasTesT tables tabappears in the results table if the measurements have the duplex, FasTesT, etc.values are available.*

Note: *For a quick general overview of the pass/fail statuses of your measurements according to the certification standards, you can select the* ***Certification*** *view in the* ***Measurement*** *tab.*

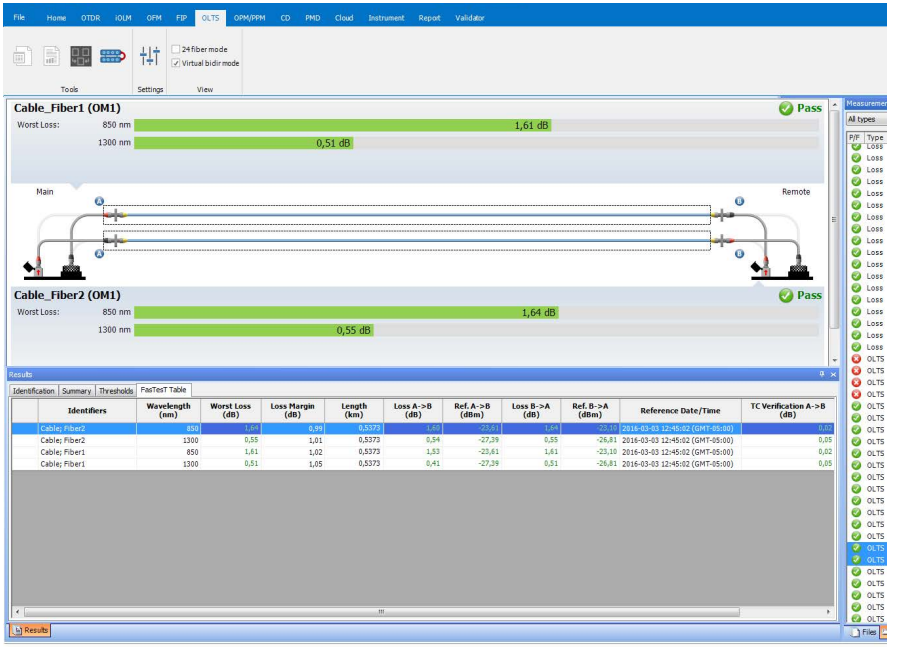
Viewing Link View Results

You can view the results for MAX-900 series OLTS files in the graph view.

Click on any result to see detailed information about the margin, test configuration used, wavelength, limit and result.



In the case of bidirectional measurements, if you select both measurements from the same file, the link view displays both connections between the main and remote units

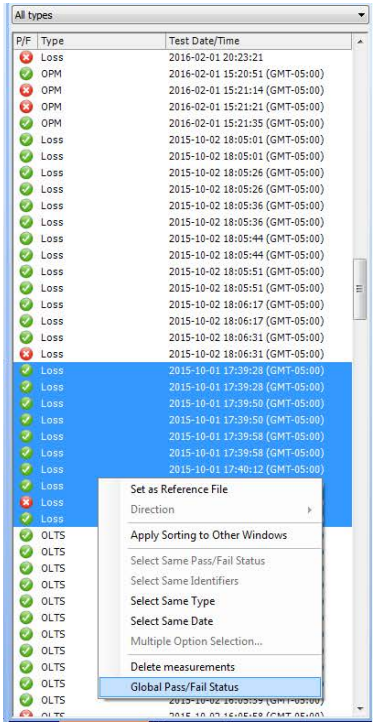


Viewing Pass/Fail Status Information

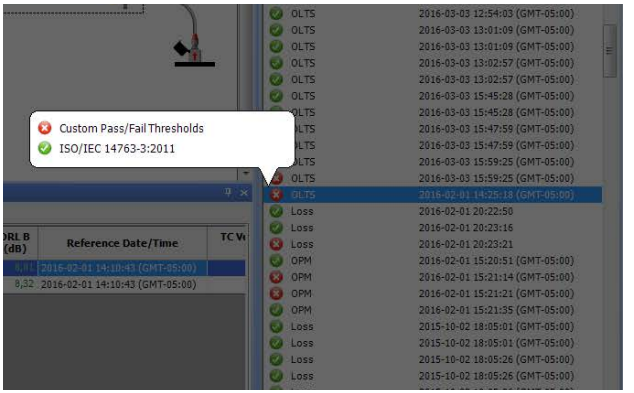
When working with MAX-900 series files, you can see the detailed pass/fail information for all standards used during the FasTesT.

To view the global pass/fail information:

1. From the **Files** or **Measurements** tabs, select the file or files for which you want to see the status.
2. Right-click the selected files, then select **Global Pass/Fail Status**.



3. The information appears in a tooltip window. Click anywhere to exit.

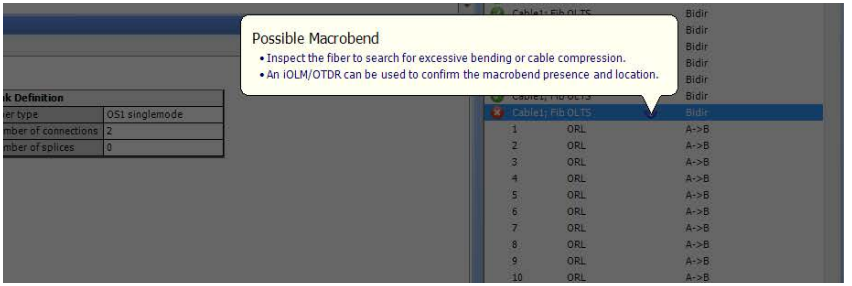


Understanding Diagnostics

OLTS result files made with the MAX-900 series provide you with diagnostics to help you with detected problems or ambiguous measurement situations. You can see the diagnostics in the **Measurements** tab, the **FasTesT Table** tab, and in the link view.

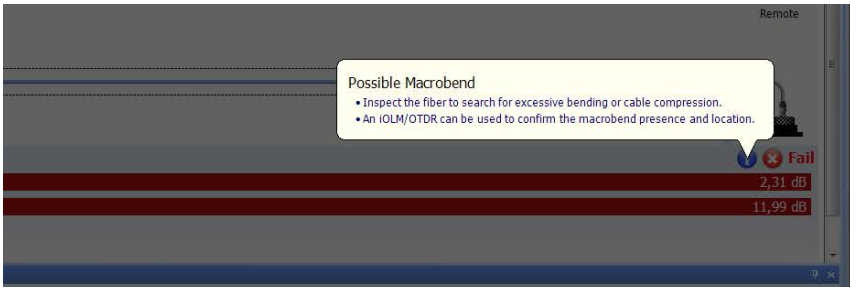
To display the diagnostics in the Measurement tab:

1. Right-click in the column headers to make the Diagnostics column appear.
2. Click on the icon of the diagnostic that you want to view.



To view diagnostics in the FasTesT Table tab and Link View:

Click on the corresponding icon.

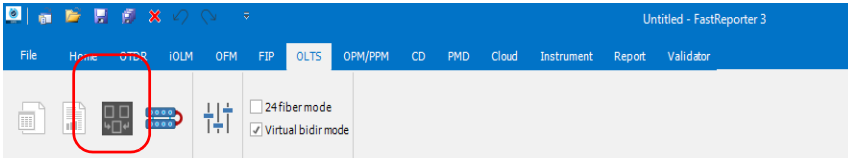


Merging OLTS Measurement Files

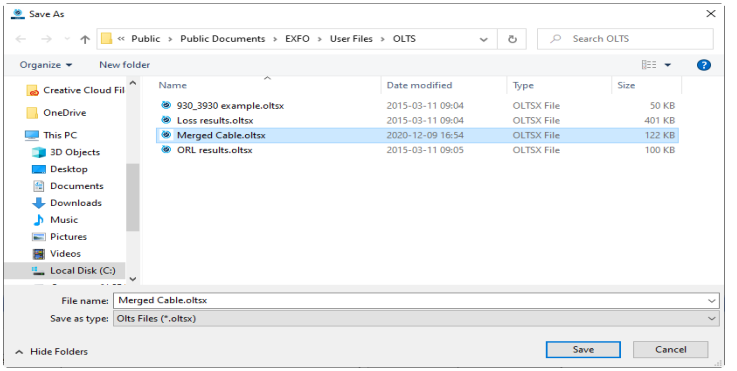
You might want to merge several measurement files to create a single file. This can be useful for example if you have downloaded several single-measurement files from the TestFlow server.

To merge measurement files into one:

1. Open the files that you want to merge and select them in the list.
2. From the ribbon, select the **OLTS** tab if it is not selected already.
3. Select the **Merge Measurements** button.



4. Change the name and location as needed, then click **Save**.



You can also access the merge feature in right-click menu of the **Measurements** tab.

Creating 24 fiber test measurement

You can merge a set of two 12 fibers test measurements as if tested as a 24 fiber test and analyze the behavior of it as a single test. For example, if you have tested a 24 fiber cable with 12 fiber type connector, the first 12 fibers in one time and remaining 12 fibers afterwards, these two test measurement files can be merged together using this feature and save it as a single 24 fiber test measurement file.

IMPORTANT

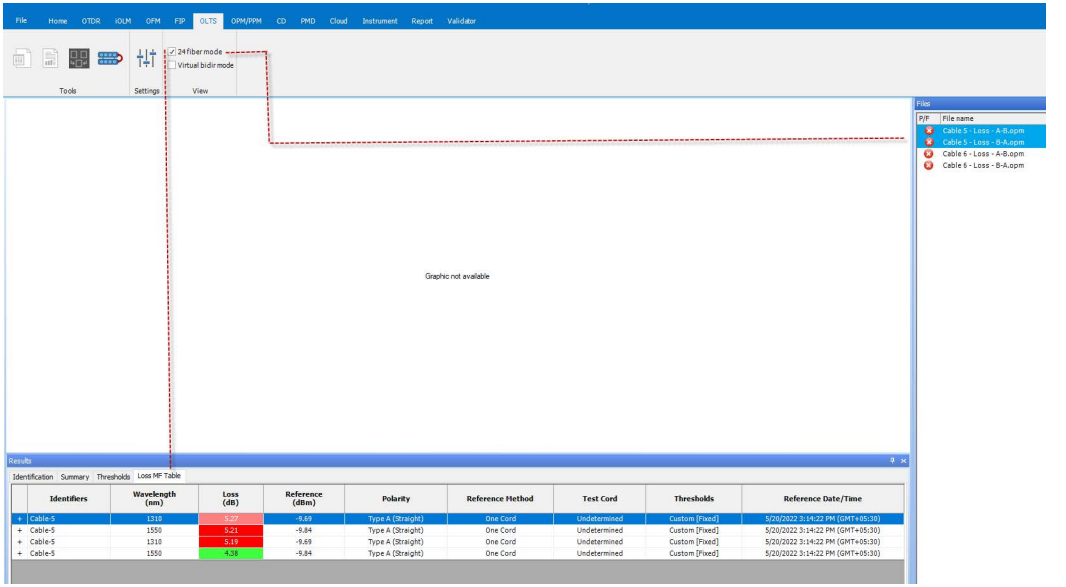
The two test measurement files selected should have the same Wavelength, Thresholds, Fiber Type, Number of Connections, Number of Splices, and Fiber Layout.

How to create a 24 fiber test measurement

You can select two loss or a power test measurements to use this feature.

To create a 24 fiber test measurement:

1. Select two separate 12 fiber test measurements (two loss files).



2. Select the **24 fiber mode** option if not already selected.
   The two 12 fiber test measurements will now show the details as a single 24 fiber test measurement.

Note: *Expand the + icon to see the detailed information of this 24 fiber test measurement for each wavelength.*

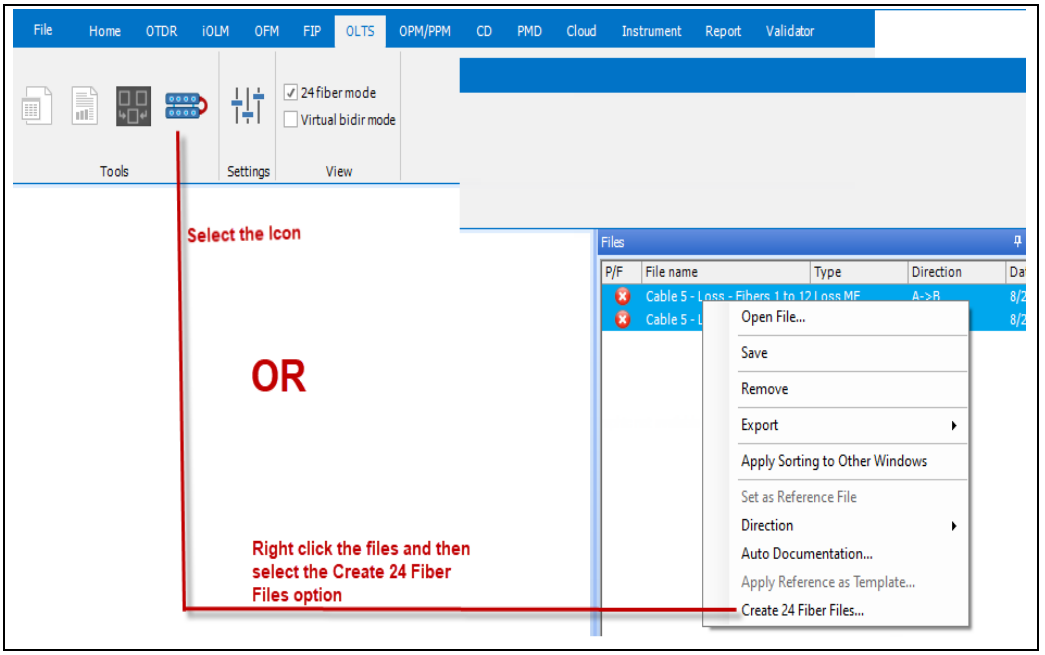
Saving the created 24 fiber test measurement

You can save the created 24 fiber test measurement as a single file and analyze it accordingly.

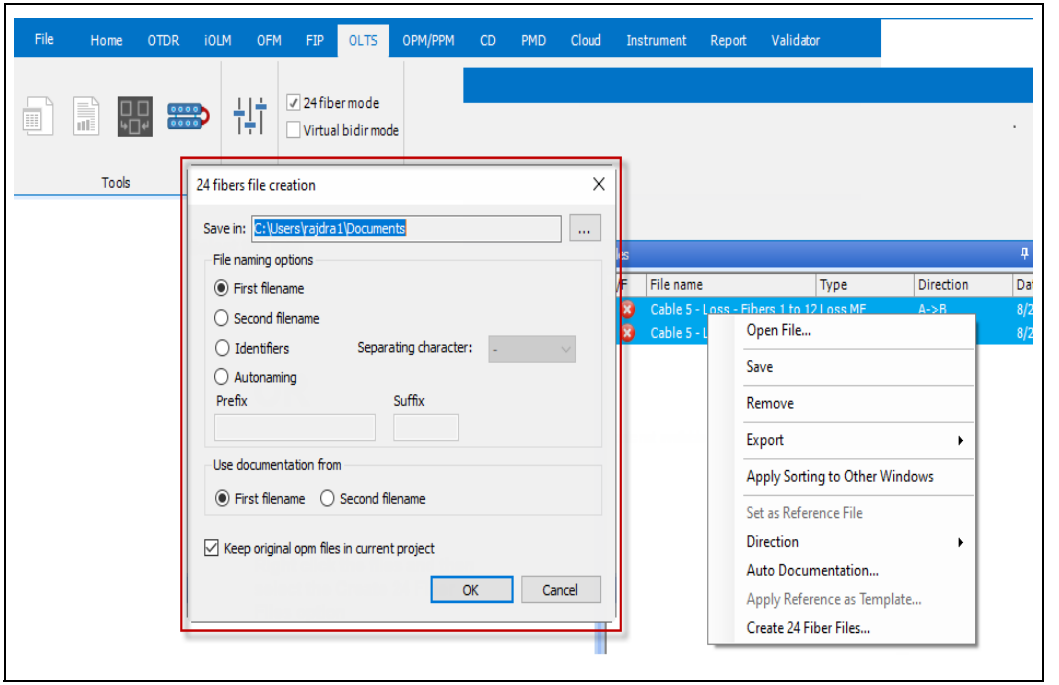
To save the created 24 fiber test files

1. Select 12 fiber two different test files, select the 24 fiber mode, and then select the Bi-directional Icon.

Note: *You can also right click on the required files, and then select* ***Create 24 Fib Files...***.



2. Select the location and other options, and then select **OK** to save the file. The saved file can now be opened as a single 24 fiber file.


File
Home
OTDR
iOLM
OFM
FIP
OLTS
OPM/PPM
CD
PMD
Cloud
Instrument
Report
Validator
24 fiber mode
Virtual bidir mode
Tools
24 fibers file creation
Save in: C:\Users\rajdra1\Documents
File naming options
First filename
Second filename
Identifiers
Separating character:
Autonaming
Prefix
Suffix
Use documentation from
First filename
Second filename
Keep original opm files in current project
OK
Cancel
File name
Type
Direction
Cable 5 - Loss - Fibers 1 to 12 Loss MF
A->B
Open File...
Save
Remove
Export
Apply Sorting to Other Windows
Set as Reference File
Direction
Auto Documentation...
Apply Reference as Template...
Create 24 Fiber Files...

Creating a Virtual Bi-directional test measurement

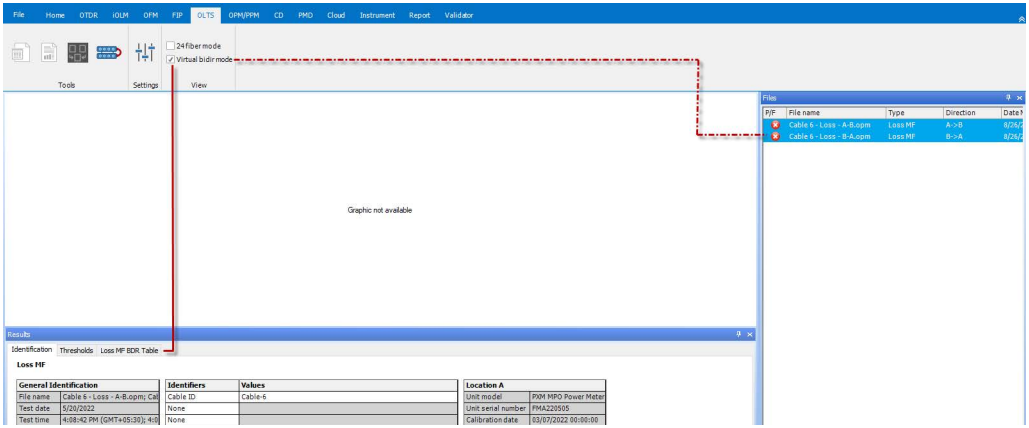
Two single files can be merged together to analyze the virtual bi-directional file for analyses. This file cannot be saved as a single Bi-directional file.

How to create a virtual bi-directional test measurement

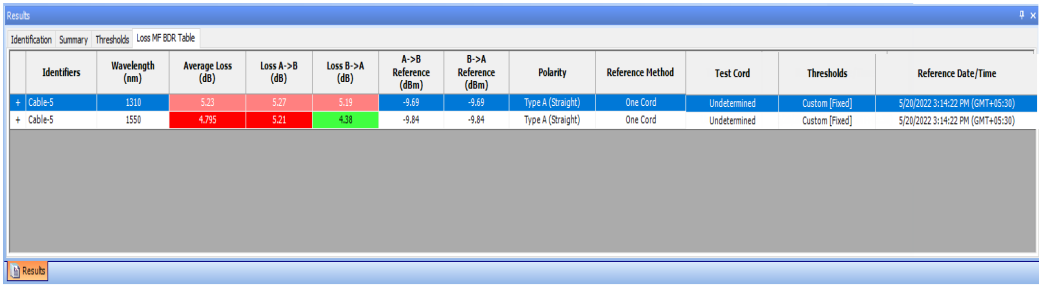
Two set of files, for example, test executed from A>B direction and another file tested from B>A location can be merged to analyze the parameters as if the test executed is bi-directional and not as a two separate tests executed at two different ends.

To create a virtual bi-directional test measurement:

1. Select the required two individual test measurement files tested at two different ends.



2. Select the **Virtual Bi-dir mode** option if not already selected.
   The **Loss MF Table** tab in the **Results** section will change to **Loss MF BDR Table**. In addition to other values, the **Average Loss values** and reference direction specific values will be updated in the **Loss MF BDR Table**.



IMPORTANT

The two test measurement files selected should be from different directions (A>B and another from B>A).
Also should have the same Wavelength, Actual Polarity, Thresholds, Fiber Type, Number of Connections, Number of Splices, and Fiber Layout.

10 Working with OPM/PPM Measurements

Accepted File Formats

FastReporter 3 lets you work with measurement files saved in the following formats, but does not necessarily permit all operations on them.

Select the appropriate options and elements available for the 24 fiber test measurements files.

File Format	File Extension	Display	Modification
PPM-350D	.ppm	✔	✔
PPM-350C	.ppm	✔	✔
PPM1	.opm	✔	✔
iOLM	.iolm	✔	✔
OPM	.oltsx	✔	✔
ConnectorMax 2	.cmax2	✔	✔
MAX-900 Series	.olts	✔	✔
OPM Power	.opm	✔	✔
OPM Loss	.opm	✔	✔
OPM Power Multifiber (MF)	.opm	✔	✔
OPM Loss Multifiber (MF)	.opm	✔	✔

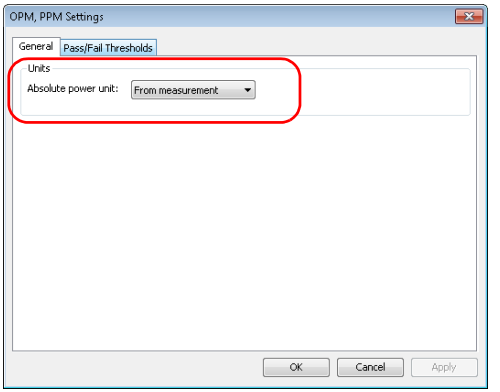
Selecting the Absolute Power Unit

You can set FastReporter 3 to use either dBm, watts, or use the power unit used in the measurement you are viewing.

To select the power unit:

1. If you have not done so already, select the **OPM** ribbon tab.
2. Select **Settings**.

3. In the **General** tab, select which unit to use.



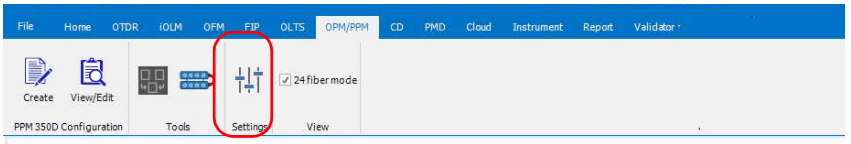
4. Click **OK** to confirm your choice and close the window.

Changing OPM/PPM Settings

The pass/fail thresholds that you set for PON Power Meter (PPM) or Optical Power Meter (OPM) projects and the predefined thresholds are applied on the corresponding table tabs in the **Results** window. If you need to change the threshold for analysis purposes, it can be done in the **Thresholds** tab.

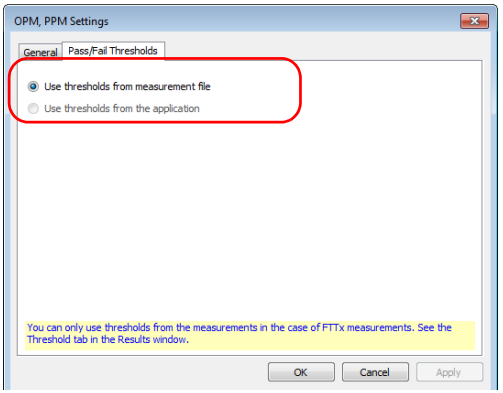
To select which thresholds to use for the measurements:

1. If you have not done so already, select the **OPM** ribbon tab.
2. Select **Settings**.



3. In the **Pass/Fail Thresholds** tab, select whether the thresholds to use are those from the measurement file, or those from the application.

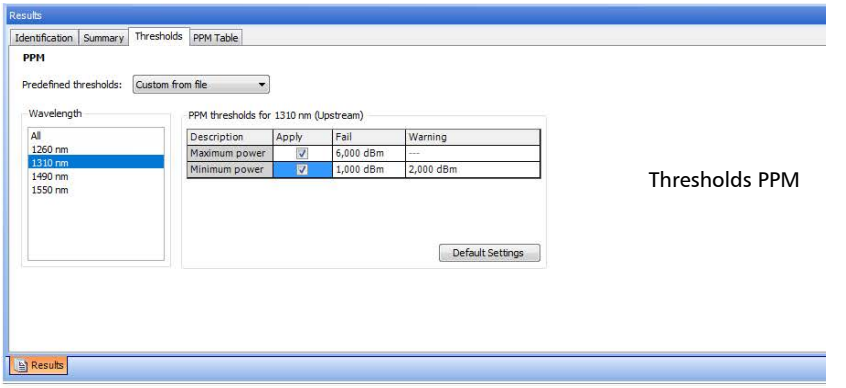
Note: *In the case of FTTx measurements, you can only use the thresholds from the measurement files.*



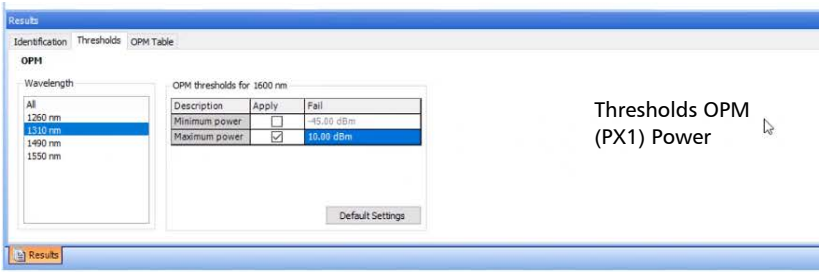
4. Click **OK** to confirm your choice and close the window.

To change OPM/PPM settings:

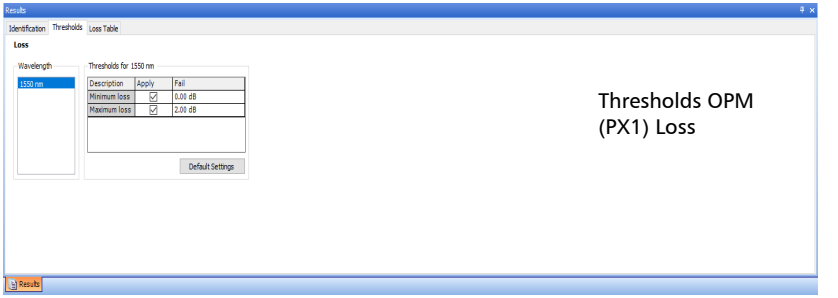
1. Open the file which contains OPM/PPM measurements.
2. On the **Results** window, click the **Thresholds** tab.



Thresholds PPM



Thresholds OPM (PX1) Power



Thresholds OPM (PX1) Loss

3. Select a wavelength or wavelengths to modify. Select **All** to select all wavelengths.

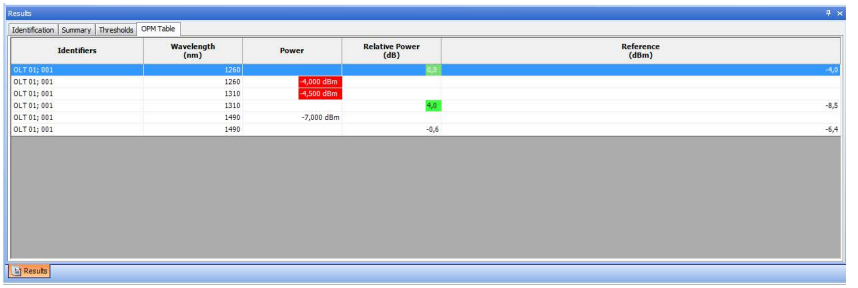
4. In the table, select the respective checkbox in the **Apply** column and modify the minimum and maximum threshold values according to your requirement. The values cannot be less or more than the standard values for the selected wavelengths. Clearing the checkbox will not apply its associated value. Select **Default Settings** to set the default values.

Viewing Power Meter Results

Power meter results are displayed in the OPM and PPM tables.

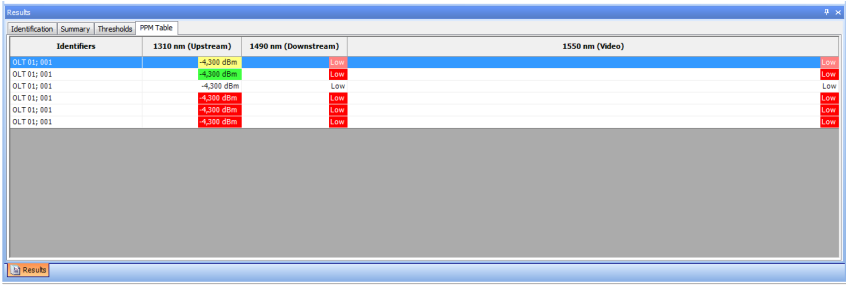
To view the Power meter results for OPM measurements:

1. Select OPM measurements.
2. From the **Results** window, select **OPM Table/Loss Table**.



To view the Power meter results for PPM measurements:

1. Select the file which contains PPM measurements.
2. From the **Results** window, select **PPM Table**.

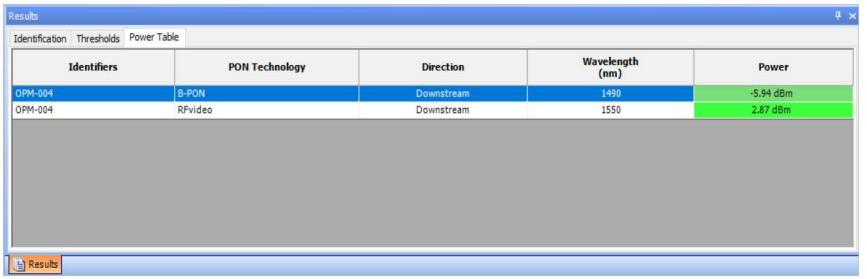


To view the Power meter results for the OPM (PX1) measurements:

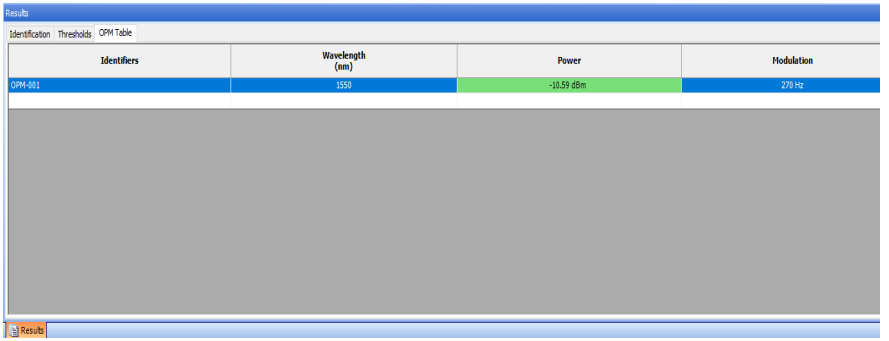
1. Select the file which contains the PX1 power and Loss measurements.

From the **Results** window, select **OPM Table** or **Loss Table** according to the selected files.

OPM (PX1) Power with PON Technology

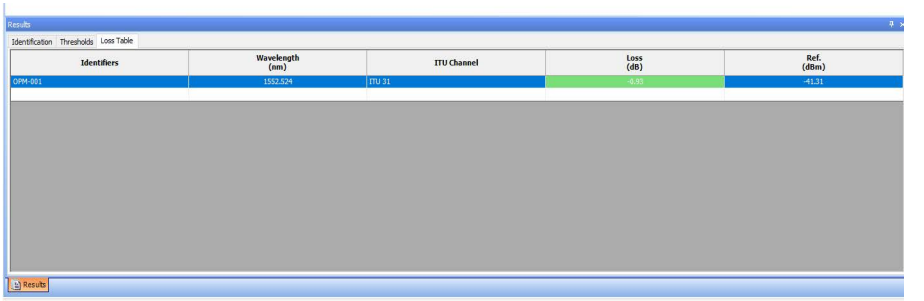


OPM (PX1) Power with Modulation

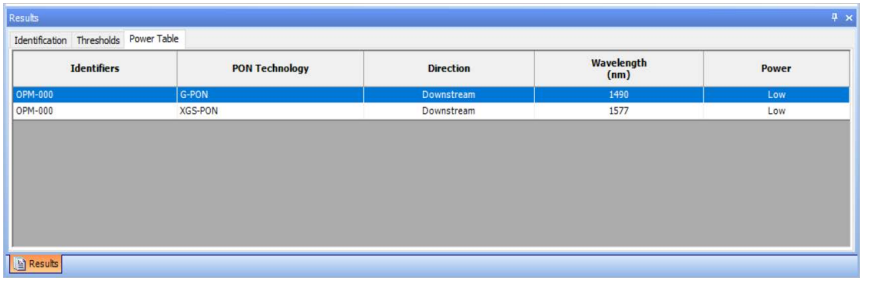


Note: *The reference values, application name, and ITU channel and Modulation information appears if available for the selected measurements.*

OPM (PX1) Loss Results with ITU Channel



PPM (PPM1) Power Results with PON Technology

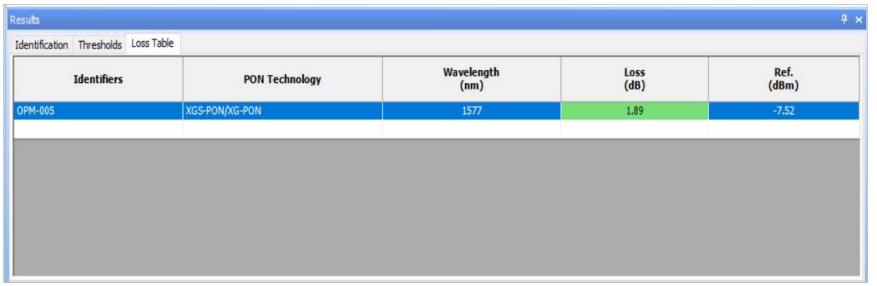


Note: *The reference values, application name, and ITU channel information appears if available for the selected measurements.*

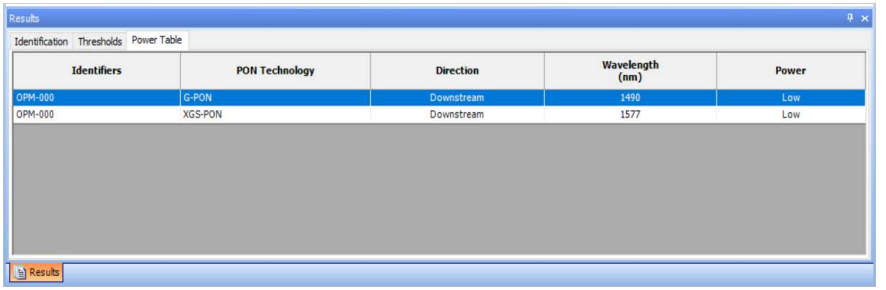
To view the Power meter results for the PPM (PPM1) measurements:

1. Select the file which contains the PPM1 power and Loss measurements. From the **Results** window, select **Loss Table or Power table** according to the selected files.

PPM (PPM1) Loss Results with PON Technology



PPM (PPM1) Loss Results with PON Technology



Setting Thresholds for the OPM MF tests

Depending on the type of threshold you have selected for your files, you can adjust some of the values on the current measurements according to your needs.

Note: *You can use one or several of the Threshold options for all the selected tests. The values appear in the respective fields in a comma separated form.*

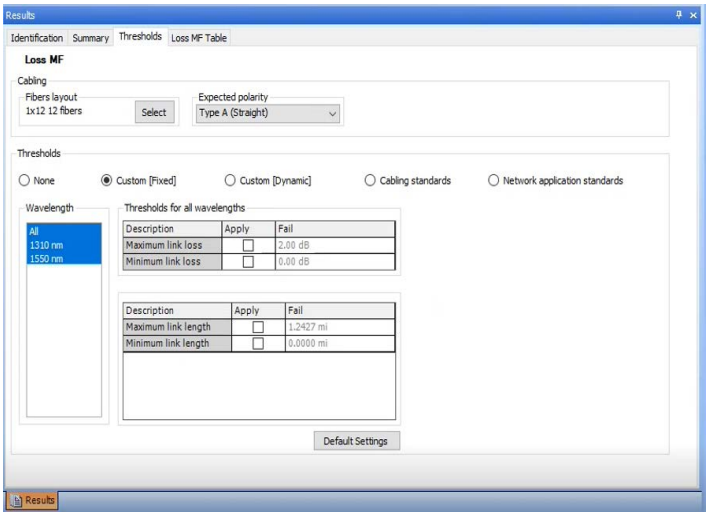
Note: *Select individual Test or all selected tests, it will apply to all wavelengths available for the test.*

- Thresholds for all wavelength: This setting will use the test pass/fail threshold value, the maximum and minimum power and loss value for the test can be set to access or modify the selected test files.
- Fibers evaluated: This setting will set the test's pass/fail status with respect to the number of fibers selected. E.g. single row 1 x 8
- Expected Polarity: The polarity threshold is set to access the pass/fail of OPM MF Loss tests accordingly.

To set the threshold type option and its values:

1. Select the required file to set or modify its threshold values. Modify the wavelengths, threshold parameters, Connections, splices and so on accordingly and save the file. The pass/fail status will be changed according to the newly set threshold configurations.

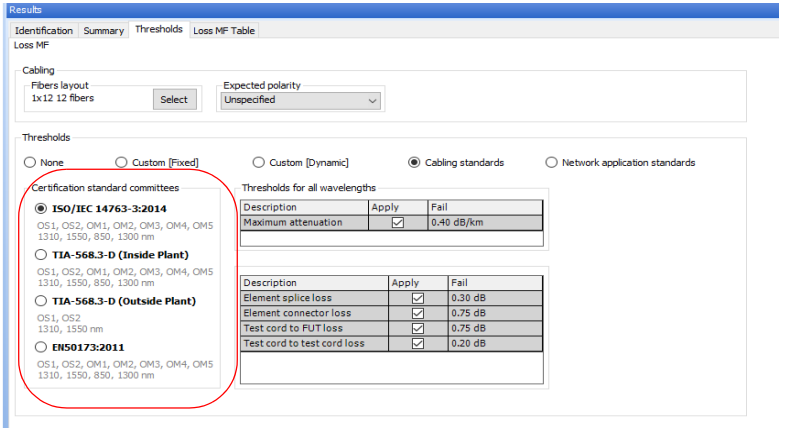
Note: *The threshold option and its values will be displayed according to the threshold set for the selected file. For example, if the selected file does not have any threshold values set, it will display* ***None*** *option. If the file has fixed threshold values, it will display the Custom (Fixed) threshold option and its values. Similarly, if the file has dynamic threshold values, it will display the Custom (Dynamic) option, Cabling standards, and the Network application standards..*

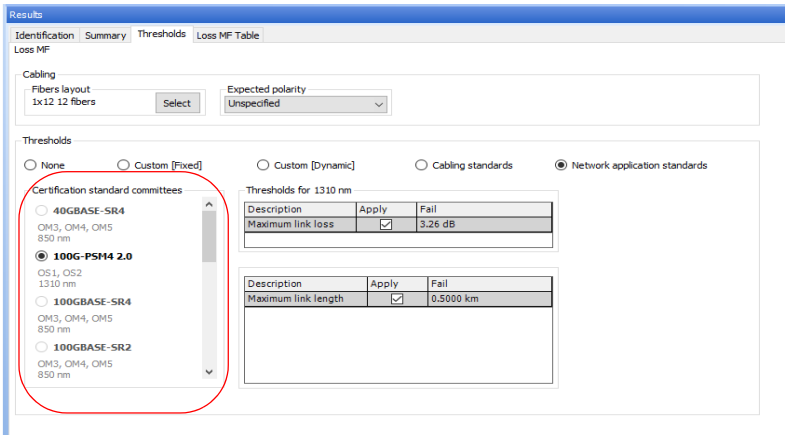


IMPORTANT

The modified values for the selected threshold option will be lost and will not be remembered if you select another threshold option in between before saving the file.
The last selected threshold option and its values will be considered and set for the selected file. So do not select any other threshold options after configuring the required values unless you specifically want to set another threshold option and its values for the file.

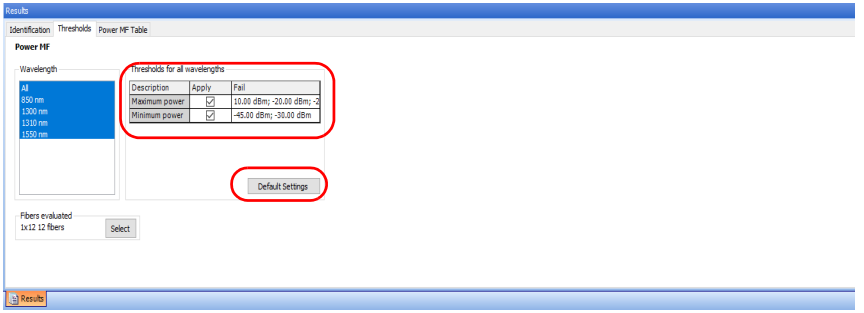
For the Cabling and Network standards select the required Certificate Standards from the list that are available to select according to the fiber type you have selected.





To apply maximum and minimum Threshold values for both Power tests:

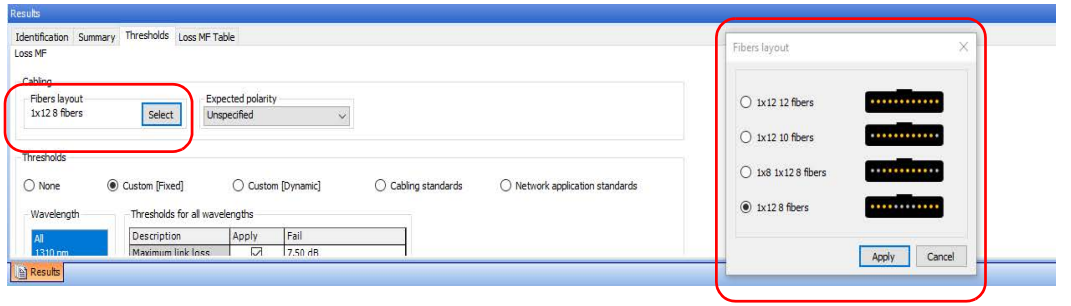
1. Select the file or files for which you want to change the threshold type.
2. Select the **Thresholds** tab, and then set the Maximum and Minimum Power or Loss values.



Note: *You can select the **Default Settings** to set the default threshold values for the selected tests.*

To select or modify the Fiber Evaluated thresholds:

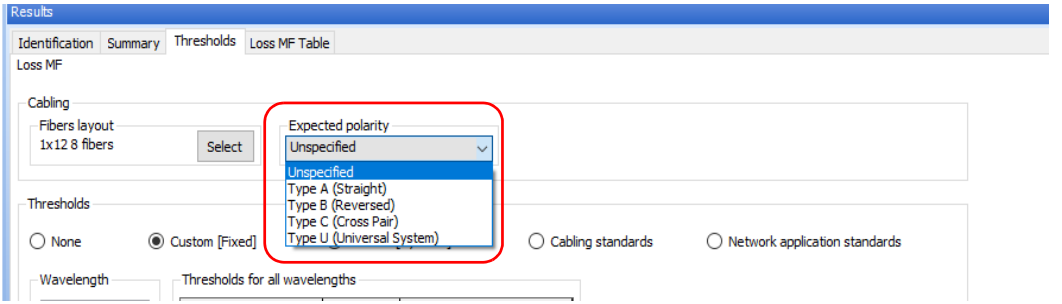
1. Select the file or files for which you want to change the threshold type.
2. Select the **Thresholds** tab, then select the **Fibers layout** option.



3. On the **Fibers layout** window, select the number of fibers according to your requirement for assessment and click **Apply**.
   The result of the tests are updated according to the fiber evaluated set value.

To select or modify the Polarity thresholds for Loss tests:

1. Select the file or files for which you want to change the threshold type.
2. Select the **Thresholds** tab, and then select the polarity from the **Expected polarity** drop down list..
   The global pass/fail status of the test updates according to the type of polarity set for the selected tests.



3.

Note: *If this is set to* ***Unspecified****, the global pass/fail status will be Unknown.*

Viewing OPM MF Results

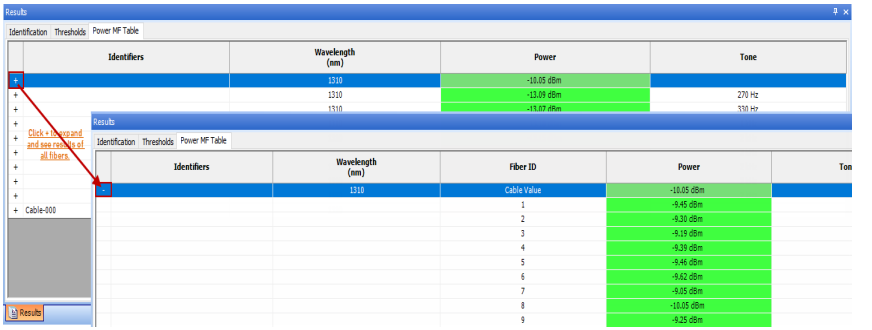
You can view all the details of the selected Power and Loss tests. The global pass/fail can be accessed by modifying and setting the new threshold values.

Note: *To see the result of each individual fiber from the performed test. Click the + icon to expand the selected test. Click the - icon on the expanded window again to collapse.*

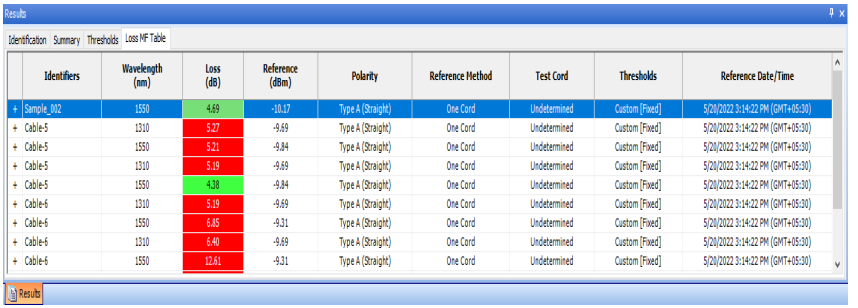
To view the test results for the OPM (MF) measurements:

1. Select the file which contains the MF power or Loss measurements.
2. From the **Results** window, select **Power MF Table** or **Loss MF Table** according to the files selected.

OPM (MF) Power Results



OPM (MF) Loss Results with Polarity Type



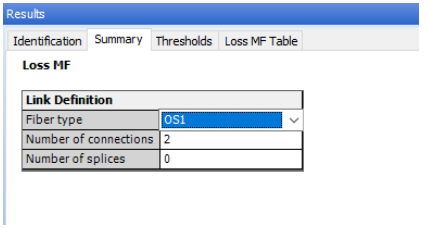
Note: *The type of polarity will appear if available in the test.*

Configuring Link Definitions

You can define or modify the Fiber Type, number of connections, and number of splices for the selected test(s).

To modify the link definitions:

1. Open and select the required OPM-MF test measurement file.
2. On the **Results** table, go to the **Summary** tab and then set or modify the **Number of connections** or **Number of splices** in the **Link Definitions** table.



Note: *The number of connections and number range should be in between 2 to 99. And, the splices values should be in between 0 to 99.*

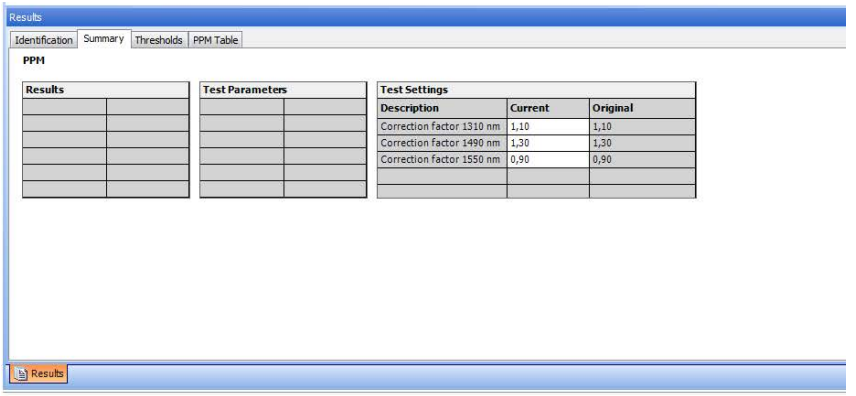
Changing the Correction Factor (Plus Mode)

Correction factors are used to adjust the OPM and PPM measurements. The correction factor is specified by wavelength only, and the fiber core size is not taken into account. FastReporter 3 allows you to change the correction factor for PPM file types. These corrections should be made before the measurement is taken and should be stored with each measurement. A correction factor of 1.0 has no effect on the measurement.

Note: *The correction factor is not available for measurements from iOLM files.*

To change the correction factor:

1. Open an OPM or a PPM measurement file.
2. Select the measurements for which you want to change the correction factor.
3. In the **Results** window, select the **Summary** tab.



4. Modify the correction factors associated with the wavelengths as needed. Click the desired correction factor value under **Test Settings** column and modify it.

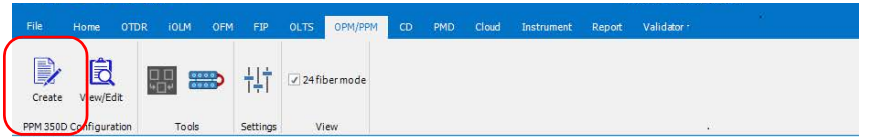
Creating Configuration Files for the PPM-350D

You can create your configuration files for the PPM-350D units in FastReporter 3, then transfer them to your unit for uniform testing.

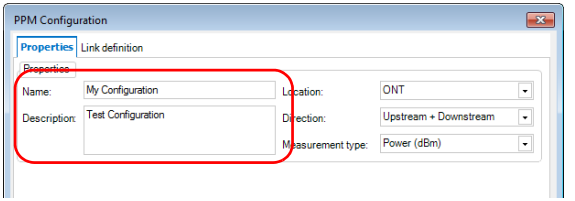
Note: *For information about using the configuration files on the units, refer to the user guide for the PPM-350D.*

To create a configuration file:

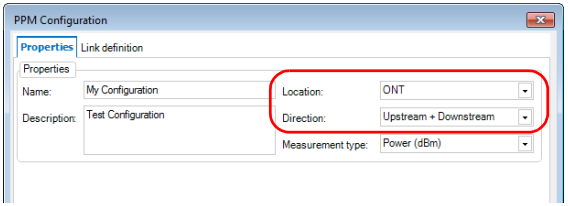
1. If you have not done so already, select the **OPM** tab.
2. Under **PPM-350D Configuration**, select **Create**.



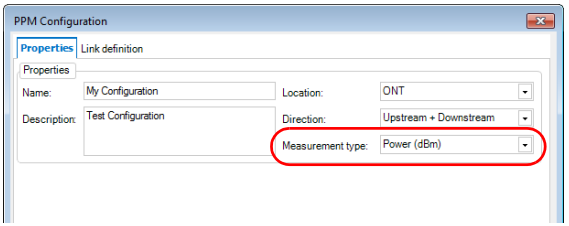
3. Select the **Properties** tab.
4. Enter a name and a description for your configuration. The configuration name will also be used when saving the file.



5. Select the location for your tests (ONT or OLT), as well as the direction (upstream, downstream, both, or undefined).



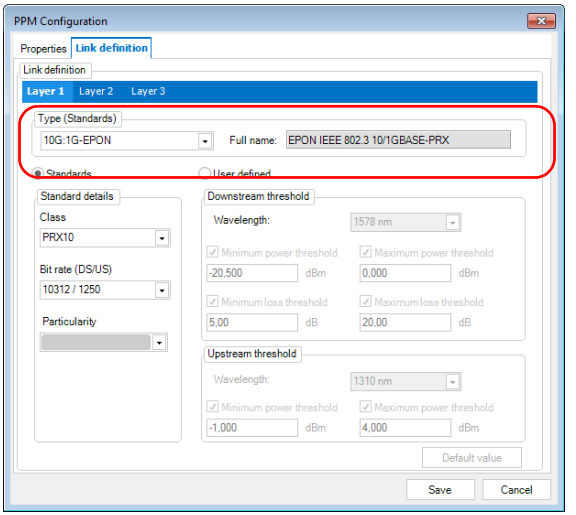
6. Select the measurement type for your test (power, loss, both, or unspecified).



7. Select the **Link Definition** tab.

8. Enter the information for the layers in your configuration. You can have up to three layers depending on the standard you choose.

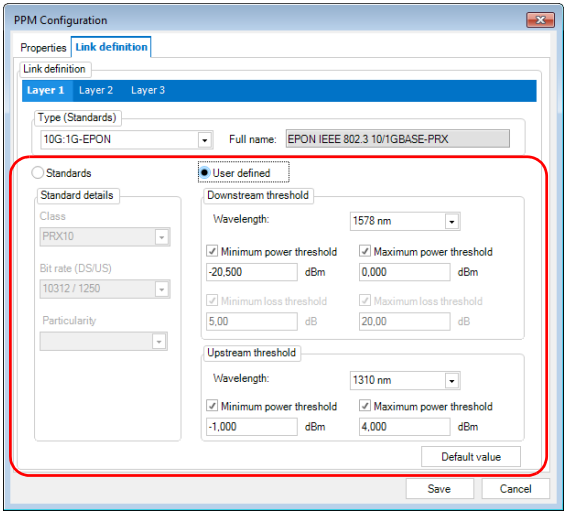
8a. Select the standard to use for your test. The list of available standards will vary according to the information you have selected in the **Properties** tab.



8b. Enter the details related to the tests.

The standards section lets you use the drop-down lists to enter the information.

The user-defined section lets you select the upstream and downstream wavelengths, plus add thresholds if you have entered power or loss as the measurement type.



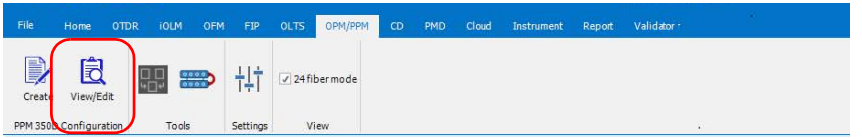
9. If needed, repeat step 8 for the two other layer tabs.

10. Once you are done, click **Save** to store the configuration file.

11. Select the location for your file, then click **Save** to confirm your choice.

To view or edit a configuration file:

1. If you have not done so already, select the **OPM** tab.
2. Under **PPM-350D Configuration**, select **View/Edit**.



3. Select which configuration file you want to edit, then click **Open**.
4. Change the test configuration as needed. You can change anything except for the name of the configuration. Once you are done, click **Save**.

Creating 24 fiber test measurement

You can merge a set of two 12 fibers test measurements as if tested as a 24 fiber test and analyze the behavior of it as a single test. For example, if you have tested a 24 fiber cable with 12 fiber type connector, the first 12 fibers in one time and remaining 12 fibers afterwards, these two test measurement files can be merged together using this feature and save it as a single 24 fiber test measurement file.

IMPORTANT

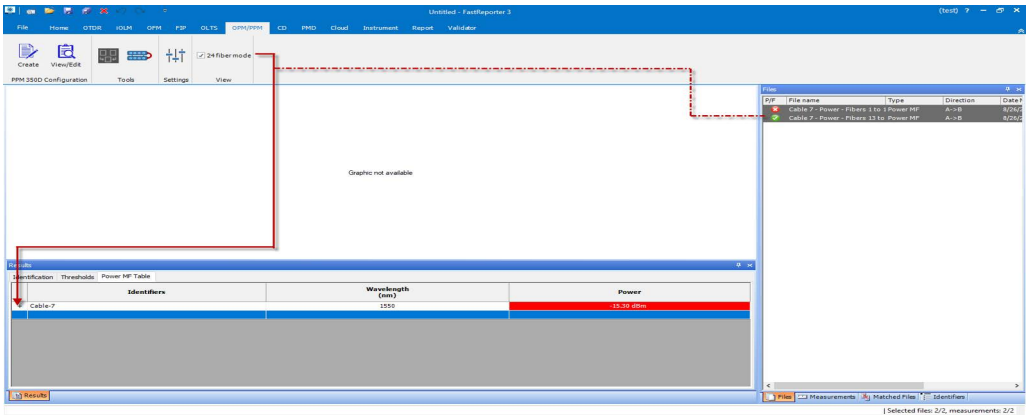
The two test measurement files selected should have the same Wavelength, Thresholds, and Fiber Layout.

How to create a 24 fiber test measurement

You can select two loss or a power test measurements to use this feature.

To create a 24 fiber test measurement:

1. Select two separate 12 fiber test measurements (two power files).



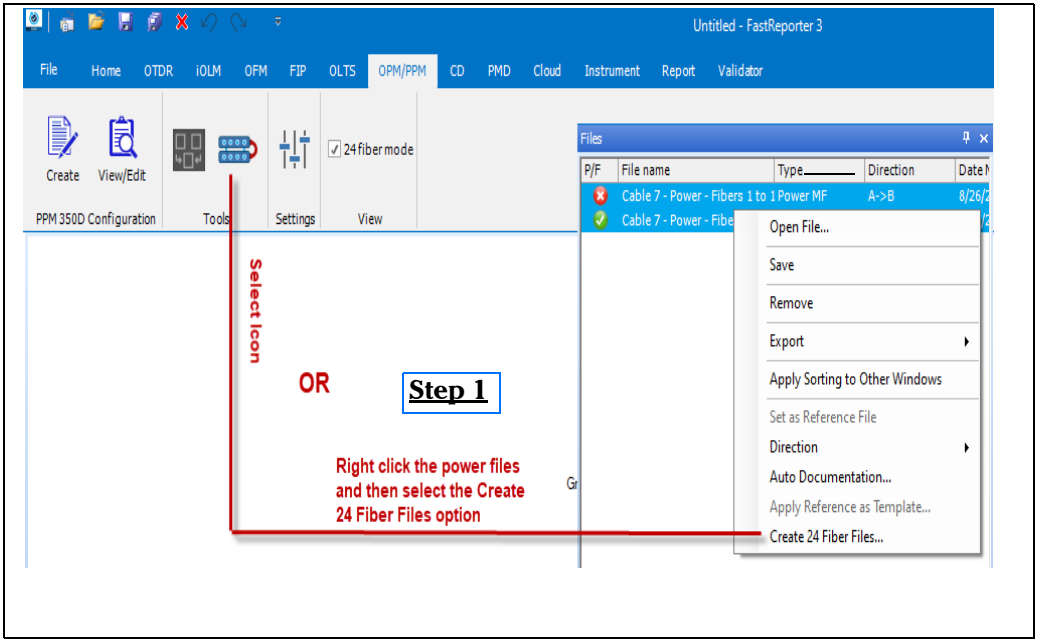
2. Select the **24 fiber mode** option if not already selected.
   The two 12 fiber test measurements will now show the details as a single 24 fiber test measurement.

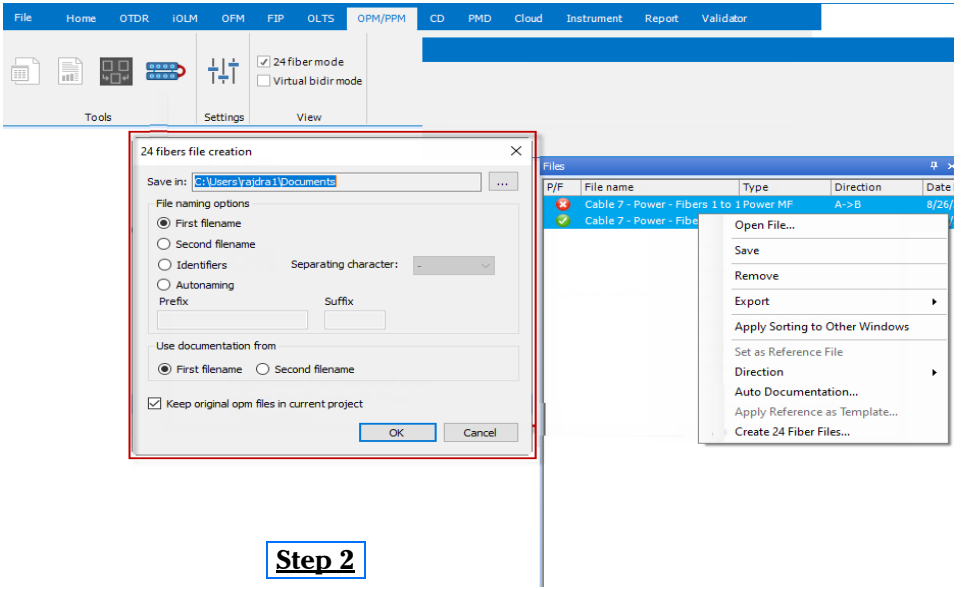
Note: *Expand the + icon to see the detailed information of this 24 fiber test measurement.*

Saving the created 24 fiber test measurement

You can save the created 24 fiber test measurement as a single file and analyze it accordingly.

To save the created 24 fiber test measurement:





Step 2

Select the saving location and other options, and then select **OK** to save the file. The saved file can now be opened as a single 24 fiber file.

11 Working with CD Files

Accepted File Formats

FastReporter 3 lets you work with measurement files saved in different formats, but does not necessarily permit all operations on them.

File Format	File Extension	Display	Modification
EXFO CD (FTB-5800 modules)	.exfocd	✔	✔
CDPMD (FTB-5700 modules)	.cdpmd	✔	✔

Note: *The .cdpmd file may also contain fiber length and PMD information.*

Note: *When you modify information or data that is common to both CD and PMD formats in .cdpmd files, the contents is automatically updated in both measurement types.*

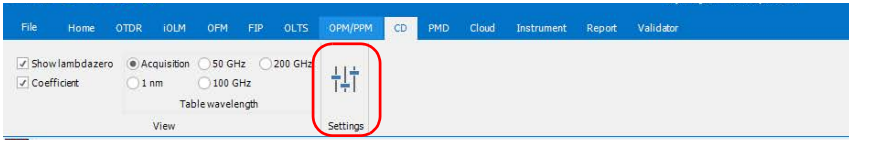
Changing CD Settings

The pass/fail thresholds that you set for CD projects are displayed on the **Summary** tab in the **Results** window. Should you need to change the wavelength measurement range for analysis purposes, this is also done in the **Summary** tab.

The dispersion thresholds are applied on the maximum dispersion for the measurement file and on each dispersion value of the CD table.

To change CD settings:

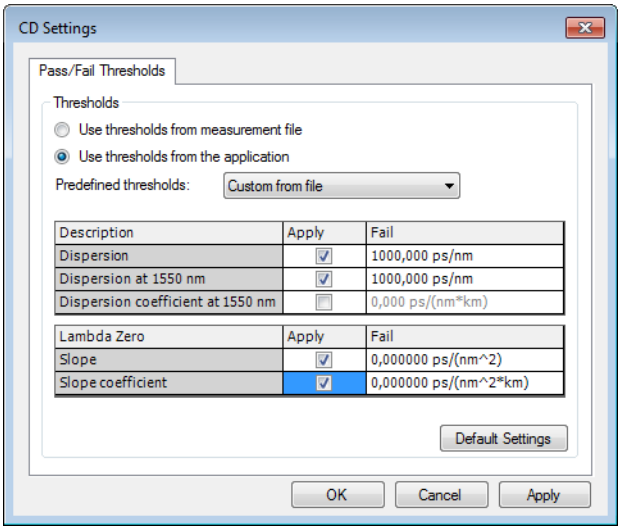
1. On the ribbon, select the **CD** tab if it is not selected already.
2. Select the **Settings** menu.
3. If you have not done so already, select the **CD** ribbon tab.
4. Select **Settings**.



5. Select the type of threshold to use for your analysis, either from the measurement file itself or from a list of predetermined thresholds.

   ➤ The threshold from the measurement file is the one that was used during the actual CD test. When you select this threshold, you cannot modify the values in the threshold table.

   ➤ The threshold from the application is a threshold set by FastReporter 3, which you can select and modify.

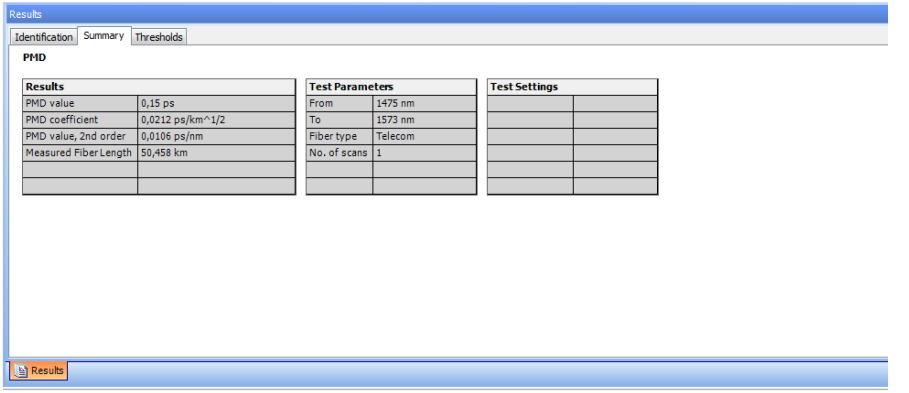


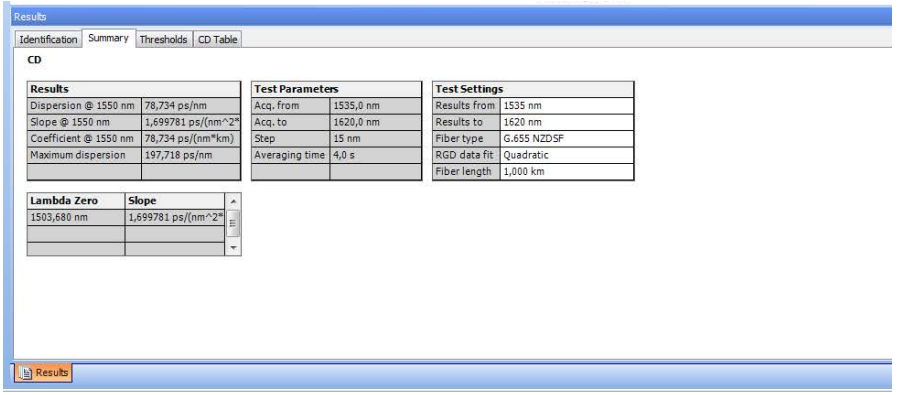
6. Modify the displayed values as needed. The **Apply** option must be enabled for the values to be active and modifiable.

7. To apply the changes without closing the dialog box, click **Apply**. To apply the changes and close the dialog box, click **OK**.

The thresholds are displayed in the main window, in the **Summary** tab, under **Results**. If some values failed the test, they will appear clearly in red.

Note: *The first figure illustrates the display for a .cdpmd file, and the second for an .exfocd file.*

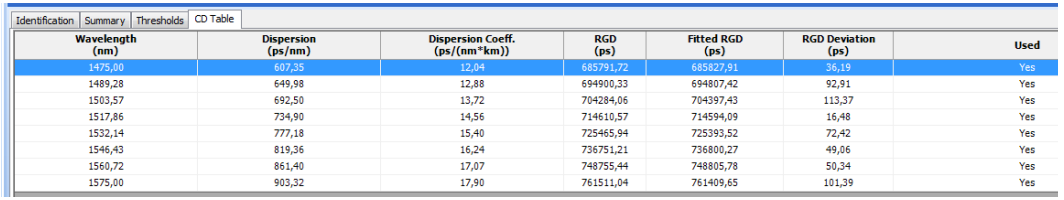




You can view the details for your measurement file in the **CD Table** tab. Depending on the type of CD measurement file you are viewing (.exfocd or .cdpmd), the available information differs. Any failed measurement will also show in this tab.

Note: *RGD measurements are only available in .exfocd files.*

Note: *If you do not see the **CD Table** tab, make sure you have selected only one measurement in the list.*

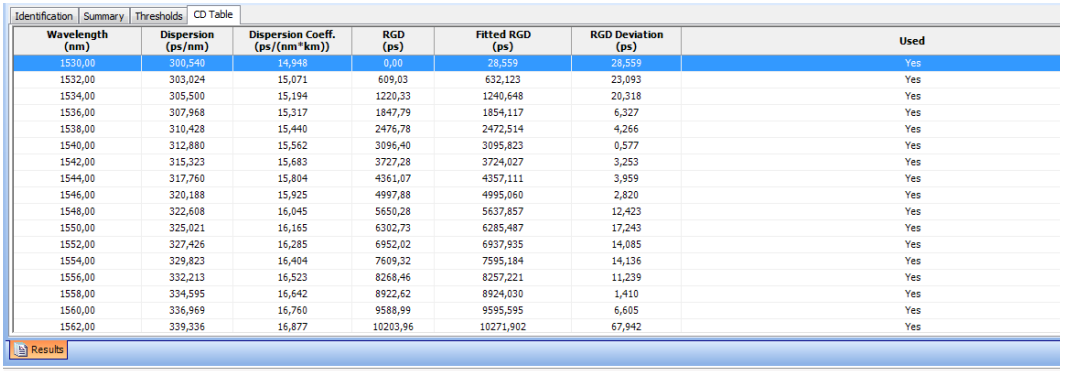


Identification | Summary | Thresholds | CD Table

Wavelength (nm)	Dispersion (ps/nm)	Dispersion Coeff. (ps/(nm*km))	RGD (ps)	Fitted RGD (ps)	RGD Deviation (ps)	Used
1475,00	607,35	12,04	685791,72	685827,91	36,19	Yes
1489,28	649,98	12,88	694900,33	694807,42	92,91	Yes
1503,57	692,50	13,72	704284,06	704397,43	113,37	Yes
1517,86	734,90	14,56	714610,57	714594,09	16,48	Yes
1532,14	777,18	15,40	725465,94	725393,52	72,42	Yes
1546,43	819,36	16,24	736751,21	736800,27	49,06	Yes
1560,72	861,40	17,07	748755,44	748805,78	50,34	Yes
1575,00	903,32	17,90	761511,04	761409,65	101,39	Yes

.cdpmd file

.exfocd file



Identification | Summary | Thresholds | CD Table

Wavelength (nm)	Dispersion (ps/nm)	Dispersion Coeff. (ps/(nm*km))	RGD (ps)	Fitted RGD (ps)	RGD Deviation (ps)	Used
1530,00	300,540	14,948	0,00	28,559	28,559	Yes
1532,00	303,024	15,071	609,03	632,123	23,093	Yes
1534,00	305,500	15,194	1220,33	1240,648	20,318	Yes
1536,00	307,968	15,317	1847,79	1854,117	6,327	Yes
1538,00	310,428	15,440	2476,78	2472,514	4,266	Yes
1540,00	312,880	15,562	3096,40	3095,823	0,577	Yes
1542,00	315,323	15,683	3727,28	3724,027	3,253	Yes
1544,00	317,760	15,804	4361,07	4357,111	3,959	Yes
1546,00	320,188	15,925	4997,88	4995,060	2,820	Yes
1548,00	322,608	16,045	5650,28	5637,857	12,423	Yes
1550,00	325,021	16,165	6302,73	6285,487	17,243	Yes
1552,00	327,426	16,285	6952,02	6937,935	14,085	Yes
1554,00	329,823	16,404	7609,32	7595,184	14,136	Yes
1556,00	332,213	16,523	8268,46	8257,221	11,239	Yes
1558,00	334,595	16,642	8922,62	8924,030	1,410	Yes
1560,00	336,969	16,760	9588,99	9595,595	6,605	Yes
1562,00	339,336	16,877	10203,96	10271,902	67,942	Yes

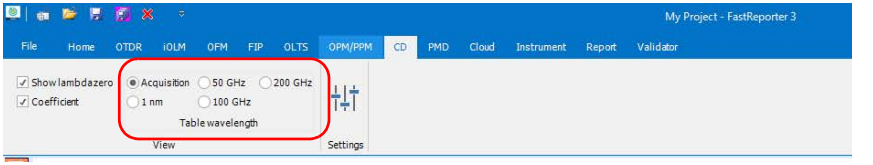
Results

It is possible for you to change the table wavelength, that is the way to calculate the table according to the Results from and Results to values. You can select from the table wavelength values below.

- 1 nm (Results range with a step of 1 nm in-between values)
- 50 GHz
- 100 GHz
- 200 GHz
- From the acquisition

To change the table wavelength:

1. From the ribbon, select the **CD** tab if it is not selected already.
2. In the **Table Wavelength** list, select the value you want to use.



If a file is open already, the values are automatically updated.

Changing CD Fiber Type

FastReporter 3 allows you to analyze various fiber types for chromatic dispersion.

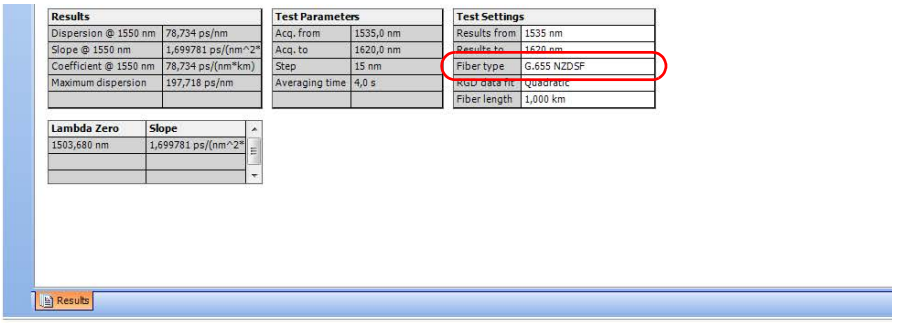
To change the CD fiber type:

1. Open a CD measurement file.
2. Select the measurement or measurements for which you want to change the fiber type.
3. In the main window, select the **Summary** tab.

4. Select the fiber type according to your needs in the **Fiber Type** box:

- G.652 NDSF (3-term Sellmeier fit)
- G.653 DSF (quadratic fit)
- G.655 NZDSF (quadratic fit)
- G.656 Wideband NZDSF (quadratic fit)
- Compensating (quadratic fit)
- Flattened (cubic fit)
- Amplified Links (cubic fit)
- Custom (default cubic fit)

Note: *When you select a different fiber type, the fit is automatically changed to match the default fit value for this new fiber type. However, you can change this new fit type as desired in the corresponding list.*

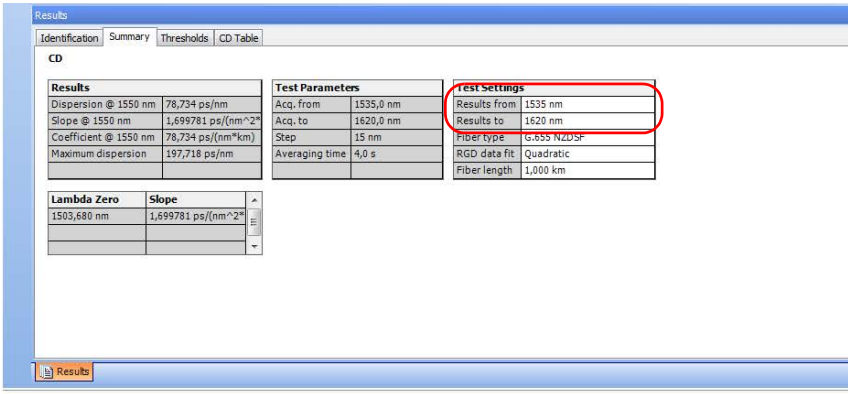


Changing Analysis Range

The range used for taking the measurement and the range used for analyzing the results can be different if you want to concentrate your analysis on a specific area. You can change it for both types of CD files.

To change the analysis range (results from and results to values):

1. Open a CD measurement file.
2. Select the measurement or measurements for which you want to change the analysis range.
3. In the main window, select the **Summary** tab.
4. In the **Results from** and **Results to** boxes, change the wavelength range values as needed for your analysis.

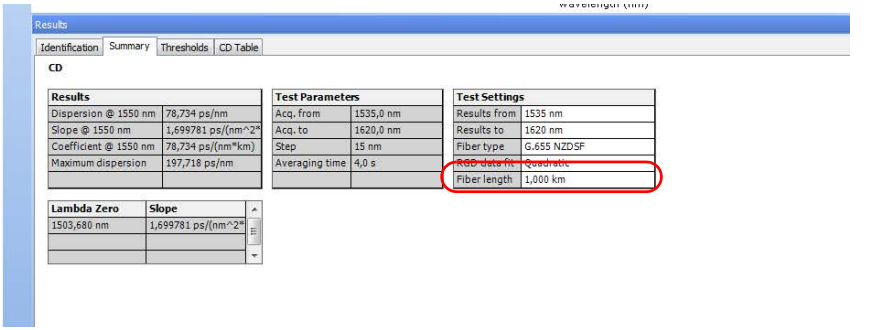


Changing the Fiber Length

If you are working with an .exfocd format file, you can change the fiber length to obtain more precision in your analysis.

To change the fiber length:

1. Open a CD measurement file.
2. Select the measurement or measurements for which you want to change the fiber length.
3. In the main window, select the **Summary** tab.
4. In the **Fiber Length** box, enter a new value for the analysis.



Note: *If your file is in .cdpmd format, the fiber length was measured automatically during the measurement and cannot be edited.*

Switching Between Curve Types

If you have a specified fiber length in your CD file, you can view either the chromatic dispersion or the chromatic dispersion coefficient curves.

To switch between the coefficient and dispersion curves:

1. From the ribbon, select the **CD** tab if it is not selected already.
2. Under **View**, select the **Coefficient** option.

The table values in the **Summary** tab are updated automatically.

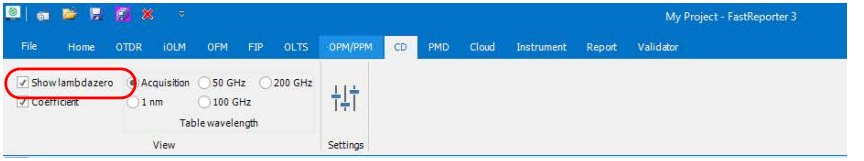
Showing the Zero-Dispersion Wavelength

The zero-dispersion wavelength (where dispersion is at zero) corresponds to the wavelength point at which the fiber under test reaches its maximum bandwidth. The slope from this zero-dispersion point indicates how fast dispersion rises as wavelength increases. Key chromatic dispersion parameters are the dispersion zero and the slope at zero dispersion.

You can display the zero-dispersion wavelength on your files. It will appear in a table under the **Summary tab.**

To display the zero-dispersion wavelength table:

1. From the ribbon, select the **CD** tab if it is not selected already.
2. Select the **Show Lambda Zero** option.



12 Working with PMD Files

Accepted File Formats

FastReporter 3 lets you work with measurement files saved in different formats, but does not necessarily permit all operations on them.

File Format	File Extension	Display	Modification
PMD (FTB-5500 modules)	.pmd	✔	✔
PMDB (FTB-5500 modules)	.pmdb	✔	✔
CDPMD (FTB-5700 modules)	.cdpmd	✔	✔

Note: *The 64-bit version of FastReporter 3 does not support the .pmd and .pmdb file formats. Install the 32-bit version to view and process those files.*

Note: *The .cdpmd file may also contain fiber length and CD information.*

Note: *When you modify information or data that is common to both CD and PMD formats in .cdpmd files, the contents is automatically updated in both measurement types.*

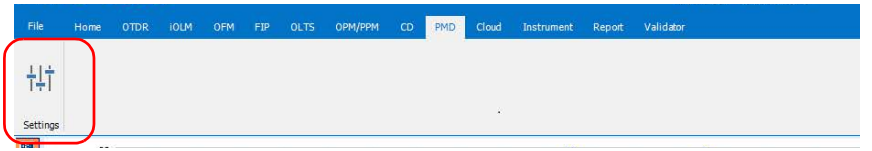
Changing PMD Settings

You can change the thresholds you want to use for the analysis:

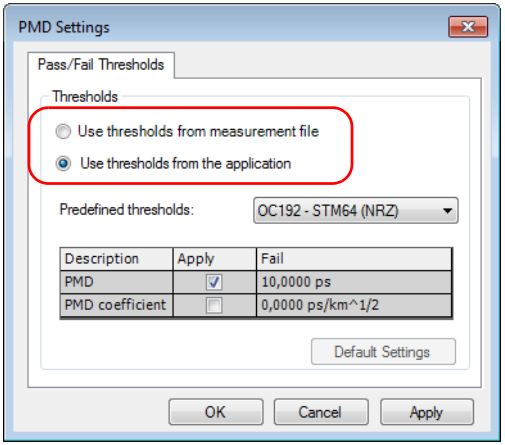
- The threshold from the measurement file is the one that was used during the actual PMD test. When you select this threshold, you cannot modify the values in the threshold table.
- The threshold from the application is a threshold set by FastReporter 3, which you can select and modify.

To change PMD settings:

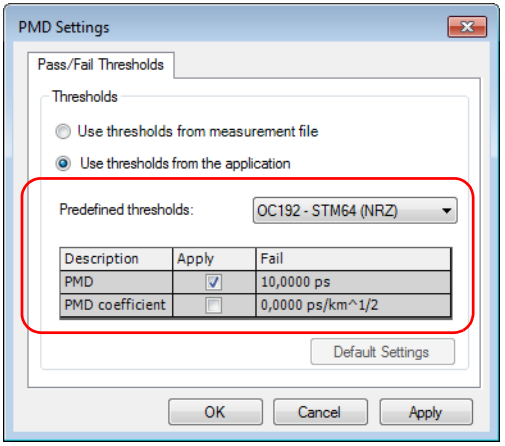
1. On the ribbon, select the **PMD** tab if it is not selected already.
2. Select the **Settings** menu.



3. Select the type of threshold to use for your analysis.



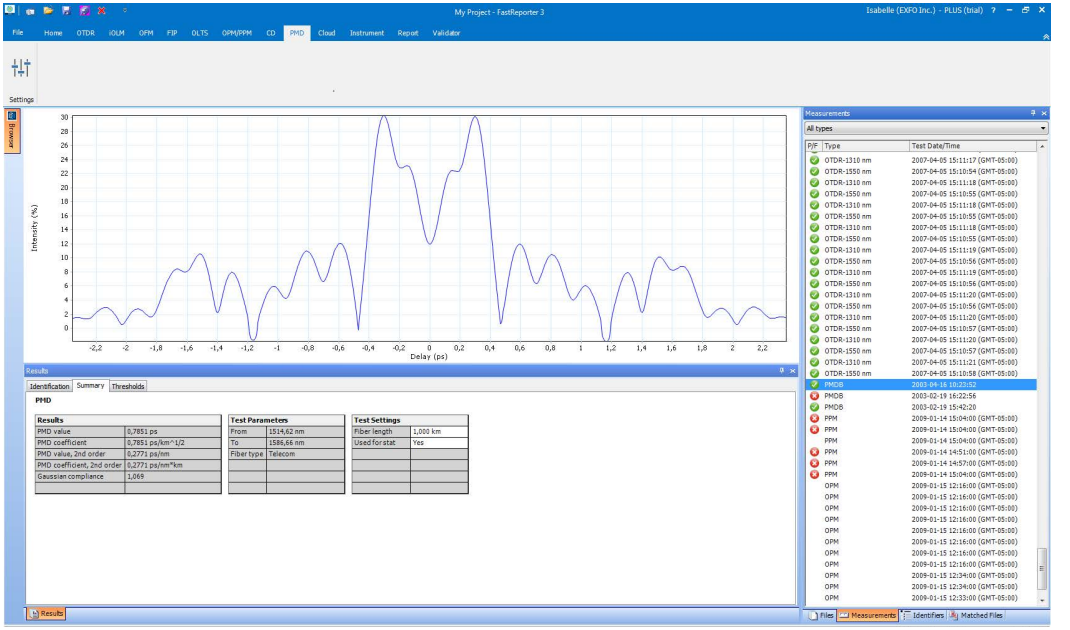
4. Modify the displayed values as needed if you selected to use a threshold from the application. The **Apply** option must be enabled for the values to be active and modifiable.



5. To apply the changes without closing the dialog box, click **Apply**. To apply the changes and close the dialog box, click **OK**.

The thresholds are displayed in the main window, in the **Summary** tab, under **Results**.

Note: *If some values failed the test, they will appear clearly in red.*



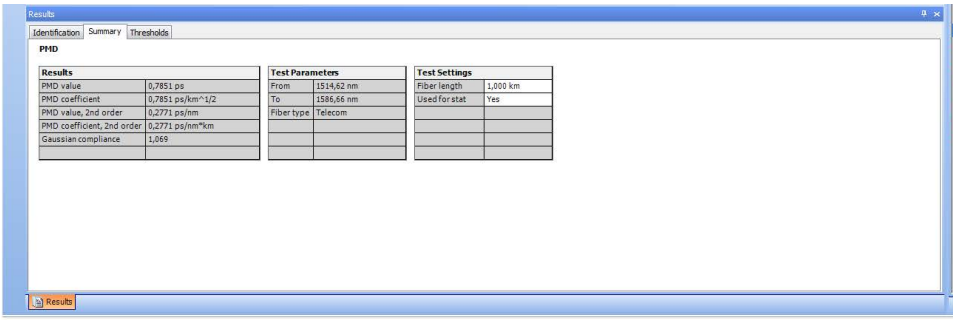
Note: *The .cdpmd files do not display a graph for the PMD measurement.*

Changing Fiber Length

If you are working with .pmd or .pmdb files, you can change the fiber length to obtain more precision in your analysis.

To change the fiber length:

1. Open a PMD measurement file.
2. Select the measurement or measurements for which you want to change the fiber length.
3. In the main window, select the **Summary** tab.



4. Locate the fiber length value under **Test Settings** and modify it as needed.

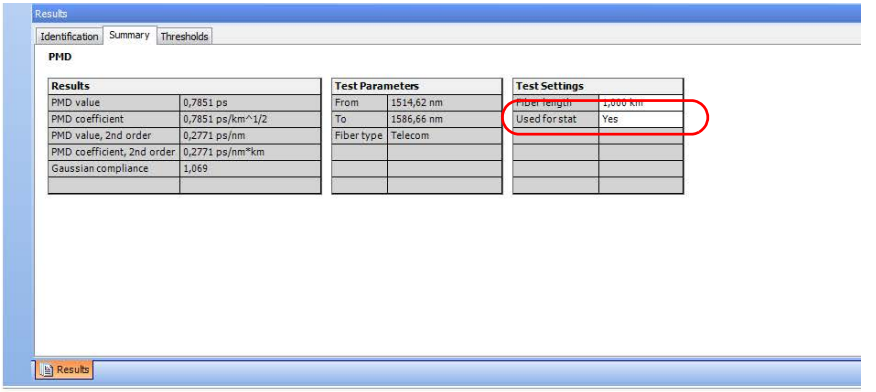
Note: *If your file is in .cdpmd format, the fiber length was measured automatically during the measurement and cannot be edited.*

Working with PMD Statistic Measurements

When selecting more than one PMD measurements on a same file, the **Statistics** tab appears. This tab can be used to see average values for the measurements.

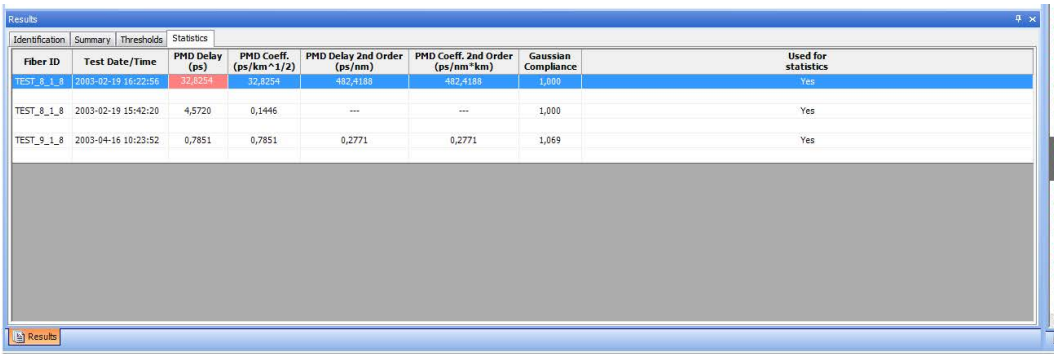
To exclude a measurement from the statistic values:

1. Open a PMD measurement file.
2. Select the measurement or measurements that you want to exclude from the statistics values.
3. In the main window, select the **Summary** tab.
4. Set the measurements as *not* used for the statistics under **Test Settings**.



To view PMD measurement statistics:

1. Open a .pmdb measurement file.
2. Select more than one measurement to make the tab appear.
3. In the main window, select the **Statistics** tab.



13 Using Instruments (For PC Only)

You can directly connect the instrument and download the test measurements from the executed jobs (Local Jobs). The instrument (testing device) connected should be rescanned whenever the new test measurement files need to be downloaded. Only the new files will be downloaded and the previously downloaded files will be retained on your system.

Note: *For now, only the measurement files for the local jobs form the FIP-500 testing device are supported.*

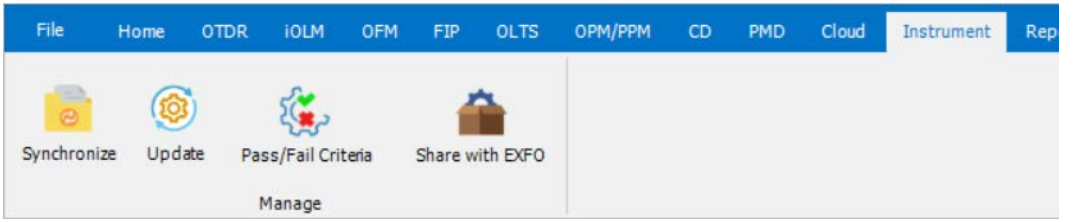
Note: *While disconnecting devices, follow Windows standard practices for the safety of your device and data.*

Viewing and Modifying the local test measurements

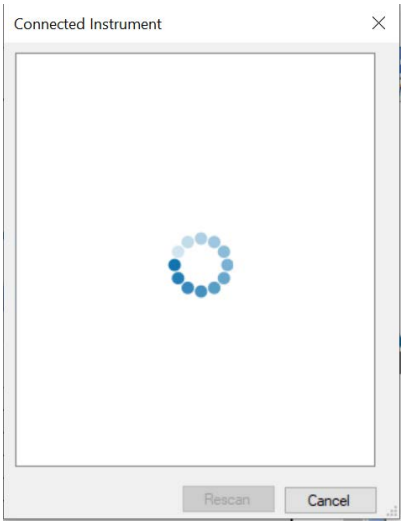
The test measurement files for the local jobs can be opened and modified accordingly.

To fetch (download) the test measurements from the local jobs:

1. Connect the instrument to your system.
2. Select the **Instrument** menu, and then select the **Synchronize** sub-menu.



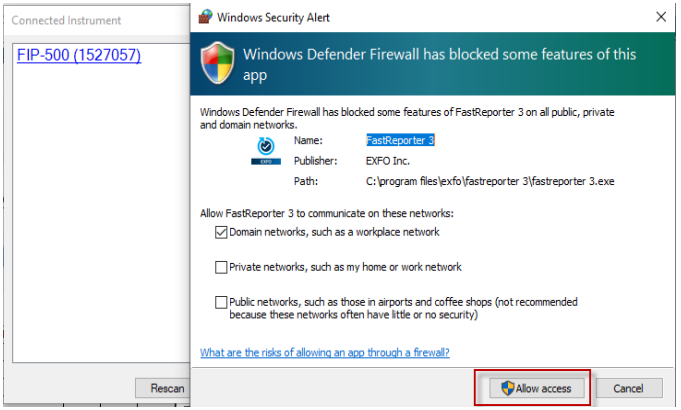
3. The instrument connected will be scanned, searched to connect and synchronize with the FastReporter 3.



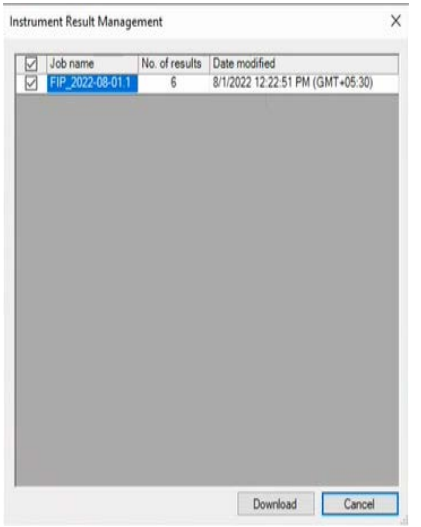
4. The connected devices to your system will be displayed once detected. Select the required testing device.

Note: *Select **Rescan** button if the device is not found or to fetch the latest data.*

5. Your system's firewall blocks the access of your testing device at your first connection attempt. Select **Allow access** to communicate it with the FastReporter 3 application and add as a trusted device. Skip this step if not asked.

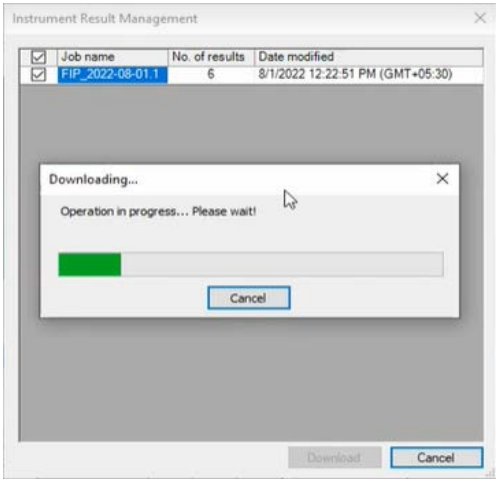


6. Once connected, the Job name and the number of test measurements available will be displayed for the selected device.

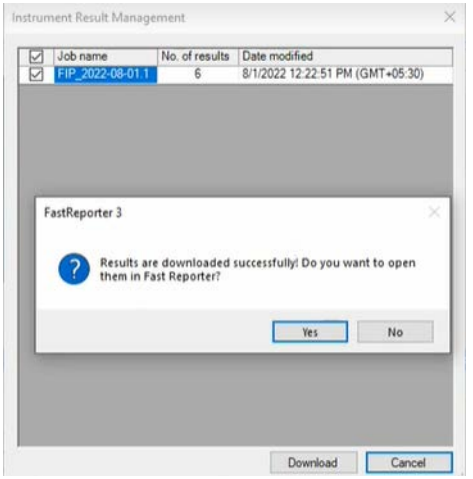


7. Select the required job or select multiple jobs, and then select the Download button. The selected jobs will be downloaded.

Once downloaded, a message appears to confirm opening the



downloaded files for modification, select **Yes** to open and modify the test measurements now. The files opened then can be modified and saved.



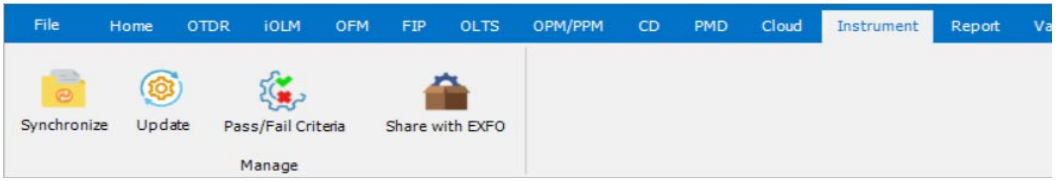
Note: *If you want to save the modified files, use **Save As** menu to save the file with different file name or at a different location. You cannot save the measurement files of the local jobs with the same file name.*

Updating the connected testing devices

You can update the connected testing device if the update is available for the device. You can do this by connecting it to the server or from your local system if the system image package is available on your system. You can use the advanced update to update the devices with a specific version or to update from the system file if available locally.

To update the testing devices (default):

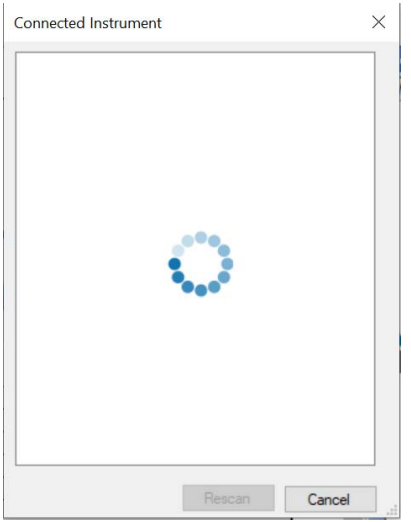
1. Connect the instrument to your system.
2. Select the **Instrument** menu, and then select the **Update** sub-menu.



The device connected will be scanned and searched. The connected devices to your system will be displayed once detected.

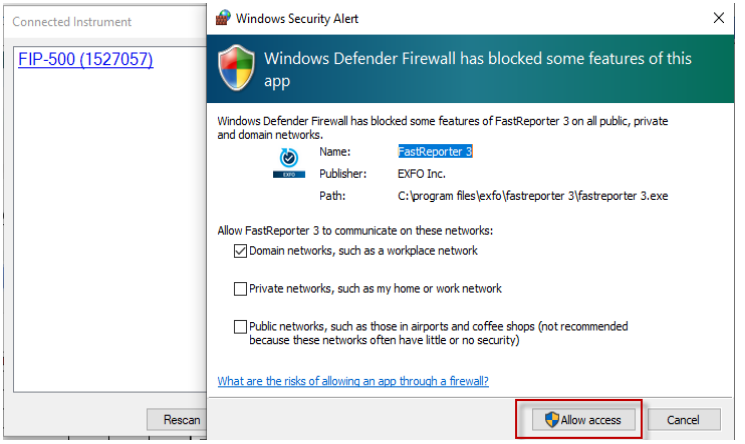
Note: *Select **Rescan** button if the device is not found.*

Select the device.

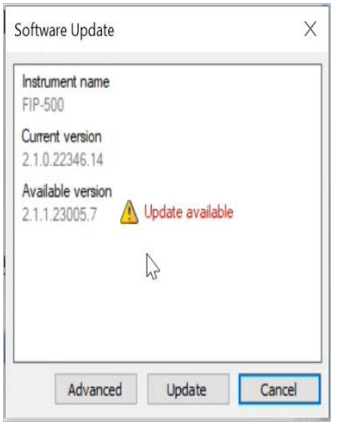


3. Select the required testing device.

4. Your system's firewall blocks the access of your testing device at your first connection attempt. Select **Allow access** to communicate it with the FastReporter 3 application and add as a trusted device. Skip this step if not asked.



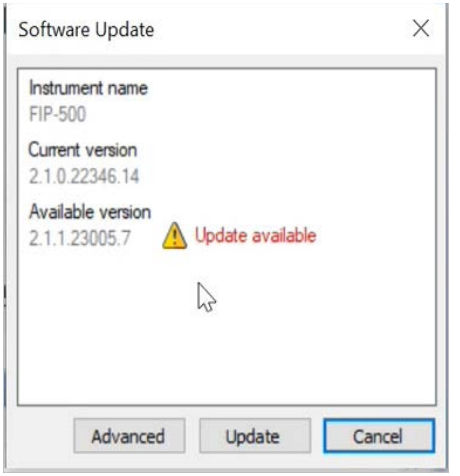
5. Once connected and if the update is available for the selected device, it will be notified with the detailed information.



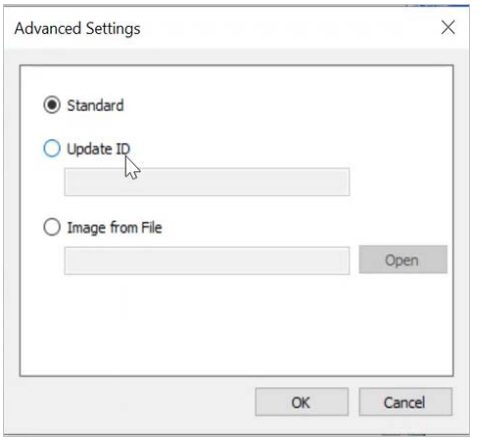
6. Select the update button for default update.
   The device restarts after updating the required version.

To update the testing device (advanced):

1. Select the **Advanced** button from the software update screen.



2. You can proceed with various options as required:



- **Standard** option, select this option to have the default Update which updates the device with the latest version available for the device. Select the **OK** button after selecting the **Standard** option.
- **Update ID** option, select this option if you want to update the device with a specific or precise version of the software. For this you should have the update ID. select this option, enter the required **Update ID** pin, and then select the **OK** button.
- **Image from file** option, select this option if you want to update the device using the system image file (lib file) if available on your system. Select this option, browse the file by selecting the **Open** button, and then select the **OK** button.

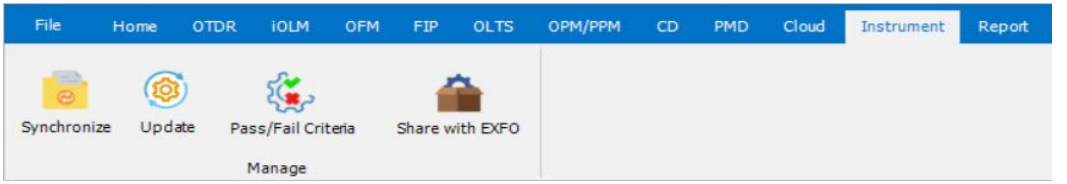
Note: *After updating the device, it will restart to apply the changes.*

Managing the Pass/Fail Criteria (Threshold Management) file (For FIP-500 only)

You can delete/download/upload the threshold management file having the pass/fail criteria from the selected device.

To Delete/Download/Upload the threshold management file from the device:

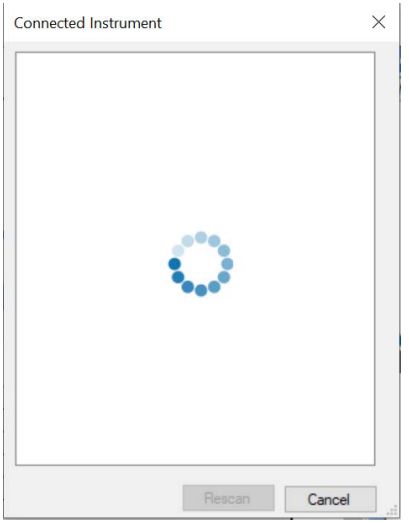
1. Connect the testing device to your system.
2. Select the **Instrument** menu, and then select the **Pass/Fail Criteria** sub-menu.



The device connected will be scanned and searched. The connected devices to your system will be displayed once detected.

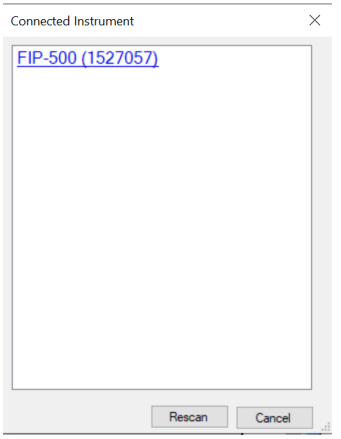
Note: *Select **Rescan** button if the device is not found.*

Select the device.

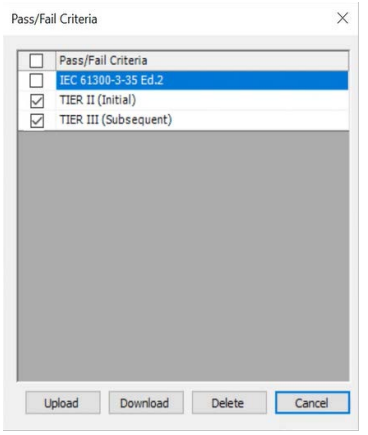


3. Select the required testing device.
The list Pass/Fail Criteria -Threshold Management files available on the device appears.

Note: *Accept and allow the Firewall setting to unblock the connection restriction if asked.*



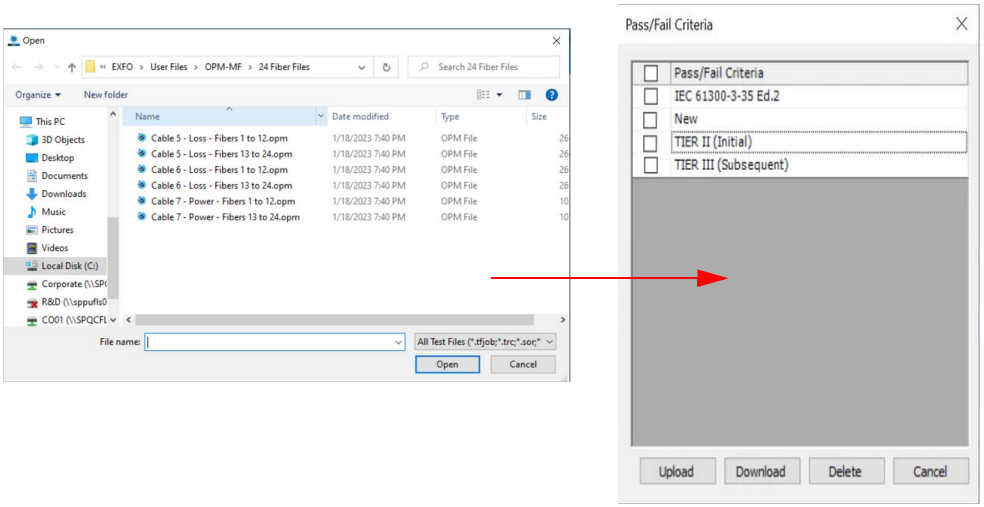
4. Select the check-box associated with the Pass/Fail Criteria -Threshold Management file and then select the required button accordingly.



➤ The **Delete** button, deletes the selected files from the device.

➤ The **Download** button, downloads the selected files to your system.

➤ The **Upload** button, will ask you to browse the new Pass/Fail Criteria -Threshold Management file from your system. The selected file uploads to the device.

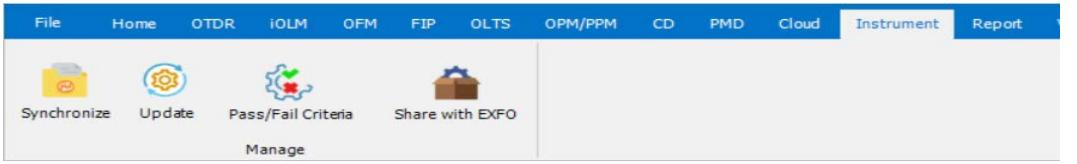


Sharing files with EXFO (For FIP-500 only)

You can download the required files and share them (through email) with EXFO. The files downloaded can be attached as references to your queries. For example, the log file of activities to troubleshoot, or a test files which have conflictsor undesired results. etc.

To Download the files from the device:

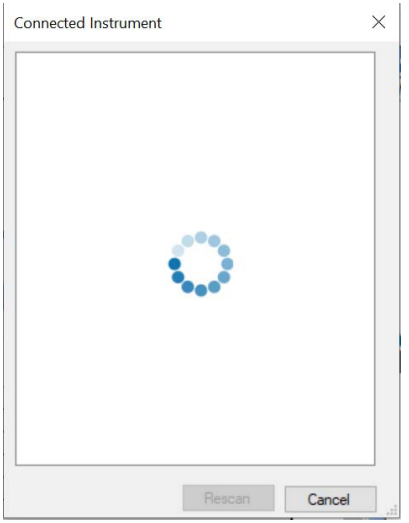
1. Connect the testing device to your system.
2. Select the **Instrument** menu, and then select the **Share with EXFO** sub-menu.



The device connected will be scanned and searched. The connected devices to your system will be displayed once detected.

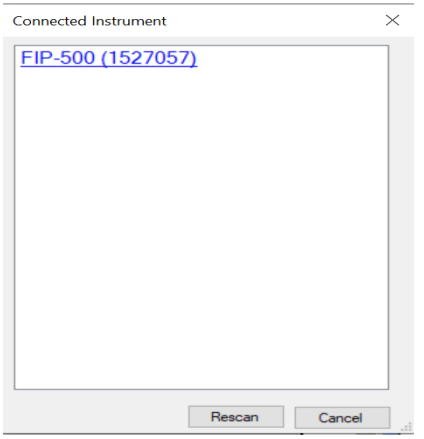
Note: *Select **Rescan** button if the device is not found.*

Select the device.

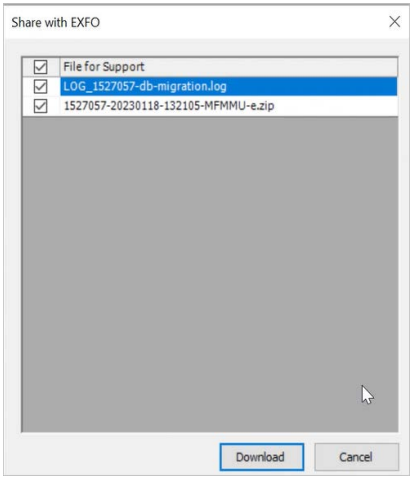


3. Select the required testing device.
   The list of files available on the device appears.

Note: *Accept and allow the Firewall setting to unblock the connection restriction if asked.*



4. Select the check-box associated with the file and then select the **Download** button.



The files downloaded can be shared with EXFO through e-mail.

14 Generating Reports

FastReporter 3 can print and generate thee types of reports:

- *Measurement report:* This type of report contains one measurement type and one measurement at a time.
- *Summary report:* This type of report combines different measurements or several measurements of the same type.
- Reports as they are presented when using the OTDR, iOLM, OLTS and FIP applications.

The following options are included in measurement and summary reports:

Property or Element	Option
Tools properties	Distance units
OTDR properties	Pulse baseline Events calculation and thresholds Numeric values precision Pass/Fail thresholds Macrobend tolerances
OPM, PPM, iOLM, OLTS, FIP, CD, and PMD properties	Pass/Fail thresholds
Data graph	Zoom

If you want to include other options in a report, you must modify the associated report template. For more details, see *Using Excel Report Templates* on page 453.

For examples of the reports that you can generate with FastReporter 3, see *Report Samples* on page 466.

Generating Measurement or Summary Reports (Plus Mode)

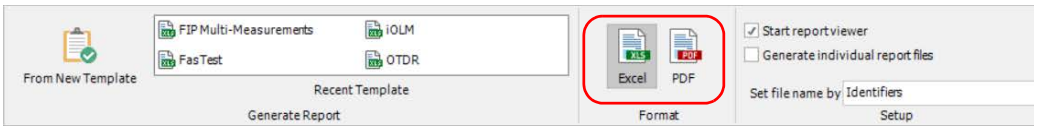
You can easily generate a variety of reports in the following formats:

File Type	Application
*.xls, *.xlsx, *.xlsm	Microsoft Excel
*.pdf	Adobe Reader

You can select in a list of available types of reports. Those you have used last will be displayed in the shortcut window for quicker access.

To set up the report format:

1. If you have not done already, select the **Report** ribbon tab.
2. Under **Format**, select which type of report output you want.



3. Under **Setup**, select whether you want to start the application linked with the report format or if you want to generate separate report files for each measurement. In that case, the linked viewer will not open.

4. Indicate what will be used for the file name of the report in the list of available choices.

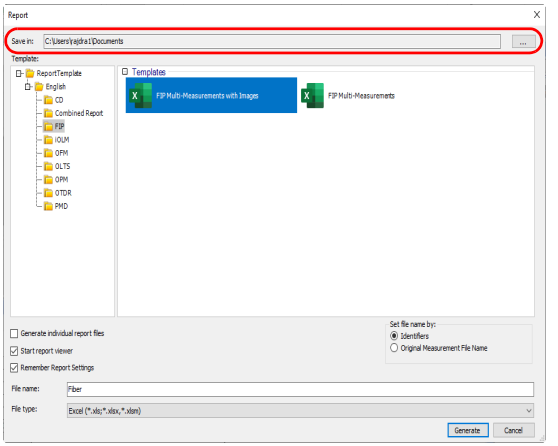
To generate a report using the shortcut menu:

From the **Report** ribbon tab, select one of the types in the list. The report is created using the settings you have selected.

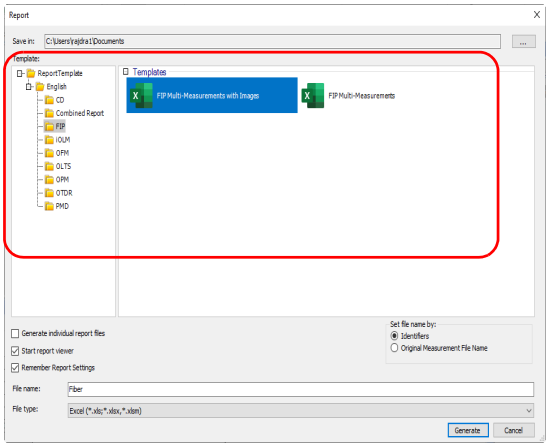
To generate other types of reports:

1. Select measurements or files in the **Measurements** or **Files** tabs.
2. If you have not done so already, select the **Report** ribbon tab.
3. Under **Select and Favorite Reports**, click **Select**.

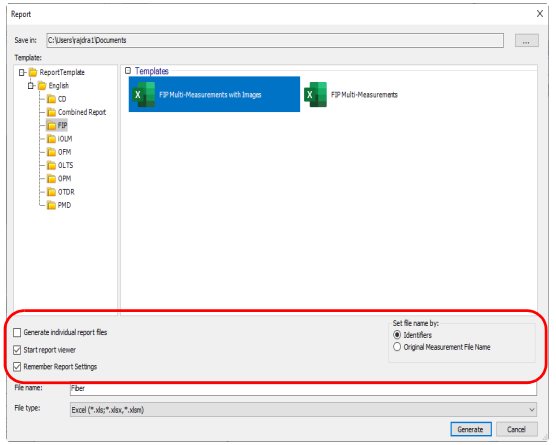
4. If needed, select the location where to save the report.



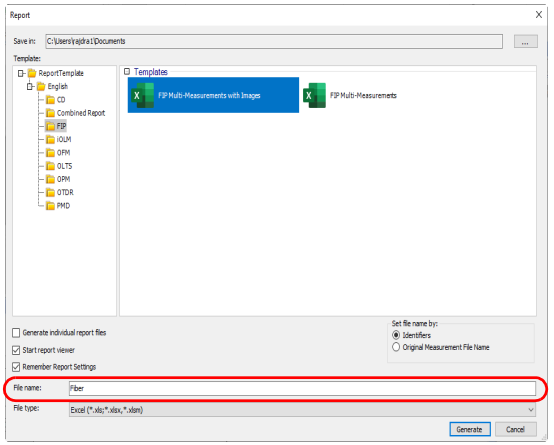
5. Select a report template.



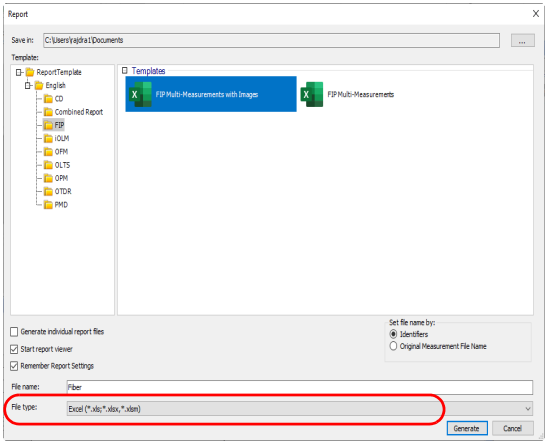
6. The report settings are the same that you have selected on the ribbon tab, but you can modify them as needed.
You can select the **Remember Report Setting** option if required. This will remember all your settings for your next sessions.



7. Enter a name for the report.



8. In the **File Type** list, select whether you want to save the report as a PDF, or Excel file.



Note: *The templates that appear for selection are relevant to the selected file types.*

IMPORTANT

You should always enable macros in Microsoft Excel before generating the report in that format. Refer to the Excel help for information on how to enable macros.

9. Click **OK**.

Note: *The application retains the file type selection, the location of report saving folder, and the selected report template for your further sessions.*

Generating Individual Test Reports

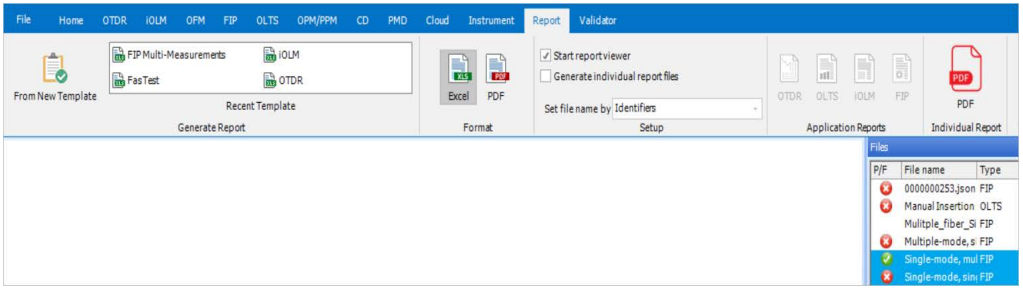
You can create the individual test reports for the selected files.

Note: *If multiple files are selected for the individual reports, all selected files should be of the same file type.*

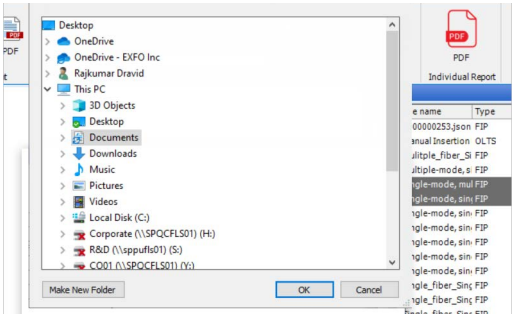
Note: *The individual report generation is not supported for the TestFlow Jobs for now.*

To generate the individual test reports

1. In the **Reports** menu, select the test measurement file or multiple test measurements and then select the **PDF Individual Report** menu.



2. Select the location to save the reports, make a new folder if required, and then select **OK**.


Desktop
OneDrive
OneDrive - EXFO Inc
Rajkumar Dravid
This PC
3D Objects
Desktop
Documents
Downloads
Music
Pictures
Videos
Local Disk (C:)
Corporate (\\SPQCFLS01) (H:)
R&D (\\sppufls01) (S:)
Make New Folder
OK
Cancel
PDF
Individual Report
e name
Type

Generating Application-Related Reports

Generating reports such as you would see on the OTDR, iOLM, OLTS and FIP applications is done in a similar manner. The reports can be generated in PDF, XML or MHTML formats.

Note: *OLTS reports are available in PDF format only.*

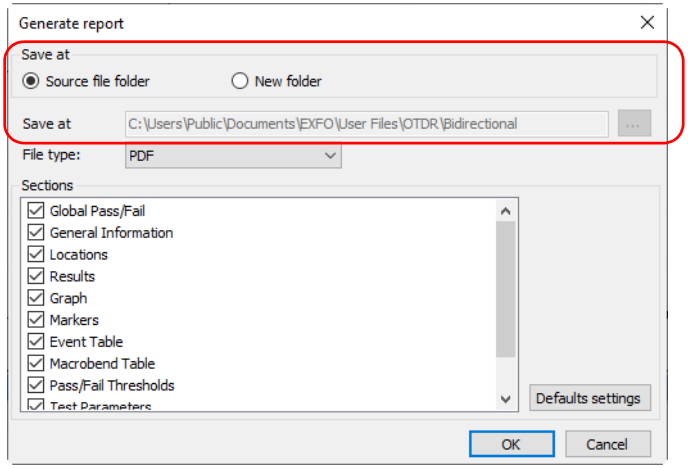
To generate an application-related report:

1. From the main window, select the ribbon tab corresponding to the application you want to use, **OTDR**, **iOLM, OLTS** or **FIP,** then under **Tools**, click their relative **Generate Application Report**.

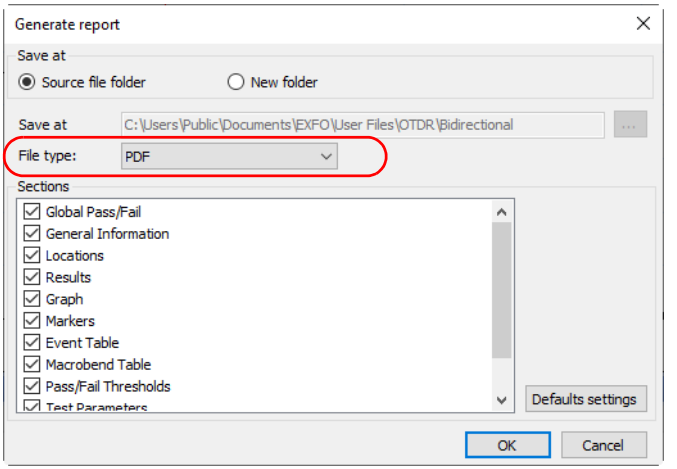
   OR

   Select the **Report** ribbon tab, then under **Application Reports**, select the one you want to use.

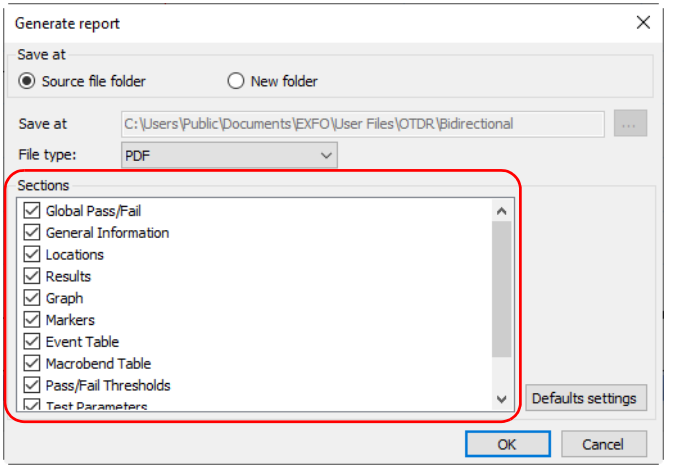
2. Select whether you want to put the report in the same location as the source files, or select a new location.



3. Select the format you want to use to generate the report.



4. Select the items to include in the report. The list of available items will vary depending on the application you have selected.



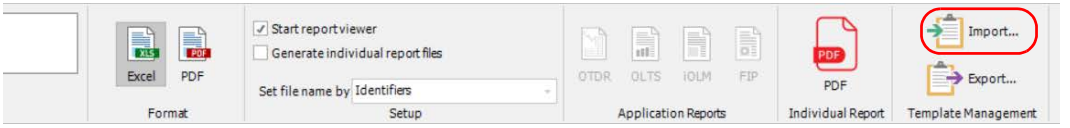
5. Click **OK** to generate the report.

Importing and Exporting Templates

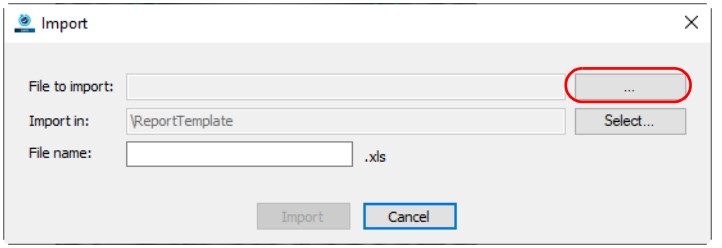
You can import existing templates you have elsewhere, or export them to other locations easily.

To import a template:

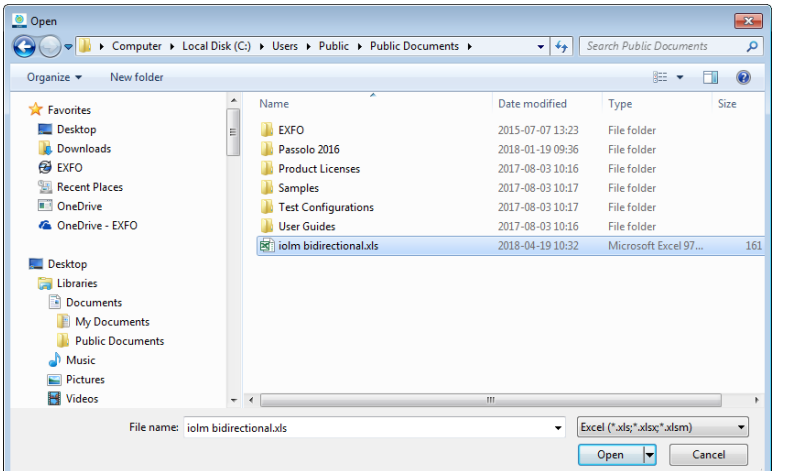
1. Select the **Report** ribbon tab.
2. Under **Management**, select **Import**.



3. Click [...] to access the file location.

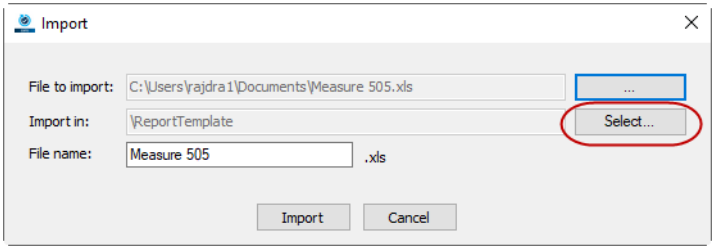


4. Browse to the current location of the template, then select it.
You may have to change the file filter at the bottom of the window to see the appropriate format.

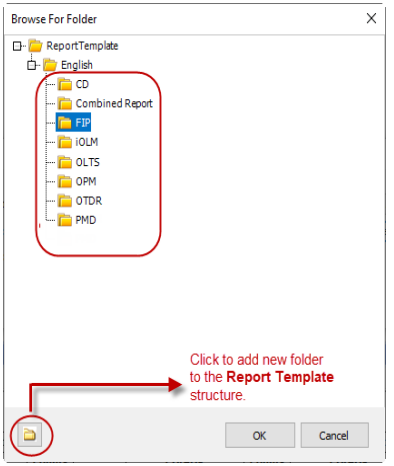


5. Click **Open**.
The path of the template file to be imported is added.

6. To add the browsed template to your applications specific template location, click **Select** associated with the **Import in** label.

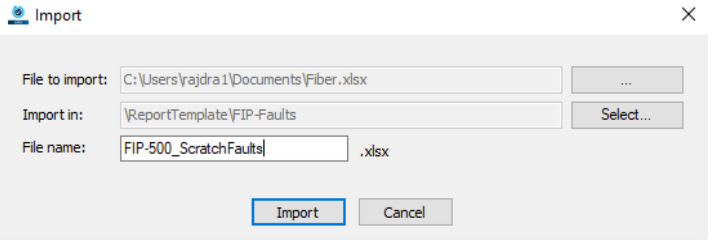


7. Expand the **Report Template** folder structure, and then select the required folder or add a new folder.
For example, if the template is for FIP test types, select FIP folder.



Note: *Click the folder icon at the bottom if you want to add a new folder, add a folder name and import the template in it.*

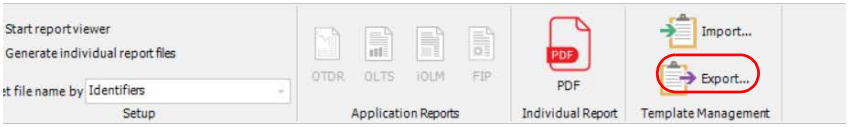
8. If desired, rename the template (File name).



9. Click **Import**.

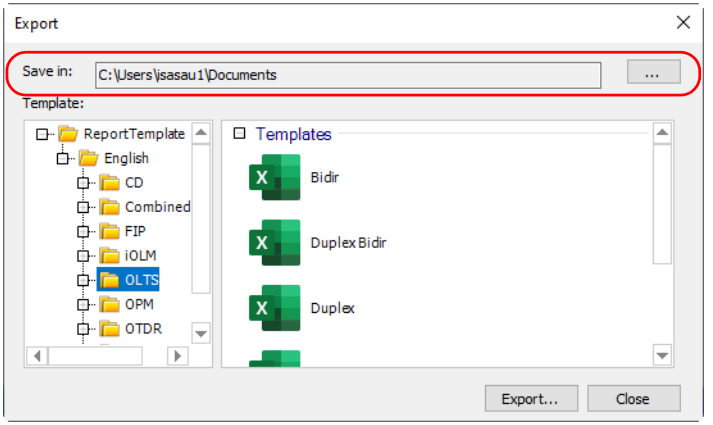
To export a template to another location:

1. Select the **Report** ribbon tab.
2. Under **Management**, select **Export**.

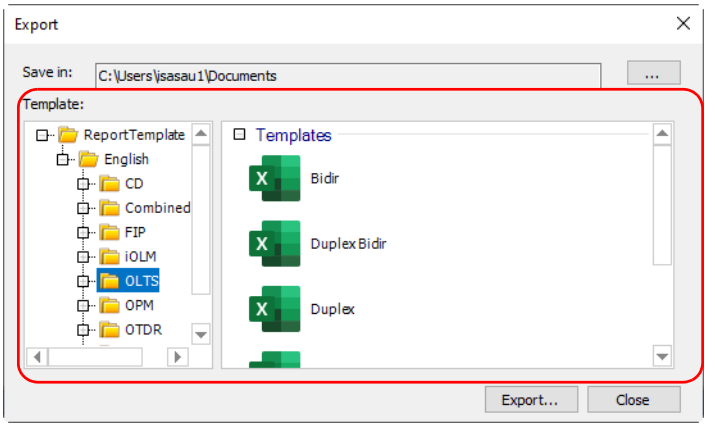


Note: *The name of the report automatically bears the word Copy to prevent unintentional overwrites.*

3. Select the location where you want to export the file.



4. Select the report template you want to export.



5. Click **Export**.

6. Change the name if needed, then click **Save**.

Creating and Modifying Report Templates

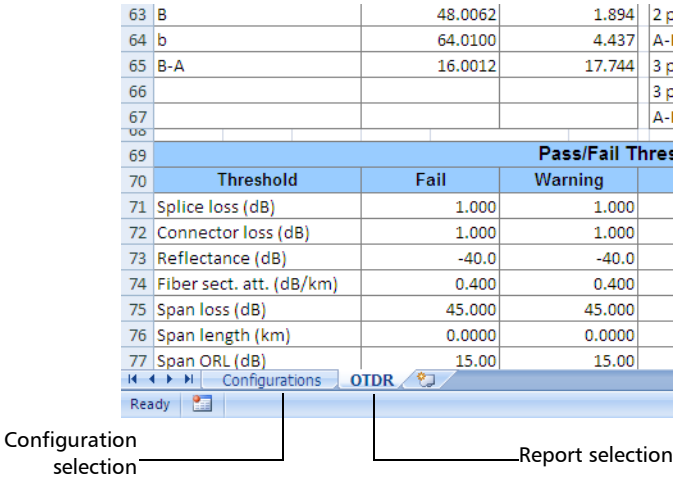
You can create a new report template, or modify an existing report template in Excel. To create a new report template, EXFO recommends that you start with an existing FastReporter 3 report template and modify it as required. This way you will have access to the database fields for populating the report with measurement data. Once you are done, save it using a different name that suits your testing needs.

Using Excel Report Templates

The default templates installed in FastReporter 3 are stored in C:\ProgramData\Exfo\FastReporter 3\<Version>\ReportTemplate\English

Each template has two sheets:

- A configuration sheet where you can select different tag settings for the report.
- A sheet with the actual report with all the “tags” that are used to generate the required report.



Using the Configuration Sheet

The configuration sheet contains three parts.

- Flags
- Sheet Details
- Filter Details

Flags are used to specify to Excel how to handle specific behavior as well as data display. By default, you have access to two different flag settings, Apply Thresholds and Cell Merging. These flag settings are visible in the **Configuration** sheet. The table below contains details for each flag setting.

Setting	Purpose	Note
Apply Thresholds	Apply pass/fail thresholds from FastReporter 3, that is change font and background color used in the application.	True = will use threshold from FastReporter 3 False = no threshold applied. It can use conditional formatting from Excel.
Cell Merging	Merges cells with matched records. For example, if the FiberID is the same for 3 measurements, they are merged into a single cell.	To improve the performance, this option is always set to "False" in all the report templates, except in the FiberCharacteration template. This should be set to "True" when extra processing is done with Excel's Pivot table.

Some non-mandatory, or supportive flags, are hidden. One or more can be added as needed.

Note: *If the Excel sheet contains only an* Image *tag in cell A1, and that cell is merged with other cell, then the image will not be displayed in the report.*

Note: *The setting name should be written in one block without spaces. They have been separated on more than one text line in the table below for readability purposes only.*

Setting	Purpose	Default Value
DisplayOnlyMatched Measurements	To specify if only the data common to both matched measurements is to be displayed. For example, if you match two measurements containing common and different wavelengths (measurement one has 1310, 1550 and 1625, while measurement two has 1310, 1410 and 1625), and the setting is set to true, the report data is displayed for every distinct wavelength.	FALSE
DisplayGraphPer Measurement	To specify if a graph should be displayed for each trace in the measurement, or if all measurements are to be displayed in a single graph.	FALSE
MeasurementPerSheet	Maximum number of measurements allowed per sheet. A blank value indicates that there is no limit.	Blank
WavelengthPerSheet	Maximum number of wavelengths allowed per sheet. A blank value indicates that there is no limit.	Blank
MeasurementTypes	To specify which measurement type should be supported. A blank value indicates that it supports all measurement types.	Blank

Setting	Purpose	Default Value
FillOnlyMatched Wavelengths	To display data of common wavelengths. Used when data is coming from different origins and common wavelengths needs to be displayed. For example, if your report includes iOLM, OTDR and FIP files, The iOLM wavelengths are treated first, then only the OTDR files with matching wavelengths.	FALSE
FillMatchedOLM Measurements InSingleRow	To display the details from two different iOLM files with different directions in a single row.(Used in iOLM cable summary reports).	FALSE
MergeAllSheets InSingleSheet	To merge all sheets into the first sheet.	FALSE
MergeSheets ByIdentifier	To merge sheets with the same identifiers.	FALSE

The *sheet details* are used to specify if multiple sheets should be inserted. This table is not mandatory and is hidden by default.

Once the SheetDetails table is displayed, you need to specify the fields below to insert multiple sheets:

- SheetName: to specify the name of the sheet for which multiple sheets are inserted. If you rename a sheet, you must also change it in the sheet details to make sure that you generate multiple sheets in the report.
- AddMultipleSheets: to specify if multiple sheets should be inserted.
- Tables (optional): to specify which tables are used in a particular sheet.
- PrimaryTable: to specify the table from which you have to use distinct values and add multiple sheets for each value.
- PrimaryColumn: to specify the column name from the Primary table. A new sheet is inserted for each distinct value of the PrimaryColumn.

Filter details are used to specify filter criteria. This is not mandatory, and should be used when filters are required. Filter details are not hard coded. You can specify the required filters; to do so the FilterDetails table must be present in the report template.

The FilterDetails table is divided into three columns:

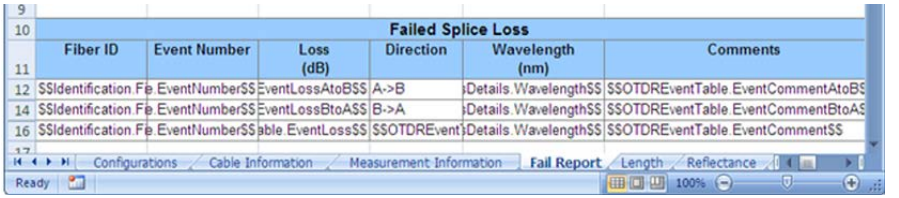
- SheetName
- Range
- Filters

19	SheetName	Range	Filter
20	Fail Report	$A$3:$F$3	OTDREventTable.IsEvent
21	Fail Report	$A$5:$F$5	OTDREventTable.IsEvent
22	Fail Report	$A$7:$F$7	OTDREventTable.IsEvent
23	Fail Report	$A$12:$F$12	OTDREventTable.IsEvent
24	Fail Report	$A$14:$F$14	OTDREventTable.IsEvent
25	Fail Report	$A$16:$F$16	OTDREventTable.IsEvent
26	Fail Report	$A$21:$F$21	OTDREventTable.IsEvent
27	Fail Report	$A$23:$F$23	OTDREventTable.IsEvent
28	Fail Report	$A$25:$F$25	OTDREventTable.IsEvent
29	Fail Report	$A$30:$F$30	OTDRSummary.SpanLoss
30	Fail Report	$A$32:$F$32	OTDRSummary.SpanLoss
31	Fail Report	$A$34:$F$34	OTDRSummary.SpanLoss
32	Fail Report	$A$39:$F$39	OTDREventTable.IsEvent
33	Fail Report	$A$41:$F$41	OTDREventTable.IsEvent
34	Fail Report	$A$43:$F$43	OTDREventTable.IsEvent
35	Length	$A$6:$D$6	OTDREventTable.IsEvent
36	Loss	$A$3:$E$3	OTDREventTable.IsEvent
37	Splice and reflectance	$C$1:$E$8	OTDREventTable.IsEvent

The *sheet name* is used to specify the sheet name for which you want to apply a filter. If you rename the sheet, you must change the name accordingly in the FilterDetails table for it to be identified correctly and apply the filters.

Note: *It is not mandatory to specify sheet names if no filters are applied on that sheet.*

One sheet can have multiple filters.



The *range* indicates the address of the first cell and last cell for which you want to apply the filter, separated by a colon. The range must exactly match the range in the sheet; if you specify a filter range of $A$3:$C$3 and the actual range in the FilterDetails table is $A$3:$F$3, the formula is not applied because they are not considered as matching.

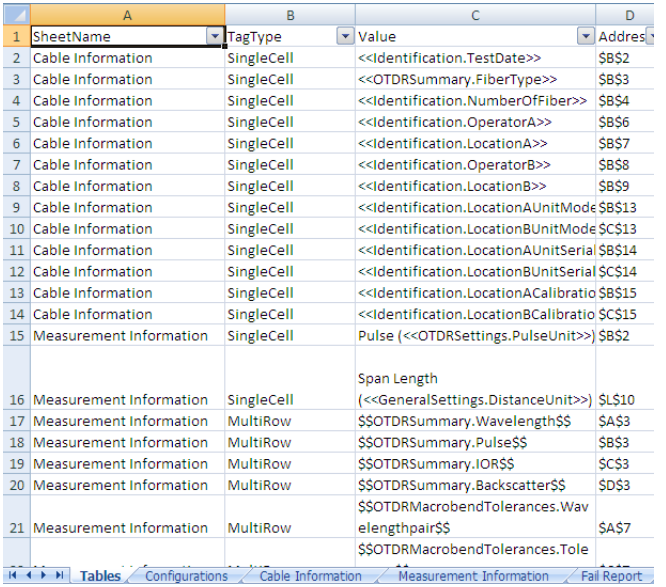
The *filters* are to specify conditions and support the AND and OR operators. You need to provide TableName.FieldName as a field. For example, OTDREventTable.IsEvent=true AND OTDREventTable.IsEventReflective =true AND OTDREventTable.EventLossAtoBPassFailStatus='Fail'.

An additional sheet is available, the *Table sheet*. The Table sheet is generated by a macro when a template is saved. It contains information on different tags present in the template and it will be used to generate the appropriate data set (result values) needed for the report.

By default, this sheet is hidden. To view it, right-click on the name of the active sheet and select **Unhide**, then select **Table** and click **OK**.

Note: *To create a new template, you must start from an existing template. Otherwise the Table sheet will not be created and the template will not work, as FastReporter 3 will not be able to generate the dataset needed.*

Note: *Since the Table sheet is be generated using a macro, you must enable macros to modify it.*



	A	B	C	D
1	SheetName	TagType	Value	Addres
2	Cable Information	SingleCell	<<Identification.TestDate>>	$B$2
3	Cable Information	SingleCell	<<OTDRSummary.FiberType>>	$B$3
4	Cable Information	SingleCell	<<Identification.NumberOfFiber>>	$B$4
5	Cable Information	SingleCell	<<Identification.OperatorA>>	$B$6
6	Cable Information	SingleCell	<<Identification.LocationA>>	$B$7
7	Cable Information	SingleCell	<<Identification.OperatorB>>	$B$8
8	Cable Information	SingleCell	<<Identification.LocationB>>	$B$9
9	Cable Information	SingleCell	<<Identification.LocationAUnitMode	$B$13
10	Cable Information	SingleCell	<<Identification.LocationBUnitMode	$C$13
11	Cable Information	SingleCell	<<Identification.LocationAUnitSerial	$B$14
12	Cable Information	SingleCell	<<Identification.LocationBUnitSerial	$C$14
13	Cable Information	SingleCell	<<Identification.LocationACalibratio	$B$15
14	Cable Information	SingleCell	<<Identification.LocationBCalibratio	$C$15
15	Measurement Information	SingleCell	Pulse (<<OTDRSettings.PulseUnit>>)	$B$2
16	Measurement Information	SingleCell	Span Length (<<GeneralSettings.DistanceUnit>>)	$L$10
17	Measurement Information	MultiRow	$$OTDRSummary.Wavelength$$	$A$3
18	Measurement Information	MultiRow	$$OTDRSummary.Pulse$$	$B$3
19	Measurement Information	MultiRow	$$OTDRSummary.IOR$$	$C$3
20	Measurement Information	MultiRow	$$OTDRSummary.Backscatter$$	$D$3
21	Measurement Information	MultiRow	$$OTDRMacrobendTolerances.Wavelengthpair$$	$A$7
			$$OTDRMacrobendTolerances.Tole	

Tables | Configurations | Cable Information | Measurement Information | Fail Report

The *Report sheet* is where you can define how you want the output (the report) to look like. The report sheet will contain different FieldName tags.

Field Name tags are the combination of TableName and ColumnName. (TableName.ColumnName), for example, Identification.FiberID. You should use the field names from the Universal sheet. For more information, see *Using the Universal Sheet* on page 465.

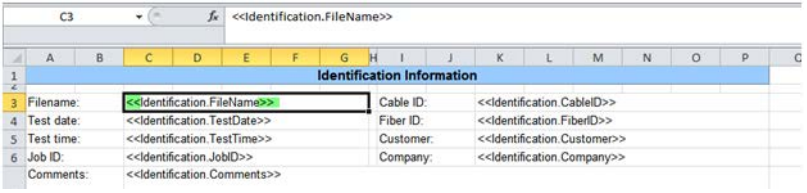
You have to provide special prefixes and suffixes to the field name while designing templates. These prefixes and suffixes are used to perform the data insertion, and determine whether data should be filled in a single cell, if multiple rows should be inserted, or a block should be repeated.

Tags are categorized in five groups:

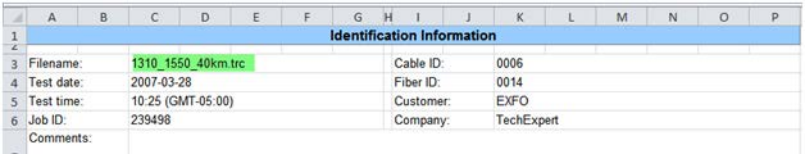
- Single Cell
- Multi Row
- Multi Column
- Block
- Image

The *single cell* tag organizes data in a single cell.If multiple values are available, they are separated by a semicolon. The prefix for this tag is <<, and the suffix is >>.

Example: <<Identification.TestDate>>



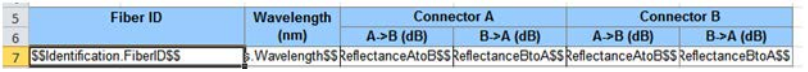
Excel template



Output in the report

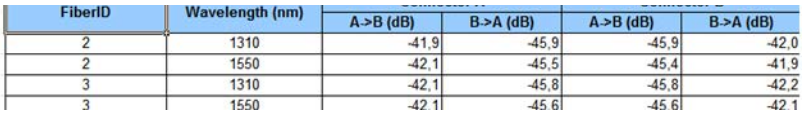
The *multi-row* tag inserts multiple rows in Excel. For example, if one file has three measurements, three rows are inserted. The prefix for this tag is $$, and the suffix is $$.

Example: $$OTDRSummary.Wavelength$$



	Fiber ID	Wavelength (nm)	Connector A		Connector B	
			A->B (dB)	B->A (dB)	A->B (dB)	B->A (dB)
7	$$Identification.FiberID$$	s.Wavelength$$	ReflectanceAtoB$$	ReflectanceBtoA$$	ReflectanceAtoB$$	ReflectanceBtoA$$

Excel template



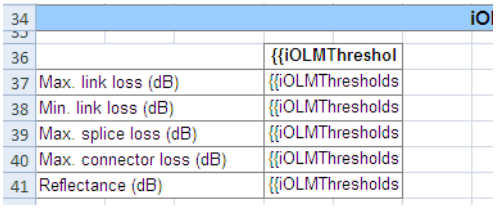
FiberID	Wavelength (nm)	A->B (dB)	B->A (dB)	A->B (dB)	B->A (dB)
2	1310	-41,9	-45,9	-45,9	-42,0
2	1550	-42,1	-45,5	-45,4	-41,9
3	1310	-42,1	-45,8	-45,8	-42,2
3	1550	-42,1	-45,6	-45,6	-42,1

Output in the report

The multi-column tag is used to process one single tag at a time. It does NOT insert new columns, but rather uses the existing columns. While designing the template, you should make sure that there are enough empty columns available after the Multi Column tag. If not, it will overwrite existing data.

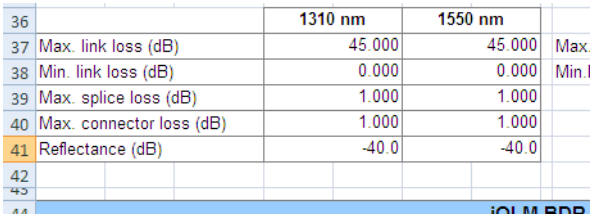
The prefix for this tag is {{ and the suffix is }}.

Example, {{OTDRSummary.Wavelength_FiberSize}}



34		iOl
36		{{iOLMThreshol
37	Max. link loss (dB)	{{iOLMThresholds
38	Min. link loss (dB)	{{iOLMThresholds
39	Max. splice loss (dB)	{{iOLMThresholds
40	Max. connector loss (dB)	{{iOLMThresholds
41	Reflectance (dB)	{{iOLMThresholds

Excel template



		1310 nm	1550 nm	
36				
37	Max. link loss (dB)	45.000	45.000	Max.
38	Min. link loss (dB)	0.000	0.000	Min.l
39	Max. splice loss (dB)	1.000	1.000	
40	Max. connector loss (dB)	1.000	1.000	
41	Reflectance (dB)	-40.0	-40.0	
42				

Output in the Report

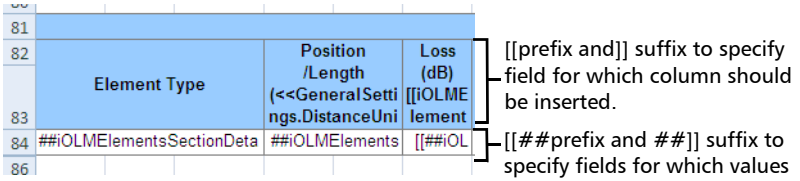
The *Block* tag contains several other tags. It indicates a structure such as that of the Event table, where you insert rows and columns. Only one block tag group should be specified per sheet.

Note: *These tags are supported for the OTDR Event table and iOLM Element and Section tables.*

The prefix for the block tag is ##, and the suffix is ##.

The prefix for inserting rows is [[, and the suffix is]].

The prefix to insert column blocks is [[##, the suffix is ##]].



To add multiple blocks, such as for the iOLM element and section table, add a + sign between the prefix/suffix and the tag.

For example, adding a second block would look like this: [[+##tag##+]]

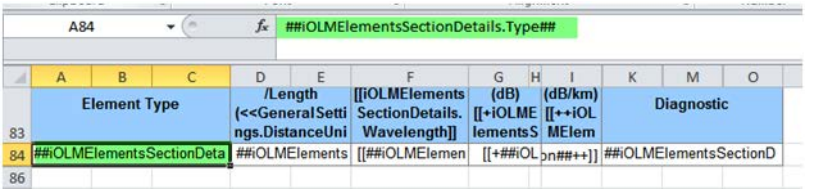
Adding a third block would look like this: [[++##tag##++]]

You do not need to add a + sign to add a row, as the number of rows will remain the same in the case of multiple blocks.

iOLM Table								
Element Type	Position /Length (km)	Loss (dB) 1310 nm	Loss (dB) 1550 nm	Refl. (dB) 1310 nm	Refl. (dB) 1550 nm	Att. (dB/km) 1310 nm	Att. (dB/km) 1550 nm	Diagnostic
Connector (A)	0,0000	1067	0,950	-82,0	-72,5			The fiber under test is not properly connected
Section	0,4031	---	0,091			---	0,226	
Splice	0,4031	---	2935	---	---			Make sure that the fiber is properly spliced.
Section	0,1018	0,043	0,048			0,425	0,460	
Splitter 1:32	0,5049	17320	16146	---	-86,9			
Section	17 065	0,445	0,367			0,261	0,213	
Connector (B)	22 114	---	---	-64,3	-64,2			To characterize loss and include the element

Required Report format

To add blocks for loss, reflectance and attenuation, you have to add blocks for each wavelength. Fill the loss values first (insert a separate column for each wavelength), then reflectance and then attenuation.



As mentioned in the figure above, for loss the tag is

- [[iOLMElementsSectionDetails.Wavelength]] - To add columns
- [[##iOLMElementsSectionDetails.ElementLoss##]] - To add data row and column wise.

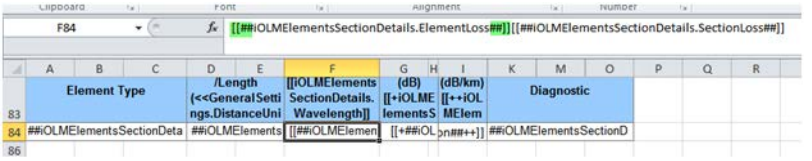
For the next block, you have to use the + sign. The next block tag will look like:

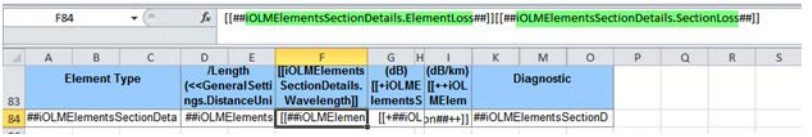
- [[+iOLMElementsSectionDetails.Wavelength+]]
- [[+##iOLMElementsSectionDetails.ElementReflectance##+]]

To add one more block for attenuation, you have to add two + signs. The next block tags will look like:

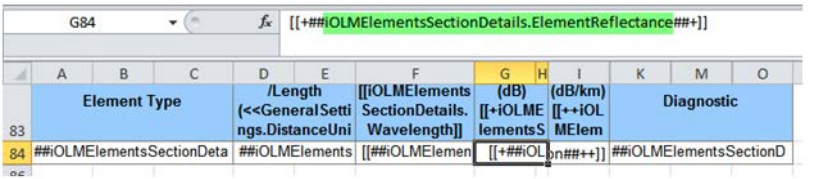
- [[++iOLMElementsSectionDetails.Wavelength++]]
- [[+++##iOLMElementsSectionDetails. SectionAttenuation##++]]

In the case of multiple tags in a single cell, since the tag related to the loss of an event/element or a section are not the same, you need to put the two possibilities.





Since there is only one possibility for the reflectance, you simply have to put the corresponding tag.



The *image* tag uses ((as a prefix, and)) as a suffix.

Example: ((iOLMGraph.GraphFromApplication))

To modify an Excel report template:

1. Access the Excel report templates folder.
2. Create a copy of the report template that you want to modify.
3. Open the duplicate report template with Microsoft Excel.
4. Add new column information using the {{Tag}}. Refer to the Universal sheet for the list of supported tags. You can remove a column by deleting the cell contents.
5. Add new row information using the $$Tag$$. Refer to the Universal sheet for the list of supported tags. You can remove the row information by deleting the cell contents.
6. Change the logo using the header/footer option in Microsoft Excel.

Note: *For more information on the Universal sheet, see* Using the Universal Sheet *on page 465.*

Using the Universal Sheet

The universal sheet provides the list of tags for different fields used in FastReporter 3. You can use these tags to create custom report templates for the fields such as GeneralSettings, MatchedFilesDetails, CustomIdentifier, Identification etc. related to the OTDR, iOLM, OLTS, CD, PMD, OPM/PPM, and FIP measurements. You can copy the supported tags, which are highlighted in green, to customize your Excel report template.

You can access the universal sheet from C:\ProgramData\Exfo\FastReporter 3\<version>\ReportTemplate\English.

15 Report Samples

This section presents samples of some reports you can generate using FastReporter 3. Keep in mind that those reports are samples and your final results may differ depending on the options and number of files you have selected. Various other report types are also available for your other testing needs.

Bidirectional OTDR

OTDR Bidirectional Report

Identification Information

Filename:	Bidir00001_1310.bdr	Cable ID:	22
Test date:	2007-04-12	Fiber ID:	1
Test time:	12:56:23 (GMT-05:00)	Customer:	
Job ID:		Company:	
Comments:			

Location A		Location B	
Location:		Location:	
Operator:		Operator:	
Unit model:	S7300D	Unit model:	S7300D
Unit s/n:		Unit s/n:	
Calibration Date:	2018-03-19	Calibration Date:	2018-03-19

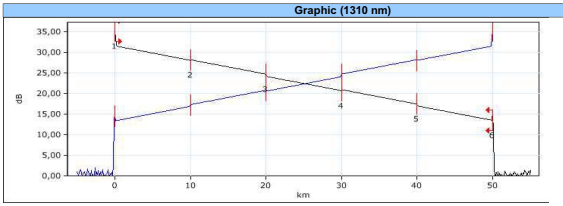
Test Parameters	A->B	B->A
Wavelength (nm) :	1310	1310
Fiber Core Size (m):	9	9
Range (km):	55.0000	55.0000
Pulse (ns):	1000	1000
Duration (s):	45	45

Test Settings	A->B	B->A
IOR:	1.468000	1.468000
Backscatter (dB):	-79.50	-79.50
Helix Factor (%):	0.00	0.00
Splice loss detection threshold (dB):	0.020	0.020
Reflectance detection threshold (dB):	-72.0	-72.0
End-of-fiber detection threshold (dB):	5.000	5.000

Results (1310 nm)

Span length (km):	50.0003	Span loss (dB):	18.102	Span ORL (dB):	---
Average loss (dB/km):	0.362	Avg. splice loss (dB):	0.154	Max. splice loss (dB):	0.191

Graphic (1310 nm)



Event Table (1310 nm)

Type	No.	Location/ Length (km)	Average Attenuation (dB)	Average Loss (dB)	Cumulative Loss (dB)	Loss A->B (dB)	Loss B->A (dB)
Reflective	1	0,0000		---	---	---	---
Section		9.9863	0.350	3.496	3.496	3.496	3.496
Non-Reflective	2	9,9863		0,142	3.638	-0,149	0,433
Section		10.0054	0.349	3.494	7.132	3.494	3.494
Non-Reflective	3	19,9917		0,155	7.287	0,536	-0,226
Section		10.0156	0.350	3.503	10.789	3.504	3.502
Non-Reflective	4	30,0073		0,191	10.980	-0,260	0,642
Section		9.9952	0.350	3.495	14.475	3.493	3.497
Non-Reflective	5	40,0025		0,127	14.602	0,423	-0,169
Section		9.9978	0.350	3.501	18.102	3.497	3.504
Reflective	6	50,0003		---	18.102	---	---

Pass/Fail Thresholds (1310 nm)

Threshold	Fail	Warning	
Unidir splice loss (dB)	---	---	
Bidir splice loss (dB)	1.000	1.000	
Unidir connector loss (dB)	---	---	
Bidir connector loss (dB)	1.000	1.000	
Fiber sect. att. (dB/km)	0.400	0.400	
Span loss (dB)	45.000	45.000	
Span length (km)	0.0000	0.0000	

EXFO Signature: _____ 19-04-2018

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OTDR

OTDR Report (1550 nm (9 µm))

Fail

General Information

File name:	High dynamic_1550_1625.trc		
Test date:	2010-05-11	Customer:	
Test time:	15:57:06	Company:	
Cable ID:		Fiber ID:	Fiber0190
Job ID:			
Comments:			

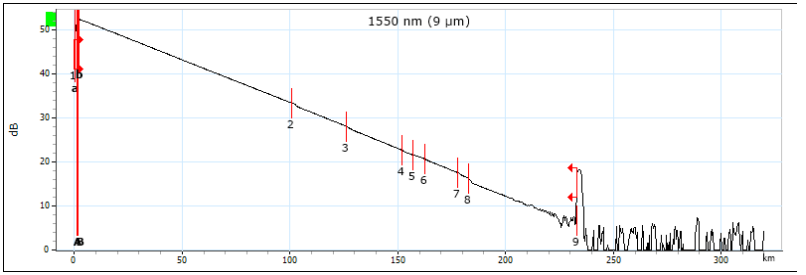
Locations

	Location A	Location B
Location		
Operator		
Model	FTB-7600E-034B-EA-VFL	
Serial number	393164	
Calibration date	2007-08-28 (UTC)	

Results

Span length:	232,81 km	Average loss:	0,202 dB/km	Injection level:	53,0 dB
Span loss:	47,141 dB	Average splice loss:	0,224 dB		
Span ORL:	31,83 dB	Maximum splice loss:	0,789 dB		

Graph



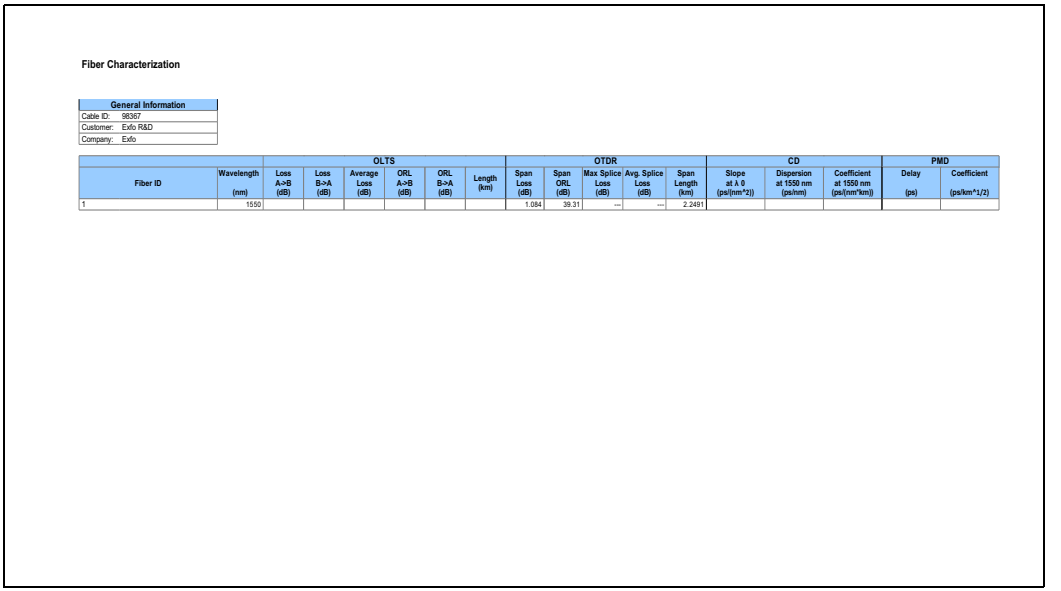
Markers

Marker	Position (km)	Value (dB)
a	0,5002	49,420
A	1,0004	51,020
B	1,5007	51,872
b	2,0009	52,443

A-B LSA attenuation:	-1,692 dB/km	A-B average loss:	-1,704 dB/km
A-B LSA loss:	0,000 dB	4-point Event Loss:	-2,444 dB
A-B ORL:	44,03 dB	Maximum reflectance:	-35,8 dB

Signature: _____ Date: 2020-12-15 Page 1 of 4

Fiber Characterization



Fiber Characterization

General Information	
Cable ID:	98367
Customer:	Exfo R&D
Company:	Exfo

		OLTS						OTDR					CD			PMD	
Fiber ID	Wavelength (nm)	Loss A->B (dB)	Loss B->A (dB)	Average Loss (dB)	ORL A->B (dB)	ORL B->A (dB)	Length (km)	Span Loss (dB)	Span ORL (dB)	Max Splice Loss (dB)	Avg. Splice Loss (dB)	Span Length (km)	Slope at λ 0 (ps/[nm^2])	Dispersion at 1550 nm (ps/nm)	Coefficient at 1550 nm (ps/[nm*km])	Delay (ps)	Coefficient (ps/km*1/2)
1	1550							1.084	39.31	---	---	2.2491					

Fiber Inspection Probe

FIP Multi-Measurements

Pass Fail Status

Global: Fail

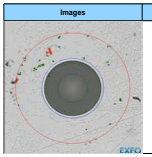
FIP General Information

Test date:	2013-10-22		
Test time:	09:41:22 (GMT-05:00)	Unit model:	FIP-420B
Job ID:		Unit s/n:	726346
Customer:			
Company:			
Operator A:			
Comments:	Factory measurement file sample		

FIP Test Parameters

Configuration:	IEC MM SF PC ENLARGED	Number of Fibers:	1
Connector type:	(SF) Single-Fiber connector	Analysis Mode:	Outside Plant
Fiber type:	(MM) Multiple-Mode fiber		
Polishing type:	(PC) Physical contact		
Focus level:	91% (Nominal)		

FIP Results

Images	Cable ID	Fiber ID	Location A	Location B	Connector ID	Frame	Direction	Connector P/F	Fiber P/F
		Fiber					A->B		

EXFO Signature: _____ 4/19/2018

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iOLM

iOLM Report

Fail

General Information

File name:	1310 1550 PON 1X8 1X8.iolm		
Test date:	2012-01-18	Customer:	
Test time:	15:47:12 (UTC)	Company:	
Job ID:			
Comments:			

Locations

	Location A	Location B
Operator		
Model	FTB-730-23B-04B-OPM-EA	
Serial number	551749	
Calibration date	2011-04-11 (UTC)	

Identifiers

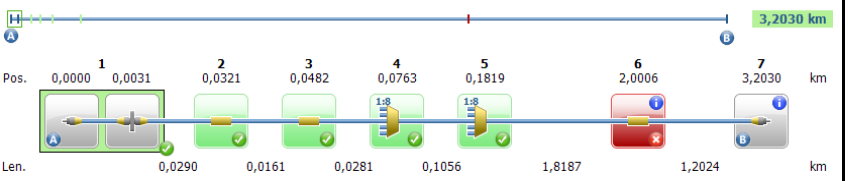
OLT	ONT	Location
	1	

iOLM Results

Link length: 3,2030 km
Acquisition status: Completed

Wavelength (nm)	Link Loss (dB)	Link ORL (dB)
1310	23,723	49,36
1550	23,074	52,75

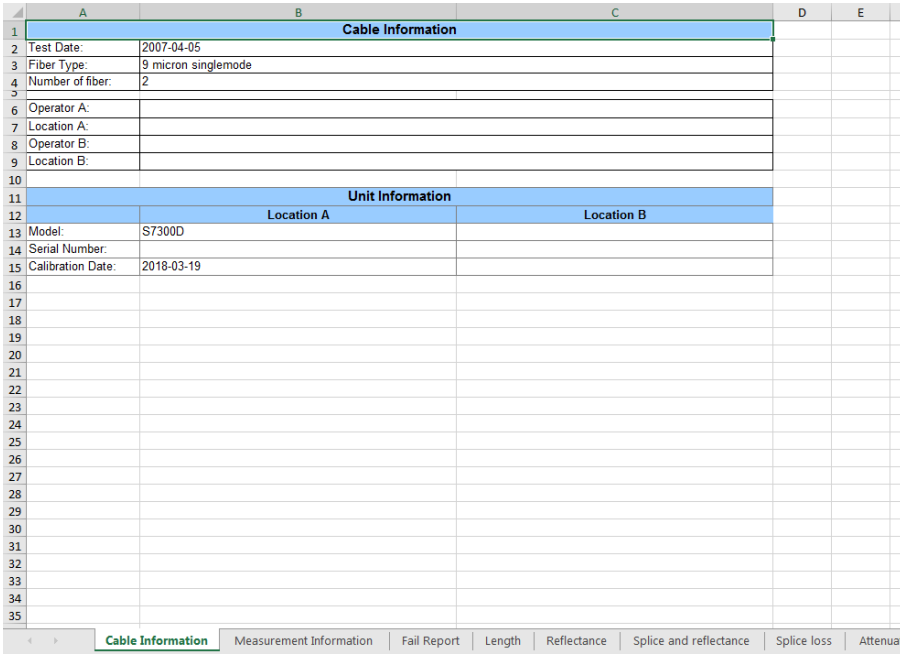
Link View



EXFO Signature: _____ Date: 2020-12-16 Page 1 of 2

OTDR Advanced Cable (Excel Template)

This report displays various information related to the OTDR Advance cable, such as: Cable information, Measurement information, Fail report, Length, Reflectance, Splice and reflectance, Splice loss, Attenuation, and Loss.

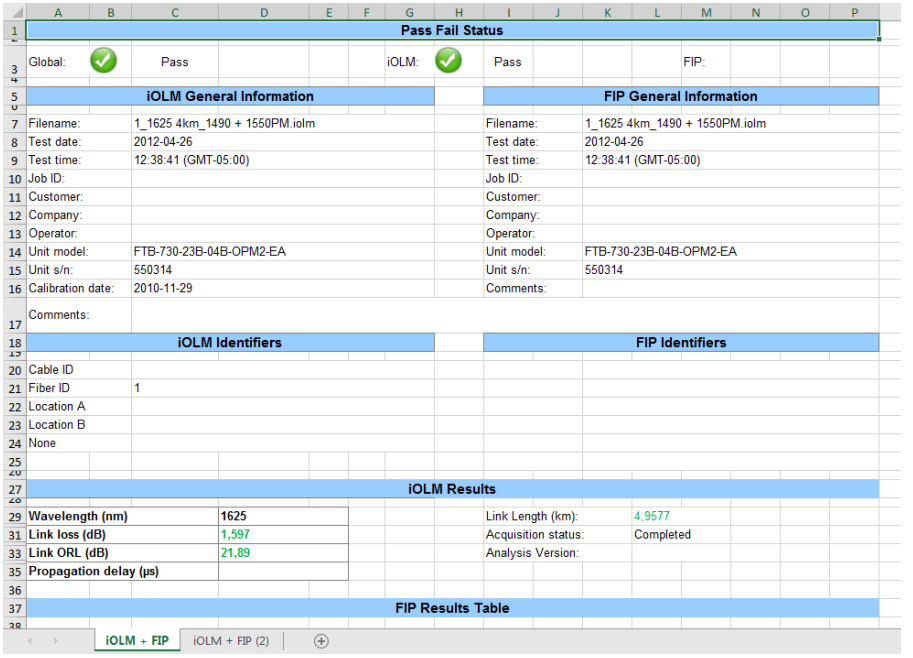


	A	B	C	D	E
1	**Cable Information**				
2	Test Date:	2007-04-05			
3	Fiber Type:	9 micron singlemode			
4	Number of fiber:	2			
5					
6	Operator A:				
7	Location A:				
8	Operator B:				
9	Location B:				
10					
11	**Unit Information**				
12		**Location A**	**Location B**		
13	Model:	S7300D			
14	Serial Number:				
15	Calibration Date:	2018-03-19			
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					

Cable Information | Measurement Information | Fail Report | Length | Reflectance | Splice and reflectance | Splice loss | Attenua

iOLM + FIP (Excel Template)

This report displays the iOLMandFIP measurement values in single report based on matching.If multiple measurements are selected, the report displays multiple worksheets for the each of the selected measurements. The worksheets are labeled as iOLM + FIP (n). Where, (n) represents the measurement number.

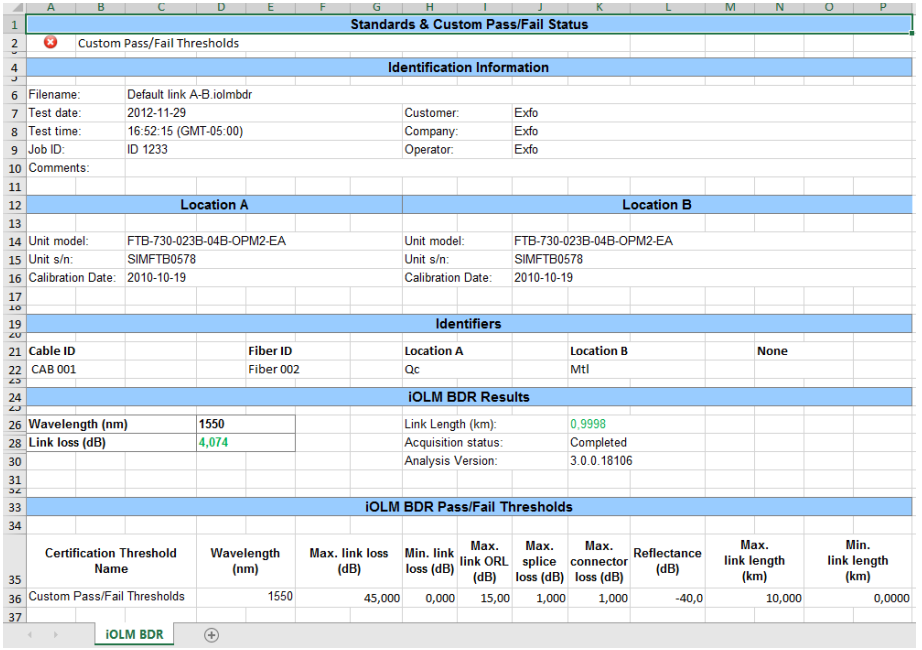


Pass Fail Status							
Global:	Pass			iOLM:	Pass		FIP:
iOLM General Information				**FIP General Information**			
Filename:	1_1625 4km_1490 + 1550PM.iolm			Filename:	1_1625 4km_1490 + 1550PM.iolm		
Test date:	2012-04-26			Test date:	2012-04-26		
Test time:	12:38:41 (GMT-05:00)			Test time:	12:38:41 (GMT-05:00)		
Job ID:				Job ID:			
Customer:				Customer:			
Company:				Company:			
Operator:				Operator:			
Unit model:	FTB-730-23B-04B-OPM2-EA			Unit model:	FTB-730-23B-04B-OPM2-EA		
Unit s/n:	550314			Unit s/n:	550314		
Calibration date:	2010-11-29			Comments:			
Comments:							
iOLM Identifiers				**FIP Identifiers**			
Cable ID							
Fiber ID	1						
Location A							
Location B							
None							
iOLM Results							
Wavelength (nm)	1625			Link Length (km):	4,9577		
Link loss (dB)	1,597			Acquisition status:	Completed		
Link ORL (dB)	21,89			Analysis Version:			
Propagation delay (µs)							
FIP Results Table							

iOLM + FIP | iOLM + FIP (2)

iOLM Bidirectional (Excel Template)

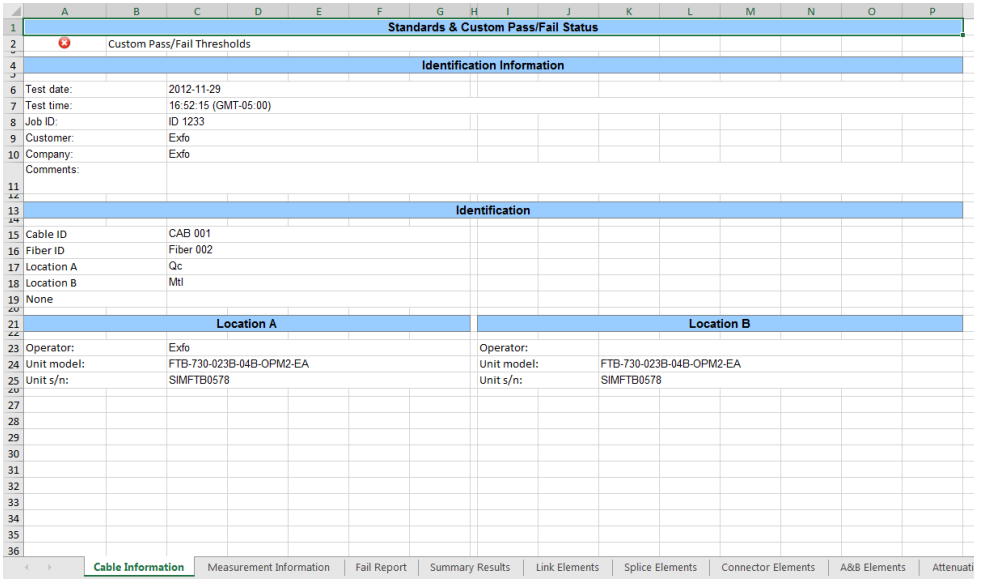
This report displays the Bidirectional measurement with corresponding unidirectional measurements A-B and B-A.



Standards & Custom Pass/Fail Status															
Custom Pass/Fail Thresholds															
Identification Information															
Filename:	Default link A-B.iolmbdr														
Test date:	2012-11-29						Customer:	Exfo							
Test time:	16:52:15 (GMT-05:00)						Company:	Exfo							
Job ID:	ID 1233						Operator:	Exfo							
Comments:															
Location A							**Location B**								
Unit model:	FTB-730-023B-04B-OPM2-EA						Unit model:	FTB-730-023B-04B-OPM2-EA							
Unit s/n:	SIMFTB0578						Unit s/n:	SIMFTB0578							
Calibration Date:	2010-10-19						Calibration Date:	2010-10-19							
Identifiers															
Cable ID			**Fiber ID**				**Location A**			**Location B**				**None**	
CAB 001			Fiber 002				Qc			Mtl					
iOLM BDR Results															
Wavelength (nm)	1550						Link Length (km):	0,9998							
Link loss (dB)	4,074						Acquisition status:	Completed							
							Analysis Version:	3.0.0.18106							
iOLM BDR Pass/Fail Thresholds															
Certification Threshold Name	**Wavelength (nm)**	**Max. link loss (dB)**	**Min. link loss (dB)**	**Max. link ORL (dB)**	**Max. splice loss (dB)**	**Max. connector loss (dB)**	**Reflectance (dB)**	**Max. link length (km)**	**Min. link length (km)**						
Custom Pass/Fail Thresholds	1550	45,000	0,000	15,00	1,000	1,000	-40,0	10,000	0,0000						

iOLM Advanced Cable Report (Excel Report)

This report shows detailed information for your cables. Each category of the report (cable information, measurement information, fail report, summary results, link elements, splice elements, connector elements, A & B elements, and attenuation section) is on a separate sheet.

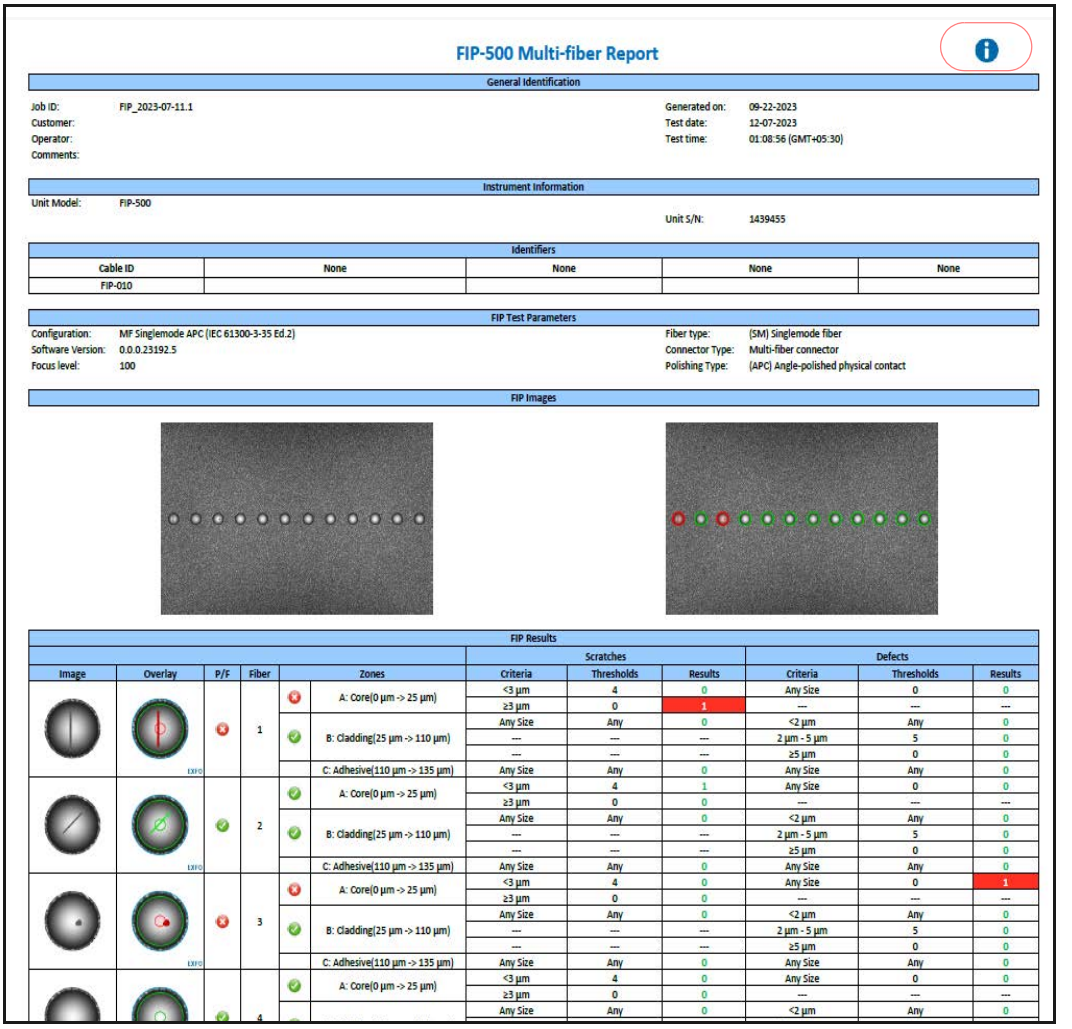


Standards & Custom Pass/Fail Status				
	Custom Pass/Fail Thresholds			
Identification Information				
Test date:	2012-11-29			
Test time:	16:52:15 (GMT-05:00)			
Job ID:	ID 1233			
Customer:	Exfo			
Company:	Exfo			
Comments:				
Identification				
Cable ID	CAB 001			
Fiber ID	Fiber 002			
Location A	Qc			
Location B	Mtl			
None				
Location A		**Location B**		
Operator:	Exfo	Operator:		
Unit model:	FTB-730-023B-04B-OPM2-EA	Unit model:	FTB-730-023B-04B-OPM2-EA	
Unit s/n:	SIMFTB0578	Unit s/n:	SIMFTB0578	

Cable Information | Measurement Information | Fail Report | Summary Results | Link Elements | Splice Elements | Connector Elements | A&B Elements | Attenuati

FIP-500 Multi Measurement Reports

You can get the details of the defects and the fiber images that were captured. After selecting the ⓘ icon at the top right corner of the report, you will be directed to the diagnostics of the measurement if available.



FIP-500 Multi-fiber Report

General Identification

Job ID:	FIP_2023-07-11.1	Generated on:	09-22-2023
Customer:		Test date:	12-07-2023
Operator:		Test time:	01:08:56 (GMT+05:30)
Comments:			

Instrument Information

Unit Model:	FIP-500	Unit S/N:	1439455

Identifiers

Cable ID	None	None	None	None
FIP-010				

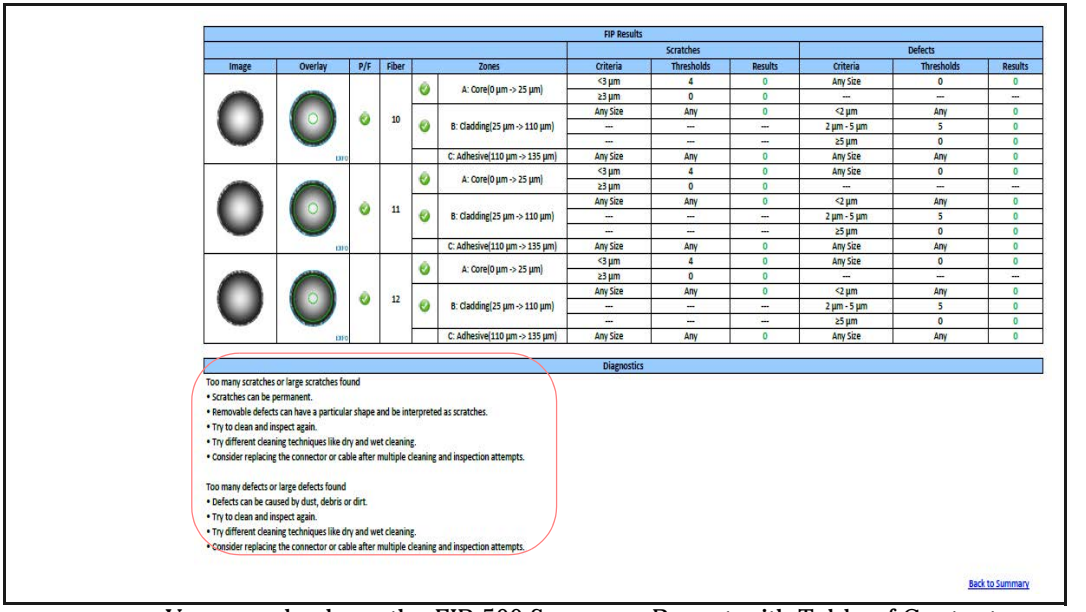
FIP Test Parameters

Configuration:	MF Singlemode APC (IEC 61300-3-35 Ed.2)	Fiber type:	(SM) Singlemode fiber
Software Version:	0.0.0.23192.5	Connector Type:	Multi-fiber connector
Focus level:	100	Polishing Type:	(APC) Angle-polished physical contact

FIP Images

FIP Results

					Scratches			Defects		
Image	Overlay	P/F	Fiber	Zones	Criteria	Thresholds	Results	Criteria	Thresholds	Results
		✗	1	✗ A: Core(0 µm -> 25 µm)	<3 µm	4	0	Any Size	0	0
					≥3 µm	0	1	---	---	---
				✓ B: Cladding(25 µm -> 110 µm)	Any Size	Any	0	<2 µm	Any	0
					---	---	---	2 µm - 5 µm	5	0
					---	---	---	≥5 µm	0	0
				C: Adhesive(110 µm -> 135 µm)	Any Size	Any	0	Any Size	Any	0
		✓	2	✓ A: Core(0 µm -> 25 µm)	<3 µm	4	1	Any Size	0	0
					≥3 µm	0	0	---	---	---
				✓ B: Cladding(25 µm -> 110 µm)	Any Size	Any	0	<2 µm	Any	0
					---	---	---	2 µm - 5 µm	5	0
					---	---	---	≥5 µm	0	0
				C: Adhesive(110 µm -> 135 µm)	Any Size	Any	0	Any Size	Any	0
		✗	3	✗ A: Core(0 µm -> 25 µm)	<3 µm	4	0	Any Size	0	1
					≥3 µm	0	0	---	---	---
				✓ B: Cladding(25 µm -> 110 µm)	Any Size	Any	0	<2 µm	Any	0
					---	---	---	2 µm - 5 µm	5	0
					---	---	---	≥5 µm	0	0
				C: Adhesive(110 µm -> 135 µm)	Any Size	Any	0	Any Size	Any	0
		✓	4	✓ A: Core(0 µm -> 25 µm)	<3 µm	4	0	Any Size	0	0
					≥3 µm	0	0	---	---	---
					Any Size	Any	0	<2 µm	Any	0



FIP Results

						Scratches			Defects		
Image	Overlay	P/F	Fiber	Zones	Criteria	Thresholds	Results	Criteria	Thresholds	Results
		✓	10	✓ A: Core(0 µm -> 25 µm)	<3 µm	4	0	Any Size	0	0
					≥3 µm	0	0	---	---	---
				✓ B: Cladding(25 µm -> 110 µm)	Any Size	Any	0	<2 µm	Any	0
					---	---	---	2 µm - 5 µm	5	0
					---	---	---	≥5 µm	0	0
				C: Adhesive(110 µm -> 135 µm)	Any Size	Any	0	Any Size	Any	0
		✓	11	✓ A: Core(0 µm -> 25 µm)	<3 µm	4	0	Any Size	0	0
					≥3 µm	0	0	---	---	---
				✓ B: Cladding(25 µm -> 110 µm)	Any Size	Any	0	<2 µm	Any	0
					---	---	---	2 µm - 5 µm	5	0
					---	---	---	≥5 µm	0	0
				C: Adhesive(110 µm -> 135 µm)	Any Size	Any	0	Any Size	Any	0
		✓	12	✓ A: Core(0 µm -> 25 µm)	<3 µm	4	0	Any Size	0	0
					≥3 µm	0	0	---	---	---
				✓ B: Cladding(25 µm -> 110 µm)	Any Size	Any	0	<2 µm	Any	0
					---	---	---	2 µm - 5 µm	5	0
					---	---	---	≥5 µm	0	0
				C: Adhesive(110 µm -> 135 µm)	Any Size	Any	0	Any Size	Any	0

Diagnostics

Too many scratches or large scratches found
- Scratches can be permanent.
- Removable defects can have a particular shape and be interpreted as scratches.
- Try to clean and inspect again.
- Try different cleaning techniques like dry and wet cleaning.
- Consider replacing the connector or cable after multiple cleaning and inspection attempts.

Too many defects or large defects found
- Defects can be caused by dust, debris or dirt.
- Try to clean and inspect again.
- Try different cleaning techniques like dry and wet cleaning.
- Consider replacing the connector or cable after multiple cleaning and inspection attempts.

Back to Summary

You can also have the FIP-500 Summary Report with Table of Contents which are hyperlinked to the detailed reports. Use the **FIP-500 with Table of Contents** template to get this report.
Click the hyperlinked identifiers to see the detailed reports.

FIP-500 Summary Report

General Identification

Job ID:
Customer:
Comments:

Generated on: 09/07/2022
Operator:

Instrument Information

Unit Model: FIP-500
Unit S/N: 500001

FIP Test Parameters

Configuration: MultiFiber SingleMode ThresholdSet (IEC 613(
Connector Type: Multifiber connector

Fiber type: (SM) Single-Mode fiber

Test Results

P/F	Identifiers	Date & Time	Results
	Measure 508	6/18/2021 6:49:59 AM (GMT+05:30)	

You can also have the detailed report only that shows the information of each fiber.Use the **FIP-500 Multi Fiber** template for these reports.

FIP-500 Multi-fiber Report

General Identification

Job ID:	FIP_2023-07-11.1	Generated on:	09-21-2023
Customer:		Test date:	12-07-2023
Operator:		Test time:	01:29:11 (GMT+05:30)
Comments:			

Instrument Information

Unit Model:	FIP-500	Unit S/N:	1439455

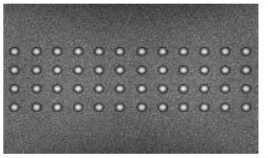
Identifiers

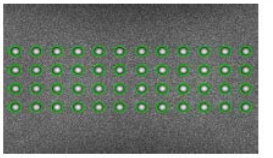
Cable ID	None	None	None	None
FIP-013				

FIP Test Parameters

Configuration:	MF Singlemode APC (IEC 61300-3-35 Ed.2)	Fiber type:	(SM) Singlemode fiber
Software Version:	0.0.0.23192.5	Connector Type:	Multi-fiber connector
Focus level:	100	Polishing Type:	(APC) Angle-polished physical contact

FIP Images



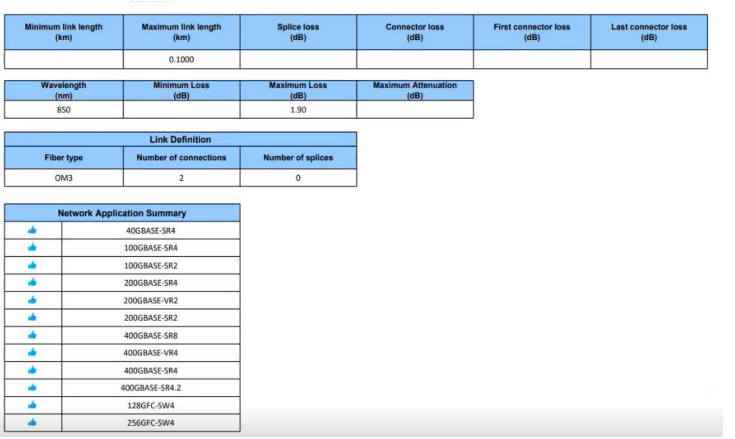


FIP Results

						Scratches			Defects		
Image	Overlay	P/F	Fiber	Zones		Criteria	Thresholds	Results	Criteria	Thresholds	Results
		✓	1	A: Core(0 µm -> 25 µm)	✓	<3 µm	4	0	Any Size	0	0
						≥3 µm	0	0	---	---	---
				B: Cladding(25 µm -> 110 µm)	✓	Any Size	Any	0	<2 µm	Any	0
						---	---	---	2 µm - 5 µm	5	0
						---	---	---	≥5 µm	0	0
				C: Adhesive(110 µm -> 135 µm)		Any Size	Any	0	Any Size	Any	0
		✓	2	A: Core(0 µm -> 25 µm)	✓	<3 µm	4	0	Any Size	0	0
						≥3 µm	0	0	---	---	---
				B: Cladding(25 µm -> 110 µm)	✓	Any Size	Any	0	<2 µm	Any	0
						---	---	---	2 µm - 5 µm	5	0
						---	---	---	≥5 µm	0	0
				C: Adhesive(110 µm -> 135 µm)		Any Size	Any	0	Any Size	Any	0
		✓	3	A: Core(0 µm -> 25 µm)	✓	<3 µm	4	0	Any Size	0	0
						≥3 µm	0	0	---	---	---
				B: Cladding(25 µm -> 110 µm)	✓	Any Size	Any	0	<2 µm	Any	0
						---	---	---	2 µm - 5 µm	5	0
						---	---	---	≥5 µm	0	0
				C: Adhesive(110 µm -> 135 µm)		Any Size	Any	0	Any Size	Any	0
		✓	4	A: Core(0 µm -> 25 µm)	✓	<3 µm	4	0	Any Size	0	0
						≥3 µm	0	0	---	---	---
				B: Cladding(25 µm -> 110 µm)	✓	Any Size	Any	0	<2 µm	Any	0
						---	---	---	2 µm - 5 µm	5	0
						---	---	---	≥5 µm	0	0
				C: Adhesive(110 µm -> 135 µm)		Any Size	Any	0	Any Size	Any	0
		✓	5	A: Core(0 µm -> 25 µm)	✓	<3 µm	4	0	Any Size	0	0
						≥3 µm	0	0	---	---	---
				B: Cladding(25 µm -> 110 µm)	✓	Any Size	Any	0	<2 µm	Any	0
						---	---	---	2 µm - 5 µm	5	0
						---	---	---	≥5 µm	0	0
				C: Adhesive(110 µm -> 135 µm)		Any Size	Any	0	Any Size	Any	0
		✓	6	A: Core(0 µm -> 25 µm)	✓	<3 µm	4	0	Any Size	0	0
						≥3 µm	0	0	---	---	---
				B: Cladding(25 µm -> 110 µm)	✓	Any Size	Any	0	<2 µm	Any	0
						---	---	---	2 µm - 5 µm	5	0
						---	---	---	≥5 µm	0	0
				C: Adhesive(110 µm -> 135 µm)		Any Size	Any	0	Any Size	Any	0
		✓	7	A: Core(0 µm -> 25 µm)	✓	<3 µm	4	0	Any Size	0	0
						≥3 µm	0	0	---	---	---
				B: Cladding(25 µm -> 110 µm)	✓	Any Size	Any	0	<2 µm	Any	0
						---	---	---	2 µm - 5 µm	5	0
						---	---	---	≥5 µm	0	0
				C: Adhesive(110 µm -> 135 µm)		Any Size	Any	0	Any Size	Any	0
		✓	8	A: Core(0 µm -> 25 µm)	✓	<3 µm	4	0	Any Size	0	0
						≥3 µm	0	0	---	---	---
				B: Cladding(25 µm -> 110 µm)	✓	Any Size	Any	0	<2 µm	Any	0
						---	---	---	2 µm - 5 µm	5	0
						---	---	---	≥5 µm	0	0

OLTS Reports

The OLTS MF Loss report shows the Network Application summary if available in the measurement.



Minimum link length (km)	Maximum link length (km)	Splice loss (dB)	Connector loss (dB)	First connector loss (dB)	Last connector loss (dB)
	0.1000				

Wavelength (nm)	Minimum Loss (dB)	Maximum Loss (dB)	Maximum Attenuation (dB)
850		1.90	

Link Definition		
Fiber type	Number of connections	Number of splices
OM3	2	0

Network Application Summary	
👍	40GBASE-SR4
👍	100GBASE-SR4
👍	100GBASE-SR2
👍	200GBASE-SR4
👍	200GBASE-VR2
👍	200GBASE-SR2
👍	400GBASE-SR8
👍	400GBASE-VR4
👍	400GBASE-SR4
👍	400GBASE-SR4.2
👍	128GFC-SW4
👍	256GFC-SW4

16 Using the Validator (Plus Mode)

The Validator lets you create a project file to select the data and values to validate in your measurement files. This fully customizable tool can let you find inconsistencies quickly. The tabs available in the Validator will depend on which test types are installed (see *Changing FastReporter 3 Options* on page 31 for details).

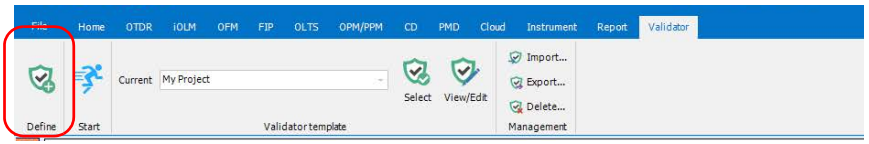
Note: *The test measurement files from the FIP-500 testing device are not supported for validation.*

Creating (Define), Customizing (Edit), Importing, Exporting Validator Project

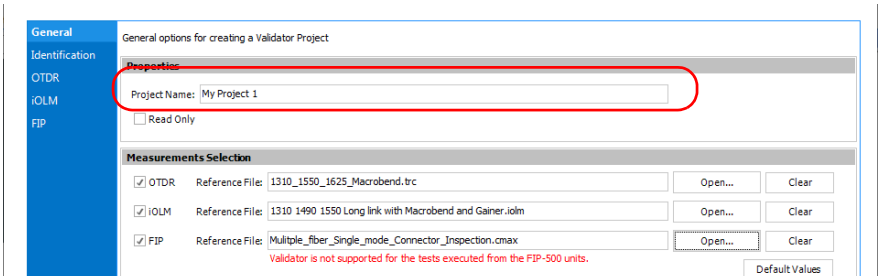
You can create, customize by editing properties, import, and export the Validator project.

To create and customize a Validator project:

1. If you have not done so already, select the **Validator** ribbon tab.
2. Click **Define**.



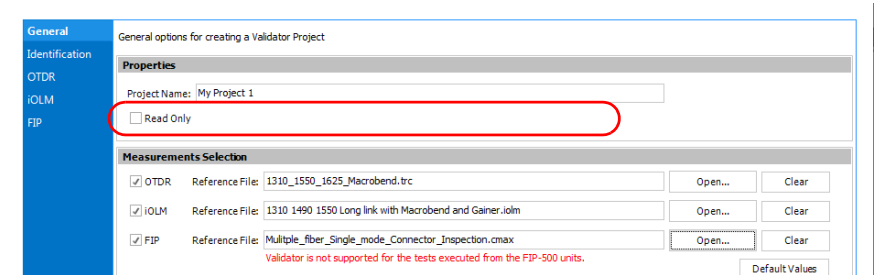
3. In the Validator assistant, select the **General** tab, then enter a name for your project.



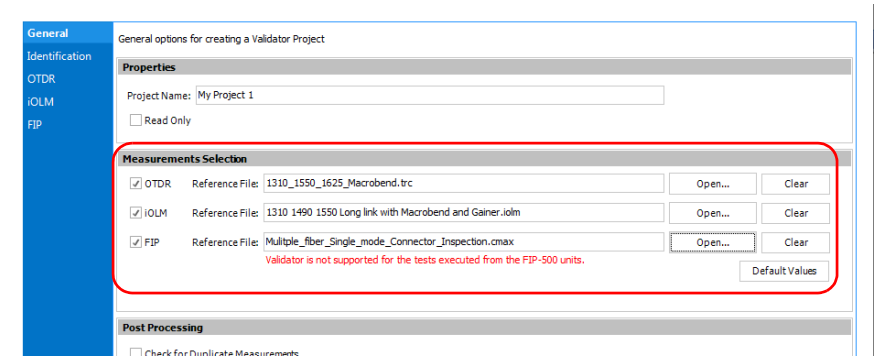
4. If you want to prevent users from editing the template, select the corresponding option.

IMPORTANT

Selecting this option means that once you click Save, you cannot edit the template anymore.



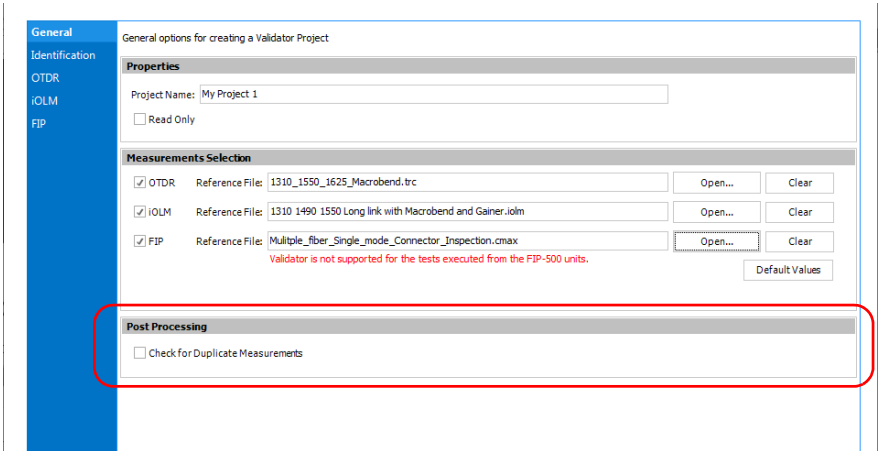
5. Select which measurement types you want to include in the template by checking the corresponding option.



6. If you want to use reference files for your measurement types, select them using the **Open** button corresponding to the one you want. Once in the selection window, you can select the file or files needed.

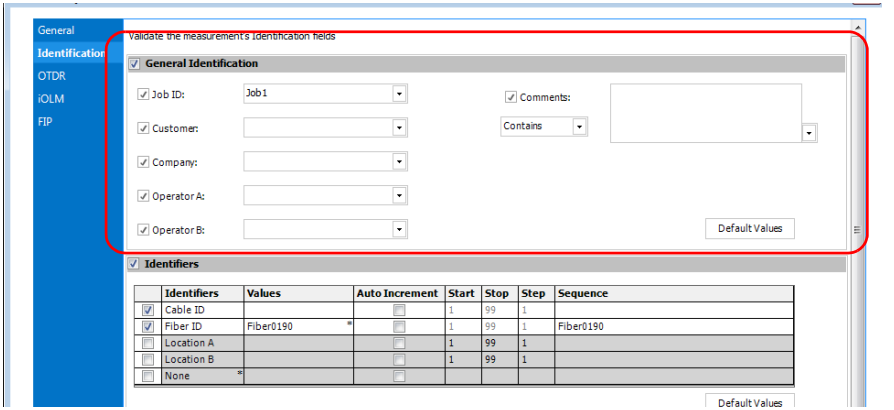
Note: *If there is one reference file, its values will be used to pre-fill the validation items. If there is more than one reference files, the first instance of a value will be used to pre-fill the validation items.*

7. If you want the Validator to check for duplicate measurements, select the corresponding option.



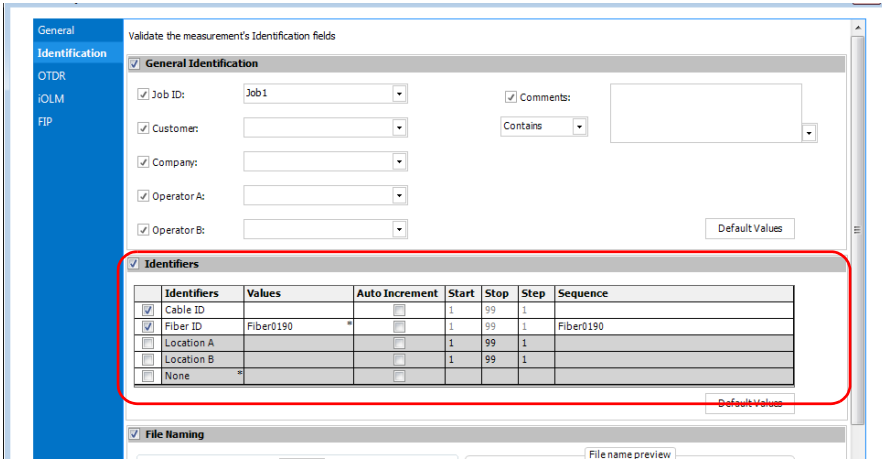
8. Click **Identification** tab.

9. Select the general identification values to include in the job. This section is selected by default.



Note: *If a reference file is set, the values are already pre-filled with the reference file's values. When more than one value is available, you can select which one you want.*

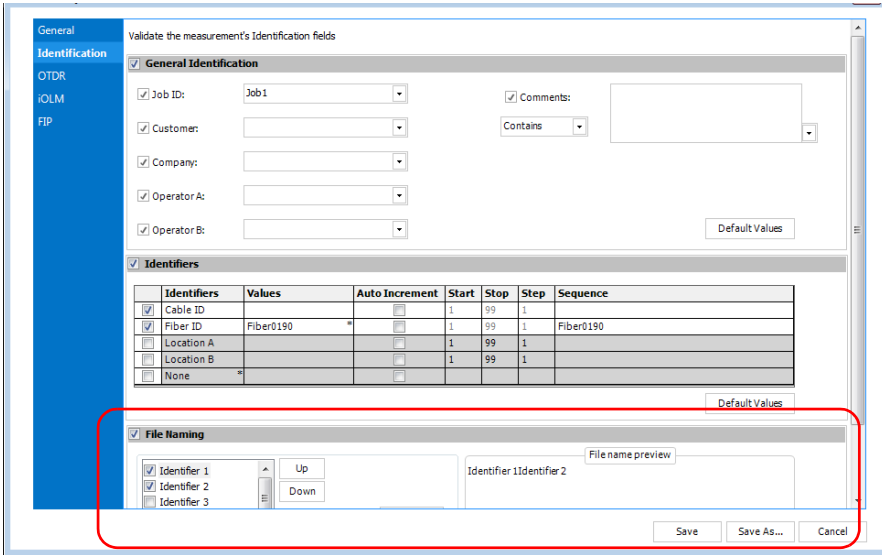
10. Select which identifiers you want to validate. This section is selected by default.



You can also set the auto-incrementation values for the identifiers as needed.

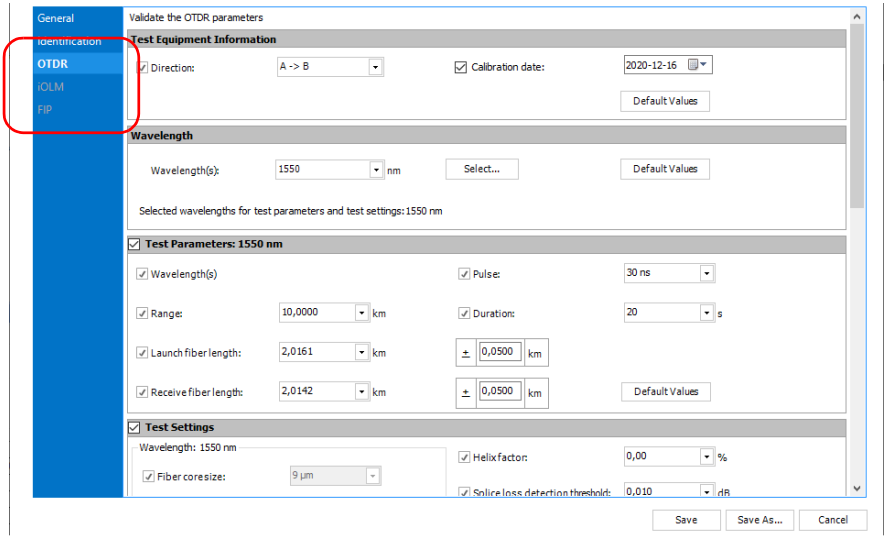
Note: *If a reference file is set, the values are already pre-filled with the reference file's values. When more than one value is available, you can select which one you want.*

11. If you want the file naming components to be validated, enable the corresponding section and select the desired components.



If you want to include the contents into the validation process, select the corresponding option. Then, select if the validation will look for an exact match whether it simply contains what you have entered.

12. Select each test type available in the list on the left and select the items you want to include in the validation. For details on the items, see the chapter corresponding to your test type.



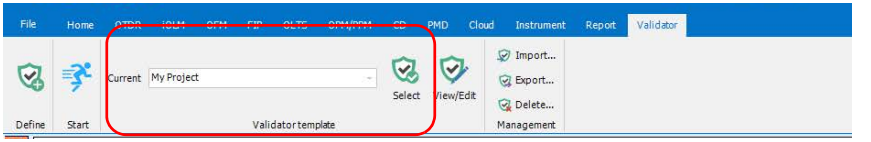
13. Once you are done, click **Save**. The compliance list automatically saved. If you want to do a duplicate of this configuration and save it under another name, use **Save As** instead.

Note: *While modifying the iOLM template, in the thresholds configuration section, you can select the **Apply Bidir and Unidir** option to apply the individual Bidir values along with Unidir values. After configuration, the validation for the Bidir will be done according to the basis of separate loss-values instead of their average loss values.*

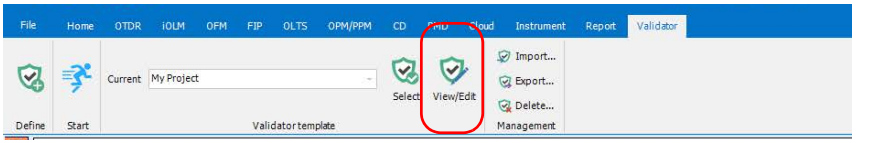
Note: *While modifying the OTDR template, in the **Events** section, you can use the **Splitter detection** table to update the threshold value. You can select (check box in the **Apply** column) the respective **Splitter ratio** and then you can modify the **Threshold value** for it. The threshold value cannot be more than the next corresponding threshold value.*

To view or modify an existing configuration template:

1. If you have not done so already, select the **Validator** ribbon tab.
2. Under **Compliance Template** select the desired template using the **Select** button or the drop-down list.

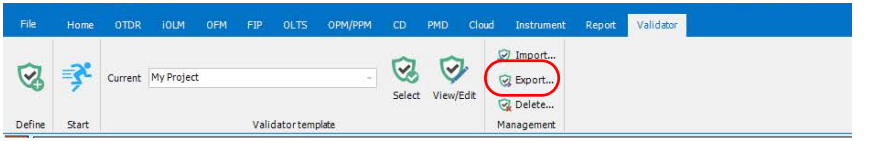


3. Click **View/Edit**.

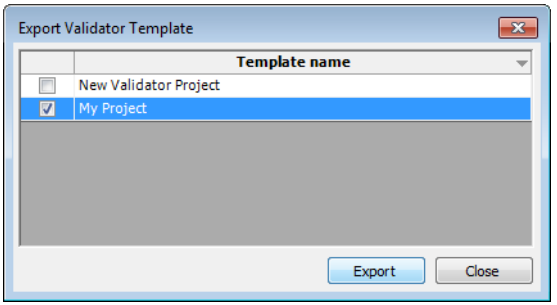


To export a configuration template:

1. If you have not done so already, select the **Validator** ribbon tab.
2. Under **Management**, select **Export**.



3. Select which template files you want to export, then click **Export**.



4. Go to the location where you want to save the templates, then click **OK**.

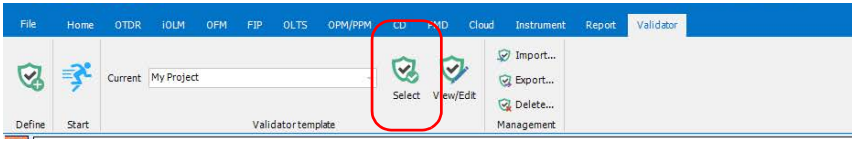
To import a configuration template:

1. If you have not done so already, select the **Validator** ribbon tab.
2. Under **Management**, select **Import**.

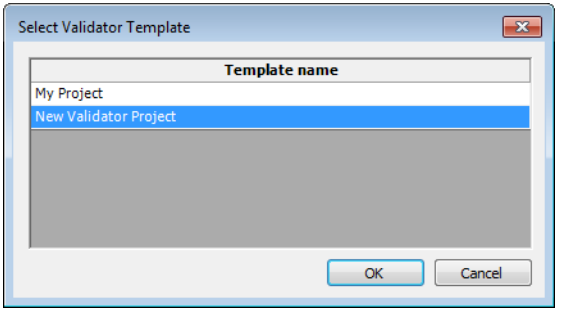
3. Locate the template you want to use, then click **Open**.

To select a configuration template:

1. If you have not done so already, select the **Validator** ribbon tab.
2. Under **Compliance Template**, click **Select**.



3. Locate the file you want to use in the list, then click **OK**.



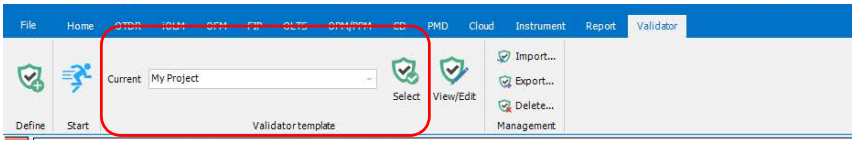
The selected template appears in the window.

To run a configuration template:

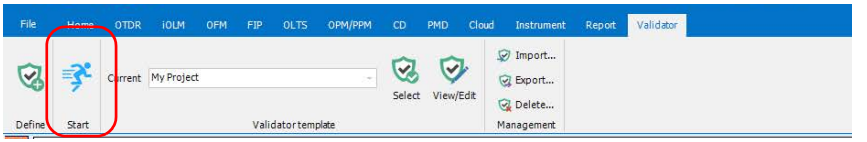
1. In the **Files** tab, select at least one file.

2. If you have not done so already, select the **Validator** ribbon tab.

3. Select the template you want to use for your compliance check.

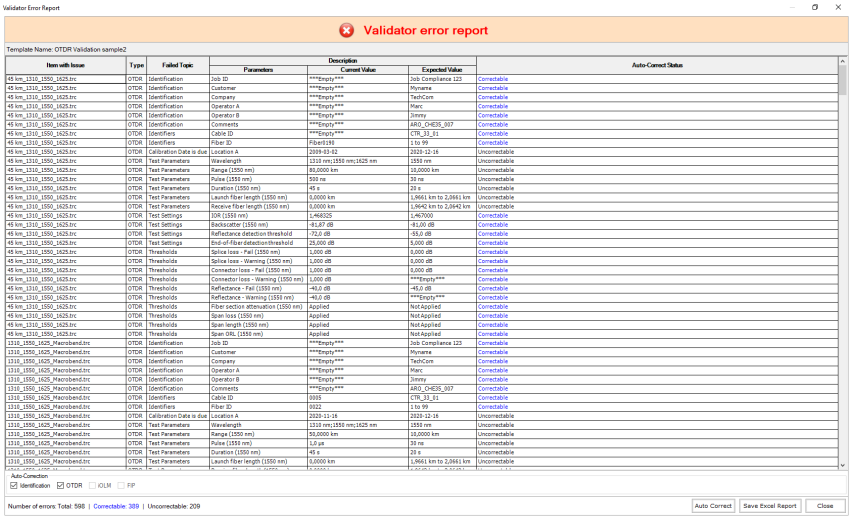


4. Once you have modified or selected the template as needed, click **Start**.



Note: *The button is available if a template is selected and if at least one valid measurement is selected in the* ***Files*** *tab.*

If there were some issues found by the Validator, you will see a table indicating which measurement is involved and a description of the issue.



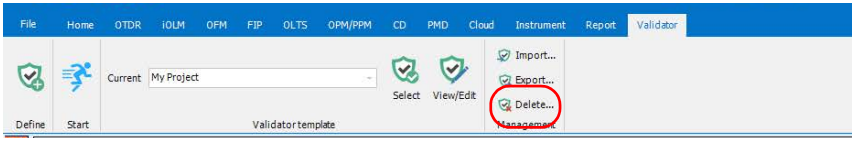
5. Some of the issues can be corrected automatically by the Validator and are identified as such in the table. If you want the Validator to handle them, click **Auto Correct** then confirm the action when prompted.

6. If you want to save an Excel copy of this report, click **Save Excel Report**, then select a name and location for the file. This can be useful for later consultation if you want to address the errors found in the report.

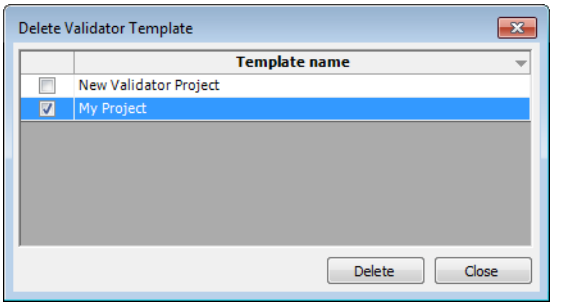
7. Click **Close** to return to the application.

To delete a configuration template:

1. If you have not done so already, select the **Validator** ribbon tab.
2. Under **Management**, click **Delete**.



3. Select which templates you want to remove in the list, then click **Delete** and confirm your choice.

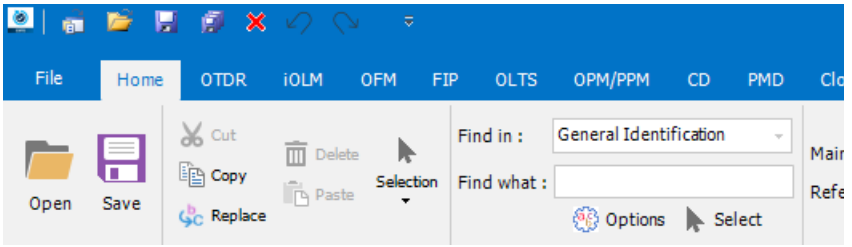


17 Viewing and Editing Measurements

Once you have added files to your list, you can view the results for the measurements they contain in the **Results** window, as well as identification information about them.

The tabs available depend on the measurement type selected. For example, for OTDR measurements, in addition to the **Identification** and **Summary** tabs, there is also the **Event Table** tab, and the **Markers** tab, if available for the selected measurement.

Note: *Now you can undo/redo the recently performed activities for the **Identification** and **Auto Documentation**. Select CTRL+Z or select the **Undo** icon from the ribbon bar. Also, to redo, select CTRL+Y or select the **Redo** icon from the ribbon bar.*



Editing Measurement Identification Information

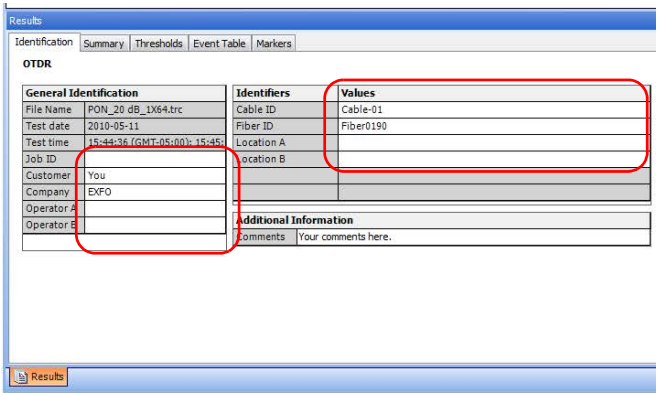
You can edit several of the fields on the **Identification** tab in the **Results** pane. Other fields are populated from information in the measurement file, if present, and will appear shaded.

Your FastReporter 3 application allows you to edit the general identification information for single-fiber as well as multiple-fiber connector FIP files. You can also modify information specific to job files such as custom job properties and job-related comments. The information you can edit will depend on the type of file you are working on.

To edit the identification information:

1. Open the required file.
2. Select the measurements for which you want to view or modify the identifier labels.
3. In the **Results** window, select the **Identification** tab.

4. Click in the white section to the right of a field label to select it, then enter the desired value.



Note: *The identifier labels are not editable if iOLM measurements are selected with any other type of measurement (for example, CD).*

Note: *When the identifier label is selected as* None*, the values are not editable.*

Note: *The maximum character limits for Job ID, Customer, Operators is 237 characters, while for all other identifiers refer the following table.*

Custom fields in FR	OTDR	iOLM	OFM	FIP	OLTS	OPM/PPM	CD	PMD
OLT	40	40	25	30	30	30	25	25
ONT	40	40	25	30	30	30	25	25
FDH	40	40	25	30	30	30	25	25
Drop Terminal	40	40	25	30	30	30	25	25
Splitter	40	40	25	30	30	30	25	25
Fiber ID	40	40	25	30	30	30	25	25
Cable ID	40	40	25	30	30	30	25	25
Location	40	40	25	30	30	30	25	25

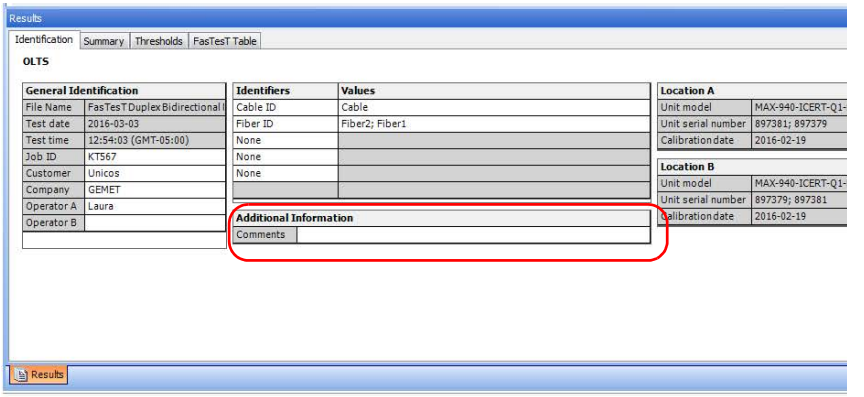
Modifying Additional Information

You can modify additional information for OLTS and OPM/PPM measurements, such as comments relating to the cables or fibers.

Note: *If a cable comment is present, the application merges this comment with the comment of each fiber measurement of this cable. The cable comment and the fiber comment are separated by a hyphen (-).*

To modify the additional information:

1. Open the required file.
2. Select the **Identification** tab.
3. Click on the **Comments** field under the **Additional Information** section to modify the additional information.



Find and Replace

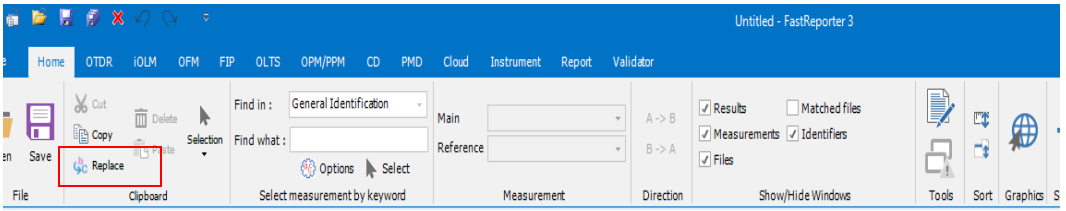
You can find and replace the General Identifications, Identifiers, Identifier Names, Identifier Values, and Comments.

Warning

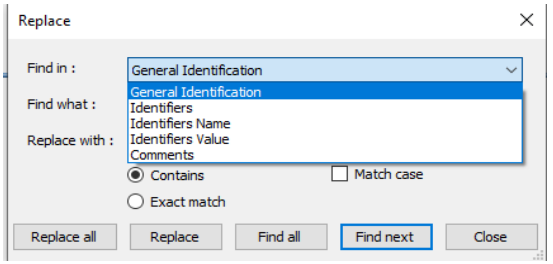
The **Redo/Undo** feature will not available for the find and replace activities, and also for the previous activities once the **Find/Replace** feature is selected.

To Find and Replace the parameters and values:

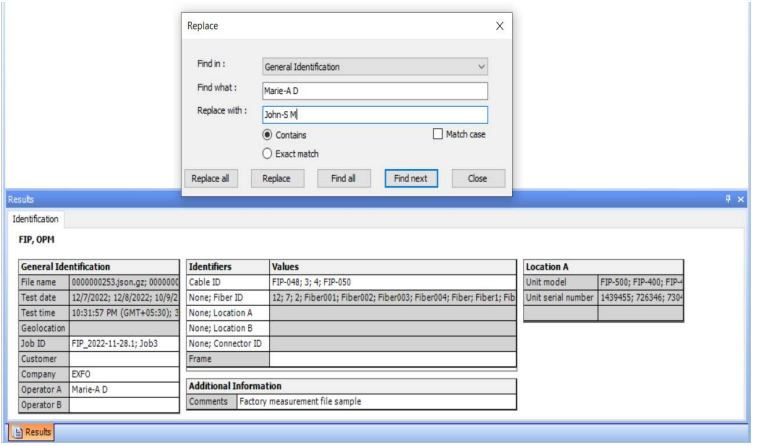
1. Go to **Home** menu, and then select the **Replace** sub-menu.



2. Select from the **Find in** drop down the required parameter category.

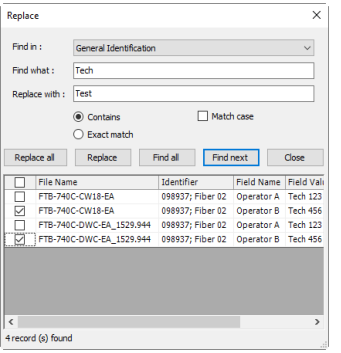


3. In the **Find what** text box, enter the label or value that you want to find.
4. If you want to replace the parameter or value entered in the **Find what** text box, enter the label or value that you want to replace with in the **Replace with** text box.

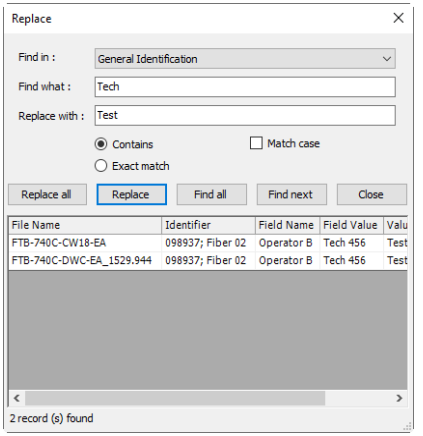


5. Select **Contains**, **Exact match**, **Match case** options to filter or precisely look for the parameter or value, and then **select Find next** or **Find all**. The files that matches the selected parameters and filters will be listed in the table below.

6. Select the required files from the list to replace the parameters or values from them.



7. Select **Replace**, **Replace all** as required.
The replaced files with the replaced field name is displayed after replacing. Verify the changes accordingly.

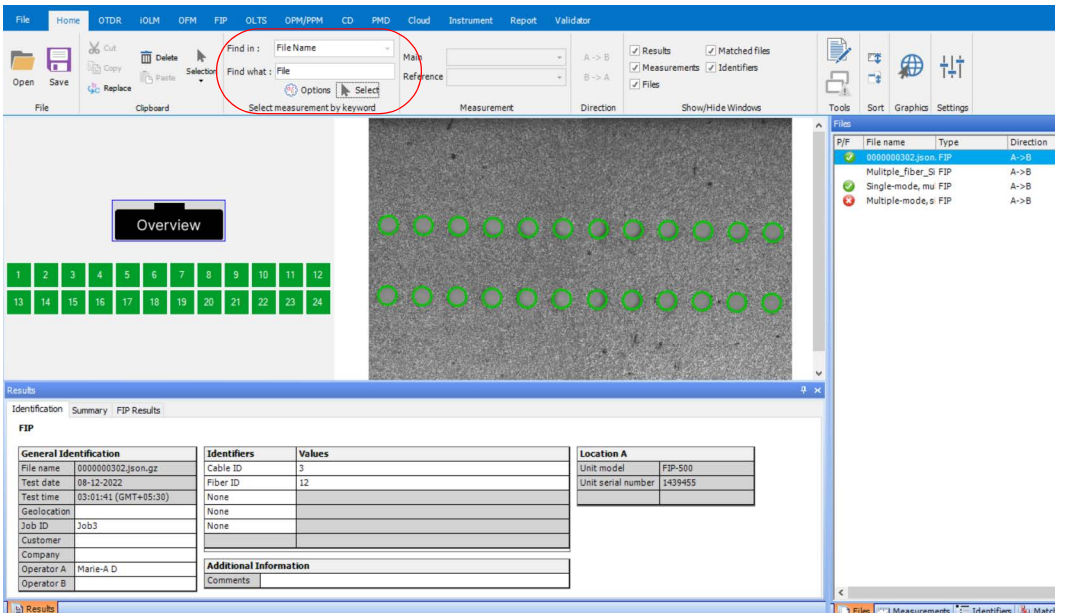


Search by keyword

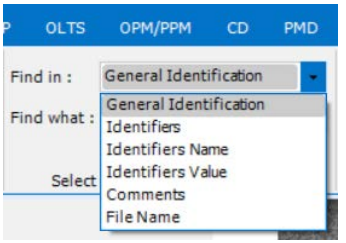
You can search the files with a keyword. The files with the matching keyword will highlighted in the **Files** section. You can find in the keyword from the General Identification, Identifiers, Comments, and File Name parameters. You can filter the search having the contents, exact match, and even match the case.

To search the files with the keyword:

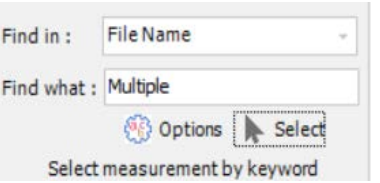
1. Select the required files to that you want to search from.
2. On the **Home** menu, goto the **Select Measurements By Keyword** menu.



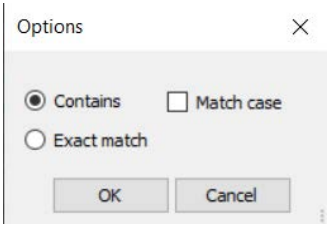
3. On the **Select Measurements By Keyword** section, select the parameter from the **Find in** drop-down list. to searchthe keyword from the test parameters.



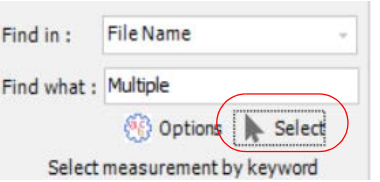
4. Type the keyword you want to search in the **Find what** text box.



5. If required, select **Options** to refine your search by selecting the criteria other than Contains. select the **Match case** or **Exact match** accordingly if required, and then select **OK**.



6. On returning, select the **Select** option from the **Select Measurement by keyword** section.
The files matching the keyword and criteria are highlighted in the **Files** section.


Find in :
File Name
Find what :
Multiple
Options
Select
Select measurement by keyword

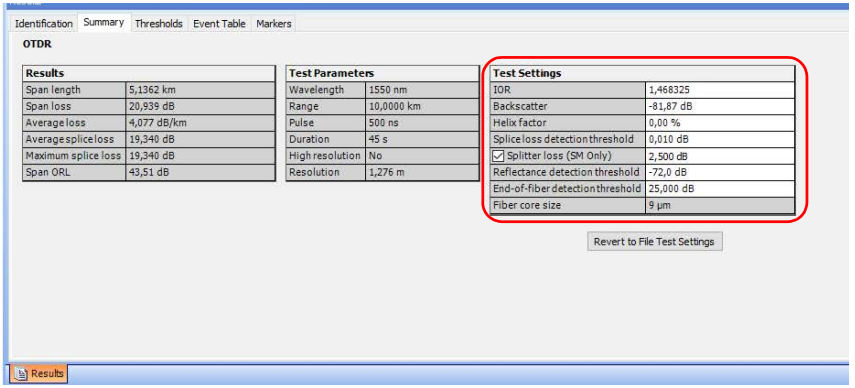
Modifying Summary Information (Plus Mode)

When viewing your test results, you can quickly find a summary of the information, and modify the related test settings as needed to view the impact on the measurement.

Note: *The items displayed in the **Summary** tab will depend on the type of file you are viewing.*

To edit the summary information:

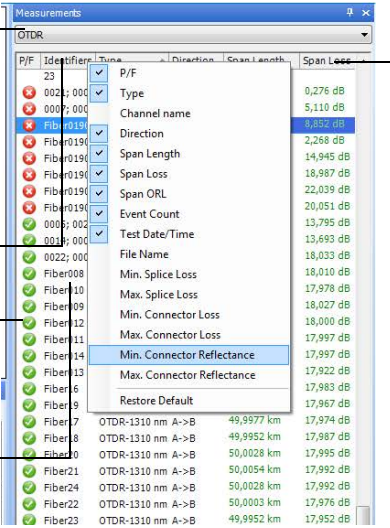
1. Open the desired file.
2. Select the measurement for which you want to view or modify the summary information.
3. Click in the field to the right of the field label.
4. Enter a value.



Viewing and Sorting Files or Measurements

You can view and sort files and measurements according various criteria, depending on the type of file or measurements you are viewing. You can sort the files according the header, or you can do manual sorting.

The available file types at the top window will determine which items are displayed. Not all items are available for all measurement types.



Select which items to view from the list. Depending on which types of files are displayed, the available items will differ.

Click to sort according to a specific column.

Click and drag to change position manually.

Right-click to select other sorting criteria.

Right-click to select columns to display. Change the order by dragging the column to a new location (available for OTDR, iOLM and OLTS only).

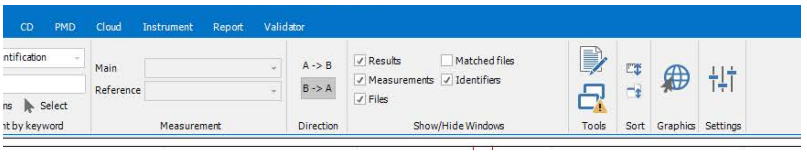
In the **Files** tab, you can select to display the **Identifiers** column.

Note: *During manual sorting, if the files are not adjacent, you need to group them by pressing Ctrl+G.*

When you have sorted one of the tabs, you can apply the same sorting criteria to the two other tabs. This is particularly useful to send your criteria to the **Matched Files** tab, since it is used to determine the order in which the files appear in your reports.

To apply sorting to other windows:

1. If you have not done so already, select the **Home** ribbon tab.
2. Select the files in the **Files** window or measurements in the Measurements window.
3. Under **Sort**, select which applies for your situation:
   - ➤ If you have sorted the files, click **Apply File Sorting** to apply the sorting to the **Measurements** and **Matched Files** tab.
   - ➤ If you have sorted the measurements, click **Apply Measurement Sorting** to apply the sorting to the **Files** and **Matched Files** tab.



Note: *When files in the **Matched Files** tab are not of the same type and the sorting is based on the **Files** or **Measurements** tabs, it may be possible that the sorting is not exactly the same, as priority is granted to file type and priority.*

Note: *You can modify the column width and position of the Files, Measurements, and Identifiers column. In addition to this, show/hide the columns, and so on. All these changes done are remembered for your further sessions. These changes will be remembered even after modifying and repairing the FastReporter 3 application.Managing Files*

You can open single files for consultation and perform changes on them.

Note: *If you have purchased the FC option, you can mange the files as part of projects. For more information, see* Working with Projects (Plus Mode) *on page 43*

To open files:

1. From the main window, select the **File** ribbon tab, then **Open**.
2. Select whether you want to open your own files or sample files provided with the application. You can also select the most recently used files.

To close files:

1. Select the file or files that you want to close. If you want to close all of them, you do not need to select any.
2. From the main window, select the **File** ribbon tab, then **Close**.
3. Select whether you want to close only the selected files or all of them. If some were modified and you have not saved them, you will be prompted to do so.

You can save the changes you make to selected measurement files or to all measurement files in the current project.

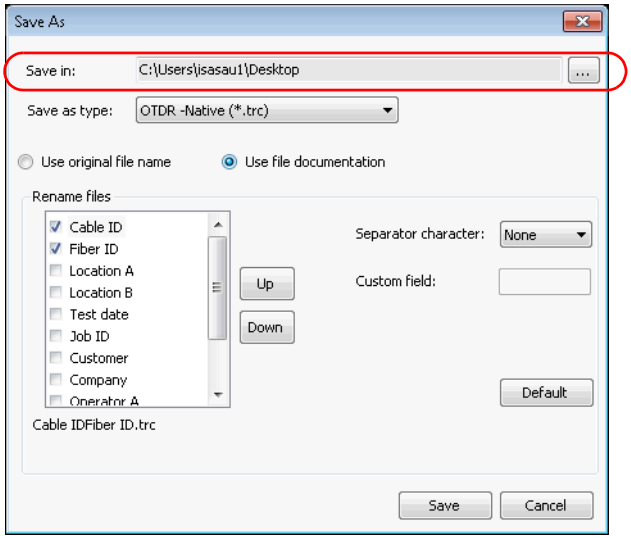
When saving several files at a time, you can set an automated naming pattern so that they all follow the same naming scheme. Depending on the type of files you are saving, different items will be available in the window.

To save selected measurement files:

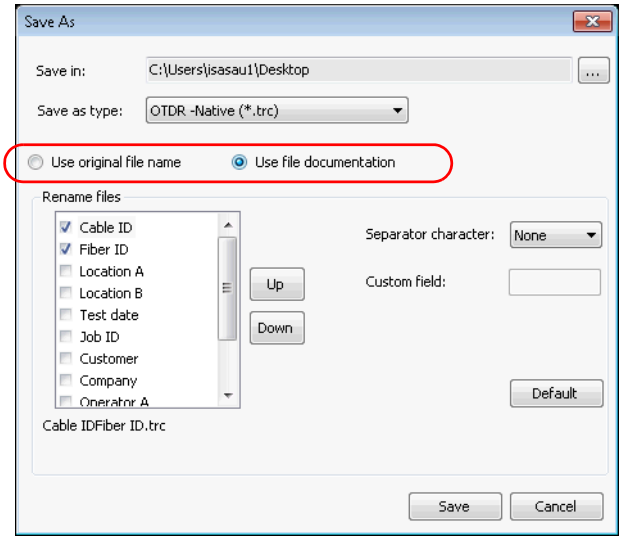
1. In the **Files** tab, select the file or files that you want to save.
2. Select the **Files** ribbon tab, then **Save** and **Save Selected Files**.

To save selected measurement files under a different name:

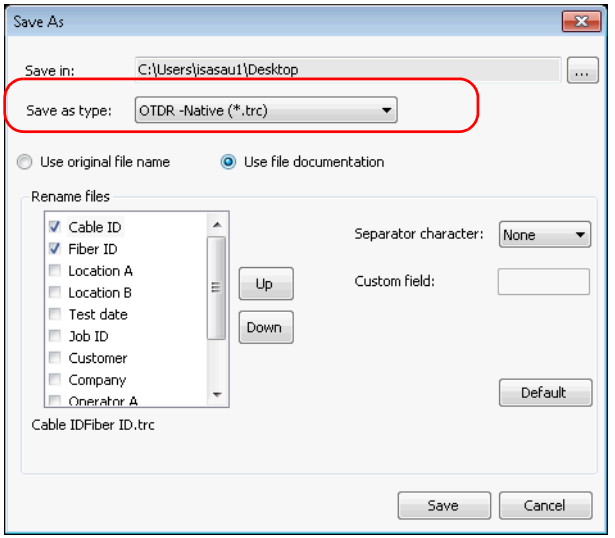
1. In the **Files** tab, select the files that you want to save.
2. Select the **Files** ribbon tab, then **Save** and **Save Selected Files As**.
3. Select the location for your files.



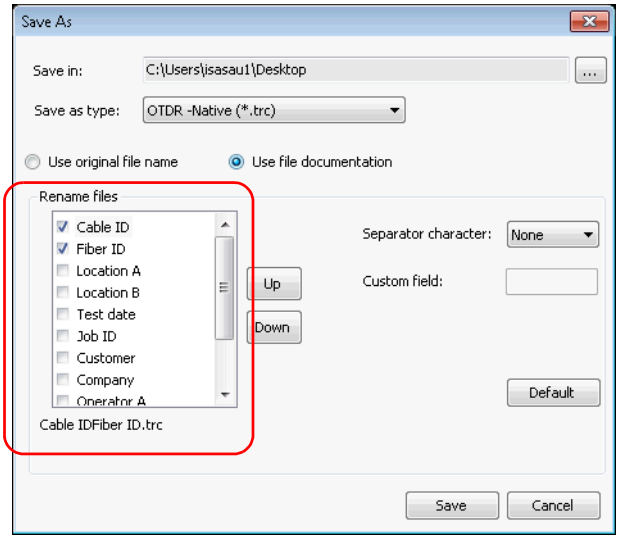
4. Select whether you want to use the original file names, or if you want to use the file documentation elements. If you are using the original file names, go to step 9. Otherwise, proceed as instructed below.



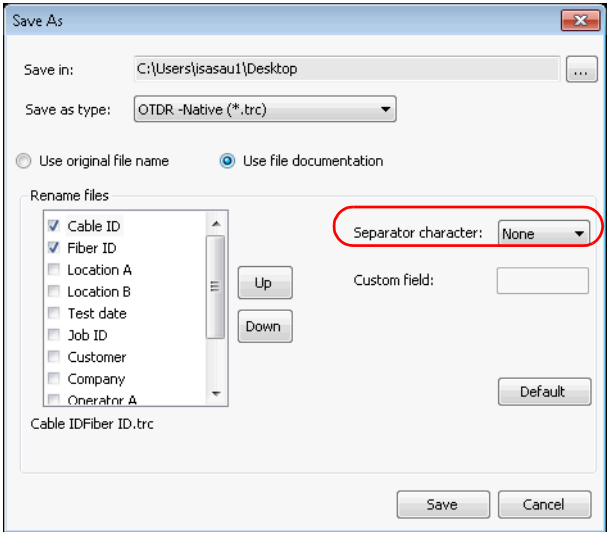
5. If your files are in OTDR format, you can select a different format to which to save the files.



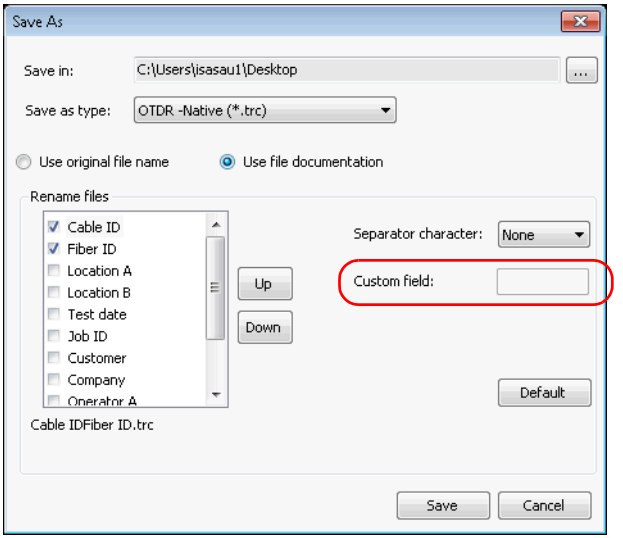
6. Select which items you want to include in the name. You can change the order of the items using the arrow buttons.



7. Select the type of character you want to use as a separator between the items.



8. If you have selected to add a custom field to the file name, you can enter the value you want in the corresponding box.



9. Click **Save** to confirm your action.

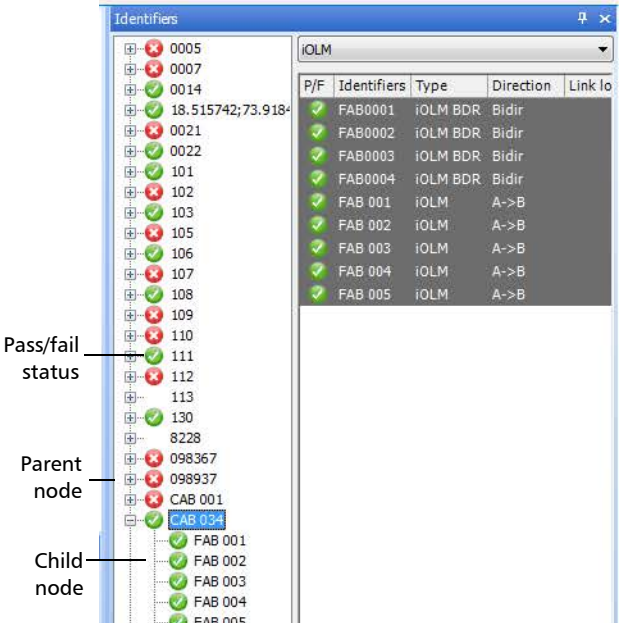
Note: *PMD files will be saved with the .pmdb extension, ConnectorMax files will be saved with the .cmax2 extension, and OLTS files will be saved with the .oltsx extension.*

To save all files:

Select the **Files** ribbon tab, then **Save** and **Save All**. All measurement files in the current project and the project file are saved.

Using the Identifiers View

Another way to filter and sort your measurements can be according to the identifiers included in them. These identifiers are displayed in a tree view where you can expand or collapse results for easier management and viewing purposes. When you click on a specific part of the tree view, the resulting files are displayed in a table on the right of the tree. This table behaves like the **Measurement** tab and allows you to perform the same actions regarding sorting and selection.



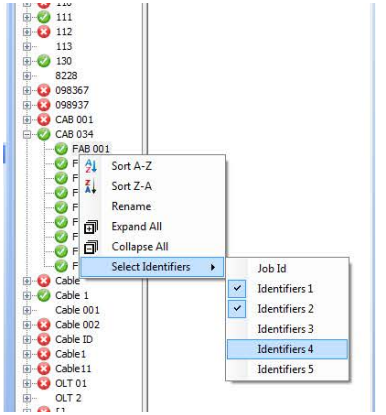
The identifier information used to sort the measurements are found under their respective **Identification** tabs. Each identifier down the list in the table creates a node in the tree. The identifiers used for matching the files are those you have selected as active in your project settings. See *Matching Files* on page 55 for more information.

The items in the tree view also show pass/fail icons so that you can quickly see if there are problems for specific measurements.

You can regroup identifiers, rename them, and move the measurements within the tree to assign new identifiers to them. The identifiers used in the list

To show and select measurements:

1. From the main window, select the **Identifiers** tab.
2. If you want to view only specific identifiers, right-click in the tree, click **Select Identifiers** and then the ones you want to view.



3. Select the item you wish to view in the tree. All measurements on this node, as well as those in the children nodes are displayed in the table on the right. The identifiers used in the tree view are shown in a column, you can therefore sort the results using this criterion.

   You can select more than one node using the Ctrl key. The multiple selection will work for nodes at the same level, with the same parent.

Note: *You can sort the measurements in the table as you would in the **Measurements** tab. See* Viewing and Sorting Files or Measurements *on page 505.*

To move measurements within a same branch:

1. Click on the node or measurements to select them.
2. Drag them to the desired node. The information will be updated automatically.

IMPORTANT

The identifier information previously contained in the files you are moving will be replaced with the identifier information of the new node.

3. Confirm the move.

To change the identifiers of all measurements in a specific node:

1. In the tree, select the node that you want to change by right-clicking on it.
2. Select **Rename**.
3. Enter the desired new name.

   The values in the **Identification** tab are changed for each measurements and the nodes are updated according to the new name.

18 Using FastReporter 3 Tools

Tools are available to help you better manage your data:

Setting a Reference File or Measurement (Plus Mode)

A reference file is used to compare fibers within the same cable, monitor fiber deterioration or compare fibers before and after installation. Once a measurement file has been added to a project, you can set it as a reference file. The reference file can then be used to automatically document other measurement files (see *Automatically Documenting Measurement Files (Plus Mode)* on page 519).

For supported OTDR file formats, FastReporter 3 will display the reference measurement, in red, in the Event Table. The reference measurement can then be applied as a template (see *Setting and Applying OTDR/OTDR Bidir Reference as Template (Plus Mode)* on page 184). You can set a file as a reference if the file format supports applying a reference as a template.

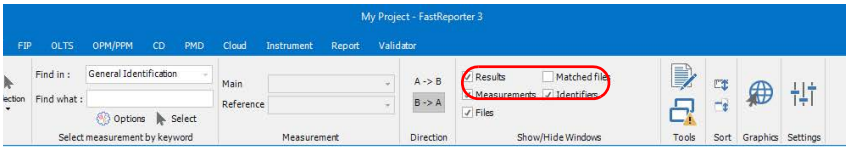
Automatically Documenting Measurement Files (Plus Mode)

The auto documentation feature can be used to copy selected identification information from a reference file to selected files. You can also use this feature to automatically assign fiber IDs to selected files.

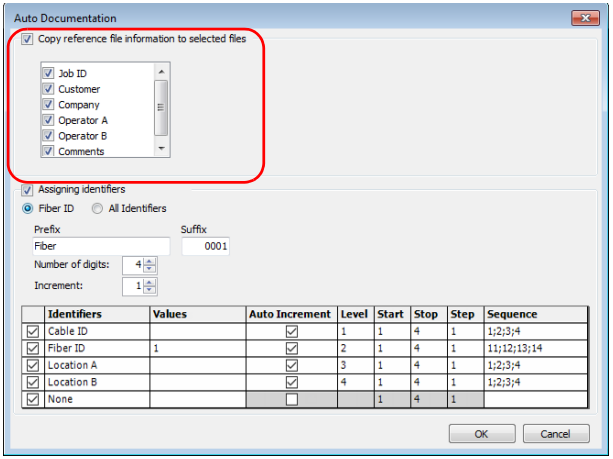
Note: *The auto documentation tool is available even if no reference file is defined; in that case, you cannot copy reference file information to files, but you can assign fiber IDs automatically if your selected files contain at least one fiber ID identifier.*

Note: *Now you can undo the recently performed activities for the Identifiers and Auto Documentation. Select CTRL+Z or select the Undo icon from the ribbon bar.To use the auto documentation feature:*

1. In the **Files** window, select the file that will serve as the reference file.
2. From the **File** ribbon tab, click **Set as Reference File**.
3. In the **Files** window, select the files to which you want to export the information.
4. Select the **Home** tab.
5. Under **Tools**, select **Auto Documentation**.

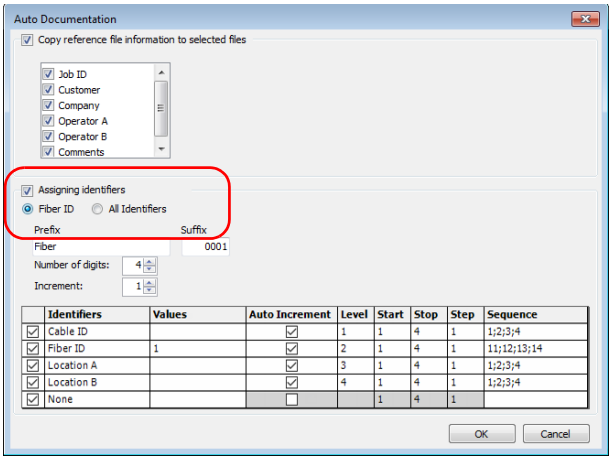


6. To copy items from the reference trace to your selected file, enable the corresponding option, then select the desired items.

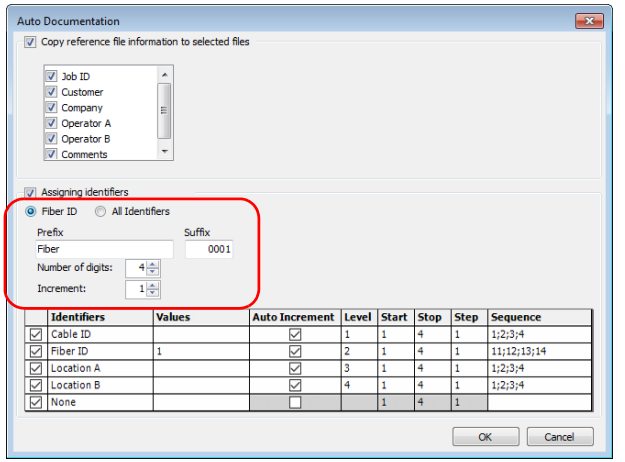


The file information options listed are the identifiers included in the reference file and will differ depending on the file type.

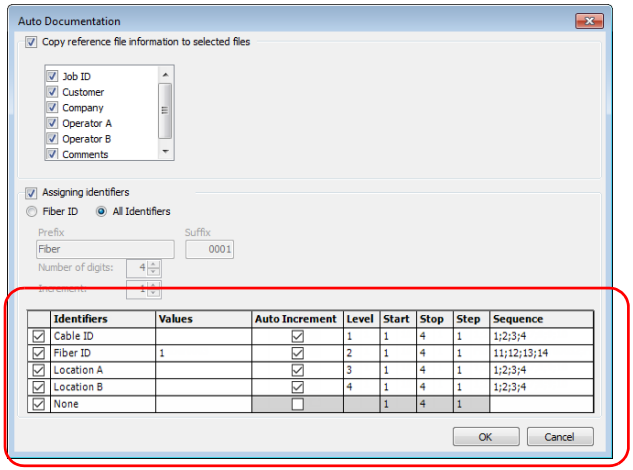
7. Select whether you want to copy the fiber IDs or all of the identifiers for all the files.



➤ If you are copying the fiber IDs, enter a prefix and suffix, and select the number of digits and increment value to use.



➤ If you are using all of the identifiers, select which values to use in the list. You can modify the ID or start and stop values, indicate whether they will be incremented automatically, and what step value to use if that is the case. You can also set the levels of the identifiers to increment simultaneously at same order. For example, if you set the level of Cable ID and Fiber ID at level 1 order, the auto-increment values (range) of these identifiers will increment simultaneously at level 1 order. Two or more identifiers can be set to same level of increment.



The start and stop values can be either numeric or alphabetic

If you enter items separated by semicolons in the **Values** cell, this is the sequence that will be used for incrementation.

If your selection includes PPM files, OLT, ONT and location identifiers are displayed.

If your selection includes OTDR, CD, PMD or OLTS files, Cable ID, Fiber ID, Location and Location B identifiers are displayed.

If your selection includes only iOLM and FIP files, custom identifiers are displayed; you will be able to change their names as needed.

Note: *The information is copied to the selected files only if they contain the corresponding field.*

8. Click **OK**.

Using the Duplicated Measurements Tool (Plus Mode)

Sometimes, you might need to verify if tests were actually performed on fibers and that the analysis or results were not just copied and pasted there for speedy execution purposes. The duplicated measurements tool can help you to quickly locate such files.

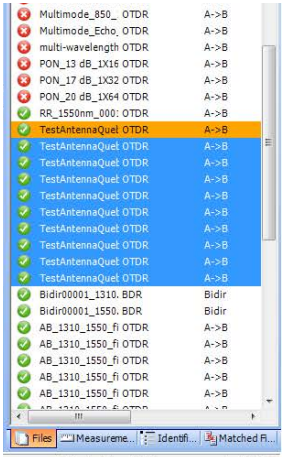
When you select at least two measurement files, you can have FastReporter 3 automatically compare them and indicate which files show the same acquisition time, measurement wavelength and module serial number. These files can then be selected automatically so you do not have to look for them through your list, and batch processed.

Note: *For the FIP, the application will match the fiber ID, test configuration name and test date/time of the measurement to mark the measurements as duplicated.*

Note: *In the case of bidirectional OTDR files, both directions are analyzed separately.*

To search for duplicated information in files:

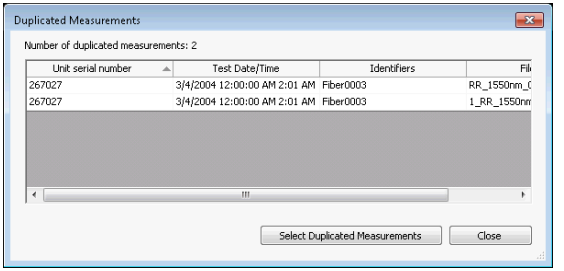
1. Open the files on which you want to use the tool.
2. Select the desired measurements.



3. Select the **Home** tab.

4. Under **Tools**, select **Duplicated Measurements**.

The files are analyzed and the result appears on-screen. The duplicate measurement tool will display the unit serial number, test date/time, identifiers, and filename details.



5. By clicking **Select Duplicate Measurements**, you will automatically pick the detected files in the **Measurements** tab.
6. Proceed with any batch operation you want to perform for those files.

Using the Clipboard (Plus Mode)

You use the clipboard tools to copy and paste information you enter in the **Results** tab, delete measurements or files from the list, or select items quickly if they have the same type or date for example.

You can also copy the measurement graph from FastReporter 3 and paste it at your required place, for example, into an e-mail message, or an application such as Microsoft Excel for use in existing measurement reports.

To use the clipboard with a measurement graph:

1. Select the **Home** ribbon tab.
2. Click on the graph.
3. Under **Clipboard**, click **Copy**.
4. Goto the application where you want to paste the graph into (e-mail client, spreadsheet, word processing application, etc.).

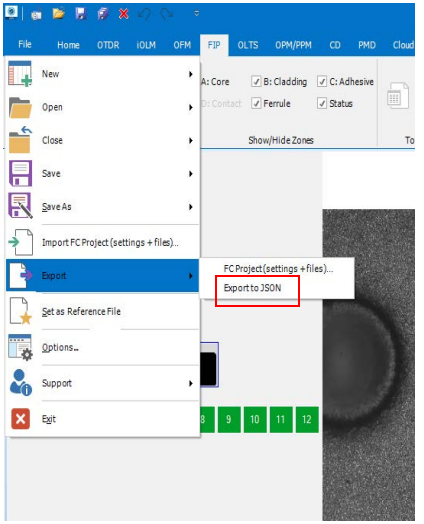
5. Place the mouse pointer where you want to insert the graph, and on the application's **Edit** menu, click **Paste**.

Exporting the measurements to JSON extension

You can also export the iOLM, FIP-500, OPM-MF, PPM1, and iOLTS measurement files to the JSON Extension file.

To export the .fip file to JSON:

1. On the ribbon bar, go to **File** > **Export,** and the select **Export to JSON**.



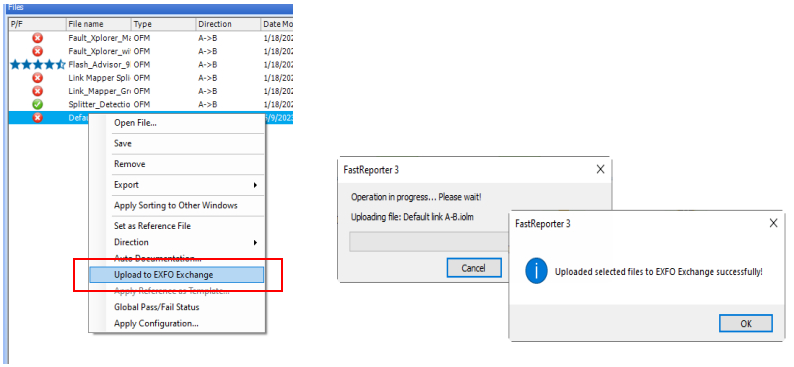
On the explorer window that opens, browse the required location to save the exported file, change the file name if required, and then select **Save**. The exported FIP file will be saved in JSON format at the selected location.

Uploading the file to EXFO Exchange

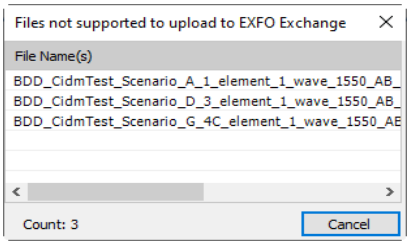
You can upload the file to your EXFO Exchange.

To upload the file to your EXFO Exchange.

1. Open the required files in FastReporter.
2. In the **Files** section, right click the file that you want to upload and then select the **Upload to EXFO Exchange** option.



Note: *The files that are not uploaded to the server are listed for your reference if any error occurs or if the files you are uploading are not supported.*



19 FastReporter 3 Examples

This chapter walks you through the tasks required to create and modify projects, reports, and templates. Detailed procedures are provided for creating the following examples:

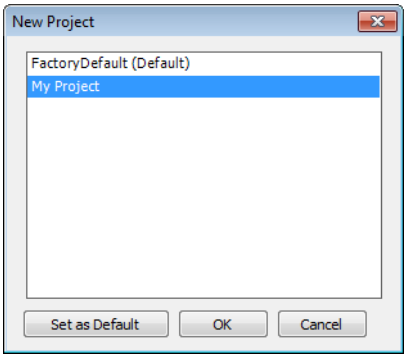
- *Creating an OTDR Bidirectional project:* Create an OTDR project with OTDR traces going in both directions (that is, from A to B and from B to A).
- *Creating a project template:* Create a project template containing the properties and settings that you often use in your projects.
- *Creating a fiber characterization report:* Create a printed or electronic fiber characterization report based on selected measurements.

Creating an OTDR Bidirectional Project

You can change the directions of the OTDR files and create bidirectional projects.

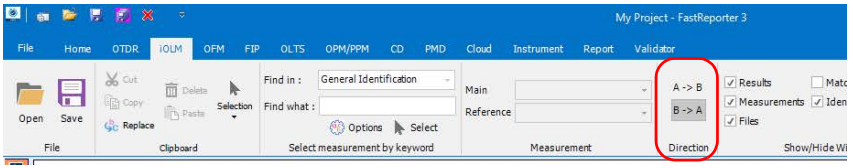
To create an OTDR Bidirectional project:

1. On the **File** ribbon tab, select **New**, then **Project**.
2. In the list, select the template you want to use.



3. Click **OK**.
4. On the **File** ribbon tab, select **Open**, then **File**.
5. Select the OTDR files to be added to the project. The selected files are highlighted.
6. Click **Open**.
7. In the **Files** tab, select the file or files for which you want to change the direction.

8. Select the **Home** ribbon tab, then under **Direction** select **A->B** or **B->A** as needed.

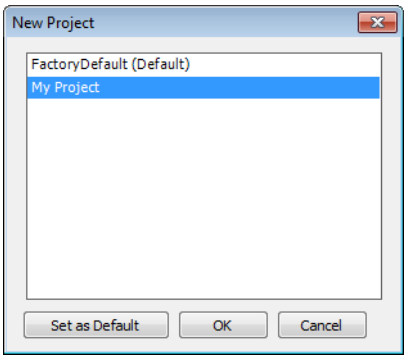


Creating a Project Template

You can save the properties and settings you often use when creating projects in a project template. For example, you can save the pass/fail thresholds that you often use in your OTDR projects in an OTDR project template.

To create a project template:

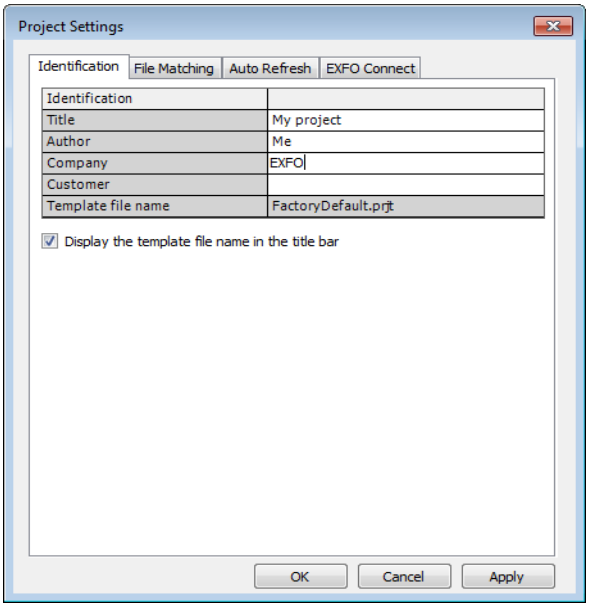
1. From the **File** ribbon tab, select **New**, then **Project**.
2. In the list, click a template. Use an existing template that already contains some of the properties and settings that you want to use as a starting point, if applicable.



3. Click **OK**.

4. In the **Home** ribbon tab, select **Settings**.

5. Under the **Identification** tab, enter the information to identify your template. Click into each item to activate it, then type in the information.



6. When you have finished making changes to the project properties, click **OK**.

7. On the **File** ribbon tab, click **Save As**, then **Project As Template**.

8. In the **File name** box, type a name for the project template file.

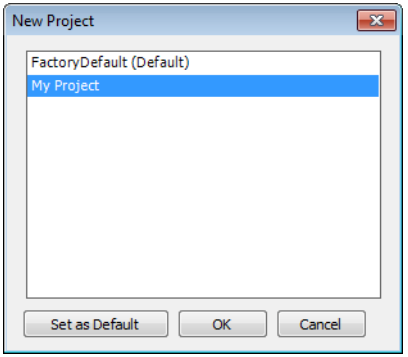
IMPORTANT

FastReporter 3 automatically saves project templates in the Project Template folder. If you change the location, the template will not be available for selection in the New Project dialog box when you start a new project.

9. Click **Save**.

10. On the **File** ribbon tab, select **New**, then **Project**.

11. To set the new project template as the default template, click the file name, and click **Set as Default**.



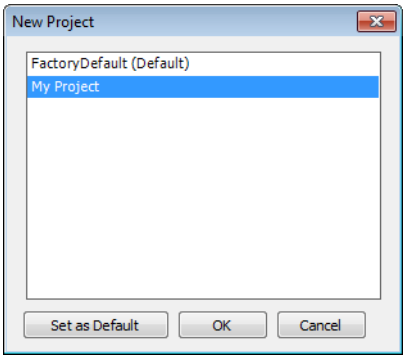
12. Click **OK** to start a new project or **Cancel** if you do not wish to start a new project at this time.

Creating a Fiber Characterization Report

Throughout the network life cycle, fiber characterization reports are essential for avoiding delays in service provisioning before system component installation, in results comparison for post-installation troubleshooting, and in ongoing network analysis and trending.

To create a fiber characterization report:

1. On the **File** ribbon tab, select **New**, then **Project**.
2. In the list, click the template you want to use.



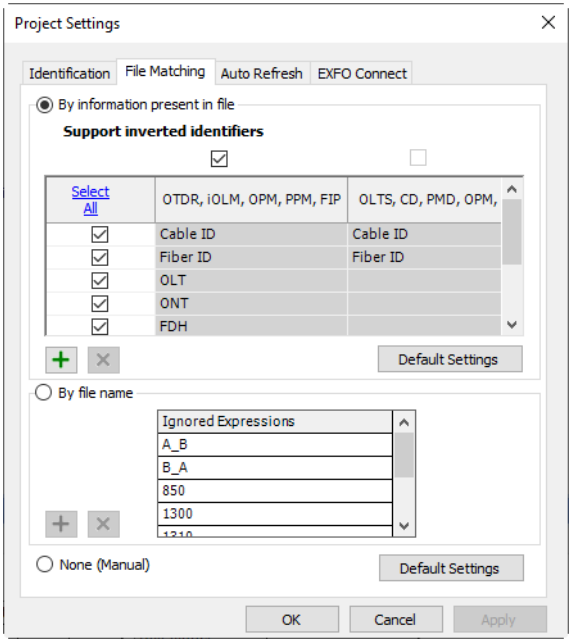
3. Click **OK**.
4. On the **File** ribbon tab, select **Open**, then **File**.
5. Select multiple CD, OLTS, PMD, iOLM or OTDR files.

Note: *You must select files with matching fiber IDs and Cable IDs.*

6. Click **Open** to add the selected files to the project.

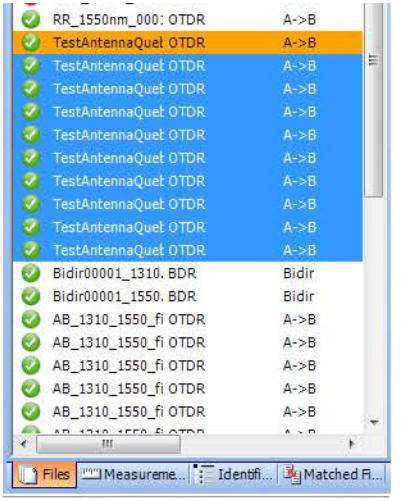
7. In the **Home** ribbon tab, select **Settings**.

8. Under the **File Matching** tab, click **By information present in file**.



9. Click **OK**.

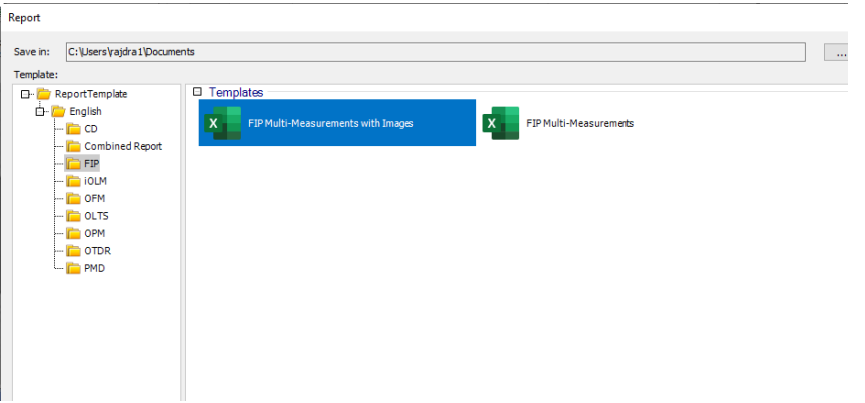
10. In the **Measurements** tab, select the measurements you want to include in the report.



11. To print or create an electronic version of the report, follow the appropriate procedure below.

12. Select the **Report** ribbon tab, then click **From New Template**.

13. In the list, select **Template**.



14. The report is generated according to the selected template.

20 Troubleshooting

The table below presents common problems and their solutions.

Problem	Solution
I have trouble installing the application	➤ Remove the old version before installing the new version. ➤ Turn off your anti-virus program and try to install the application again.
I cannot see my files in the application	Some file formats, such as CD and PMD, or older OTDR files, cannot be viewed in the 64-bit version of the application. Try to open them in the 32-bit version of the application. In the case of the older OTDR files, you can try to save them in a newer format in the 32-bit version of the application, then open them in the 64-bit version of the application.
I cannot open an OTDR file.	If the CylancePROTECT anti-virus is installed in the system/computer on which FastReporter 3 is running, you need to add the agiledotnetrt64.dll and agiledotnetrt.dll files in the exclusion list. To add dll files in the exclusion list, contact your IT support team.
I cannot activate FastReporter 3 with my USB key because it is not recognized.	In FastReporter 3, select the **File** menu, then **Support** and **Install FastReporter USB Dongle Driver**. Once the installation is complete, restart the application.

Consulting the Online Help

Help for FastReporter 3 is available directly in your application.

To refer user guide:

On the ribbon bar, go to **File** > **Support** > **Help**.

OR, on Ribbon bar, select icon, next to your Login name (Workspace)

Consulting Information About FastReporter 3

You can view information about your application, such as the version number and remaining trial period days if you have not activated. It also has the information to help you should you need to contact the technical support team.

To display the information about FastReporter 3:

On the ribbon bar, go to **File** > **Support** > **About FastReporter**.

Contacting the Technical Support Group

To obtain after-sales service or technical support for this product, contact EXFO at one of the following numbers. The Technical Support Group is available to take your calls from Monday to Friday, 8:00 a.m. to 7:00 p.m. (Eastern Time in North America).

Technical Support Group
400 Godin Avenue
Quebec (Quebec) G1M 2K2
CANADA

1 866 683-0155 (USA and Canada)
Tel.: 1 418 683-5498
Fax: 1 418 683-9224
support@exfo.com

A Description of Event Types

This section describes all types of events that may appear in the events table generated by the application. Here is a guide to the descriptions:

- Each type of event has its own symbol.
- Each type of event is represented by a graph of a fiber trace, which illustrates the power reflected back toward the source as a function of distance.
- An arrow points to the location of the event type in the trace.
- Most graphs show one complete trace; that is, an entire acquisition range.
- Some graphs show only a portion of the entire range to view events of interest more closely.

Span Start

The Span Start of a trace is the event that marks the beginning of the fiber span. By default, the Span Start is placed on the first event of a tested fiber (typically the first connector of the OTDR itself).

You can make another event the start of the span you want to focus your analysis on. This will set the beginning of the events table at a specific event along the trace.

Span End

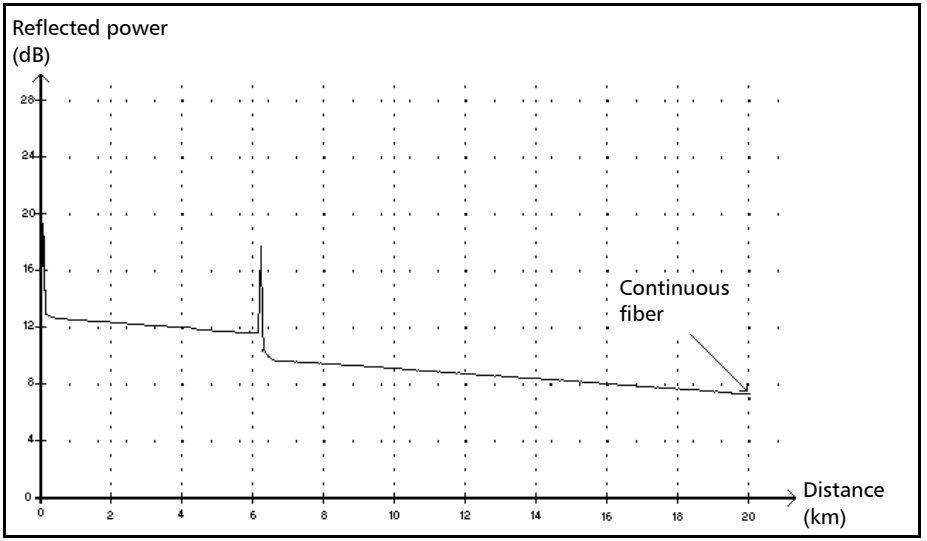
The Span End of a trace is the event that marks the end of the fiber span. By default, the Span End is placed on the last event of a tested fiber, and is called the end-of-fiber event.

You can also make another event the end of the span you want to focus your analysis on. This will set the end of the events table at a specific event along the trace.

Short Fibers

You can test short fibers with the application. You can even define a fiber span for short fibers by placing the span start and the span end on the same event.

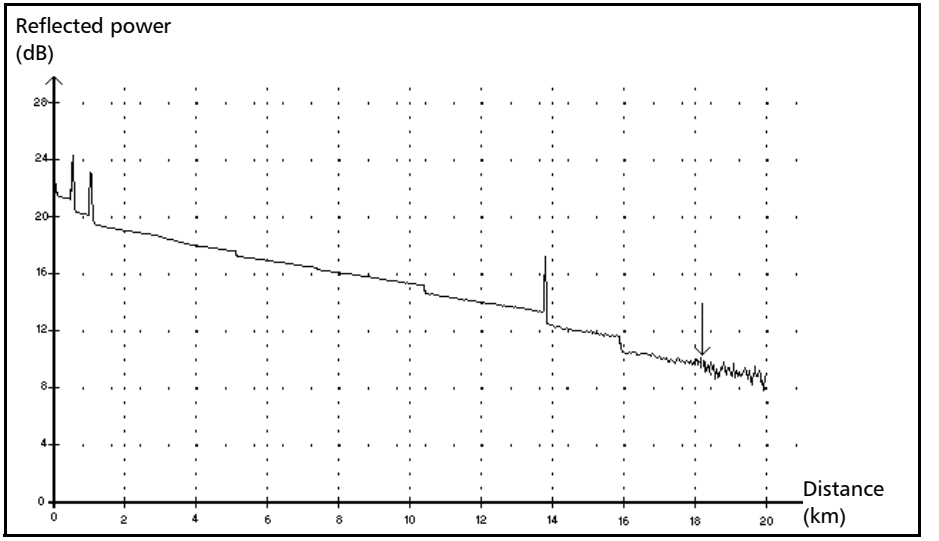
Continuous Fiber



This event indicates that the selected acquisition range was shorter than the fiber length.

- The fiber end was not detected because the analysis process ended before reaching the end of the fiber.
- The acquisition distance range should therefore be increased to a value greater than the fiber length.
- There is no loss or reflectance specified for continuous fiber events.

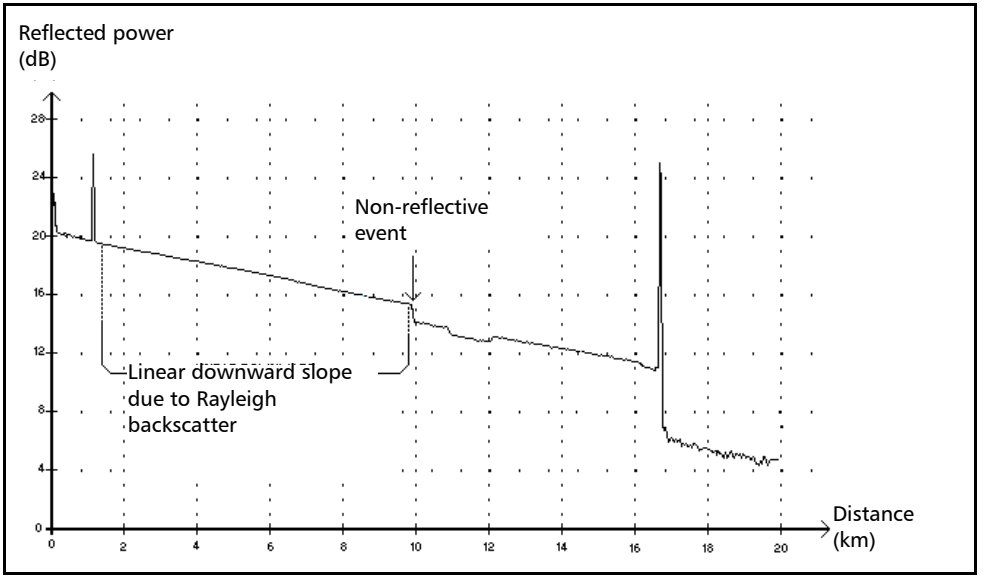
End of Analysis



This event indicates that the pulse width used did not provide enough dynamic range to get to the end of the fiber.

- The analysis ended before reaching the end of the fiber because the signal-to-noise ratio was too low.
- The pulse width should therefore be increased so the signal reaches the end of the fiber with a sufficient signal-to-noise ratio.
- There is no loss or reflectance specified for end-of-analysis events.

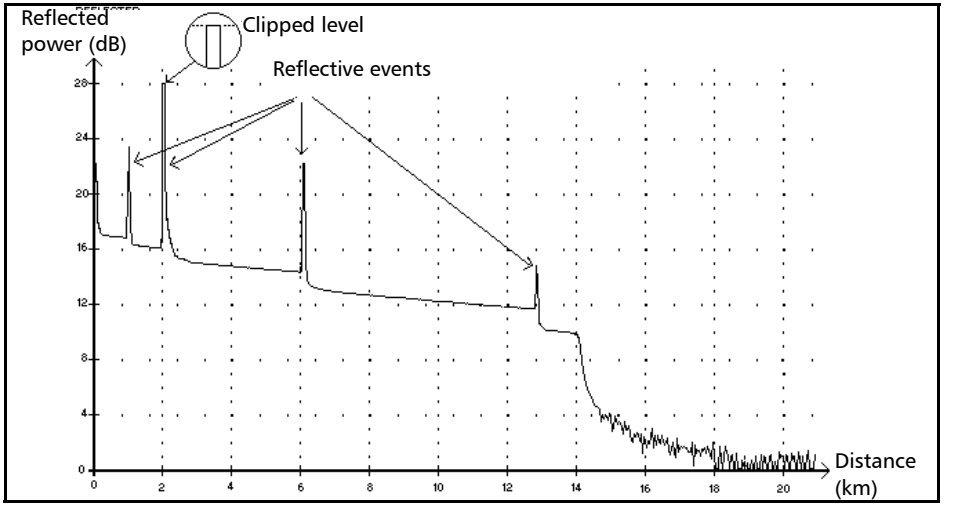
Non-Reflective Event



This event is characterized by a sudden decrease in the Rayleigh backscatter signal level. It appears as a discontinuity in the downward slope of the trace signal.

- This event is often caused by splices, macrobends, or microbends in the fiber.
- A loss value is specified for non-reflective events. There is no reflectance specified for this type of event.
- If you set thresholds, the application indicates a non-reflective fault in the events table, whenever a value exceeds the loss threshold.

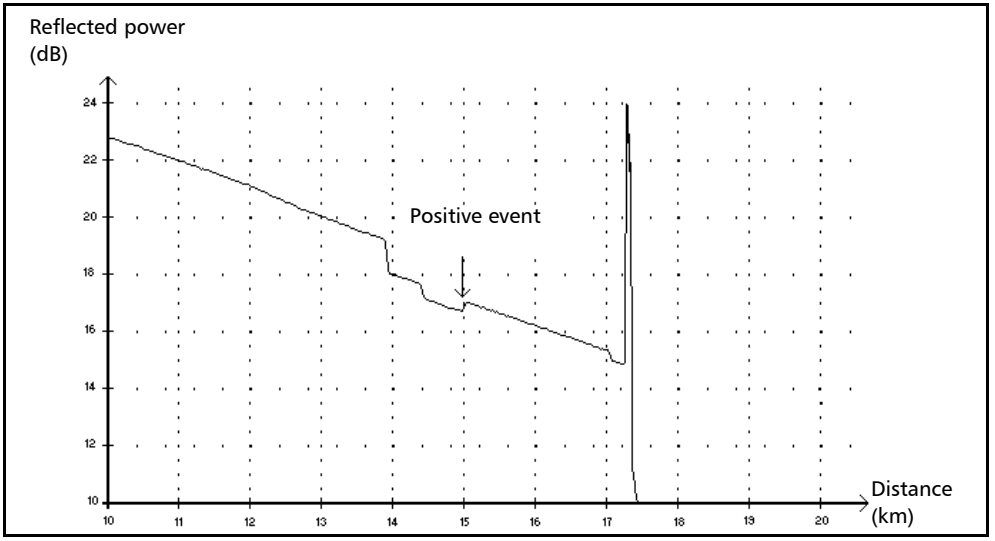
Reflective Event



Reflective events appear as spikes in the fiber trace. They are caused by an abrupt discontinuity in the index of refraction.

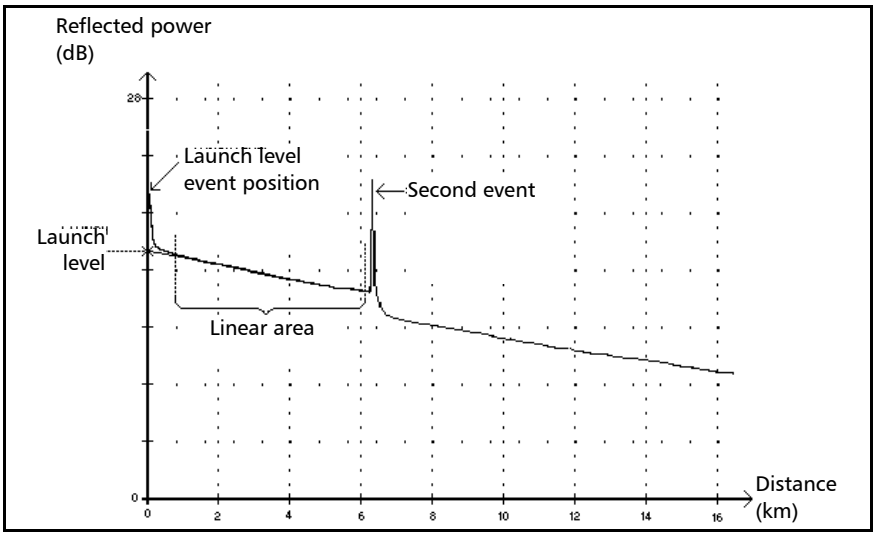
- Reflective events cause a significant portion of the energy initially launched into the fiber to be reflected back toward the source.
- Reflective events may indicate the presence of connectors, mechanical splices, or even poor-quality fusion splices or cracks.
- Normally, loss and reflectance values are specified for reflective events.
- When the reflective spike reaches the maximum level, its top may be clipped due to the saturation of the detector. As a result, the dead zone (minimum distance for making a detection or attenuation measurement between this event and a second nearby) may be increased.
- If you set thresholds, the application indicates a reflective fault in the events table, whenever a value exceeds reflectance or connector loss thresholds.

Positive Event



This event indicates a splice with an apparent gain, due to the junction of two fiber sections having different fiber backscatter characteristics (backscatter and backscatter capture coefficients).

Launch Level →



This event indicates the level of the signal launched into the fiber.

➤ The figure above shows how the launch level is measured.

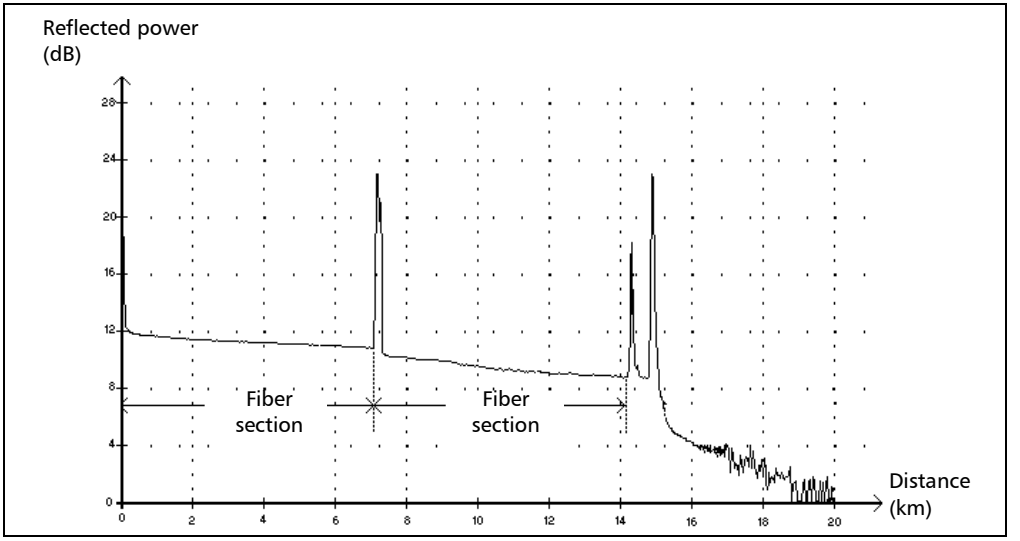
A straight line is plotted using least-square approximation to fit all trace points in the linear area between the first and second detected events.

The straight line is projected toward the Y-axis (dB) until it crosses the axis.

The crossing point indicates the launch level.

➤ <<<< in the events table indicates that the launch level is too low.

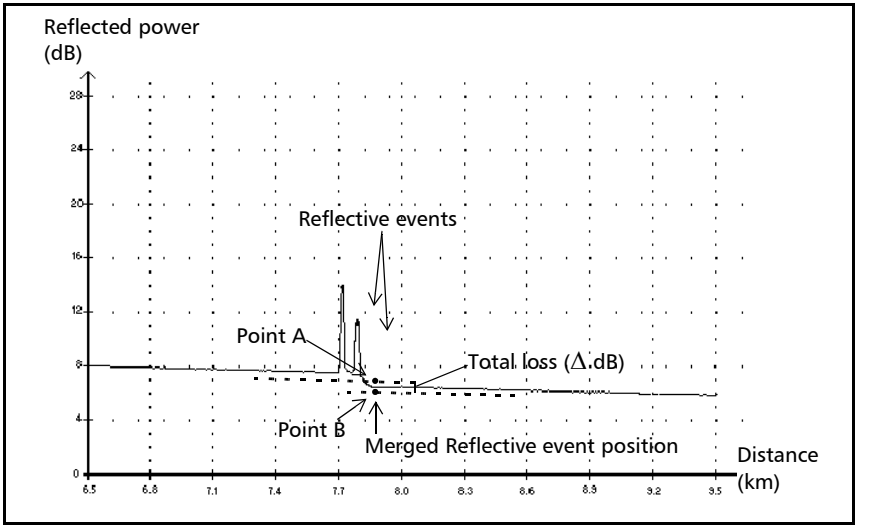
Fiber Section ⊢⊣



This symbol denotes a fiber section with no event.

- The sum of all fiber sections contained in an entire fiber trace equals the total fiber length. Detected events are distinct even if they cover more than one point on the trace.
- A loss value is specified for fiber section events. No reflectance is specified for this type of event.
- The attenuation (dB/distance in kilometers) is obtained by dividing the loss by the fiber section length.

Merged Event Σ



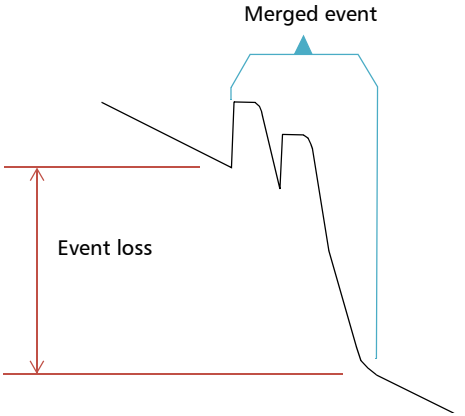
This symbol denotes an event combined with one or more other events. It also indicates the total loss produced by the merged events following it in the events table.

- A Merged Event is composed of subevents. Only the Merged Event is attributed a number in the events table, not the subevents composing it, if they are displayed.
- *Reflective* events may indicate the presence of connectors, mechanical splices, or poor-quality fusion splices or cracks.
- *Non-reflective* events may indicate the presence of splices, splitters or bendings.
- A reflectance value is specified for all merged events and indicates the maximum reflectance for the merged event. A reflectance value is also displayed for each reflective subevent composing the Merged Event.

- The total loss (Δ dB) produced by the events is measured by plotting two straight lines.
  - The first line is plotted by fitting, through least-square approximation, trace points in the linear area preceding the first event.
  - The second line is plotted by fitting, through least-square approximation, trace points in the linear area following the second event. If there were more than two merged events, this line would be plotted in the linear area following the last merged event. This line is then projected toward the first merged event.
  - The total loss (Δ dB) equals the power difference between the point where the first event begins (point A) and the point on the projected straight line located just below the first event (point B).
  - No loss value can be specified for the subevents.

Pass/Fail Tests

As an example about pass/fail tests, let us consider the situation below:



Merged sub-events:

2 reflective losses

1 non-reflective loss

Thresholds:

Reflective loss: 0.5 dB

Non-reflective Loss: 0.2 dB

For a merged event, it is possible to determine the global event loss, but not the contribution of each sub-event. This is why the pass/fail test may sometimes lead to “false positive” or “false negative” results.

When evaluating event status against thresholds, we are faced with two possible conditions:

- All event types are tested (reflective, non-reflective)
- Only some event types are selected (for example, you could decide not to test reflective loss)

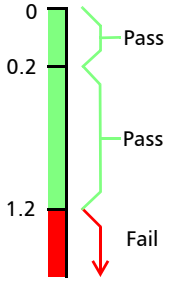
The third case would be to test none of the event types, which means the same as not wanting to know the status of the events.

All Event Types Are Tested

In the first case, where all event types are tested, the pass/fail conditions are as follows:

- If the event loss is less than or equal to the smallest threshold value, then the event status is *Pass*.
- If the event loss is greater than the sum of the number of sub-events of a type, multiplied by the threshold value for this event type, then the event status is *Fail*.
- If the event loss is "in between", since it is not possible to know exactly the weight of a sub-event in the merged event, the global event is considered to have a status of *Pass*.

Pass/Fail Analysis



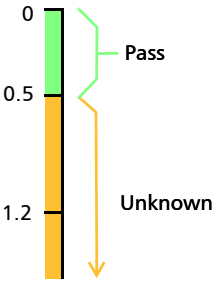
Fail Level
$=\Sigma(N_{sub} \times Th_{sub})$
$= (2 \times 0.5) + (1 \times 0.2)$
$= 1.2$

If the merged event loss is smaller than or equal to 1.2, then the status is *Pass*. Otherwise, it is *Fail*.

Not All Event Types Are Tested

In this situation, the only thing that we can clearly know is when the loss has a *Pass* status. If the global event loss is less than or equal to the smallest threshold value (a value that is tested, of course), we are sure that the merged event status is *Pass*. Otherwise, we cannot know, so the status of the event is *Unknown*.

In our example, if we suppose that you chose not to test non-reflective losses, then the analysis would be done as shown below:

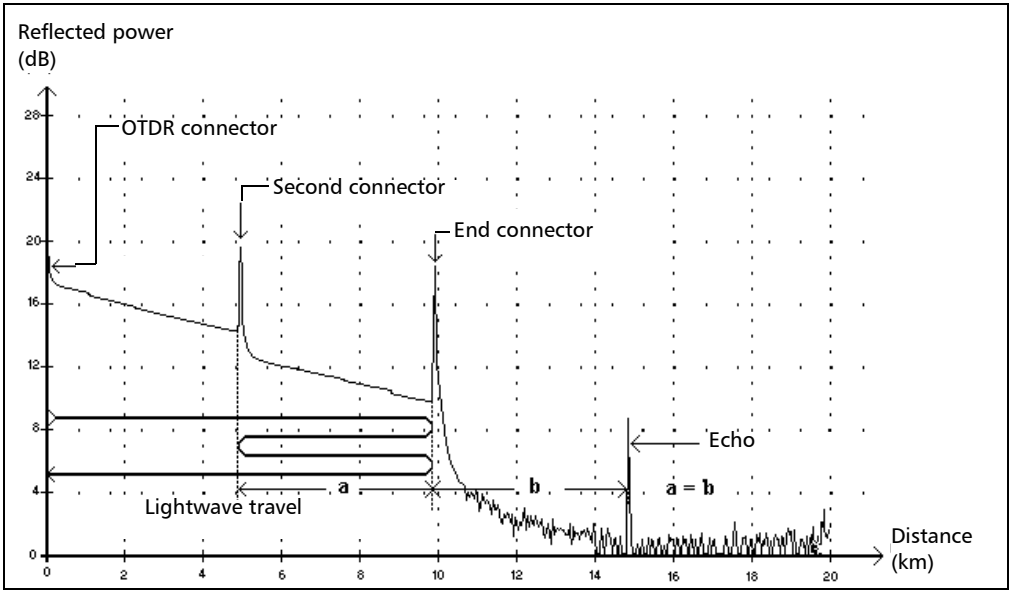


Effect of Event Status in the Global Trace Status

- A trace status is, by default, set to *Unknown*.
- If a trace is set to *Fail* once, it remains with that status (it cannot be set back to *Pass* or *Unknown*).
- Whenever an event status is *Fail*, so is the trace status.
- If an event status is *Pass*, the trace status can change from *Unknown* to *Pass*.
- If an event status is *Unknown,* the trace status remains the same. In other words, the event, in this case, has no influence on the trace status.

To avoid *Unknown* statuses, do not unselect loss thresholds individually.

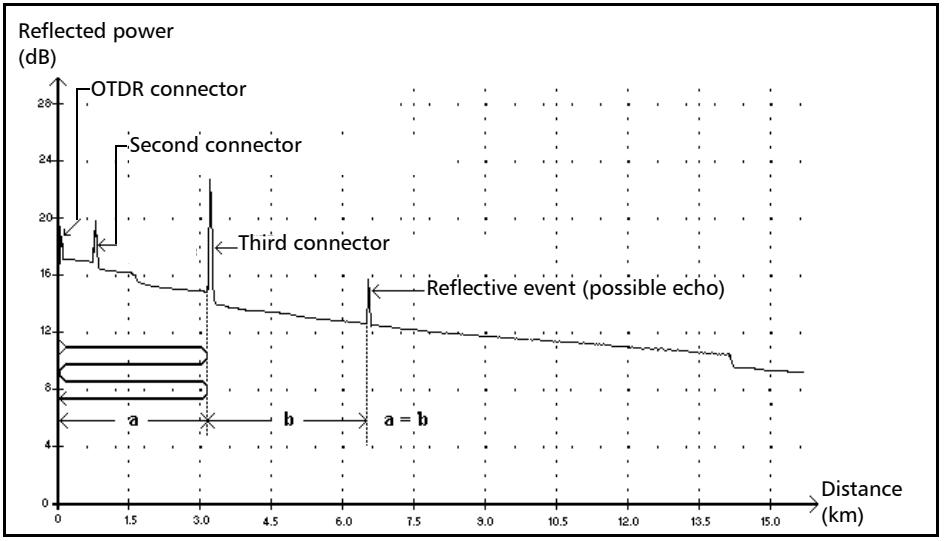
Echo



This symbol indicates that a reflective event has been detected after the end of the fiber.

- In the example above, the launched pulse travels up to the end connector and is reflected back toward the OTDR. Then, it reaches the second connector and is reflected again toward the end connector. It is then reflected back to the OTDR.
- The application interprets this new reflection as an echo because of its characteristics (reflectance and particular position with respect to other reflections).
- The distance between the second connector reflection and the end connector reflection is equal to the distance between the end connector reflection and the echo.
- There is no loss specified for echo events.

Reflective Event (Possible Echo)



This symbol indicates a reflective event that can be a real reflection or an echo produced by another stronger reflection located closer to the source.

- In the example above, the launched pulse hits the third connector, is reflected back to the OTDR and reflected again into the fiber. It then reaches the third connector a second time and is reflected once more to the OTDR.

  The application would therefore detect a reflective event located at twice the distance of the third connector. Since this event is almost null (no loss), and since its distance is a multiple of the third connector distance, the application would interpret it as a possible echo.

- A reflectance value is specified for reflective events (possible echo).

B Measuring Chromatic Dispersion: Theory

EXFO's Chromatic Dispersion Analyzer applies the phase-shift method, which consists of measuring the phase variation of a sinusoidal intensity modulated signal at a specific wavelength to obtain the relative group delay of a fiber. The derivative of the relative group delay calculated from fitted equations on computed results gives the dispersion, the zero-dispersion wavelength and the dispersion slope.

Method Behind the Chromatic Dispersion Analyzer

In EXFO's Chromatic Dispersion Analyzer, the light source is a broadband source, which is intensity modulated at a high frequency. This light is injected into the fiber under test and the modulated light travels along the fiber. The high-frequency intensity modulation propagates at a speed that depends on wavelength and polarization. Values are obtained for the differences in travel time between modulations at different wavelengths. The higher the number of wavelengths at which this is done, the more accurate the chromatic dispersion results will be.

The first fixed filter in the receiver extracts the portion of the light that will follow an optical path. A second filter, which is a time-tunable filter, will extract a second part of the original signal and then follow a different optical path.

Different path combinations are added using a chopper. The amplitude of the high-frequency signals are measured and digitized. The phase difference is then computed using the different amplitudes. This value is stored along with the tunable filters position and a new measurement cycle begins. A new time delay is computed and stored with wavelength data. When sufficient data is accumulated, chromatic dispersion can be computed.

Using Data Fits to Obtain Dispersion

This section gives you details about the way EXFO uses the data fits to obtain dispersion. Once group delays are computed, equations are fitted in order to obtain dispersion, dispersion slope and zero-dispersion wavelengths. The dispersion curve of typical singlemode fibers follows certain equations used to interpolate zero-dispersion wavelength and slope. The following table graph shows the equations applied to singlemode fibers in specific wavelength ranges.

Fiber Type and Wavelength Range	Expression for D
G.652 NDSF $1200\ \text{nm} \le \lambda \le 1600\ \text{nm}$	$\tau(\lambda) = A + B\lambda^2 + C\lambda^{-2}$ $D(\lambda) = 2(B\lambda - C\lambda^{-3})$
G.653 DSF 1500 nm-1600 nm	$\tau(\lambda) = A + B\lambda^2 + C\lambda$ $D(\lambda) = 2B\lambda + C$
G.655 NZDSF up to 1560 nm	$D(\lambda) = \left\{\left[\frac{D(1560) - D(1530)}{30}\right]^{\circ} \cdot (\lambda - 1560)\right\} + D(1560)$
G.655 NZDSF 1530 nm-1565 nm (C Band)	$D(\lambda) = \left\{\left[\frac{D(1565) - D(1530)}{35}\right]^{\circ} \cdot (\lambda - 1565)\right\} + D(1565)$
1565 nm-1625 nm (L Band)	$D(\lambda) = \left\{\left[\frac{D(1625) - D(1565)}{60}\right]^{\circ} \cdot (\lambda - 1625)\right\} + D(1625)$

Fiber Type and Wavelength Range	Expression for D
G.653 DSF $1200\ \text{nm} \le \lambda \le 1600\ \text{nm}$	$\tau(\lambda) = A + B\lambda + C\lambda\ln(\lambda)$ $D(\lambda) = B + C + C\ln(\lambda)$
50/125 $50\text{nm} \le \lambda \le 1450\text{nm}$	$\tau(\lambda) = A + B\lambda^{2} + C\lambda^{-2}$ $D(\lambda) = 2(B\lambda - C\lambda^{-3})$
62.5/125 $750\text{nm} \le \lambda \le 1450\text{nm}$	$\tau(\lambda) = A + B\lambda^{2} + C\lambda^{-2}$ $D(\lambda) = 2(B\lambda - C\lambda^{-3})$
G.655 NZDSF 1530 nm-1565 nm	$D(\lambda) = \left\{\left[\frac{D(1565) - D(1530)}{35}\right]^{\circ} \cdot (\lambda - 1565)\right\} + D(1565)$

As the previous table demonstrates, specific fits are recommended for specific types of fiber and specific wavelength ranges. Fits should be used carefully when extrapolating parameters to obtain maximum precision.

- The 3-Term Sellmeier applies mostly to standard fibers with single zero dispersion at 1300 nm.
- The 5-Term Sellmeier has five zero crossings. Since it is extremely elastic, it should be used with caution when extrapolating because the fit may curve away from the true results beyond fitted points.
- The same warning applies to the cubic fit.
- The lambda-log-lambda fit is applicable to dispersion-shifted fibers with a zero dispersion wavelength in the 1550 nm wavelength region.
- The linear fit is useful when there are too few measurements for multiple parameter fits to be used. It is applicable to all fibers if the range is sufficiently small.

The fits will give you a tool to obtain the dispersion slope and zero-dispersion point.

Helping You Manage Chromatic Dispersion

The zero-dispersion wavelength (where dispersion is at zero) corresponds to the wavelength point at which the fiber under test reaches its maximum bandwidth.The slope from this zero-dispersion point indicates how fast dispersion rises as wavelength increases. Key chromatic dispersion parameters are the dispersion zero and the slope at zero dispersion.

Getting precise chromatic dispersion parameters helps you choose the right dispersion-compensated fiber or material in order to reverse the dispersion and dispersion slope before the data is interpreted by the receiver at the other end of the line.

The effects of chromatic dispersion decrease with a reduction in the absolute value of the fiber chromatic dispersion or with dispersion compensation.

C Measuring Polarization Mode Dispersion: Theory

The dispersion phenomenon is described as a number of non-intensity-dependant physical occurrences resulting directly in signal loss (pulse spreading or time jitter in a digital system; distortion in an analog system). PMD is an important type of signal dispersion. As unrepeated link distances are increased and transmission rates pushed upwards, PMD can significantly reduce system performance.

To better understand the impact of PMD, consider the example of a pulse passing through a wave plate. Upon entering the wave plate, the pulse is decomposed into polarization components aligned with each of the two birefringent axes of the plate (known as the fast and slow axes). The components propagating independently through the wave plate at different group velocities will recombine at the end of the wave plate as a superposition of two pulses split in time.

The delay between those pulses is designated as the differential group delay (DGD) and is written as $\delta\tau$. For a Gaussian, unchirped input pulse of rms width $\sigma 0$, the rms width at the output is given by

$$\sigma^2 = \sigma_0{}^2 + r_0(1 - r_0) \bullet \delta\tau^2$$

where $r0$ is the fraction of the input-pulse energy launched into one of the birefringence axes.

Worst-case spreading occurs when the signal is perfectly split in two ($r0 = 1/2$), while no spreading occurs if the input state of polarization (SOP) of the launched signal is aligned with one of the birefringence axes.

To generalize this example, consider a long, weakly birefringent telecommunications fiber as a concatenation of many, randomly orientated birefringent wave plates. Each interface between two wave plates redistributes the optical energy along both axes of the subsequent wave plate. This transfer of energy is called mode coupling.

In a long fiber, numerous mode-coupling events occur along the fiber length, so that light emerging from the output end is the superposition of a number of pulses with different delays. Nonetheless, it turns out that for any given optical frequency, ω, one can always find two orthogonal input principal states of polarization (PSPs) such that a light pulse with the same input SOP as the input PSP, undergoes no spreading. For a single wave plate, the PSPs are the two birefringent axes, whereas for a concatenation of wave plates, neither the input nor the output PSPs correspond to the alignment of the birefringent axes anywhere.

Contrary to the case of a wave plate, the DGD and PSPs of a long fiber are dependent on wavelength and fluctuate in time as a result of environmental variations such as temperature, external mechanical constraints, etc. Their behavior is random, both as a function of wavelength at a given time and as a function of time at a given wavelength. Fortunately, this behavior can be characterized statistically. It can be demonstrated that the probability density function of $\delta\tau$ is Maxwellian and, by definition, PMD is its rms value, that is:

$$\mathrm{PMD} = \sqrt{\mathrm{DGD}^2}$$

Note: *PMD is sometimes defined as the mean value of the DGD, which for a Maxwellian distribution yields a value 17 % lower than the rms definition.*

If the average is calculated over ω, PMD is stable in time, provided that the averaging window is sufficiently large (Dwdt >> 1).

It is essential to keep in mind that DGD fluctuates in time and can be either smaller or larger than its rms value or PMD. This results in a statistical probability that a pulse (information bit) is broadened, and leads to the eventual impaired ability of the receiver to efficiently decode the information. This adverse PMD effect makes it a critical phenomenon in limiting transmission of high-bit-rate information.

In the case of PMD in a long fiber, there is a specific state called input PSP. In this state, when the input SOP of the signal is aligned with one of its axes, it will propagate through the fiber without any spreading or distortion of the signal. This phenomenon is defined as this specific input SOP such that the output SOP is independent of optical frequency. Again, the worst case occurs when the signal is equally split between both input PSPs.

For long telecom fibers with random coupling of energy between modes (that is. L >> h, where h is the coupling length), PMD grows as the square root of the distance, whereas PMD of strong HiBi fiber (negligible mode coupling) is directly proportional to the distance. Therefore, the PMD coefficient for negligible mode coupling is expressed as ps/km, while the PMD coefficient for random mode coupling is defined as ps/$km^{1/2}$.

D Keyboard Shortcuts

This section presents the available keyboard shortcuts to help you use FastReporter 3 in a quick and efficient way.

To	Press
Create a project	Ctrl + N
Open a project	Ctrl + Shift + O
Open a file	Ctrl + O
Open a sample file	Ctrl + F
Save selected files	Ctrl + S
Save all files	Ctrl + Shift + S
Cut	Ctrl + X
Copy	Ctrl + C
Paste	Ctrl + V
Delete	Del
Select all	Ctrl + A
Invert selection	Ctrl + I
Add event with marker A	Ctrl + Insert
Add event with all markers	Ctrl + S + Insert
Bring all markers in current view	Ctrl + Q
Group selected items	Ctrl + G

To	Press
Horizontal zoom controls. ➤ Press Ctrl + Alt, then scroll the mouse wheel forward or backward. ➤ Press Ctrl + Alt and drag the mouse over the part of the graph that you want to magnify, forming a rectangle. When you release the mouse button, the new zoomed area corresponds to the rectangle size and position. **Note:** *If you press Ctrl + Alt but do not select a rectangle size, the graph is zoomed by a 2X factor.*	Ctrl + Alt
Vertical zoom controls. ➤ Press Ctrl + Shift, then scroll the mouse wheel forward or backward. ➤ Press Ctrl + Shift and drag the mouse over the part of the graph that you want to magnify, forming a rectangle. When you release the mouse button, the new zoomed area corresponds to the rectangle size and position. **Note:** *If you press Ctrl + Shift but do not select a rectangle size, the graph is zoomed by a 2X factor.*	Ctrl + Shift

To	Press
Horizontal + vertical zoom controls. ➤ Pres Ctrl, then scroll the mouse wheel forward or backward. ➤ Press Ctrl and drag the mouse over the part of the graph that you want to magnify, forming a rectangle. When you release the mouse button, the new zoomed area corresponds to the rectangle size and position. **Note:** *If you press Ctrl but do not select a rectangle size, the graph is zoomed by a 2X factor.*	Ctrl
Bring graph view to 100%	Ctrl + Home
To switch between the graph view and the webpage view.	Ctrl + W

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