FTTH-SLM Software Option

For T-BERD®/MTS-2000, -4000 V2, -5800, SmartOTDR, CellAdvisor 5G and OneAdvisor-800 Platforms

User Manual

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User Manual

Viavi Solutions
1-844-GO-VIAVI
www.viavisolutions.com

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Contents

About This Guide

The VIAVI equipments provide handheld, modular platforms designed for the construction, validation and maintenance of fiber networks.

The topics discussed in this chapter are as follows:

Purpose and scope

The purpose of this guide is to help you successfully use the equipment features and capabilities. This guide includes task-based instructions that describe how to configure, use, and troubleshoot the equipment with OTDR module.

Assumptions

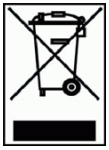
We are assuming that you have basic computer and mouse/track ball experience and are familiar with basic telecommunication and fiber optic concepts and terminology.

Technical assistance

If you require technical assistance, call 1-844-GO-VIAVI. For the latest TAC information, go to http://www.viavisolutions.com/en/services-and-support/support/technical-assistance.

Recycling Information

VIAVI recommends that customers dispose of their instruments and peripherals in an environmentally sound manner. Potential methods include reuse of parts or whole products and recycling of products components, and/or materials.



Waste Electrical and electronic Equipment (WEEE) Directive

In the European Union, this label indicates that this product should not be disposed of with household waste. It should be deposited at an appropriate facility to enable recovery and recycling.

Conventions

This guide uses naming conventions and symbols, as described in the following tables.

Table 1 Typographical conventions

Description	Example
User interface actions appear in this **typeface**.	On the Status bar, click **Start**.
Buttons or switches that you press on a unit appear in this **TYPEFACE**.	Press the **ON** switch
Code and output messages appear in this `typeface`.	`All results okay`
Text you must type exactly as shown appears in this **`typeface`**.	Type: **`a:\set.exe`** in the dialog box
Variables appear in this ***typeface***.	Type the new ***hostname***.
Book references appear in this ***typeface***.	Refer to ***Newton's Telecom Dictionary***
A vertical bar | means "or": only one option can appear in a single command.	`platform [a|b|e]`
Square brackets [ ] indicate an optional argument.	`login [platform name]`
Slanted brackets < > group required arguments.	<`password`>

Table 2 Keyboard and menu conventions

Description	Example
A plus sign + indicates simultaneous keystrokes.	Press **Ctrl+s**
A comma indicates consecutive key strokes.	Press **Alt+f,s**
A slanted bracket indicates choosing a submenu from menu.	On the menu bar, click **Start > Program Files**.

Table 3 Symbol conventions

	**This symbol represents a general hazard.**
	**This symbol represents a risk of electrical shock.**
	**NOTE** This symbol represents a Note indicating related information or tip.
	**This symbol, located on the equipment or its packaging indicates that the equipment must not be disposed of in a land-fill site or as municipal waste, and should be disposed of according to your national regulations.**

Table 4 Safety definitions

	**WARNING** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	**CAUTION** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

1

FTTH-SLM Principle and Configuration

This chapter describes how to configure OTDR test parameters for testing PON networks with single or cascaded PON splitters.

The topics discussed in this chapter are as follows:

NOTE
Patented, as described at www.viavisolutions.com/patents.

NOTE
FTTH-SLM Premium uses OptiPulse software.

Principle of FTTH-SLM

FTTH-SLM is an OTDR software application available as an optional feature for the VIAVI OTDRs. It is installed on the mainframe using a license key (refer to the base unit user manual for instructions on installing upgrade license files).

The FTTH-SLM application provides a PON-specific user interface and test algorithm for OTDR testing through PON splitters (Passive Optical Network) and distributed taps.

FTTH-SLM application automatically sequences multiple pulse width acquisitions to optimize the detection and characterization of PON splitters and all fiber link elements.

The number of pulse widths and measurement times are not fixed and may vary between tests.

A consolidated results table, a single OTDR trace per wavelength and an icon link map view is displayed at test completion. Each OTDR trace is made of trace section from all utilized pulse widths.

Two FTTH-SLM licenses are available:

- FTTH-SLM Base: Perfect for “basic” PON Architectures (one splitter only or cascaded PON architectures with medium/long distance between splitters)
- FTTH-SLM Premium: Needed for “advanced” PON Architectures (cascaded PON architectures with a short distance (< 100m) between splitters and Unbalanced Splitter/Distributed taps architectures).

Configuring the OTDR to test standard PON networks (one or cascaded PON splitters)

On the **Home** page:

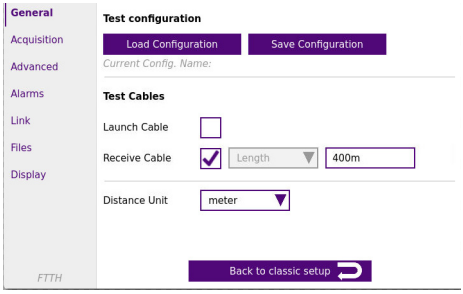
1. Select the FTTH-OTDR icon 

.
The results page automatically displays.
2. Press **SETUP** key  to display the OTDR configuration menu for FTTH network.

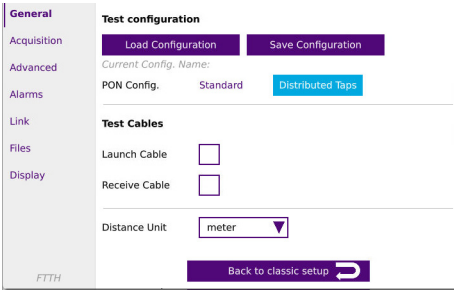
General page

Press **General** to configure the general parameters for FTTH acquisitions:

Figure 1 General page



with FTTH-SLM Base



with FTTH-SLM Premium License

NOTE

If FTTH-SLM Premium Software license is installed, you must select Standard PON Config. For "Distributed Taps", see.Chapter 3.

Load Configuration

To load a configuration file previously created or available in the equipment and apply parameters to new FTTH tests:

1 Press menu key Load Configuration .

2 Select the configuration file desired

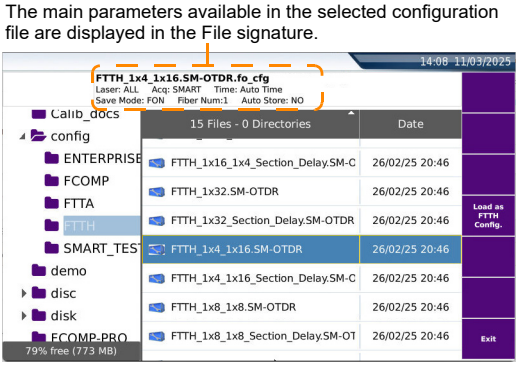
3 Press **Load as FTTH Config**.

You can modify some acquisition or file storage parameters, and save them in a new configuration file (see “Saving OTDR configuration in a file” on page 4).

NOTE

Most of the configuration files are available into the equipment, in `disk/config/FTTH`.

Figure 2 Loading a FTTH configuration file



Current Config. Name

This parameter displays the configuration file selected for acquisition: select **Load config.** to change the config file to use.

Saving OTDR configuration in a file

Once File and Measurement parameters have been configured, those parameters are kept in memory and can be saved in a configuration file.

This configuration file can then be recalled for future acquisition in FTTH OTDR.

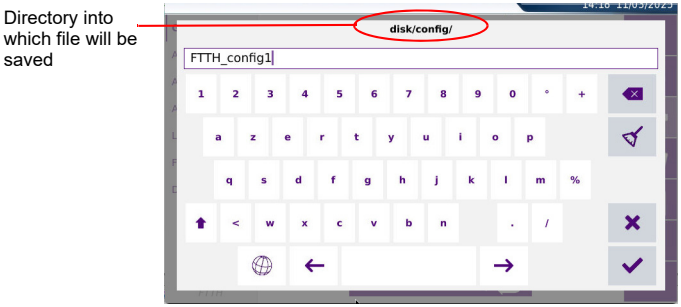
To save parameters in a configuration file:

1 From General page, press key Save Configuration.
The onscreen keyboard displays

2 Enter a name for the configuration file (max. 20 characters).

NOTE
Configuration file is saved by default in the directory **`disk/config/FTTH`**.

Figure 3 Save Configuration file - Onscreen keyboard



3 Press ✔ to validate

A sound is emitted to indicate the file is saved.

The configuration file is saved with the extension .fo_cfg (icon) and can be recalled at any time.

Test Cables

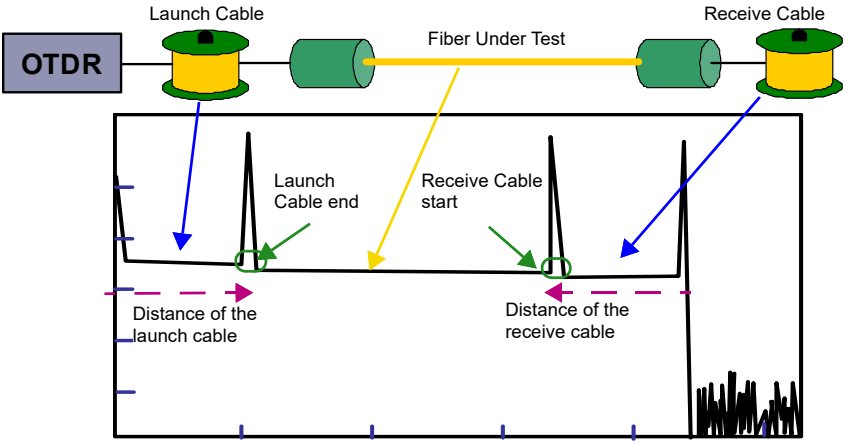
Launch Cable / Receive Cable

Not selected (=No) No launch or receive cable to offset from the measurement.

Selected If the parameter is selected, different settings can be defined:

Length Press the **Length** text box to display a keyboard. Enter the desired length value or measure the cable length using the key.

Figure 4 Launch Cable / Receive Cable



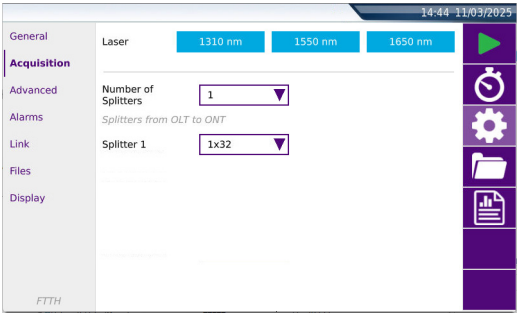
Distance Unit

Define the unit of the distances displayed: **km**, **kfeet**, **miles**, **meter**, **feet**.

Acquisition page

Press **Acquisition** to configure the FTTH acquisition parameters.

Figure 5 Acquisition page



Laser

The acquisition is performed at the selected wavelength(s) for multi-wavelength OTDRs. The available wavelength options depend on the OTDR type.

Number of Splitters

1 / 2 / 3: select the number of splitters.

Set the splitter ratio for each splitter. In a cascaded splitter architecture, Splitter 1 is the closest to the OLT.

Splitters types

Discover: auto-detection and identification of PON splitter types. The **Discover** mode is only available if FTTH-SLM Premium software license is installed.

NOTE
The **Discover** mode does not allow Pass/Fail analysis

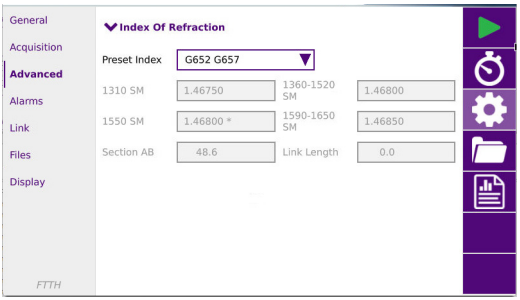
For each splitter, select a splitter ratio from the list.:

- 1x2 / 1x4 / 1x8 / 1x16 / 1x32 / 1x64 / 1x128
- 2x2 / 2x4 / 2x8 / 2x16 / 2x32 / 2x64 / 2x128

Advanced page

Press **Advanced** to configure the Index of Refraction.

Figure 6 Advanced parameters



Index of refraction

Choice of group refraction index of the whole fiber.

User set the refractive index between 1.30000 and 1.69999 for each wavelength (1310 SM, 1360-1510 SM, 1550 SM, 1590 - 1650 SM)

or,

If the actual distance between the cursors A and B is known, enter its value under **Section AB** to establish the index of the fiber.

Predefined It is possible to choose one of the predefined values given for certain cables.

Table 1 Predefined index values (Single Mode)

Wavelength (nm)	1310 SM	1360 - 1520 SM	1550 SM	1590 - 1650 SM
Generic G652 G657	1.46750	1.46800	1.46800	1.46850
Generic G653 G655	1.46750	1.46800	1.46800	1.46850
Generic G654 E	1.46550	1.46550	1.46550	1.46550
ATT SM	1.46600	1.46700	1.46700	1.46700
Corning SMF-28	1.46750	1.46810	1.46810	1.46810
Corning SMF-DS	1.47180	1.47110	1.47110	1.47110
Corning SMF-LS	1.47100	1.47000	1.47000	1.47000
Corning-Leaf	1.46890	1.46840	1.46840	1.46900
Draka SMF	1.46750	1.46800	1.46800	1.46850

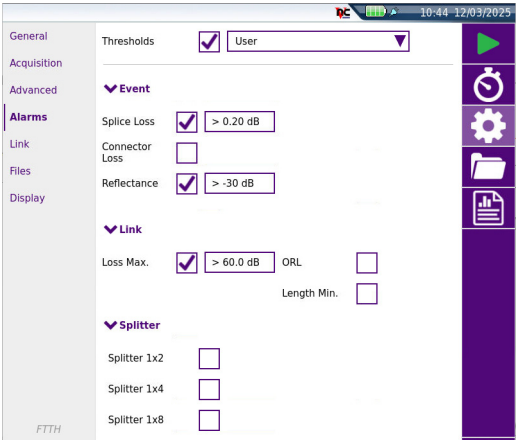
Table 1 Predefined index values (Single Mode)

Wavelength (nm)	1310 SM	1360 - 1520 SM	1550 SM	1590 - 1650 SM
Draka Longline	1.46700	1.46700	1.46710	1.46750
Draka Teralight	1.46820	1.46820	1.46830	1.46850
Draka Benbright	1.46750	1.46750	1.46800	1.46850
Fitel Furukawa	1.47000	1.47000	1.47000	1.47000
OFS Lucent Allwave	1.46750	1.46750	1.46750	1.46850
Lucent Truewave	1.47100	1.47100	1.47000	1.47000
SpecTran SM	1.46750	1.46810	1.46810	1.46810
Sterlite	1.46700	1.46700	1.46750	1.46750
Sumitomo Litespec	1.46600	1.46600	1.46700	1.47000
Sumitomo Pure	1.46600	1.46600	1.46700	1.47000

Alarms page

Press **Alarms** to configure the alarm thresholds.

Figure 7 Alarms parameters



None The alarm function is not active.

User Define your own thresholds for one or several elements:
Event: Splice Loss / Connector Loss / Reflectance
Link: Loss Max / ORL / Length Min.
Splitter: define the thresholds for each splitter ratio

Default / G.697/G.98x PON / G.697/IEEE PON

Select one of this parameter to configure the alarm thresholds with predefined values:

Table 2 Alarms thresholds

		Default	G.697/G.98x PON & G.697/IEEE PON
Events	Splice Loss	> 0.20 dB	> 0.30 dB
	Connector Loss	> 0.50 dB	> 0.50 dB
	Reflectance	> - 35 dB	> - 35 dB
Slope		> 1.00 dB/km	-
Link	ORL	< 27 dB	< 27 dB
	Loss Max	-	Select: **No**, **Manual** or: • for G.697/G.98x PON: **20 dB (A)** / **25 dB (B)** / **30 dB (C)** • for G.697/IEEE PON: **23 dB (PX-10)** / **26 dB (PX-20)**
Splitter	Splitter 1x2	> 5.0 dB	> 4.2 dB
	Splitter 1x4	> 8.0 dB	> 7.8 dB
	Splitter 1x8	> 11.0 dB	> 11.4 dB
	Splitter 1x16	> 14.0 dB	> 15.0 dB
	Splitter 1x32	> 17.0 dB	> 18.6 dB
	Splitter 1x64	> 21.0 dB	> 22.0 dB
	Splitter 1x128	> 24.0 dB	> 25.0 dB

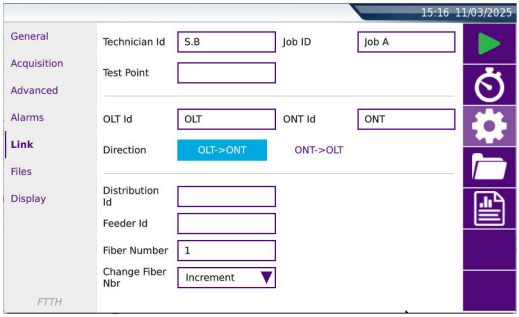
If results are above the thresholds, they will be highlighted in red in the table of results, and the icon will be displayed at the top right of the screen.

If all the results lie within the thresholds (no result is in red), results are displayed in green in the table and the icon is .

Link page

Press **Link** and configure the link parameters.

Figure 8 Link Description parameters



The information entered in the **Link** window refer to the cable and fiber under test. Loading a stored file without its configuration will not modify this menu.

Technician Id

Touch to enter the name of the operator carrying out the measurement.

Job ID

Touch to enter a description of the measurement to be performed.

Test Point / OLT Id / ONT Id / Distribution Id / Feeder Id

Those parameters allow to enter an identification for each element of the network using the Edition menu.

Fiber Number

Select the parameter **Fiber Number** and modify the number of the fiber to be tested.

The fiber number can be automatically incremented/decremented at each new file save if it has been configured in the **Change Fiber Nbr** parameter below.

Change Fiber Nbr

No the Fiber number does not change unless manually modified.

Increment the fiber number is automatically incremented at each new file-save.

Decrement the fiber number is automatically decremented at each new file-save

User defined select the parameter and click in the text box to enter the incrementation / de-crementation value.

Note: to decrement the number, enter the sign «-» before the number. Example: -1.

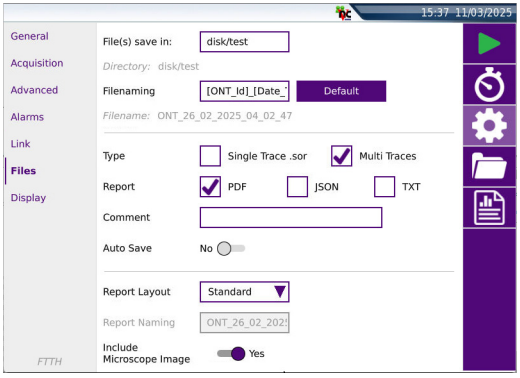
Min: -999 / Max: 999 / Auto: 0

Files page

The Files storage parameters can be configured, in order to define how the results traces will be saved onto the equipment.

Press **Files** to configure the files storage.

Figure 9 Files parameters



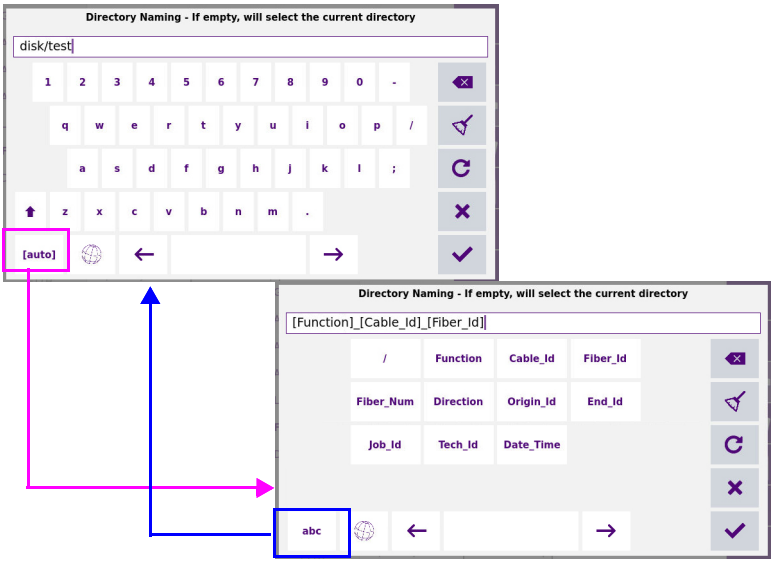
File(s) save in

Click on the text box to display the edition keypad and define the directory target for files saving

Use **/** to define subdirectories. the **[auto]** button allows to use predefined fields based on the link description..

Example: `disk/test`

Figure 10 Directory - Edition keypad



or

Click on  or leave the box empty to select the Current Directory for file saving.

Press  to validate.

Press  to modify the keyboard language: English / French / German.

Directory

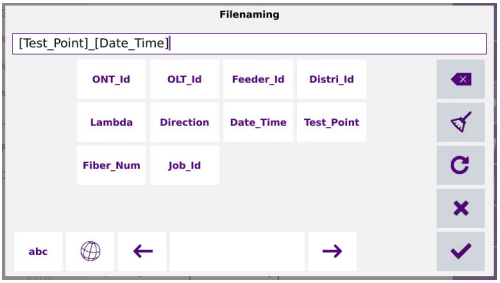
This field displays the directory selected/created into which the file(s) will be saved.

Filenaming

Click on the text box to modify the name of the file for the result trace.

Use the onscreen keyboard to view and select the pre-defined parameters available or, press **abc** key to enter a name manually for the file.

Figure 11 Filenaming - Edition keypad (auto)



Press  to validate.

Press  to modify the keyboard language: English / French / German.

To apply the name by default to the file: `[Test_Point]_[Date_Time]`

- From the onscreen keyboard click on  (see figure above)
- From Files page, press **Default** key.

The name of the file is displayed in grey under **Filenaming** parameter. Check to validate.

Type

In this parameter, select the file content for traces saving:

Single Trace .sor if several wavelengths are used for the test, each trace is saved in a distinct file (.sor extension), compliant with Bellcore standard.

In FTTH-SLM, the .sor files include recombined traces

Multi Traces this selection means that a .csor file (proprietary format recombined traces and raw data) will be saved.

If un-selected, the unit displays a message informing the user that it will be selected by default at test completion.

If several wavelengths are used for the test, the .csor file includes all wavelengths (ML is added to the File name in that case).

If **Multi Traces** + **PDF** report are selected, a pdf report with all wavelengths on 1 page is saved at test completion.

Report

Select the report format to be generated:

PDF	select to generate a report in a pdf file.
JSON	select to generate json file(s) compatible with VIAVI test process automation (job manager and StrataSync cloud data management system).
TXT	select to generate a txt file of the results.

If all parameters are defined with **No**, only the .sor (or .csor) file will be saved.

Auto Save

Select **Yes** to store automatically the trace or traces resulting from each acquisition according to the filenaming rules.

Confirm if alarm = fail

Select **Confirm if alarm = Fail** to display a confirmation dialog box if a value exceeds alarm thresholds, and to be able to choose to save or not the trace.
If no alarm is detected on trace, it is automatically stored.

Report Layout

This parameter allows to define the report page setting and is available exclusively if a **PDF** and/or a **TXT** file has been defined in the **Report** parameter.:

Standard	in multi-trace display, one pdf report page is generated for each trace.
Consolidated	in multi-trace display, one pdf report page is generated for all traces

Report naming

If **Consolidated** is defined for **Report Layout**, tap on the **Report Naming** text box to modify the name of the report file for the result trace.

Using the onscreen keybaord, enter a name manually for the file and press  to validate.

If no name is entered, the report name by defaut applies: `Report_SM/MM-OTDR`.

Include Microscope Image

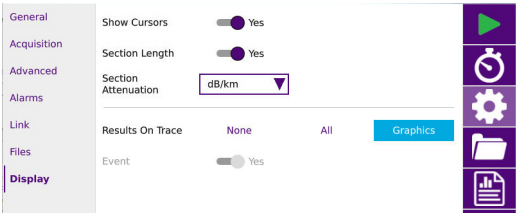
In the pdf report, an image of the scope test result can be displayed on the upper part of the report. Select **Yes** to include the scope test result image into the report.

NOTE
This parameter is available only if the **PDF** report format is selected

Display page

In the **Setup** menu, press **Display**.

Figure 12 Display parameters



Show Cursors

No the Cursors A and B are hided on Trace view

Yes the Cursors A and B are displayed on Trace view.

Section Length

Define if the distance between the marker of the event and the previous marker must be indicated in the results table: select **Yes** or **No**.

Section Attenuation

None The section attenuation and Loss values are not displayed in the table of results.

dB/km Displays the section slope in the table of results. If the fiber is too short to measure the slope accurately, no value is displayed (empty field).

dB Displays the section loss in the table of results. With short fiber where the slope cannot be measured with a good accuracy, the loss in dB is approximate and displayed.

Results on trace

According to the selection, the trace will show:

None the trace alone

All the trace with results value (loss, position, reflectance...) and markers.

Graphics the trace with event markers only.

2

FTTH Acquisition and Results

This chapter describes the procedures to launch the FTTH acquisition and the results page content.

The topics discussed in this chapter are as follows:

NOTE

Patented, as described at www.viavisolutions.com/patents.

Launching the acquisition

Once the acquisition hs been correctly configured, the measurement can be started.

Inspect & clean all fiber connections prior connecting fiber cables into the ports (patch panels, OLT or ONT...).

1 Press **START** key  to launch measurement.
The red **Test** indicator goes on to show that the equipment is in process of acquisition and the screen displays the trace in process of acquisition.

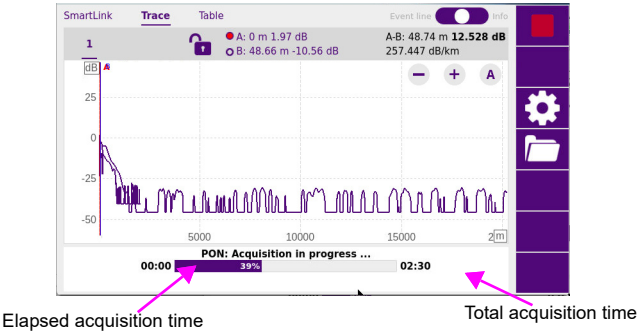
2 The quality of the connection is displayed for a few seconds.

Table 3 Connection indicator

State	Connection 
Good	The connection is OK
Bad	• There are several connectors close to the external connector of the equipment • One of the connectors is dirty or badly connected. Replace the launch cable, make the connection again properly or clean the connector of the OTDR or of the jumper. • No fiber is connected.

3 Then, a bar graph shows elapsed and remaining acquisition time.

Figure 13 Acquisition in progress



At the end of the acquisition, a beep is emitted, the trace is displayed and an automatic measurement is started.

Traffic detection

Traffic on the fiber under test is automatically detected and reported.

If a non-filtered wavelength/OTDR port is used, the OTDR test should not be performed when live traffic is detected. For live fiber testing, use a Live OTDR port and select the filtered wavelength in the Setup menu. If the OTDR does not support a filtered wavelength, it is not capable of live fiber testing.

In some cases, even when a filtered OTDR wavelength (1625 or 1650 nm) is used, traffic may still be detected. This is due to an out-of-band SFP signal detected by the Live OTDR port. The test can still be performed, but the OTDR trace may be impacted.

Press the **START** key to begin the measurement. A message indicates there is traffic on the fiber and asks you if you wish to continue or not:

- If you select **NO**, the OTDR test will be canceled.
- If you select **YES**, the OTDR test will proceed despite the presence of traffic.

NOTE

If the OTDR test is confirmed despite the detected traffic (by selecting YES), next OTDR tests will automatically proceed, even if traffic is still present on the fiber.

If the OTDR test is canceled (by selecting NO), and the START softkey is pressed again, the confirmation message will reappear, asking whether you wish to continue.

The "LFD" letters flashing in the scaled-down trace view, located in the upper-left corner of the screen, indicate that the live traffic detection feature is continuously active. The scale-down trace view is visible when the **Event Line/Info** bar button is set to Info.

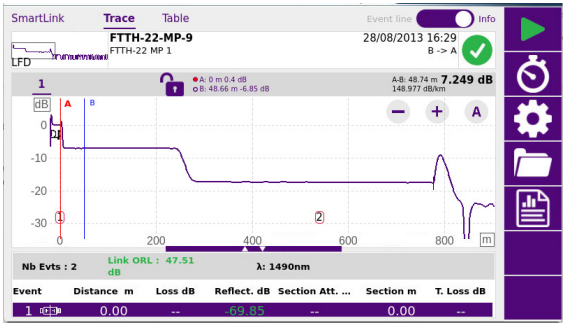
Results page

The trace(s) acquired or recalled from a memory is/are displayed on the Results page.

Trace View

The Trace view is displayed if the **Trace** tab is selected.

Figure 14 FTTH OTDR Trace



Press  to go back to FTTH Setup screen and modify the parameters before launching a new acquisition.

- On the upper right side, the alarm icon is displayed (if some alarm thresholds are defined in the pre-loaded configuration file).

Table 4 Alarms display

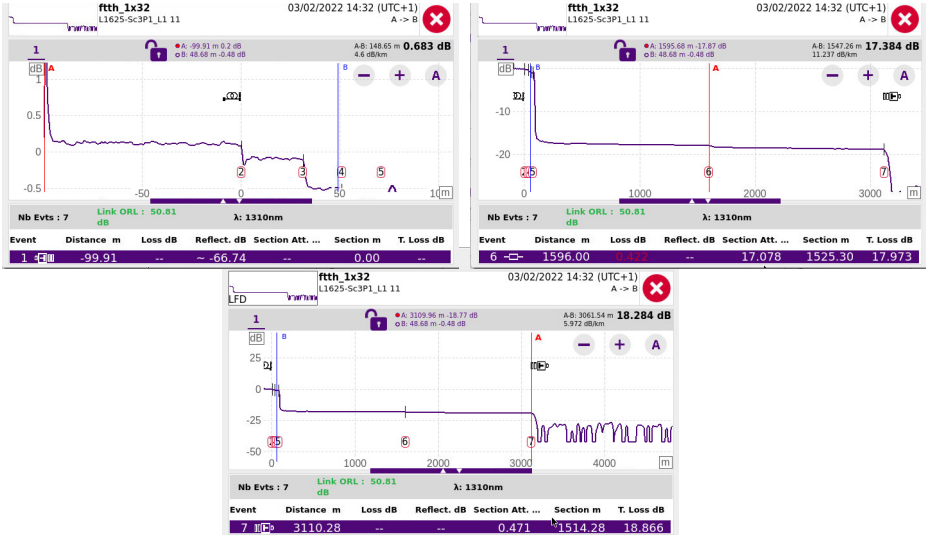
Fail	Indicates that at least one result (link, event or slope) exceeds the alarm thresholds defined in the configuration file used for acquisition Results are displayed in red.
Valid	Indicates that the global alarm lies within the thresholds defined in Alarms page. Some results can be in Warning status (orange), but the global alarms status is Pass.

Multi-pulses traces

In case of multi pluses traces, the display is simplified to handle traces: only the “useful” traces and sections (cut section of traces) are displayed.

Ex: The 7 events detected in the example below are coming from 3 acquisitions, a **combined trace** is created showing only the 3 useful sections.

Figure 15 FTTH results traces in multi-pulses



Common functions on Trace View

Display of events on the trace

Each event detected is referenced under the trace by a serial number. The reflectometry trace is displayed with a dotted vertical line set on the start of launch cable (if the **Launch Cable End** parameter is defined in the **SETUP** menu)

The trace can also be displayed with a dotted vertical line on the end of fiber  .

The icon  is displayed on trace if the **Receive Cable Start** parameter has been defined in the Setup menu.

The results of the measurements of attenuation, reflectance and slope can be marked on the trace.

The reflectance of a ghost event is displayed in brackets on the trace.

Criteria for displaying an event

An event will be displayed if its loss or its reflectance exceeds the default detection thresholds. Attenuation and reflectance results for an event will be displayed if they can be calculated.

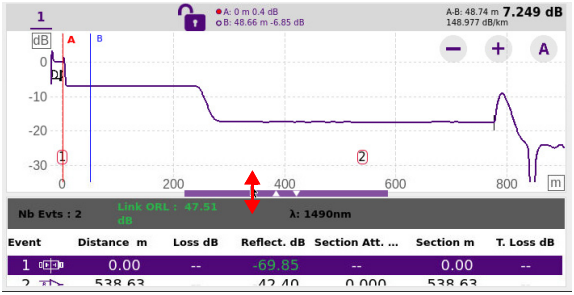
The reflectance of an event is always measured except when the event causes a saturated Fresnel peak or if it is drowned out by noise. In this case, the equipment displays **>** to show that the actual reflectance exceeds the value displayed.

Results table

Under the trace is displayed the results table with all the events detected during acquisition.

The line corresponding to the event nearest to the cursor is highlighted in purple. This highlighting moves if the cursor is moved.

To reduce or enlarge the size of the results table, tap and maintain the bar between trace and table and move downward or upward .



At the top of the table, a line shows the generic parameters of the fiber: numbers of events present, total ORL of the link and the wavelength of the active trace in case of multi wavelengths acquisitions.

Each event is referenced under the trace by a number which is repeated in the first column of the table. The table then shows:

- icon symbolizing the type of the event:

	Receive cable Start
	Launch cable End: the attenuation and distances are measured on the basis of the corresponding marker.
	Non-reflective attenuation (e.g. splice).
	Splitter
	Reflective event. (e.g. connector)
	Ghost reflection
	Slope of the fiber (when no fault follows the slope)
	End of fiber
	Front connector
	Bend
	Bend on OTDR Connector
	Unbalanced Coupler

ORL	Manual ORL Measurement
	Front OTDR device
	Front Splitter 1N
	Front Splitter 2N
	Front Splitter N1
	Front Splitter N1
	Front PON first fiber
	Front bend splitter down
	Front bend splitter up
	Front expanded beam connector
	Unbalanced splitter
	Front clustered splitter

The event underlined in purple is the one the nearest of the cursor set on trace. To visualize an event, tap on this event on the table to set the cursor on it onto the trace.

The following columns are then displayed next to each event icon:

Distance	The distance of the event from the beginning of the fiber, in meters (or miles)
Loss	The attenuation due to the event, in dB
Reflect.	The reflectance of the event, in dB
Section Att.	The attenuation, in dB, between the marker of the event and the previous marker

Section	The length of the section = the distance between the marker of the event and the previous marker.
T. Loss	The total attenuation of the fiber (total loss), in dB

Cursors

The cursors A and B are represented by vertical lines of different colors:

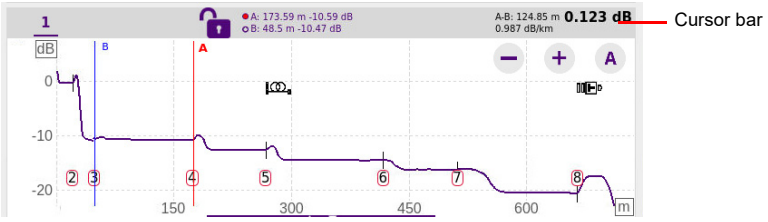
- The A cursor line is displayed in red
- The B cursor line is displayed in blue.

The Cursor position is displayed just above the trace: the active cursor is represented with a red/blue point in the cursor bar.

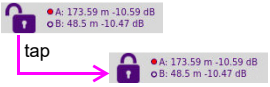
1 Touch the screen on the required location on trace where the active cursor must be set.

Above the trace is shown the 2-points loss measurement between the two cursors, together with the distance between the two cursors.

Figure 16 Cursors information

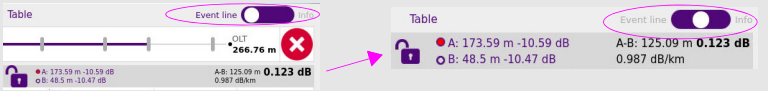


Tap on the **Lock** icon in order to lock both cursors position:



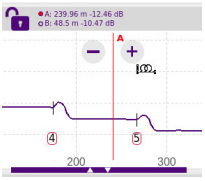
NOTE

The cursor information font size is increased if neither the **Info** bar nor the **Event line** is defined:



Precise positioning of the cursors

To get a more accurate position of one cursor on trace, press Cursor Line and use − or + , at each side of the cursor line, to slightly move the cursor toward left or right.



Zoom function

The Zoom function is used to analyze part of the trace in greater detail.

The zoom is centered on the active cursor.

The position of the section of trace displayed with respect to the complete trace is represented by a rectangle on the mini-trace at the top left-hand corner of the screen, if the **Info** bar is selected.

Tap as many times as necessary on the Zoom key + or − to zoom in or out on the trace.

Tap on the **Automatic Zoom** key A to swap from an automatic zoom to full trace and vice-versa

Specific functions of the zoom with a touchscreen

With the touchscreen:

- maintain your finger pressed on screen and shift the traces horizontally or vertically
- position your finger on a cursor and move it on trace maintaining your finger pressed and moving it toward left or right

Zooming on the different events in succession

1 Set the cursor on one event

2 Define a zoom on this event.

3 Tap on another event in the results table.

The cursor is automatically positioned on this event, which is always centered on the screen, keeping the zoom level selected.

Shift function

The Shift function is used to displace the displayed section of the trace by directly clicking on the touchscreen.

The horizontal shift is performed maintaining the point of intersection between the trace and the selected cursor at the same level, scrolling the trace horizontally while following it vertically, so that it never goes off the screen.

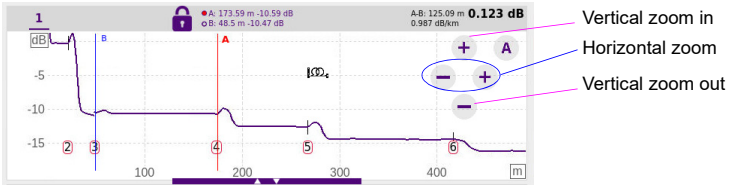
To use this function:

1 Tap on the trace.and displace trace manually on touchscreen toward left/right or upward/backward.

Advanced Zoom function

Make a long press on A button to allow zooming vertically and horizontally independently.

Figure 17 Horizontal and Vertical Zoom



Make another long press on A button to return to initial zoom function.

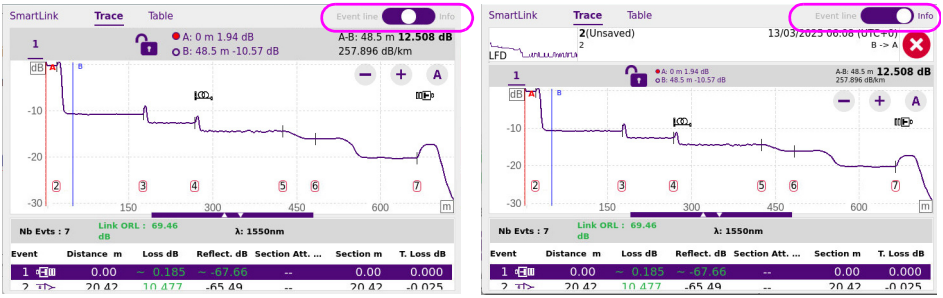
Enlarged view of the trace and results table

To visualize the trace, and results table, on a larger format, the Event Line / Info bar at the top of the screen can be hided:

Tap on the button **Event Line/Info bar** until this button is set in the middle of the bar:

The trace and table will be displayed on a larger surface of the screen, and the cursors information font size increased.

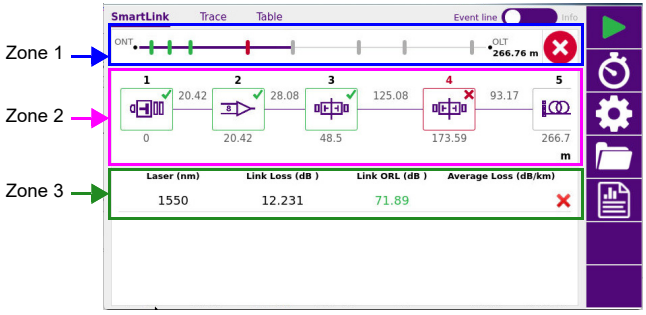
Figure 18 Trace view with/without Event or Info bar



SmartLink view

1 Tap on **Smart Link** tab.
A screen as the following one is displayed:

Figure 19 SmartLink function

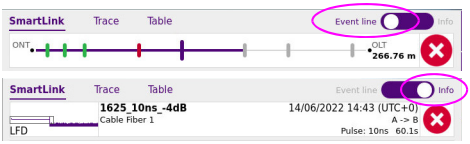


The screen is divided into three zones:

- **Zone 1**: the **Event line**, which is a graphical representation of the fiber with the detected events position on this fiber and the alarm status icon, or the Info bar, with the acquisition parameters of the trace, together with a small-scale representation of the trace.

  Tap on the button to switch from **Event** line to Info and vice-versa.

Figure 20 Event line or Info bar



NOTE

This zone is available whatever is the display: SmartLink, Trace or Table.

- **Zone 2**: Graphical representation of the link, with icons symbolizing the different events detected.
- **Zone 3**: Link Table, which gives a summary of results for each wavelength, with results within/without thresholds in green/red (according to Alarm thresholds defined in the setup screen).

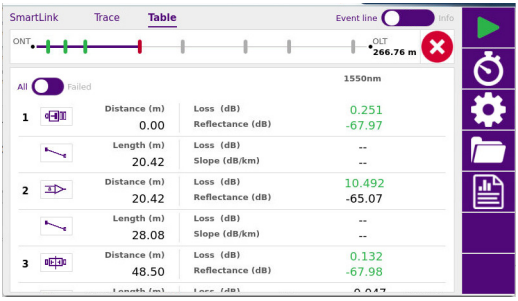
If several traces are displayed in overlay, with the same wavelength, then the Zone 2 indicates the results for each wavelength. The graphical representation of the Zone 1 is a combination of multiple pulses and wavelengths acquisitions.

Table View

1 Tap on **Table** tab.

A screen as the following one is displayed:

Figure 21 Table view



The list of all the events detected during acquisition or manually measured are displayed in a table:

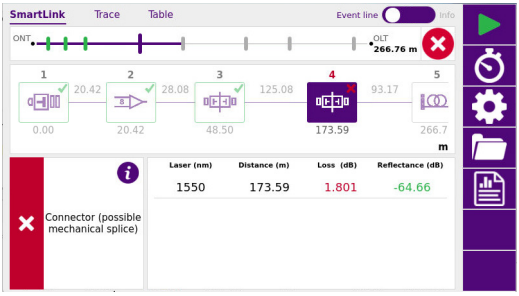
- The events exceeding alarm thresholds are displayed in red, whereas those lying withing the thresholds are displayed in green.
  Select **Failed** on the button All Failed to display exclusively the results exceeding the thresholds

Showing the detailed information of one event

The information concerning the event, its type and the alarm thresholds defined for this event, can be displayed from the **SmartLink** or **Table** screen.

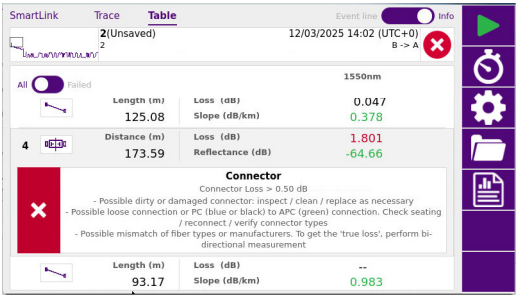
1 In **SmartLink** view, select the event for which information must be displayed, on the graphic.
The event is highlighted in purple once selected. .
A frame displays, and describes:
– the event type
– the value above which it is on defect

Figure 22 Event Details



In **Table** view, tap on one event line to display the information under this event

Figure 23 Event detailed



NOTE

The event is displayed with a red icon if it is above the alarm thresholds defined in the setup menu.
A green icon is displayed if it lies within the thresholds.

A yellow icon is displayed if the value is above a «Warning» threshold.
No icon is displayed if no alarm has been defined in the Setup menu

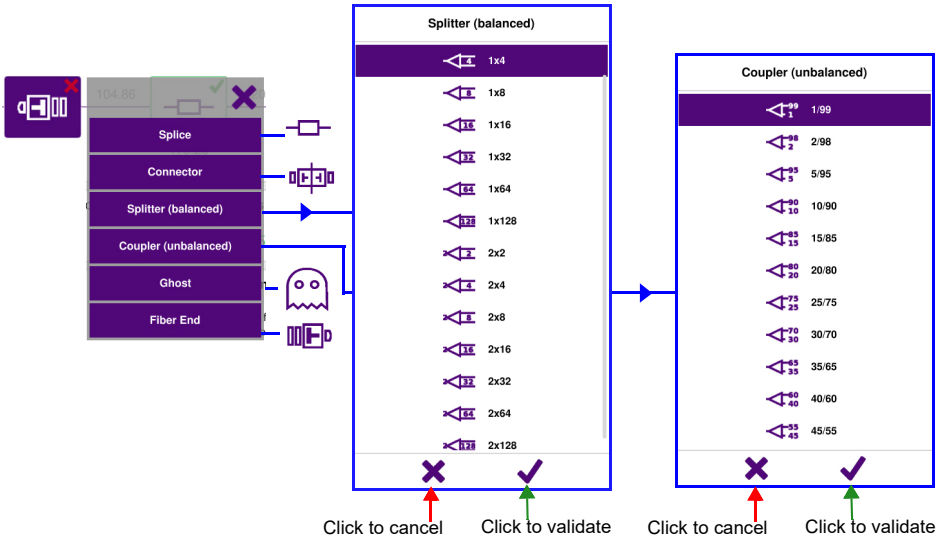
Changing the type of an event

The type of event can be modified, either from **Table** view or from **SmartLink** view:

1 Maintain pressed the icon to be modified.

2 In the menu open, select the new type of event to be applied.

Figure 24 Event Code



3 Tap on ✓ to validate.

NOTE
The event modification is automatically applied on trace and in the results table.

Tap on ✗ to cancel the modification.

3

Distributed Taps PON Networks Testing

This chapter describes how to configure OTDR test parameters for testing Distributed Taps PON networks.

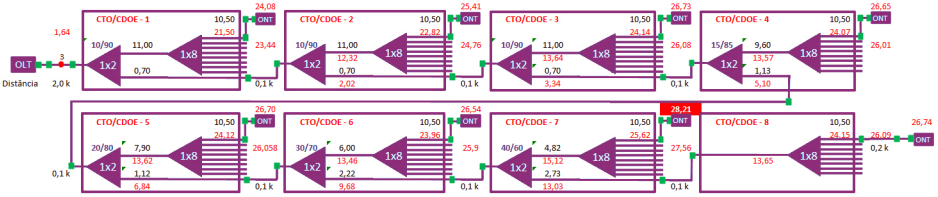
The topics discussed in this chapter are as follows:

Distributed Taps PON Networks

A Distributed Taps PON network also called Tapped PON is a fiber-optic distribution architecture that combines a traditional optical splitter with optical taps to efficiently allocate optical power among multiple users.

This setup provides a flexible and cost-effective solution, especially in rural deployments where long distances and sparse user distribution make traditional PON designs less efficient.The Premium software option allows to set the complete cascaded network which includes UNBALANCED or TAPERED optical splitters.
These elements are automatically detected and identified with their respective ratio, and their loss value compared to the setup thresholds.

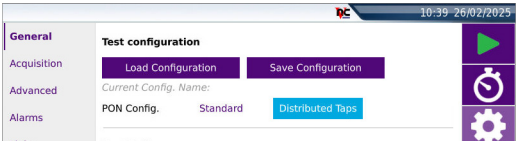
Figure 25 Example of a PON distributed taps architecture



Configuring the distributed taps network topology

1 In the General page, define the **PON Config.** parameter to **Distributed Taps** in order to configure the unbalanced couplers.

Figure 26 General page - Distributed Taps selection



2 In the **Acquisition** page, define the **Unbalanced Taps** parameter:

a Define the **Detection** type: **Default** or **Discover**.

If **Default** Detection is selected:

b Set the **Number of Taps** couplers per the plan

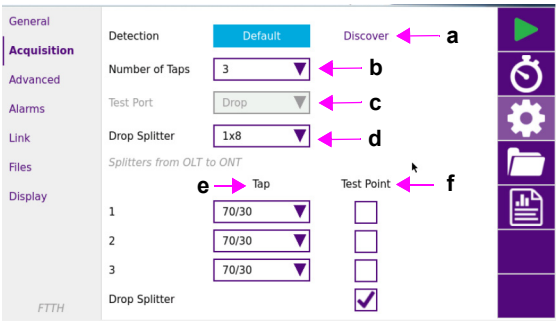
c Define the **Test Port** type: **Drop** or **Bus/Thru**.

d If **Drop** is selected, set the **Drop Splitter** ratio.

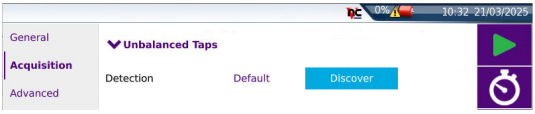
e Set the ratio for each tap.

f Select the **Test Point** among the Taps' list or set the **Drop splitter** as test point.

Figure 27 Unbalanced Taps configuration



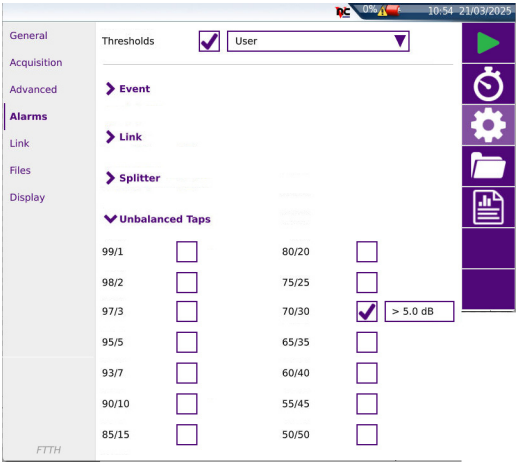
3 If **Discover** Detection is selected, there is no need to manually set any link elements. The OTDR will automatically detect and display all discovered elements along the link. Based on the measured loss, it will identify whether an element is a PON coupler, a tap, or another type of network element. In this mode, pass/fail analysis is not performed.



In this mode, it's recommended to load a pre-defined configuration file called "FTTH_Taps_Discover.SM" (via the Acquisition page) to maximize the taps detection.

4 Once all acquisition parameters defined, tap on **Alarms** to define the pass/fail loss thresholds for each **Unbalanced Taps**, if Alarm **Threshold** parameter is defined with **User**:

Select the taps to be defined and enter the value in the numeric keypad.



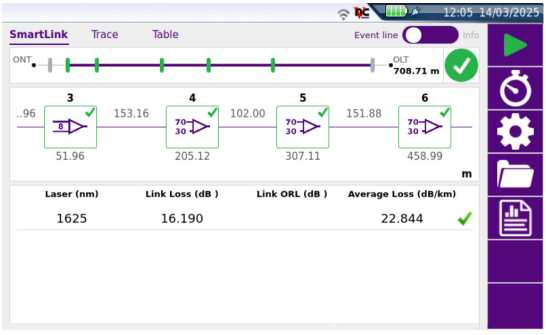
Launching the test and displaying results

1 Once all test parameters are correctly configured, press the **Start** softkey to begin the acquisition.

2 Once the acquisition is complete, the SLM view is automatically displayed.

SmartLink Results

Figure 28 SmartLink View



The unbalanced or tapered optical splitters are identified with their respective ratio, and their loss value compared to the Alarm thresholds defined.

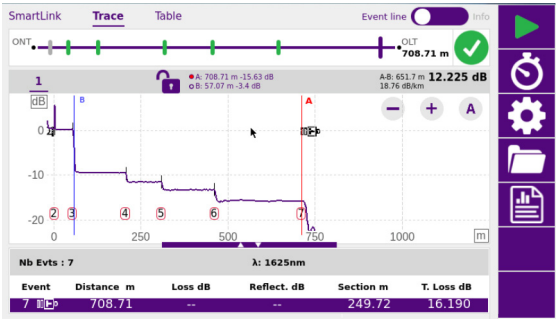
In case of 2 closely spaced splitters, a cluster of splitters is identified, as dictated in the PON configuration settings, and applies the correct pass/fail criteria.

For other SLM functions, see “SmartLink view” on page 28.

Results Trace

Press **Trace** tab to display the FTTH trace.

Figure 29 Distributed taps OTDR Trace example



For more information on trace features, see “Results page” on page 20.

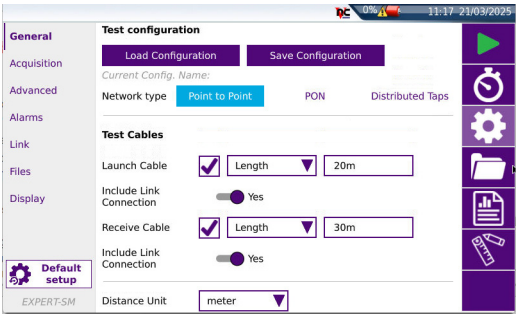
ExpertOTDR with FTTH-SLM option

When the FTTH software option is installed (Base or Premium), the ExpertOTDR function allows to perform OTDR acquisitions for different networks.

1 On the Home page, select **ExpertOTDR** icon.

2 In the **General** page, define the network installed:
- **Point to Point**
- **PON**
- **Distributed Taps** (only with FTTH Premium option).

Figure 30 ExpertOTDR configuration - General page with FTTH option



Refer to OTDR Module User Manual for the description of the Point-to-Point Acquisition and results page.

4

File saving and report generation

This chapter describes the FTTH results saving and the report generation.

The topics discussed in this chapter are as follows:

NOTE

Patented, as described at www.viavisolutions.com/patents.

Saving the trace(s) and generating a report

Once the results page is displayed, the trace(s) can be saved and a report can be generated directly from the results screen.

Saving and report can have been automatically generated if, in the file configuration, the **Auto Store** parameter has been set to **Yes** (see page 15).

Saving results and creating a report from results page

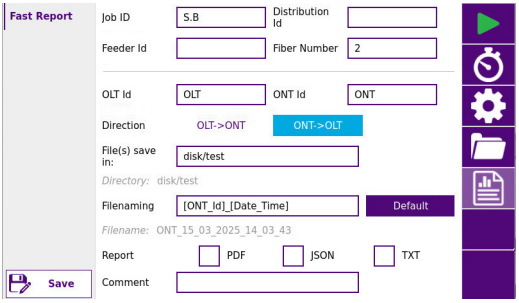
To save the trace and generate a report:

1 Press **Report** key  .

A menu displays under the trace.

2 In the menu, configure the file saving mode (and the report).

Figure 31 Fast report configuration



a Touch **Job Id** text box to enter a description of the measurement to be performed.

b The **Test Point**, **OLT Id**, **ONT Id**, **Distribution Id** and **Feeder Id** parameters allow to enter an identification for each element of the network using the Edition menu.

c Select the parameter **Fiber Number** and modify the number of the fiber to be tested.

d In the **Direction** parameter, select/modify the direction, to define if the measurement has been performed from OLT to ONT (**OLT -> ONT**) or from ONT to OLT (**ONT -> OLT**).

e Click on **File(s) save in** text box and enter the directory path (see "File(s) save in" page 12).

or

In the edition keypad, click on key  to define the current directory as directory for file saving.

f Click on **Filenaming** text box and enter a name for the file in the edition keypad (see Figure 11 on page 14).

or

Apply the auto filenaming (see "Filenaming" page 13).

g In the **REPORT** parameter, select the report format to be generated: **TXT**, **PDF** and / or **JSON** (see “Report” on page 14).

If all parameters are defined with **No**, only the .sor (or .csor) file will be saved.

h If wished, enter a **Comment** clicking in the text box to display the edition keypad.

3 Once all the parameters are configured, press **Save** key 

.

4 Enter a name for the file in the edition keypad.

or

Apply the auto filenaming (see "Filenaming" page 13).

5 Press  to validate

NOTE

The sor file and the txt, pdf and json files will have the same name.

Once saving is completed, a sound is emitted onto the Platform.

NOTE

The file and the report are saved in the last storage media and directory selected.

NOTE

To modify the directory into which the report will be saved, click on the header of the **Saving** Edition keypad to display the **Directory** keypad and enter a new path for the directory.

Opening a report

1. To open the report, press **File** menu key from results page.
2. In the **Explorer** page, in the directory selected, select the file/report.
   The file name is:
   For the txt file: *trace file_sor.txt*
   For the pdf file: *trace file.sor.pdf*
3. Press **Load**.
   The file opens on the T-BERD/MTS.

Figure 32 Fast Report with FTTH-SLM option

CAUTION

To modify the VIAVI logo, set by default on the header of the pdf report, save your logo in a jpg file called `logo.jpg` and place it to the root of the disk: `disk > logo.jpg`.

700MAN207
Rev 001, 04-25
English

VIAVI Solutions

North America:	**1.844.GO VIAVI / 1.844.468.4284**
Latin America	**+52 55 5543 6644**
EMEA	**+49 7121 862273**
APAC	**+1 512 201 6534**
All Other Regions:	**viavisolutions.com/contacts**
email	**TAC@viavisolutions.com**
address	**6001 America Center Drive, San Jose, CA, 95002, USA**