

OTDR PC-based Analysis Software User Manual

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software installation

1. JRE

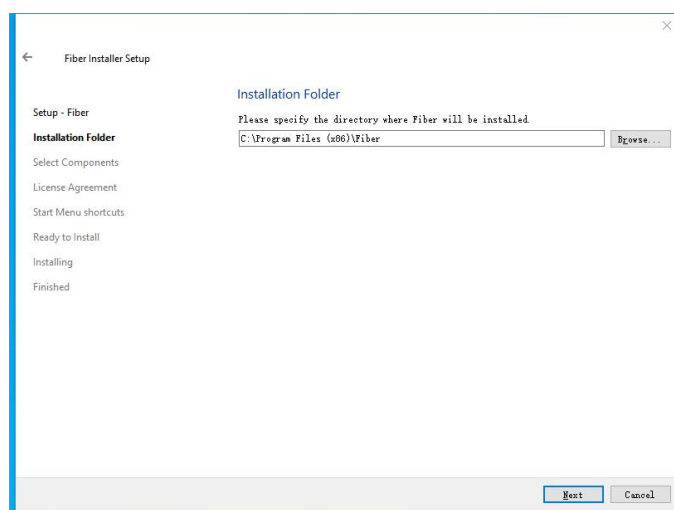
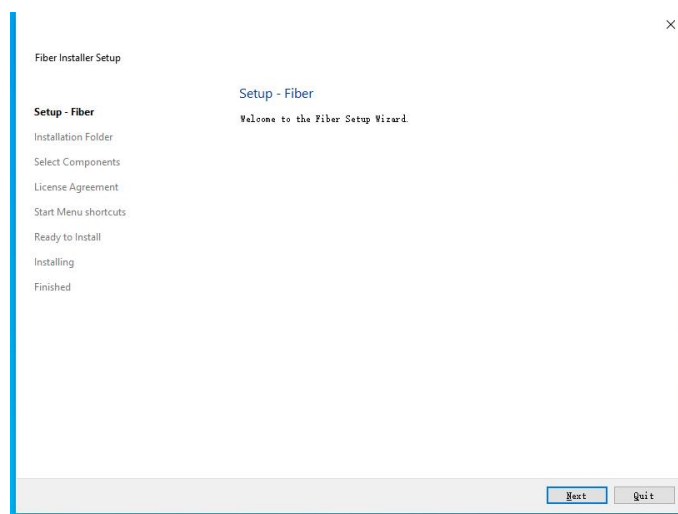
Operating system:

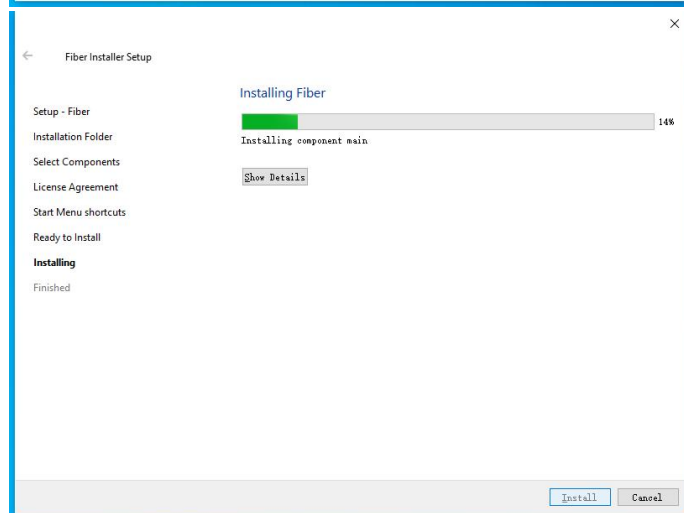
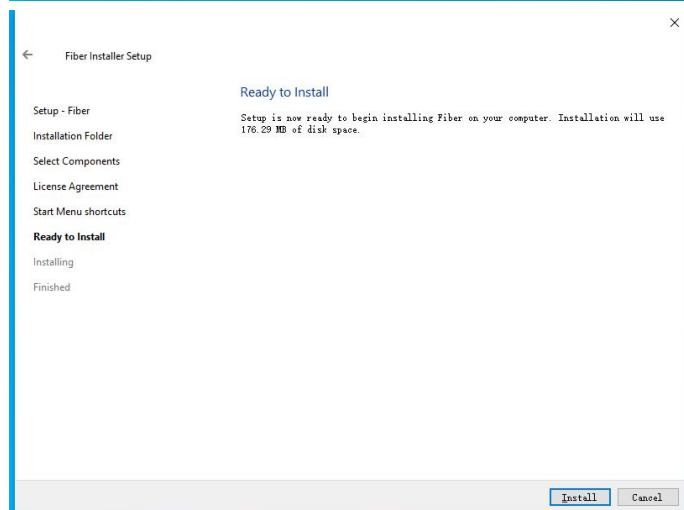
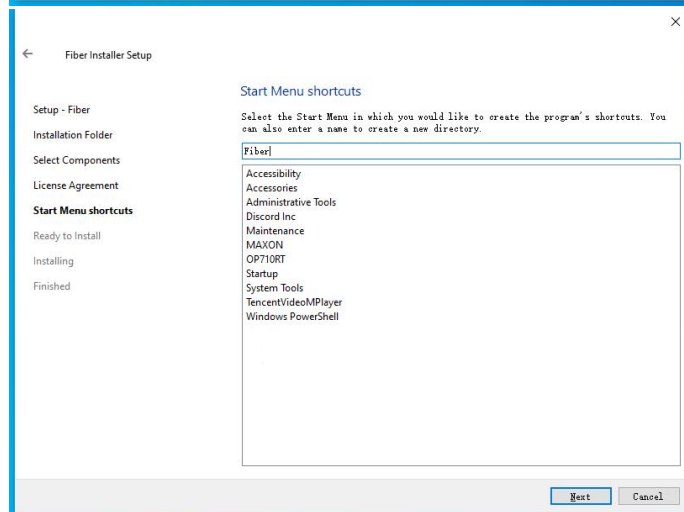
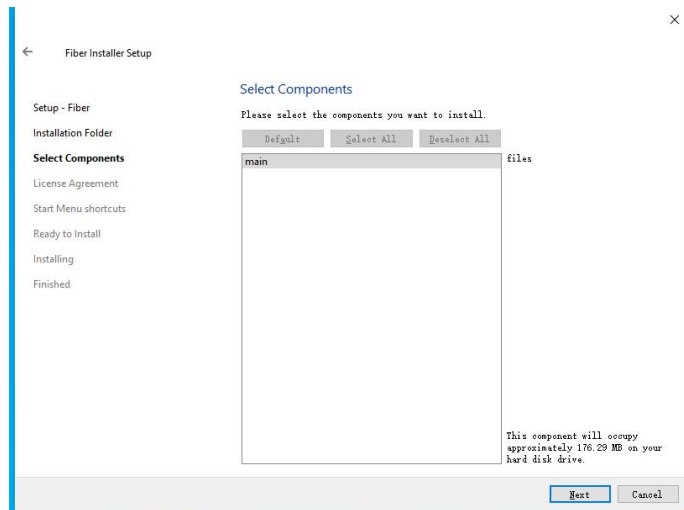
Minimum requirements Windows 10(32 bit/64 bit).

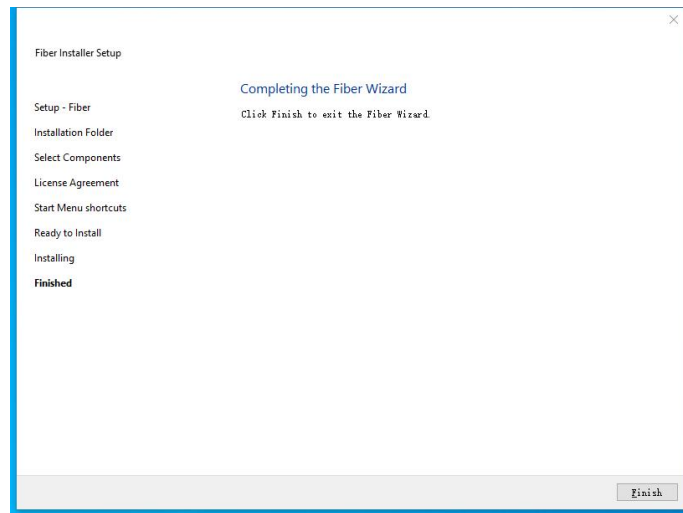
2. installation

Note: If you have installed an old version, you must uninstall it before installing it again.

Double-click on the Fiber-Installer-0.2.8.2-x86 program installer to display the installation screen.







3. Uninstall

Start - Control Panel - Add/Remove Programs - Locate and select Fiber - Right-click with the mouse - Choose Uninstall.

Start and Exit

1. Start

Desktop shortcut

Start - All Programs—OTDR Assistant for PC.exe

2. Exit

1)File - Exit

2)The "(X)" button at the top right of the software.

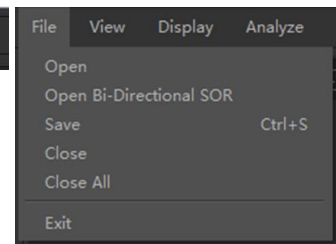
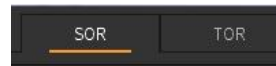
Interface layout

1. Menu

1)File

a)Open (max. 40 waveforms)

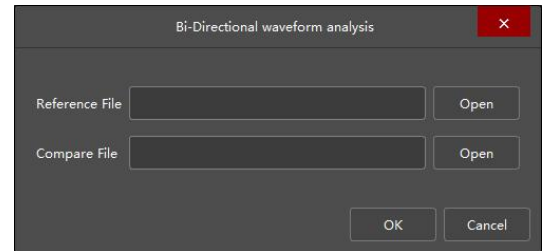
File - Open - Select waveform file and open
(When SOR is selected in the upper right corner,
only *.sor files can be opened; when TOR is selected,
only *.tor files can be opened)



b)Open Bi-Directional SOR

File - Open SOR Bidirectional Waveform - Pop
up the bidirectional waveform analysis window.
Open the reference file and the comparison
file (*.sor) from the directory.

**Note: The pulse width, dynamic range, and
wavelength of the two files of the bidirectional
wavelength test must be the same, the waveform
of the compare file is reversed left and right.**



c)Save

Save changes to the annotated information, environmental information, and other editable
parts in the file. When saving SOR files, the cursor position of the AaBb markers on the
curve graph will also be saved.

d)Close

Close the selected file in the file list.

e)Close all

Close all currently open files.

f)Exit

2)View

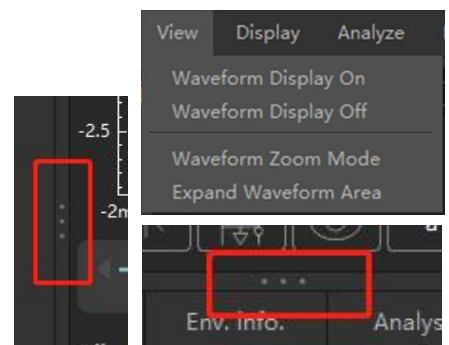
a)Waveform Display On

b)Waveform Display Off

c)Waveform Zoom Mode

d)Expand Waveform Area

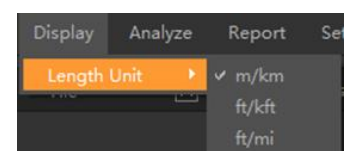
- Click to minimize the file list and hide the bottom
tab bar.
- When the tab bar is hidden, you can place the mouse
below the control cursor button...icon. When the
bidirectional arrow appears, hold down the left mouse
button and drag upwards to display.
- Place the mouse between the file list and the waveform
area at the ... icon. When the bidirectional arrow
appears, hold down the left mouse button and drag left
or right to adjust the width of the file list.



3)Display

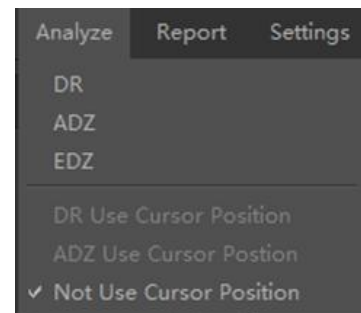
a)Length Unit

Set the unit of length for display



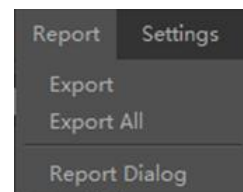
4) Analyze

- a) DR
- b) ADZ
- c) EDZ
- d) DR Use Cursor Position
- e) ADZ Use Cursor Position
- f) Not Use Cursor Position



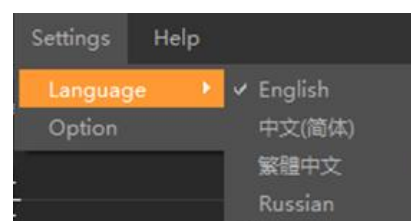
5) Report

- a) Export
Export report for the currently selected file.
- b) Export All
- c) Report Dialog



6) Settings

- a) Language
Switch between English, Simplified Chinese, Traditional Chinese, and Russian.
- b) Option
Prompt whether the query window is pop up each time you exit.



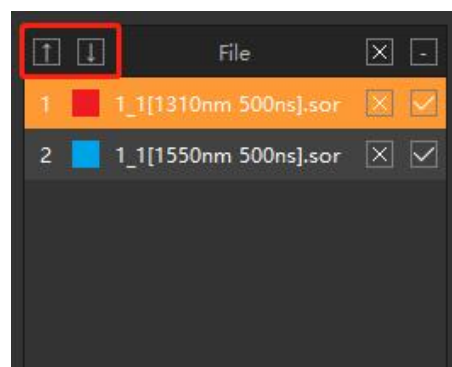
7) Help

- a) About
View the current software name and version.

2. File list

1) Select file switch

- a) Left-click to select a file.
- b) Use the arrow button above the file list.
Select the information corresponding to the waveform (e. g., measurement condition, cursor information, event list)
will display in the corresponding area, A, B, a, b
cursor will also be associated with the waveform.

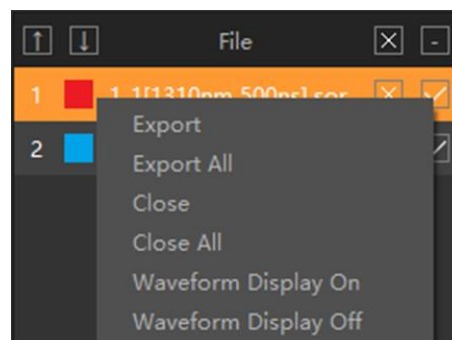


2) Close the file

- a) Click on the 'x' at the top right of the file list, and a prompt will ask if you want to close all.
- b) Click on the 'x' next to each file, and a prompt will ask if you want to close the file.
- c) Selecting a file brings up a right-click menu where you can choose to close or close all files.

3) Hide the file

- a) Click on the '-' at the top right of the file list to hide/show all files.
- b) Click on the '-' next to each file to hide/show that specific file.
- c) When selecting a file to bring up the right-click menu, you can choose to show/hide all files.



4) Export/Export All

Select a file to select the right-click menu to select to export / export all reports

3. Data list

1) Waveform information

The top left of the data list displays the waveform information, including the pass / no-pass results, total distance, total loss, and total optical loss values.



2) Thumbnail

Display the entire waveform



3) A-B cursor information

Display the distance difference, attenuation value, and attenuation rate between points A and B.



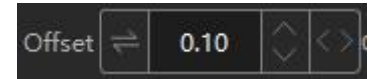
4) Event list linear view



- a) Place the mouse in the linear view area of the event list, and long left click to left/right move to view all the event icons.
- b) In the SOR/TOR event icons, a $\checkmark$ indicates that the event has passed, and a $\times$ indicates that the event has not passed. If two or more events are enclosed in a dashed box, it indicates that the event is an M event.
- c) Left-click on the event icon, A, B, a, b, and the cursor will be positioned at the position of the currently selected event in the waveform map, meanwhile the list is selected in event list.

5)Offset (The horizontal/vertical movement amplitude of the currently selected waveform)

The offset table consists of step buttons, step values, up and down arrow buttons, and left and right arrow buttons from left to right. Click the button to move and reset the waveform. For detailed operation methods, see the horizontal/vertical movement and recovery in the waveform operation.



6)Cursor control

The cursor table from left to right includes cursor reset, cursor centering, automatic adjustment of cursor up and down positions, and display/hide cursor. Click the button to control the cursor. For detailed operation methods, see cursor operation in waveform operation.



7)Single curve display

After clicking the tool icon, when the border turns orange, the selected waveform in the waveform area will be displayed in red, while the other curves will be displayed in gray, as shown in the following image.



4. Event list

1)Event

Event							
No.	Type	Dist./Len.(km)	Loss(dB)	Ref.(dB)	Atten.(dB/km)	C.Loss(dB)	Sub-Event
	Section	(0.22970)	0.051	---	0.222	4.675	
7	Attn	11.61749	0.742	---	---	5.417	
	Section	(15.60909)	2.856	---	0.183	8.273	
8	End	27.22657	---	---	---	8.273	

a)Left/right click

Select the event line and locate the A, B; a, b cursor at the position of the currently selected event in the waveform meanwhile select current event icon in event list linear.

b) Scroll the mouse wheel

Select Event: View all events.

Click Event Title Menu: Switch event menu.

c) When events are close together, merged events (M-type) are generated. Clicking on the icon in the sub-event column pops up a window where you can view the data of the sub-events within the merged event.

2) Measuring parameters

Event	Parameters	Mark info.	Env. info.	Analysis	Total info.
Parameter		Setting			
Wavelength: 1550nm		Refractive Rate: 1.46832			
Pulse Width: 500ns		Backscatter Coefficient: -82.1dB			
Avg. Time: 180s		Max Reflection Threshold: -75.0dB			
Range: 40km		Splice Loss: 0.05dB			
		End Threshold: 3.0dB			

3) Mark information

Company, customer, cable ID, fiber ID, and comments can be customized as needed.

Event	Parameters	Mark info.	Env. info.	Analysis	Total info.
Edit					
Company					
Customer					
Cable ID					
Fiber ID					
Comments					

4) Event information

Location A, Operator A, Location B, Operator B can be edited as needed.

Event	Parameters	Mark info.	Env. info.	Analysis	Total info.
Edit					
Location A				Direction: A→B	
Operator A				Loc. tech.: --,--	
Location B				Lon./Lat.: --,--,--,--	
Operator B				Temp./Hum.: --,--	

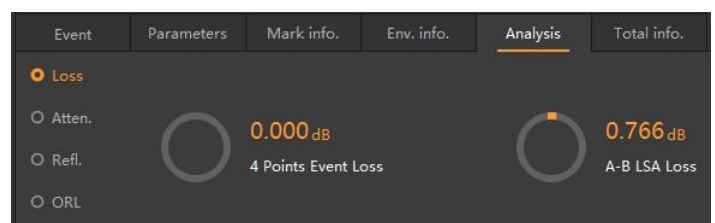
5) Analysis

Loss:

The four-point method will display four cursors "a, A, b, B". Move the cursors appropriately. The difference between the LSA value in "a, A" and the LSA value in "b, B" can more accurately determine the loss.

A-B LSA Loss:

Use two-point method to calculate loss. Calculate the difference between A and B by "A, B" LSA slope.

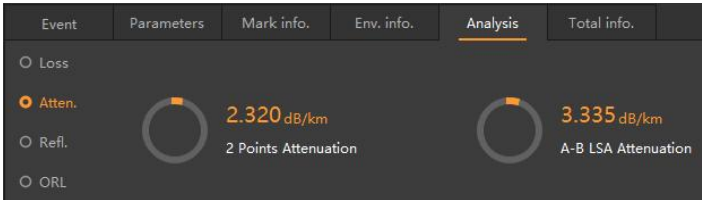


Attenuation Rate:

Two-point attenuation: calculate the real attenuation between cursor A and B, then unitized the loss per kilometer to show, easily disturb by noise.

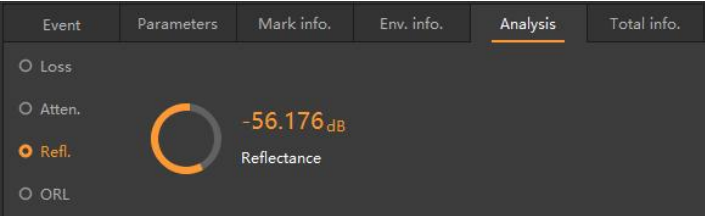
A-B LSA Attenuation :

Calculate the LSA slope between points A and B to obtain the attenuation value, Attenuation rate is relatively stable.



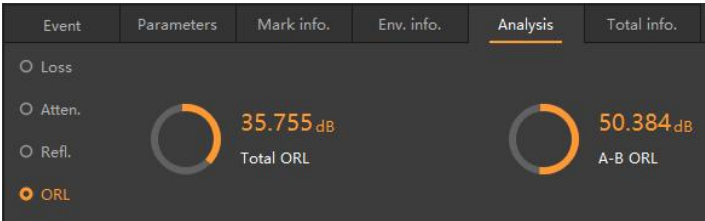
Reflectance :

Three-point method reflection has a, A and B three cursors. Set “ a, A ” at the flat position before reflection, the initial power is obtained after LSA average, and set B in the highest point of reflection to show the reflection value.



ORL :

Return loss measurement: A-B optical return loss calculates the return loss between two cursors, and line total optical return loss calculates the return loss of the entire optical fiber.



6)Total information

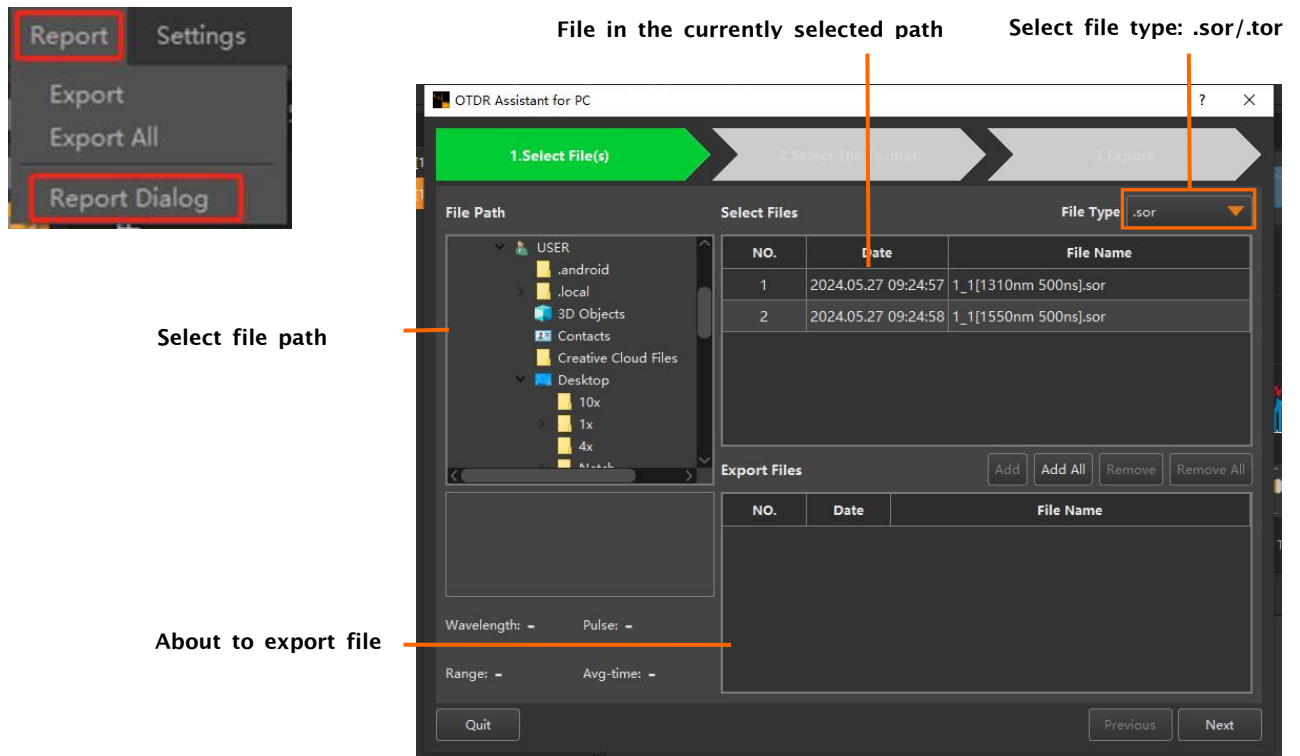
Event	Parameters	Mark info.	Env. info.	Analysis	Total info.
SOR Version: 212					
Manufacturer: T3					
Measure Datetime: 2022/01/12 15:34:24 (GMT+08:00)					

Report

1. Select file

1) Enter the file selection interface

Report – Report Dialog – Enter the file selection interface for exporting reports.



2) Add export file

a) When selecting files in the path, you can use Ctrl/Shift keys for multiple selections. The 'Add' and 'Add All' buttons will become active, allowing you to add some or all files to the export file list.

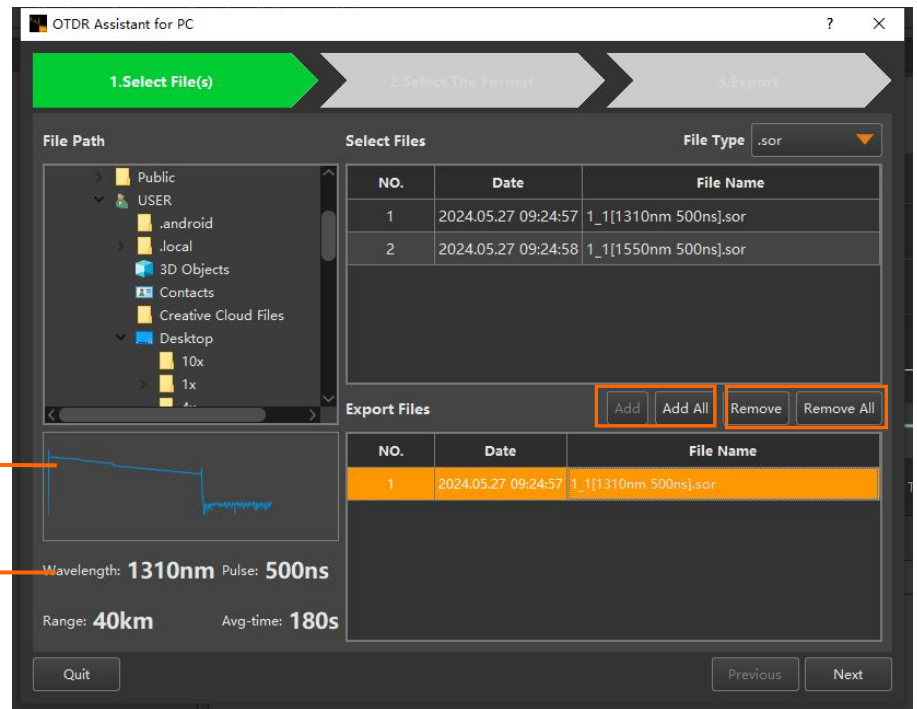
b) When some files have already been added to the export list, you can continue to add more after changing the file type. This way, you can export both .sor and .tor files simultaneously.

c) After selecting the files, hold down the left mouse button, drag the files into the export file list, and release the button to add the files.

3) When selecting files in the export file list, hold down the Ctrl/Shift key to select multiple files. At this time, the "Remove" and "Remove All" buttons in the figure below can be edited to remove some or all files in the export file list.

The waveform preview area for the currently selected .sor file
(Note: .tor files cannot be previewed).

The information for the currently selected .sor file
(Note: .tor files cannot be displayed).



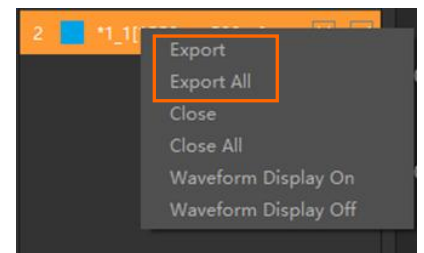
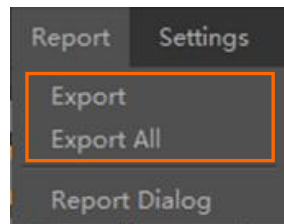
2. Select layout

1) Select the layout interface to enter

a) Click Next on the Select File interface to enter.

b) OTDR Assistant for PC—Open the file right-click menu or the report menu.—Export/Export All

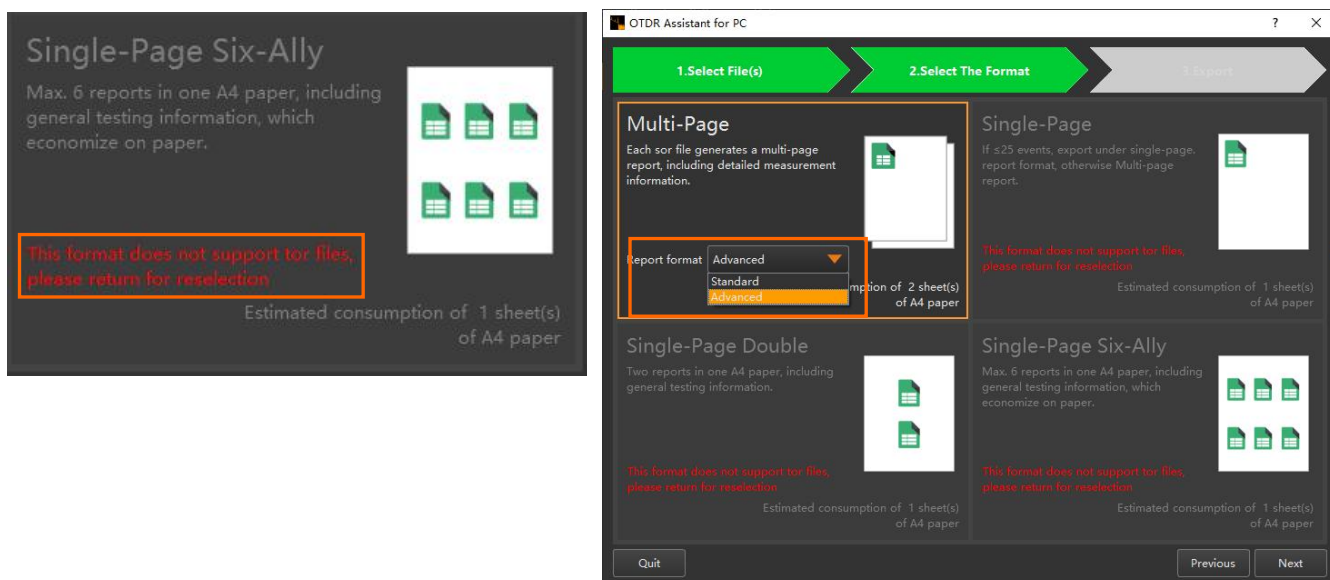
c) Switch to TOR in the top right corner—open the file right-click menu or the report menu—enter the export/export all option.



2) Export in two formats: PDF and XLS. The XLS format includes three layouts: single-page, single-page Double, and single-page six-Ally.

3) The XLS format supports print preview, printing, and export functions. (Only supports SOR files, TOR files are not supported at the moment).

4)The multi-page report format can be selected as standard or advanced.



3. Export

1)Enter the export interface

Click 'Next' on the 'Select the format' interface.

2)Customer information setting

a)Use following information : After selecting and entering the information, it will appear in all exported/printed reports. If 'Auto accumulate value' is checked and the information entered is a number, the fiber ID in the exported/printed reports will start accumulating from this number. If the information entered is Chinese/English characters or left blank, the fiber ID in the exported/printed reports will start accumulating from 0 sequentially. If 'Auto accumulate value' is not checked, the fiber ID will be the actual content entered.

Fiber ID		☒ Auto accumulate value
Fiber ID	sgfg	☒ Auto accumulate value
Fiber ID	一号光纤	☒ Auto accumulate value

No.	Fiber ID	File Name
1	0	1_1[1310nm 500ns].sor
2	1	1_1[1550nm 500ns].sor

Fiber ID	20	☒ Auto accumulate value
----------	----	---

No.	Fiber ID	File Name
1	20	1_1[1310nm 500ns].sor
2	21	1_1[1550nm 500ns].sor

Fiber ID	zdbh	☐ Auto accumulate value
----------	------	--

No.	Fiber ID	File Name
1	zdbh	1_1[1310nm 500ns].sor
2	zdbh	1_1[1550nm 500ns].sor

b)Use the information contained in the file: The information displayed in the exported/printed report is the information contained in the original file.

3)Export Option

a)When exporting a file, the framed portion in the image below is not displayed.

When exporting multiple files, it shows

Export Option

Report Name: 1_1[1550nm 500ns] ☒ Follow source filename Report Format: .pdf

Export To: C:/Users/USER/Desktop ☐ Follow source file path

b)When exporting multiple files simultaneously and selecting 'Follow source filename' the exported file names are the same as the source file names. If 'Follow source filename' is not selected, the report names will be the name of the first exported file followed by _0001.

Export Option

Report Name: 1_1[1550nm 500ns] ☒ Follow source filename Report Format: .pdf

Export To: C:/Users/USER/Desktop ☐ Follow source file path

Preview

No.	Fiber ID	File Name	Date	Report Name	
1		1_1[1550nm 500ns].sor	2024.05.27 09.24.58	1_1[1550nm 500ns].pdf	C:/Users/L
2		1_1[1310nm 500ns].sor	2024.05.27 09.24.57	1_1[1550nm 500ns]_0002.pdf	C:/Users/L

Export Option

Report Name: 1_1[1550nm 500ns] ☒ Follow source filename Report Format: .pdf

Export To: C:/Users/USER/Desktop ☐ Follow source file path

Preview

No.	Fiber ID	File Name	Date	Report Name	
1		1_1[1550nm 500ns].sor	2024.05.27 09.24.58	1_1[1550nm 500ns].pdf	C:/Users/L
2		1_1[1310nm 500ns].sor	2024.05.27 09.24.57	1_1[1310nm 500ns].pdf	C:/Users/L

c)When exporting multiple files at the same time and checking "Follow file path", the exported files are stored in the location of the first sor/tor file by default; if "Follow file path" is not checked, the exported files are stored in the location of the corresponding sor/tor file.

d)The report format can be selected as .pdf and .xls. (Only PDF format can be exported for multi-page reports)

a)Print Preview

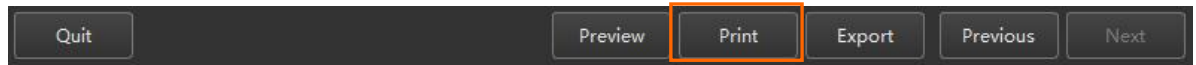
No.	Fiber ID	File Name	Date	Report Name	
1		1_1[1550nm 500ns].sor	2024.05.27 09.24.58	1_1[1550nm 500ns]_0001.pdf	C:/Users/L
2		1_1[1310nm 500ns].sor	2024.05.27 09.24.57	1_1[1550nm 500ns]_0002.pdf	C:/Users/L

<<
>>

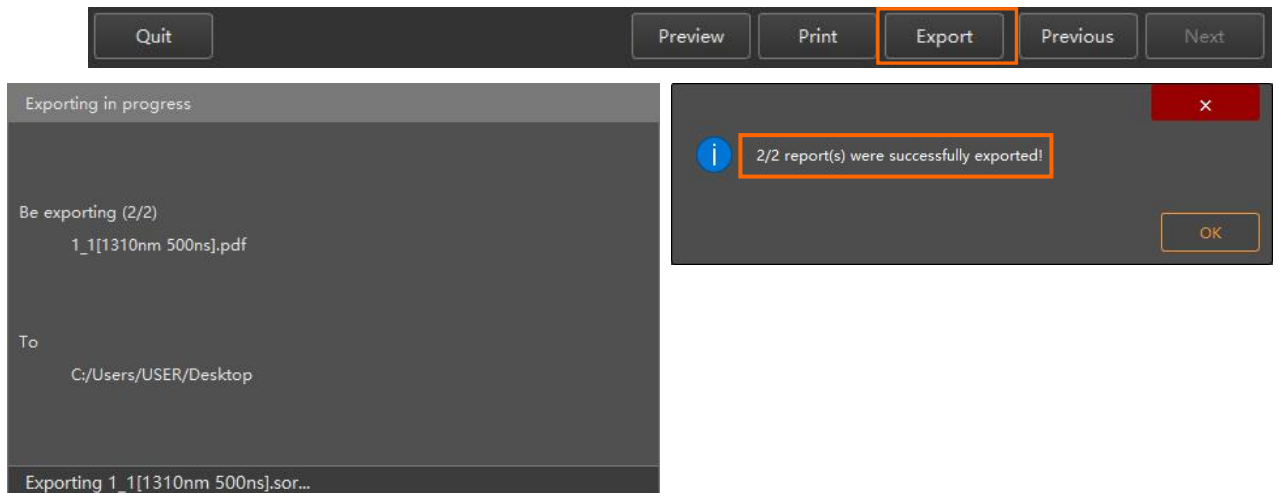
Quit
Preview
Print
Export
Previous
Next



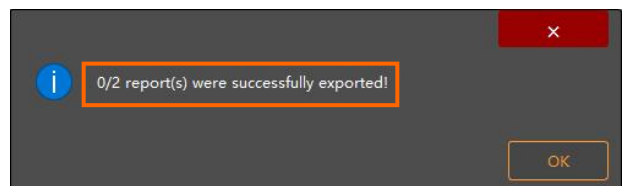
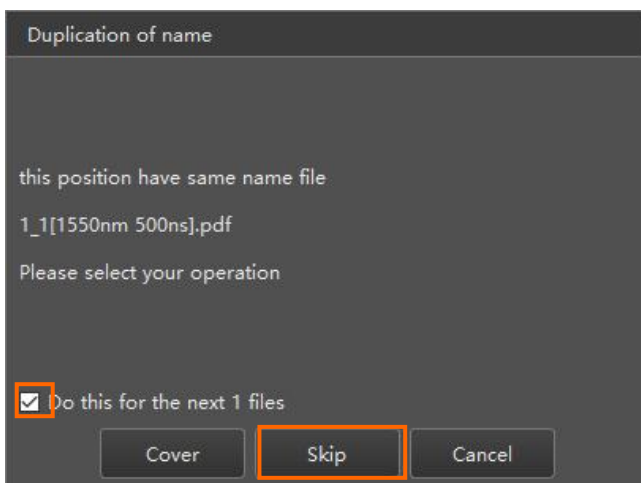
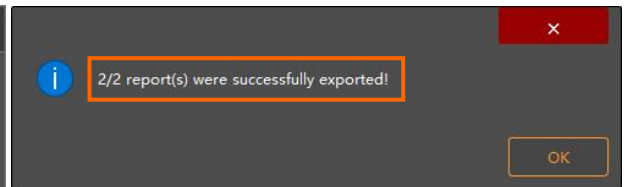
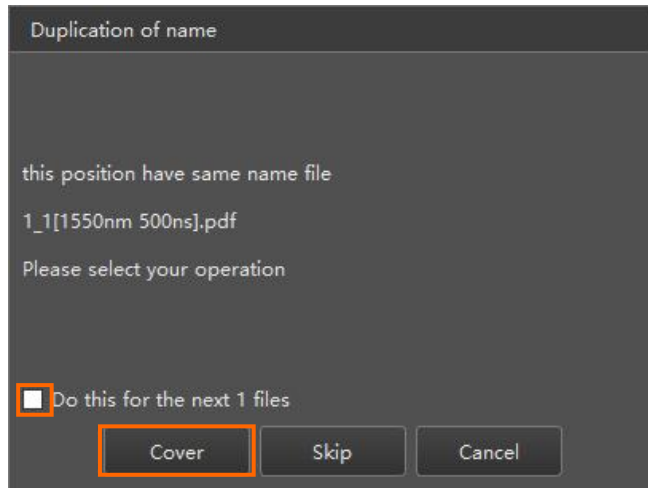
b) Short press the Print button or click the printer icon in the upper right corner of the Print Preview interface, and the Print window will appear. At this time, all file reports in the preview list will be printed and exported by default.



c) Short press Export, a "Export" prompt box pops up. After the export is complete, an "Export Result" prompt box appears, allowing you to check if the file was successfully exported.



- d) When a file with the same name already exists in the export path, clicking on export report triggers a duplicate name dialog box. If you don't select "Perform this action for the next n files" and click on either the "Overwrite" or "Skip" button, a confirmation dialog will appear for each file exported, requiring individual confirmation. If you do select the option, all files will be exported without the need for multiple confirmations. After the export is complete, a "Export Result" prompt box appears, allowing you to check if the files were successfully exported.

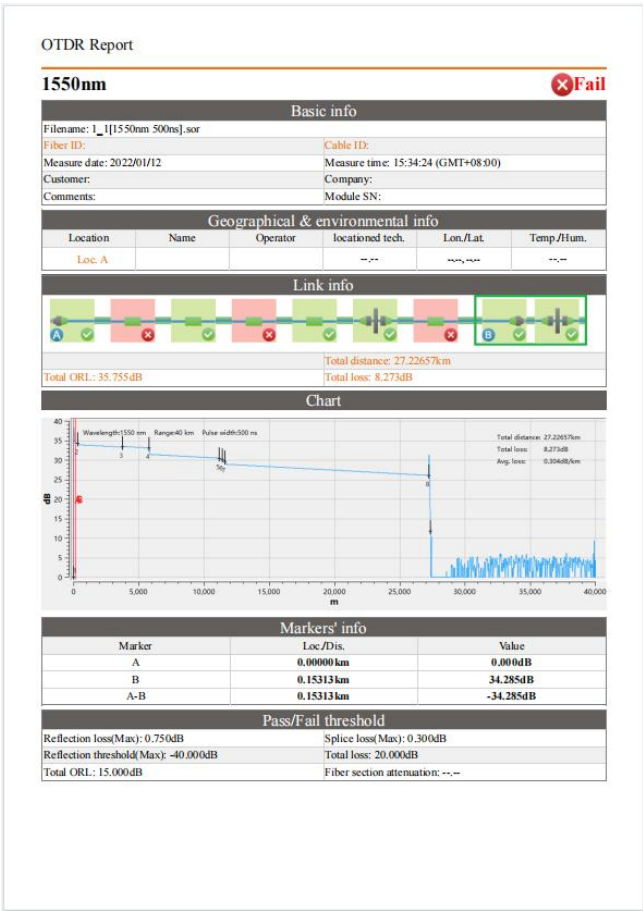


4. Sample Report

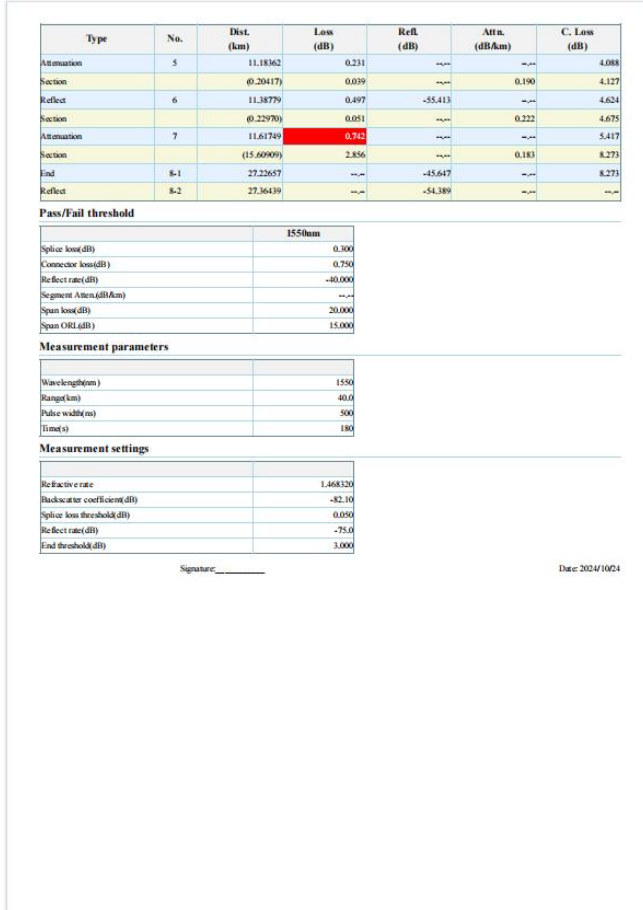
1)"sor" files

a)Multi-Page (*Only PDF export format supported)

Advanced Report Format

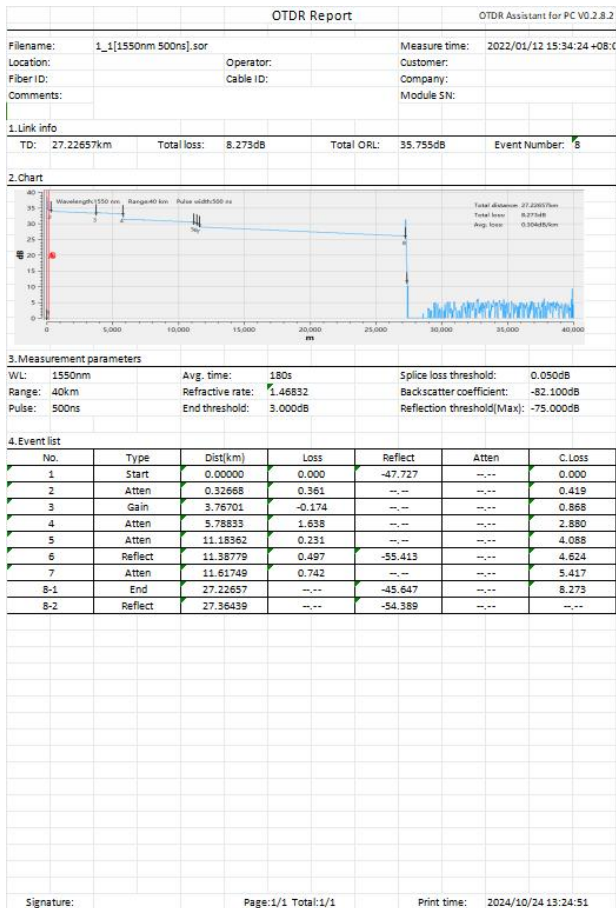


Standard Report Format

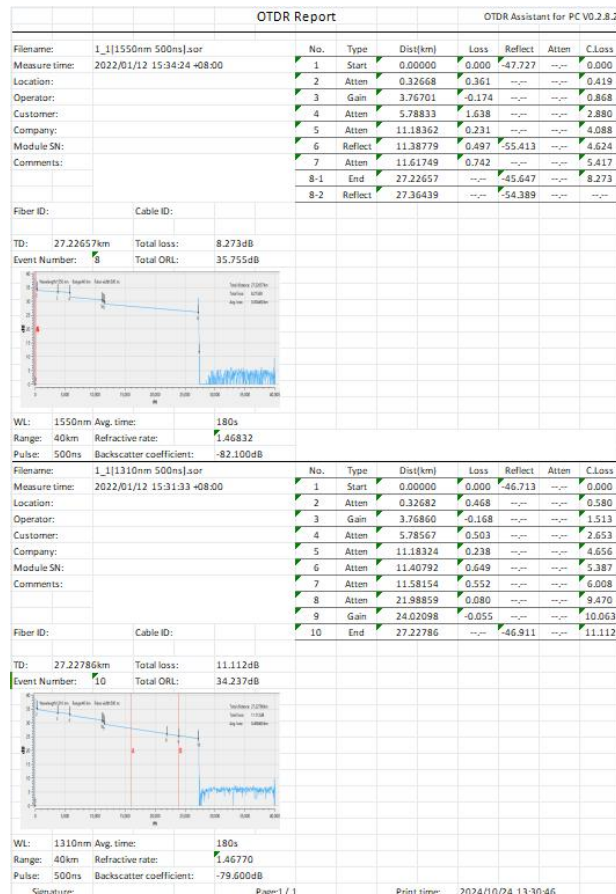


b)Single-Page (*Only XLS export format supported)

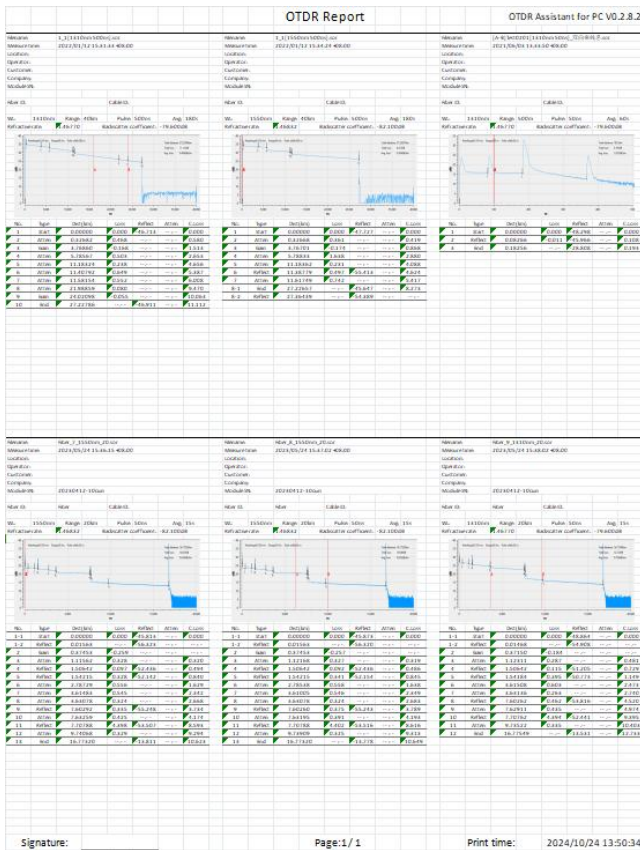
More than 25 events (including sub-events) will display on two pages.



c)Single-Page Double (*Only XLS export format supported)



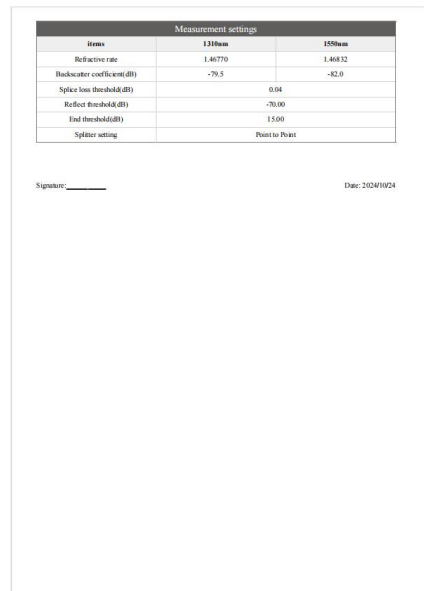
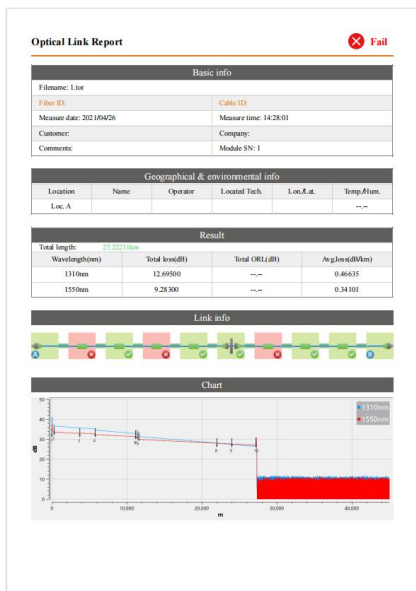
d)Single-Page Six-Ally (*Only XLS export format supported)



2)"tor" files

a)Multi-Page (*Only PDF export format supported)

Advanced Report Format



Standard Report Format

Optical Link Report

X Fail

General Info

Filename:	Fiber_Test
Master Date:	17/09/2018
Master User:	MS00000
Slave ID:	Fiber 01
Task ID:	...
Comments:	

Location

Zone: A	
Location:	
Operator:	
Model:	...
Module SN:	
Cable Date:	...

Result

Open length: 1.94377km

Wavelength (nm)	Speed of light (m)	Open Time (μs)	Avg. Power (dBm)
1310	24.796	6000	(-2.7054)

Graphics

Event list					
No.	Type	Site km	Local (M) 07/Dec	Re-Occ (M) 07/Dec	Re-Occ (M) 07/Dec
1		0.0000	0.375	.....	.....
1.1		0.0000	.....	.....	.....
1.2		0.0000	.....	.....	.....
2		0.1000	0.300	.....	.....
3		0.1100	0.307	.....	.....
4		0.2000	0.400	.....	.....
5		0.2000	0.400	.....	.....
Connector to day 10. Check for connector and reinsert if 0 found					
6		0.3000	0.500	.....	.....
7		0.4000	0.600	.....	.....
8		0.5000	0.700	.....	.....
9		0.6000	0.800	.....	.....
Connector to day 10. Check for connector and reinsert if 0 found					
10		0.7000	0.900	.....	.....
11		0.8000	1.000	.....	.....
12		0.9000	1.100	.....	.....
13		1.0000	1.200	.....	.....
14		1.1000	1.300	.....	.....
15		1.2000	1.400	.....	.....
16		1.3000	1.500	.....	.....
17		1.4000	1.600	.....	.....
18		1.5000	1.700	.....	.....
19		1.6000	1.800	.....	.....
20		1.7000	1.900	.....	.....
21		1.8000	2.000	.....	.....
22		1.9000	2.100	.....	.....
23		2.0000	2.200	.....	.....
24		2.1000	2.300	.....	.....
25		2.2000	2.400	.....	.....
26		2.3000	2.500	.....	.....
27		2.4000	2.600	.....	.....
28		2.5000	2.700	.....	.....
29		2.6000	2.800	.....	.....
30		2.7000	2.900	.....	.....
31		2.8000	3.000	.....	.....
32		2.9000	3.100	.....	.....
33		3.0000	3.200	.....	.....
34		3.1000	3.300	.....	.....
35		3.2000	3.400	.....	.....
36		3.3000	3.500	.....	.....
37		3.4000	3.600	.....	.....
38		3.5000	3.700	.....	.....
39		3.6000	3.800	.....	.....
40		3.7000	3.900	.....	.....
41		3.8000	4.000	.....	.....
42		3.9000	4.100	.....	.....
43		4.0000	4.200	.....	.....
44		4.1000	4.300	.....	.....
45		4.2000	4.400	.....	.....
46		4.3000	4.500	.....	.....
47		4.4000	4.600	.....	.....
48		4.5000	4.700	.....	.....
49		4.6000	4.800	.....	.....
50		4.7000	4.900	.....	.....
51		4.8000	5.000	.....	.....
52		4.9000	5.100	.....	.....
53		5.0000	5.200	.....	.....
54		5.1000	5.300	.....	.....
55		5.2000	5.400	.....	.....
56		5.3000	5.500	.....	.....
57		5.4000	5.600	.....	.....
58		5.5000	5.700	.....	.....
59		5.6000	5.800	.....	.....
60		5.7000	5.900	.....	.....
61		5.8000	6.000	.....	.....
62		5.9000	6.100	.....	.....
63		6.0000	6.200	.....	.....
64		6.1000	6.300	.....	.....
65		6.2000	6.400	.....	.....
66		6.3000	6.500	.....	.....
67		6.4000	6.600	.....	.....
68		6.5000	6.700	.....	.....
69		6.6000	6.800	.....	.....
70		6.7000	6.900	.....	.....
71		6.8000	7.000	.....	.....
72		6.9000	7.100	.....	.....
73		7.0000	7.200	.....	.....
74		7.1000	7.300	.....	.....
75		7.2000	7.400	.....	.....
76		7.3000	7.500	.....	.....
77		7.4000	7.600	.....	.....
78		7.5000	7.700	.....	.....
79		7.6000	7.800	.....	.....
80		7.7000	7.900	.....	.....
81		7.8000	8.000	.....	.....
82		7.9000	8.100	.....	.....
83		8.0000	8.200	.....	.....
84		8.1000	8.300	.....	.....
85		8.2000	8.400	.....	.....
86		8.3000	8.500	.....	.....
87		8.4000	8.600	.....	.....
88		8.5000	8.700	.....	.....
89		8.6000	8.800	.....	.....
90		8.7000	8.900	.....	.....
91		8.8000	9.000	.....	.....
92		8.9000	9.100	.....	.....
93		9.0000	9.200	.....	.....
94		9.1000	9.300	.....	.....
95		9.2000	9.400	.....	.....
96		9.3000	9.500	.....	.....
97		9.4000	9.600	.....	.....
98		9.5000	9.700	.....	.....
99		9.6000	9.800	.....	.....
100		9.7000	9.900	.....	.....

Pass/Fail threshold

Splice loss(dB)	0.0
Connector loss(dB)	0.0
Reflector loss(dB)	0.0
Span loss(dB)	0.0
Span ORL(dB)	0.0
Segment A loss(dB)	0.0

Measure settings

	100
Roll out rate	0.00000
Backscatter coefficient(dB)	0.0
Optice time threshold(dB)	0.00
Roll off threshold(dB)	0.00
Line threshold(dB)	0.00
Optimize setting	Point to Point

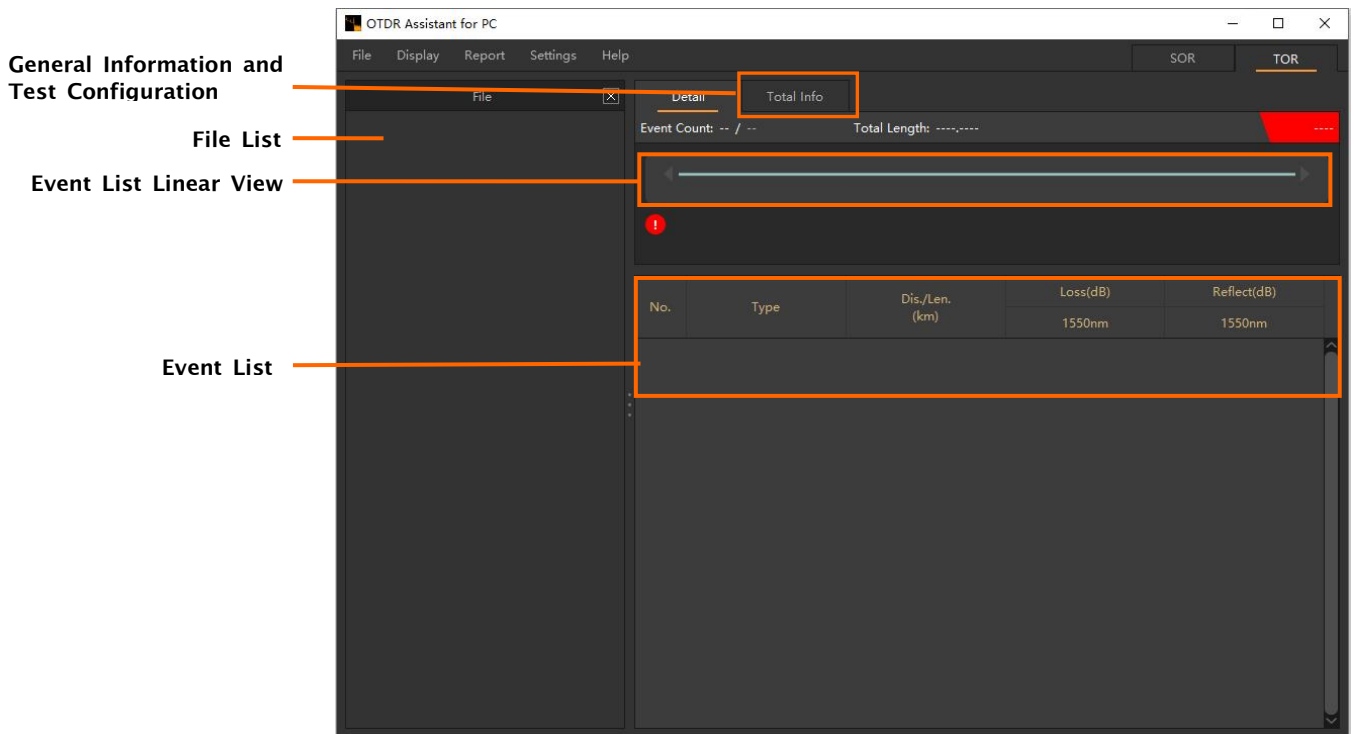
Signature: _____

Date: 2024/10/24

iOLA

1. Main Interface

Click on the TOR in the top right corner to access the main interface of iOLA.



2. File

1)Open (Up to ten waveforms can be opened simultaneously)

a)File—Open File—Open waveform file (*.tor) .

b)After selecting a file, hold down the left mouse button, drag the file into the main interface and then release it to open the file.

2)Close

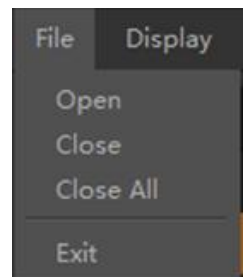
To close the selected file in the file list.

3)Close All

Close all currently open files.

4)Exit

Exit the iOLA interface.



3. Report

Enter the report export interface, details can be found in the [Report](#).

4. File list

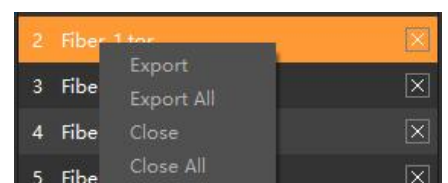
2) Right-click menu

a)Export a report for the currently selected waveform file.

b)Export reports for all waveform files.

c)Close the currently selected waveform file.

d)Close all waveform files.



5. Detail

1)File details

View the judgment results, total number of events, and total measurement length.

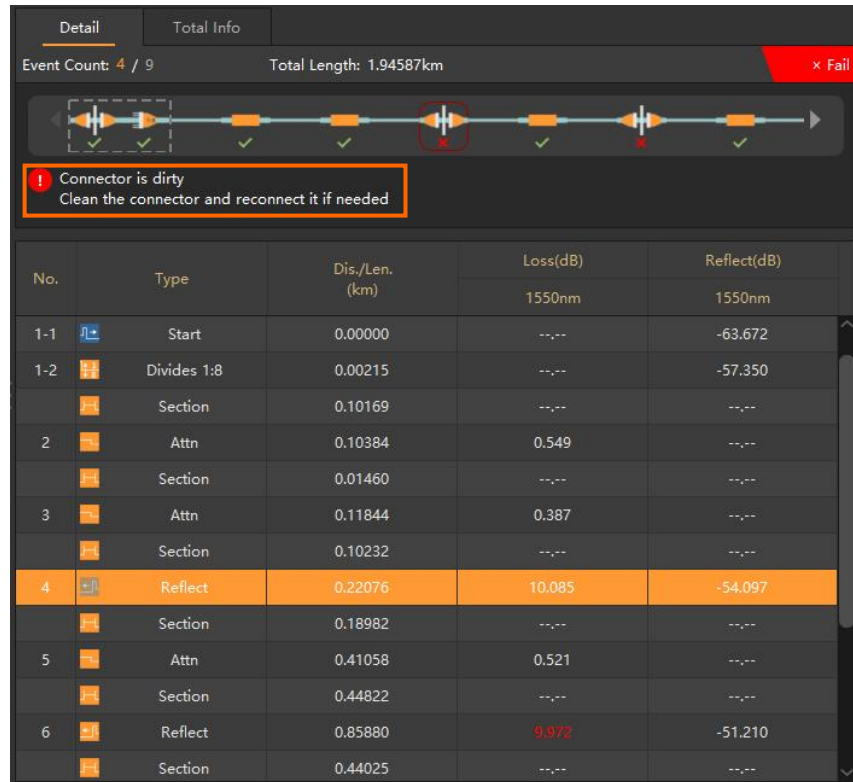
2)Event chart

When events exceed the display range of the interface, you can click the left and right arrows to view all event icons.

3)Event list

When the number of events exceeds the display limit of the interface, you can scroll the mouse wheel to view all event information.

Note: Select the failed event in the event chart or the red-marked event in the event list, and the abnormal cause analysis will be displayed below the event chart, as shown in the following figure:



6. Total Information

- 1)View total information
- 2)View test configuration
- 3)View fiber characteristics
- 4)View measure set

Detail	Total Info	
Wavelength(nm)	Link Loss(dB)	Link ORL(dB)
1310	12.695	--.--
1550	9.283	--.--
Test Config: Point to Point		
Fiber Characteristics		
Wavelength(nm)	Refractive rate	Scatter coefficient(dB)
1310	1.46770	-79.5
1550	1.46832	-82.0
Measure Set		
Pass/fail Threshold	Measure Set	
Reflection loss(Max): 0.75dB	End threshold: 15.0dB	
Reflect rate(Max): -40.00dB	Splice loss(Min): 0.04dB	
Splice loss(Max): 0.30dB	Reflection threshold(Min): -70.0dB	
Total loss: 20.00dB		
Total ORL: --.--		
Fiber section attenuation: --.--		

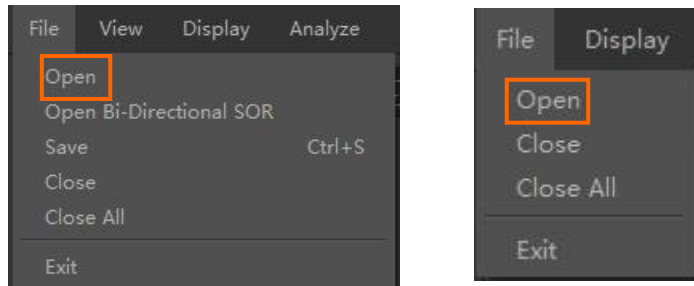
File Operation

1. Open file

The .sor file can open up to forty waveforms simultaneously, while the .tor file can open up to ten waveforms simultaneously.

1) File - Open

2) After selecting a file, hold down the left mouse button, drag the file into the main interface and then release it to open the file.



2. Close file

1) Close

a) File - Close

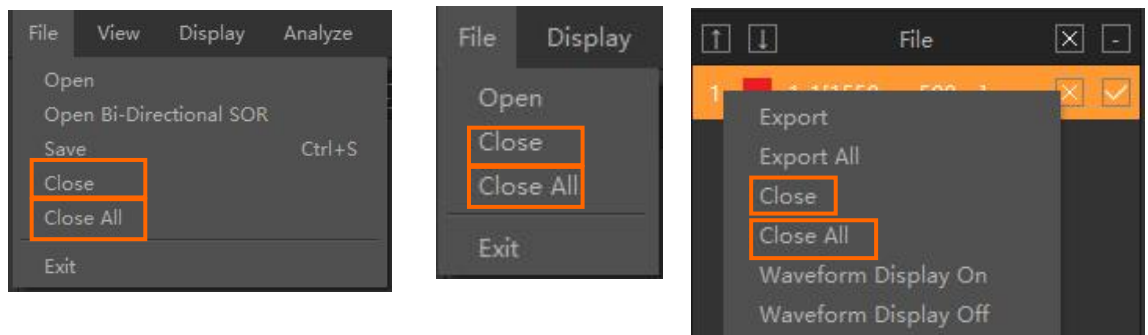
b) Right-click menu - Close the selected waveform in the current file list.

2) Close All

Close all opened waveform files

a) File - Close All

b) Right-click menu - Close all



Waveform operations

1. Cursor operations

1) Drag

In the waveform display area, place the mouse cursor on the cursor mark, press and hold the left mouse button, and drag to change the cursor position.

2) Positioning

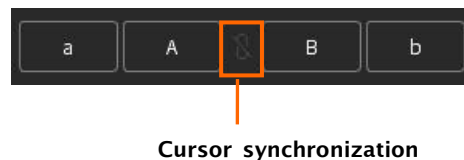
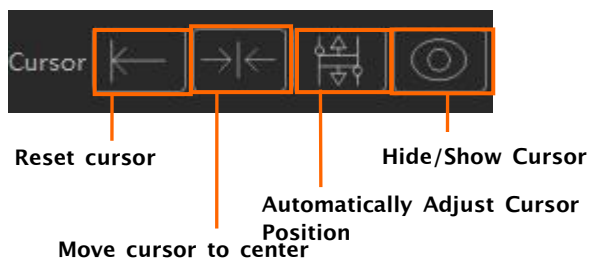
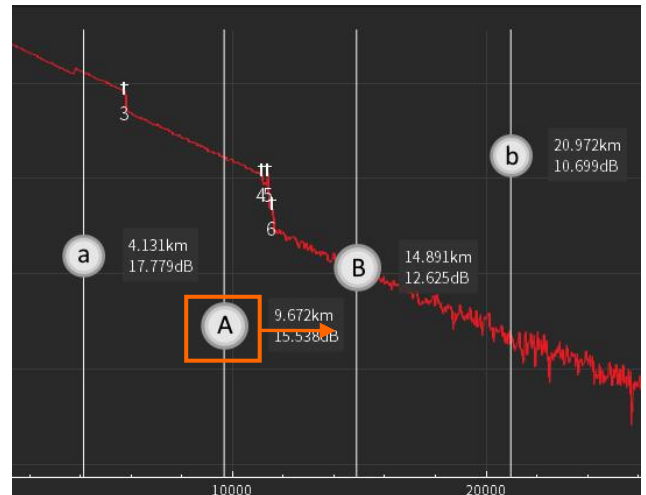
a) Click the cursor reset button, The cursor A, B, a, b will be positioned at the beginning of the waveform.

b) Click the cursor center button, the A, B, a, b cursors will be positioned at the center of the waveform.

c) Click the button to automatically adjust the vertical position of the cursor. The A, B; a, b cursors are vertically positioned at an average interval in the waveform graph.

d) Click the display cursor button to show the A, B, a, b cursors. When the cursors are displayed, click the hide cursor button to hide the A, B, a, b cursors.

e) Click the cursor sync button to set/cancel the synchronization of A, B, a, and b cursors; when clicking each cursor button, the cursor will display in orange, allowing the selected cursors to sync.



2. Zoom in/zoom out and restore

1) Zoom in / Zoom out

a) Partial zoom

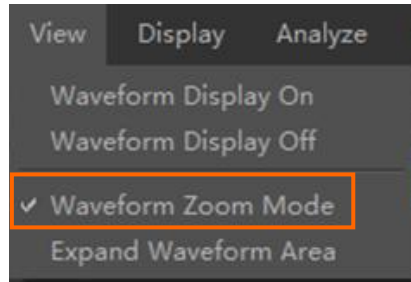
Press and hold the right mouse button at one corner of the area you want to zoom in on, drag a rectangular box to the opposite corner in the zoom area. When you release the mouse, the area you selected in the chart will be refreshed and zoomed in.

b) Overall zoom in/out

- When 'Waveform Zoom Mode' is checked, scrolling the mouse wheel in the waveform display area simultaneously zooms in/out the waveform in the X and Y directions. Press and hold Ctrl and roll the mouse wheel to zoom in/out the waveform in the X-axis direction; press and hold Shift and roll the mouse wheel to zoom in/out the waveform in the Y-axis direction.



- When 'Waveform Zoom Mode' is not checked, scrolling the mouse wheel in the waveform display area will zoom in/out the waveform in the Y-axis direction; holding down Ctrl and scrolling the mouse wheel will zoom in/out the waveform in the X-axis direction.



2) Restore

Double-click the left/right mouse button in the waveform display area to restore the waveform to its original size.

3. Horizontal/Vertical Movement and Restore

1) Horizontal/Vertical Movement

Place the mouse in the waveform display area, press the left mouse button, and drag the mouse in the waveform display area to move the waveform graph up, down, left, and right.

2) Restore

Double-click the left/right mouse button in the waveform display area to restore the waveform to its original position.

3) Precise vertical movement and resetting facilitate comparison between curves. The upper and lower units of the offset function are dB, and the left and right units are data points.

a) "Step" button: Click the up and down arrow buttons to cycle between 0.1/1/5 when clicked. Click the left and right arrow buttons to switch between 1/10/100/500/1000/5000 when clicked.

b) Step Value: Manually input a step value, which can set the data range vertically [0.01, 10] and horizontally [1, 100000].

c) Up and down arrow buttons: Click to select the waveform and move up/down by the step value.

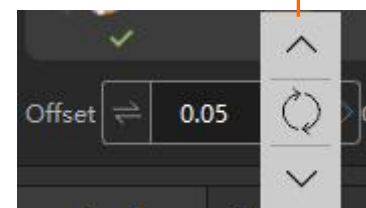
d) Left and right arrow buttons: Click to select the waveform, then move left/right in step increments.

e) Restore button: Click the up/down/left/right arrows, with a reset button displayed in the middle of the arrows. When the waveform is offset, clicking will reset the waveform vertically/horizontally.

Switch Step Value Input step value



vertical movement step value



horizontal movement waveform restore step value

waveform analysis

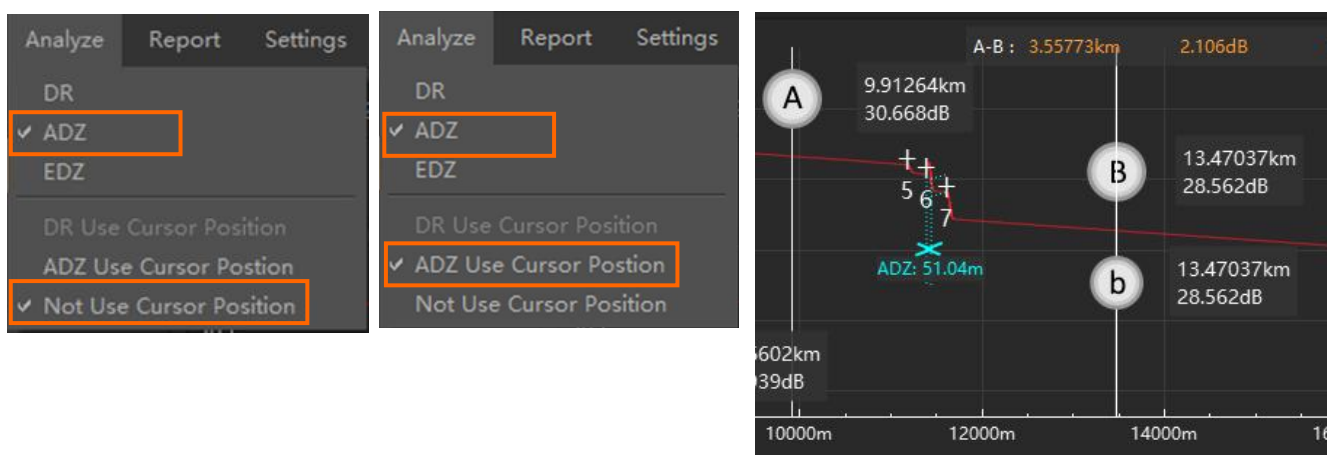
1. Dynamic Range

- 1)After selecting the dynamic range, automatically analyze and display the dynamic range.
- 2)After selecting the dynamic range, then selecting the dynamic range using the cursor position, you can accurately calculate the dynamic range by moving the cursor.
Moving the A, a cursor adjusts the calculation range of backscatter level, while moving the B, b cursor can adjust the calculation range of the noise component, as shown in the figure below:



2. Attenuation Blind Zone

- 1)After selecting the attenuation deadzone, clicking on a specific event in the event chart or event list will display the attenuation blind zone for that event.
- 2)By selecting the attenuation blind zone using the cursor position, you can accurately calculate the attenuation blind zone by moving the cursor.
Moving the B, b cursor can adjust the range of the calculation segment, as shown in the following figure:



3. Event Dead Zone

1) After selecting the event dead zone, clicking on a specific event in the event chart or event list will display the event's dead zone, as shown in the following figure:

