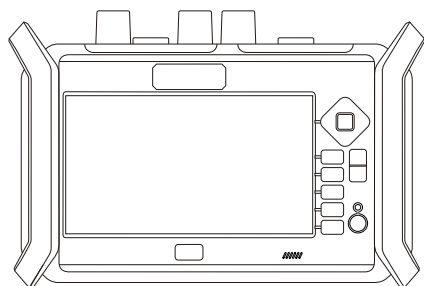


Optical Time Domain Reflectometer

USER'S GUIDE



Warning and note

WARNING

Any undefined change or modification of this manual will deprive you of the right to operate the equipment.

To reduce the risk of fire or electric shock, do not expose the equipment to rain or humidity.

To prevent electric shock, please do not open the shell, and it must be repaired by qualified personnel.

Please ensure no signal in fiber before testing, active fiber may damage the device and not in warranty range.

NOTE

As the laser is harmful to the eyes, don't look directly at the laser outlet and don't attempt to disassemble the cabinet.

PRECAUTIONS FOR USE

Using the battery:

The equipment can be charged by special batteries, and can not be mixed with batteries of different models or capacities.

Avoiding condensation:

Sudden changes in temperature should be avoided. Do not use the device immediately after moving the device from the cold area to the hot area, or when the room suddenly heats up, because the device may have condensation phenomenon. If the temperature changes abruptly, stop using it and take out the battery, and the power can be switched on after at least an hour.

Storage:

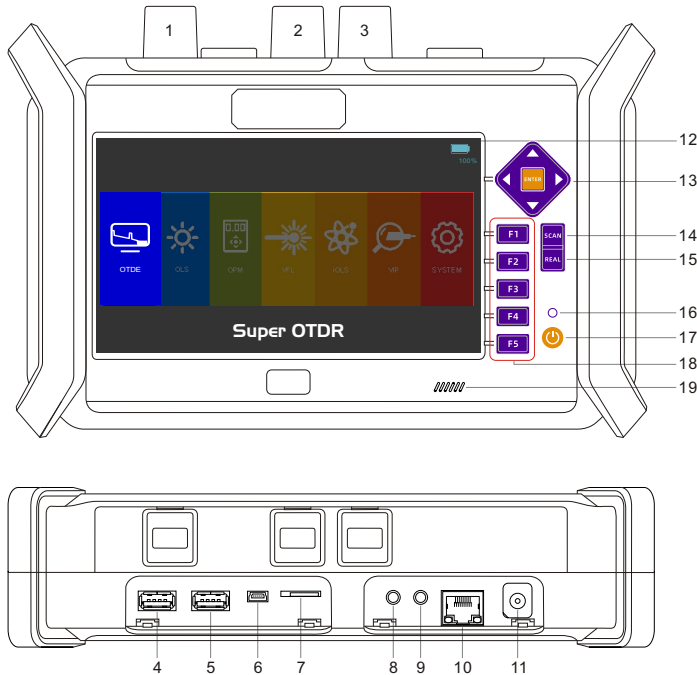
When the device is not used for a long time, please take out the battery to avoid the damage caused by battery leakage .

※ The content of this manual is for reference only, and everything is based on the actual product.






INTRODUCTION

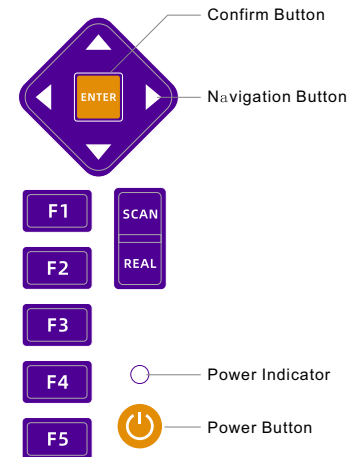
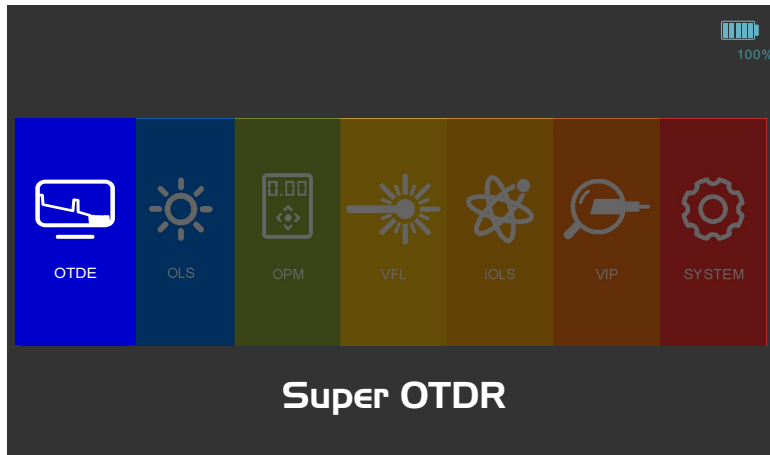
Super OTDR adopts modular design and integrates various module functions, it is a smart testing platform by personalized testing functions.



1	OTDR&OLS
2	VFL
3	OPM
4	USB1
5	USB2
6	USB3
7	Micro SD Slot
8	Headset Socket
9	Serial Port
10	Ethernet Port
11	AC/DC Socket
12	7 inch Touch Screen
13	Buttons Area
14	Average Measure
15	Real-time Measure
16	Power Indicator
17	Power Button
18	Function Buttons
19	Beep

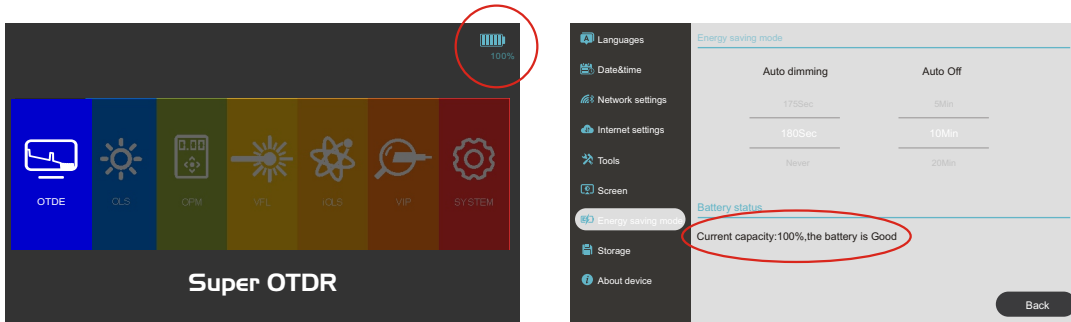
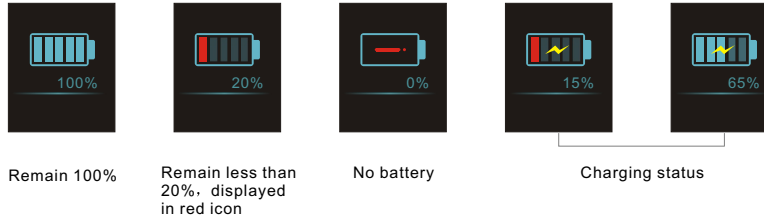
POWER ON/OFF

Press "  " for 2 seconds to turn on the device, and tap each icon or press direction & "  " buttons to select corresponding function. In startup state, press "  " for 2 seconds, the screen prompts whether power off or not, if yes, the device turns down.



BATTERY INFORMATION

Battery information shows on the upper right of the interface, and will present different color and graphics in different battery capacity. Users also can check the detailed battery information in "System-Energy saving mode" Menu.



OTDR- INTERFACE

Tap "OTDR" to enter measurement interface, each application or tool are as following. Tap the icon on the right, then bottom interface will display corresponding application or tool, same as press the button "F1-F5".

File name: If blank, means no test or saved wavelength at present. Click to display/hide thumbnail Battery information

The screenshot displays the OTDR measurement interface. At the top, there is a 'File name:' field and a 'Battery information' icon showing 100% charge. The main area is a graph with a y-axis from 0 to 60 and an x-axis from 0 to 50 meters. To the right of the graph, there are fields for 'Total dist: ---', 'Total loss: ---', and 'Total ORL: ---'. Below the graph is a control panel with buttons for 'OTDR Settings', 'Wavelength' (1550nm), 'Range' (60km), 'Pulse' (2.5us), 'Time' (15s), 'Mode' (Manual), 'Average measure', and 'Real-time measure'. On the far right, there is a vertical menu with 'Measure settings', 'Events', 'Analyse', 'Save/File', and 'Back to menu'. To the right of the screenshot, there is a legend for function keys: a purple diamond with 'ENTER' in the center, and five purple buttons labeled 'F1' through 'F5'. Next to 'F1' and 'F2' are two stacked buttons labeled 'SCAN' (Average measure) and 'REAL' (Real-time measure). A power button icon is shown next to 'F4' and 'F5'.

Date/ Time

External device information

Average measure

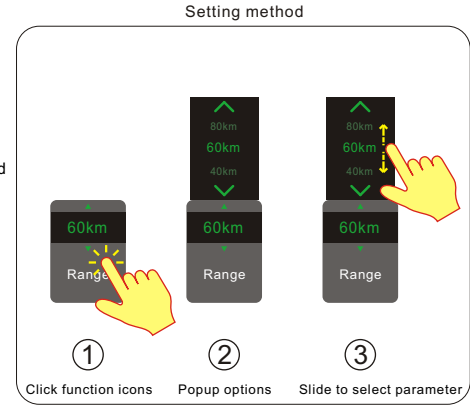
Real-time measure

OTDR- MEASURE SETTINGS

Measurement setting is the first step before testing, Auto mode adapts to most situations, but Manual mode can get more accurate and effective results.



Turn blue when selected



- Same as "SCAN" and "REAL" buttons to start/stop the test.
- Manual or auto mode. If "Auto", range and pulse will be matched automatically.
- 5s-180s. The longer test time, the more accurate results.
- "3ns-20us". The larger pulse width, the higher dynamic, but event and attenuation dead zone will be bigger.
- "100m-330km" can be set as range.
- Single wavelength or double wavelengths testing for same type fiber, user can select one or two testing wavelengths at one time.
- Used to set OTDR expertise parameters.

OTDR- MEASURE SETTINGS- OTDR SET

Tap "OTDR Settings" to the setup interface (Pass/Fail Settings in default). Tap each parameter to set the value, these parameters are designed for the quick judgement on fiber line. if over it, then will prompt in red in the events list.

The screenshot displays the OTDR Settings application interface. The main screen shows a table of settings under the heading "OTDR Settings". A yellow hand icon points to the "OTDR Settings" button at the bottom left. A second, larger screenshot is overlaid on the right, showing a numeric keypad for setting the "Reflection loss threshold(Max)" to 0.75dB. The keypad has buttons for digits 1-9, 0, and a Backspace key, along with Restore and Confirm buttons.

OTDR Settings			
Pass/fail threshold	Fiber characteristics	Measure set.	Other set.
Reflection loss(Max)	0.75dB	Splice loss(Max)	0.300dB
Reflect rate(Max)	40.00dB	Total loss	20.00dB
Total ORL	15.00dB		

Reflection loss threshold(Max) setting						
0.75dB						
1	2	3	4	5	Backspace	
6	7	8	9	0	-./	
Restore			Confirm			

OTDR- MEASURE SETTINGS-OTDR SET

Click "Fiber characteristics" to set "Refractive rate" and "Scatter coefficient". Large deviations will lead to measurement errors of distance and attenuation rate, so we suggest keep them in default setting value.

The image displays two screenshots of the OTDR Settings interface. The top screenshot shows the 'Fiber characteristics' tab selected, with a yellow hand icon pointing to the 'Refractive rate' field. The bottom screenshot shows the 'Refractive rate setting' dialog box, where the value '1.46770' is entered in the input field. The dialog box includes a numeric keypad and 'Restore' and 'Confirm' buttons.

OTDR Settings - Fiber characteristics

Pass/fail threshold	Fiber characteristics	Measure set.	Other set.
Refractive rate	1310nm:1.46770 1550nm:1.46832	Scatter coefficient	1310nm:-79.6dB 1550nm:-82.1dB

OTDR Settings - Refractive rate setting

Refractive rate setting					
1310nm					
<	1.46770				>
1	2	3	4	5	Backspace
6	7	8	9	0	.
Restore			Confirm		

OTDR Settings - Main Panel

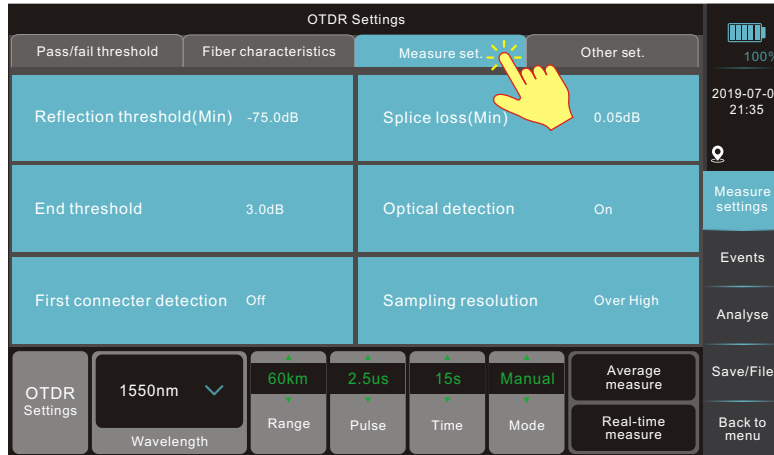
OTDR Settings	1550nm	60km	2.5us	15s	Manual
Wavelength	Range	Pulse	Time	Mode	

OTDR Settings - Main Panel (Bottom)

OTDR Settings	1550nm	60km	2.5us	15s	Manual	Average measure	Real-time measure
Wavelength	Range	Pulse	Time	Mode			

OTDR- MEASURE SETTINGS- OTDR SET

"Measure set.", used to set the critical parameters for OTDR events judgement.



Reflection threshold: If reflectance is over the setting value, then called as "Reflection event "

Splice loss: If splicing loss is over the setting value, then called as "Loss event "

End threshold: If loss is over the setting value, then called as "End event "

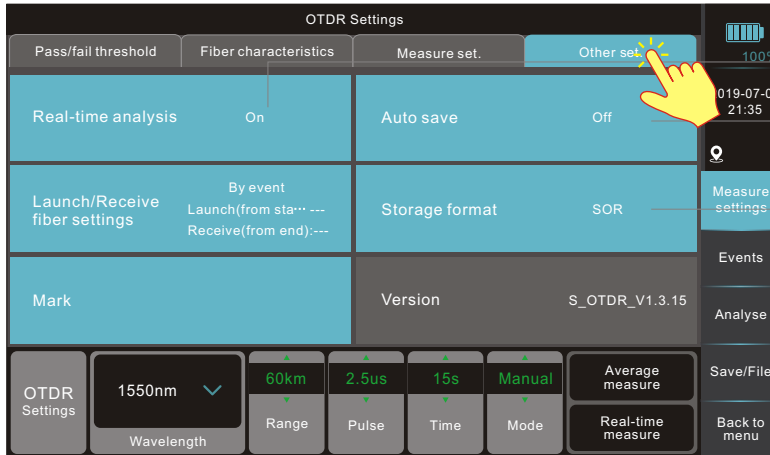
Optical detection: When "ON", if there is signal in testing fiber, it will stop the measurement to protect device from damage.

End face detection: Detect the first connection quality of fiber before measurement

Sampling resolution: The higher, then the longer time of testing analysis.

OTDR- MEASURE SETTINGS- OTDR SET

"Other set.": settings for before/after OTDR measurement; Injection/receiving fiber settings: Check details in P10; Mark: Check details in P11.



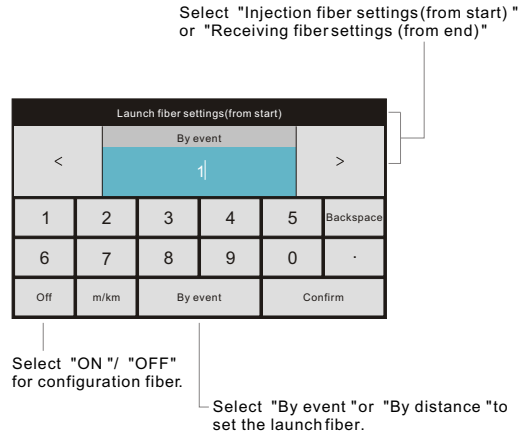
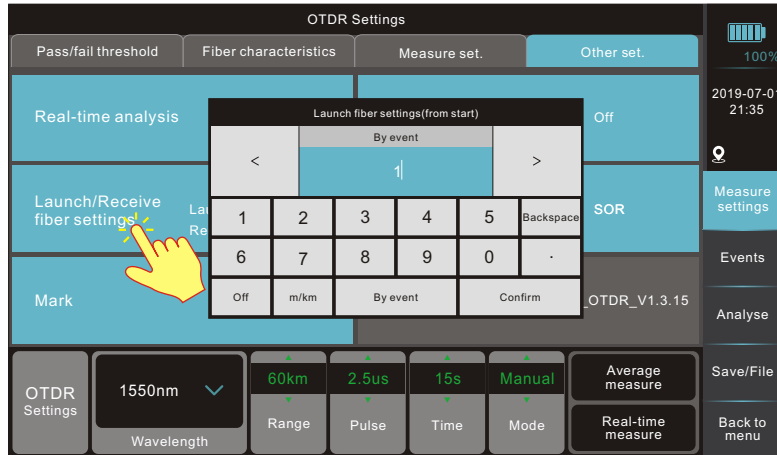
When "ON ", it will average measure again for analyzing the result after real-time measurement.

When "ON ", it will save the results automatically after average measurement.

Set format of data storage: "SOR "or "SOR+PDF".

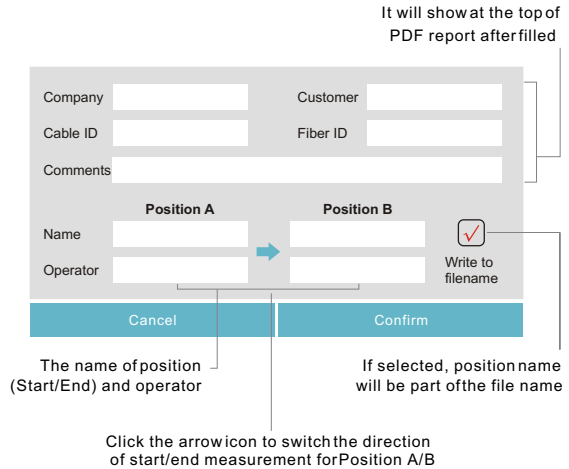
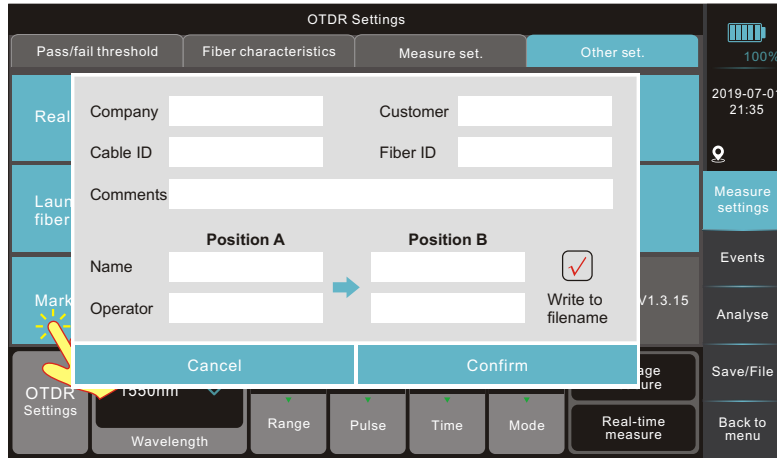
OTDR- MEASURE SETTINGS- OTDR SET

For some strict testing condition, users will add launch fiber before or after the tested fiber or both sides to get more accurate results, but need hide from the events list or report, then "Injection/receiving fiber settings" can help you reach that.



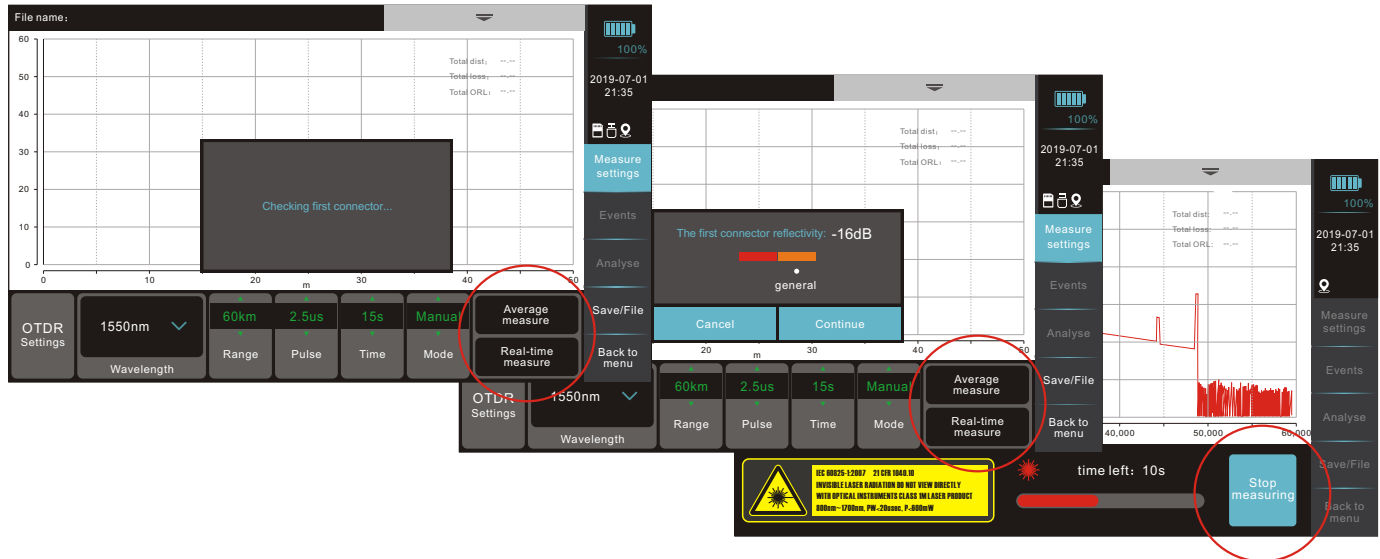
OTDR- MEASURE SETTINGS- OTDR SET

User can add some basic information as reference for later checking.



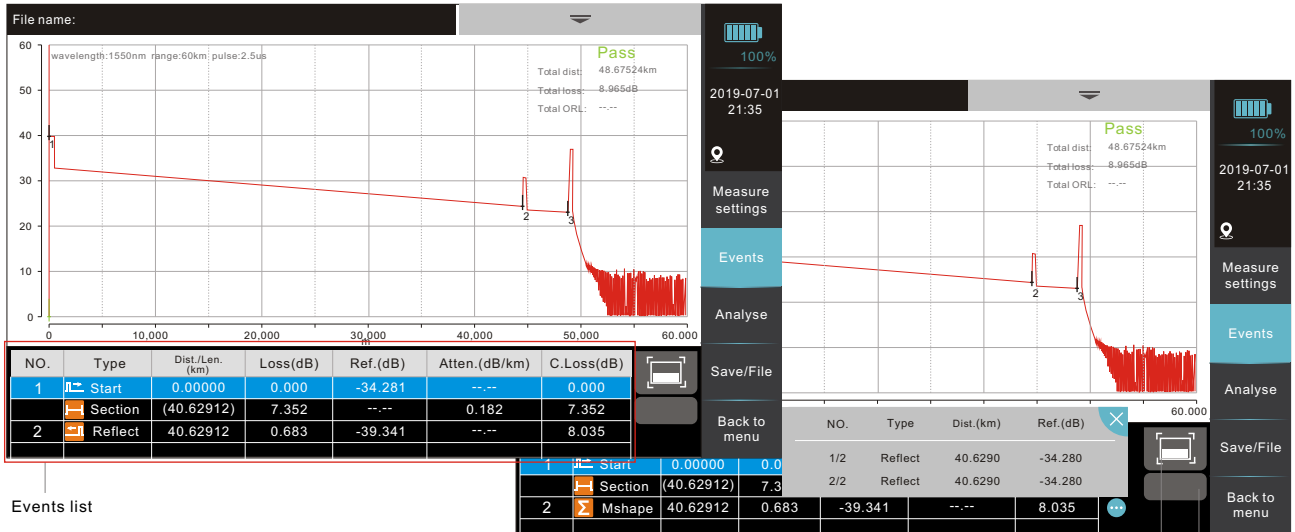
OTDR- START MEASUREMENT

After setting, tap "Average measure" or "Real-time measure" to start measurement, same as press "SCAN" or "REAL" button. If "End face detection" on, it will measure the first splice and show its loss, user can choose "Cancel" or "Continue" as per value, also can tap "Stop measuring" during the test. Under real-time measurement, range can be switched in "Auto" mode.



OTDR- EVENTS

After "Average measure", the device enters "Events" interface, and displays events list at the bottom. No events list under "Real-time measure" unless "Real-time analysis" on. Events list as "event + zone" (information between two events) format, tap corresponding event or zone column, then will mark the position on the testing waveform. If "M" event, user can tap "⋮" to check sub-events info.



Events list

Click the icon to check events list under half-screen or full-screen display
 When events quantity exceed the display range, then slide to check the hidden events

OTDR- MAP LINK

Click "Full-screen" button to check detailed "Map Link"-a visible events list, help users diagnose the condition of fiber line quickly. Click event in red, it will display the possible faults and troubleshooting suggestions.

The fault analysis of red markevents and tips for troubleshooting

File name: [Redacted]

Wavelength: 1550nm range: 300km pulse: 20us

Fail

Total dist: 44.69621km
Total loss: 10.512dB
Total ORL: ---

Fiber is connected exceptionally
Check and clean the link of fiber if needed

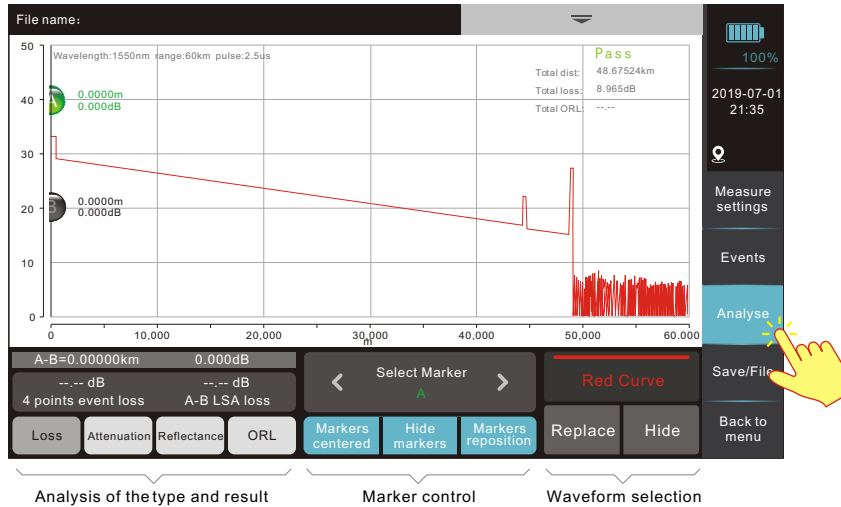
44.69621 km

NO.	Type	Dist./Len. (km)	Loss(dB)	Ref.(dB)	Atten.(dB/km)	C.Loss(dB)
1	Start	0.00000	0.000	-30.556	---	0.000
	Section	(34.93412)	6.361	---	0.182	6.361
2	Attn	34.93412	1.042	---	---	7.403
	Section	(5.69902)	1.042	---	0.182	8.445
3	Reflect	40.63314	1.325	-36.706	---	9.770

Dist./Len. (km)	Loss(dB)	Ref.(dB)	Atten.(dB/km)	C.Loss(dB)
00000	0.000	-30.556	---	0.000
.93412)	6.361	---	0.182	6.361
.93412	1.042	---	---	7.403
69902)	1.042	---	0.182	8.445
.63314	1.325	-36.706	---	9.770
06307)	0.742	---	0.182	10.512
.69621	---	-36.913	---	10.512

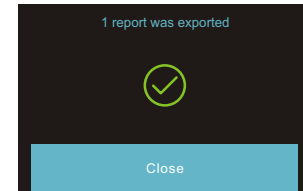
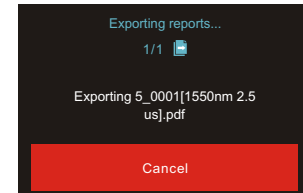
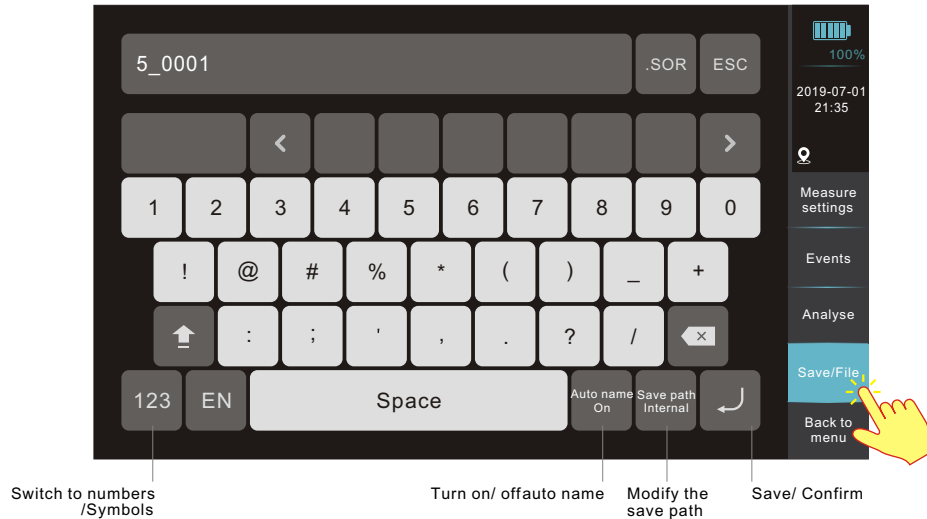
OTDR- ANALYSE

Tap "Analyse" to more expertized analysis interface if events list fail to meet your need. It is advanced OTDR function, so require users having specialized technical knowledge to analyze the waveform in order to find inconspicuous faults. Mainly used for calculation of Loss, Attenuation, Reflectance and ORL of user-defined section.




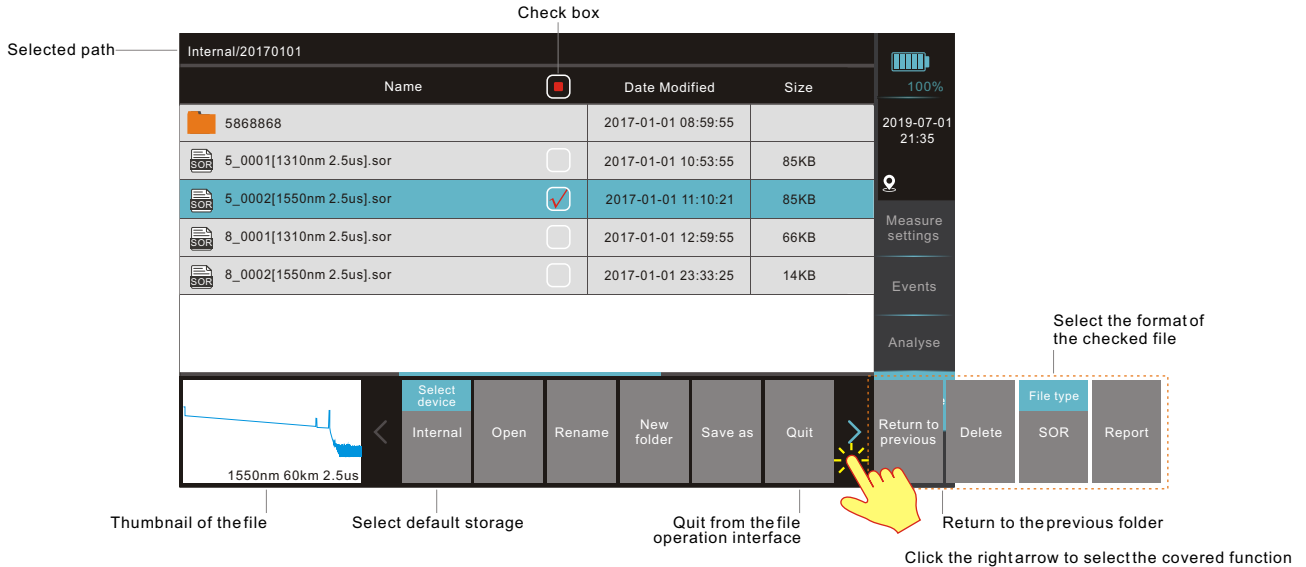
OTDR- SAVE

After measurement, click "Save/File" to save the results. If "Auto save" off, user can edit the filename (Max. 40 characters) or select auto-name function. When storage format is "SOR+PDF", tap "Save/File", then prompts "Exporting reports ..." and "1 report was exported".



OTDR- FILE OPERATION

Tap "Save/File" into the file operation interface. Select the sor. File (Max. 2 sor. file), then press "  " button or click "Open" to check/analyze the testing waveform. Tap "File type" to check different file format "SOR" or "PDF". Only support opening the sor. File.



The screenshot shows the file operation interface with the following components and annotations:

- Selected path:** Internal/20170101
- Check box:** A red square icon at the top right of the file list.
- File List Table:**

Name	Date Modified	Size
5868868	2017-01-01 08:59:55	
5_0001{1310nm 2.5us}.sor	2017-01-01 10:53:55	85KB
5_0002{1550nm 2.5us}.sor	2017-01-01 11:10:21	85KB
8_0001{1310nm 2.5us}.sor	2017-01-01 12:59:55	66KB
8_0002{1550nm 2.5us}.sor	2017-01-01 23:33:25	14KB
- Thumbnail of the file:** A small waveform graph showing a signal over time, labeled "1550nm 60km 2.5us".
- Select default storage:** A button labeled "Select device" with a dropdown menu showing "Internal".
- Quit from the file operation interface:** A button labeled "Quit".
- Return to the previous folder:** A button labeled "Return to previous" with a right-pointing arrow.
- Select the format of the checked file:** A button labeled "File type" with a dropdown menu showing "SOR".
- Click the rightarrow to select the covered function:** A yellow hand icon pointing to the right-pointing arrow on the "Return to previous" button.

OTDR- FILE MOVE

Tap "Save as" to copy the sor. files selected to other memory units. First choose sor. files, and click "Save as" option, then click "Select device" to select the storage path, and click "Save" to copy the files.



OTDR- REPORT

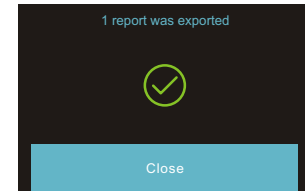
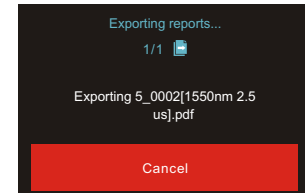
If need to check detailed report, user can select sor. files(multiple), then click "Report" option to output the pdf. reports and OTDR will prompt "Exporting reports" and "1 report was exported".

Check box

Name	<input type="checkbox"/>	Date Modified	Size
5868868		2017-01-01 08:59:55	
5_0001[1310nm 2.5us].sor	<input type="checkbox"/>	2017-01-01 10:53:55	85KB
5_0002[1550nm 2.5us].sor	<input checked="" type="checkbox"/>	2017-01-01 11:10:21	85KB
8_0001[1310nm 2.5us].sor	<input type="checkbox"/>	2017-01-01 12:59:55	66KB
8_0002[1550nm 2.5us].sor	<input type="checkbox"/>	2017-01-01 23:33:25	14KB

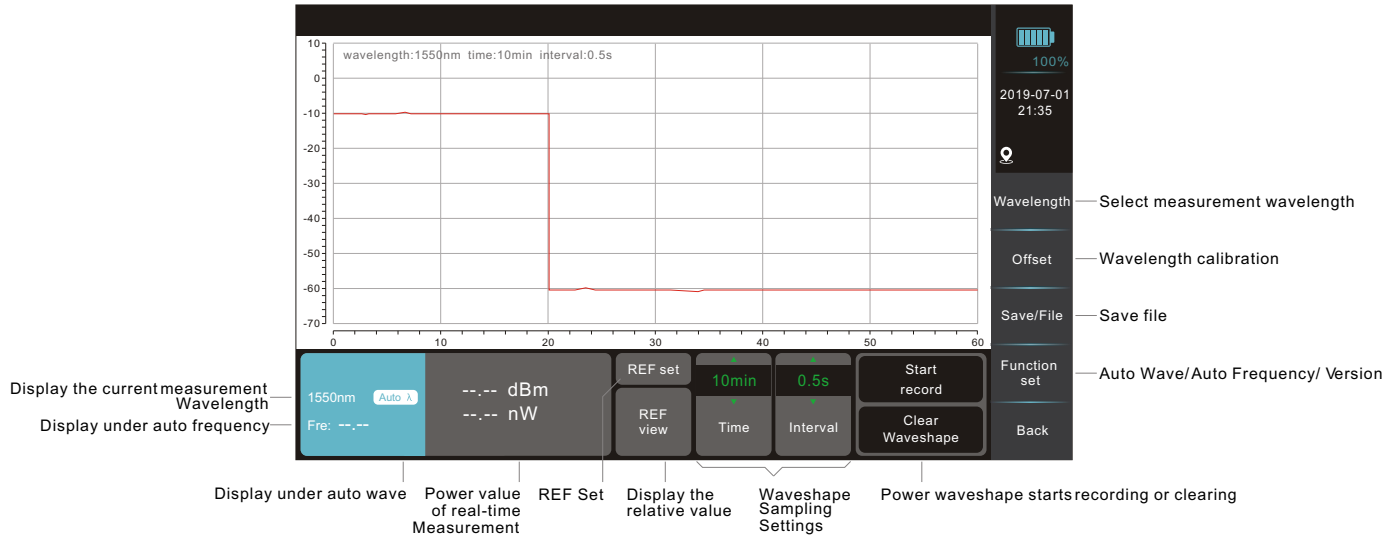
1550nm 60km 2.5us

Save as Quit Return to previous Delete File type SOR Report



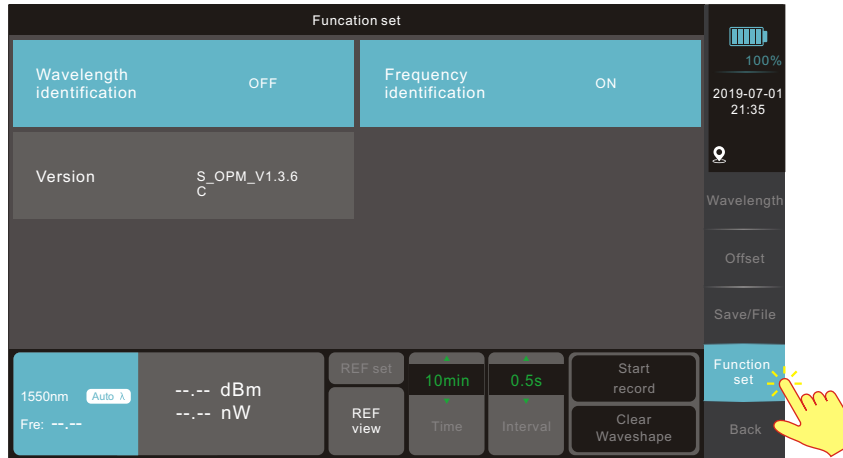
OPM- INTERFACE

Except basic OPM function, adding waveform function----record continuous change of optical power in a pre-set time. User can save the waveform for later checking. "Offset" function is to set a deviation value compared to Parent Meter value in order to make OPM value displayed same as in parent meter when deviation appears. Detailed function set in page 22.



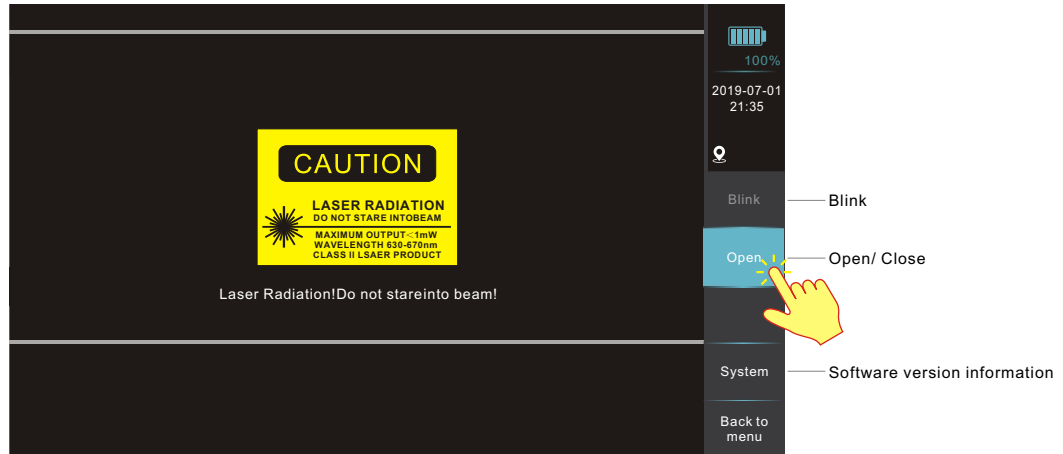
OPM- FUNCTION SET

Tap "Function Set" to set OPM parameters "Auto Wave" and "Auto Frequency". If "ON", it will show "Auto λ " and "Fre:." in wavelength window. User also can check OPM version.



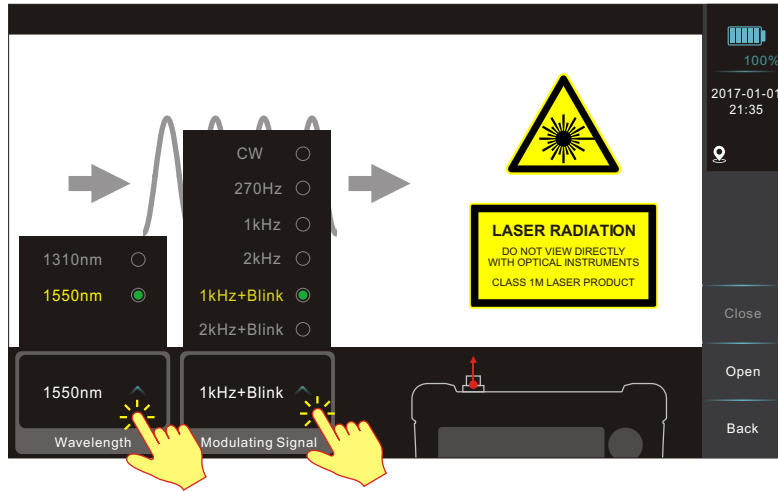
VFL- INTERFACE

Tap "Open/Close" or press "F2" button to turn on/off VFL, click "Blink" or press "F1" button to VFL glint (Frequency 2Hz).



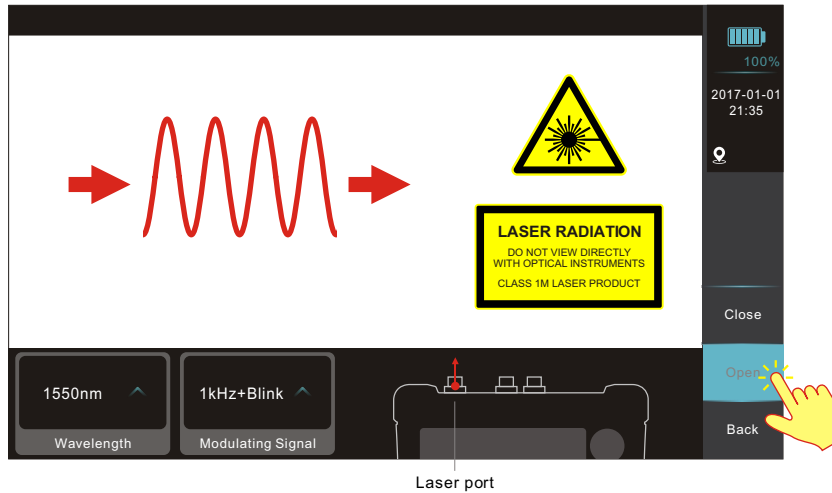
OLS- INTERFACE

Tap "Wavelength" and "Modulating Signal" to set the parameters. OLS wavelength is same with OTDR wavelength.



OLS- ON/OFF

Tap "Open" / "Close" or press "F4"/ "F3" button to turn on/off laser source. If select "1kHz+Blink" or "2kHz+Blink" in modulating signal after laser on, then laser mark on the screen will glint.



iOLA- INTERFACE

Tap "iOLA" or press direction and buttons to enter the iOLA interface.

File name: If blank, means no test or saved wavelength at present.

Current splitters type

Battery information

Events and intervals between events

The positions of events

Details of the selected events

iOLA advanced settings

Wavelength settings

Display measurement value

Measurement results

Start measurement

File Name: Measure config: PON 2 Splitters 1:2 1:8

Pos. km

Len. km

No.	Type	Dis./Len. (km)	Loss(dB)		Reflect(dB)	
			1310nm	1550nm	1310nm	1550nm

Ev.Num

100%

2019-07-01 21:35

Link View

Event List

File

Save

Back

iOLA Settings

1310nm

1550nm

Wavelength

1310nm: ---

1550nm: ---

Link Loss

Link ORL

Start Measure

Save

Back

iOLA- MEASURE SETTINGS

Tap "iOLA setting" to set iOLA parameters ("Link definition" in default) before measurement. User can click "Splitter setting" to set 1# splitter and 2# splitter, and will show measure configuration on the top right. Configuration in splitter setting takes priority in analyzing when having splitters during the test.

The image displays two screenshots of the iOLA measurement settings interface. The top screenshot shows the main settings screen with the following elements:

- File Name: Measure config: PON 2 Splitters 1:16 1:8
- Pass/fail threshold: 100%
- Fiber characteristics: 17-01-01 21:35
- Measure set: Link definition
- Version: S_IOLM_V1.3.9
- Splitter setting: 1:2 1:8
- iOLA Settings: 1310nm, 1550nm
- Link Loss: 1310nm: ---, 1550nm: ---
- Link ORL: 1310nm: ---, 1550nm: ---

The bottom screenshot shows the 'Splitter' configuration screen with the following elements:

- File Name: Measure config: PON 2 Splitters 1:16 1:8
- Pass/fail threshold: 100%
- Fiber characteristics: 2017-01-01 21:35
- Splitter: #2 Splitter (1:16), #1 Splitter (1:8)
- OLT: Building icon
- Splitter options: 1:8, 1:16, 1:32
- Buttons: Confirm, Cancel, Start Measure
- iOLA Settings: 1310nm, 1550nm
- Link Loss: 1310nm: ---, 1550nm: ---
- Link ORL: 1310nm: ---, 1550nm: ---

iOLA- MEASURE SETTINGS

Tap "Pass/Not Pass set." to set the value to quickly identify the fiber line good or not. Click "Fiber characteristics" to set "Refractive rate" and "Scatter coefficient". Click "Measure set." to set the critical parameters for iOLA events judgement.

The image displays three overlapping screenshots of the iOLA software interface, illustrating the navigation path for setting measurement parameters. The interface is titled "Measure config: PON 2 Splitters 1:2 1:8" and shows a battery level of 100% and a timestamp of 2017-01-01 21:35.


Top Screenshot (Pass/Not Pass set): Shows the "Pass/fail threshold" tab. The "Reflection loss(Max)" is set to 0.75dB and the "Splice loss(Max)" is set to 0.30dB. The "Reflect rate(Max)" is set to -40.00dB. The "Link Loss" is also visible.

Middle Screenshot (Fiber characteristics): Shows the "Fiber characteristics" tab. The "Refractive rate" is set to 1310nm:1.46770 and 1550nm:1.46832. The "Scatter coefficient" is set to 1310nm:-79.6dB.

Bottom Screenshot (Measure set): Shows the "Measure set." tab. The "Reflection threshold(Min)" is set to -75.00dB and the "Splice loss(Min)" is set to 0.05dB. The "End threshold" is set to 3.00dB. The "Start Measure" button is visible.

The interface also includes an "iOLA Settings" section with a "Wavelength" dropdown menu showing 1310nm and 1550nm, and a "Link Loss" section with a "Link" dropdown menu.

iOLA- START MEASUREMENT

Select wavelengths and click "Start Measure"/ "Stop Test" or press "  " button to start / discontinue the test.

File Name: Measure config: PON 2 Splitters 1:2 1:8

Pos. km

Len. km

No.	Type	Dis./Len. (km)	Loss(dB)		Reflect(dB)	
			1310nm	1550nm	1310nm	1550nm

iOLA Settings

Wavelength: 1310nm, 1550nm

Link Loss: 1310nm: ---, 1550nm: ---

Link ORL: 1310nm: ---, 1550nm: ---

Start Measure

File Name: Measure config: PON 2 Splitters 1:2 1:8

Pos. km

Len. km

No.	Type	Dis./Len. (km)	Loss(dB)		Reflect(dB)	
			1310nm	1550nm	1310nm	1550nm
			0.254dB	15.254dB		
			0.396dB	8.396dB		Pass

iOLA Settings

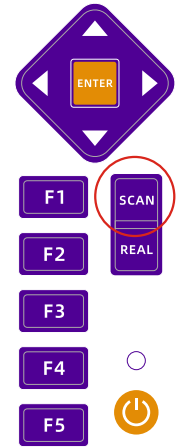
Wavelength: 1310nm, 1550nm

Link Loss: 1310nm: 0.254dB, 1550nm: 0.396dB

Link ORL: 1310nm: 15.254dB, 1550nm: 8.396dB

Stop Test

30s



iOLA- EVENT LIST

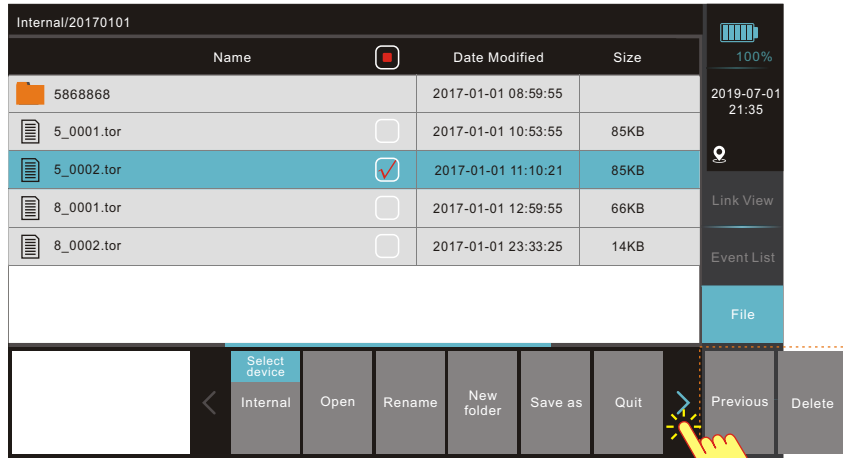
After measurement, tap "EventList" to check detailed events list of the whole optical link. When some events are too close, then merged into one event, but user also can check sub-events. Click event type to select other events by tap the icon.

The screenshot displays the iOLA Event List interface. At the top, it shows 'File Name:' and 'Measure config: PON 2 splitters 1:16 1:8'. Below this is a table with columns for 'No.', 'Type', 'Dis./Len. (km)', 'Loss(dB)' (1310nm, 1550nm), and 'Reflect(dB)' (1310nm, 1550nm). A yellow hand icon points to the 'Event List' button on the right side of the screen. Another yellow hand icon points to the 'Event selection window' which is a pop-up menu showing various event types like MacroB, Connector, Splice, Splitter, Splitter2, Splitter4, Splitter8, Splitter16, Splitter32, and Splitter64. At the bottom, there are 'iOLA Settings' for 1310nm and 1550nm, a 'Start Measure' button, and a 'Back' button.

No.	Type	Dis./Len. (km)	Loss(dB)		Reflect(dB)	
			1310nm	1550nm	1310nm	1550nm
1		0.00000	0.000	0.000	-29.526	-25.314
		0.00000	0.000	0.000	-29.526	-25.314
2		0.00000	0.000	0.000	-29.526	-25.314
2-1		0.00000	0.000	0.000	-29.526	-25.314
2-2					-29.526	-25.314
2-3					-29.526	-25.314
					-29.526	-25.314

iOLA- FILE

Tap "File" to check or edit saved files.



Select default storage

Save to other storage



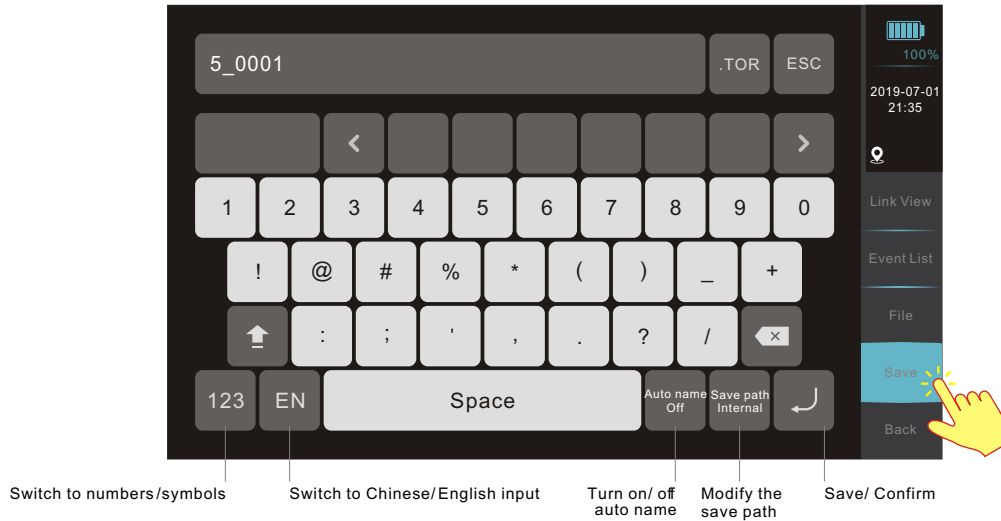
Return to the previous folder

Quit from the file operation interface

Click the right arrow to select the covered function

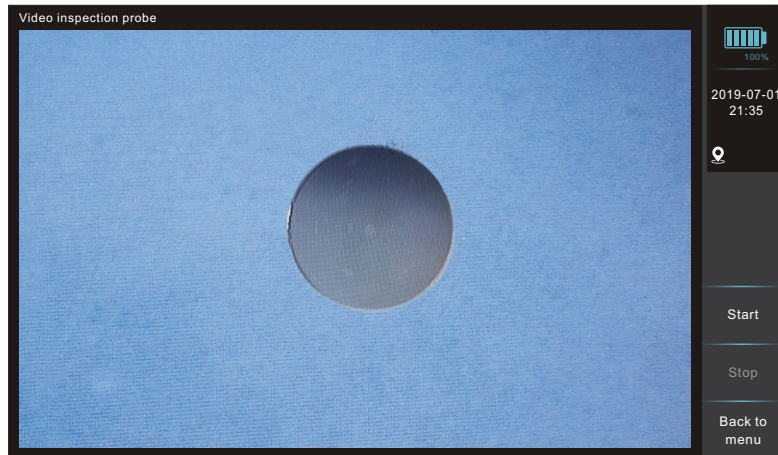
iOLA- SAVE

After measurement, click "Save" to save the results. User can edit the folder or filename (Max. 40 characters) or select auto-name function.



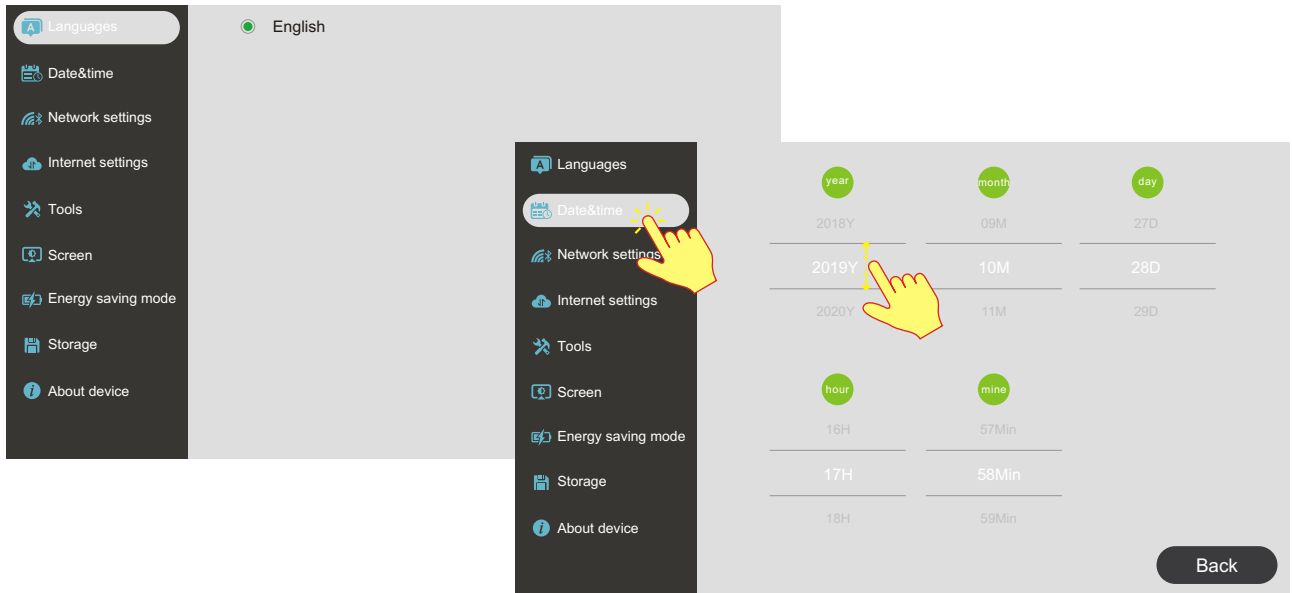
VIP- INTERFACE

Connecting with fiber microscope via USB to inspect and certify fiber end face quality. Tap "Start"/ "Stop" or press "F3"/ "F4" button to start or stop inspection.



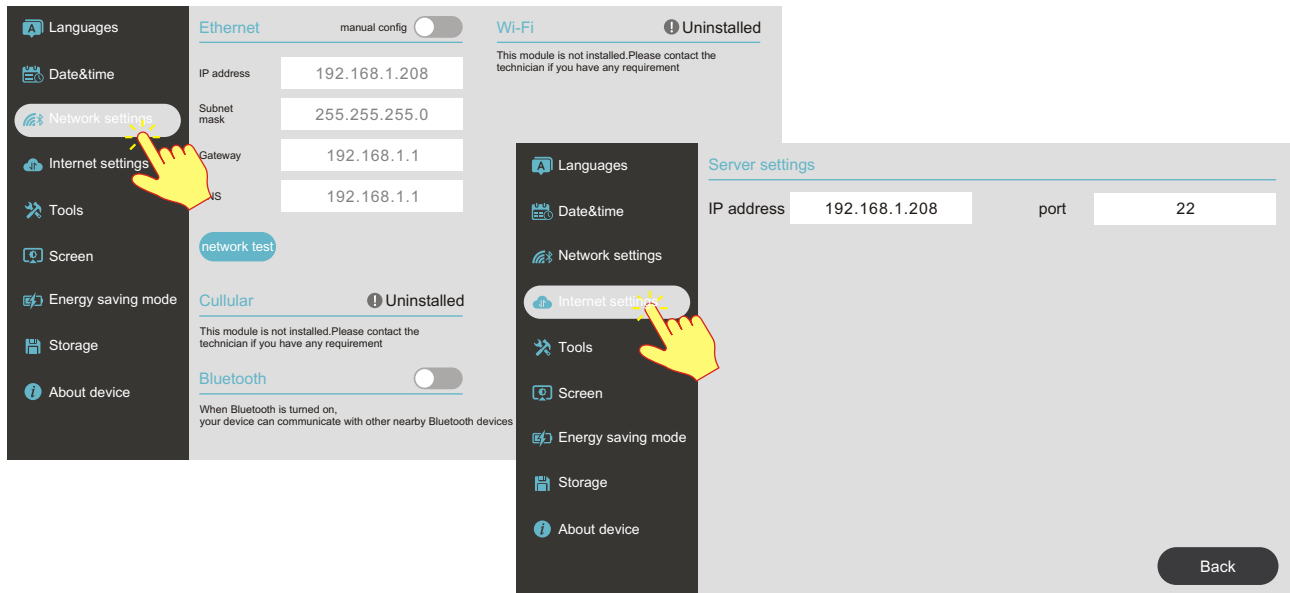
SYSTEM- SETTINGS

Tap "System" to system setting interface. User can select left menu to check or edit corresponding parameters.



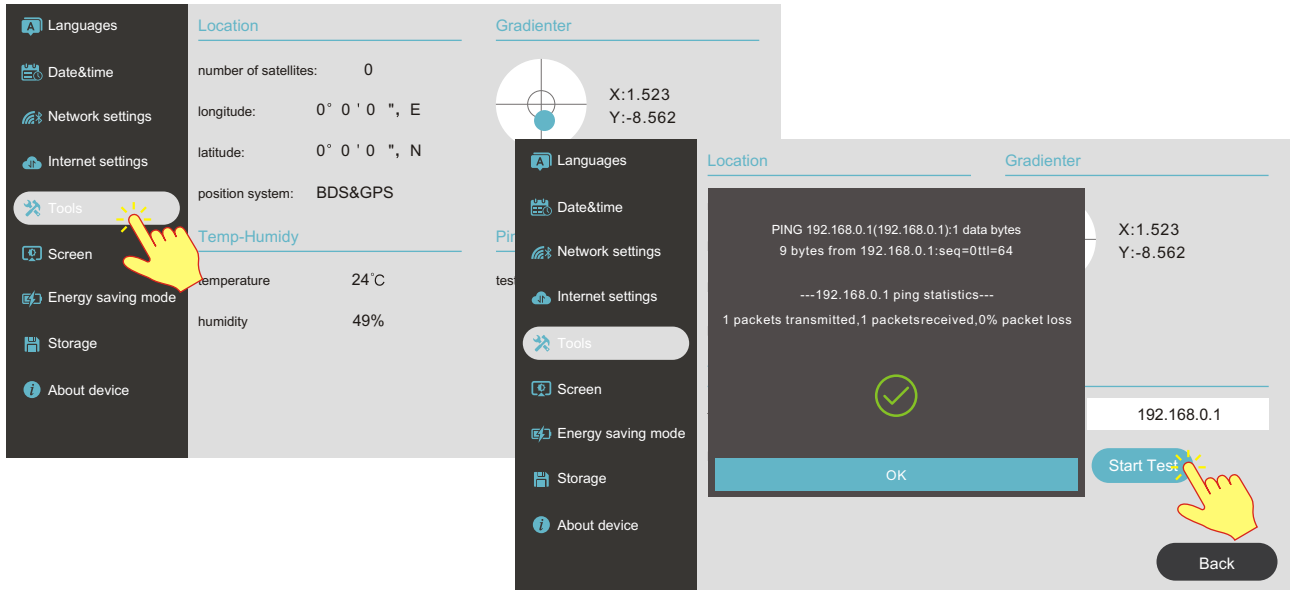
SYSTEM- SETTINGS

"Network settings" interface contains NetWorkSet, Cellular(optional), Bluetooth(optional), WiFiSet (optional).In "Internet settings", server settings can be used to remote control.



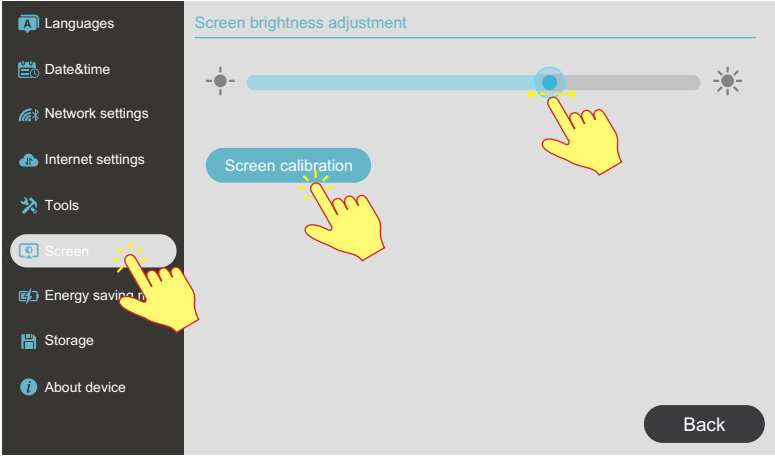
SYSTEM- SETTINGS

Tap "Tools" to check BDS&GPS, Temperature & Humidity, gradienter, Ping test. Ping is a common network testing tool, input IP address and click " **Start Test** ", then will show a prompt as following.



SYSTEM- SETTINGS

Tap "Screen" to adjust brightness and calibration.



SYSTEM- SETTINGS

Tap "Energy saving mode" to set time for Auto Dimming and Auto Off. User can also check battery capacity here. Tap "Save information" to check current memory units and its capacity, also can delete all data results by clicking " Format ". User can check the version information and set privacy or factory reset.

