LinkU
Make A Better Link

User Guide
Version: 1.3

Optical Time Domain Reflectometer

Model LOT5200

Preface

Thank you for purchasing LinkU OTDR (Optical Time Domain Reflectometer). This manual contains useful information about this instrument's function, setting, operating procedures and maintenance. To ensure correct use, please read this manual thoroughly before beginning operation. After reading the manual, keep it in a convenient location for quick reference whenever a question arises during operation.

The contents of this manual are subject to change without prior notice as a result of continuing improvements to the instrument's performance and functions.

Safety Precaution

1. AC/DC Adapter
   Power supply spec.: Output DC: 12V, 3A~4A
   Input AC: 100V ~ 240V, 50~60 Hz, 1.6A
   Using an inappropriate charger adaptor may result in damage to the instrument.

2. Battery
   In order to ensure the performance of batteries, please use internal batteries to supply power when using this instrument for the first time, deplete the battery power, and then recharge the battery. The first charging time should be no less than 4 hours. The charging temperature range is -10 ~ 50℃. When the ambient temperature is too high, please stop charging for your safety. When the instrument is idle for more than 2 months, it should be charged in time to maintain the battery power do not put the battery close to the source of fire. Do not open or damage the battery.The temperature range for long term storage is -20~50℃.

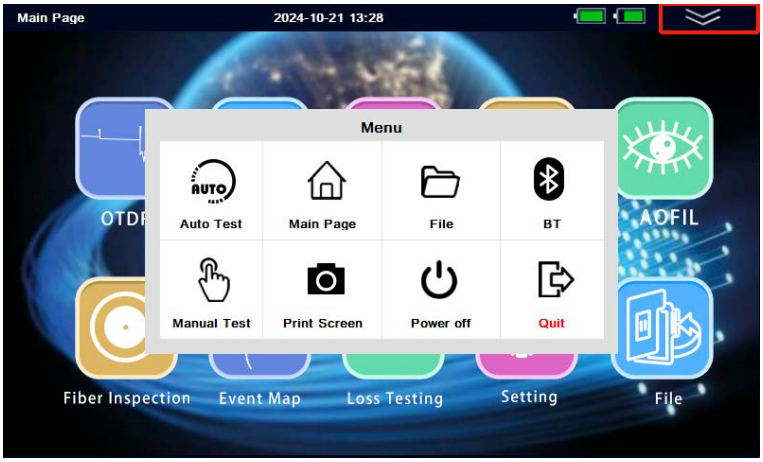
3. Laser Safety
   The laser in this equipment is classified as Class 3B. It may result in serious damage to the eyes. Never look directly into the connector on the equipment nor into the end of the cable connected to the equipment.

4. Before testing with OTDR module please ensure there is no active signal in optical network under test, any signal which power is higher than 0dBm will permanently damage this instrument and this damage is not covered by the warranty !

1. Overall Layout

No.	Name	Description
I	Optical interface	VFL, Power Meter, Laser Source, OTDR
II	Electrical interface	Power supply，MINI USB
III	Electrical interface	USB2.0（Type A），SD card
IV	Indicator light	Indicates which functional module is working
V	Key	Power Key

In Main Menu,press [⌄⌄] to enter the quick menu, in which user can turn on/off Bluetooth and take screenshots



2. System Settings

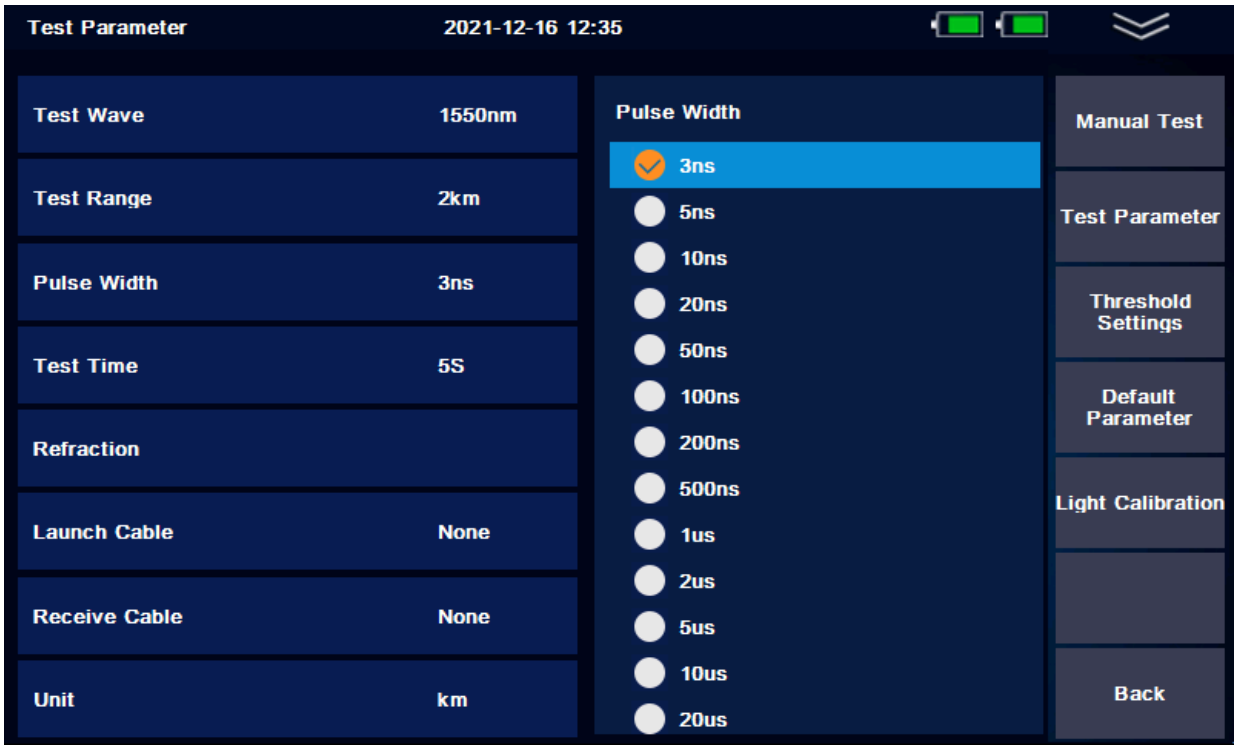
In Main Menu,press [Setting] to enter the System Settings, press [System Info] to check system information of the OTDR, press [Upgrades] to upgrade the OTDR software and firmware.

3. OTDR Module

In Main Menu, press [OTDR] to enter OTDR module setup menu.

3.1 Setting

Press [Test Parameter] menu to enter the Test Parameter setting



3.1.1 Parameters Settings

[Test Wave]: Select test wavelength

[Test Range]: Select test distance (selectable only in manual mode). In automatic mode, OTDR will adopt the most appropriate parameters for the current measurement automatically.

[Pulse Width]: Select proper Pulse Width.

Pulse width refers to the time width of the optical pulse signal, the wider the pulse width, the stronger the optical power injected into the optical fiber, the stronger the backscattering signal of the optical fiber, the farther the OTDR can effectively detect, but the wide pulse width will cause the saturation of the initial reflection signal and cause a large dead zone. Therefore, the choice of pulse width is related to the fiber length. The longer the fiber length is, the wider the pulse width is.

* OTDR will automatically select the most appropriate reference pulse width when manual test range is set in automatic mode. The range and pulse width can be adjusted in manual mode. The following suggestions is for your reference only:

Test Range / Pulse Width	500m	2km	5km	10km	20km	40km	80km	120km	200km	240km
3ns	√	△	△	△	△	△	△	△	△	△
5ns	√	√	△	△	△	△	△	△	△	△
10ns	√	√	√	△	△	△	△	△	△	△
20ns	√	√	√	√	△	△	△	△	△	△
50ns	△	√	√	√	√	△	△	△	△	△
100ns	△	△	√	√	√	△	△	△	△	△
200ns	△	△	△	△	√	√	△	△	△	△
500ns	△	△	△	△	√	√	√	△	△	△
1us	△	△	△	△	△	√	√	√	△	△
2us	△	△	△	△	△	△	√	√	√	△
5us	△	△	△	△	△	△	√	√	√	√
10us	△	△	△	△	△	△	△	√	√	√
20us	△	△	△	△	△	△	△	√	√	√

[Test Time]: Select test time (Average Test) or [Real Time]

In average test mode, the longer test time is, the better the signal to noise ratio of the signal is and the more accurate the test results are.

In Realtime test mode, OTDR will keep running test until stopped by user, and display the last test result.

[Resolution]: Higher resolution will have more sampling points and higher accuracy, but also increase the amount of data collected.

[Refraction]: Edit the refraction index which is recommended by the fiber manufacture.

[Launch Cable]: Set the length of the Initial Fiber (Guide Fiber).

User could move the first connector out of the dead zone of the OTDR by using an initial fiber. Proper length of guide fiber is 100~1000m.

[Receive Cable]: Set the length of the receive cable.

[Unit]: Select distance unit: km, kfeet, mile

3.1.2 Threshold Settings :

The threshold settings allow user to set the threshold of Attenuation,Reflection,Terminal, Backscatter coefficient and Pass / Fail judgement.

3.1.3 Default Parameter: Press [Yes] to restore the factory settings.

3.1.4 Light Calibration: Press [Yes] to reset the baseline of the light detection, meanwhile, the OTDR output port must be covered.

3.2 Running Test

3.2.1 Real time Test Mode

In main menu, press [OTDR] >> [Parameter Settings] >> [Test Time] to choose [RealTime], then press [Manual Test] to run real time test.

3.2.2 Average Test Mode

In main menu, press [OTDR] >>[Parameter Settings] >> [Test Time] to choose Test time, then press [Manual Test] key to run averaging test.

3.2.3 Auto Test Mode

In main menu, press [OTDR] >> [Auto Test] to run auto test.

❖ The measuring results could be auto saved once the measurement is finished.

3.3 Curve Operations

In main menu, press [OTDR] >> [Curve Operations]

3.3.1 [Cursor]: Select cursor A or B, and move the selected cursor which is highlighted in red color.

3.3.2 [Curve Operations]: Zoom in or zoom out the curve horizontally or vertically which is centered around the selected cursor (A or B, or between A and B)

3.4 File Operations

In main menu, press [File] or press [OTDR] >> [File Operations]

3.4.1 [Load]: To select and process saved files.

3.4.1.1 [File operation]: To copy, cut, paste, delete, rename the selected file

3.4.1.2 [Load]: To load the selected file to the screen

3.4.1.3 [Save Settings]: To choose storage device, edit file information

3.4.2 [Save]: To save current test result

3.4.3 [Switch]: To switch different curves, the selected curve will be highlighted

3.4.4 [Remove Current Trace]: To remove cutrrent curve

3.4.5 [Save Settings]: To choose storage medium, edit file information

3.4.6 [Event Analysis]: To select cursor, curve operations, add /remove event

3.5 Event Map

In main menu, press [Event Map]

3.5.1 [Test]: to run test

3.5.2 [Cursor]: to select cursor A or B

3.5.3 [Setting]: to setup Test Mode, Test Wavelength, Test Range, Pulse Width, Pass/Fail Thresholds, Splitter Loss, and the lenth of Launch Cable / Receive Cable

The Pass/Fail threshold is used to judge whether the welding junction and flange connection point are within the acceptable range.

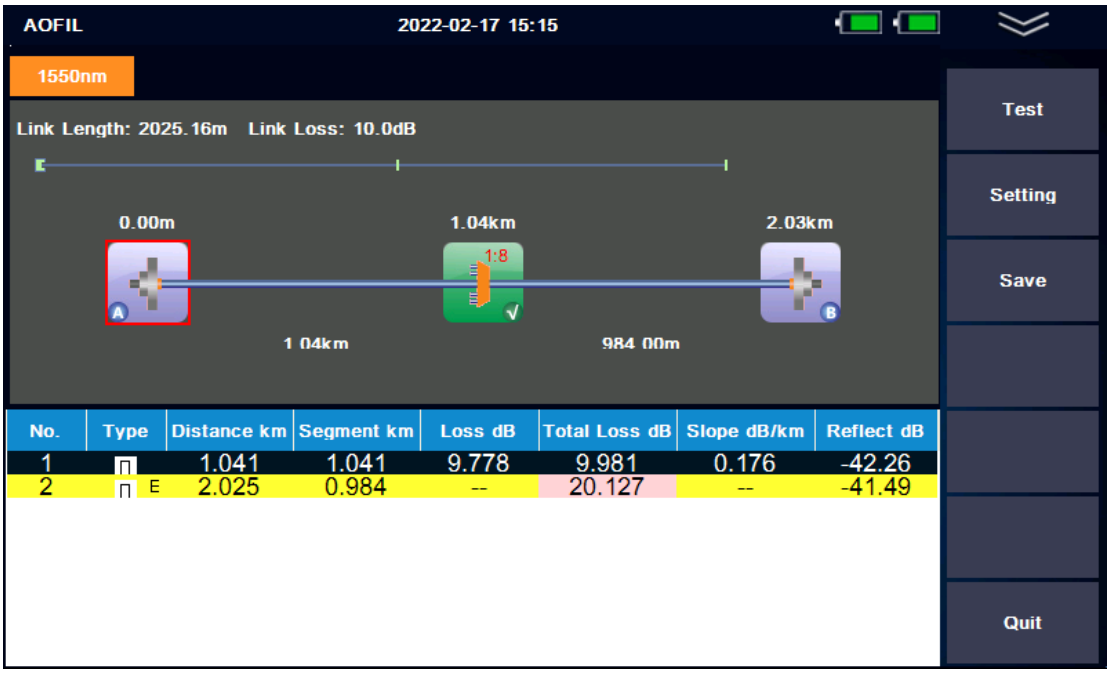
There would be one or more 1*N splitters in PON network with different loss at each splitter point, so, it is necessary to preset the loss value of the splitter. If the loss value is set incorrectly, the accuracy of the event map will be affected.

3.5.4 [Load]: To load the selected file to the screen

3.5.5 [Save]: To save current event

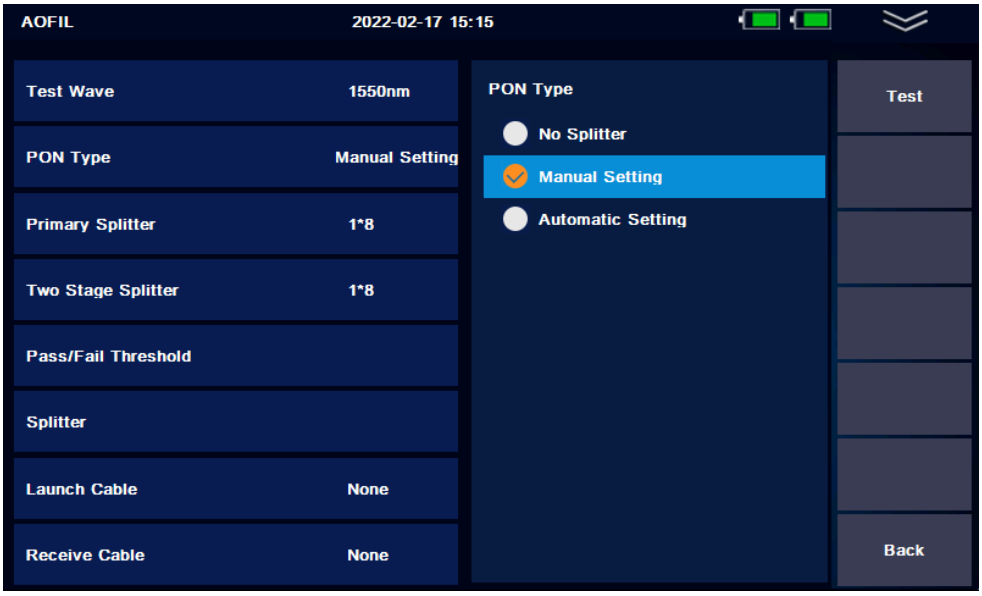
3.6 AOFIL(Intelligent analysis of optical fiber link iLOM)

AOFIL is to use multi pulse width to intelligently identify various event types in optical fiber link, such as reflection event, attenuation event, 1: N splitter, etc.



* Parameter Setting

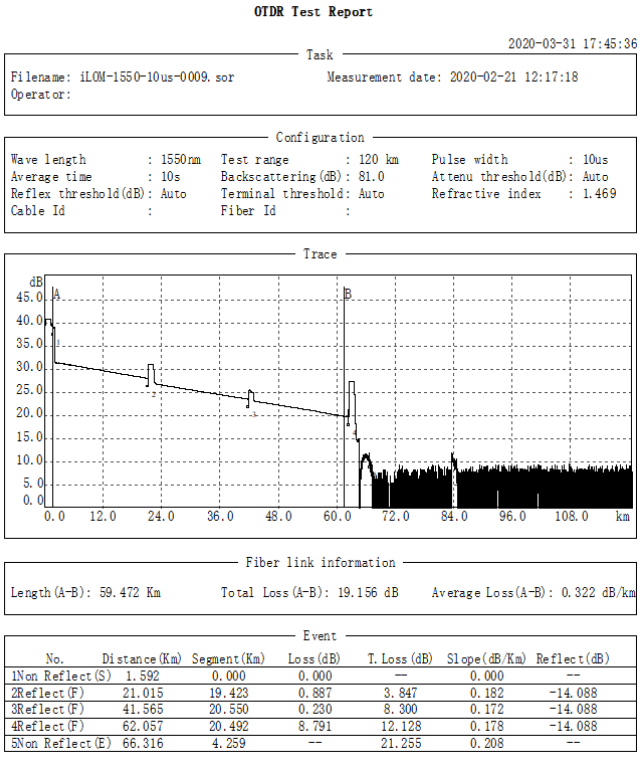
The parameters must be preset before running AOFIL.



3.7 PC Software

User can carry out multi-trace comparison or analysis by using PC software after upload the traces to computer, and print the report easily.

Note: The software installation file and operation instructions are stored in the SD card of the device. The files can be transfered to computer through the mini USB cable.



OTDR Test Report

2020-03-31 17:45:36

Task

Filename: iLOM-1550-10us-0009.sor Measurement date: 2020-02-21 12:17:18
Operator:

Configuration

Wave length	: 1550nm	Test range	: 120 km	Pulse width	: 10us
Average time	: 10s	Backscattering(dB)	: 81.0	Attenu threshold(dB)	: Auto
Reflex threshold(dB)	: Auto	Terminal threshold	: Auto	Refractive index	: 1.469
Cable Id	:	Fiber Id	:		

Trace

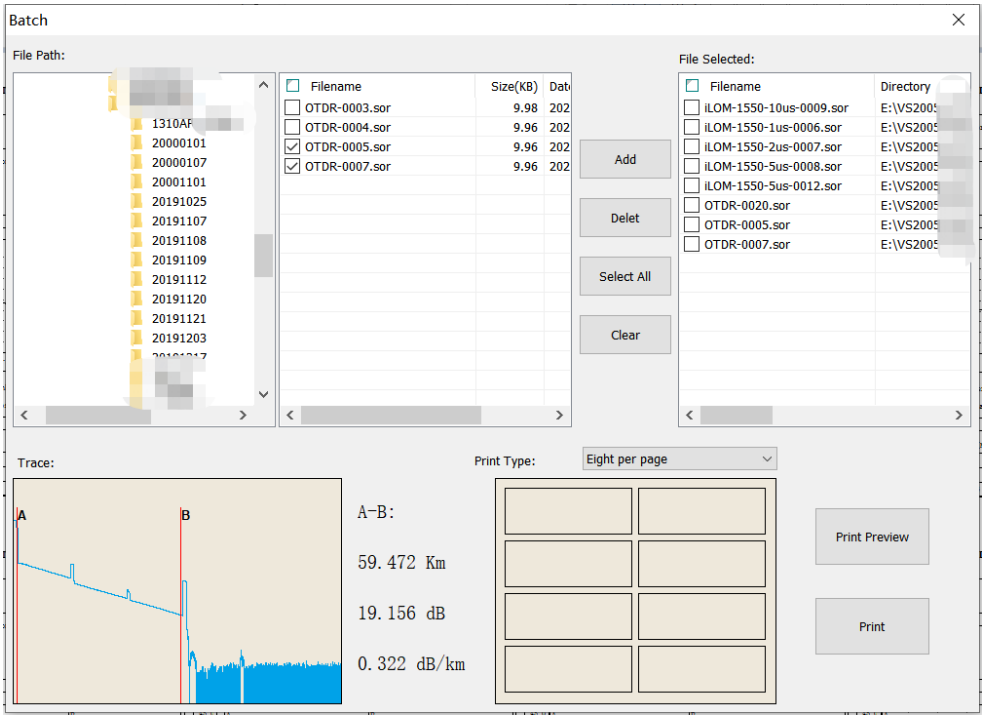
Fiber link information

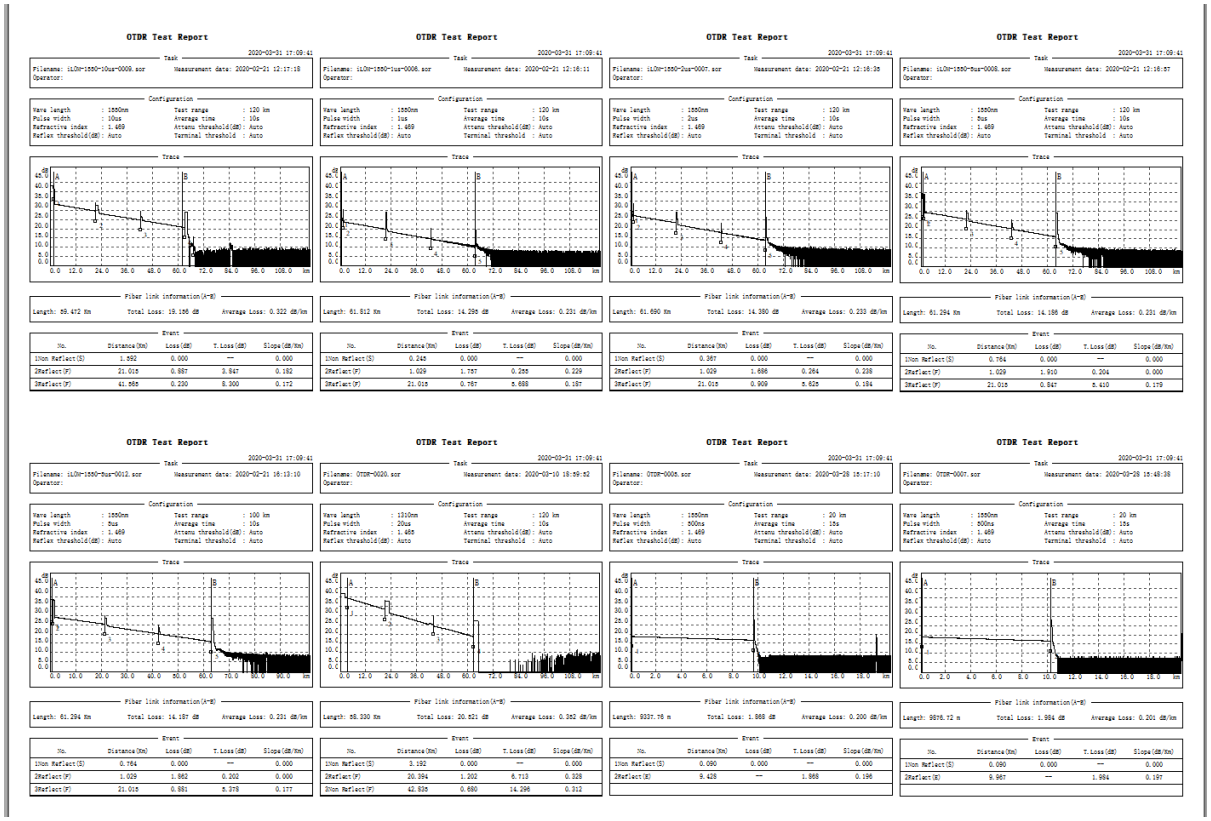
Length(A-B): 59.472 Km Total Loss(A-B): 19.156 dB Average Loss(A-B): 0.322 dB/km

Event

No.	Distance(Km)	Segment(Km)	Loss(dB)	T.Loss(dB)	Slope(dB/Km)	Reflect(dB)
1Non Reflect(S)	1.592	0.000	0.000	--	0.000	--
2Reflect(F)	21.015	19.423	0.887	3.847	0.182	-14.088
3Reflect(F)	41.565	20.550	0.230	8.300	0.172	-14.088
4Reflect(F)	62.057	20.492	8.791	12.128	0.178	-14.088
5Non Reflect(E)	66.316	4.259	--	21.255	0.208	--

Batch printing：





4. Other Modules

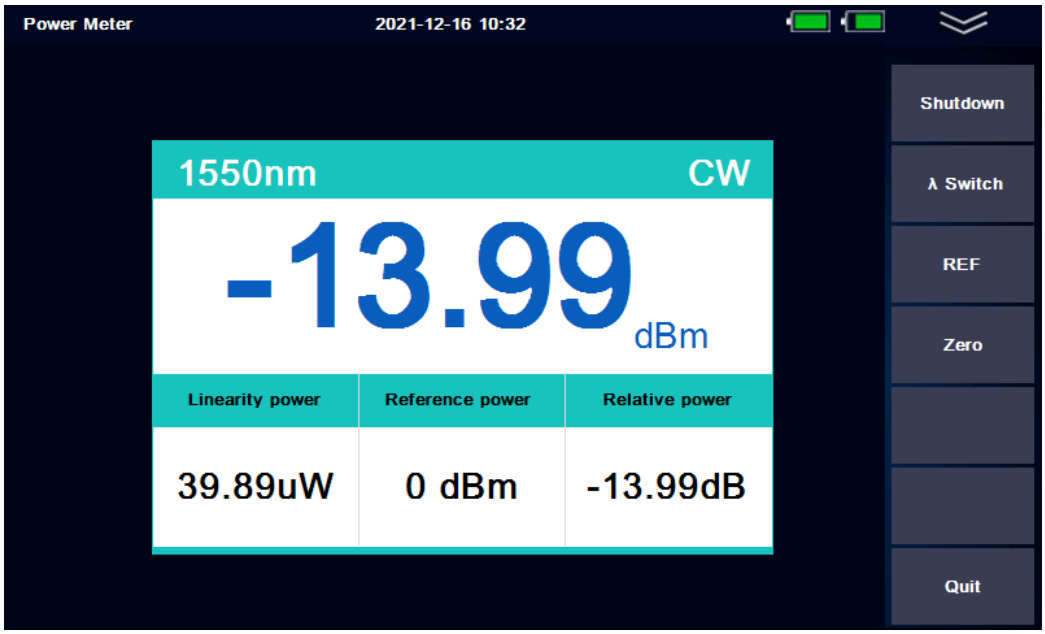
4.1 Visual Fault Locator (VFL) Module

The 650nm VFL module is used to identify fiber and locate a break (or macrobend) point. It works in 2 selectable modes: CW and 2 Hz modulation.

The VFL can be turned off by pressing [Shutdown] or [Quit]. When the VFL module is activated, do not stare into the beam directly, otherwise it may cause irreversible injury !

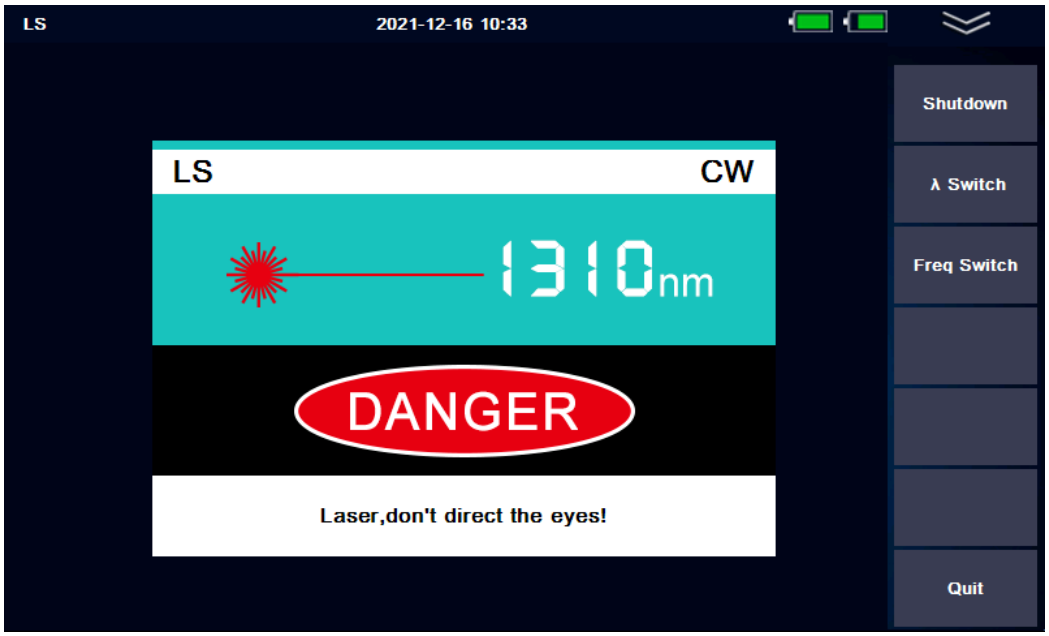
4.2 Optical Power Meter (OPM) Module

The OPM has the frequency identification function of 270Hz/1kHz/2kHz.
Press [Start/Shutdown] to turn on and off the OPM
Press [λ Switch] to switch the test wavelength
Press [REF] to set the current value as the reference value
Press [Zero] to reset the reference value to “zero”



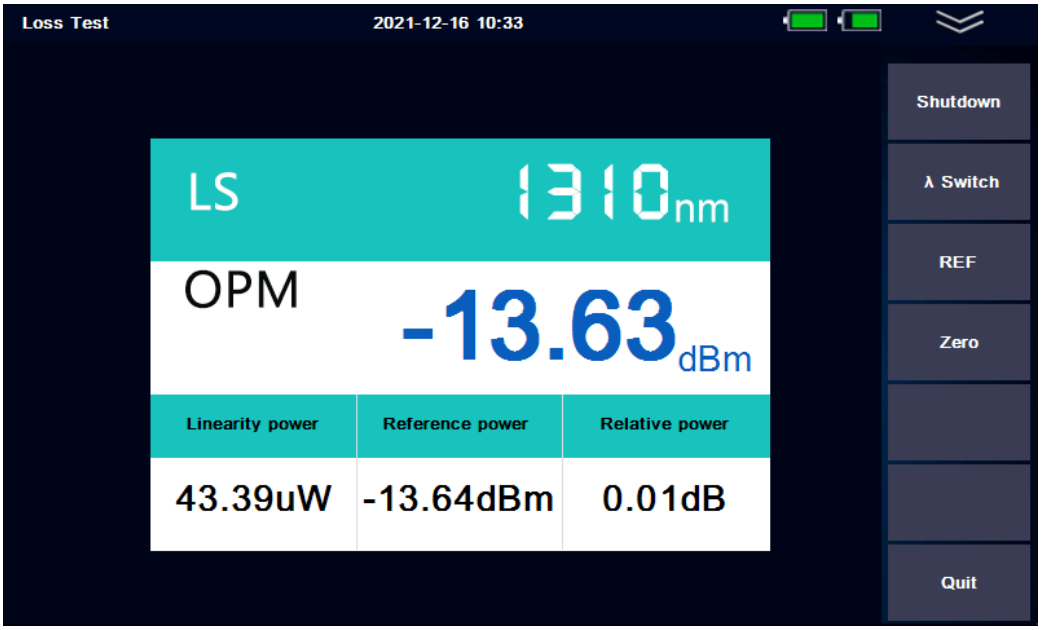
4.3 Laser Source (OLS) Module

The OLS module (output power: -5dBm±2dB) has same wavelengths as OTDR, and use the same optical port.
Press [Start/Shutdown] to turn on and off the OLS
Press [λ Switch] to switch the current wavelength
Press [Freq Switch] to switch the output frequency of CW/270Hz/1kHz/2kHz



4.4 Loss Testing (OLT) Module

The OLT module will be activated when both OLS and OPM modules are available.
Press [Start/Shutdown] to turn on and off the OLT
Press [λ Switch] to switch the current wavelength
Press [REF] to set the current value as the reference value
Press [Zero] to reset the reference value to “zero”



5. Softwareware Upgrade

Upgrading can be done by inserting an U disk in the USB port (the upgrade file must be in the root directory).

Upgrade Steps:

1) Put the software upgrade file in the U disk root directory
2) Turn on the instrument and insert the U disk into the USB port.
3) In main menu, press [Settings] >>[Software Upgrade] >>[OK]
4) Upgrading will be done automatically

Note: Do not turn off the instrument during the upgrade, do not unplug the U disk, these wrong operations may cause system software damage and instrumentation cannot start normally, once this situation occurs, please contact the manufacturer or the authorized after sales service agent for system repair.

6. Instrument Maintenance

6.1 Connector Cleaning

The output interface of the LOT5100 series OTDR is an interchangeable 2.5mm universal interface, which must be kept clean. When the test results are inaccurate or abnormal, the first action is to check and clean the connector.When cleaning, make sure that OTDR and VFL modules are turned off. Unscrew the output interface and wipe the end face with a dust free paper towel or cotton swab wetted by alcohol.

Also, please keep the dust cap clean and put on the output interface after use.

6.2 Screen Cleaning

The LOT5200 series OTDR comes with a 7-inch TFT color LCD capacitive touch screen. Don't stab the LCD screen with sharp object. To clean the LCD screen, please use soft paper cloth. Do not use organic solvent to wipe the LCD screen.

6.3 Instrument Calibration

It is suggested that the OTDR should be calibrated every two years.

Users are strictly forbidden to dismantle the machine without permission, otherwise the manufacturer has the right to refuse to provide the warranty service.