ShinewayTech®
Dependable Partner for Future Networks

OLT-55

Intelligent Optical Loss Tester

User's Manual

Safety Instructions

Safety Terms Used in This Manual

The **WARNING** sign denotes a hazard. It calls attention to a procedure which could result in personnel injury.

The **CAUTION** sign denotes a hazard. It calls attention to an operating procedure if not correctly performed or adhered to, could result in damage to or destruction of part or the entire product.

The **NOTE** sign information that may be beneficial during the use and maintenance of the instrument.

OLT-55 series Optical Loss Tester is a laser device, user should always avoid direct eye exposure to the laser output. Using microscope or magnifier to observe the laser output should also be avoided: laser beam may converge on the retina and cause permanent eye injury.

Battery: OLT-55 battery type is lithium battery.

Battery Power Supply: Do not expose battery to fire or intense heat. Do not open or mutilate battery. Avoid touching the electrolyte in the battery, which is corrosive and may cause injuries to eyes, skin or damage to clothes.

External Power Supply: OLT-55 support external power supply: 5V DC/750mA. External power supply is optional.

Laser Radiation: To avoid serious eye injury, never look directly into the optical outputs of fiber optic network equipment, test equipment,

- Always avoid looking directly into the optical output port, when the instrument is working
- Always replace protective dust cap on the detector port when the instrument is not in use.
- Always avoid looking directly at unconnected end of optic fiber in testing and make the unconnected end pointing at a non-reflective object.

Contents

1. General Information

1.1 Scope of this Manual

Thank you for purchasing ShinewayTech® instrument. Please read this manual carefully before using ShinewayTech® fiber optic instrument. Always be aware of the **Warning** and **Caution** sign appearing throughout this manual.

This manual contains the information necessary for proper operation and maintenance of ShinewayTech® instrument, troubleshooting instructions as well as information regarding maintenance services.

All ShinewayTech® instruments are carefully assembled and undergo rigorous mechanical, electrical, and optical inspection prior to shipment. Beside the instrument, the package also includes a lithium battery pack, a charging/data transfer cable, a power adapter, a FC/PC flange and this user's manual. For detailed information, please refer to the packing list.

Upon receiving the instrument, please check for any obvious signs of physical damage that may have occurred during shipment. Report any damage to the shipping agent or the representative of Shineway Technologies Inc. immediately. Retain the original packing materials in case reshipment is necessary.

1.2 Unpacking and Inspection

This instrument has been carefully packed in accordance with standard shipping procedures. Examine the instrument for damage that may have occurred during shipment. If you find any damage or the instrument is not working, or if any of the following items are not included, please contact your representative of Shineway Technologies, Inc.

If necessary, you may contact Shineway Technologies, Inc via this email:
support@shinewaytech.com.

NOTE To return the instrument in the case of repair, calibration or other maintenance, please note the following:

- Be sure to pack the instrument with soft cushion like Polyethylene, so as to protect the shell of the instrument.
- Please use the original hard packing box. If use other packing material, please

ensure at least 3 cm soft material around the instrument.

- Be sure to correctly fill out and return the warranty registration card, which should include the following information: company name, postal address, contact, phone number, email address and problem description.
- Be sure to seal the packing box with exclusive tape.
- Be sure to ship to your representative or the agent of the Company in a reliable way.
- way.

1.3 Introduction

ShinewayTech®OLT-55 Intelligent Optical Loss Tester combines stabilized laser source and optical power meter which can perform automatic bidirectional loss test on single fiber with Pass/Fail assessment to offer user-friendly operation and avoid potential operational mistake. The rugged and easy-to-use OLT-55 is the ideal optical loss tester for FTTx, LAN and CATV application.

Features:

- All-in-one: SLS + OPM + OLT + ORL + Length test
- Optical power monitoring (Auto power trace)
- Bidirectional loss test on single fiber
- ORL test
- Pass/Fail assessment
- Automatic wavelength identification/switch (AutoID)
- Remote reference value setting
- Internal clock & fiber S/N editable
- 1000 test records (CSV) storage & management
- Data transfer to PC via USB (Driver-free)
- Auto test records save in local unit/remote unit/both units
- USB power charging
- Over 35 hours continuous operation
- Multilanguage support
- No warm-up, quick start
- High resolution color LCD
- Pocketsize, lightweight and easy-to-use

Automatic Wavelength Identification

Compatible with the digital encryption protocols of its laser source module and Shineway SLS-50 Series Stabilized Laser Source, OLT-55 can automatically identify the wavelength of the input optical signal and switch to the corresponding test mode, which greatly reduces the workload at both ends and avoids potential error.

Automatic Bidirectional Loss Test on Single Fiber

Two OLT-55 at both ends of a single optical fiber can perform bidirectional loss test by just pressing one and can automatically measure and display the entire fiber attenuation to help users acquire complete and accurate optical fiber loss information.

Applicable to FTTx/PON testing

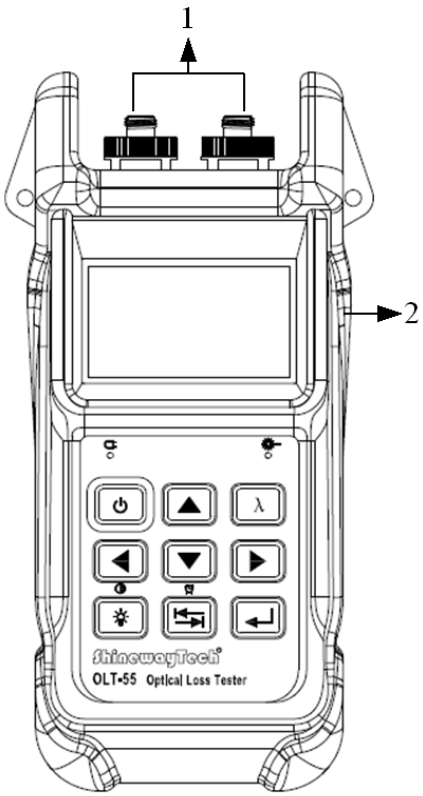
OLT-55 can be applied to measure Triple-play signals (1310nm, 1490nm and 1550nm) on Passive Optical Network (PON)

2. Basic Operation

2.1 Foreword

This part introduces the basic operation on OLT-55. Specific operations are elaborated in Chapter 3 of this manual. Please read this manual carefully for optimal operation. If you encounter any problems during operation, you are welcome to contact the technical staff of our company or representatives.

2.2 Instrument Details



2.2.1 External Interfaces

1. Optical Input & Output

OLT-55 is available with FC connector (Interchangeable SC/ST).

Note: Output port is marked with "LS"; Input port is marked with "PM".

2. USB Power /Data Port

OLT-55 can be charged by external power adapter (5V DC, 750mA).

2.2.2 Keypad Operation

Power on/off.

Toggle between wavelengths.

Toggle between setup items;
Adjust value in setup mode.

Toggle between sub-interfaces in working mode;
Shift digit positions in setup mode.

Toggle between working modes: SLS, OPM, OLT & ORL;
Long press to enable/disable Auto Power Off.

Enter setup mode;
Execute or toggle between setup values;
Confirm.

Short press to turn backlight on/off;
Long press to set contrast.

2.2.3 Indicator

Charging indicator.

Laser Indicator (Illuminate when laser emits).

2.3 Use of Battery

OLT-55 works on lithium battery. Please make sure battery is mounted properly before use. When battery is low, low battery indicator will appear on LCD. You can still use OLT-55 as long as its display on LCD is identifiable. When LCD display becomes dim, laser source output will become unstable and power meter measurement will be inaccurate. Please charge as soon as possible when battery is low to ensure accurate measurement.

NOTE Please take out the battery if OLT-55 is not in use for a long time.

2.4 Connector Cleaning

Please follow the instructions below when cleaning:

- Turn off the instrument before cleaning.
- Non-compliant operation may result in hazardous radiation exposure.
- Turn off laser source before cleaning optical interface.
- Always avoid looking directly into the optical output port when the instrument is working, laser is invisible and can cause serious eye damage.
- Disconnect instrument from power supply before cleaning to prevent electric shock.
- Do not install unauthorized parts or make unauthorized adjustments on instrument.
- Please consult qualified professional about maintenance and repair services.

NOTE Always clean optical connector before using OLT-55 to ensure accurate measurement. Clean the optical connector gently with cleaning swab.

NOTE Inappropriate maintenance may result in low performance or error:

- Distance error increases;
- Linearity error;
- Extra optical power attenuation;
- Received optical power is beyond normal range.

3. Operation

3.1 Power On

Press  and loading screen appears, see Figure 3.1.

Figure 3.1

Then it enters functional interface (The last interface before last shutdown), see Figure 3.2.

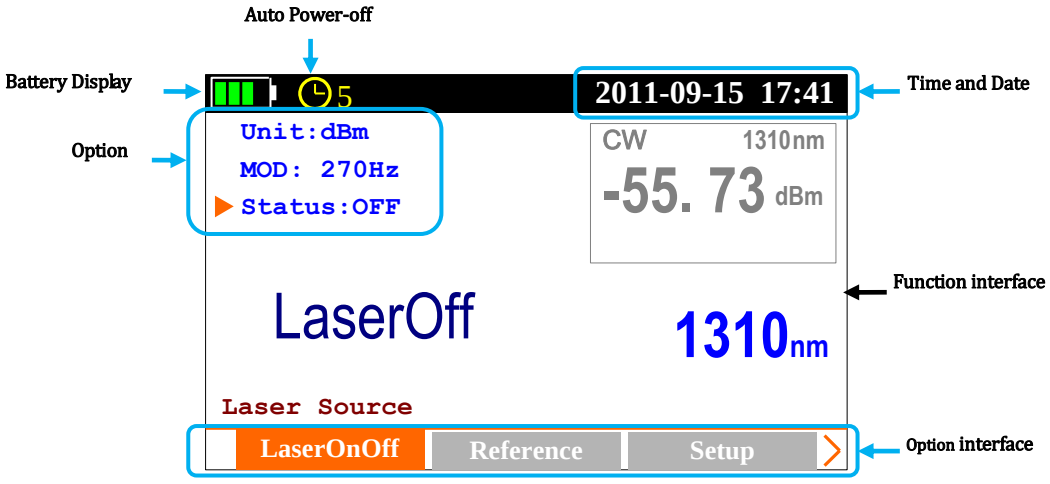


Figure 3.2

The toggle between functional interfaces:

Press  to toggle [Main menu] interface, see Figure 3.3.

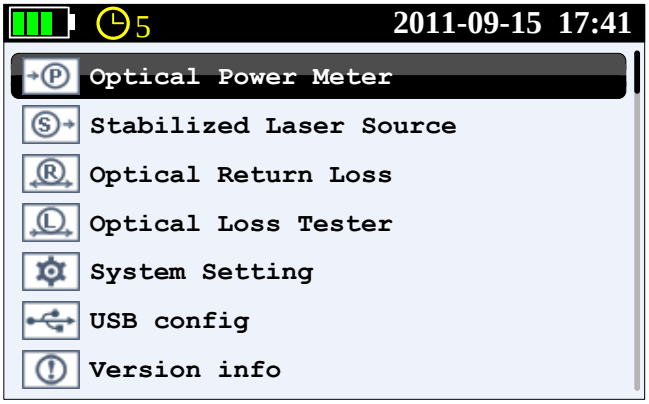
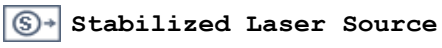
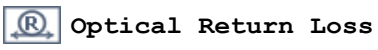
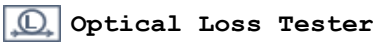


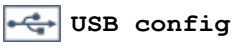
Figure 3.3

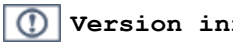
1. Press  and  to toggle the following function interface:











2. Press  and  to toggle the corresponding function interface;

3. Press  to enter the corresponding function interface.

The toggle between different setting interfaces:

- Under [] function interface, press  and  to toggle the following interfaces:

- Under []function interface, press  and  to toggle the following interfaces:

- Under []function interface, press 

and  to toggle the following interfaces:

- Under [ **Optical Return Loss**]function interface, press 

and  to toggle the following interfaces:

The system setup

Press  to enter [ **System Setting**] function interface:

Press  ,  and  to enter and edit the Date, Time, Brightness, Auto Off and Language.

USB config

Press  to enter [ **USB config**] function interface:

Press  and  to select :

Mass storage: PC recognition it for a USB flash drive;

Communication: the equipment directly transfer the data to the PC software, mainly used in the optical power meter "Draw Trance" function, the power fluctuations will be shown in the PC software.

Device information

After press  , it will display the version of software and hardware.

3.2 Stabilized Laser Source (SLS)

Press  and  to the following interface, see Figure 3.4.

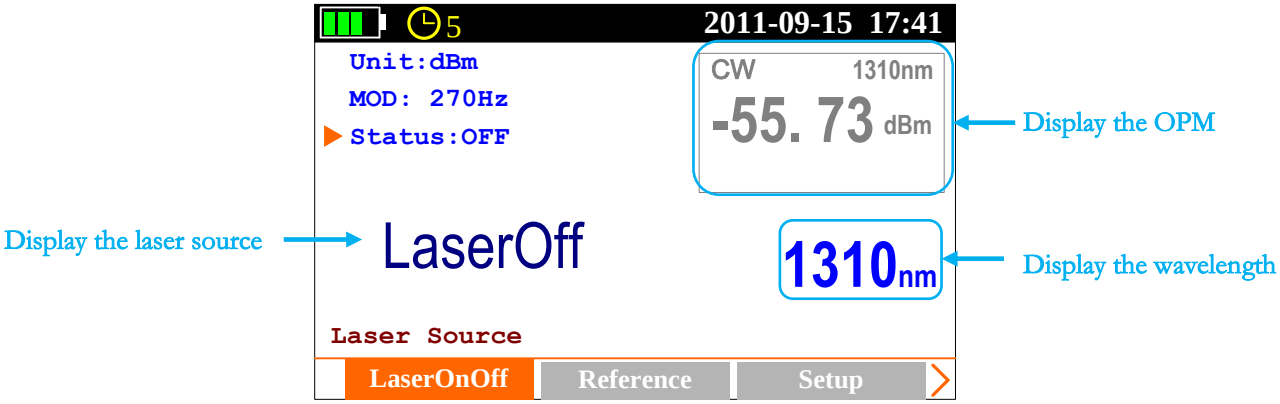


Figure 3.4

3.2.1 SLS-Laser On/Off

- Press ◀ and ▶ to [LaserOnOff] sub-interface, see Figure 3.4;
- Press ↵ to turn on laser source, see Figure 3.5; press ↵ again to turn off laser, see Figure 3.5;

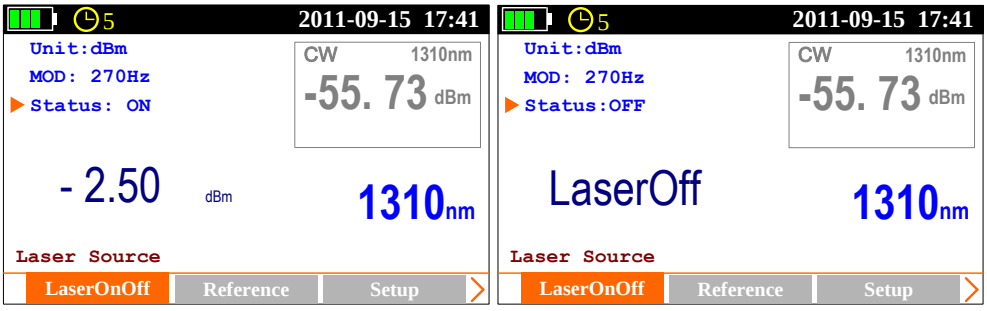


Figure 3.5

- Press ▲ to select "MOD" option, press ↵ the output mode toggles between **CW**, **270Hz**, **1KHz**, **2KHz** and **AutoID**;
- Press ▲ to select "Unit" option, press ↵ the output power unit and value toggle between **dBm** and m**W**.

3.2.2 SLS-Reference Setting

Note: This function is only for AutoID mode applicable, "Ref: XXX. XXdBm" parameters will set up to the opposite side which has the corresponding models test instrument, this is only for the test reference.

- Press  and  to [Reference] sub-interface, see Figure 3.6;

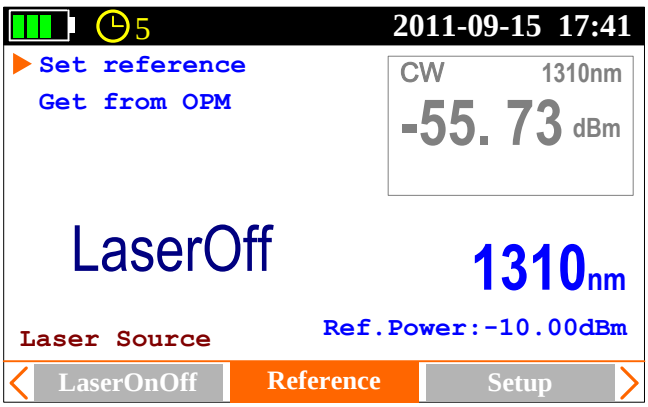


Figure 3.6

- Press  and  to select " Set reference " and " Get from OPM " :

" Set reference " : press  to enter and edit power value, select "OK" and press  to confirm. At this time on the right-bottom of the screen it will display "Ref.Power:-10.00dBm", means -10dBm is the value you just set, and this value will send to the opposite side.

" Get from OPM ": press  to set the current power value which gets from OPM as the reference.

- Press  to toggle between the different wavelength.

3.2.3 SLS-Setup

Press  and  to [Setup] interface, see Figure 3.7.

Note: This function is only for Auto ID mode applicable.

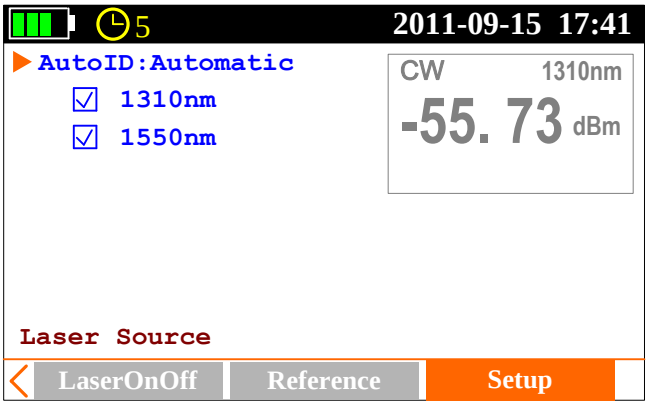


Figure 3.7

While the cursor on "Auto ID ", press  to select Manual or Automatic. Under Automatic mode, press  and  to move to the certain wavelength (1310nm, 1550nm), press  to select it or not.

3.3 Optical Power Meter (OPM)

Press  and  to [Power Meter] interface, see Figure 3.8.

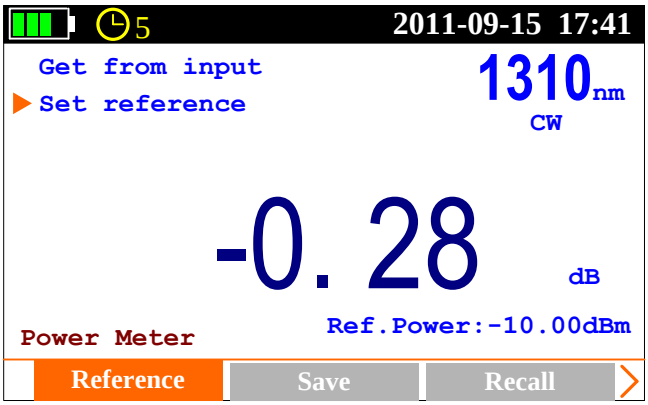


Figure 3.8

3.3.1 OPM-Reference Setting

- Press  and  to [Reference] sub-interface, see Figure 3.8.
- Press  and  to select item: **Set reference** and **Get from input power**, press  to enable adjustment, press    to adjust the value, and press  to confirm.

NOTE

- **Set reference** refers to manual reference value setup; if the laser source (ShinewayTech laser source with AutoID function) on the other side of the tested fiber enables AutoID, the OPM will automatically set the reference value sent from the laser source as reference ("AutoID" will appear in this interface).
- **Get from input power** sets the current measured power value as reference value.

3.3.2 OPM-Save Record

Press  and  to [Save] sub-interface, see Figure 3.9.

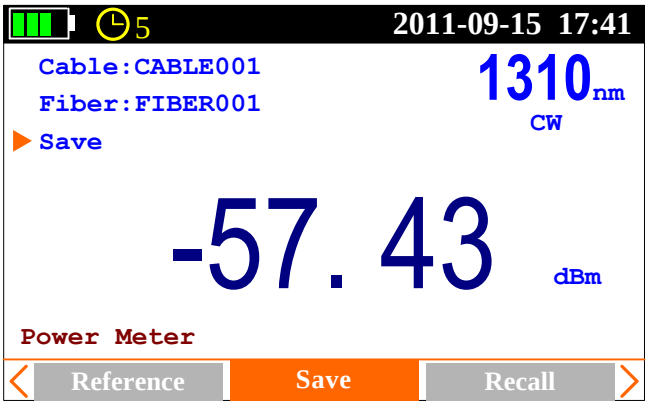


Figure 3.9

Press  and  to select item: **Cable:** and **Fiber:**, press  to edit the information, and then press  to confirm.

Press  and  to select **Save**, and press  to save current record.

3.3.3 OPM-Recall

Press  and  to [Recall] sub-interface, see Figure 3.10.

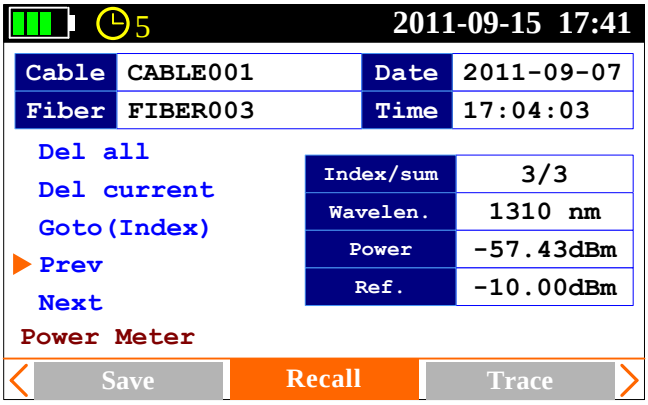


Figure 3.10

Press  and  to select item: **Del all, Del current, Goto (Index), Prev** and **Next**.

3.3.3 OPM-Trace

Press  and  to [Trace] sub-interface, see Figure 3.11.

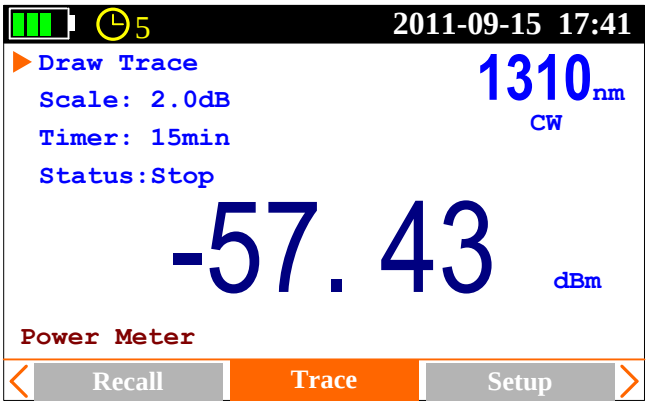


Figure 3.11

Press  and  to select item: **Draw Trace, Scale, Timer** and **Status.**

Draw Trace: press  , it will display the trace as Figure 3.12;

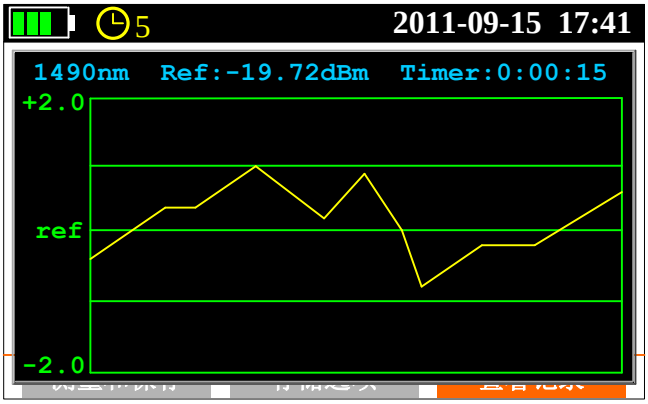


Figure 3.12

Scale: press  to select the suitable scale, press  to confirm;

Timer: press  and  to select test time **15min**, press  to toggle between **15min**, **60min** and **8hour**;

Status: press  to running/stop trace.

3.3.4 OPM-Setup

Press  and  to [Setup] sub-interface, see Figure 3.13.

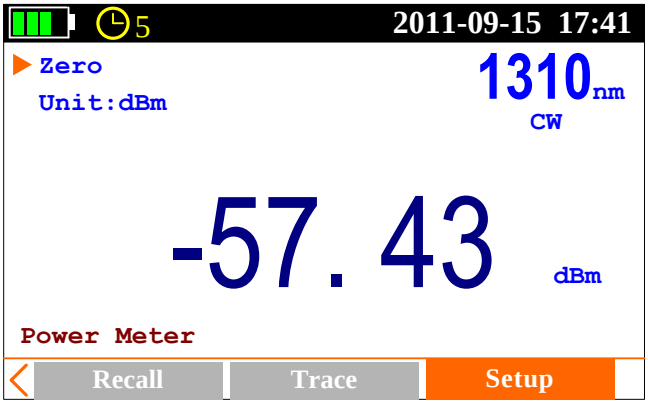


Figure 3.13

Press  and  to select item: **Zero** and **Unit**.

Zero: Screw on the dust cap, press the  twice, the instrument will be automatically calibrate zero;

Note: this operation should do first in the use of optical power meter.

Unit: press  and  to select dBm, dB, mW.

Press  to toggle between the different wavelength.

NOTE **Operation Procedure:**

1. Zero
2. Reference Setting
3. Input laser source
4. Read the power value
5. Save
6. Toggle the wavelength, and then repeat step 3, 4 and 5.

3.4 Optical Loss Test (OLT)

Press  and  to [Optical Loss Test] interface, see Figure 3.14.

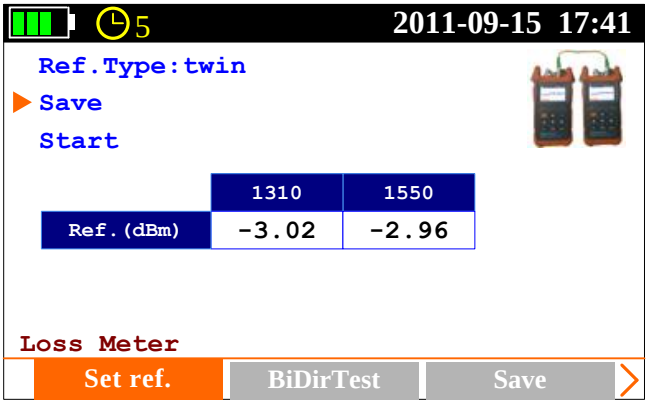


Figure 3.14

3.4.1 OLT-Reference Setting

Press  and  to [Set ref.] sub-interface, as shown in Figure 3.14.

Press  and  to select **Ref. Type**, and press  to toggle between **single** and **twin**, see Figure 3.15.

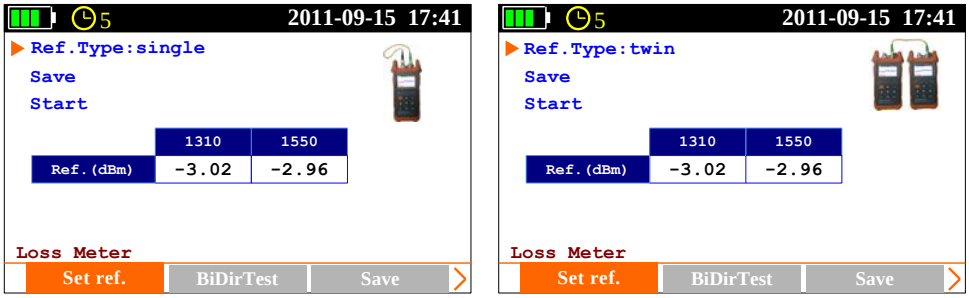


Figure 3.15

In **single:** the laser source port and power meter port connect to each other on the same unit, the power value measured by the power meter is the reference value;
In **twin:** the optical loss test ports of two different units connect to each other by patch cord and the power value measured in **twin** is more reasonable which is recommended.

After connecting the ports, press  and  to select **Start**, press  to start the test.

Press  and  to select **Save**, press  to save the measured value as reference value.

3.4.2 OLT-Bi-directional Test

Press  and  to [BiDirTest] sub-interface, as shown in Figure 3.16.

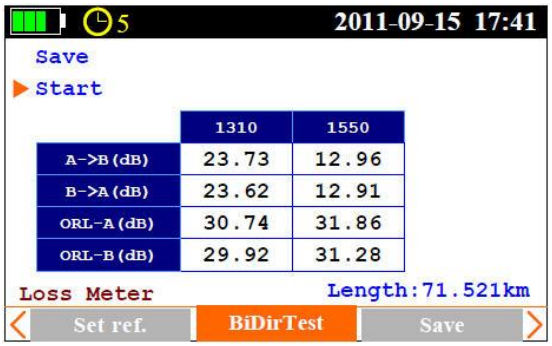


Figure 3.16

Press  and  to select **Start**, and press  to start the test.

Press  and  to select **Save**, and press  to save the result.

Please also refer to 3.4.3 to save the result.

NOTE Please complete Threshold setting and Reference setting before bi-directional test or it will affect test result.

3.4.3 OLT-Save Record

Press  and  to [Save] sub-interface, as shown in Figure 3.17.

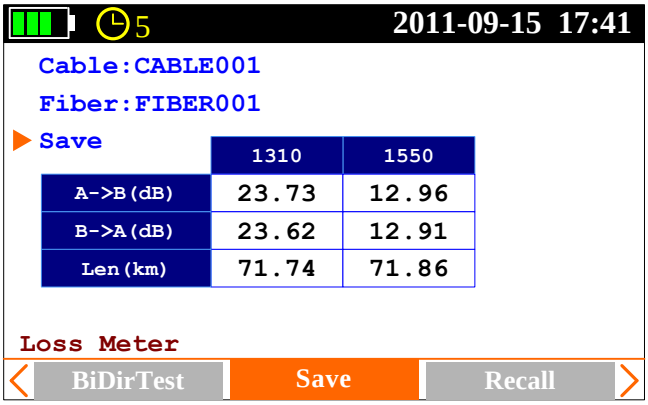


Figure 3.17

Press  and  to select item: **Cable** and **Fiber**, press  to enable digit

adjustment, press  to confirm.

Press  and  to select **Save**, and press  to save current record.

3.4.4 OLT-Recall

Press  and  to [Recall] sub-interface, as shown in Figure 3.18.

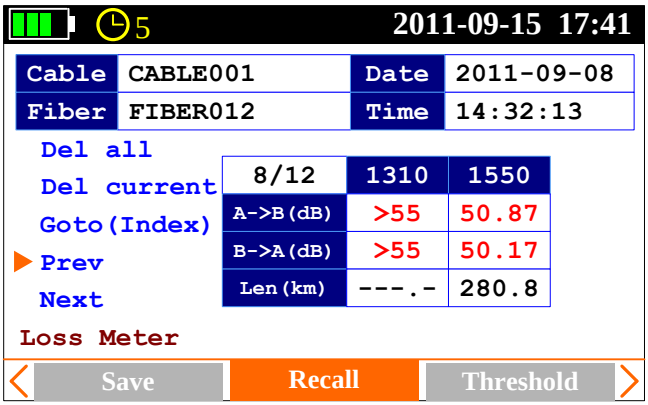


Figure 3.18

Press  and  to select item: **Del all, Del current, Goto (Index), Prev** and **Next**.

3.4.5 OLT-Threshold Setting

Press  and  to [Thresholds] sub-interface, as shown in Figure 3.18.

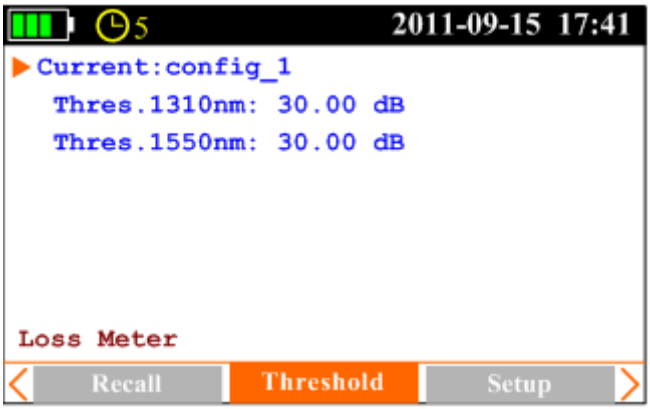


Figure 3.18

Press  and  to select the item to be adjusted, press  to enable

adjustment, and press  to confirm.

NOTE **Thres:** In bi-directional test, OLT-55 determines test result **PASS** or **FAIL** according to the thresholds setting.

3.4.6 OLT-Setup

Press  and  to [Setup] sub-interface, as shown in Figure 3.19.

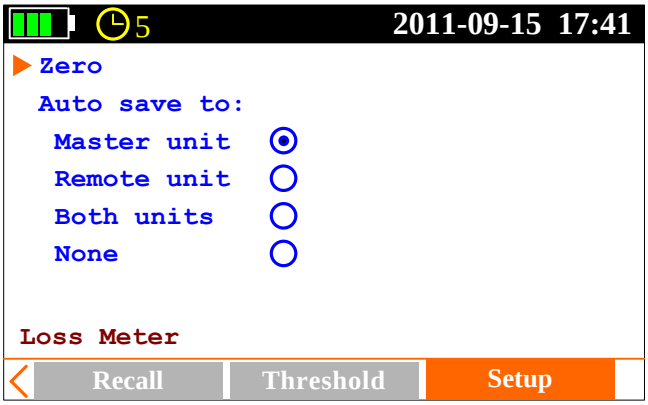


Figure 3.19

Press  and  to select items: **zero** and **Auto save to**, press  to confirm.

- **Zero:** Screw on the dust cap, press the  twice, the instrument will be automatically calibrate zero;
  Note: this operation should do first in the use of optical power meter.
- **Auto save to:** The Zero results to be automatic save to **Master unit**, **Remote unit**, **Both units** and **None**.

NOTE **Operation Procedure about Bi-directional Test:**

1. Zero: Screw on the dust cap, press the  twice, the instrument will be automatically calibrate zero;
2. Reference Setting: **Ref. Type** set to **twin**
3. Threshold Setting: set "Thres" and "Loss"; the value of the Thres limit the maximum loss of the entire link, "Loss" is generally provided by the fiber's supplier, the basis for calculation of the fiber length of the entire link ;
4. Connect the reference patch-cord: connect one unit OLT port to another unit OLT port

with two reference patch cords. See Figure 3.20:

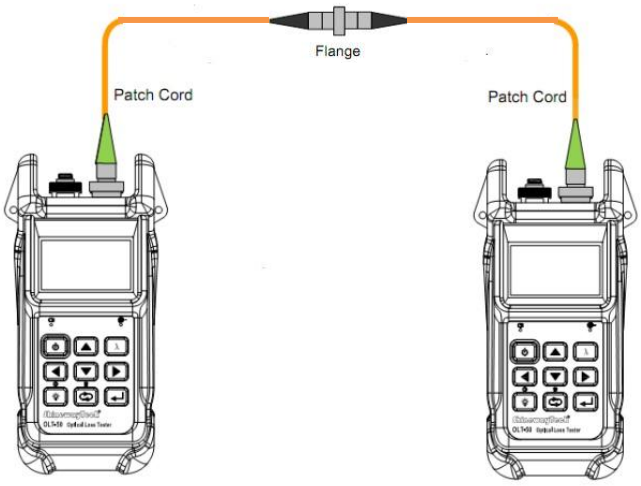


Figure 3.20

5. Under [Set. Ref] sub-interface, select **Start** and then press  , it will display the reference power value on the interface.
6. Toggle to [BiDirTest] sub-interface, connect measured fiber link as shown Figure 3.21, then select **Start** and then press  , test is running, and then the test result will be displaied.

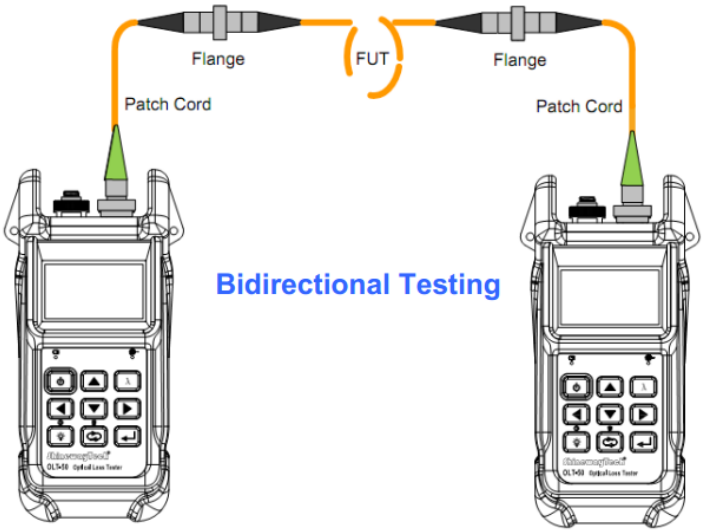


Figure 3.21

7. Toggle to [Save] sun-interface, select **Save.**

3.5 Optical Return Loss Test (ORL)-Option

Press  to [Optical Return Loss] sub-interface, as shown in Figure 3.22.

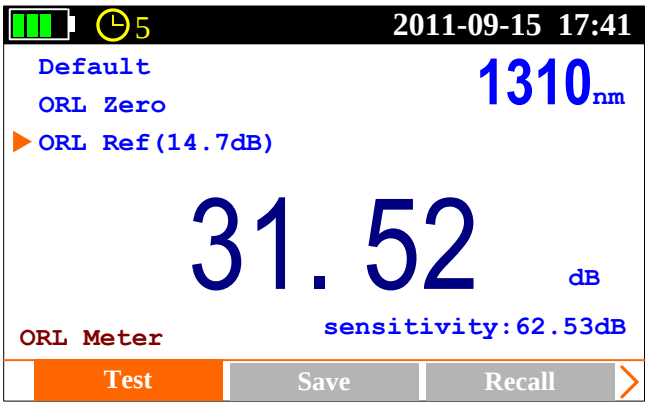


Figure 3.22

3.5.1 ORL-ORL Test

Press  and  to [Test] sub-interface, as shown in Figure 3.22.

Press  and  to select **Default, ORL Zero,** and **ORL Ref(14.7dB):**

Default: after press  , the value of **ORL Zero** and **ORL Ref(14.7dB)** restores to factory defaults;

ORL Zero: Connect one end of the test patch-cord to the OLT port, and at the other end of the patch-cord winding on a small diameter round bars, while observing the current return loss value displayed, the return loss value in the winding process will gradually become larger, when the return loss value does not change, press  to save the current return loss value as the ORL Zero.

ORL Ref(14.7dB) : "**(14.7dB)**" means the current ORL value measured under default ORL zero value and default ORL reference. Connect the reference patch-cord to OLT port, press  and  to select **OK**, and press  to save current ORL zero value。

ORL zero value should be reset when changing patch cord or disconnecting/reconnecting patch cord.

3.5.2 ORL-Save Record

Press  and  to [Save] sub-interface, as shown in Figure 3.23.

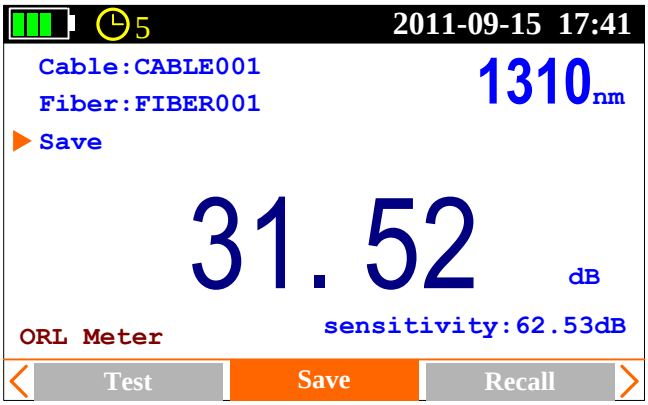


Figure 3.23

Press  and  to select item: **Cable** and **Fiber**, press  to enable digit adjustment, press  to confirm.

Press  and  to select **Save**, and press  to save current record.

3.5.3 ORL-Recall

Press  and  to [Recall] sub-interface, as shown in Figure 3.24.

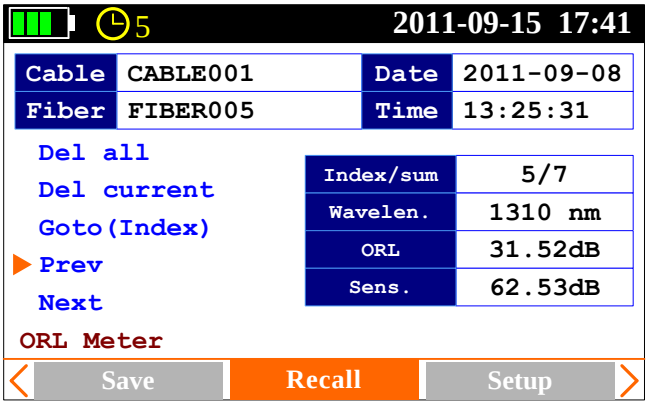


Figure 3.24

Press  and  to select item: **Del all, Del current, Goto (Index), Prev** and **Next**.

3.5.4 ORL-Setup

Press  and  to [Setup] sub-interface, as shown in Figure 3.25.

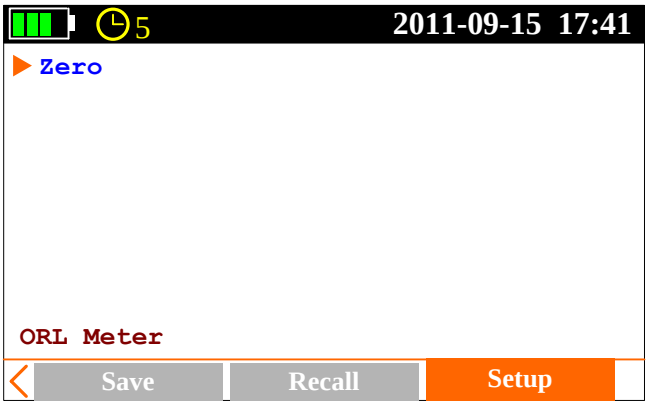


Figure 3.25

Screw on the dust cap, press the  twice, the instrument will be automatically calibrate zero;

Operation Procedure about Optical Return Loss Test:

1. Zero: Screw on the dust cap, press the  twice, the instrument will be automatically calibrate zero;
2. Set ORL Zero: toggle to [Test] sub-interface, refer to 3.5.1 set ORL Zero. At this time the display on the right-bottom of the interface **sensitivity:××.××dB** means lower bound of the measurable return loss value.
3. Set ORL Ref: refer to 3.5.1 set ORL Ref. Then press  to toggle another wavelength and set ORL Ref at this wavelength. All the wavelength should do. At this time the display value on the interface should show about 14.70.
4. Replace test patch-cord and one connects OLT port, another connects measured optical link, now read the ORL value directly.
5. Toggle to [Save] sub-interface to save the test result.

4. Maintenance and Calibration

4.1 Cleaning of the connectors

Keep the cleanness of connectors and dust caps. The detector needs to be cleaned timely.

4.2 Calibration Requirement

Calibration of OLT-55 is recommended every three years. Please contact Shineway Technologies Inc. or our agent for proper calibration.

5. Warranty Information

5.1 Terms of Warranty

OLT-50 is warranted against defective material and workmanship for a period of one (1) year from the date of shipment to the original customer. Any product found to be defective within the warranty period would be repaired or replaced by the Provider free of charge.
In no case will the Provider's liabilities exceed the original purchase price of the product.
The warranty doesn't include the accessories and optional parts.

5.2 Exclusions

The warranty on your equipment shall not apply to defects resulting from the following:

- *Unauthorized repair or modification*
- *Misuse, negligence, or accident*

The Provider reserves the right to make changes to any of its products at any time without having to replace or change previously purchased units.

5.3 Warranty Registration

A warranty registration card is included with the original shipment of equipment. Please take a few moments to fill out the card and mail or fax it to ShinewayTech's local Customer Service Center to ensure proper initiation of your warranty term and scope of your warranty.

5.4 Returning Instruments

To return instrument for reasons of yearly calibration or other, please contact the local Customer Service Center of ShinewayTech to obtain additional information and a RMA# (Return Materials Authorization number). And describe briefly reasons for the return of the equipment, to allow us offer you more efficient service.

NOTE To return the instrument in the case of repair, calibration or other

maintenance, please note the following:

- Be sure to pack the instrument with soft cushion like Polyethylene, so as to protect the shell of the instrument.
- Please use the original hard packing box. If use other packing material, please ensure at least 3 cm soft material around the instrument.

5.5 Contact Customer Service

Please check our web site **(www.shinewaytech.com)** for updates to this manual and additional application information. If you need technical or sales support, please contact local **Shineway Technologies** Customer Service.

Shineway Technologies (China), Inc.:
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Postal code: 100085
Tel: +86-10-62953388
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Email: support@shinewaytech.com
WEB: www.shinewaytech.com

THANK YOU FOR CHOOSING
SHINEWAY TECHNOLOGIES!

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