

ZW-3327

Insertion/Return Loss Test Station

[SM 1310/1550]



User Manual (V1.0)

2015 -5

Content

1 Overview

1-1 General information

1-2 Main features

1-3 Specifications

1-4 Standard Package

2 Appearance Description

2-1 Main frame

2-2 Front Panel

2-3 Rear panel

3 Function instruction

3-1 Function button instruction

3-2 Menu function instruction

3-3 Subject setting

4 Working instruction

4-1 Open the tester

4-2 Insertion loss testing/Return loss testing

4-3 OPM testing

5 Software application

5-1 Software instruction

5-2 Real time refresh area

5-3 DUT instruction

5-4 Test mode set instruction

ZW-3327 Insertion/Return Loss Test Station

5-5 Table view instruction

5-6 Functional buttons instruction

6 Attention and Common fault

7 Notice

8 Maintenance

8-1 Detector Care

8-2 Connector Cleaning and Care Instructions

9 Quality of Services

1 Overview

1-1 General information

ZW-3327 series Insertion/Return Loss Test Station is a precise instrument, which has adopted advantages from current abroad instrument brand and improved to the application from clients. It is a technological breakthrough in the domestic market and greatly improves the efficiency of IL test of optical devices which combines the two wavelengths testing result in one shot. It has extensive applications in the fiber cable, fiber passive device, fiber active device and optical communication system. It is suitable to perform the WIP testing and sample character testing for fiber device manufactory, research institutes

1-2 Main Features:

- 1) High stable laser source equips;
- 2) Multiple testing mode application;
- 3) USB interface to support software application ;
- 4) kinds of fiber terminations adopt ;
- 5) Color screen for man-machine conversation ;
- 6) Multiple COM interface compatible application ;

1-3 Specifications

Specifications	INSERTION LOSS & RETURN LOSS TEST STATION
Test wavelength (nm)	1310/1550 (±10nm) ①
Applicable fiber type (μm)	9/125
Laser source connector type	FC/APC ②
Output power (dBm)	≥-5
Output stability (dB)	±0.005(15 min @ 25℃) ③
Test range (dB)	0~75
Resolution (dBm/dB)	0.1
Test accuracy (dB)	±0.3 (0~65dB) ④
Sensor element	InGaAs ⑤
Detector size	Φ2.0mm ⑥
Wavelength range (nm)	800~1700
Wavelength calibration (nm)	850/1300/1310/1490/1550/1625 ⑦
Power range (dBm)	+3~-75
Linearity (dB)	±0.2 (+3~-65dBm) ⑧
Test mode	Linearity/Non-Linearity
Resolution (dBm/dB/xW)	0.01
Connector type	FC/SC/ST/Φ2.5mm/Φ1.25mm

Display	CLCD ⑨
Communication interface	USB 2.0/RS232
(continued)	
Power (V)	AC 90~260
Operating temperature (°C)	0~+40
Storage conditions (°C)	-25~+70
Relative humidity	0~85% (without condensation)
Dimensions (mm, LWH)	280*260*120
Weight (kg)	3.15

① FP laser source applied under offset $\pm 10\text{nm}$, customization for laser types else.

② Default FCAPC adapter applied for laser source.

③ The stability of laser output be collected under 25 °C centigrade indoor

temperature, continue testing 15 minutes under 100ms sampling rate after 20 minutes preheating.

④ The accuracy is measured repeatedly with the standard light source, at 25°C centigrade indoor temperature and the power detection range at 0~-65dBm.

⑤ The optical power meter part of the instrument using InGaAs as sensor element, the power range can be tested in the wavelength of 800~1700nm.

⑥ The optical power meter part of the instrument using a detector with the diameter 2mm. If there is a requirement for the detector area, please refer to other products of this series or contact us.

⑦ The standard configuration of the light source part is 1310nm and 1550nm. It supports single-mode IL&RL testing at the dual-wavelength. If users need to test

multimode devices or other wavelengths, please contact us.

⑧ The linearity be collected under 20~25 °C centigrade indoor temperature, continue testing 15 minutes under 100ms sampling rate after 20 minutes preheating.

⑨ Color liquid crystal display applied for operation monitor.

1-4 Standard Package

Chart 1-2 components

No	Name	Qty
1	ZW-3327 main unit	1
2	Power cord	1
3	(FC、SC、ST、2.5mm、1.25mm)	1
4	FC/APC—FC/PC patch cord	1
5	FC/APC—FC/APC patch cord	1
6	Instruction	1
7	Cotton stick	1
8	Fuse	1
9	CD	1
10	USB Cable	1
11	RS232 (option)	1
12	Wireless module (option)	1
13	Foot Switch (option)	1

2 Appearance Description

2-1 Main frame

Aluminum profile applied for the ZW3327 IL tester framing, TFT color screen applied for operation monitor. Human engineering front panel design applied for operation. Front view as chart 2-1:



Chart 2 -1 Front view

2-2 Front Panel

The laser source output adapter locates on the left side with FC adapter, the detector locates on the right side with $\Phi 2.0\text{mm}$ InGaAs PD with FC adapter (Adjustable for $\Phi 2.5/\Phi 1.25$ and special types). As chart 2-2 shows:

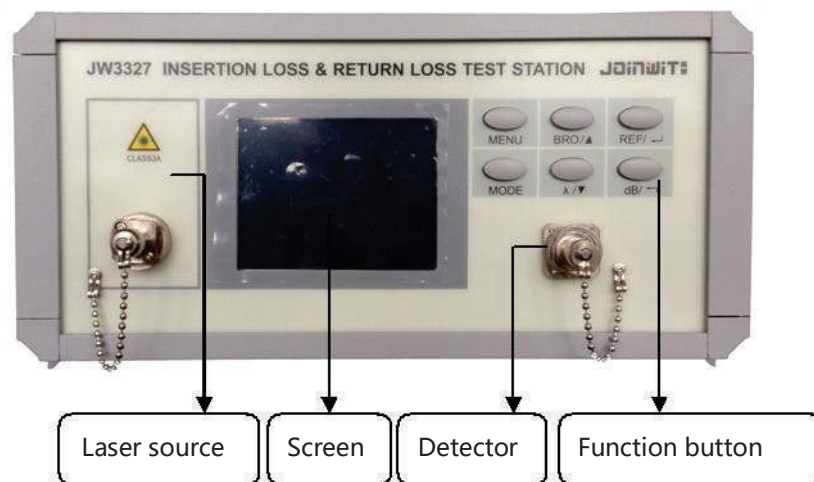


Chart 2 -2 Front panel

2-3 Rear panel

The foot switch adapter, USB adapter and power adapter locate on the rear panel. As chart 2-3 shows:

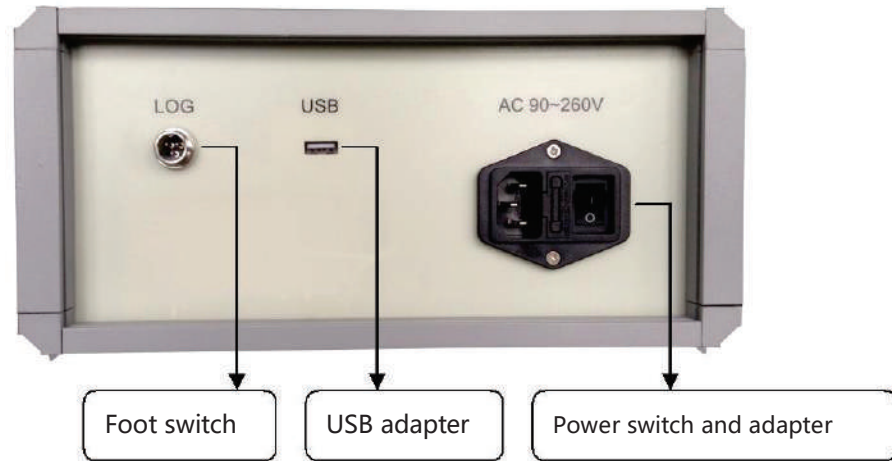


Chart 2 -3 Rear panel

3 Function instruction

3-1 Function button instruction

The Danish buttons application shows as chart 3-1:

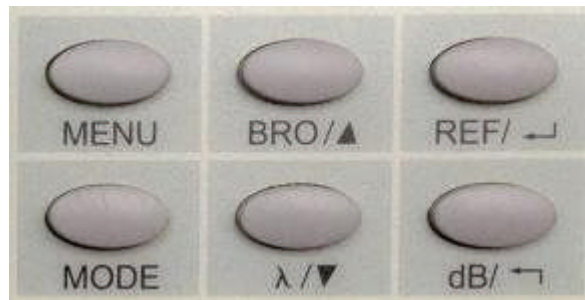


Chart 3 -1 Buttons area

Sheet 3-1 Buttons function review

No	Name	Function
1	MENU	1: Menu setting entrance 2: Left moving (Threshold setting)
2	BRO/▲	1: Return loss zero setting (Long-click, return loss testing mode) 2: Up moving (Menu setting) 3: Plus 1 (Threshold setting)
3	REF/↵	1: REF setting(return loss testing mode or insertion loss testing mode) 2: Confirm and save (Menu setting)
4	MODE	1: Testing mode switch (5 modes) a. Single wavelength insertion loss testing b. Single wavelength return loss testing c. Single wavelength insertion loss testing and return loss testing d. Two wavelengths insertion loss testing and return loss testing e. OPM 2: Right moving (Threshold setting)
5	λ/▼	1: Wavelength switch 2: Down moving (Menu setting) 3: Minus 1 (Threshold setting)

6	dB/←	1: Zero calibration (insertion testing or OPM mode) 2: Return without saving (Menu setting)
---	------	--

Attention: Default click is short click。





3-2 Menu function instruction

3-2-1 :Click button MENU open the main index

Shows as chart 3-2:



Chart 3 -2 Menu screen

Via the up and down buttons pressing to choose the right setting item, the item shows red when it be selected; Then press button REF/  entry the subject , Via the up and down buttons pressing and button REF/  to select the subject items, press button dB/  to return the main menu, press again button dB/  to quit the setting screen。

3-2-2 :Menu instruction

Sheet 3 -2 Menu instruction

No	Name	Function
1	Units setting	1: dBm 2: Watt
2	Sampling1: rate2:	100ms 200ms 3: 400ms 4: 1000ms
3	Backlight1: setting2:	100% 80% 3: 60%

		4: 40% 5: 20%
4	Threshold setting	1: 1310 insertion loss threshold 2: 1310 return loss threshold 3: 1550 insertion loss threshold 4: 1550 return loss threshold
5	Local information	1: ID 2: IL Send 3: RL Send

3-3 Subject setting

3-3-1 : Units setting

Clicking button MENU to open menu index, choose Unites setting accordingly. DBm confirmed the power value with Log Koc, Watt confirmed the power value with linear value. Shows as chart 3-3-1;

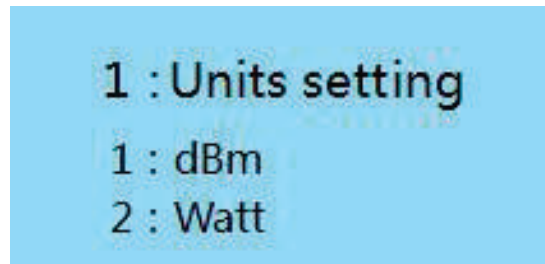


Chart 3 -3-1 Units setting

3-3-2 : Sampling rate

Sampling rate setting , default setting with 200ms 。 Shows as chart 3-3-2:

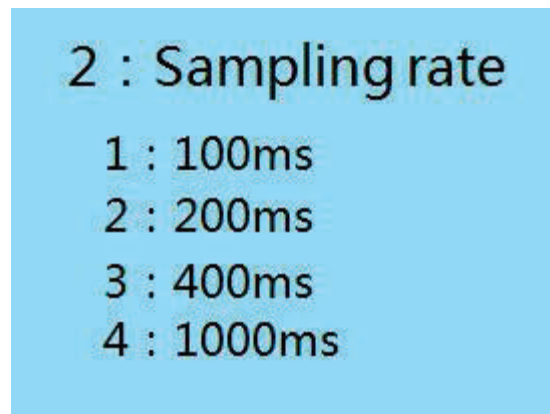


Chart 3 -3-2 Sampling rate

3-3-3 : Backlight setting

Backlight setting , default setting with 100%. Shows as chart 3-3-3:

3 : Backlight setting

- 1 : 100%
- 2 : 80%
- 3 : 60%
- 4 : 40%
- 5 : 20%

Chart 3 -3-3 Backlight setting

3-3-4: Threshold setting


Threshold setting includes 1310nm and 1550nm two wavelengths contents. The resolution ratio is 0.1db for insertion loss and the resolution ratio is 1db for return loss. The testing result be marked with red when the insertion loss testing result over the threshold, the return loss testing result less than the threshold. Shows as chart

3-3-4: (The threshold is not same to the setting in software applications)

4 : Threshold setting

- 1 : 1310 IL
- 2 : 1310 RL
- 3 : 1550 IL
- 4 : 1550 RL


Chart 3 -3-4 Threshold setting



1 : 1310 IL

00.10

Chart 3 -3-4-1 1310 Insertion loss threshold setting



2 : 1310 RL

65.0

Chart 3 -3-4-2 1310 Return loss threshold setting
setting 3 -3-5: Local information

ID: Net ID, working in the software and intranet application。

IL Send: The switch for the linkage to connect tester and software application, the operator could upload the result by click the foot switch when it's stay with ON, vice versa the result is not uploaded when it's stay with OFF.

RL Send: Function is same to IL Send。



5 : Local information

ID : 30

IL Send : ON

RL Send : OFF

Chart 3 -3-5 Local information

4 Working instruction

4-1 Open the tester

Connected power 220V AC, open the switch in the rear panel, the screen shows the logging information。

4-2 Insertion loss testing/Return loss testing

According to switch button MODE, there are four testing modes available for working.

Single wavelength insertion loss testing;

Single wavelength return loss testing;

Single wavelength insertion loss testing and return loss testing;

Two wavelengths insertion loss testing and return loss testing

Connect the master cable onto the laser source output adapter, press button $\lambda/\blacktriangledown$ to choose the wavelength under single wavelength testing mode. Connect the master cable onto the detector and press button REF/ \leftarrow to set the Insertion loss reference value. Switch to the single return loss testing mode, long press button $\lambda/\blacktriangledown$ to set the Return loss reference value. Then please short press button REF/ \leftarrow to set OPM reference value.

Then please clean the DUT end face, connect the DUT to master cable with right type adapter and detector, start to test.

	1310nm	1550nm
IL	0.04dB	0.02dB
RL	67.82dB	66.43dB

Chart 4 -2 Duplex wavelength IR testing screen

4-3 OPM testing

By pressing button MODE to switch the OPM testing mode, press button $\lambda/\blacktriangledown$ to choose the wavelength, press button REF/ \leftarrow to set the OPM reference value。

Then please clean the DUT end face, connect the DUT to master cable with right type adapter and detector, start to test.

The laser source will launch the continuous lighting when switch the wavelength to 1310 or 1550 nm.

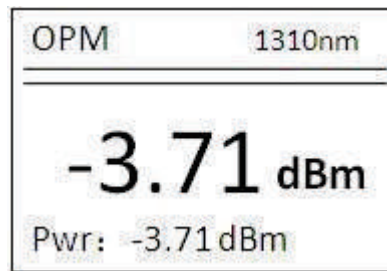


Chart 4 -3 OPM testing screen

5 Software application

We provide the suitable software for the JW3327 IL tester, which performs the data collecting, recording and management conveniently

5-1 Software instruction

Manage the database in software application: Shows as chart 5-1:

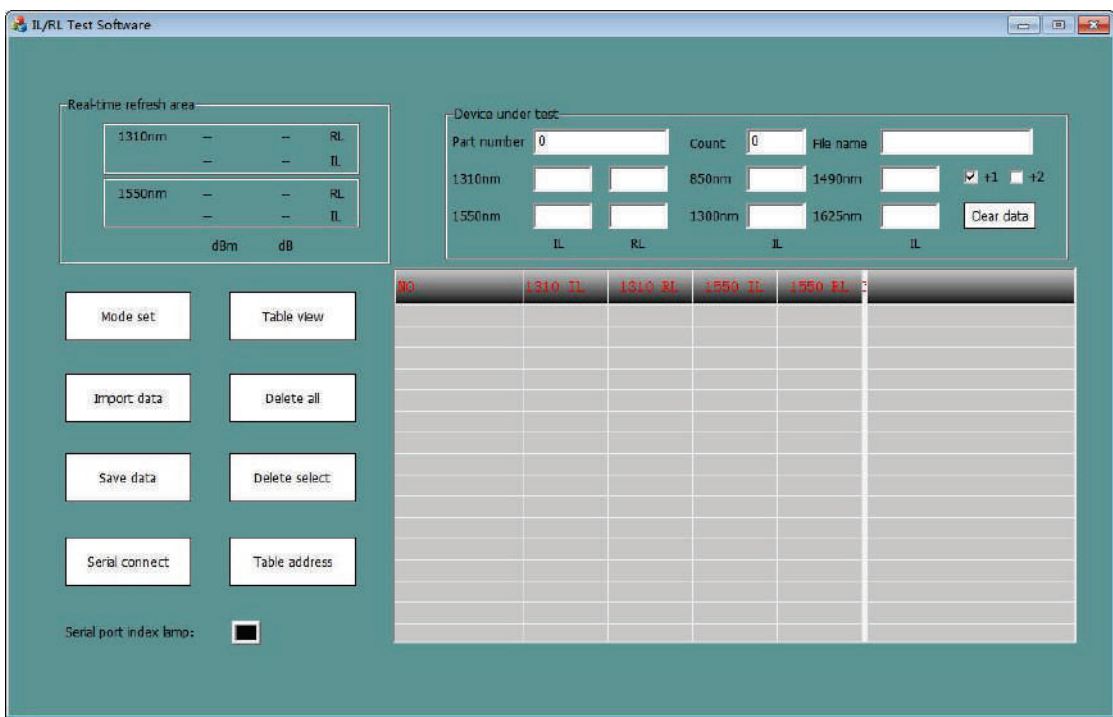


Chart 5 - 1 IL tester main screen

The software provide data management and testing profile management accordingly.

5-2 Real time refresh area

The real time refresh area will launch the data in actual time when connecting the IL tester with computer. Shows as chart 5-2:



Chart 5 - 2 Real time refresh

area 5 - 3 DUT instruction

Each uploaded database will shows in the DUT testing screen as chart 5-3:

Device under test

Part number

0

Count

0

File name

1310nm

850nm

1490nm

☒ +1 ☐ +2

1550nm

1300nm

1625nm

Clear data

IL

RL

IL

IL

Chart 5 -3 DUT screen

5-4 Test mode set instruction

Test mode set allows operator to modify the parameter set, test type select, mode set, serial port set, set table number and fix value set. Shows as chart 5-4:

The screenshot shows a 'Test mode set' dialog box with the following fields and options:

- Parameter set:**
 - IL MAX (dB): 100
 - RL MIN (dB): 10
 - Radio buttons: ☒ IL, ☐ RL
 - OK button
- Test type select:**
 - Radio buttons: ☒ 1310 IL, ☐ 1310 RL, ☐ 1550 IL, ☐ 1550 RL, ☐ 850 IL, ☐ 1300 IL, ☐ 1490 IL, ☐ 1625 IL
- Mode set:**
 - Radio buttons: ☒ Stand-alone mode, ☐ Many machine model
 - Single table choose: [dropdown]
- Serial port Set:**
 - Port: COM5 (dropdown)
 - Rate: 9600 (dropdown)
- Set table number:**
 - Table: 001 (dropdown)
 - Address: 0 (text box)
 - Set button
- Fix value set:**
 - ☐ Use function
 - RL MAX(dB): 80 (text box)
 - OK button

Chart 5 -4 Test mode set screen

- 1.Parameter set: Threshold setting, all NG database can't be uploaded to software. IL and RL database upload option.
- 2.Mode set: Stand-alone mode only allows modification and operation to the appointed tester.
Many machine model allows all the database uploading from all connected testers.
- 3.Test type select: Select the right testing type customization.
- 4.Serial port set: Select the COM port and baud rate.
- 5.Set table number: Link the device to the appointed address.

5-5 Table view instruction

Table view includes add table, fault table and option for table database filtering.

Shows as chart 5-5:

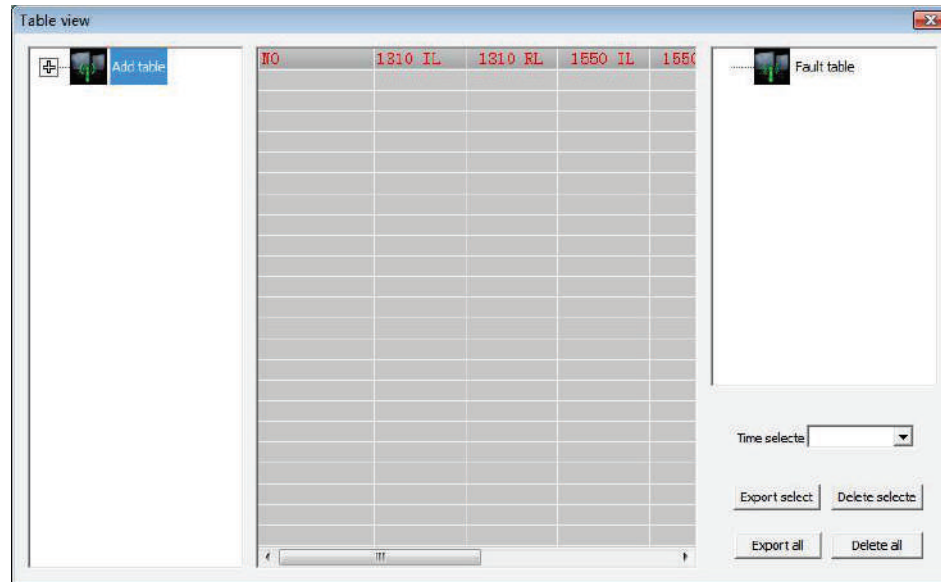


Chart 5 -5 Table view screen

1. Add table: adding new device, rename the device and review the details from the running device.
2. Fault table: fault device parameter review and recover.
3. Option for table database filtering: export or delete the database for one device.

5-6 Functional buttons instruction

1. Import data: appearing all the saved data in the software for reviewing.
2. Delete all: deleting all the database in the current screen .
3. Save data: saving the database in the current screen as EXCEL into the folder Save.
4. Serial connect: review all the status for connected devices.
5. Serial port index lamp: connecting status lamp for the device and software. It's green when the connection is ok.

6.Database display frame: each uploaded test result shows in this frame.

6 Attention and Common fault

- (1) Laser source and Erbium Doped Fiber Amplifier launch the sightless laser radiation, to care about your health please avoid to face or see the laser source output adapter directly during the device normal running;
- (2) Make sure the master cable connector is FCAPC and clean enough before mating it onto the laser source output adapter;
- (3) Make sure the DUT connector end face is qualified by magnifier before mating to the master cable and detector;
- (4) The master cable length should be more than 1 meter at least;
- (5) When the testing data floating out of standard status please calibration insertion loss reference value again. Please cover the detector when the tester is standing by;

Unstable root cause list:

The master cable is bending;

The master cable connector end face is dirty;

The master cable connector end face is scratched;

The laser source output connector be contaminated;

The master cable does not assemble with laser source well;

7 Notice

Keeping clean status connect to the laser source and detector to protect the instrument precision;

Try to perform the mating with one brand adapter;

Keeping the cap onto the detector and laser source output adapter during idle state;

Keeping smoothly mating operation to avoid the scratch;

It's forbidden to lay on stuff else on the top of instrument;

8. Maintenance

8-1 Detector Care

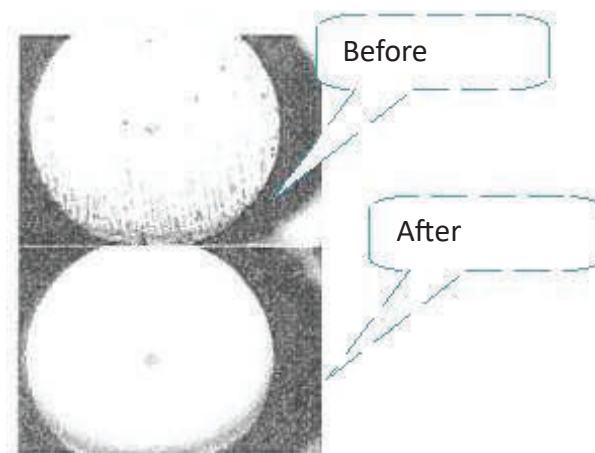
The optical power meter is equipped with an optical detector and adapter systems that allows for the exchange of the adapters to match the connector of the cable to be measured. Removing the adapter exposes the detector glass surface. In most cases the glass surface of the detector is AR(anti reflection)coated and can be easily scratched.

To clean the detector surface, if at all needed, us only an optical grade lens cleaning tissue, such as are supplied with the large area detectors(1N5,IN10).Carefully wipe any dust off the detector surface by gently wiping the glass with the cleaning tissue.

Warning : Under no circumstances use any cleaning fluids!

8-2 Connector Cleaning and Care Instructions

To ensure maximum optical connector life and best possible insertion Loss(IL) and return loss (RL)all fiber optic connectors must be cleaned every time before they are mated. Failure to properly clean a fiber optic connector can destroy the end face polish the first time the connector is mated, while a properly cared for connector will last for more than 500matings.The illustration below depicts connector end-faces before and after cleaning.



8-1 Fiber end-face contrast figure

9. Quality of Services

Caution: Repair it in the field is Forbidden.

Details of warranty terms and conditions are given as below:

- 1) The company warrants that the Insertion Loss/Return Loss Test Station will be free from defects in material and workmanship for a period of 18 months. The date will be started from the date of goods shipment.
- 2) If any defectives happened due to quality problems of the product during the warranty period, the company promises to repair or replace free of charge. But the freight cost and related taxes will be shared by both parties. The company will pay the shipping cost from customer side to our factory and pay the import taxes related. Customer will pay the shipping cost from our factory to customer side and its local import taxes accordingly.
- 3) This warranty is limited to defects in workmanship and materials and does not cover damages from accident, acts of god, neglect, wrong usage or abnormal conditions of operation.
- 4) The company will charge corresponding fees for the cost of materials, repair and shipping in conditions of below:

Defects occurred under normal use and service but out of the warranty period.

Failures and damages occurred do not because of defects in material and workmanship of products.

Failures and damages occurred because of failing to comply with the Operation

abnormal conditions of operation or handling:

Such as artificial damage, or operating in abnormal conditions of like high temperature、high voltage, humidity and etc., we will charge depend on the actual failure rating.