

# ST332B ADSL2+ Tester

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V1.0 (II)

## User Manual

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## 1. Summary

ST332B ADSL2+ Tester is specially designed to meet the urgent requirement of xDSL testing, including ADSL, ADSL2+, and READSL as well; it is particularly used by the field operator for the telecommunication installation and maintenance.

At present, most of the xDSL testers in the market are so complicated which require the operators to occupy rich signal emulation knowledge and network analysis ability. Additionally the prices are generally high. The ISP could only afford a few sets and turn help to the professional network analysis engineer to operate. In fact they are not the suitable equipments for the installation and maintenance operator.

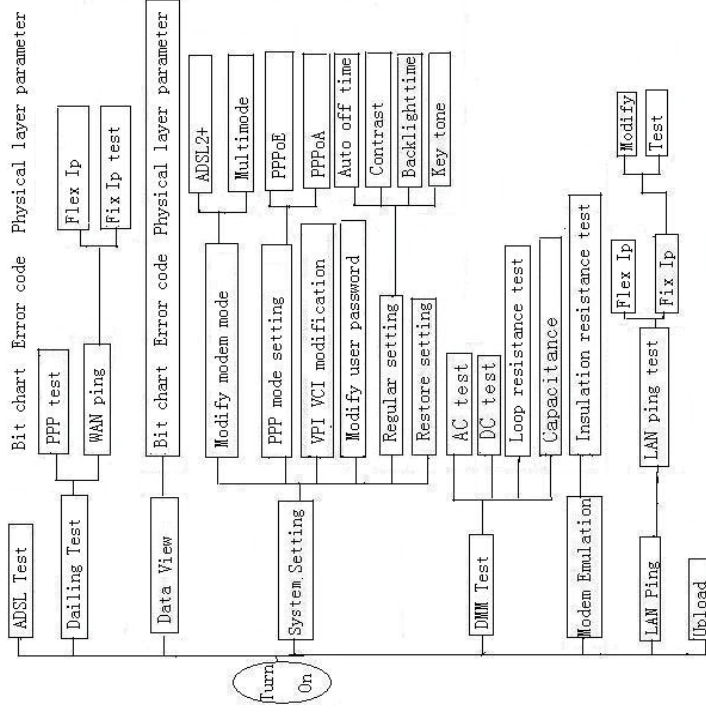
With the rapid development of broadband service, the field operators of installation and maintenance have to face much more and complicated workload than ever before, as a result, the equipment which is simple, portable and money-saved is eagerly wanted.

ST332B ADSL2+ Tester could not only test the physical parameters but also help to judge whether the line is fit for xDSL service and evaluate the quality of service. In fact the field operators do not need to know so many line parameters and specifications. To them, the most important is to determine the quality of service and locate the fault points. With the help of ST332B every forefront workman is prepared to the task. Further more, it could also make PPPoE/PPPoA dialing through the built-in Modem and validate the connection between the user and ISP through emulating the user PC + Modem.

ST332B adopts LCD display and menu operation. It could display the test results directly and intuitively. It is the ideal tool for the field technician installing and maintaining ADSL/ADSL2+ service.

## 2. Main functions and specifications

Function frame as following:



### 2.1 xDSL specifications

#### ADSL2+

- 1) Standards: ITU G.992.1 (G.dmt), ITU G.992.2 (G.lite), ITU G.994.1(G.hs), ANSI T1.413 issue #2, ITU G.992.5(ADSL2+) Annex L. Maximal connecting distance is 6.5km; Compatible with ADSL, ADSL2 and READSL
- 2) DSL transmission parameters:
  - DSL up/down max speed;
  - DSL up channel speed: 0 ~ 1.2Mbps;
  - DSL down channel speed: 0 ~ 24Mbps;
  - DSL up/down attenuation: 0 ~ 63.5dB;

- DSL up/down noise margin: 0 ~ 32dB;
- DSL up/down output power;
- Error test for CRC, FEC, HEC, NCD, LOS;
- Display DSL connection mode;
- Determine service quality;
- Display the channel bit chart.

## ADSL

- 1) Standards: ITU G.992.1 (G.dmt), ITU G.992.2 (G.lite), ITU G.994.1 (G.hs), ANSI T1.413 Issue # 2
- 2) DSL transmission parameters:
  - DSL up/down max speed;
  - DSL up channel speed: 0 ~ 1Mbps;
  - DSL down channel speed: 0 ~ 8Mbps;
  - DSL up/down attenuation: 0 ~ 63.5dB;
  - DSL up/down noise margin: 0 ~ 32dB;
  - DSL up/down output power;
  - Error test for CRC, FEC, HEC, NCD, LOS;
  - Display DSL connection mode;
  - Determine service quality;
  - Display the channel bit chart.

## 2.2 Dialing test functions

You can fulfill the function of Perform PPP dialing to user twisted-pair (WAN port). After successful dialing, it could get this terminal IP, opposite terminal IP, chiefly DNS server IP and subordinate IP address. The dial function includes PPPoE and PPPoA.

## 2.3 Modem parameters setting

Operator can set current modem standard and choose ADSL2Plus Auto or Multi mode. What is more, the operator can also revise PPPoE attribute (PAP/CHAP), user name and password by management software or by buttons on the tester.

## 2.4 Modem emulation

ST332B can replace the user Modem completely. And the user could take ST332B as modem to dial and login to Internet to test if there is any problem of subscriber's Modem.

## 2.5 Data storage and browse

ST332B has memory capacity of 50 records. The records include line parameters, channel bit chart and error test. User could browse the records through entering different record number.

## 2.6 DMM test

ST332B can test such items as follows:

AC Voltage: -400 to 400 V; Resolution: 0.1V  
 DC Voltage: 0 to 290 V;  
 Capacitance: 0 to 1000nF, Accuracy: 0 — 10nF ±2nF ,  
 10nF-1000nF ±2 %±2nF  
 Loop Resistance: 0 to 20KΩ;  
 Accuracy: 0-100 ±3%±4Ω, 100—500 ±3%, 500—2000 ±2%, 2000—20K ±2%  
 Insulation Resistance: 0 to 50MΩ; Accuracy: 0—1.0 ±0.1 MΩ,  
 1.0—30 ±10%±0.5 MΩ

## 2.7 PING test

It can perform the WAN PING Test and LAN PING Test. LAN PING Test can judge if the connection with IP addresses success or not and also confirm LAN work OK or not. WAN PING test can Ping website addresses directly toward Local WAN, and check the connectivity of WAN Line.

## 2.8 Data upload

Users can upload data to PC through RS232 port, which is convenient for users to save and manage the data.

## 2.9 System parameters setting

Users can set the lighting length of backlight. The default time is 15s, and the utmost time is 99S. The default Auto-off time is 8 minutes; users can set the time length from 5—59 minutes. The key-press sound can be set need, or not need, and the buttons can modify the username and password, VPI, VCI, adjust contrast and Modem work mode and PPPoA or PPPoE dial mode or restore the original setting etc.

## 2.10 Dimension & Weight

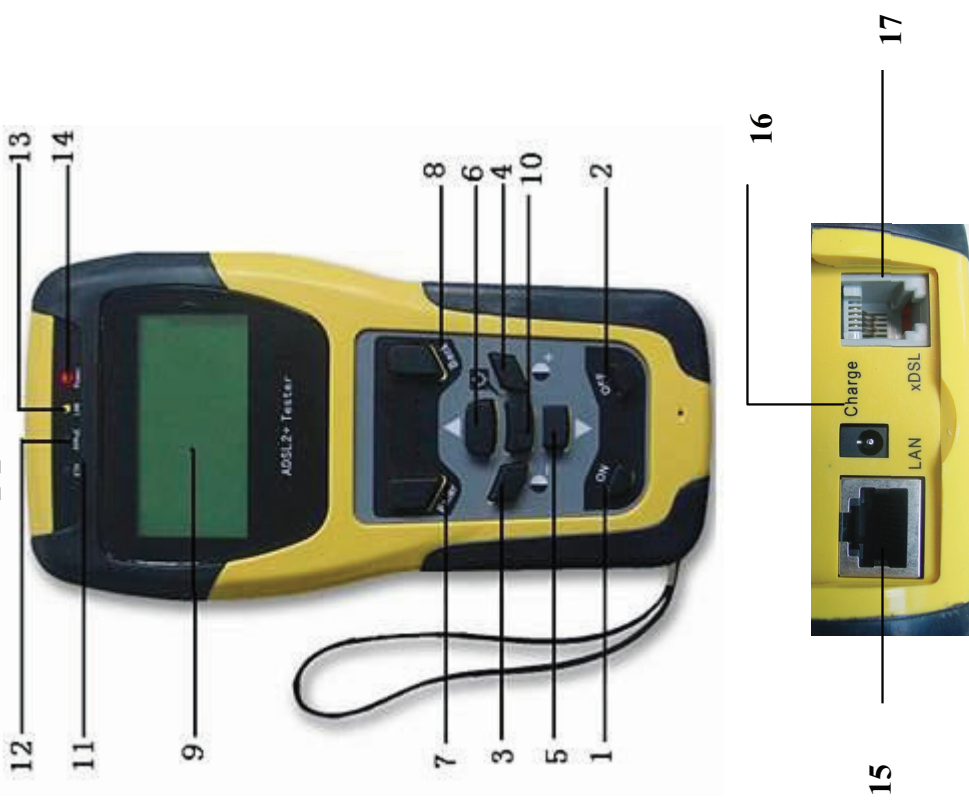
Dimension (mm): 180 × 93 × 48

Weight: < 500g

## 2.11 Operation environment

- a) Temperature: 0 °C ~ +50 °C
- b) Humidity: ≤ 85%
- c) Pressure: 86kPa ~ 106kPa
- d) Power supply: The rechargeable lithium batteries  
2800mAh, DC8.4V charger
- e) Battery duration: > 4.5 hours

## 3. Structure & Appearance



1. ON button
2. OFF button
3. Left button
4. Right button
5. Down button
6. Up button

- 7. Enter button
- 8. Back button
- 9. LCD
- 10. Backlight button
- 11. Ethernet LED
- 12. PPP LED
- 13. Link LED
- 14. Power LED
- 15. LAN Port (RJ45)
- 16. Charge Port
- 17. xDSL Port(RJ11)

#### LED introduction

**ETH LED:** Shining - Ethernet link in normal condition.

Flicker - There is data flux in Ethernet.

**Link LED:** LED flicker slowly - finding central office,

LED flicker rapidly - xDSL Modem is doing the xDSL handing;

Shining - Link connected and work normally.

**PPP LED:** Shinning - successful PPPoE dialing or PPPoA dialing;

## 4. Precautions

- For the first time use, please make sure that the battery is fully charged before initiating machine. (refer to 5.14 item)
- If there is any abnormal phenomenon during operation, please restart the instrument.
- To ensure the normal operation, please press the operation buttons for 0.5 second until you hear the tone.
- The test result will be affected if the user terminal is in use when testing. Please disconnect the user terminal before make a test.
- Please confirm username, password, VPI/VCI and PAP/CHAP before making PPP dialing.

- If there is ▲ or ▼ on screen, please operate as it indicates.

## 5. Operation introduction

### 5.1 Turn on the tester

Pressing “ON” button for 1 second, the power LED will shine. After hearing “Di...” sound, the LCD will display the main menu that means the tester has been started, the PIC.1 as follows:

XDSL Test	DMM test	■
Dial Test	LAN Ping	
View Data	Modem Emu	
Sys Set	Upload	

Pic.1

### 5.2 Turn off the tester

- When ST332B is in normal working mode, press “OFF” button to turn off the tester step by step.
- Press “OFF” button last a long time about 4 or 5 seconds, you also can switch of the tester obliged.
- When the battery is in low voltage, it will power off automatically.
- If there is no any operation of the tester for 8 minutes, ST332B will power off automatically.

### 5.3 Adjust LCD contrast

When the tester is “ON”, users can enter into “Sys set” interface, then enter “Regular setting”, through the “Up” button and



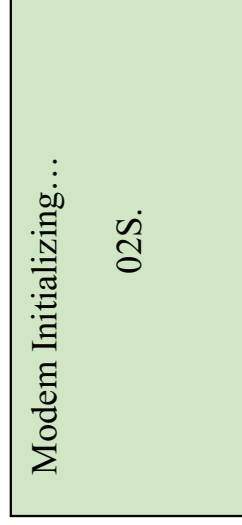
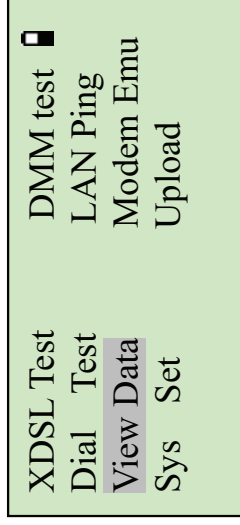
“Down” button adjust the contrast of LCD.

## 5.4 Backlight function

During the operation, the operator can press “Backlight” button to turn on or turn off the backlight. In normal condition if there is no any operation on keyboard after 15 seconds, the tester will shut off automatically.

## 5.5 Initiate modem

After power on, the tester will enter into the main menu, see Pic. as follows. Press “Enter” to perform xDSL Test. Firstly, the tester will initialize the Modem. If the modem initialization fails, the system will make the Modem reposition, if also failed, the tester will back to the main menu.

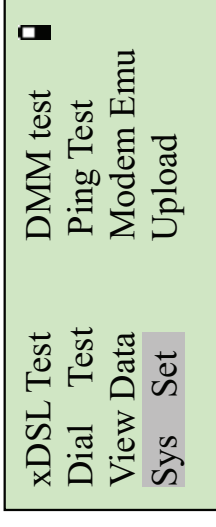


Pic.2

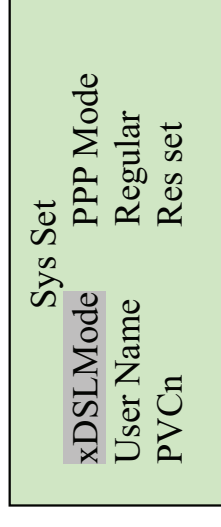
## 5.6 System setting

In main menu, please move the cursor to the **Sys Set** (system setting in Pic.3) item by pressing ▲ or ▼ according to

indication. And press the “Enter” button to display Modem setting parameters. (Pic.4)

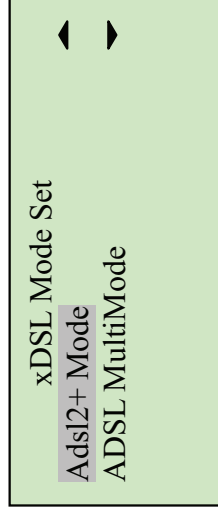


Pic.3



Pic.4

### 5.6.1 xDSL mode setting



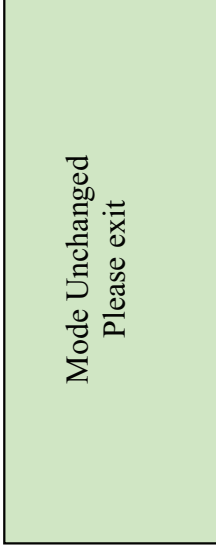
Pic.5

If it is the first time to enter xDSL mode set window, the selected item is current xDSL mode setting as Pic.5 shows, the current Modem collocation is **Adsl2+ Mode**. If the selected one is Multi mode it means the current Modem collocation is ADSL Multimode.

Adsl2+ Auto: If selected, it the Modem will be in the ADSL2+ self-adapting mode

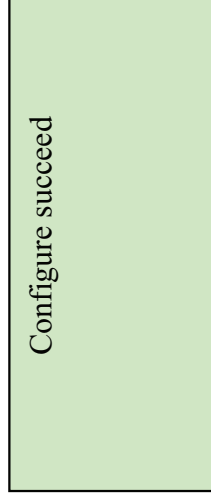
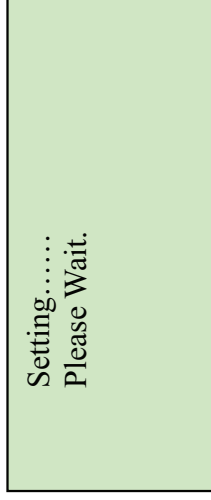
Multi: If selected, the Modem will be set in ADSL mode

In the Pic.5, according to the indication, you can move the cursor to the item you want to set pressing ▲ or ▼. Press “Enter” button, then the setting information will be displayed on the screen. If there is nothing to change, press “Enter” button and the tester will display the following as Pic.6



Pic.6

If the mode is revised, press “Enter” button, and the tester will display the follows.

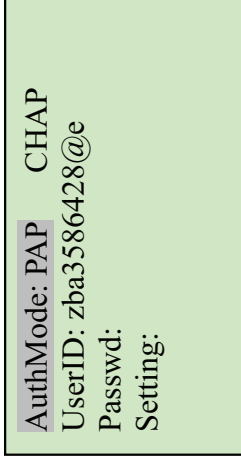


Pic.7

## 5.6.2 Username modification

In the following Pic.4, move the cursor into “Username”, press “Enter” to enter into the modification interface. The length

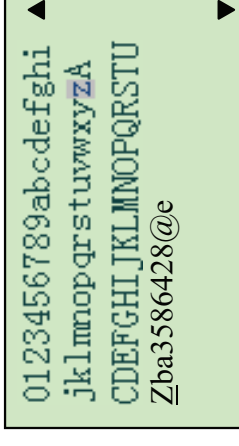
username is 1-49, the length of password is 0-49.



Pic.8

### A “Keyboard” appears

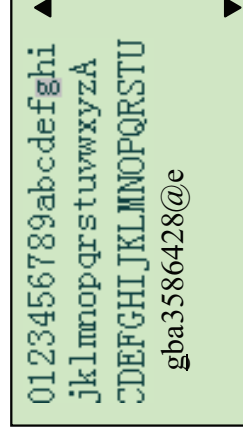
Move the cursor into “UserID”, Press “Enter”, the keyboard comes out in the screen.



Pic.9

### B. Modify characters

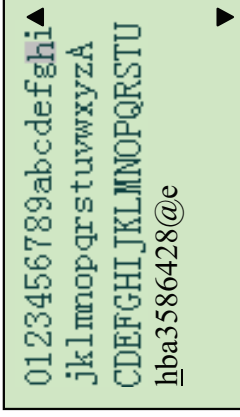
Press ▲ or ▼, the characters moves in the screen, the following Pic. will be displayed:



Pic.10

Based on Pic.10, press “Right” button, the character will move into the next character, users can use same method to modify the next character.  
Pic. as follows:

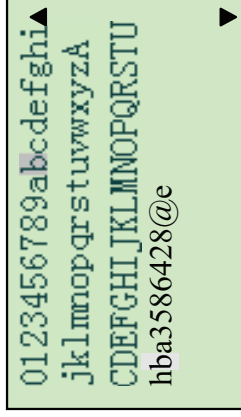




Pic.11

### C. Modify the next character

Based on the previous operation, press “Enter” for a little while,, then users can modify the next character.



Pic.12

### D. Exit the modifications of characters

Press “Cancel” for more than 1.5s, the modification of user ID is completed.

#### Input the password:

Move the cursor into “Passwd”, modify the password through the same method as the userID modification.

#### AuthMode:

Choose the “PAP” or “CHAP” by moving the cursor.

PAP (Password Authentication Protocol)

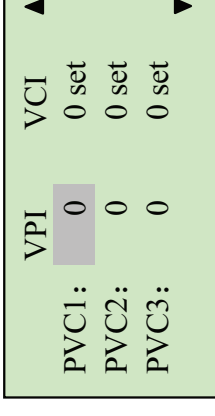
CHAP (Challenge Handshake Authentication Protocol)

#### Save the modification:

After all the modification completed, press “Enter”, the tester will display “changing...please wait”. When the notification vanishes, the final setting will be completed.

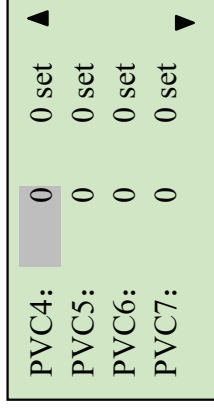
## 5.6.3 VPI/VCI modification

In the Sys Setup menu (Pic.4), move the cursor into “PVCn”, and then press “Enter” button to enter into VPI VCI modification interface as shown in Pic.13:



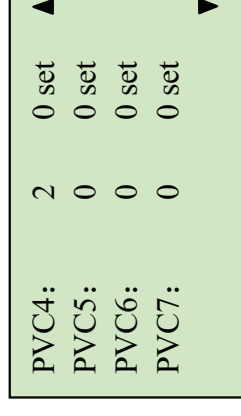
Pic.13

Open the Pic.14 by “Up”, “Down”, “Left”, “Right”:



Pic.14

**VPI modification:** In Pic.14, press “Enter” to modify the VPI number, Press “Up”, “Down”, the following Pic. will be displayed:



Pic.15

Press “Left” button, we can modify the “0” into “0~9”

PVC4:	02	0	set	▲
PVC5:	0	0	set	
PVC6:	0	0	set	
PVC7:	0	0	set	▼

Pic.16

The following Pic. is the result of the modification

PVC4:	12	0	set	▲
PVC5:	0	0	set	
PVC6:	0	0	set	
PVC7:	0	0	set	▼

Pic.17

**Exit the VPI modification:** Press back, users can exit the VPI modification, the following Pic. will be displayed in the screen:

PVC4:	12	0	set	▲
PVC5:	0	0	set	
PVC6:	0	0	set	
PVC7:	0	0	set	▼

Pic.18

**Save VPI:**

After a group of VPI VCI parameters modification, press “Left” or “Right” button, the cursor will move to “Set”, press “Enter”, after 4-7s, the data will be saved in the Modem.

PVC4:	12	0	set	▲
PVC5:	6	0	set	
PVC6:	35	0	set	
PVC7:	0	0	set	▼

Pic.19

#### 5.6.4 Choose PPP mode

PPP Mode
PPPoE PPPoA

Pic.20

Move the cursor into “PPP Mode”, Press “Enter” to choose the suitable Dial Mode.

#### 5.6.5 Regular setting

In the Sys Setup menu (Pic.4), move the cursor to “Regular”, then press “Enter” button to enter into the regular setting interface.

Auto	Off	08m
Bklt	Time	15S
Key	Tone	Open
Contrast		20

Pic.21

**Backlight time set:**

The default time of backlight is 15S. If users want to change the time, they can change it in this interface. The utmost length is 99s.

In the Pic.21, press “Enter”, users can change the time length by

“Up” or “Down”, The number will moves from 5~99:

Auot Off	08m
Bklt Time	15S
Key Tone	Open
Contrast	20

Pic.22

Press “Enter”, the backlight time will be set.

**Key Tone set:** Move the cursor into “Key Tone” by “Down” button, Pic. as follows:

Auot Off	08m
Bklt time	15S
Key Tone	Open
Contrast	20

Pic.23

#### Turn off the Key Tone:

In the Pic.23, press “Up” or “Down”, the “ON” will change into “OFF”, Pic. as follows:

Auoto Off	08m
Bklt time	15S
Key Tone	Shut
Contrast	20

Pic.24

#### Adjust the contrast:

In the Pic.2, press “Up” or “Down”, the cursor will move to “Contrast”, Pic. as follows:

Auot Off	08m
Bklt time	15S
Key Tone	Shut
Contrast	20

Pic.25

Press “Enter”, change the number “20” by “Up” or “Down”, Pic. as follows:

Auoto Off	8m
Bklt time	15S
Key Tone	Shut
Contrast	21

Pic.26

Press “Back”, users can back to the upper menu.

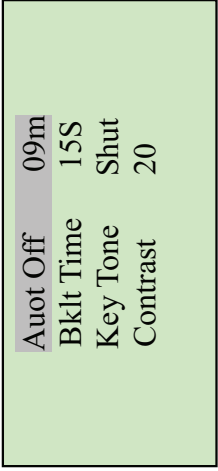
#### 5.6.6 Auto off time length set

In the Pic.21, move the cursor to “Auto off” by button, Pic. as follows:

Auot Off	08m
Bklt Time	15S
Key Tone	Shut
Contrast	20

Pic.27

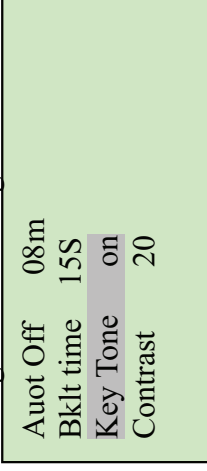
In the Pic.27, press “Enter”, users can change the time by “Up” and “Down”



Pic.28

### 5.6.7 Restore setting

In the Sys Setup menu (Pic.4), press “Up”, “Down” to move the cursor to “Res Set”, then press “enter”, there will be “Are you sure to restore factory setting?” press “Enter”, then the LCD will display manufacturing default settings as shown in Pic.29

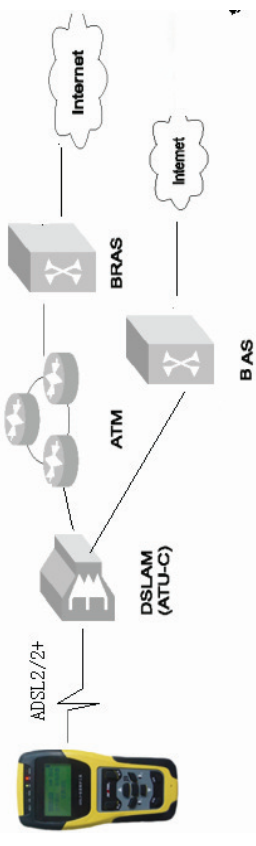


Pic.29

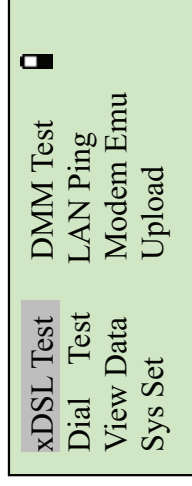
**⚠ Notice:** All the parameters in Modem restore to the factory original setting.

### 5.7 xDSL test

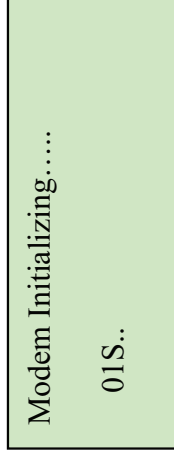
xDSL test also called physical layer test, for testing the physical parameters of xDSL lines, including the current state, link mode, up / down rate, the max rate, the capacitance, noise margin, the power attenuation, power output, CRC errors, HEC error, FEC error, LOS error, NCD error, exam time and channel bit chart. The details refer to the following picture.



Press ▲ or ▼ to move the cursor to the **xDSL Test** option and press **Enter** button to enter the xDSL test window as shown in Pic.31

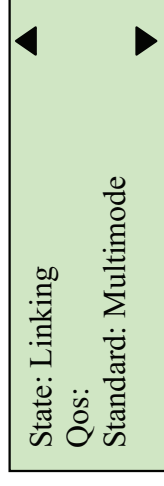


Pic.30



Pic.31

In this interface, press the “Cancel” button, you can withdraw from the xDSL test and return to the main menu (Pic30). Tester entered the initial stage of Modem, then entered second initialization times, if initialization still failed, LCD display “initialization Modem failed, enter the menu?” you can return to the main menu interface by pressing “conform” or “Cancel”

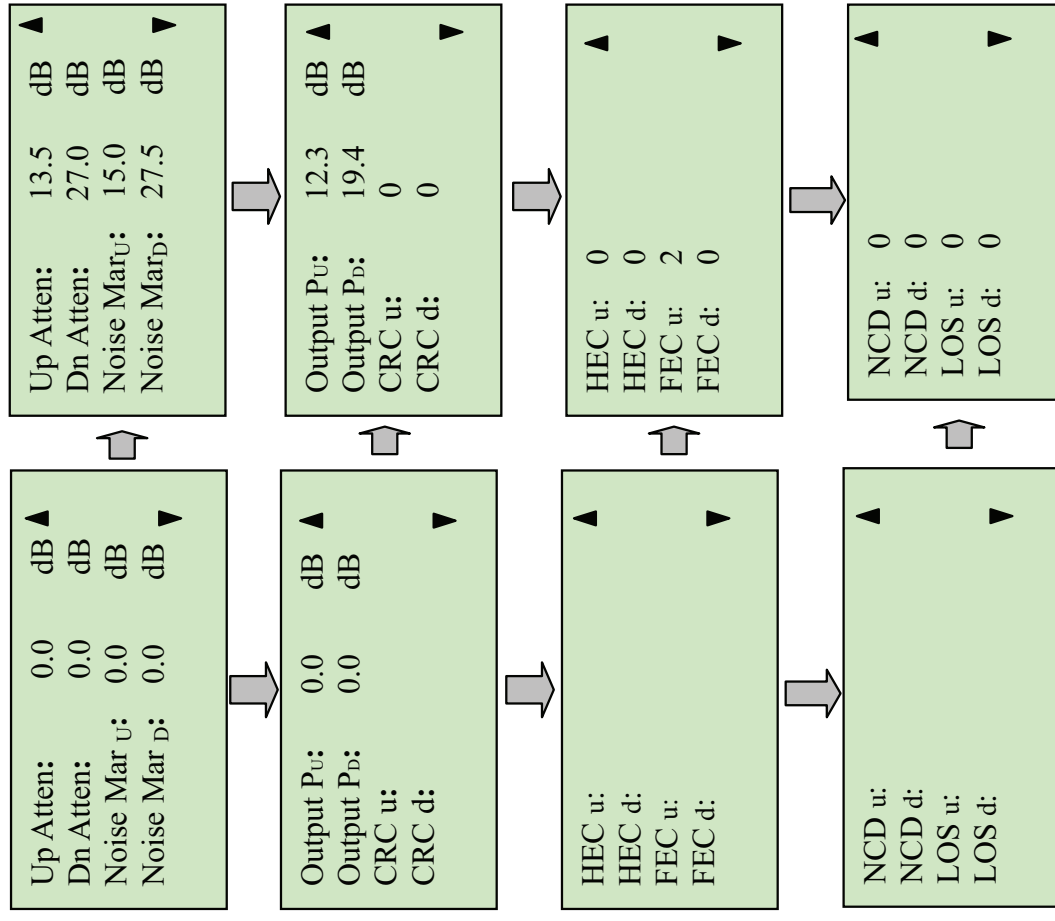
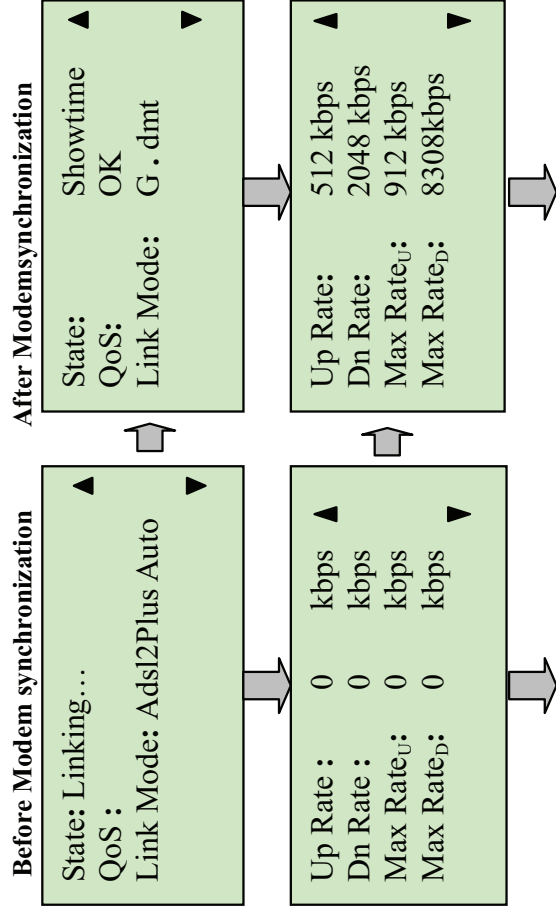


button, as shown in Pic31. If the initialization Modem has repeatedly failed to initialize, please contact your dealer for after-sale maintenance, to ensure the normal using.

### 5.7.1 Physical layer parameter test

In xDSL test window you could browse many parameters by pressing ▲ or ▼ according to the indication. The parameters include current state (State), Quality of Service (QoS), Link mode, up/down stream rate (Up/Dn rate), up/down max rate, up/down attenuation(Up/Dn Atten), up/down noise margin(NoiseMar) and up/down output power(Output P<sub>UD</sub>). Please refer to Pic.12. The parameters are divided into 2 groups. Bars on left show the parameters before synchronization while bars on right the parameters after synchronization.

Fitful LNK LED shinning - Modem is not in synchronization and current state is “connecting”.  
 Steady LNK LED shinning - Modem is synchronizing and current state is “connected”.



Pic.32

**Link mode:** ADI mode of ADSL;  
**ADI:** ADSL G.DMT mode, ITU-T G992.1 standard compliance;  
**G.DMT:** ADSL G.LITE mode, ITU-T G992.2 standard compliance;

**T1.413:** ADSL T1.413 mode, ANSI T1.413 issue1 & Issue 2 standard compliance.

**G.DMT.BIS:** ADSL2 G.DMT.BIT mode, ITU-T G992.3 standard compliance;

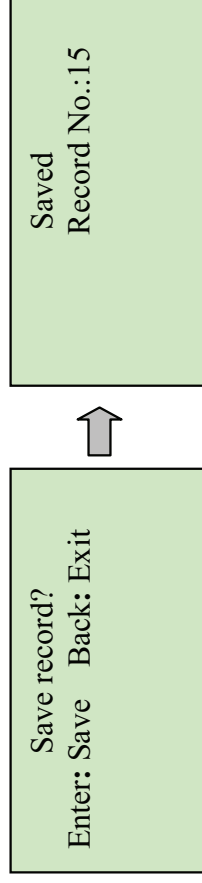
**G.DMT.BISPLUS:**ADSL2+ G.DMT.BISPLUS mode, ITU-T G992.5 standard compliance.

**ADSL2/2+:** ADSL2+G.dmt.bisplus mode, ITU-T G992.5 compliance.

**Service quality:** ST332B has 4 levels to show the service quality, that is, to show whether the line is fit for xDSL service and evaluate current service quality. They are: **Excellent, Good, OK and Poor.**

### 5.7.2 Save test records

In Pic.13, please click “Back” button to return main menu if Modem is not in synchronization. If the modem has been in synchronization and ST332B will display following content.



Pic.33

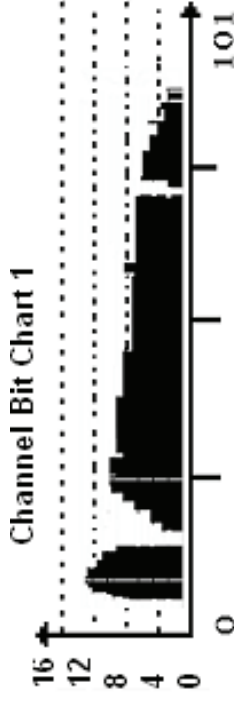
Press “Back” button to refuse to save record and return main menu; While press “Enter” button to save record and its record number will be displayed as the right bar shows (Pic.33).

Additionally ST332B has a memory capacity of 50 records. Once a record is saved, the record No. will increase by one

automatically. When the user tries to save 51<sup>th</sup> record into ST332B, the first record will be overlapped.

### 5.7.3 Display bit chart

In the window of Pic.12, press ▼ button, if the modem isn't synchronized, then there will not be any graph.



Pic.34

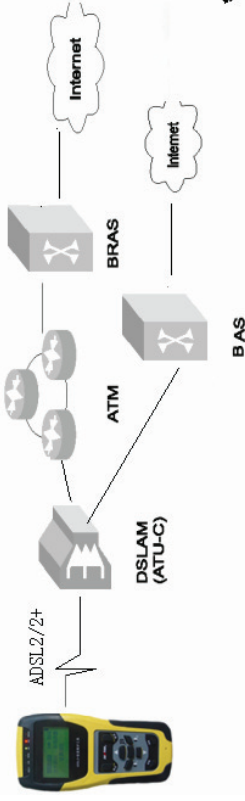
Press ▼ Button, the bit chart with first 102 channels will be displayed, and then next until all 512 channels are displayed; press “Back” button to return to the main menu. The number of channel bit chart will be different due to the difference of user line.

### 5.8 Dial test

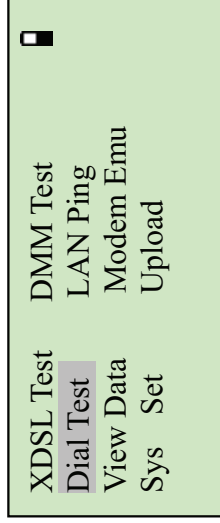
Function introduction: PPP (Point-to-Point Protocol) designing, is aimed to establish Point-to-Point data-transport by dialing or special line. It has become a common solution scheme between the host, bridge and router. PPP link process: Stage 1: Creating a PPP link; Stage 2: user authentication; stage3: Recall network layer protocol. Using Ethernet (Ethernet) resources, carrying out PPP protocol on Ethernet to test a user authentication method, called PPPoE. PPPoE is to protect the user's Ethernet resources, and achieve the requirements for ADSL link; it is the most extensive technical standards in application ADSL.



Uniformity, running PPP protocol on the ATM (Asynchronous Transfer Mode) to manage user authentication, called PPPoA, it is as the same as PPPoE in principle and function, but difference is that PPPoA run on ATM internet, the PPPoE work on Ethernet, so it should be suit for ATM stander and Ethernet. Physical linking refers to the following Picture.

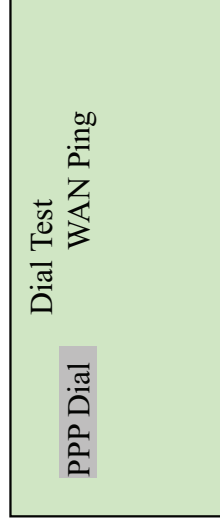


In main menu (Pic.2), press ▲ or ▼ to select **Dial Test** option.



Pic.35p

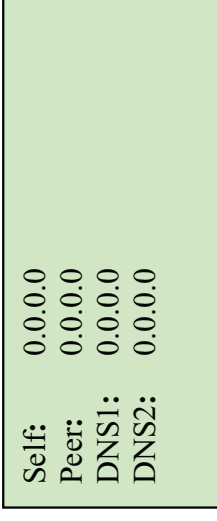
Press “Enter” button and Pic.36 will appears:.



Pic.36

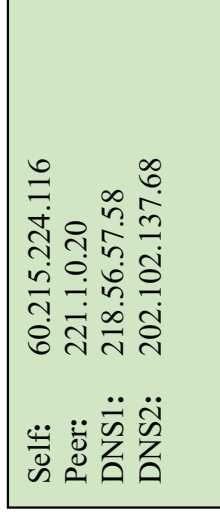
### 5.8.1 PPP dial

Press “Enter” button. The following Pic.37 will be displayed:



Pic.37

Press “Back” button to return the upper menu. If dialing is successful, the LCD will display dialing result (Pic.38).



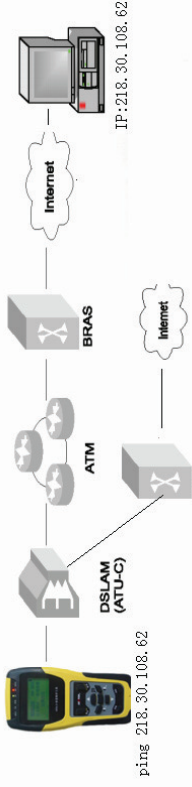
Pic.38

Now you could browse the dialing information by pressing ▲ or ▼ (Pic.18). And you could also press “Back” button to return upper menu.

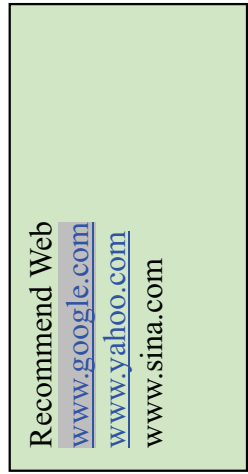
- Self: Self IP Address;
- Peer: Remote IP Address;
- DNS1: Primary DNS Server address;
- DNS2: Secondary DNS Server address.

### 5.8.2 WAN ping

Linking frame refers to the following picture:

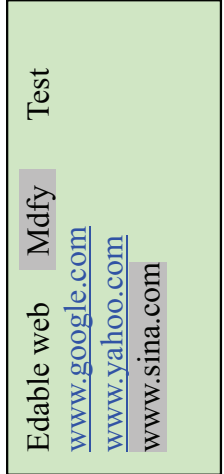


Move the cursor to “WAN Ping”, Press “Enter”, the following Pic. will be displayed.



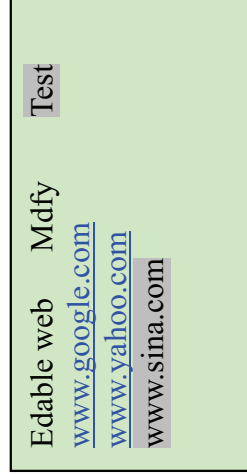
Pic.39

Move the cursor to the third item, the screen will display “Mdfy” “Test”



Pic.40

Move the cursor to “Test” by button



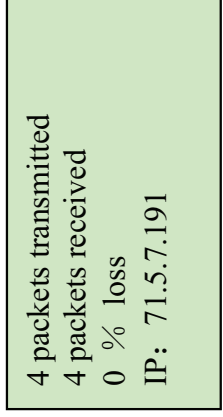
Pic.41

**Modify the web:**

In the above Pic., press “Enter” to enter into the characters modification interface. The modify method is the same as 5.6.2: UserName and password modification.

**WAN ping:**

In the above Pic., “Testing, please wait” will be displayed in the screen, after about 8s the test result will come out as follows:



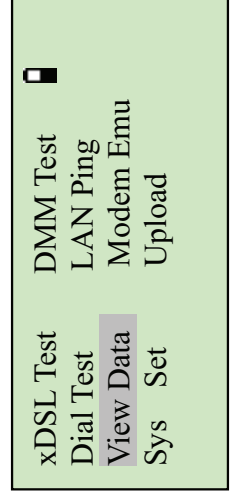
Pic.42

If the Dial is failure, when perform Ping Test, there will be “Please make sure PPP Dial succeeds, or the web is correct, and then do Ping Test”.

Sometimes the PPP Dial succeeds, but the screen display “Test failure, please retest”. This is caused by the serial port data unstable; users can operate the tester according to the note.

**5.9 View data**

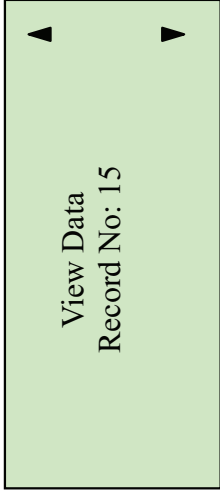
In main menu (Pic.2), move cursor to the **View Data** option by pressing ▲ or ▼, please refer to following Pic.:



Pic.43

Press “Enter” button and the LCD will display the picture as

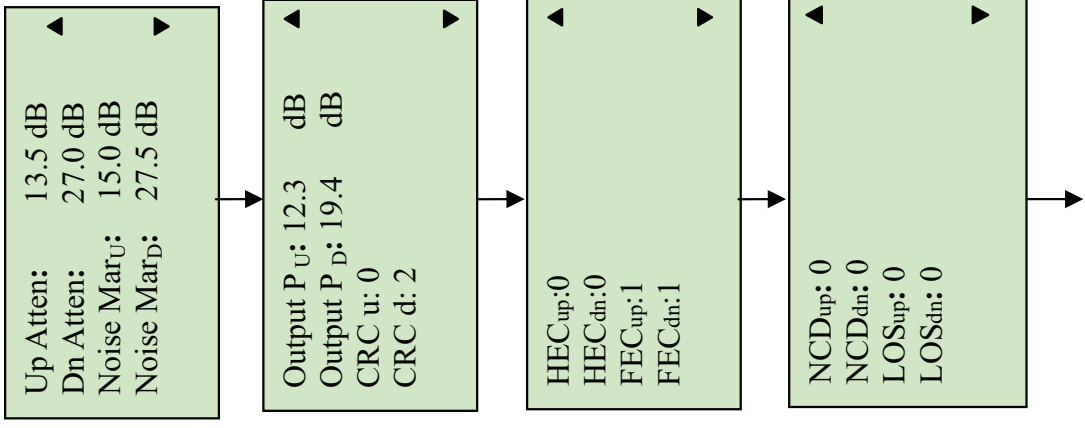
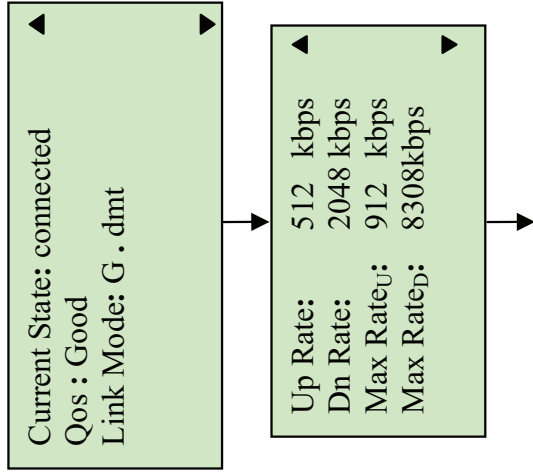
follows.

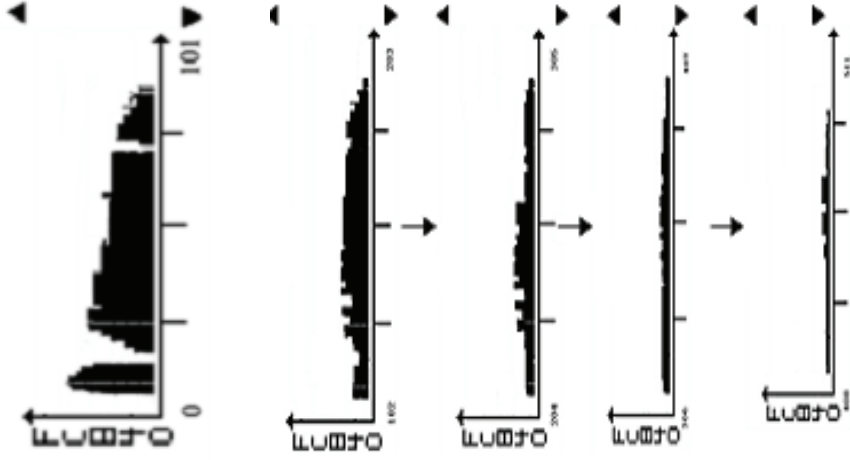


Pic.44

Now the selected record No. is the newest record number. If you want to read record please press "Enter" button. In the record you could view current state, service quality, connection mode, up/down streams rate, up/down max rate, up/down attenuation, up/down noise margin and up/down output power and error test by pressing ▲ or ▼ (Pic.25)

In Pic.44 window, the user could select the other record number by pressing ▲ or ▼ . After that, please press "Enter" button to browse the selected record.





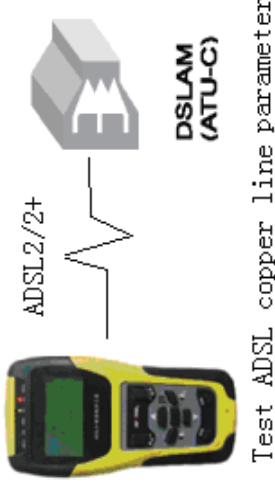
Pic.45

Please press “Back” button to stop browsing and return the main menu.

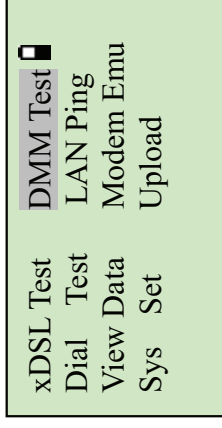
### 5.10 DMM test

Built-in digital multimeter can test the DC and AC voltage, resistance, capacitance, insulation resistance parameters.

Maintenance personnel can use these functions to test if there is danger voltage, or the existence of 48 V voltages on the telephone line. As the following Pictures:

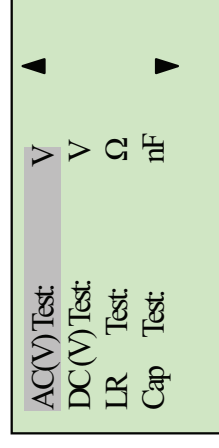


In the main menu, move the cursor to the DMM Test by “Up”, “Down”, “Left” and “Right” button as Pic.46 shows:



Pic.46

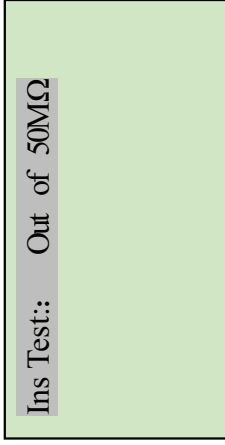
After click the “Enter” button, the LCD will display the following as Pic.47 shows.



Pic.47

Now the as Pic.47 shows, the AC currency is measured, and the value will be refurbished every 0.5 second, In addition to testing AC voltage, if the lines have more than two volts of alternating

current on it, the tester will prompt, this means can not do the tests.. You can see the next page by the movement of ▲ or ▼.



Pic.48

Then press “OK” button to begin testing insulation, the screen will display the screen shown in picture 48. Press “OK” button to confirm data measurement. In AC voltage, DC voltage, resistance test, it is automatic test. For other items, please press “OK” button to confirm the test.

While withdrawing from the DMM test, if the line voltage is higher than safe voltage, in order to protect circuits, tester is not allowed to withdraw from DMM test, there will be “larger than the online voltage safe voltage, can not withdraw from the DMM test” tips. Only the elimination of voltage or line voltage is less than the security voltage can be returned to the main interface. Usually, to withdraw from the DMM test is to remove the test line. “Safe voltage”: DC to 80 V, AC to 50 V, between AC50V to AC80V is a critical state, sometimes can directly withdraw from DMM test, and sometimes can not. But if the voltage is more than 80 V, can not withdraw from DMM test.

### 5.10.1 DC voltage test

Use the voltage test, can test the exist of the signal. For ordinary telephone services bundled in the xDSL lines, if the line voltage is low or 0 V, means the line can not use or have bad insulation, short circuit or open circuit, need to check the line. In this test, the DC voltage range is -400 V ~ +400 V. When beyond the range of testing, the equipment will be prompted to “out of range”.

### 5.10.2 AC voltage test

Use AC voltage test, to test the high-voltage alternating current in the lines, to protect the lineman, If the high-voltage alternating current exist, please remove the test nips carefully to avoid electric shock.

The test is limited to the AC voltage test range of 0 ~ 290 V. When test beyond this range, the equipment will be prompted to “out of range”.

### 5.10.3 Resistance test

Use resistance test function can determine the length of cable. Conversely, if you know the length of the cable, the resistance test result will show whether the cable connection is good or not.

Calculation formula:

$$L = RL / RO \text{ (Km)} \text{-----} \textcircled{1}$$

①: RL is resistance measurements result ( $\Omega$ ), RO is the resistance ( $\Omega$ ) per kilometer.

General specifications for the 0.32 mm of copper RO = 435.2  $\Omega$ , specifications for the 0.4 mm copper RO = 278.5  $\Omega$ , specifications for the 0.5 mm copper RO = 178.3  $\Omega$ .

If the course of testing equipment tips “out of range” which shows test nips not connected or cable not looped or , or out of resistance range, please check the test nips or retest after loop the cable again.

In the test, if the line exist voltage (voltage more than 2V), the tester will prompt “voltage!” means this line have electricity , can not test the resistance. Please check the lines and test after cutting the electricity.

### 5.10.4 Capacitance test

Use of capacitance test function can determine the length of lines. If there is no bridge tap or waterish logged, we can get the length from the test result of the capacitance.

Calculation formula:

$$L = \text{Cab} / \text{CO (Km)} \text{ ----- ②}$$

②: Cab for capacitance test result (nF), CO capacitance result (nF) per kilometer.

Commonly use telephone cable capacitance per kilometer: CO = 51nF.

If the tester prompts “out of range”, that means capacitance out of range or the cable have faults, please re-test after checking the lines.

Conducting this test, if the lines have voltage (voltage more than 2 V), the tester will prompt “voltage!”, and then return to the test menu. This means the line have electricity and can not test the capacitance, please check the line and retest after cutting the electricity.

### 5.10.5 Insulation test

Insulation test can test the insulation status of the line. If the insulation resistance value is small, means the insulation is bad, this will the make quality of the transmission very bad, need to repair. General for ADSL lines, insulation resistance value should be more than 10 MΩ.

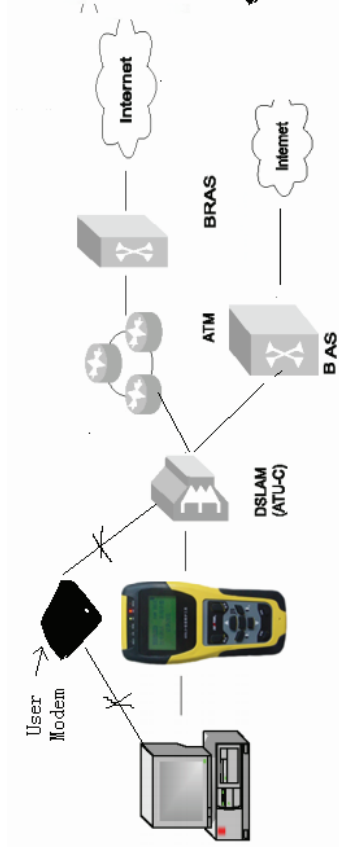
In this test, if the line have voltage (voltage more than 2 V), Tester will prompt “voltage!” This means the line have electricity and can not test the insulation, please check the line and retest after cutting the electricity. If the line resistance out of value range, the tester will show “Out of 50MΩ”, that means the insulation is good.

**⚠ Notice: When testing insulation, tester will bring a 100V’s voltage, please operate it very carefully and do not touch the test nips by hand!**

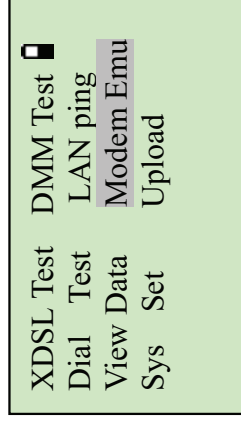
## 5.11 Modem emulation

Function Introduction: If the Ethernet can not be connected,

firstly, we should test the Modem is good or not. We can use tester replace the user’s Modem. As the following picture:

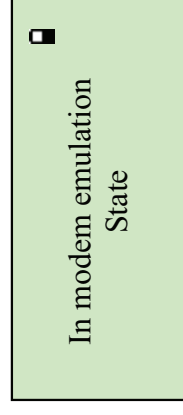


In the main menu (Pic.49), moves the cursor to the **Modem Emu** by “Up”, “Down”, “Left” and “Right” button as Pic.49 shows:



Pic.49

Then press “OK” button, tester will display “Setting...Please wait”, after 4 seconds the tester will display “In Modem emulation state”:



Pic.50

When ST332B is in operation, it could be used as xDSL Modem. And user could make dialing or logon the Internet by ST332B to

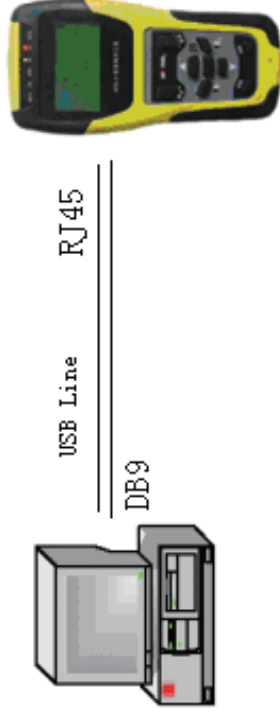


see if there is any fault in user Modem.

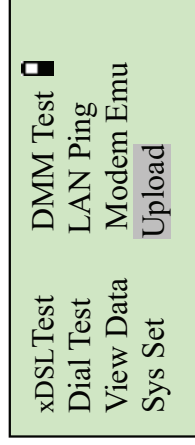
During Modem emulation the ST332B works under RFC1483 Bridge mode.

### 5.12 Data upload

Data line connection as following:

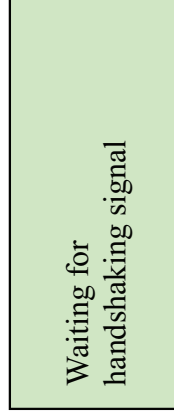


In the main menu (Pic.49), moves the cursor to the Upload by “Up”, “Down”, “Left” and “Right” button as Pic.51 shows:



Pic.51

Then press “OK” button, tester will display “Waiting for handshaking signal”

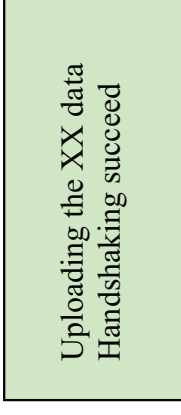


Pic.52

#### Data line connection:

Now connect the RJ45 point on the “data line” to the LAN port, another point connect to the computer.

Open management software, switch to upload interface, click “receive data” button, then the tester will quickly display “Uploading the XX data”, as shown in Pic.53:

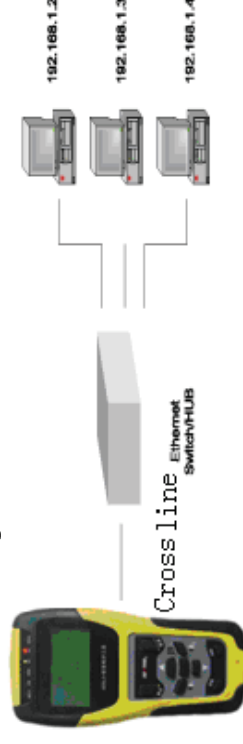


Pic.53

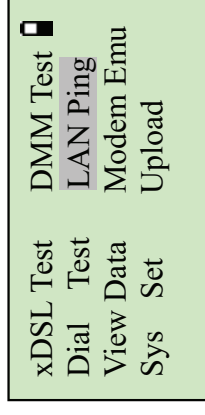
After uploading, the test will display “upload succeed”, and enter into o upload interface again. After successful data uploading, through management software can do the data analysis, static display each set of data.

### 5.13 LAN ping test

Connection frame picture:

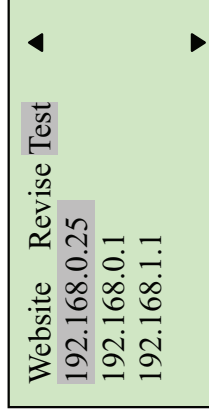


In the main menu (Pic.49), moves the cursor to the LAN Ping by “Up”, “Down”, “Left” and “Right” button as Pic.54 shows:



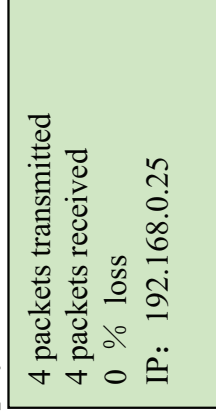
Pic.54

Then press “OK”, tester will display Pic.55:



Pic.55

Press “OK” button, tester will display “Testing, please wait”, test result will be displayed after 8 seconds, as Pic.56 shows:



Pic.56

The address in Pic.55 is fixed, can not be changed. If you want to enter the IP address, operate through “Up” or “Down” button, the first line tips shows the status of the current site: can be modified or fixed address. Pic.55 shows that the current site can be modified, press “Left” or “Right” button on Pic.55 can revise URL, character modification method see 5.6.2 user name/ password revise.

(1) LAN PING test → LAN ping PING tests conducted on the LAN, according to data loss rate, judge the connection of the pinging IP address, judge the effectiveness of IP address, to confirm LAN connection (In the absence of computer).

Connect the LAN port and Ethernet port on the hub through network test line (direct line). If connect with the computer need

to use a cross-test line.

(2) WAN PING test → WAN ping WAN ping operations please see the dial-up test. Connect the ADSL port to the ADSL line to do the Wan ping test. Ping a website IP to the WAN direction to check WAN connectivity links.

## 5.14 Charge battery

The tester has a chargeable 2800mAh Li-polymer battery. After starting the tester the battery capacity will be shown in the top right corner of LCD. When the battery symbol is empty please charge it in time, otherwise the tester will display “Switch off after one minute as low voltage”

Charge method: Insert the charger into the charge jacket which is on the top. Then connect charger with 220V AC power socket. If the LED on charger is shining and red it means that the tester is being charged. And charge time is 6~7 hours or so. If the LED turns green from red it means that the battery is fully charged. Please take off the charger.

To ensure to get correct results and protect tester please don't operate the tester when being charged.

## 6. Faults and solutions

Faults	Reasons	Solutions	Notes
Nothing displayed after powering on tester.	LCD contract is not proper.	Adjust contrast	Refer to 5.3.
Link LED and PPP LED are in abnormal condition.	Low voltage.	Charge battery.	
PPP dialing failed.	Wrong username or password	Input correct username or password.	
PPP dialing failed with correct username and password	Parameters abnormal on the modem register	Enter into the Sys set, restore factory settings	

## 7. xDSL test management software

xDSL test management software is the management software of ST332B, read real-time data , parameter setting, read and save the record and record analyze functions to help you conveniently and efficiently use this tester.

### 7.1 Operation environment

We need a PC with port a RS232 connection cable.

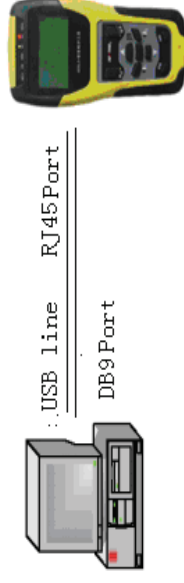
Recommended configuration of the PC:

CPU: More than 1G Memory: More than 512Mb

HD: More than 20G Port: One

Operating system: Windows XP

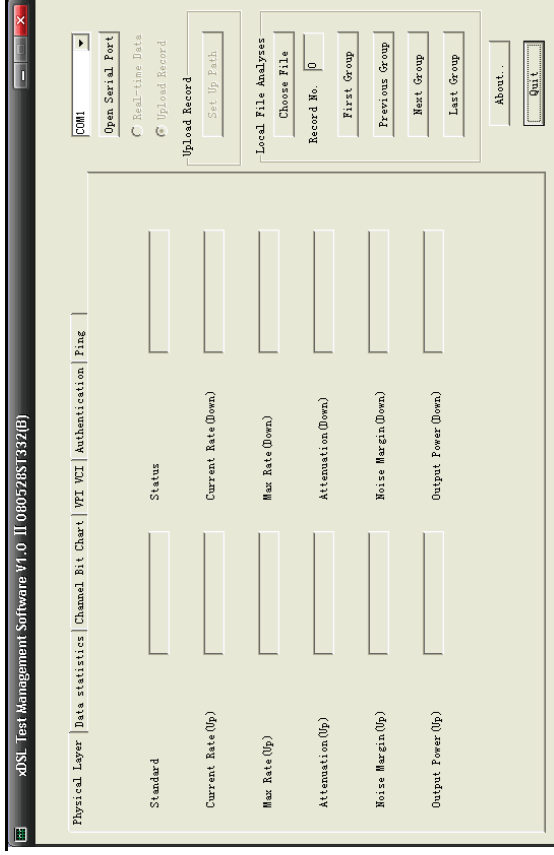
Connecting: Put the DB9 outlet on the RS232 line into the port on the PC, RJ45 insert to the LAN port.



**⚠ Note: The tester should be in “Data upload” state!**

### 7.2 Software features

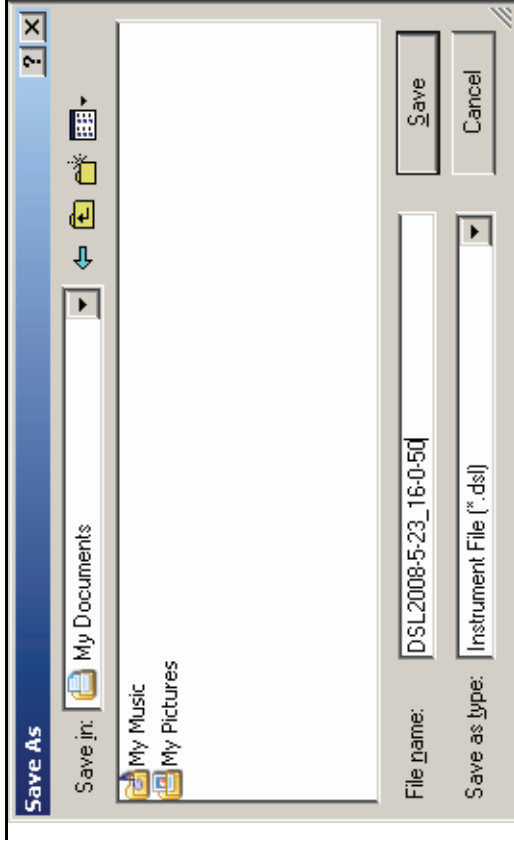
After connecting with the port, software will display the physical layer, data statistics, channel bit chart, VCI VPI, authentication, may revise the VCI VPI, authentication information, ping destination address. Instruments will be read in the records and documents stored in the form of local and analysis the records.



Pic.57 Main menu

### 7.3 Records upload

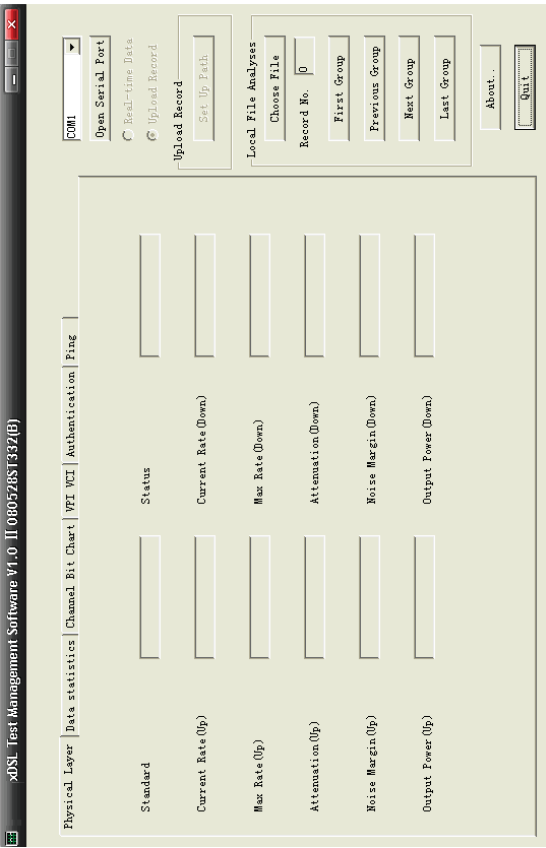
Choose the port you connected, click “Open Serial Port”, then the connection will be successful. Choose “Upload Record”, then click “Set up Path” to enter into the save record window, enter (the default for the current date DSL - year - month - date - hour - minute - second, Make sure the file extension is .dsl), click on “Save” button to upload records. “Upload success” will display after upload.



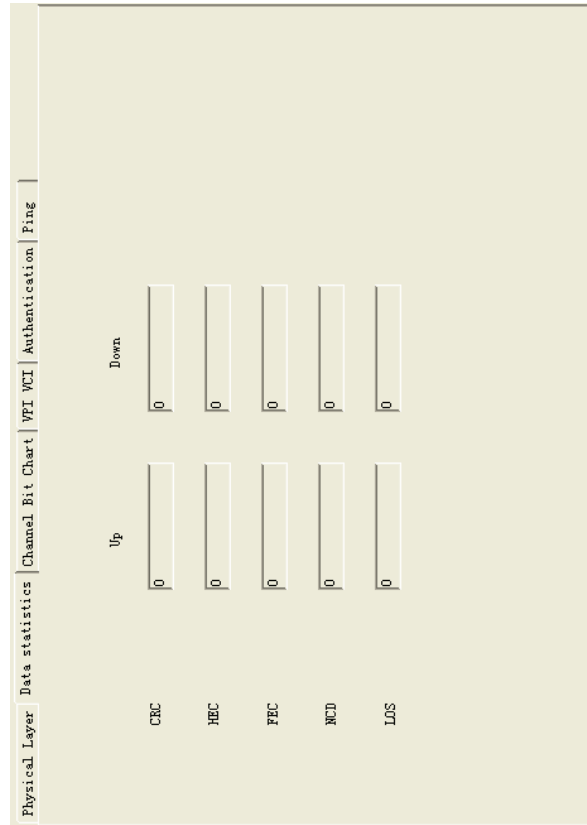
Pic.58 Save record

### 7.4 Real-time data

Click Real-time data will display the current data. Click properties page button to view different data.



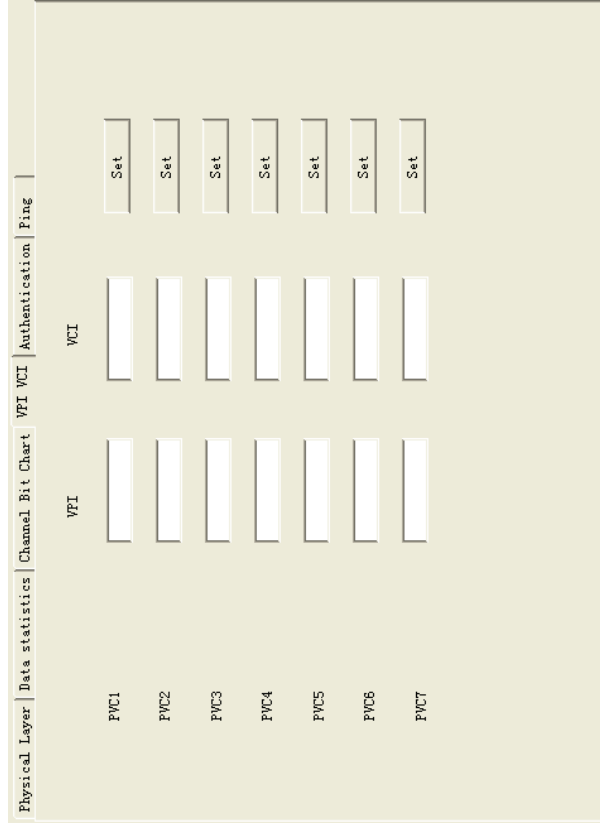
Pic.59 Physical layer



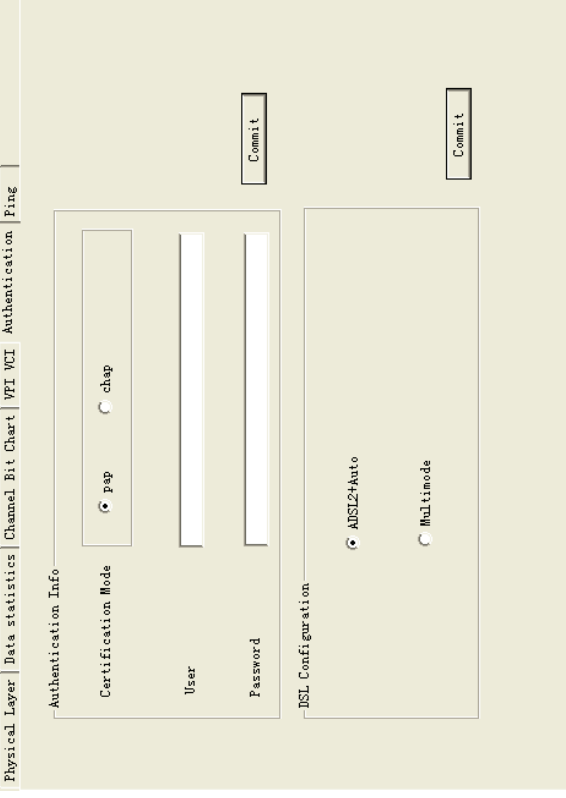
Pic.60 Data statistics



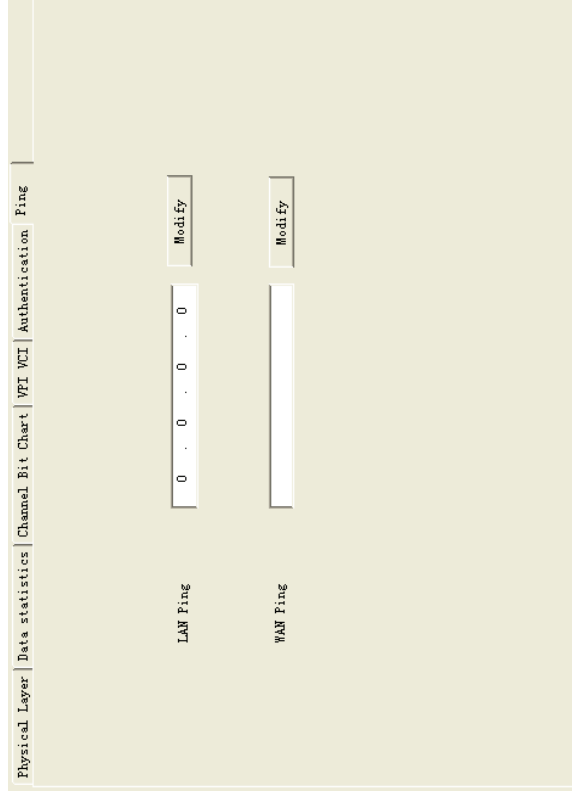
Pic.61 Channel bit chart



Pic.62 VPI VCI



Pic.63 Authentication




Pic.64 Ping

## 7.5 Parameter revise

Choose “Real-time Data”, click relevant page to revise the data

### 7.5.1 VPI VCI revise

Click VPI VCI page, revise the data after the software displayed the data (  Notice : There can not be 2 exactly same data in the 7 groups), click relevant “set” button, revise succeed after display “Save PVC successful”, See Pic.62 .

### 7.5.2 Authentication revise

Click authentication revise page, revise the data after the software displayed the saved data, then click “commit” button, after successfully revise the DSL setting, please restart the tester. See Pic.63.

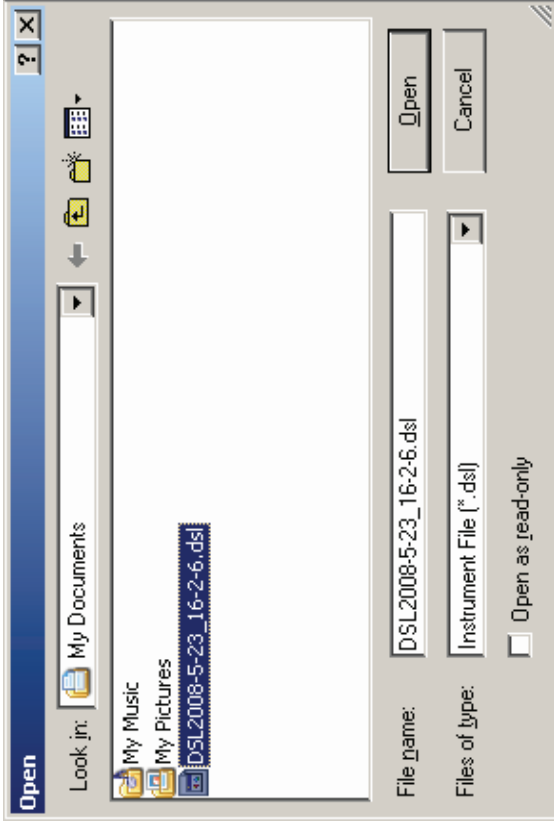
### 7.5.3 Ping destination address revise

Click Ping page, revise ping destination address, click “Modify” button, setting finished after revise succeed. See Pic.64.

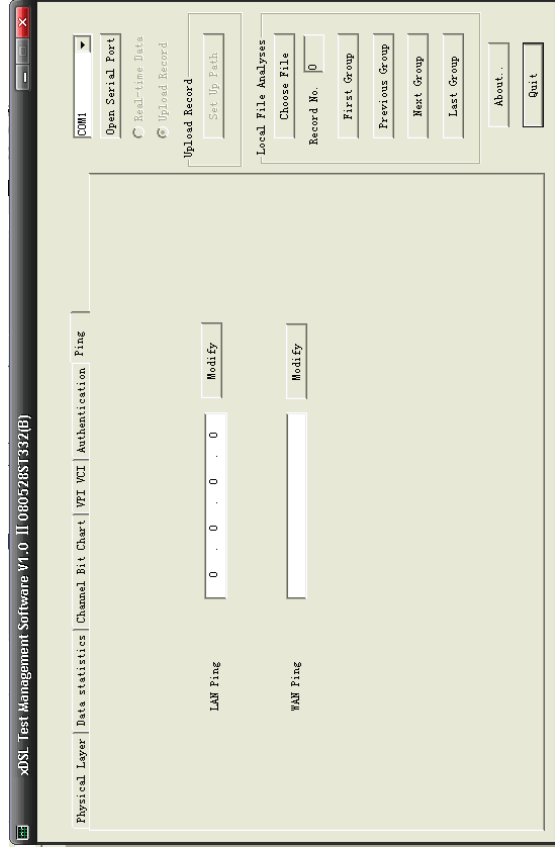
## 7.6 Record analyze

When analyse the record, please keep the port closed. Click “choose file” button, Pic.65 will come out, choose the file and click “open” to load. Click “first group” “previous group” “next group” “last group” to check relevant record.





Pic.65 Choose record



Pic.66 Check record

## 7.7 Attention

If the PC have more than one network card, please use only one before connect with the tester. The IP address is 192.168.1.\* (\* ranged in 2-254) and forbid other network card.

## 8. Accessories

- Direct Ethernet line 1
- Cross Ethernet Line 1
- RS232 line 1
- Test line 1
- Charger 1
- User manual 1
- Management software CD 1
- Certificate of approval 1