

ST332B(III)

ADSL2+ Tester

V1.0

User Manual

Shandong Senter Electronic Co., Ltd

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1. Summary

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

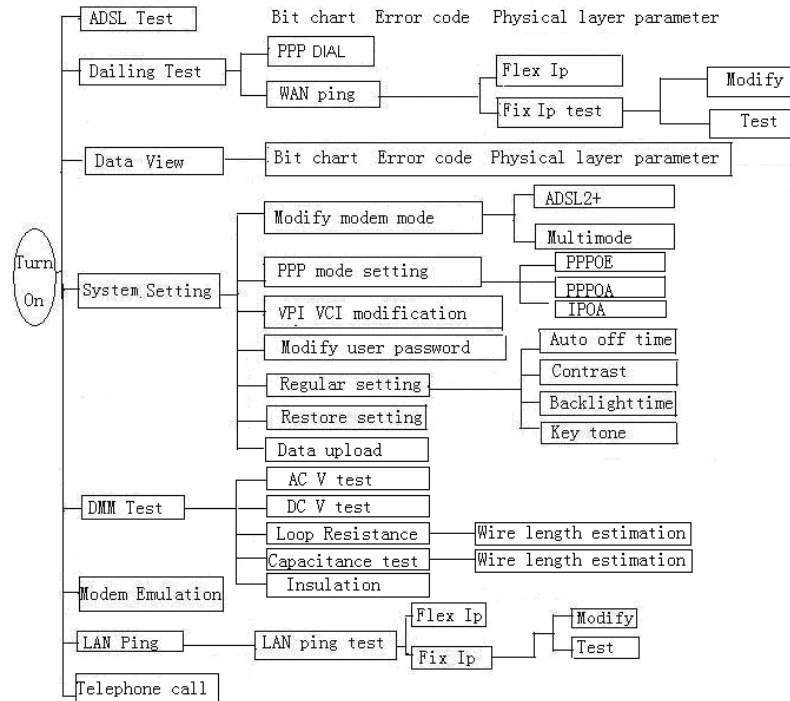
With the rapid development of broadband service, the field operators of installation and maintenance have to face much more and complicated workload than ever before, as a result, the equipment which is simple, portable and money-saved is eagerly wanted.

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. The built-in integrated telephone can check the standard telephone services. After testing, all the data can be uploaded to the computer and save them.

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.
- 2) Maximal connecting distance is 6.5km; Compatible with ADSL, ADSL2 and READSL
 - 3) 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.
 - Identify mixed code and fast code.

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, PPPoA and IPoA..

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 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:

- a) AC Voltage: -400 to 400 V; Resolution: 0.1V
- b) DC Voltage: 0 to 290 V;
- c) Capacitance: 0 to 1000nF,
Accuracy: 0—10nF: $\pm 2\text{nF}$, 10nF-1000nF: $\pm 2\% \pm 2\text{nF}$
- d) Loop Resistance: 0 to 20K Ω ;
Accuracy: 0-100: $\pm 3\% \pm 4\Omega$, 100—500: $\pm 3\%$, 500—2000: $\pm 2\%$, 2000—20K: $\pm 2\%$.
- e) Insulation Resistance: 0 to 50M Ω
Accuracy: 0—1.0M: $\pm 0.1\text{ M}\Omega$, 1.0—30M: $\pm 10\% \pm 0.5\text{ M}\Omega$

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 is OK or not. WAN PING test can Ping website addresses directly toward Local WAN, and check the connectivity of WAN Line.

2.8 Telephone call

Same function as a simple telephone: dial and answer. Can pick up the phone when you testing other things.

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): $180 \times 93 \times 48$

Weight (g): < 500

2.11 Operation environment

- a) Temperature: $0^{\circ}\text{C} \sim +50^{\circ}\text{C}$
- b) Humidity: $\leq 85\%$
- c) Pressure: $86\text{kPa} \sim 106\text{kPa}$
- d) Power supply: The rechargeable lithium batteries

2800mAH, DC8.4V charger

e) Battery duration: > 4.5 hours

3. Structure & Appearance



1. HOOK LED
2. Ethernet LED
3. PPP LED
4. LCD
5. Enter button
6. Number button: 1
7. Left button and Number button: 4 and Character: ghi
8. Number button: 7 and Character: pqrs
9. Character: * and Special Character enter button.
10. Power button.
11. Power off button
12. Number button: 0
13. Character : #
14. Number button: 9 and Character: wxyz
15. Down button and Number button: 8 and Character: tuv
16. Right button and Number button: 5 and Character: jkl
17. Number button: 6 and Character: mno
18. Number button: 3 and Character: def
19. Cancel button
20. Up button and Number button: 2
21. Link LED
22. Power LED
23. POTS LED
24. RJ45 port for Ethernet.
25. Charge port for charger.
26. RJ11 port for test line.

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 works normally.

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

POTS LED: Green: POTS voltage OK. Orange: POTS voltage high. No light: No voltage or voltage too low.

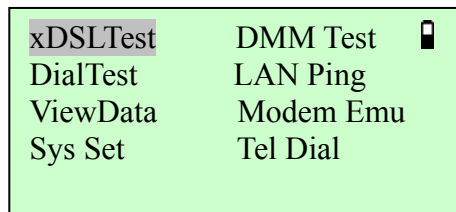
4. Precautions

- 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 about 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:



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 for a long time about 4 or 5 seconds, you also can switch of the tester obliged.
- When the battery is in low voltage, LCD display battery low, auto shut off in one minute, then it will power off automatically, tester give 3 short voice before shut off.
- If there is no any operation of the tester for 8 minutes, ST332B will power off automatically.

5.3 Adjust LCD contrast

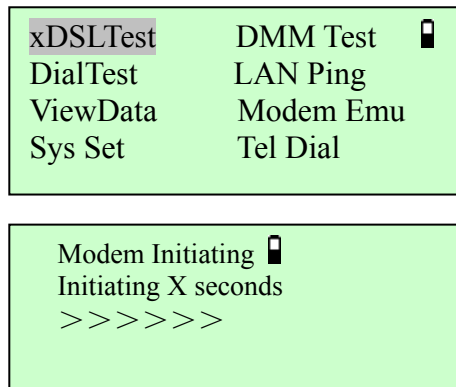
When the tester is “ON”, users can enter into “Sys Set” interface, then enter “Regular”, through the “Up” button and “Down” button adjust the contrast of LCD.

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

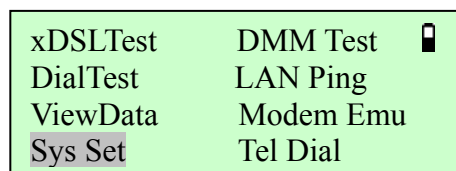
After power on, the tester will enter into the main menu, see Pic 2 as follows. Press “Enter” to perform xDSL Test. Firstly, the tester will initialize the Modem. If the modem initialization fails, the system will make the Modem reposition, if also failed, the tester will back to the main menu.



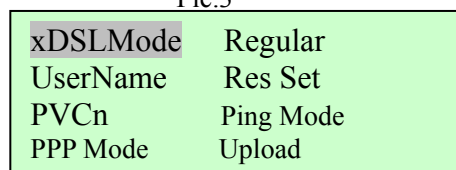
Pic.2

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)

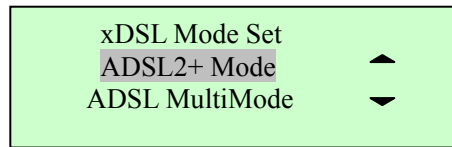


Pic.3



Pic.4

5.6.1 xDSL mode setting



Pic.5

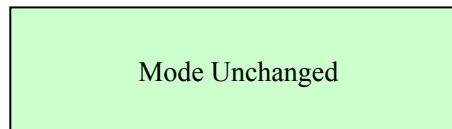
Under Pic.4, move the cursor to **xDSLMode**, press OK to come into the xDSL mode interface.

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+ Mode: If selected, the Modem will be in the ADSL2+ self-adapting mode, modem will choose the current mode, ADSL2+ mode is the default mode. If can not connected, modem will auto set as part ADSL mode, but this mode is not compatible for all the ADSL lines.

ADSL Multi Mode: If selected, the Modem will be set in ADSL mode, do not support ADSL2+ mode.

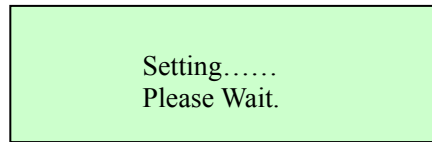
In the Pic.5, according to the indication, you can move the cursor to the item you want to set pressing ▲ or ▼. Press “Enter” button, then the setting information will be displayed on the screen. If there is nothing to change, press “Enter” button and the tester will display the following as Pic.6



Pic.6

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

display as the following Pic.7.

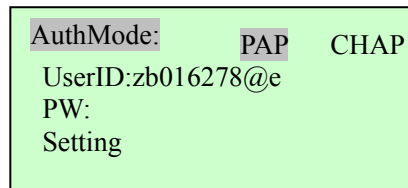


Pic.7

At this point, the built-in xDSL Modem equipment will be connected according to your new set of standards.

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

By pressing the “up” and “down” button for username, password and authentication mode of recycling options. If modify the user name, the operations are as follows:

A. Input method switch

The # key is the key to switch input method, press this key, "↔, 123, abc, ABC, and delete" icon circle shows

The upper right corner:

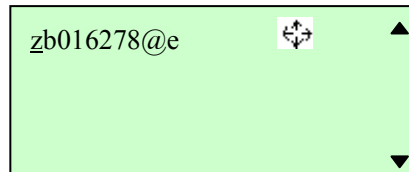
↔ : Cursor can be moved, only the direction buttons work.

123 : Enter numbers only;

abc : Enter lowercase character only.

ABC: Enter uppercase character only;

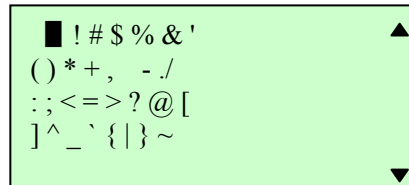
Delete: Press “Cancel” button to delete the character, press direction buttons to move the cursor.



Pic.9

B. Enter special characters

Press button *



Pic.10

Based on Pic.10, press direction buttons to choose the character then press “Enter” button to enter this character ; press “Cancel” button to give up the enter..

C. Exit the modifications of characters

After modify, press # button to switch the input method to the undelete mode. Press “Cancel” button to quite the character input.

Input the password:

Under Pic.8, move the cursor to “Passwd”, press Enter button to enter the password, same method as the username modification.

Auth Mode:

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, move the cursor to the setting under Pic 8, then press Enter button, 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.11:

	VPI	VCI	▲
IPOA:	0	0 Set	
PVC2:	0	0 Set	
PVC3:	0	0 Set	▼

Pic.11

Open the Pic.12 by “Up”, “Down”, “Left”, “Right”:

PVC4:	0	0 Set	▲
PVC5:	0	0 Set	
PVC6:	0	0 Set	
PVC7:	0	0 Set	▼

Pic.12

VPI modification: In Pic.12, press “Enter” to modify the VPI number, Press “Up”, “Down”, the following Pic13. will be displayed:

PVC4:	2	0 Set	▲
PVC5:	0	0 Set	
PVC6:	0	0 Set	▼

Pic.13

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.14

The following Pic15. is the result of the modification

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

Pic.15

Exit the VPI modification: Press back, users can exit the VPI modification, the following Pic.16 will be displayed in the screen:

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

Pic.16

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.17

5.6.4 Choose PPP mode

Protocol	set
PPPoE	Mode
PPPoA	Mode
IPoA	Mode

Pic.18

Move the cursor into “PPP Mode”, Press “Enter” to choose the suitable Dial Mode. Press Enter button to confirm, then enter onto the setting interface, if there is no modify, tester will display current setting not changed.

xDSL Modem will dial as your new setting.

IPoA → IPoA model parameters interface can modify the IP address, gateway, domain name server, and subnet mask. PVC setting is in the PVCn first group.

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
Bkl Time	30S
Key Tone	Open
Contrast	45

Pic.19

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.20, press “Enter”, users can change the time length by “Up” or “Down”, The number will move from 5~99:

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

Pic.20

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

Key Tone set: Move the cursor into “Key Tone” by “Down” button, Pic.21 as follows:

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

Pic.21

Turn off the Key Tone:

In the Pic.21, press “Up” or “Down”, the “ON” will change into “OFF”, Pic.22 as follows:

Auto Off	08m
Bkl Time	15S
Key Tone	Shut
Contrast	20

Pic.22

Adjust the contrast:

In the Pic.22, press “Up” or “Down”, the cursor will move to “Contrast”, Pic.23. as follows:

Auto Off	08m
Bkl Time	15S
Key Tone	Shut
Contrast	20

Pic.23

Press “Enter”, change the number “20” by “Up” or “Down”, Pic.24. as follows:

Auto Off	08m
Bkl Time	15S
Key Tone	Shut
Contrast	20

Pic.24

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

5.6.6 Auto off time length set

In the Pic.19, move the cursor to “Auto off” by button, Pic25. as follows:

Auto Off	08m
Bkl Time	15S
Key Tone	Shut
Contrast	20

Pic.25

In the Pic.25, press “Enter”, users can change the time by “Up” and “Down”

Auto Off	08m
Bkl Time	15S
Key Tone	Shut
Contrast	20


Pic.26

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.27

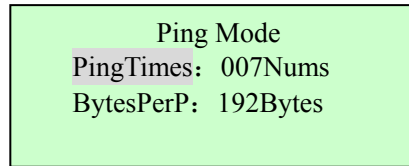
Auto Off	08m
Bkl Time	15S
Key Tone	Open
Contrast	20

Pic27

 **Notice: All Modem parameters are restored to factory settings.**

5.6.8 Ping mode

In Pic.4, move the cursor to “Ping Mode”, press enter, “Ping Mode” setting is as Pic.28:

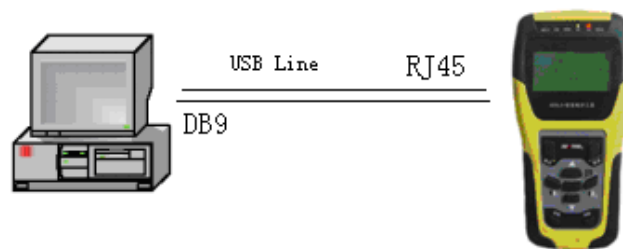


Pic28

To modify the Ping frequency and Ping packet by press the buttons.

5.6.9 Data upload

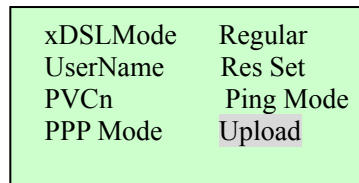
Data line connection as following:



Pic29

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

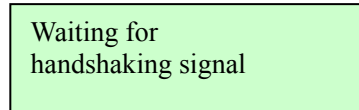
In the sys set menu, move the cursor to the **Upload** by “Up”, “Down”, “Left” and “Right” button, as Pic 30 shows:



xDSLMode	Regular
UserName	Res Set
PVCn	Ping Mode
PPP Mode	Upload

Pic30

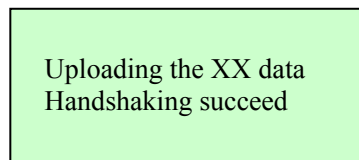
Then press “OK” button, tester will display “Waiting for handshaking signal”. as Pic.31 shows:



Waiting for
handshaking signal

Pic31

Open management software, switch to upload interface, click “receive data” button, then the tester will quickly display “Uploading the XX data”, as shown in pic32



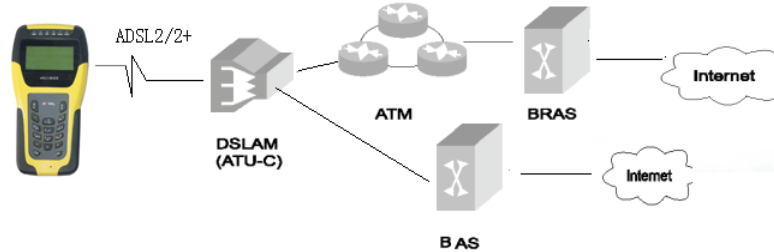
Uploading the XX data
Handshaking succeed

Pic32

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.

5.7 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 Pic. 33:



Pic. 33

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 34

xDSL Test	DMM Test
DialTest	LAN Ping
ViewData	Modem Emu
Sys Set	Tel Dial
Modem Initializing..... X Seconds	
State: Linking ▲	
Qos:	
Standard: Multimode ▼	

Pic34

In this interface, press the “Cancel” button, you can withdraw from the xDSL test and return to the main menu. 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 “Enter” or “Back” button, as shown in Pic34. If the initialization Modem has repeatedly failed to initialize, please contact your dealer for after-sale maintenance, to ensure the normal using.

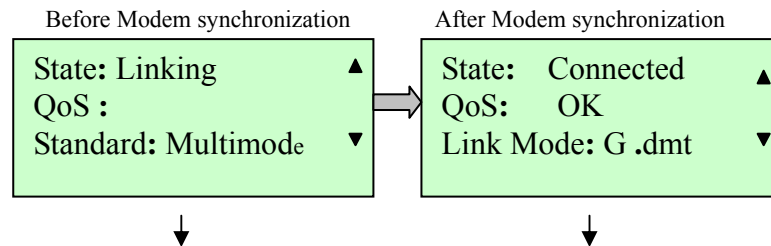
5.7.1 Physical layer parameter test

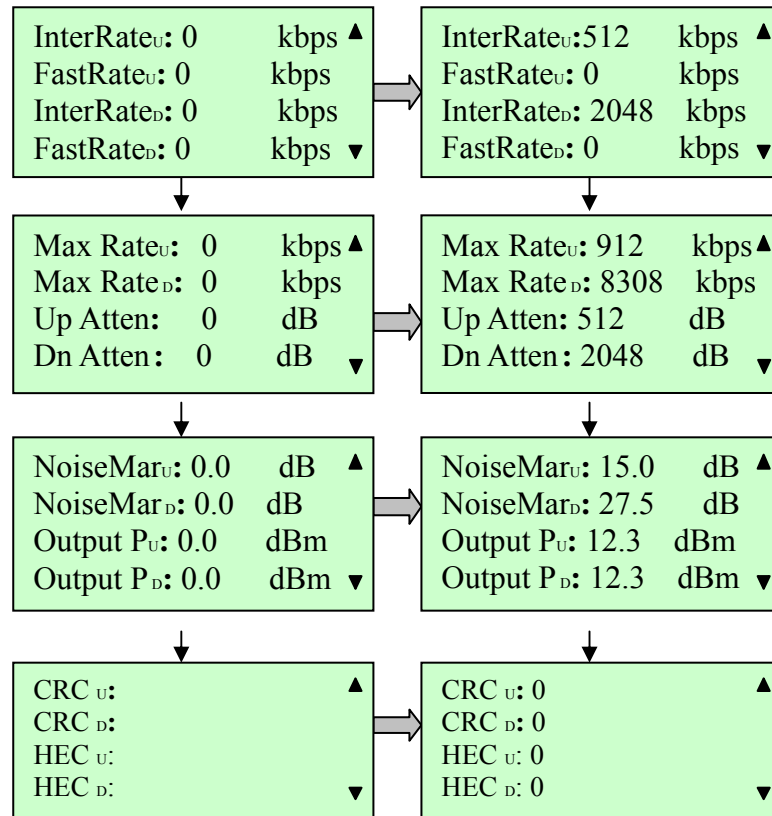
In xDSL test window you could browse many parameters by pressing ▲ or ▼ according to the indication. The parameters include current state (State), Quality of Service (QoS), Link mode, up/down stream rate (Up/Dn rate), up/down max rate, up/down attenuation(Up/Dn Atten), up/down noise margin(NoiseMar) and up/down output power(Output $P_{U/D}$). Please refer to Pic.35.

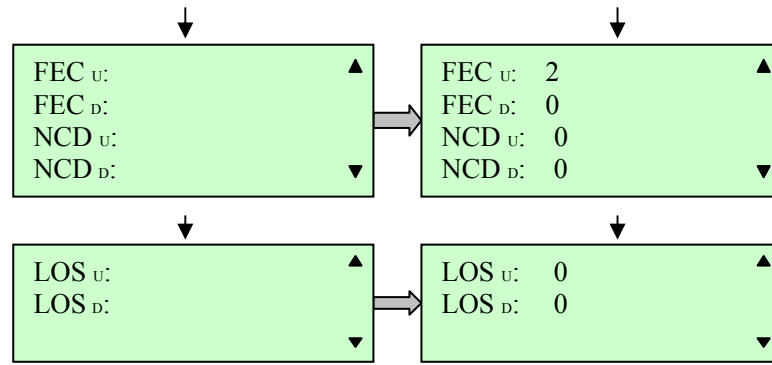
The parameters are divided into 2 groups. The left chart show the parameters before Modem synchronization while the right chart show the parameters after Modem synchronization.

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 35

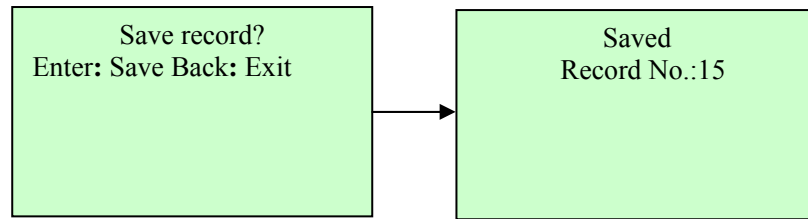
Link mode:

ADI: ADI mode of ADSL;
G.DMT: ADSL G.DMT mode, ITU-T G992.1 standard compliance;
G.LITE: 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.34, 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 as Pic.36:

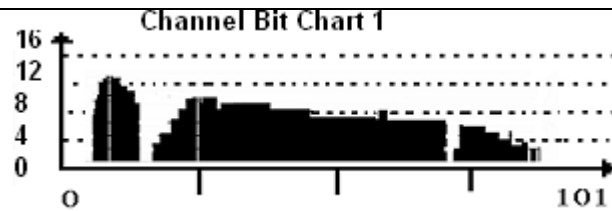


Pic 36

Press “Back” button to refuse to save record and return to main menu; While press “Enter” button to save record and its record number will be displayed as the right bar shows. 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 51th record into ST332B, the first record will be overlapped. The saved contents include line transmission parameters and channel bit chart as well as error code. Operators can view saved records through “View Data” (Refer to 5.9 View Data function)

5.7.3 Display bit chart

In the interface of Pic.35, press ▼ button, if the modem isn't synchronized, then there will not be any graph; if the modem synchronized. The following Pic.37 will be displayed:



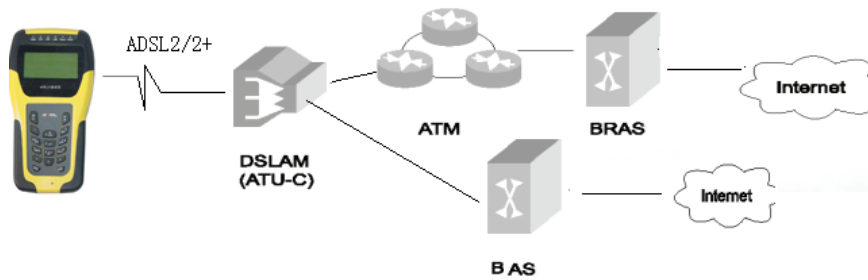
Pic.37

Press ▼ Button, the bit chart with first 102 channels will be displayed, and after 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

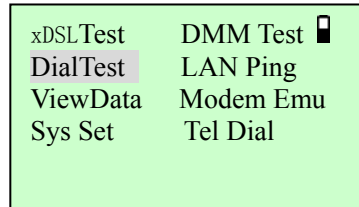
Function introduction: PPP (Point-to-Point Protocol) designing, is aimed to establish Point-to-Point data-transport by dialing or special line. It has become a common solution scheme between the host, bridge and router. PPP link process: Stage 1: Creating a PPP link; Stage 2: user authentication; stage3: Recall network layer protocol. The method of carrying out PPP protocol on Ethernet to test a user authentication 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 the same as PPPoE in principle and function, but the difference is that PPPoA run on ATM internet while the PPPoE work on Ethernet, so it should be suit for ATM stander and Ethernet. Physical linking refers to the following Picture 38.



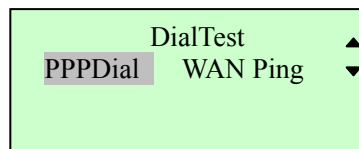
Pic38

In main menu, press ▲ or ▼ to select **Dial Test** option, as shown in Pic 39



Pic39

Operator needs to set the Modem before dial. The LCD will show: “setting, please wait”; it will take 10~12S to do the settings. After a success setting, the following Pic.40 will be displayed:



Pic 40

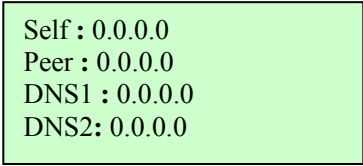
5.8.1 PPP dial

Press “Enter” button in Pic. 41 to do PPP Dial; operators can

choose dial mode in Sys Set.

If PPP Mode is PPPoE or PPPoA, the LCD will show Self IP Address, Remote IP Address; the Primary and Secondary DNS Server addresses.

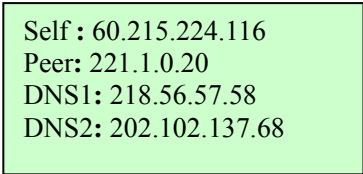
If PPP Mode is IPOA, the LCD will show Self IP Address, Gateway IP; DNS Serve and subnet mask addresses.



```
Self : 0.0.0.0
Peer : 0.0.0.0
DNS1 : 0.0.0.0
DNS2: 0.0.0.0
```

Pic 41 IPoA Mode

PPP Link LED Bright means the dial success. The PPPOE or PPPOA dialing information as Pic.42



```
Self : 60.215.224.116
Peer: 221.1.0.20
DNS1: 218.56.57.58
DNS2: 202.102.137.68
```

Pic42 PPPoA or PPPoE Mode

Now if the Modem Sync succeeded, the operator can do PPP dial; if the Modem doesn't sync, operator should wait until the Sync succeed and PPP dial will carry out automatically.

Press "Back" when operator wants to exit from the testing, the LCD will show "Restoring...". And it will return to Pic.39 in about 8s.

Dial parameters introduction and Modification:

There are 7 groups VPI/VCI parameters. Operators can modify them through management software (Refer to software manual), and also can modify them through the keys of the tester (Refer to 5.6.3 Revise VPI/VCI).

The tester has only one fixed PPP test account. Operator can read or change it through management software (Only can read user name). Operator can also read or change the PPP auth Mode to choose PAP/CHAP Auth Mode. (Refer to 7). Before test, please confirm the fixed test account and auth mode are correct. Operator can change user name, password and auth mode through keys also. (Refer to 5.6.2)

Among the 7 groups VPI/VCI parameters, only when the testing line's VPI/VCI match 1 of the 7, operator can do PPP dial. After a success dial, the PPP indicator will shine, and stop dialing, the indicator shut off.

VPI (Virtual Path Identifier)

VCI (Virtual Channel Identifier)

PAP (Password Authentication Protocol)

CHAP (Challenge Handshake Authentication Protocol)

Self: Self IP Address

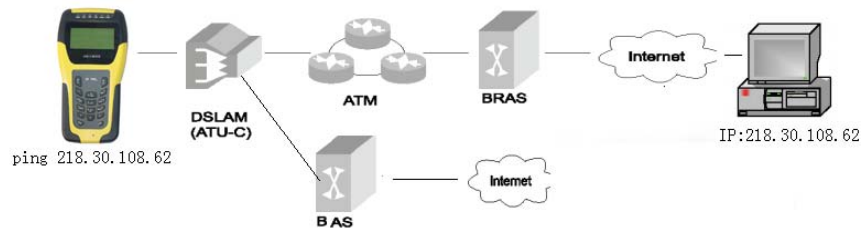
Peer: Remote IP Address

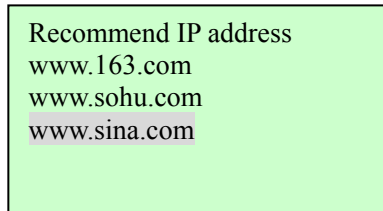
DNS1: Primary DNS Server address

DNS2: Secondary DNS Server address

5.8.2 WAN Ping test

Linking frame refers to the following Picture 43:

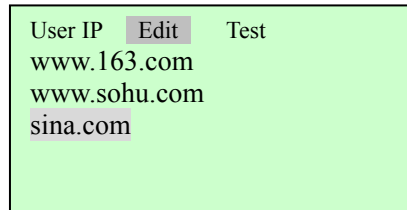




Pic44

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

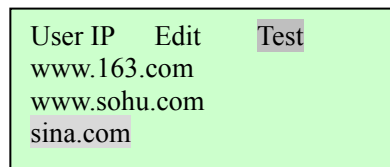
As shown in Pic.45



Pic45

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

As shown in Pic.46:



Pic.46

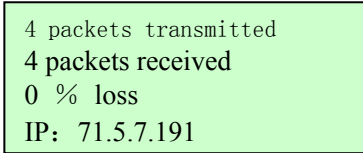
Modify the web:

In Pic 45, press “Enter” to enter into the characters modification interface. The modify method is the same as 5.6.2: User Name and password modification.

WAN ping:

In the above Pic46, “Testing, please wait” will be displayed in the screen, after about 8s the test result will come out as

follows Pic.47:



```

4 packets transmitted
4 packets received
0 % loss
IP: 71.5.7.191

```

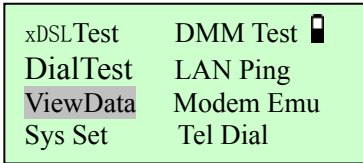
Pic 47

If the Dial failed, when perform Ping Test, there will be “Please make sure PPP Dial succeeds, or the web is correct before Ping Test”.

If the PPP Dial succeeds, but the screen displays “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 48:



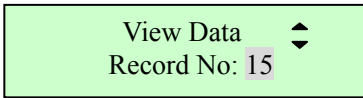
```

xDSLTest    DMM Test
DialTest    LAN Ping
ViewData    Modem Emu
Sys Set     Tel Dial

```

Pic 48

Press “Enter” button and the LCD will display the Picture 49 as follows.



```

View Data
Record No: 15

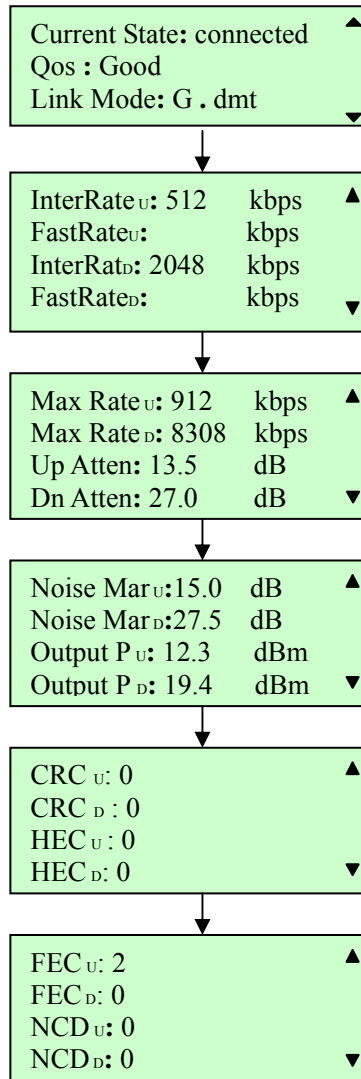
```

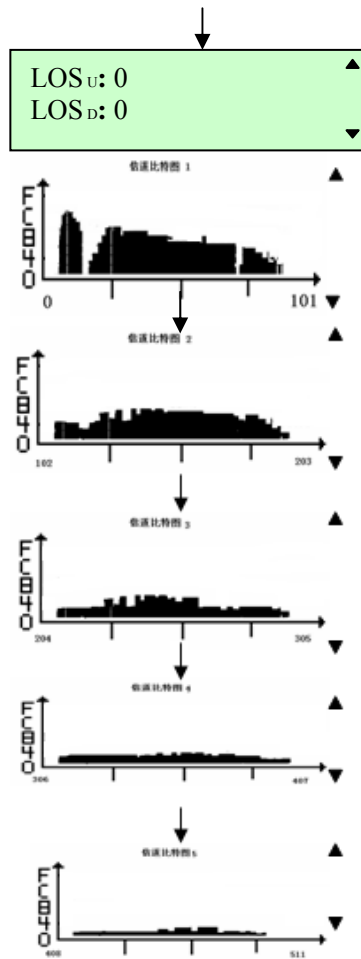
Pic 49

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.50

In Pic.49 interface, the user could select the other record number by pressing ▲ or ▼. After that, please press “Enter” button to browse the selected record.





Pic 50

Please press “Back” button to stop browsing and return to 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 and estimated cable length on the telephone line. As the following Pic.51:



Pic 51

In the main menu, move the cursor to the DMM Test by “Up”, “Down”, “Left” and “Right” button as Pic.52 shows:

xDSLTest	DMM Test
DialTest	LAN Ping
ViewData	Modem Emu
Sys Set	Tel Dial

Pic.52

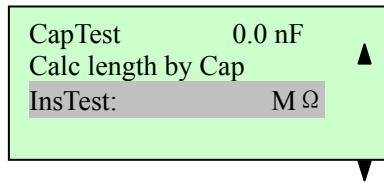
After click the “Enter” button, the LCD will display the following as Pic 53 shows.

ACTest:	V	
DCTest:	V	
LRTest:	Ω	▲
Calc length by LR		

Pic 53



Now the as Pic.53 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 54

Then press “OK” button to begin testing insulation, the screen will display the screen shown in pic.54. 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

The voltage test can test if there is a signal in the line. For ordinary telephone services bundled in the xDSL lines, if the line voltage is low or 0 V, means the line is not in use or under 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

AC voltage test can test the high-voltage alternating current in the line in order to protect the lineman. If encounter high-voltage alternating current please remove the test nips carefully to avoid electric shock.

The test is limited to the AC voltage test range of 0 ~ 290 V. The equipment will be prompted to “out of range” beyond this 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 (Ω), RO is the resistance (Ω) per kilometer.

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

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

In the test, if there in voltage (voltage more than 2V) in the line, then there will be a prompt “voltage!”. It means this line have electricity and 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 judge 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:

$$L = C_{ab} / CO \text{ (Km)}. \text{-----} \textcircled{2}$$

②: C_{ab} 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

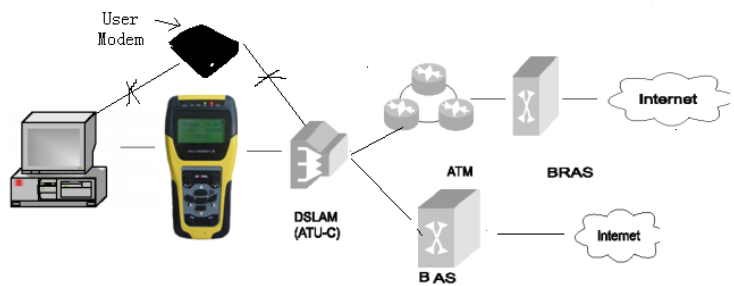
Insulation test can test the insulation status of the line. If the insulation resistance value is small, means the insulation is bad, this will make quality of the transmission very bad, needs repair. General for ADSL lines, insulation resistance value should be more than 10 M Ω .

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 50M Ω ”, 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, we should test whether the Modem is good or not firstly. We can use tester replace the user's Modem. As the following picture:



Pic 55

In the main menu (Pic.56), moves the cursor to the **Modem Emu** by “Up”, “Down”, “Left” and “Right” button as Pic.49 shows:

xDSLTest	DMM Test
DialTest	LAN Ping
ViewData	Modem Emu
Sys Set	Tel Dial

Pic.56

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

In modem Emulation

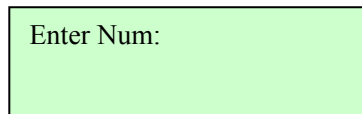
Pic.57

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 Tel dial

Function Introduction: Inside it a normal telephone is integrated. The user can either answer the phone or call out during a normal ADSL test. Calling won't interrupt the test.

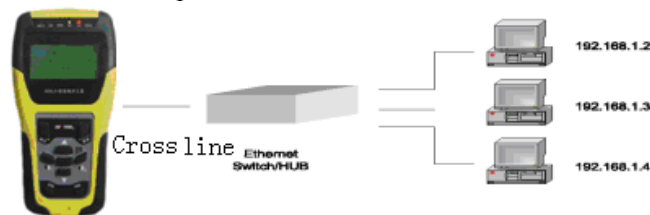
You can hear dialing tone when entering into the dialing interface, press the keyboard to call out. If there is a call the POTS indicator light will flicker and a “didi” sound will be heard on any other interface except the DMM test. You can answer the phone by entering into the dialing interface as Pic 58 shows:



Pic 58

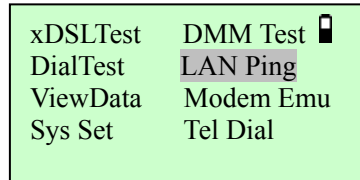
5.13 LAN ping test

Connection frame picture 59:



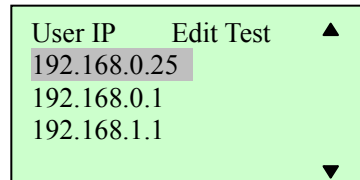
Pic 59

In the main menu, move the cursor to the LAN Ping by “Up”, “Down”, “Left” and “Right” button as Pic.60 shows:



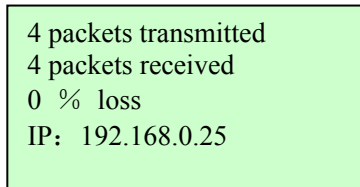
Pic.60

Then press “OK”, tester will display Pic.61:



Pic.61

Press “OK” button, tester will display “Testing”, test result will be displayed after 8 seconds, as Pic.62 shows:



Pic.62

The address in Pic.61 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.61 shows that the current site can be modified, press “Left” or “Right” button on Pic 61 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). A cross-test line is needed if connected with the computer.

(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 2000mAh 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 due to 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 charging.

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.

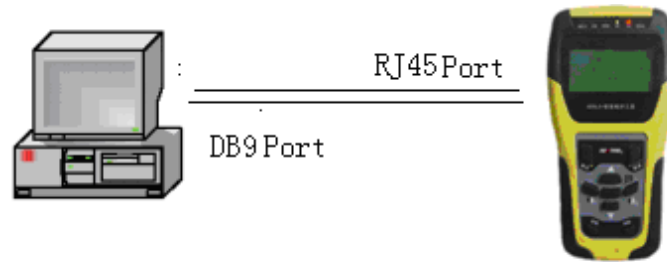
Recommended configuration of the PC:

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.

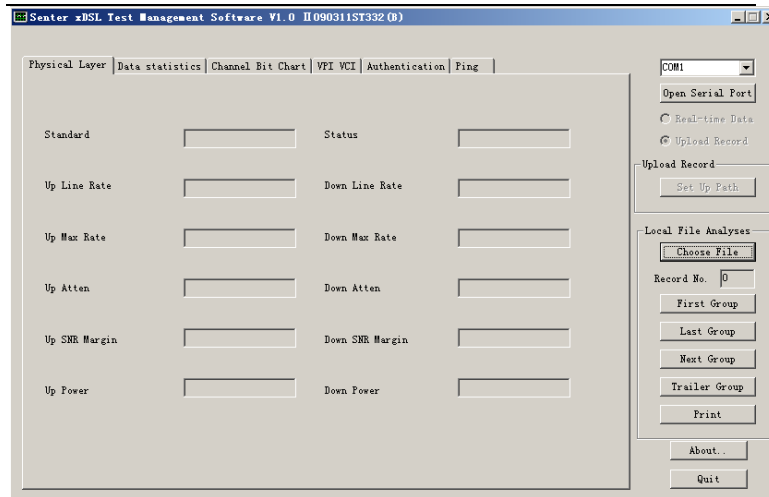


Pic 63

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

7.2 Software features

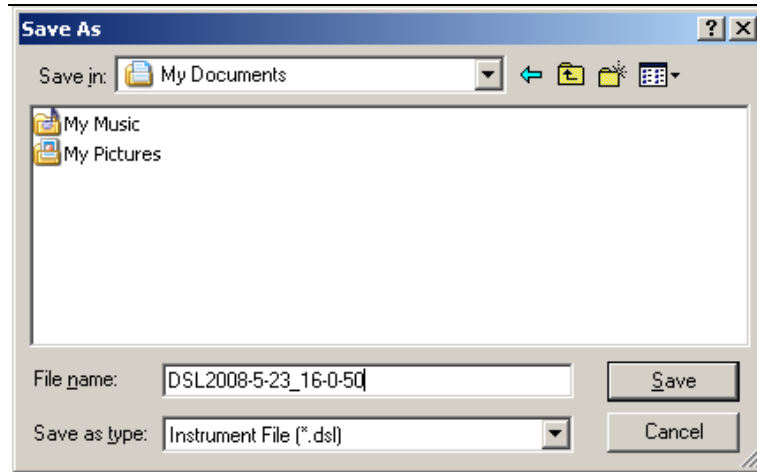
After connecting with the port, software will display the physical layer, data statistics, channel bit chart, VCI VPI, authentication, may revise the VCI VPI, authentication information, ping destination address. The records of instruments will be read; it will be stored and analyzed as documents in local.



Pic.64 Main menu

7.3 Records upload

Choose the port you connected, click “Open Serial Port”, then the connection will succeed. Choose “Upload Record”, then press “Set up Path” to enter into the save record interface, 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.65 Save record

7.4 Real-time data

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

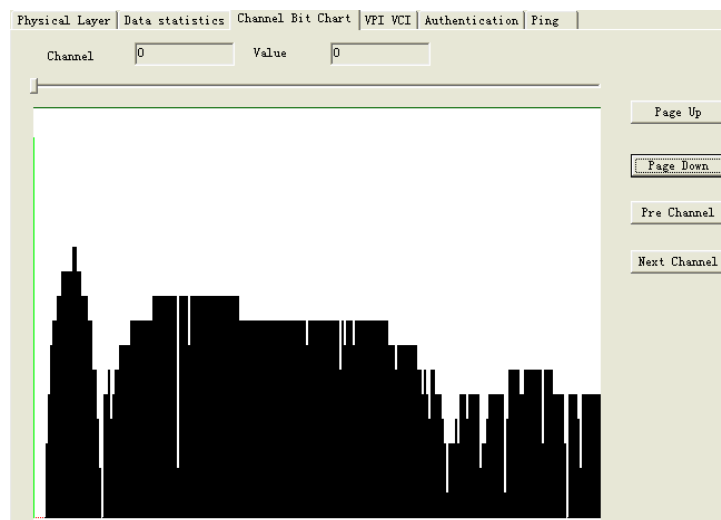
ST332B ADSL2+ Tester

Physical Layer	Data statistics	Channel Bit Chart	VPI VCI	Authentication	Ping
Standard	<input type="text"/>		Status	<input type="text"/>	
Up Line Rate	<input type="text"/>		Down Line Rate	<input type="text"/>	
Up Max Rate	<input type="text"/>		Down Max Rate	<input type="text"/>	
Up Atten	<input type="text"/>		Down Atten	<input type="text"/>	
Up SNR Margin	<input type="text"/>		Down SNR Margin	<input type="text"/>	
Up Power	<input type="text"/>		Down Power	<input type="text"/>	

Pic.66 Physical layer

Physical Layer	Data statistics	Channel Bit Chart	VPI VCI	Authentication	Ping
		Up	Down		
CRC		<input type="text" value="0"/>	<input type="text" value="0"/>		
HEC		<input type="text" value="0"/>	<input type="text" value="0"/>		
FEC		<input type="text" value="0"/>	<input type="text" value="0"/>		
WCD		<input type="text" value="0"/>	<input type="text" value="0"/>		
LOS		<input type="text" value="0"/>	<input type="text" value="0"/>		

Pic.67 Data statistics



Pic.68 Channel bit chart

Physical Layer	Data statistics	Channel Bit Chart	VPI VCI	Authentication	Ping
			VPI	VCI	
PVC1			<input type="text"/>	<input type="text"/>	<input type="button" value="Set"/>
PVC2			<input type="text"/>	<input type="text"/>	<input type="button" value="Set"/>
PVC3			<input type="text"/>	<input type="text"/>	<input type="button" value="Set"/>
PVC4			<input type="text"/>	<input type="text"/>	<input type="button" value="Set"/>
PVC5			<input type="text"/>	<input type="text"/>	<input type="button" value="Set"/>
PVC6			<input type="text"/>	<input type="text"/>	<input type="button" value="Set"/>
PVC7			<input type="text"/>	<input type="text"/>	<input type="button" value="Set"/>

Pic.69 VPI VCI

Physical Layer	Data statistics	Channel Bit Chart	VPI VCI	Authentication	Ping
Authentication Info					
Certification Mode <input checked="" type="radio"/> pap <input type="radio"/> chap					
User <input type="text"/>					
Password <input type="text"/>					
<input type="button" value="Commit"/>					
DSL Configuration					
<input checked="" type="radio"/> ADSL2+Auto					
<input type="radio"/> Multimode					
<input type="button" value="Commit"/>					

Pic.70 Authentication

Physical Layer | Data statistics | Channel Bit Chart | VPI VCI | Authentication | Ping

LAN Ping: 0 . 0 . 0 . 0 Modify


WAN Ping: Modify

Pic.71 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.69.

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.70.

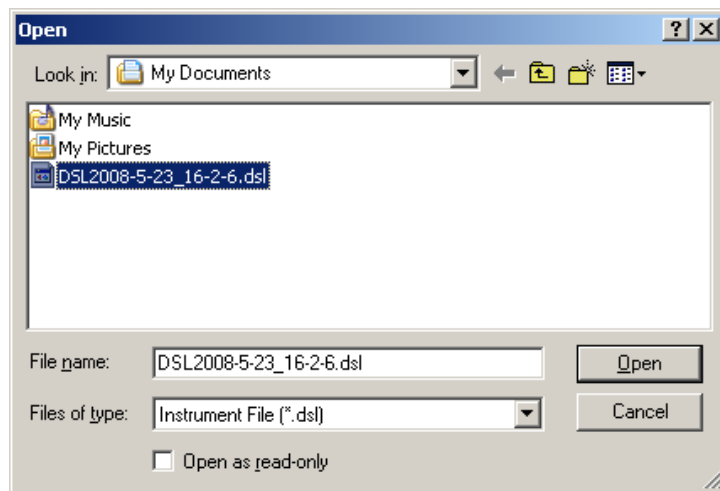
7.5.3 Ping destination address revise

Click Ping page, revise ping destination address, click “Modify” button, setting finished after revise succeed. See Pic.71.

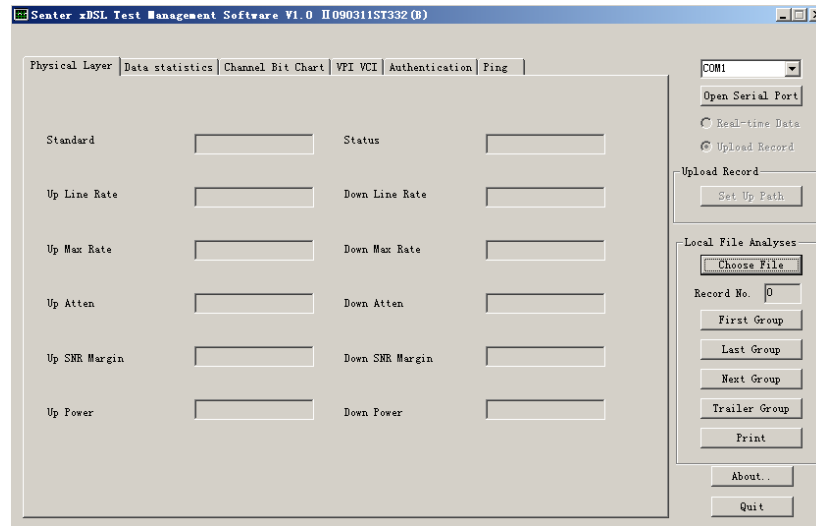
7.6 Record analyze

When analyze the record, please keep the port closed.

Click “choose file” button, Pic.65 will display, choose the file and click “open” to load. Click “first group” “previous group” “next group” “last group” to check relevant record.



Pic.72 Choose record

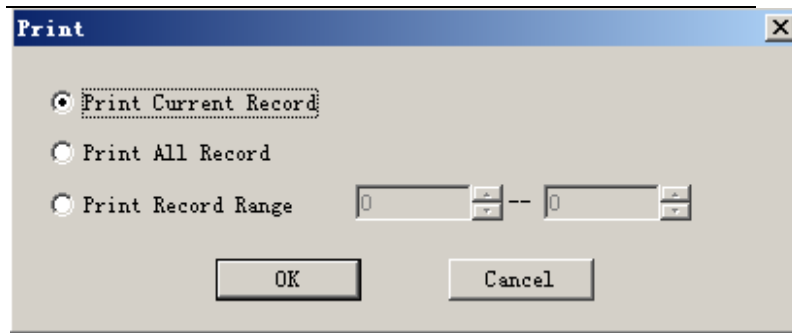


Pic.73 Check record

7.7 Print out

Operators can print out the records when view the history date.

Press: “Print”, the following pic74 will display, click “OK” and choose a printer to print the record.



Pic.74

7.8 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.

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