# FOX450B

## Enhanced All-in-One xDSL Test Set
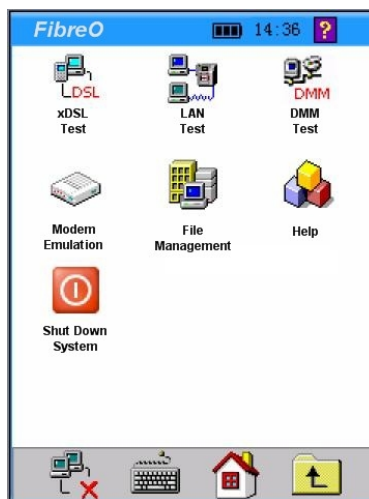


## Key Features

- Consolidation of DSL modem, PING and Metallic Testing

- Support three types of emulation:
  Modem emulation (through mode)
  PC emulation
  PC+Modem emulation

- Web Browse - after succeeding in PPPoE/ PPPoA Dial, the user can surf on the internet

- Fast and easy copper loop qualification for ADSL2+ services with a pass/fail indication and programmable thresholds

- Fully-featured ADSL/ADSL2+ tests quickly verify provisioned rates and service quality

- Discovery – search and identify devices on the same LAN

- WinCE Operation system

- 240 x 320 TFT true color LCD display and touch screen

- Identify ATU-C brand

- Determine telephone line faults (line break or mix)

- Power Management

- Line voltage indication

- USB Port - USB equipment, keyboard, mouse and memory stick

- Provide two Ethernet ports – direct (Hub) and cross (Network)

- Big data memory capacity - up to 20M or using external memory stick via USB port

- DC operation with vehicle power adapter

FOX450B, a consolidation of DSL modem, IP PING and Metallic Testing is specially designed to meet the urgent requirements of xDSL testing including ADSL, ADSL2, ADSL2+ and READSL. It is particularly used by a field technician for DSL installation and maintenance.

FOX450B can not only test physical parameters but also help to judge whether the line is suitable to provide xDSL services and evaluate service quality. In fact, field technicians do not need to know line parameters and specifications. To them, the most important is to determine the service quality and locate the faulty points.

FOX450B can perform PPPoE/PPPoA dial, browse IE webpages and emulate a user's PC+ Modem to test the connectivity from the user to ISP. After successful PPP dial, network layer tests such as IP Ping, Ipconfig, Route, and Tracert can be fulfilled. The powerful tester can even emulate the user's PC to test broadband IP line or perform PPPoE /PPPoA dial through user's Modem in order to verify the connectivity of IP network and the problem of user's Modem as well as eliminate malfunctions that lead to login failure to WebPages caused by the user's PC.

FOX450B adopts 240 x 320 TFT true colors LCD with a touching screen – so easy to operate and setup parameters, and display results intuitively.

# Comprehensive xDSL and LAN Access Testing

## xDSL Test

FOX450B emulates DSL CPE modem and PC to perform physical layer, network layer and application layer test. It also allows the user to pre-setup criteria to further analyze the DSL line condition and score quality of service.

It includes the tests below:

### DSL Layer Test
Perform fast synchronization test at customer's premises; determine whether rates promised are rates delivered; confirm parameters for ADSL/ADSL2/ADSL2+. FOX450B will display bits per tone in graphics after successfully linking up with DSLAM.

### Noise Margin Curve
FOX450B can measure the real time up/down stream noise margin changes and display in graphics. The results reflect the DSL line stability again environment changes. It is a helpful parameter for troubleshooting an unstable DSL service.

### Verification ATM Mapping
ATM loopback functionalities.

### PPP dialing
The user can fulfill PPPoE (or PPPoA) dialing through PPPoE (or PPPoA) test account. After successful dialing, it will obtain local/destination IP, DNS server IP and subordinate IP address, and PPP LED will be shinning. 7 VPI/VCI groups are preset for the user to select conveniently and they are also user-definable. And the user may also select and set PAP, CHAP, MS-CHAP and MS-CHAP V2 authorization method.

### Network Layer Test
Verifying connectivity to the Internet via tests of IP Ping, Ipconfig, Tracert and Route.
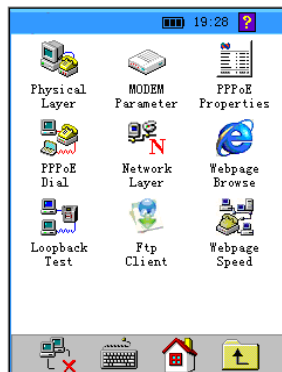
### Web Speed

### Webpage Browsing Test

### FTP Client

## Modem emulation

FOX450B can replace the user Modem completely. The user could take FOX450B as a DSL modem to do PPP dial and log into the Internet and determine if the customer modem works properly. FOX450B will also provide link parameters and statistics.

## LAN Test

FOX450B emulates PC to perform PPPoE dial test, network layer and application layer test of LAN.

It includes the below tests:

### LAN port PPPoE Dial
Verify if Broadband IP or LAN performs normally. And the user may also select and set PAP, CHAP, MS-CHAP and MS-CHAP V2 authorization method.

### Data Rate and Through Put
After successful PPP dialing, FOX450B can display data rate and through put of the link.

### Network Layer Test
Ping, Ipconfig, Tracert and Route.

### Fixative IP – search for devices on the same LAN. It will display both IP address and host name.

### Web Speed

### Webpage Browsing Test

### FTP Client

## Copper Testing

FOX450B can measure AC/DC Voltage, Capacitance, Loop Resistance and Insulation Resistance for basic line trouble-shooting. It also estimates loop distance.

### Indicate Line Voltage
For safety purposes, when line voltage greater than 80VDC or 50VAC is detected, FOX250 will display warning message and the voltage indicator LED will be turned on informing the technician of the loop condition.

## Data storage, file transfer and management software

FOX450B can save results including line parameters, channel bit chart and error test to built-in 20Mb memory or external memory stick via a USB port or upload them to a PC via the unit's LAN port for records or further analysis. Test results can be transferred to other PCs on the same LAN. Using the software all parameters can be preset before passing the test set to the technician for test campaign and collecting test results after. Technicians do not have to worry about setting the unit at all, thus increasing test efficiency significantly.

# Specifications

## ADSL/ADSL2/ADSL2+

| | |
|---|---|
| Emulation | ATU-R modem/Through mode |
| | PC Emulation |
| | Modem+ PC |
| Standards | ITU G.992.1 (G.dmt), |
| | ITU G.992.2 (G.lite), |
| | ITU G.992.3 (ADSL2) |
| | ITU G.994.1(G.hs), |
| | ANSI T1.413 issue #2, |
| | ITU G.992.5 (ADSL2+) Annex L. |
| Rate Supported | Downstream: up to 24Mbps; |
| | Upstream: up to 1.2Mbps; |
| Physical Layer | Max bit rates |
| Features Supported | Actual bit rates |
| | Mode: Fast/Interleaved |
| | Capacity |
| | Attenuation ( 0 ~ 63.5dB) |
| | Noise margin (0 ~ 32dB) |
| | Output power |
| | DSL Connection Mode |
| | Noise Margin Curve |
| | Time of Measurement |
| | Number of Connection |
| | Determine service quality: Excellent, good, ok or poor |
| ATM Layer | VPI/VCI Configuration - 7 pre-set groups and user definable |
| | VC-Mux and LLC Multiplexing |
| | ATM PING (OAM Loopback) |
| Protocols Supported | PPPoE (RFC2516) with PAP, CHAP, MS-CHAP, |
| | MS-CHAP V2 session |
| | PPPoA (RFC2364) |
| | Ethernet over ATM/Bridge RFC1483 |
| IP PING | WAN and LAN |
| | PING IP address or URL |
| | Package Size, Test Times, Delay |
| Ipconfig | TCP/IP, DHCP, DNS Setup, IP/Netmask/Gateway |
| Route | Print, Add, Delete or Change route |
| Tracert | IP address, Name, Hops, Delay |
| | Support IPv4 and IPv6 |
| Web Speed | IP Address and URL |
| | Time and Rates |
| IE Webpage Test | IP Address/URL |
| | IE window |
| FTP Client | IP Address/URL |
| | File, Time and Rates |
| Discovery | Search and identify the IP address, name, host and MAC address |
| | of devices in the same Local Area Network |
| Errors Measurement | LOS - Loss of Signal |
| | CRC - Cyclic Redundancy Check |
| | HEC - Header Error Correction |
| | FEC - Forward Error Correction |
| | NCD - No Cell Delineation |
| | OCD - Out of Cell Declination |

## DMM Measurement

| Test | Test Range | Accuracy |
|---|---|---|
| DC Voltage | 0 ~ 100 VDC | ±2% |
| | 100 ~ 200 VDC | ± 5% |
| | 200 ~ 400 VDC | ±5% |
| AC Voltage | 0 ~ 100 VAC | ±2% |
| | 100 ~ 400 VAC | ±5% |
| Loop Resistance | 0 ~ 100Ω | ±3% |
| | 100 ~ 500Ω | ±3% |
| | 500 ~ 2000Ω | ±2% |
| | 2000 ~ 20KΩ | ±2% |
| Capacitance | 0 ~ 10 nF | ±2 nF |
| | 10 ~ 1000nF | ±2% |
| Loop Distance Estimation | Based on the value of Loop Resistance or Capacity under condition of clean cable | |
| Insulation Resistance @100V | 0 ~ 1.0 MΩ | ±0.1 MΩ |
| | 1.0 ~ 50 MΩ | ±10% |

## General Specifications

| | |
|---|---|
| Display | 240×320 TFT true color LCD, touch screen, WinCE |
| Software | Remote Management software allows user to preset parameter and upload test results via Ethernet port. |
| Memory | 20M |
| Interfaces | RJ11/ 2 PIN connector - DSL and DMM Test Port |
| | 10/100Mbps Ethernet Port for through mode testing |
| | RJ45 Ethernet - Comm Port |
| | USB - software upgrade, keyboard and external memory |
| LED | Ethernet Link status/Data |
| | xDSL Act – Data/PPP |
| | xDSL Link Status - Negotiating/Training or Linked up |
| | Power Status |
| Power Supply | Rechargeable 7.4V, 2700mAH Li-Ion |
| | Operating time (approx.) – 8 hrs (typical measurement) |
| | AC adapter (110 ~ 250VAC, 50/60Hz)/output 7.4V |
| | Vehicle power adapter (Optional) |
| | Power Management – auto power off and low battery warning 1 minute before shutting down. |
| Max Test Distance | 6.5km |
| Time and date | Setup with built-in clock and calendar |
| Temperature (Operation) | 0 ~ 40ºC |
| Temperature (Storage) | -20ºC ~ 70ºC |
| Relative Humidity | up to 85% non-condensing |
| Dimension (mm) | 176 (L) × 130 (W) × 60 (H) |
| Weight (w/Battery) | <700g |

## Certificate  CE

*Note:  Specifications subject to change without notice*

## Standard Accessories

| | |
|---|---|
| Direct Ethernet cable | 1 piece |
| Test Cable | 1 piece |
| LCD Protection Cover | 1 piece |
| Touch screen stick | 1 piece |
| Li-Ion rechargeable battery | 1 pack |
| AC/DC Power Adapter | 1 piece |
| User manual | 1 hard copy |
| Management software | 1 CD |
| Soft carrying case | 1 case |
| Handle | 1 piece |
| Vehicle power adapter | Optional |

## Related Products

| | |
|---|---|
| FOX-100 | Wire tracker |
| FOX-150 series | Telephone line & service test sets |
| FOX-450MS | ADSL2+ and SD IPTV package |
| FOX-450MH | ADSL2+ and HD IPTV package |
| FOX-450V | Advanced DMM+VDSL2 tester |
| FOX-600CQM | ADSL2+ and IPTV package |

## Ordering Information

| | |
|---|---|
| Model | FOX450B |