

# FOX-450V

## Enhanced ADSL2+ and VDSL2 Test Set



### Key Features

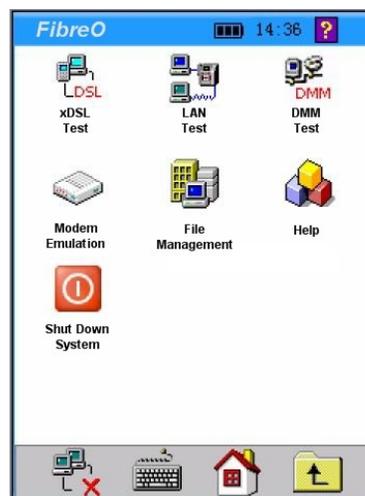
- Consolidation of VDSL2 modem, PING and Metallic Testing
- Support three types of emulation: Modem emulation (through mode) PC emulation PC+Modem emulation
- Web Browse - after succeeding in PPPoE/PPPoA Dial, the user can surf on the internet
- Fast and easy copper loop qualification for VDSL2 and ADSL2+ services with a pass/fail indication and programmable thresholds
- Fully-featured ADSL/ADSL2+/VDSL2 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

FOX-450V, a consolidation of very high speed DSL modem (VDSL2), IP PING and Metallic Testing is specially designed to meet the urgent requirements of last mile testing (VDSL2) and backward compatible with ADSL, ADSL2, ADSL2+ and READSL. It is particularly used by a field technician for all type of DSL installation and maintenance.

FOX-450V 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.

FOX-450V 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.

FOX-450V 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

FOX450 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+/VDSL2. FOX450 will display bits per tone in graphics after successfully linking up with DSLAM.

### Noise Margin Curve

FOX450 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 shining. 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

FOX450 can replace the user Modem completely. The user could take FOX450 as a DSL modem to do PPP dial and log into the Internet and determine if the customer modem works properly. FOX450 will also provide link parameters and statistics.



## LAN Test

FOX450 can emulate 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, FOX450 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



IP address	Host name
192.168.0.7	SENER-XINHUA
192.168.0.10	WANG-JING
192.168.0.11	WANG-CHENG
192.168.0.13	WANG-YONGJIN
192.168.0.15	FAN-WENXUE
192.168.0.16	ZSF
192.168.0.17	FHB
192.168.0.19	ZZT
192.168.0.20	LXW
192.168.0.26	ZZY

## Copper Testing

FOX450V can measure AC/DC Voltage, Capacitance, Loop Resistance and Insulation Resistance for basic line troubleshooting. 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

FOX450V 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+

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 QoS: Excellent, good, ok or poor
ATM Layer	VPI/VCI Config. - 7 pre-set groups & user definable VC-Mux and LLC Multiplexing ATM PING (OAM Loop-back)
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
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	LOS - Loss of Signal
Measurement	CRC - Cyclic Redundancy Check HEC - Header Error Correction FEC - Forward Error Correction NCD - No Cell Delineation OCD - Out of Cell Declination LCD - Lost Cell Delineation ES – Error Seconds SES – Severely Error Seconds UAS – Unavailable seconds LOF – Loss of Frame

### VDSL2

(In Addition to Features of ADSL/ADSL2+)

Standards	VDSL2 G.993.2
Compliance	Support ATM, PTM data link layer encapsulation INP value of DSL line Check DSL line signal loss, frame loss. Show the bit map of DSL line and bit scatter of each sub-channel (support the graph and words)

### 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%
Capacitance	2000 ~ 20KΩ	±2%
	0 ~ 10 nF	±2 nF
Loop Distance Estimation	10 ~ 1000nF	±2%
	Based on the value of Loop Resistance or Capacity under condition of clean cable	
Insulation	0 ~ 1.0 MΩ	±0.1 MΩ
Resistance @ 100V	1.0 ~ 50 MΩ	±10%

## Certificate CE

*Note: Specifications subject to change without notice*

## 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 - s/w upgrade, keyboard and external memory
LED	Ethernet Link status/Data xDSL Act - Data/PPP xDSL Link Status - Negotiating/Training/Linked up Power Status
Power Supply	Rechargeable 7.4V, 2700mAH Li-Ion Operating time (approx.) - 8 hrs (typical test) 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
Operating Temp.	0 ~ 40°C
Storage Temp.	-20°C ~ 70°C
Relative Humidity	up to 85% non-condensing
Dimension(mm)	176 (L) × 130 (W) × 60 (H)
Weight	<700g (w/Battery)

*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

<b>FOX-100</b>	<b>Wire tracker</b>
<b>FOX-150 series</b>	<b>Telephone line &amp; service test sets</b>
<b>FOX-250</b>	<b>DMM and ADSL2+ tester</b>
<b>FOX-450B</b>	<b>Advanced DMM and ADSL2+ tester</b>
<b>FOX-450M</b>	<b>Multimedia Test set</b>
<b>FOX-600CQM</b>	<b>Cable Qualification Test Set</b>

## Ordering Information

<b>Model</b>	<b>FOX-450V (VDSL2)</b>
--------------	-------------------------