



VePAL BX100A+ Handheld ADSL Test Sets

ADSL network testing simplified

VeEX™ VePAL BX100A+ series are next generation test solutions for ADSL2+/ADSL2/ADSL networks supporting Triple Play services.

Platform Highlights

- Intuitive presentation of measurements with test graphics
- High resolution color touch-screen viewable in any lighting conditions fitted with protective cover
- Robust, handheld chassis packed with powerful and flexible features for demanding environments and test conditions
- Optimized for field engineers or technicians installing and maintaining ADSL networks enabling Triple Play services
- Ethernet port and connection for back office applications, workforce management and Triple Play service verification
- User defined test profiles and thresholds enable fast, efficient and consistent turn-up of services
- USB memory stick support and FTP upload capability for test result storage and file transfer respectively
- Maintain instrument software, manage test configurations, process measurement results and generate customer test reports using included ReVeal™ PC software
- Extend field testing time using interchangeable Lilon battery pack/s. Greater battery autonomy provided in standby mode
- Supports advanced IP testing; Ping, trace route, ARP Wiz, VoIP, IPTV, WiFi, web browser, and FTP upload/download via Ethernet or USB port where applicable
- NetWiz cable diagnosis with network statistics*
- VoIP call emulation and MOS performance analysis*
- WiFi Wiz site survey with Internet connection test*

Key Features

- ADSL2+/ADSL2/ADSL modem emulation per ITU standards
- Automatic link turn-up after power-on or connection to line
- Fast display of link-up results: upstream/downstream data rates, noise margin, latency, attenuation, training time
- Loop length estimation capability
- Graphical and tabular representation of bits per tone
- FEC, HEC and CRC count for upstream and downstream paths
- ATM OAM loopback cells functionality
- Scanning of multiple PVCs and analysis of traffic
- Multiple encapsulation methods
- Terminate, Pass-Through and Terminal Equipment test modes
- Annex B (ADSL/ISDN) support
- Annex M support
- Impulse Noise Protection (INP) support
- Advanced IP connectivity test functions over ADSL interface
- IPTV stream analysis: MPEG2, MPEG4 Part 10 (H.264) and VC-1 in ADSL Terminate mode (modem emulation)
- IGMP latency (channel zapping), Media Delivery Index (MDI) and Primary Clock Reference (PCR), and jitter measurements
- POTS Expert for placing and receiving DTMF calls*
- DMM for measuring AC/DC voltage and current, loop resistance, and leakage resistance*

*Optional

ADSL Network Installation and Troubleshooting



> Showtime
IP 192.168.1.101

Hop	TTL (ms)	Address
1	50	66.185.150.82 bb2-sjg-P0-0.atdn.net
2	24	66.185.152.22 bb2-las-P7-0.atdn.net
3	122	66.185.152.24 bb1-las-P2-0.atdn.net

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Trace Reset

> Showtime
ATM

Number	VPI	VCI
1	0	38
2	0	39
3	0	40
4	0	43

Scanning in Progress...

Stop

> Searching
DMM

T/R (AC):	110 V
T/GND (AC):	0 V
R/GND (AC):	0 V

T-R T-G R-G ALL

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Application layer test
 FTP upload/download
 Web page download
 Web browser
 IPTV, VoIP

> Searching
IP 192.168.0.54

Channel	Results	Scan	Viewer
192.168.0.54:1234			

Unicast-MPEG TS

Status: Decoding, Please Wait

Stop

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Internet Protocol layer test
 Bridged or Routed IP ping
 Ping to LAN (DTE) or WAN (DSL)
 Fixed or DHCP IP address allocation
 Multiple encapsulation methods

> Showtime
Pass Through

Setup	Status	Statistics
IP Address:	192.168.1.101	
Gateway:	192.168.1.102	
Subnet Mask:	255.255.255.0	
Authentication:	PAP	
DNS IP:	192.168.1.105	

ROUTER: PASS
PPP: PASS

Disconnect

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Authentication layer test
 PPPoE/A client and server modes
 PAP/CHAP authentication
 PPP statistics, packet counts and errors

> Showtime
Measurements

Bits	Alarm	Events
Mode	Link Up	Current
>ADSL2+	Up	Down
Actual Rate	1023K	22017K
Max Rate	1039K	25594K
Capacity	98.5%	86.0%
Noise Margin	6.5dB	-4.0dB
Attenuation	0.0dB	0.0dB
Tx Power	0.4dBm	8.5dBm
Training Time		16 sec
Mode		ADSL2+
Est. Length		0 meter

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ATM layer test
 ATM statistics including user bit rate
 OAM, loopback, Ping, statistics
 PVC scan and mapping

DSL layer test
 ADSL2+ / ADSL2 / ADSL
 Annex A and Annex B
 Annex M
 Impulse Noise Protection (INP)

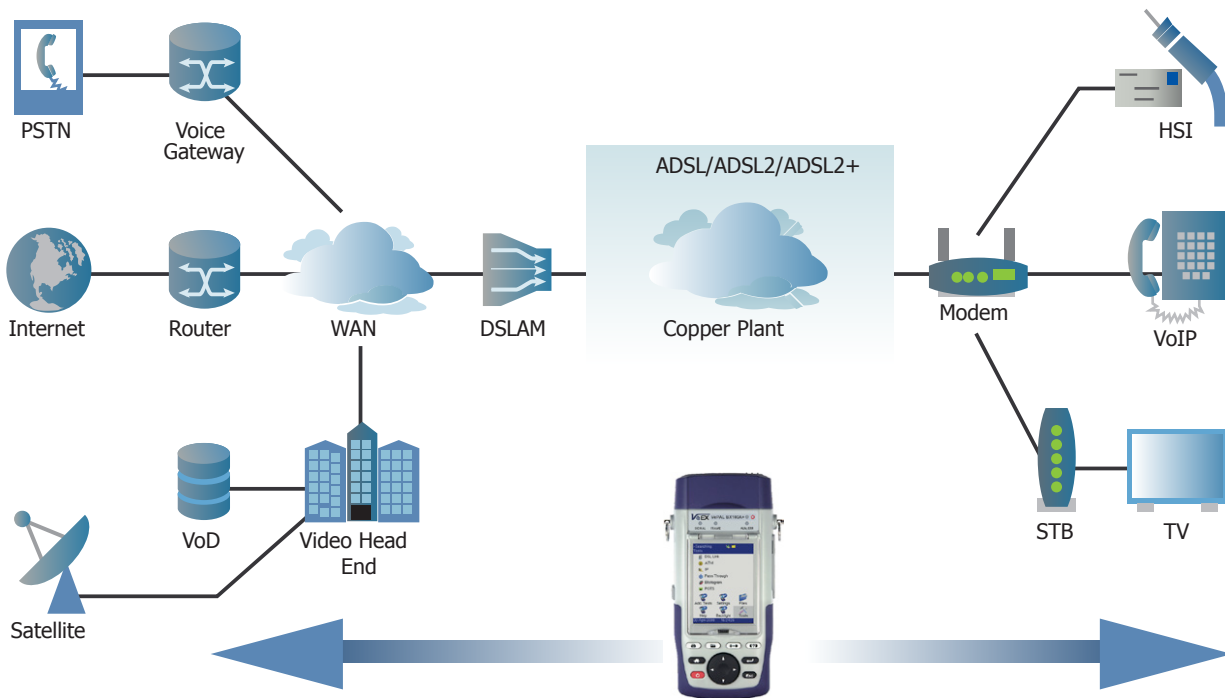
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Physical layer test
 AC/DC voltage, current,
 Resistance, Noise analysis
 Power influence

1

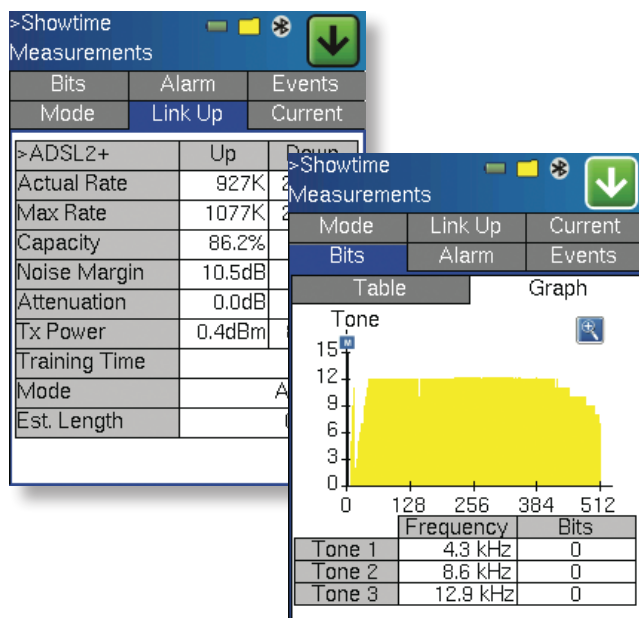
Applications

ADSL and Triple Play installation and provisioning is made easy with the BX series test solutions. The BX100A+ addresses the dominant test scenarios technicians are likely to encounter irrespective of the network or service demarcation point. Check the copper pair for local loop problems, verify link rate, ATM and IP connections. Verify broadband Internet service using a variety of test methods, validate VoIP service using call emulation or evaluate IPTV quality using simple but comprehensive stream analysis. Home CAT-5 network wiring can be tested and monitored, while the WiFi site survey identifies the best wireless Access Point location. Ensure that the regular phone line is working properly using the POTS function.



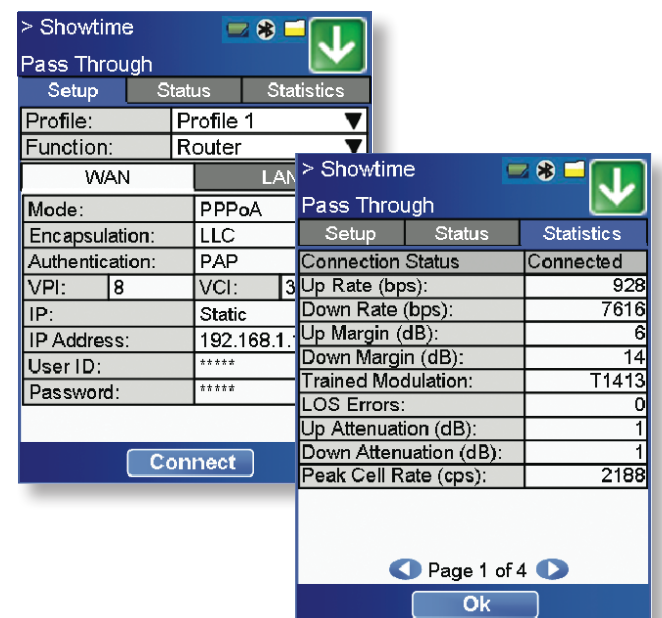
Comprehensive ADSL support

All industry-standard ADSL variants from G.Lite to ADSL2+ are supported. The test set automatically searches for and links up at the highest possible rate available when connected to the line under test. Key showtime parameters are displayed for installation verification and troubleshooting analysis. Bits/tone allocation in both tabular and graphical formats is presented to indicate bit suppression due to noise, cross-talk and other effects. A zoom function and on-screen markers enhance viewing and identification of tones affected by interference.



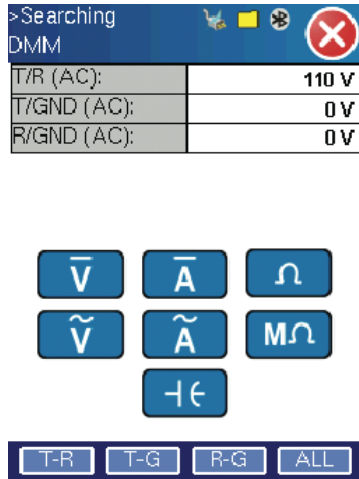
Modem Emulation

In pass through mode, true modem emulation is made possible for further fault diagnosis and isolation. The ADSL data stream is "piped" to the built-in 10/100-T Ethernet port while the ADSL modem acts as a bridge or router depending on configuration. Connection statistics on both the ADSL line and Ethernet port are monitored and reported simultaneously and continuously. Results include upstream/downstream bit rates, attenuation, noise margin, ATM cell rate, and Ethernet IP packets.



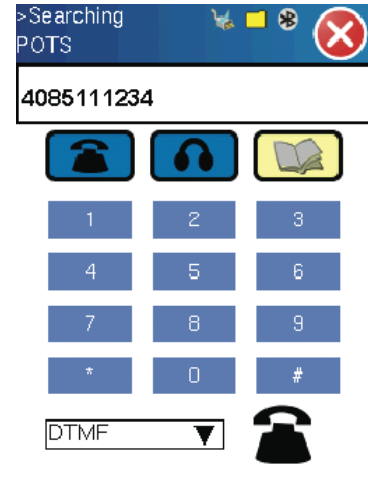
DMM

The Digital Multimeter (DMM) option quickly confirms that there is correct voltage on the copper pair. Common copper problems such as AC induced noise, open or shorted wires, and grounding issues are easily identified. Loop current can also be measured to indicate the presence of resistive faults.



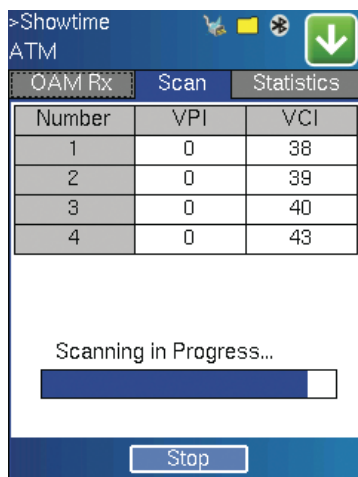
POTS Service Testing

Acting like a butt-set, the POTS option is able to draw dial tone from the telephone service that coexists on the ADSL line. Place and receive phone calls using DTMF/DP dialing, and enjoy hands-free operation using an external headset/microphone. Caller ID and phone book add value to this basic yet essential tool.



ATM Functions

As long as ATM remains the main transport technology for ADSL networks, technicians will be required to test this layer. OAM loopback cells can be used to verify end-to-end connectivity while a segmented OAM ping test can quickly isolate problem locations. Advanced ATM test and handling capability enables the BX test set to loopback ATM cells and provide statistics. Scan up to five separate PVCs typical of Triple Play service delivery to customers over ATM-based networks.



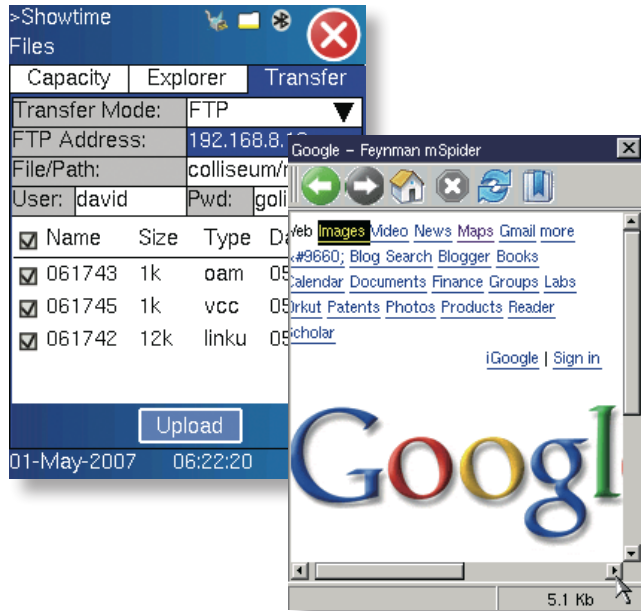
Events

Events mode not only logs and displays a time stamped sequence of the ADSL modem to DSLAM connection process, but also records modem retrains due to link failures, micro-interruptions and other aberrations. At a mere glance, the technician can quickly identify whether the modem is training successfully and whether or not showtime was achieved in a timely manner.



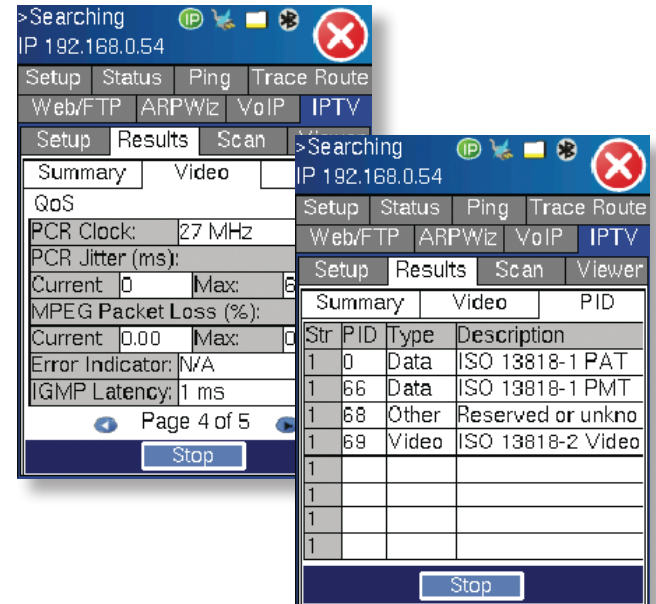
Advanced IP Testing

Triple Play services are IP centric, so IP test functions are no longer considered a luxury. On a daily basis, technicians verify network connections during service installation and restoration, so Ping test, Trace Route, ARP, Web browser, FTP throughput, VoIP Call emulation and IPTV measurement have become routine measurements. IP verification on the BX100A+ is possible over the xDSL Cable Modem and 10/100Base-T Ethernet test ports, while a subset of these tools is available using the USB WiFi adaptor.



IPTV Service Verification

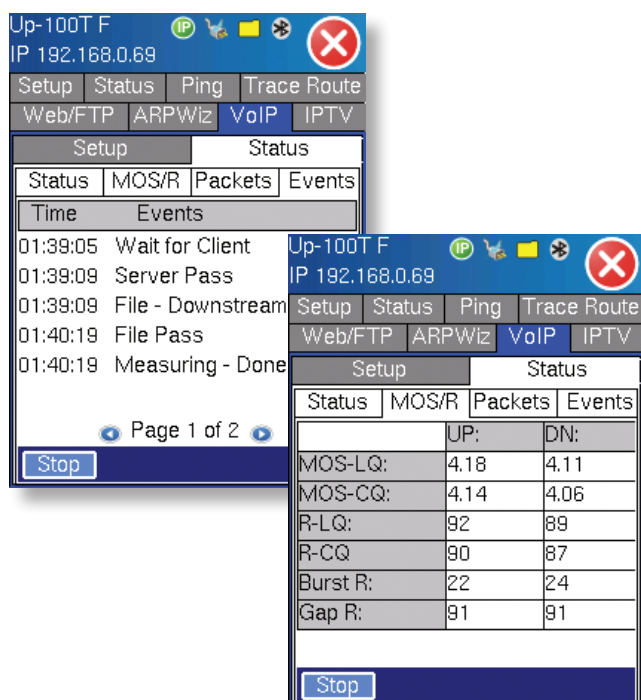
Designed and optimized for technicians turning up IP video service. Transport stream analysis encompasses data/video/audio bit rates and Program Identification (PID) mapping. Packet jitter and loss, IGMP latency (channel zapping), PCR statistics and Viewer function complete the Video Quality of Service (QoS) application suite.



VoIP Testing

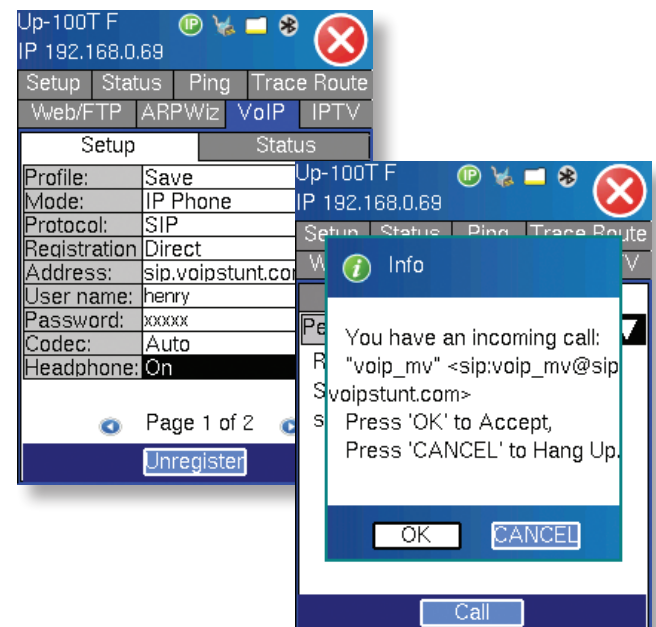
Take advantage of the two separate software options offering different test methods to verify and provision your VoIP network. Testing can be performed over any of the Ethernet or ADSL test ports, ensuring CPE related problems are covered.

VoIP Check – Simulates a VoIP call to the nearest router and measures the round trip MOS score and related VoIP parameters.



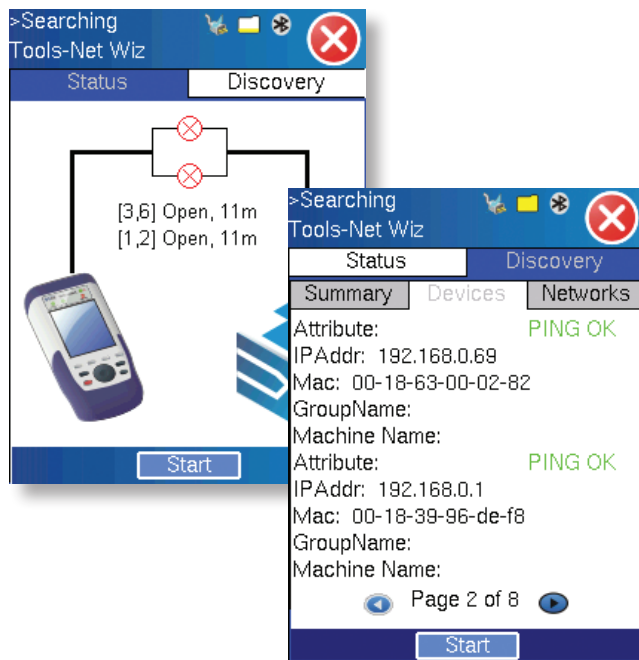
VoIP Expert – Generates industry standard wave files to verify MOS and R-factor values of upstream and downstream paths and includes QoS measurements such as packet jitter, packet loss, and delay. Compatible with all VeX testers including VX1000 VoIP server software.

VoIP Call Expert – Emulates an IP phone and can place and receive calls using SIP or H.323 protocols. Comprehensive Codec support and call destination options verify voice encoding and translation provisioning. Real-time evaluation of subjective voice quality (MOS and R-factor) is made possible using the patented Telchemy test method.



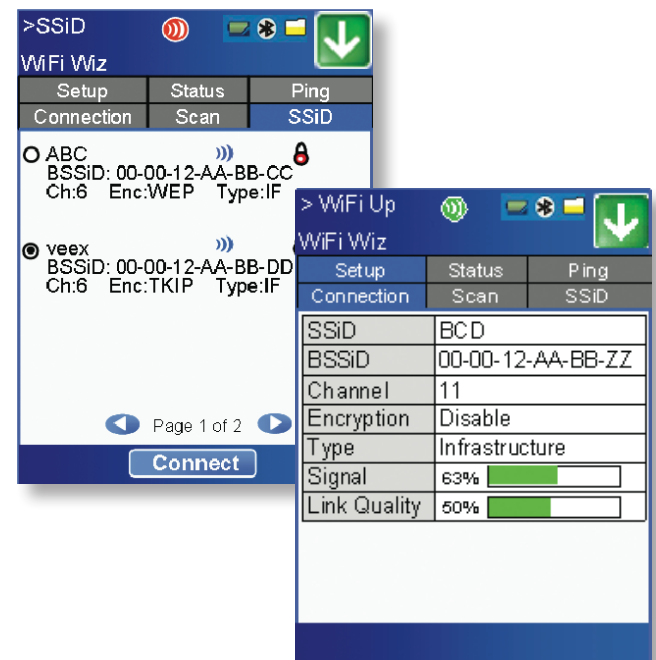
Net Wiz

Ethernet network installation is simplified using this basic, yet powerful feature. A built-in TDR identifies distance to short, distance to open, wire cross, and other anomalies associated with CAT-5 structured cabling. "Sniff" the network using the one-touch discovery feature. Identify routers, gateways, printers, PCs and other devices connected to the network within seconds.



WiFi Wiz

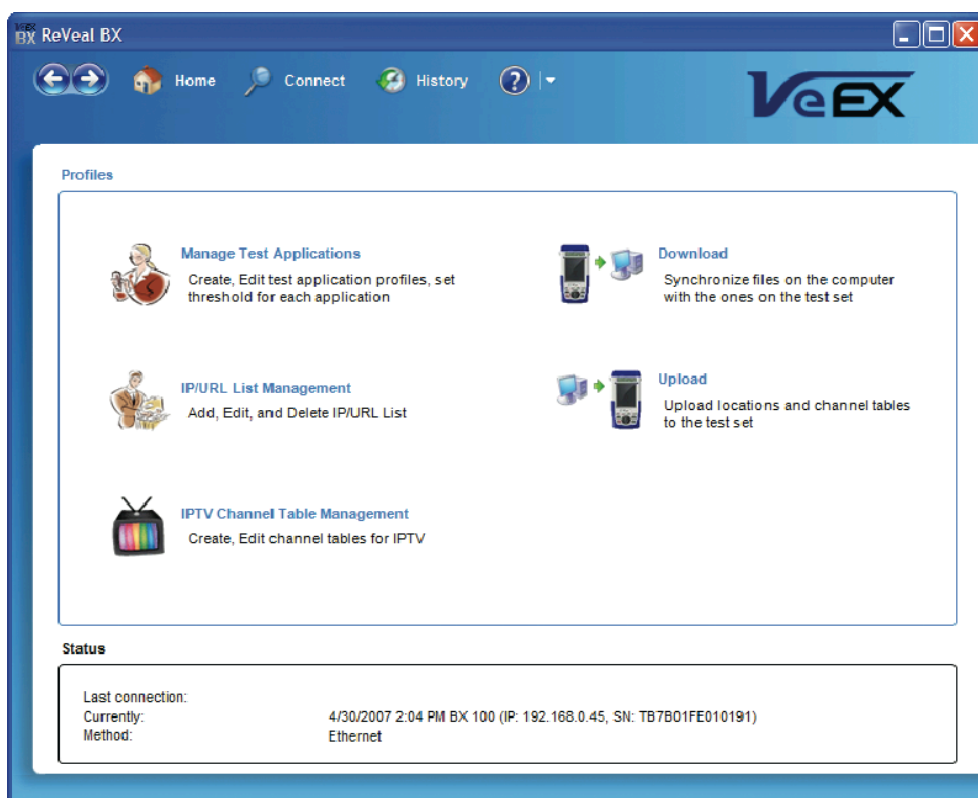
All VePAL products adopt a USB WiFi adaptor to make 802.11 b/g wireless installations a simple task. Scan for existing and available networks or perform signal strength and quality measurements to determine the best location for a new wireless access point. The IP Ping capability ensures the wireless network is properly installed and configured.



ReVeal BX PC Tool

The complementary PC software is a powerful tool used to manage multiple BX series test units. Applications include:

- Manage Test Applications: includes user profiles with preset thresholds
- IP/URL List Management: list of commonly used IP addresses and/or URL links in IP connectivity tests
- IPTV Channel Table Management: program Electronic Programming Guide (EPG) for channel scanning, PID and IGMP test functions
- Download/Upload: test results can be transferred or downloaded and saved to the PC, for test report generation in PDF format or in CSV format for data analysis or test data archiving



Specifications

ADSL2+ Conformance (Annex A/B)

ITU-T G.992.5 (ADSL2+), ITU-T G.992.3 (ADSL2 and RE-ADSL2),
ITU-T G.992.1 (G.DMT), ITU-T G.992.2 (G.Lite), ETSI ETR 328,
ANSI T1.413 issue 2

Annex M supports ADSL2+ and ADSL2

Physical Layer

Current, Link Turn Up, and Maximum Bit Rates, Capacity, Noise Margin, Attenuation, Connection Method, Training Time, and Number of Syncs

Event Log

Bits per Tone (graphical and tabular formats)

SNR (graphical and tabular formats)

Errors

Loss of signal

Severely errored frames

RS corrected bytes

CRC, FEC, HEC, LCD, NCD

IP Connectivity

PPPoE, PPPoA, Bridged, Routed

Encapsulations: LLC SNAP, VC MUX

Address Mode: DHCP, IPCP, Static (BX100A+ only) with CHAP/PAP

DNS Support

Data IP Test

IP Statistics: TX/RX %, lost packets, packet delay, PING, (single, multiple and continuous), Trace Route, Echo Response and Web/FTP test

ATM

ATM OAM Analysis and Generation

Total RX/TX cells

RX dropped cells

RX CRC errors

TX AAL5 frames, RX AAL5 frames

RX AAL5 error

VCC scan

Ethernet

Pass through

- Pass through function, bridged or routed

DSL side

- RX/TX packets
- RX/TX bad packets
- RX/TX bytes

Options

DMM

Voltage: 0 to 240V

Current: 0 to 110mA

Resistance: 0 to 100MΩ

Capacitance: 10nF to 10μF

Measurement accuracy: 5%

POTS

Pulse or DTMF dialing

Monitor mode during an active call

Incoming caller ID

Phone book for quick dialing

IP Testing

Ping, Trace Route, ARP, FTP/Web tests, Web-browser. These tests are done via the chassis 10/100-T port or via DSL modem emulation.

IPTV

Provides true STB emulation

Supports IGMP/RTSP signaling, MPEG2/4, H.264 encoding, RTP/VC1/
MPEG-TS transport streams

Video/Audio rates

Channel zapping for quick and complete installation check

MPEG4 and H.264 real-time video decode

VoIP Testing

VoIP Check

- Simulates VoIP call to the nearest router
- Round Trip MOS score

VoIP Expert

- MOS and R-factor measurement
- Packet Statistics: packet loss, jitter, delay

VoIP Call Expert

- VoIP call setup with VoIP USB adaptor
- Supports SIP and H.323 protocols
- Codec: G.711U, G.711A, Optional G.723, G.729

NetWiz

Available on 10/100-T chassis port

Detect distance to open/short, wire cross, impedance mismatch

Network device discovery

Auto Ping verification

WiFi Wiz

Supports 802.11 b/g

SSID detection, infrastructure, Ad-hoc, and encryption

Signal strength and qualify site survey

IP connection verification

General Specifications

Size	210 x 100 x 55 mm (H x W x D) 8.25 x 3.75 x 2.25 in
Weight	Less than 1 kg (less than 2.2 lb)
Battery	Lilon battery pack
Battery Operating Time	> 3 hours
AC Adaptor	Input: 100-240 VAC, 50-60 Hz Output: 15VDC, 3.5A
Operating Temperature	-10°C to 45°C (14°F to 113°F)
Storage Temperature	-20°C to 70°C (-4°F to 158°F)
Humidity	5% to 95% non-condensing
Display	3.5" QVGA 320x240 full color touch-screen
Ruggedness	Survives 1.5 m (5 ft) drop to concrete
Water resistance	May be used in heavy rain
Interfaces	USB 2.0 Host and Client, RJ45 10/100-T Ethernet, Bluetooth (optional)
Languages	Multiple languages support

Ordering Information

Z01-00-008P	VePAL BX100A+ Handheld ADSL2+ Annex A Test Set
Select one:	
Z01-04-001P	VePAL BX100A+ Handheld ADSL2+ Annex A Test Set (Conexant chipset)
Z01-04-002P	VePAL BX100A+ Handheld ADSL2+ Annex B Test Set (Conexant chipset)
Z01-04-003P	VePAL BX100A+ Handheld ADSL2+ Annex A Test Set with INP support (Texas Instruments chipset)

Interfaces/Test Options

499-05-006	ADSL Annex M
499-05-067	Bitstogram
Z66-00-001P ¹	POTS Expert, incl. Earpiece (requires RJ45 to alligator cable)
Z66-00-002P ¹	DMM Expert (requires 2mm banana cable)

¹Options are mutually exclusive.

Additional Options

(via USB, 10/100 Base-T Management Port)

499-05-001	Web Browser (requires advanced IP option)
499-05-002	NetWiz
499-05-003	Remote Control
499-05-008	IPTV Expert
499-05-095	VoIP G.723 Codec
499-05-096	VoIP G.729 Codec
499-05-102	VoIP Check
499-05-175	USB Bluetooth Dialing and File Transfer Support (USB Bluetooth adaptor not included)
Z33-00-001	VoIP Expert, incl. VoIP Check option
Z88-00-001G	WiFi Wiz, incl. USB WiFi Adaptor
Z88-00-001P	VoIP Call Expert, incl. VoIP USB Adaptor & Earpiece
Z88-00-005G	Advanced IP, incl. Ethernet Cable

Recommended Accessories

A02-00-001G	Car Adaptor
C02-00-002G	Carrying Pouch
F02-00-002G	RJ45 - 2 STD Alligator Clip Cable 2 m (6 ft)
F02-00-003G	RJ45 - 2 Bed of Nail Clip Cable 2 m (6 ft)
Z77-00-002G	2mm Banana to Alligator Cable
Z77-00-003G	2mm Banana to Bed of Nail Clip Cable
Z77-00-006G	LCD Protective Film (Pack of 5)
Z99-99-007G	USB Bluetooth Adaptor (requires 499-05-175)
Z99-99-010G	Earpiece

Replacement Items

403-15-001G	Top Connector Cover Hinge (Pack of 5)
405-02-001G	Screen Protector
405-02-002G	Top Connector Cover
A01-00-001G	AC Adaptor
B02-03-002G	Battery Pack
B02-06-002G	Extended Battery Pack
C01-00-001G	Carrying Case (Basic)
C03-00-001G	Shoulder Strap
F02-00-001G	Ethernet Cable RJ45 to RJ45 2 m (6 ft)
F04-00-001G	Power Cord - US 2 m (6 ft)
F04-00-002G	Power Cord - EU 2 m (6 ft)
F04-00-003G	Power Cord - UK 2 m (6 ft)
Z77-00-001G	Stylus with String (Pack of 5)



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