

2008 Global Test & Measurement
Emerging Company of the Year Award

VePAL BX100A

Handheld ADSL Test Sets

ADSL network testing simplified

VeEX™ VePAL BX100A series are next generation test solutions for ADSL/ADSL2/ADSL2+ 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 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 and FTP upload support for test result storage/file transfer
- 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 LiIon battery pack/s. Greater battery autonomy provided in standby mode
- Advanced IP connection tests; Ping, trace route, ARP Wiz, web browser, and FTP upload/download
- Optional NetWiz cable diagnosis with network statistics
- Optional VoIP call emulation and MOS performance analysis
- Optional WiFi Wiz site survey with internet connection test

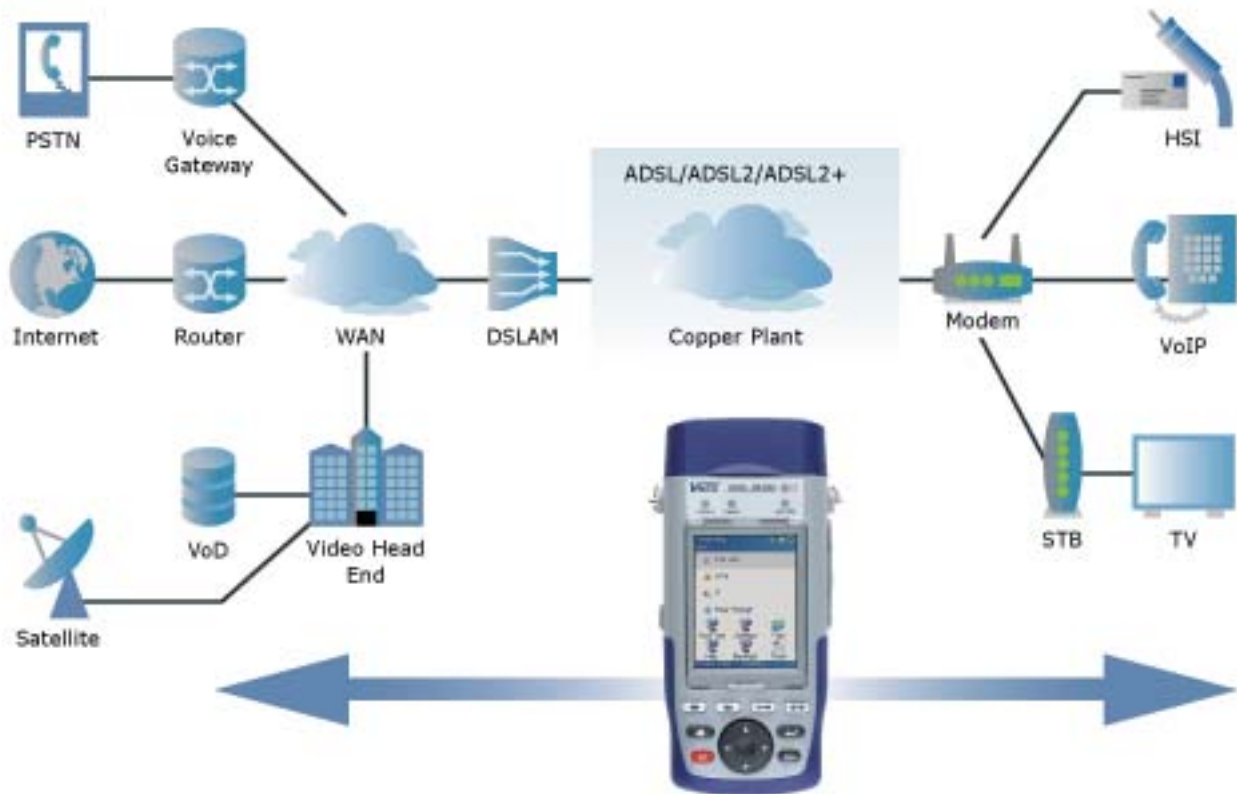
Key Features

- 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 loop-back 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 L Reach extended mode 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 (modem emulation) mode
- IGMP latency (channel zapping), Media Delivery Index (MDI) and Primary Clock Reference (PCR), and jitter measurements
- Optional POTS Expert for placing and receiving DTMF calls
- Optional DMM for measuring AC/DC voltage and current, loop resistance, and leakage resistance

Broadband Expert

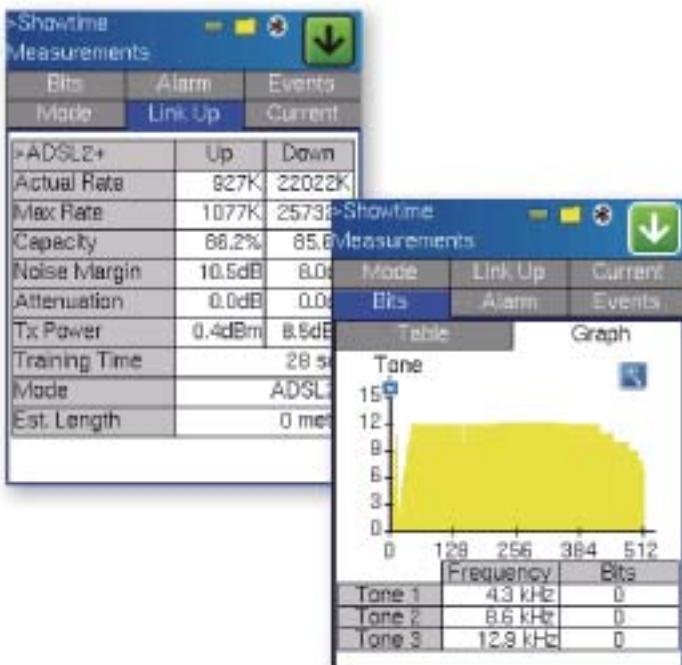
Applications

ADSL and Triple Play installation and provisioning made easy. The BX100 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/tones allocation in both tabular and graphical formats is presented to indicate bit suppression due to noise, cross-talk and other affects. 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 emulates 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.



Digital Multimeter

The 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

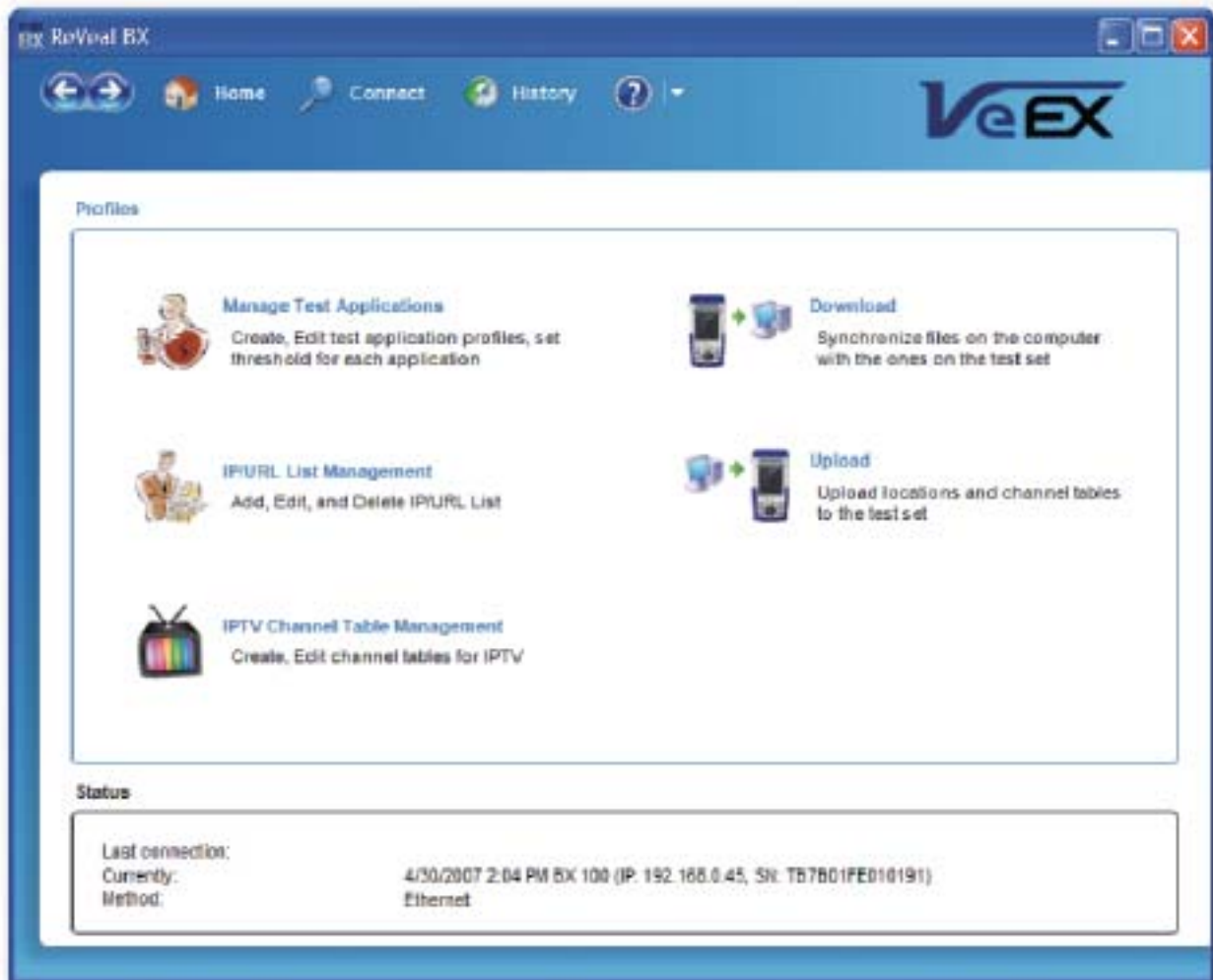
Acting like a butt-set, the POTS option is able to draw dial tone from the telephone service that co-exists on the ADSL line. Place and receive phone calls using DTMF or DP dialing, and enjoy hands-free operation using an external headset/microphone. Caller ID and phone book add value to this basic yet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



Manage Applications

A variety of frequently used functions can be pre-programmed and managed using the ReVeal BX software utility. Applications include:

- Manage test applications including user profiles with preset thresholds
- IP/URL list management of commonly used IP addresses and/or URL links in IP connectivity tests
- IPTV channel table management to program Electronic Programming Guide (EPG) for channel scanning, PID and IGMP test functions
- Download or Upload files, tests results from computer to test set and vice versa



ATM functions

As long as ATM remains the main transport technology for ADSL networks, technicians will be required to test this layer. OAM loop-back 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 to loop-back ATM cells and provide statistics. Scan up to five separate PVCs typical of Triple Play service delivery to customers over ATM based networks.

OAM Rx	Scan	Statistics
Number	VPI	VCI
1	0	36
2	0	38
3	0	40
4	0	43

Scanning In Progress..

Stop

Events mode

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

Mode	Link Up	Current
Bits	Alarm	Events
Time	Event	
05:17:25	Link Down	
05:17:27	Hand Shake	
05:17:32	Discovery	
05:17:33	Training	
05:17:41	Showtime	

Advanced IP testing

Complete IP verification is possible using either the ADSL or Ethernet test ports. Considering that all Triple Play services are IP centric, a powerful and comprehensive set of IP test capabilities is no longer considered a luxury or a "nice to have" feature. Technicians need to verify network connection during installation and/or service restoration, and thus rely on features such as Ping test, Trace Route, ARP, Web browser, and FTP upload/download to get the system "up and running".

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.

Name	Size	Type	Date
061743	1k	oam	05/01/07
061745	1k	vcc	05/01/07
061742	12k	link	05/01/07

Upload

01-May-2007 06:22:20

QoS

PCR Clock: 27 MHz

PCR Jitter (ms):

Current: 0 Mac: 0

MPEG Packet Loss (%):

Current: 0.00 Mac: 0.01

Error Indicator: N/A

IGMP Latency: 1 ms

Str	PID	Type	Description
1	0	Data	ISO 13818-1 PAT
1	66	Data	ISO 13818-1 PMT
1	68	Other	Reserved or unused
1	69	Video	ISO 13818-2 Video
1			
1			
1			
1			

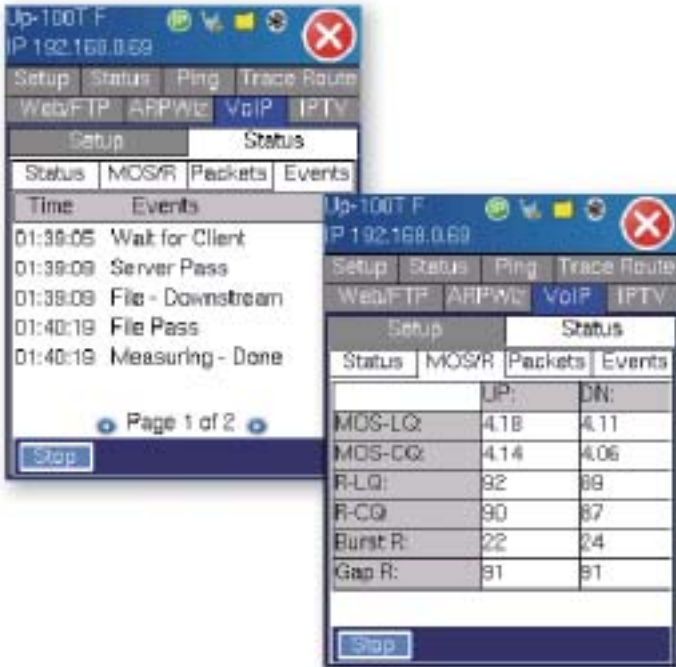
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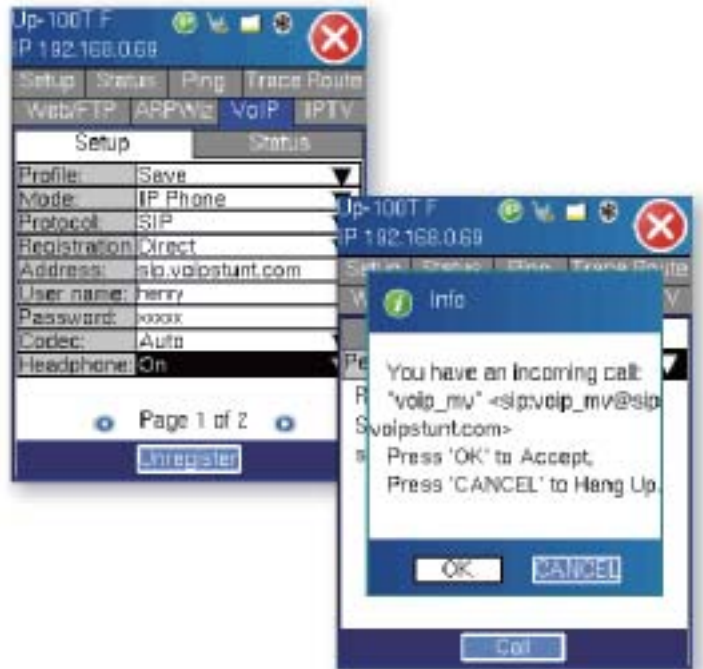
Voice over IP testing

Take advantage of the two separate software options offering different test methods to verify and provision your VoIP network. Being able to test over the Ethernet and/or ADSL test interface ensures that the technician has all bases covered when confronted with CPE related problems.

The VoIP Expert generates industry standard wave files to verify MOS and R-Factor values of upstream and downstream paths and includes QOS measurements like packet jitter, packet loss, and delay.



The 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 which has been integrated into all VPAL test sets.



Net Wiz

Ethernet network installation 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.



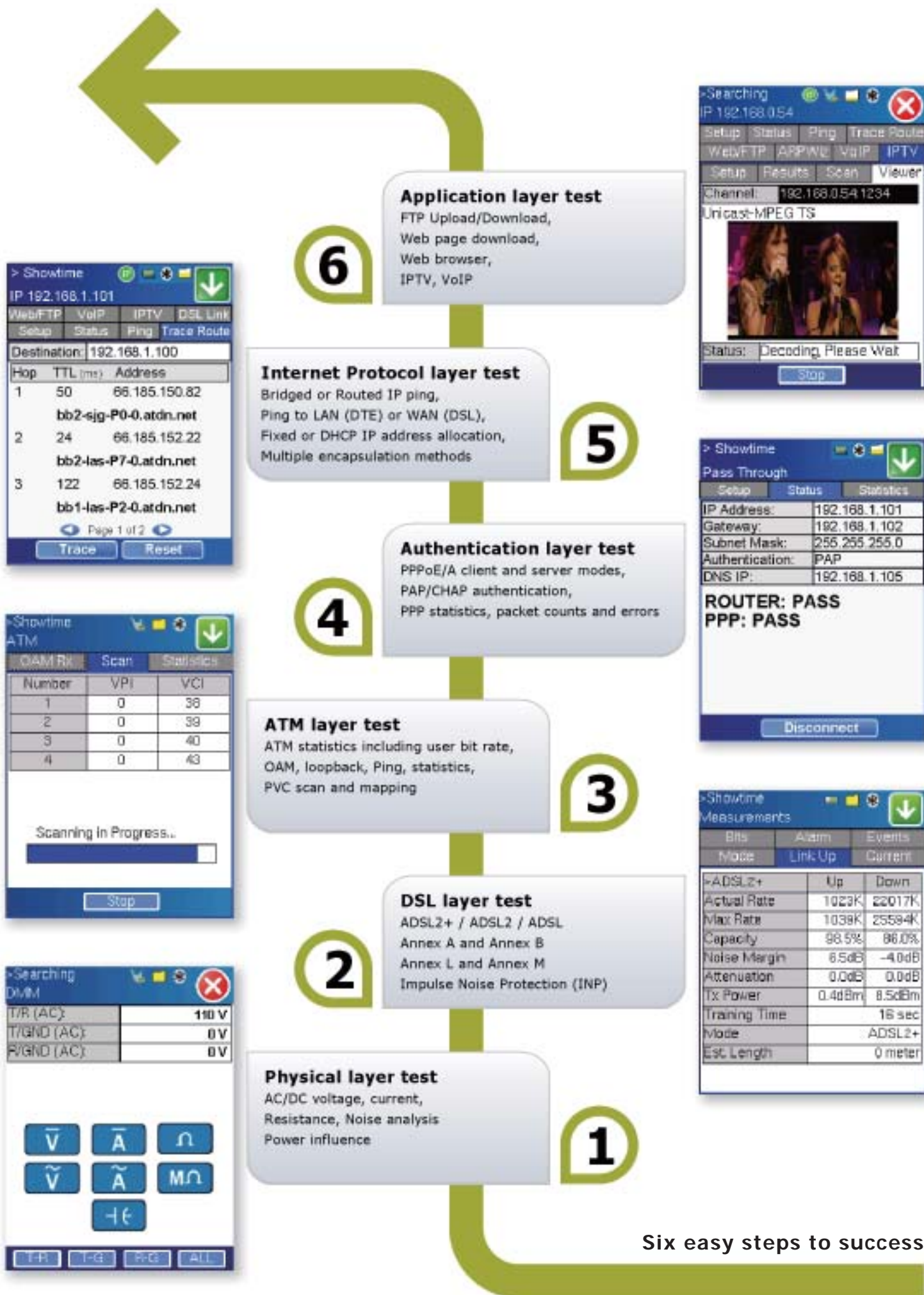
WiFi Wiz

All VPAL products adopt an 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 finally ensures the wireless network is properly installed and configured.



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

> Searching
IP 192.168.0.54

Channel	Results	Scan	Viewer
192.168.0.54 1234			

Unicast-MPEG TS

Status: Decoding, Please Wait

> Showtime
ATM

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

Scanning In Progress..

> Showtime
Pass Through

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

> Searching
DMM

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

V A Ω
Ṽ Ã MΩ
+E

> Showtime
Measurements

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

Six easy steps to success

Specifications

ADSL2+ (Annex A or Annex B) Conformance

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 error frames

RS corrected bytes

CRC, FEC, HEC, LCD, NCD

IP Connectivity

PPPoE, PPPoA, IPoA, Bridged, Routed

Encapsulations: LLC SNAP, VC MUX

Address Mode: DHCP, IPCP, Static 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

TX Dropped Cells

Total RX/TX Cells

RX CRC Errors

TX AAL5 Frames, RX AAL5 Frames

RX AAL5 Error

VCC Scan

Ethernet (Pass through)

Pass through function, bridged or routed

Ethernet (on DSL side)

RX/TX Frames

Collisions

RX/TX Errors

RX/TX Bytes

RX/TX dropped

RX/TX Frames

Collisions

RX/TX Errors

Advance IP test suit

Ping, trace route, ARP wiz, FTP/Web tests. These tests are done via the chassis 10/100-T port or via DSL modem emulation

Service Verification Options

VoIP Expert

Provides VoIP Metrics

- 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 Protocol

Codec: G.711U, G.711A, Auto

IPTV

Provides true STB emulation

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

Packet Statistics: packet loss, jitter, delay, PID mapping

Video/Audio rates

Channel zapping for quick and complete installation check

WiFi Wiz

Supports IEEE 802.11 b/g

SSID detection, Infrastructure, Ad-hoc, and encryption

Signal strength and quality site survey

IP connection verification

Net Wiz

Available on 10/100-T chassis port

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

Network device discovery

Auto ping 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 lbs)
Battery	Lilon smart battery 2400 mAh 10.8VDC
AC Adapter	Input: 100-240 VAC, 50-60 Hz Output: 15VDC, 3.5A
Operating Temperature	-10°C to 50°C (14°F to 122°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 on all sides
Water-resistance	Water resistant - may be used in heavy rain
Interfaces	USB 2.0 Host and Client, RJ45 10/100T Ethernet, Bluetooth 2.0 (optional)
Languages	Multiple languages can be supported

Ordering Information

Z01-01-001P	VePAL BX100A Handheld ADSL2+ Annex A Test Set
Z01-01-002P	VePAL BX100A Handheld ADSL2+ Annex B Test Set
Z01-01-005P	VePAL BX100AT Handheld ADSL2+ Annex A Test Set with INP support

Interfaces/Test Options

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

Additional Options

499-05-001	Web Browser (require advanced IP option)
499-05-002	NetWiz
499-05-003	Remote Control
499-05-007	VoIP Expert
499-05-008	IPTV Expert
Z88-00-001G	WiFi Wiz, incl. USB WiFi Adaptor
Z88-00-001P	VoIP Call Expert, incl. VoIP USB Adaptor & Earplug
Z88-00-005G	Advanced IP, incl. Ethernet Cable

Recommended Accessories

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
Z99-00-003G	Earplug

Replacement Items

405-02-001G	Screen Protector
A01-00-001G	AC Adaptor
A02-00-001G	Car Adaptor
B02-03-001G	Battery Pack
C01-00-001G	Carrying Case (Basic)
C02-00-002G	Carrying Pouch
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 (pack of 5)



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