



VePAL CX150E Cable Expert

Handheld SLM/Digital Signal and Cable Modem Analyzer

Testing CATV Networks made easy

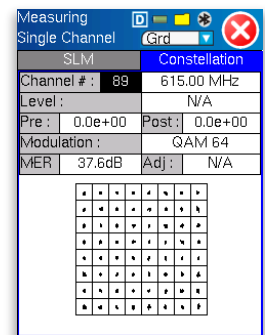
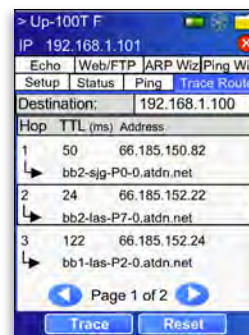
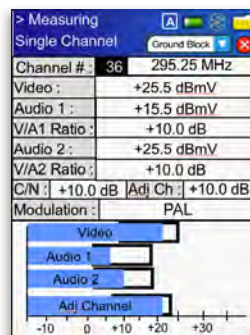
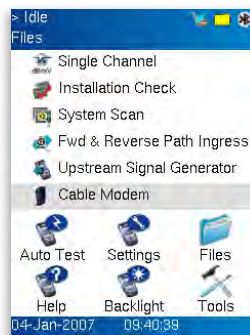
VeEX™ VePAL CX150E provides the next generation testing solution for cable TV network installation and maintenance of analog and digital video, cable modem, and VoIP services.

Platform Highlights

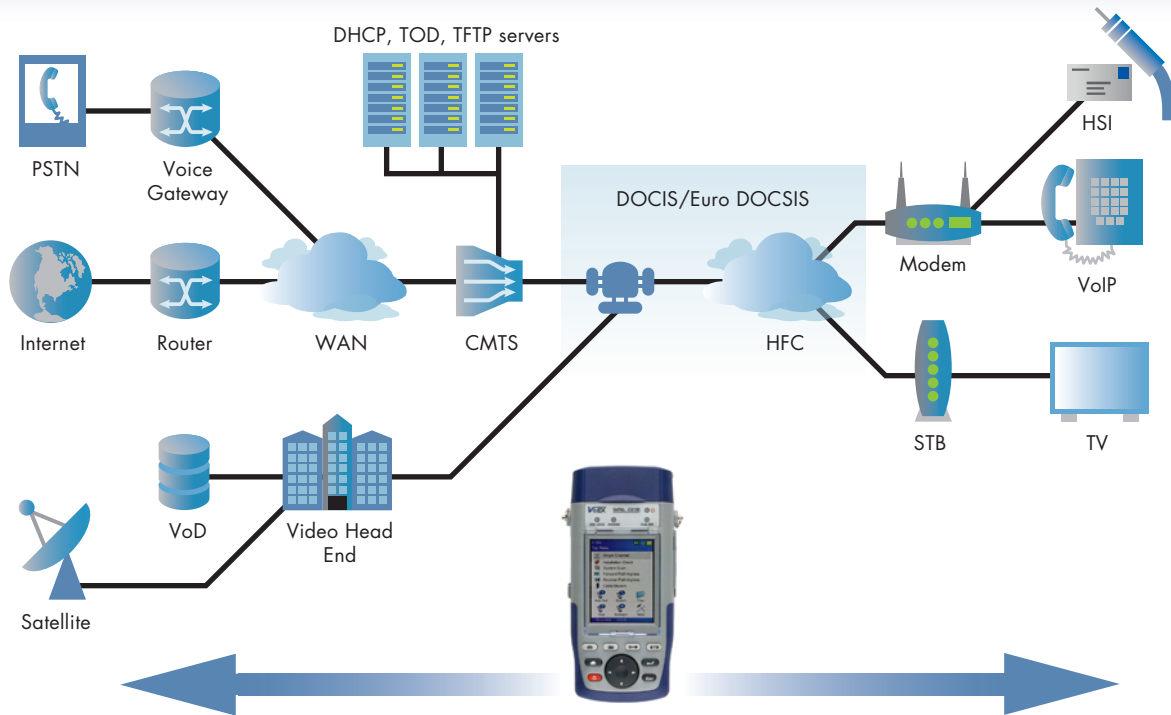
- High Resolution color touchscreen with intuitive GUI suitable for reading in any light conditions
- A robust, handheld unit packed with powerful and flexible features for today's field test environment
- Ideal for the field engineer or technician installing and maintaining CATV networks
- Web Browser for connection to back office applications, workforce management and instrument remote control
- Report generation in various industry accepted formats
- User defined test profiles and automated macros enable fast and consistent turn-up of services
- Manage test profiles, macros, and measurement results using included ReVeal™ PC software
- Extended battery life

Key Features

- Frequency range from 4 to 1000MHz
- Measures PAL and SECAM analog signals
- Measures QAM 64/256 ITU-T J.83 Annex A digital signals
- Single-Channel Measurements
- Installation Check with Location based performance thresholds
- System Scan
- Forward and Reverse Path Ingress Scan
- Euro DOCSIS 1.0/1.1/2.0 Service Verification
- Optional VoIP Expert for VoIP Performance Analysis
- Auto Test
- IP connectivity tests: Ping, Trace Route, Echo Response with DNS support, ARP Wiz
- Web download verification
- FTP download/upload verification
- Optional NetWiz application to validate the health of the network and connected devices, and to perform cable diagnostics
- Optional VoIP Expert and VoIP Talk Expert for VoIP Performance Analysis and Call Emulation
- Optional IPTV function for complete triple play testing
- Optional WiFi Site Survey and Internet Connection verification
- Modem Emulation



Applications



Upstream and Downstream synchronization parameters are displayed with Pass/Fail criteria after ranging and registration is completed. Additional screens display performance values, network related IP addresses and other connection statistics.

| Setup | Results | IP | Turn Up | Events |
|----------------------|---------|----|---------|--------|
| Downstream Freq: | 759 MHz | | | |
| Downstream Lock: | Pass | | | |
| Upstream Sync: | Pass | | | |
| Downstream Sync: | Pass | | | |
| Upstream Ranging: | Pass | | | |
| DHCP: | Pass | | | |
| Time Of Day: | Pass | | | |
| TFTP: | Pass | | | |
| Configuration File : | Pass | | | |
| Registration: | Pass | | | |
| Connection: | Online | | | |

The built-in Web browser is the ultimate test to verify internet connectivity. Web page download performance statistics also provide the technician with fast information concerning any possible downstream throughput problems.



Events mode displays a connection record when CX150E connects to the CMTS—problems are easily identified enabling fast diagnosis. Modem retrains and other signal conditions are also reported providing a link history.

| Time | Events |
|----------|--------------------------|
| 14:45:20 | Upstream Sync Pass |
| 14:45:12 | Upstream Ranging InProg |
| 14:45:12 | Downstream Sync Pass |
| 14:44:59 | Downstream Sync InProg |
| 14:44:59 | Upstream Sync Pass |
| 14:44:56 | Upstream Sync InProgress |
| 14:44:56 | Downstream Lock Pass |
| 14:44:55 | Downstream Lock InProg |

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Comprehensive IP features are available to validate the entire network. Ping testing checks basic connectivity with latency values, while advanced FTP functions verify both upstream and downstream performance.

| Setup | Result |
|-----------------|----------------|
| ST 15:02:31 | ET 00:00:10 |
| Destination | www.veexinc.co |
| PING: | PASS |
| Sent | 10 |
| Received | 10 |
| Unreach | 0 |
| Missing | 0 |
| Round Trip (ms) | |
| Current | 428 |
| Average | 298 |
| Max: | 428 |
| Min | 183 |

Specifications

Performance

- Frequency Range: 4 to 1000MHz
- Level Input Range: -40dBmV to +55dBmV
- Level Accuracy: ± 1.0 dB typical
- Amplitude Resolution: 0.1dB
- C/N Accuracy: ± 1.5 dB typical
- Downstream Modulation: 64/256 QAM Annex A
- Digital Lock Range 64 QAM: -20dBmV to +60dBmV
- Digital Lock Range 256 QAM: -15dBmV to +60dBmV
- Modulation Error Ratio (MER): 21 to 40 dB (± 1.0 dB accuracy typical)
- Downstream FEC Range: 1.0×10^{-9} to 9.0×10^{-3}
- Input Impedance: 75 Ohms

Single Channel Measurements

- Analog signal measurements: Video and audio power level, video to audio ratio, adjacent channel ratio, C/N ratios
- Digital signal measurements: QAM power level, MER, Pre and Post FEC, Constellation, Deep Interleave, Adjacent channel ratio

Installation Check

- Measurement locations: Tap, ground block, Set-Top, and user defined location.
- Analog Measurements: All single channel measurements including tilt, peak-to-valley, min/max video level, min/max video to audio ratio, min/max C/N ratio, max adjacent channel ratio
- Digital Measurements: All single channel measurements including tilt, peak-to-valley values, min/max QAM level, min/max MER, min/max Pre FEC, min/max Post FEC, max adjacent channel ratio

System Scan

Scan on all channels in the active channel plan

- Analog Measurements: Video and audio power levels, video to audio ratio, adjacent channel ratio, C/N ratio, tilt, peak-to-valley, min/max video level, min/max video to audio ratio, min/max C/N ratio, max adjacent channel ratio
- Digital Measurements: QAM power level, Adjacent channel ratio, tilt, peak-to-valley values, min/max QAM level, max adjacent channel ratio

Forward and Reverse Path Ingress Scan

Carrier power level, ingress power level, noise power level, C/I and C/N values. Graphical and numeric display of results.

Upstream Signal Generator

- Frequency Range: 1 MHz to 60 MHz
- TX Level: +1 to +60 dBmV
- Modulation: QPSK, 16QAM, and CW
- Symbol Rate: 2.560M, 1.280M, 640K, 320K, 160K

Euro DOCSIS Cable Modem

- Supports Euro DOCSIS 1.0/1.1/ 2.0
- Downstream/Receiver
 - Demodulation: QAM64, QAM256
 - Data Rate: 30 Mbps (QAM64), 43 Mbps (QAM256)
 - Frequency Range: 108 MHz to 862 MHz
 - Bandwidth: 8 MHz
 - Input Signal Level: -15 dBmV to +15 dBmV
- Upstream/Transmitter
 - Modulation: QPSK, QAM16, QAM32, QAM64, QAM128
 - Data Rate: 0.32 to 30.72 Mbps (TDMA), 2.56 to 35.84 Mbps (SCDMA)
 - Frequency Range: 5 MHz to 65 MHz
 - Bandwidth 200 kHz, 400 kHz, 800 kHz, 1600 kHz, 3200 kHz, 6400 kHz
 - Output Signal Level: +8 to +58 dBmV (QPSK), +8 to 55 dBmV (QAM16), +8 to +54 dBmV (QAM32), +8 to 53 dBmV (S-CDMA)

IP Tests

Ping, trace route, FTP/Web tests. These tests are done via the chassis 10/100T port and Cable Modem interface.

VoIP Expert

Provides VoIP Metrics

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

IPTV

- Provides true STB emulation
- Supports IGMP/RTSP signalling, MPEG2/4, H.264, VC1 encoding, RTP/MPEG-TS transport streams
- Packet Statistics: packet loss, jitter, delay, PID mapping, Video/Audio rates
- Auto zap™ for quick and complete installation check

WiFi Wiz

- Supports 802.11 b/g
- Provides site survey and SSID detection
- Verifies connection to selected SSID

General Specifications

| | |
|-----------------------|--|
| Size | (H x W x D) 210 mm x 100 mm x 55 mm (8.25 in x 3.75 in 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 60°C (14°F to 140°F) |
| Storage Temperature | -20°C to 70°C (-4°F to 158°F) |
| Humidity | 5% to 95% non-condensing |
| Display | QVGA 320x240 full color touch screen |
| Ruggedness | Survives 1m (3 ft) drop to concrete on all sides |
| Water-resistance | May be used in heavy rain |
| Interfaces | USB 2.0 Host and Client, RJ45 10/100T Ethernet, Bluetooth 2.0 (optional) |
| Languages | Multiple languages supported |

Ordering Information

- Z02-01-004P VePAL CX150E Handheld SLM/Cable Modem
- 499-05-001 Web Browser
- 499-05-004 Advanced IP
- 499-05-002 NetWiz
- 499-05-003 Remote Control **
- 499-05-007 VoIP Expert
- 499-05-008 IPTV Expert
- 499-05-017 WiFiWiz**
- 499-05-026 CX150E Upstream Signal Generator
- F02-00-001G Ethernet Cable
- A02-00-001G Car Adapter
- C01-00-002G Carrying Case (Deluxe)

Replacement Items

- F01-00-001G Coaxial Cable
- 407-0833-001G Coaxial Connector
- C01-00-001G Carrying Case (Basic)
- 405-02-001G Screen Protector
- B02-03-001G Battery pack
- A01-00-001G AC Adapter

** Check factory for availability



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