WX150 Wi-Fi

Wi-Fi Air Expert® Test Set

The WX150 test set is a compact and lightweight addition to the Wi-Fi Air Expert family. It provides all the tools necessary for Wi-Fi networks discovery, survey, optimization, performance testing and troubleshooting in a compact form factor.

With countless deployments including residential, private and public Hotspots, managed SMBs and hospitality services, Wi-Fi is both a source of great opportunities and challenges for carriers. Customer expectations are high but they have very limited knowledge of the technologies' environmental limitations or best practices, leading to numerous service calls.

VeEX's Wi-Fi Air Expert provides the tools for reliable, repeatable install procedures that go beyond RF layer analysis. It provides complete performance testing that measures end user's experience under traffic load.

Service calls and end user frustration can often be traced to the common complaint of a "slow network." The Air Expert's V-Perf test can help to unequivocally prove the Wi-Fi network's capacity. With configurable data transmission rate and Pass/Fail threshold, technicians can quickly establish whether the achieved upload and download rates meet SLA requirements and readiness for high bandwidth traffic like audio and video streaming.

Platform Highlights

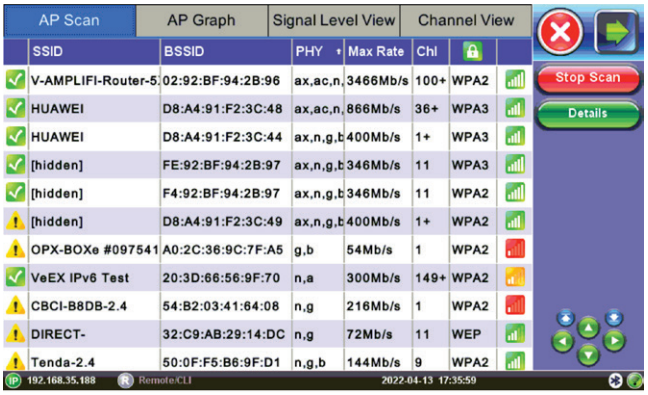
- Supports detection and connection to:
  - 802.11a/b/g/n/ac/ax devices
- Discovers networks and lists Access Points, Clients and Channels in table and/or graphical format
- AP detailed capabilities discovery including SSID, BSSID, channels, security, supported data rates, signal and noise levels, co-channel and adjacent APs and associated clients
- Survey coverage problems with signal and noise levels tracking
- Analyze Channel usage by utilization and number of APs
- Discover associated and non-associated Wi-Fi Clients present in the network
- One button Auto-Test evaluates the health of the Wi-Fi network with analysis of security, coverage, interference, top talkers and connectivity with configurable AP list
- Connectivity testing with DHCP connection to APs, Ping, Trace Route and ARPWiz
- Verify network performance with dual ended V-Perf Upload/ Download throughput testing
- Ethernet 10/100/1000-T and 1000-X ports to verify end-to-end throughput performance
- Ethernet connectivity and PoE testing
- Optional dual band 2.4 GHz and 5 GHz spectrum analyzer to easily discover and identify Wi-Fi and non-Wi-Fi interference

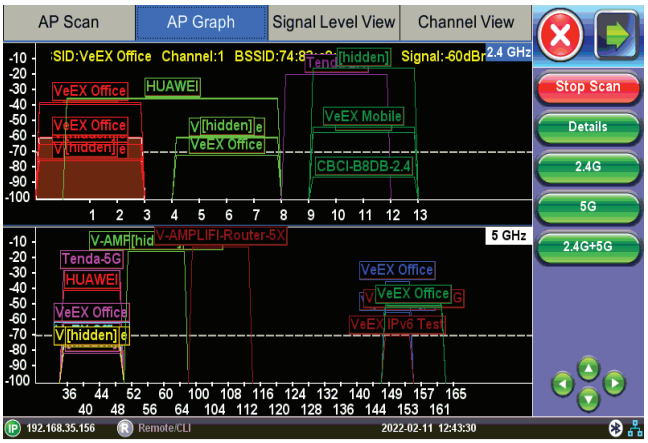
Key Features

Discover Your Network

The Air Expert scans the Wi-Fi network for 802.11 a/b/g/n/ac/ax APs and Clients. Results are provided in table and graphical format.

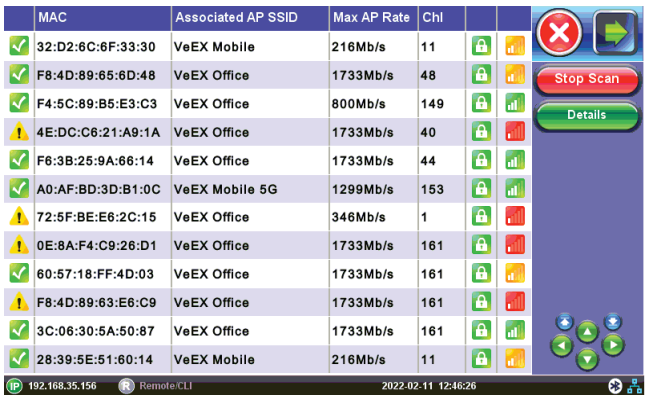
AP Discovery





Scan results include AP detailed capabilities: SSID, BSSID, channels, security, supported data rates, signal and noise levels, SNR, co-channel and adjacent channels AP, BSS load, associated clients. Warning signs alert technicians about AP configuration issues as well as if any measurements go beyond user configurable thresholds. The table view can be filtered by any field in order to help in troubleshooting, while the graphical view provides an easy to understand picture of co-channel and adjacent channel interferers.

Clients Discovery

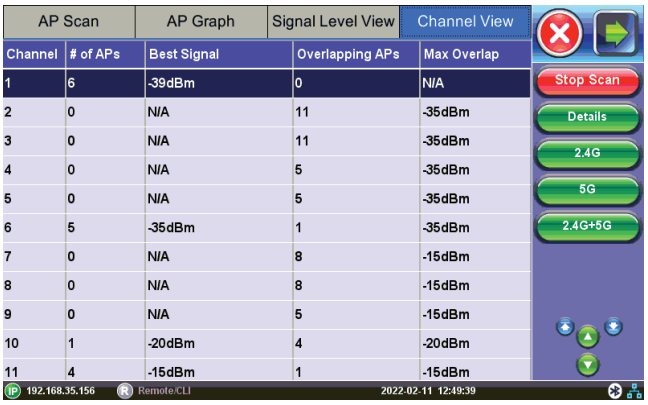


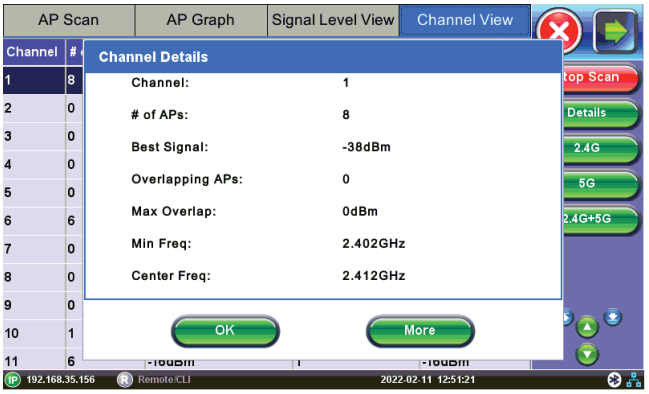
The Air Expert Client scan function monitors all Wi-Fi channels to detect Wi-Fi clients with the SSID they are associated to, as well as non-associated clients (clients not connected to an AP). Network administrators can ensure that the devices are authorized on the network by checking against their MAC address and manufacturer information as well as monitor the client's activity.

Channel Utilization Discovery

With Wi-Fi as a shared medium, all devices on the same channel share air time. An AP located on a channel with active co-channel APs or adjacent channel APs will lead to lower performance as they are competing for the same available air time.

The Air Expert Channel scan function provides a view of channel utilization in table format to quickly identify channels with high utilization.



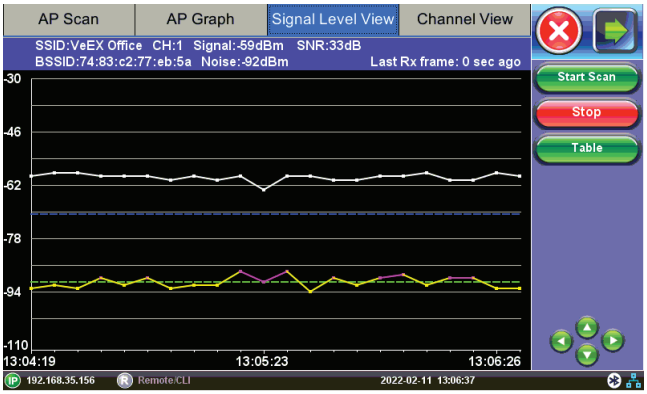


Detailed channel measurements can be sorted by any field including utilization %, number of APs, number of co-channel APs and strongest signal. This information is crucial as technicians need to identify if performance issues are linked to high channel utilization and must quickly decide if reconfiguring the AP to a new channel is advisable.

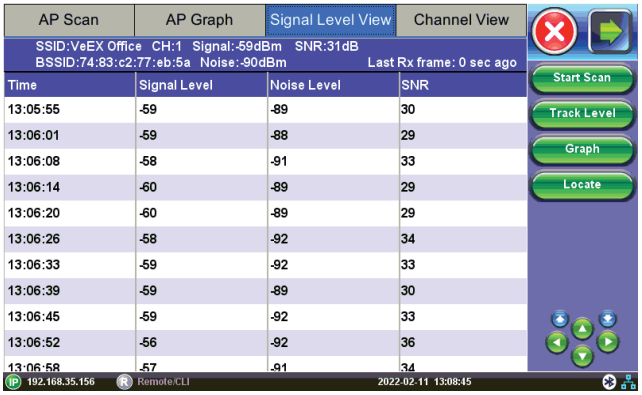
Survey Your Network

Level Tracking

A required step for any installation is to survey the facility for proper coverage with a site walk through. The Air Expert Level tracking function facilitates this step by providing Signal and Noise levels tracking in graphical and table format.

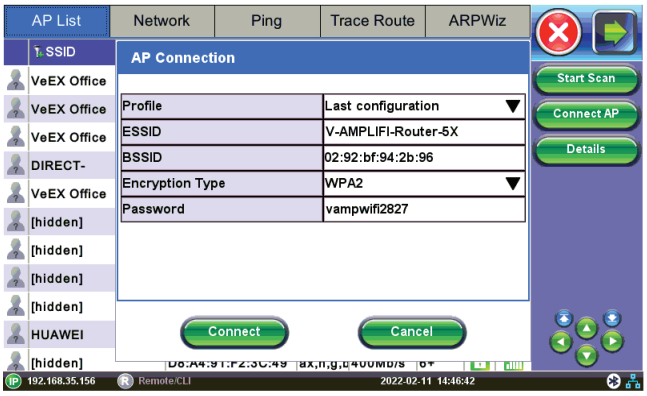


With user configurable thresholds, it is easy to pinpoint where the Signal or Noise levels fall below acceptable quality and ensure site readiness. With a set of pre-configured and configurable location labels, add location information to your measurements to create a full record of the facility walk through.

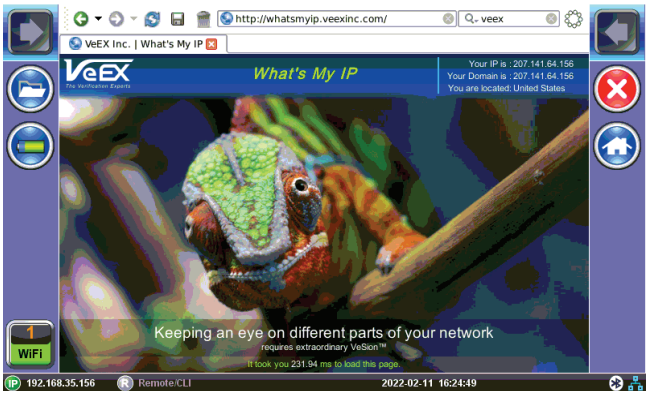


Connectivity Testing

To ensure that network connectivity is available, the Air Expert emulates a client and connects to an AP with customer credentials. Supported security protocols include WEP, WPA, WPA2, and WPA3 as well as Splash page/Captive portal webpage login.The interface allows the technician to review association and authentication status, and provides detailed information about network parameters: assigned IP address, Gateway, DHCP server and DNS server addresses.



Network troubleshooting tools Ping and Traceroute verify connectivity to the internet while the ARPWiz application discovers the local network.



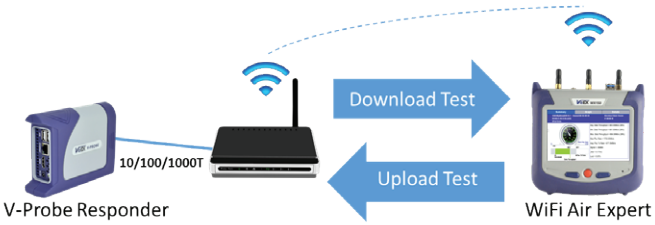
Optimize Your Network

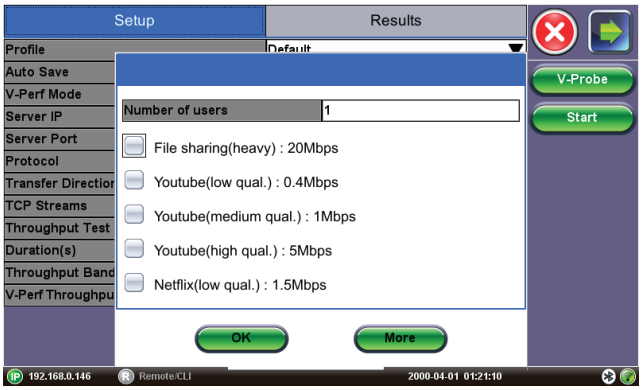
V-Perf Throughput Testing

Surveying the RF environment is a good first step for any installation to determine network performance in terms of coverage and connectivity. But real time and bandwidth-hungry applications like video and audio streaming, place a traffic load strain on the network that cannot be properly assessed with RF metrics alone. The customer's true Quality of Experience (QoE) can only be measured with traffic loads simulating an end user's application data traffic. The Air Expert V-Perf dual-ended upload and download traffic test evaluates the network's performance under load and measures QoE parameters from an end user's point of view.

Technicians can quickly establish whether the achieved upload and download rates meet SLA requirements and readiness for high bandwidth traffic like audio and video streaming, with pre-configured profiles for common applications (Netflix, YouTube, Skype, VoIP….).

V-Perf dual-ended test is compatible with iPerf3 servers, Air Expert or companion V-Probe responders, connected directly on the back of the AP 10/100/1000T to perform Wi-Fi to Ethernet data throughput tests. The test can also be performed to a cloud-based server, qualifying Wi-Fi and Broadband access bandwidth in one step.





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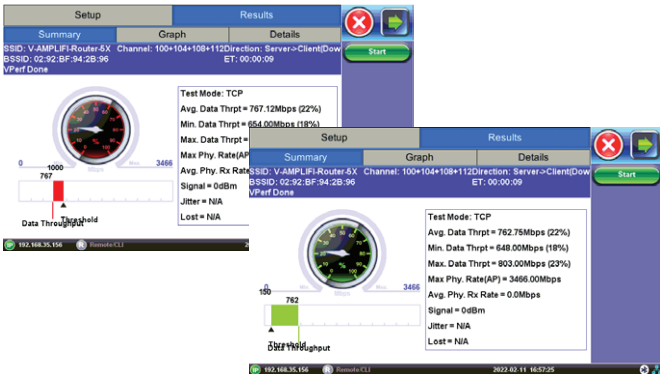


V-Probe Responder

The V-Probe Responder is a companion accessory for the Air Expert, and can be used as a V-Perf TCP/UDP test responder on the 10/100/1000BaseT interface. Quick to setup, V-Probe is discovered, controlled and configured directly from the Air Expert user interface. This allows technicians to quickly quality the air interface performance through the customer's Wi-Fi Access Point.

Site Survey Map

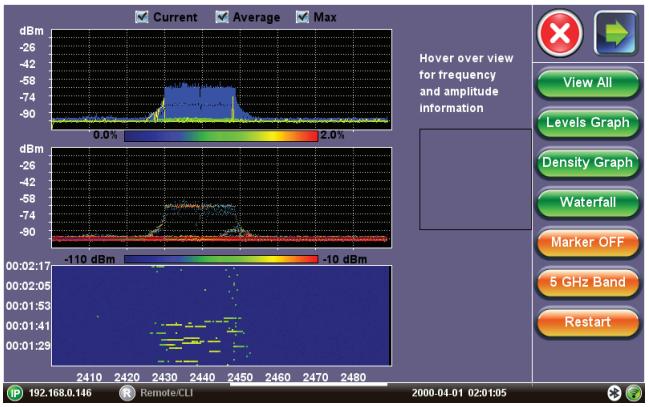
In site survey mode, user marks his/her location on the map and V-Perf measurement are associated with the user's location.

Troubleshoot Your Network

Wi-Fi Spectrum Analyzer

With the 2.4 GHz and 5 GHz RF frequency bands open for unlicensed use, Wi-Fi's frequency bands are available for anyone to use. The 2.4 GHz frequency band is especially popular and crowded. It is used by many common RF emitting devices including cordless phones, Bluetooth, Zigbee, baby monitors, wireless audio or security systems. All of these devices constitute sources of non-Wi-Fi interference. They emit frequencies either on a single narrow frequency range like Zigbee, or frequency hopping across the entire spectrum, like Bluetooth, or continuously emitting across the entire spectrum, like a microwave oven. These interferers do not follow Wi-Fi protocol rules, so interference can start while Wi-Fi devices are in the middle of a transmission and last for an unknown duration. In some cases, Wi-Fi will attempt to continue operation in the presence of RF interference by automatically switching to a lower data rate, which slows the use of wireless applications. In the worst case, if the interference source is strong and constant, the Wi-Fi devices will hold communications until the interfering signal goes away completely.

Many highly disruptive and intermittent Wi-Fi performance issues can be traced to non-Wi-Fi interferers. But unless technicians are armed with a specialized spectrum analyzer, they will be powerless in detecting these interference sources since traditional Wi-Fi network scanning tools can only discover 802.11 Wi-Fi devices.

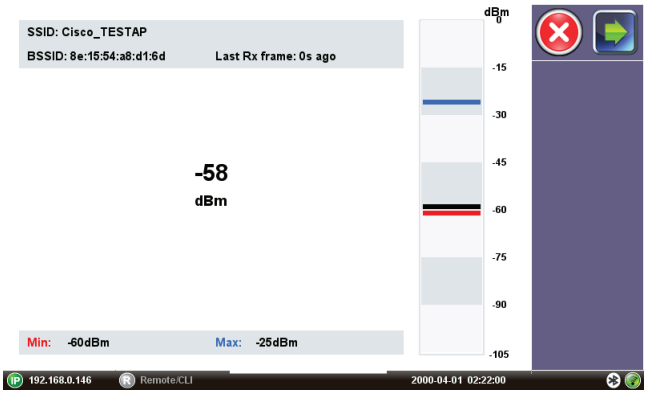


The Air Expert offers a dedicated spectrum analyzer that displays all RF activity – Wi-Fi and non-Wi-Fi interferers – in the 2.4 GHz and 5 GHz bands. The Spectrum Analyzer view allows technicians to visualize interference sources overlapping with the AP under test. The Wi-Fi interference library can also be used to identify interference signatures against a list of known interferers (Cordless phones, Zigbee, Bluetooth, etc.)

Secure Your Network

Wi-Fi Locate Function

If suspected rogue APs or Clients are present on the network, the Air Expert locate function can be used to track the physical location of the device. The function monitors the strength of the signal, and reports progress.



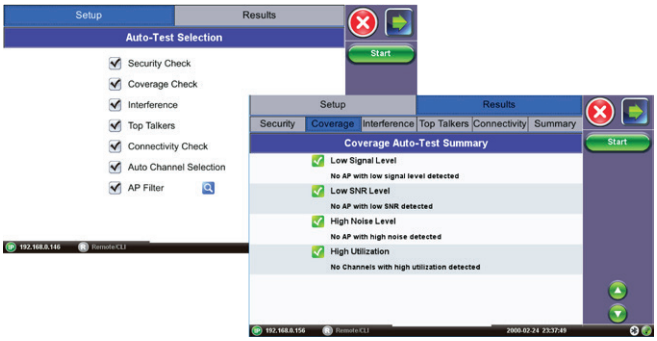
Automate Testing

Auto Test Function

Wi-Fi performance is highly dependent on environmental factors. RF signals can be attenuated or blocked by physical obstacles like large metallic objects or concrete walls, neighboring APs with high traffic load can reduce performance, and non-Wi-Fi interference sources, like cordless phones, video cameras or baby monitors, can disrupt Wi-Fi transmission.

Since environmental factors will vary from location to location, no two installs will face the same challenges. Yet it is important to follow a repeatable install procedure to ensure consistency in the service level provided to the end user.

The Air Expert Auto Test function provides an automated, reliable and repeatable installation routine. With configurable test profiles for consistency, and test results clearly marked with Pass, Fail or Warning status, technicians are provided with an easy-to-use and comprehensive site assessment routine.



Test Your Wired Network

Test Interfaces

The Air Expert is optionally fitted with an RJ45 10/100/1000BaseT Ethernet interface and an SFP 1000Base-X interface. This allows technicians to verify or troubleshoot the wired access network and broadband access.

IP Tools

Provides Ethernet and Internet connectivity verification and troubleshooting tools, supports: IPv4 (Static, DHCP) and VLAN. Network troubleshooting tools Ping and Traceroute verify connectivity to the internet while the ARPWiz application discovers the local network.

PoE Test

The Power over Ethernet test function supports emulation of Powered Device and allows technicians to identify the pairs used. This function also measures PoE voltage.

V-Perf Throughput Testing

V-Perf dual ended test is compatible with iPerf3 servers, or an Air Expert test set connected on the Wi-Fi interface to run Ethernet to Wi-Fi data throughput test. The test can also be performed to a cloud-based server, to qualify Wi-Fi and Broadband access bandwidth in one step.

With configurable data transmission rate and Pass/Fail threshold, technicians can quickly establish whether the achieved upload and download rates meet SLA requirements and readiness for high bandwidth traffic like audio and video streaming.

Document Your Network

Remote Access

The WX150 offers multiple ways for Remote Control or access to the information remotely (i.e. test results, test profiles, etc.).

The test set can be reached via:

- ReVeal PC software
- Web browser (Web Remote Control)
- VNC® Client
- Management Port Connectivity: Wi-Fi 802.11 b/g/n

Report Generation

Test results generation in PDF format

Export test results and profiles via USB memory, Bluetooth, web browser, Data Card or ReVeal companion PC software

VeSion® R-Server Client Option

Part of VeEX's VeSion® centralized monitoring and management solutions, the R-Server Workflow and Asset Management system provides crucial tools to manage fleets of technicians, test equipment, standardized test profiles, thresholds, centralized test results collection, reporting, jobs/ticketing, and software update delivery to create coordinated and efficient disciplined workforce and test procedures. R-Server enhances the workflow to achieve the level of quality and repeatability required by telecommunications service providers, MSOs and their contractors. The flexible R-Server can be deployed in cloud, hosted, and corporate networks, on physical or virtualized servers.

Makes the job simpler for field technicians as they can download test profiles and upload test results. Supervisors can preset and upload test parameters which are provided to the test sets as profiles. Technicians can simply download profiles, run tests, and upload results to a centralized system that stores and secures the data. No need to worry about losing test results ever again.

Advanced Management

This option allows users to append work order information to test results (i.e. Job ID, account, location, comments)

- Compatible with R300 Productivity Server (R-Server)
- Authorized test sets can register with specific VeSion R300 Server
- Test results can be uploaded via Bluetooth or Wi-Fi

**Requires optional Wi-Fi USB adapter*

Specifications

	Wi-Fi Module
Wireless Standards	802.11 a, b, g, n, ac, ax
Wi-Fi Data Rates	• 802.11 a: up to 54 Mbps • 802.11 b: up to 11 Mbps • 802.11 g: up to 54 Mbps • 802.11 n: up to 450 Mbps - BPSK, QPSK,16-QAM, 64-QAM - MCS0~15 • 802.11 ac: up to 1.3 Gbps - MCS 0~9 • 802.11 ax: up to 10.53 Gbps - HE0~11
Operating Frequencies	• ISM: 2.412 GHz to 2.4835 GHz • UNII: 5.15 GHz to 5.35 GHz, 5.47GHz to 5.725GHz, 5.725GHz to 5.85GHz
MIMO Channels	• 2x2:2
Wi-Fi Security Standards	• 64/128-bits WEP • WPA/WPA2/WPA3
Output Power	• 802.11b: 18.5 dBm @ 11 Mbps • 802.11g: 17 dBm @ 54 Mbps • 802.11n HT20: 13.5 dBm @ MCS7 • 802.11n HT40: 13.5 dBm @ MCS7 • 802.11ac HT80: 9 dBm @ MCS9 • 802.11ax HE20: 13.5 dBm @ HE7 • 802.11ax HE40: 13.5 dBm @ HE7 • 802.11ax HE80: 9 dBm @ HE9
Receiver Sensitivity	• 802.11b: ≤-88 dBm @ 11 Mbps • 802.11g: ≤-77 dBm @ 54 Mbps • 802.11n HT20: ≤-73 dBm @ MCS7 • 802.11n HT40: ≤-70 dBm @ MCS7 • 802.11ac HT80: ≤-62 dBm @ MCS9 • 802.11ax HE20: ≤-69 dBm @ HE7 • 802.11ax HE40: ≤-68 dBm @ HE7 • 802.11ax HE80: ≤-60 dBm @ HE9
Wi-Fi Antennas	• Antennas (2) - Configurable operation with 1 or 2 antennas

General

Wi-Fi Spectrum Analyzer (Optional)

- Frequency Range: 2400 MHz to 2484 MHz and 5000 MHz to 6000 MHz
- Amplitude Range: -100 to -6.5 dBm
- Reverse polarity SMA : 50 Ohms
- Absolute max input power : +10 dBm (over this it can damage the unit)

802.3 Ethernet test ports

- RJ45 10/100/1000Base-T
- SFP 1000Base-X

PoE Testing

- Emulation of Powered Device
- Detect pairs used
- PoE voltage measurement

General Specifications

Size	150 x 150 x 80 mm (5.9 x 5.9 x 3.1”)
Weight	1.1 kg (2.4 lbs)
Battery	Lithium-ion battery, 56 Wh with low voltage indication
AC Adapter	Input: 100-240 VAC, 50-60 Hz Output: 15 VDC, 5A
Operating Time	8 hours typical operation
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	5” WVGA 800x480 TFT color LCD touchscreen
Ruggedness	Survives 2m (6 ft) drop to concrete on all sides
Water resistance	May be used in light rain
Interfaces	Micro-USB with On The Go (OTG) support RJ45 10/100/1000 BT
Connectivity	Wi-Fi 802.11 b/g/n, Bluetooth
Languages	Multiple languages can be supported
Certifications	CE & ROHS compliant
Safety Standards	AC adaptor - IEC 61010-1, Class II (GOST 12.2.091)

VeEX
The Verification Experts

CE

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