

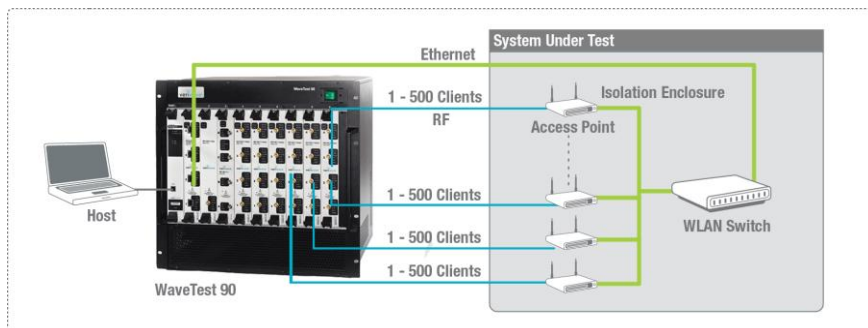
WaveBlade WiFi 802.11 a/b/g (1-port WBW1101 & WBW1101P, 4-port WBW1104)

VeriWave's WiFi 802.11 a/b/g WaveBlade series offers flexible, comprehensive testing of Wireless LAN network infrastructure devices including enterprise and consumer Access Points (APs) and controllers as well as wireless-enabled client devices such as PCs, dual-mode phones, patient monitors and scanners. Scalable to 18,000 clients within a single WaveTest chassis, the WiFi WaveBlade series integrates traffic generation, performance analysis, mobile client behavior and distance emulation and enables both cabled lab testing as well as open-air field testing.

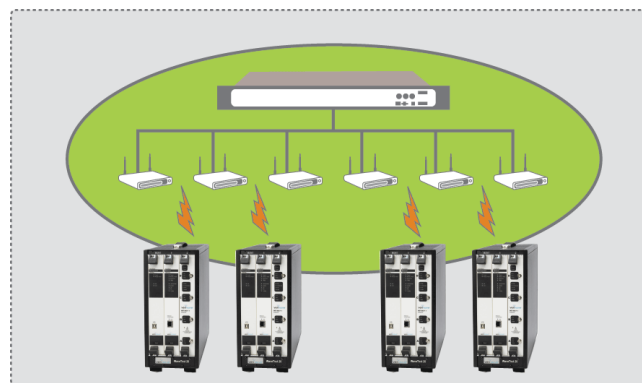
The WiFi WaveBlade series generates multi-protocol IP traffic from hundreds of independent stateful clients creating real world traffic conditions including inter-client contention. The effects of distance and propagation on AP and controller performance can be characterized through the granular variation of transmit power exhibited by each individual client.

The single-port WBW1101, the high-power WBW1101P and the 4-port WBW1104 are all line-cards that fits into VeriWave's WT90 and WT20 chassis and interwork seamlessly with the WaveBlade WiFi 802.11n and WaveBlade Ethernet line-cards, offering seamless testing of the converged wireless/wired network edge.

In addition the 802.11a/b/g functionality, the WBW1101P high power module is a fully featured, single stream 802.11n solution supporting rates up to 150 Mbps that is suitable for open-air testing.



Typical lab test setup using WBW1104



Open-air field test using WBW1101P

Benefits

- Up to 500 fully independent, stateful 802.11 client state machines per port enable precise measurement of critical performance metrics at data rates reaching up to maximum theoretical limits
- Highly customizable mobile client roaming behavior
- Complete control over client medium access times to generate aggressive non-compliant clients and study the effects thereof on the AP and Controller
- Built-in transmit power control and per packet frame-error-injection to emulate real-world distance effects between AP and client
- Execute open-air field tests and/or cabled tests in lab environments
- Capability to introduce real-world effects such as hidden-node issues that cause client collisions resulting in transmission of malformed packets to the AP
- Industry-best simultaneous bi-directional (TX/RX) air-rate packet capture support of up to 256MB on each port
- User customizable client behavior and Traffic types ranging from raw 802.11 frames to a variety of IP-based higher level protocols including UDP, RTP etc.
- Fast, flexible functional, integration, and negative testing using VeriWave's WaveDynamix[™].
- Ease-of-use through simplified set-up in a wide-array of VeriWave Test Suites, Applications and WaveAutomation

Specifications

	WBW1101	WBW1104	WBW1101P
Number of ports	1 x 802.11 a/b/g port	4 individual and independent 802.11 a/b/g ports supporting multi-user and multi-test beds	1 x 802.11 a/b/g/n SISO port*
Maximum number of ports per chassis	9	36	9
Maximum PHY rate	Up to 54 Mbps	Up to 54 Mbps per port	<ul style="list-style-type: none"> Legacy: up to 54 Mbps HT: up to 150 Mbps
Operating frequency	<ul style="list-style-type: none"> 2.4 GHz channels 4.9 GHz and 5 GHz channels 		
Operating channels	<ul style="list-style-type: none"> 2.412 to 2.484 GHz: 1 to 14 4.940 to 4.990 GHz: 21, 25 5.180 to 5.320 GHz: 36, 40, 44, 48, 52, 56, 60, 64 5.500 to 5.700 GHz: 100 to 140 5.740 to 5.825 GHz: 149 to 165 		
Channel bandwidth	<ul style="list-style-type: none"> 2.4 GHz: 20 MHz 4.9 GHz: 20 MHz 5.0 GHz: 20 MHz 	<ul style="list-style-type: none"> Legacy: 20 MHz 802.11n: 20 or 40 MHz 	
Transmit power control	<ul style="list-style-type: none"> 2.4 GHz: 0 to -50dBm in 1dB steps 4.9 GHz: 0 to -50dBm in 1dB steps 5.0 GHz: 0 to -50dBm in 1dB steps 	2.4 GHz: 0 to +15dBm in 1dBm steps	
Transmit power accuracy	+/- 1dBm for 2.4, 4.9 and 5.0 GHz bands		
Receive sensitivity	<ul style="list-style-type: none"> 65dBm min for 8x10⁻² FER (CCK) 65dBm for 10x10⁻² PER (OFDM) 		
Receive sensitivity	<ul style="list-style-type: none"> -82 dBm min for 8x10⁻² FER (1 Mbps CCK) -65 dBm min for 10x10⁻² PER (64-QAM (5/6)) 		

	WBW1101	WBW1104	WBW1101P
Interface connector	SMA female connector, standard thread, AC coupled, 50 Ohms		
Antenna interface connector configurations	1 connector	<ul style="list-style-type: none"> 1 connector per port 4 per WaveBlade 	1 connector
Traffic timestamp accuracy	50ns		
Maximum number of emulated clients	500	<ul style="list-style-type: none"> 500 per port 2,000 per WaveBlade 	500
Maximum number of emulated flows	1,000	<ul style="list-style-type: none"> 1,000 per port 16,000 per WaveBlade 	1,000
Maximum number of clients / flows analyzed	131,000	<ul style="list-style-type: none"> 131,000 per port 524,000 per WaveBlade 	131,000
802.11 MAC control (all parameters)	Independent per client		
802.1x authentication support	PEAP/MSCHAPv2, TLS, LEAP/EAP-FAST, TTLS		
Encryption support	WEP-40 and WEP-104, TKIP (WPA), CCMP (WPA2)		
Layer 3 / 4 (IP, UDP, TCP, etc.) control (all parameters)	Independent per client		
Port counters	One for each of layer 2, 3 and 4 frame types		
Client, flow and flow-group counters	Frames sent / received, bytes sent / received, out-of-order frames, payload integrity, latency histograms		

For more detailed specifications regarding the 802.11n functionality of the WBW1101P, please view the WaveBlade WiFi 802.11n data sheet. *

Minimum Requirements

VeriWave Test System	1 x VeriWave WaveTest 90™ or WaveTest 20™ system
Host Computer	<ul style="list-style-type: none"> X86-based PC with 1GHz processor and 256MB RAM Windows XP SP2, or Linux (2.6 or higher kernel level) with Web Browser installed to manage the WaveBlade