Miercom

Panasonic

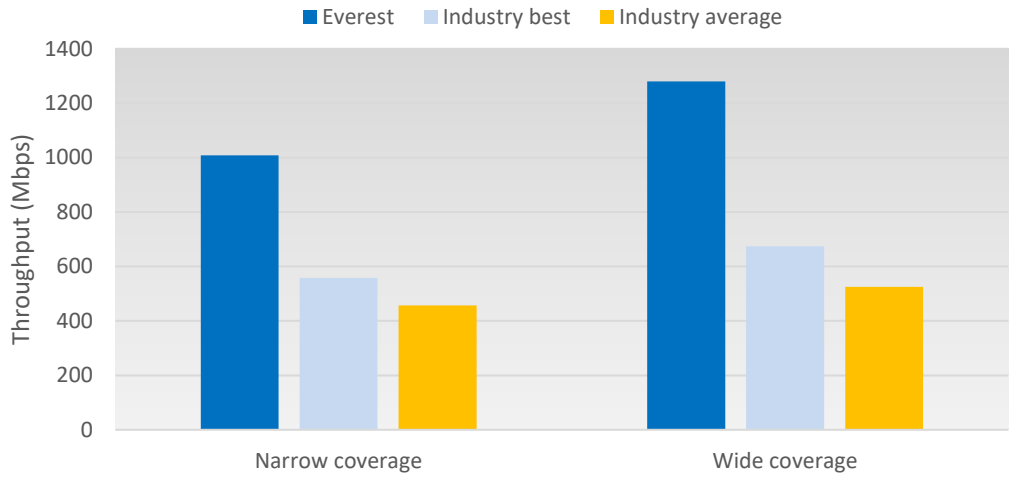
Everest NRe and WRe Wave 2 802.11n/ac Four-Radio Access Point Solution

First ever four-radio access point solution tested offers greatest scalability on the market. Both Everest Wave 2 APs proved best scalability and throughput compared to its competition.

Panasonic introduced a new Wi-Fi solution, intended to transform the wireless experience for fans in large sports and entertainment venues. Miercom was engaged to perform an independent evaluation of Panasonic's new technology, and testing confirmed that the Everest platform offers significantly enhanced performance compared to similar systems. Everest Access Points (APs) and software are intended to give system designers and integrators the best available tools to overcome the challenges of connecting tens of thousands of wireless devices in ultra-high density (UHD) environments. Each Everest AP model features four, simultaneous 4x4 802.11n/ac Wave 2 radios – double or triple the number of critical 5 GHz radios in comparable top-tier Wi-Fi AP products.

Panasonic Everest outperforms competing products in every performance and scalability test conducted.

Panasonic Everest NRe and WRe vs Industry Access Point Performance



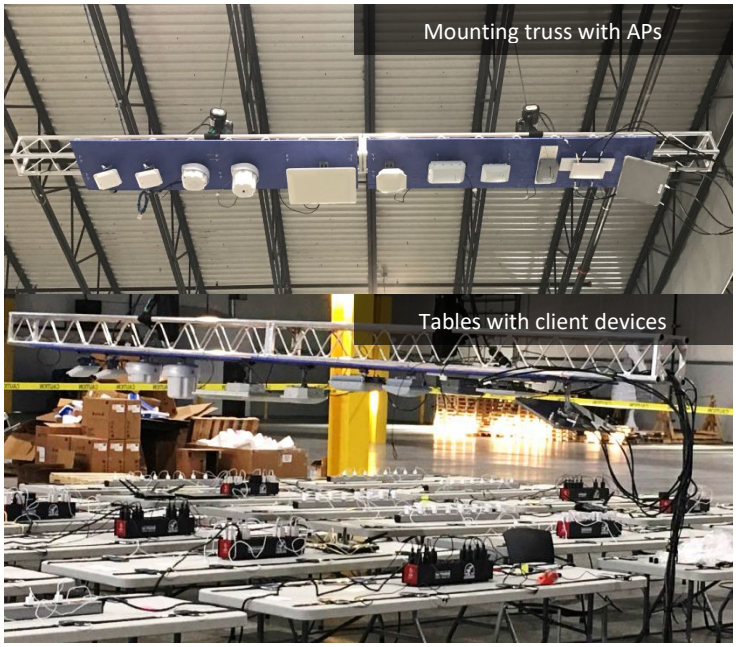
Source: Miercom

Panasonic Everest APs provide greatest maximum throughput, achieving 2.3 times that of competitive products and 1.3 times the industry average for aggregate throughput of competing products.

Access Point Setup

Tests were conducted in a controlled environment hosted in a warehouse free of unwanted RF noise. The test setup is shown to the right. Each AP was mounted on a truss suspended 25 feet above 25 tables populated with 200 mobile client devices. Client density equaled one device per every four square feet, representative of the density in a stadium or arena. Different models of client devices were used to reflect real-world end user client populations. All competitive product procurement, setup, network optimization and extensive UHD test execution was performed by Miercom over a three month period.

Competitive Test Setup



Client Environment

The Ixia IxChariot test tool was used to generate traffic and measure performance using a repeatable test methodology utilizing downstream and upstream TCP traffic from an increasing number of active clients. Results were compared to determine system performance under specific load conditions. Realistic traffic was produced and transferred between endpoints using a mobile application, installed on each client, and an API. Scripts were incorporated to perform iterative tests. All 200 clients were commercially available mobile phones at the time of testing, representing a real-world distribution of devices that an outdoor AP would be expected to handle.

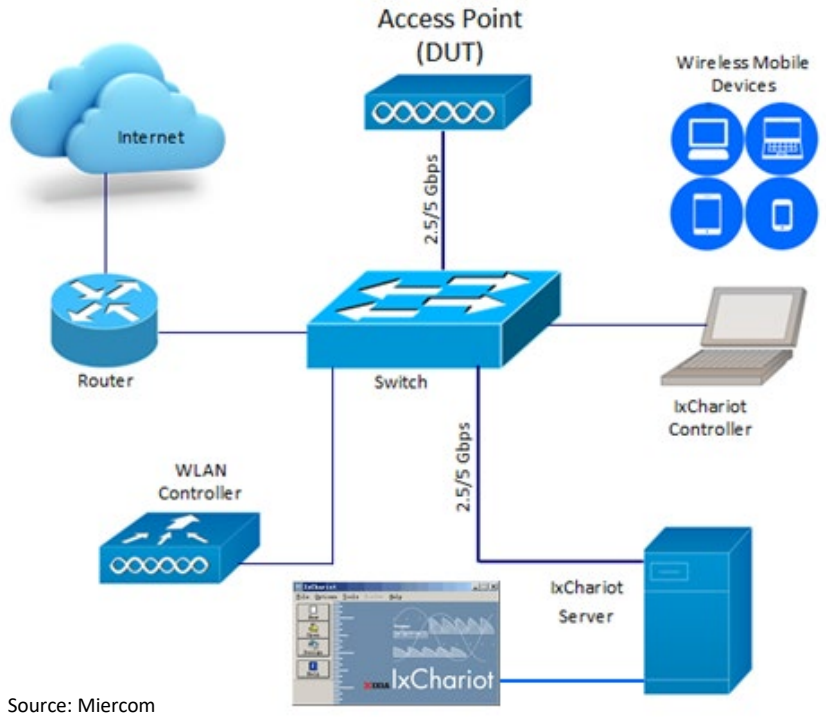
Client Assignment

The four-radio solutions had 16 percent of clients assigned to the 2.4 GHz band and 28 percent to UNII-1, UNII-2c and UNII-3 for a total of 84 percent of clients on the 5 GHz band. Panasonic is future-ready for the eventual elimination of the 2.4 GHz band in UHD deployments.

Two-radio solutions had 36 percent of clients assigned to the 2.4 GHz and 64 percent of clients assigned to the 5 GHz band.

No band optimization was enabled for any AP, and all clients were manually connected to achieve appropriate per-band distributions. Only a single AP was tested at a time, with all client connections confirmed prior to testing.

Network Diagram



Source: Miercom

Based on the network diagram shown, Miercom tested two models of the four-radio Everest APs: the narrow pattern 1004NRe with high-gain configurable 30° beams, and the wide pattern 1004WRe. These multi-radio configurable APs were evaluated for flexibility and scalable connectivity, and then compared to various models of similar products in an UHD environment. The Everest units were electronically identical, differing only in radiation pattern of the antenna system. Everest radio resources were paired with a patented system of highly directional software-controlled antennas, creating ideal conditions for effective MIMO and MU-MIMO communications. Both are specifically designed to increase service capacity and optimally manage network interference using patented system architecture. Miercom was impressed with the architecture, engineering and user interface of Panasonic's solution.

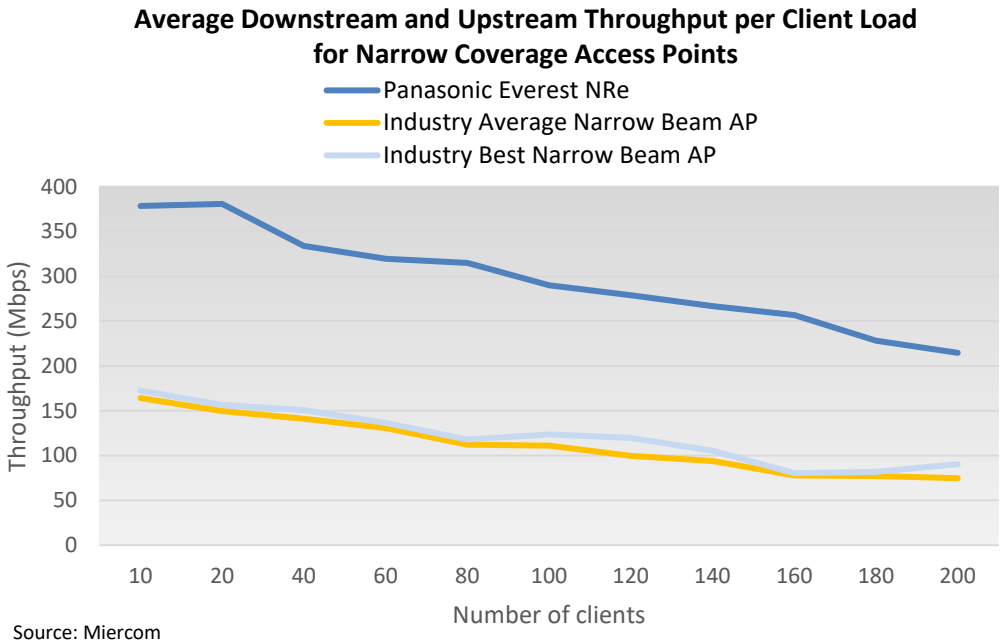
Results

Tested APs were characterized by aggregate average downstream and upstream throughput with 20 MHz channels. When comparing the average of downstream and upstream results, the Everest APs proved superior to their competition.

Panasonic Everest APs achieved maximum throughput using a total of 220 MHz bandwidth while competing products only used 120 MHz. As a result, Panasonic Everest NRe and WRe APs could achieve significantly higher throughput per spectrum when integrating the four-radio APs with proprietary antenna technology.

Narrow beam APs and wide beam APs were compared separately to similar products. Each Everest AP was compared to the industry average, the average competitive downstream and upstream throughput, and the best industry performance using an increasing load of 10 to 200 active mobile clients. Results showed the Panasonic Everest solution exceeded its competition using both narrow and wide coverage.

The Everest NRe was compared to similar narrow beam APs, shown in the chart below. The Everest NRe had up to 3.3 times the throughput of the average AP. For a 200-client load, it saw nearly triple the throughput of the average AP and 2.4 times the best AP.

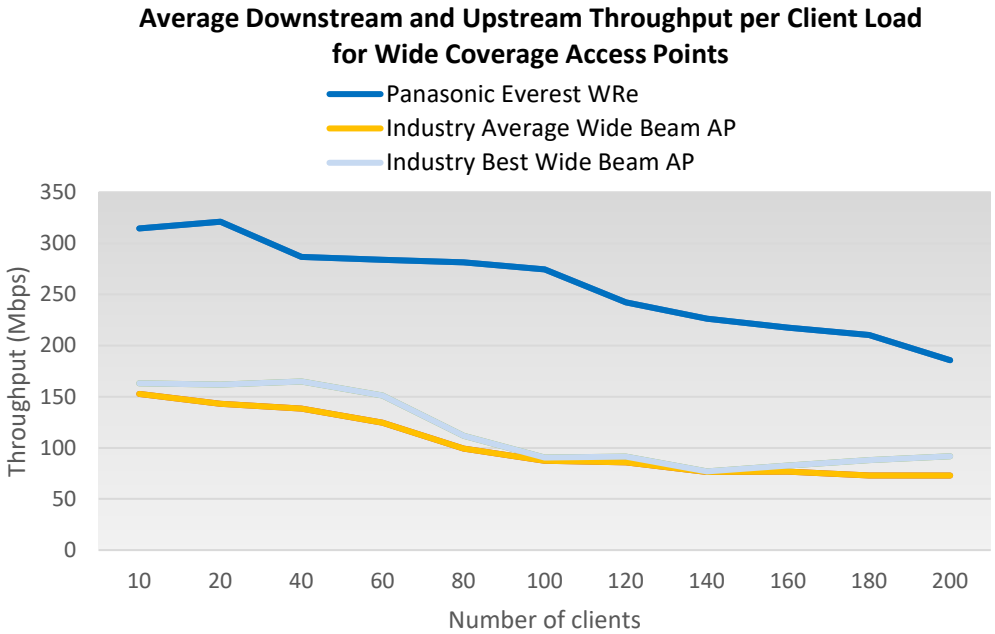


Source: Miercom

Panasonic Everest NRe narrow beam AP offered three times more throughput than the average narrow beam AP. This test was run using heavy traffic loads in a UHD environment, gradually increasing client density from 10 to 200 clients.

The chart below depicts the averaged downstream and upstream performance of Everest WRe AP versus the industry average and best wide beam APs. The Everest WRe proved up to 3.1 times the throughput of the average AP. For a load of 200-clients, it performed 2.5 times the average wide beam AP and 2 times the best competitor.

Panasonic Everest WRe wide beam AP offered over twice the throughput of competing wide coverage APs. This test was run using heavy traffic loads in a UHD environment, gradually increasing client density from 10 to 200 clients.



Source: Miercom

Both Everest models showed at least double the performance of competitor products and achieved sustained aggregate throughput above 1 Gbps. When subjected to stress and load tests, both APs delivered more than 400 Gbps aggregate throughput for 200 mobile clients.

Test results clearly demonstrated the Everest AP innovative system architecture and RF technology support high-capacity wireless connectivity.

Conclusion

The Panasonic Everest 1004NRe and 1004WRe Wave 2 APs were tested and compared with similar, commercially available products. The test results clearly demonstrated the superior performance and client-load scalability of the Everest four-radio solution, for narrow and wide coverage, when compared to dual-band two-radio solutions in UHD client environments. Based on these results, we proudly award the Panasonic Everest Access Point Solution the ***Miercom Performance Verified*** certification.

About Miercom Industry Average

Miercom undertakes a thorough, in-depth competitive analysis of products and services. Tested products and/or services include network equipment, software products, hybrid solutions and services like Software as a Service (SaaS). All vendors in a particular space are invited to represent their product in an Industry Assessment review, at no charge to them. All participating vendors are afforded the opportunity to review their results during testing, following testing and prior to information being published.

Industry averages of the data, taken from the average performance or efficacy score in any given area, are maintained by Miercom. These averages are updated in real-time, as additional products are added to the assessment grid. Miercom releases industry averages at least every six months.

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