



60 GHz Wireless Innovation

Extending the Reach
of Gigabit Ethernet



Vubiq Networks, Inc. is a privately held wireless networking technology company headquartered in Irvine, California. The company designs, manufactures and markets proprietary, high-bandwidth, 60 GHz V-Band wireless transmission products that enable full-duplex gigabit speed transport and backhaul support with full integration of software-defined layer 2 networking capabilities

Leveraging years of development, Vubiq focuses on gigabit transmission systems using its V-Band millimeter wave technology for metropolitan Gigabit Ethernet wireless fiber extension, campus building wireless connectivity, and advanced mobile network backhaul applications. Today, Vubiq technology is used by some of the largest companies in the world.



Vubiq's HaulPass V60s™ product is an innovative, compact, V-Band wireless broadband solution that delivers quality of service, Gigabit Ethernet transport speeds, and advanced networking.

Vubiq leverages its founders' decades-long legacy of technology and intellectual property development focused on high-bandwidth wireless transmission systems. The company holds 13 patents for its fundamental hardware designs, as well as for systems-level applications.

The Endless Demand for Bandwidth

Bandwidth. There just never seems to be enough of it. Yesterday's 10 megabit and 100 megabit data rates were seen as ample for enterprise, metropolitan and mobile backhaul capacity. But the demand has now evolved to gigabit speeds, and will continue to increase over the next years to 10 gigabits per second and higher.

While the demand for increased bandwidth is never ending, there are some places where it is simply too difficult or expensive to provision additional bandwidth using fiber-optic cabling. Broadband wireless radio technology has traditionally filled the gap for some applications, but current Wi-Fi solutions based on 2.4 and 5 GHz technologies have now reached bandwidth limitations as well.

Today, enterprises and service providers are increasingly looking at 60 GHz V-Band wireless solutions. They are discovering that for many applications, V-Band wireless connectivity provides attractive benefits based on license-free operation, high immunity to interference, and easy and cost-effective deployment.

The Advantages of V-Band Links

What's so special about using the V-Band radio spectrum to deliver wireless high-bandwidth Ethernet? The simple answer is there is no other globally available, unlicensed spectrum with 7 GHz of radio bandwidth. This massive spectral bandwidth enables low-cost gigabit data rates.

V-Band is globally allocated as unlicensed spectrum. Just like Wi-Fi or Bluetooth, V-Band equipment can be deployed as needed without the need for licensing by regulatory agencies. This freedom provides the ability to deploy V-Band wireless solutions as needed in enterprise, campus, ISP, private, and carrier networks.

Where V-Band Links Are Used

Broadband Wireless Fiber Extension

As the demand for bandwidth continues to grow and exceed the predicted expectations of the global mobile and internet markets, fiber-optic cable continues to be the technology of choice for high bandwidth delivery. However, there is a major issue with using a physical cable to deliver bandwidth: a physical path is required.

Fiber-optic cable is typically buried below city streets, strung on utility poles, or installed in buildings. The cost for this physical cable installation and the politics, delay and additional costs for access rights are well known in the industry. In many cases, a physical path for the “last few hundred feet” cannot be trenched for fiber-optic cable and stops an installation in its tracks. V-Band broadband wireless connectivity is the practical and cost-effective solution to the extension of such fiber-optic networks.

Mobile Wireless Backhaul

In the mobile carrier market, the explosive growth of internet apps and streaming video on smart devices are stressing the capacity of mobile carrier networks worldwide. Mobile carriers are increasingly installing smaller base stations called “small cells” in order to meet the required expansion in capacity. Small cells allow the carriers to re-use the access spectrum that they currently have under license.

The typical location for a small cell in metro areas is on an existing structure such as a street light, telephone pole or building roof top. The mobile signals are then wirelessly transmitted back to an existing macro cell. Providing high-bandwidth wireless connections back to macro cells or “backhaul” is an ideal application for 60 GHz wireless products.

Vubiq Intellectual Property

As a communications technology innovator, Vubiq owns a growing portfolio of 13 patents in millimeter wave components and system-level network communications, including:

- Waveguide Interface with a Launch Transducer and a Circular Interface Plate
- RFID System utilizing Parametric Reflective Technology
- Integrated Antenna and Chip Package and Method of Manufacturing thereof
- Full Wave Di-Patch Antenna
- System and Method for Wireless Communications in a Backplane Fabric
- On-Off Keying using Vector Modulation
- Precision Waveguide Interface

These valuable patents provide Vubiq with the ability to continue to design and create proprietary and protected solutions.

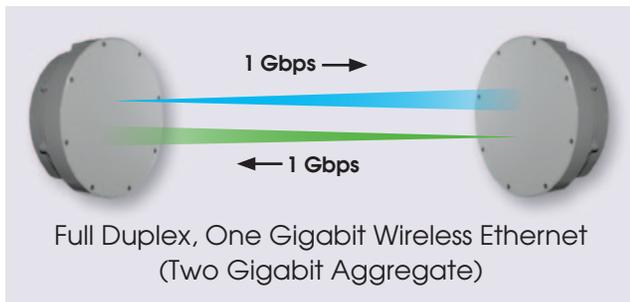
The HaulPass V60s Wireless Product



HaulPass V60s is an advanced V-Band broadband wireless solution that delivers low-latency, full-duplex Gigabit Ethernet transport speeds

in a small, ruggedized, easy-to-install enclosure. The product’s advanced features include:

- High-bandwidth, point-to-point wireless links
- 60 GHz V-Band license-free operation
- 750-meter range for line-of-sight applications
- Small, lightweight footprint
- Cost-effective, easy-to-deploy solution
- Full duplex (FDD), wire-speed Gigabit Ethernet
- Low power requirements via POE+
- Fully integrated dual-port Ethernet switch



The HaulPass V60s supports full-duplex, V-Band wireless links with 7 GHz of allocated spectrum bandwidth, advanced intelligence, and comprehensive Ethernet switching functionality. Integrated low-latency forward error correction assures data transmission reliability.

HaulPass V60s line-of-sight, full-duplex wireless connections can span up to 750 meters (0.5 miles). Multiple HaulPass V60s can be daisy-chained for longer distances. Weighing only 2.4 kg (5.2 lbs), HaulPass V60s is housed in a ruggedized outdoor enclosure, designed for extreme weather environments. Powered via POE+, the system draws less than 15 watts.

HaulPass V60s in Action

The HaulPass V60s provides an ideal solution for line-of-sight data links that would otherwise be cost prohibitive with fiber-optic cable, such as:

- Connecting LANs between buildings
- Extending fiber backbones
- Wireless backhaul for mobile networks

Immediate ROI

HaulPass V60s customers achieve immediate ROI thanks to an economic price point and rapid deployment. Enterprises, mobile carriers and service providers will save thousands of dollars in trenching and fiber installation costs, as well as the elimination of ongoing data communications charges.

Vubiq Management

John Dilworth, CEO, has over 20 years of experience in management, business development, sales and marketing. His expertise spans the virtualization, application publishing, wireless communications, enterprise networking, and storage markets

Mike Pettus, CTO and Founder, has over 30 years of experience in wireless technology, including over 10 years in millimeter wave product development. He has been an active member of the FCC Millimeter Wave Communications Working Group, and the IEEE 802.11 PHY committee.

Dave Slocum, VP Operations, has over 20 years of experience in finance, supply chain management, product development, global logistics, customer support, and direct manufacturing operations.

Roger Tharp, CFO, has 30 years of financial experience starting with public firms and moving to start-up stage companies.



Making V-Band Ubiquitous

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