FAQ

Q.   Who is Quantenna?

A.   Quantenna Communications, Inc. is a leading developer of silicon for intelligent wireless networking that delivers guaranteed high-speed wireless bandwidth in any size home, anytime, anywhere. The company's patented technology ensures guaranteed bandwidth in Wi-Fi home networks, wireless enterprise networking systems and consumer electronics devices. Headquartered in Sunnyvale, Calif., Quantenna was founded in 2006 and has raised more than $27 million in Series A and B funding from some of Silicon Valley's most esteemed venture capital firms, including Sequoia Capital, Venrock Associates, Sigma Partners and Grazia Equity.

Q.   What products does Quantenna offer?

A.   Quantenna offers the Quantum QHS™ family of wireless LAN (WLAN) 802.11 a/b/g/n MIMO products, which significantly improve the reliability and performance of home networking, carrier deployment, enterprise networks and consumer electronics. Quantenna's products include:

- *QHS1000*: A fully integrated chipset solution with up to 1 Gbps performance. It is available as a dual 4x4 or quad 2x2 and operates on both the 2.4 and 5 GHz spectrums concurrently.
- *QHS600*: A fully integrated single chip solution with up to 600 Mbps link speed. The chip is available as single 4x4 or dual 2x2 and operates on the less crowded 5 GHz spectrum for bandwidth-intensive applications such as video.
- *QHS450*: A fully integrated single chip solution with up to 450 Mbps link speed. It is available as single 4x4 or dual 2x2 and operates on 2.4 GHz spectrum for data-intensive applications.
- *Quantenna OS:* A full-featured access point operating software that runs on the Quantenna family of products, dramatically reducing development time frames for equipment vendors. Quantenna also enables equipment vendors to port their own software features on to Quantenna chipsets to further reduce BOM cost.
- *QHS Plug:* A fully functional, small form factor access point that plugs directly into an electrical outlet. The Quantenna plug features an integrated mesh network element that acts as a reference system. It comes with a development kit that includes schematics, Gerber files and the bill of materials (BOM), and uses the QHS 1000 silicon and the Quantenna OS.

Q.   What makes Quantenna's products different from or better than wireless semiconductors currently on the market?

A.   Today, other wireless chipsets in the market offer spotty performance, limited coverage, poor reliability and unpredictable bandwidth. These 802.11a/b/g/n chipsets offer low-speed connectivity and limited performance, falling far short of the reliability, rate and range necessary for true triple play services and the transmission of real-time video services including Internet protocol TV (IPTV), standard definition and high definition TV over wireless networks. In order to support those services, vendors often use multiple chip configurations that still fall short of true reliability.

Quantenna's QHS chipsets are the first to deliver guaranteed bandwidth for wireless connections anywhere in any size home. They enable equipment vendors and carriers to overcome unreliable connections and dead zones – the biggest problems in the wireless delivery of real-time video, HDTV, IPTV and "triple-play" services in the home.

Q.   How do Quantenna's products achieve guaranteed bandwidth?

A.   Quantenna's QHS family are the first 802.11 a/b/g/n MIMO products to offer the unique combination of the essential technologies – on a single chipset – for guaranteed bandwidth:

- *World's first 4x4 MIMO radio/antenna:* Offers the highest possible reliability in high-interference conditions;
- *Active transmit (Tx) beamforming:* Enables the chip to locate receiving devices and focus the signal on them, improving range and data rate while conserving power;
- *Concurrent dual band:* Supports real-time video transmission via the 5 Ghz band and data over the 2.4 Ghz band;
- *Mesh networking:* Guarantees total coverage in any size home by using adaptive vector mesh routing; and
- *Highest Integration:* Integrates high efficiency power amplifiers (PAs) with 18 dBm output power along with LNA, VGA, switches, baluns and diplexers that constitute a front-end module.

Q.   **What is the significance of a 4x4 and Tx beamforming?**

A.   Quantenna's 4x4 transceivers with Tx beamforming increase reliability and robustness by more than 50 percent over competing 802.11n products that are available today. This increased reliability makes it possible to view real-time video, HDTV and movies over a wireless LAN network.

Q.   **Why is it important to have concurrent dual band?**

A.   Concurrent dual band involves operating the wireless LAN product in both the 2.4 GHz and 5 GHz spectrums simultaneously. Data can be transmitted over the more crowded 2.4 GHz spectrum, while real-time traffic such as video and TV channels can use the less crowded 5 GHz spectrum.

Q.   **What is the QHS Plug?**

A.   Quantenna's QHS Plug is a small, full-featured access point router that plugs directly into an electrical outlet. It acts as a reference platform for equipment vendors that want to evaluate or demonstrate the capabilities of Quantenna's solution. More importantly, however, it is ready for volume production, making it easy for equipment vendors to bring a turnkey, intelligent access point mesh plug to market with the option of simply putting it in their own enclosure.

Q.   **How do Quantenna's products achieve complete coverage throughout a home?**

A.   Quantenna's silicon solution is the only one to offer guaranteed bandwidth over any size home, anywhere. The number, type and thickness of walls within homes determine the extent of signal interference and blockage, which in turn impacts the coverage under normal circumstances. With Quantenna products, signal uncertainty and dead zones are eliminated by adding Quantum Plugs throughout the house to create a complete mesh wireless network. Full coverage of a typical home can be achieved with one or two Quantum Plugs.

Q.   **What is Quantenna OS?**

A.   Quantenna's operation software is full-featured access point software with routing, switching, security and mesh networking functionality that runs on the Linux operating system. Quantenna OS enables equipment vendors to develop and port their own value-added features. Since Quantenna OS runs on the integrated network processor, it eliminates the need for an external network processor and reduces BOM cost for equipment vendors.

Q.   What type of equipment would use Quantenna's chipsets?

A.   Home networks/ carrier systems: WLAN access points, mesh plugs, DSL home gateways.

Enterprise networks: High-end routers, mesh plugs, LCD projectors, printers, laptop and desktop computers.

Consumer electronics: Flat panel TVs, personal video recorders, game consoles, video cameras.

Q.   What are the chief benefits of Quantenna's products for equipment vendors? And for carriers?

A.   Quantenna's products give equipment vendors a strategic, competitive advantage while lowering their BOM costs. They can build innovative wireless products that utilize fewer components, are smaller, cost less to make and deliver superior performance.

Quantenna's products will enable carriers to deploy wireless HDTV, IPTV and/or triple-play services more rapidly and cost-effectively, because they will not need to send technicians to homes to set up the connections. They simply provide their customers with the access point routers and mesh networking plugs, enabling customers to self-install. Service will be more reliable as well, resulting in lower customer support costs and wider consumer acceptance of wireless home networking for multimedia services.

Q.   When will the Quantenna products be available?

A.   The Quantenna chipsets will be sampling in the fourth quarter of 2008. They are expected to be production and with customers by the second quarter of 2009.

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