

## Synopsys and Alereon

### DesignWare IP for PCI Express Helps Alereon Speed Time-to-Market for Worldwide Wireless USB Chipset



**“Time-to-market was critical for us. Synopsys provided high-quality DesignWare IP, which enabled us to achieve first-pass silicon success and enter a new market as the clear leader.”**

*– Dr. David Shoemaker, Vice President of Engineering and Operations, Alereon*

#### Business

Alereon is a fables semiconductor company developing innovative ultra-wideband (UWB) wireless chipsets.

#### Challenges

- Meeting critical time-to-market windows
- Integrating high-performance PCI Express® PHY IP into a mixed-signal design flow
- Acquiring high-quality IP that would integrate into the design with low risk

#### Solution

- DesignWare® PHY IP for PCI Express

#### Benefits

- Achieved first-pass silicon success with proven, high-quality IP
- First to market with a worldwide wireless USB Chipset
- Received excellent technical support and complete set of deliverables

#### Overview

Alereon's mission is to simplify networking by removing cables, allowing effortless connections between PCs, consumer electronics, PC peripherals and mobile devices. Alereon was founded by industry pioneers in ultra-wideband technology. The company's 120+ patent/application portfolio speaks to the experience of their team and deep understanding of radio frequency technology.

Alereon's AL5100/AL5300 Worldwide Wireless USB Chipset is PHY Registered and Platform Certified by the WiMedia Alliance. The chipset is the only silicon that operates over the full 3.1 to 10.6 GHz spectrum, giving developers all 49 UWB channels across all 14 UWB bands over which to transmit. Alereon's latest addition, the AL5100/AL5350 chipset builds upon the success of its predecessor and adds a PCI Express interface for Wireless USB applications embedded in high-performance PCs, docking stations, and wireless monitors as well as for wireless connections from laptops to HDTVs.

**“After evaluating other IP vendors on ease of use, quality, and completeness of deliverables, Synopsys was the clear winner in all areas. As an established leader in PCI Express IP, we knew it was the lowest risk solution for us.”**

*– Dr. David Shoemaker, Vice President of Engineering and Operations, Alereon*

### **Leading IP Features**

Alereon was developing their next-generation AL5350 wireless USB chipset, which would be the first single chip solution to support all worldwide frequencies ranging from 3 – 10 GHz. The AL5350 chipset required a high-performance PCI Express PHY interface to support wireless USB applications.

This chipset would launch Alereon into a new market, so time-to-market was critical. Alereon needed to find a mixed-signal PCI Express PHY IP solution that would quickly integrate into their design flow. After starting the IP vendor selection process, they quickly determined that Synopsys' DesignWare PHY IP for PCI Express was the ideal solution. Synopsys offered a product that was compliant to the specifications and met their power and performance requirements.

Furthermore, the unique on-chip diagnostic and ATE capabilities within the PHY was a very important feature to Alereon. These capabilities allowed Alereon to lower costs by conducting internal self tests on a low-cost, high-speed digital tester. In addition, Alereon was able to go from initial silicon to production test within four weeks.

**“Having the on-chip diagnostics and ATE capabilities was a definite plus in making sure that the IP was mature. It was a very important feature, which allowed us to lower our test costs and go from initial silicon to production test within four weeks.”**

*– Dr. David Shoemaker, Vice President of Engineering and Operations, Alereon*

### **High Quality and Excellent Support**

Alereon had good experiences using Synopsys' DesignWare IP in the past and knew that Synopsys approached developing IP as a serious business. Unlike other IP vendors, Synopsys provided Alereon with a comprehensive set of deliverables, which consisted of characterization and compliance data, well written documentation and high-quality PCI Express PHY IP that was silicon-proven and in volume production. In addition, Alereon was very impressed with the technical expertise of the support team.

“Going with another vendor was not an option because no one else had the same level of credibility and quality in the market,” said Dr. Shoemaker, vice president of engineering and operations at Alereon. “A re-spin of our chip could mean a three million dollar investment and we were just not going to take the risk.” As a result, Alereon achieved first-pass silicon success and taped-out the AL5350 wireless USB chipset in four and a half months, enabling them to be first to market.

