

Synopsys and Euphonic Technologies

High Quality DesignWare IP for PCI Express Enables First Pass Silicon Success for High Performance Graphics Controller



“After evaluating other IP vendors, Synopsys provided us with the most comprehensive, silicon-proven IP solution including digital controllers and PHY, which met our power and performance requirements.”

– Shinji Masuda, Vice President of Engineering, Euphonic Technologies

Business

Euphonic Technologies develops embedded solutions for wireless communication and high precision graphic applications.

Challenges

- Obtaining high quality PCI Express® IP for their chip design
- Ability to conduct thorough hardware validation using the same IP on an FPGA platform
- Meeting system performance requirements

Solution

- DesignWare® digital controllers and PHY IP for PCI Express

Benefits

- Achieved first pass silicon success
- Lowered integration risk by acquiring comprehensive, high quality IP solution from a single vendor
- Met power, feature and performance requirements

Overview

Euphonic Technologies develops high performance system-on-chips for wireless communication and high precision imaging applications. The EGC601 is a high performance 2D graphic controller that employs a flexible and power efficient architecture for integration into a wide range of industrial applications such as POS systems, ATMs, medical equipment, machine tools and digital signs.

The Euphonic EGC601 Embedded Graphic Controller dramatically boosts image quality by implementing high resolution and alpha-blending capabilities, while supporting multiple displays. The EGC601 utilizes a unified memory architecture and unlike other solutions, drives up to four LCD panels at one time. In addition, the high bandwidth capabilities of the PCI Express interface, allows the device to handle up to five different imaging layers without intervention of the host CPU.

“The quality of the IP was excellent and the front end integration process went very smoothly. Furthermore, the DesignWare IP for PCI Express functioned precisely to the standard and enabled us to achieve first pass silicon success.”

– Shinji Masuda, Vice President of Engineering, Euphonic Technologies

Leading IP Features

Euphonic Technologies went through a rigorous process to determine the key requirements for their EGC601 chip. Euphonic needed an eight lane, high performance PCI Express mixed-signal PHY and digital controllers for their chip design. The IP also had to accommodate crucial system validation using an FPGA board.

After evaluating other IP vendors, Euphonic selected Synopsys because it offered a comprehensive, single vendor PCI Express IP solution consisting of a low power PHY and synthesizable Endpoint, Root Port and Dual Mode digital controllers. The PCI Express dual mode capability expands the role of the graphics controller in the graphics subsystem to function as the central device in an intelligent display system and enables peripherals such as network cards to be added. There was no other provider at the time that could match Synopsys' complete offering. Furthermore, Euphonic was very impressed with the PHY's unique on-chip diagnostic and ATE capabilities, which allowed them to quickly get from initial silicon to production test.

High Quality and Excellent Support

From Euphonic's perspective, the most valuable contribution of the DesignWare IP to the project was that the IP was of high quality and functioned precisely to the standard. “By relying on Synopsys to provide us with a compliant PCI Express IP solution, we were able to save a great deal of development time because we did not have to spend valuable resources on understanding the complexities of the standard,” said Shinji Masuda, vice president of engineering for Euphonic Technologies. In addition, Synopsys provided Euphonic with good technical support and comprehensive documentation.

With great momentum following the first pass silicon success of the EGC601 chip Euphonic is focused on future developments, which will include DesignWare IP.



“Synopsys was the only company that offered us a PCI Express IP solution, which met our feature requirements and FPGA validation needs. We were also very impressed with the on-chip diagnostic capabilities and low power consumption of the IP.”

– Shinji Masuda, Vice President of Engineering, Euphonic Technologies

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