



## CADENCE AND CLEARSPD

Cadence Compliance Management System Enables ClearSpeed to Reach Coverage Goals Faster

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**Mike Bartley**, *Test and Verification Manager, ClearSpeed*

### CORPORATE PROFILE

- Established in 2001, ClearSpeed is the leading authority in acceleration technology for meeting the requirements of the world’s most compute-intensive applications

### DESIGN CHALLENGE

- Achieve better compliance measurement of verification processes
- Reach coverage goals easier and faster to meet aggressive time-to-market schedules
- Improve project management capabilities

### CADENCE SOLUTION

- The Cadence Compliance Management System provided ClearSpeed a simple, automated path to complete compliance verification

### CADENCE PRODUCTS AND SERVICES

- Cadence Compliance Management System for PCI Express
- Incisive Enterprise Manager
- Incisive Verification IP for PCI Express

## ACCELERATION TECHNOLOGY FOR HIGH-PERFORMANCE COMPUTING

ClearSpeed Technology is the world leader in acceleration technology. The company produces coprocessors, boards and software tools that are used in high-performance computing to dramatically increase performance without significantly impacting power requirements.

The company’s Advance Accelerator products use the ClearSpeed CSX600, an embedded parallel processor with 96 cores that executes 25 billion 64-bit floating-point operations per second while typically consuming only 10 Watts of power. This makes the CSX600 both the fastest processor design available for 64-bit floating-point performance and the most energy efficient.

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To support the development of its PCI Express based products, ClearSpeed evaluated its verification capabilities.

“We had been using Cadence’s PCI Express Universal Verification Component (UVC) for a year or so,” said Mike Bartley, test and verification manager. “Then we were shown a new solution that would help us further refine our processes: a PCI Express Compliance Management System.”

Each CMS includes an executable verification plan, or “vPlan,” a compliance test suite and a full set of compliance metrics. In ClearSpeed’s case, the verification team is working with the PCI Express CMS and focusing on bridging the coverage gap they foresee in their “Callanish” chip. By doing so they will ensure quality, boost productivity, and add the predictability needed to deliver on schedule.

“The UVC gives us the ability to automatically create many different PCI Express transactions,” said Bartley. “Then, with the compliance part of it, we get a

new level of accuracy and predictability. It reports back to us clear indications of our compliance status.”

## RAPID RESULTS

ClearSpeed has adopted CMS as an integral part of its verification flow, which also includes Cadence® Enterprise Manager for regression running. “We brought up the CMS compliance test suite in our verification environment in just a day,” said Bartley. “Our team was impressed with the rapid results. We identified a number of failures right away and we’re now working to dramatically expand our regression runs to take full advantage of the CMS.”

## PRIORITIZING VERIFICATION OBJECTIVES

Bartley explained that the development team at ClearSpeed needed to prioritize coverage targets, and subsequently, identify the best processes available for reaching the targets. Upon seeing the PCI

Express Compliance Management System (CMS) together with Enterprise Manager, ClearSpeed recognized the solution was precisely what they needed to achieve their objective and satisfy an aggressive time-to-market schedule.

The ClearSpeed team decided to pursue an approach that involved first concentrating its efforts on achieving 100% coverage of the high-priority items. Subsequently, the team would turn its attention to lower priority coverage areas and potentially allow waivers for non-covered lower priority items during sign-off.

## SUPERIOR PROJECT MANAGEMENT

Now that CMS is in place at ClearSpeed, Bartley estimates his team can dramatically reduce the effort required to signoff the PCI Express interface on the Callanish chip but, more importantly, reduce the time to signoff through coverage prioritization. Additionally, Bartley was eager to explain how the solution fosters superior management processes. “We have gained some major improvements with our ability to track progress and better assign resources. CMS gives us an invaluable project management tool because it helps us completely understand and report on our verification status by regularly tracking coverage, bug statistics, and test failures in each of the main functional areas,” he said.

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