

Cadence Speedbridge Adapter for USB Devices

High-speed in-circuit emulation for hardware/software co-verification

The Cadence® SpeedBridge® Adapter for USB Devices allows a USB 2.0 device emulated in a Cadence Palladium® system to interface with a standard PC with one or more PCI/PCI-X slots. It enables hardware/software co-verification, early verification of embedded software prior to hardware prototype, and IP reuse, helping engineers boost their productivity while reducing system risk.

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As SoC designs continue to increase in size and complexity, verification becomes increasingly time consuming. Acceleration and emulation enable more comprehensive validation of a design than with simulation alone, and they allow engineers to develop firmware, drivers, and software before final silicon availability.

Cadence offers a powerful in-circuit emulation solution for USB devices. The Cadence SpeedBridge Adapter for USB Devices uses an industry-standard enhanced host controller interface core (EHCI) found in modern desktop PCs. The controller runs at emulation frequencies and communicates with the desktop PC across a standard PCI bus that is speed buffered by the adapter. The Cadence SpeedBridge Adapter for USB Devices shows up as a standard USB host controller to the operating system and therefore does

not require custom drivers for the host controller. The only driver required is the customer device driver for the emulated device.

Alternatively, third-party software can be used to create custom test drivers to enable basic USB testing. The emulation interface is the standard digital universal transceiver macro interface (UTMI) that would normally connect to a USB transceiver. The Cadence SpeedBridge Adapter for USB Devices provides the necessary virtualization of the USB transceiver so that an emulated device will connect and configure in a normal manner as if a real transceiver were being used.

The Cadence SpeedBridge Adapter for USB Devices connects directly to a Cadence emulator through standard emulation cables. It is designed to be functionally transparent to both the emulated designs and the target device.

With the high speed of Cadence in-circuit emulation, you can co-verify hardware and software together with USB device application software. Cadence emulators, such as Palladium systems, provide both hardware and software debug technologies you need for ease of use, ease of debug, and high speed, so you don't have to sacrifice quality. You can use a USB monitor and a software debugger such as GNU project debugger (GDB) to see low-level USB activities, performance testing, debug driver, or application software. Cadence provides leading-edge HW/SW debug technologies and methodology. (See Figure 1)

Benefits

Reduces system risk

- Enables USB device verification in a SoC/system environment
 - Enables verification of software/drivers/interfaces

- Enables collaboration among HW/SW engineers for efficient debugging with respective views

Improves productivity

- Offers a high-performance emulation solution for verifying USB devices
 - Enables software development early in the design cycle
 - Enables HW/SW co-verification
 - Provides test IP so you can start from known working setup

Enables IP reuse

- Delivers a solution that works from one project to another
 - Eliminates the need for users to develop complex bridge solutions for standards-based interface protocols
 - Enables rapid emulation deployment

Enables advanced debugging

- Leverages the advanced debugging capabilities of the Palladium system (such as Full Vision)
 - Enables remote reset of PC platform
 - Offers on-board DIP switches and LED indicators

Specifications

Supported standards

- UTMI v1.05/ UTMI + level-0 digital interface
 - High-speed USB 2.0 transactions
 - 33MHz PCI plug-in cards
 - 3.3V and 5V compatible

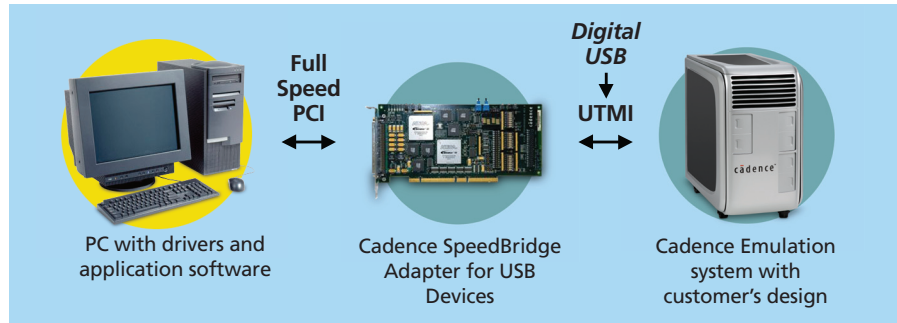


Figure 1: Cadence SpeedBridge Adapter for USB Devices helps you connect a Cadence emulation system to a standard PC

Contains industry-standard EHCI controller core

- Supports Microsoft Windows EHCI software driver

Power

- 3A@120 VAC, 1.5A@220 VAC

Requirements

- Palladium emulator
- Universal SpeedBridge Chassis

Cadence Services and Support

- Cadence application engineers can answer your technical questions by telephone, email, or Internet—they can also provide technical assistance and custom training

- Cadence certified instructors teach more than 70 courses and bring their real-world experience into the classroom
- More than 25 Internet Learning Series (iLS) online courses allow you the flexibility of training at your own computer via the Internet
- Cadence Online Support gives you 24x7 online access to a knowledgebase of the latest solutions, technical documentation, software downloads, and more