Application Notes

If you want to do a bit more reading about how our FPGAs lend themselves to a broad number of applications, we recommend these application notes.

XAPP469: Spread-Spectrum Clocking Reception for Displays

www.xilinx.com/support/documentation/application_notes/xapp469.pdf

Display applications like flat panels and video players commonly use high-speed low-voltage differential signaling (LVDS) interfaces to transfer video data. To address electromagnetic compatibility (EMC) issues, designers can use spread-spectrum clocking to reduce the impact of the radiated energy these signals produce. When designers use a spread-spectrum clock as the source from which LVDS signals are derived, the radiated energy is spread across a range of frequencies, effectively reducing the peak energy at any one frequency.

In this application note, Jim Tatsukawa shows that a spread-spectrum clock will drive the LVDS interfaces of Spartan®-3E and Extended Spartan-3A family devices with no adverse effects on a system's performance. Tatsukawa explains how to estimate the maximum spread-spectrum clock modulation frequency for the digital clock manager (DCM) and describes a simple test setup to evaluate the effects of the spread-spectrum clock on a typical LVDS communications path.

Note: This application note applies to Spartan-3E and Extended Spartan-3A family devices only.

XAPP1117: Software Debugging Techniques for PowerPC 440 Processor Embedded Platforms

www.xilinx.com/support/documentation/application_notes/xapp1117.pdf

In this application note, Brian Hill discusses the use of the Xilinx Microprocessor Debugger (XMD) and the GNU software debugger (GDB) to debug software defects.

Hill describes how you can use XMD to download executables to the system, to control running these applications with breakpoints and to examine or modify memory and CPU registers. He also explains how to use the GDB's symbolic software debugger in concert with XMD. Doing so can streamline tasks that are normally cumbersome to perform with XMD alone.

The note demonstrates how to use GDB to debug software locally (with a local process running on the same machine and operating system as GDB itself) to connect to the GDB stub, also called GDB server, running within XMD. XMD automatically starts the GDB server after the user connects to the target processor.

To use the application note effectively, get your hands on an ML507 board (*www.xilinx.com/products/boards/ml507/reference_designs.htm*), which includes a Virtex®-5 FXT and, in turn, a PowerPC® (PPC) 440 processor core.

The note includes a design implementation that Hill intentionally seeded with software defects. Hill then reviews how to find and fix these bugs and lists the best tools for the job.

XAPP1052: Bus Master DMA Reference Design for the Xilinx Endpoint Block Plus Core for PCI Express

www.xilinx.com/support/documentation/application_notes/xapp1052.pdf

In this application note, Jake Wiltgen shows how to design and implement a bus master direct memory access (DMA) design for the endpoint block, plus wrapper core, for PCI Express® using the Virtex®-5 FPGA, which includes an integrated block for PCI Express. A bus master DMA (BMD) design moves data to and from host memory. By using one in your applications, your design can achieve higher throughput and performance, along with lower overall CPU utilization.

Included in this BMD reference design is a DMA kernel mode driver, including source and Windows 32-bit software application, both provided by Avnet. The application note also includes instructions for installing both the driver and application.

To view other Xilinx application notes, visit www.xilinx.com/support/documentation/application_notes.htm.