SPACEWIRE IP FOR ACTEL RADIATION TOLERANT FPGAS

Session: SpaceWire Components

Short Paper

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ABSTRACT

STAR-Dundee Ltd and University of Dundee have teamed with Actel to provide a range of SpaceWire IP cores optimised for the Actel RTAX-S radiation tolerant series of devices. FPGA technology is ideal for instrument development, allowing one off equipment development without the large non-recurring engineering (NRE) costs of ASICs. The RTAX-S family provides a large number of available logic gates enabling complete instrument interface and control systems to be integrated on a single device.

SpaceWire was designed to provide a fast and efficient (low gate count) interface suitable for use onboard spacecraft. It is now being widely used by the major space agencies and aerospace industry across the world. SpaceWire is ideal for connecting an instrument into an onboard data-handling system and many missions are now selecting SpaceWire as the onboard interface of choice.

A ready laid-out SpaceWire interface with guaranteed timing, that fits into a corner of an Actel RTAX-S device would make the design of instrument interface and control FPGAs much simpler. Effort could then be concentrated on the application specific design without having to be concerned about the SpaceWire interface design.

The Actel “Block Flow” technology makes this possible. A functional block with fixed layout can be integrated with general user logic. STAR-Dundee are designing a series of SpaceWire interface blocks including a SpaceWire interface, a SpaceWire interface with Remote Memory Access Protocol (RMAP) support and a SpaceWire router. The first of these IP blocks will be available in September 2007.

The full paper will contain details of the performance, size and power consumption of the Actel SpaceWire IP.