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EQUATOR REVS MEDIA PROCESSOR

By Tom R. Halfhill {7/28/03-04}

Equator Technologies unveiled a new member of its media-processor family at **Embedded Processor Forum 2003**, claiming the chip will deliver more signal-processing performance than any other VLIW architecture. The new processor, the BSP-16, is scheduled for

production in 3Q04. Designed for digital TV, digital video recorders, video conferencing, and other media-oriented applications, the BSP-16 follows Equator's BSP-15 and MAP-CA.

The latter chip won the *MPR* award for Best Media Processor of 2000. (See *MPR 1/29/01-04*, "Media Processors Gain Ground" and *MPR 3/13/00-04*, "MAP-CA Ready for Prime Time.") The BSP-16 is similar to the BSP-15 but isn't pin compatible with it, due in part to new interfaces for DDR-SDRAM, IDE, and a UART.

Despite the new I/O features and a boost in clock frequency to 350–500MHz (vs. 300–405MHz for the BSP-15), the new chip will consume about half as much power: 1–2W typical. A shrink from TSMC's 0.15-micron process to the 0.13-micron "G" process makes the difference. Core voltage drops to 1.0V, with 3.3V I/O. PCI is 5V tolerant. The integrated memory controller is compatible with 32/64-bit DDR-SDRAM (166MHz at 2.5V I/O). Equator says a BSP-16 running flat out at 500MHz will consume only 2W while encoding or decoding an MPEG-2 video stream.

Hardware acceleration and media-specific I/O ports set the BSP-16 apart from general-purpose DSPs. One accelerator is a DMA controller called the DataStreamer, which can prevent stalls by overlapping memory accesses with the DDR

controller. Equator says CPU stall cycles drop from 50% to less than 5% when the BSP-16 is processing MPEG streams. The chip also has 16 multipliers (16 × 16 bits) with 64-bit accumulators, a video scaler, and an SVGA display-refresh controller. I/O interfaces include two video inputs, one video output, 16-bit audio, and one analog/digital RGB output with a RAMDAC.

The BSP-16 is binary compatible with the BSP-15 and MAP-CA processors. Because Equator designed the BSP-16 for media processing, the four-issue VLIW instruction set and software-development tools are highly optimized for that application. There are 500 opcode variations for such functions as rounding, saturation, and formatting, and Equator provides code libraries for MPEG, H.263/H.264 video, Windows Media 9, DivX, RealNetworks audio/video streaming, and On2 video compression. Supported operating systems include VxWorks, Linux, and eCos. As with previous Equator media processors, the BSP-16 is programmable in C and C++. Equator discourages assembly-language programming by not providing an assembler.

The 350MHz BSP-16 will be priced at $20 in 100,000-unit quantities; Equator will announce pricing for the 400MHz and 500MHz parts later. For more information, see *www.equator.com.* ◇