

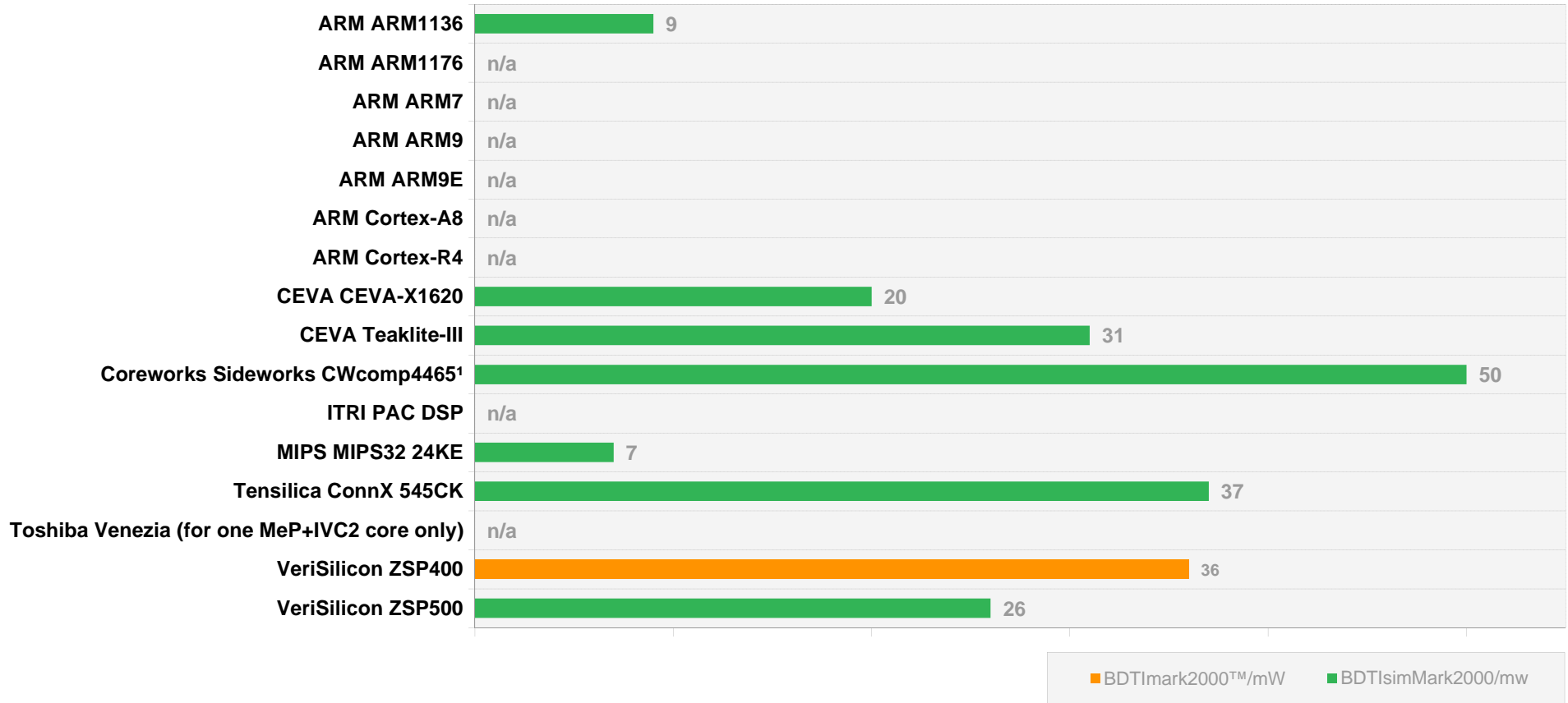
Speed per Milliwatt Ratios for Fixed-Point Licensable Cores (130 nm)

Updated September 2009

Copyright © 2009 Berkeley Design Technology, Inc.

No reproduction or reuse is permitted without the express authorization of BDTI.

See page 3 for details.



All processors benchmarked with 16-bit fixed-point data. All scores use worst-case clock speeds for the TSMC CL013G process and ARM Artisan SAGE-X library. Vendors can choose different speed/area/power trade-offs; to understand the trade-offs, please view all BDTI metrics for each core. BDTIsimMark2000™ scores may be based on projected clock speeds. For information, see www.BDTI.com/Services/Benchmarks.

¹Coreworks scores include both a customized SideWorks DSP engine and the FireWorks 32-bit RISC processor. The SideWorks core used to implement the BDTI DSP Kernel Benchmarks includes four 16-bit multiplier units, six 32-bit ALUs, five shift units, six data multiplexing units, two data de-multiplexing units, two bit-reverse units, a bit unpack unit, and 6K bytes of memory. Different versions of the SideWorks core will yield different performance, power consumption, and die size figures than those reported here.

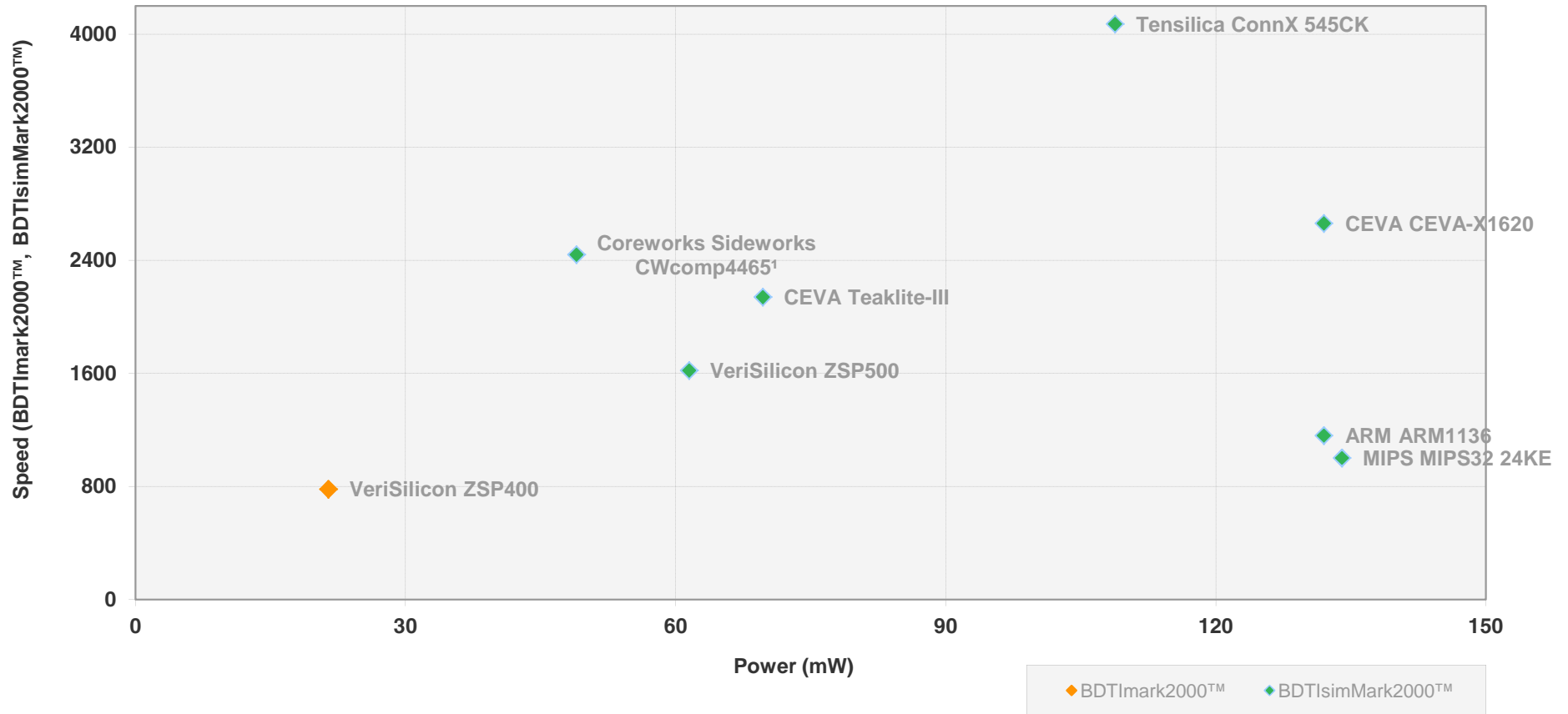
Speed vs. Power for Fixed-Point Licensable Cores (130 nm)

Updated September 2009

Copyright © 2009 Berkeley Design Technology, Inc.

Contact BDTI for authorization to publish scores.

See page 3 for details.



All processors benchmarked with 16-bit fixed-point data. All scores use worst-case clock speeds for the TSMC CL013G process and ARM Artisan SAGE-X library. Vendors can choose different speed/area/power trade-offs; to understand the trade-offs, please view all BDTI metrics for each core. BDTIsimMark2000™ scores may be based on projected clock speeds. For information, see www.BDTI.com/Services/Benchmarks.

¹Coreworks scores include both a customized SideWorks DSP engine and the FireWorks 32-bit RISC processor. The SideWorks core used to implement the BDTI DSP Kernel Benchmarks includes four 16-bit multiplier units, six 32-bit ALUs, five shift units, six data multiplexing units, two data de-multiplexing units, two bit-reverse units, a bit unpack unit, and 6K bytes of memory. Different versions of the SideWorks core will yield different performance, power consumption, and die size figures than those reported

Speed vs. Power for Fixed-Point Licensable Cores (130 nm)

Updated September 2009

Copyright © 2009 Berkeley Design Technology, Inc.

Contact BDTI for authorization to publish scores.



Processor Family	Clock Rate	BDTI _{mark} 2000™, BDTI _{sim} Mark2000™	Power	BDTI _{mark} 2000™/mW, BDTI _{sim} Mark2000™/mW
ARM ARM1136	330	1160	132 mW	9
ARM ARM1176	335	1200	n/a	n/a
ARM ARM7	145	160	n/a	n/a
ARM ARM9	255	320	n/a	n/a
ARM ARM9E	265	550	n/a	n/a
ARM Cortex-A8	n/a	n/a	n/a	n/a
ARM Cortex-R4	n/a	n/a	n/a	n/a
CEVA CEVA-X1620	330	2660	132 mW	20
CEVA Teaklite-III	335	2140	70 mW	31
Coreworks Sideworks CWcomp4465 ¹	209	2440	49 mW	50
ITRI PAC DSP	n/a	n/a	n/a	n/a
MIPS MIPS32 24KE	335	1000	134 mW	7
Tensilica ConnX 545CK	245	4070	109 mW	37
Toshiba Venezia (for one MeP+IVC2 core only)	n/a	n/a	n/a	n/a
VeriSilicon ZSP400	165	780	21 mW	36
VeriSilicon ZSP500	205	1620	62 mW	26

All processors benchmarked with 16-bit fixed-point data. All results assume use of the TSMC CL013G process and the ARM Artisan SAGE-X library. Vendors can choose different speed/area/power trade-offs; to understand the trade-offs, please view all BDTI metrics for each core.

¹Coreworks scores include both a customized SideWorks DSP engine and the FireWorks 32-bit RISC processor. The SideWorks core used to implement the BDTI DSP Kernel Benchmarks includes four 16-bit multiplier units, six 32-bit ALUs, five shift units, six data multiplexing units, two data de-multiplexing units, two bit-reverse units, a bit unpack unit, and 6K bytes of memory. Different versions of the SideWorks core will yield different performance, power consumption, and die size figures than those reported here.

Clock rate: Clock speeds assume worst-case process, voltage, and temperature variations

Power: Power estimates assume typical process, voltage, and temperature variations

Power for core only; does not include power for caches or other memories

BDTI_{mark}2000™, BDTI_{sim}Mark2000™: The BDTI_{mark}2000™ and BDTI_{sim}Mark2000™ provide a summary measure of signal processing speed. BDTI_{sim}Mark2000™ scores may be based on projected clock speeds.

For more info and scores see www.BDTI.com/Services/Benchmarks.