SPEC® CFP2006 Result
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GIGA-BYTE Technology Co. Ltd.
(Test Sponsor: Intel Corporation)

Gigabyte MA78GM-S2H Motherboard (AMD Phenom II X4 920)

$SPECfp^{®}2006 =$ 17.2

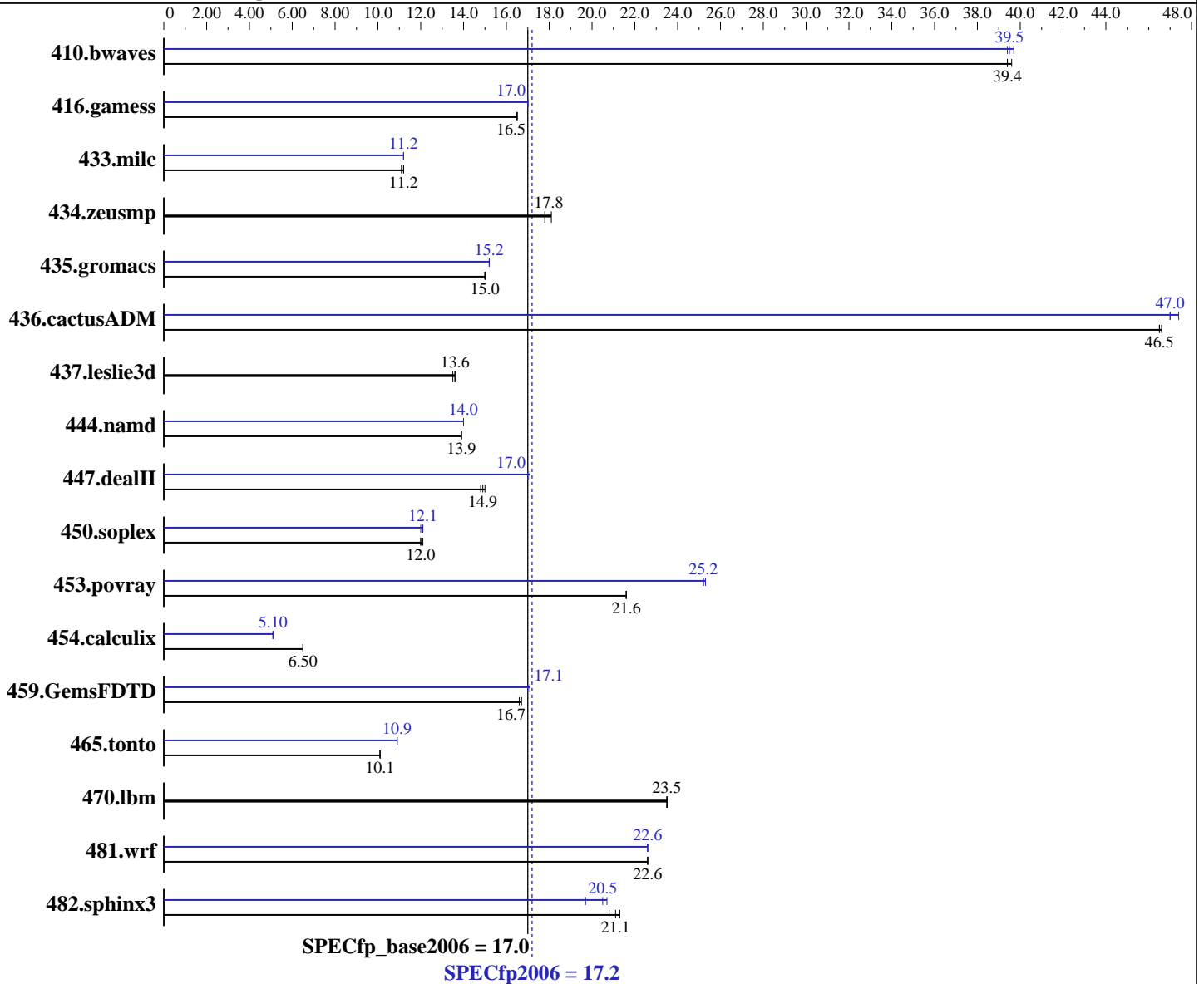$SPECfp\_base2006 =$ 17.0

CPU2006 license: 13
Test sponsor: Intel Corporation
Tested by: Intel Corporation

Test date: May-2009
Hardware Availability: Jan-2009
Software Availability: Nov-2008

Benchmark	Result
410.bwaves	39.5 / 39.4
416.gamess	17.0 / 16.5
433.milc	11.2 / 11.2
434.zeusmp	17.8
435.gromacs	15.2 / 15.0
436.cactusADM	47.0 / 46.5
437.leslie3d	13.6
444.namd	14.0 / 13.9
447.dealII	17.0 / 14.9
450.soplex	12.1 / 12.0
453.povray	25.2 / 21.6
454.calculix	5.10 / 6.50
459.GemsFDTD	17.1 / 16.7
465.tonto	10.9 / 10.1
470.lbm	23.5
481.wrf	22.6 / 22.6
482.sphinx3	20.5 / 21.1

SPECfp_base2006 = 17.0
SPECfp2006 = 17.2

Hardware
CPU Name: AMD Phenom II X4 920
CPU Characteristics:
CPU MHz: 2800
FPU: Integrated
CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip
CPU(s) orderable: 1 chip
Primary Cache: 64 KB I + 64 KB D on chip per core
Secondary Cache: 512 KB I+D on chip per core
Continued on next page

Software
Operating System: Windows Vista Ultimate w/ SP1 (64-bit)
Compiler: Intel C++ Compiler Professional 11.0 for IA32
Build 20080930 Package ID: w_cproc_p_11.0.054
Intel Visual Fortran Compiler Professional 11.0 for IA32
Build 20080930 Package ID: w_cprof_p_11.0.054
Microsoft Visual Studio 2008 (for libraries)
Auto Parallel: Yes
File System: NTFS
Continued on next page

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L3 Cache:	6 MB I+D on chip per chip	System State:	Default
Other Cache:	None	Base Pointers:	32-bit
Memory:	4 GB (4x1GB DDR2-800 CL5)	Peak Pointers:	32-bit
Disk Subsystem:	Seagate 320 GB SATA, 7200RPM	Other Software:	SmartHeap Library Version 8.1 from
Other Hardware:	None		http://www.microquill.com/

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**345**	**39.4**	343	39.6	345	39.4	**344**	**39.5**	342	39.7	345	39.4
416.gamess	**1186**	**16.5**	1185	16.5	1188	16.5	1150	17.0	1149	17.0	**1150**	**17.0**
433.milc	827	11.1	822	11.2	**822**	**11.2**	**823**	**11.2**	823	11.2	823	11.2
434.zeusmp	512	17.8	503	18.1	**510**	**17.8**	512	17.8	503	18.1	**510**	**17.8**
435.gromacs	**477**	**15.0**	477	15.0	476	15.0	**470**	**15.2**	470	15.2	469	15.2
436.cactusADM	**257**	**46.5**	256	46.6	257	46.5	252	47.4	254	47.0	**254**	**47.0**
437.leslie3d	699	13.5	**691**	**13.6**	691	13.6	699	13.5	**691**	**13.6**	691	13.6
444.namd	576	13.9	577	13.9	**577**	**13.9**	573	14.0	573	14.0	**573**	**14.0**
447.dealII	763	15.0	**768**	**14.9**	773	14.8	667	17.1	674	17.0	**672**	**17.0**
450.soplex	692	12.1	**696**	**12.0**	697	12.0	**692**	**12.1**	688	12.1	695	12.0
453.povray	247	21.6	**247**	**21.6**	247	21.6	**211**	**25.2**	211	25.2	211	25.3
454.calculix	1275	6.50	1276	6.50	**1276**	**6.50**	**1629**	**5.10**	1630	5.10	1629	5.10
459.GemsFDTD	**634**	**16.7**	637	16.6	634	16.7	**621**	**17.1**	625	17.0	620	17.1
465.tonto	978	10.1	977	10.1	**978**	**10.1**	**905**	**10.9**	907	10.9	904	10.9
470.lbm	**585**	**23.5**	585	23.5	585	23.5	**585**	**23.5**	585	23.5	585	23.5
481.wrf	495	22.6	494	22.6	**495**	**22.6**	494	22.6	495	22.6	**495**	**22.6**
482.sphinx3	**923**	**21.1**	939	20.8	915	21.3	989	19.7	939	20.7	**949**	**20.5**

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

General Notes

```
Tested systems can be used with Shin-G ATX case, Antec NeoPower 480W power supply
Binaries were built on Windows Vista Ultimate (32-bit)
OMP_NUM_THREADS set to number of logical processors as seen by the OS
KMP_AFFINITY set to physical,0
```

Base Compiler Invocation

C benchmarks:
```
icl -Qvc9 -Qc99
```

C++ benchmarks:
```
icl -Qvc9
```

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Base Compiler Invocation (Continued)

Fortran benchmarks:
```
ifort
```

Benchmarks using both Fortran and C:
```
icl -Qvc9 -Qc99 ifort
```

Base Portability Flags

```
436.cactusADM: -Qlowercase /assume:underscore
     444.namd: -TP
    447.dealII: -DDEAL_II_MEMBER_VAR_SPECIALIZATION_BUG
    453.povray: -DSPEC_CPU_WINDOWS_ICL
   454.calculix: -DSPEC_CPU_NOZMODIFIER -Qlowercase
      481.wrf: -DSPEC_CPU_WINDOWS_ICL
```

Base Optimization Flags

C benchmarks:
```
/arch:SSE2 -Qipo -O3 -Qprec-div- -Qparallel -Qopt-prefetch
/F1000000000
```

C++ benchmarks:
```
/arch:SSE2 -Qipo -O3 -Qprec-div- -Qparallel -Qopt-prefetch
-Qcxx-features /F1000000000 shlw32m.lib
          -link /FORCE:MULTIPLE
```

Fortran benchmarks:
```
/arch:SSE2 -Qipo -O3 -Qprec-div- -Qparallel -Qopt-prefetch
/F1000000000
```

Benchmarks using both Fortran and C:
```
/arch:SSE2 -Qipo -O3 -Qprec-div- -Qparallel -Qopt-prefetch
/F1000000000
```

Peak Compiler Invocation

C benchmarks:
```
icl -Qvc9 -Qc99
```

C++ benchmarks:
```
icl -Qvc9
```

Fortran benchmarks:
```
ifort
```

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Peak Compiler Invocation (Continued)

Benchmarks using both Fortran and C:
```
icl -Qvc9 -Qc99 ifort
```

Peak Portability Flags

```
436.cactusADM: -Qlowercase /assume:underscore
     444.namd: -TP
    447.dealII: -DDEAL_II_MEMBER_VAR_SPECIALIZATION_BUG
    453.povray: -DSPEC_CPU_WINDOWS_ICL
   454.calculix: -DSPEC_CPU_NOZMODIFIER -Qlowercase
      481.wrf: -DSPEC_CPU_WINDOWS_ICL
```

Peak Optimization Flags

C benchmarks:

```
  433.milc: /arch:SSE2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)
            -Qipo -O3 -Qprec-div- -Oa /F1000000000

  470.lbm: basepeak = yes

482.sphinx3: /arch:SSE2 -Qipo -O3 -Qprec-div- -Qunroll2 /F1000000000
```

C++ benchmarks:

```
  444.namd: /arch:SSE2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)
            -Qipo -O3 -Qprec-div- -Oa /F1000000000 shlw32m.lib
                      -link /FORCE:MULTIPLE

 447.dealII: /arch:SSE2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)
            -Qipo -O3 -Qprec-div- -Qunroll2 -Qopt-prefetch
            -Qansi-alias -Qscalar-rep- /F1000000000 shlw32m.lib
                      -link /FORCE:MULTIPLE

 450.soplex: /arch:SSE2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)
            -Qipo -O3 -Qprec-div- /F1000000000 shlw32m.lib
                      -link /FORCE:MULTIPLE

 453.povray: /arch:SSE2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)
            -Qipo -O3 -Qprec-div- -Qunroll4 -Qansi-alias /F1000000000
            shlw32m.lib            -link /FORCE:MULTIPLE
```

Fortran benchmarks:

```
 410.bwaves: /arch:SSE2 -Qipo -O3 -Qprec-div- -Qopt-prefetch
            -Qparallel /F1000000000
```

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Peak Optimization Flags (Continued)

```
416.gamess: /arch:SSE2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)
            -Qipo -O3 -Qprec-div- -Qunroll2 -Ob0 -Qansi-alias
            -Qscalar-rep- /F1000000000

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: /arch:SSE2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)
            -Qipo -O3 -Qprec-div- -Qunroll2 -Ob0 -Qopt-prefetch
            -Qparallel /F1000000000

465.tonto: /arch:SSE2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)
            -Qipo -O3 -Qprec-div- -Qunroll4 -Qauto /F1000000000
```

Benchmarks using both Fortran and C:

```
435.gromacs: /arch:SSE2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)
            -Qipo -O3 -Qprec-div- -Qopt-prefetch /F1000000000

436.cactusADM: /arch:SSE2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)
            -Qipo -O3 -Qprec-div- -Qunroll2 -Qopt-prefetch -Qparallel
            /F1000000000

454.calculix: /arch:SSE2 -Qipo -O3 -Qprec-div- /F1000000000

481.wrf: /arch:SSE2 -Qipo -O3 -Qprec-div- -Qopt-prefetch
            -Qparallel /F1000000000
```

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic11.0-win32-revA.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Intel-ic11.0-win32-revA.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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