# SPEC® CINT2006 Result

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## GIGA-BYTE Technology Co. Ltd.

(Test Sponsor: Intel Corporation)

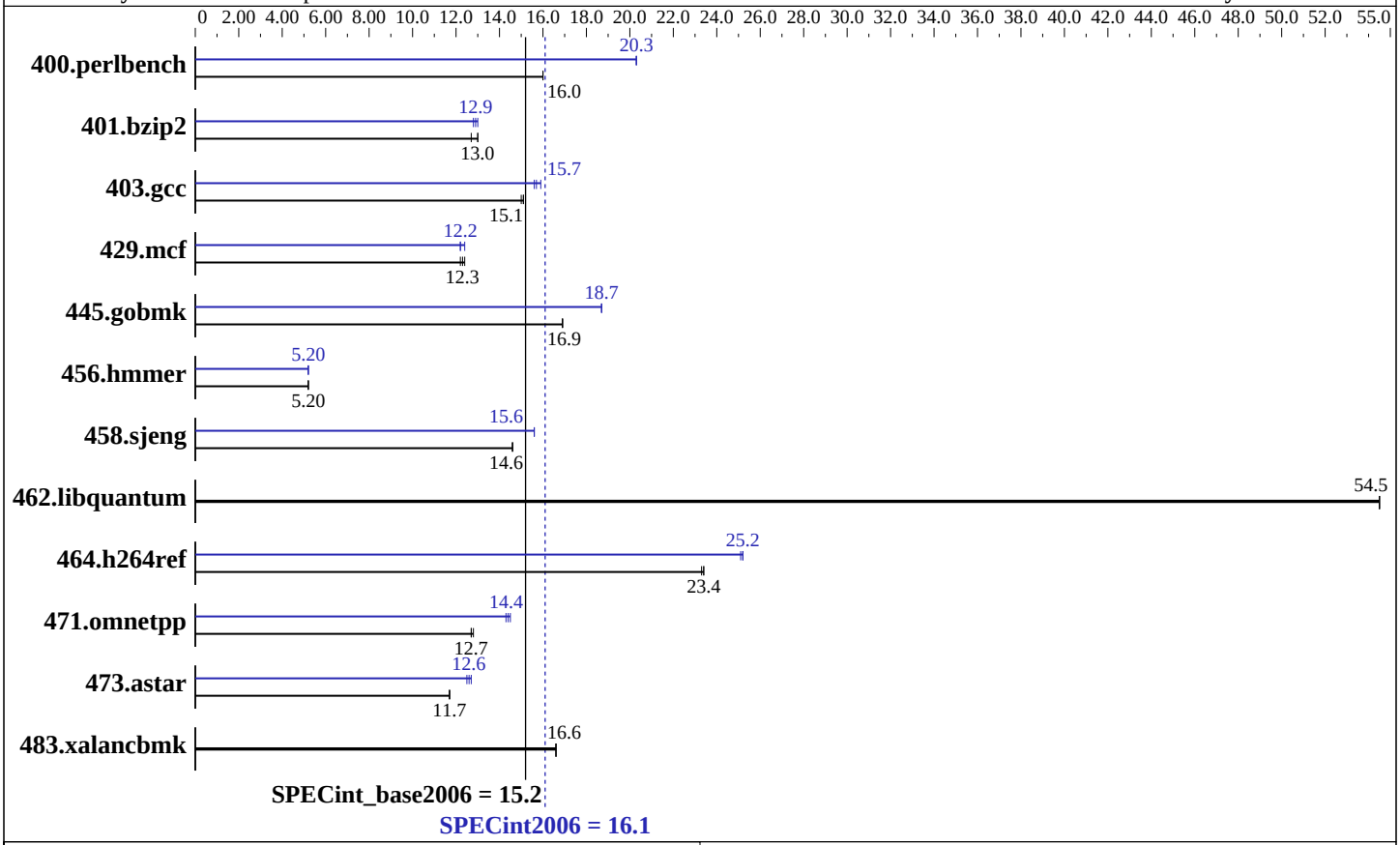
Gigabyte MA78GM-S2H Motherboard (AMD Phenom II X4 910)

SPECint®2006 = 16.1

SPECint_base2006 = 15.2

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

**Test date:** May-2009
**Hardware Availability:** Feb-2009
**Software Availability:** Nov-2008




## Hardware

| | |
|---|---|
| CPU Name: | AMD Phenom II X4 910 |
| CPU Characteristics: | |
| CPU MHz: | 2600 |
| 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 |
| L3 Cache: | 6 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 4 GB (4x1GB DDR2-800 CL5) |
| Disk Subsystem: | Seagate 320 GB SATA, 7200RPM |
| Other Hardware: | None |

## 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 Microsoft Visual Studio 2008 (for libraries) |
| Auto Parallel: | Yes |
| File System: | NTFS |
| System State: | Default |
| Base Pointers: | 32-bit |
| Peak Pointers: | 32-bit |
| Other Software: | SmartHeap Library Version 8.1 from http://www.microquill.com/ |

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## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 400.perlbench | 611 | 16.0 | **610** | **16.0** | 610 | 16.0 | **481** | **20.3** | 481 | 20.3 | 482 | 20.3 |
| 401.bzip2 | 763 | 12.7 | **744** | **13.0** | 744 | 13.0 | **746** | **12.9** | 754 | 12.8 | 743 | 13.0 |
| 403.gcc | **535** | **15.1** | 537 | 15.0 | 534 | 15.1 | 517 | 15.6 | 507 | 15.9 | **513** | **15.7** |
| 429.mcf | **739** | **12.3** | 733 | 12.4 | 747 | 12.2 | 745 | 12.2 | 738 | 12.4 | **745** | **12.2** |
| 445.gobmk | 619 | 16.9 | 621 | 16.9 | **620** | **16.9** | 562 | 18.7 | 560 | 18.7 | **561** | **18.7** |
| 456.hmmer | 1786 | 5.20 | 1787 | 5.20 | **1787** | **5.20** | **1794** | **5.20** | 1802 | 5.20 | 1789 | 5.20 |
| 458.sjeng | 831 | 14.6 | **831** | **14.6** | 831 | 14.6 | 774 | 15.6 | 774 | 15.6 | **774** | **15.6** |
| 462.libquantum | 380 | 54.5 | **380** | **54.5** | 380 | 54.5 | 380 | 54.5 | **380** | **54.5** | 380 | 54.5 |
| 464.h264ref | **948** | **23.4** | 946 | 23.4 | 950 | 23.3 | **879** | **25.2** | 880 | 25.1 | 878 | 25.2 |
| 471.omnetpp | **491** | **12.7** | 489 | 12.8 | 492 | 12.7 | 437 | 14.3 | **435** | **14.4** | 430 | 14.5 |
| 473.astar | 601 | 11.7 | 600 | 11.7 | **600** | **11.7** | 563 | 12.5 | **556** | **12.6** | 552 | 12.7 |
| 483.xalancbmk | 417 | 16.6 | **416** | **16.6** | 415 | 16.6 | 417 | 16.6 | **416** | **16.6** | 415 | 16.6 |

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
```

## Base Portability Flags

403.gcc: `-DSPEC_CPU_WIN32`
464.h264ref: `-DSPEC_CPU_NO_INTTYPES -DWIN32`
483.xalancbmk: `-Qoption,cpp,--no_wchar_t_keyword`

## Base Optimization Flags

C benchmarks:
```
/arch:SSE2 -Qipo -O3 -Qprec-div- -Qopt-prefetch -Qparallel
-Qpar-runtime-control -Qvec-guard-write /F512000000
```

C++ benchmarks:
```
/arch:SSE2 -Qipo -O3 -Qprec-div- -Qopt-prefetch -Qcxx-features
/F512000000 shlw32m.lib            -link /FORCE:MULTIPLE
```

## Base Other Flags

C benchmarks:

403.gcc: `-Dalloca=_alloca`

## Peak Compiler Invocation

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

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

## Peak Portability Flags

403.gcc: `-DSPEC_CPU_WIN32`
464.h264ref: `-DSPEC_CPU_NO_INTTYPES -DWIN32`
483.xalancbmk: `-Qoption,cpp,--no_wchar_t_keyword`

## Peak Optimization Flags

C benchmarks:

400.perlbench: `/arch:SSE2`(pass 2) `-Qprof_gen`(pass 1) `-Qprof_use`(pass 2)
`-Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-prefetch`
`/F512000000 shlw32m.lib            -link /FORCE:MULTIPLE`

401.bzip2: `/arch:SSE2`(pass 2) `-Qprof_gen`(pass 1) `-Qprof_use`(pass 2)
`-Qipo -O3 -Qprec-div- -Qopt-prefetch -Qansi-alias`
`/F512000000`

403.gcc: `/arch:SSE2`(pass 2) `-Qprof_gen`(pass 1) `-Qprof_use`(pass 2)
`-Qipo -O3 -Qprec-div- /F512000000`

Continued on next page

## Peak Optimization Flags (Continued)

429.mcf: /arch:SSE2 -Qipo -O3 -Qprec-div- -Qopt-prefetch /F512000000

445.gobmk: /arch:SSE2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2) -Qipo -O2 -Qprec-div- -Qansi-alias /F512000000

456.hmmer: /arch:SSE2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2) -Qipo -O3 -Qprec-div- -Qunroll2 -Qansi-alias /F512000000

458.sjeng: /arch:SSE2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2) -Qipo -O3 -Qprec-div- -Qunroll4 /F512000000

462.libquantum: basepeak = yes

464.h264ref: Same as 456.hmmer

C++ benchmarks:

471.omnetpp: /arch:SSE2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2) -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-ra-region-strategy=block /F512000000 shlw32m.lib -link /FORCE:MULTIPLE

473.astar: /arch:SSE2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2) -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-ra-region-strategy=routine /F512000000 shlw32m.lib -link /FORCE:MULTIPLE

483.xalancbmk: basepeak = yes

## Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca

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

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