



# SPEC® CFP2006 Result

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GIGA-BYTE Technology Co. Ltd.

(Test Sponsor: Intel Corporation)

Gigabyte GA-X58A-UD7 motherboard (Intel Core i7-920)

SPECfp®2006 = 32.1

SPECfp\_base2006 = 30.8

CPU2006 license: 13

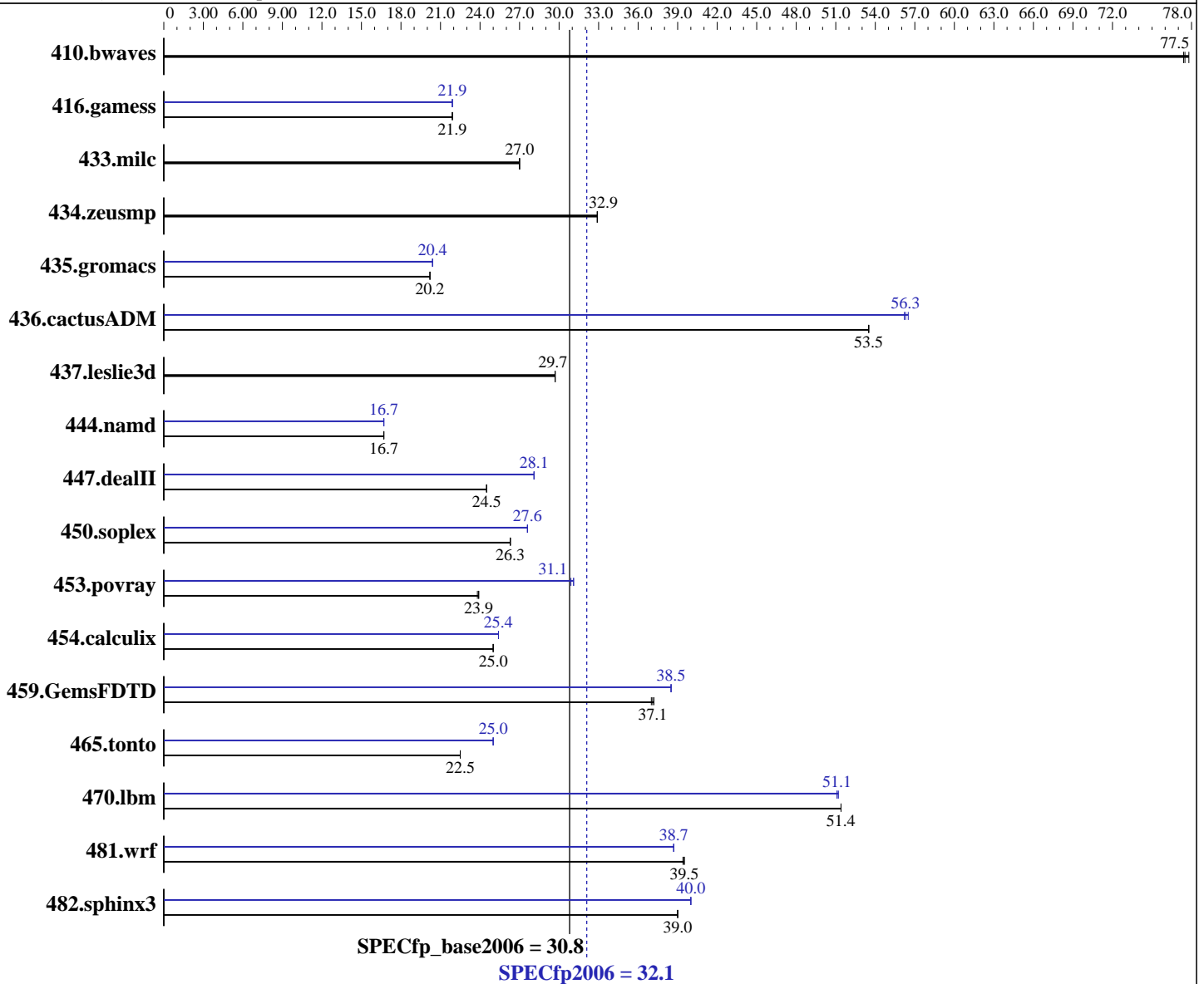
Test sponsor: Intel Corporation

Tested by: Intel Corporation

Test date: Feb-2010

Hardware Availability: Nov-2009

Software Availability: Oct-2009



### Hardware

CPU Name: Intel Core i7-920  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.93 GHz  
 CPU MHz: 2667  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip, 2 threads/core  
 CPU(s) orderable: 1 chip  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 256 KB I+D on chip per core

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### Software

Operating System: Windows Vista Ultimate w/ SP1 (64-bit)  
 Compiler: Intel C++ Compiler Professional 11.1 for Intel 64  
 Build 20090903 Package ID: w\_cproc\_p\_11.1.045  
 Intel Visual Fortran Compiler Professional 11.1 for Intel 64  
 Build 20090903 Package ID: w\_cproc\_p\_11.1.045, w\_cprof\_p\_11.1.045  
 Microsoft Visual Studio 2008 Professional SP1 (for libraries)  
 Auto Parallel: Yes

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L3 Cache: 8 MB I+D on chip per chip  
Other Cache: None  
Memory: 12 GB (6x2GB Micron 16JTF25664AY-1G1D1 DDR3-1066 CL7)  
Disk Subsystem: Intel X25-M 80GB SSD  
Other Hardware: None

File System: NTFS  
System State: Default  
Base Pointers: 64-bit  
Peak Pointers: 64-bit  
Other Software: None  
SmartHeap Library Version 8.1 from <http://www.microquill.com/>

## Results Table

| Benchmark     | Base       |             |            |             |            |             | Peak       |             |            |             |            |             |
|---------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|
|               | Seconds    | Ratio       | Seconds    | Ratio       | Seconds    | Ratio       | Seconds    | Ratio       | Seconds    | Ratio       | Seconds    | Ratio       |
| 410.bwaves    | 176        | 77.4        | <u>175</u> | <u>77.5</u> | 175        | 77.8        | 176        | 77.4        | <u>175</u> | <u>77.5</u> | 175        | 77.8        |
| 416.gamess    | 893        | 21.9        | 894        | 21.9        | <u>894</u> | <u>21.9</u> | 896        | 21.9        | <u>896</u> | <u>21.9</u> | 896        | 21.9        |
| 433.milc      | <u>340</u> | <u>27.0</u> | 339        | 27.0        | 340        | 27.0        | <u>340</u> | <u>27.0</u> | 339        | 27.0        | 340        | 27.0        |
| 434.zeusmp    | 277        | 32.9        | 277        | 32.9        | <u>277</u> | <u>32.9</u> | 277        | 32.9        | 277        | 32.9        | <u>277</u> | <u>32.9</u> |
| 435.gromacs   | 353        | 20.2        | <u>353</u> | <u>20.2</u> | 353        | 20.2        | <u>351</u> | <u>20.4</u> | 351        | 20.4        | 351        | 20.4        |
| 436.cactusADM | <u>223</u> | <u>53.5</u> | 224        | 53.5        | 223        | 53.5        | 213        | 56.2        | <u>212</u> | <u>56.3</u> | 211        | 56.5        |
| 437.leslie3d  | 317        | 29.7        | 317        | 29.7        | <u>317</u> | <u>29.7</u> | 317        | 29.7        | 317        | 29.7        | <u>317</u> | <u>29.7</u> |
| 444.namd      | 480        | 16.7        | <u>480</u> | <u>16.7</u> | 480        | 16.7        | 481        | 16.7        | <u>481</u> | <u>16.7</u> | 481        | 16.7        |
| 447.dealII    | 466        | 24.5        | <u>466</u> | <u>24.5</u> | 466        | 24.5        | 407        | 28.1        | 407        | 28.1        | <u>407</u> | <u>28.1</u> |
| 450.soplex    | 317        | 26.3        | 317        | 26.3        | <u>317</u> | <u>26.3</u> | 302        | 27.6        | 303        | 27.6        | <u>302</u> | <u>27.6</u> |
| 453.povray    | <u>223</u> | <u>23.9</u> | 224        | 23.8        | 223        | 23.9        | 172        | 30.9        | <u>171</u> | <u>31.1</u> | 171        | 31.1        |
| 454.calculix  | 330        | 25.0        | <u>330</u> | <u>25.0</u> | 330        | 25.0        | 325        | 25.4        | <u>325</u> | <u>25.4</u> | 325        | 25.4        |
| 459.GemsFDTD  | 287        | 37.0        | 285        | 37.2        | <u>286</u> | <u>37.1</u> | 276        | 38.5        | <u>276</u> | <u>38.5</u> | 276        | 38.5        |
| 465.tonto     | 437        | 22.5        | <u>438</u> | <u>22.5</u> | 438        | 22.5        | 394        | 25.0        | <u>394</u> | <u>25.0</u> | 394        | 25.0        |
| 470.lbm       | 268        | 51.4        | 267        | 51.4        | <u>267</u> | <u>51.4</u> | 269        | 51.1        | <u>269</u> | <u>51.1</u> | 269        | 51.2        |
| 481.wrf       | <u>283</u> | <u>39.5</u> | 283        | 39.4        | 283        | 39.5        | <u>288</u> | <u>38.7</u> | 288        | 38.7        | 288        | 38.7        |
| 482.sphinx3   | 500        | 39.0        | <u>500</u> | <u>39.0</u> | 500        | 39.0        | 488        | 40.0        | <u>488</u> | <u>40.0</u> | 488        | 40.0        |

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,  
PC Power and Cooling 1200W power supply  
OMP\_NUM\_THREADS set to number of processors cores  
KMP\_AFFINITY set to granularity=fine,scatter  
System was configured with an ATI 5970 discrete graphics card

## Base Compiler Invocation

C benchmarks:  
icl -Qvc9 -Qstd=c99

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## Base Compiler Invocation (Continued)

C++ benchmarks:

icl -Qvc9

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icl -Qvc9 -Qstd=c99 ifort

## Base Portability Flags

410.bwaves: -DSPEC\_CPU\_P64 /Qlowercase  
 416.gamess: -DSPEC\_CPU\_P64  
 433.milc: -DSPEC\_CPU\_P64  
 434.zeusmp: -DSPEC\_CPU\_P64  
 435.gromacs: -DSPEC\_CPU\_P64  
 436.cactusADM: -DSPEC\_CPU\_P64 -Qlowercase /assume:underscore  
 437.leslie3d: -DSPEC\_CPU\_P64  
 444.namd: -DSPEC\_CPU\_P64 /TP  
 447.dealII: -DSPEC\_CPU\_P64 -DDEAL\_II\_MEMBER\_VAR\_SPECIALIZATION\_BUG  
 450.soplex: -DSPEC\_CPU\_P64  
 453.povray: -DSPEC\_CPU\_P64 -DSPEC\_CPU\_WINDOWS\_ICL  
 454.calculix: -DSPEC\_CPU\_P64 -DSPEC\_CPU\_NOZMODIFIER -Qlowercase  
 459.GemsFDTD: -DSPEC\_CPU\_P64  
 465.tonto: -DSPEC\_CPU\_P64  
 470.lbm: -DSPEC\_CPU\_P64  
 481.wrf: -DSPEC\_CPU\_P64 -DSPEC\_CPU\_WINDOWS\_ICL  
 482.sphinx3: -DSPEC\_CPU\_P64

## Base Optimization Flags

C benchmarks:

-QxSSE4.2 -Qipo -O3 -Qprec-div- -Qparallel -Qopt-prefetch  
-Qauto-ilp32 /F1000000000

C++ benchmarks:

-QxSSE4.2 -Qipo -O3 -Qprec-div- -Qparallel -Qopt-prefetch  
-Qcxx-features -Qauto-ilp32 /F1000000000 shlW64M.lib  
-link /FORCE:MULTIPLE

Fortran benchmarks:

-QxSSE4.2 -Qipo -O3 -Qprec-div- -Qparallel -Qopt-prefetch  
/F1000000000

Benchmarks using both Fortran and C:

-QxSSE4.2 -Qipo -O3 -Qprec-div- -Qparallel -Qopt-prefetch  
-Qauto-ilp32 /F1000000000



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## Peak Compiler Invocation

C benchmarks:

icl -Qvc9 -Qstd=c99

C++ benchmarks:

icl -Qvc9

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icl -Qvc9 -Qstd=c99 ifort

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: -QxSSE4.2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qprec-div- -Qansi-alias -Qparallel  
-Qauto-ilp32 /F1000000000

482.sphinx3: -QxSSE4.2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qprec-div- -Qunroll2 -Qauto-ilp32 /F1000000000

C++ benchmarks:

444.namd: -QxSSE4.2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qprec-div- -Oa -Qauto-ilp32 /F1000000000  
shlW64M.lib -link /FORCE:MULTIPLE

447.dealII: -QxSSE4.2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qprec-div- -Qunroll2 -Qopt-prefetch  
-Qansi-alias -Qscalar-rep- -Qauto-ilp32 /F1000000000  
shlW64M.lib -link /FORCE:MULTIPLE

450.soplex: -QxSSE4.2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qauto-ilp32 /F1000000000 shlW64M.lib  
-link /FORCE:MULTIPLE

453.povray: -QxSSE4.2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qprec-div- -Qunroll4 -Qansi-alias -Qauto-ilp32  
/F1000000000 shlW64M.lib -link /FORCE:MULTIPLE

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## Peak Optimization Flags (Continued)

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -QxSSE4.2(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: -QxSSE4.2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qprec-div- -Qunroll2 -Qopt-prefetch -Qparallel  
/F1000000000

465.tonto: -QxSSE4.2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qprec-div- -Qunroll4 -Qauto -Qinline-calloc  
/F1000000000

Benchmarks using both Fortran and C:

435.gromacs: -QxSSE4.2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qprec-div- -Qopt-prefetch -Qauto-ilp32  
/F1000000000

436.cactusADM: -QxSSE4.2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qprec-div- -Qopt-prefetch -Qparallel -Qunroll2  
-Qauto-ilp32 /F1000000000

454.calculix: -QxSSE4.2 -Qipo -O3 -Qprec-div- -Qauto-ilp32 /F1000000000

481.wrf: Same as 454.calculix

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-winx64-revA.20100302.01.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-winx64-revA.20100302.01.xml>



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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

Tested with SPEC CPU2006 v1.1.  
Report generated on Wed Jul 23 06:42:56 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 2 March 2010.