



# SPEC<sup>®</sup> CFP2006 Result

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## Intel Corporation

SPECfp<sup>®</sup>2006 = **58.6**

Intel DQ87PG motherboard (Intel Core i5-4440S)

SPECfp\_base2006 = **57.5**

CPU2006 license: 13

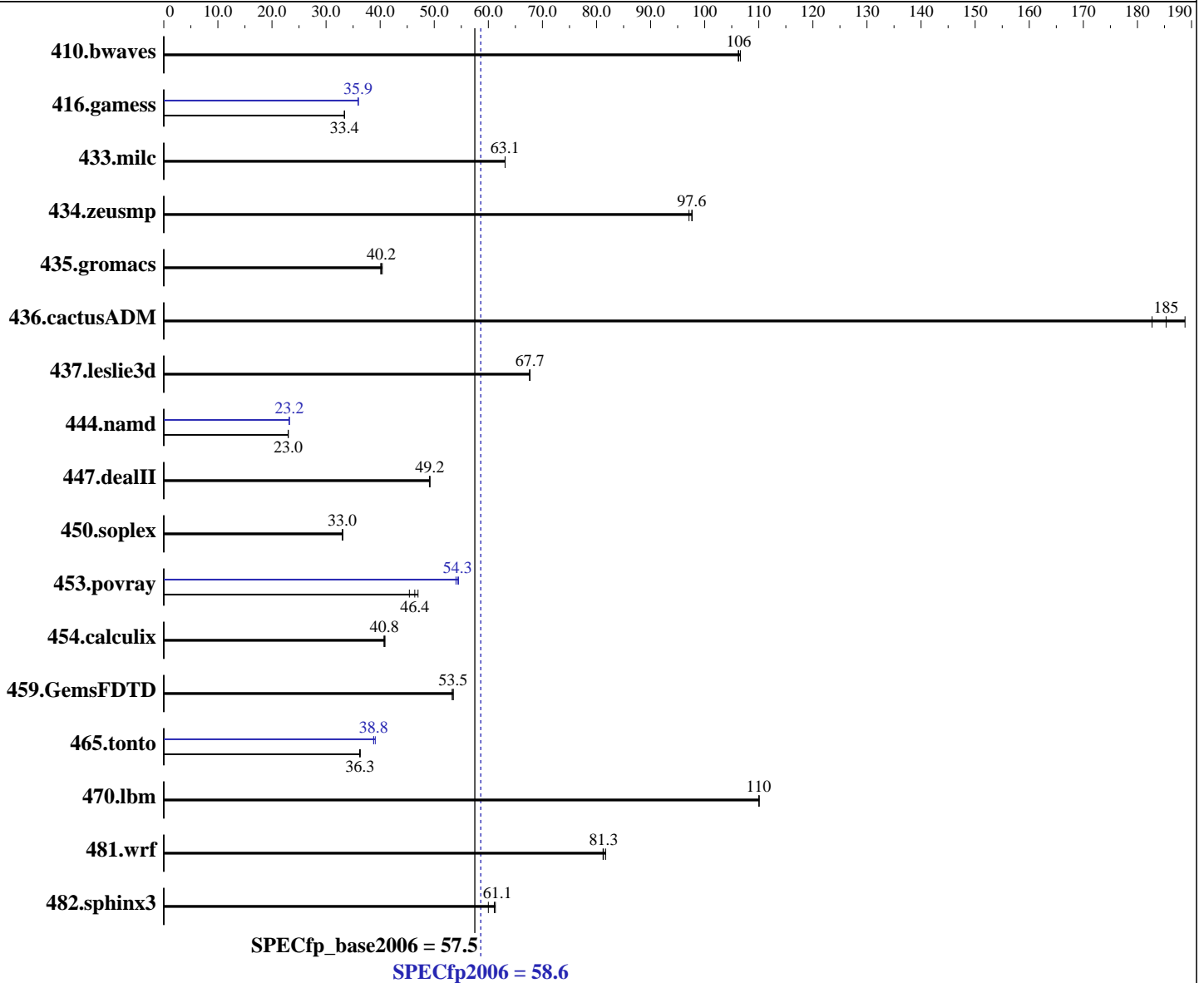
Test date: Dec-2013

Test sponsor: Intel Corporation

Hardware Availability: Sep-2013

Tested by: Intel Corporation

Software Availability: Apr-2013



### Hardware

CPU Name: Intel Core i5-4440S  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.30 GHz  
 CPU MHz: 2800  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip  
 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: Microsoft Windows 7 Enterprise 6.1.7601 Service Pack 1 Build 7601  
 Compiler: C/C++: Version 13.1.1.171 of Intel C++ Studio XE for Windows;  
 Fortran: Version 13.1.1.171 of Intel Fortran Studio XE for Windows;  
 Libraries: Version 16.00.30319.01 of Microsoft Visual Studio 2010 Professional SP1  
 Auto Parallel: Yes

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L3 Cache: 6 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 4 GB (2 x 2 GB 1Rx8 PC3-12800U-11)  
 Disk Subsystem: 250 GB Seagate SATA HDD, 7200 RPM  
 Other Hardware: None

File System: NTFS  
 System State: Default  
 Base Pointers: 32/64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: SmartHeap Library Version 10.0 from <http://www.microquill.com/>

## Results Table

| Benchmark     | Base        |             |            |             |            |             | Peak        |             |            |             |             |             |
|---------------|-------------|-------------|------------|-------------|------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|
|               | Seconds     | Ratio       | Seconds    | Ratio       | Seconds    | Ratio       | Seconds     | Ratio       | Seconds    | Ratio       | Seconds     | Ratio       |
| 410.bwaves    | 128         | 107         | <b>128</b> | <b>106</b>  | 128        | 106         | 128         | 107         | <b>128</b> | <b>106</b>  | 128         | 106         |
| 416.gamess    | <b>587</b>  | <b>33.4</b> | 585        | 33.4        | 587        | 33.4        | <b>545</b>  | <b>35.9</b> | 544        | 36.0        | 545         | 35.9        |
| 433.milc      | 145         | 63.1        | <b>145</b> | <b>63.1</b> | 145        | 63.1        | 145         | 63.1        | <b>145</b> | <b>63.1</b> | 145         | 63.1        |
| 434.zeusmp    | <b>93.2</b> | <b>97.6</b> | 93.7       | 97.1        | 93.1       | 97.7        | <b>93.2</b> | <b>97.6</b> | 93.7       | 97.1        | 93.1        | 97.7        |
| 435.gromacs   | 178         | 40.1        | 177        | 40.4        | <b>178</b> | <b>40.2</b> | 178         | 40.1        | 177        | 40.4        | <b>178</b>  | <b>40.2</b> |
| 436.cactusADM | <b>64.5</b> | <b>185</b>  | 63.3       | 189         | 65.4       | 183         | <b>64.5</b> | <b>185</b>  | 63.3       | 189         | 65.4        | 183         |
| 437.leslie3d  | 139         | 67.6        | <b>139</b> | <b>67.7</b> | 139        | 67.7        | 139         | 67.6        | <b>139</b> | <b>67.7</b> | 139         | 67.7        |
| 444.namd      | 349         | 23.0        | <b>349</b> | <b>23.0</b> | 349        | 23.0        | <b>346</b>  | <b>23.2</b> | 346        | 23.2        | 346         | 23.2        |
| 447.dealII    | <b>233</b>  | <b>49.2</b> | 233        | 49.1        | 233        | 49.2        | <b>233</b>  | <b>49.2</b> | 233        | 49.1        | 233         | 49.2        |
| 450.soplex    | 252         | 33.1        | 253        | 33.0        | <b>252</b> | <b>33.0</b> | 252         | 33.1        | 253        | 33.0        | <b>252</b>  | <b>33.0</b> |
| 453.povray    | <b>115</b>  | <b>46.4</b> | 117        | 45.4        | 113        | 47.0        | 98.5        | 54.0        | 97.6       | 54.5        | <b>97.9</b> | <b>54.3</b> |
| 454.calculix  | 202         | 40.9        | 203        | 40.7        | <b>202</b> | <b>40.8</b> | 202         | 40.9        | 203        | 40.7        | <b>202</b>  | <b>40.8</b> |
| 459.GemsFDTD  | 199         | 53.3        | 198        | 53.5        | <b>198</b> | <b>53.5</b> | 199         | 53.3        | 198        | 53.5        | <b>198</b>  | <b>53.5</b> |
| 465.tonto     | <b>271</b>  | <b>36.3</b> | 271        | 36.3        | 272        | 36.2        | 254         | 38.8        | 252        | 39.1        | <b>253</b>  | <b>38.8</b> |
| 470.lbm       | 125         | 110         | <b>125</b> | <b>110</b>  | 125        | 110         | 125         | 110         | <b>125</b> | <b>110</b>  | 125         | 110         |
| 481.wrf       | 138         | 81.2        | 137        | 81.7        | <b>137</b> | <b>81.3</b> | 138         | 81.2        | 137        | 81.7        | <b>137</b>  | <b>81.3</b> |
| 482.sphinx3   | 318         | 61.3        | <b>319</b> | <b>61.1</b> | 325        | 60.0        | 318         | 61.3        | <b>319</b> | <b>61.1</b> | 325         | 60.0        |

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

## Compiler Invocation Notes

To compile these binaries, the Intel Compiler 13.1 was set up to generate 64-bit binaries with the command:  
 "ipsxe-comp-vars.bat intel64 vs2010" (shortcut provided in the Intel(r) Parallel Studio XE 2013 program folder)

## Platform Notes

Sysinfo program C:\SPEC13.1\Docs\sysinfo  
 \$Rev: 6775 \$ \$Date:: 2011-08-16 #\$ \8787f7622badcf24e01c368b1db4377c  
 running on Clt00224D4FB715 Sat Dec 7 18:51:00 2013

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:

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## Platform Notes (Continued)

<http://www.spec.org/cpu2006/Docs/config.html#sysinfo>

Trying 'systeminfo'

```

OS Name      : Microsoft Windows 7 Enterprise
OS Version   : 6.1.7601 Service Pack 1 Build 7601
System Manufacturer: INTEL_
System Model  : DQ87PG__
Processor(s) : 1 Processor(s) Installed.
               [01]: Intel64 Family 6 Model 60 Stepping 3 GenuineIntel ~2801 Mhz
BIOS Version : Intel(R) Corp. PGQ8710H.86A.0036.2013.0702.1908, 7/2/2013
Total Physical Memory: 3,749 MB

```

Trying 'wmic cpu get /value'

```

DeviceID      : CPU0
L2CacheSize   : 1024
L3CacheSize   : 6144
MaxClockSpeed : 2801
Name          : Intel(R) Core(TM) i5-4440S CPU @ 2.80GHz
NumberOfCores : 4
NumberOfLogicalProcessors: 4

```

(End of data from sysinfo program)

BIOS: SATA mode set to RAID

Windows Disk Driver: Intel Rapid Storage Technology 12.5.0.1066

Windows Chipset Driver: Intel Chipset Driver 9.4.0.1027

## Component Notes

Tested systems can be used with Shin-G ATX case,  
 PC Power and Cooling 1200W power supply  
 Micron MT8JTF25664AZ-1G6 Series Memory DIMMs

## General Notes

OMP\_NUM\_THREADS set to number of processors cores  
 KMP\_AFFINITY set to granularity=fine,scatter  
 Binaries compiled on a system with 1x Intel Core i7-860 CPU  
 + 8GB memory using Windows 7 Enterprise 64-bit

## Base Compiler Invocation

C benchmarks:

icl -Qvc10 -Qstd=c99

C++ benchmarks:

icl -Qvc10

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## Base Compiler Invocation (Continued)

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icl -Qvc10 -Qstd=c99 ifort

## Base Portability Flags

410.bwaves: -DSPEC\_CPU\_P64  
 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 -names:lowercase /assume:underscore  
 437.leslie3d: -DSPEC\_CPU\_P64  
 444.namd: -DSPEC\_CPU\_P64 /TP  
 447.dealII: -DSPEC\_CPU\_P64 -DDEAL\_II\_MEMBER\_VAR\_SPECIALIZATION\_BUG  
 -Qoption,cpp,--ms\_incompat\_treatment\_of\_commas\_in\_macros  
 450.soplex: -DSPEC\_CPU\_P64  
 453.povray: -DSPEC\_CPU\_P64 -DSPEC\_CPU\_NEED\_INVHYP -DNEED\_INVHYP  
 454.calculix: -DSPEC\_CPU\_P64 -DSPEC\_CPU\_NOZMODIFIER -names:lowercase  
 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:

-QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qparallel -Qansi-alias  
-Qopt-prefetch -Qauto-ilp32 /F1000000000

C++ benchmarks:

-QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qparallel -Qansi-alias  
-Qopt-prefetch -Qcxx-features -Qauto-ilp32 /F1000000000 shlw64M.lib  
-link /FORCE:MULTIPLE

Fortran benchmarks:

-QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qparallel -Qansi-alias  
-Qopt-prefetch /F1000000000

Benchmarks using both Fortran and C:

-QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qparallel -Qansi-alias  
-Qopt-prefetch -Qauto-ilp32 /F1000000000



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## Peak Compiler Invocation

C benchmarks:

icl -Qvc10 -Qstd=c99

C++ benchmarks:

icl -Qvc10

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icl -Qvc10 -Qstd=c99 ifort

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -QxCORE-AVX2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qprec-div- -Oa -Qauto-ilp32 /F1000000000  
sh1W64M.lib -link /FORCE:MULTIPLE

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -QxCORE-AVX2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qprec-div- -Qunroll4 -Qansi-alias -Qauto-ilp32  
/F1000000000 sh1W64M.lib -link /FORCE:MULTIPLE

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -QxCORE-AVX2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qprec-div- -Qunroll2 -Ob0 -Qansi-alias  
-Qscalar-rep- /F1000000000

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## Peak Optimization Flags (Continued)

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: basepeak = yes

465.tonto: -QxCORE-AVX2(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: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes

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

<http://www.spec.org/cpu2006/flags/Intel-ic13.1-official-windows.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic13.1-official-windows.xml>

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

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