



# SPEC<sup>®</sup> CFP2006 Result

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## Intel Corporation

SPECfp<sup>®</sup>2006 = **58.5**

Intel DQ77MK motherboard (Intel Core i5-3450)

SPECfp\_base2006 = **56.9**

CPU2006 license: 13

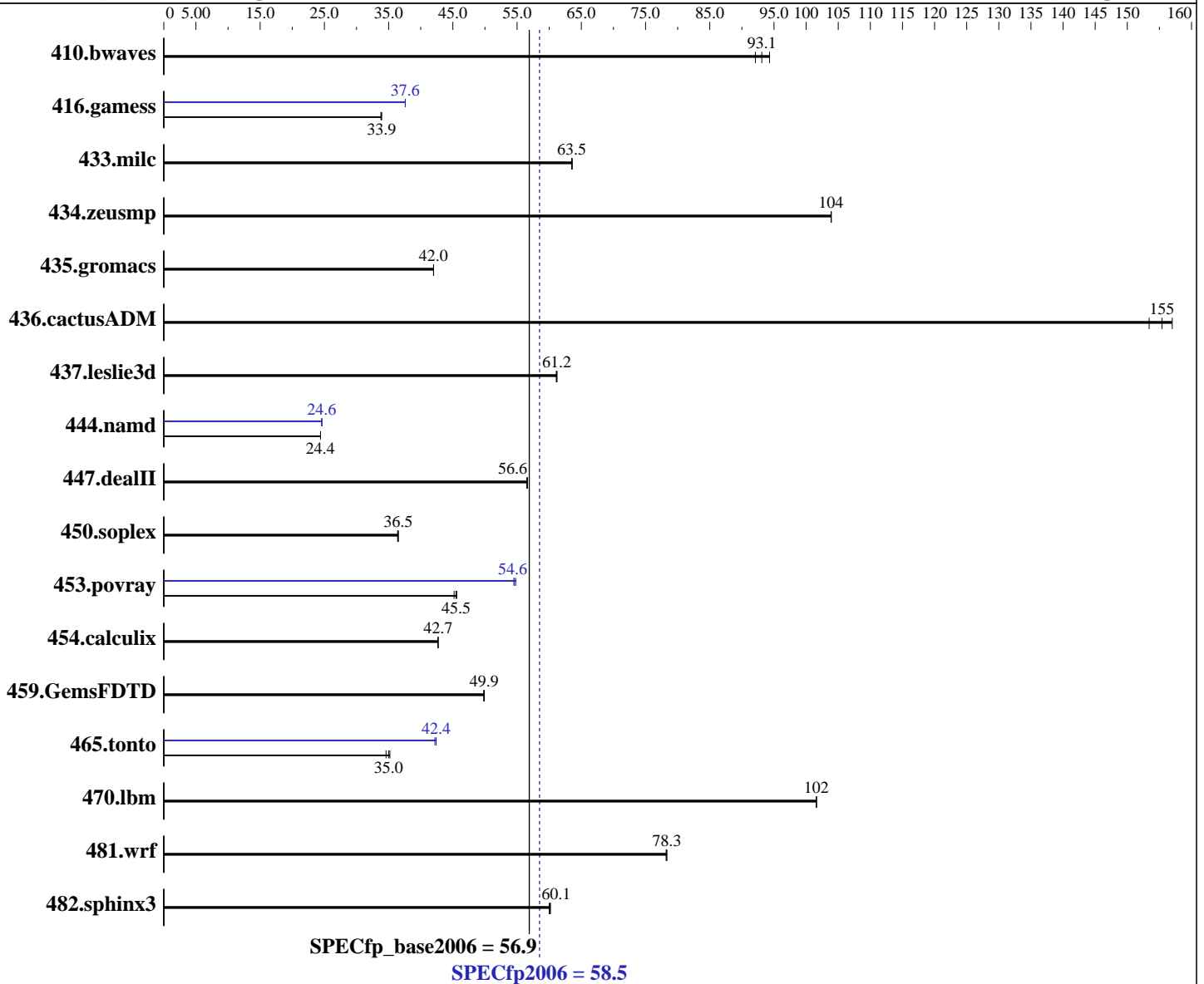
Test date: Nov-2013

Test sponsor: Intel Corporation

Hardware Availability: Nov-2012

Tested by: Intel Corporation

Software Availability: Apr-2013



### Hardware

CPU Name: Intel Core i5-3450  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz  
 CPU MHz: 3100  
 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	144	94.3	<b>146</b>	<b>93.1</b>	148	92.1	144	94.3	<b>146</b>	<b>93.1</b>	148	92.1
416.gamess	578	33.9	579	33.8	<b>578</b>	<b>33.9</b>	520	37.6	521	37.6	<b>521</b>	<b>37.6</b>
433.milc	144	63.6	145	63.5	<b>145</b>	<b>63.5</b>	144	63.6	145	63.5	<b>145</b>	<b>63.5</b>
434.zeusmp	87.6	104	<b>87.6</b>	<b>104</b>	87.6	104	87.6	104	<b>87.6</b>	<b>104</b>	87.6	104
435.gromacs	170	42.0	170	42.0	<b>170</b>	<b>42.0</b>	170	42.0	170	42.0	<b>170</b>	<b>42.0</b>
436.cactusADM	<b>76.9</b>	<b>155</b>	76.1	157	77.9	153	<b>76.9</b>	<b>155</b>	76.1	157	77.9	153
437.leslie3d	154	61.1	154	61.2	<b>154</b>	<b>61.2</b>	154	61.1	154	61.2	<b>154</b>	<b>61.2</b>
444.namd	<b>329</b>	<b>24.4</b>	329	24.4	329	24.4	326	24.6	<b>326</b>	<b>24.6</b>	326	24.6
447.dealII	203	56.5	<b>202</b>	<b>56.6</b>	202	56.6	203	56.5	<b>202</b>	<b>56.6</b>	202	56.6
450.soplex	<b>229</b>	<b>36.5</b>	228	36.5	229	36.4	<b>229</b>	<b>36.5</b>	228	36.5	229	36.4
453.povray	<b>117</b>	<b>45.5</b>	117	45.6	118	45.2	97.6	54.5	97.1	54.8	<b>97.5</b>	<b>54.6</b>
454.calculix	<b>193</b>	<b>42.7</b>	193	42.7	193	42.7	<b>193</b>	<b>42.7</b>	193	42.7	193	42.7
459.GemsFDTD	213	49.8	213	49.9	<b>213</b>	<b>49.9</b>	213	49.8	213	49.9	<b>213</b>	<b>49.9</b>
465.tonto	280	35.2	284	34.6	<b>281</b>	<b>35.0</b>	232	42.4	233	42.2	<b>232</b>	<b>42.4</b>
470.lbm	135	102	135	102	<b>135</b>	<b>102</b>	135	102	135	102	<b>135</b>	<b>102</b>
481.wrf	143	78.2	143	78.3	<b>143</b>	<b>78.3</b>	143	78.2	143	78.3	<b>143</b>	<b>78.3</b>
482.sphinx3	325	60.0	324	60.2	<b>325</b>	<b>60.1</b>	325	60.0	324	60.2	<b>325</b>	<b>60.1</b>

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 DQ77MK-PC Sat Nov 9 12:09:19 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  : DQ77MK__
Processor(s) : 1 Processor(s) Installed.
               [01]: Intel64 Family 6 Model 58 Stepping 9 GenuineIntel ~3101 Mhz
BIOS Version : Intel Corp. MKQ7710H.86A.0054.2012.1120.1444, 11/20/2012
Total Physical Memory: 3,912 MB

```

Trying 'wmic cpu get /value'

```

DeviceID      : CPU0
L2CacheSize   : 1024
L3CacheSize   : 6144
MaxClockSpeed : 3101
Name          : Intel(R) Core(TM) i5-3450 CPU @ 3.10GHz
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:

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

C++ benchmarks:

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

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

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

447.dealIII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -QxAVX(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: -QxAVX(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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Tested by: Intel Corporation

Software Availability: Apr-2013

## Peak Optimization Flags (Continued)

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: basepeak = yes

465.tonto: -QxAVX(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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