



# SPEC<sup>®</sup> CFP2006 Result

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ASUSTeK Computer Inc.  
(Test Sponsor: Intel Corporation)

SPECfp<sup>®</sup>\_rate2006 = 105

ASUS Q170M-C motherboard (Intel Pentium G4520)

SPECfp\_rate\_base2006 = 103

CPU2006 license: 13

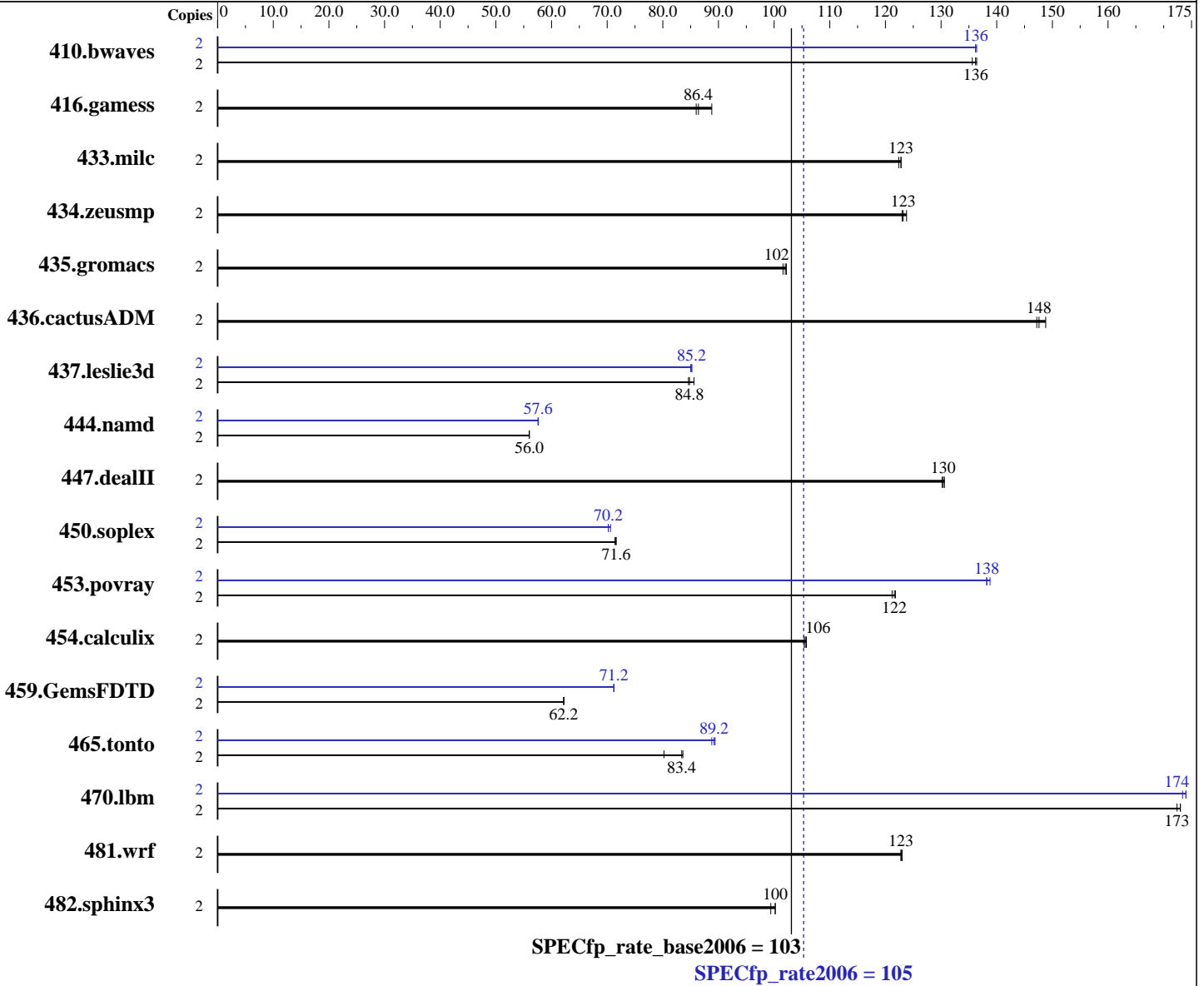
Test sponsor: Intel Corporation

Tested by: Intel Corporation

Test date: Mar-2016

Hardware Availability: Sep-2015

Software Availability: Aug-2015



### Hardware

CPU Name: Intel Pentium G4520  
 CPU Characteristics:  
 CPU MHz: 3600  
 FPU: Integrated  
 CPU(s) enabled: 2 cores, 1 chip, 2 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

Continued on next page

### Software

Operating System: Microsoft Windows 7 Professional  
 6.1.7601 Service Pack 1 Build 7601  
 Compiler: C/C++: Version 16.0.0.110 of Intel C++ Studio XE  
 for Windows;  
 Fortran: Version 16.0.0.110 of Intel Fortran  
 Studio XE for Windows;  
 Libraries: Version 18.00.30723 of Microsoft  
 Visual Studio 2013  
 Auto Parallel: No

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L3 Cache: 3 MB I+D on chip per chip  
Other Cache: None  
Memory: 8 GB (2 x 4 GB 2Rx4 PC4-2133P-U)  
Disk Subsystem: 1 TB Seagate Barracuda 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 11.0 from <http://www.microquill.com/>

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	2	199	136	<b>200</b>	<b>136</b>	200	136	2	199	136	<b>200</b>	<b>136</b>	200	136
416.gamess	2	441	88.8	<b>454</b>	<b>86.4</b>	455	86.0	2	441	88.8	<b>454</b>	<b>86.4</b>	455	86.0
433.milc	2	149	123	<b>150</b>	<b>123</b>	150	122	2	149	123	<b>150</b>	<b>123</b>	150	122
434.zeusmp	2	148	123	<b>148</b>	<b>123</b>	147	124	2	148	123	<b>148</b>	<b>123</b>	147	124
435.gromacs	2	<b>140</b>	<b>102</b>	140	102	141	102	2	<b>140</b>	<b>102</b>	140	102	141	102
436.cactusADM	2	161	149	162	147	<b>162</b>	<b>148</b>	2	161	149	162	147	<b>162</b>	<b>148</b>
437.leslie3d	2	<b>222</b>	<b>84.8</b>	222	84.6	220	85.6	2	221	85.2	<b>221</b>	<b>85.2</b>	221	85.0
444.namd	2	287	56.0	287	56.0	<b>287</b>	<b>56.0</b>	2	279	57.6	279	57.6	<b>279</b>	<b>57.6</b>
447.dealII	2	175	131	176	130	<b>176</b>	<b>130</b>	2	175	131	176	130	<b>176</b>	<b>130</b>
450.soplex	2	233	71.4	233	71.6	<b>233</b>	<b>71.6</b>	2	238	70.2	<b>237</b>	<b>70.2</b>	236	70.6
453.povray	2	87.8	121	<b>87.5</b>	<b>122</b>	87.3	122	2	<b>77.0</b>	<b>138</b>	76.7	139	77.0	138
454.calculix	2	156	105	156	106	<b>156</b>	<b>106</b>	2	156	105	156	106	<b>156</b>	<b>106</b>
459.GemsFDTD	2	<b>341</b>	<b>62.2</b>	342	62.2	341	62.2	2	298	71.2	<b>298</b>	<b>71.2</b>	298	71.2
465.tonto	2	246	80.2	<b>236</b>	<b>83.4</b>	235	83.6	2	220	89.4	<b>221</b>	<b>89.2</b>	222	88.8
470.lbm	2	159	173	159	172	<b>159</b>	<b>173</b>	2	158	174	<b>158</b>	<b>174</b>	158	173
481.wrf	2	182	123	<b>182</b>	<b>123</b>	182	123	2	182	123	<b>182</b>	<b>123</b>	182	123
482.sphinx3	2	<b>389</b>	<b>100</b>	392	99.4	389	100	2	<b>389</b>	<b>100</b>	392	99.4	389	100

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 16.0 was set up to generate 64-bit binaries with the command:  
"psxevars.bat intel64" (shortcut provided in the Intel(r) Parallel Studio XE 2016 program folder)

## Platform Notes

Sysinfo program C:\SPEC16.0\Docs\sysinfo  
\$Rev: 6775 \$ \$Date:: 2011-08-16 #\$ \8787f7622badcf24e01c368b1db4377c  
running on CltF832E48859C5 Wed Mar 16 02:43:50 2016

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 Professional
OS Version    : 6.1.7601 Service Pack 1 Build 7601
System Manufacturer: System manufacturer
System Model   : System Product Name
Processor(s)   : 1 Processor(s) Installed.
                [01]: Intel64 Family 6 Model 94 Stepping 3 GenuineIntel ~3600 Mhz
BIOS Version   : American Megatrends Inc. 0704, 1/12/2016
Total Physical Memory: 8,070 MB
```

Trying 'wmic cpu get /value'

```
DeviceID      : CPU0
L2CacheSize   : 512
L3CacheSize   : 3072
MaxClockSpeed : 3600
Name          : Intel(R) Pentium(R) CPU G4520 @ 3.60GHz
NumberOfCores : 2
NumberOfLogicalProcessors: 2
```

(End of data from sysinfo program)

## Component Notes

Tested systems can be used with Shin-G ATX case,  
PC Power and Cooling 1200W power supply

## General Notes

```
450.soplex (peak): "getline_test" src.alt was used.
447.dealIII (base): "max_prototype" src.alt was used.
447.dealIII (base): "cxx11_make_pair" src.alt was used.
450.soplex (base): "getline_test" src.alt was used.
447.dealIII (base): "max_prototype" src.alt was used.
447.dealIII (base): "cxx11_make_pair" src.alt was used.
```

Binaries compiled on a system with 1x Intel Xeon E5-2699 v3 CPU  
+ 64GB memory using Windows 8.1 Enterprise 64-bit

## Base Compiler Invocation

C benchmarks:  
icl -Qvc12 -Qstd=c99

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## Base Compiler Invocation (Continued)

C++ benchmarks:  
icl -Qvc12  
  
Fortran benchmarks:  
ifort  
  
Benchmarks using both Fortran and C:  
icl -Qvc12 -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  
-DSPEC\_CPU\_BOOST\_CONFIG\_MSC\_VER -DSPEC\_NEED\_ALGORITHM  
450.soplex: -DSPEC\_CPU\_P64 -DSPEC\_GETLINE\_TEST  
453.povray: -DSPEC\_CPU\_P64  
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:  
-QxSSE4.2 -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-prefetch  
-Qauto-ilp32 /F1000000000 -link /FORCE:MULTIPLE  
  
C++ benchmarks:  
-QxSSE4.2 -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-prefetch  
-Qcxx-features -Qauto-ilp32 /F1000000000 shlw64M.lib  
-link /FORCE:MULTIPLE  
  
Fortran benchmarks:  
-QxSSE4.2 -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-prefetch  
/F1000000000 -link /FORCE:MULTIPLE

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## Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:

```
-QxSSE4.2 -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-prefetch
-Qauto-ilp32 /F1000000000 -link /FORCE:MULTIPLE
```

## Peak Compiler Invocation

C benchmarks:

```
icl -Qvc12 -Qstd=c99
```

C++ benchmarks:

```
icl -Qvc12
```

Fortran benchmarks:

```
ifort
```

Benchmarks using both Fortran and C:

```
icl -Qvc12 -Qstd=c99 ifort
```

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

```
433.milc: basepeak = yes
```

```
470.lbm: -QxSSE4.2 -Qprof_gen(pass 1) -Qprof_use(pass 2) -Qipo -O3
-Qprec-div- -Qansi-alias -Qopt-prefetch -Qauto-ilp32
/F1000000000 -link /FORCE:MULTIPLE
```

```
482.sphinx3: basepeak = yes
```

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.dealIII: basepeak = yes
```

```
450.soplex: -QxSSE4.2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)
-Qipo -O3 -Qauto-ilp32 /F1000000000 shlW64M.lib
-link /FORCE:MULTIPLE
```

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## Peak Optimization Flags (Continued)

```
453.povray: -QxSSE4.2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)
-Qipo -O3 -Qprec-div- -Qopt-prefetch -Qauto-ilp32
/F1000000000 shlw64M.lib -link /FORCE:MULTIPLE
```

### Fortran benchmarks:

```
410.bwaves: -QxSSE4.2 -Qprof_gen(pass 1) -Qprof_use(pass 2) -Qipo -O3
-Qprec-div- -Qansi-alias -Qopt-prefetch /F1000000000
-link /FORCE:MULTIPLE
```

416.gamess: basepeak = yes

434.zeusmp: basepeak = yes

437.leslie3d: Same as 410.bwaves

459.GemsFDTD: Same as 410.bwaves

```
465.tonto: -QxSSE4.2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)
-Qipo -O3 -Qprec-div- -Qunroll4 -Qauto /F1000000000
-link /FORCE:MULTIPLE
```

### 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-ic16.0-official-windows.html>

You can also download the XML flags source by saving the following link:  
<http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-windows.xml>



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

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