# SPEC® CFP2006 Result

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## ASUSTeK Computer Inc.

(Test Sponsor: Intel Corporation)

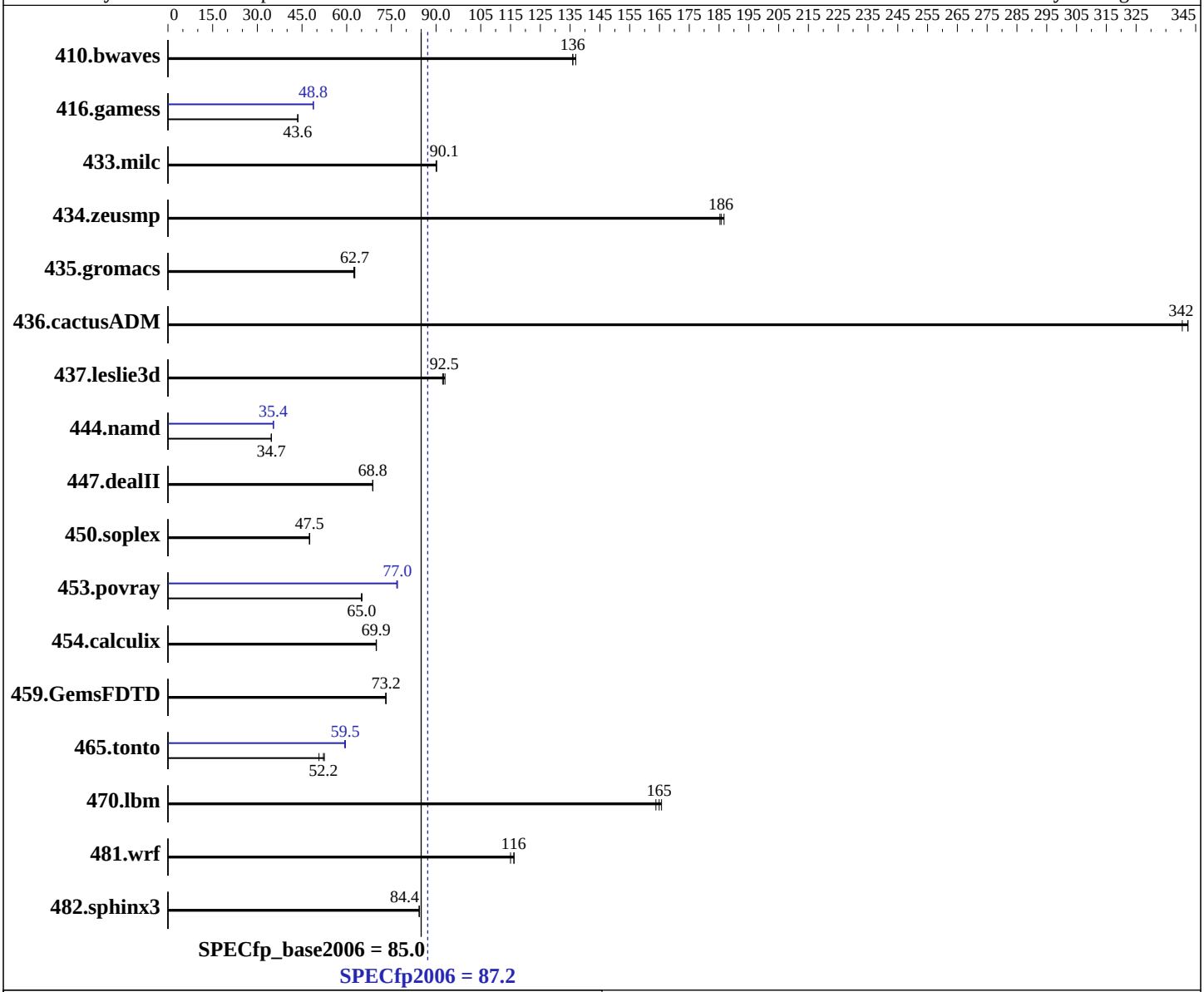
ASUS Z170MPLUS motherboard (Intel Core i5-6500)

SPECfp®2006 = 87.2

SPECfp_base2006 = 85.0

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

**Test date:** Oct-2015
**Hardware Availability:** Sep-2015
**Software Availability:** Aug-2015




## Hardware

| | |
|---|---|
| CPU Name: | Intel Core i5-6500 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.60 GHz |
| CPU MHz: | 3200 |
| 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 10 Pro 10.0.10240 N/A Build 10240 |
| 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: | Yes |

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| | |
|---|---|
| L3 Cache: | 6 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 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 11.0 from http://www.microquill.com/ |

## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 99.3 | 137 | **100** | **136** | 100 | 136 | 99.3 | 137 | **100** | **136** | 100 | 136 |
| 416.gamess | 449 | 43.6 | **449** | **43.6** | 449 | 43.6 | 401 | 48.8 | **401** | **48.8** | 401 | 48.8 |
| 433.milc | 102 | 90.2 | **102** | **90.1** | 102 | 90.0 | 102 | 90.2 | **102** | **90.1** | 102 | 90.0 |
| 434.zeusmp | 48.7 | 187 | 49.1 | 185 | **49.0** | **186** | 48.7 | 187 | 49.1 | 185 | **49.0** | **186** |
| 435.gromacs | 114 | 62.7 | **114** | **62.7** | 114 | 62.4 | 114 | 62.7 | **114** | **62.7** | 114 | 62.4 |
| 436.cactusADM | 34.9 | 342 | **34.9** | **342** | 35.1 | 341 | 34.9 | 342 | **34.9** | **342** | 35.1 | 341 |
| 437.leslie3d | 101 | 93.0 | 102 | 92.2 | **102** | **92.5** | 101 | 93.0 | 102 | 92.2 | **102** | **92.5** |
| 444.namd | 231 | 34.7 | 231 | 34.7 | **231** | **34.7** | 226 | 35.4 | 227 | 35.4 | **226** | **35.4** |
| 447.dealII | 166 | 68.8 | 167 | 68.7 | **166** | **68.8** | 166 | 68.8 | 167 | 68.7 | **166** | **68.8** |
| 450.soplex | 175 | 47.6 | **176** | **47.5** | 176 | 47.5 | 175 | 47.6 | **176** | **47.5** | 176 | 47.5 |
| 453.povray | **81.9** | **65.0** | 81.9 | 65.0 | 81.7 | 65.1 | 69.3 | 76.8 | 69.1 | 77.0 | **69.1** | **77.0** |
| 454.calculix | **118** | **69.9** | 118 | 69.9 | 118 | 70.0 | **118** | **69.9** | 118 | 69.9 | 118 | 70.0 |
| 459.GemsFDTD | 145 | 73.2 | **145** | **73.2** | 145 | 73.1 | 145 | 73.2 | **145** | **73.2** | 145 | 73.1 |
| 465.tonto | **189** | **52.2** | 188 | 52.5 | 194 | 50.7 | 165 | 59.6 | **166** | **59.5** | 166 | 59.3 |
| 470.lbm | 82.9 | 166 | **83.3** | **165** | 83.9 | 164 | 82.9 | 166 | **83.3** | **165** | 83.9 | 164 |
| 481.wrf | 97.1 | 115 | **96.2** | **116** | 96.1 | 116 | 97.1 | 115 | **96.2** | **116** | 96.1 | 116 |
| 482.sphinx3 | 231 | 84.4 | **231** | **84.4** | 231 | 84.3 | 231 | 84.4 | **231** | **84.4** | 231 | 84.3 |

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 Clt305A3A7B76F6 Fri Oct  9 14:50:16 2015

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

Continued on next page

## Platform Notes (Continued)

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

    Trying 'systeminfo'
    OS Name       : Microsoft Windows 10 Pro
    OS Version    : 10.0.10240 N/A Build 10240
    System Manufacturer: System manufacturer
    System Model  : System Product Name
    Processor(s)  : 1 Processor(s) Installed.
         [01]: Intel64 Family 6 Model 94 Stepping 3 GenuineIntel ~3201 Mhz
    BIOS Version  : American Megatrends Inc. 0408, 8/28/2015
    Total Physical Memory: 8,084 MB

    Trying 'wmic cpu get /value'
    DeviceID      : CPU0
    L2CacheSize   : 1024
    L3CacheSize   : 6144
    MaxClockSpeed : 3201
    Name          : Intel(R) Core(TM) i5-6500 CPU @ 3.20GHz
    NumberOfCores : 4
    NumberOfLogicalProcessors: 4

    (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 (base): "getline_test" src.alt was used.

  447.dealII (base): "max_prototype" src.alt was used.
  447.dealII (base): "cxx11_make_pair" src.alt was used.

  450.soplex (base): "getline_test" src.alt was used.

  447.dealII (base): "max_prototype" src.alt was used.
  447.dealII (base): "cxx11_make_pair" src.alt was used.

   OMP_NUM_THREADS set to number of processors cores
   KMP_AFFINITY set to granularity=fine,scatter
   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

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

C++ benchmarks:
-QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qparallel -Qansi-alias
-Qopt-prefetch -Qcxx-features /F1000000000 shlW64M.lib
-link /FORCE:MULTIPLE

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

Continued on next page

## Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:
-QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qparallel -Qansi-alias
-Qopt-prefetch /F1000000000

## 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: 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 /F1000000000 shlW64M.lib
-link /FORCE:MULTIPLE

447.dealII: basepeak = yes

450.soplex: basepeak = yes

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## Peak Optimization Flags (Continued)

453.povray: -QxCORE-AVX2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2) -Qipo -O3 -Qprec-div- -Qunroll4 -Qansi-alias /F1000000000 shlW64M.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

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-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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Tested with SPEC CPU2006 v1.2.
Report generated on Tue Nov 17 19:17:46 2015 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 17 November 2015.