# SPEC® CFP2006 Result

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## ASUSTeK Computer Inc.

(Test Sponsor: Intel Corporation)

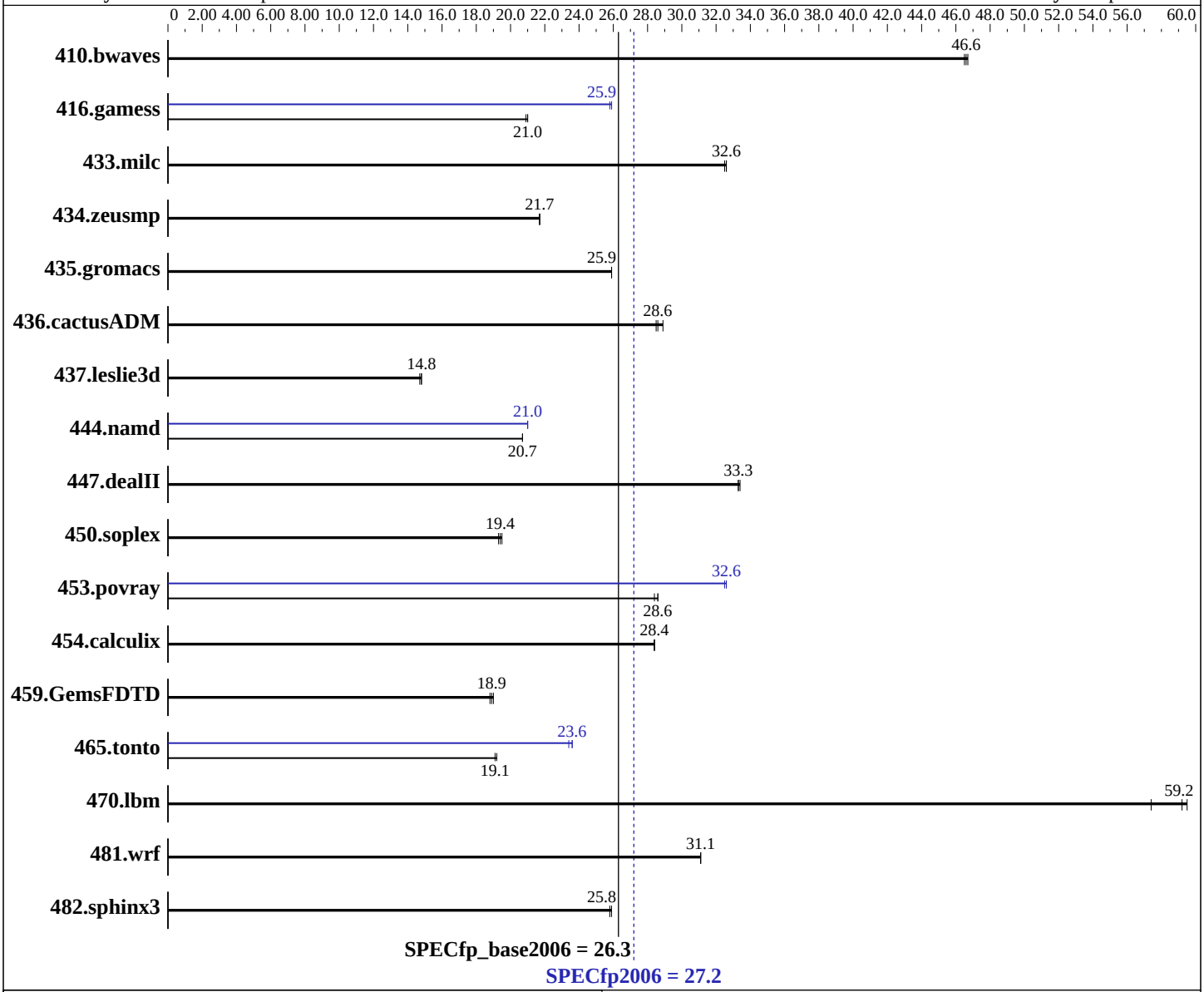
ASUS F2A85-M PRO motherboard (AMD A6-6400K APU with Radeon HD Graphics)

SPECfp®2006 = 27.2

SPECfp_base2006 = 26.3

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

**Test date:** Oct-2013
**Hardware Availability:** Jun-2013
**Software Availability:** Apr-2013




## Hardware

| | |
|---|---|
| CPU Name: | AMD A6-6400K |
| CPU Characteristics: | AMD Turbo CORE technology up to 4.10 GHz |
| CPU MHz: | 3900 |
| FPU: | Integrated |
| CPU(s) enabled: | 2 cores, 1 chip, 2 cores/chip |
| CPU(s) orderable: | 1 chip |
| Primary Cache: | 64 KB I on chip per chip; 16 KB D on chip per core |
| Secondary Cache: | 1 MB I+D on chip per chip |

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## Software

| | |
|---|---|
| Operating System: | Microsoft Windows 7 Ultimate 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: | None |
| 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 | **292** | **46.6** | 293 | 46.5 | 291 | 46.7 | **292** | **46.6** | 293 | 46.5 | 291 | 46.7 |
| 416.gamess | **931** | **21.0** | 930 | 21.0 | 935 | 20.9 | 757 | 25.9 | 758 | 25.8 | **757** | **25.9** |
| 433.milc | 282 | 32.5 | 281 | 32.6 | **282** | **32.6** | 282 | 32.5 | 281 | 32.6 | **282** | **32.6** |
| 434.zeusmp | 420 | 21.7 | **420** | **21.7** | 420 | 21.7 | 420 | 21.7 | **420** | **21.7** | 420 | 21.7 |
| 435.gromacs | 276 | 25.9 | 275 | 25.9 | **276** | **25.9** | 276 | 25.9 | 275 | 25.9 | **276** | **25.9** |
| 436.cactusADM | 413 | 28.9 | 419 | 28.5 | **418** | **28.6** | 413 | 28.9 | 419 | 28.5 | **418** | **28.6** |
| 437.leslie3d | **636** | **14.8** | 637 | 14.7 | 636 | 14.8 | **636** | **14.8** | 637 | 14.7 | 636 | 14.8 |
| 444.namd | **388** | **20.7** | 388 | 20.7 | 388 | 20.7 | 381 | 21.0 | **381** | **21.0** | 381 | 21.0 |
| 447.dealII | 343 | 33.4 | 343 | 33.3 | **343** | **33.3** | 343 | 33.4 | 343 | 33.3 | **343** | **33.3** |
| 450.soplex | 428 | 19.5 | **430** | **19.4** | 432 | 19.3 | 428 | 19.5 | **430** | **19.4** | 432 | 19.3 |
| 453.povray | 186 | 28.6 | **186** | **28.6** | 187 | 28.4 | 163 | 32.6 | 164 | 32.5 | **163** | **32.6** |
| 454.calculix | 291 | 28.4 | **291** | **28.4** | 291 | 28.4 | 291 | 28.4 | **291** | **28.4** | 291 | 28.4 |
| 459.GemsFDTD | 564 | 18.8 | 559 | 19.0 | **563** | **18.9** | 564 | 18.8 | 559 | 19.0 | **563** | **18.9** |
| 465.tonto | 514 | 19.1 | 514 | 19.2 | **514** | **19.1** | 420 | 23.4 | 416 | 23.6 | **417** | **23.6** |
| 470.lbm | 239 | 57.4 | 231 | 59.5 | **232** | **59.2** | 239 | 57.4 | 231 | 59.5 | **232** | **59.2** |
| 481.wrf | 359 | 31.1 | 359 | 31.1 | **359** | **31.1** | 359 | 31.1 | 359 | 31.1 | **359** | **31.1** |
| 482.sphinx3 | **755** | **25.8** | 755 | 25.8 | 754 | 25.9 | **755** | **25.8** | 755 | 25.8 | 754 | 25.9 |

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 Clt3085A9AEE4F6 Mon Oct  7 22:05:29 2013

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 7 Ultimate
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]: AMD64 Family 21 Model 19 Stepping 1 AuthenticAMD ~3900 Mhz
BIOS Version   : American Megatrends Inc. 6105, 5/8/2013
Total Physical Memory: 3,111 MB

Trying 'wmic cpu get /value'
DeviceID       : CPU0
L2CacheSize    : 1024
L3CacheSize    : 0
MaxClockSpeed : 3900
Name           : AMD A6-6400K APU with Radeon(tm) HD Graphics
NumberOfCores : 1
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
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
```

Fortran benchmarks:
```
ifort
```

Continued on next page

## Base Compiler Invocation (Continued)

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:
/arch:AVX -Qipo -O3 -Qprec-div- -Qparallel -Qansi-alias
-Qopt-prefetch -Qauto-ilp32 /F1000000000

C++ benchmarks:
/arch:AVX -Qipo -O3 -Qprec-div- -Qparallel -Qansi-alias
-Qopt-prefetch -Qcxx-features -Qauto-ilp32 /F1000000000 shlW64M.lib
-link /FORCE:MULTIPLE

Fortran benchmarks:
/arch:AVX -Qipo -O3 -Qprec-div- -Qparallel -Qansi-alias
-Qopt-prefetch /F1000000000

Benchmarks using both Fortran and C:
/arch:AVX -Qipo -O3 -Qprec-div- -Qparallel -Qansi-alias
-Qopt-prefetch -Qauto-ilp32 /F1000000000

## 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: `/arch:AVX`(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: `basepeak = yes`

450.soplex: `basepeak = yes`

453.povray: `/arch:AVX`(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`

Fortran benchmarks:

410.bwaves: `basepeak = yes`

416.gamess: `/arch:AVX`(pass 2) `-Qprof_gen`(pass 1) `-Qprof_use`(pass 2)
`-Qipo -O3 -Qprec-div- -Qunroll2 -Ob0 -Qansi-alias`
`-Qscalar-rep- /F1000000000`

Continued on next page

## Peak Optimization Flags (Continued)

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: basepeak = yes

465.tonto: /arch:AVX(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.20130924.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.20130924.xml


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