SPEC® CFP2006 Result
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ASUSTeK Computer Inc.
(Test Sponsor: Intel Corporation)

ASUS A88X-PRO Motherboard (AMD A8-8650 with Radeon R7 Graphics)

$SPECfp^{®}2006 =$ 36.4

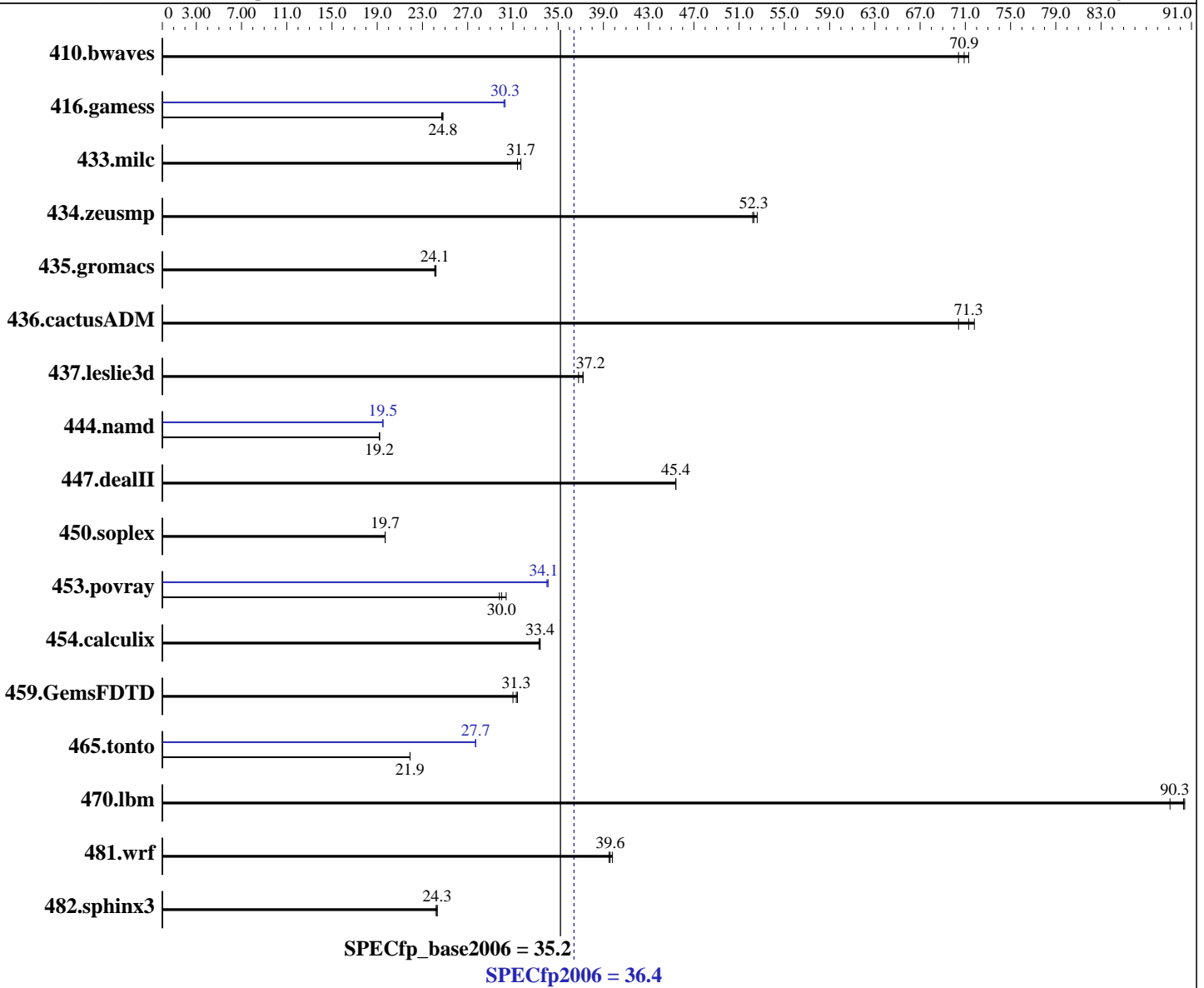$SPECfp\_base2006 =$ 35.2

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

Test date: May-2016
Hardware Availability: Dec-2015
Software Availability: Aug-2015

Benchmark	Result
410.bwaves	70.9
416.gamess	30.3 / 24.8
433.milc	31.7
434.zeusmp	52.3
435.gromacs	24.1
436.cactusADM	71.3
437.leslie3d	37.2
444.namd	19.5 / 19.2
447.dealII	45.4
450.soplex	19.7
453.povray	34.1 / 30.0
454.calculix	33.4
459.GemsFDTD	31.3
465.tonto	27.7 / 21.9
470.lbm	90.3
481.wrf	39.6
482.sphinx3	24.3

SPECfp_base2006 = 35.2
SPECfp2006 = 36.4

Hardware
CPU Name:	AMD A8-8650
CPU Characteristics:	AMD Turbo CORE technology up to 3.80 GHz
CPU MHz:	3200
FPU:	Integrated
CPU(s) enabled:	4 cores, 1 chip, 4 cores/chip
CPU(s) orderable:	1 chip
Primary Cache:	192 KB I on chip per chip, 96 KB I shared / 2 cores; 16 KB D on chip per core
Secondary Cache:	4 MB I+D on chip per chip, 2 MB shared / 2 cores

Software
Operating System:	Microsoft Windows 7 Ultimate 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:	Yes

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L3 Cache:	None
Other Cache:	None
Memory:	8 GB (2 x 4 GB 2Rx8 PC3-10600U-11)
Disk Subsystem:	Seagate Barracuda 250 GB SATA, 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	193	70.4	**192**	**70.9**	191	71.3	193	70.4	**192**	**70.9**	191	71.3
416.gamess	790	24.8	**791**	**24.8**	792	24.7	**647**	**30.3**	648	30.2	646	30.3
433.milc	290	31.7	**290**	**31.7**	292	31.4	290	31.7	**290**	**31.7**	292	31.4
434.zeusmp	173	52.6	**174**	**52.3**	174	52.2	173	52.6	**174**	**52.3**	174	52.2
435.gromacs	**296**	**24.1**	295	24.2	296	24.1	**296**	**24.1**	295	24.2	296	24.1
436.cactusADM	170	70.4	167	71.8	**168**	**71.3**	170	70.4	167	71.8	**168**	**71.3**
437.leslie3d	253	37.2	256	36.8	**253**	**37.2**	253	37.2	256	36.8	**253**	**37.2**
444.namd	418	19.2	**417**	**19.2**	417	19.2	411	19.5	**411**	**19.5**	411	19.5
447.dealII	252	45.4	252	45.4	**252**	**45.4**	252	45.4	252	45.4	**252**	**45.4**
450.soplex	424	19.7	422	19.7	**423**	**19.7**	424	19.7	422	19.7	**423**	**19.7**
453.povray	179	29.8	**177**	**30.0**	175	30.4	156	34.1	**156**	**34.1**	157	34.0
454.calculix	247	33.3	**247**	**33.4**	247	33.4	247	33.3	**247**	**33.4**	247	33.4
459.GemsFDTD	342	31.0	337	31.4	**339**	**31.3**	342	31.0	337	31.4	**339**	**31.3**
465.tonto	450	21.9	**450**	**21.9**	449	21.9	**355**	**27.7**	356	27.7	355	27.7
470.lbm	154	89.1	152	90.4	**152**	**90.3**	154	89.1	152	90.4	**152**	**90.3**
481.wrf	283	39.5	281	39.8	**282**	**39.6**	283	39.5	281	39.8	**282**	**39.6**
482.sphinx3	804	24.3	**804**	**24.3**	804	24.2	804	24.3	**804**	**24.3**	804	24.2

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 CltE03F49ACBFDE Thu May 26 12:23:55 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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CPU2006 license: 13		**Test date:**	May-2016
Test sponsor:	Intel Corporation	**Hardware Availability:**	Dec-2015
Tested by:	Intel Corporation	**Software Availability:**	Aug-2015

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 56 Stepping 1 AuthenticAMD ~3200 Mhz
  BIOS Version    : American Megatrends Inc. 2502, 12/11/2015
  Total Physical Memory: 7,108 MB

  Trying 'wmic cpu get /value'
  DeviceID       : CPU0
  L2CacheSize    : 25359
  L3CacheSize    : 0
  MaxClockSpeed  : 3200
  Name           : AMD A8-8650 Radeon R7, 10 Compute Cores 4C+6G
  NumberOfCores  : 2
  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
```

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Test date: May-2016

Hardware Availability: Dec-2015

Software Availability: Aug-2015

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

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

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

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Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:
```
/arch:AVX -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: /arch:AVX(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: /arch:AVX(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: /arch:AVX(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: /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-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

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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