SPEC® CFP2006 Result
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Intel Corporation

ASUS H97M-PLUS Motherboard (Intel Core i5-4460)

$SPECfp^{®}\_rate2006 =$ 131

$SPECfp\_rate\_base2006 =$ 130
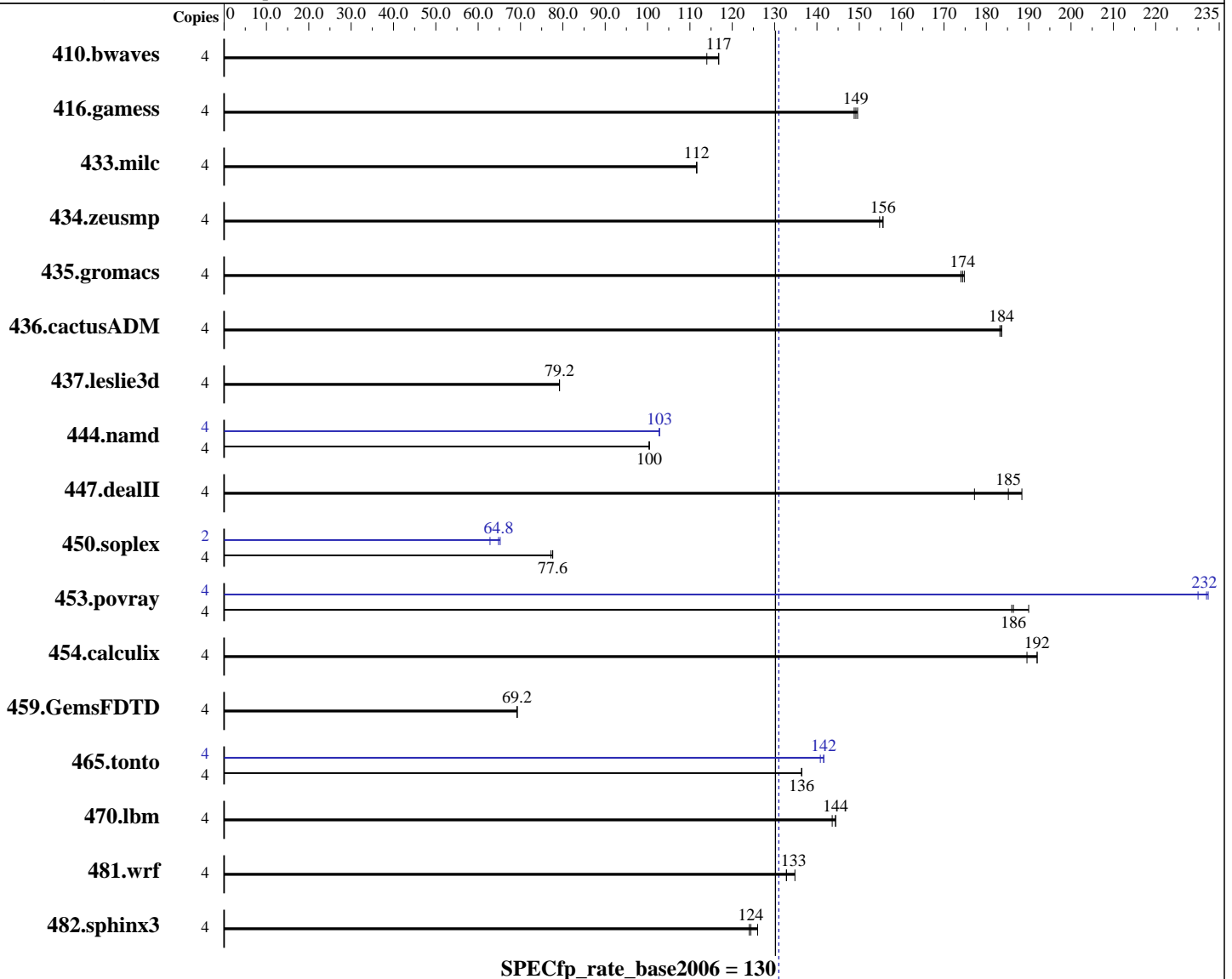
CPU2006 license: 13
Test sponsor: Intel Corporation
Tested by: Intel Corporation

Test date: Jun-2014
Hardware Availability: Jun-2014
Software Availability: Oct-2013

Copies		
410.bwaves	4	117
416.gamess	4	149
433.milc	4	112
434.zeusmp	4	156
435.gromacs	4	174
436.cactusADM	4	184
437.leslie3d	4	79.2
444.namd	4	103
	4	100
447.dealII	4	185
450.soplex	2	64.8
	4	77.6
453.povray	4	232
	4	186
454.calculix	4	192
459.GemsFDTD	4	69.2
465.tonto	4	142
	4	136
470.lbm	4	144
481.wrf	4	133
482.sphinx3	4	124

SPECfp_rate_base2006 = 130

SPECfp_rate2006 = 131

Hardware

CPU Name: Intel Core i5-4460
CPU Characteristics: Intel Turbo Boost Technology up to 3.40 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

Continued on next page

Software

Operating System: Microsoft Windows 8.1 Pro
6.3.9600 N/A Build 9600
Compiler: C/C++: Version 14.0.1.139 of Intel C++ Studio XE
for Windows;
Fortran: Version 14.0.1.139 of Intel Fortran
Studio XE for Windows;
Libraries: Version 16.00.30319.01 of Microsoft
Visual Studio 2010 Professional SP1
Auto Parallel: No

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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 PC3-12800U-11)
Disk Subsystem:	1 TB 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						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	4	476	114	**465**	**117**	465	117	4	476	114	**465**	**117**	465	117
416.gamess	4	**525**	**149**	527	149	523	150	4	**525**	**149**	527	149	523	150
433.milc	4	**329**	**112**	329	112	329	112	4	**329**	**112**	329	112	329	112
434.zeusmp	4	**234**	**156**	235	155	234	156	4	**234**	**156**	235	155	234	156
435.gromacs	4	**164**	**174**	164	175	164	174	4	**164**	**174**	164	175	164	174
436.cactusADM	4	**261**	**184**	261	183	260	184	4	**261**	**184**	261	183	260	184
437.leslie3d	4	475	79.2	474	79.2	**474**	**79.2**	4	475	79.2	474	79.2	**474**	**79.2**
444.namd	4	**319**	**100**	320	100	319	100	4	312	103	**312**	**103**	312	103
447.dealII	4	**247**	**185**	243	188	259	177	4	**247**	**185**	243	188	259	177
450.soplex	4	432	77.2	430	77.6	**430**	**77.6**	2	**258**	**64.8**	265	62.8	256	65.2
453.povray	4	115	186	112	190	**114**	**186**	4	92.6	230	91.6	232	**91.8**	**232**
454.calculix	4	174	190	**172**	**192**	172	192	4	174	190	**172**	**192**	172	192
459.GemsFDTD	4	615	69.2	**613**	**69.2**	613	69.2	4	615	69.2	**613**	**69.2**	613	69.2
465.tonto	4	288	136	**289**	**136**	289	136	4	**278**	**142**	278	142	280	141
470.lbm	4	382	144	**381**	**144**	381	144	4	382	144	**381**	**144**	381	144
481.wrf	4	**336**	**133**	337	133	331	135	4	**336**	**133**	337	133	331	135
482.sphinx3	4	618	126	629	124	**626**	**124**	4	618	126	629	124	**626**	**124**

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 14.0 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)

Submit Notes

    Processes were bound to specific processors using the start command with the /affinity switch.
    The config file option 'submit' was used to generate the affinity mask for each process.

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Platform Notes

```
Sysinfo program C:\SPEC14.0/Docs/sysinfo
$Rev: 6775 $ $Date:: 2011-08-16 #$ \8787f7622badcf24e01c368b1db4377c
running on Clt10C37B4DECBB Sat Jun 28 08:57:00 2014

This section contains SUT (System Under Test) info as seen by
some common utilities.  To remove or add to this section, see:
  http://www.spec.org/cpu2006/Docs/config.html#sysinfo

Trying 'systeminfo'
OS Name        : Microsoft Windows 8.1 Pro
OS Version     : 6.3.9600 N/A Build 9600
System Manufacturer: ASUS
System Model   : All Series
Processor(s)   : 1 Processor(s) Installed.
    [01]: Intel64 Family 6 Model 60 Stepping 3 GenuineIntel ~3201 Mhz
BIOS Version   : American Megatrends Inc. 2001, 6/13/2014
Total Physical Memory: 8,006 MB

Trying 'wmic cpu get /value'
DeviceID       : CPU0
L2CacheSize    : 1024
L3CacheSize    : 6144
MaxClockSpeed  : 3201
Name           : Intel(R) Core(TM) i5-4460 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

```
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
```

Continued on next page

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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:
```
    -QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-prefetch
    -Qauto-ilp32 /F1000000000          -link /FORCE:MULTIPLE
```

C++ benchmarks:
```
    -QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-prefetch
    -Qcxx-features -Qauto-ilp32 /F1000000000 shlW64M.lib
             -link /FORCE:MULTIPLE
```

Fortran benchmarks:
```
    -QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-prefetch
    /F1000000000          -link /FORCE:MULTIPLE
```

Benchmarks using both Fortran and C:
```
    -QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-prefetch
    -Qauto-ilp32 /F1000000000          -link /FORCE:MULTIPLE
```

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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: -QxCORE-AVX2(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: -QxCORE-AVX2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)
              -Qipo -O3 -Qauto-ilp32 /F1000000000 shlW64M.lib
                     -link /FORCE:MULTIPLE

   453.povray: -QxCORE-AVX2(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: basepeak = yes
```

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Peak Optimization Flags (Continued)

416.gamess: basepeak = yes

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 /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-ic14.0-official-windows.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-windows.xml

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

Tested with SPEC CPU2006 v1.2.
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