## SPEC® CFP2006 Result

**ASUSTeK Computer Inc.**  
(Test Sponsor: Intel Corporation)

**ASUS Z170MPLUS motherboard (Intel Core i5-6600K)**

### SPECfp®2006 = 90.8
### SPECfp_base2006 = 88.6

<table>
<thead>
<tr>
<th>Test date:</th>
<th>Oct-2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability:</td>
<td>Sep-2015</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Aug-2015</td>
</tr>
</tbody>
</table>

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

### Software
- Operating System: Microsoft Windows 10 Pro 10.0.10240 N/A Build 10240
- Auto Parallel: Yes

### Hardware

<table>
<thead>
<tr>
<th>Test</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>136</td>
</tr>
<tr>
<td>416.gamess</td>
<td>52.7</td>
</tr>
<tr>
<td>433.milc</td>
<td>91.4</td>
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<tr>
<td>434.zeusmp</td>
<td>190</td>
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<tr>
<td>435.gromacs</td>
<td>68.3</td>
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<tr>
<td>436.cactusADM</td>
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<tr>
<td>437.leslie3d</td>
<td>92.2</td>
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<tr>
<td>444.namd</td>
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<td>447.dealII</td>
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<td>450.soplex</td>
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<td>453.povray</td>
<td>83.1</td>
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<td>454.calculix</td>
<td>70.5</td>
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<tr>
<td>459.GemsFDTD</td>
<td>72.9</td>
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<tr>
<td>465.tonto</td>
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<td>470.lbm</td>
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<td>481.wrf</td>
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<tr>
<td>482.sphinx3</td>
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</table>

### Benchmark Scores

<table>
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</table>

### Benchmarks Used
- 410.bwaves
- 416.gamess
- 433.milc
- 434.zeusmp
- 435.gromacs
- 436.cactusADM
- 437.leslie3d
- 444.namd
- 447.dealII
- 450.soplex
- 453.povray
- 454.calculix
- 459.GemsFDTD
- 465.tonto
- 470.lbm
- 481.wrf
- 482.sphinx3

### System Information

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
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<tbody>
<tr>
<td>CPU Name:</td>
<td>Intel Core i5-6600K</td>
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<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 3.90 GHz</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>3500</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
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<tr>
<td>CPU(s) enabled:</td>
<td>4 cores, 1 chip, 4 cores/chip</td>
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<tr>
<td>CPU(s) orderable:</td>
<td>1 chip</td>
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<tr>
<td>Primary Cache:</td>
<td>32 KB I + 32 KB D on chip per core</td>
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<tr>
<td>Secondary Cache:</td>
<td>256 KB I+D on chip per core</td>
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</tbody>
</table>

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ASUSTeK Computer Inc.

(Test Sponsor: Intel Corporation)

ASUS Z170MPLUS motherboard (Intel Core i5-6600K)

SPEC CFP2006 Result

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SPECfp2006 = 90.8

SPECfp_base2006 = 88.6

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

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

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>91.5</td>
<td>214</td>
<td>91.1</td>
</tr>
</tbody>
</table>

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 DESKTOP-C8BQEO8 Wed Oct 7 20:12:05 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
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SPECfp2006 = 90.8
SPECfp_base2006 = 88.6

CPU2006 license: 13
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Tested by: Intel Corporation

CPU2006 license: 13
Test date: Oct-2015
Hardware Availability: Sep-2015
Software Availability: Aug-2015

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 ~3501 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 : 3501
Name : Intel(R) Core(TM) i5-6600K CPU @ 3.50GHz
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
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ASUS Z170MPLUS motherboard (Intel Core i5-6600K)  

SPEC CFP2006 Result  

SPECfp2006 = 90.8  
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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 -DSPEC_CPU_NOZMODIFIER -names:lowercase  
459.GemsFDTD: -DSPEC_CPU_P64 -DSPEC_CPU_WINDOWS_ICL  
465.tonto: -DSPEC_CPU_P64  
466.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 -03 -Qprec-div -Qparallel -Qansi-alias  
-Qopt-prefetch /F1000000000  

C++ benchmarks:  
-QxCORE-AVX2 -Qipo -03 -Qprec-div -Qparallel -Qansi-alias  
-Qopt-prefetch -Qcxx-features /F1000000000 shlW64M.lib  
-link /FORCE:MULTIPLE  

Fortran benchmarks:  
-QxCORE-AVX2 -Qipo -03 -Qprec-div -Qparallel -Qansi-alias  
-Qopt-prefetch /F1000000000  

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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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**CPU2006 license:** 13  
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**Test date:** Oct-2015  
**Hardware Availability:** Sep-2015  
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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-`  
    - `-Qunroll12`  
    - `-Ob0 -Qansi-alias`  
  - **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-`  
    - `-Qunroll14`  
    - `-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](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](http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-windows.xml)

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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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