## SPEC® CFP2006 Result

ASUSTeK Computer Inc.  
(Test Sponsor: Intel Corporation)

ASUS Q170M-C motherboard (Intel Core i5-6400)

| SPECfp®2006 | 82.4 |
| SPECfp_base2006 | 80.6 |

### Software

| Operating System: | Microsoft Windows 7 Professional  
| 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;  
| Auto Parallel: | Yes |

### Hardware

| CPU Name: | Intel Core i5-6400 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.30 GHz |
| CPU MHz: | 2700 |
| 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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### Test Details

**CPU2006 license:** 13  
**Test sponsor:** Intel Corporation  
**Tested by:** Intel Corporation  
**Test date:** Mar-2016  
**Hardware Availability:** Sep-2015  
**Software Availability:** Aug-2015
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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 Barracuda 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

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<th>Ratio</th>
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</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 CltF832E4885654 Tue Mar 15 19:39:23 2016

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
ASUSTeK Computer Inc.  
(Test Sponsor: Intel Corporation)

ASUS Q170M-C motherboard (Intel Core i5-6400)

**SPEC CFP2006 Result**

<table>
<thead>
<tr>
<th>SPECfp2006</th>
<th>82.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>80.6</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 13  
**Test date:** Mar-2016  
**Test sponsor:** Intel Corporation  
**Hardware Availability:** Sep-2015  
**Tested by:** Intel Corporation  
**Software Availability:** Aug-2015

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**Platform Notes (Continued)**

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

Trying 'systeminfo'  
OS Name : Microsoft Windows 7 Professional  
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]: Intel64 Family 6 Model 94 Stepping 3 GenuineIntel ~2701 Mhz  
BIOS Version : American Megatrends Inc. 0704, 1/12/2016  
Total Physical Memory: 8,070 MB

Trying 'wmic cpu get /value'  
DeviceID : CPU0  
L2CacheSize : 1024  
L3CacheSize : 6144  
MaxClockSpeed : 2701  
Name : Intel(R) Core(TM) i5-6400 CPU @ 2.70GHz  
NumberOfCores : 4  
NumberOfLogicalProcessors: 4

(End of data from sysinfo program)

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**Component Notes**

Tested systems can be used with Shin-G ATX case,  
PC Power and Cooling 1200W power supply

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**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
ASUSTeK Computer Inc.  
(Test Sponsor: Intel Corporation)  
ASUS Q170M-C motherboard (Intel Core i5-6400)  

**SPEC CFP2006 Result**

**SPECfp2006 =**  82.4  
**SPECfp_base2006 =**  80.6

**CPU2006 license:** 13  
**Test date:** Mar-2016  
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**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`
- 450.soplex: `-DSPEC_CPU_P64` `-DSPEC_GETLINE_TEST`
- 453.povray: `-DSPEC_CPU_P64` `-names:lowercase`
- 454.calculix: `-DSPEC_CPU_P64` `-DSPEC_CPU_NOZMODIFIER`
- 459.GemsFDTD: `-DSPEC_CPU_P64` `-names:lowercase`
- 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 shrW64M.lib`  
  `-link /FORCE:MULTIPLE`

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

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Continued on next page
## Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:
- `-QxCORE-AVX2`  
- `-Qipo`  
- `-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`: basepeak = yes
    
    ```
    -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
ASUSTeK Computer Inc.  
(237x62)  
ASUS Q170M-C motherboard (Intel Core i5-6400) 

SPECfp2006 = 82.4  
SPECfp_base2006 = 80.6

CPU2006 license: 13  
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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 -Qunroll14 -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 
-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 -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 

You can also download the XML flags source by saving the following link: 

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For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2. 
Report generated on Tue Jul 12 11:02:19 2016 by SPEC CPU2006 PS/PDF formatter v6932. 
Originally published on 12 July 2016.