# SPEC® CFP2006 Result

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

**ASUS Q170M-C motherboard (Intel Pentium G4520)**

<table>
<thead>
<tr>
<th>CPU2006 license:</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor:</td>
<td>Intel Corporation</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Intel Corporation</td>
</tr>
</tbody>
</table>

**CPU2006 license: 13**

<table>
<thead>
<tr>
<th>Test date:</th>
<th>Mar-2016</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>

### SPECfp®2006 = 72.1

### SPECfp_base2006 = 71.0

### Results

<table>
<thead>
<tr>
<th>Test</th>
<th>Benchmark</th>
<th>Result</th>
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</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>45.5</td>
<td></td>
</tr>
<tr>
<td>416.gamess</td>
<td>44.2</td>
<td></td>
</tr>
<tr>
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<td>82.7</td>
<td></td>
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<tr>
<td>434.zeusmp</td>
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<td>435.gromacs</td>
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<td>436.cactusADM</td>
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<tr>
<td>437.leslie3d</td>
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<td>444.namd</td>
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<tr>
<td>447.dealII</td>
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<tr>
<td>450.soplex</td>
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<td>453.povray</td>
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<td>454.calculix</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>
<tr>
<td>482.sphinx3</td>
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</tr>
</tbody>
</table>

### Hardware

**CPU Name:** Intel Pentium G4520

**CPU Characteristics:**

- CPU MHz: 3600
- FPU: Integrated
- CPU(s) enabled: 2 cores, 1 chip, 2 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

### 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

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L3 Cache: 3 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

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds Base</th>
<th>Seconds Ratio</th>
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<td>295</td>
<td>66.1</td>
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</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 CltF832E48859C5 Tue Mar 15 16:40:40 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.  
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ASUS Q170M-C motherboard (Intel Pentium G4520)

**SPECfp2006** = 72.1  
**SPECfp_base2006** = 71.0

CPU2006 license: 13  
Test sponsor: Intel Corporation  
Test date: Mar-2016  
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 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 ~3600 Mhz  
BIOS Version  : American Megatrends Inc. 0704, 1/12/2016  
Total Physical Memory: 8,070 MB

Trying 'wmic cpu get /value'  
DeviceID      : CPU0  
L2CacheSize   : 512  
L3CacheSize   : 3072  
MaxClockSpeed : 3600  
Name          : Intel(R) Pentium(R) CPU G4520 @ 3.60GHz  
NumberOfCores : 2  
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

**General Notes**

450.soplex (base): "getline_test" src.alt was used.  
447.dealII (base): "max_prototype" src.alt was used.  
447.dealII (base): "cxxll_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): "cxxll_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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### 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
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:

```
-QxSSE4.2 -Qipo -O3 -Qprec-div- -Qparallel -Qansi-alias
-Qopt-prefetch /F1000000000
```

C++ benchmarks:

```
-QxSSE4.2 -Qipo -O3 -Qprec-div- -Qparallel -Qansi-alias
-Qopt-prefetch -Qcxx-features /F1000000000 shlW64M.lib
-link /FORCE:MULTIPLE
```

Fortran benchmarks:

```
-QxSSE4.2 -Qipo -O3 -Qprec-div- -Qparallel -Qansi-alias
-Qopt-prefetch /F1000000000
```

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Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:
-`-QxSSE4.2` `-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`: `QxSSE4.2(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

Continued on next page
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Peak Optimization Flags (Continued)

453. povray: 
- QxSSE4.2(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: 
- QxSSE4.2(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: 
- QxSSE4.2(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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