ASUSTeK Computer Inc.  
(Test Sponsor: Intel Corporation)

ASUS Q170M-C motherboard (Intel Core i3-6098P)  

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

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

<table>
<thead>
<tr>
<th>SPECfp®2006 = 80.2</th>
<th>SPECfp_base2006 = 78.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>41.1</td>
</tr>
<tr>
<td>416.gamess</td>
<td>46.7</td>
</tr>
<tr>
<td>433.milc</td>
<td>87.0</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>145</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>61.2</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>80.4</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>35.0</td>
</tr>
<tr>
<td>444.namd</td>
<td>34.4</td>
</tr>
<tr>
<td>447.dealII</td>
<td>70.7</td>
</tr>
<tr>
<td>450.soplex</td>
<td>42.6</td>
</tr>
<tr>
<td>453.povray</td>
<td>76.1</td>
</tr>
<tr>
<td>454.calculix</td>
<td>64.8</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>62.9</td>
</tr>
<tr>
<td>465.tonto</td>
<td>58.4</td>
</tr>
<tr>
<td>470.lbm</td>
<td>55.7</td>
</tr>
<tr>
<td>481.wrf</td>
<td>109</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>69.6</td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Core i3-6098P
- **CPU Characteristics:**
  - CPU MHz: 3600
  - FPU: Integrated
  - CPU(s) enabled: 2 cores, 1 chip, 2 cores/chip, 2 threads/core
  - 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
ASUSTeK Computer Inc.
(Test Sponsor: Intel Corporation)
ASUS Q170M-C motherboard (Intel Core i3-6098P)

SPEC CFP2006 Result
Copyright 2006-2016 Standard Performance Evaluation Corporation

SPECfp2006 = 80.2
SPECfp_base2006 = 78.9

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

ASUS Q170M-C motherboard (Intel Core i3-6098P)

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>Base Seconds</th>
<th>Ratio</th>
<th>Base Seconds</th>
<th>Ratio</th>
<th>Base Seconds</th>
<th>Ratio</th>
<th>Base Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>98.5</td>
<td>138</td>
<td>98.3</td>
<td>138</td>
<td>98.4</td>
<td>138</td>
<td>98.5</td>
<td>138</td>
</tr>
<tr>
<td>416.gamess</td>
<td>419</td>
<td>46.7</td>
<td>419</td>
<td>46.7</td>
<td>419</td>
<td>46.7</td>
<td>405</td>
<td>48.3</td>
</tr>
<tr>
<td>433.milc</td>
<td>105</td>
<td>87.7</td>
<td>106</td>
<td>87.0</td>
<td>107</td>
<td>86.0</td>
<td>105</td>
<td>87.7</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>62.9</td>
<td>145</td>
<td>62.9</td>
<td>145</td>
<td>63.1</td>
<td>144</td>
<td>62.9</td>
<td>145</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>117</td>
<td>61.3</td>
<td>117</td>
<td>61.2</td>
<td>117</td>
<td>61.2</td>
<td>117</td>
<td>61.3</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>56.3</td>
<td>212</td>
<td>56.5</td>
<td>212</td>
<td>56.5</td>
<td>212</td>
<td>56.3</td>
<td>212</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>117</td>
<td>80.5</td>
<td>117</td>
<td>80.2</td>
<td>117</td>
<td>80.4</td>
<td>117</td>
<td>80.5</td>
</tr>
<tr>
<td>444.namd</td>
<td>233</td>
<td>34.4</td>
<td>233</td>
<td>34.4</td>
<td>233</td>
<td>34.4</td>
<td>229</td>
<td>35.0</td>
</tr>
<tr>
<td>447.dealII</td>
<td>161</td>
<td>71.1</td>
<td>162</td>
<td>70.7</td>
<td>162</td>
<td>70.4</td>
<td>161</td>
<td>71.1</td>
</tr>
<tr>
<td>450.soplex</td>
<td>193</td>
<td>43.1</td>
<td>196</td>
<td>42.6</td>
<td>196</td>
<td>42.6</td>
<td>193</td>
<td>43.1</td>
</tr>
<tr>
<td>453.povray</td>
<td>81.9</td>
<td>65.0</td>
<td>82.1</td>
<td>64.8</td>
<td>82.4</td>
<td>64.6</td>
<td>69.9</td>
<td>76.1</td>
</tr>
<tr>
<td>454.calculix</td>
<td>116</td>
<td>71.2</td>
<td>116</td>
<td>71.1</td>
<td>116</td>
<td>71.1</td>
<td>116</td>
<td>71.2</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>169</td>
<td>62.9</td>
<td>169</td>
<td>62.9</td>
<td>169</td>
<td>62.9</td>
<td>169</td>
<td>62.9</td>
</tr>
<tr>
<td>465.tonto</td>
<td>177</td>
<td>55.5</td>
<td>177</td>
<td>55.7</td>
<td>177</td>
<td>55.8</td>
<td>169</td>
<td>58.4</td>
</tr>
<tr>
<td>470.lbm</td>
<td>82.2</td>
<td>167</td>
<td>82.2</td>
<td>167</td>
<td>82.2</td>
<td>167</td>
<td>82.2</td>
<td>167</td>
</tr>
<tr>
<td>481.wrf</td>
<td>102</td>
<td>109</td>
<td>102</td>
<td>109</td>
<td>102</td>
<td>109</td>
<td>102</td>
<td>109</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>280</td>
<td>69.6</td>
<td>281</td>
<td>69.3</td>
<td>280</td>
<td>69.7</td>
<td>280</td>
<td>69.6</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 CltF832E4885A95 Tue Apr  5 16:54:39 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 i3-6098P)

**SPEC CFP2006 Result**

SPECfp2006 = 80.2  
SPECfp_base2006 = 78.9

---

**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: 8,074 MB

Trying 'wmic cpu get /value'
DeviceID : CPU0  
L2CacheSize : 512  
L3CacheSize : 3072  
MaxClockSpeed : 3600  
Name : Intel(R) Core(TM) i3-6098P CPU @ 3.60GHz  
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
SPEC CFP2006 Result

ASUSTeK Computer Inc.
(Test Sponsor: Intel Corporation)
ASUS Q170M-C motherboard (Intel Core i3-6098P)

SPECfp2006 = 80.2
SPECfp_base2006 = 78.9

CPU2006 license: 13
Test sponsor: Intel Corporation
Test date: Apr-2016
Hardware Availability: Dec-2015
Tested by: Intel Corporation
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_SPECIFICATION_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:
-QxCORE-AVX2 -Qipo -Qprec-div -Qparallel -Qansi-alias
-Qopt-prefetch /F1000000000

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

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

Continued on next page
ASUSTeK Computer Inc.  
(Test Sponsor: Intel Corporation)

ASUS Q170M-C motherboard (Intel Core i3-6098P)

SPECfp2006 = 80.2 
SPECfp_base2006 = 78.9

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

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

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

Continued on next page
ASUSTeK Computer Inc.  
(Test Sponsor: Intel Corporation)  
ASUS Q170M-C motherboard (Intel Core i3-6098P)  

**SPEC CFP2006 Result**

| CPU2006 license:  | 13 |
| Test date:       | Apr-2016 |
| Test sponsor:    | Intel Corporation |
| Tested by:       | Intel Corporation |

**SPECfp2006 = 80.2**  
**SPECfp_base2006 = 78.9**

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:

Spec and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU2006 v1.2.  
Report generated on Tue Jul 12 11:02:37 2016 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 12 July 2016.