



# SPEC® CPU2017 Floating Point Rate Result

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**ASUSTeK Computer Inc.**

(Test Sponsor: Intel Corporation)

SPECrate2017\_fp\_base = 24.6

ASUS Z170M-PLUS Motherboard (Intel Core i7-6700K)

SPECrate2017\_fp\_peak = Not Run

CPU2017 License: 13

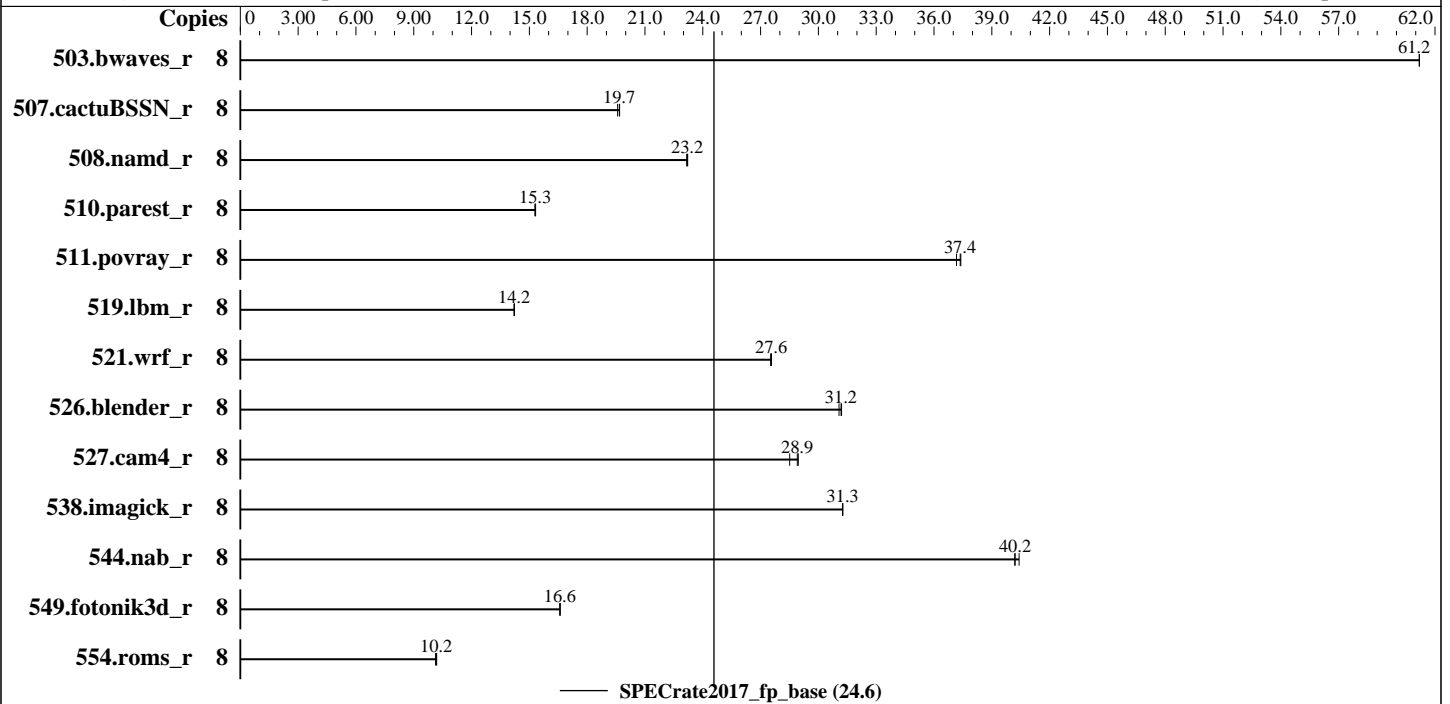
Test Sponsor: Intel Corporation

Tested by: Intel Corporation

Test Date: Dec-2016

Hardware Availability: Jan-2016

Software Availability: Sep-2016



## Hardware

CPU Name: Intel Core i7-6700K  
 Max MHz.: 4200  
 Nominal: 4000  
 Enabled: 4 cores, 1 chip, 2 threads/core  
 Orderable: 1 chip  
 Cache L1: 32 KB I + 32 KB D on chip per core  
 L2: 256 KB I+D on chip per core  
 L3: 8 MB I+D on chip per chip  
 Other: None  
 Memory: 32 GB (2 x 16 GB 2Rx8 PC4-3000N-U, running at 2133, G.SKILL Ripjaws F4-3000C14D-32GVK)  
 Storage: 1.5 TB SATA HDD, 7200RPM  
 Other: None

## Software

OS: Red Hat Enterprise Linux Server release 7.2 (Maipo)  
 3.10.0-327.el7.x86\_64  
 Compiler: C/C++: Version 17.0.0.098 of Intel C/C++ Compiler for Linux;  
 Fortran: Version 17.0.0.098 of Intel Fortran Compiler for Linux  
 Parallel: No  
 Firmware: American Megatrends Inc. v0701 01/13/2016  
 File System: xfs  
 System State: Run level 5 (Multiuser Networking with GUI)  
 Base Pointers: 64-bit  
 Peak Pointers: Not Applicable  
 Other: Microquill SmartHeap V10.2



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## Results Table

| Benchmark       | Base   |            |             |             |             |             |             | Peak   |         |       |         |       |         |       |
|-----------------|--------|------------|-------------|-------------|-------------|-------------|-------------|--------|---------|-------|---------|-------|---------|-------|
|                 | Copies | Seconds    | Ratio       | Seconds     | Ratio       | Seconds     | Ratio       | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 503.bwaves_r    | 8      | 1311       | 61.2        | 1311        | 61.2        | <b>1311</b> | <b>61.2</b> |        |         |       |         |       |         |       |
| 507.cactuBSSN_r | 8      | 515        | 19.7        | 517         | 19.6        | <b>515</b>  | <b>19.7</b> |        |         |       |         |       |         |       |
| 508.namd_r      | 8      | 328        | 23.2        | 327         | 23.2        | <b>328</b>  | <b>23.2</b> |        |         |       |         |       |         |       |
| 510.parest_r    | 8      | 1366       | 15.3        | <b>1367</b> | <b>15.3</b> | 1369        | 15.3        |        |         |       |         |       |         |       |
| 511.povray_r    | 8      | <b>500</b> | <b>37.4</b> | 503         | 37.2        | 500         | 37.4        |        |         |       |         |       |         |       |
| 519.lbm_r       | 8      | <b>593</b> | <b>14.2</b> | 593         | 14.2        | 593         | 14.2        |        |         |       |         |       |         |       |
| 521.wrf_r       | 8      | 650        | 27.6        | <b>650</b>  | <b>27.6</b> | 651         | 27.5        |        |         |       |         |       |         |       |
| 526.blender_r   | 8      | <b>391</b> | <b>31.2</b> | 390         | 31.2        | 392         | 31.1        |        |         |       |         |       |         |       |
| 527.cam4_r      | 8      | 483        | 29.0        | 491         | 28.5        | <b>484</b>  | <b>28.9</b> |        |         |       |         |       |         |       |
| 538.imagick_r   | 8      | 637        | 31.2        | 636         | 31.3        | <b>636</b>  | <b>31.3</b> |        |         |       |         |       |         |       |
| 544.nab_r       | 8      | 333        | 40.4        | 335         | 40.2        | <b>335</b>  | <b>40.2</b> |        |         |       |         |       |         |       |
| 549.fotonik3d_r | 8      | 1880       | 16.6        | <b>1879</b> | <b>16.6</b> | 1878        | 16.6        |        |         |       |         |       |         |       |
| 554.roms_r      | 8      | 1248       | 10.2        | 1255        | 10.1        | <b>1250</b> | <b>10.2</b> |        |         |       |         |       |         |       |

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Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

## Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

## General Notes

Environment variables set by runcpu before the start of the run:

LD\_LIBRARY\_PATH = \*/home/specdev/workspace/cpu2017-rc4/lib/ia32:/home/specdev/workspace/cpu2017-rc4/lib/intel64:/home/specdev/workspace/cpu2017-rc4/sh10.2\*

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM  
memory using Redhat Enterprise Linux 7.2  
Transparent Huge Pages enabled by default

## Platform Notes

Sysinfo program /home/specdev/workspace/cpu2017-rc4/Docs/sysinfo  
Rev: r5007 of 2016-11-15 fc8dc82f217779bedfed4d694d580ba9  
running on mrcarrol-desky Tue Dec 13 11:12:40 2016

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## Platform Notes (Continued)

This section contains SUT (System Under Test) info as seen by some common utilities.

For more information on this section, see  
<http://www.spec.org/cpu2017/Docs/config.html#sysinfo>

```
From /proc/cpuinfo
model name : Intel(R) Core(TM) i7-6700K CPU @ 4.00GHz
 1 "physical id"s (chips)
 8 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The
following excerpts from /proc/cpuinfo might not be reliable. Use with
caution.)
  cpu cores : 4
  siblings  : 8
  physical 0: cores 0 1 2 3
cache size : 8192 KB
```

The view from numactl --hardware follows. WARNING: a numactl 'node' might or might not correspond to a physical chip.

```
available: 1 nodes (0)
node 0 cpus: 0 1 2 3 4 5 6 7
node 0 size: 32655 MB
node 0 free: 10791 MB
node distances:
node    0
 0:    10
```

```
From /proc/meminfo
MemTotal:      32667216 kB
HugePages_Total:      0
Hugepagesize:    2048 kB
```

```
From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.2 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.2"
PRETTY_NAME=Storage
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.2:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.2:ga:server
```

```
uname -a:
```

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## Platform Notes (Continued)

```
Linux mrcarrol-desky 3.10.0-327.el7.x86_64 #1 SMP Thu Oct 29 17:29:29 EDT
2015 x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 5 Dec 7 09:08
```

```
SPEC is set to: /home/specdev/workspace/cpu2017-rc4
```

```
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs   1.5T   89G  1.5T   6% /home
```

```
Cannot run dmidecode; consider saying 'chmod +s /usr/sbin/dmidecode'
```

```
(End of data from sysinfo program)
```

## Base Compiler Invocation

C benchmarks:

```
icc -m64 -std=c11
```

C++ benchmarks:

```
icpc -m64
```

Fortran benchmarks:

```
ifort -m64
```

Benchmarks using both Fortran and C:

```
ifort -m64 icc -m64 -std=c11
```

Benchmarks using both C and C++:

```
icpc -m64 icc -m64 -std=c11
```

Benchmarks using Fortran, C, and C++:

```
icpc -m64 icc -m64 -std=c11 ifort -m64
```

## Base Portability Flags

```
503.bwaves_r: -DSPEC_LP64
```

```
507.cactuBSSN_r: -DSPEC_LP64
```

```
508.namd_r: -DSPEC_LP64
```

```
510.parest_r: -DSPEC_LP64
```

```
511.povray_r: -DSPEC_LP64
```

```
519.lbm_r: -DSPEC_LP64
```

```
521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
```

```
526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsigned-char
```

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## Base Portability Flags (Continued)

527.cam4\_r: -DSPEC\_LP64 -DSPEC\_CASE\_FLAG  
538.imagick\_r: -DSPEC\_LP64  
544.nab\_r: -DSPEC\_LP64  
549.fotonik3d\_r: -DSPEC\_LP64  
554.roms\_r: -DSPEC\_LP64

## Base Optimization Flags

### C benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -auto-p32 -qopt-prefetch  
-qopt-mem-layout-trans=3

### C++ benchmarks:

-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-p32  
-qopt-prefetch -qopt-mem-layout-trans=3 -L/sh10.2 -lsmartheap64

### Fortran benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch  
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs

### Benchmarks using both Fortran and C:

-xCORE-AVX2 -ipo -O3 -no-prec-div -auto-p32 -qopt-prefetch  
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs

### Benchmarks using both C and C++:

-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-p32  
-qopt-prefetch -qopt-mem-layout-trans=3 -L/sh10.2 -lsmartheap64

### Benchmarks using Fortran, C, and C++:

-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-p32  
-qopt-prefetch -qopt-mem-layout-trans=3 -nostandard-realloc-lhs  
-L/sh10.2 -lsmartheap64

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2017/flags/Intel-ic17.0-official-linux64-revE.html>

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

<http://www.spec.org/cpu2017/flags/Intel-ic17.0-official-linux64-revE.xml>



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For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

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