SPEC® CPU2017 Floating Point Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS720Q-E9(Z11PH-D12) Server System
(2.30 GHz, Intel Xeon Gold 6140)

$SPECspeed2017\_fp\_base = 114$

$SPECspeed2017\_fp\_peak = 115$

CPU2017 License: 9016	**Test Date:**	Sep-2018
Test Sponsor: ASUSTeK Computer Inc.	**Hardware Availability:**	Mar-2018
Tested by: ASUSTeK Computer Inc.	**Software Availability:**	Jun-2018

Threads

- **603.bwaves_s** 36 — 496 / 495
- **607.cactuBSSN_s** 36 — 148 / 150
- **619.lbm_s** 36 — 43.9 / 43.9
- **621.wrf_s** 36 — 96.3 / 99.5
- **627.cam4_s** 36 — 89.4 / 89.3
- **628.pop2_s** 36 — 61.8 / 62.8
- **638.imagick_s** 36 — 108 / 104
- **644.nab_s** 36 — 214 / 214
- **649.fotonik3d_s** 36 — 82.9 / 82.6
- **654.roms_s** 36 — 114 / 117

—— **SPECspeed2017_fp_base (114)**   ----- **SPECspeed2017_fp_peak (115)**

Hardware

CPU Name: Intel Xeon Gold 6140
 Max MHz.: 3700
 Nominal: 2300
Enabled: 36 cores, 2 chips
Orderable: 1, 2 chip(s)
Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 1 MB I+D on chip per core
 L3: 24.75 MB I+D on chip per chip
 Other: None
Memory: 384 GB (12 x 32 GB 2Rx4 PC4-2666V-R)
Storage: 1 x 240 GB SATA SSD
Other: None

Software

OS: SUSE Linux Enterprise Server 12 (x86_64) SP3
  Kernel 4.4.120-94.17-default
Compiler: C/C++: Version 18.0.3.222 of Intel C/C++
  Compiler for Linux;
  Fortran: Version 18.0.3.222 of Intel Fortran
  Compiler for Linux
Parallel: Yes
Firmware: Version 0905 released Mar-2018
File System: btrfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: None

SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS720Q-E9(Z11PH-D12) Server System
(2.30 GHz, Intel Xeon Gold 6140)

SPECspeed2017_fp_base = 114

SPECspeed2017_fp_peak = 115
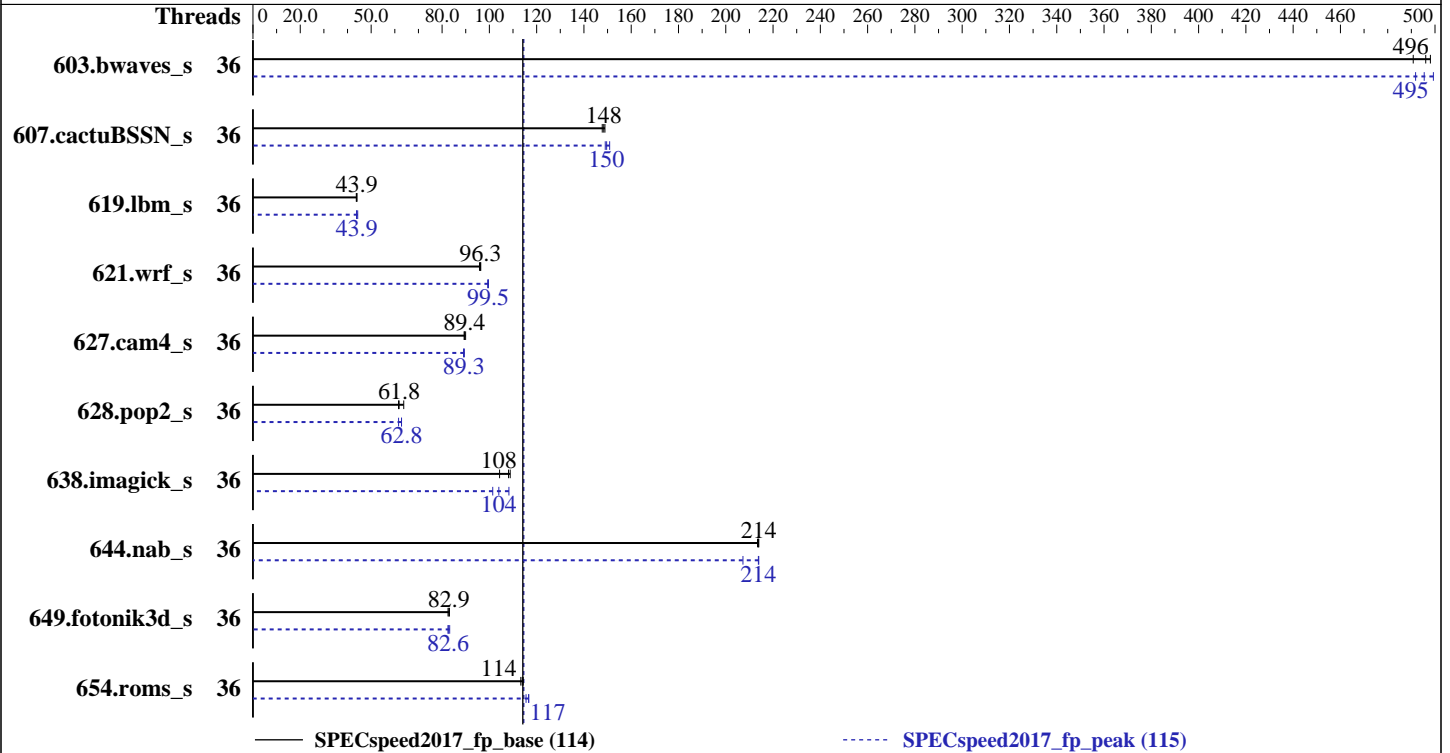
CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Sep-2018
Hardware Availability: Mar-2018
Software Availability: Jun-2018

Results Table

Benchmark	Base						Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
603.bwaves_s	36	**119**	**496**	120	491	118	498	36	120	492	118	499	**119**	**495**
607.cactuBSSN_s	36	113	148	112	149	**112**	**148**	36	**111**	**150**	112	149	110	151
619.lbm_s	36	119	44.0	**119**	**43.9**	120	43.7	36	120	43.8	**119**	**43.9**	118	44.3
621.wrf_s	36	**137**	**96.3**	138	95.8	137	96.3	36	133	99.6	133	99.3	**133**	**99.5**
627.cam4_s	36	99.2	89.4	**99.1**	**89.4**	98.5	90.0	36	99.5	89.1	99.1	89.4	**99.3**	**89.3**
628.pop2_s	36	186	63.8	193	61.6	**192**	**61.8**	36	**189**	**62.8**	193	61.6	189	62.8
638.imagick_s	36	138	104	133	109	**133**	**108**	36	133	108	**139**	**104**	142	101
644.nab_s	36	81.7	214	81.9	213	**81.7**	**214**	36	84.3	207	81.7	214	**81.7**	**214**
649.fotonik3d_s	36	110	83.1	110	82.5	**110**	**82.9**	36	110	82.6	110	83.2	**110**	**82.6**
654.roms_s	36	**138**	**114**	138	114	139	113	36	135	117	136	116	**135**	**117**
SPECspeed2017_fp_base =			**114**										
SPECspeed2017_fp_peak =			**115**										

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

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:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/spec2017/lib/ia32:/spec2017/lib/intel64:/spec2017/je5.0.1-32:/spec2017/je5.0.1-64"
OMP_STACKSIZE = "192M"

 Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
 memory using Redhat Enterprise Linux 7.4
 Transparent Huge Pages enabled by default
 Prior to runcpu invocation
 Filesystem page cache synced and cleared with:
 sync; echo 3>        /proc/sys/vm/drop_caches
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)
is mitigated in the system as tested and documented.
```

Platform Notes

```
BIOS Configuration:
SNC = Disabled
IMC interleaving = AUTO
```

(Continued on next page)

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

ASUSTeK Computer Inc.

ASUS RS720Q-E9(Z11PH-D12) Server System
(2.30 GHz, Intel Xeon Gold 6140)

SPECspeed2017_fp_base = 114

SPECspeed2017_fp_peak = 115

CPU2017 License:	9016	**Test Date:**	Sep-2018
Test Sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:**	Mar-2018
Tested by:	ASUSTeK Computer Inc.	**Software Availability:**	Jun-2018

Platform Notes (Continued)

```
Patrol Scrub = Disabled
VT-d = Disabled
HyperThreading = Disabled
 Sysinfo program /spec2017/bin/sysinfo
 Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
 running on linux-pmm5 Mon Sep  3 21:58:10 2018

 SUT (System Under Test) info as seen by some common utilities.
 For more information on this section, see
    https://www.spec.org/cpu2017/Docs/config.html#sysinfo

 From /proc/cpuinfo
    model name : Intel(R) Xeon(R) Gold 6140 CPU @ 2.30GHz
       2  "physical id"s (chips)
       36 "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 : 18
       siblings  : 18
       physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
       physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27

 From lscpu:
     Architecture:          x86_64
     CPU op-mode(s):        32-bit, 64-bit
     Byte Order:            Little Endian
     CPU(s):                36
     On-line CPU(s) list:   0-35
     Thread(s) per core:    1
     Core(s) per socket:    18
     Socket(s):             2
     NUMA node(s):          2
     Vendor ID:             GenuineIntel
     CPU family:            6
     Model:                 85
     Model name:            Intel(R) Xeon(R) Gold 6140 CPU @ 2.30GHz
     Stepping:              4
     CPU MHz:               2301.000
     CPU max MHz:           2301.0000
     CPU min MHz:           1000.0000
     BogoMIPS:              4692.18
     Virtualization:        VT-x
     L1d cache:             32K
     L1i cache:             32K
     L2 cache:              1024K
     L3 cache:              25344K
     NUMA node0 CPU(s):     0-17
```

(Continued on next page)

ASUSTeK Computer Inc.

ASUS RS720Q-E9(Z11PH-D12) Server System
(2.30 GHz, Intel Xeon Gold 6140)

SPECspeed2017_fp_base = 114

SPECspeed2017_fp_peak = 115

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Sep-2018
Hardware Availability: Mar-2018
Software Availability: Jun-2018

Platform Notes (Continued)

```
     NUMA node1 CPU(s):     18-35
     Flags:                 fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
   pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp
   lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
   aperfmperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
   fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
   xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ida arat epb invpcid_single pln pts
   dtherm intel_pt rsb_ctxsw spec_ctrl stibp retpoline kaiser tpr_shadow vnmi
   flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm
   cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl
   xsaveopt xsavec xgetbv1 cqm_llc cqm_occup_llc pku ospke

 /proc/cpuinfo cache data
    cache size : 25344 KB

 From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a
 physical chip.
   available: 2 nodes (0-1)
   node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
   node 0 size: 192066 MB
   node 0 free: 187392 MB
   node 1 cpus: 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35
   node 1 size: 193516 MB
   node 1 free: 188328 MB
   node distances:
   node   0   1
     0:  10  21
     1:  21  10

 From /proc/meminfo
    MemTotal:       394837328 kB
    HugePages_Total:        0
    Hugepagesize:        2048 kB

 From /etc/*release* /etc/*version*
    SuSE-release:
      SUSE Linux Enterprise Server 12 (x86_64)
      VERSION = 12
      PATCHLEVEL = 3
      # This file is deprecated and will be removed in a future service pack or release.
      # Please check /etc/os-release for details about this release.
    os-release:
      NAME="SLES"
      VERSION="12-SP3"
      VERSION_ID="12.3"
      PRETTY_NAME="SUSE Linux Enterprise Server 12 SP3"
      ID="sles"
```

(Continued on next page)

ASUSTeK Computer Inc.

ASUS RS720Q-E9(Z11PH-D12) Server System
(2.30 GHz, Intel Xeon Gold 6140)

$SPECspeed2017\_fp\_base = 114$

$SPECspeed2017\_fp\_peak = 115$

CPU2017 License: 9016		**Test Date:**	Sep-2018
Test Sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:**	Mar-2018
Tested by:	ASUSTeK Computer Inc.	**Software Availability:**	Jun-2018

Platform Notes (Continued)

```
        ANSI_COLOR="0;32"
        CPE_NAME="cpe:/o:suse:sles:12:sp3"

  uname -a:
     Linux linux-pmm5 4.4.120-94.17-default #1 SMP Wed Mar 14 17:23:00 UTC 2018 (cf3a7bb)
     x86_64 x86_64 x86_64 GNU/Linux

  Kernel self-reported vulnerability status:

  CVE-2017-5754 (Meltdown):           Mitigation: PTI
  CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
  CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS+IBPB

  run-level 3 Sep 3 09:57

  SPEC is set to: /spec2017
     Filesystem      Type   Size  Used Avail Use% Mounted on
     /dev/sda2       btrfs  203G  110G   93G  55% /

  Additional information from dmidecode follows.  WARNING: Use caution when you interpret
  this section. The 'dmidecode' program reads system data which is "intended to allow
  hardware to be accurately determined", but the intent may not be met, as there are
  frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.
    BIOS American Megatrends Inc. 0905 03/19/2018
    Memory:
     12x Kingston D4-26662R4-32G 32 GB 2 rank 2666

  (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
 CC   619.lbm_s(base) 638.imagick_s(base, peak) 644.nab_s(base, peak)
------------------------------------------------------------------------------
icc (ICC) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------


==============================================================================
 CC   619.lbm_s(peak)
------------------------------------------------------------------------------
icc (ICC) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------


==============================================================================
```

(Continued on next page)

ASUSTeK Computer Inc.

ASUS RS720Q-E9(Z11PH-D12) Server System
(2.30 GHz, Intel Xeon Gold 6140)

SPECspeed2017_fp_base = 114

SPECspeed2017_fp_peak = 115

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Sep-2018
Hardware Availability: Mar-2018
Software Availability: Jun-2018

Compiler Version Notes (Continued)

```
 FC  607.cactuBSSN_s(base)
-------------------------------------------------------------------------------
icpc (ICC) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
icc (ICC) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
ifort (IFORT) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
-------------------------------------------------------------------------------


==============================================================================
FC   607.cactuBSSN_s(peak)
-------------------------------------------------------------------------------
icpc (ICC) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
icc (ICC) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
ifort (IFORT) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
-------------------------------------------------------------------------------


==============================================================================
 FC  603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)
-------------------------------------------------------------------------------
ifort (IFORT) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
-------------------------------------------------------------------------------


==============================================================================
FC   603.bwaves_s(peak) 649.fotonik3d_s(peak) 654.roms_s(peak)
-------------------------------------------------------------------------------
ifort (IFORT) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
-------------------------------------------------------------------------------


==============================================================================
 CC  621.wrf_s(base) 627.cam4_s(base, peak) 628.pop2_s(base)
-------------------------------------------------------------------------------
ifort (IFORT) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
icc (ICC) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
-------------------------------------------------------------------------------


==============================================================================
CC   621.wrf_s(peak) 628.pop2_s(peak)
-------------------------------------------------------------------------------
```

(Continued on next page)

SPEC CPU2017 Floating Point Speed Result

ASUSTeK Computer Inc.

ASUS RS720Q-E9(Z11PH-D12) Server System
(2.30 GHz, Intel Xeon Gold 6140)

SPECspeed2017_fp_base = 114

SPECspeed2017_fp_peak = 115

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Sep-2018
Hardware Availability: Mar-2018
Software Availability: Jun-2018

Compiler Version Notes (Continued)

```
ifort (IFORT) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
icc (ICC) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
-----------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
```
icc -m64 -std=c11
```

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
ifort -m64 icc -m64 -std=c11
```

Benchmarks using Fortran, C, and C++:
```
icpc -m64 icc -m64 -std=c11 ifort -m64
```

Base Portability Flags

603.bwaves_s: `-DSPEC_LP64`
607.cactuBSSN_s: `-DSPEC_LP64`
619.lbm_s: `-DSPEC_LP64`
621.wrf_s: `-DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian`
627.cam4_s: `-DSPEC_LP64 -DSPEC_CASE_FLAG`
628.pop2_s: `-DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian -assume byterecl`
638.imagick_s: `-DSPEC_LP64`
644.nab_s: `-DSPEC_LP64`
649.fotonik3d_s: `-DSPEC_LP64`
654.roms_s: `-DSPEC_LP64`

Base Optimization Flags

C benchmarks:
```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
```

(Continued on next page)

Standard Performance Evaluation Corporation (info@spec.org) https://www.spec.org/

ASUSTeK Computer Inc.

ASUS RS720Q-E9(Z11PH-D12) Server System
(2.30 GHz, Intel Xeon Gold 6140)

SPECspeed2017_fp_base = 114

SPECspeed2017_fp_peak = 115

CPU2017 License:	9016	**Test Date:**	Sep-2018
Test Sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:**	Mar-2018
Tested by:	ASUSTeK Computer Inc.	**Software Availability:**	Jun-2018

Base Optimization Flags (Continued)

Fortran benchmarks:
```
-DSPEC_OPENMP -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp
-nostandard-realloc-lhs -align array32byte
```

Benchmarks using both Fortran and C:
```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -align array32byte
```

Benchmarks using Fortran, C, and C++:
```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -align array32byte
```

Peak Compiler Invocation

C benchmarks:
```
icc -m64 -std=c11
```

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
ifort -m64 icc -m64 -std=c11
```

Benchmarks using Fortran, C, and C++:
```
icpc -m64 icc -m64 -std=c11 ifort -m64
```

Peak Portability Flags

```
Same as Base Portability Flags
```

Peak Optimization Flags

C benchmarks:

```
619.lbm_s: -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX512
-qopt-prefetch -ipo -O3 -ffinite-math-only -no-prec-div
-qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp
```

(Continued on next page)

SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS720Q-E9(Z11PH-D12) Server System
(2.30 GHz, Intel Xeon Gold 6140)

$SPECspeed2017\_fp\_base = 114$

$SPECspeed2017\_fp\_peak = 115$

CPU2017 License: 9016		**Test Date:**	Sep-2018
Test Sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:**	Mar-2018
Tested by:	ASUSTeK Computer Inc.	**Software Availability:**	Jun-2018

Peak Optimization Flags (Continued)

619.lbm_s (continued):
-DSPEC_OPENMP

638.imagick_s: -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp
-DSPEC_OPENMP

644.nab_s: Same as 638.imagick_s

Fortran benchmarks:
-prof-gen(pass 1) -prof-use(pass 2) -DSPEC_SUPPRESS_OPENMP
-DSPEC_OPENMP -O2 -xCORE-AVX512 -qopt-prefetch -ipo -O3
-ffinite-math-only -no-prec-div -qopt-mem-layout-trans=3 -qopenmp
-nostandard-realloc-lhs -align array32byte

Benchmarks using both Fortran and C:

621.wrf_s: -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX512
-qopt-prefetch -ipo -O3 -ffinite-math-only -no-prec-div
-qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -nostandard-realloc-lhs -align array32byte

627.cam4_s: -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp
-DSPEC_OPENMP -nostandard-realloc-lhs -align array32byte

628.pop2_s: Same as 621.wrf_s

Benchmarks using Fortran, C, and C++:
-prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX512 -qopt-prefetch
-ipo -O3 -ffinite-math-only -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP -nostandard-realloc-lhs
-align array32byte

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/ASUSTekPlatform-Settings-z11-V2.0-revD.html
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-12-21.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/ASUSTekPlatform-Settings-z11-V2.0-revD.xml
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-12-21.xml

SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS720Q-E9(Z11PH-D12) Server System
(2.30 GHz, Intel Xeon Gold 6140)

SPECspeed2017_fp_base = 114

SPECspeed2017_fp_peak = 115

CPU2017 License:	9016	**Test Date:**	Sep-2018
Test Sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:**	Mar-2018
Tested by:	ASUSTeK Computer Inc.	**Software Availability:**	Jun-2018

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

Tested with SPEC CPU2017 v1.0.5 on 2018-09-03 09:58:09-0400.
Report generated on 2018-10-31 19:14:38 by CPU2017 PDF formatter v6067.
Originally published on 2018-10-02.