## CPU2017 Floating Point Rate Result

**Fujitsu**

PRIMERGY TX1320 M4, Intel Xeon E-2186G, 3.80GHz

**CPU2017 License**: 19
**Test Sponsor**: Fujitsu
**Tested by**: Fujitsu

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<th>Test Date:</th>
<th>Hardware Availability:</th>
<th>Software Availability:</th>
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<td>License: 19</td>
<td>Oct-2018</td>
<td>Nov-2018</td>
<td>Sep-2018</td>
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**SPECrate2017_fp_peak** = 39.3

**SPECrate2017_fp_base** = 38.7

### Hardware

- **CPU Name**: Intel Xeon E-2186G
- **Max MHz.**: 4700
- **Nominal**: 3800
- **Enabled**: 6 cores, 1 chip
- **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**: 12 MB I+D on chip per chip
- **Other**: None
- **Memory**: 64 GB (4 x 16 GB 2Rx8 PC4-2666V-E)
- **Storage**: 1 x SATA M.2 SSD, 240GB
- **Others**: None

### Software

- **OS**: SUSE Linux Enterprise Server 15 4.12.14-23-default
- **Compiler**: C/C++: Version 19.0.0.117 of Intel C/C++ Compiler for Linux;
  Fortran: Version 19.0.0.117 of Intel Fortran Compiler for Linux
- **Parallel**: No
- **Firmware**:
  - Fujitsu BIOS Version V5.0.0.13 R1.4.0 for D3673-A1x. Released Nov-2018 tested as V5.0.0.13 R1.0.0 for D3673-A1x Sep-2018
- **File System**: xfs
- **System State**: Run level 3 (multi-user)
- **Base Pointers**: 64-bit
- **Peak Pointers**: 64-bit
- **Others**: None

---

**503.bwaves_r** 6
**507.cactuBSSN_r** 6
**508.namd_r** 6
**510.parest_r** 6
**511.povray_r** 6
**519.lbm_r** 6
**521.wrf_r** 6
**526.blender_r** 6
**527.cam4_r** 6
**538.imagick_r** 6
**544.nab_r** 6
**549.fotonik3d_r** 6
**554.roms_r** 6

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**SPECrate2017_fp_base** (38.7)

**SPECrate2017_fp_peak** (39.3)
SPEC CPU2017 Floating Point Rate Result

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SPECrate2017_fp_base = 38.7
SPECrate2017_fp_peak = 39.3

Results Table

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</tbody>
</table>

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

Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset 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"
Process tuning settings:
echo 500000 > /proc/sys/kernel/sched_cfs_bandwidth_slice_us

General Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/Benchmark/speccpu2017-ic19-20181011/icc19-lib/intel64"

Binaries compiled on a system with 2x Intel Xeon Silver 4108 CPU + 384GB RAM
memory using SUSE Linux Enterprise Server 12 SP2
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)
(Continued on next page)
Fujitsu
PRIMERGY TX1320 M4, Intel Xeon E-2186G, 3.80GHz

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Copyright 2017-2018 Standard Performance Evaluation Corporation

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Test Date: Oct-2018
Hardware Availability: Nov-2018
Software Availability: Sep-2018

General Notes (Continued)

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:
Hyper-Threading = Disabled
Software Guard Extensions (SGX) = Disabled
Fan Control = Full
Race To Halt (RTH) = Disabled
Energy Efficient Turbo = Disabled
Package C-State Un-demotion = Enabled
DMI Link ASPM Control = Disabled
Native PCIE Enable = Disabled

Sysinfo program /home/Benchmark/speccpu2017-ic19-20181011/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bdc091c0f
running on TX1320M4 Sat Oct 27 03:20:24 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) E-2186G CPU @ 3.80GHz
  1 "physical id"s (chips)
  6 "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 : 6
siblings : 6
physical 0: cores 0 1 2 3 4 5

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 6
On-line CPU(s) list: 0-5
Thread(s) per core: 1
Core(s) per socket: 6
Socket(s): 1
NUMA node(s): 1
Vendor ID: GenuineIntel

(Continued on next page)
Platform Notes (Continued)

CPU family: 6  
Model: 158  
Model name: Intel(R) Xeon(R) E-2186G CPU @ 3.80GHz  
Stepping: 10  
CPU MHz: 3800.000  
CPU max MHz: 4700.0000  
CPU min MHz: 800.0000  
BogoMIPS: 7584.00  
Virtualization: VT-x  
L1d cache: 32K  
L1i cache: 32K  
L2 cache: 256K  
L3 cache: 12288K  
NUMA node0 CPU(s): 0-5  
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 cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb invpcid_single pti tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid l1tf dtc eptvd tsc_ppe achecker smap clflushopt intel_pt xsaveopt xsavec xgetbv1 xsave xread xstore xsetbv ibpb ibrs ibrs dtherm ida arat pln pts hwp hwp_notify hwp_act_window hwp_epp ssbd

/proc/cpuinfo cache data
  cache size : 12288 KB

From numactl --hardware 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
  node 0 size: 63915 MB
  node 0 free: 63428 MB
  node distances:
    node 0
    0: 10

From /proc/meminfo
  MemTotal: 65449524 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
  os-release:
    NAME="SLES"
    VERSION="15"

(Continued on next page)
Platform Notes (Continued)

VERSION_ID="15"
PRETTY_NAME="SUSE Linux Enterprise Server 15"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15"

uname -a:
Linux TX1320M4 4.12.14-23-default #1 SMP Tue May 29 21:04:44 UTC 2018 (cd0437b) x86_64
x86_64 x86_64 GNU/Linux

run-level 3 Oct 27 03:16

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 FUJITSU // American Megatrends Inc. V5.0.0.13 R1.0.0 for D3673-A1x
09/14/2018
Memory:
4x SK Hynix HMA82GU6CJR8N-VK 16 GB 2 rank 2667

Compiler Version Notes

CC 519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base) 550.tar_r(base)
-----------------------------------------------------------------------
icc (ICC) 19.0.0.117 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
-----------------------------------------------------------------------

CC 519.lbm_r(peak) 538.imagick_r(peak) 544.nab_r(peak) 550.tar_r(peak)
-----------------------------------------------------------------------
icc (ICC) 19.0.0.117 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
-----------------------------------------------------------------------

CXXC 508.namd_r(base) 510.parest_r(base)
(Continued on next page)
## Compiler Version Notes (Continued)

```plaintext
icpc (ICC) 19.0.0.117 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

```plaintext
CXXC 508.namd_r(peak) 510.parest_r(peak)
```

```plaintext
icpc (ICC) 19.0.0.117 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

```plaintext
---
CC 511.povray_r(base) 526.blender_r(base)
```

```plaintext
icpc (ICC) 19.0.0.117 20180804
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icc (ICC) 19.0.0.117 20180804
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CC 511.povray_r(peak) 526.blender_r(peak)
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Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
icc (ICC) 19.0.0.117 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
ifort (IFORT) 19.0.0.117 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

```plaintext
---
FC 507.cactuBSSN_r(base)
```

```plaintext
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```plaintext
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FC 507.cactuBSSN_r(peak)
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ifort (IFORT) 19.0.0.117 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

---

CC  521.wrf_r(base) 527.cam4_r(base)

ICC (ICC) 19.0.0.117 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

---

CC  521.wrf_r(peak) 527.cam4_r(peak)

ICC (ICC) 19.0.0.117 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

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### Base Compiler Invocation

C benchmarks:
- icc -m64 -std=c11

C++ benchmarks:
- icpc -m64

(Continued on next page)
Base Compiler Invocation (Continued)

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
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 -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs

(Continued on next page)
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<td>Tested by:</td>
<td>Fujitsu</td>
<td>Software Availability:</td>
<td>Sep-2018</td>
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**Base Optimization Flags (Continued)**

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qqopt=mem-layout-trans=3 -auto -nostandard-realloc-lhs

Benchmarks using both C and C++:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qqopt=mem-layout-trans=3

Benchmarks using Fortran, C, and C++:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qqopt=mem-layout-trans=3 -auto -nostandard-realloc-lhs

**Peak 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

**Peak Portability Flags**

Same as Base Portability Flags

**Peak Optimization Flags**

C benchmarks:

(Continued on next page)
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**CPU2017 License:** 19  
**Test Sponsor:** Fujitsu  
**Tested by:** Fujitsu

**Test Date:** Oct-2018  
**Hardware Availability:** Nov-2018  
**Software Availability:** Sep-2018

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### Peak Optimization Flags (Continued)

- **519.lbm_r:** basepeak = yes
- **538.imagick_r:** basepeak = yes
- **544.nab_r:** basepeak = yes

**C++ benchmarks:**

- **508.namd_r:**
  - -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
  - -no-prec-div -qopt-prefetch -ffinite-math-only
  - -qopt-mem-layout-trans=3

- **510.parest_r:** basepeak = yes

**Fortran benchmarks:**

- **503.bwaves_r:** basepeak = yes
- **549.fotonik3d_r:** basepeak = yes

- **554.roms_r:**
  - -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
  - -no-prec-div -qopt-prefetch -ffinite-math-only
  - -qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs

**Benchmarks using both Fortran and C:**

- -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
  - -no-prec-div -qopt-prefetch -ffinite-math-only
  - -qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs

**Benchmarks using both C and C++:**

- **511.povray_r:**
  - -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
  - -no-prec-div -qopt-prefetch -ffinite-math-only
  - -qopt-mem-layout-trans=3

- **526.blender_r:** basepeak = yes

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

- **507.cactuBSSN_r:** basepeak = yes

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The flags files that were used to format this result can be browsed at:

Fujitsu
PRIMERGY TX1320 M4, Intel Xeon E-2186G, 3.80GHz

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You can also download the XML flags sources by saving the following links:

- http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0.2-CFL-RevA.xml

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

Tested with SPEC CPU2017 v1.0.2 on 2018-10-26 14:20:24-0400.