**Huawei CH242 V5 (Intel Xeon Gold 5115)**

**CPU2017 License:** 3175  
**Test Sponsor:** Huawei  
**Tested by:** Huawei  
**Hardware Availability:** Jul-2017  
**Software Availability:** Jan-2018  
**Test Date:** Jun-2018

<table>
<thead>
<tr>
<th>SPECrate2017_fp_base</th>
<th>SPECrate2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>204</td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon Gold 5115  
- **Max MHz.:** 3200  
- **Nominal:** 2400  
- **Enabled:** 40 cores, 4 chips, 2 threads/core  
- **Orderable:** 2.4 chips  
- **Cache L1:** 32 KB I + 32 KB D on chip per core  
- **L2:** 1 MB I+D on chip per core  
- **Cache L3:** 13.75 MB I+D on chip per chip  
- **Other:** None  
- **Memory:** 1536 GB (48 x 32 GB 2Rx4 PC4-2666V-R, running at 2400)  
- **Storage:** 1 x 1200 GB SAS, 10000 RPM  
- **Other:** None

### Software

- **OS:** Red Hat Enterprise Linux Server release 7.3 (Maipo)  
- **Compiler:** C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux; Fortran: Version 18.0.0.128 of Intel Fortran Compiler for Linux  
- **Firmware:** Version 0.84 Released Mar-2018  
- **File System:** ext4  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** 64-bit  
- **Other:** None
SPECPowerCPU2017 Floating Point Rate Result

Huawei
Huawei CH242 V5 (Intel Xeon Gold 5115)

SPECrate2017_fp_base = 200
SPECrate2017_fp_peak = 204

Results Table

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<td>1189</td>
<td>107</td>
<td>1174</td>
<td>108</td>
</tr>
</tbody>
</table>

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 = "/spec/lib/ia32:/spec/lib/intel64:/spec/je5.0.1-32:/spec/je5.0.1-64"
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
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)

(Continued on next page)
Huawei

Huawei CH242 V5 (Intel Xeon Gold 5115)

| SPECrate2017_fp_base = 200 |
| SPECrate2017_fp_peak = 204 |

CPU2017 License: 3175  
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Hardware Availability: Jul-2017  
Software Availability: Jan-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:
Power Policy Set to Performance
SNC Set to Enabled
IMC Interleaving Set to 1-way Interleave
XPT Prefetch Set to Enabled
Sysinfo program /spec/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bccc091c0f
running on localhost.localdomain Fri Jun 15 11:49:57 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 5115 CPU @ 2.40GHz
  4 "physical id"s (chips)
  80 "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 : 10
siblings : 20
  physical 0: cores 0 1 2 3 4 8 9 10 11 12
  physical 1: cores 0 1 2 3 4 8 9 10 11 12
  physical 2: cores 0 1 2 3 4 8 9 10 11 12
  physical 3: cores 0 1 2 3 4 8 9 10 11 12

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 80
On-line CPU(s) list: 0-79
Thread(s) per core: 2
Core(s) per socket: 10
Socket(s): 4
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6

(Continued on next page)
## SPEC CPU2017 Floating Point Rate Result

### Huawei CH242 V5 (Intel Xeon Gold 5115)

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</table>

**SPECrate2017_fp_base** = 200

**SPECrate2017_fp_peak** = 204

### Platform Notes (Continued)

```plaintext
Model: 85
Model name: Intel(R) Xeon(R) Gold 5115 CPU @ 2.40GHz
Stepping: 4
CPU MHz: 2400.000
BogoMIPS: 4805.75
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 14080K
NUMA node0 CPU(s): 0-9,40-49
NUMA node1 CPU(s): 10-19,50-59
NUMA node2 CPU(s): 20-29,60-69
NUMA node3 CPU(s): 30-39,70-79
```

/proc/cpuinfo cache data
- cache size: 14080 KB

From numactl --hardware
```
WARNING: a numactl 'node' might or might not correspond to a physical chip.
available: 4 nodes (0-3)
node 0 cpus: 0 1 2 3 4 5 6 7 8 9 40 41 42 43 44 45 46 47 48 49
node 0 size: 371811 MB
node 0 free: 371811 MB
node 1 cpus: 10 11 12 13 14 15 16 17 18 19 50 51 52 53 54 55 56 57 58 59
node 1 size: 392537 MB
node 1 free: 392537 MB
node 2 cpus: 20 21 22 23 24 25 26 27 28 29 60 61 62 63 64 65 66 67 68 69
node 2 size: 392537 MB
node 2 free: 392537 MB
node 3 cpus: 30 31 32 33 34 35 36 37 38 39 70 71 72 73 74 75 76 77 78 79
node 3 size: 392537 MB
node 3 free: 392537 MB
node distances:
  node 0 1 2 3
  0: 10 21 31 21
  1: 21 10 21 31
  2: 31 21 10 21
  3: 21 31 21 10
```

From /proc/meminfo
```
MemTotal: 1584313784 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
```

From /etc/*release* /etc/*version*
```
os-release:
```

(Continued on next page)
## Huawei

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### Platform Notes

**NAME**="Red Hat Enterprise Linux Server"  
**VERSION="7.3 (Maipo)"**  
**ID="rhel"**  
**ID_LIKE="fedora"**  
**VERSION_ID="7.3"**  
**PRETTY_NAME="Red Hat Enterprise Linux Server 7.3 (Maipo)"**  
**ANSI_COLOR="0;31"**  
**CPE_NAME="cpe:/o:redhat:enterprise_linux:7.3:GA:server"**  
redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)  
system-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)  

```
uname -a:
Linux localhost.localdomain 3.10.0-693.11.6.el7.x86_64 #1 SMP Thu Dec 28 14:23:39 EST 2017 x86_64 x86_64 x86_64 GNU/Linux
```

**run-level** 3 Jun 15 01:30

**SPEC is set to:** /spec  
```
Filesystem  Type  Size  Used Avail Use% Mounted on
/dev/sda4      xfs   600G   53G  547G   9% /
```

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 INSYDE Corp. 0.84 03/26/2018  
Memory:  
40x Hynix HMA84GR7AFR4N-VK 32 GB 2 rank 2666, configured at 2400  
8x Samsung M393A4K40BB2-CTD 32 GB 2 rank 2666, configured at 2400

(End of data from sysinfo program)

### Compiler Version Notes

```
==============================================================================
CC  519.lbm_r(base) 538.imagick_r(base, peak) 544.nab_r(base)
==============================================================================
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
==============================================================================
```

```
==============================================================================
CC  519.lbm_r(peak) 544.nab_r(peak)
==============================================================================
icc (ICC) 18.0.0 20170811
```

(Continued on next page)
Huawei

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Compiler Version Notes (Continued)

Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

CXXC 508.namd_r(base) 510.parest_r(base)
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

CXXC 508.namd_r(peak) 510.parest_r(peak)
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

CC 511.povray_r(base) 526.blender_r(base)
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

CC 511.povray_r(peak) 526.blender_r(peak)
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

FC 507.cactuBSSN_r(base)
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

(Continued on next page)
### Huawei

**Huawei CH242 V5 (Intel Xeon Gold 5115)**

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**Compiler Version Notes (Continued)**

```
FC  507.cactuBSSN_r(peak)  
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

```
FC  503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(base)  
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

```
FC  554.roms_r(peak)  
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

```
CC  521.wrf_r(base) 527.cam4_r(base)  
ifort (IFORT) 18.0.0 20170811
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```
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Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

**Base Compiler Invocation**

C benchmarks:

```
icc
```

(Continued on next page)
Huawei
Huawei CH242 V5 (Intel Xeon Gold 5115)

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<tr>
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Base Compiler Invocation (Continued)

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using both C and C++:
icpc icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort

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

(Continued on next page)
## SPEC CPU2017 Floating Point Rate Result

### Huawei

Huawei CH242 V5 (Intel Xeon Gold 5115)

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- **Software Availability:** Jan-2018

### Base Optimization Flags (Continued)

- **Fortran benchmarks:**
  -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte

- **Benchmarks using both Fortran and C:**
  -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte

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

- **Benchmarks using Fortran, C, and C++:**
  -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte

### Base Other Flags

- **C benchmarks:**
  -m64 -std=c11

- **C++ benchmarks:**
  -m64

- **Fortran benchmarks:**
  -m64

- **Benchmarks using both Fortran and C:**
  -m64 -std=c11

- **Benchmarks using both C and C++:**
  -m64 -std=c11

- **Benchmarks using Fortran, C, and C++:**
  -m64 -std=c11

### Peak Compiler Invocation

- **C benchmarks:**
  icc

(Continued on next page)
Huawei CH242 V5 (Intel Xeon Gold 5115)

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**CPU2017 License**: 3175

**Test Sponsor**: Huawei

**Tested by**: Huawei

**Test Date**: Jun-2018

**Hardware Availability**: Jul-2017

**Software Availability**: Jan-2018

---

**Peak Compiler Invocation** (Continued)

C++ benchmarks:

icpc

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

ifort icc

Benchmarks using both C and C++:

icpc icc

Benchmarks using Fortran, C, and C++:

icpc icc ifort

---

**Peak Portability Flags**

Same as Base Portability Flags

---

**Peak Optimization Flags**

C benchmarks:

519.lbm_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

538.imagick_r: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3

544.nab_r: Same as 519.lbm_r

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

(Continued on next page)
Huawei

Huawei CH242 V5 (Intel Xeon Gold 5115)

<table>
<thead>
<tr>
<th>SPECrate2017_fp_base</th>
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<td>SPECrate2017_fp_peak</td>
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CPU2017 License: 3175
Test Sponsor: Huawei
Test Date: Jun-2018
Hardware Availability: Jul-2017
Tested by: Huawei
Software Availability: Jan-2018

Peak Optimization Flags (Continued)

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 -nostandard-realloc-lhs
-align array32byte

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 -nostandard-realloc-lhs -align array32byte

Benchmarks using both C and C++:

    -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
    -no-prec-div -qopt-prefetch -ffinite-math-only

Benchmarks using Fortran, C, and C++:

507.cactuBSSN_r.basepeak = yes

Peak Other Flags

C benchmarks:
-m64 -std=c11

C++ benchmarks:
-m64

Fortran benchmarks:
-m64

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

Benchmarks using both C and C++:
-m64 -std=c11

Benchmarks using Fortran, C, and C++:
-m64 -std=c11
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The flags files that were used to format this result can be browsed at


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

- http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.xml

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