## SPEC CPU®2017 Floating Point Rate Result

**Huawei**

(Test Sponsor: Peng Cheng Laboratory)

Huawei TaiShan 200 Server (Model 2480)  
(2.6 GHz, Huawei Kunpeng 920 7260)

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base = 501</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak = Not Run</td>
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<table>
<thead>
<tr>
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<th>Test Date: May-2020</th>
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<tbody>
<tr>
<td>Test Sponsor: Peng Cheng Laboratory</td>
<td>Hardware Availability: Jan-2020</td>
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<tr>
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<td>Software Availability: Jul-2020</td>
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<tr>
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<tr>
<td>507.cactuBSSN_r 256</td>
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<tr>
<td>508.namd_r 256</td>
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<tr>
<td>510.parest_r 256</td>
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<tr>
<td>527.cam4_r 256</td>
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<td>538.imagick_r 256</td>
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<tr>
<td>544.nab_r 256</td>
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</tr>
<tr>
<td>549.fotonik3d_r 256</td>
<td></td>
</tr>
<tr>
<td>554.roms_r 256</td>
<td></td>
</tr>
</tbody>
</table>

### Hardware

**CPU Name:** Huawei Kunpeng 920 7260  
**Max MHz:** 2600  
**Nominal:** 2600  
**Enabled:** 256 cores, 4 chips  
**Orderable:** 1,2,3,4 chips  
**Cache L1:** 64 KB I + 64 KB D on chip per core  
**L2:** 512 KB I+D on chip per core  
**L3:** 64 MB I+D on chip per chip  
**Other:** None  
**Memory:** 1 TB (32 x 32 GB 2Rx4 PC4-2933Y-R)  
**Storage:** 1 x 960 GB SAS SSD  
**Other:** None  
**Power Management:** BIOS set to prefer performance at the cost of additional power usage

### Software

**OS:** kylin release 10 (Azalea)  
**Compiler:** C/C++/Fortran: Version 9.1.0 of GCC, the GNU Compiler Collection  
**Parallel:** No  
**Firmware:** Huawei Corp. Version 1.20 released Apr-2020  
**File System:** xfs  
**System State:** Run level 5 (multi-user graphical)  
**Base Pointers:** 64-bit  
**Peak Pointers:** Not Applicable  
**Other:** None
**Huawei TaiShan 200 Server (Model 2480)**

(2.6 GHz, Huawei Kunpeng 920 7260)

<table>
<thead>
<tr>
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<td>1679</td>
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</tr>
</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"

**Environment Variables Notes**

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

LD_LIBRARY_PATH =
"/usr/local/gcc-9.1.0/lib64/:/usr/local/gcc-9.1.0/lib:/lib64:"

**General Notes**

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

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)

(Continued on next page)
SPEC CPU®2017 Floating Point Rate Result

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Huawei
(Test Sponsor: Peng Cheng Laboratory)
Huawei TaiShan 200 Server (Model 2480)
(2.6 GHz, Huawei Kunpeng 920 7260)

SPECrater®2017_fp_base = 501
SPECrater®2017_fp_peak = Not Run

CPU2017 License: 5036
Test Sponsor: Peng Cheng Laboratory
Tested by: Peng Cheng Laboratory

Test Date: May-2020
Hardware Availability: Jan-2020
Software Availability: Jul-2020

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.
NA: 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
Custom Refresh Rate Set to 64ms
CPU Prefetcher Set to Enabled
L3 Cache Model Set to in :private out:private

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edbbe6e46a485a0011
running on localhost.localdomain Sun Jun 21 10:31:05 2020

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
*
* Did not identify cpu model. If you would
* like to write your own sysinfo program, see
* www.spec.org/cpu2017/config.html#sysinfo
*
*
* 0 "physical id" tags found. Perhaps this is an older system,
* or a virtualized system. Not attempting to guess how to
* count chips/cores for this system.
*
  256 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

From lscpu:
Architecture: aarch64
CPU op-mode(s): 64-bit
Byte Order: Little Endian
CPU(s): 256
On-line CPU(s) list: 0-255
Thread(s) per core: 1
Core(s) per socket: 64
Socket(s): 4

(Continued on next page)
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Platform Notes (Continued)

NUMA node(s): 8
Vendor ID: HiSilicon
Model: 0
Model name: Kunpeng-920
Stepping: 0x1
BogoMIPS: 200.00
L1d cache: 16 MiB
L1i cache: 16 MiB
L2 cache: 128 MiB
L3 cache: 512 MiB
NUMA node0 CPU(s): 0-31
NUMA node1 CPU(s): 32-63
NUMA node2 CPU(s): 64-95
NUMA node3 CPU(s): 96-127
NUMA node4 CPU(s): 128-159
NUMA node5 CPU(s): 160-191
NUMA node6 CPU(s): 192-223
NUMA node7 CPU(s): 224-255
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl
Vulnerability Spectre v1: Mitigation; __user pointer sanitization
Vulnerability Spectre v2: Not affected
Vulnerability Tsx async abort: Not affected
Flags: fp asimd evtstrm aes pmull sha1 sha2 crc32 atomics fphp asimdhp cpuid asimdrdm jscvt fcma dcpop asimdfhm ssbs

From /proc/meminfo
MemTotal: 1071619840 kB
HugePages_Total: 100000
Hugepagesize: 2048 kB

From /etc/*release*/etc/*version*
kylin-release: kylin release 10 (Azalea)

(Continued on next page)
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Platform Notes (Continued)

system-release: kylin release 10 (Azalea)

uname -a:
Linux localhost.localdomain 4.19.90-5.ky10.aarch64 #1 SMP Wed Apr 8 09:34:13 CST 2020
aarch64 aarch64 aarch64 GNU/Linux

Kernel self-reported vulnerability status:

itlb_multihit: Not affected
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
CVE-2017-5754 (Meltdown): Not affected
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Not affected
tsx_async_abort: Not affected

run-level 5 Jun 19 18:13

SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/klas00-home xfs 838G 18G 821G 3% /home

From /sys/devices/virtual/dmi/id
BIOS: Huawei Corp. 1.20 04/14/2020
Vendor: Huawei
Product: TaiShan 200 (Model 2480)
Serial: 2102312UXX10KC000007

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.
Memory:
32x Hynix HMA84GR7CJR4N-WM 32 GB 2 rank 2933

(End of data from sysinfo program)
The sysinfo is missing the cpu name, the processor under test is Huawei Kunpeng 920 7260. The L3 capacity is 64MB per processor for Huawei Kunpeng 920 7260 processor for a SUT total of 256 MiB.
## Specification

### Test Sponsor:
Peng Cheng Laboratory

### Huawei TaiShan 200 Server (Model 2480)
(Huawei Kunpeng 920 7260)

| SPECrate\(^\text{®}2017\) fp\(_{\text{base}}\) | 501 |
| SPECrate\(^\text{®}2017\) fp\(_{\text{peak}}\) | Not Run |

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5036

### Test Date:
May-2020

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Jan-2020

### Software Availability:
Jul-2020

### Compiled By:
Peng Cheng Laboratory

### Compiler Version Notes

<table>
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<th>Source</th>
<th>Compiler</th>
<th>Version</th>
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<tr>
<td>C</td>
<td>519.lbm(_r)(base) 538.imagick(_r)(base) 544.nab(_r)(base)</td>
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</tr>
<tr>
<td>C++</td>
<td>508.namd(_r)(base) 510.parest(_r)(base)</td>
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<td>C++, C</td>
<td>511.povray(_r)(base) 526.blender(_r)(base)</td>
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Test Sponsor: Peng Cheng Laboratory
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Compiler Version Notes (Continued)

Thread model: posix
gcc version 9.1.0 (GCC)

-----------------------------------------------
C++, C, Fortran | 507.cactuBSSN_r(base)

Using built-in specs.
COLLECT_GCC=/usr/local/gcc-9.1.0/bin/g++
COLLECT_LTO_WRAPPER=/usr/local/gcc-9.1.0/libexec/gcc/aarch64-unknown-linux-gnu/9.1.0/lto-wrapper
Target: aarch64-unknown-linux-gnu
Configured with: ../configure --enable-checking=release
--enable-languages=c,c++,fortran --disable-multilib
--prefix=/usr/local/gcc-9.1.0
Thread model: posix
gcc version 9.1.0 (GCC)
Using built-in specs.
COLLECT_GCC=/usr/local/gcc-9.1.0/bin/gcc
COLLECT_LTO_WRAPPER=/usr/local/gcc-9.1.0/libexec/gcc/aarch64-unknown-linux-gnu/9.1.0/lto-wrapper
Target: aarch64-unknown-linux-gnu
Configured with: ../configure --enable-checking=release
--enable-languages=c,c++,fortran --disable-multilib
--prefix=/usr/local/gcc-9.1.0
Thread model: posix
gcc version 9.1.0 (GCC)
Using built-in specs.
COLLECT_GCC=/usr/local/gcc-9.1.0/bin/gfortran
COLLECT_LTO_WRAPPER=/usr/local/gcc-9.1.0/libexec/gcc/aarch64-unknown-linux-gnu/9.1.0/lto-wrapper
Target: aarch64-unknown-linux-gnu
Configured with: ../configure --enable-checking=release
--enable-languages=c,c++,fortran --disable-multilib
--prefix=/usr/local/gcc-9.1.0
Thread model: posix
gcc version 9.1.0 (GCC)

==============================================================================
Fortran         | 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)

Using built-in specs.
COLLECT_GCC=/usr/local/gcc-9.1.0/bin/gfortran
COLLECT_LTO_WRAPPER=/usr/local/gcc-9.1.0/libexec/gcc/aarch64-unknown-linux-gnu/9.1.0/lto-wrapper
Target: aarch64-unknown-linux-gnu
Configured with: ../configure --enable-checking=release
--enable-languages=c,c++,fortran --disable-multilib
--prefix=/usr/local/gcc-9.1.0
Thread model: posix

class version 9.1.0 (GCC)

==============================================================================

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SPECCPU®2017 Floating Point Rate Result

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Compiler Version Notes (Continued)

gcc version 9.1.0 (GCC)

Fortran, C | 521.wrf_r(base) 527.cam4_r(base)

Using built-in specs.
COLLECT_GCC=/usr/local/gcc-9.1.0/bin/gfortran
COLLECT_LTO_WRAPPER=/usr/local/gcc-9.1.0/libexec/gcc/aarch64-unknown-linux-gnu/9.1.0/lto-wrapper
Target: aarch64-unknown-linux-gnu
Configured with: ../configure --enable-checking=release
 --enable-languages=c,c++,fortran --disable-multilib
 --prefix=/usr/local/gcc-9.1.0
Thread model: posix

gcc version 9.1.0 (GCC)
Using built-in specs.
COLLECT_GCC=/usr/local/gcc-9.1.0/bin/gcc
COLLECT_LTO_WRAPPER=/usr/local/gcc-9.1.0/libexec/gcc/aarch64-unknown-linux-gnu/9.1.0/lto-wrapper
Target: aarch64-unknown-linux-gnu
Configured with: ../configure --enable-checking=release
 --enable-languages=c,c++,fortran --disable-multilib
 --prefix=/usr/local/gcc-9.1.0
Thread model: posix

gcc version 9.1.0 (GCC)

Base Compiler Invocation

C benchmarks:
gcc

C++ benchmarks:
g++

Fortran benchmarks:
gfortran

Benchmarks using both Fortran and C:
gfortran gcc

Benchmarks using both C and C++:
g++ gcc

Benchmarks using Fortran, C, and C++:
g++ gcc gfortran
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CPU2017 License: 5036  
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**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_CASE_FLAG -fconvert=big-endian -DSPEC_LP64  
- 526.blender_r: -funsigned-char -DSPEC_LINUX -DSPEC_LP64  
- 527.cam4_r: -DSPEC_CASE_FLAG -DSPEC_LP64  
- 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:
- -mabi=lp64 -std=c99 -O3 -g -pipe -flto -march=armv8.2-a+lse  
  -fno-PIE -fomit-frame-pointer -no-pie -funroll-loops

C++ benchmarks:
- -mabi=lp64 -O3 -g -pipe -flto -march=armv8.2-a+lse -fno-PIE  
  -fomit-frame-pointer -no-pie -funroll-loops

Fortran benchmarks:
- -mabi=lp64 -O3 -g -pipe -flto -march=armv8.2-a+lse -fno-PIE  
  -fomit-frame-pointer -no-pie -funroll-loops

Benchmarks using both Fortran and C:
- -mabi=lp64 -std=c99 -O3 -g -pipe -flto -march=armv8.2-a+lse  
  -fno-PIE -fomit-frame-pointer -no-pie -funroll-loops

Benchmarks using both C and C++:
- -mabi=lp64 -std=c99 -O3 -g -pipe -flto -march=armv8.2-a+lse  
  -fno-PIE -fomit-frame-pointer -no-pie -funroll-loops

Benchmarks using Fortran, C, and C++:
- -mabi=lp64 -std=c99 -O3 -g -pipe -flto -march=armv8.2-a+lse  
  -fno-PIE -fomit-frame-pointer -no-pie -funroll-loops

The flags files that were used to format this result can be browsed at
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You can also download the XML flags sources by saving the following links:


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Tested with SPEC CPU®2017 v1.1.0 on 2020-06-20 22:31:04-0400.
Report generated on 2020-07-07 14:30:03 by CPU2017 PDF formatter v6255.
Originally published on 2020-07-07.