



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)

SPECrate®2017_fp_base = 516

SPECrate®2017_fp_peak = Not Run

CPU2017 License: 5036

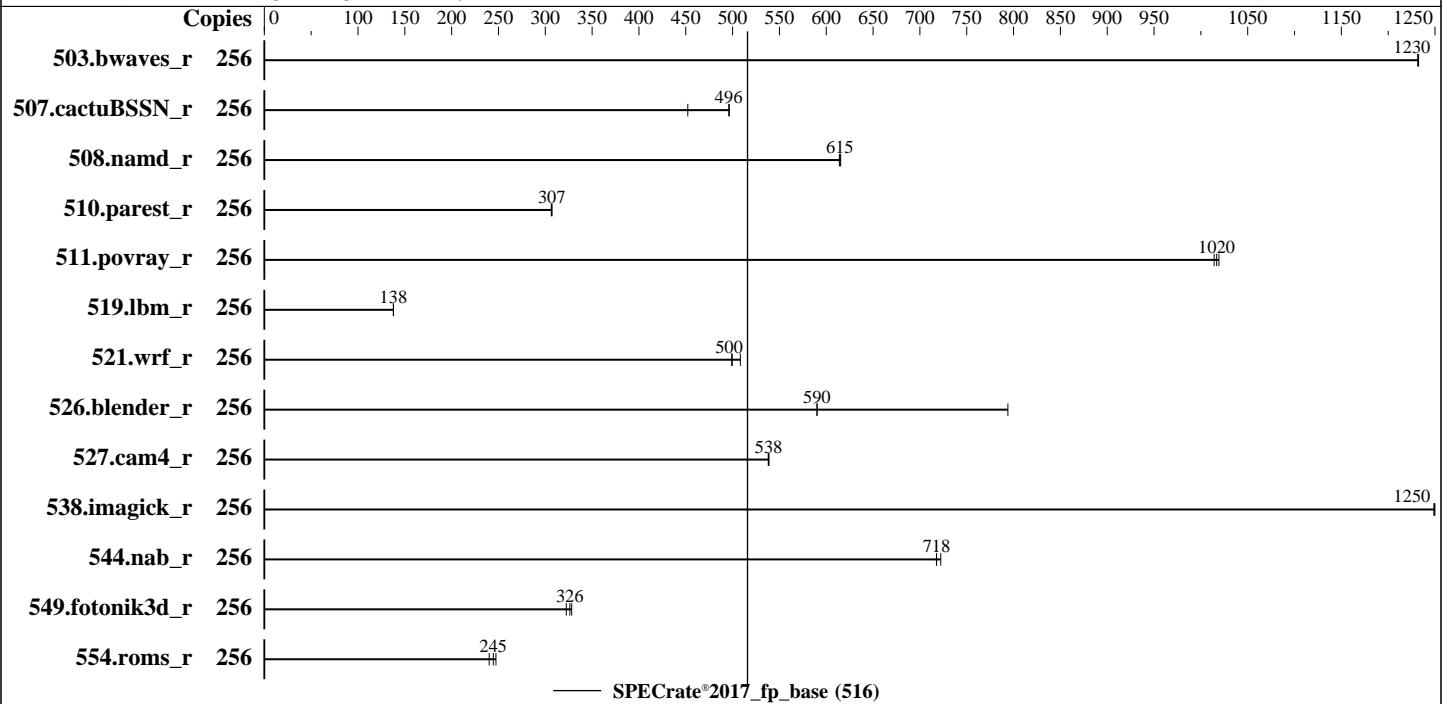
Test Sponsor: Peng Cheng Laboratory

Tested by: Peng Cheng Laboratory

Test Date: May-2020

Hardware Availability: Jan-2020

Software Availability: Jul-2020



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

Software

OS: kylin release 10 (Azalea)
 4.19.90-5.ky10.aarch64
 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
 Power Management: BIOS set to prefer performance at the cost of additional power usage



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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	256	2083	1230	2084	1230	<u>2084</u>	<u>1230</u>							
507.cactuBSSN_r	256	717	452	<u>654</u>	<u>496</u>	653	496							
508.namd_r	256	395	615	396	614	<u>396</u>	<u>615</u>							
510.parest_r	256	2181	307	<u>2182</u>	<u>307</u>	2186	306							
511.povray_r	256	589	1010	<u>588</u>	<u>1020</u>	586	1020							
519.lbm_r	256	1956	138	<u>1957</u>	<u>138</u>	1958	138							
521.wrf_r	256	1128	508	1149	499	<u>1148</u>	<u>500</u>							
526.blender_r	256	491	794	<u>661</u>	<u>590</u>	661	590							
527.cam4_r	256	<u>832</u>	<u>538</u>	832	538	831	539							
538.imagick_r	256	510	1250	509	1250	<u>510</u>	<u>1250</u>							
544.nab_r	256	<u>600</u>	<u>718</u>	600	718	597	722							
549.fotonik3d_r	256	<u>3058</u>	<u>326</u>	3040	328	3094	322							
554.roms_r	256	1645	247	1694	240	<u>1664</u>	<u>245</u>							

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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)

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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 295195f888a3d7edble6e46a485a0011

running on localhost.localdomain Sat Jun 20 17:45:02 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

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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 asimddp asimdfhm ssbs

```

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.

From /proc/meminfo

```

MemTotal: 1071619840 kB
HugePages_Total: 100000
Hugepagesize: 2048 kB

```

From /etc/*release* /etc/*version*

```

kylin-release: kylin release 10 (Azalea)
os-release:
  NAME="kylin"
  VERSION="10 (Azalea)"
  ID="kylin"
  VERSION_ID="10"
  PRETTY_NAME="kylin 10 (Azalea)"
  ANSI_COLOR="0;31"

```

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Platform Notes (Continued)

```
system-release: kylin release 10 (Azalea)
system-release-cpe: cpe:/o:kylin:kylin:10:ga:server
```

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.



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Compiler Version Notes

=====
C | 519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
=====

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)
=====

=====
C++ | 508.namd_r(base) 510.parest_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)
=====

=====
C++, C | 511.povray_r(base) 526.blender_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

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Thread model: posix

gcc version 9.1.0 (GCC)

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Target: aarch64-unknown-linux-gnu

Configured with: ../configure --enable-checking=release

--enable-languages=c,c++,fortran --disable-multilib

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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

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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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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 -Ofast -g -pipe -flto -march=armv8.2-a+lse
-fno-PIE -fomit-frame-pointer -no-pie -funroll-loops

C++ benchmarks:

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

Fortran benchmarks:

-mabi=lp64 -Ofast -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 -Ofast -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 -Ofast -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 -Ofast -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

<http://www.spec.org/cpu2017/flags/gcc.2020-06-30.html>

<http://www.spec.org/cpu2017/flags/PCL-Platform-Settings-Kunpeng-V1.0-revF.html>



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

<http://www.spec.org/cpu2017/flags/gcc.2020-06-30.xml>

<http://www.spec.org/cpu2017/flags/PCL-Platform-Settings-Kunpeng-V1.0-revF.xml>

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

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