



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12  
(4.05 GHz, AMD EPYC 9274F)

SPECrate®2017\_fp\_base = 798

SPECrate®2017\_fp\_peak = 807

CPU2017 License: 9016

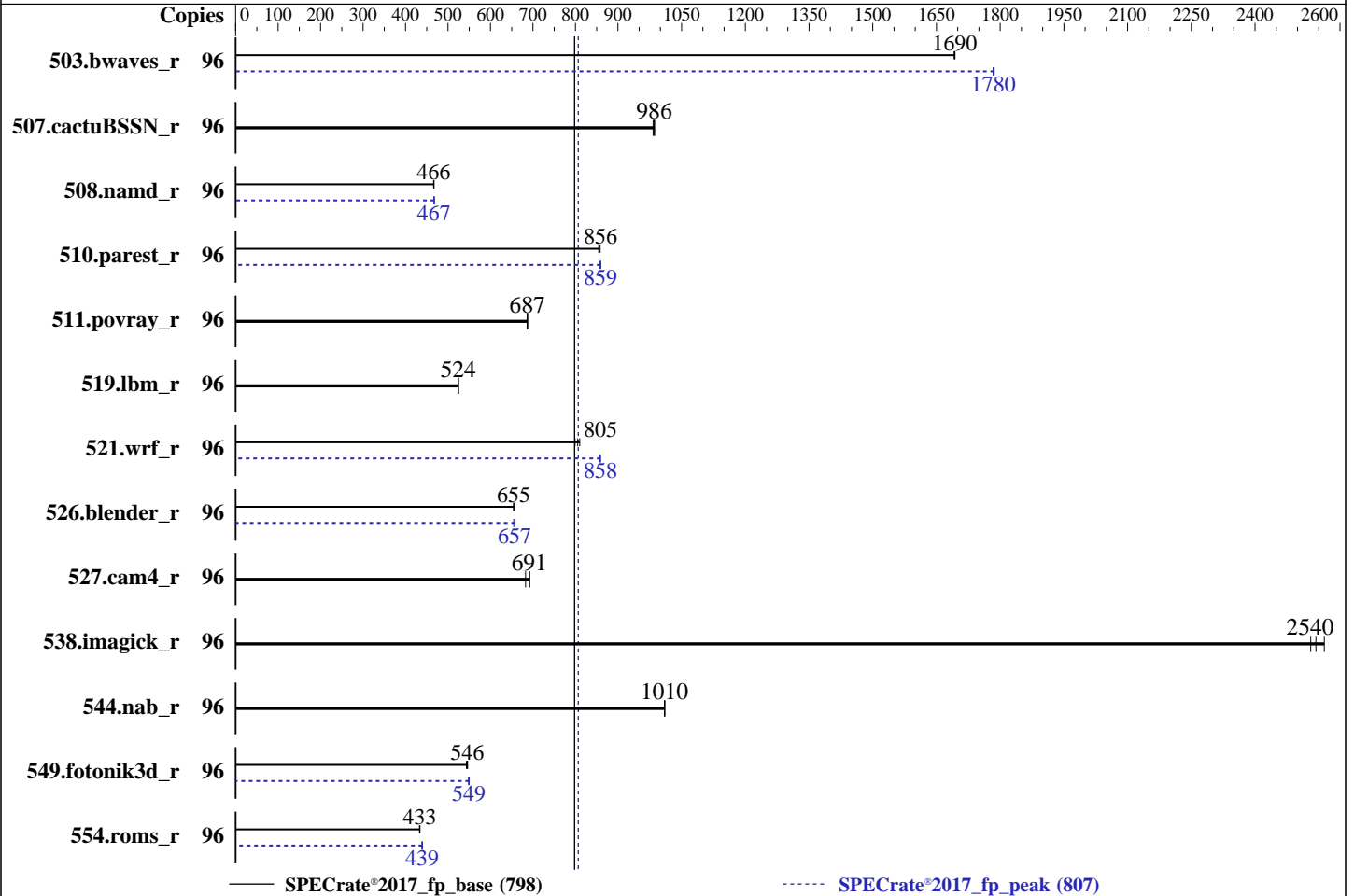
Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Mar-2023

Hardware Availability: Dec-2022

Software Availability: Nov-2022



### Hardware

CPU Name: AMD EPYC 9274F  
 Max MHz: 4300  
 Nominal: 4050  
 Enabled: 48 cores, 2 chips, 2 threads/core  
 Orderable: 1,2 chips  
 Cache L1: 32 KB I + 32 KB D on chip per core  
 L2: 1 MB I+D on chip per core  
 L3: 256 MB I+D on chip per chip,  
 32 MB shared / 3 cores  
 Other: None  
 Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-4800B-R)  
 Storage: 1 x 4.0 TB PCIE NVME SSD  
 Other: None

### Software

OS: SUSE Linux Enterprise Server 15 SP4 (x86\_64)  
 Kernel 5.14.21-150400.22-default  
 Compiler: C/C++/Fortran: Version 4.0.0 of AOCC  
 Parallel: No  
 Firmware: Version 0602 released Dec-2022  
 File System: xfs  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: 64-bit  
 Other: None  
 Power Management: BIOS and OS set to prefer performance at the cost of additional power usage.



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12  
(4.05 GHz, AMD EPYC 9274F)

SPECrate®2017\_fp\_base = 798

SPECrate®2017\_fp\_peak = 807

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Mar-2023

Hardware Availability: Dec-2022

Software Availability: Nov-2022

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	96	<b>569</b>	<b>1690</b>	568	1690	569	1690	96	539	1790	540	1780	<b>540</b>	<b>1780</b>
507.cactuBSSN_r	96	124	983	123	986	<b>123</b>	<b>986</b>	96	124	983	123	986	<b>123</b>	<b>986</b>
508.namd_r	96	<b>196</b>	<b>466</b>	196	466	195	467	96	195	467	195	468	<b>195</b>	<b>467</b>
510.parest_r	96	293	858	294	855	<b>293</b>	<b>856</b>	96	293	858	<b>292</b>	<b>859</b>	292	859
511.povray_r	96	327	686	326	688	<b>326</b>	<b>687</b>	96	327	686	326	688	<b>326</b>	<b>687</b>
519.lbm_r	96	<b>193</b>	<b>524</b>	193	524	193	524	96	<b>193</b>	<b>524</b>	193	524	193	524
521.wrf_r	96	265	810	269	799	<b>267</b>	<b>805</b>	96	251	856	250	859	<b>251</b>	<b>858</b>
526.blender_r	96	223	654	<b>223</b>	<b>655</b>	222	657	96	<b>223</b>	<b>657</b>	222	658	223	655
527.cam4_r	96	<b>243</b>	<b>691</b>	243	692	246	683	96	<b>243</b>	<b>691</b>	243	692	246	683
538.imagick_r	96	93.2	2560	94.3	2530	<b>93.9</b>	<b>2540</b>	96	93.2	2560	94.3	2530	<b>93.9</b>	<b>2540</b>
544.nab_r	96	<b>160</b>	<b>1010</b>	160	1010	160	1010	96	<b>160</b>	<b>1010</b>	160	1010	160	1010
549.fotonik3d_r	96	685	546	<b>686</b>	<b>546</b>	688	543	96	<b>682</b>	<b>549</b>	682	549	680	550
554.roms_r	96	352	433	351	434	<b>352</b>	<b>433</b>	96	347	439	<b>347</b>	<b>439</b>	347	440

SPECrate®2017\_fp\_base = **798**

SPECrate®2017\_fp\_peak = **807**

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

## Compiler Notes

The AMD64 AOCC Compiler Suite is available at  
<http://developer.amd.com/amd-aocc/>

## Submit Notes

The config file option 'submit' was used.  
'numactl' was used to bind copies to the cores.  
See the configuration file for details.

## Operating System Notes

'ulimit -s unlimited' was used to set environment stack size limit  
'ulimit -l 2097152' was used to set environment locked pages in memory limit  
OS set to performance mode via cpupower frequency-set -g performance  
runcpu command invoked through numactl i.e.:  
numactl --interleave=all runcpu <etc>  
To limit dirty cache to 8% of memory, 'sysctl -w vm.dirty\_ratio=8' run as root.  
To limit swap usage to minimum necessary, 'sysctl -w vm.swappiness=1' run as root.  
To free node-local memory and avoid remote memory usage,  
'sysctl -w vm.zone\_reclaim\_mode=1' run as root.  
To clear filesystem caches, 'sync; sysctl -w vm.drop\_caches=3' run as root.

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

**ASUSTeK Computer Inc.**

ASUS RS720A-E12-RS12  
(4.05 GHz, AMD EPYC 9274F)

SPECrate®2017\_fp\_base = 798

SPECrate®2017\_fp\_peak = 807

**CPU2017 License:** 9016

**Test Sponsor:** ASUSTeK Computer Inc.

**Tested by:** ASUSTeK Computer Inc.

**Test Date:** Mar-2023

**Hardware Availability:** Dec-2022

**Software Availability:** Nov-2022

## Operating System Notes (Continued)

To disable address space layout randomization (ASLR) to reduce run-to-run variability, 'sysctl -w kernel.randomize\_va\_space=0' run as root.

To enable Transparent Hugepages (THP) for all allocations, 'echo always > /sys/kernel/mm/transparent\_hugepage/enabled' and 'echo always > /sys/kernel/mm/transparent\_hugepage/defrag' run as root.

## Environment Variables Notes

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

```
LD_LIBRARY_PATH =  
    "/cpull9/amd_rate_aocc400_genoa_B_lib/lib:/cpull9/amd_rate_aocc400_genoa  
    _B_lib/lib32:"  
MALLOC_CONF = "retain:true"
```

## General Notes

Binaries were compiled on a system with 2x AMD EPYC 9174F CPU + 1.5TiB Memory using RHEL 8.6

NA: 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:  
SR-IOV Support = Disabled  
SVM Mode = Disabled  
NUMA nodes per socket = NPS4  
Determinism Control = Manual  
Determinism Enable = Power  
Engine Boost = Aggressive  
TDP Control = Manual  
TDP = 400  
PPT Control = Manual  
PPT = 400  
BMC Configuration:  
Fan mode = Full speed mode

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12  
(4.05 GHz, AMD EPYC 9274F)

SPECrate®2017\_fp\_base = 798

SPECrate®2017\_fp\_peak = 807

**CPU2017 License:** 9016

**Test Sponsor:** ASUSTeK Computer Inc.

**Tested by:** ASUSTeK Computer Inc.

**Test Date:** Mar-2023

**Hardware Availability:** Dec-2022

**Software Availability:** Nov-2022

### Platform Notes (Continued)

sysinfo program /cpull9/bin/sysinfo  
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197  
running on localhost Sun Mar 12 07:45:17 2023

SUT (System Under Test) info as seen by some common utilities.

-----  
Table of contents

- 1. uname -a
- 2. w
- 3. Username
- 4. ulimit -a
- 5. sysinfo process ancestry
- 6. /proc/cpuinfo
- 7. lscpu
- 8. numactl --hardware
- 9. /proc/meminfo
- 10. who -r
- 11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)
- 12. Services, from systemctl list-unit-files
- 13. Linux kernel boot-time arguments, from /proc/cmdline
- 14. cpupower frequency-info
- 15. tuned-adm active
- 16. sysctl
- 17. /sys/kernel/mm/transparent\_hugepage
- 18. /sys/kernel/mm/transparent\_hugepage/khugepaged
- 19. OS release
- 20. Disk information
- 21. /sys/devices/virtual/dmi/id
- 22. dmidecode
- 23. BIOS

-----  
1. uname -a  
Linux localhost 5.14.21-150400.22-default #1 SMP PREEMPT\_DYNAMIC Wed May 11 06:57:18 UTC 2022 (49db222)  
x86\_64 x86\_64 x86\_64 GNU/Linux

-----  
2. w  
07:45:17 up 2 days, 15:07, 2 users, load average: 61.19, 87.26, 92.34  
USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT  
root tty1 - Thu16 45:34m 1.29s 0.28s /bin/bash ./amd\_rate\_aocc400\_genoa\_B1.sh  
root tty2 - Fri09 41:21m 0.04s 0.04s -bash

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12  
(4.05 GHz, AMD EPYC 9274F)

SPECrate®2017\_fp\_base = 798

SPECrate®2017\_fp\_peak = 807

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Mar-2023

Hardware Availability: Dec-2022

Software Availability: Nov-2022

### Platform Notes (Continued)

#### 3. Username

From environment variable \$USER: root

#### 4. ulimit -a

```

core file size          (blocks, -c) unlimited
data seg size          (kbytes, -d) unlimited
scheduling priority    (-e) 0
file size              (blocks, -f) unlimited
pending signals        (-i) 6190559
max locked memory      (kbytes, -l) 2097152
max memory size        (kbytes, -m) unlimited
open files             (-n) 1024
pipe size              (512 bytes, -p) 8
POSIX message queues   (bytes, -q) 819200
real-time priority     (-r) 0
stack size             (kbytes, -s) unlimited
cpu time               (seconds, -t) unlimited
max user processes     (-u) 6190559
virtual memory         (kbytes, -v) unlimited
file locks             (-x) unlimited

```

#### 5. sysinfo process ancestry

```

/usr/lib/systemd/systemd --switched-root --system --deserialize 30
login -- root
-bash
/bin/bash ./rate.sh
python3 ./run_amd_rate_aocc400_genoa_B1.py
/bin/bash ./amd_rate_aocc400_genoa_B1.sh
runcpu --config amd_rate_aocc400_genoa_B1.cfg --tune all --reportable --iterations 3 fprate
runcpu --configfile amd_rate_aocc400_genoa_B1.cfg --tune all --reportable --iterations 3 --nopower --runmode
rate --tune base:peak --size test:train:refrate fprate --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.281/temlogs/preenv.fprate.281.0.log --lognum 281.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /cpull9

```

#### 6. /proc/cpuinfo

```

model name      : AMD EPYC 9274F 24-Core Processor
vendor_id      : AuthenticAMD
cpu family     : 25
model          : 17
stepping       : 1
microcode      : 0xa101111
bugs           : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
TLB size      : 3584 4K pages

```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12  
(4.05 GHz, AMD EPYC 9274F)

SPECrate®2017\_fp\_base = 798

SPECrate®2017\_fp\_peak = 807

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Mar-2023

Hardware Availability: Dec-2022

Software Availability: Nov-2022

### Platform Notes (Continued)

```

cpu cores      : 24
siblings      : 48
2 physical ids (chips)
96 processors (hardware threads)
physical id 0: core ids 0-2,8-10,16-18,24-26,32-34,40-42,48-50,56-58
physical id 1: core ids 0-2,8-10,16-18,24-26,32-34,40-42,48-50,56-58
physical id 0: apicids 0-5,16-21,32-37,48-53,64-69,80-85,96-101,112-117
physical id 1: apicids 128-133,144-149,160-165,176-181,192-197,208-213,224-229,240-245

```

Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for virtualized systems. Use the above data carefully.

#### 7. lscpu

From lscpu from util-linux 2.37.2:

```

Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Address sizes:         52 bits physical, 57 bits virtual
Byte Order:            Little Endian
CPU(s):                96
On-line CPU(s) list:   0-95
Vendor ID:              AuthenticAMD
Model name:             AMD EPYC 9274F 24-Core Processor
CPU family:            25
Model:                 17
Thread(s) per core:    2
Core(s) per socket:    24
Socket(s):              2
Stepping:              1
Frequency boost:       enabled
CPU max MHz:           4303.1250
CPU min MHz:           1500.0000
BogoMIPS:              8088.46

```

```

Flags:                  fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36
                        clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdpe1gb rdtscp lm
                        constant_tsc rep_good nopl nonstop_tsc cpuid extd_apicid aperfmperf rapl
                        pni pclmulqdq monitor ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe
                        popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy
                        abm sse4a misalignsse 3dnowprefetch osvw ibs skinit wdt tce topoext
                        perfctr_core perfctr_nb bpext perfctr_llc mwaitx cpb cat_l3 cdp_l3
                        invpcid_single hw_pstate ssbd mba ibrs ibpb stibp vmmcall fsgsbase bmi1
                        avx2 smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap
                        avx512ifma clflushopt clwb avx512cd sha_ni avx512bw avx512vl xsaveopt
                        xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
                        avx512_bf16 clzero irperf xsaveerptr rdpru wbnoinvd amd_ppin arat npt lbrv
                        svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists
                        pausefilter pfthreshold avic v_vmsave_vmload vgif v_spec_ctrl avx512vbmi

```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12  
(4.05 GHz, AMD EPYC 9274F)

SPECrate®2017\_fp\_base = 798

SPECrate®2017\_fp\_peak = 807

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Mar-2023

Hardware Availability: Dec-2022

Software Availability: Nov-2022

### Platform Notes (Continued)

umip pku ospke avx512\_vbmi2 gfni vaes vpclmulqdq avx512\_vnni avx512\_bitalg  
avx512\_vpopcntdq la57 rdpid overflow\_recov succor smca fsrm flush\_lld

```

Virtualization: AMD-V
L1d cache: 1.5 MiB (48 instances)
L1i cache: 1.5 MiB (48 instances)
L2 cache: 48 MiB (48 instances)
L3 cache: 512 MiB (16 instances)
NUMA node(s): 8
NUMA node0 CPU(s): 0-5,48-53
NUMA node1 CPU(s): 6-11,54-59
NUMA node2 CPU(s): 12-17,60-65
NUMA node3 CPU(s): 18-23,66-71
NUMA node4 CPU(s): 24-29,72-77
NUMA node5 CPU(s): 30-35,78-83
NUMA node6 CPU(s): 36-41,84-89
NUMA node7 CPU(s): 42-47,90-95
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 and seccomp
Vulnerability Spectre v1: Mitigation; usercopy/swaps barriers and __user pointer sanitization
Vulnerability Spectre v2: Mitigation; Retpolines, IBPB conditional, IBRS_FW, STIBP always-on, RSB
filling
Vulnerability Srbds: Not affected
Vulnerability Tsx async abort: Not affected

```

From lscpu --cache:

NAME	ONE-SIZE	ALL-SIZE	WAYS	TYPE	LEVEL	SETS	PHY-LINE	COHERENCY-SIZE
L1d	32K	1.5M	8	Data	1	64	1	64
L1i	32K	1.5M	8	Instruction	1	64	1	64
L2	1M	48M	8	Unified	2	2048	1	64
L3	32M	512M	16	Unified	3	32768	1	64

8. numactl --hardware

NOTE: a numactl 'node' might or might not correspond to a physical chip.

```

available: 8 nodes (0-7)
node 0 cpus: 0-5,48-53
node 0 size: 193256 MB
node 0 free: 191837 MB
node 1 cpus: 6-11,54-59
node 1 size: 193519 MB
node 1 free: 192511 MB
node 2 cpus: 12-17,60-65
node 2 size: 193519 MB
node 2 free: 192955 MB

```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12  
(4.05 GHz, AMD EPYC 9274F)

SPECrate®2017\_fp\_base = 798

SPECrate®2017\_fp\_peak = 807

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Mar-2023

Hardware Availability: Dec-2022

Software Availability: Nov-2022

### Platform Notes (Continued)

```

node 3 cpus: 18-23,66-71
node 3 size: 193519 MB
node 3 free: 192938 MB
node 4 cpus: 24-29,72-77
node 4 size: 193485 MB
node 4 free: 192942 MB
node 5 cpus: 30-35,78-83
node 5 size: 193519 MB
node 5 free: 192984 MB
node 6 cpus: 36-41,84-89
node 6 size: 193519 MB
node 6 free: 192947 MB
node 7 cpus: 42-47,90-95
node 7 size: 193321 MB
node 7 free: 192773 MB
node distances:
node   0   1   2   3   4   5   6   7
  0:  10  12  12  12  32  32  32  32
  1:  12  10  12  12  32  32  32  32
  2:  12  12  10  12  32  32  32  32
  3:  12  12  12  10  32  32  32  32
  4:  32  32  32  32  10  12  12  12
  5:  32  32  32  32  12  10  12  12
  6:  32  32  32  32  12  12  10  12
  7:  32  32  32  32  12  12  12  10

```

```

-----
9. /proc/meminfo
   MemTotal:          1584807808 kB

```

```

-----
10. who -r
    run-level 3 Mar 9 16:38

```

```

-----
11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)
    Default Target    Status
    multi-user        running

```

```

-----
12. Services, from systemctl list-unit-files
    STATE          UNIT FILES
    enabled        YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron display-manager getty@ haveged
                    irqbalance issue-generator kbdsettings klog lvm2-monitor nscd nvme-fc-boot-connections
                    postfix purge-kernels rollback rsyslog smartd sshd wicked wickedd-auto4 wickedd-dhcp4
                    wickedd-dhcp6 wickedd-nanny
    enabled-runtime systemd-remount-fs

```

(Continued on next page)





# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12  
(4.05 GHz, AMD EPYC 9274F)

SPECrate®2017\_fp\_base = 798

SPECrate®2017\_fp\_peak = 807

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Mar-2023

Hardware Availability: Dec-2022

Software Availability: Nov-2022

### Platform Notes (Continued)

```

disabled      autofs autoyast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
              chronyd console-getty cups cups-browsed debug-shell ebttables exchange-bmc-os-info
              firewalld gpm grub2-once haveged-switch-root ipmi ipmievd issue-add-ssh-keys kexec-load
              lunmask man-db-create multipathd nfs nfs-blkmap nvme-autoconnect rdisc rpcbind
              rpmconfigcheck rsyncd serial-getty@ smartd_generate_opts snmpd snmptrapd svnservice
              systemd-boot-check-no-failures systemd-network-generator systemd-sysext
              systemd-time-wait-sync systemd-timesyncd tuned udisks2
indirect      wickedd

```

-----  
13. Linux kernel boot-time arguments, from /proc/cmdline

```

BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
root=UUID=bd4eeb48-8f2c-47c9-ae06-b7241b1d0eb7
splash=silent
mitigations=auto
quiet
security=apparmor

```

-----  
14. cpupower frequency-info

```

analyzing CPU 0:
  current policy: frequency should be within 1.50 GHz and 4.05 GHz.
                  The governor "performance" may decide which speed to use
                  within this range.

boost state support:
  Supported: yes
  Active: yes

```

-----  
15. tuned-adm active

```

It seems that tuned daemon is not running, preset profile is not activated.
Preset profile: throughput-performance

```

-----  
16. sysctl

```

kernel.numa_balancing          1
kernel.randomize_va_space      0
vm.compaction_proactiveness    20
vm.dirty_background_bytes      0
vm.dirty_background_ratio     10
vm.dirty_bytes                 0
vm.dirty_expire_centisecs     3000
vm.dirty_ratio                 8
vm.dirty_writeback_centisecs   500
vm.dirtytime_expire_seconds    43200
vm.extfrag_threshold           500
vm.min_unmapped_ratio          1

```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12  
(4.05 GHz, AMD EPYC 9274F)

SPECrate®2017\_fp\_base = 798

SPECrate®2017\_fp\_peak = 807

**CPU2017 License:** 9016

**Test Sponsor:** ASUSTeK Computer Inc.

**Tested by:** ASUSTeK Computer Inc.

**Test Date:** Mar-2023

**Hardware Availability:** Dec-2022

**Software Availability:** Nov-2022

### Platform Notes (Continued)

```

vm.nr_hugepages          0
vm.nr_hugepages_mempolicy 0
vm.nr_overcommit_hugepages 0
vm.swappiness            1
vm.watermark_boost_factor 15000
vm.watermark_scale_factor 10
vm.zone_reclaim_mode     1

```

```

-----
17. /sys/kernel/mm/transparent_hugepage
defrag          [always] defer defer+madvise madvise never
enabled         [always] madvise never
hpage_pmd_size 2097152
shmem_enabled  always within_size advise [never] deny force

```

```

-----
18. /sys/kernel/mm/transparent_hugepage/khugepaged
alloc_sleep_millisecs  60000
defrag                  1
max_ptes_none          511
max_ptes_shared        256
max_ptes_swap          64
pages_to_scan          4096
scan_sleep_millisecs   10000

```

```

-----
19. OS release
From /etc/*-release /etc/*-version
os-release SUSE Linux Enterprise Server 15 SP4

```

```

-----
20. Disk information
SPEC is set to: /cpull9
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/nvme0n1p4 xfs   2.0T  53G  2.0T   3% /

```

```

-----
21. /sys/devices/virtual/dmi/id
Vendor:          ASUSTeK COMPUTER INC.
Product:         RS720A-E12-RS12
Product Family: Server
Serial:          123456789012

```

```

-----
22. dmidecode
Additional information from dmidecode 3.2 follows.  WARNING: Use caution when you interpret this section.
The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately

```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12  
(4.05 GHz, AMD EPYC 9274F)

SPECrate®2017\_fp\_base = 798

SPECrate®2017\_fp\_peak = 807

**CPU2017 License:** 9016

**Test Sponsor:** ASUSTeK Computer Inc.

**Tested by:** ASUSTeK Computer Inc.

**Test Date:** Mar-2023

**Hardware Availability:** Dec-2022

**Software Availability:** Nov-2022

### Platform Notes (Continued)

determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

Memory:

24x Samsung M321R8GA0BB0-CQKDG 64 GB 2 rank 4800

#### 23. BIOS

(This section combines info from /sys/devices and dmidecode.)

BIOS Vendor: American Megatrends Inc.

BIOS Version: 0602

BIOS Date: 12/09/2022

BIOS Revision: 6.2

### Compiler Version Notes

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

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

```
=====  
C++ | 508.namd_r(base, peak) 510.parest_r(base, peak)  
=====
```

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

```
=====  
C++, C | 511.povray_r(base, peak) 526.blender_r(base, peak)  
=====
```

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12  
(4.05 GHz, AMD EPYC 9274F)

SPECrate®2017\_fp\_base = 798

SPECrate®2017\_fp\_peak = 807

**CPU2017 License:** 9016

**Test Sponsor:** ASUSTeK Computer Inc.

**Tested by:** ASUSTeK Computer Inc.

**Test Date:** Mar-2023

**Hardware Availability:** Dec-2022

**Software Availability:** Nov-2022

### Compiler Version Notes (Continued)

LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

=====  
C++, C, Fortran | 507.cactuBSSN\_r(base, peak)

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on  
LLVM Mirror.Version.14.0.6)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on  
LLVM Mirror.Version.14.0.6)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on  
LLVM Mirror.Version.14.0.6)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

=====  
Fortran | 503.bwaves\_r(base, peak) 549.fotonik3d\_r(base, peak)  
| 554.roms\_r(base, peak)

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on  
LLVM Mirror.Version.14.0.6)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

=====  
Fortran, C | 521.wrf\_r(base, peak) 527.cam4\_r(base, peak)

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on  
LLVM Mirror.Version.14.0.6)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on  
LLVM Mirror.Version.14.0.6)

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12  
(4.05 GHz, AMD EPYC 9274F)

SPECrate®2017\_fp\_base = 798

SPECrate®2017\_fp\_peak = 807

**CPU2017 License:** 9016

**Test Sponsor:** ASUSTeK Computer Inc.

**Tested by:** ASUSTeK Computer Inc.

**Test Date:** Mar-2023

**Hardware Availability:** Dec-2022

**Software Availability:** Nov-2022

### Compiler Version Notes (Continued)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

### Base Compiler Invocation

C benchmarks:

clang

C++ benchmarks:

clang++

Fortran benchmarks:

flang

Benchmarks using both Fortran and C:

flang clang

Benchmarks using both C and C++:

clang++ clang

Benchmarks using Fortran, C, and C++:

clang++ clang flang

### 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 -Mbyteswapio -DSPEC\_LP64

526.blender\_r: -funsigned-char -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



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12  
(4.05 GHz, AMD EPYC 9274F)

SPECrate®2017\_fp\_base = 798

SPECrate®2017\_fp\_peak = 807

**CPU2017 License:** 9016

**Test Sponsor:** ASUSTeK Computer Inc.

**Tested by:** ASUSTeK Computer Inc.

**Test Date:** Mar-2023

**Hardware Availability:** Dec-2022

**Software Availability:** Nov-2022

## Base Optimization Flags

### C benchmarks:

```
-m64 -flt0 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-ldist-scalar-expand -fenable-aggressive-gather -O3
-march=znver4 -fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-zopt -lamdlibm -lamdalloc -lflang
```

### C++ benchmarks:

```
-m64 -flt0 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -mllvm -unroll-threshold=100
-finline-aggressive -mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lamdalloc
-lflang
```

### Fortran benchmarks:

```
-m64 -flt0 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -Kieee -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -zopt -lamdlibm -lamdalloc
-lflang
```

### Benchmarks using both Fortran and C:

```
-m64 -flt0 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-zopt -Kieee -Mrecursive -funroll-loops -mllvm -lsr-in-nested-loop
-fepilog-vectorization-of-inductions -lamdlibm -lamdalloc -lflang
```

### Benchmarks using both C and C++:

```
-m64 -flt0 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-zopt -mllvm -unroll-threshold=100 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000 -lamdlibm -lamdalloc -lflang
```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

**ASUSTeK Computer Inc.**

ASUS RS720A-E12-RS12  
(4.05 GHz, AMD EPYC 9274F)

SPECrate®2017\_fp\_base = 798

SPECrate®2017\_fp\_peak = 807

**CPU2017 License:** 9016

**Test Sponsor:** ASUSTeK Computer Inc.

**Tested by:** ASUSTeK Computer Inc.

**Test Date:** Mar-2023

**Hardware Availability:** Dec-2022

**Software Availability:** Nov-2022

## Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++:

```
-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-zopt -mllvm -unroll-threshold=100 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000 -Kieee -Mrecursive
-funroll-loops -mllvm -lsr-in-nested-loop
-fepilog-vectorization-of-inductions -lamdlibm -lamdalloc -lflang
```

## Base Other Flags

C benchmarks:

```
-Wno-unused-command-line-argument
```

C++ benchmarks:

```
-Wno-unused-command-line-argument
```

Fortran benchmarks:

```
-Wno-unused-command-line-argument
```

Benchmarks using both Fortran and C:

```
-Wno-unused-command-line-argument
```

Benchmarks using both C and C++:

```
-Wno-unused-command-line-argument
```

Benchmarks using Fortran, C, and C++:

```
-Wno-unused-command-line-argument
```

## Peak Compiler Invocation

C benchmarks:

```
clang
```

C++ benchmarks:

```
clang++
```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

**ASUSTeK Computer Inc.**

ASUS RS720A-E12-RS12  
(4.05 GHz, AMD EPYC 9274F)

SPECrate®2017\_fp\_base = 798

SPECrate®2017\_fp\_peak = 807

**CPU2017 License:** 9016

**Test Sponsor:** ASUSTeK Computer Inc.

**Tested by:** ASUSTeK Computer Inc.

**Test Date:** Mar-2023

**Hardware Availability:** Dec-2022

**Software Availability:** Nov-2022

## Peak Compiler Invocation (Continued)

Fortran benchmarks:

flang

Benchmarks using both Fortran and C:

flang clang

Benchmarks using both C and C++:

clang++ clang

Benchmarks using Fortran, C, and C++:

clang++ clang flang

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

519.lbm\_r: basepeak = yes

538.imagick\_r: basepeak = yes

544.nab\_r: basepeak = yes

C++ benchmarks:

508.namd\_r: -m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6  
-Wl,-mllvm -Wl,-reduce-array-computations=3  
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast  
-march=znver4 -fveclib=AMDLIBM -ffast-math  
-finline-aggressive -mllvm -unroll-threshold=100  
-mllvm -reduce-array-computations=3 -zopt -lamdlibm  
-lamdalloc

510.parest\_r: -m64 -flto -Wl,-mllvm -Wl,-suppress-fmas  
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast  
-march=znver4 -fveclib=AMDLIBM -ffast-math  
-finline-aggressive -mllvm -unroll-threshold=100  
-mllvm -reduce-array-computations=3 -zopt -lamdlibm  
-lamdalloc

(Continued on next page)





# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

**ASUSTeK Computer Inc.**

ASUS RS720A-E12-RS12  
(4.05 GHz, AMD EPYC 9274F)

SPECrate®2017\_fp\_base = 798

SPECrate®2017\_fp\_peak = 807

**CPU2017 License:** 9016

**Test Sponsor:** ASUSTeK Computer Inc.

**Tested by:** ASUSTeK Computer Inc.

**Test Date:** Mar-2023

**Hardware Availability:** Dec-2022

**Software Availability:** Nov-2022

## Peak Optimization Flags (Continued)

Fortran benchmarks:

```
503.bwaves_r: -m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math -Mrecursive
-mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -zopt -lamdlibm
-lamdalloc -lflang
```

```
549.fotonik3d_r: -m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math -Kieee
-Mrecursive -mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -fvector-transform
-fscalar-transform -lamdlibm -lamdalloc -lflang
```

554.roms\_r: Same as 503.bwaves\_r

Benchmarks using both Fortran and C:

```
521.wrf_r: -m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math
-fstruct-layout=7 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -Mrecursive
-fepilog-vectorization-of-inductions -lamdlibm -lamdalloc
-lflang
```

527.cam4\_r: basepeak = yes

Benchmarks using both C and C++:

511.povray\_r: basepeak = yes

```
526.blender_r: -m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math
-fstruct-layout=7 -mllvm -unroll-threshold=50
```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12  
(4.05 GHz, AMD EPYC 9274F)

SPECrate®2017\_fp\_base = 798

SPECrate®2017\_fp\_peak = 807

**CPU2017 License:** 9016

**Test Sponsor:** ASUSTeK Computer Inc.

**Tested by:** ASUSTeK Computer Inc.

**Test Date:** Mar-2023

**Hardware Availability:** Dec-2022

**Software Availability:** Nov-2022

## Peak Optimization Flags (Continued)

526.blender\_r (continued):

```
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt
-finline-aggressive -mllvm -unroll-threshold=100 -lamdlibm
-lamdalloc
```

Benchmarks using Fortran, C, and C++:

507.cactuBSSN\_r: basepeak = yes

## Peak Other Flags

C benchmarks:

```
-Wno-unused-command-line-argument
```

C++ benchmarks:

```
-Wno-unused-command-line-argument
```

Fortran benchmarks:

```
-Wno-unused-command-line-argument
```

Benchmarks using both Fortran and C:

```
-Wno-unused-command-line-argument
```

Benchmarks using both C and C++:

```
-Wno-unused-command-line-argument
```

Benchmarks using Fortran, C, and C++:

```
-Wno-unused-command-line-argument
```

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

<http://www.spec.org/cpu2017/flags/ASUSTekPlatform-Settings-AMD-K14-V1.1.html>

<http://www.spec.org/cpu2017/flags/aocc400-flags.html>

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

<http://www.spec.org/cpu2017/flags/ASUSTekPlatform-Settings-AMD-K14-V1.1.xml>

<http://www.spec.org/cpu2017/flags/aocc400-flags.xml>



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

**ASUSTeK Computer Inc.**

ASUS RS720A-E12-RS12  
(4.05 GHz, AMD EPYC 9274F)

SPECrate®2017\_fp\_base = 798

SPECrate®2017\_fp\_peak = 807

**CPU2017 License:** 9016

**Test Sponsor:** ASUSTeK Computer Inc.

**Tested by:** ASUSTeK Computer Inc.

**Test Date:** Mar-2023

**Hardware Availability:** Dec-2022

**Software Availability:** Nov-2022

SPEC CPU and SPECrate are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

Tested with SPEC CPU®2017 v1.1.9 on 2023-03-11 18:45:17-0500.

Report generated on 2023-04-14 11:26:48 by CPU2017 PDF formatter v6442.

Originally published on 2023-04-14.