



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 348

PowerEdge R7715 (AMD EPYC 9135 16-Core Processor)

SPECrate®2017_fp_peak = 355

CPU2017 License: 6573

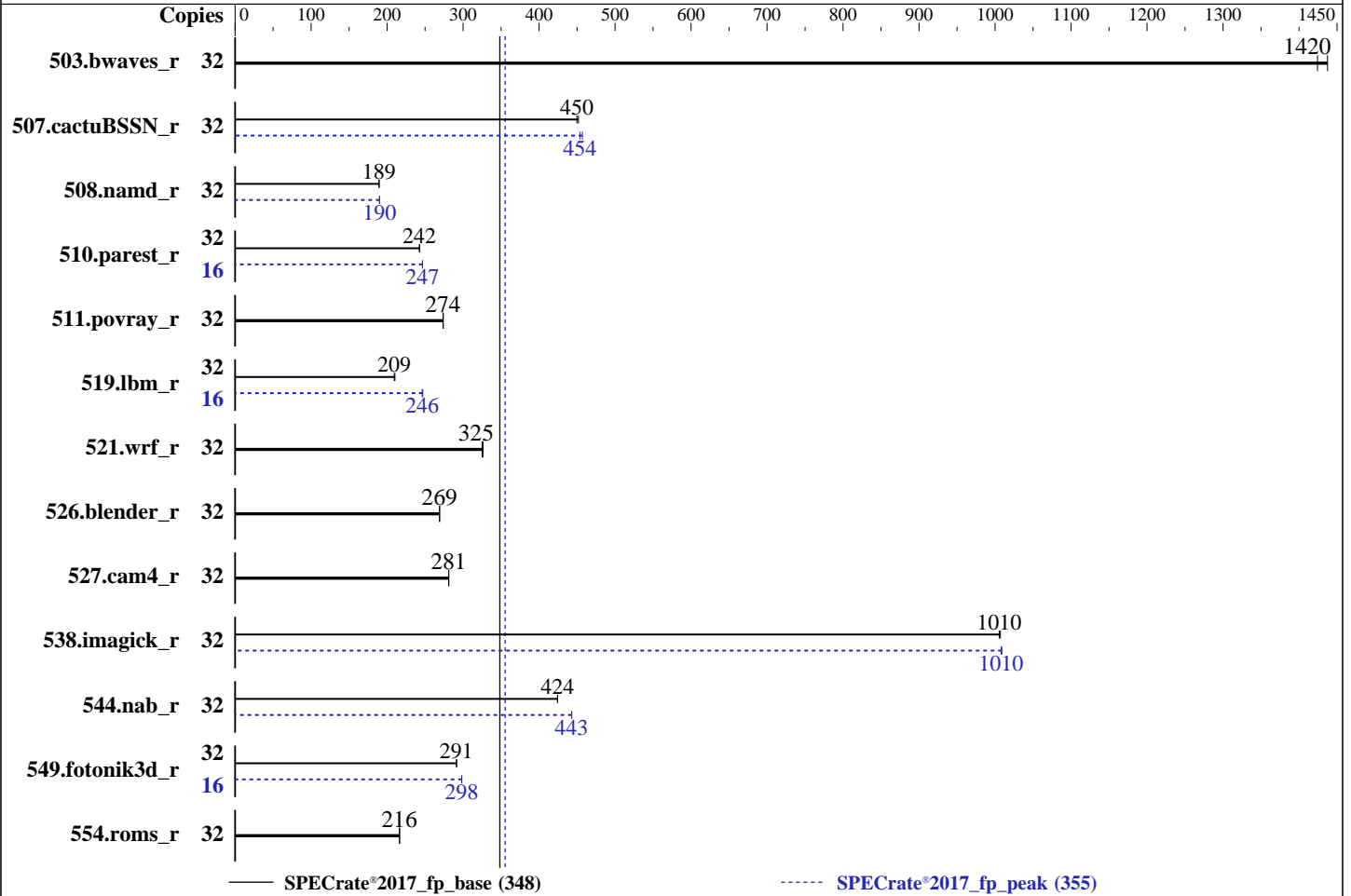
Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Nov-2024

Hardware Availability: Nov-2024

Software Availability: Oct-2024



Hardware

CPU Name: AMD EPYC 9135
 Max MHz: 4300
 Nominal: 3650
 Enabled: 16 cores, 1 chip, 2 threads/core
 Orderable: 1 chip
 Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 1 MB I+D on chip per core
 L3: 64 MB I+D on chip per chip, 16 MB shared / 4 cores
 Other: None
 Memory: 768 GB (12 x 64 GB 2Rx4 PC5-6400B-R, running at 5200)
 Storage: 40 GB on tmpfs
 Other: CPU Cooling: DLC

Software

OS: Ubuntu 24.04 LTS
 6.8.0-44-generic
 Compiler: C/C++/Fortran: Version 5.0.0 of AOCC
 Parallel: No
 Firmware: Version 1.0.3 released Oct-2024
 File System: tmpfs
 System State: Run level 5 (graphical 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 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 348

PowerEdge R7715 (AMD EPYC 9135 16-Core Processor)

SPECrate®2017_fp_peak = 355

CPU2017 License: 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Nov-2024
Hardware Availability: Nov-2024
Software Availability: Oct-2024

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	32	223	1440	<u>225</u>	<u>1420</u>			32	223	1440	<u>225</u>	<u>1420</u>		
507.cactuBSSN_r	32	<u>90.1</u>	<u>450</u>	89.7	452			32	88.6	457	<u>89.3</u>	<u>454</u>		
508.namd_r	32	160	190	<u>160</u>	<u>189</u>			32	<u>160</u>	<u>190</u>	160	190		
510.parest_r	32	345	243	<u>345</u>	<u>242</u>			16	<u>170</u>	<u>247</u>	170	247		
511.povray_r	32	<u>273</u>	<u>274</u>	273	274			32	<u>273</u>	<u>274</u>	273	274		
519.lbm_r	32	160	210	<u>161</u>	<u>209</u>			16	<u>68.5</u>	<u>246</u>	68.3	247		
521.wrf_r	32	220	326	<u>220</u>	<u>325</u>			32	220	326	<u>220</u>	<u>325</u>		
526.blender_r	32	181	269	<u>181</u>	<u>269</u>			32	181	269	<u>181</u>	<u>269</u>		
527.cam4_r	32	<u>199</u>	<u>281</u>	199	281			32	<u>199</u>	<u>281</u>	199	281		
538.imagick_r	32	<u>79.2</u>	<u>1010</u>	79.0	1010			32	78.9	1010	<u>78.9</u>	<u>1010</u>		
544.nab_r	32	127	424	<u>127</u>	<u>424</u>			32	122	443	<u>122</u>	<u>443</u>		
549.fotonik3d_r	32	<u>428</u>	<u>291</u>	428	292			16	209	298	<u>209</u>	<u>298</u>		
554.roms_r	32	235	217	<u>235</u>	<u>216</u>			32	235	217	<u>235</u>	<u>216</u>		

SPECrate®2017_fp_base = 348

SPECrate®2017_fp_peak = 355

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

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.
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,

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 348

PowerEdge R7715 (AMD EPYC 9135 16-Core Processor)

SPECrate®2017_fp_peak = 355

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Nov-2024

Hardware Availability: Nov-2024

Software Availability: Oct-2024

Operating System Notes (Continued)

'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 =  
    "/mnt/ramdisk/cpu2017-1.1.9-aocc500-znerv5_A1/amd_rate_aocc500_znver5_A_lib/lib:/mnt/ramdisk/cpu2017-1  
    .1.9-aocc500-znerv5_A1/amd_rate_aocc500_znver5_A_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.

Benchmark run from a 40 GB ramdisk created with the cmd: "mount -t tmpfs -o size=40G tmpfs /mnt/ramdisk"

Platform Notes

BIOS settings:

DRAM Refresh Delay : Performance
DIMM Self Healing on -
Uncorrectable Memory Error : Disabled

Virtualization Technology : Disabled
NUMA Nodes per Socket : 4
L3 cache as NUMA Domain : Enabled

System Profile : Custom
C-States : Disabled
Memory Patrol Scrub : Disabled
PCI ASPM L1 Link -
Power Management : Disabled
Determinism Control : Manual
Determinism Slider : Power Determinism

Sysinfo program /mnt/ramdisk/cpu2017-1.1.9-aocc500-znerv5_A1/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on SLR7751-R7715 Sat Nov 2 03:59:18 2024

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

Table of contents

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 348

PowerEdge R7715 (AMD EPYC 9135 16-Core Processor)

SPECrate®2017_fp_peak = 355

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Nov-2024

Hardware Availability: Nov-2024

Software Availability: Oct-2024

Platform Notes (Continued)

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 255 (255.4-lubuntu8)
12. Failed units, from systemctl list-units --state=failed
13. Services, from systemctl list-unit-files
14. Linux kernel boot-time arguments, from /proc/cmdline
15. cpupower frequency-info
16. tuned-adm active
17. sysctl
18. /sys/kernel/mm/transparent_hugepage
19. /sys/kernel/mm/transparent_hugepage/khugepaged
20. OS release
21. Disk information
22. /sys/devices/virtual/dmi/id
23. dmidecode
24. BIOS

```
-----
1. uname -a
Linux SLR7751-R7715 6.8.0-44-generic #44-Ubuntu SMP PREEMPT_DYNAMIC Tue Aug 13 13:35:26 UTC 2024 x86_64
x86_64 x86_64 GNU/Linux
-----
```

```
-----
2. w
03:59:18 up 2:40, 2 users, load average: 23.16, 29.94, 31.13
USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT
root tty1 - 01:19 2:37m 1.32s 0.41s /bin/bash ./amd_rate_aocc500_znver5_A1.sh
root tty2 - 01:21 2:37m 0.04s ? -bash
-----
```

```
-----
3. Username
From environment variable $USER: root
-----
```

```
-----
4. ulimit -a
time(seconds) unlimited
file(blocks) unlimited
data(kbytes) unlimited
stack(kbytes) unlimited
coredump(blocks) 0
memory(kbytes) unlimited
locked memory(kbytes) 2097152
process 3093025
nofiles 1024
vmemory(kbytes) unlimited
locks unlimited
rtprio 0
-----
```

```
-----
5. sysinfo process ancestry
/sbin/init
-----
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 348

PowerEdge R7715 (AMD EPYC 9135 16-Core Processor)

SPECrate®2017_fp_peak = 355

CPU2017 License: 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Nov-2024
Hardware Availability: Nov-2024
Software Availability: Oct-2024

Platform Notes (Continued)

```

/bin/login -p --
-bash
/bin/bash /home/DellFiles/bin/DELL_rate.sh
/bin/bash /home/DellFiles/bin/dell-run-main.sh rate
/bin/bash /home/DellFiles/bin/dell-run-main.sh rate
/bin/bash /home/DellFiles/bin/AMD/dell-run-speccpu.sh rate --define DL-BIOSinc=Dell-BIOS_EPYC-5.inc --define
DL-BIOS-LogProc=1 --define DL-BIOS-adddcD=1 --define DL-VERS=5.3.7 --output_format html,pdf,txt
python3 ./run_amd_rate_aocc500_znver5_A1.py
/bin/bash ./amd_rate_aocc500_znver5_A1.sh
runcpu --config amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 2 --define
DL-BIOS-L3NUMA=1 --define DL-BIOS-NPS=4 --define DL-BIOSinc=Dell-BIOS_EPYC-5.inc --define
DL-BIOS-LogProc=1 --define DL-BIOS-adddcD=1 --define DL-VERS=5.3.7 --output_format html,pdf,txt fprate
runcpu --configfile amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 2 --define
DL-BIOS-L3NUMA=1 --define DL-BIOS-NPS=4 --define DL-BIOSinc=Dell-BIOS_EPYC-5.inc --define
DL-BIOS-LogProc=1 --define DL-BIOS-adddcD=1 --define DL-VERS=5.3.7 --output_format html,pdf,txt --nopower
--runmode rate --tune base:peak --size test:train:refrate fprate --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.002/templogs/preenv.fprate.002.0.log --lognum 002.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /mnt/ramdisk/cpu2017-1.1.9-aocc500-znerv5_A1

```

```

-----
6. /proc/cpuinfo
model name      : AMD EPYC 9135 16-Core Processor
vendor_id      : AuthenticAMD
cpu family     : 26
model          : 2
stepping       : 1
microcode      : 0xb00211a
bugs           : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
TLB size      : 192 4K pages
cpu cores     : 16
siblings      : 32
1 physical ids (chips)
32 processors (hardware threads)
physical id 0: core ids 0-3,8-11,16-19,24-27
physical id 0: apicids 0-7,16-23,32-39,48-55
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 2.39.3:
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):                32
On-line CPU(s) list:  0-31
Vendor ID:              AuthenticAMD
BIOS Vendor ID:        AMD
Model name:            AMD EPYC 9135 16-Core Processor
BIOS Model name:       AMD EPYC 9135 16-Core Processor
BIOS CPU family:       107
CPU family:            26
Model:                 2
Thread(s) per core:    2
Core(s) per socket:    16
Socket(s):              1
Stepping:              1

```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 348

PowerEdge R7715 (AMD EPYC 9135 16-Core Processor)

SPECrate®2017_fp_peak = 355

CPU2017 License: 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Nov-2024
Hardware Availability: Nov-2024
Software Availability: Oct-2024

Platform Notes (Continued)

```

Frequency boost:          enabled
CPU(s) scaling MHz:      87%
CPU max MHz:              4305.8589
CPU min MHz:              1500.0000
BogoMIPS:                 7289.92
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 amd_lbr_v2 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 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 hw_pstate ssbd mba perfmon_v2
                          ibrs ibpb stibp ibrs_enhanced vmmcall fsgsbase tsc_adjust bmil 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 user_shstk avx_vnni avx512_bf16 clzero irperf
                          xsaveerptr rdpru wbnoinvd amd_ppin cppc arat npt lbrv svm_lock
                          nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter
                          pfthreshold avic v_vmsave_vmload vgif x2avic v_spec_ctrl vnmi
                          avx512vbmi umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq
                          avx512_vnni avx512_bitalg avx512_vpopcntdq la57 rdpid bus_lock_detect
                          movdiri movdir64b overflow_recov succor smca fsrm avx512_vp2intersect
                          flush_lld debug_swap
Lld cache:                768 KiB (16 instances)
L1i cache:                512 KiB (16 instances)
L2 cache:                 16 MiB (16 instances)
L3 cache:                 64 MiB (4 instances)
NUMA node(s):             4
NUMA node0 CPU(s):        0-3,16-19
NUMA node1 CPU(s):        4-7,20-23
NUMA node2 CPU(s):        8-11,24-27
NUMA node3 CPU(s):        12-15,28-31
Vulnerability Gather data sampling: Not affected
Vulnerability Itlb multihit:       Not affected
Vulnerability L1tf:                Not affected
Vulnerability Mds:                 Not affected
Vulnerability Meltdown:            Not affected
Vulnerability Mmio stale data:      Not affected
Vulnerability Reg file data sampling: Not affected
Vulnerability Retbleed:             Not affected
Vulnerability Spec rstack overflow: Not affected
Vulnerability Spec store bypass:    Mitigation; Speculative Store Bypass disabled via prctl
Vulnerability Spectre v1:           Mitigation; usercopy/swapgs barriers and __user pointer sanitization
Vulnerability Spectre v2:           Mitigation; Enhanced / Automatic IBRS; IBPB conditional; STIBP
                                      always-on; RSB filling; PBR SB-eIBRS Not affected; BHI Not affected
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   48K    768K    12 Data          1     64     1         64
L1i   32K    512K     8 Instruction    1     64     1         64
L2    1M     16M    16 Unified       2   1024     1         64
L3    16M    64M    16 Unified       3 16384     1         64

```

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

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 348

PowerEdge R7715 (AMD EPYC 9135 16-Core Processor)

SPECrate®2017_fp_peak = 355

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Nov-2024

Hardware Availability: Nov-2024

Software Availability: Oct-2024

Platform Notes (Continued)

```

available: 4 nodes (0-3)
node 0 cpus: 0-3,16-19
node 0 size: 192818 MB
node 0 free: 188712 MB
node 1 cpus: 4-7,20-23
node 1 size: 193532 MB
node 1 free: 192908 MB
node 2 cpus: 8-11,24-27
node 2 size: 193532 MB
node 2 free: 192927 MB
node 3 cpus: 12-15,28-31
node 3 size: 193444 MB
node 3 free: 192898 MB
node distances:
node  0  1  2  3
  0: 10 12 12 12
  1: 12 10 12 12
  2: 12 12 10 12
  3: 12 12 12 10

```

```

9. /proc/meminfo
   MemTotal:      791886996 kB

```

```

10. who -r
    run-level 5 Nov 2 01:18

```

```

11. Systemd service manager version: systemd 255 (255.4-lubuntu8)
    Default Target    Status
    graphical         degraded

```

```

12. Failed units, from systemctl list-units --state=failed
    UNIT                                LOAD    ACTIVE SUB    DESCRIPTION
* fwupd-refresh.service loaded failed failed Refresh fwupd metadata and update motd
Legend: LOAD    -> Reflects whether the unit definition was properly loaded.
        ACTIVE  -> The high-level unit activation state, i.e. generalization of SUB.
        SUB     -> The low-level unit activation state, values depend on unit type.
1 loaded units listed.

```

```

13. Services, from systemctl list-unit-files
    STATE     UNIT FILES
enabled      ModemManager apparmor appport blk-availability cloud-config cloud-final cloud-init
cloud-init-local console-setup cron dmesg e2scrub_reap finalrd getty@ gpu-manager
grub-common grub-initrd-fallback keyboard-setup lm-sensors lvm2-monitor multipathd
networkd-dispatcher open-iscsi open-vm-tools pollinate rsyslog secureboot-db setvtrgb
sysstat systemd-networkd systemd-networkd-wait-online systemd-pstore systemd-resolved
systemd-boot-check-no-failures systemd-conftext systemd-network-generator
enabled-runtime netplan-ovs-cleanup systemd-fsck-root systemd-remount-fs
disabled    console-getty debug-shell iscsid nftables rsync serial-getty@ ssh
systemd-boot-check-no-failures systemd-conftext systemd-network-generator
systemd-networkd-wait-online@ systemd-pcrlock-file-system systemd-pcrlock-firmware-code
systemd-pcrlock-firmware-config systemd-pcrlock-machine-id systemd-pcrlock-make-policy
systemd-pcrlock-secureboot-authority systemd-pcrlock-secureboot-policy systemd-sysext
systemd-time-wait-sync upower
indirect     systemd-sysupdate systemd-sysupdate-reboot uuid
masked       cryptdisks cryptdisks-early hwclock multipath-tools-boot screen-cleanup sudo x11-common

```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 348

PowerEdge R7715 (AMD EPYC 9135 16-Core Processor)

SPECrate®2017_fp_peak = 355

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Nov-2024

Hardware Availability: Nov-2024

Software Availability: Oct-2024

Platform Notes (Continued)

```
-----
14. Linux kernel boot-time arguments, from /proc/cmdline
BOOT_IMAGE=/boot/vmlinuz-6.8.0-44-generic
root=UUID=8458ae54-58cc-4621-9289-b1d743fde503
ro
-----
```

```
-----
15. cpupower frequency-info
analyzing CPU 31:
  current policy: frequency should be within 1.50 GHz and 3.65 GHz.
                  The governor "performance" may decide which speed to use
                  within this range.

  boost state support:
    Supported: yes
    Active: yes
    Boost States: 0
    Total States: 3
    Pstate-P0: 21800MHz
-----
```

```
-----
16. tuned-adm active
  Current active profile: latency-performance
-----
```

```
-----
17. sysctl
kernel.numa_balancing          1
kernel.randomize_va_space      0
vm.compaction_proactiveness    20
vm.dirty_background_bytes      0
vm.dirty_background_ratio      3
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
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
-----
```

```
-----
18. /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
-----
```

```
-----
19. /sys/kernel/mm/transparent_hugepage/khugepaged
alloc_sleep_millisecs  60000
defrag                  1
max_ptes_none           511
max_ptes_shared         256
max_ptes_swap           64
-----
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 348

PowerEdge R7715 (AMD EPYC 9135 16-Core Processor)

SPECrate®2017_fp_peak = 355

CPU2017 License: 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Nov-2024
Hardware Availability: Nov-2024
Software Availability: Oct-2024

Platform Notes (Continued)

pages_to_scan 4096
scan_sleep_millisecs 10000

20. OS release
From /etc/*-release /etc/*-version
os-release Ubuntu 24.04 LTS

21. Disk information
SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-aocc500-znerv5_A1
Filesystem Type Size Used Avail Use% Mounted on
tmpfs tmpfs 40G 3.3G 37G 9% /mnt/ramdisk

22. /sys/devices/virtual/dmi/id
Vendor: Dell Inc.
Product: PowerEdge R7715
Product Family: PowerEdge
Serial: SLR7751

23. dmidecode
Additional information from dmidecode 3.5 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:
12x 802C0000802C MTC40F2046S1RC64BD1 64 GB 2 rank 6400, configured at 5200

24. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor: Dell Inc.
BIOS Version: 1.0.3
BIOS Date: 10/28/2024
BIOS Revision: 1.0

Compiler Version Notes

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

AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin

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

AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 348

PowerEdge R7715 (AMD EPYC 9135 16-Core Processor)

SPECrate®2017_fp_peak = 355

CPU2017 License: 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Nov-2024
Hardware Availability: Nov-2024
Software Availability: Oct-2024

Compiler Version Notes (Continued)

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

AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
=====

=====
C++, C, Fortran | 507.cactuBSSN_r(base, peak)
=====

AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
=====

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

AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
=====

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

AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
=====

Base Compiler Invocation

C benchmarks:
clang

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 348

PowerEdge R7715 (AMD EPYC 9135 16-Core Processor)

SPECrate®2017_fp_peak = 355

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Nov-2024

Hardware Availability: Nov-2024

Software Availability: Oct-2024

Base Compiler Invocation (Continued)

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

Base Optimization Flags

C benchmarks:

-m64 -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=znver5 -fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie -flto
 -fstruct-layout=7 -mllvm -unroll-threshold=50
 -mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining
 -mllvm -reduce-array-computations=3 -zopt -lamdlibm -lamdalloc
 -lflang -ldl

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 348

PowerEdge R7715 (AMD EPYC 9135 16-Core Processor)

SPECrate®2017_fp_peak = 355

CPU2017 License: 6573

Test Date: Nov-2024

Test Sponsor: Dell Inc.

Hardware Availability: Nov-2024

Tested by: Dell Inc.

Software Availability: Oct-2024

Base Optimization Flags (Continued)

C++ benchmarks:

```
-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Wl,-mllvm -Wl,-extra-inliner
-O3 -march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-mllvm -unroll-threshold=100 -mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lamdalloc
-lflang -ldl
```

Fortran benchmarks:

```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-aggressive-gather=true
-Wl,-mllvm -Wl,-enable-masked-gather-sequence=false -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -flto -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -zopt -lamdlibm -lamdalloc
-lflang -ldl
```

Benchmarks using both Fortran and C:

```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-aggressive-gather=true
-Wl,-mllvm -Wl,-enable-masked-gather-sequence=false -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining
-mllvm -reduce-array-computations=3 -zopt -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -fepilog-vectorization-of-inductions
-lamdlibm -lamdalloc -lflang -ldl
```

Benchmarks using both C and C++:

```
-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Wl,-mllvm -Wl,-extra-inliner
-O3 -march=znver5 -fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie
-flto -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
-mllvm -loop-unswitch-threshold=200000 -lamdlibm -lamdalloc -lflang
-ldl
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 348

PowerEdge R7715 (AMD EPYC 9135 16-Core Processor)

SPECrate®2017_fp_peak = 355

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Nov-2024

Hardware Availability: Nov-2024

Software Availability: Oct-2024

Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++:

```
-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Wl,-mllvm -Wl,-extra-inliner
-O3 -march=znver5 -fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie
-flto -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
-mllvm -loop-unswitch-threshold=200000 -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -fepilog-vectorization-of-inductions
-lamdlibm -lamdalloc -lflang -ldl
```

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++
```

Fortran benchmarks:

```
flang
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 348

PowerEdge R7715 (AMD EPYC 9135 16-Core Processor)

SPECrate®2017_fp_peak = 355

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Nov-2024

Hardware Availability: Nov-2024

Software Availability: Oct-2024

Peak Compiler Invocation (Continued)

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: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-freemap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc -ldl
```

538.imagick_r: Same as 519.lbm_r

```
544.nab_r: -m64 -flto -Wl,-mllvm -Wl,-ldist-scalar-expand
-fenable-aggressive-gather -Ofast -march=znver5
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -freemap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc -ldl
```

C++ benchmarks:

```
508.namd_r: -m64 -std=c++14
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 348

PowerEdge R7715 (AMD EPYC 9135 16-Core Processor)

SPECrate®2017_fp_peak = 355

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Nov-2024

Hardware Availability: Nov-2024

Software Availability: Oct-2024

Peak Optimization Flags (Continued)

508.namd_r (continued):

```
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc -ldl
```

510.parest_r: -m64 -std=c++14 -flto -Wl,-mllvm -Wl,-suppress-fmas

```
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math
-mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc -ldl
```

Fortran benchmarks:

503.bwaves_r: basepeak = yes

549.fotonik3d_r: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6

```
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-Mrecursive -mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -fvector-transform
-fscalar-transform -lamdlibm -lamdalloc -ldl -lflang
```

554.roms_r: basepeak = yes

Benchmarks using both Fortran and C:

521.wrf_r: basepeak = yes

527.cam4_r: basepeak = yes

Benchmarks using both C and C++:

511.povray_r: basepeak = yes

526.blender_r: basepeak = yes

Benchmarks using Fortran, C, and C++:

```
-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast -march=znver5
-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=7
-mllvm -unroll-threshold=50 -fremap-arrays -fstrip-mining
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 348

PowerEdge R7715 (AMD EPYC 9135 16-Core Processor)

SPECrate®2017_fp_peak = 355

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Nov-2024

Hardware Availability: Nov-2024

Software Availability: Oct-2024

Peak Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++ (continued):

```
-mllvm -inline-threshold=1000 -mllvm -reduce-array-computations=3 -zopt
-mllvm -unroll-threshold=100 -mllvm -loop-unswitch-threshold=200000
-faggressive-loop-transform -fvector-transform -fscalar-transform
-Mrecursive -fepilog-vectorization-of-inductions -lamdlibm -lamdalloc
-ldl -lflang
```

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/aocc500-flags.html>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-AMD-EPYC-v1.4.html>

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

<http://www.spec.org/cpu2017/flags/aocc500-flags.xml>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-AMD-EPYC-v1.4.xml>

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.

Tested with SPEC CPU®2017 v1.1.9 on 2024-11-01 23:59:18-0400.

Report generated on 2024-11-20 11:06:59 by CPU2017 PDF formatter v6716.

Originally published on 2024-11-19.