SPEC CPU®2026 Integer Rate Result

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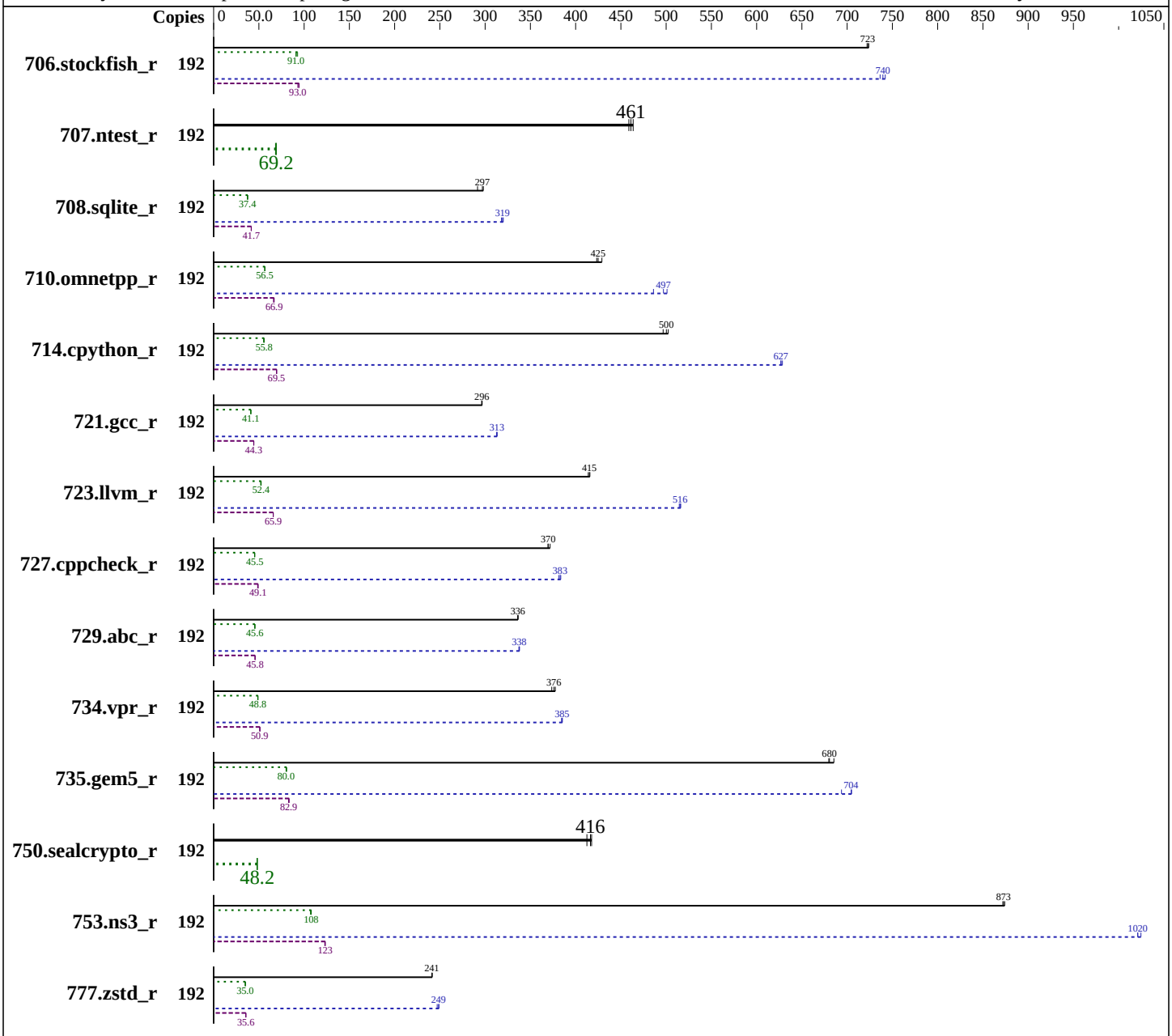
GIGA-BYTE TECHNOLOGY CO., LTD.
(Test Sponsor: Ampere Computing, Inc.)
R2A3-T40-AAV1
(3.20 GHz AmpereOneM A192-32M)

SPECrate®2026_int_base =	429
SPECrate®2026_int_energy_base =	55.1
SPECrate®2026_int_peak =	462
SPECrate®2026_int_energy_peak =	59.7

CPU2026 License: 6412
Test Sponsor: Ampere Computing, Inc.
Tested by: Ampere Computing, Inc.

Test Date: Feb-2026
Hardware Availability: Nov-2025
Software Availability: Oct-2025



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Hardware

CPU Name:	AmpereOneM A192-32M
Max MHz:	3200
Nominal:	3200
Enabled:	192 cores, 1 chip
Orderable:	1 chip
Cache L1:	16 KB I + 64 KB D on chip per core
L2:	2 MB I+D on chip per core
L3:	64 MB I+D on chip per chip
Other:	None
Memory:	768 GB (12 x 64 GB 2Rx4 PC5-5600B-R)
Storage:	1 x 960 GB Samsung M.2 (MZ1L2960HCJR-00A07)
Cooling:	Air
Other:	None

Software

OS:	Fedora Linux 43 (Server Edition) 6.17.5-200.64K_PS.fc42.aarch64
Compiler:	C/C++/Fortran: Version 15.2.0 of GCC
Compiler Category:	Community
Firmware:	Version 5.4.5.1 released Oct-2025
File System:	xfs
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	64-bit
Other:	Jemalloc memory allocator library v5.3.0
Power Management:	OS CPU governor set to "performance"

Power

Max. Power (W):	854.3
Idle Power (W):	236.28
Min. Temperature (C):	20.50
Elevation (m):	60
Line Standard:	120 V / 60 Hz / 1 phase / 2 wire
Provisioning:	Line powered

Power Settings

Management FW:	Version 4.06 of MegaRAC BMC
Memory Mode:	Normal

Power-Relevant Hardware

Power Supply:	1 x 1600 W (non-redundant)
Details:	1+1 1600W 80 PLUS Titanium redundant power supplies AC Power Supply
Backplane:	PCIe Gen5 x4
Other Storage:	Embedded SATA Controller
Storage Model #s:	R2A3-T40-AAV1
NICs Installed:	1 x Mellanox Technologies MT27710 Family @ 25 GbE (2 ports ethernet)
NICs Enabled (FW/OS):	2 / 1
NICs Connected/Speed:	1 @ 25 Gbps
Other HW Model #s:	Fan configuration is 4 x 80x80x38mm

Power Analyzer

Power Analyzer:	cpu-reference-ptd:8000
Hardware Vendor:	Yokogawa
Model:	WT-310
Serial Number:	T11733285
Input Connection:	Serial over USB
Metrology Institute:	NIST
Calibration By:	Yokogawa USA
Calibration Label:	T126622
Calibration Date:	13-Aug-2025
PTDaemon® Version:	1.11.3 (0c074d7d; 2025-10-15)
Setup Description:	Directly Connected to PSU 1

(Continued on next page)

Temperature Meter

Temperature Meter:	cpu-reference-ptd:9000
Hardware Vendor:	PCSensor
Model:	USB9097+DS18B20
Serial Number:	N/A
Input Connection:	USB
PTDaemon Version:	1.11.3 (0c074d7d; 2025-10-15)
Setup Description:	In front of SUT front panel primary air inlet

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CPU2026 License: 6412
Test Sponsor: Ampere Computing, Inc.
Tested by: Ampere Computing, Inc.

Test Date: Feb-2026
Hardware Availability: Nov-2025
Software Availability: Oct-2025

Power Analyzer (Continued)
Current Ranges Used: 10A
Voltage Range Used: 150V

Base Results Table

Benchmark	Copies	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
706.stockfish_r	192	335	722	221	92.8	661	710	334	724	225	91.3	673	713	**335**	**723**	**226**	**91.0**	**674**	**713**
707.ntest_r	192	**247**	**461**	**138**	**69.2**	**559**	**582**	245	464	138	69.1	562	581	248	459	139	68.4	562	584
708.sqlite_r	192	**341**	**297**	**227**	**37.4**	**666**	**842**	348	292	228	37.3	655	834	340	298	226	37.7	663	854
710.omnetpp_r	192	**220**	**425**	**139**	**56.5**	**633**	**769**	220	423	139	56.5	631	767	217	429	138	56.7	637	769
714.cpython_r	192	**184**	**500**	**138**	**55.8**	**750**	**828**	185	497	138	55.7	745	825	183	502	139	55.3	760	831
721.gcc_r	192	444	297	270	41.1	608	756	**444**	**296**	**270**	**41.1**	**608**	**764**	445	296	271	41.0	608	766
723.llvm_r	192	**234**	**415**	**156**	**52.4**	**664**	**739**	234	416	156	52.5	664	743	235	414	157	52.0	668	749
727.cppcheck_r	192	185	372	128	45.3	690	807	**186**	**370**	**127**	**45.5**	**682**	**802**	187	369	128	45.2	686	804
729.abc_r	192	262	336	162	45.5	618	792	**262**	**336**	**162**	**45.6**	**618**	**794**	262	336	162	45.5	618	785
734.vpr_r	192	234	378	151	49.1	644	773	**235**	**376**	**152**	**48.8**	**645**	**772**	237	374	152	48.7	642	767
735.gem5_r	192	138	680	97.1	80.6	706	798	136	685	97.2	80.5	712	794	**137**	**680**	**97.8**	**80.0**	**712**	**821**
750.sealcrypto_r	192	250	412	181	47.9	726	750	**247**	**416**	**180**	**48.2**	**728**	**751**	246	418	180	48.2	731	748
753.ns3_r	192	135	874	91.8	108	682	765	135	872	92.3	107	684	767	**135**	**873**	**91.6**	**108**	**679**	**757**
777.zstd_r	192	513	241	296	35.1	577	700	**513**	**241**	**296**	**35.0**	**578**	**696**	512	242	297	35.0	580	700

SPECrate®2026_int_base = 429
SPECrate®2026_int_energy_base = 55.1

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

Peak Results Table

Benchmark	Copies	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
706.stockfish_r	192	329	736	217	94.5	662	714	**327**	**740**	**221**	**93.0**	**675**	**717**	326	742	219	93.9	671	715
707.ntest_r	192	**247**	**461**	**138**	**69.2**	**559**	**582**	245	464	138	69.1	562	581	248	459	139	68.4	562	584
708.sqlite_r	192	317	320	205	41.6	646	821	**318**	**319**	**204**	**41.7**	**642**	**826**	319	318	205	41.5	643	826
710.omnetpp_r	192	192	486	119	66.3	618	766	186	501	118	66.4	635	767	**188**	**497**	**117**	**66.9**	**625**	**769**
714.cpython_r	192	147	627	110	69.6	752	825	146	628	111	69.5	756	825	**147**	**627**	**111**	**69.5**	**754**	**824**
721.gcc_r	192	421	313	251	44.3	597	761	421	313	250	44.5	592	759	**421**	**313**	**251**	**44.3**	**596**	**764**
723.llvm_r	192	189	515	124	65.9	656	753	**189**	**516**	**124**	**65.9**	**656**	**747**	189	516	124	65.8	658	746
727.cppcheck_r	192	**180**	**383**	**118**	**49.1**	**655**	**785**	181	381	119	48.6	659	787	180	384	118	49.1	656	789
729.abc_r	192	**261**	**338**	**161**	**45.8**	**618**	**782**	261	338	161	45.8	617	787	261	337	161	45.8	616	785
734.vpr_r	192	230	384	145	51.1	630	751	230	385	145	51.2	630	768	**230**	**385**	**145**	**50.9**	**633**	**773**
735.gem5_r	192	133	705	93.8	83.5	707	799	135	694	94.6	82.7	702	800	**133**	**704**	**94.4**	**82.9**	**711**	**796**
750.sealcrypto_r	192	250	412	181	47.9	726	750	**247**	**416**	**180**	**48.2**	**728**	**751**	246	418	180	48.2	731	748
753.ns3_r	192	115	1020	80.5	123	698	778	115	1020	80.3	123	699	782	**115**	**1020**	**80.1**	**123**	**695**	**770**
777.zstd_r	192	501	247	292	35.5	583	702	**497**	**249**	**291**	**35.6**	**585**	**705**	497	249	292	35.6	587	703

SPECrate®2026_int_peak = 462
SPECrate®2026_int_energy_peak = 59.7

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

Compiler Notes

```
Binaries were compiled on a system with 1x AmpereOneM CPU
chip + 768 GB Memory using Fedora Linux 42
```

Submit Notes

```
The config file option 'submit' was used.
'numactl' was used to bind copies to the cores.
```

Operating System Notes

```
'ulimit -s unlimited' was used to set environment stack size
Set dirty_ratio=8 to limit dirty cache to 8% of memory
     echo 8 | sudo tee /proc/sys/vm/dirty_ratio
Set swappiness=1 to swap only if necessary
     echo 1 | sudo tee /proc/sys/vm/swappiness
Set zone_reclaim_mode=1 to free local node memory and avoid remote memory
     echo 1 | sudo tee /proc/sys/vm/zone_reclaim_mode
Set drop_caches=3 to reset caches before invoking runcpu
     echo 3 | sudo tee /proc/sys/vm/drop_caches
Set numa_balancing=0 to disable automatic numa balancing
     echo 0 | sudo tee /proc/sys/kernel/numa_balancing
Switch off all ktune and tuned settings
     sudo tuned-adm off
Transparent huge pages set to 'never'
     sudo bash -c "echo never > /sys/kernel/mm/transparent_hugepage/enabled"

runcpu command invoked through numactl i.e.
numactl --interleave=all runcpu <etc>
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
     "/home/amptest/workspace/sir2026_pkg_verify/ampere_spec2026/spec2026/jem
     alloc/install/lib:/home/amptest/workspace/sir2026_pkg_verify/ampere_spec
     2026/spec2026/gcc/install/lib64:/home/amptest/ampere_spec2026/spec2026/j
     emalloc/install/lib:/home/amptest/ampere_spec2026/spec2026/gcc/install/l
     ib64"
MALLOC_CONF = "thp:never,dirty_decay_ms:-1,muzzy_decay_ms:-1,retain:true"
```

General Notes

```
Jemalloc v5.3.0 is available via
https://github.com/jemalloc/jemalloc/releases/download/5.3.0/jemalloc-5.3.0.tar.bz2
It was built on Fedora Linux 42 using Version 15.2.0 of GCC
The configure options are
"--with-lg-page=16" for building libjemalloc.so, and
```

(Continued on next page)

General Notes (Continued)

```
"--with-lg-quantum=3 --with-lg-page=16" for building libjemalloc_ext.so
Tuned MALLOC_CONF in terms of https://jemalloc.net/jemalloc.3.html

 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

```
Note: lscpu is not able to detect the SLC.
SLC is defined at https://developer.arm.com/documentation/100180/0103/bry1436285730281

Sysinfo program /home/amptest/workspace/sir2026_pkg_verify/ampere_spec2026/spec2026/bin/sysinfo
Rev: 069f95da7e7f5d81b2ce48a82150e54f
running on ampereone Wed Feb  4 11:21:17 2026

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

------------------------------------------------------------
Table of contents
------------------------------------------------------------
 1. uname -srvm
 2. w
 3. Username
 4. ulimit -a
 5. sysinfo process ancestry
 6. /proc/cpuinfo
 7. lscpu
 8. numactl --hardware
 9. /proc/meminfo
10. Systemd service manager version: systemd 258 (258-1.fc43)
11. Services, from systemctl list-unit-files
12. Linux kernel boot-time arguments, from /proc/cmdline
13. cpupower frequency-info
14. tuned-adm active
15. sysctl
16. /sys/kernel/mm/transparent_hugepage
17. /sys/kernel/mm/transparent_hugepage/khugepaged
18. OS release
19. Disk information
20. /sys/devices/virtual/dmi/id
```

(Continued on next page)

Platform Notes (Continued)

```
 21. dmidecode
 22. BIOS
 ------------------------------------------------------------

 ------------------------------------------------------------
 1. uname -srvm
   Linux 6.17.5-200.64K_PS.fc42.aarch64 #1 SMP PREEMPT_DYNAMIC Wed Jan 21 08:54:52 EST 2026 aarch64

 ------------------------------------------------------------
 2. w
    11:21:17 up  3:34,  2 users,  load average: 95.96, 34.00, 12.19
   USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
   amptest            07:47    3:34m  0.00s  0.02s sshd-session: amptest [priv]
   amptest            07:47    3:34m  0.00s  0.17s /usr/lib/systemd/systemd --user

 ------------------------------------------------------------
 3. Username
   From environment variable $USER:  root
   From the command 'logname':       amptest

 ------------------------------------------------------------
 4. ulimit -a
   real-time non-blocking time  (microseconds, -R) unlimited
   core file size              (blocks, -c) 0
   data seg size               (kbytes, -d) unlimited
   scheduling priority                 (-e) 0
   file size                   (blocks, -f) unlimited
   pending signals                     (-i) 784991
   max locked memory           (kbytes, -l) 8192
   max memory size             (kbytes, -m) unlimited
   open files                          (-n) 524288
   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) 784991
   virtual memory              (kbytes, -v) unlimited
   file locks                          (-x) unlimited

 ------------------------------------------------------------
 5. sysinfo process ancestry
  /usr/lib/systemd/systemd --switched-root --system --deserialize=57
  sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
  sshd-session: amptest [priv]
```

(Continued on next page)

Platform Notes (Continued)

```
 sshd-session: amptest@notty
 java -jar remoting.jar -workDir /home/amptest -jar-cache /home/amptest/remoting/jarCache
 /bin/bash /tmp/jenkins13268025325745977 29.sh
 sudo -S -E UPDATE_UTIL=false /home/amptest/util/jenkins/speccpu_pkg_verify.sh
   GreenSIR2026/without_report/spec2026_intrate_gcc15_Ofast_static_ampereonem_power_109.tgz
 /bin/bash /home/amptest/util/jenkins/speccpu_pkg_verify.sh
   GreenSIR2026/without_report/spec2026_intrate_gcc15_Ofast_static_ampereonem_power_109.tgz
/bin/bash /home/amptest/workspace/sir2026_pkg_verify/ampere_spec2026/run_spec2026.sh --iterations 3
   --nobuild --action run --copies 192 --reportable --tune=base,peak intrate
 runcpu --config=ampere_aarch64 --define numasize=48 --define
   gcc_dir=/home/amptest/ampere_spec2026/spec2026/gcc/install --define
   llvm_dir=/home/amptest/ampere_spec2026/spec2026/llvm/install --define
  jemalloc_dir=/home/amptest/ampere_spec2026/spec2026/jemalloc/install --define glibc_dir=/ --iterations 3
   --nobuild --action run --copies 192 --reportable --tune=base,peak intrate
 runcpu --configfile ampere_aarch64 --define numasize=48 --define
   gcc_dir=/home/amptest/ampere_spec2026/spec2026/gcc/install --define
   llvm_dir=/home/amptest/ampere_spec2026/spec2026/llvm/install --define
  jemalloc_dir=/home/amptest/ampere_spec2026/spec2026/jemalloc/install --define glibc_dir=/ --iterations 3
  --nobuild --action run --copies 192 --reportable --tune base,peak --runmode rate --tune base:peak --size
  refrate intrate --nopreenv --note-preenv --logfile $SPEC/tmp/CPU2026.003/templogs/preenv.intrate.003.0.log
   --lognum 003.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo -f
$SPEC = /home/amptest/workspace/sir2026_pkg_verify/ampere_spec2026/spec2026

------------------------------------------------------------
6. /proc/cpuinfo
    CPU implementer : 0xc0
    CPU architecture: 8
    CPU variant     : 0x0
    CPU part        : 0xac4
    CPU revision    : 0
   Features        : fp asimd evtstrm aes pmull sha1 sha2 crc32 atomics fphp asimdhp cpuid asimdrdm jscvt
                     fcma lrcpc dcpop sha3 sm3 sm4 asimddp sha512 asimdfhm dit uscat ilrcpc flagm ssbs sb
                          paca pacg dcpodp flagm2 frint i8mm bf16 rng bti ecv

------------------------------------------------------------
7. lscpu

From lscpu from util-linux 2.41.3:
  Architecture:                            aarch64
  CPU op-mode(s):                          64-bit
  Byte Order:                              Little Endian
  CPU(s):                                  192
  On-line CPU(s) list:                     0-191
  Vendor ID:                               Ampere
```

(Continued on next page)

Platform Notes (Continued)

```
  BIOS Vendor ID:                          Ampere (R)
  Model name:                              Ampere-1a
  BIOS Model name:                         AmpereOne (R) A192-32M CPU @ 3.2GHz
  BIOS CPU family:                         257
  Model:                                   0
  Thread(s) per core:                      1
  Core(s) per socket:                      192
  Socket(s):                               1
  Stepping:                                0x0
  Frequency boost:                         disabled
  CPU(s) scaling MHz:                      100%
  CPU max MHz:                             3200.0000
  CPU min MHz:                             1000.0000
  BogoMIPS:                                2000.00
  Flags:                                   fp asimd evtstrm aes pmull sha1 sha2 crc32 atomics fphp asimdhp
                                           cpuid asimdrdm jscvt fcma lrcpc dcpop sha3 sm3 sm4 asimddp sha512
                                           asimdfhm dit uscat ilrcpc flagm ssbs sb paca pacg dcpodp flagm2
                                           frint i8mm bf16 rng bti ecv
  L1d cache:                               12 MiB (192 instances)
  L1i cache:                               3 MiB (192 instances)
  L2 cache:                                384 MiB (192 instances)
  NUMA node(s):                            4
  NUMA node0 CPU(s):                       0-47
  NUMA node1 CPU(s):                       48-95
  NUMA node2 CPU(s):                       96-143
  NUMA node3 CPU(s):                       144-191
  Vulnerability Gather data sampling:      Not affected
  Vulnerability Ghostwrite:                Not affected
  Vulnerability Indirect target selection: 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 Old microcode:             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; __user pointer sanitization
  Vulnerability Spectre v2:                Not affected
  Vulnerability Srbds:                     Not affected
  Vulnerability Tsa:                       Not affected
  Vulnerability Tsx async abort:           Not affected
  Vulnerability Vmscape:                   Not affected
```

(Continued on next page)

Platform Notes (Continued)

```
From lscpu --cache:
     NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL SETS PHY-LINE COHERENCY-SIZE
     L1d       64K      12M    4 Data            1  256                      64
     L1i       16K       3M    4 Instruction     1   64                      64
     L2         2M     384M    8 Unified         2 4096                      64

------------------------------------------------------------
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 4 nodes (0-3)
  node 0 cpus: 0-47
  node 0 size: 195947 MB
  node 0 free: 189432 MB
  node 1 cpus: 48-95
  node 1 size: 196403 MB
  node 1 free: 189586 MB
  node 2 cpus: 96-143
  node 2 size: 196403 MB
  node 2 free: 192659 MB
  node 3 cpus: 144-191
  node 3 size: 196211 MB
  node 3 free: 191565 MB
  node distances:
  node     0    1    2    3
     0:   10   11   11   12
     1:   11   10   12   11
     2:   11   12   10   11
     3:   12   11   11   10

------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       803806272 kB

'who -r' did not return a run level

------------------------------------------------------------
10. Systemd service manager version: systemd 258 (258-1.fc43)
  Default Target  Status
  multi-user      running

------------------------------------------------------------
11. Services, from systemctl list-unit-files
  STATE            UNIT FILES
  enabled         ModemManager NetworkManager NetworkManager-dispatcher abrt-journal-core abrt-oops
```

(Continued on next page)

Platform Notes (Continued)

```
                 abrt-vmcore abrt-xorg abrtd atd audit-rules auditd authselect-apply-changes bluetooth
                 crond dbus-broker fips-crypto-policy-overlay firewalld getty@ irqbalance iscsi-onboot
                  iscsi-starter lm_sensors lvm2-monitor mdmonitor multipathd rpmdb-rebuild rsyslog
                  rtkit-daemon selinux-autorelabel-mark smartd sshd sssd systemd-boot-clear-sysfail
                 systemd-confext systemd-resolved systemd-sysext systemd-tpm2-clear tuned udisks2 upower
   enabled-runtime  systemd-remount-fs
   disabled         NetworkManager-wait-online abrt-pstoreoops arp-ethers blk-availability
                   canberra-system-bootup canberra-system-shutdown canberra-system-shutdown-reboot
                  chrony-wait chronyd chronyd-restricted console-getty containerd cpupower debug-shell
                  dnf-system-upgrade dnf5-offline-transaction dnsmasq docker fancontrol fsidd gssproxy
                 iscsi-init iscsid iscsiuio kvm_stat lastlog2-import low-memory-monitor lvm-devices-import
                    man-db-restart-cache-update netavark-dhcp-proxy netavark-firewalld-reload
                    netavark-nftables-reload nfs-blkmap nfs-server nftables nis-domainname
                    nvmefc-boot-connections nvmf-autoconnect openhpid podman podman-auto-update
                    podman-clean-transient podman-kube@ podman-restart psacct rmtfs rpcbind
                    selinux-check-proper-disable ssh-host-keys-migration sshd-keygen@ svnserve
                 systemd-boot-check-no-failures systemd-boot-update systemd-homed systemd-homed-activate
                systemd-homed-firstboot systemd-network-generator systemd-oomd 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-pstore systemd-time-wait-sync systemd-timesyncd
                  systemd-udev-load-credentials systemd-userdb-load-credentials wpa_supplicant zvbid
   indirect      iscsi pcscd serial-getty@ sshd@ sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh
                      sssd-sudo systemd-sysupdate systemd-sysupdate-reboot systemd-userdbd

------------------------------------------------------------
12. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=(hd5,gpt2)/vmlinuz-6.17.5-200.64K_PS.fc42.aarch64
  root=/dev/mapper/fedora-root
  ro
  rd.lvm.lv=fedora/root
  nokaslr
  kaslr.disabled=1
  nohz=on
  nohz_full=0-191

------------------------------------------------------------
13. cpupower frequency-info
  analyzing CPU 4:
    current policy: frequency should be within 1000 MHz and 3.20 GHz.
                    The governor "performance" may decide which speed to use
                    within this range.

------------------------------------------------------------
14. tuned-adm active
```

(Continued on next page)

Platform Notes (Continued)

```
  No current active profile.

------------------------------------------------------------
15. sysctl
  kernel.numa_balancing               0
  kernel.randomize_va_space           2
  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
  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

------------------------------------------------------------
16. /sys/kernel/mm/transparent_hugepage
  defrag          always defer defer+madvise madvise [never]
  enabled         always madvise [never]
  hpage_pmd_size  536870912
  shmem_enabled   always within_size advise [never] deny force

------------------------------------------------------------
17. /sys/kernel/mm/transparent_hugepage/khugepaged
  alloc_sleep_millisecs   60000
  defrag                      1
  max_ptes_none            8191
  max_ptes_shared          4096
  max_ptes_swap            1024
  pages_to_scan           65536
  scan_sleep_millisecs    10000

------------------------------------------------------------
18. OS release
  From /etc/*-release /etc/*-version
  os-release     Fedora Linux 43 (Server Edition)
```

(Continued on next page)

Platform Notes (Continued)

```
   fedora-release Fedora release 43 (Forty Three)
   redhat-release Fedora release 43 (Forty Three)
   system-release Fedora release 43 (Forty Three)

 ------------------------------------------------------------
 19. Disk information
 SPEC is set to: /home/amptest/workspace/sir2026_pkg_verify/ampere_spec2026/spec2026
   Filesystem              Type  Size  Used Avail Use% Mounted on
   /dev/mapper/fedora-root xfs   891G  245G  647G  28% /

 ------------------------------------------------------------
 20. /sys/devices/virtual/dmi/id
     Vendor:         GIGACOMPUTING
     Product:        R2A3-T40-AAV1
     Product Family: R2A3-T40-AAV1
     Serial:         00000000000000000000000000001

 ------------------------------------------------------------
 21. dmidecode
   Additional information from dmidecode 3.6 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 Micron Technology MTC40F2046S1RC56BD2 MLCC 64 GB 2 rank 5600


 ------------------------------------------------------------
 22. BIOS
 (This section combines info from /sys/devices and dmidecode.)
    BIOS Vendor:       Ampere Computing LLC
    BIOS Version:      5.4.5.1
    BIOS Date:         10/22/2025
    BIOS Revision:     5.37
```

Compiler Version Notes

```
==============================================================================
C      | 708.sqlite_r(base, peak) 714.cpython_r(base, peak) 777.zstd_r(base,
       | peak)
------------------------------------------------------------------------------
gcc (GCC) 15.2.0
Copyright (C) 2025 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
```

(Continued on next page)

Compiler Version Notes (Continued)

```
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
------------------------------------------------------------------------------

==============================================================================
C++    | 706.stockfish_r(base, peak) 707.ntest_r(base, peak)
       | 727.cppcheck_r(base, peak) 753.ns3_r(base, peak)
------------------------------------------------------------------------------
g++ (GCC) 15.2.0
Copyright (C) 2025 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
------------------------------------------------------------------------------

==============================================================================
C++, C | 710.omnetpp_r(base pass 0, peak pass 1, peak pass 2) 721.gcc_r(base
       | pass 0, peak pass 1, peak pass 2) 723.llvm_r(base pass 0, peak pass
       | 1, peak pass 2) 729.abc_r(base pass 0, peak pass 1, peak pass 2)
       | 734.vpr_r(base pass 0, peak pass 1, peak pass 2) 735.gem5_r(base
       | pass 0, peak pass 1, peak pass 2) 750.sealcrypto_r(base pass 0, peak
       | pass 0)
------------------------------------------------------------------------------
g++ (GCC) 15.2.0
Copyright (C) 2025 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
------------------------------------------------------------------------------

==============================================================================
C++, C | 710.omnetpp_r(base pass 0, peak pass 1, peak pass 2) 721.gcc_r(base
       | pass 0, peak pass 1, peak pass 2) 723.llvm_r(base pass 0, peak pass
       | 1, peak pass 2) 729.abc_r(base pass 0, peak pass 1, peak pass 2)
       | 734.vpr_r(base pass 0, peak pass 1, peak pass 2) 735.gem5_r(base
       | pass 0, peak pass 1, peak pass 2) 750.sealcrypto_r(base pass 0, peak
       | pass 0)
------------------------------------------------------------------------------
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warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
------------------------------------------------------------------------------

==============================================================================
C++, C | 710.omnetpp_r(base pass 0, peak pass 1, peak pass 2) 721.gcc_r(base
       | pass 0, peak pass 1, peak pass 2) 723.llvm_r(base pass 0, peak pass
       | 1, peak pass 2) 729.abc_r(base pass 0, peak pass 1, peak pass 2)
```

(Continued on next page)

Compiler Version Notes (Continued)

```
       | 734.vpr_r(base pass 0, peak pass 1, peak pass 2) 735.gem5_r(base
       | pass 0, peak pass 1, peak pass 2) 750.sealcrypto_r(base pass 0, peak
       | pass 0)
------------------------------------------------------------------------------
g++ (GCC) 15.2.0
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warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
------------------------------------------------------------------------------

==============================================================================
C++, C | 710.omnetpp_r(base pass 0, peak pass 1, peak pass 2) 721.gcc_r(base
       | pass 0, peak pass 1, peak pass 2) 723.llvm_r(base pass 0, peak pass
       | 1, peak pass 2) 729.abc_r(base pass 0, peak pass 1, peak pass 2)
       | 734.vpr_r(base pass 0, peak pass 1, peak pass 2) 735.gem5_r(base
       | pass 0, peak pass 1, peak pass 2) 750.sealcrypto_r(base pass 0, peak
       | pass 0)
------------------------------------------------------------------------------
gcc (GCC) 15.2.0
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This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
gcc

C++ benchmarks:
g++

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

Base Portability Flags

710.omnetpp_r: -fno-finite-math-only
734.vpr_r: -fno-finite-math-only
735.gem5_r: -fno-finite-math-only

Base Optimization Flags

C benchmarks:
-mabi=lp64 -std=c18 -Wl,-allow-multiple-definition -static
-fwhole-program
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib
-L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib -g -Ofast
-mcpu=ampere1a -flto=32 -funroll-loops --param early-inlining-insns=96
--param max-inline-insns-auto=64 --param inline-unit-growth=96
-u malloc -ljemalloc

C++ benchmarks:

706.stockfish_r: -mabi=lp64 -std=c++17 -Wl,-allow-multiple-definition
-static -fwhole-program
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib
-L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib
-g -Ofast -mcpu=ampere1a -flto=32 -funroll-loops
--param early-inlining-insns=256
--param max-inline-insns-auto=128
--param inline-unit-growth=256 -ffinite-loops -pthread
-u malloc -ljemalloc_ext

707.ntest_r: -mabi=lp64 -std=c++17 -Wl,-allow-multiple-definition
-static -fwhole-program
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib
-L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib
-g -Ofast -mcpu=ampere1a -flto=32 -funroll-loops
--param early-inlining-insns=256
--param max-inline-insns-auto=128
--param inline-unit-growth=256 -ffinite-loops -u malloc
-ljemalloc_ext

727.cppcheck_r: Same as 707.ntest_r

753.ns3_r: Same as 707.ntest_r

Benchmarks using both C and C++:

710.omnetpp_r: -mabi=lp64 -std=c++17 -std=c18
-Wl,-allow-multiple-definition -static -fwhole-program
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib

(Continued on next page)

Base Optimization Flags (Continued)

710.omnetpp_r (continued):
-L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib
-g -Ofast -mcpu=ampere1a -flto=32 -funroll-loops
--param early-inlining-insns=96
--param max-inline-insns-auto=64
--param inline-unit-growth=96
--param early-inlining-insns=256
--param max-inline-insns-auto=128
--param inline-unit-growth=256 -ffinite-loops -u malloc
-ljemalloc_ext

721.gcc_r: Same as 710.omnetpp_r

723.llvm_r: -mabi=lp64 -std=c++17 -std=c18
-Wl,-allow-multiple-definition -static -fwhole-program
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib
-L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib
-g -Ofast -mcpu=ampere1a -flto=32 -funroll-loops
--param early-inlining-insns=96
--param max-inline-insns-auto=64
--param inline-unit-growth=96
--param early-inlining-insns=256
--param max-inline-insns-auto=128
--param inline-unit-growth=256 -ffinite-loops -pthread
-u malloc -ljemalloc_ext

729.abc_r: Same as 710.omnetpp_r

734.vpr_r: Same as 710.omnetpp_r

735.gem5_r: Same as 723.llvm_r

750.sealcrypto_r: Same as 710.omnetpp_r

Base Other Flags

C benchmarks:
-w -Wl,-Map,mapfile

C++ benchmarks:
-Wl,-Map,mapfile

(Continued on next page)

Base Other Flags (Continued)

Benchmarks using both C and C++:
`-w -Wl,-Map,mapfile`

Peak Compiler Invocation

C benchmarks:
`gcc`

C++ benchmarks:
`g++`

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

Peak Portability Flags

710.omnetpp_r: `-fno-finite-math-only`
734.vpr_r: `-fno-finite-math-only`
735.gem5_r: `-fno-finite-math-only`

Peak Optimization Flags

C benchmarks:
`-mabi=lp64 -std=c18 -Wl,-allow-multiple-definition -static`
`-fwhole-program`
`-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64`
`-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib`
`-L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib`
`-fprofile-generate -fprofile-use -fprofile-partial-training -g -Ofast`
`-mcpu=ampere1a -flto=32 -funroll-loops --param early-inlining-insns=96`
`--param max-inline-insns-auto=64 --param inline-unit-growth=96`
`-u malloc -ljemalloc`

C++ benchmarks:

(Continued on next page)

Peak Optimization Flags (Continued)

706.stockfish_r: `-mabi=lp64 -std=c++17 -Wl,-allow-multiple-definition -static -fwhole-program -L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64 -L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib -L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib -fprofile-generate -fprofile-use -fprofile-partial-training -g -Ofast -mcpu=ampere1a -flto=32 -funroll-loops --param early-inlining-insns=256 --param max-inline-insns-auto=128 --param inline-unit-growth=256 -ffinite-loops -pthread -u malloc -ljemalloc_ext`

707.ntest_r: `basepeak = yes`

727.cppcheck_r: `-mabi=lp64 -std=c++17 -Wl,-allow-multiple-definition -static -fwhole-program -L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64 -L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib -L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib -fprofile-generate -fprofile-use -fprofile-partial-training -g -Ofast -mcpu=ampere1a -flto=32 -funroll-loops --param early-inlining-insns=256 --param max-inline-insns-auto=128 --param inline-unit-growth=256 -ffinite-loops -u malloc -ljemalloc_ext`

753.ns3_r: `Same as 727.cppcheck_r`

Benchmarks using both C and C++:

710.omnetpp_r: `-mabi=lp64 -std=c++17 -std=c18 -Wl,-allow-multiple-definition -static -fwhole-program -L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64 -L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib -L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib -fprofile-generate -fprofile-use -fprofile-partial-training -g -Ofast -mcpu=ampere1a -flto=32 -funroll-loops --param early-inlining-insns=96 --param max-inline-insns-auto=64 --param inline-unit-growth=96 --param early-inlining-insns=256 --param max-inline-insns-auto=128 --param inline-unit-growth=256 -ffinite-loops -u malloc -ljemalloc_ext`

(Continued on next page)

Peak Optimization Flags (Continued)

721.gcc_r: Same as 710.omnetpp_r

723.llvm_r: -mabi=lp64 -std=c++17 -std=c18
-Wl,-allow-multiple-definition -static -fwhole-program
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib
-L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib
-fprofile-generate -fprofile-use
-fprofile-partial-training -g -Ofast -mcpu=ampere1a
-flto=32 -funroll-loops --param early-inlining-insns=96
--param max-inline-insns-auto=64
--param inline-unit-growth=96
--param early-inlining-insns=256
--param max-inline-insns-auto=128
--param inline-unit-growth=256 -ffinite-loops -pthread
-u malloc -ljemalloc_ext

729.abc_r: Same as 710.omnetpp_r

734.vpr_r: Same as 710.omnetpp_r

735.gem5_r: Same as 723.llvm_r

750.sealcrypto_r: basepeak = yes

Peak Other Flags

C benchmarks:
-w -Wl,-Map,mapfile

C++ benchmarks:
-Wl,-Map,mapfile

Benchmarks using both C and C++:
-w -Wl,-Map,mapfile

SPEC CPU®2026 Integer Rate Result

Copyright 2026 Standard Performance Evaluation Corporation

GIGA-BYTE TECHNOLOGY CO., LTD.
(Test Sponsor: Ampere Computing, Inc.)
R2A3-T40-AAV1
(3.20 GHz AmpereOneM A192-32M)

SPECrate®2026_int_base =	429
SPECrate®2026_int_energy_base =	55.1
SPECrate®2026_int_peak =	462
SPECrate®2026_int_energy_peak =	59.7

CPU2026 License: 6412
Test Sponsor: Ampere Computing, Inc.
Tested by: Ampere Computing, Inc.

Test Date: Feb-2026
Hardware Availability: Nov-2025
Software Availability: Oct-2025

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2026/results/flags/gcc-rev-A2.html
http://www.spec.org/cpu2026/results/flags/GIGA-BYTE-platform-settings-AmpereOneM-rev.1.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2026/results/flags/gcc-rev-A2.xml
http://www.spec.org/cpu2026/results/flags/GIGA-BYTE-platform-settings-AmpereOneM-rev.1.xml

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

Tested with SPEC CPU®2026 v0.902.0 on 2026-02-04 14:21:16-0500.
Report generated on 2026-05-04 23:26:59 by CPU2026 PS formatter (86729d3b).
Originally published on 2026-05-05.