SPEC CPU®2017 Floating Point Rate Result

IEIT Systems Co., Ltd.
NF5280A7 (AMD EPYC 9684X)

$SPECrate®2017_fp_base = $ **1610**

$SPECrate®2017_fp_peak = $ Not Run

CPU2017 License: 3358
Test Sponsor: IEIT Systems Co., Ltd.
Tested by: IEIT Systems Co., Ltd.

Test Date: Sep-2024
Hardware Availability: Jun-2023
Software Availability: Jun-2024

Benchmark	Copies	Result
503.bwaves_r	384	1780
507.cactuBSSN_r	384	1670
508.namd_r	384	1440
510.parest_r	384	2160
511.povray_r	384	2080
519.lbm_r	384	589
521.wrf_r	384	1360
526.blender_r	384	2000
527.cam4_r	384	2030
538.imagick_r	384	7750
544.nab_r	384	3190
549.fotonik3d_r	384	570
554.roms_r	384	559

SPECrate®2017_fp_base (1610)

Hardware

CPU Name: AMD EPYC 9684X
 Max MHz: 3700
 Nominal: 2550
Enabled: 192 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: 1152 MB I+D on chip per chip,
 96 MB shared / 8 cores
 Other: None
Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 1 x 960 GB NVME SSD
Other: CPU Cooling: Air

Software

OS: SUSE Linux Enterprise Server 15 SP6
 6.4.0-150600.21-default
Compiler: C/C++/Fortran: Version 4.0.0 of AOCC
Parallel: No
Firmware: Version 04.02.32 released May-2024
File System: btrfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage.

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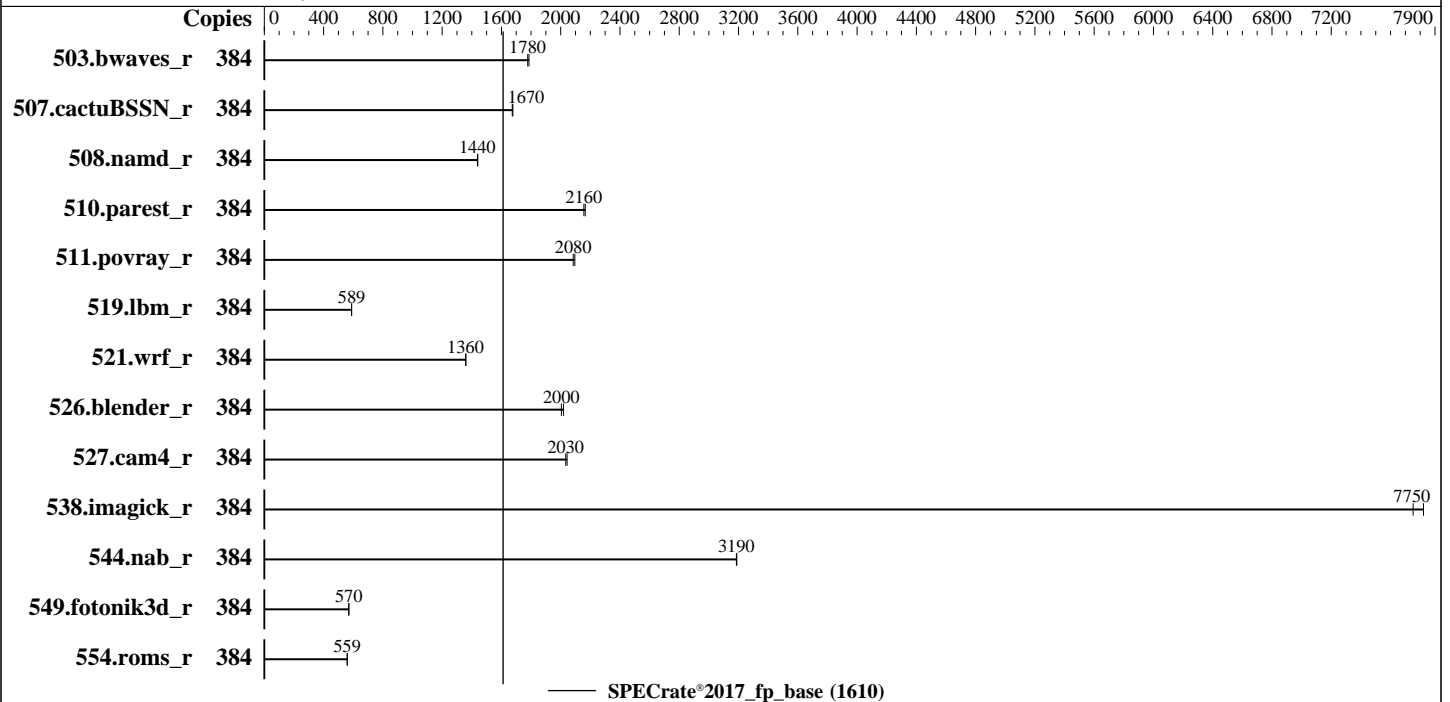|	
IEIT Systems Co., Ltd.	SPECrate®2017_fp_base = 1610
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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	384	**2167**	**1780**	2156	1790									
507.cactuBSSN_r	384	290	1680	**291**	**1670**									
508.namd_r	384	**254**	**1440**	253	1440									
510.parest_r	384	**466**	**2160**	464	2170									
511.povray_r	384	**430**	**2080**	428	2100									
519.lbm_r	384	**687**	**589**	687	589									
521.wrf_r	384	**633**	**1360**	632	1360									
526.blender_r	384	290	2020	**292**	**2000**									
527.cam4_r	384	329	2040	**330**	**2030**									
538.imagick_r	384	**123**	**7750**	122	7820									
544.nab_r	384	203	3190	**203**	**3190**									
549.fotonik3d_r	384	2622	571	**2626**	**570**									
554.roms_r	384	**1091**	**559**	1091	559									

SPECrate®2017_fp_base = **1610**

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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)

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

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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 =
    "/home/CPU2017/amd_rate_aocc400_znver4_A_lib/lib:/home/CPU2017/amd_rate_aocc400_znver4_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.
```

Platform Notes

```
 BIOS configuration:
 SVM Mode = disable
 DRAM Scrub time = disable
 NUMA nodes per socket = NPS4
 Determinism Slider = Power
 cTDP = 400
 Package Power Limit = 400

 Sysinfo program /home/CPU2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost Sun Sep 22 20:58:20 2024

 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 254 (254.10+suse.84.ge8d77af424)
 12. Services, from systemctl list-unit-files
 13. Linux kernel boot-time arguments, from /proc/cmdline
```

(Continued on next page)

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Platform Notes (Continued)

```
   14. cpupower frequency-info
   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
   21. dmidecode
   22. BIOS
   ------------------------------------------------------------

   ------------------------------------------------------------
   1. uname -a
     Linux localhost 6.4.0-150600.21-default #1 SMP PREEMPT_DYNAMIC Thu May 16 11:09:22 UTC 2024 (36c1e09)
     x86_64 x86_64 x86_64 GNU/Linux

   ------------------------------------------------------------
   2. w
      20:58:20 up  3:00,  1 user,  load average: 0.51, 0.14, 6.03
     USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
     root     tty1     -                17:58   44.00s  2.05s  0.39s /bin/bash ./amd_rate_aocc400_znver4_A1.sh

   ------------------------------------------------------------
   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) 6188664
     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) 6188664
     virtual memory          (kbytes, -v) unlimited
     file locks                      (-x) unlimited

   ------------------------------------------------------------
   5. sysinfo process ancestry
    /usr/lib/systemd/systemd --switched-root --system --deserialize=31
    login -- root
    -bash
    python3 ./run_amd_rate_aocc400_znver4_A1.py
    /bin/bash ./amd_rate_aocc400_znver4_A1.sh
    runcpu --config amd_rate_aocc400_znver4_A1.cfg --tune base --reportable --iterations 2 fprate
    runcpu --configfile amd_rate_aocc400_znver4_A1.cfg --tune base --reportable --iterations 2 --nopower
      --runmode rate --tune base --size test:train:refrate fprate --nopreenv --note-preenv --logfile
      $SPEC/tmp/CPU2017.009/templogs/preenv.fprate.009.0.log --lognum 009.0 --from_runcpu 2
    specperl $SPEC/bin/sysinfo
    $SPEC = /home/CPU2017

   ------------------------------------------------------------
```

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Platform Notes (Continued)

```
 6. /proc/cpuinfo
     model name       : AMD EPYC 9684X 96-Core Processor
     vendor_id        : AuthenticAMD
     cpu family       : 25
     model            : 17
     stepping         : 2
     microcode        : 0xa101244
     bugs             : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass srso
     TLB size         : 3584 4K pages
     cpu cores        : 96
     siblings         : 192
     2 physical ids (chips)
     384 processors (hardware threads)
     physical id 0: core ids 0-95
     physical id 1: core ids 0-95
     physical id 0: apicids 0-191
     physical id 1: apicids 256-447
   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):                          384
   On-line CPU(s) list:             0-383
   Vendor ID:                       AuthenticAMD
   BIOS Vendor ID:                  Advanced Micro Devices, Inc.
   Model name:                      AMD EPYC 9684X 96-Core Processor
   BIOS Model name:                 AMD EPYC 9684X 96-Core Processor           Unknown CPU @ 2.5GHz
   BIOS CPU family:                 107
   CPU family:                      25
   Model:                           17
   Thread(s) per core:              2
   Core(s) per socket:              96
   Socket(s):                       2
   Stepping:                        2
   Frequency boost:                 enabled
   CPU(s) scaling MHz:              69%
   CPU max MHz:                     3715.4290
   CPU min MHz:                     1500.0000
   BogoMIPS:                        5092.07
   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 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
                                    user_shstk avx512_bf16 clzero irperf xsaveerptr rdpru wbnoinvd
                                    amd_ppin cppc arat npt lbrv svm_lock nrip_save tsc_scale vmcb_clean
```

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Platform Notes (Continued)

```
                            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 overflow_recov succor smca fsrm flush_l1d
                            debug_swap
  L1d cache:                6 MiB (192 instances)
  L1i cache:                6 MiB (192 instances)
  L2 cache:                 192 MiB (192 instances)
  L3 cache:                 2.3 GiB (24 instances)
  NUMA node(s):             8
  NUMA node0 CPU(s):        0-23,192-215
  NUMA node1 CPU(s):        24-47,216-239
  NUMA node2 CPU(s):        48-71,240-263
  NUMA node3 CPU(s):        72-95,264-287
  NUMA node4 CPU(s):        96-119,288-311
  NUMA node5 CPU(s):        120-143,312-335
  NUMA node6 CPU(s):        144-167,336-359
  NUMA node7 CPU(s):        168-191,360-383
  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:  Mitigation; Safe RET
  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; PBRSB-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      32K      6M   8 Data             1    64       1             64
      L1i      32K      6M   8 Instruction      1    64       1             64
      L2        1M    192M   8 Unified          2  2048       1             64
      L3       96M    2.3G  16 Unified          3 98304       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: 0-23,192-215
    node 0 size: 193075 MB
    node 0 free: 191365 MB
    node 1 cpus: 24-47,216-239
    node 1 size: 193523 MB
    node 1 free: 191789 MB
    node 2 cpus: 48-71,240-263
    node 2 size: 193523 MB
    node 2 free: 191850 MB
    node 3 cpus: 72-95,264-287
    node 3 size: 193523 MB
    node 3 free: 191806 MB
    node 4 cpus: 96-119,288-311
    node 4 size: 193523 MB
    node 4 free: 191817 MB
```

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Platform Notes (Continued)

```
  node 5 cpus: 120-143,312-335
  node 5 size: 193523 MB
  node 5 free: 191823 MB
  node 6 cpus: 144-167,336-359
  node 6 size: 193523 MB
  node 6 free: 191793 MB
  node 7 cpus: 168-191,360-383
  node 7 size: 192975 MB
  node 7 free: 191270 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:       1584323448 kB


  --------------------------------------------------------------
  10. who -r
     run-level 3 Sep 22 17:58


  --------------------------------------------------------------
  11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)
     Default Target  Status
     multi-user      running


  --------------------------------------------------------------
  12. Services, from systemctl list-unit-files
     STATE            UNIT FILES
     enabled          apparmor auditd cron firewalld getty@ irqbalance issue-generator kbdsettings kdump
                      kdump-early kdump-notify nvmefc-boot-connections nvmf-autoconnect postfix purge-kernels
                      rollback sshd systemd-pstore wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6
                      wickedd-nanny
     enabled-runtime  systemd-remount-fs
     disabled         boot-sysctl ca-certificates chrony-wait chronyd console-getty debug-shell ebtables
                      exchange-bmc-os-info fsidd grub2-once haveged hwloc-dump-hwdata ipmievd issue-add-ssh-keys
                      kexec-load nfs nfs-blkmap rpcbind rpmconfigcheck serial-getty@
                      systemd-boot-check-no-failures systemd-confext systemd-network-generator systemd-sysext
                      systemd-time-wait-sync systemd-timesyncd
     indirect         systemd-userdbd wickedd

  --------------------------------------------------------------
  13. Linux kernel boot-time arguments, from /proc/cmdline
     BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default
     root=UUID=daf71402-9a22-417d-a498-881cf3539e73
     splash=silent
     mitigations=auto
     quiet
     security=apparmor
     crashkernel=384M,high
     crashkernel=72M,low

  --------------------------------------------------------------
```

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Platform Notes (Continued)

```
 14. cpupower frequency-info
   analyzing CPU 17:
     current policy: frequency should be within 1.50 GHz and 2.55 GHz.
                     The governor "performance" may decide which speed to use
                     within this range.
     boost state support:
       Supported: yes
       Active: yes


 ----------------------------------------------------------------
 15. 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
   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  2097152
   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             511
   max_ptes_shared           256
   max_ptes_swap              64
   pages_to_scan            4096
   scan_sleep_millisecs    10000


 ----------------------------------------------------------------
 18. OS release
   From /etc/*-release /etc/*-version
   os-release SUSE Linux Enterprise Server 15 SP6


 ----------------------------------------------------------------
 19. Disk information
 SPEC is set to: /home/CPU2017
   Filesystem      Type   Size  Used Avail Use% Mounted on
   /dev/nvme0n1p2 btrfs  892G   25G  866G   3% /home

 ----------------------------------------------------------------
```

(Continued on next page)

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Platform Notes (Continued)

```
 20. /sys/devices/virtual/dmi/id
     Vendor:          IEIT SYSTEMS
     Product:         NF5280-A7-A0-R0-00
     Product Family: Not specified
     Serial:          000000000


     ---------------------------------------------------------------
 21. dmidecode
   Additional information from dmidecode 3.4 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:
     3x Hynix HMCG94MEBRA109N 64 GB 2 rank 4800
     6x Samsung M329R8GA0BB0-CQKDG 64 GB 2 rank 4800
     10x Samsung M329R8GA0BB0-CQKEG 64 GB 2 rank 4800
     5x Samsung M329R8GA0BB0-CQKVG 64 GB 2 rank 4800


     ---------------------------------------------------------------
 22. BIOS
  (This section combines info from /sys/devices and dmidecode.)
     BIOS Vendor:       American Megatrends International, LLC.
     BIOS Version:      04.02.32
     BIOS Date:         05/14/2024
```

Compiler Version Notes

```
==============================================================================
C               | 519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
------------------------------------------------------------------------------


==============================================================================
C++             | 508.namd_r(base) 510.parest_r(base)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
------------------------------------------------------------------------------


==============================================================================
C++, C          | 511.povray_r(base) 526.blender_r(base)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
------------------------------------------------------------------------------
```

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IEIT Systems Co., Ltd.	SPECrate®2017_fp_base =	1610
NF5280A7 (AMD EPYC 9684X)	SPECrate®2017_fp_peak =	Not Run

CPU2017 License: 3358   **Test Date:** Sep-2024
Test Sponsor: IEIT Systems Co., Ltd.   **Hardware Availability:** Jun-2023
Tested by: IEIT Systems Co., Ltd.   **Software Availability:** Jun-2024

Compiler Version Notes (Continued)

```
==============================================================================
C++, C, Fortran | 507.cactuBSSN_r(base)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
------------------------------------------------------------------------------


==============================================================================
Fortran        | 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
------------------------------------------------------------------------------


==============================================================================
Fortran, C     | 521.wrf_r(base) 527.cam4_r(base)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
```
clang
```

C++ benchmarks:
```
clang++
```

Fortran benchmarks:
```
flang
```

Benchmarks using both Fortran and C:
```
flang clang
```

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SPEC CPU®2017 Floating Point Rate Result

IEIT Systems Co., Ltd.

NF5280A7 (AMD EPYC 9684X)

SPECrate®2017_fp_base =   1610

SPECrate®2017_fp_peak = Not Run

CPU2017 License: 3358
Test Sponsor: IEIT Systems Co., Ltd.
Tested by: IEIT Systems Co., Ltd.

Test Date: Sep-2024
Hardware Availability: Jun-2023
Software Availability: Jun-2024

Base Compiler Invocation (Continued)

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 -flto -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 -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 -mllvm -unroll-threshold=100
-finline-aggressive -mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lamdalloc
-lflang
```

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IEIT Systems Co., Ltd.

NF5280A7 (AMD EPYC 9684X)

SPECrate®2017_fp_base = 1610

SPECrate®2017_fp_peak = Not Run

CPU2017 License: 3358
Test Sponsor: IEIT Systems Co., Ltd.
Tested by: IEIT Systems Co., Ltd.

Test Date: Sep-2024
Hardware Availability: Jun-2023
Software Availability: Jun-2024

Base Optimization Flags (Continued)

Fortran benchmarks:
```
-m64 -flto -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 -flto -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 -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 -lamdlibm -lamdalloc -lflang
```

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
```

IEIT Systems Co., Ltd.	SPECrate®2017_fp_base = 1610
NF5280A7 (AMD EPYC 9684X)	SPECrate®2017_fp_peak = Not Run

CPU2017 License:	3358		**Test Date:**	Sep-2024
Test Sponsor:	IEIT Systems Co., Ltd.		**Hardware Availability:**	Jun-2023
Tested by:	IEIT Systems Co., Ltd.		**Software Availability:**	Jun-2024

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`

The flags files that were used to format this result can be browsed at
`http://www.spec.org/cpu2017/flags/aocc400-flags.html`
`http://www.spec.org/cpu2017/flags/IEIT-Platform-Settings-amd-V1.0.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2017/flags/aocc400-flags.xml`
`http://www.spec.org/cpu2017/flags/IEIT-Platform-Settings-amd-V1.0.xml`

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

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