# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## GIGA-BYTE TECHNOLOGY CO., LTD.

R283-Z90-AAD1-000
(AMD EPYC 9654, 2.4GHz)

SPECrate®2017_fp_base = 1350

SPECrate®2017_fp_peak = 1470

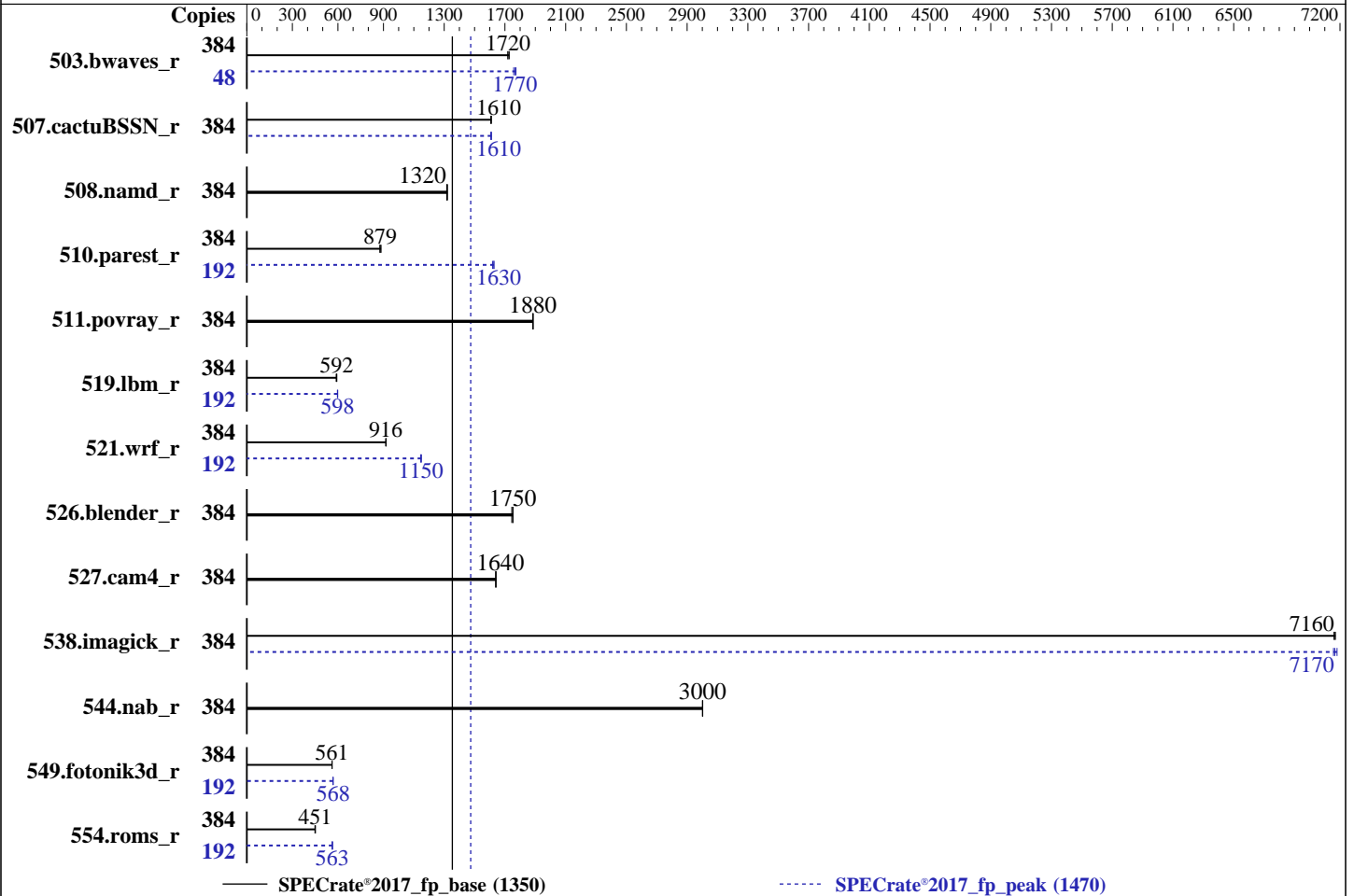| | |
|---|---|
| **CPU2017 License:** 9082 | **Test Date:** Dec-2022 |
| **Test Sponsor:** GIGA-BYTE TECHNOLOGY CO., LTD. | **Hardware Availability:** Nov-2022 |
| **Tested by:** GIGA-BYTE TECHNOLOGY CO., LTD. | **Software Availability:** Dec-2022 |

Copies

| Benchmark | Copies | base | peak |
|---|---|---|---|
| 503.bwaves_r | 384 / 48 | 1720 | 1770 |
| 507.cactuBSSN_r | 384 | 1610 | 1610 |
| 508.namd_r | 384 | 1320 | |
| 510.parest_r | 384 / 192 | 879 | 1630 |
| 511.povray_r | 384 | 1880 | |
| 519.lbm_r | 384 / 192 | 592 | 598 |
| 521.wrf_r | 384 / 192 | 916 | 1150 |
| 526.blender_r | 384 | 1750 | |
| 527.cam4_r | 384 | 1640 | |
| 538.imagick_r | 384 | 7160 | 7170 |
| 544.nab_r | 384 | 3000 | |
| 549.fotonik3d_r | 384 / 192 | 561 | 568 |
| 554.roms_r | 384 / 192 | 451 | 563 |

—— SPECrate®2017_fp_base (1350)  ------ SPECrate®2017_fp_peak (1470)

## Hardware

CPU Name: AMD EPYC 9654
 Max MHz: 3700
 Nominal: 2400
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: 384 MB I+D on chip per chip, 32 MB shared / 8 cores
 Other: None
Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 1 x 3.2 TB PCIE NVME SSD
Other: None

## Software

OS: SUSE Linux Enterprise Server 15 SP4 (x86_64) 5.14.21-150400.22-default
Compiler: C/C++/Fortran: Version 4.0.0 of AOCC
Parallel: No
Firmware: Version F04 released Dec-2022
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: None
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage.

Standard Performance Evaluation Corporation (info@spec.org)          https://www.spec.org/

# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## GIGA-BYTE TECHNOLOGY CO., LTD.

R283-Z90-AAD1-000
(AMD EPYC 9654, 2.4GHz)

SPECrate®2017_fp_base = 1350

SPECrate®2017_fp_peak = 1470

| | | |
|---|---|---|
| **CPU2017 License:** 9082 | **Test Date:** | Dec-2022 |
| **Test Sponsor:** GIGA-BYTE TECHNOLOGY CO., LTD. | **Hardware Availability:** | Nov-2022 |
| **Tested by:** GIGA-BYTE TECHNOLOGY CO., LTD. | **Software Availability:** | Dec-2022 |

## Results Table

| Benchmark | Base | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 503.bwaves_r | 384 | 2240 | 1720 | 2228 | 1730 | **2238** | **1720** | 48 | 274 | 1760 | **272** | **1770** | 272 | 1770 |
| 507.cactuBSSN_r | 384 | 302 | 1610 | **302** | **1610** | 302 | 1610 | 384 | 302 | 1610 | 302 | 1610 | **302** | **1610** |
| 508.namd_r | 384 | 277 | 1320 | 276 | 1320 | **277** | **1320** | 384 | 277 | 1320 | 276 | 1320 | **277** | **1320** |
| 510.parest_r | 384 | **1143** | **879** | 1147 | 876 | 1136 | 884 | 192 | **309** | **1630** | 310 | 1620 | 309 | 1630 |
| 511.povray_r | 384 | 476 | 1880 | 476 | 1880 | **476** | **1880** | 384 | 476 | 1880 | 476 | 1880 | **476** | **1880** |
| 519.lbm_r | 384 | 688 | 588 | **683** | **592** | 683 | 592 | 192 | **338** | **598** | 338 | 598 | 339 | 597 |
| 521.wrf_r | 384 | **939** | **916** | 940 | 915 | 937 | 918 | 192 | **375** | **1150** | 374 | 1150 | 375 | 1150 |
| 526.blender_r | 384 | 334 | 1750 | 335 | 1750 | **334** | **1750** | 384 | 334 | 1750 | 335 | 1750 | **334** | **1750** |
| 527.cam4_r | 384 | 409 | 1640 | **410** | **1640** | 410 | 1640 | 384 | 409 | 1640 | **410** | **1640** | 410 | 1640 |
| 538.imagick_r | 384 | **133** | **7160** | 133 | 7160 | 133 | 7170 | 384 | **133** | **7170** | 133 | 7160 | 133 | 7180 |
| 544.nab_r | 384 | **215** | **3000** | 215 | 3000 | 215 | 3000 | 384 | **215** | **3000** | 215 | 3000 | 215 | 3000 |
| 549.fotonik3d_r | 384 | **2667** | **561** | 2668 | 561 | 2663 | 562 | 192 | 1317 | 568 | 1318 | 568 | **1317** | **568** |
| 554.roms_r | 384 | 1360 | 449 | 1351 | 452 | **1354** | **451** | 192 | 540 | 565 | 544 | 561 | **542** | **563** |
| SPECrate®2017_fp_base = | | 1350 | | | | | | | | | | | | |
| SPECrate®2017_fp_peak = | | 1470 | | | | | | | | | | | | |

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.
```

**(Continued on next page)**

Standard Performance Evaluation Corporation (info@spec.org)
https://www.spec.org/

# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## GIGA-BYTE TECHNOLOGY CO., LTD.

R283-Z90-AAD1-000
(AMD EPYC 9654, 2.4GHz)

SPECrate®2017_fp_base = 1350

SPECrate®2017_fp_peak = 1470

## Operating System Notes (Continued)

```
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,
'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_rB1/amd_rate_aocc400_genoa_B_lib/lib:/home/cpu2017_rB1/am
      d_rate_aocc400_genoa_B_lib/lib32:"
MALLOC_CONF = "retain:true"
```

## General Notes

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

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)
is mitigated in the system as tested and documented.
```

## Platform Notes

```
BIOS settings:
SEV Control = Disable
TSME = Disabled
Determinism Control = Manual
Determinism Enable = Power
TDP Control = Manual
TDP = 400
PPT Control = Manual
PPT = 400

  Sysinfo program /home/cpu2017_rB1/bin/sysinfo
  Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
```

**(Continued on next page)**

## GIGA-BYTE TECHNOLOGY CO., LTD.

R283-Z90-AAD1-000
(AMD EPYC 9654, 2.4GHz)

SPECrate®2017_fp_base = 1350

SPECrate®2017_fp_peak = 1470

**CPU2017 License:** 9082
**Test Sponsor:** GIGA-BYTE TECHNOLOGY CO., LTD.
**Tested by:** GIGA-BYTE TECHNOLOGY CO., LTD.

**Test Date:** Dec-2022
**Hardware Availability:** Nov-2022
**Software Availability:** Dec-2022

## Platform Notes (Continued)

```
running on localhost Tue Dec 13 23:36:54 2022

SUT (System Under Test) info as seen by some common utilities.
For more information on this section, see
   https://www.spec.org/cpu2017/Docs/config.html#sysinfo

From /proc/cpuinfo
   model name : AMD EPYC 9654 96-Core Processor
      2  "physical id"s (chips)
      384 "processors"
   cores, siblings (Caution: counting these is hw and system dependent. The following
   excerpts from /proc/cpuinfo might not be reliable.  Use with caution.)
      cpu cores : 96
      siblings  : 192
      physical 0: cores 0 1 2 3 4 5 6 7 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
      26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53
      54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81
      82 83 84 85 86 87 88 89 90 91 92 93 94 95
      physical 1: cores 0 1 2 3 4 5 6 7 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
      26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53
      54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81
      82 83 84 85 86 87 88 89 90 91 92 93 94 95

From lscpu from util-linux 2.37.2:
   Architecture:            x86_64
   CPU op-mode(s):          32-bit, 64-bit
   Address sizes:           52 bits physical, 57 bits virtual
   Byte Order:              Little Endian
   CPU(s):                  384
   On-line CPU(s) list:     0-383
   Vendor ID:               AuthenticAMD
   Model name:              AMD EPYC 9654 96-Core Processor
   CPU family:              25
   Model:                   17
   Thread(s) per core:      2
   Core(s) per socket:      96
   Socket(s):               2
   Stepping:                1
   Frequency boost:         enabled
   CPU max MHz:             3707.8120
   CPU min MHz:             1500.0000
   BogoMIPS:                4800.07
   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 nopl nonstop_tsc cpuid extd_apicid
   aperfmperf rapl pni pclmulqdq monitor ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe
   popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a
```

**(Continued on next page)**

## GIGA-BYTE TECHNOLOGY CO., LTD.

R283-Z90-AAD1-000
(AMD EPYC 9654, 2.4GHz)

SPECrate®2017_fp_base = 1350

SPECrate®2017_fp_peak = 1470

**CPU2017 License:** 9082
**Test Sponsor:** GIGA-BYTE TECHNOLOGY CO., LTD.
**Tested by:** GIGA-BYTE TECHNOLOGY CO., LTD.

**Test Date:** Dec-2022
**Hardware Availability:** Nov-2022
**Software Availability:** Dec-2022

## Platform Notes (Continued)

```
    misalignsse 3dnowprefetch osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb
    bpext perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate ssbd mba ibrs
    ibpb stibp vmmcall fsgsbase bmi1 avx2 smep bmi2 erms invpcid cqm rdt_a avx512f
    avx512dq rdseed adx smap avx512ifma clflushopt clwb avx512cd sha_ni avx512bw
    avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
    cqm_mbm_local avx512_bf16 clzero irperf xsaveerptr rdpru wbnoinvd amd_ppin arat npt
    lbrv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter
    pfthreshold avic v_vmsave_vmload vgif v_spec_ctrl avx512vbmi umip pku ospke
    avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg avx512_vpopcntdq la57
    rdpid overflow_recov succor smca fsrm flush_l1d
  Virtualization:                 AMD-V
  L1d cache:                      6 MiB (192 instances)
  L1i cache:                      6 MiB (192 instances)
  L2 cache:                       192 MiB (192 instances)
  L3 cache:                       768 MiB (24 instances)
  NUMA node(s):                   24
  NUMA node0 CPU(s):              0-7,192-199
  NUMA node1 CPU(s):              8-15,200-207
  NUMA node2 CPU(s):              16-23,208-215
  NUMA node3 CPU(s):              24-31,216-223
  NUMA node4 CPU(s):              32-39,224-231
  NUMA node5 CPU(s):              40-47,232-239
  NUMA node6 CPU(s):              48-55,240-247
  NUMA node7 CPU(s):              56-63,248-255
  NUMA node8 CPU(s):              64-71,256-263
  NUMA node9 CPU(s):              72-79,264-271
  NUMA node10 CPU(s):             80-87,272-279
  NUMA node11 CPU(s):             88-95,280-287
  NUMA node12 CPU(s):             96-103,288-295
  NUMA node13 CPU(s):             104-111,296-303
  NUMA node14 CPU(s):             112-119,304-311
  NUMA node15 CPU(s):             120-127,312-319
  NUMA node16 CPU(s):             128-135,320-327
  NUMA node17 CPU(s):             136-143,328-335
  NUMA node18 CPU(s):             144-151,336-343
  NUMA node19 CPU(s):             152-159,344-351
  NUMA node20 CPU(s):             160-167,352-359
  NUMA node21 CPU(s):             168-175,360-367
  NUMA node22 CPU(s):             176-183,368-375
  NUMA node23 CPU(s):             184-191,376-383
  Vulnerability Itlb multihit:    Not affected
  Vulnerability L1tf:             Not affected
  Vulnerability Mds:              Not affected
  Vulnerability Meltdown:         Not affected
  Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via
    prctl and seccomp
  Vulnerability Spectre v1:        Mitigation; usercopy/swapgs barriers and __user
```

**(Continued on next page)**

# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## GIGA-BYTE TECHNOLOGY CO., LTD.

R283-Z90-AAD1-000
(AMD EPYC 9654, 2.4GHz)

SPECrate®2017_fp_base = 1350

SPECrate®2017_fp_peak = 1470

**CPU2017 License:** 9082
**Test Sponsor:** GIGA-BYTE TECHNOLOGY CO., LTD.
**Tested by:** GIGA-BYTE TECHNOLOGY CO., LTD.

**Test Date:** Dec-2022
**Hardware Availability:** Nov-2022
**Software Availability:** Dec-2022

## Platform Notes (Continued)

```
      pointer sanitization
      Vulnerability Spectre v2:         Mitigation; Retpolines, IBPB conditional, IBRS_FW,
      STIBP always-on, RSB filling
      Vulnerability Srbds:              Not affected
      Vulnerability Tsx async abort:    Not affected

  From lscpu --cache:
      NAME ONE-SIZE ALL-SIZE WAYS TYPE           LEVEL   SETS PHY-LINE COHERENCY-SIZE
      L1d        32K       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         32M     768M   16 Unified         3  32768        1              64

  /proc/cpuinfo cache data
     cache size : 1024 KB


  From numactl --hardware
  WARNING: a numactl 'node' might or might not correspond to a physical chip.
    available: 24 nodes (0-23)
    node 0 cpus: 0 1 2 3 4 5 6 7 192 193 194 195 196 197 198 199
    node 0 size: 64176 MB
    node 0 free: 61526 MB
    node 1 cpus: 8 9 10 11 12 13 14 15 200 201 202 203 204 205 206 207
    node 1 size: 64506 MB
    node 1 free: 63875 MB
    node 2 cpus: 16 17 18 19 20 21 22 23 208 209 210 211 212 213 214 215
    node 2 size: 64506 MB
    node 2 free: 63870 MB
    node 3 cpus: 24 25 26 27 28 29 30 31 216 217 218 219 220 221 222 223
    node 3 size: 64506 MB
    node 3 free: 63838 MB
    node 4 cpus: 32 33 34 35 36 37 38 39 224 225 226 227 228 229 230 231
    node 4 size: 64506 MB
    node 4 free: 63884 MB
    node 5 cpus: 40 41 42 43 44 45 46 47 232 233 234 235 236 237 238 239
    node 5 size: 64506 MB
    node 5 free: 63875 MB
    node 6 cpus: 48 49 50 51 52 53 54 55 240 241 242 243 244 245 246 247
    node 6 size: 64506 MB
    node 6 free: 63777 MB
    node 7 cpus: 56 57 58 59 60 61 62 63 248 249 250 251 252 253 254 255
    node 7 size: 64506 MB
    node 7 free: 63868 MB
    node 8 cpus: 64 65 66 67 68 69 70 71 256 257 258 259 260 261 262 263
    node 8 size: 64506 MB
    node 8 free: 62675 MB
    node 9 cpus: 72 73 74 75 76 77 78 79 264 265 266 267 268 269 270 271
```

**(Continued on next page)**

GIGA-BYTE TECHNOLOGY CO., LTD.

SPECrate®2017_fp_base = 1350

R283-Z90-AAD1-000
(AMD EPYC 9654, 2.4GHz)

SPECrate®2017_fp_peak = 1470

**CPU2017 License:** 9082
**Test Sponsor:** GIGA-BYTE TECHNOLOGY CO., LTD.
**Tested by:** GIGA-BYTE TECHNOLOGY CO., LTD.

**Test Date:** Dec-2022
**Hardware Availability:** Nov-2022
**Software Availability:** Dec-2022

## Platform Notes (Continued)

```
   node 9 size: 64506 MB
   node 9 free: 63907 MB
   node 10 cpus: 80 81 82 83 84 85 86 87 272 273 274 275 276 277 278 279
   node 10 size: 64506 MB
   node 10 free: 63892 MB
   node 11 cpus: 88 89 90 91 92 93 94 95 280 281 282 283 284 285 286 287
   node 11 size: 64506 MB
   node 11 free: 63873 MB
   node 12 cpus: 96 97 98 99 100 101 102 103 288 289 290 291 292 293 294 295
   node 12 size: 64506 MB
   node 12 free: 63892 MB
   node 13 cpus: 104 105 106 107 108 109 110 111 296 297 298 299 300 301 302 303
   node 13 size: 64506 MB
   node 13 free: 63894 MB
   node 14 cpus: 112 113 114 115 116 117 118 119 304 305 306 307 308 309 310 311
   node 14 size: 64472 MB
   node 14 free: 63852 MB
   node 15 cpus: 120 121 122 123 124 125 126 127 312 313 314 315 316 317 318 319
   node 15 size: 64506 MB
   node 15 free: 63911 MB
   node 16 cpus: 128 129 130 131 132 133 134 135 320 321 322 323 324 325 326 327
   node 16 size: 64506 MB
   node 16 free: 63902 MB
   node 17 cpus: 136 137 138 139 140 141 142 143 328 329 330 331 332 333 334 335
   node 17 size: 64506 MB
   node 17 free: 63898 MB
   node 18 cpus: 144 145 146 147 148 149 150 151 336 337 338 339 340 341 342 343
   node 18 size: 64506 MB
   node 18 free: 63891 MB
   node 19 cpus: 152 153 154 155 156 157 158 159 344 345 346 347 348 349 350 351
   node 19 size: 64506 MB
   node 19 free: 63903 MB
   node 20 cpus: 160 161 162 163 164 165 166 167 352 353 354 355 356 357 358 359
   node 20 size: 64506 MB
   node 20 free: 63903 MB
   node 21 cpus: 168 169 170 171 172 173 174 175 360 361 362 363 364 365 366 367
   node 21 size: 64506 MB
   node 21 free: 63895 MB
   node 22 cpus: 176 177 178 179 180 181 182 183 368 369 370 371 372 373 374 375
   node 22 size: 64506 MB
   node 22 free: 63901 MB
   node 23 cpus: 184 185 186 187 188 189 190 191 376 377 378 379 380 381 382 383
   node 23 size: 64018 MB
   node 23 free: 63408 MB
   node distances:
   node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19
     20  21  22  23
```

**(Continued on next page)**

## GIGA-BYTE TECHNOLOGY CO., LTD.

R283-Z90-AAD1-000
(AMD EPYC 9654, 2.4GHz)

SPECrate®2017_fp_base = 1350

SPECrate®2017_fp_peak = 1470

| | |
|---|---|
| **CPU2017 License:** 9082 | **Test Date:** Dec-2022 |
| **Test Sponsor:** GIGA-BYTE TECHNOLOGY CO., LTD. | **Hardware Availability:** Nov-2022 |
| **Tested by:** GIGA-BYTE TECHNOLOGY CO., LTD. | **Software Availability:** Dec-2022 |

## Platform Notes (Continued)

```
  0:  10  11  11  12  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32
     32  32  32  32
  1:  11  10  11  12  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32
     32  32  32  32
  2:  11  11  10  12  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32
     32  32  32  32
  3:  12  12  12  10  11  11  12  12  12  12  12  12  32  32  32  32  32  32  32  32
     32  32  32  32
  4:  12  12  12  11  10  11  12  12  12  12  12  12  32  32  32  32  32  32  32  32
     32  32  32  32
  5:  12  12  12  11  11  10  12  12  12  12  12  12  32  32  32  32  32  32  32  32
     32  32  32  32
  6:  12  12  12  12  12  12  10  11  11  12  12  12  32  32  32  32  32  32  32  32
     32  32  32  32
  7:  12  12  12  12  12  12  11  10  11  12  12  12  32  32  32  32  32  32  32  32
     32  32  32  32
  8:  12  12  12  12  12  12  11  11  10  12  12  12  32  32  32  32  32  32  32  32
     32  32  32  32
  9:  12  12  12  12  12  12  12  12  12  10  11  11  32  32  32  32  32  32  32  32
     32  32  32  32
 10:  12  12  12  12  12  12  12  12  12  11  10  11  32  32  32  32  32  32  32  32
     32  32  32  32
 11:  12  12  12  12  12  12  12  12  12  11  11  10  32  32  32  32  32  32  32  32
     32  32  32  32
 12:  32  32  32  32  32  32  32  32  32  32  32  32  10  11  11  12  12  12  12  12
     12  12  12  12
 13:  32  32  32  32  32  32  32  32  32  32  32  32  11  10  11  12  12  12  12  12
     12  12  12  12
 14:  32  32  32  32  32  32  32  32  32  32  32  32  11  11  10  12  12  12  12  12
     12  12  12  12
 15:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  10  11  11  12  12
     12  12  12  12
 16:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  11  10  11  12  12
     12  12  12  12
 17:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  11  11  10  12  12
     12  12  12  12
 18:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  10  11
     11  12  12  12
 19:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  11  10
     11  12  12  12
 20:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  11  11
     10  12  12  12
 21:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12
     12  10  11  11
 22:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12
     12  11  10  11
 23:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12
```

**(Continued on next page)**

# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## GIGA-BYTE TECHNOLOGY CO., LTD.

R283-Z90-AAD1-000
(AMD EPYC 9654, 2.4GHz)

SPECrate®2017_fp_base = 1350

SPECrate®2017_fp_peak = 1470

**CPU2017 License:** 9082
**Test Sponsor:** GIGA-BYTE TECHNOLOGY CO., LTD.
**Tested by:** GIGA-BYTE TECHNOLOGY CO., LTD.

**Test Date:** Dec-2022
**Hardware Availability:** Nov-2022
**Software Availability:** Dec-2022

## Platform Notes (Continued)

```
     12  11  11  10

 From /proc/meminfo
    MemTotal:        1584439916 kB
    HugePages_Total:          0
    Hugepagesize:          2048 kB

 /sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has
    performance

 /usr/bin/lsb_release -d
    SUSE Linux Enterprise Server 15 SP4

 From /etc/*release* /etc/*version*
    os-release:
       NAME="SLES"
       VERSION="15-SP4"
       VERSION_ID="15.4"
       PRETTY_NAME="SUSE Linux Enterprise Server 15 SP4"
       ID="sles"
       ID_LIKE="suse"
       ANSI_COLOR="0;32"
       CPE_NAME="cpe:/o:suse:sles:15:sp4"

 uname -a:
    Linux localhost 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18
    UTC 2022 (49db222) x86_64 x86_64 x86_64 GNU/Linux

 Kernel self-reported vulnerability status:

 CVE-2018-12207 (iTLB Multihit):                  Not affected
 CVE-2018-3620 (L1 Terminal Fault):               Not affected
 Microarchitectural Data Sampling:                Not affected
 CVE-2017-5754 (Meltdown):                        Not affected
 CVE-2018-3639 (Speculative Store Bypass):        Mitigation: Speculative Store
                                                  Bypass disabled via prctl and
                                                  seccomp
 CVE-2017-5753 (Spectre variant 1):               Mitigation: usercopy/swapgs
                                                  barriers and __user pointer
                                                  sanitization
 CVE-2017-5715 (Spectre variant 2):               Mitigation: Retpolines, IBPB:
                                                  conditional, IBRS_FW, STIBP:
                                                  always-on, RSB filling
 CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
 CVE-2019-11135 (TSX Asynchronous Abort):         Not affected

 run-level 3 Dec 13 16:55
```

**(Continued on next page)**

# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## GIGA-BYTE TECHNOLOGY CO., LTD.

R283-Z90-AAD1-000
(AMD EPYC 9654, 2.4GHz)

SPECrate®2017_fp_base = 1350

SPECrate®2017_fp_peak = 1470

**CPU2017 License:** 9082
**Test Sponsor:** GIGA-BYTE TECHNOLOGY CO., LTD.
**Tested by:** GIGA-BYTE TECHNOLOGY CO., LTD.

**Test Date:** Dec-2022
**Hardware Availability:** Nov-2022
**Software Availability:** Dec-2022

## Platform Notes (Continued)

```
  SPEC is set to: /home/cpu2017_rB1
     Filesystem      Type   Size   Used Avail Use% Mounted on
     /dev/nvme0n1p3 xfs    237G    61G  176G  26% /home

  From /sys/devices/virtual/dmi/id
     Vendor:          GIGABYTE
     Product:         R283-Z90-AAD1-000
     Product Family: Server
     Serial:          GMG6D1212A0002


  Additional information from dmidecode 3.2 follows.  WARNING: Use caution when you
  interpret this section. The 'dmidecode' program reads system data which is "intended to
  allow hardware to be accurately determined", but the intent may not be met, as there are
  frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.
    Memory:
      24x Micron Technology MTC40F2046S1RC48BA1 64 GB 2 rank 4800

  BIOS:
     BIOS Vendor:        GIGABYTE
     BIOS Version:       F04
     BIOS Date:          12/01/2022
     BIOS Revision:      5.27

  (End of data from sysinfo program)
```

## Compiler Version Notes

```
==============================================================================
C                  | 519.lbm_r(base, peak) 538.imagick_r(base, peak)
                   | 544.nab_r(base, peak)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
------------------------------------------------------------------------------


==============================================================================
C++                | 508.namd_r(base, peak) 510.parest_r(base, peak)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
```

**(Continued on next page)**

## GIGA-BYTE TECHNOLOGY CO., LTD.

R283-Z90-AAD1-000
(AMD EPYC 9654, 2.4GHz)

SPECrate®2017_fp_base = 1350

SPECrate®2017_fp_peak = 1470

**CPU2017 License:** 9082
**Test Sponsor:** GIGA-BYTE TECHNOLOGY CO., LTD.
**Tested by:** GIGA-BYTE TECHNOLOGY CO., LTD.

**Test Date:** Dec-2022
**Hardware Availability:** Nov-2022
**Software Availability:** Dec-2022

## Compiler Version Notes (Continued)

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


==============================================================================
C++, C          | 511.povray_r(base, peak) 526.blender_r(base, peak)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
------------------------------------------------------------------------------


==============================================================================
C++, C, Fortran | 507.cactuBSSN_r(base, peak)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
------------------------------------------------------------------------------


==============================================================================
Fortran         | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak)
                | 554.roms_r(base, peak)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
```

**(Continued on next page)**

# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## GIGA-BYTE TECHNOLOGY CO., LTD.

R283-Z90-AAD1-000
(AMD EPYC 9654, 2.4GHz)

SPECrate®2017_fp_base = 1350

SPECrate®2017_fp_peak = 1470

**CPU2017 License:** 9082
**Test Sponsor:** GIGA-BYTE TECHNOLOGY CO., LTD.
**Tested by:** GIGA-BYTE TECHNOLOGY CO., LTD.

**Test Date:** Dec-2022
**Hardware Availability:** Nov-2022
**Software Availability:** Dec-2022

## Compiler Version Notes (Continued)

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

==========================================================================
Fortran, C      | 521.wrf_r(base, peak) 527.cam4_r(base, peak)
--------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
--------------------------------------------------------------------------
```

# Base Compiler Invocation

C benchmarks:
`clang`

C++ benchmarks:
`clang++`

Fortran benchmarks:
`flang`

Benchmarks using both Fortran and C:
`flang clang`

Benchmarks using both C and C++:
`clang++ clang`

Benchmarks using Fortran, C, and C++:
`clang++ clang flang`

# Base Portability Flags

503.bwaves_r: `-DSPEC_LP64`
507.cactuBSSN_r: `-DSPEC_LP64`
508.namd_r: `-DSPEC_LP64`
510.parest_r: `-DSPEC_LP64`

**(Continued on next page)**

## GIGA-BYTE TECHNOLOGY CO., LTD.

R283-Z90-AAD1-000
(AMD EPYC 9654, 2.4GHz)

SPECrate®2017_fp_base = 1350

SPECrate®2017_fp_peak = 1470

| | | | |
|---|---|---|---|
| **CPU2017 License:** 9082 | | **Test Date:** | Dec-2022 |
| **Test Sponsor:** | GIGA-BYTE TECHNOLOGY CO., LTD. | **Hardware Availability:** | Nov-2022 |
| **Tested by:** | GIGA-BYTE TECHNOLOGY CO., LTD. | **Software Availability:** | Dec-2022 |

# Base Portability Flags (Continued)

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`

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`

**(Continued on next page)**

## GIGA-BYTE TECHNOLOGY CO., LTD.

R283-Z90-AAD1-000
(AMD EPYC 9654, 2.4GHz)

SPECrate®2017_fp_base = 1350

SPECrate®2017_fp_peak = 1470

| | | | |
|---|---|---|---|
| **CPU2017 License:** 9082 | | **Test Date:** | Dec-2022 |
| **Test Sponsor:** | GIGA-BYTE TECHNOLOGY CO., LTD. | **Hardware Availability:** | Nov-2022 |
| **Tested by:** | GIGA-BYTE TECHNOLOGY CO., LTD. | **Software Availability:** | Dec-2022 |

# Base Optimization Flags (Continued)

Benchmarks using both Fortran and C (continued):
```
-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
```

# 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
```

**(Continued on next page)**

## GIGA-BYTE TECHNOLOGY CO., LTD.

**R283-Z90-AAD1-000**
**(AMD EPYC 9654, 2.4GHz)**

SPECrate®2017_fp_base = 1350

SPECrate®2017_fp_peak = 1470

| | | | |
|---|---|---|---|
| **CPU2017 License:** 9082 | | **Test Date:** | Dec-2022 |
| **Test Sponsor:** | GIGA-BYTE TECHNOLOGY CO., LTD. | **Hardware Availability:** | Nov-2022 |
| **Tested by:** | GIGA-BYTE TECHNOLOGY CO., LTD. | **Software Availability:** | Dec-2022 |

# Base Other Flags (Continued)

Benchmarks using Fortran, C, and C++:
```
-Wno-unused-command-line-argument
```

# Peak Compiler Invocation

C benchmarks:
```
clang
```

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

Fortran benchmarks:
```
flang
```

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

Benchmarks using both C and C++:
```
clang++ clang
```

Benchmarks using Fortran, C, and C++:
```
clang++ clang flang
```

# Peak Portability Flags

```
Same as Base Portability Flags
```

# Peak Optimization Flags

C benchmarks:

```
519.lbm_r: -m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math
-fstruct-layout=7 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
```

**(Continued on next page)**

## GIGA-BYTE TECHNOLOGY CO., LTD.

**R283-Z90-AAD1-000**
**(AMD EPYC 9654, 2.4GHz)**

SPECrate®2017_fp_base = 1350

SPECrate®2017_fp_peak = 1470

| | | | |
|---|---|---|---|
| **CPU2017 License:** 9082 | | **Test Date:** | Dec-2022 |
| **Test Sponsor:** | GIGA-BYTE TECHNOLOGY CO., LTD. | **Hardware Availability:** | Nov-2022 |
| **Tested by:** | GIGA-BYTE TECHNOLOGY CO., LTD. | **Software Availability:** | Dec-2022 |

# Peak Optimization Flags (Continued)

519.lbm_r (continued):
```
-lamdalloc
```

538.imagick_r: `Same as 519.lbm_r`

544.nab_r: `basepeak = yes`

C++ benchmarks:

508.namd_r: `basepeak = yes`

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

Fortran benchmarks:

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

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

554.roms_r: `Same as 503.bwaves_r`

Benchmarks using both Fortran and C:

521.wrf_r: `-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`
```
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math
-fstruct-layout=7 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
```

# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## GIGA-BYTE TECHNOLOGY CO., LTD.

R283-Z90-AAD1-000
(AMD EPYC 9654, 2.4GHz)

SPECrate®2017_fp_base = 1350

SPECrate®2017_fp_peak = 1470

**CPU2017 License:** 9082
**Test Sponsor:** GIGA-BYTE TECHNOLOGY CO., LTD.
**Tested by:** GIGA-BYTE TECHNOLOGY CO., LTD.

**Test Date:** Dec-2022
**Hardware Availability:** Nov-2022
**Software Availability:** Dec-2022

# Peak Optimization Flags (Continued)

521.wrf_r (continued):
```
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -Mrecursive
-fepilog-vectorization-of-inductions -lamdlibm -lamdalloc
-lflang
```

527.cam4_r: `basepeak = yes`

Benchmarks using both C and C++:

511.povray_r: `basepeak = yes`

526.blender_r: `basepeak = yes`

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 -Ofast -march=znver4
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000 -mllvm -reduce-array-computations=3 -zopt
-mllvm -unroll-threshold=100 -mllvm -loop-unswitch-threshold=200000
-finline-aggressive -faggressive-loop-transform -fvector-transform
-fscalar-transform -Mrecursive -fepilog-vectorization-of-inductions
-lamdlibm -lamdalloc -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
```

**(Continued on next page)**

Standard Performance Evaluation Corporation (info@spec.org)        https://www.spec.org/

## GIGA-BYTE TECHNOLOGY CO., LTD.

R283-Z90-AAD1-000
(AMD EPYC 9654, 2.4GHz)

SPECrate®2017_fp_base = 1350

SPECrate®2017_fp_peak = 1470

**CPU2017 License:** 9082

**Test Sponsor:** GIGA-BYTE TECHNOLOGY CO., LTD.

**Tested by:** GIGA-BYTE TECHNOLOGY CO., LTD.

**Test Date:** Dec-2022

**Hardware Availability:** Nov-2022

**Software Availability:** Dec-2022

# Peak Other Flags (Continued)

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/GIGA-BYTE-Platform-SPECcpu2017-Flags-V1.1-Genoa.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/GIGA-BYTE-Platform-SPECcpu2017-Flags-V1.1-Genoa.xml
```

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

Tested with SPEC CPU®2017 v1.1.8 on 2022-12-13 10:36:53-0500.
Report generated on 2023-01-17 18:39:22 by CPU2017 PDF formatter v6442.
Originally published on 2023-01-17.