SPEC CPU®2017 Integer Speed Result

Fujitsu

$SPECspeed®2017\_int\_base =$ 14.5

PRIMERGY RX2540 M7, Intel Xeon Platinum 8480+, 2.00GHz

$SPECspeed®2017\_int\_peak =$ Not Run

Threads

Benchmark	Threads	Result
600.perlbench_s	224	9.09
602.gcc_s	224	11.8
605.mcf_s	224	22.0
620.omnetpp_s	224	12.0
623.xalancbmk_s	224	27.3
625.x264_s	224	21.5
631.deepsjeng_s	224	7.02
641.leela_s	224	5.65
648.exchange2_s	224	22.3
657.xz_s	224	27.0

—— SPECspeed®2017_int_base (14.5)

Hardware

CPU Name: Intel Xeon Platinum 8480+
 Max MHz: 3800
 Nominal: 2000
Enabled: 112 cores, 2 chips, 2 threads/core
Orderable: 1,2 chips
Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 2 MB I+D on chip per core
 L3: 105 MB I+D on chip per chip
 Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 1 x SATA SSD, 1.92TB
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP4
 5.14.21-150400.22-default
Compiler: C/C++: Version 2022.1 of Intel oneAPI DPC++/C++ Compiler for Linux;
 Fortran: Version 2022.1 of Intel Fortran Compiler for Linux;
Parallel: Yes
Firmware: Fujitsu BIOS Version V1.0.0.0 R1.10.0 for D3983-A1x. Released Mar-2023
 tested as V1.0.0.0 R0.22.1 for D3983-A1x Dec-2022
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: jemalloc memory allocator V5.0.1
Power Management: BIOS set to prefer performance at the cost of additional power usage

SPEC CPU®2017 Integer Speed Result
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Fujitsu
PRIMERGY RX2540 M7, Intel Xeon Platinum 8480+, 2.00GHz

$SPECspeed®2017\_int\_base = 14.5$

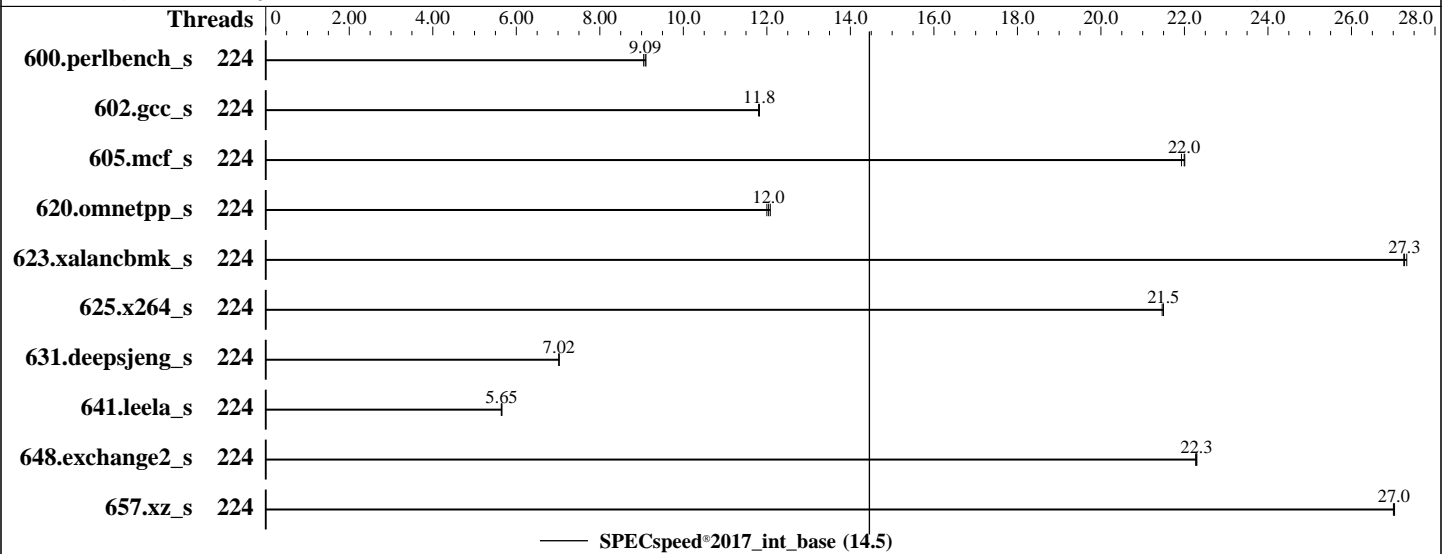$SPECspeed®2017\_int\_peak = Not Run$

CPU2017 License: 19
Test Sponsor: Fujitsu
Tested by: Fujitsu

Test Date: Dec-2022
Hardware Availability: Mar-2023
Software Availability: Jun-2022

Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	224	195	9.11	196	9.05	**195**	**9.09**							
602.gcc_s	224	337	11.8	**337**	**11.8**	337	11.8							
605.mcf_s	224	215	22.0	**215**	**22.0**	215	21.9							
620.omnetpp_s	224	135	12.1	**135**	**12.0**	136	12.0							
623.xalancbmk_s	224	**52.0**	**27.3**	52.0	27.3	51.9	27.3							
625.x264_s	224	82.2	21.5	82.1	21.5	**82.1**	**21.5**							
631.deepsjeng_s	224	204	7.02	204	7.02	**204**	**7.02**							
641.leela_s	224	**302**	**5.65**	302	5.65	302	5.64							
648.exchange2_s	224	132	22.3	132	22.3	**132**	**22.3**							
657.xz_s	224	229	27.0	229	27.0	**229**	**27.0**							

SPECspeed®2017_int_base =	**14.5**
SPECspeed®2017_int_peak =	**Not Run**

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

Compiler Notes

```
SPEC has ruled that the compiler used for this result was performing a compilation
that specifically improves the performance of the 523.xalancbmk_r / 623.xalancbmk_s
benchmarks using a priori knowledge of the SPEC code and dataset to perform a
transformation that has narrow applicability.

In order to encourage optimizations that have wide applicability (see rule 1.4
https://www.spec.org/cpu2017/Docs/runrules.html#rule_1.4), SPEC will no longer
publish results using this optimization.

This result is left in the SPEC results database for historical reference.
```

Operating System Notes

```
 Stack size set to unlimited using "ulimit -s unlimited"
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/Benchamrk/speccpu-1.1.8/lib/intel64:/home/Benchamrk/speccpu-1.1.8/je5.0.1-64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"
```

General Notes

```
 Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
 memory using Redhat Enterprise Linux 8.0
 Transparent Huge Pages enabled by default
 Prior to runcpu invocation
```

(Continued on next page)

SPEC CPU®2017 Integer Speed Result
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Fujitsu
PRIMERGY RX2540 M7, Intel Xeon Platinum 8480+, 2.00GHz

$SPECspeed®2017\_int\_base =$ 14.5

$SPECspeed®2017_int_peak = $ Not Run

CPU2017 License: 19
Test Sponsor: Fujitsu
Tested by: Fujitsu

Test Date: Dec-2022
Hardware Availability: Mar-2023
Software Availability: Jun-2022

General Notes (Continued)

```
Filesystem page cache synced and cleared with:
sync; echo 3>        /proc/sys/vm/drop_caches
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.
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5
sources available from jemalloc.net or https://github.com/jemalloc/jemalloc/releases
```

Platform Notes

```
BIOS configuration:
RdCur for XPT Prefetch = Enable
Adjacent Cache Line Prefetch = Disabled
Package C State limit = C0
SNC (Sub NUMA) = Enable SNC2
HWPM Support = Disabled
AVX P1 = Level2
CPU Performance Boost = Aggressive
FAN Control = Full

Sysinfo program /home/Benchamrk/speccpu-1.1.8/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
running on localhost Tue Dec  6 15:47:05 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 : Intel(R) Xeon(R) Platinum 8480+
      2  "physical id"s (chips)
      224 "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 : 56
      siblings  : 112
      physical 0: cores 0 1 2 3 4 5 6 7 8 9 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
      physical 1: cores 0 1 2 3 4 5 6 7 8 9 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

From lscpu from util-linux 2.37.2:
      Architecture:          x86_64
      CPU op-mode(s):        32-bit, 64-bit
      Address sizes:         46 bits physical, 57 bits virtual
      Byte Order:            Little Endian
      CPU(s):                224
      On-line CPU(s) list:   0-223
      Vendor ID:             GenuineIntel
      Model name:            Intel(R) Xeon(R) Platinum 8480+
      CPU family:            6
      Model:                 143
      Thread(s) per core:    2
```

(Continued on next page)

Fujitsu

PRIMERGY RX2540 M7, Intel Xeon Platinum 8480+, 2.00GHz

$SPECspeed®2017\_int\_base =$ 14.5

$SPECspeed®2017\_int\_peak =$ Not Run

CPU2017 License: 19
Test Sponsor: Fujitsu
Tested by: Fujitsu

Test Date: Dec-2022
Hardware Availability: Mar-2023
Software Availability: Jun-2022

Platform Notes (Continued)

```
       Core(s) per socket:           56
       Socket(s):                    2
       Stepping:                     8
       Frequency boost:              enabled
       CPU max MHz:                  1301.0000
       CPU min MHz:                  800.0000
       BogoMIPS:                     2600.00
       Flags:                        fpu vme de pse tsc msr pae mce cx8 apic sep mtrr
       pge mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx
       pdpe1gb rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
       nonstop_tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx
       smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt
       tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault
       epb cat_l3 cat_l2 cdp_l3 invpcid_single intel_ppin cdp_l2 ssbd mba ibrs ibpb stibp
       ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1
       hle avx2 smep bmi2 erms invpcid rtm cqm rdt_a avx512f avx512dq rdseed adx smap
       avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl xsaveopt
       xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
       split_lock_detect avx_vnni avx512_bf16 wbnoinvd dtherm ida arat pln pts avx512vbmi
       umip pku ospke waitpkg avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg
       tme avx512_vpopcntdq la57 rdpid bus_lock_detect cldemote movdiri movdir64b enqcmd
       fsrm md_clear serialize tsxldtrk pconfig arch_lbr avx512_fp16 amx_tile flush_l1d
       arch_capabilities
       Virtualization:               VT-x
       L1d cache:                    5.3 MiB (112 instances)
       L1i cache:                    3.5 MiB (112 instances)
       L2 cache:                     224 MiB (112 instances)
       L3 cache:                     210 MiB (2 instances)
       NUMA node(s):                 4
       NUMA node0 CPU(s):            0-27,112-139
       NUMA node1 CPU(s):            28-55,140-167
       NUMA node2 CPU(s):            56-83,168-195
       NUMA node3 CPU(s):            84-111,196-223
       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
       pointer sanitization
       Vulnerability Spectre v2:     Mitigation; Enhanced IBRS, IBPB conditional, 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      48K     5.3M  12 Data           1     64       1            64
       L1i      32K     3.5M   8 Instruction    1     64       1            64
       L2        2M     224M  16 Unified        2   2048       1            64
       L3      105M     210M  15 Unified        3 114688       1            64

   /proc/cpuinfo cache data
      cache size : 107520 KB

   From numactl --hardware
   WARNING: a numactl 'node' might or might not correspond to a physical chip.
     available: 4 nodes (0-3)
     node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
```

(Continued on next page)

Fujitsu

PRIMERGY RX2540 M7, Intel Xeon Platinum 8480+, 2.00GHz

SPECspeed®2017_int_base = 14.5

SPECspeed®2017_int_peak = Not Run

Platform Notes (Continued)

```
    112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133
    134 135 136 137 138 139
    node 0 size: 257614 MB
    node 0 free: 255596 MB
    node 1 cpus: 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 55 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158
    159 160 161 162 163 164 165 166 167
    node 1 size: 258033 MB
    node 1 free: 257734 MB
    node 2 cpus: 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 83 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186
    187 188 189 190 191 192 193 194 195
    node 2 size: 257999 MB
    node 2 free: 257678 MB
    node 3 cpus: 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105
    106 107 108 109 110 111 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211
    212 213 214 215 216 217 218 219 220 221 222 223
    node 3 size: 257659 MB
    node 3 free: 257407 MB
    node distances:
    node   0   1   2   3
      0:  10  12  21  21
      1:  12  10  21  21
      2:  21  21  10  12
      3:  21  21  12  10

  From /proc/meminfo
    MemTotal:       1056058264 kB
    HugePages_Total:        0
    Hugepagesize:        2048 kB

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

  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
```

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Fujitsu

PRIMERGY RX2540 M7, Intel Xeon Platinum 8480+, 2.00GHz

$SPECspeed®2017_int_base = $ 14.5

$SPECspeed®2017_int_peak = $ Not Run

CPU2017 License: 19
Test Sponsor: Fujitsu
Tested by: Fujitsu

Test Date: Dec-2022
Hardware Availability: Mar-2023
Software Availability: Jun-2022

Platform Notes (Continued)

```
                                          sanitization
CVE-2017-5715 (Spectre variant 2):        Mitigation: Enhanced IBRS, IBPB:
                                          conditional, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort):  Not affected

run-level 3 Dec 6 05:22

SPEC is set to: /home/Benchamrk/speccpu-1.1.8
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda3       xfs   868G   28G  840G   4% /home

From /sys/devices/virtual/dmi/id
    Vendor:         FUJITSU
    Product:        PRIMERGY RX2540 M7
    Product Family: SERVER
    Serial:         EWCExxxxxx

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:
    2x Samsung M321R8GA0BB0-CQKDG 64 GB 2 rank 4800
    8x Samsung M321R8GA0BB0-CQKEG 64 GB 2 rank 4800
    6x Samsung M321R8GA0BB0-CQKVG 64 GB 2 rank 4800

BIOS:
  BIOS Vendor:       FUJITSU
  BIOS Version:      V1.0.0.0 R0.22.1 for D3983-A1x
  BIOS Date:         12/01/2022
  BIOS Revision:     0.22
  Firmware Revision: 2.0

(End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================================
C        | 600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base) 657.xz_s(base)
----------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
----------------------------------------------------------------------------------------------


==============================================================================================
C++      | 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base) 641.leela_s(base)
----------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
----------------------------------------------------------------------------------------------


==============================================================================================
Fortran  | 648.exchange2_s(base)
----------------------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
----------------------------------------------------------------------------------------------
```

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$SPECspeed^®2017\_int\_base =$ 14.5

$SPECspeed^®2017\_int\_peak =$ Not Run

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Base Compiler Invocation

C benchmarks:
`icx`

C++ benchmarks:
`icpx`

Fortran benchmarks:
`ifx`

Base Portability Flags

600.perlbench_s: `-DSPEC_LP64 -DSPEC_LINUX_X64`
602.gcc_s: `-DSPEC_LP64`
605.mcf_s: `-DSPEC_LP64`
620.omnetpp_s: `-DSPEC_LP64`
623.xalancbmk_s: `-DSPEC_LP64 -DSPEC_LINUX`
625.x264_s: `-DSPEC_LP64`
631.deepsjeng_s: `-DSPEC_LP64`
641.leela_s: `-DSPEC_LP64`
648.exchange2_s: `-DSPEC_LP64`
657.xz_s: `-DSPEC_LP64`

Base Optimization Flags

C benchmarks:
`-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto`
`-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -fiopenmp`
`-DSPEC_OPENMP -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

C++ benchmarks:
`-m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto`
`-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4`
`-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

Fortran benchmarks:
`-m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto`
`-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4`
`-nostandard-realloc-lhs -align array32byte`
`-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

Fujitsu

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SPECspeed®2017_int_peak = Not Run

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

http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0-SPR-RevA.html
http://www.spec.org/cpu2017/flags/Intel-ic2022-official-linux64_revA.2023-01-10.html

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

http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0-SPR-RevA.xml
http://www.spec.org/cpu2017/flags/Intel-ic2022-official-linux64_revA.2023-01-10.xml

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

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