New H3C Technologies Co., Ltd. | SPECspeed®2017_int_base = 11.5
---|---
H3C UniServer R4900 G5 (Intel Xeon Gold 5318N) | SPECspeed®2017_int_peak = 11.7

<table>
<thead>
<tr>
<th>SPEC CPU®2017 Integer Speed Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copyright 2017-2021 Standard Performance Evaluation Corporation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU2017 License:</td>
<td>9066</td>
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<tr>
<td>Test Date:</td>
<td>Nov-2021</td>
</tr>
<tr>
<td>Test Sponsor:</td>
<td>New H3C Technologies Co., Ltd.</td>
</tr>
<tr>
<td>Hardware Availability:</td>
<td>Sep-2020</td>
</tr>
<tr>
<td>Tested by:</td>
<td>New H3C Technologies Co., Ltd.</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Jan-2021</td>
</tr>
</tbody>
</table>

### Software

- **OS:** Red Hat Enterprise Linux release 8.2 (Ootpa)
- **Compiler:** C/C++: Version 2021.1 of Intel oneAPI DPC++/C++ Compiler Build 20201113 for Linux; Fortran: Version 2021.1 of Intel Fortran Compiler Classic Build 20201112 for Linux; C/C++: Version 2021.1 of Intel C/C++ Compiler Classic Build 20201112 for Linux
- **Parallel:** Yes
- **Firmware:** Version 5.34 released Sep-2021 BIOS
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **Other:** jemalloc memory allocator V5.0.1
- **Power Management:** BIOS and OS set to prefer performance at the cost of additional power usage.

### Hardware

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name:</td>
<td>Intel Xeon Gold 5318N</td>
</tr>
<tr>
<td>Max MHz:</td>
<td>3400</td>
</tr>
<tr>
<td>Nominal:</td>
<td>2100</td>
</tr>
<tr>
<td>Enabled:</td>
<td>48 cores, 2 chips</td>
</tr>
<tr>
<td>Orderable:</td>
<td>1.2 chips</td>
</tr>
<tr>
<td>Cache L1:</td>
<td>32 KB I + 48 KB D on chip per core</td>
</tr>
<tr>
<td>L2:</td>
<td>1.25 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3:</td>
<td>36 MB I+D on chip per core</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
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<tr>
<td>Memory:</td>
<td>256 GB (16 x 16 GB 2Rx8 PC4-3200V-R, running at 2666)</td>
</tr>
<tr>
<td>Storage:</td>
<td>1 x 960GB SATA SSD</td>
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<tr>
<td>Other:</td>
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### Benchmarks

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
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<tbody>
<tr>
<td>perlbench</td>
<td>48</td>
<td>8.08</td>
<td>11.7</td>
</tr>
<tr>
<td>gcc</td>
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<td>10.5</td>
<td>11.5</td>
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<td>mcf</td>
<td>48</td>
<td>10.9</td>
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<tr>
<td>omnetpp</td>
<td>48</td>
<td>11.1</td>
<td></td>
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<tr>
<td>xalancbmk</td>
<td>48</td>
<td>13.2</td>
<td></td>
</tr>
<tr>
<td>x264</td>
<td>48</td>
<td>16.6</td>
<td></td>
</tr>
<tr>
<td>deepsjeng</td>
<td>48</td>
<td>17.3</td>
<td></td>
</tr>
<tr>
<td>leela</td>
<td>48</td>
<td>18.8</td>
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</tr>
<tr>
<td>exchange2</td>
<td>48</td>
<td>22.4</td>
<td></td>
</tr>
<tr>
<td>xz</td>
<td>48</td>
<td>19.4</td>
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</tr>
</tbody>
</table>

---

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Standard Performance Evaluation Corporation (info@spec.org)  
https://www.spec.org/
New H3C Technologies Co., Ltd.

H3C UniServer R4900 G5 (Intel Xeon Gold 5318N)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<td>219</td>
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<td>602.gcc_s</td>
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<td>377</td>
<td>10.6</td>
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<td>365</td>
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<td>620.omnetpp_s</td>
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<td>641.leela_s</td>
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<tr>
<td>648.exchange2_s</td>
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<td>657.xz_s</td>
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<td>22.4</td>
<td>276</td>
<td>22.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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/speccpu/lib/intel64:/home/speccpu/je5.0.1-64"
MALLOCONF = "retain:true"
OMP_STACKSIZE = "192M"

General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM
memory using Redhat Enterprise Linux 8.0
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-2017-57515 (Spectre variant 2) is mitigated in the system as tested and documented.
Transparent Huge Pages enabled by default
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
  sync; echo 3>/proc/sys/vm/drop_caches
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

(Continued on next page)
New H3C Technologies Co., Ltd.
H3C UniServer R4900 G5 (Intel Xeon Gold 5318N)

SPEC CPU®2017 Integer Speed Result
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SPECspeed®2017_int_base = 11.5
SPECspeed®2017_int_peak = 11.7

CPU2017 License: 9066
Test Sponsor: New H3C Technologies Co., Ltd.
Test Date: Nov-2021
Tested by: New H3C Technologies Co., Ltd.
Hardware Availability: Sep-2020
Software Availability: Jan-2021

General Notes (Continued)

Platform Notes

BIOS Settings:
Set Hyper-Threading to Disabled
Set Energy Performance BIAS to Performance
Set Patrol Scrub to Disabled

Sysinfo program /home/speccpu/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d
running on localhost.localdomain Thu Nov 11 07:15:16 2021

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) Gold 5318N CPU @ 2.10GHz
  2 "physical id"s (chips)
  48 "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 : 24
siblings : 24
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
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

From lscpu from util-linux 2.32.1:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 48
On-line CPU(s) list: 0-47
Thread(s) per core: 1
Core(s) per socket: 24
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Gold 5318N CPU @ 2.10GHz
Stepping: 6
CPU MHz: 895.432
CPU max MHz: 3400.0000
CPU min MHz: 800.0000

(Continued on next page)
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H3C UniServer R4900 G5 (Intel Xeon Gold 5318N)

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---

**Platform Notes (Continued)**

```
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---

**Platform Notes (Continued)**

BogoMIPS: 4200.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 36864K
NUMA node0 CPU(s): 0-23
NUMA node1 CPU(s): 24-47

Flags: fpu vme de pse tsc msr pae mce cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpcegb rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtopr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3nowprefetch cpuid_fault epb cat_13 invpcid_single ssbd mba ibrs ibpb stibp ibrs_enhanced cpr_shadow vnumi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erts invpcid rtm cqm rdt_a avx512f avx512dq rdsne adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha ni avx512bw avx512vl xsaveopt xsavec xgetbv1 xsavees cqm_llc cqm_occup_llc cqm_mbbm_total cqm_mbbm_local wboinvd dtcvel ida arat pln pts hwp hwp_act_window hwp_eqp hwp_pkg_req avx512vbmi umip pku ospke avx512_vbmi2 gfni vaes vpcmmlqrdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid md_clear pconfig flush_lld arch_capabilities

/proc/cpuinfo cache data
cache size : 36864 KB

From numactl --hardware
WARNING: a numactl 'node' might or might not correspond to a physical chip.
available: 2 nodes (0-1)
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
node 0 size: 128326 MB
node 0 free: 127237 MB
node 1 cpus: 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47
node 1 size: 129016 MB
node 1 free: 128408 MB
node distances:
node 0 1
0: 10 20
1: 20 10

From /proc/meminfo
MemTotal: 263518488 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/sbin/tuned-adm active
Current active profile: throughput-performance

(Continued on next page)
New H3C Technologies Co., Ltd.

H3C UniServer R4900 G5 (Intel Xeon Gold 5318N)

CPU2017 License: 9066
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SPECspeed®2017_int_base = 11.5
SPECspeed®2017_int_peak = 11.7

Platform Notes (Continued)

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

From /etc/*release* /etc/*version* os-release:
NAME="Red Hat Enterprise Linux"
VERSION="8.2 (Ootpa)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="8.2"
PLATFORM_ID="platform:el8"
PRETTY_NAME="Red Hat Enterprise Linux 8.2 (Ootpa)"
ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.2:ga

uname -a:
Linux localhost.localdomain 4.18.0-193.el8.x86_64 #1 SMP Fri Mar 27 14:35:58 UTC 2020
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): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2018-3639 (Speculative Store Bypass): Mitigation: usercopy/swaps barriers and __user pointer sanitation
CVE-2017-5753 (Spectre variant 1): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
CVE-2017-5715 (Spectre variant 2): No status reported
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 Nov 11 07:12
SPEC is set to: /home/speccpu

Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 839G 89G 750G 11% /home

From /sys/devices/virtual/dmi/id
Vendor: New H3C Technologies Co., Ltd.

(Continued on next page)
New H3C Technologies Co., Ltd.

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Platform Notes (Continued)

Product: H3C UniServer R4900 G5
Product Family: Rack
Serial: 210235A2RBH212000005

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:
  16x Micron 18ASF2G72PDZ-3G2E1 16 GB 2 rank 3200, configured at 2666
  16x NO DIMM NO DIMM

BIOS:
  BIOS Vendor: American Megatrends International, LLC.
  BIOS Version: 5.34
  BIOS Date: 09/11/2021
  BIOS Revision: 5.22

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
| C       | 600.perlbench_s(peak)
|-----------------------------------------------------------------------------|
|Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
-----------------------------------------------------------------------------

==============================================================================
| C       | 600.perlbench_s(base) 602.gcc_s(base, peak) 605.mcf_s(base, peak)
| 625.x264_s(base, peak) 657.xz_s(base, peak)
-----------------------------------------------------------------------------
|Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.               
-----------------------------------------------------------------------------

==============================================================================
| C       | 600.perlbench_s(peak)
|-----------------------------------------------------------------------------|
|Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.               
-----------------------------------------------------------------------------

(Continued on next page)
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Compiler Version Notes (Continued)

==============================================================================
| C       | 600.perlbench_s(base) 602.gcc_s(base, peak) 605.mcf_s(base, peak)       |
|         | 625.x264_s(base, peak) 657.xz_s(base, peak)                               |
==============================================================================

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, 
Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

==============================================================================
| C++     | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak)                   |
|         | 631.deepsjeng_s(base, peak) 641.leela_s(base, peak)                     |
==============================================================================

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, 
Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

==============================================================================
| Fortran | 648.exchange2_s(base, peak)                                             |
==============================================================================

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on 
Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifort

Base Portability Flags

600.perlbench_s: -DSPECLP64 -DSPECLINUX_X64
602.gcc_s: -DSPECLP64
605.mcf_s: -DSPECLP64

(Continued on next page)
New H3C Technologies Co., Ltd.  
H3C UniServer R4900 G5 (Intel Xeon Gold 5318N)

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**Base Portability Flags (Continued)**

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:
-DSPEC_OPENMP -std=c11 -m64 -fiopenmp -Wl,-z,muldefs -xCORE-AVX512
-03 -ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

C++ benchmarks:
-DSPEC_OPENMP -m64 -Wl,-z,muldefs -xCORE-AVX512 -03 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin/
-lqkmalloc

Fortran benchmarks:
-m64 -xCORE-AVX512 -03 -ipo -no-prec-div -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-mbranches-within-32B-boundaries

**Peak Compiler Invocation**

C benchmarks (except as noted below):
icx

600.perlbench_s: icc

C++ benchmarks:
icpx

Fortran benchmarks:
ifort
### SPEC CPU® 2017 Integer Speed Result

**New H3C Technologies Co., Ltd.**

**H3C UniServer R4900 G5 (Intel Xeon Gold 5318N)**

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>Test Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>9066</td>
<td>Nov-2021</td>
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### Specspeed® 2017 Int Base = 11.5

### Specspeed® 2017 Int Peak = 11.7

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**Peak Portability Flags**

Same as Base Portability Flags

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**Peak Optimization Flags**

#### C benchmarks:

- 600.perlbench_s: `-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2)`
- `-xCORE-AVX512 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=4 -fno-strict-overflow`
- `-mbranches-within-32B-boundaries`
- `-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

- 602.gcc_s: `-m64 -std=c11 -Wl,-z,muldefs -fprofile-generate(pass 1)`
- `-fprofile-use=default.profdata(pass 2) -xCORE-AVX512 -flto`
- `-Ofast(pass 1) -O3 -ffast-math -qopt-mem-layout-trans=4`
- `-mbranches-within-32B-boundaries`
- `-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

- 605.mcf_s: `basepeak = yes`

- 625.x264_s: `-DSPEC_OPENMP -fiopenmp -std=c11 -m64 -Wl,-z,muldefs`
- `-xCORE-AVX512 -flto -O3 -ffast-math`
- `-qopt-mem-layout-trans=4 -fno-alias`
- `-mbranches-within-32B-boundaries`
- `-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

- 657.xz_s: `basepeak = yes`

#### C++ benchmarks:

- 620.omnetpp_s: `basepeak = yes`

- 623.xalancbmk_s: `basepeak = yes`

- 631.deepsjeng_s: `basepeak = yes`

- 641.leela_s: `basepeak = yes`

#### Fortran benchmarks:

- 648.exchange2_s: `basepeak = yes`
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<tr>
<th>SPECspeed®2017_int_base</th>
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The flags files that were used to format this result can be browsed at


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


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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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