Huawei CH222 V3 (Intel Xeon E5-2650 v4)

<table>
<thead>
<tr>
<th>SPECfp®2006</th>
<th>SPECfp_base2006</th>
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<tbody>
<tr>
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CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei

Test date: Feb-2016
Hardware Availability: Mar-2016
Software Availability: Mar-2016

SPEC has determined that this result is not in compliance with the SPEC CPU2006 run and reporting rules. Specifically, the memory was not available as required by SPEC CPU rule 1.3.2 and the SPEC Open Systems Group policy on general availability.

Non-Compliant

410.bwaves
416.gamess
433.milc
434.zeusmp
435.gromacs
436.cactusADM
437.leslie3d
444.namd
447.dealII
450.soplex
453.povray
454.calculix
459.GemsFD
465.tonto
470.lbm
481.wrf
482.sphinx3

Non-Compliant
**Huawei CH222 V3 (Intel Xeon E5-2650 v4)**

<table>
<thead>
<tr>
<th>SPECfp2006 =</th>
<th>NC</th>
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<tbody>
<tr>
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<td>NC</td>
</tr>
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</table>

**CPU2006 license:** 3175  
**Test sponsor:** Huawei  
**Tested by:** Huawei  
**Test date:** Feb-2016  
**Hardware Availability:** Mar-2016  
**Software Availability:** Mar-2016

**SPEC has determined that this result is not in compliance with the SPEC CPU2006 run and reporting rules. Specifically, the memory was not available as required by SPEC CPU rule 1.3.2 and the SPEC Open Systems Group policy on general availability.**

<table>
<thead>
<tr>
<th><strong>Hardware</strong></th>
<th><strong>Software</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU Name:</strong> Intel Xeon E5-2650 v4</td>
<td><strong>Operating System:</strong> Red Hat Enterprise Linux Server release 7.0 (Maipo) 3.10.0-123.el7.x86_64</td>
</tr>
<tr>
<td><strong>CPU Characteristics:</strong> Intel Turbo Boost Technology up to 2.90 GHz</td>
<td><strong>Compiler:</strong> C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux; Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux</td>
</tr>
<tr>
<td><strong>CPU MHz:</strong> 2200</td>
<td><strong>Auto Parallel:</strong> Yes</td>
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<tr>
<td><strong>FPU:</strong> Integrated</td>
<td><strong>File System:</strong> ext4</td>
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<tr>
<td><strong>CPU(s) enabled:</strong> 24 cores, 2 chips, 12 cores/chip</td>
<td><strong>System State:</strong> Run level 3 (multi-user)</td>
</tr>
<tr>
<td><strong>CPU(s) orderable:</strong> 1,2 chip</td>
<td><strong>Base Pointers:</strong> 64-bit</td>
</tr>
<tr>
<td><strong>Primary Cache:</strong> 32 KB I + 32 KB D on chip per core</td>
<td><strong>Peak Pointers:</strong> 32/64-bit</td>
</tr>
<tr>
<td><strong>Secondary Cache:</strong> 256 KB I+D on chip per core</td>
<td><strong>Other Software:</strong> None</td>
</tr>
<tr>
<td><strong>L3 Cache:</strong> 30 MB I+D on chip per chip</td>
<td><strong>Other Hardware:</strong> None</td>
</tr>
<tr>
<td><strong>Other Cache:</strong> None</td>
<td><strong>Memory:</strong> 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R)</td>
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<tr>
<td><strong>Disk Subsystem:</strong> 1 x 1 T SATA, 7200 RPM</td>
<td><strong>Compiler:</strong> C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux; Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux</td>
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<tr>
<td><strong>Other Software:</strong> None</td>
<td><strong>Auto Parallel:</strong> Yes</td>
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<tr>
<td><strong>File System:</strong> ext4</td>
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</tr>
<tr>
<td><strong>Base Pointers:</strong> 64-bit</td>
<td><strong>Peak Pointers:</strong> 32/64-bit</td>
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<tr>
<td><strong>Other Software:</strong> None</td>
<td><strong>Other Hardware:</strong> None</td>
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</tbody>
</table>
**Huawei**

**Huawei CH222 V3 (Intel Xeon E5-2650 v4)**

<table>
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<tbody>
<tr>
<td>Test sponsor:</td>
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<tr>
<td>SPECfp2006 =</td>
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<tr>
<td>SPECfp_base2006 =</td>
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---

**Results Table**

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<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<tbody>
<tr>
<td>Base</td>
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</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"

---

**Platform Notes**

BIOS configuration:
- Set Power Efficiency Mode to Custom
- Set Snoop Mode to HS mode
- Set Patrol Scrub to Disable
- Set Hyper-Threading to Disable

Sysinfo program /speccpu/spec16/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Sat Feb 20 09:42:17 2016

Continued on next page
Huawei

Huawei CH222 V3 (Intel Xeon E5-2650 v4)

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei

SPECfp2006 = NC
SPECfp_base2006 = NC

CPU2006 license: 3175
Test date: Feb-2016
Hardware Availability: Mar-2016
Software Availability: Mar-2016

SPEC has determined that this result is not in compliance with the SPEC CPU2006 run and reporting rules. Specifically, the memory was not available as required by SPEC CPU rule 1.3.2 and the SPEC Open Systems Group policy on general availability.

Platform Notes (Continued)

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see: http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo
- model name: Intel(R) Xeon(R) CPU E5-2650 2.20GHz
- 2 "physical id"s (chips)
- 24 "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: 12
  - siblings: 12
  - physical 0: cores 0 2 3 4 5 8 9 10 11 12 13
  - physical 1: cores 0 2 3 4 5 8 9 10 11 12 13
- cache size: 30720 KB

From /proc/meminfo
- MemTotal: 263570248 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
- os-release:
  - NAME="Red Hat Enterprise Linux Server"
  - VERSION="7.0 (Maipo)"
  - ID="rhel"
  - ID_LIKE="fedora"
  - VERSION_ID="7.0"
  - PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
  - CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:GA:server"
  - Redhat-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
  - system-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
  - system-release-cpe: cpe:/o:redhat:enterprise_linux:7.0:ga:server

uname -a:
- Linux localhost.localdomain 3.10.0-123.el7.x86_64 #1 SMP Mon May 5 11:16:57 EDT 2014 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Feb 20 04:28
SPEC is set to: /speccpu/spec16

Continued on next page
SPEC CFP2006 Result

Huawei

Huawei CH222 V3 (Intel Xeon E5-2650 v4)

CPU2006 license: 3175
Test sponsor: Huawei
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Platform Notes (Continued)

Filesystem     Type  Size  Used  Avail  Use%  Mounted on
/dev/sda2      ext4   865G   96G  726G   12%  /

Additional information from dmidecode:

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. There are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS Insyde Corp. 7.11 02/14/2016
Memory:
8x NO DIMM NO DIMM 3 rank
8x Samsung M393A2G40EB1-CRC 16 GB 1 rank 2400 MHz
8x Samsung M393A2G40EB1-CRC 16 GB 2 rank 2400 MHz

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/speccpu/spec16/libs/32:/speccpu/spec16/libs/64:/speccpu/spec16/sh"
OMP_NUM_THREADS = "24"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled
runspec commands invoked through numaclt i.e.:
numactl --interleave=all runspec <etc>

The Huawei CH121 V3 and Huawei CH222 V3 are electronically equivalent.
The results have been measured on a Huawei CH121 V3 model

Base Compiler Invocation

C benchmarks:
  icc   -m64

C++ benchmarks:
  icpc  -m64

Continued on next page
SPEC has determined that this result is not in compliance with the SPEC CPU2006 run and reporting rules. Specifically, the memory was not available as required by <a href="http://spec.org/cpu2006/Docs/runrules.html#rule_1.3.2">SPEC CPU rule 1.3.2</a> and the SPEC Open Systems Group policy on <a href="https://www.spec.org/osg/policy.html#AppendixC">general availability</a>.

Base Compiler Invocation (Continued)

Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
icc -m64 ifort -m64

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64 -nofor_main
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
Huawei CH222 V3 (Intel Xeon E5-2650 v4)

**SPECfp2006** = NC

**SPECfp_base2006** = NC

**CPU2006 license:** 3175

**Test date:** Feb-2016

**Test sponsor:** Huawei

**Hardware Availability:** Mar-2016

**Software Availability:** Mar-2016

---

**Base Optimization Flags (Continued)**

Benchmarks using both Fortran and C:
- `-xCORE-AVX2`
- `-ipo`
- `-O3`
- `-no-prec-div`
- `-parallel`
- `-opt-prefetch`

**Peak Optimization Flags**

**C benchmarks**:

```
482.sinmx: basepeak = yes
200: basepeak = yes
433: basepeak = yes
```

**C++ benchmarks**:

```
433.milc: basepeak = yes
470.lbm: basepeak = yes
482.sphinx3: basepeak = yes
```

**C++ benchmarks**:

```
444.namd: -xCORE-AVX2 (pass 2)
-proc-gen:threadsafe (pass 1)
-ipo (pass 2)
-O3 (pass 2)
-no-prec-div (pass 2)
-par-num-threads=1
-prof-use (pass 2)
-fno-alias
-auto-ilp32
```

---

**Peak Portability Flags**

Same as Base Portability Flags

**Peak Compiler Invocation**

- **C benchmarks**:
  - `icc -m64`

- **C++ benchmarks**:
  - `icpc -m64`

- **Fortran benchmarks**:
  - `ifort -m64`

- **C benchmarks**:
  - `icc -m64`  
  - `ifort -m64`

---

**Base Optimization Flags (continued)**

```
-ast-attrs
-xcore-avx2
-tpo -03 -no-prec-dtv -parall -opt -fvector -floop-beta
```

Benchmarks using both Fortran and C:

---

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Peak Optimization Flags (Continued)

447.dealII: basepeak = yes
450.soplex: basepeak = yes
453.povray: -xCORE-AVX2 (pass 2) -prof-gen:threadsafe (pass 1)
           -ipo (pass 2) -O3 (pass 2) -no-prec-div (pass 2)
           -par-num-threads=1 (pass 1) -prof-use (pass 2) -unroll4
           -ansi-alias

Fortran benchmarks:
410.bwaves: basepeak = yes
416.gamess: -xCORE-AVX2 (pass 2) -prof-gen:threadsafe (pass 1)
           -ipo (pass 2) -O3 (pass 2) -no-prec-div (pass 2)
           -par-num-threads=1 (pass 1) -prof-use (pass 2) -unroll2
           -inline-level=1 -scalar-rep-

434.zeusmp: basepeak = yes
437.leslie3d: basepeak = yes
459.GemsFDTD: -xCORE-AVX2 (pass 2) -prof-gen:threadsafe (pass 1)
              -ipo (pass 2) -O3 (pass 2) -no-prec-div (pass 2)
              -par-num-threads=1 (pass 1) -prof-use (pass 2) -unroll2
              -inline-level=0 -opt-prefetch -parallel
465.tonto: -xCORE-AVX2 (pass 2) -prof-gen:threadsafe (pass 1)
            -ipo (pass 2) -O3 (pass 2) -no-prec-div (pass 2)
            -par-num-threads=1 (pass 1) -prof-use (pass 2) -inline-calloc
            -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:
435.gromacs: basepeak = yes
436.cactusADM: basepeak = yes
454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias
SPEC CFP2006 Result

Huawei

Huawei CH222 V3 (Intel Xeon E5-2650 v4)

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<tr>
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Peak Optimization Flags (Continued)

481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-BDW-V1.0.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-BDW-V1.0.xml

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

Tested with SPEC CPU2006 v1.2.
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