Huawei CH222 V3 (Intel Xeon E5-2609 v4)

**SPECfp®2006 = 70.5**  
**SPECfp_base2006 = 68.3**

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<th>Mar-2016</th>
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<tbody>
<tr>
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<td>3175</td>
<td>Software Availability:</td>
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<tr>
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<tr>
<td>CPU Name:</td>
<td>Intel Xeon E5-2609 v4</td>
<td></td>
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<tr>
<td>CPU Characteristics:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPU MHz:</td>
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<td></td>
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<tr>
<td>FPU:</td>
<td>Integrated</td>
<td></td>
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<tr>
<td>CPU(s) enabled:</td>
<td>16 cores, 2 chips, 8 cores/chip</td>
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<tr>
<td>CPU(s) orderable:</td>
<td>1.2 chip</td>
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</tr>
<tr>
<td>Primary Cache:</td>
<td>32 KB I + 32 KB D on chip per core</td>
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</tr>
<tr>
<td>Secondary Cache:</td>
<td>256 KB I+D on chip per core</td>
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## SPEC CFP2006 Result

**Huawei**

Huawei CH222 V3 (Intel Xeon E5-2609 v4)

**SPECfp2006 =** 70.5

**SPECfp_base2006 =** 68.3

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<tr>
<td>Tested by: Huawei</td>
<td>Software Availability: Dec-2015</td>
</tr>
</tbody>
</table>

- L3 Cache: 20 MB I+D on chip per chip
- Other Cache: None
- Memory: 512 GB (16 x 32 GB 2Rx4 PC4-2400T-R, running at 1867 MHz)
- Disk Subsystem: 1 x 480 GB SATA SSD
- Other Hardware: None
- Base Pointers: 64-bit
- Peak Pointers: 32/64-bit
- Other Software: none

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<td>481.wrf</td>
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<td><strong>385</strong></td>
<td>50.6</td>
<td>384</td>
<td>50.7</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"

### Platform Notes

- BIOS configuration:
  - Set Power Efficiency Mode to Performance
  - Set Snoop Mode to HS mode
  - Set Patrol Scrub to Disable
- Sysinfo program /spec16/config/sysinfo.rev6914
  - $Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1

This section contains SUT (System Under Test) info as seen by

Continued on next page
Huawei CH222 V3 (Intel Xeon E5-2609 v4)

CPU2006 license: 3175
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SPECfp2006 = 70.5
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CPU2006 license: 3175
Test date: Nov-2016
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Platform Notes (Continued)

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 E5-2609 v4 @ 1.70GHz
- 2 "physical id"s (chips)
- 16 "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: 8
- siblings: 8
- physical 0: cores 0 1 2 3 4 5 6 7
- physical 1: cores 0 1 2 3 4 5 6 7
- cache size: 20480 KB

From /proc/meminfo
- MemTotal: 528829580 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
- SuSE-release:
  - SUSE Linux Enterprise Server 12 (x86_64)
  - VERSION = 12
  - PATCHLEVEL = 1
  - # This file is deprecated and will be removed in a future service pack or
    release.
  - # Please check /etc/os-release for details about this release.
- os-release:
  - NAME="SLES"
  - VERSION="12-SP1"
  - VERSION_ID="12.1"
  - PRETTY_NAME="SUSE Linux Enterprise Server 12 SP1"
  - ID="sles"
  - ANSI_COLOR="0;32"
  - CPE_NAME="cpe:/o:suse:sles:12:sp1"

uname –a:
  (8d714a0) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Nov 26 14:53

SPEC is set to: /spec16
- Filesystem Type Size Used Avail Use% Mounted on
  /dev/sda1 ext4 394G 13G 381G 4% /

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, as there are frequent changes to
Continued on next page
Huawei
Huawei CH222 V3 (Intel Xeon E5-2609 v4)

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Platform Notes (Continued)

hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS Insyde Corp. 3.32 09/14/2016
Memory: 16x Hynix HMA84GR7MFR4N-UH 32 GB 2 rank 2400 MHz, configured at 1867 MHz
8x NO DIMM NO DIMM

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/spec16/libs/32:/spec16/libs/64:/spec16/sh"
OMP_NUM_THREADS = "16"

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 command invoked through numactl 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

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

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## SPEC CFP2006 Result

### Huawei

**Huawei CH222 V3 (Intel Xeon E5-2609 v4)**

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**Hardware Availability**: Mar-2016  
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### Base Portability Flags (Continued)

- 435. gromacs: `-DSPEC_CPU_LP64 -nofor_main`
- 436. cactusADM: `-DSPEC_CPU_LP64 -nofor_main`
- 437. lesie3d: `-DSPEC_CPU_LP64`
- 444. namd: `-DSPEC_CPU_LP64 -nofor_main`
- 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`

Benchmark using both Fortran and C:

- `-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias`

### Peak Compiler Invocation

C benchmarks:

- `icc -m64`

C++ benchmarks:

- `icpc -m64`

Fortran benchmarks:

- `ifort -m64`

Benchmark using both Fortran and C:

- `icc -m64 ifort -m64`
Huawei CH222 V3 (Intel Xeon E5-2609 v4)

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**Software Availability:** Dec-2015

---

**Peak Portability Flags**  
Same as Base Portability Flags

---

**Peak Optimization Flags**

**C benchmarks:**

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

**C++ benchmarks:**

- 444.namd: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -03(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1) -prof-use(pass 2) -fno-alias -auto-ilp32
- 447.dealII: basepeak = yes
- 450.soplex: basepeak = yes
- 453.povray: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -03(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) -03(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2 -inline-level=0 -scalar-rep-
- 434.zeusmp: basepeak = yes
- 437.leslie3d: basepeak = yes
- 459.GemsFDTD: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -03(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) -03(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1) -prof-use(pass 2) -inline-calloc

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Peak Optimization Flags (Continued)

465.tonto (continued):
- 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
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.

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