## Huawei CH222 V3 (Intel Xeon E5-2660 v3)

**SPECfp®2006 = 108**  
**SPECfp_base2006 = 104**

### Hardware

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-2660 v3</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.30 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2600</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>20 cores, 2 chips, 10 cores/chip</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>1.2 chip</td>
</tr>
<tr>
<td>Primary Cache</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache</td>
<td>256 KB I+D on chip per core</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>Red Hat Enterprise Linux Server release 7.0 (Maipo) 3.10.0-123.el7.x86_64</td>
</tr>
<tr>
<td>Compiler</td>
<td>C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux; Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>Yes</td>
</tr>
<tr>
<td>File System</td>
<td>ext4</td>
</tr>
</tbody>
</table>

---

**CPU2006 license:** 3175  
**Test date:** Jan-2015  
**Test sponsor:** Huawei  
**Hardware Availability:** Sep-2014  
**Tested by:** Huawei  
**Software Availability:** Sep-2014

---

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

Huawei CH222 V3 (Intel Xeon E5-2660 v3)

SPECfp2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

SPEC CFP2006 Result

Huawei

Huawei CH222 V3 (Intel Xeon E5-2660 v3)

SPECfp2006 = 108

SPECfp_base2006 = 104

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

Huawei CH222 V3 (Intel Xeon E5-2660 v3)

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

Huawei CH222 V3 (Intel Xeon E5-2660 v3)

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

L3 Cache: 25 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)
Disk Subsystem: 1 x 300 GB SAS, 10000 RPM
Other Hardware: None

System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th>Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Seconds</td>
<td>Ratio</td>
</tr>
<tr>
<td>410.bwaves</td>
<td>29.5 461</td>
<td>27.3</td>
</tr>
<tr>
<td>416.gamess</td>
<td>546</td>
<td>35.9</td>
</tr>
<tr>
<td>433.milc</td>
<td>138</td>
<td>66.3</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>45.1 202</td>
<td>44.3</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>167</td>
<td>42.7</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>15.9</td>
<td>753</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>26.7</td>
<td>353</td>
</tr>
<tr>
<td>444.namd</td>
<td>287</td>
<td>27.9</td>
</tr>
<tr>
<td>447.dealII</td>
<td>217</td>
<td>52.6</td>
</tr>
<tr>
<td>450.soplex</td>
<td>194</td>
<td>43.0</td>
</tr>
<tr>
<td>453.povray</td>
<td>102</td>
<td>52.3</td>
</tr>
<tr>
<td>454.calculix</td>
<td>164</td>
<td>50.4</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>49.5</td>
<td>214</td>
</tr>
<tr>
<td>465.tonto</td>
<td>249</td>
<td>39.5</td>
</tr>
<tr>
<td>470.lbm</td>
<td>20.0</td>
<td>686</td>
</tr>
<tr>
<td>481.wrf</td>
<td>127</td>
<td>88.3</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>265</td>
<td>73.6</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 Custom
Set Snoop Mode to HS
Set Hyper-Threaded to Disabled
Baseboard Management Controller used to adjust the fan speed to 100%
Sysinfo program /spec15/config/sysinfo.rev6914

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

Continued on next page
Huawei

Huawei CH222 V3 (Intel Xeon E5-2660 v3)

SPECfp2006 = 108
SPECfp_base2006 = 104

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

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 E5-2660 v3 @ 2.60GHz
2 "physical id"s (chips)
20 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The
following excerpts from /proc/cpuinfo might not be reliable. Use with
cautions.)
cpu cores: 10
siblings: 10
physical 0: cores 0 1 2 3 4 8 9 10 11 12
physical 1: cores 0 1 2 3 4 8 9 10 11 12
cache size: 25600 KB

From /proc/meminfo
MemTotal: 263721016 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
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)"
ANSI_COLOR="0;31"
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 Jan 19 05:49

SPEC is set to: /spec15
Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb1 ext4 237G 13G 213G 6% /

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

BIOS Insysde Corp. 1.19 10/10/2014
Continued on next page
Huawei CH222 V3 (Intel Xeon E5-2660 v3)

SPECfp2006 = 108
SPECfp_base2006 = 104

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

Test date: Jan-2015
Hardware Availability: Sep-2014
Software Availability: Sep-2014

Platform Notes (Continued)

Memory:
8x NO DIMM NO DIMM 3 rank
8x Samsung M393A2G40DB0-CPB 16 GB 1 rank 2133 MHz
8x Samsung M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz

(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 = "/spec15/libs/32:/spec15/libs/64:/spec15/sh"
OMP_NUM_THREADS = "20"

Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB memory using RedHat EL 7.0
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled
runcspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>
The Huawei CH121 V3 and Huawei CH222 V3 models 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 -nofor_main
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
  437.leslie3d: -DSPEC_CPU_LP64
Huawei
Huawei CH222 V3 (Intel Xeon E5-2660 v3)

SPECfp2006 = 108
SPECfp_base2006 = 104

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei
Test date: Jan-2015
Hardware Availability: Sep-2014
Software Availability: Sep-2014

Base Portability Flags (Continued)

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

Benchmarks 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

Benchmarks using both Fortran and C:
icc -m64 ifort -m64
Huawei CH222 V3 (Intel Xeon E5-2660 v3)  

<table>
<thead>
<tr>
<th>SPECfp2006</th>
<th>SPECfp_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>108</td>
<td>104</td>
</tr>
</tbody>
</table>

CPU2006 license: 3175  
Test sponsor: Huawei  
Test date: Jan-2015  
Hardware Availability: Sep-2014  
Tested by: Huawei  
Software Availability: Sep-2014

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

- 433.milc: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
  -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
  -auto-ilp32 -ansi-alias

- 470.lbm: basepeak = yes

- 482.sphinx3: basepeak = yes

C++ benchmarks:

- 444.namd: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
  -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
  -fno-alias -auto-ilp32

- 447.dealII: basepeak = yes

- 450.soplex: basepeak = yes

- 453.povray: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
  -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll4  
  -ansi-alias

Fortran benchmarks:

- 410.bwaves: basepeak = yes

- 416.gamess: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
  -O3(pass 2) -no-prec-div(pass 2) -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(pass 1) -ipo(pass 2)  
  -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2  
  -inline-level=0 -opt-prefetch -parallel

- 465.tonto: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
  -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
  -inline-calloc -opt-malloc-options=3 -auto -unroll4

Continued on next page
SPEC CFP2006 Result

Huawei

Huawei CH222 V3 (Intel Xeon E5-2660 v3)

\[
\text{SPECfp2006} = 108 \\
\text{SPECfp\_base2006} = 104
\]

CPU2006 license: 3175
Test sponsor: Huawei
Test date: Jan-2015
Tested by: Huawei
Hardware Availability: Sep-2014
Tested with SPEC CPU2006 v1.2.
Software Availability: Sep-2014
Report generated on Tue Feb 10 18:30:18 2015 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 10 February 2015.

Peak Optimization Flags (Continued)

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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-HASWELL-V1.4.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-HASWELL-V1.4.xml

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Originally published on 10 February 2015.

Standard Performance Evaluation Corporation
info@spec.org
http://www.spec.org/