



# SPEC CPU®2017 Floating Point Rate Result

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**Sun Microsystems**  
(Test Sponsor: Oracle Corporation)

**Sun Fire V490**

SPECrate®2017\_fp\_base = 1.00

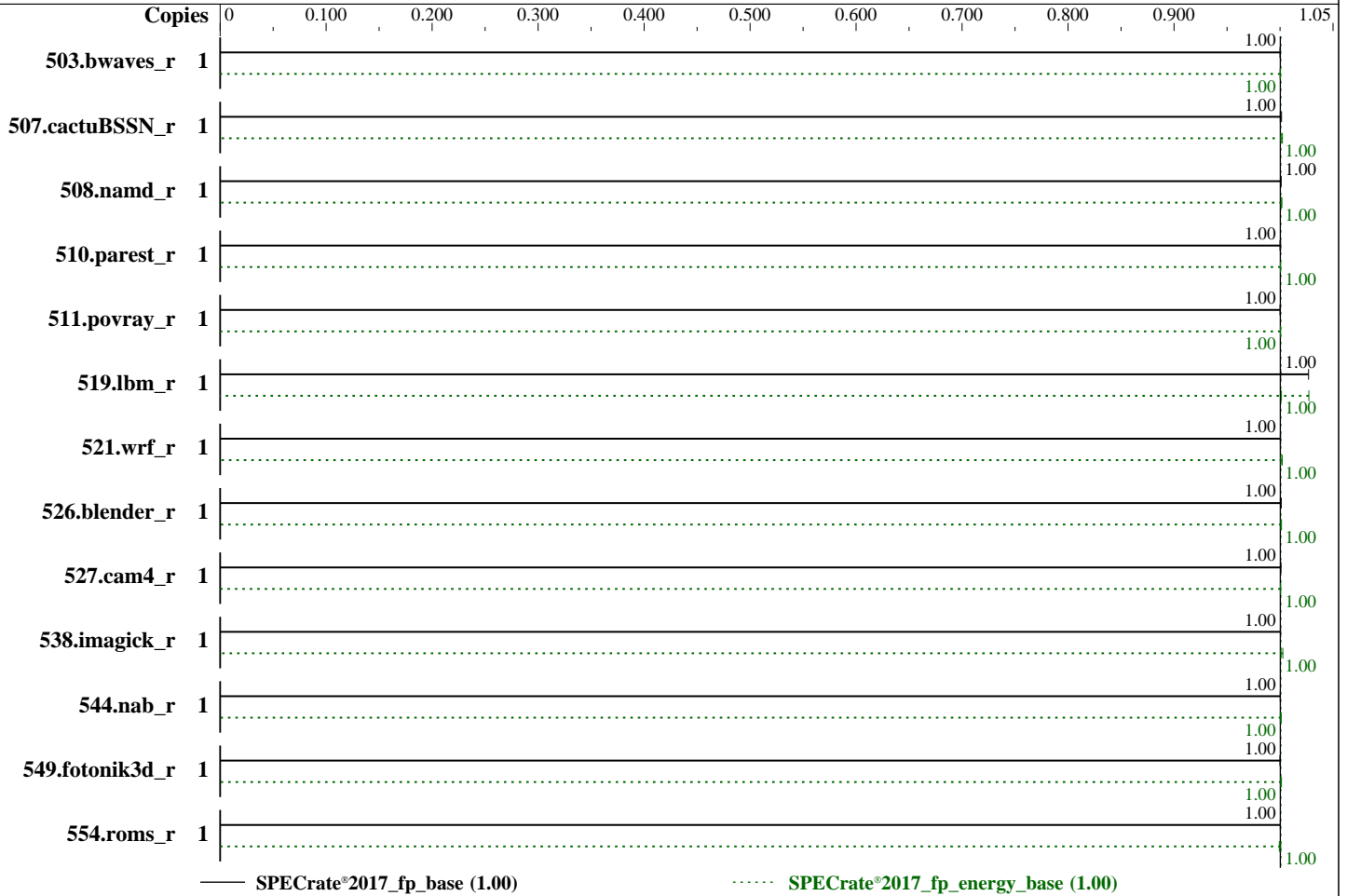
SPECrate®2017\_fp\_energy\_base = 1.00

SPECrate®2017\_fp\_peak = Not Run

SPECrate®2017\_fp\_energy\_peak = --

**CPU2017 License:** 6  
**Test Sponsor:** Oracle Corporation  
**Tested by:** Oracle Corporation

**Test Date:** Nov-2016  
**Hardware Availability:** Feb-2007  
**Software Availability:** Jul-2016



**Hardware**

CPU Name: UltraSPARC-IV+  
 Max MHz: 2100  
 Nominal: 2100  
 Enabled: 8 cores, 4 chips  
 Orderable: 2 or 4 chips  
 Cache L1: 64 KB I + 64 KB D on chip per core  
 L2: 2 MB I+D on chip per chip  
 L3: 32 MB I+D off chip per chip  
 Other: None  
 Memory: 32 GB (32 x 1 GB SDRAM Registered, ECC, 232-pin, Samsung M323S6459ET2-C1LC2)  
 Storage: 300 GB ZFS mirror on 2x 15K RPM 300 GB Fibre Channel drives  
 Other: None

**Software**

OS: Solaris 10 1/13  
 Compiler: C/C++/Fortran: Version 12.5 of Oracle Developer Studio  
 Parallel: No  
 Firmware: Sun OpenBoot PROM (patch 121689-02) version 4.22.24, released Feb-2010  
 File System: zfs  
 System State: Default  
 Base Pointers: 32-bit  
 Peak Pointers: Not Applicable  
 Other: None  
 Power Management: Set to defaults



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## Power

Max. Power (W): 1143.2  
Idle Power (W): 1080.48  
Min. Temperature (C): 20.44  
Elevation (m): 67  
Line Standard: 208 V / 60 Hz / 1 phase / 2 wire  
Provisioning: Line powered

### Power Settings

Management FW: Version 2.2.2 of Sun Remote System Control (RSC)  
Memory Mode: Normal

### Power-Relevant Hardware

Power Supply: 2 x 1448 W (redundant)  
Details: Type A187 1448 Watt AC Input Power Supply  
Backplane: N/A  
Other Storage: Sun Slimline 8x DVD-ROM (370-4412)  
Storage Model #: 2 x XTC-FC1CF-300G15KZ, connected to on-board FC HBA  
NICs Installed: 2 x on-board @ 1 GbE  
NICs Enabled (FW/OS): 2 / 1  
NICs Connected/Speed: 1 @ 1 Gbps  
Other HW Model #: None

### Power Analyzer

Power Analyzer: bur-x4170m2-002:8888  
Hardware Vendor: Yokogawa  
Model: WT210  
Serial Number: 91GC38245  
Input Connection: Serial over USB  
Metrology Institute: NIST  
Calibration By: Yokogawa USA  
Calibration Label: 110316-91GC38245  
Calibration Date: 3-Nov-2016  
PTDaemon™ Version: 1.8.1 (f3ad5467; 2016-09-07)  
Setup Description: Directly connected  
Current Ranges Used: 10A  
Voltage Range Used: 300V

### Temperature Meter

Temperature Meter: bur-x4170m2-002:8889  
Hardware Vendor: Digi  
Model: WATCHPORT/H  
Serial Number:  
Input Connection: USB  
PTDaemon Version: 1.8.1 (f3ad5467; 2016-09-07)  
Setup Description: In front of SUT front panel primary air inlet

## Base Results Table

Benchmark	Copies	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
503.bwaves_r	1	<b>10027</b>	<b>1.00</b>	<b>10900</b>	<b>1.00</b>	<b>1090</b>	<b>1120</b>	10026	1.00	10900	1.00	1090	1120						
507.cactuBSSN_r	1	1264	1.00	1390	1.00	1100	1120	<b>1266</b>	<b>1.00</b>	<b>1390</b>	<b>1.00</b>	<b>1100</b>	<b>1120</b>						
508.namd_r	1	<b>949</b>	<b>1.00</b>	<b>1030</b>	<b>1.00</b>	<b>1090</b>	<b>1100</b>	949	1.00	1030	1.00	1090	1100						
510.parest_r	1	<b>2616</b>	<b>1.00</b>	<b>2840</b>	<b>1.00</b>	<b>1090</b>	<b>1100</b>	2615	1.00	2850	1.00	1090	1100						
511.povray_r	1	<b>2335</b>	<b>1.00</b>	<b>2530</b>	<b>1.00</b>	<b>1080</b>	<b>1090</b>	2334	1.00	2530	1.00	1080	1090						
519.lbm_r	1	1026	1.03	1170	1.03	1140	1140	<b>1053</b>	<b>1.00</b>	<b>1200</b>	<b>1.00</b>	<b>1140</b>	<b>1140</b>						
521.wrf_r	1	<b>2239</b>	<b>1.00</b>	<b>2440</b>	<b>1.00</b>	<b>1090</b>	<b>1100</b>	2239	1.00	2440	1.00	1090	1100						
526.blender_r	1	1521	1.00	1650	1.00	1080	1090	<b>1523</b>	<b>1.00</b>	<b>1650</b>	<b>1.00</b>	<b>1080</b>	<b>1100</b>						
527.cam4_r	1	1748	1.00	1900	1.00	1090	1120	<b>1748</b>	<b>1.00</b>	<b>1900</b>	<b>1.00</b>	<b>1090</b>	<b>1110</b>						
538.imagick_r	1	2486	1.00	2690	1.00	1080	1090	<b>2486</b>	<b>1.00</b>	<b>2690</b>	<b>1.00</b>	<b>1080</b>	<b>1090</b>						

Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.



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SPECrate®2017\_fp\_base = 1.00

SPECrate®2017\_fp\_energy\_base = 1.00

SPECrate®2017\_fp\_peak = Not Run

SPECrate®2017\_fp\_energy\_peak = --

CPU2017 License: 6

Test Sponsor: Oracle Corporation

Tested by: Oracle Corporation

Test Date: Nov-2016

Hardware Availability: Feb-2007

Software Availability: Jul-2016

## Base Results Table (Continued)

Benchmark	Copies	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
544.nab_r	1	<b>1683</b>	<b>1.00</b>	<b>1820</b>	<b>1.00</b>	<b>1080</b>	<b>1090</b>	1682	1.00	1820	1.00	1080	1090						
549.fotonik3d_r	1	<b>3897</b>	<b>1.00</b>	<b>4340</b>	<b>1.00</b>	<b>1110</b>	<b>1130</b>	3897	1.00	4340	1.00	1110	1120						
554.roms_r	1	<b>1589</b>	<b>1.00</b>	<b>1750</b>	<b>1.00</b>	<b>1100</b>	<b>1120</b>	1588	1.00	1750	0.999	1100	1120						

SPECrate®2017\_fp\_base = **1.00**

SPECrate®2017\_fp\_energy\_base = **1.00**

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

## Operating System Notes

/etc/system settings

The ZFS cache may use 1 to 2 GB:

zfs:zfs\_arc\_min=0x40000000

zfs:zfs\_arc\_max=0x80000000

Once every 10 seconds, the page flusher may write pages older than 600 seconds:

autoup=600

tune\_t\_fsflushr=10

Prefer local pages, and allow extra memory to manage page metadata:

lpg\_alloc\_prefer=1

tsb\_rss\_factor=128

## General Notes

Environment variables set by runcpu before the start of the run:

OMP\_STACKSIZE = "120M"

## Platform Notes

Sysinfo program /cpu2017/rc3/Docs/sysinfo

Rev: r4961 of 2016-10-02 93f3ce875d5c7794alfec4785739b79b

running on bur408-84 Thu Nov 17 00:43:30 2016

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/cpu2017/Docs/config.html#sysinfo>

From /usr/sbin/psrinfo

UltraSPARC-IV+ (portid 0 impl 0x19 ver 0x22 clock 2100 MHz)

UltraSPARC-IV+ (portid 1 impl 0x19 ver 0x22 clock 2100 MHz)

UltraSPARC-IV+ (portid 2 impl 0x19 ver 0x22 clock 2100 MHz)

UltraSPARC-IV+ (portid 3 impl 0x19 ver 0x22 clock 2100 MHz)

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## Sun Fire V490

**CPU2017 License:** 6  
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**Software Availability:** Jul-2016

### Platform Notes (Continued)

4 chips  
8 threads  
2100 MHz

From kstat: 8 cores

From prtconf: 32768 Megabytes

```
/etc/release:
  Oracle Solaris 10 1/13 s10s_u11wos_24a SPARC
uname -a:
  SunOS bur408-84 5.10 Generic_147147-26 sun4u sparc SUNW,Sun-Fire-V490
```

```
disk: df -h /cpu2017/rc3
Filesystem      size  used  avail capacity  Mounted on
rpool/cpu2017/rc3  213G  1.2G   111G     2%    /cpu2017/rc3
```

(End of data from sysinfo program)

### Power Settings Notes

Device power management is disabled by default for server systems.  
The UltraSPARC IV+ CPU does not support power management.

### Compiler Version Notes

```
=====
C          | 519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
-----
cc: Studio 12.5 Sun C 5.14 SunOS_sparc 2016/05/31
cc: Warning: -xchip=native detection failed, falling back to -xchip=generic
-----

=====
C++       | 508.namd_r(base) 510.parest_r(base)
-----
CC: Studio 12.5 Sun C++ 5.14 SunOS_sparc 2016/05/31
CC: Warning: -xchip=native detection failed, falling back to -xchip=generic
-----

=====
C++, C    | 507.cactuBSSN_r(base pass 0) 511.povray_r(base pass 0, base
          | pass 0) 526.blender_r(base pass 0, base pass 0)
-----
```

(Continued on next page)



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### Compiler Version Notes (Continued)

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CC: Studio 12.5 Sun C++ 5.14 SunOS\_sparc 2016/05/31  
CC: Warning: -xchip=native detection failed, falling back to -xchip=generic  
-----

=====  
C++, C | 511.povray\_r(base pass 0, base pass 0) 526.blender\_r(base  
pass 0, base pass 0)

cc: Studio 12.5 Sun C 5.14 SunOS\_sparc 2016/05/31  
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C++, C | 507.cactuBSSN\_r(base pass 0) 511.povray\_r(base pass 0, base  
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C++, C | 511.povray\_r(base pass 0, base pass 0) 526.blender\_r(base  
pass 0, base pass 0)

cc: Studio 12.5 Sun C 5.14 SunOS\_sparc 2016/05/31  
cc: Warning: -xchip=native detection failed, falling back to -xchip=generic  
-----

=====  
C++, C, Fortran | 507.cactuBSSN\_r(base pass 0)  
-----

cc: Studio 12.5 Sun C 5.14 SunOS\_sparc 2016/05/31  
cc: Warning: -xchip=native detection failed, falling back to -xchip=generic  
-----

=====  
C++, C, Fortran | 507.cactuBSSN\_r(base pass 0)  
-----

f90: Studio 12.5 Fortran 95 8.8 SunOS\_sparc 2016/05/31  
f90: Warning: -xchip=native detection failed, falling back to -xchip=generic  
-----

=====  
C++, C, Fortran | 507.cactuBSSN\_r(base pass 0)  
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cc: Studio 12.5 Sun C 5.14 SunOS\_sparc 2016/05/31  
cc: Warning: -xchip=native detection failed, falling back to -xchip=generic  
-----

=====  
C++, C, Fortran | 507.cactuBSSN\_r(base pass 0)  
-----

f90: Studio 12.5 Fortran 95 8.8 SunOS\_sparc 2016/05/31  
f90: Warning: -xchip=native detection failed, falling back to -xchip=generic  
-----

=====  
Fortran | 503.bwaves\_r(base) 549.fotonik3d\_r(base) 554.roms\_r(base)  
-----

f90: Studio 12.5 Fortran 95 8.8 SunOS\_sparc 2016/05/31  
f90: Warning: -xchip=native detection failed, falling back to -xchip=generic  
-----

=====  
Fortran, C | 521.wrf\_r(base pass 0, base pass 0) 527.cam4\_r(base pass 0,  
base pass 0)

cc: Studio 12.5 Sun C 5.14 SunOS\_sparc 2016/05/31  
cc: Warning: -xchip=native detection failed, falling back to -xchip=generic  
-----

=====  
Fortran, C | 521.wrf\_r(base pass 0, base pass 0) 527.cam4\_r(base pass 0,  
base pass 0)

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Fortran, C | 521.wrf\_r(base pass 0, base pass 0) 527.cam4\_r(base pass 0,  
-----

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## Compiler Version Notes (Continued)

| base pass 0)

-----  
f90: Studio 12.5 Fortran 95 8.8 SunOS\_sparc 2016/05/31  
f90: Warning: -xchip=native detection failed, falling back to -xchip=generic  
-----

## Base Compiler Invocation

C benchmarks:  
cc

C++ benchmarks:  
CC

Fortran benchmarks:  
f95

Benchmarks using both Fortran and C:  
f95 cc

Benchmarks using both C and C++:  
CC cc

Benchmarks using Fortran, C, and C++:  
CC cc f95

## Base Portability Flags

503.bwaves\_r: -D\_FILE\_OFFSET\_BITS=64  
507.cactuBSSN\_r: -DSPEC\_NO\_C99\_MATH\_IN\_CXX -D\_FILE\_OFFSET\_BITS=64  
508.namd\_r: -D\_FILE\_OFFSET\_BITS=64  
510.parest\_r: -D\_FILE\_OFFSET\_BITS=64  
511.povray\_r: -D\_FILE\_OFFSET\_BITS=64  
519.lbm\_r: -D\_FILE\_OFFSET\_BITS=64  
521.wrf\_r: -D\_FILE\_OFFSET\_BITS=64  
526.blender\_r: -xchar=u -DSPEC\_NO\_ISFINITE -D\_FILE\_OFFSET\_BITS=64  
527.cam4\_r: -D\_FILE\_OFFSET\_BITS=64  
538.imagick\_r: -D\_FILE\_OFFSET\_BITS=64  
544.nab\_r: -D\_FILE\_OFFSET\_BITS=64  
549.fotonik3d\_r: -D\_FILE\_OFFSET\_BITS=64

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## Base Portability Flags (Continued)

554.roms\_r: -D\_FILE\_OFFSET\_BITS=64

## Base Optimization Flags

### C benchmarks:

-DSPEC\_SUPPRESS\_OPENMP -fast -xpagesize=4M -xprefetch\_level=3  
-xarch=sparcvis2 -xcache=64/32/4/1:2048/64/4/2:32768/64/4/2 -g1 -m32

### C++ benchmarks:

-std=c++03 -DSPEC\_SUPPRESS\_OPENMP -fast -xpagesize=4M  
-xprefetch\_level=3 -xarch=sparcvis2  
-xcache=64/32/4/1:2048/64/4/2:32768/64/4/2 -g -m32

### Fortran benchmarks:

-DSPEC\_SUPPRESS\_OPENMP -fast -xpagesize=4M -xprefetch\_level=3  
-xarch=sparcvis2 -xcache=64/32/4/1:2048/64/4/2:32768/64/4/2 -g1 -m32

### Benchmarks using both Fortran and C:

-DSPEC\_SUPPRESS\_OPENMP -fast(cc) -fast(f95) -xpagesize=4M  
-xprefetch\_level=3 -xarch=sparcvis2  
-xcache=64/32/4/1:2048/64/4/2:32768/64/4/2 -g1 -m32

### Benchmarks using both C and C++:

-std=c++03 -DSPEC\_SUPPRESS\_OPENMP -fast(CC) -fast(cc) -xpagesize=4M  
-xprefetch\_level=3 -xarch=sparcvis2  
-xcache=64/32/4/1:2048/64/4/2:32768/64/4/2 -g1 -g -m32

### Benchmarks using Fortran, C, and C++:

-std=c++03 -DSPEC\_SUPPRESS\_OPENMP -fast(CC) -fast(cc) -fast(f95)  
-xpagesize=4M -xprefetch\_level=3 -xarch=sparcvis2  
-xcache=64/32/4/1:2048/64/4/2:32768/64/4/2 -g1 -g -m32

## Base Other Flags

### C benchmarks:

-xjobs=6 -errfmt

### C++ benchmarks:

-xjobs=6

(Continued on next page)





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## Base Other Flags (Continued)

Fortran benchmarks:

-xjobs=6

Benchmarks using both Fortran and C:

-xjobs=6 -errfmt

Benchmarks using both C and C++:

-xjobs=6 -errfmt

Benchmarks using Fortran, C, and C++:

-xjobs=6 -errfmt

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

<http://www.spec.org/cpu2017/flags/Oracle-Solaris-Studio12.5.html>

<http://www.spec.org/cpu2017/flags/Oracle-SPARC.html>

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

<http://www.spec.org/cpu2017/flags/Oracle-Solaris-Studio12.5.xml>

<http://www.spec.org/cpu2017/flags/Oracle-SPARC.xml>

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For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

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