# SPEC® CPU2017 Floating Point Speed Result

## NEC Corporation

**Express5800/T110j (Intel Core i3-8300)**

<table>
<thead>
<tr>
<th><strong>CPU2017 License:</strong></th>
<th>9006</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Test Sponsor:</strong></td>
<td>NEC Corporation</td>
</tr>
<tr>
<td><strong>Tested by:</strong></td>
<td>NEC Corporation</td>
</tr>
<tr>
<td><strong>Test Date:</strong></td>
<td>Mar-2019</td>
</tr>
<tr>
<td><strong>Hardware Availability:</strong></td>
<td>Mar-2019</td>
</tr>
<tr>
<td><strong>Software Availability:</strong></td>
<td>Aug-2018</td>
</tr>
</tbody>
</table>

### threads

<table>
<thead>
<tr>
<th>SPECspeed2017_fp_base = 22.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_fp_peak = 22.5</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>OS:</th>
<th>Red Hat Enterprise Linux Server release 7.5 (Maipo)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 18.0.2.199 of Intel C/C++ Compiler for Linux; Fortran: Version 18.0.2.199 of Intel Fortran Compiler for Linux</td>
</tr>
<tr>
<td>Parallel:</td>
<td>Yes</td>
</tr>
<tr>
<td>Firmware:</td>
<td>NEC BIOS Version F09 12/04/2018 released Feb-2019</td>
</tr>
<tr>
<td>File System:</td>
<td>ext4</td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>64-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>64-bit</td>
</tr>
<tr>
<td>Other:</td>
<td>jemalloc memory allocator V5.0.1</td>
</tr>
</tbody>
</table>

### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Core i3-8300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max MHz.:</td>
<td>3700</td>
</tr>
<tr>
<td>Nominal:</td>
<td>3700</td>
</tr>
<tr>
<td>Enabled:</td>
<td>4 cores, 1 chip</td>
</tr>
<tr>
<td>Orderable:</td>
<td>1 chip</td>
</tr>
<tr>
<td>Cache L1:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>L2:</td>
<td>256 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3:</td>
<td>8 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>64 GB (4 x 16 GB 2Rx8 PC4-2666V-E, running at 2400)</td>
</tr>
<tr>
<td>Storage:</td>
<td>1 x 4 TB SATA, 7200 RPM</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
</tbody>
</table>

### threads

<table>
<thead>
<tr>
<th>603.bwaves_s</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>607.cactuBSSN_s</td>
<td>4</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>4</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>4</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>4</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>4</td>
</tr>
<tr>
<td>638.imagick_s</td>
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<tr>
<td>644.nab_s</td>
<td>4</td>
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<tr>
<td>649.fotonik3d_s</td>
<td>4</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>4</td>
</tr>
</tbody>
</table>

| 37.9 |
| 6.58  |
| 28.0  |
| 16.2  |
| 27.5  |
| 17.6  |
| 33.4  |
| 16.1  |
| 13.9  |

**SPECspeed2017_fp_base (22.2)**

**SPECspeed2017_fp_peak (22.5)**
## SPEC CPU2017 Floating Point Speed Result

**NEC Corporation**

**Express5800/T110j (Intel Core i3-8300)**

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<td>Mar-2019</td>
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</table>

**Test Sponsor:** NEC Corporation  
**Tested by:** NEC Corporation

**SPECspeed2017_fp_base = 22.2**  
**SPECspeed2017_fp_peak = 22.5**

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>4</td>
<td>826</td>
<td>71.4</td>
<td>826</td>
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<td>71.4</td>
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<td>37.9</td>
<td>4</td>
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<td>30.0</td>
<td>442</td>
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<tr>
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<td>547</td>
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<td>546</td>
<td>16.2</td>
<td>546</td>
<td>16.2</td>
<td>4</td>
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<td>628.pop2_s</td>
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<td>28.9</td>
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<tr>
<td>638.imagick_s</td>
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<td>818</td>
<td>17.6</td>
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<td>17.6</td>
<td>818</td>
<td>17.6</td>
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<tr>
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<td>1131</td>
<td>13.9</td>
<td>1129</td>
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<td>1131</td>
<td>13.9</td>
<td>1130</td>
<td>13.9</td>
<td>1131</td>
<td>13.9</td>
</tr>
</tbody>
</table>

**Operating System Notes**

Stack size set to unlimited using "ulimit -s unlimited"

**General Notes**

Environment variables set by runcpu before the start of the run:
- KMP_AFFINITY = "granularity=fine,compact"
- LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-64"
- OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i7-6700K CPU + 32GB RAM memory using Redhat Enterprise Linux 7.5

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
```

Yes: 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-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.

### SPEC CPU2017 Floating Point Speed Result

**NEC Corporation**

**Express5800/T110j (Intel Core i3-8300)**

**SPECspeed2017_fp_base** = 22.2

**SPECspeed2017_fp_peak** = 22.5

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<td>Aug-2018</td>
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</table>

#### Platform Notes

**BIOS Settings:**
- VT-x: Disabled

**Sysinfo program** /home/cpu2017/bin/sysinfo

Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9

running on t110j Tue Mar 26 04:25:35 2019

**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) Core(TM) i3-8300 CPU @ 3.70GHz
- 1 "physical id"s (chips)
- 4 "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 : 4
- siblings : 4
- physical 0: cores 0 1 2 3

From lscpu:

- Architecture: x86_64
- CPU op-mode(s): 32-bit, 64-bit
- Byte Order: Little Endian
- CPU(s): 4
- On-line CPU(s) list: 0-3
- Thread(s) per core: 1
- Core(s) per socket: 4
- Socket(s): 1
- NUMA node(s): 1
- Vendor ID: GenuineIntel
- CPU family: 6
- Model: 158
- Model name: Intel(R) Core(TM) i3-8300 CPU @ 3.70GHz
- Stepping: 11
- CPU MHz: 3690.063
- CPU max MHz: 3700.0000
- CPU min MHz: 800.0000
- BogoMIPS: 7392.00
- Virtualization: VT-x
- L1d cache: 32K
- L1i cache: 32K
- L2 cache: 256K
- L3 cache: 8192K
- NUMA node0 CPU(s): 0-3
- Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
- pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp

(Continued on next page)
<table>
<thead>
<tr>
<th>Platform Notes (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>lm constant_tsc art arch_perfmon pebs bts rep_good nopte xtopology nonstop_tsc</td>
</tr>
<tr>
<td>aperf perf eagerfpu hwcap dtes64 monitor ds_cpl vmx est tm2 ssse3 sdbg fma</td>
</tr>
<tr>
<td>cx16 xtrp pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave</td>
</tr>
<tr>
<td>avx f16c rdrand lahf_lm abm 3nowprefetch ebf intel_pt ssbd ibrs ibpb stibp</td>
</tr>
<tr>
<td>tpr_shadow vmni f lexpriority ept vpid fs gbase tsc_adjust bm1 avx2 smep bmi2 erms</td>
</tr>
<tr>
<td>ivp cdeb mpx rdseed adx smap clflush opt xsaves opt xsaves opt xgetbv1 dtherm arat pln pts</td>
</tr>
<tr>
<td>hwp hwp_notify hwp_act_window hwp_epp spec_ctrl intel_stibp flush_lld</td>
</tr>
</tbody>
</table>

```
/proc/cpuinfo cache data
  cache size:  8192 KB

From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a physical chip.
  available: 1 nodes (0)
  node 0 cpus: 0 1 2 3
  node 0 size:  65455 MB
  node 0 free: 63587 MB
  node distances:
    node 0
      0:  10

From /proc/meminfo
  MemTotal: 65895380 kB
  HugePages_Total: 0
  Hugepagesize:  2048 kB

From /etc/*release* /etc/*version*
  os-release:
    NAME="Red Hat Enterprise Linux Server"
    VERSION="7.5 (Maipo)"
    ID="rhel"
    ID_LIKE="fedora"
    VARIANT="Server"
    VARIANT_ID="server"
    VERSION_ID="7.5"
    PRETTY_NAME="Red Hat Enterprise Linux Server 7.5 (Maipo)"
    redhat-release: Red Hat Enterprise Linux Server release 7.5 (Maipo)
    system-release: Red Hat Enterprise Linux Server release 7.5 (Maipo)
    system-release-cpe: cpe:/o:redhat:enterprise_linux:7.5:ga:server

uname -a:
  Linux t110j 3.10.0-862.11.6.el7.x86_64 #1 SMP Fri Aug 10 16:55:11 UTC 2018 x86_64
  x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2017-5754 (Meltdown): Mitigation: PTI
```
NEC Corporation
Express5800/T110j (Intel Core i3-8300)

SPEC CPU2017 Floating Point Speed Result
Copyright 2017-2019 Standard Performance Evaluation Corporation

SPECspeed2017_fp_base = 22.2
SPECspeed2017_fp_peak = 22.5

CPU2017 License: 9006
Test Sponsor: NEC Corporation
Tested by: NEC Corporation

Test Date: Mar-2019
Hardware Availability: Mar-2019
Software Availability: Aug-2018

Platform Notes (Continued)

CVE-2017-5753 (Spectre variant 1): Mitigation: Load fences, __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS (kernel)

run-level 3 Mar 26 04:19

SPEC is set to: /home/cpu2017
   Filesystem  Type  Size  Used Avail Use% Mounted on
   /dev/sda3      ext4  3.6T   46G  3.4T   2% /

Additional information from dmidecode 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.
   BIOS American Megatrends Inc. F09 12/04/2018
   Memory: 4x Samsung M391A2K43BB1-CTD 16 GB 2 rank 2667, configured at 2400

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
CC 619.lbm_s(base) 638.imagick_s(base, peak) 644.nab_s(base, peak)
------------------------------------------------------------------------------
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
FC 607.cactuBSSN_s(base, peak)
------------------------------------------------------------------------------
icpc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

(Continued on next page)
NEC Corporation
Express5800/T110j (Intel Core i3-8300)

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Test Date: Mar-2019
Hardware Availability: Mar-2019
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Compiler Version Notes (Continued)

==============================================================================
FC 603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base, peak)
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
==============================================================================
FC 603.bwaves_s(peak) 649.fotonik3d_s(peak)
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
==============================================================================
CC 621.wrf_s(base) 627.cam4_s(base, peak) 628.pop2_s(base)
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
icc (ICC) 18.0.2 20180210
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==============================================================================
CC 621.wrf_s(peak) 628.pop2_s(peak)
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
  icc -m64 -std=c11

Fortran benchmarks:
  ifort -m64

Benchmarks using both Fortran and C:
  ifort -m64 icc -m64 -std=c11

Benchmarks using Fortran, C, and C++:
  icpc -m64 icc -m64 -std=c11 ifort -m64
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**Express5800/T110j (Intel Core i3-8300)**

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---

### Base Portability Flags

- 603.bwaves_s: -DSPEC_LP64
- 607.cactuBSSN_s: -DSPEC_LP64
- 619.lbm_s: -DSPEC_LP64
- 621.wrf_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
- 627.cam4_s: -DSPEC_LP64 -DSPEC_CASE_FLAG
- 628.pop2_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
- -assume byterecl
- 638.imagick_s: -DSPEC_LP64
- 644.nab_s: -DSPEC_LP64
- 649.fotonik3d_s: -DSPEC_LP64
- 654.roms_s: -DSPEC_LP64

---

### Base Optimization Flags

#### C benchmarks:

- -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
- -ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
- -L/usr/local/je5.0.1-64/lib -ljemalloc

#### Fortran benchmarks:

- -Wl,-z,muldefs -DSPEC_OPENMP -xCORE-AVX2 -ipo -O3 -no-prec-div
- -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp
- -nostandard-realloc-lhs -L/usr/local/je5.0.1-64/lib -ljemalloc

#### Benchmarks using both Fortran and C:

- -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
- -ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
- -nostandard-realloc-lhs -L/usr/local/je5.0.1-64/lib -ljemalloc

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

- -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
- -ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
- -nostandard-realloc-lhs -L/usr/local/je5.0.1-64/lib -ljemalloc

---

### Peak Compiler Invocation

#### C benchmarks:

- icc -m64 -std=c11

#### Fortran benchmarks:

- ifort -m64

---

(Continued on next page)
Peak Compiler Invocation (Continued)

Benchmarks using both Fortran and C:
ifort -m64 icc -m64 -std=c11

Benchmarks using Fortran, C, and C++:
icpc -m64 icc -m64 -std=c11 ifort -m64

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
619.lbm_s: basepeak = yes
638.imagick_s: basepeak = yes
644.nab_s: basepeak = yes

Fortran benchmarks:
603.bwaves_s: -prof-gen(pass 1) -prof-use(pass 2) -DSPEC_SUPPRESS_OPENMP
-DSPEC_OPENMP -O2 -xCORE-AVX2 -qopt-prefetch -ipo -O3
-ffinite-math-only -no-prec-div -qopt-mem-layout-trans=3
-qopenmp -nostandard-realloc-lhs
649.fotonik3d_s: Same as 603.bwaves_s
654.roms_s: -DSPEC_OPENMP -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3
-qopenmp -nostandard-realloc-lhs

Benchmarks using both Fortran and C:
621.wrf_s: -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX2
-qopt-prefetch -ipo -O3 -ffinite-math-only -no-prec-div
-qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -nostandard-realloc-lhs
627.cam4_s: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp

(Continued on next page)
Peak Optimization Flags (Continued)

627.cam4_s (continued):
-DSPEC_OPENMP -nostandard-realloc-lhs

628.pop2_s: Same as 621.wrf_s

Benchmarks using Fortran, C, and C++:

607.cactuBSSN_s: basepeak = yes

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:
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-12-21.xml