



# SPEChpc™ 2021 Tiny Result

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## xFusion

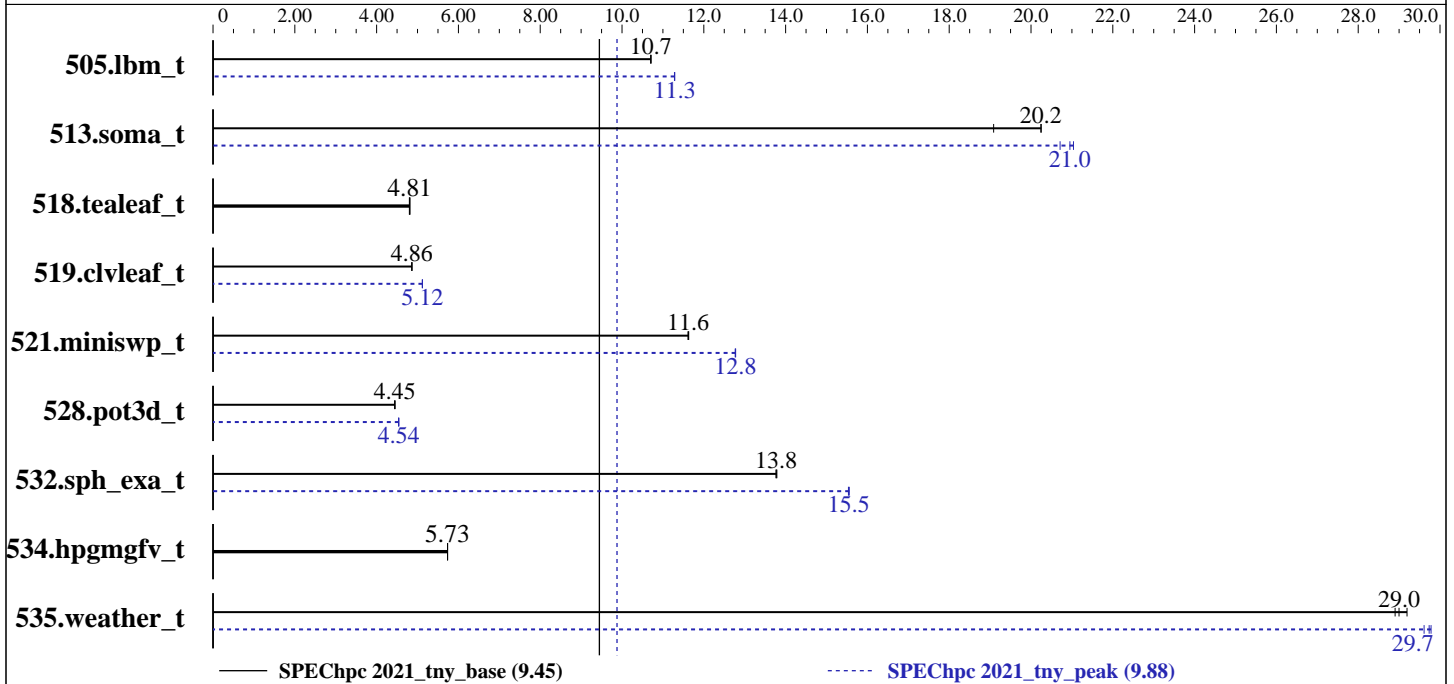
SPEChpc 2021\_tny\_base = 9.45

xFusion 2288H V7 (Intel Xeon Platinum 8490H)

SPEChpc 2021\_tny\_peak = 9.88

hpc2021 License: 6488  
Test Sponsor: xFusion  
Tested by: xFusion

Test Date: Jan-2023  
Hardware Availability: Jan-2023  
Software Availability: Nov-2022



## Results Table

Benchmark	Base								Peak									
	Model	Ranks	Thrds/Rnk	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Model	Ranks	Thrds/Rnk	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
505.lbm_t	OMP	8	30	210	10.7	<b>210</b>	<b>10.7</b>	210	10.7	OMP	60	4	<b>199</b>	<b>11.3</b>	199	11.3	199	11.3
513.soma_t	OMP	8	30	183	20.2	194	19.1	<b>183</b>	<b>20.2</b>	OMP	2	120	<b>177</b>	<b>21.0</b>	176	21.0	179	20.7
518.tealeaf_t	OMP	8	30	<b>343</b>	<b>4.81</b>	343	4.82	344	4.80	OMP	8	30	<b>343</b>	<b>4.81</b>	343	4.82	344	4.80
519.civleaf_t	OMP	8	30	339	4.86	339	4.86	<b>339</b>	<b>4.86</b>	OMP	60	4	322	5.12	322	5.12	<b>322</b>	<b>5.12</b>
521.miniswp_t	OMP	8	30	138	11.6	<b>138</b>	<b>11.6</b>	138	11.6	OMP	4	60	<b>125</b>	<b>12.8</b>	125	12.8	125	12.8
528.pot3d_t	OMP	8	30	478	4.44	<b>478</b>	<b>4.45</b>	478	4.45	OMP	120	2	<b>468</b>	<b>4.54</b>	468	4.54	469	4.54
532.sph_exa_t	OMP	8	30	141	13.8	142	13.8	<b>142</b>	<b>13.8</b>	OMP	30	8	126	15.5	<b>125</b>	<b>15.5</b>	125	15.6
534.hpgmgfv_t	OMP	8	30	205	5.73	<b>205</b>	<b>5.73</b>	205	5.73	OMP	8	30	205	5.73	<b>205</b>	<b>5.73</b>	205	5.73
535.weather_t	OMP	8	30	112	28.9	110	29.2	<b>111</b>	<b>29.0</b>	OMP	40	6	109	29.6	108	29.8	<b>108</b>	<b>29.7</b>

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



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**Test Date:** Jan-2023  
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### Hardware Summary

Type of System: Homogenous Cluster  
Compute Node: xFusion 2288H V7  
Interconnect: N/A  
Compute Nodes Used: 1  
Total Chips: 2  
Total Cores: 120  
Total Threads: 240  
Total Memory: 1 TB  
Max. Peak Threads: 120

### Software Summary

Compiler: Intel oneAPI Compiler 2022.2.1  
MPI Library: Intel MPI Library for Linux\* OS, Version 2022.2.1 Build 20221020  
Other MPI Info: N/A  
Other Software: N/A  
Base Parallel Model: OMP  
Base Ranks Run: 8  
Base Threads Run: 30  
Peak Parallel Models: OMP  
Minimum Peak Ranks: 2  
Maximum Peak Ranks: 120  
Max. Peak Threads: 120  
Min. Peak Threads: 2

## Node Description: xFusion 2288H V7

### Hardware

Number of nodes: 1  
Uses of the node: Compute  
Vendor: xFusion  
Model: xFusion 2288H V7  
CPU Name: Intel Xeon Platinum 8490H  
CPU(s) orderable: 2 chips  
Chips enabled: 2  
Cores enabled: 120  
Cores per chip: 60  
Threads per core: 2  
CPU Characteristics: Turbo Boost Technology up to 3.5 GHz  
CPU MHz: 1900  
Primary Cache: 32 KB I + 48 KB D on chip per core  
Secondary Cache: 2 MB I+D on chip per core  
L3 Cache: 112.5 MB I+D on chip per chip  
Other Cache: None  
Memory: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)  
Disk Subsystem: 1 x 7.68 TB NVMe SSD  
Other Hardware: None  
Accel Count: --  
Accel Model: --  
Accel Vendor: --  
Accel Type: --  
Accel Connection: --  
Accel ECC enabled: --  
Accel Description: --  
Adapter: N/A  
Number of Adapters: 0  
Slot Type: N/A  
Data Rate: N/A  
Ports Used: 0

### Software

Accelerator Driver: N/A  
Adapter: N/A  
Adapter Driver: N/A  
Adapter Firmware: N/A  
Operating System: CentOS Linux release 8.2.2004  
4.18.0-193.el8.x86\_644  
Local File System: xfs  
Shared File System: N/A  
System State: Multi-user, run level 3  
Other Software: N/A

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## Node Description: xFusion 2288H V7

### Hardware (Continued)

Interconnect Type: N/A

## Interconnect Description: N/A

### Hardware

Vendor: N/A  
Model: N/A  
Switch Model: N/A  
Number of Switches: 0  
Number of Ports: 0  
Data Rate: N/A  
Firmware: N/A  
Topology: N/A  
Primary Use: N/A

### Software

: --

## Submit Notes

The config file option 'submit' was used.  
export LD\_PRELOAD="/usr/lib64/libhugetlbfs.so \$LD\_PRELOAD"  
export OMP\_PROC\_BIND=true  
mpirexec.hydra -bootstrap ssh --bind-to core -np \$ranks -genv OMP\_NUM\_THREADS=\$threads \$command

## General Notes

Submitted\_by: luxu <luxu@xfusion.com>  
Submitted: Thu Jan 26 12:25:09 EST 2023  
Submission: hpc2021-20230108-00156.sub

## Compiler Version Notes

=====  
CC 505.lbm\_t(base, peak) 513.soma\_t(base, peak) 518.tealeaf\_t(base, peak)  
521.miniswp\_t(base, peak) 534.hpgmgfv\_t(base, peak)  
-----

Intel(R) oneAPI DPC++/C++ Compiler 2022.1.0 (2022.1.0.20220316)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /mnt/share/opt/intel/2022.2.0/compiler/latest/linux/bin-llvm  
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### Compiler Version Notes (Continued)

CXXC 532.sph\_exa\_t(base, peak)

-----  
Intel(R) oneAPI DPC++/C++ Compiler 2022.1.0 (2022.1.0.20220316)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /mnt/share/opt/intel/2022.2.0/compiler/latest/linux/bin-llvm  
-----

=====  
FC 519.clvleaf\_t(base, peak) 528.pot3d\_t(base, peak) 535.weather\_t(base, peak)  
-----

ifx (IFORT) 2022.1.0 20220316  
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### Base Compiler Invocation

C benchmarks:  
mpiicc -cc=icx  
  
C++ benchmarks:  
mpiicpc -cxx=icx  
  
Fortran benchmarks:  
mpiifort -fc=ifx

### Base Portability Flags

505.lbm\_t: -lstdc++  
513.soma\_t: -lstdc++ -DSPEC\_NO\_VAR\_ARRAY\_REDUCE  
518.tealeaf\_t: -lstdc++  
519.clvleaf\_t: -lstdc++  
521.miniswp\_t: -lstdc++  
528.pot3d\_t: -lstdc++  
532.sph\_exa\_t: -lstdc++  
534.hpgmgfv\_t: -lstdc++  
535.weather\_t: -lstdc++



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## Base Optimization Flags

C benchmarks:

-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -fiopenmp  
-ansi-alias

C++ benchmarks:

-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -fiopenmp  
-ansi-alias

Fortran benchmarks:

-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -fiopenmp  
-nostandard-realloc-lhs -align array64byte

## Base Other Flags

C benchmarks (except as noted below):

-Ispecmpitime

521.miniswp\_t: -Ispecmpitime/

534.hpgmgfv\_t: -Ispecmpitime

C++ benchmarks:

-Ispecmpitime

Fortran benchmarks:

519.clvleaf\_t: -Ispecmpitime

## Peak Compiler Invocation

C benchmarks:

mpicc -cc=icx

C++ benchmarks:

mpiicpc -cxx=icx

Fortran benchmarks:

mpiifort -fc=ifx



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## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

505.lbm\_t: -Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512  
-fiopenmp -ansi-alias

513.soma\_t: Same as 505.lbm\_t

518.tealeaf\_t: basepeak = yes

521.miniswp\_t: Same as 505.lbm\_t

534.hpgmgfv\_t: basepeak = yes

C++ benchmarks:

-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -ffast-math  
-fiopenmp -ansi-alias

Fortran benchmarks:

519.clvleaf\_t: -Ofast -ipo -xCORE-AVX512  
-mllvm -hir-nontemporal-cacheline-count=0 -fiopenmp  
-nostandard-realloc-lhs -align array64byte

528.pot3d\_t: -Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512  
-fiopenmp -nostandard-realloc-lhs -align array64byte

535.weather\_t: Same as 528.pot3d\_t

## Peak Other Flags

C benchmarks (except as noted below):

-Ispecmpitime

521.miniswp\_t: -Ispecmpitime/

534.hpgmgfv\_t: -Ispecmpitime

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## Peak Other Flags (Continued)

C++ benchmarks:  
-Ispecmpitime

Fortran benchmarks:

519.clvleaf\_t: -Ispecmpitime

The flags file that was used to format this result can be browsed at

<http://www.spec.org/hpc2021/flags/Intel-oneAPI-icx2021-official-linux64.2023-01-27.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/hpc2021/flags/Intel-oneAPI-icx2021-official-linux64.2023-01-27.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).

Tested with SPEChpc2021 v1.1.7 on 2023-01-06 14:17:40-0500.  
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