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3950x may

AMD Ryzen 9 3950X 16-Core testing with a ASUS ROG CROSSHAIR VII HERO (WI-FI) (3103 BIOS) and Sapphire AMD Radeon RX 470/480/570/570X/580/580X/590 4GB on Ubuntu 20.04 via the Phoronix Test Suite.

Automated Executive Summary

1 had the most wins, coming in first place for 33% of the tests.

Based on the geometric mean of all complete results, the fastest (1) was 1.005x the speed of the slowest (4). 5 was 0.999x the speed of 1, 2 was 0.999x the speed of 5, 6 was 1x the speed of 2, 3 was 0.998x the speed of 6, 4 was 0.998x the speed of 3.

The results with the greatest spread from best to worst included:

yquake2 (Renderer: OpenGL 1.x - Resolution: 1920 x 1080) at 1.09x
AOM AV1 (Encoder Mode: Speed 6 Realtime - Input: Bosphorus 4K) at 1.051x
AOM AV1 (Encoder Mode: Speed 9 Realtime - Input: Bosphorus 1080p) at 1.05x
Chia Blockchain VDF (Test: Square Plain C++) at 1.043x
QMCPACK (Input: simple-H2O) at 1.041x
yquake2 (Renderer: Software CPU - Resolution: 1920 x 1080) at 1.041x
vkpeak (fp32-scalar) at 1.036x
AOM AV1 (Encoder Mode: Speed 6 Two-Pass - Input: Bosphorus 4K) at 1.034x

Chia Blockchain VDF (Test: Square Assembly Optimized) at 1.032x
vkpeak (int16-scalar) at 1.028x.

Test Systems:

1

2

3

4

5

6

Processor: AMD Ryzen 9 3950X 16-Core @ 3.50GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VII HERO (WI-FI) (3103 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: Samsung SSD 970 EVO 250GB, Graphics: Sapphire AMD Radeon RX 470/480/570/570X/580/580X/590 4GB (1260/1750MHz), Audio: AMD Ellesmere HDMI Audio, Monitor: VA2431, Network: Intel I211 + Realtek RTL8822BE 802.11a/b/g/n/ac

OS: Ubuntu 20.04, Kernel: 5.9.0-050900rc6daily20200922-generic (x86_64) 20200921, Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.9, OpenGL: 4.6 Mesa 20.0.8 (LLVM 10.0.0), Vulkan: 1.2.128, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-9-HskZEa/gcc-9-9.3.0/debian/tmp-nvptx/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand (Boost: Enabled) - CPU Microcode: 0x8701021
Graphics Notes: GLAMOR
Python Notes: Python 2.7.18 + Python 3.8.5
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional STIBP: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

	1	2	3	4	5	6
AOM AV1 - Speed 0 Two-Pass - Bosphorus 4K	0.19	0.19	0.19	0.19	0.19	0.19
AOM AV1 - Speed 4 Two-Pass - Bosphorus 4K	4.58	**4.57**	4.59	**4.62**	4.58	4.59
Normalized	99.13%	98.92%	99.35%	100%	99.13%	99.35%

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AOM AV1 - Speed 6 Realtime - Bosphorus 4K (FPS)	16.94	16.74	16.73	16.12	16.84	16.94
Normalized	100%	98.82%	98.76%	95.16%	99.41%	100%
AOM AV1 - Speed 6 Two-Pass - Bosphorus 4K	8.81	8.86	8.57	8.64	8.62	8.72
Normalized	99.44%	100%	96.73%	97.52%	97.29%	98.42%
AOM AV1 - Speed 8 Realtime - Bosphorus 4K (FPS)	39.79	39.25	39.5	39.47	39.36	39.39
Normalized	100%	98.64%	99.27%	99.2%	98.92%	98.99%
AOM AV1 - Speed 9 Realtime - Bosphorus 4K (FPS)	48.53	48.29	48.57	48.61	48.16	48.46
Normalized	99.84%	99.34%	99.92%	100%	99.07%	99.69%
AOM AV1 - Speed 0 Two-Pass - Bosphorus	0.52	0.51	0.51	0.51	0.51	0.51
Normalized	100%	98.08%	98.08%	98.08%	98.08%	98.08%
AOM AV1 - Speed 4 Two-Pass - Bosphorus	7.24	7.23	7.23	7.19	7.2	7.17
Normalized	100%	99.86%	99.86%	99.31%	99.45%	99.03%
AOM AV1 - Speed 6 Realtime - Bosphorus 1080p (FPS)	25.07	24.7	25.24	24.95	24.95	25.23
Normalized	99.33%	97.86%	100%	98.85%	98.85%	99.96%
AOM AV1 - Speed 6 Two-Pass - Bosphorus	20.64	20.44	20.49	20.43	20.52	20.8
Normalized	99.23%	98.27%	98.51%	98.22%	98.65%	100%
AOM AV1 - Speed 8 Realtime - Bosphorus 1080p (FPS)	99.36	99.49	99.5	98.99	101.78	100.28
Normalized	97.62%	97.75%	97.76%	97.26%	100%	98.53%
AOM AV1 - Speed 9 Realtime - Bosphorus 1080p (FPS)	111.43	117.02	113.59	113.75	116.32	116.2
Normalized	95.22%	100%	97.07%	97.21%	99.4%	99.3%
Chia Blockchain VDF - Square Plain C++ (IPS)	170800	170100	169800	170300	175800	168600
Normalized	97.16%	96.76%	96.59%	96.87%	100%	95.9%
Chia Blockchain VDF - S.A.O (IPS)	146600	145700	145400	145500	150000	146900
Normalized	97.73%	97.13%	96.93%	97%	100%	97.93%
Helsing - 12 digit (sec)	3.002	2.967	2.987	2.995	3.003	2.978
Normalized	98.83%	100%	99.33%	99.07%	98.8%	99.63%
Helsing - 14 digit (sec)	299.965	299.534	299.792	298.746	299.163	299.368
Normalized	99.59%	99.74%	99.65%	100%	99.86%	99.79%
libgav1 - Chimera 1080p	128.84	129.45	129.18	129.4	128.41	129.11
Normalized	99.53%	100%	99.79%	99.96%	99.2%	99.74%
libgav1 - Summer Nature 4K (FPS)	59.52	59.31	59.3	59.25	59.5	59.19
Normalized	100%	99.65%	99.63%	99.55%	99.97%	99.45%
libgav1 - S.N.1 (FPS)	177.34	176.63	176.14	177.6	176.97	176.84
Normalized	99.85%	99.45%	99.18%	100%	99.65%	99.57%
libgav1 - C.1.1.b (FPS)	44.91	45.01	44.93	44.91	45.04	44.95
Normalized	99.71%	99.93%	99.76%	99.71%	100%	99.8%

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QMCPACK - simple-H2O (Execution Time - sec)	27.028	27.071	26.514	25.997	26.399	26.379
Normalized	96.19%	96.03%	98.05%	100%	98.48%	98.55%
Timed HMMer Search - P.D.S (sec)	118.21	118.44	118.4	118.748	118.327	119.144
Normalized	100%	99.81%	99.84%	99.55%	99.9%	99.22%
Timed MrBayes Analysis - P.P.A (sec)	105.227	105.099	105.843	104.893	104.828	105
Normalized	99.62%	99.74%	99.04%	99.94%	100%	99.84%
vkpeak - fp32-scalar (GFLOPS)	5049	4940	4884	4904	4876	4888
Normalized	100%	97.85%	96.73%	97.13%	96.57%	96.81%
vkpeak - fp32-vec4	4820	4819	4819	4821	4816	4816
Normalized	99.98%	99.95%	99.95%	100%	99.9%	99.89%
vkpeak - fp16-scalar (GFLOPS)	2577	2553	2547	2545	2543	2578
Normalized	99.97%	99.04%	98.79%	98.74%	98.66%	100%
vkpeak - fp16-vec4	2577	2513	2519	2512	2516	2544
Normalized	100%	97.54%	97.75%	97.48%	97.64%	98.73%
vkpeak - fp64-scalar (GFLOPS)	214.77	214.92	214.83	214.77	214.92	214.92
Normalized	99.93%	100%	99.96%	99.93%	100%	100%
vkpeak - fp64-vec4	214.9	214.79	214.96	214.79	214.79	214.79
Normalized	99.97%	99.92%	100%	99.92%	99.92%	99.92%
vkpeak - int32-scalar	1030	1026	1026	1027	1024	1031
Normalized	99.94%	99.5%	99.51%	99.58%	99.37%	100%
vkpeak - int32-vec4 (GIOPS)	1031	1031	1031	1030	1031	1031
Normalized	99.97%	100%	100%	99.92%	99.99%	100%
vkpeak - int16-scalar	5032	4896	4912	4893	4909	4960
Normalized	100%	97.3%	97.61%	97.23%	97.54%	98.56%
vkpeak - int16-vec4 (GIOPS)	4901	4890	4883	4885	4875	4879
Normalized	100%	99.78%	99.63%	99.67%	99.48%	99.56%
yquake2 - OpenGL 1.x - 1920 x 1080 (FPS)	737.5	778.3	736.6	714.1	745.3	722.3
Normalized	94.76%	100%	94.64%	91.75%	95.76%	92.8%
yquake2 - OpenGL 3.x - 1920 x 1080 (FPS)	992.2	990.6	990.6	990.6	992.2	992.2
Normalized	100%	99.84%	99.84%	99.84%	100%	100%
yquake2 - Software CPU - 1920 x 1080 (FPS)	124.6	125.5	129.7	125.4	125	124.9
Normalized	96.07%	96.76%	100%	96.68%	96.38%	96.3%

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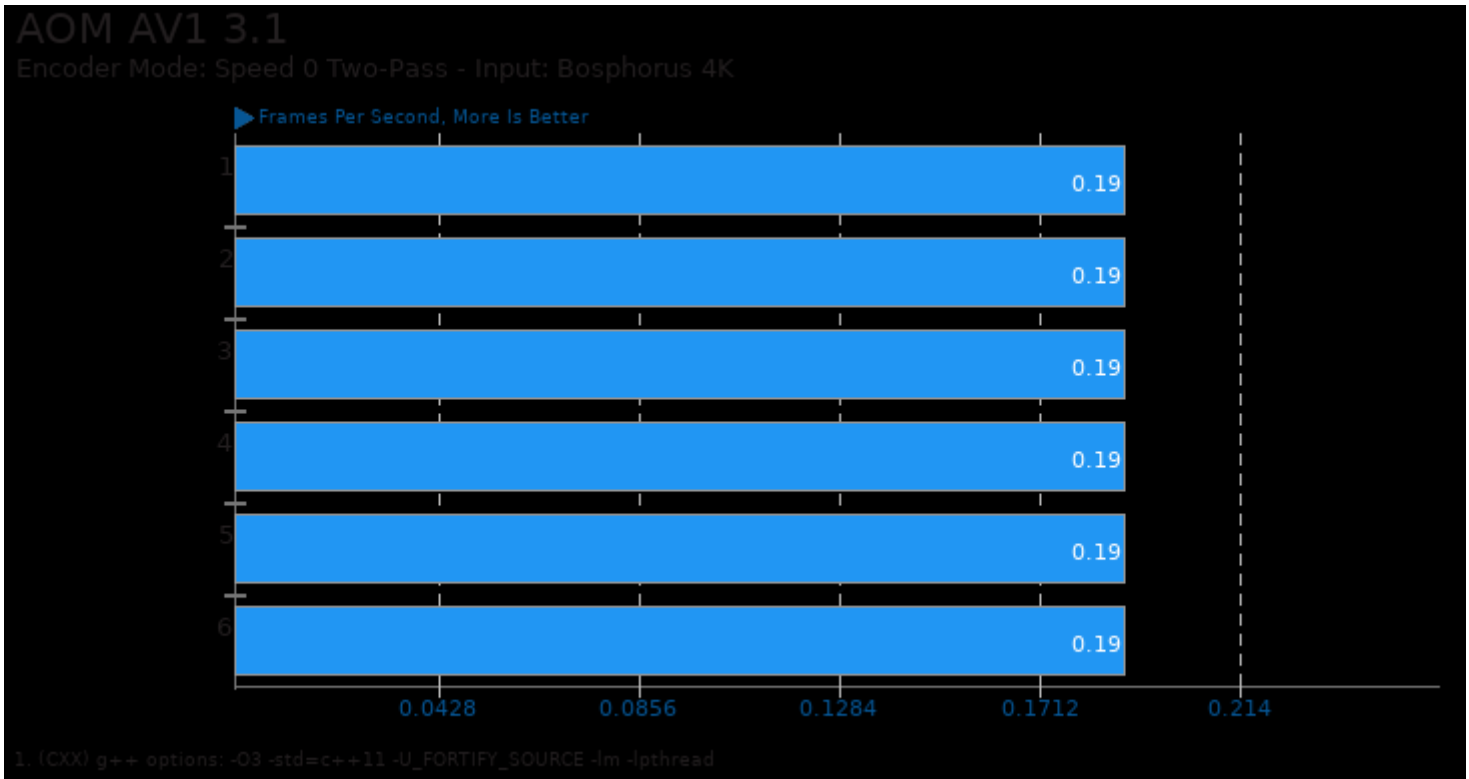
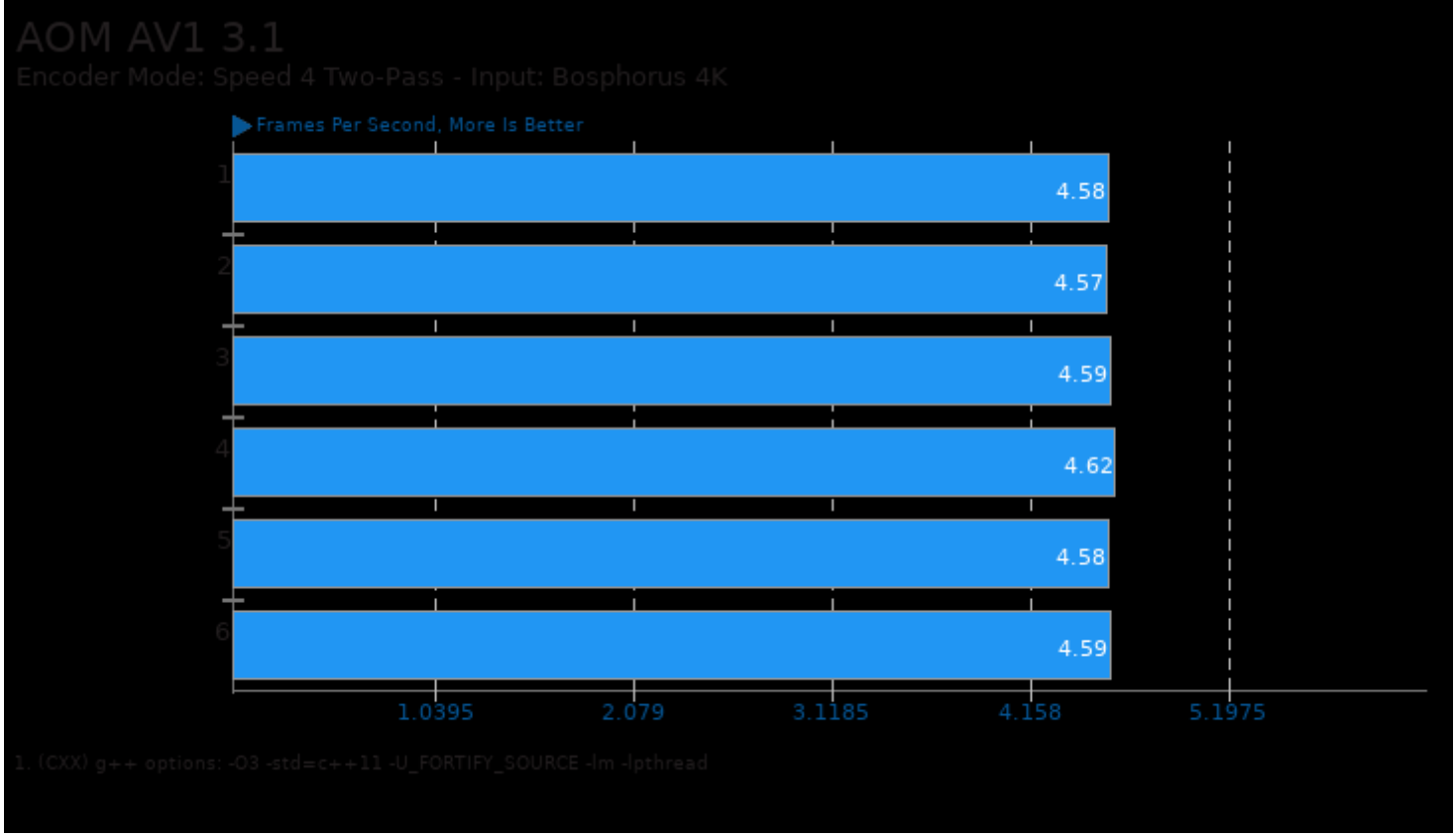

AOM AV1 3.1
Encoder Mode: Speed 0 Two-Pass - Input: Bosphorus 4K
Frames Per Second, More Is Better
1
0.19
2
0.19
3
0.19
4
0.19
5
0.19
6
0.19
0.0428
0.0856
0.1284
0.1712
0.214
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread


AOM AV1 3.1
Encoder Mode: Speed 4 Two-Pass - Input: Bosphorus 4K
Frames Per Second, More Is Better
1
4.58
2
4.57
3
4.59
4
4.62
5
4.58
6
4.59
1.0395
2.079
3.1185
4.158
5.1975
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread

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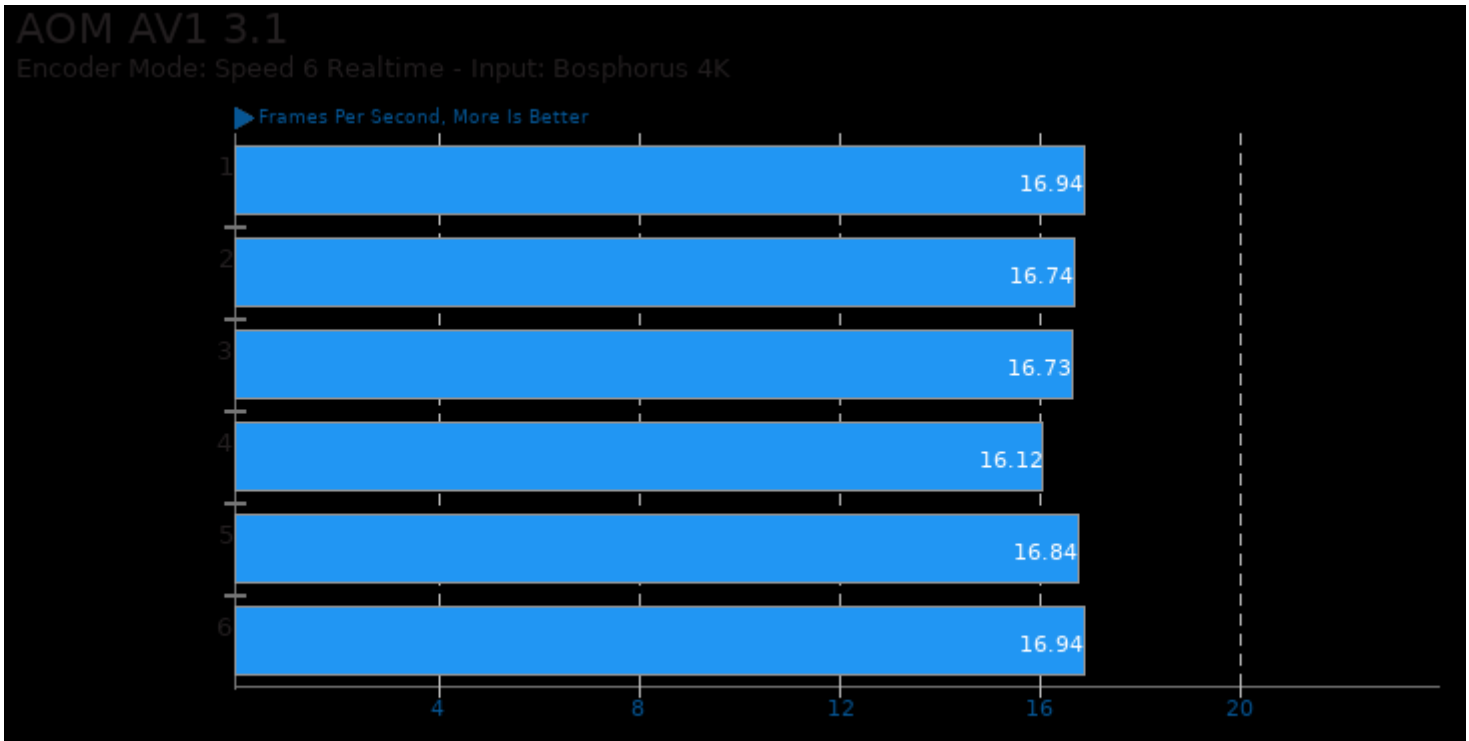
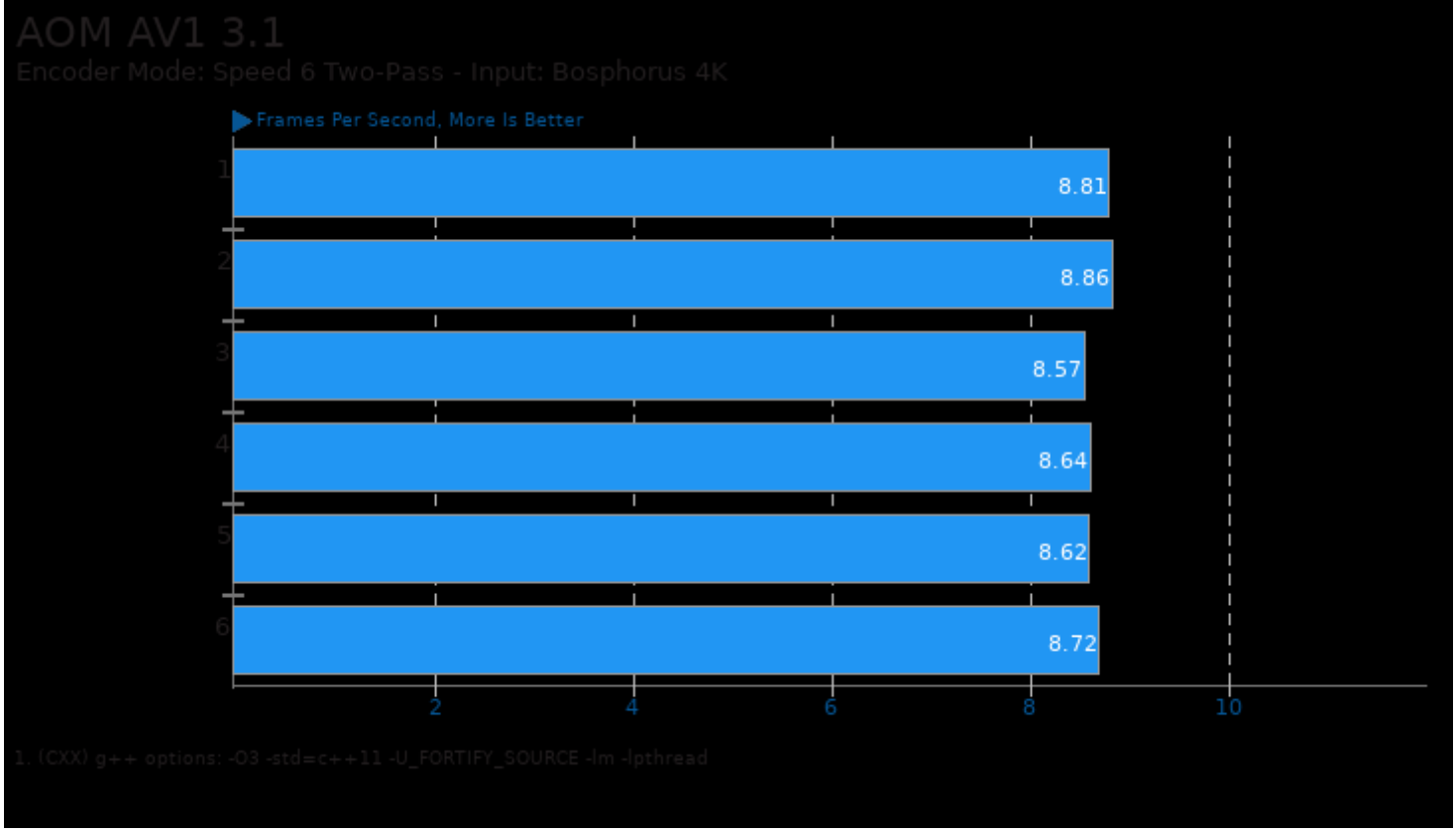

AOM AV1 3.1
Encoder Mode: Speed 6 Realtime - Input: Bosphorus 4K
Frames Per Second, More Is Better
1
16.94
2
16.74
3
16.73
4
16.12
5
16.84
6
16.94
4
8
12
16
20
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread


AOM AV1 3.1
Encoder Mode: Speed 6 Two-Pass - Input: Bosphorus 4K
Frames Per Second, More Is Better
1
8.81
2
8.86
3
8.57
4
8.64
5
8.62
6
8.72
2
4
6
8
10
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread

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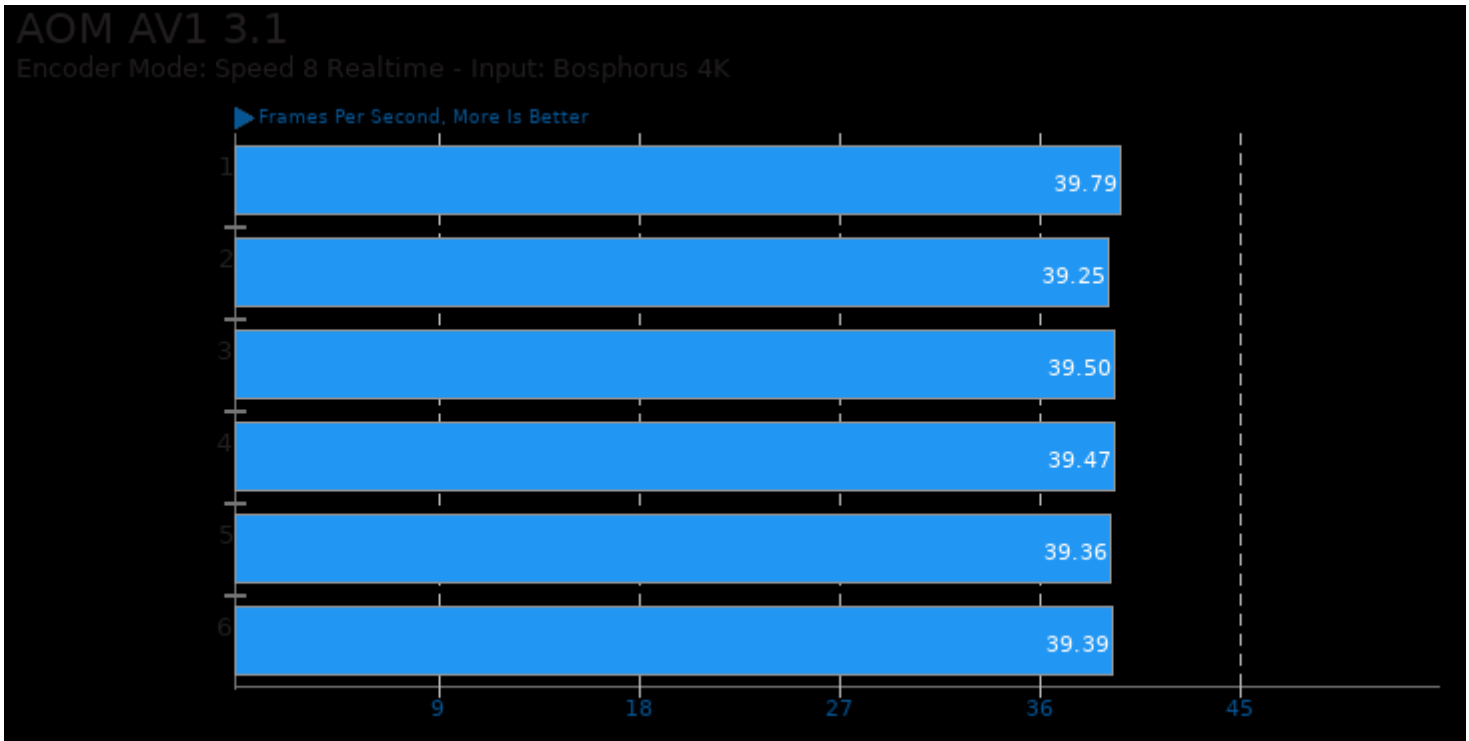
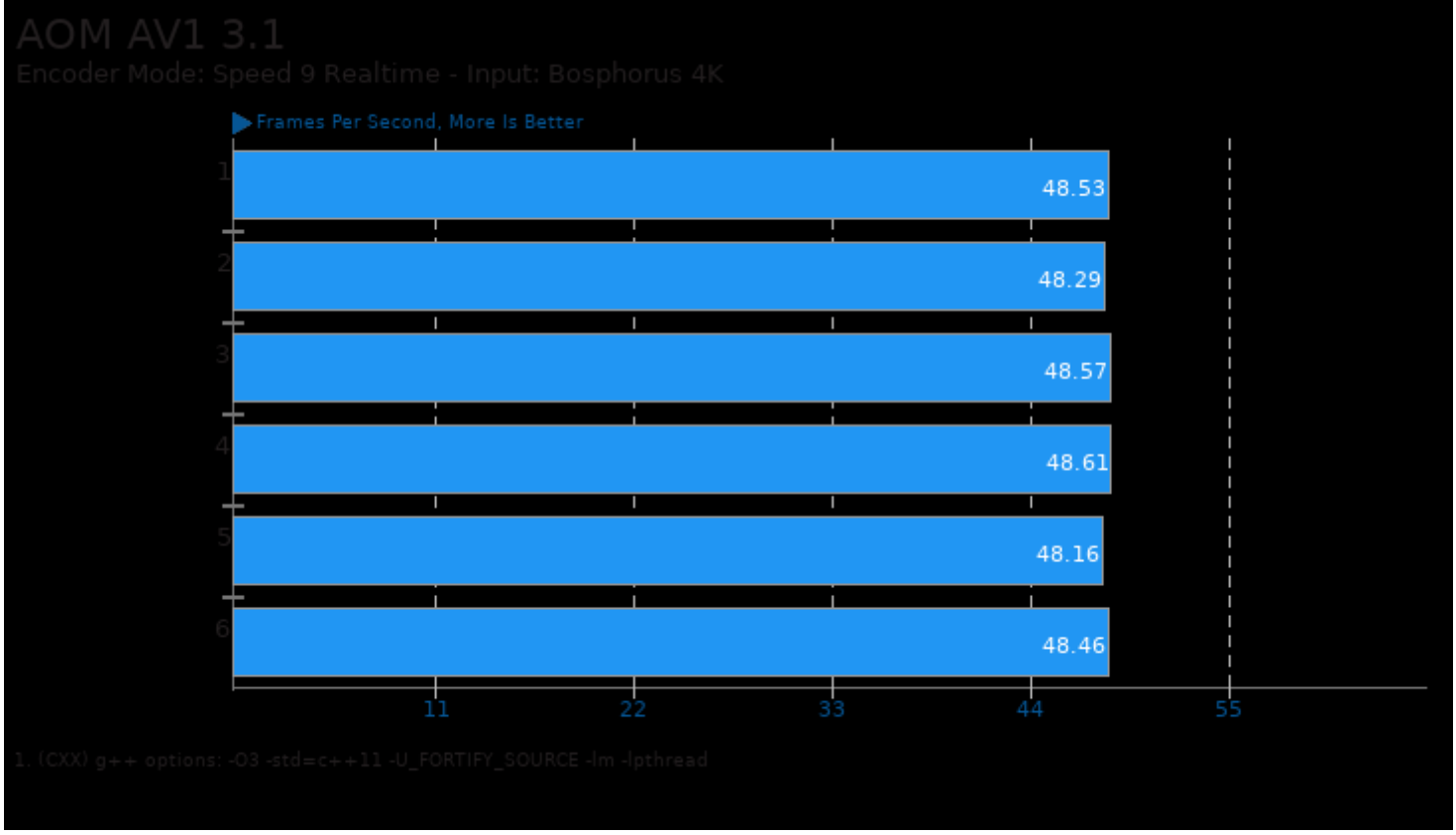
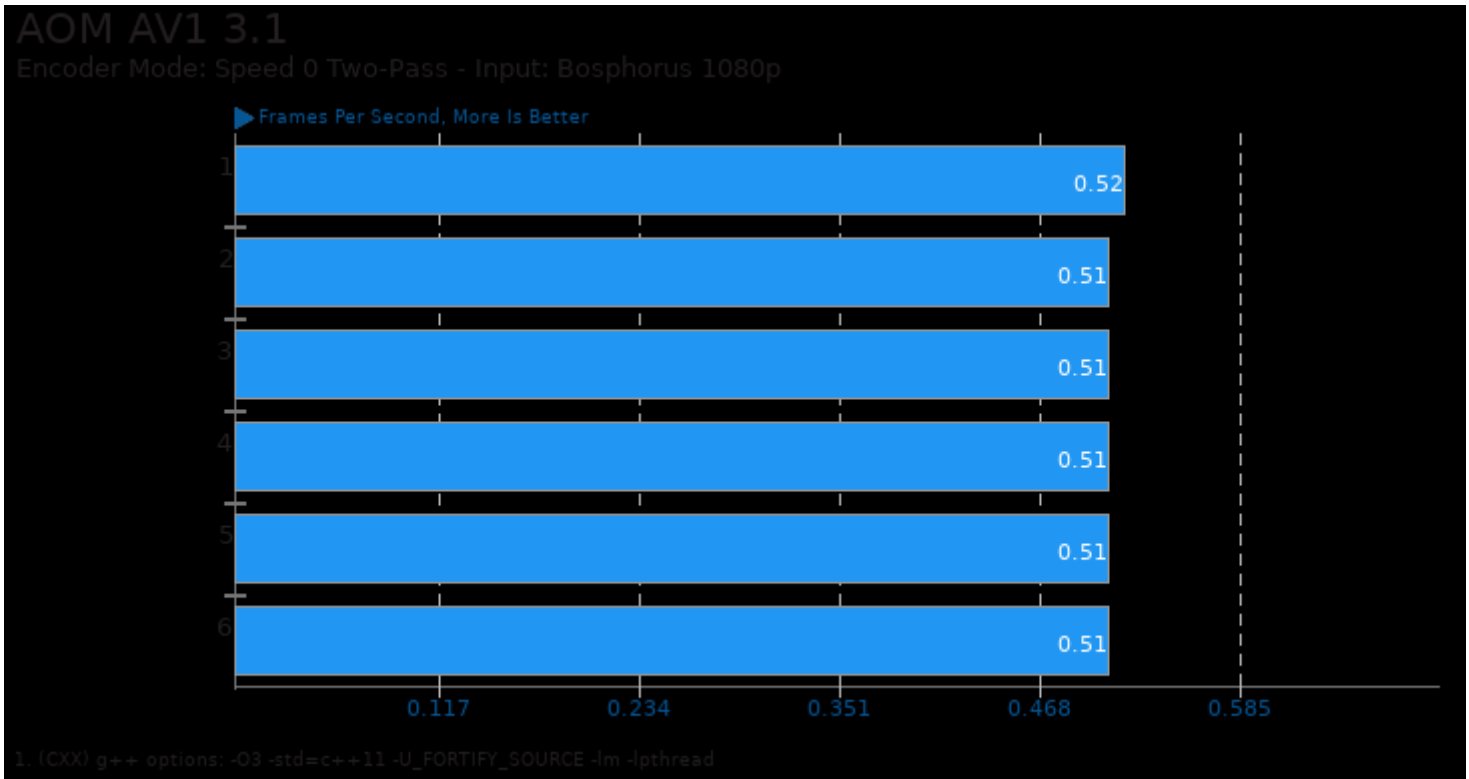
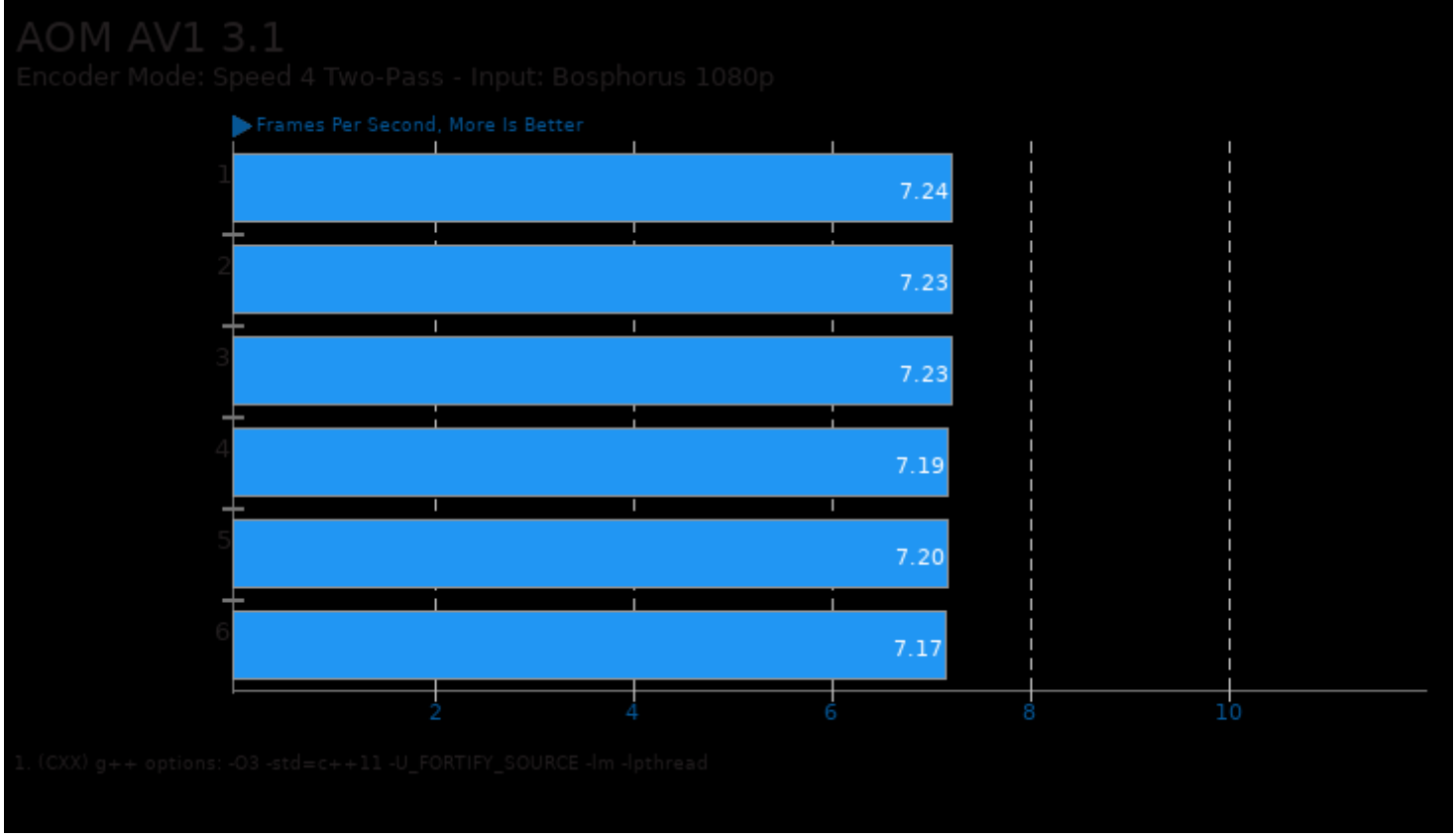

AOM AV1 3.1
Encoder Mode: Speed 8 Realtime - Input: Bosphorus 4K
Frames Per Second, More Is Better
1
39.79
2
39.25
3
39.50
4
39.47
5
39.36
6
39.39
9
18
27
36
45
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread


AOM AV1 3.1
Encoder Mode: Speed 9 Realtime - Input: Bosphorus 4K
Frames Per Second, More Is Better
1
48.53
2
48.29
3
48.57
4
48.61
5
48.16
6
48.46
11
22
33
44
55
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread


AOM AV1 3.1
Encoder Mode: Speed 0 Two-Pass - Input: Bosphorus 1080p
Frames Per Second, More Is Better
1
2
3
4
5
6
0.52
0.51
0.51
0.51
0.51
0.51
0.117
0.234
0.351
0.468
0.585
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread


AOM AV1 3.1
Encoder Mode: Speed 4 Two-Pass - Input: Bosphorus 1080p
Frames Per Second, More Is Better
1
2
3
4
5
6
7.24
7.23
7.23
7.19
7.20
7.17
2
4
6
8
10
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread

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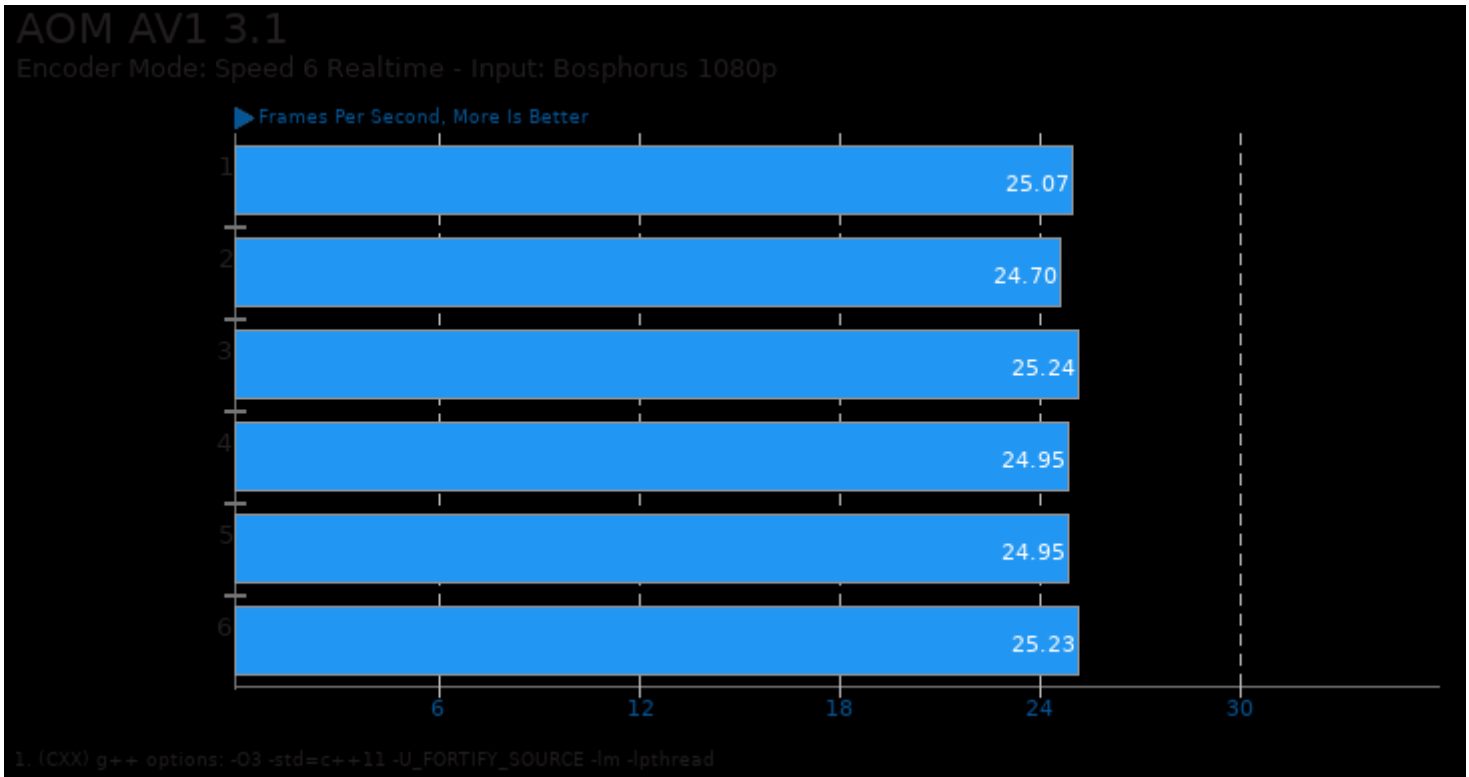
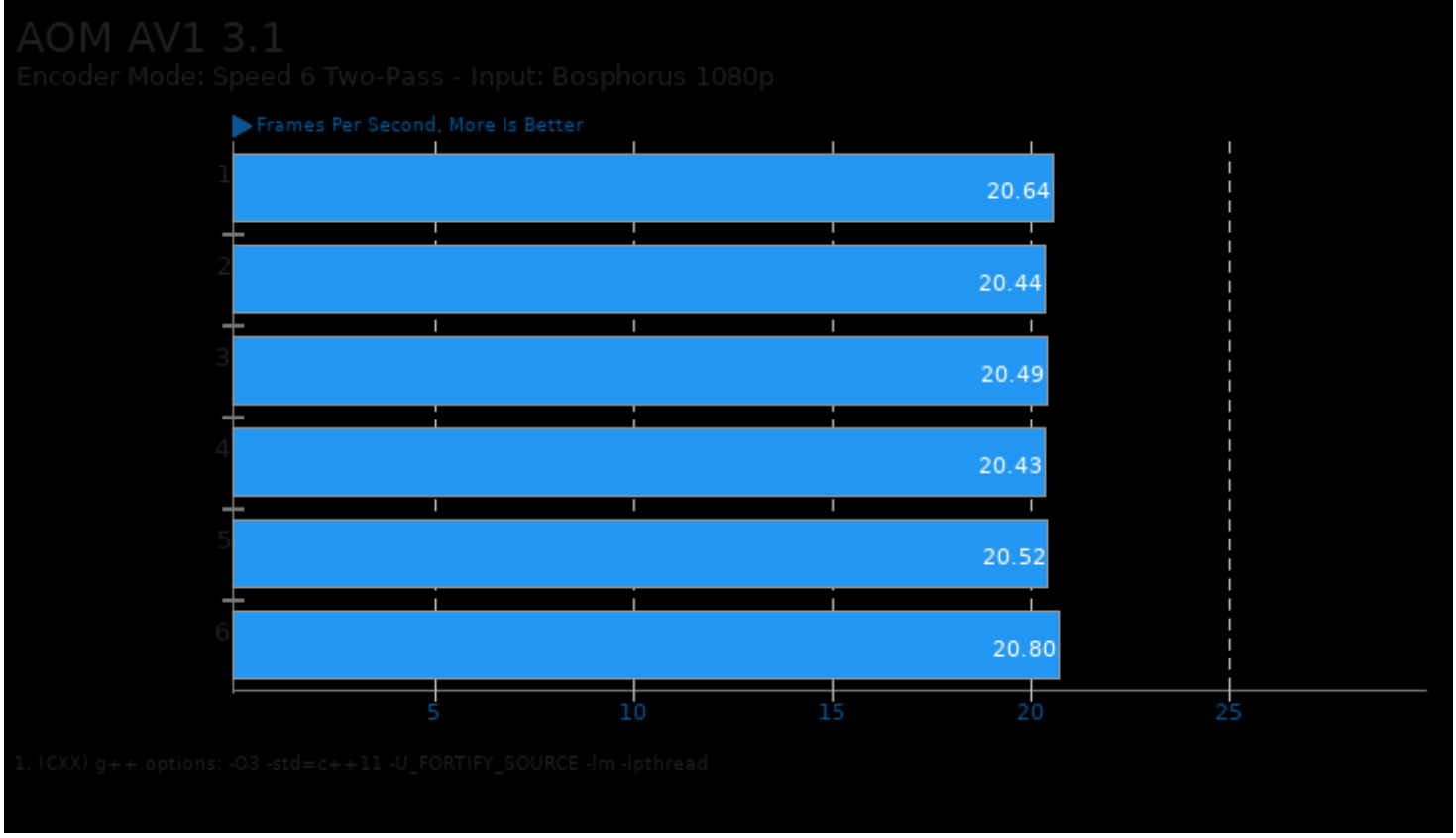

AOM AV1 3.1
Encoder Mode: Speed 6 Realtime - Input: Bosphorus 1080p
Frames Per Second, More Is Better
1
2
3
4
5
6
25.07
24.70
25.24
24.95
24.95
25.23
6
12
18
24
30
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread


AOM AV1 3.1
Encoder Mode: Speed 6 Two-Pass - Input: Bosphorus 1080p
Frames Per Second, More Is Better
1
2
3
4
5
6
20.64
20.44
20.49
20.43
20.52
20.80
5
10
15
20
25
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread

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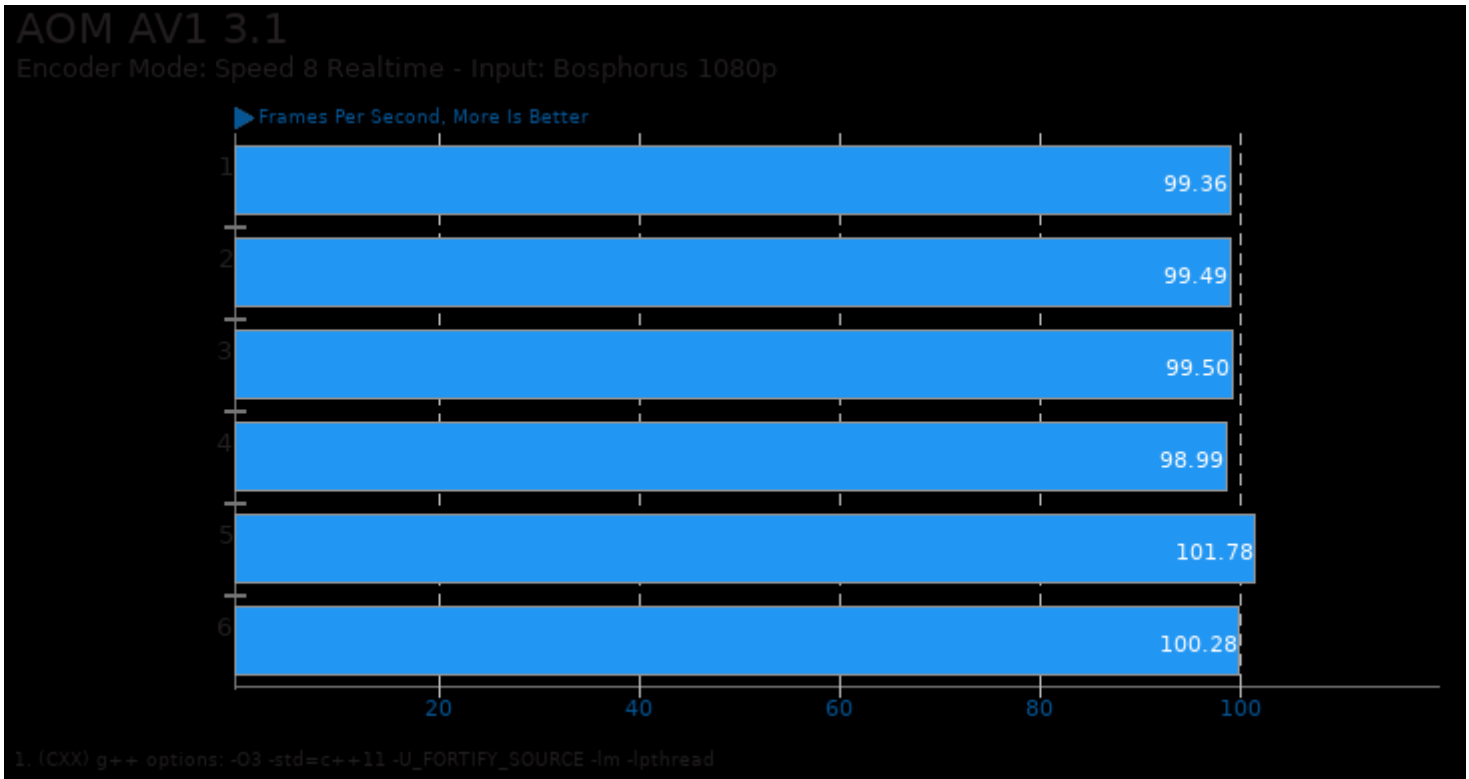
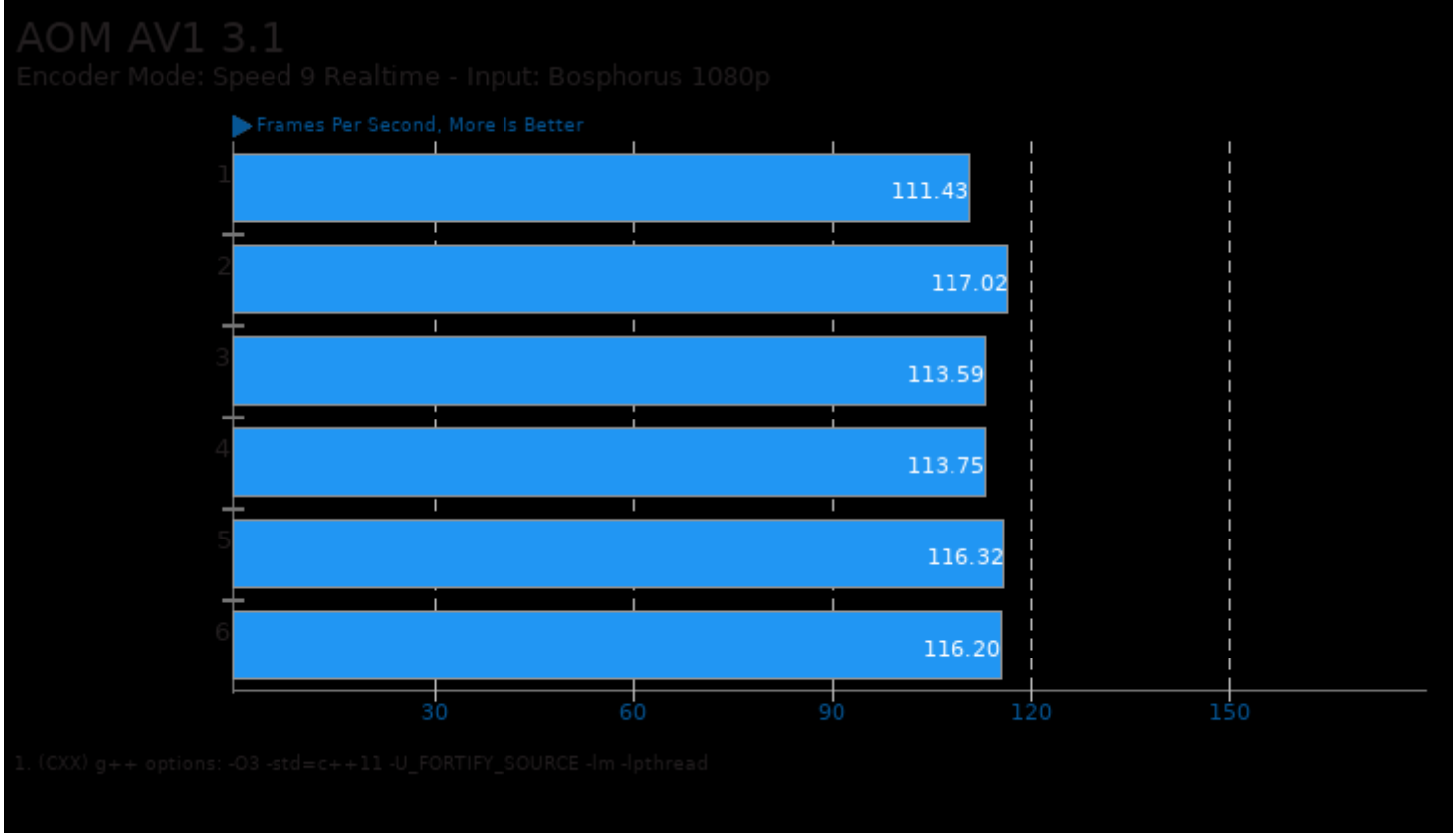

AOM AV1 3.1
Encoder Mode: Speed 8 Realtime - Input: Bosphorus 1080p
Frames Per Second, More Is Better
1
99.36
2
99.49
3
99.50
4
98.99
5
101.78
6
100.28
20
40
60
80
100
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread


AOM AV1 3.1
Encoder Mode: Speed 9 Realtime - Input: Bosphorus 1080p
Frames Per Second, More Is Better
1
111.43
2
117.02
3
113.59
4
113.75
5
116.32
6
116.20
30
60
90
120
150
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread

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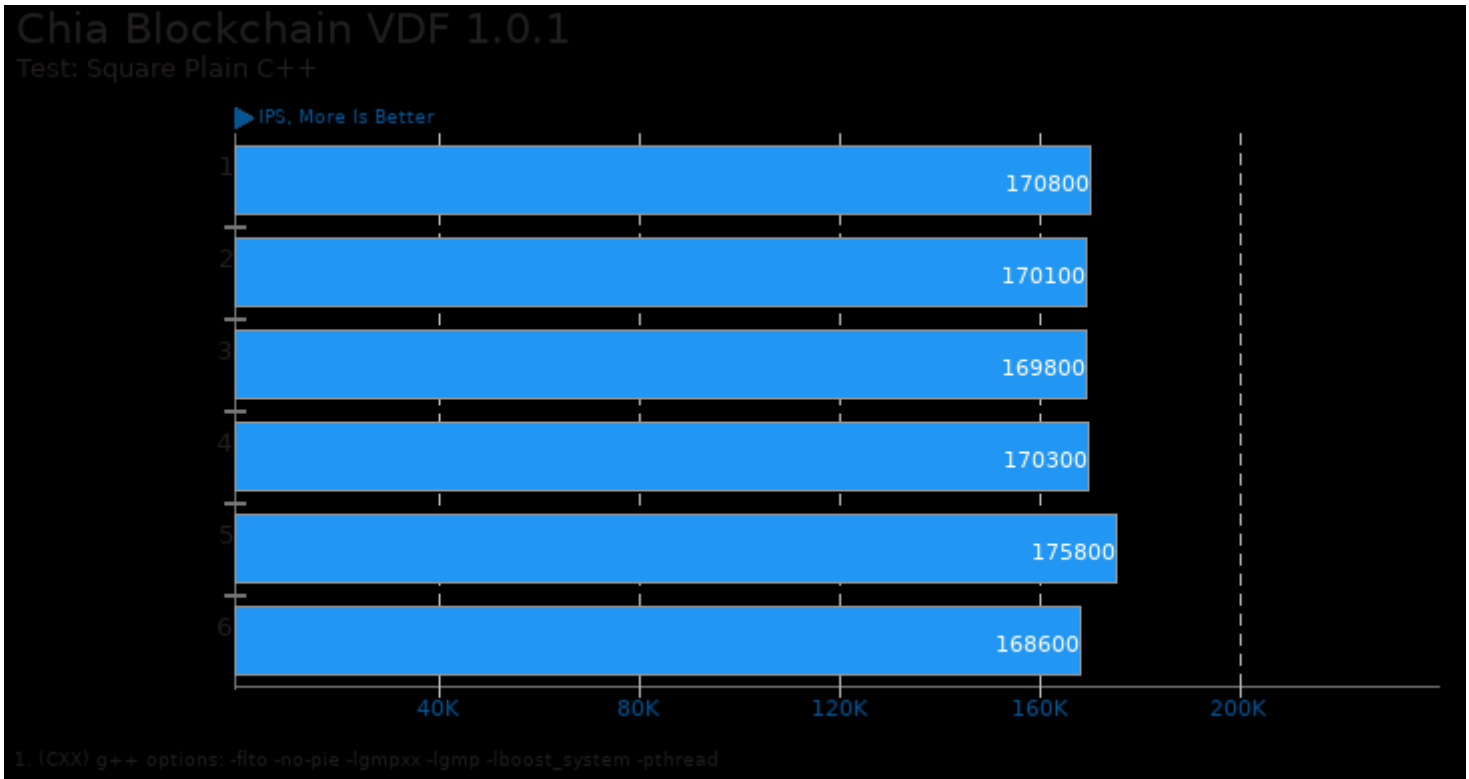
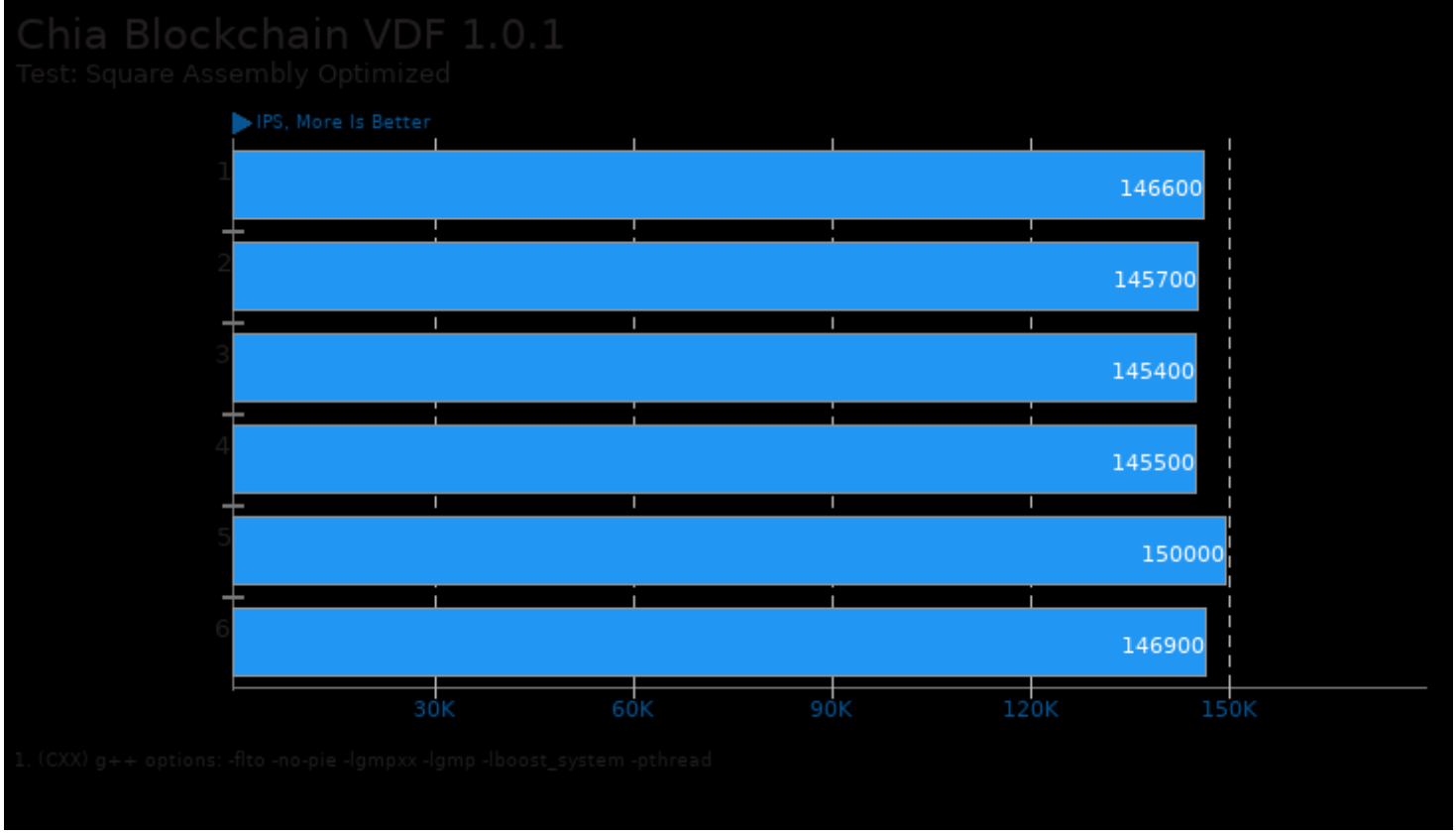

Chia Blockchain VDF 1.0.1
Test: Square Plain C++
IPS, More Is Better
1
170800
2
170100
3
169800
4
170300
5
175800
6
168600
40K
80K
120K
160K
200K
1. (CXX) g++ options: -flto -no-pie -lgmpxx -lgmp -lboost_system -pthread


Chia Blockchain VDF 1.0.1
Test: Square Assembly Optimized
IPS, More Is Better
1
146600
2
145700
3
145400
4
145500
5
150000
6
146900
30K
60K
90K
120K
150K
1. (CXX) g++ options: -flto -no-pie -lgmpxx -lgmp -lboost_system -pthread

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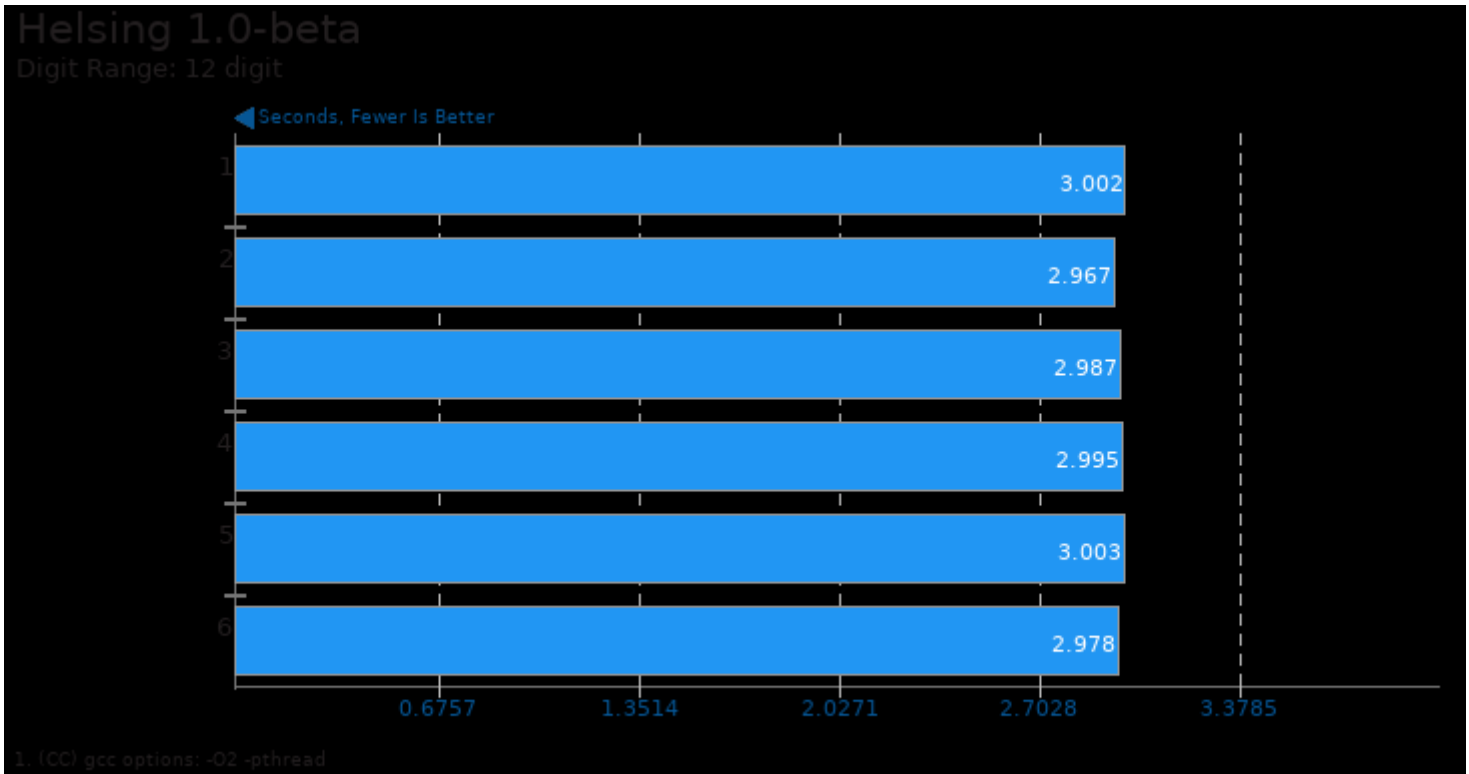
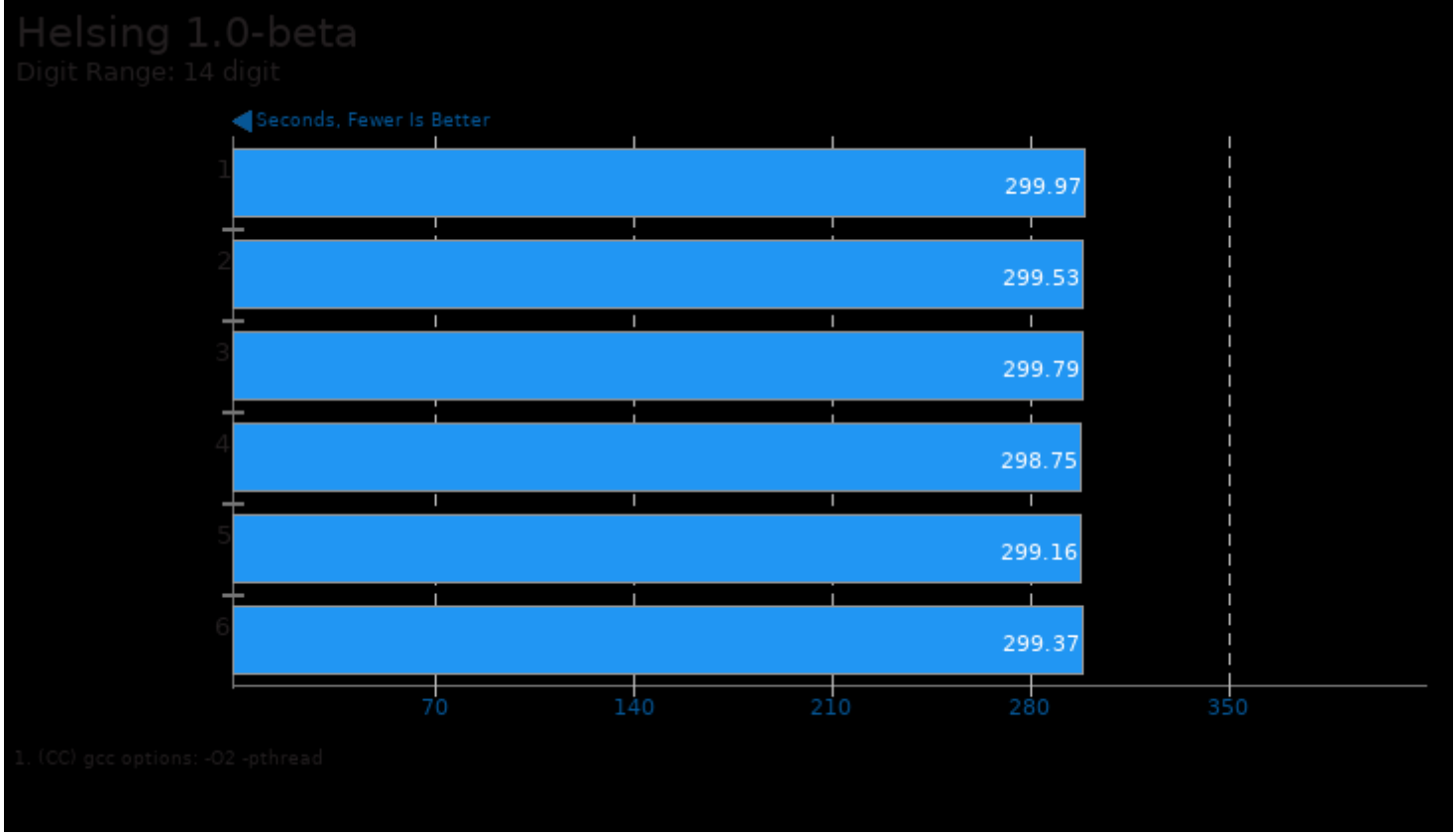
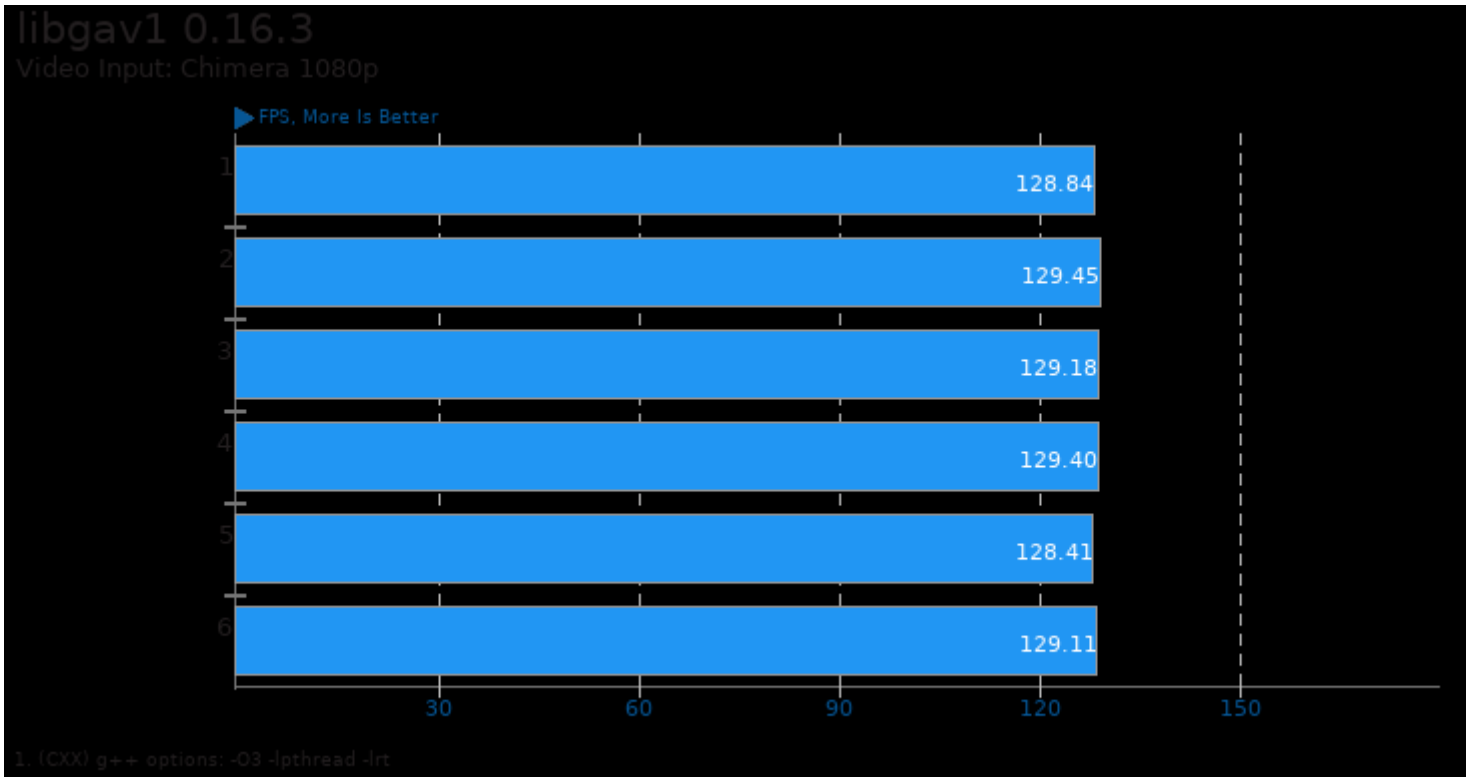
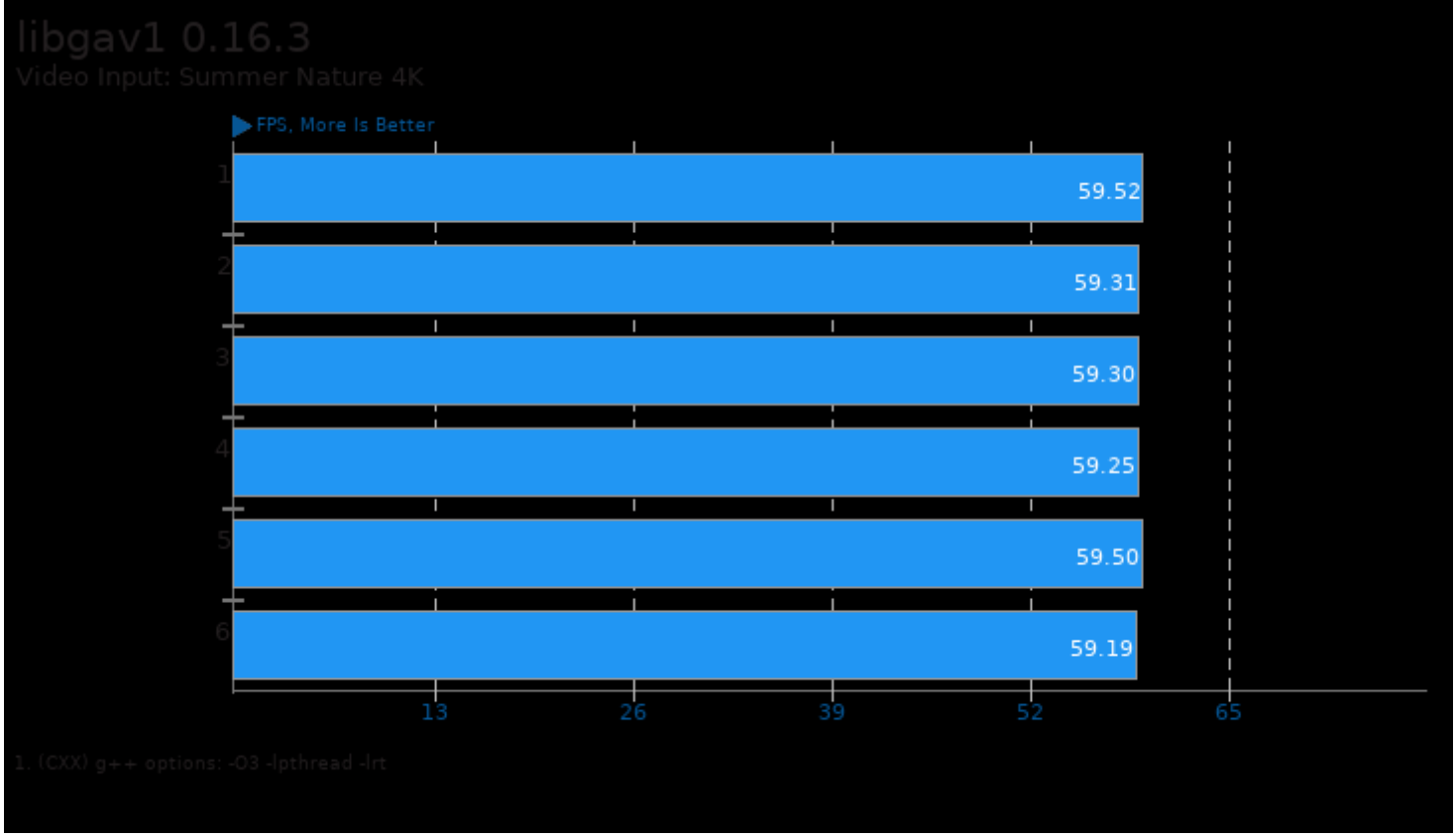

Helsing 1.0-beta
Digit Range: 12 digit
Seconds, Fewer Is Better
1
2
3
4
5
6
3.002
2.967
2.987
2.995
3.003
2.978
0.6757
1.3514
2.0271
2.7028
3.3785
1. (CC) gcc options: -O2 -pthread

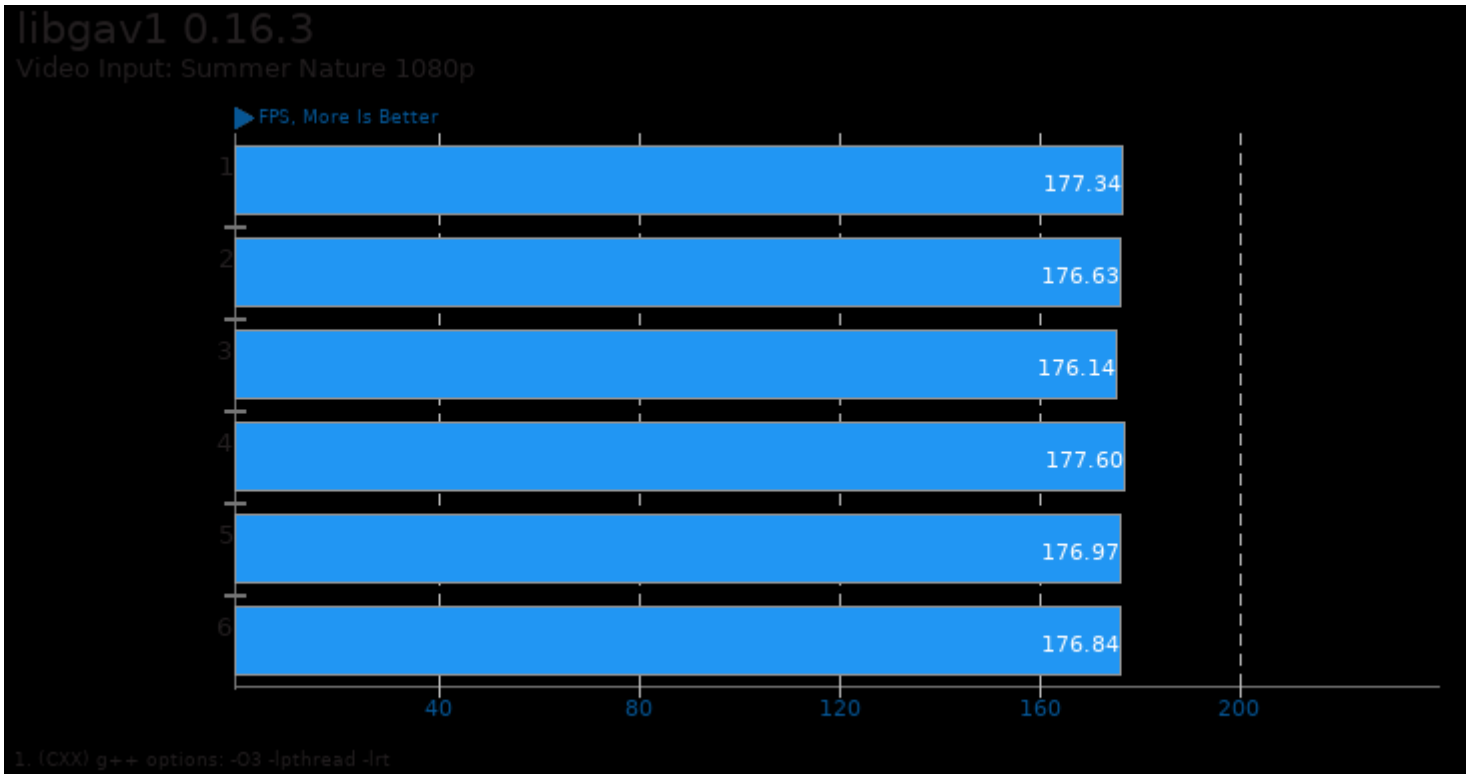

Helsing 1.0-beta
Digit Range: 14 digit
Seconds, Fewer Is Better
1
2
3
4
5
6
299.97
299.53
299.79
298.75
299.16
299.37
70
140
210
280
350
1. (CC) gcc options: -O2 -pthread

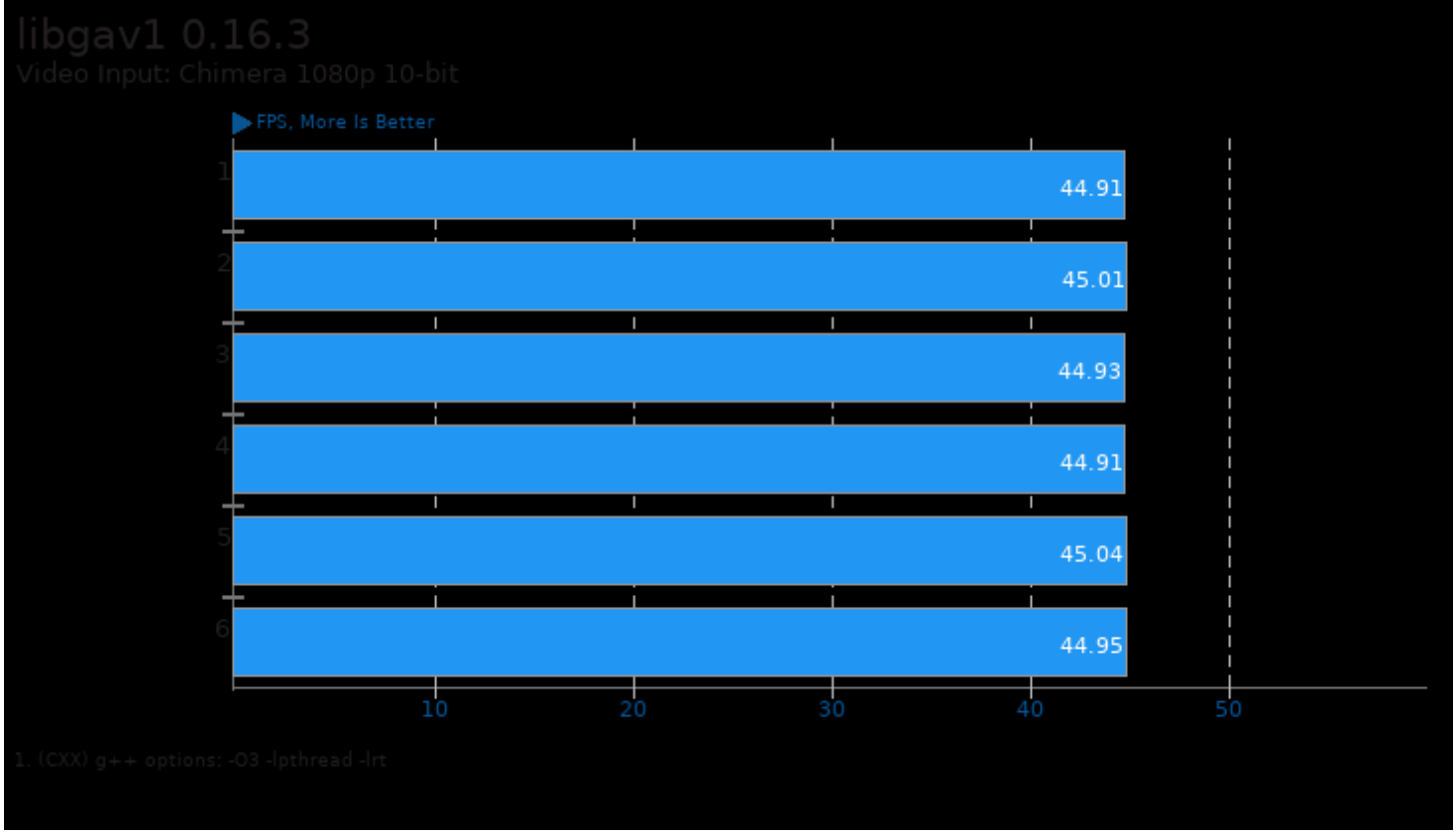
3950x may


libgav1 0.16.3
Video Input: Chimera 1080p
FPS, More Is Better
1
128.84
2
129.45
3
129.18
4
129.40
5
128.41
6
129.11
30
60
90
120
150
1. (CXX) g++ options: -O3 -lpthread -lrt


libgav1 0.16.3
Video Input: Summer Nature 4K
FPS, More Is Better
1
59.52
2
59.31
3
59.30
4
59.25
5
59.50
6
59.19
13
26
39
52
65
1. (CXX) g++ options: -O3 -lpthread -lrt

3950x may

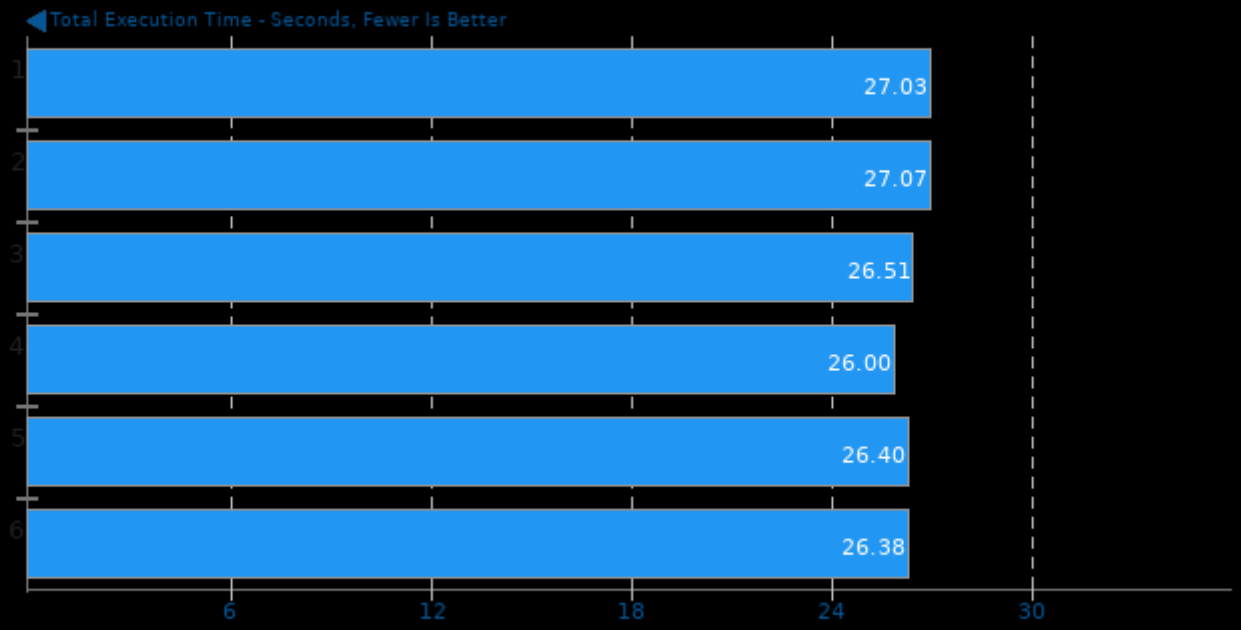

libgav1 0.16.3
Video Input: Summer Nature 1080p
FPS, More Is Better
1
2
3
4
5
6
177.34
176.63
176.14
177.60
176.97
176.84
40
80
120
160
200
1. (CXX) g++ options: -O3 -lpthread -lrt


libgav1 0.16.3
Video Input: Chimera 1080p 10-bit
FPS, More Is Better
1
2
3
4
5
6
44.91
45.01
44.93
44.91
45.04
44.95
10
20
30
40
50
1. (CXX) g++ options: -O3 -lpthread -lrt

3950x may

QMCPACK 3.11

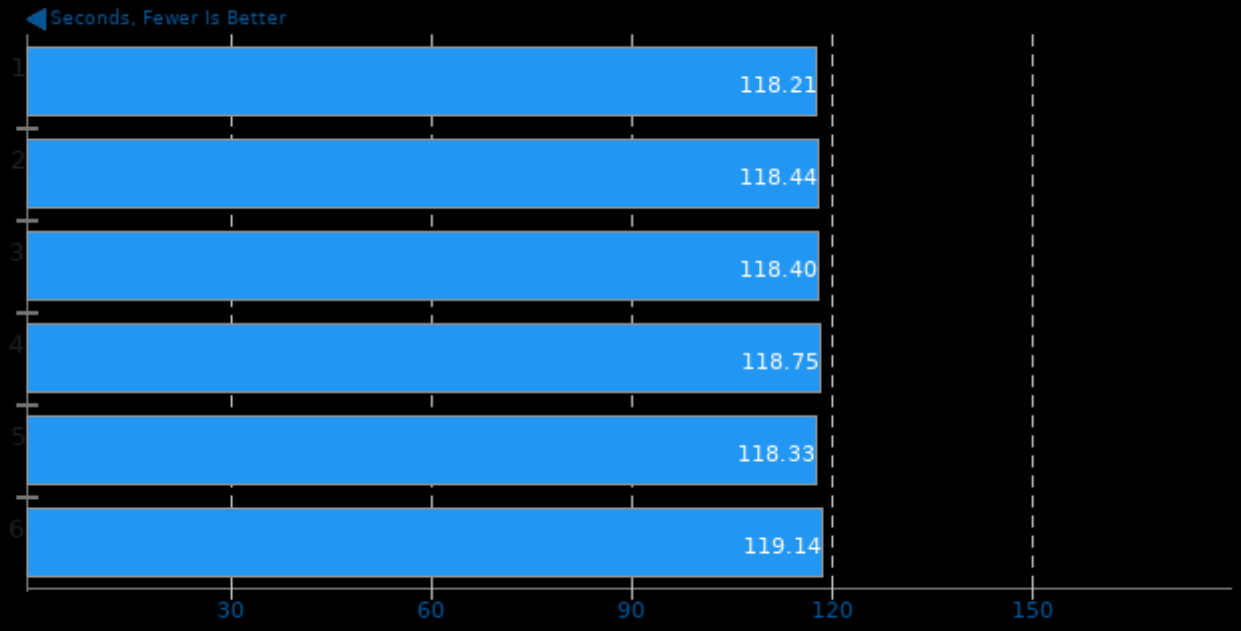
Input: simple-H2O



1. (CXX) g++ options: -fopenmp -finline-limit=1000 -fstrict-aliasing -funroll-all-loops -march=native -O3 -fomit-frame-pointer -ffast-math -pthread -lm

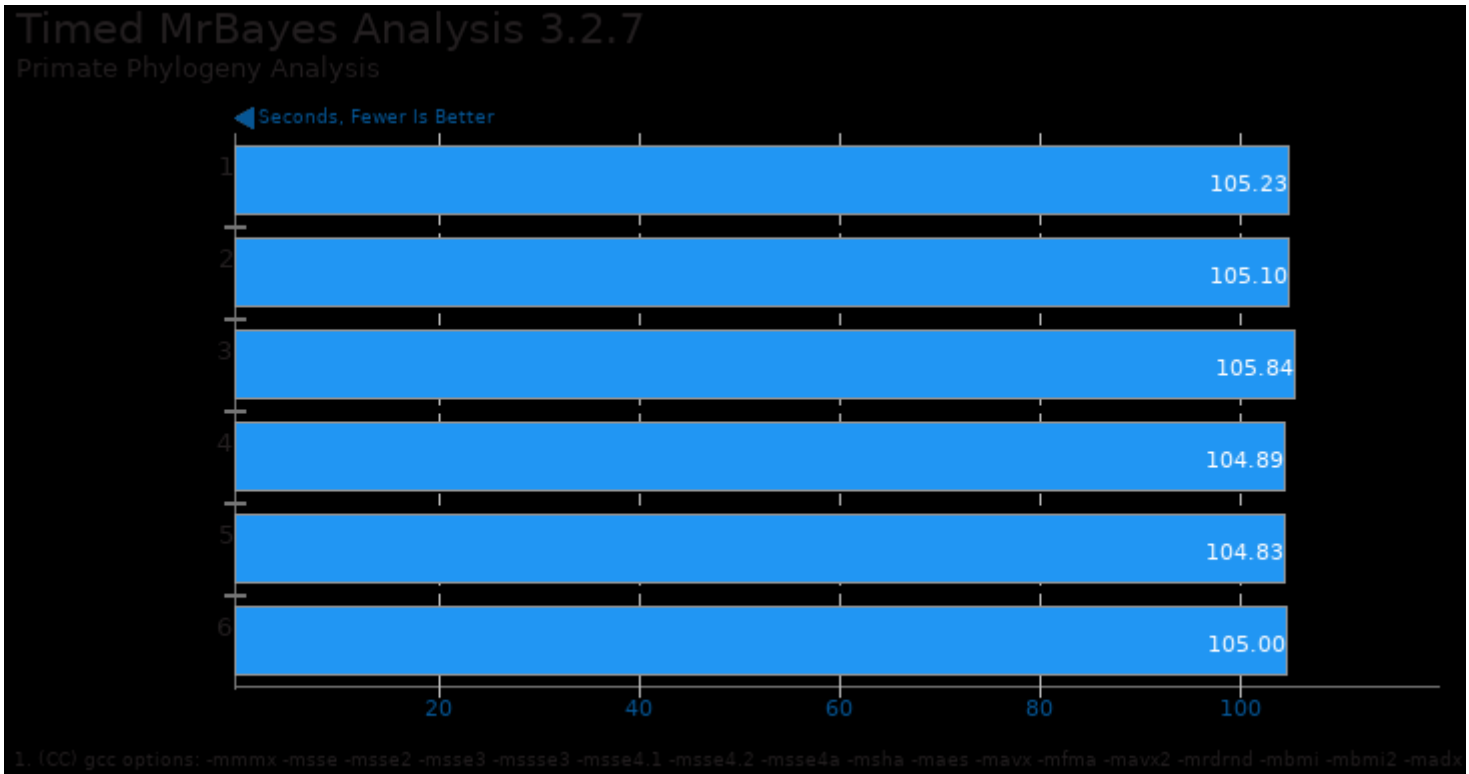
Timed HMMer Search 3.3.2

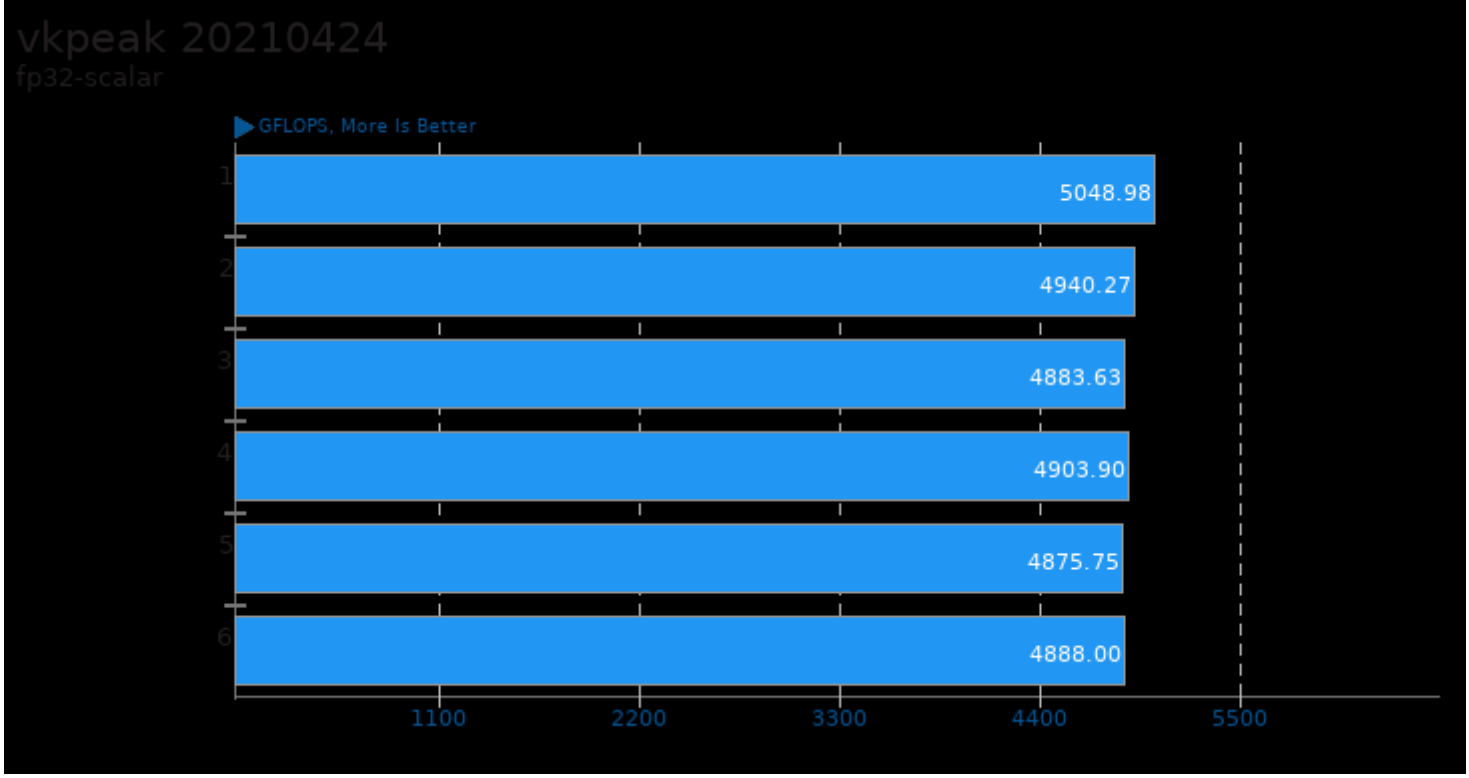
Pfam Database Search



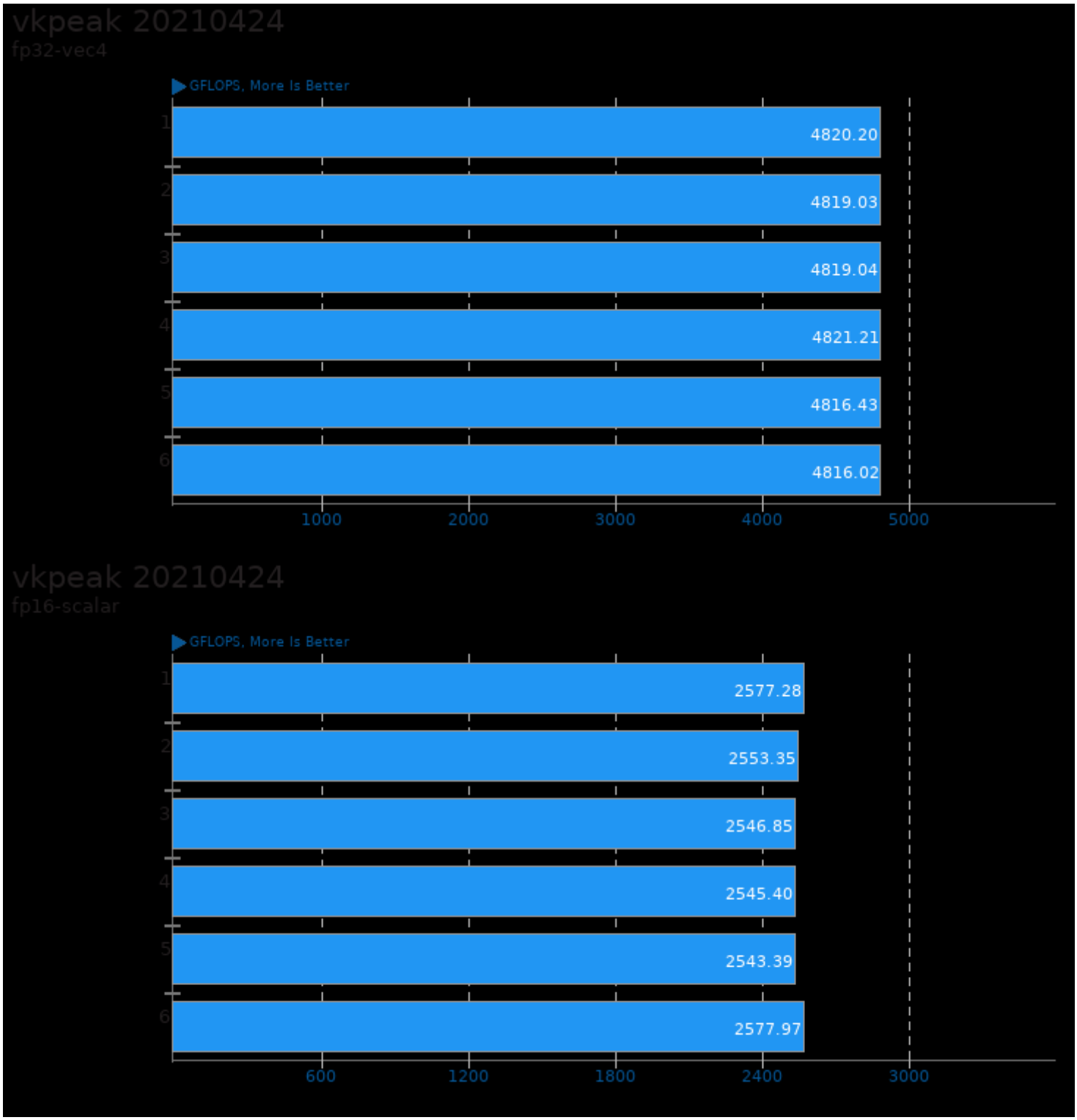
1. (CC) gcc options: -O3 -pthread -lhmmer -leasel -lm -lmpi

3950x may

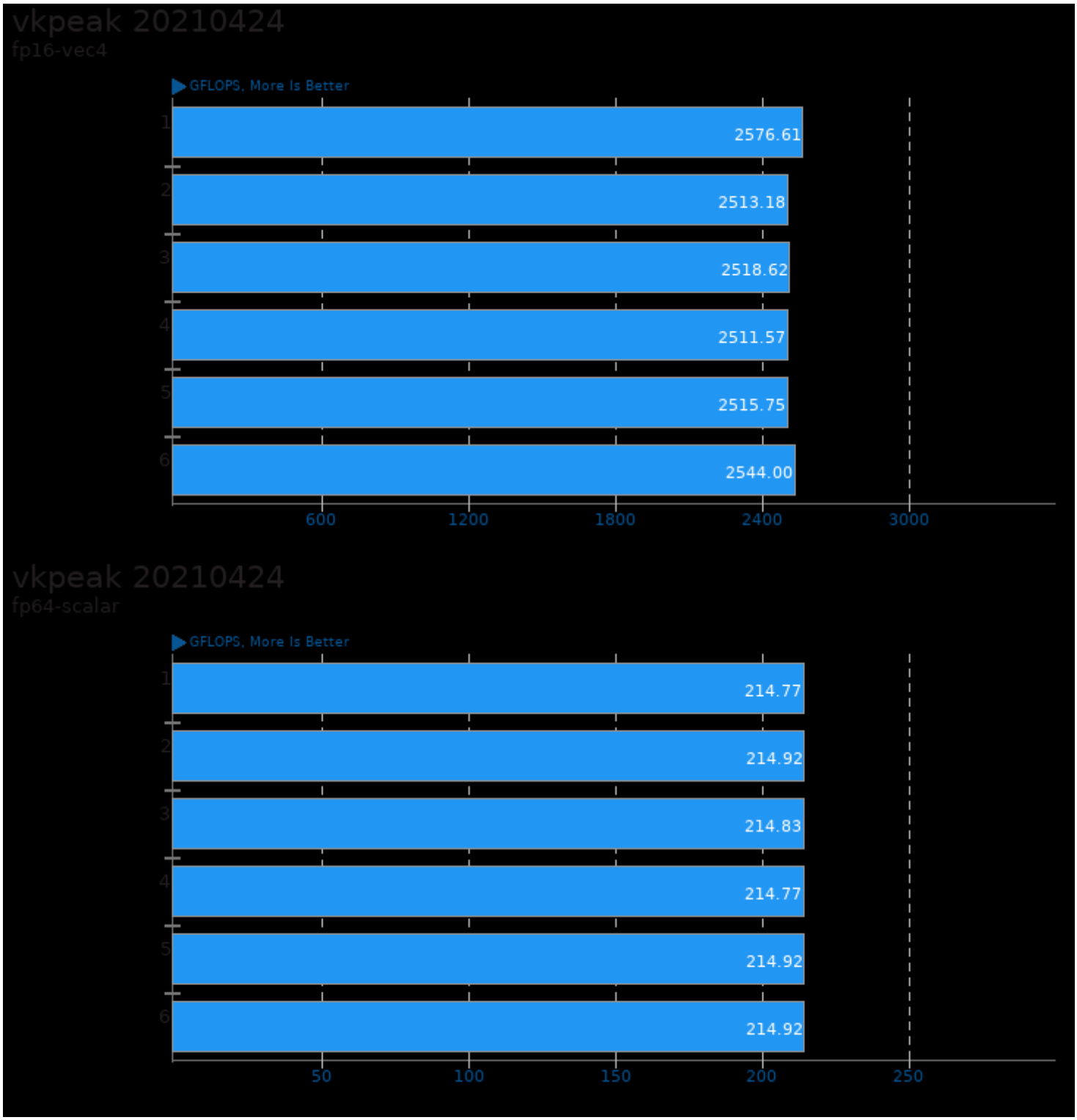

Timed MrBayes Analysis 3.2.7
Primate Phylogeny Analysis
Seconds, Fewer Is Better
1
2
3
4
5
6
105.23
105.10
105.84
104.89
104.83
105.00
20
40
60
80
100
1. (CC) gcc options: -mmmx -msse -msse2 -msse3 -mssse3 -msse4.1 -msse4.2 -msse4a -msha -maes -mavx -mfma -mavx2 -mrdrnd -mbmi -mbmi2 -madx


vkpeak 20210424
fp32-scalar
GFLOPS, More Is Better
1
2
3
4
5
6
5048.98
4940.27
4883.63
4903.90
4875.75
4888.00
1100
2200
3300
4400
5500

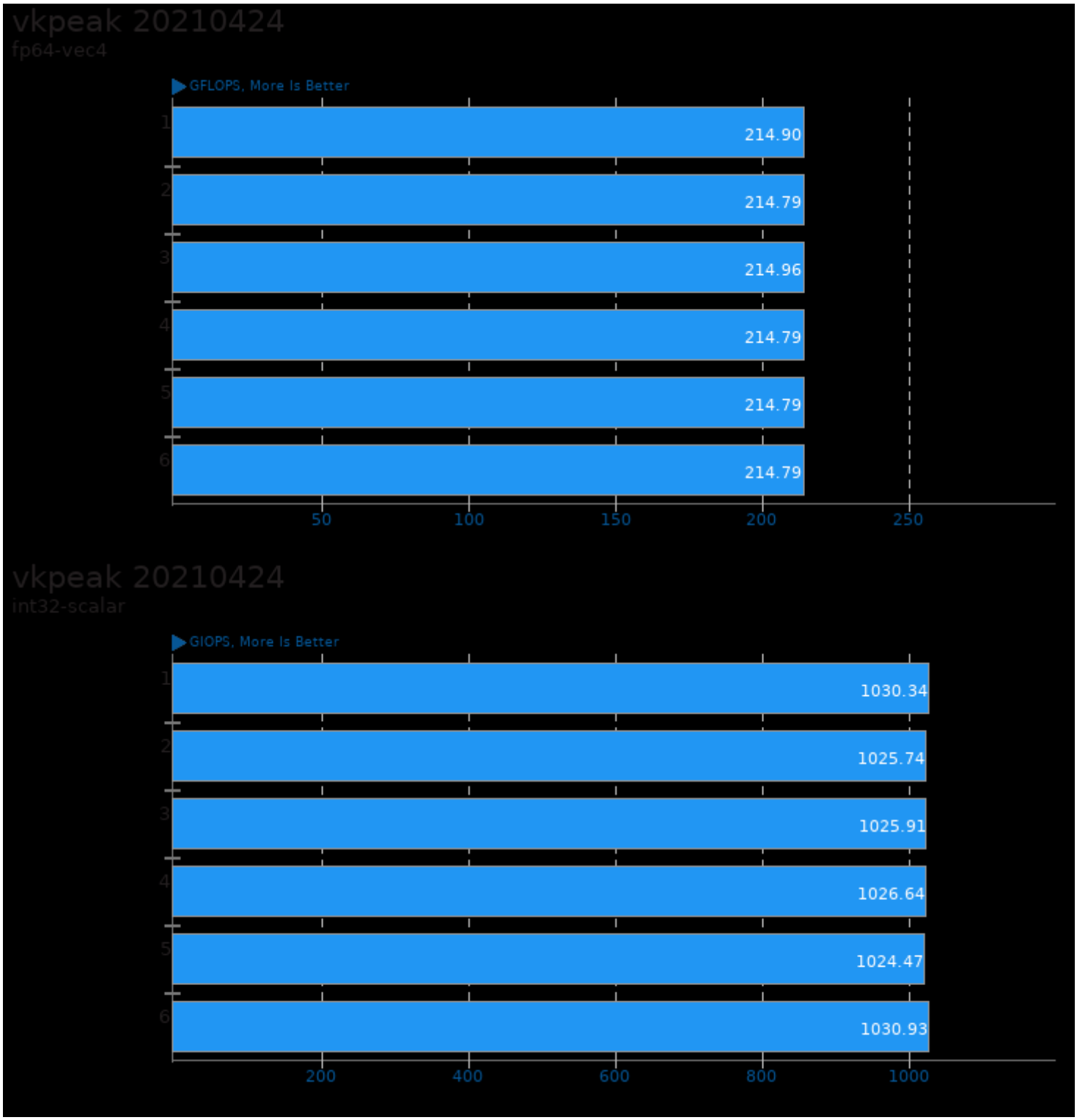
3950x may


vkpeak 20210424
fp32-vec4
GFLOPS, More Is Better
1
4820.20
2
4819.03
3
4819.04
4
4821.21
5
4816.43
6
4816.02
1000
2000
3000
4000
5000
vkpeak 20210424
fp16-scalar
GFLOPS, More Is Better
1
2577.28
2
2553.35
3
2546.85
4
2545.40
5
2543.39
6
2577.97
600
1200
1800
2400
3000

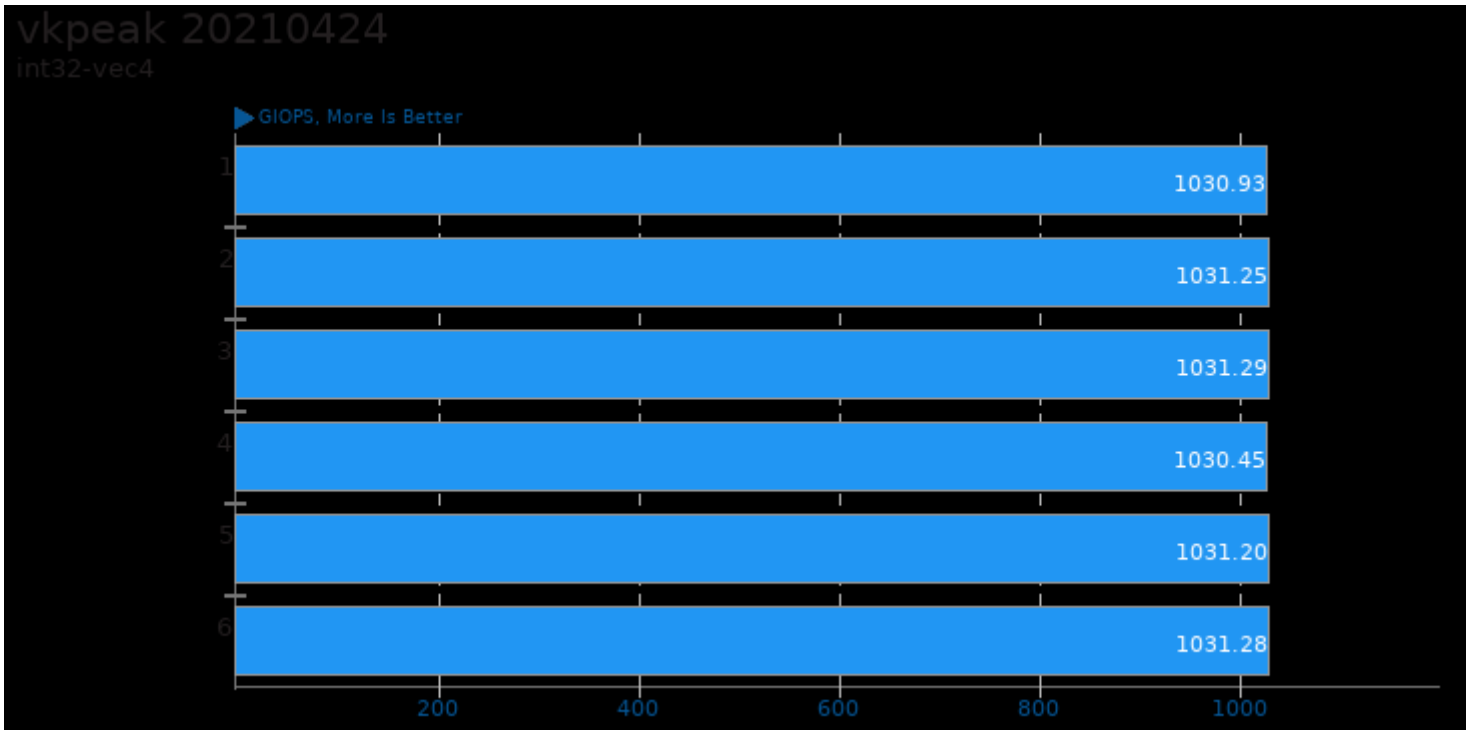
3950x may

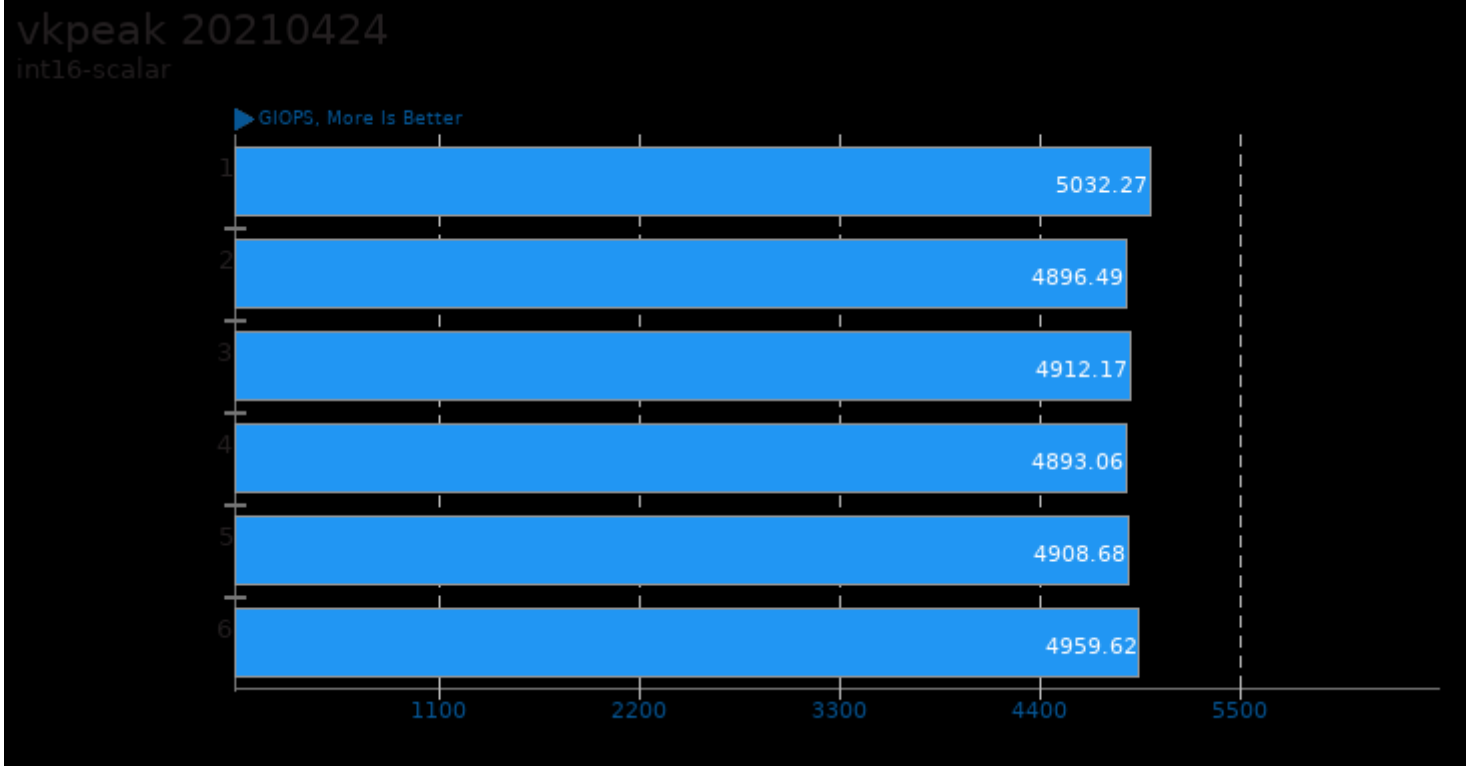

vkpeak 20210424
fp16-vec4
GFLOPS, More Is Better
1
2576.61
2
2513.18
3
2518.62
4
2511.57
5
2515.75
6
2544.00
600
1200
1800
2400
3000
vkpeak 20210424
fp64-scalar
GFLOPS, More Is Better
1
214.77
2
214.92
3
214.83
4
214.77
5
214.92
6
214.92
50
100
150
200
250

3950x may


vkpeak 20210424
fp64-vec4
GFLOPS, More Is Better
1
214.90
2
214.79
3
214.96
4
214.79
5
214.79
6
214.79
50
100
150
200
250
vkpeak 20210424
int32-scalar
GIOPS, More Is Better
1
1030.34
2
1025.74
3
1025.91
4
1026.64
5
1024.47
6
1030.93
200
400
600
800
1000

3950x may

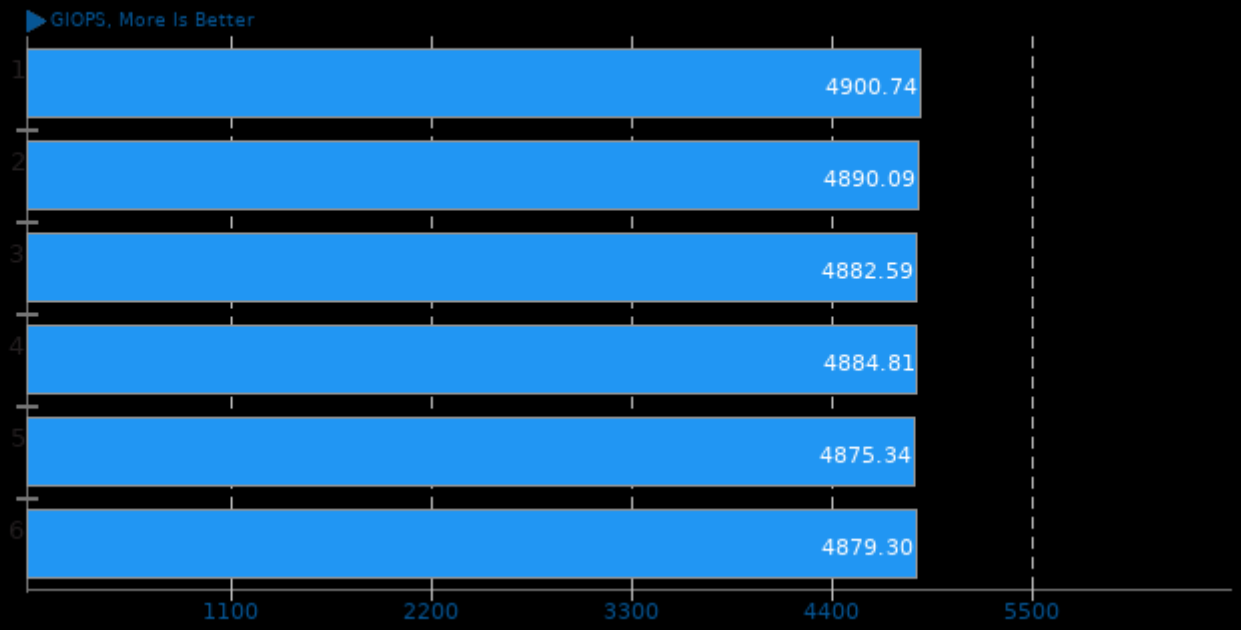

vkpeak 20210424
int32-vec4
GIOPS, More Is Better
1
1030.93
2
1031.25
3
1031.29
4
1030.45
5
1031.20
6
1031.28
200
400
600
800
1000


vkpeak 20210424
int16-scalar
GIOPS, More Is Better
1
5032.27
2
4896.49
3
4912.17
4
4893.06
5
4908.68
6
4959.62
1100
2200
3300
4400
5500

3950x may

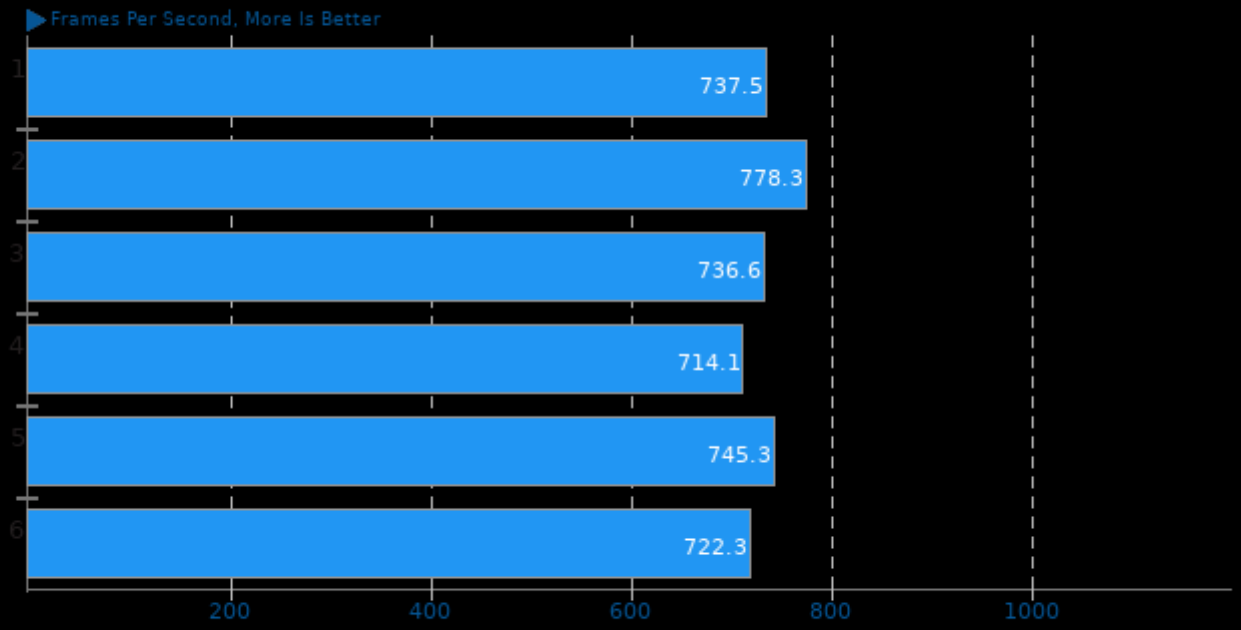
vkpeak 20210424

int16-vec4



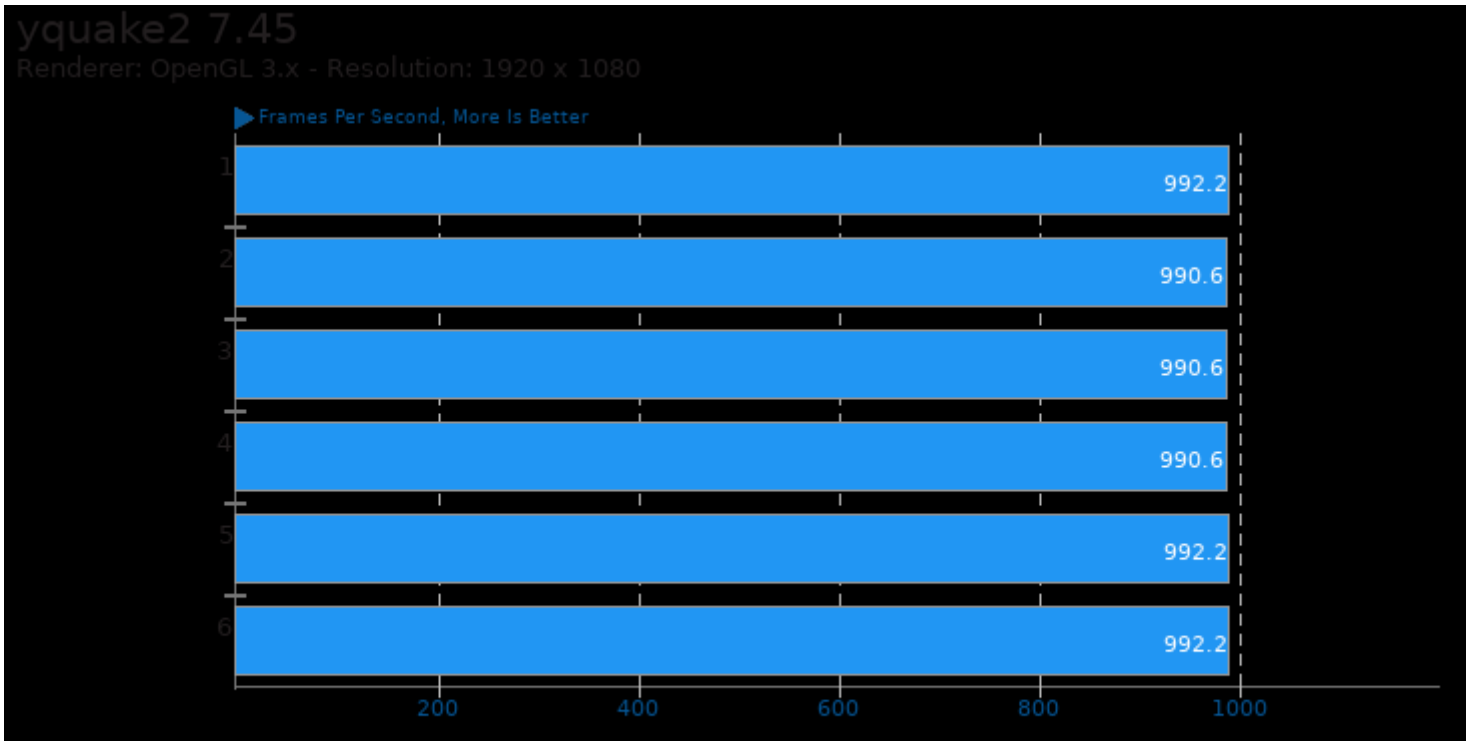
yquake2 7.45

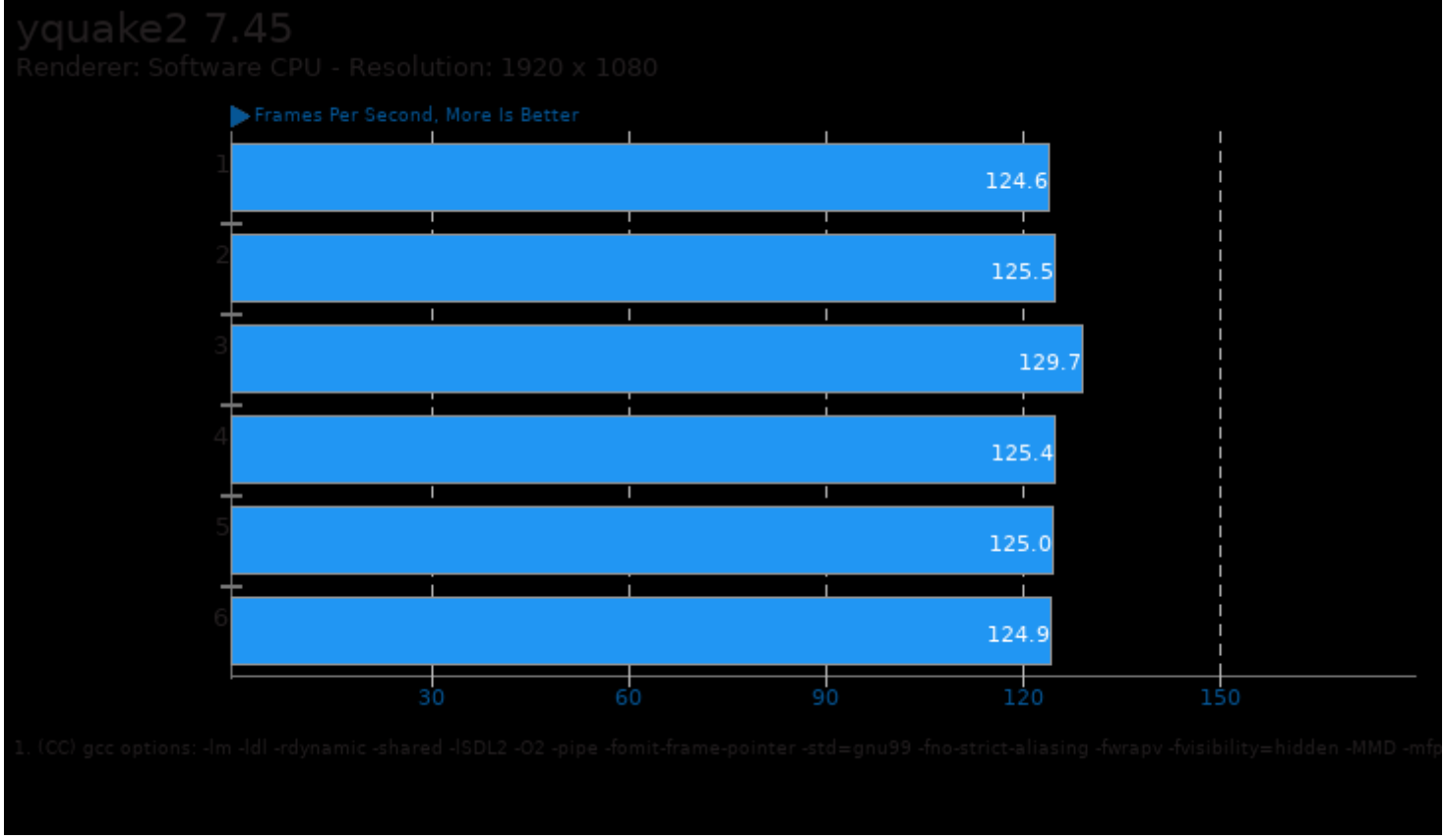
Renderer: OpenGL 1.x - Resolution: 1920 x 1080



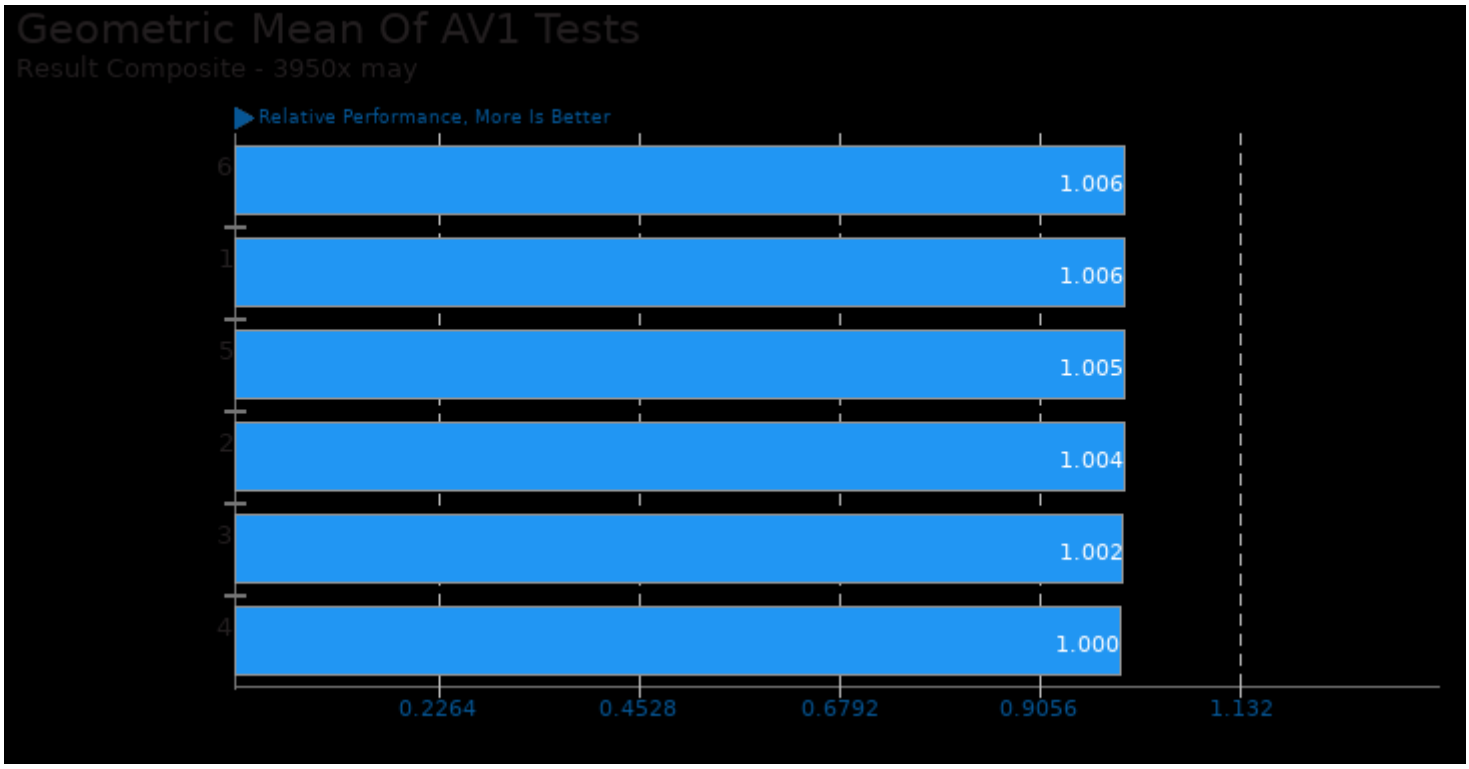
1. (CC) gcc options: -lm -ldl -rdynamic -shared -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf

3950x may

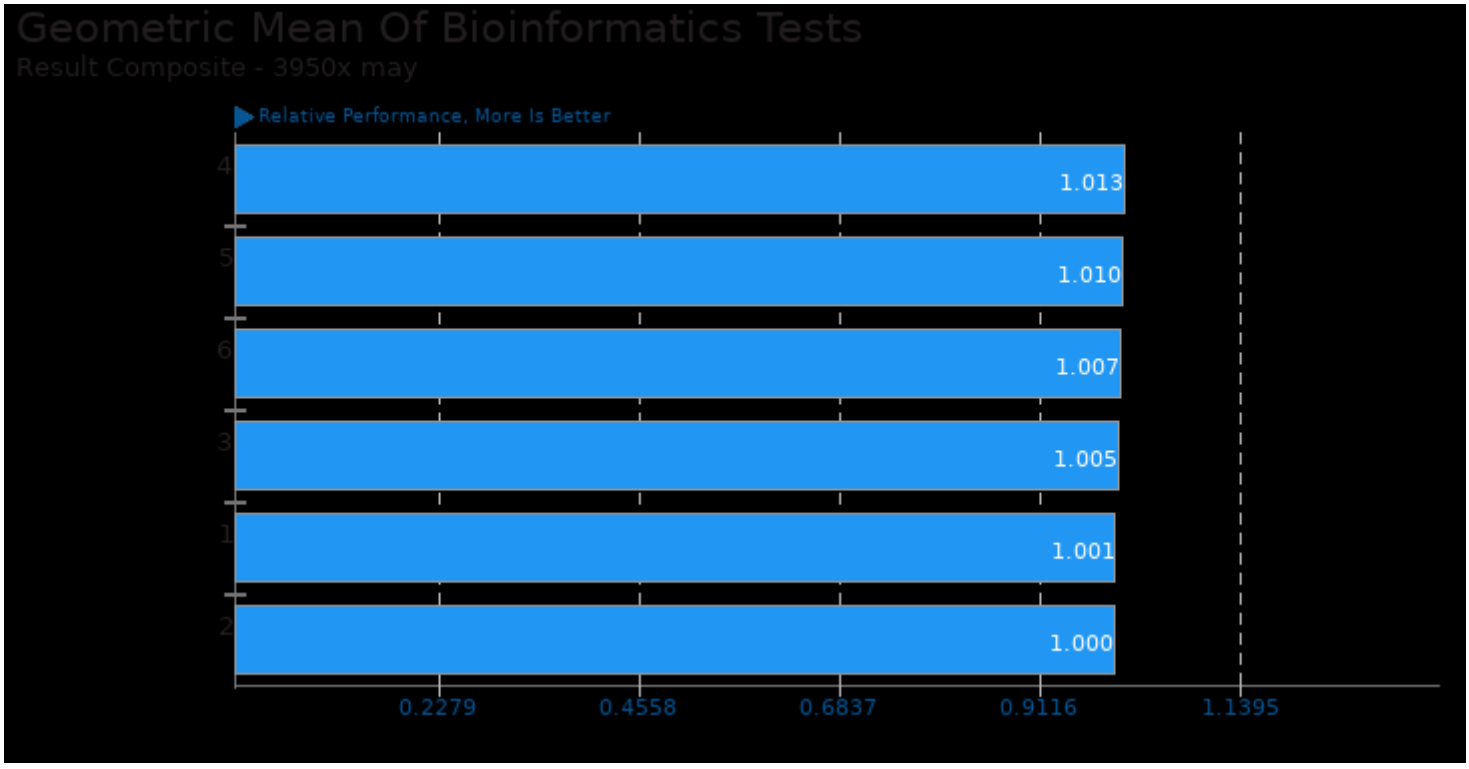

yquake2 7.45
Renderer: OpenGL 3.x - Resolution: 1920 x 1080
Frames Per Second, More Is Better
1
992.2
2
990.6
3
990.6
4
990.6
5
992.2
6
992.2
200
400
600
800
1000
1. (CC) gcc options: -lm -ldl -rdynamic -shared -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf


yquake2 7.45
Renderer: Software CPU - Resolution: 1920 x 1080
Frames Per Second, More Is Better
1
124.6
2
125.5
3
129.7
4
125.4
5
125.0
6
124.9
30
60
90
120
150
1. (CC) gcc options: -lm -ldl -rdynamic -shared -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf

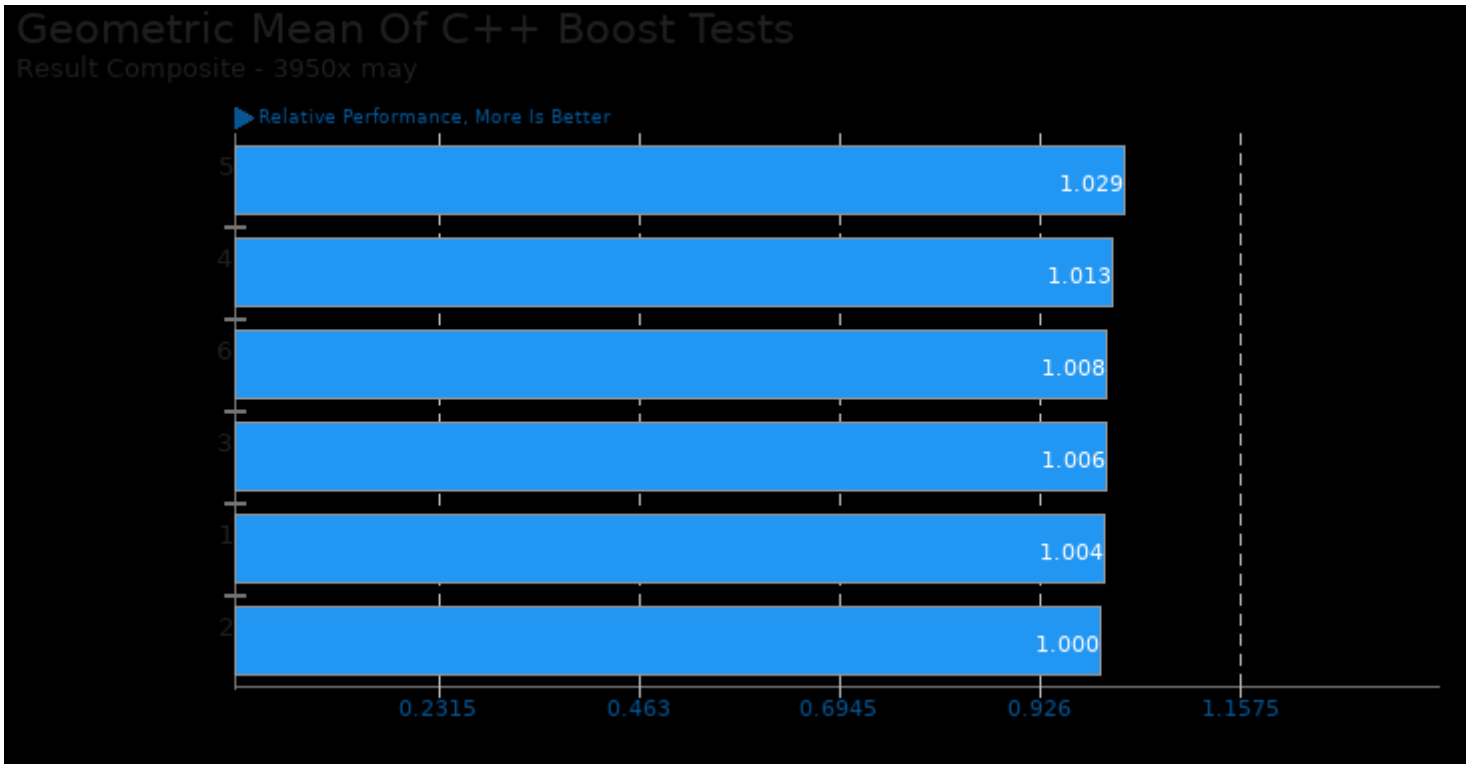
These geometric means are based upon test groupings / test suites for this result file.



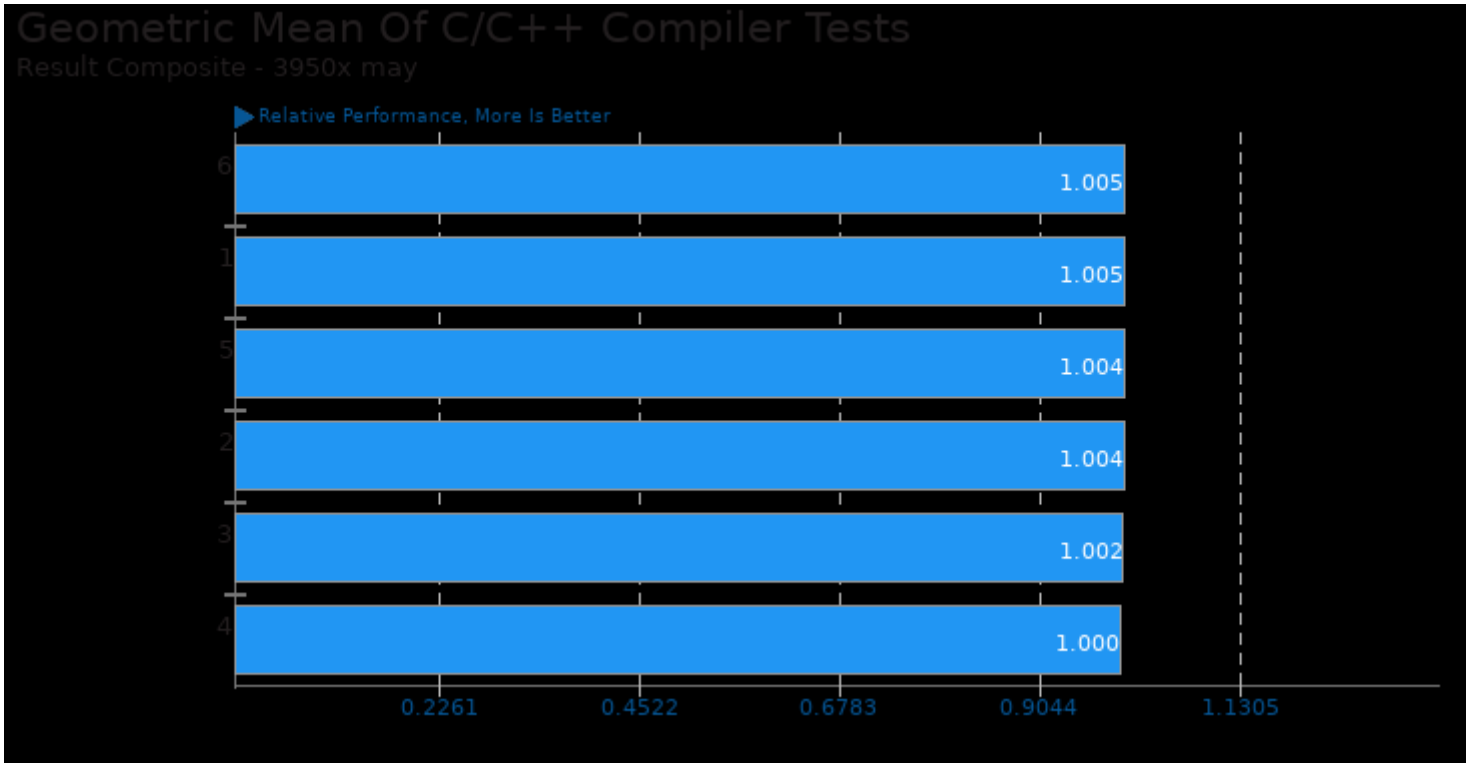
Geometric mean based upon tests: pts/aom-av1 and pts/libgav1



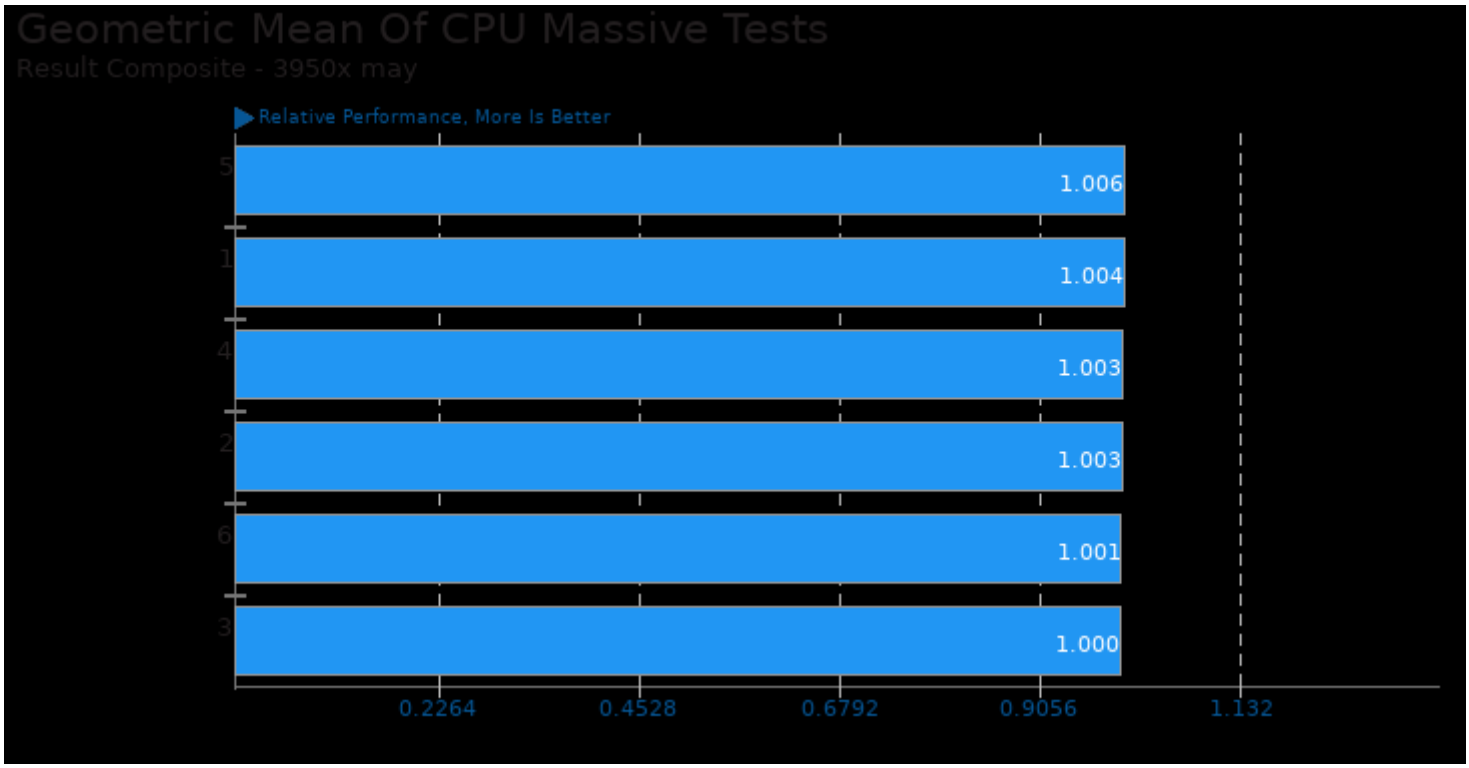
Geometric mean based upon tests: pts/mrbayes, pts/hmmer and pts/qmcpack



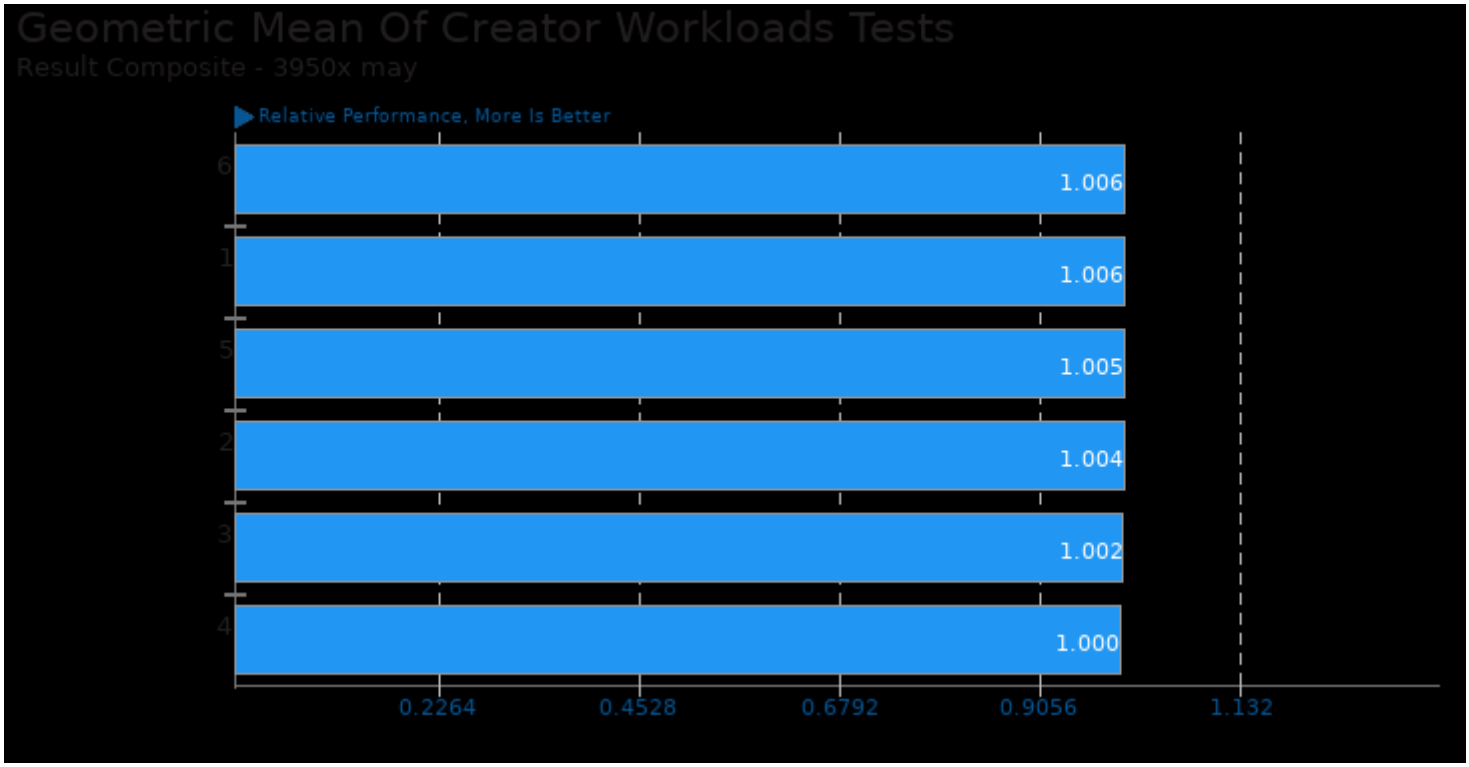
Geometric mean based upon tests: pts/chia-vdf and pts/qmcpack



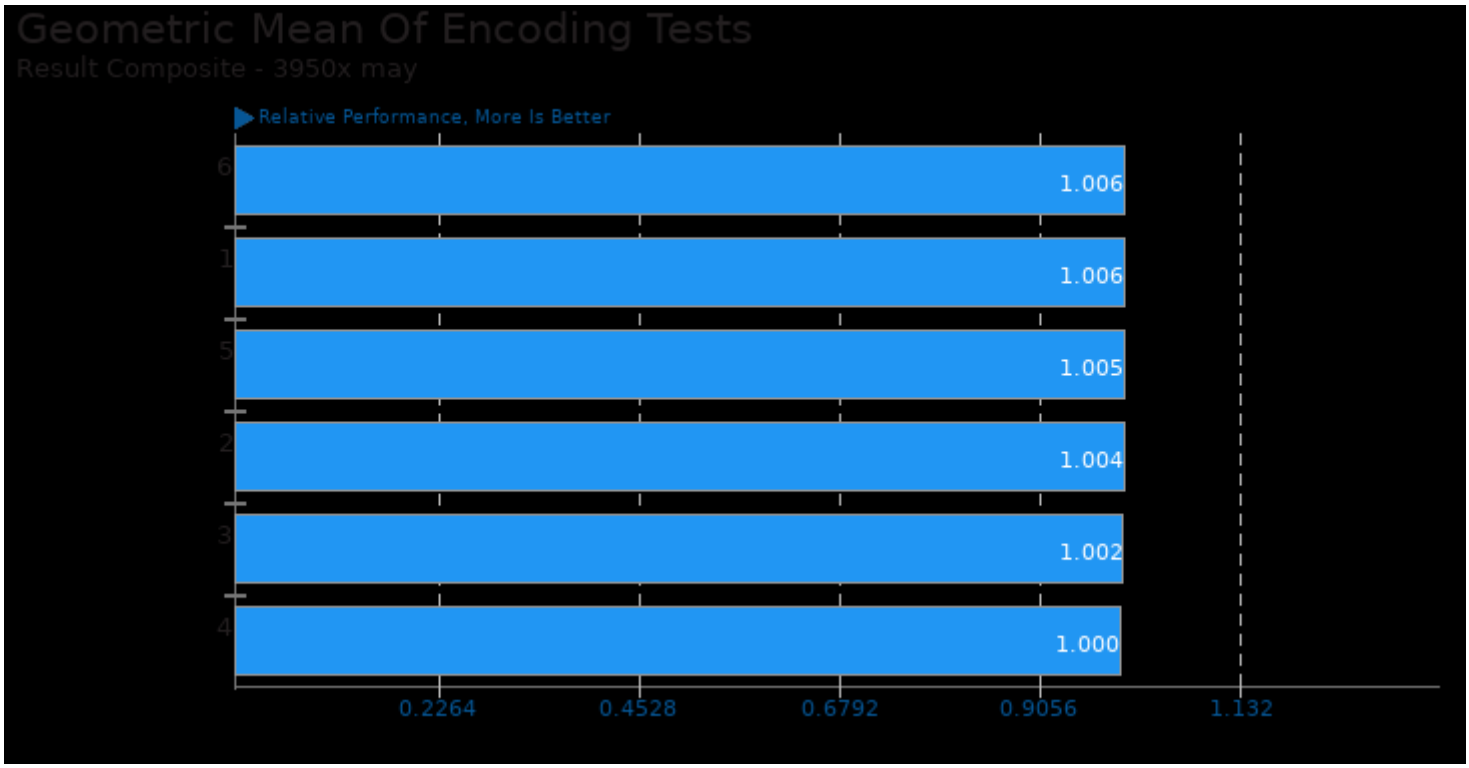
Geometric mean based upon tests: pts/hmmer, pts/mrbayes, pts/libgav1 and pts/aom-av1



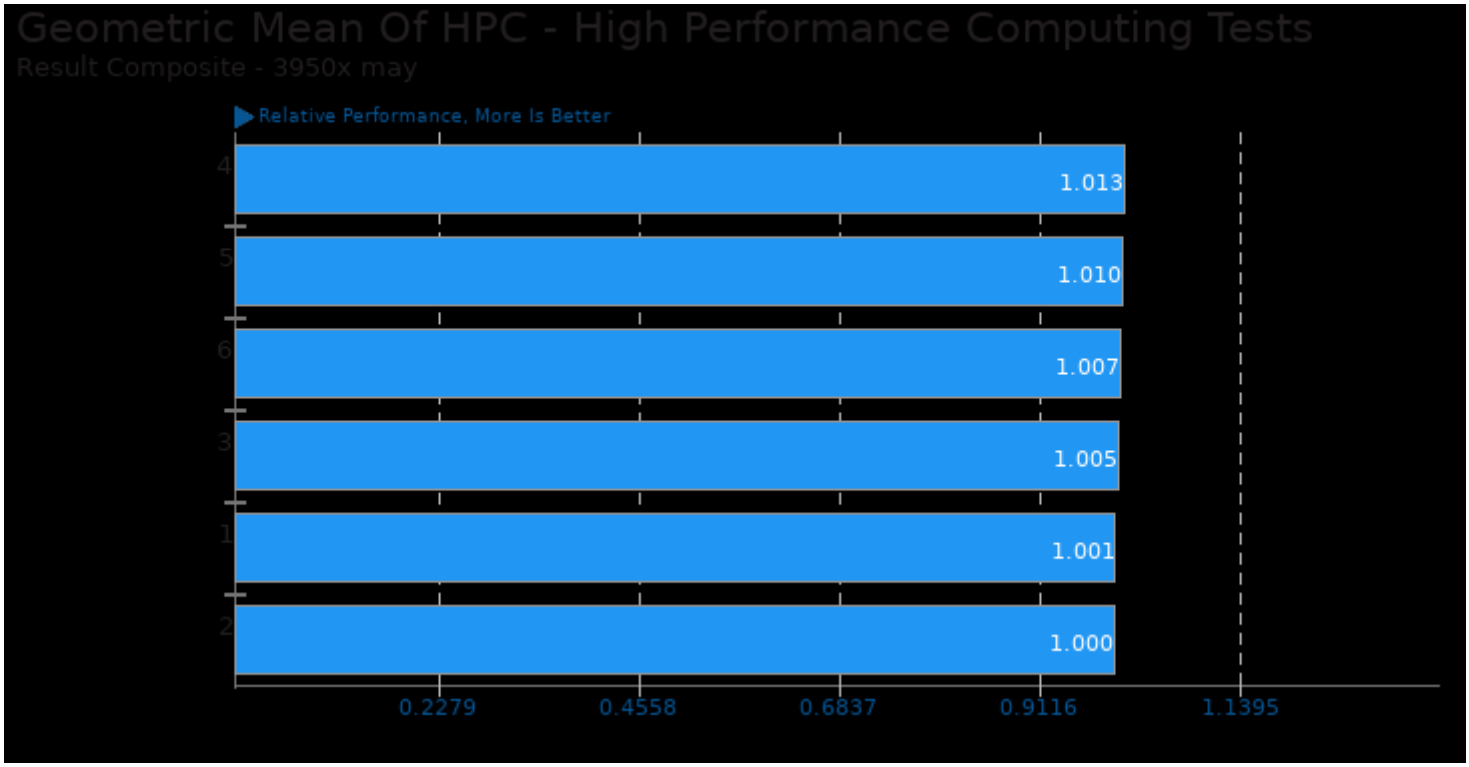
Geometric mean based upon tests: pts/hmmer and pts/mrbayes



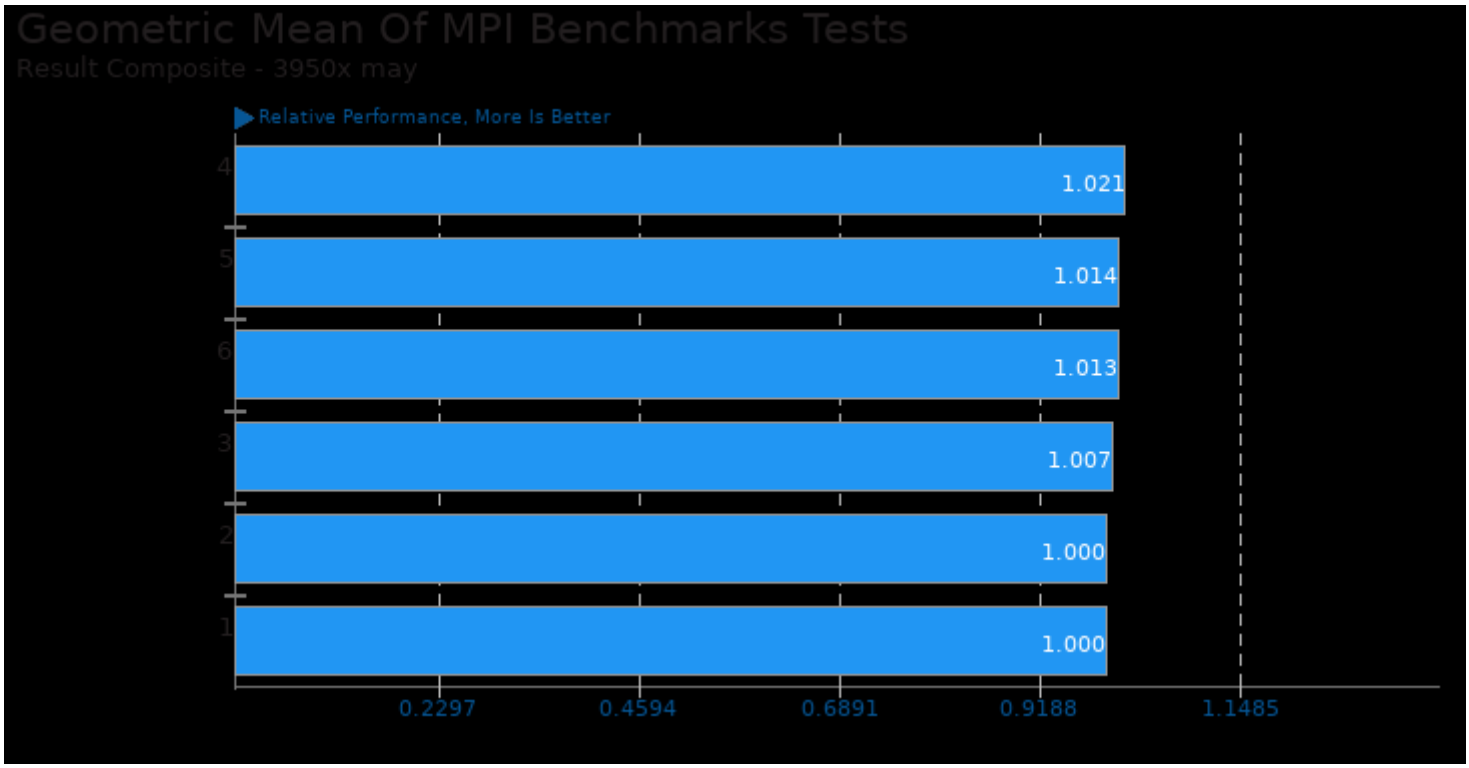
Geometric mean based upon tests: pts/aom-av1 and pts/libgav1



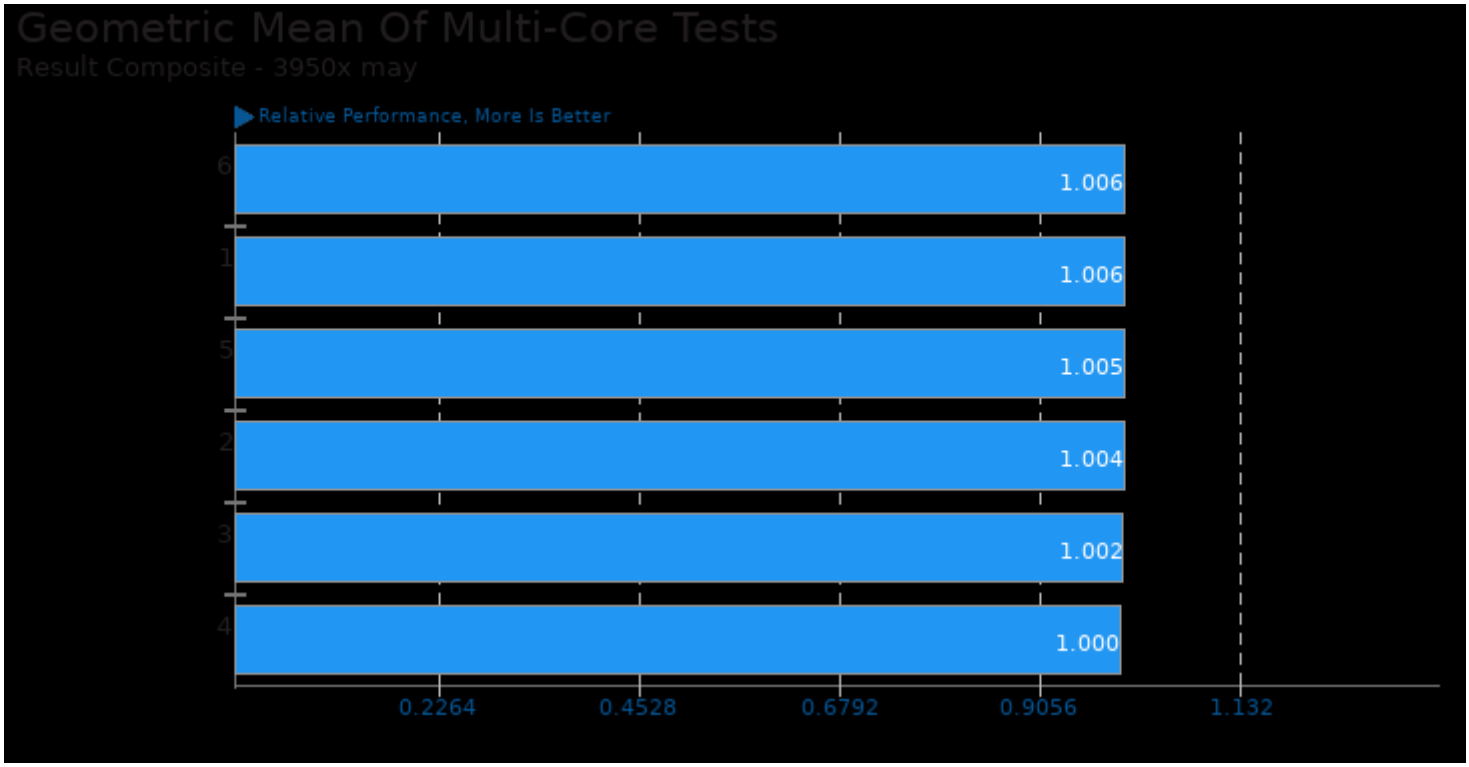
Geometric mean based upon tests: pts/aom-av1 and pts/libgav1



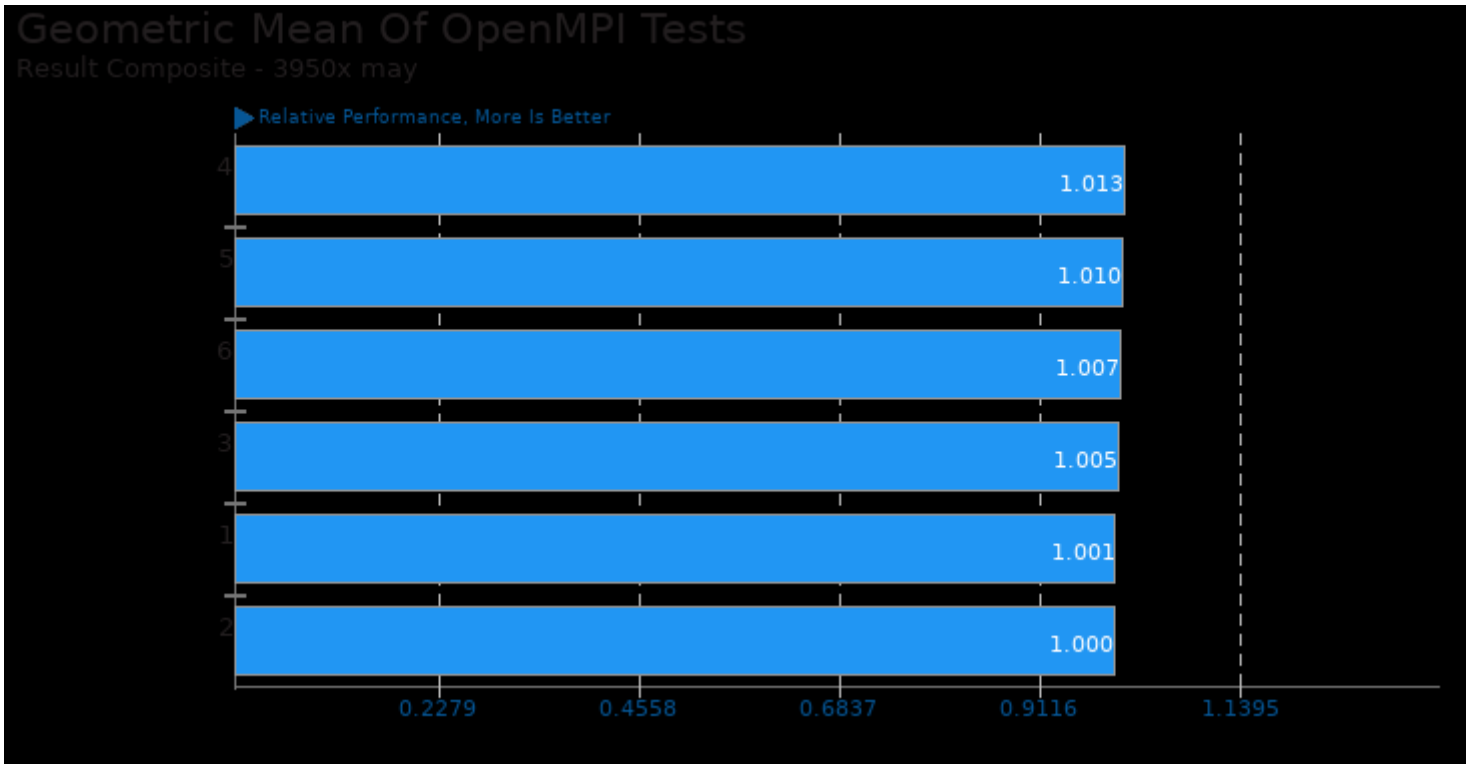
Geometric mean based upon tests: pts/mrbayes, pts/hmmer and pts/qmcpack



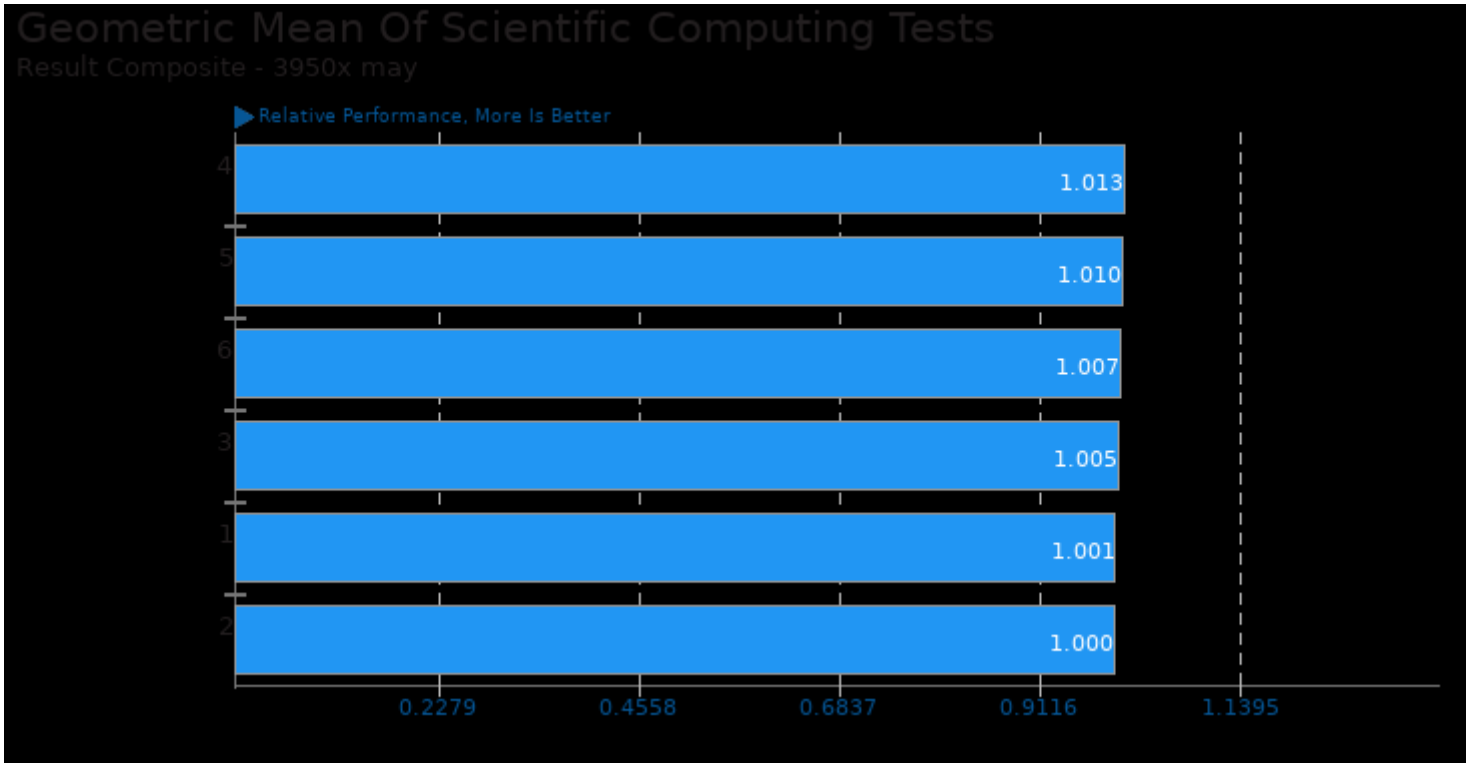
Geometric mean based upon tests: pts/qmcpack and pts/mrbayes



Geometric mean based upon tests: pts/aom-av1 and pts/libgav1

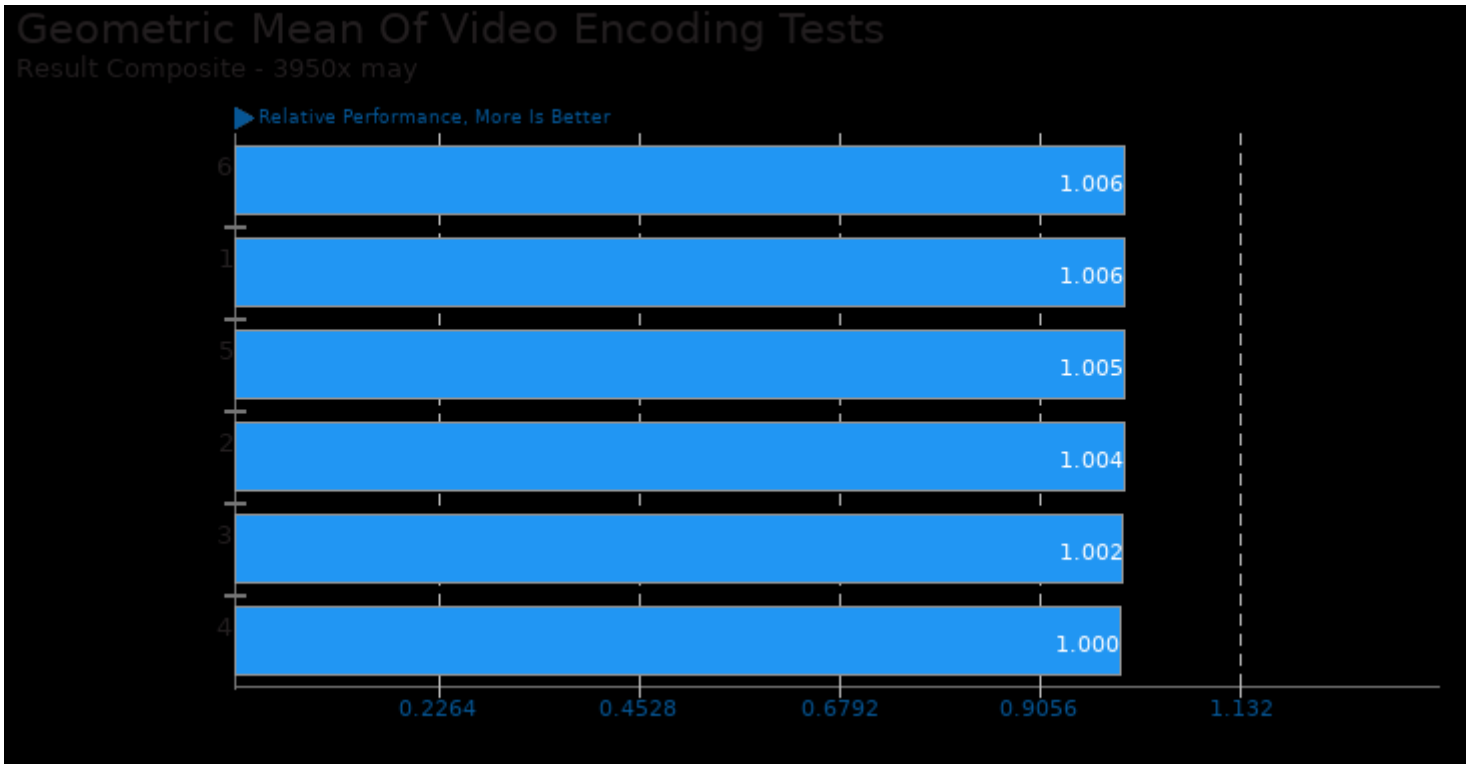


Geometric mean based upon tests: pts/qmcpack, pts/hmmer and pts/mrbayes



Geometric mean based upon tests: pts/mrbayes, pts/hmmer and pts/qmcpack

3950x may



Geometric mean based upon tests: pts/aom-av1 and pts/libgav1

This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 8 November 2024 20:29.