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8100 March

Intel Core i3-8100 testing with a ASRock Z370M-ITX/ac (P4.10 BIOS) and Intel 8th Gen Core Gaussian Mixture Model 3GB on Ubuntu 20.04 via the Phoronix Test Suite.

Automated Executive Summary

3 had the most wins, coming in first place for 36% of the tests.

Based on the geometric mean of all complete results, the fastest (3) was 1.001x the speed of the slowest (2). 3 was 1x the speed of 4, 1 was 1x the speed of 3, 2 was 1x the speed of 1.

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

JPEG XL (Input: JPEG - Encode Speed: 5) at 1.017x
ET: Legacy (Resolution: 1920 x 1080) at 1.014x
JPEG XL (Input: JPEG - Encode Speed: 7) at 1.01x
JPEG XL (Input: PNG - Encode Speed: 5) at 1.01x
dav1d (Video Input: Summer Nature 1080p) at 1.01x
dav1d (Video Input: Chimera 1080p) at 1.008x
dav1d (Video Input: Summer Nature 4K) at 1.005x
JPEG XL (Input: PNG - Encode Speed: 7) at 1.005x
libavif avifenc (Encoder Speed: 10, Lossless) at 1.003x

libavif avifenc (Encoder Speed: 6, Lossless) at 1.002x.

Test Systems:

1

2

3

4

Processor: Intel Core i3-8100 @ 3.60GHz (4 Cores), Motherboard: ASRock Z370M-ITX/ac (P4.10 BIOS), Chipset: Intel 8th Gen Core 4-core Desktop, Memory: 8GB, Disk: 60GB DREVO X1 SSD, Graphics: Intel 8th Gen Core Gaussian Mixture Model 3GB (1100MHz), Audio: Realtek ALC892, Monitor: DELL S2409W, Network: Intel I219-V + Intel I211 + Intel Dual Band-AC 3168NGW

OS: Ubuntu 20.04, Kernel: 5.9.0-050900rc1daily20200819-generic (x86_64) 20200818, Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.9, OpenGL: 4.6 Mesa 20.0.8, Vulkan: 1.2.131, 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: intel_pstate powersave - CPU Microcode: 0xde - Thermald 1.9.1
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT disabled + mds: Mitigation of Clear buffers; SMT disabled + meltdown: Mitigation of PTI + 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 generic retpoline IBPB: conditional IBRS_FW STIBP: disabled RSB filling + srbds: Mitigation of Microcode + tsx_async_abort: Not affected

	1	2	3	4
dav1d - Chimera 1080p (FPS)	**258.87**	256.99	**256.89**	257.84
Normalized	100%	99.27%	99.24%	99.6%
Standard Deviation	0.6%	0.1%	0.3%	0.2%
dav1d - Summer Nature 4K (FPS)	**70.66**	70.42	**70.32**	70.63
Normalized	100%	99.66%	99.52%	99.96%
Standard Deviation	0.1%	0.2%	0.2%	0.1%
dav1d - S.N.1 (FPS)	**237.61**	238.45	239.20	**239.95**
Normalized	99.02%	99.37%	99.69%	100%
Standard Deviation	1.6%	0.4%	0.5%	0.4%
dav1d - C.1.1.b (FPS)	69.64	**69.59**	**69.70**	
Normalized	99.91%	99.84%	100%	
Standard Deviation	0.1%	0.1%	0%	

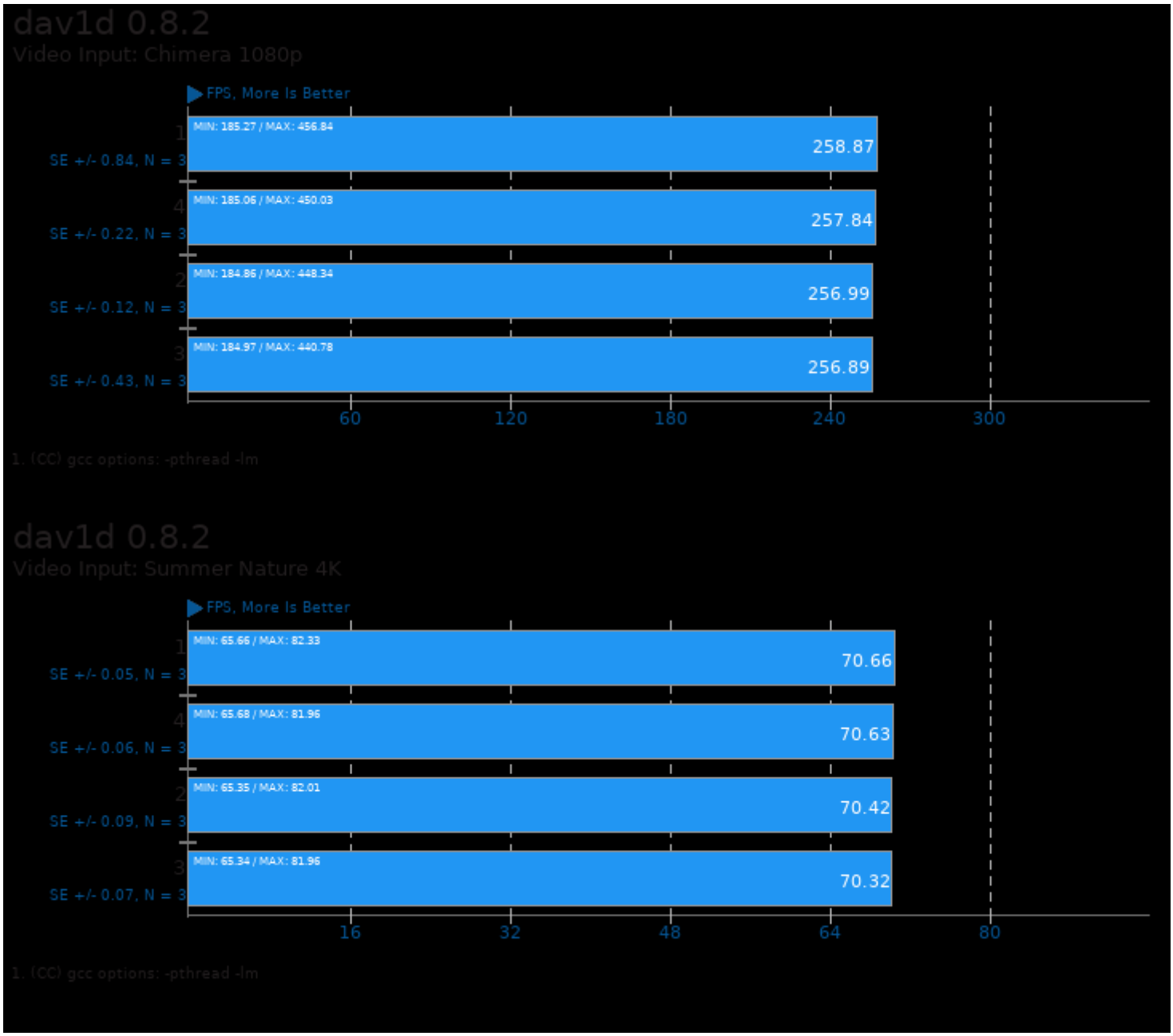
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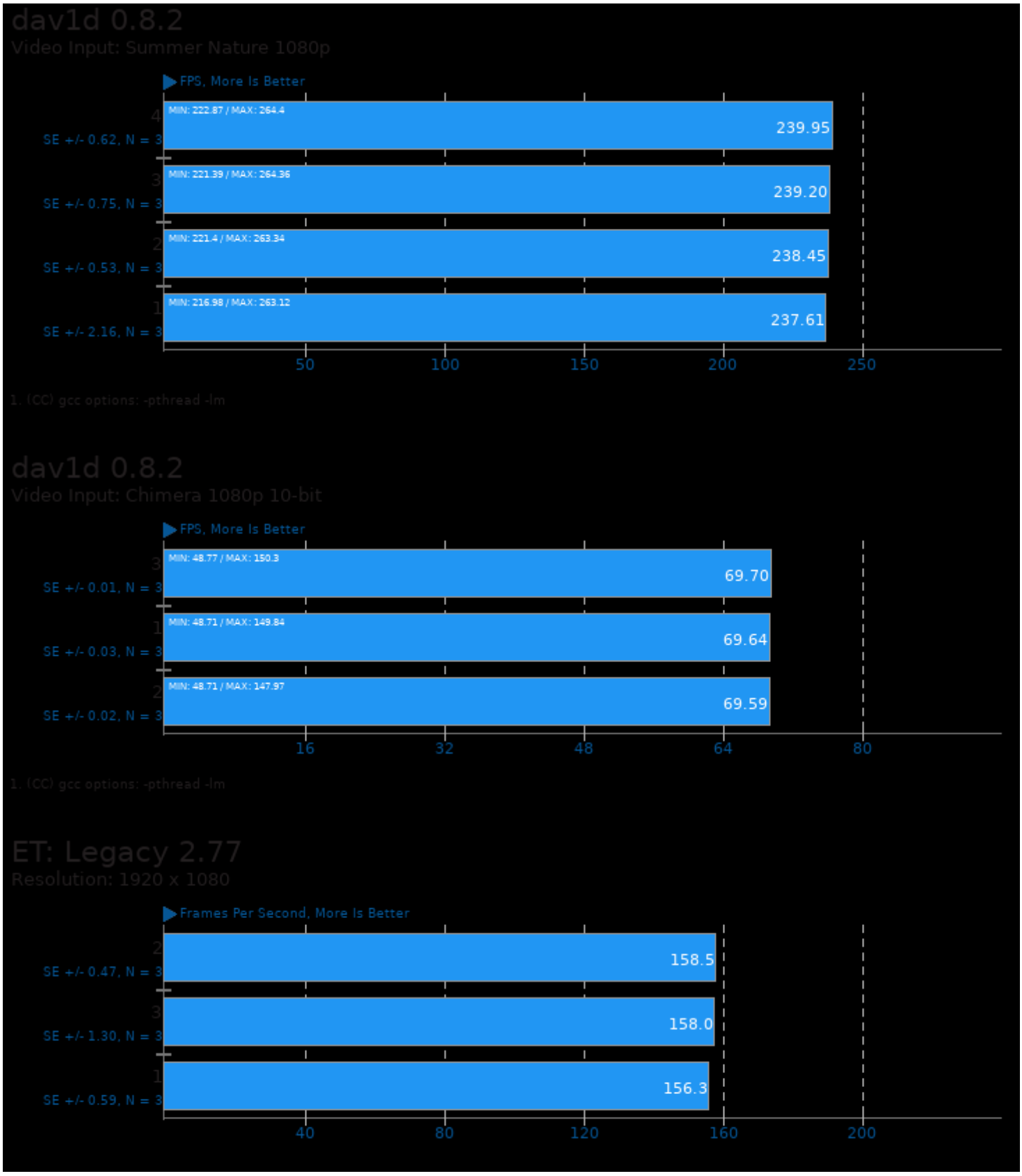
ET: Legacy - 1920 x 1080 (FPS)	**156.3**	**158.5**	158.0	
Normalized	98.61%	100%	99.68%	
Standard Deviation	0.7%	0.5%	1.4%	
JPEG XL - PNG - 5 (MP/s)	36.16	36.17	**36.47**	**36.11**
Normalized	99.15%	99.18%	100%	99.01%
Standard Deviation	0.4%	0.4%	0.3%	0.3%
JPEG XL - PNG - 7 (MP/s)	**6.56**	6.58	**6.59**	**6.59**
Normalized	99.54%	99.85%	100%	100%
Standard Deviation	0.3%	0.2%	0.2%	0.3%
JPEG XL - PNG - 8 (MP/s)	0.62	0.62	0.62	0.62
Standard Deviation	0.9%	0%	0%	0%
JPEG XL - JPEG - 5 (MP/s)	42.91	42.89	**43.18**	**42.47**
Normalized	99.37%	99.33%	100%	98.36%
Standard Deviation	0.6%	1.7%	0.2%	0.5%
JPEG XL - JPEG - 7 (MP/s)	42.76	42.85	**42.55**	**42.99**
Normalized	99.46%	99.67%	98.98%	100%
Standard Deviation	0.5%	1.1%	0.3%	0.7%
JPEG XL - JPEG - 8 (MP/s)	**20.50**	20.48	**20.47**	**20.50**
Normalized	100%	99.9%	99.85%	100%
Standard Deviation	0.2%	0.5%	0.2%	0.5%
JPEG XL Decoding - 1 (MP/s)	**33.35**	**33.37**	**33.35**	**33.37**
Normalized	99.94%	100%	99.94%	100%
Standard Deviation	0%	0%	0%	0.1%
JPEG XL Decoding - All (MP/s)	**106.45**	**106.38**	106.40	106.41
Normalized	100%	99.93%	99.95%	99.96%
Standard Deviation	0%	0%	0.1%	0%
libavif avifenc - 0 (sec)	156.975	**157.175**	**156.893**	
Normalized	99.95%	99.82%	100%	
Standard Deviation	0.2%	0.2%	0.1%	
libavif avifenc - 2 (sec)	**79.669**	**79.583**	79.652	
Normalized	99.89%	100%	99.91%	
Standard Deviation	0.1%	0.2%	0.2%	
libavif avifenc - 6 (sec)	27.147	**27.148**	**27.110**	
Normalized	99.86%	99.86%	100%	
Standard Deviation	0.2%	0.3%	0.2%	
libavif avifenc - 10 (sec)	5.619	**5.628**	**5.615**	
Normalized	99.93%	99.77%	100%	
Standard Deviation	0.1%	0.1%	0.1%	
libavif avifenc - 6, Lossless (sec)	**156.413**	156.101	**156.048**	
Normalized	99.77%	99.97%	100%	
Standard Deviation	1.2%	0.9%	0.7%	
libavif avifenc - 10, Lossless (sec)	**9.938**	**9.968**	9.955	
Normalized	100%	99.7%	99.83%	
Standard Deviation	0.4%	0.8%	0.6%	
toyBrot Fractal Generator - OpenMP (ms)	**181925**	**181755**	181863	181775
Normalized	99.91%	100%	99.94%	99.99%
Standard Deviation	0%	0.1%	0%	0.1%
toyBrot Fractal Generator - C++ Tasks (ms)	**182681**	**182725**	182705	182719
Normalized	100%	99.98%	99.99%	99.98%
Standard Deviation	0%	0%	0%	0%

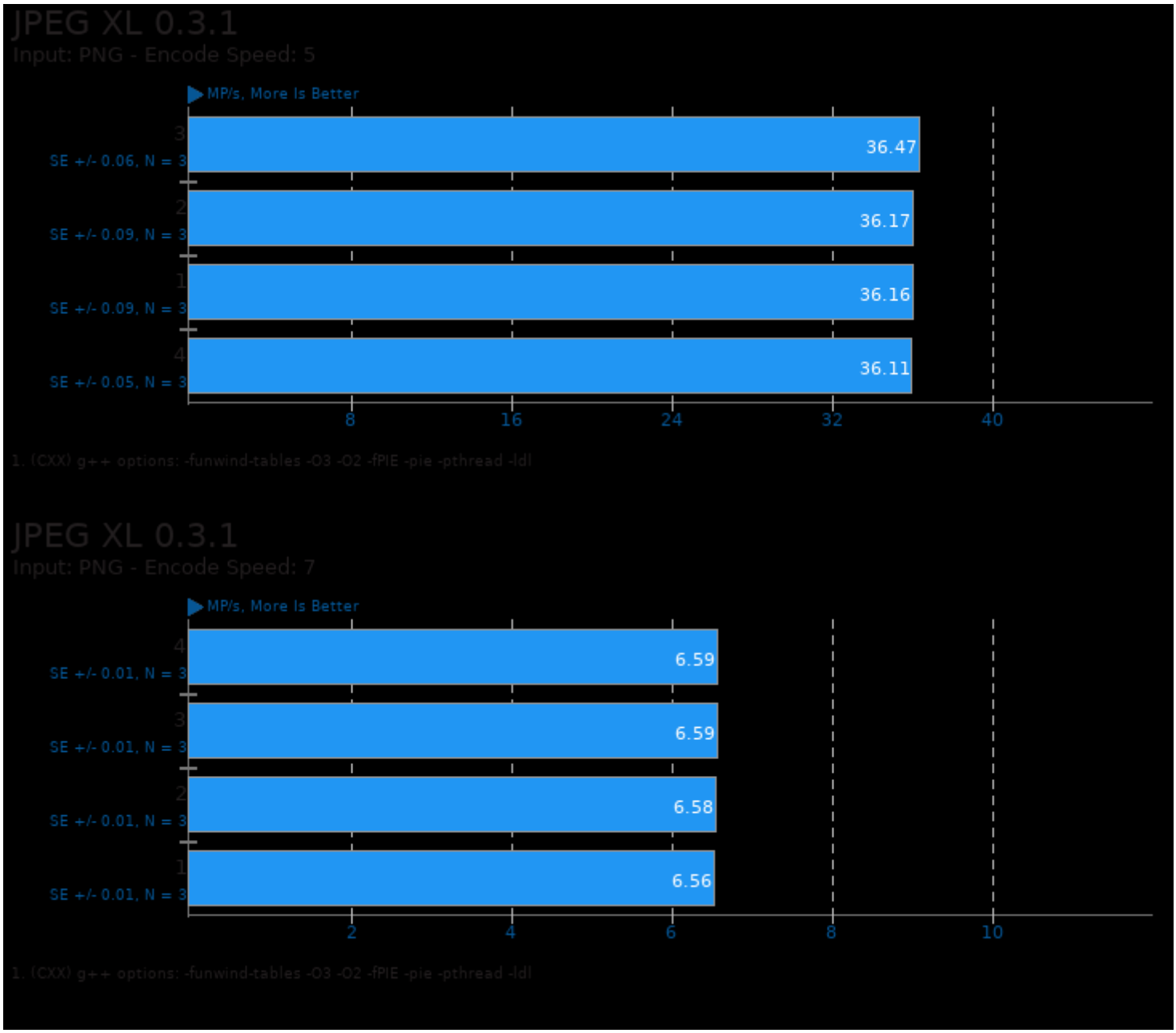
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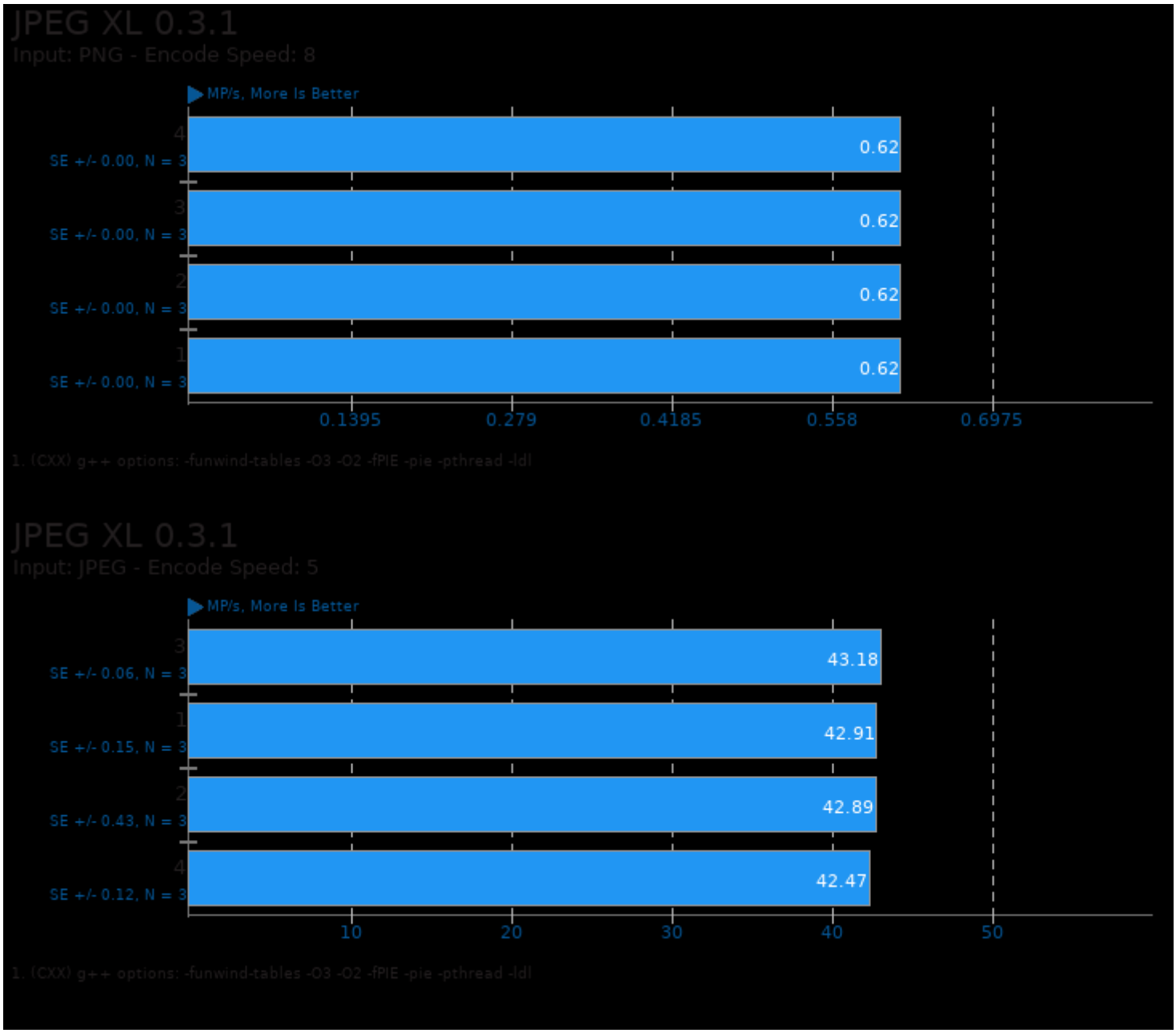
toyBrot Fractal Generator - C++ Threads (ms)	182407	182333	182320	182266
Normalized	99.92%	99.96%	99.97%	100%
Standard Deviation	0%	0.1%	0%	0.1%

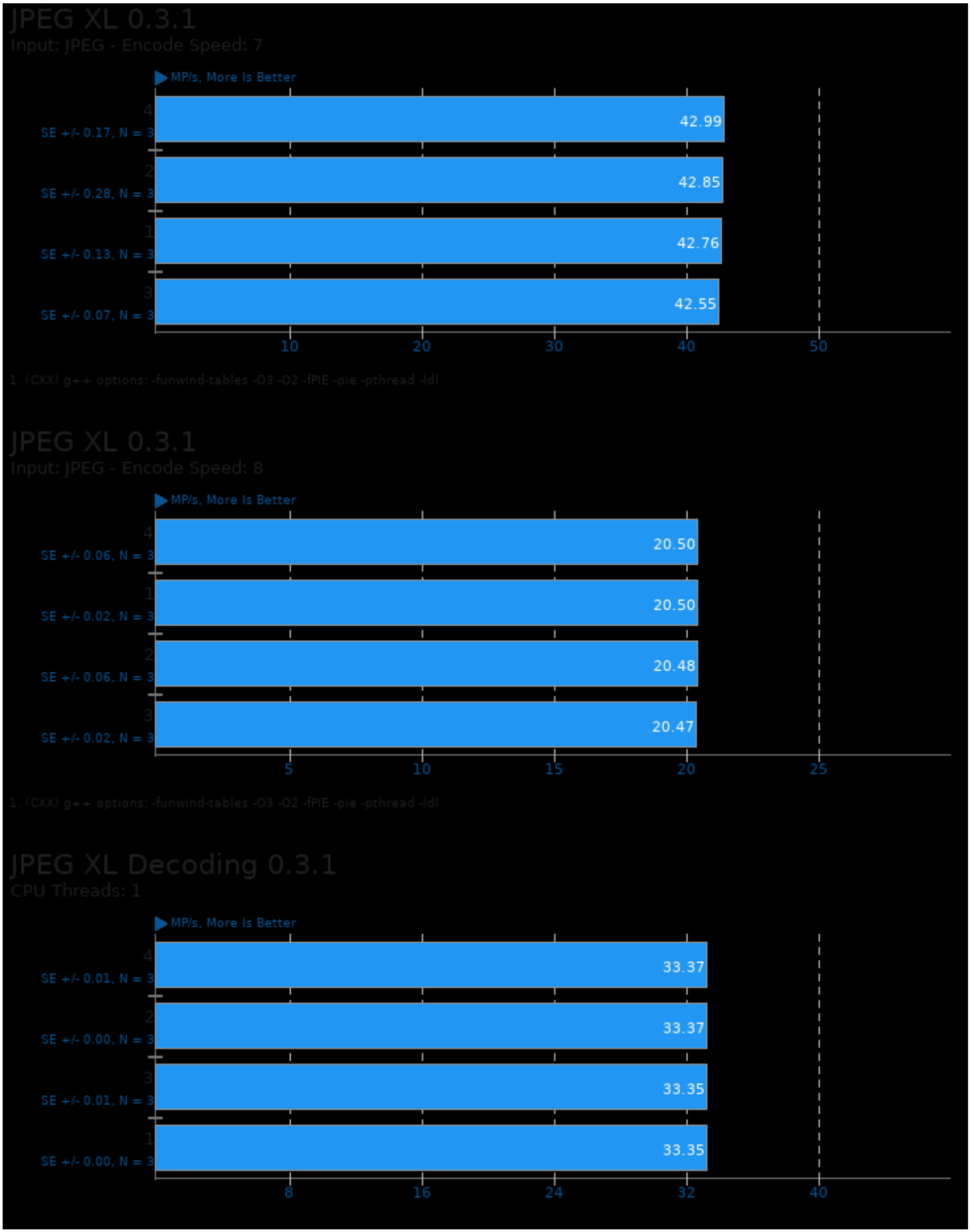
8100 March

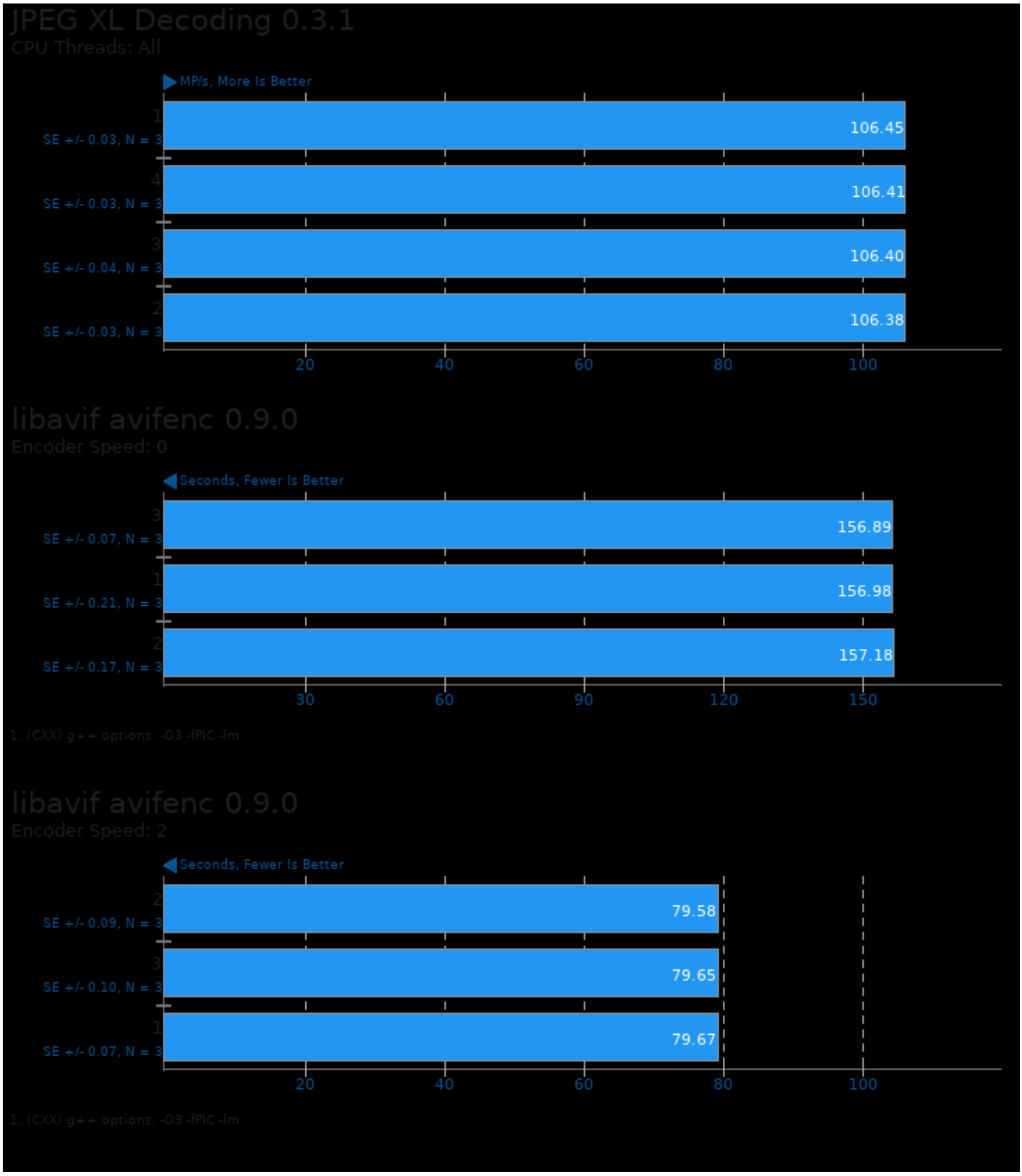

dav1d 0.8.2
Video Input: Chimera 1080p
FPS, More Is Better
1
MIN: 185.27 / MAX: 456.84
258.87
SE +/- 0.84, N = 3
4
MIN: 185.06 / MAX: 450.03
257.84
SE +/- 0.22, N = 3
2
MIN: 184.86 / MAX: 448.34
256.99
SE +/- 0.12, N = 3
3
MIN: 184.97 / MAX: 440.78
256.89
SE +/- 0.43, N = 3
60
120
180
240
300
1. (CC) gcc options: -pthread -lm
dav1d 0.8.2
Video Input: Summer Nature 4K
FPS, More Is Better
1
MIN: 65.66 / MAX: 82.33
70.66
SE +/- 0.05, N = 3
4
MIN: 65.68 / MAX: 81.96
70.63
SE +/- 0.06, N = 3
2
MIN: 65.35 / MAX: 82.01
70.42
SE +/- 0.09, N = 3
3
MIN: 65.34 / MAX: 81.96
70.32
SE +/- 0.07, N = 3
16
32
48
64
80
1. (CC) gcc options: -pthread -lm

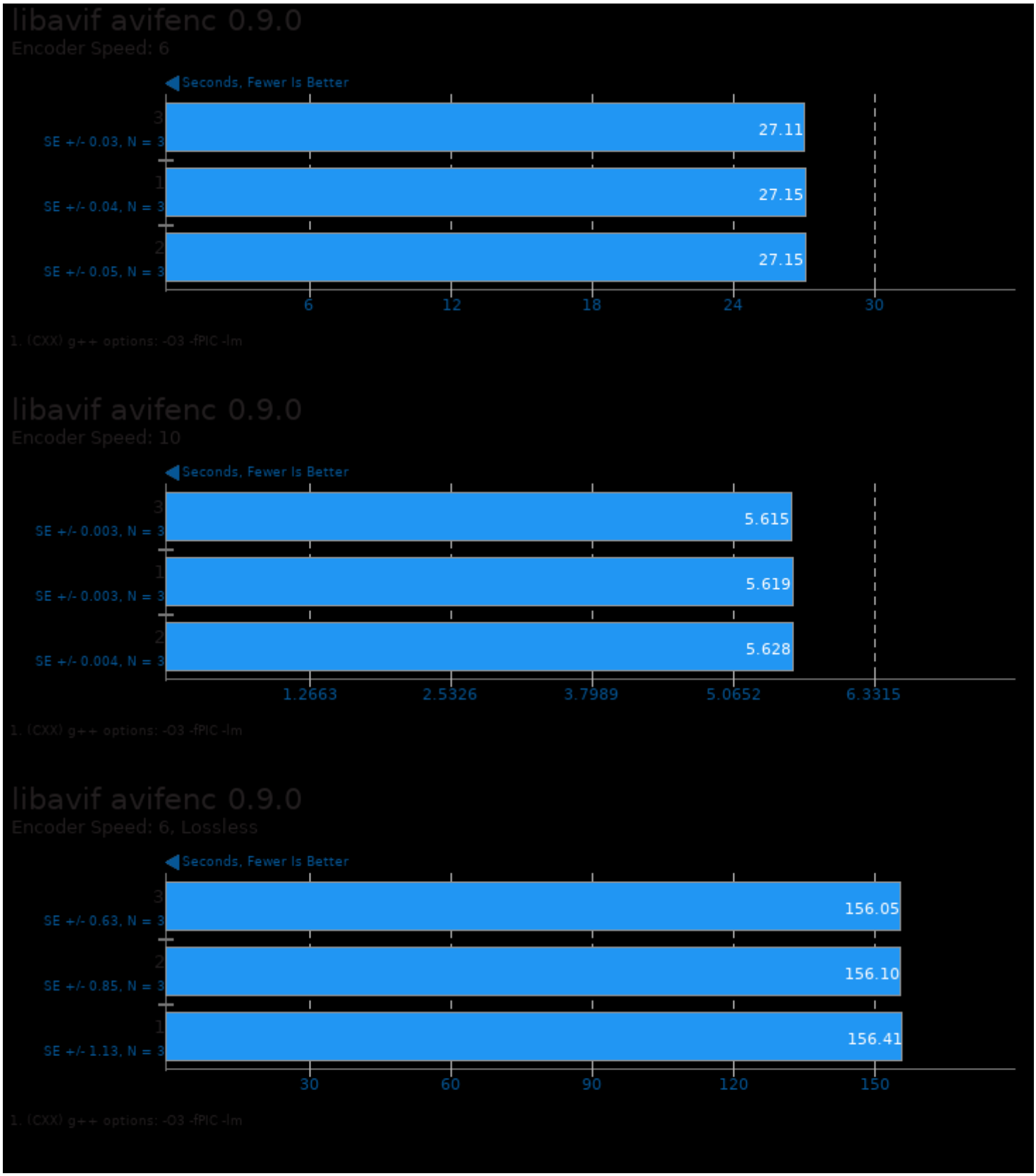

dav1d 0.8.2
Video Input: Summer Nature 1080p
FPS, More Is Better
4
MIN: 222.87 / MAX: 264.4
239.95
SE +/- 0.62, N = 3
3
MIN: 221.39 / MAX: 264.36
239.20
SE +/- 0.75, N = 3
2
MIN: 221.4 / MAX: 263.34
238.45
SE +/- 0.53, N = 3
1
MIN: 216.98 / MAX: 263.12
237.61
SE +/- 2.16, N = 3
50
100
150
200
250
1. (CC) gcc options: -pthread -lm
dav1d 0.8.2
Video Input: Chimera 1080p 10-bit
FPS, More Is Better
3
MIN: 48.77 / MAX: 150.3
69.70
SE +/- 0.01, N = 3
1
MIN: 48.71 / MAX: 149.84
69.64
SE +/- 0.03, N = 3
2
MIN: 48.71 / MAX: 147.97
69.59
SE +/- 0.02, N = 3
16
32
48
64
80
1. (CC) gcc options: -pthread -lm
ET: Legacy 2.77
Resolution: 1920 x 1080
Frames Per Second, More Is Better
2
158.5
SE +/- 0.47, N = 3
3
158.0
SE +/- 1.30, N = 3
1
156.3
SE +/- 0.59, N = 3
40
80
120
160
200

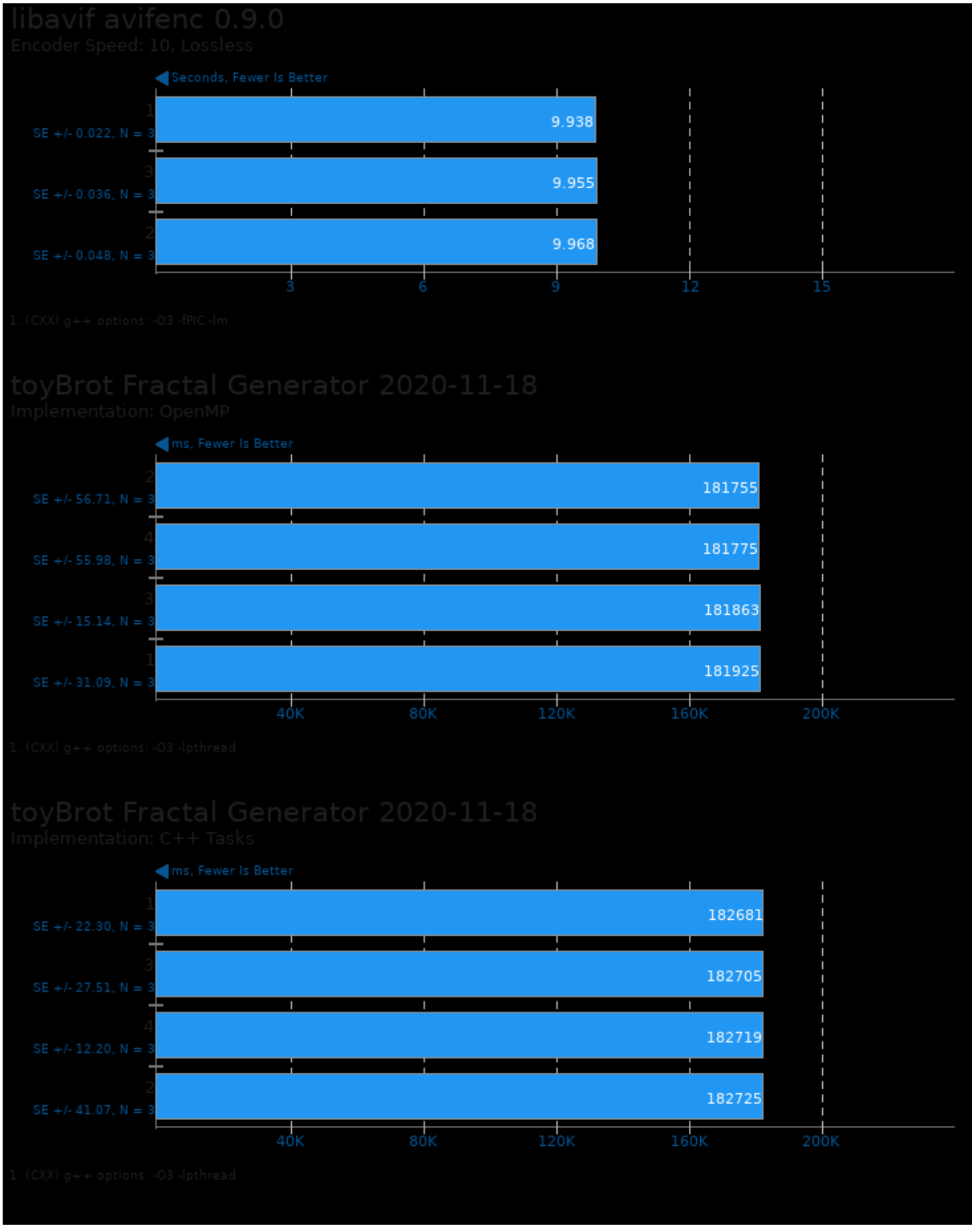

JPEG XL 0.3.1
Input: PNG - Encode Speed: 5
MP/s, More Is Better
3
SE +/- 0.06, N = 3
36.47
2
SE +/- 0.09, N = 3
36.17
1
SE +/- 0.09, N = 3
36.16
4
SE +/- 0.05, N = 3
36.11
8
16
24
32
40
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie -pthread -ldl
JPEG XL 0.3.1
Input: PNG - Encode Speed: 7
MP/s, More Is Better
4
SE +/- 0.01, N = 3
6.59
3
SE +/- 0.01, N = 3
6.59
2
SE +/- 0.01, N = 3
6.58
1
SE +/- 0.01, N = 3
6.56
2
4
6
8
10
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie -pthread -ldl


JPEG XL 0.3.1
Input: PNG - Encode Speed: 8
MP/s, More Is Better
4
SE +/- 0.00, N = 3
0.62
3
SE +/- 0.00, N = 3
0.62
2
SE +/- 0.00, N = 3
0.62
1
SE +/- 0.00, N = 3
0.62
0.1395
0.279
0.4185
0.558
0.6975
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie -pthread -ldl
JPEG XL 0.3.1
Input: JPEG - Encode Speed: 5
MP/s, More Is Better
3
SE +/- 0.06, N = 3
43.18
1
SE +/- 0.15, N = 3
42.91
2
SE +/- 0.43, N = 3
42.89
4
SE +/- 0.12, N = 3
42.47
10
20
30
40
50
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie -pthread -ldl

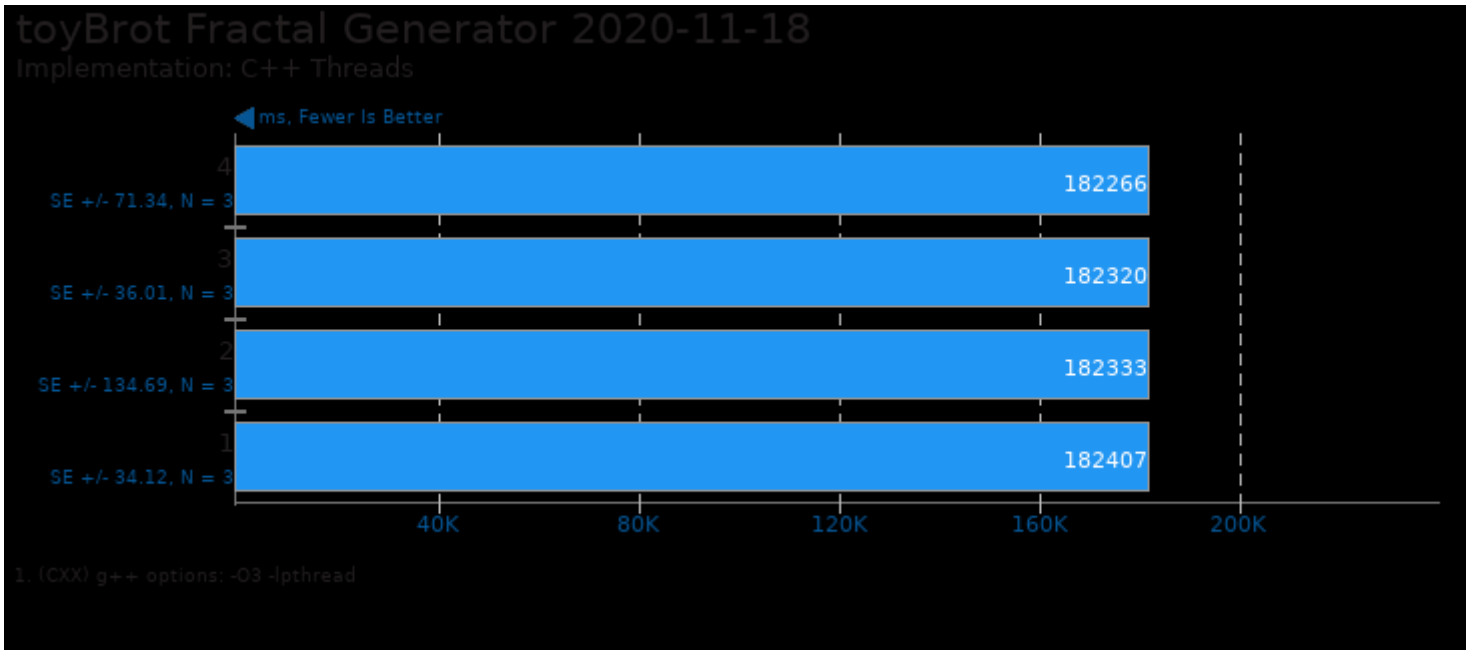

JPEG XL 0.3.1
Input: JPEG - Encode Speed: 7
MP/s, More Is Better
4
SE +/- 0.17, N = 3
42.99
2
SE +/- 0.28, N = 3
42.85
1
SE +/- 0.13, N = 3
42.76
3
SE +/- 0.07, N = 3
42.55
10
20
30
40
50
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie -pthread -ldl
JPEG XL 0.3.1
Input: JPEG - Encode Speed: 8
MP/s, More Is Better
4
SE +/- 0.06, N = 3
20.50
1
SE +/- 0.02, N = 3
20.50
2
SE +/- 0.06, N = 3
20.48
3
SE +/- 0.02, N = 3
20.47
5
10
15
20
25
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie -pthread -ldl
JPEG XL Decoding 0.3.1
CPU Threads: 1
MP/s, More Is Better
4
SE +/- 0.01, N = 3
33.37
2
SE +/- 0.00, N = 3
33.37
3
SE +/- 0.01, N = 3
33.35
1
SE +/- 0.00, N = 3
33.35
8
16
24
32
40


JPEG XL Decoding 0.3.1
CPU Threads: All
MP/s, More Is Better
1
SE +/- 0.03, N = 3
106.45
4
SE +/- 0.03, N = 3
106.41
3
SE +/- 0.04, N = 3
106.40
2
SE +/- 0.03, N = 3
106.38
20
40
60
80
100
libavif avifenc 0.9.0
Encoder Speed: 0
Seconds, Fewer Is Better
3
SE +/- 0.07, N = 3
156.89
1
SE +/- 0.21, N = 3
156.98
2
SE +/- 0.17, N = 3
157.18
30
60
90
120
150
1. (CXX) g++ options: -O3 -fPIC -lm
libavif avifenc 0.9.0
Encoder Speed: 2
Seconds, Fewer Is Better
2
SE +/- 0.09, N = 3
79.58
3
SE +/- 0.10, N = 3
79.65
1
SE +/- 0.07, N = 3
79.67
20
40
60
80
100
1. (CXX) g++ options: -O3 -fPIC -lm


libavif avifenc 0.9.0
Encoder Speed: 6
Seconds, Fewer Is Better
SE +/- 0.03, N = 3
SE +/- 0.04, N = 3
SE +/- 0.05, N = 3
27.11
27.15
27.15
6
12
18
24
30
1. (CXX) g++ options: -O3 -fPIC -lm
libavif avifenc 0.9.0
Encoder Speed: 10
Seconds, Fewer Is Better
SE +/- 0.003, N = 3
SE +/- 0.003, N = 3
SE +/- 0.004, N = 3
5.615
5.619
5.628
1.2663
2.5326
3.7989
5.0652
6.3315
1. (CXX) g++ options: -O3 -fPIC -lm
libavif avifenc 0.9.0
Encoder Speed: 6, Lossless
Seconds, Fewer Is Better
SE +/- 0.63, N = 3
SE +/- 0.85, N = 3
SE +/- 1.13, N = 3
156.05
156.10
156.41
30
60
90
120
150
1. (CXX) g++ options: -O3 -fPIC -lm

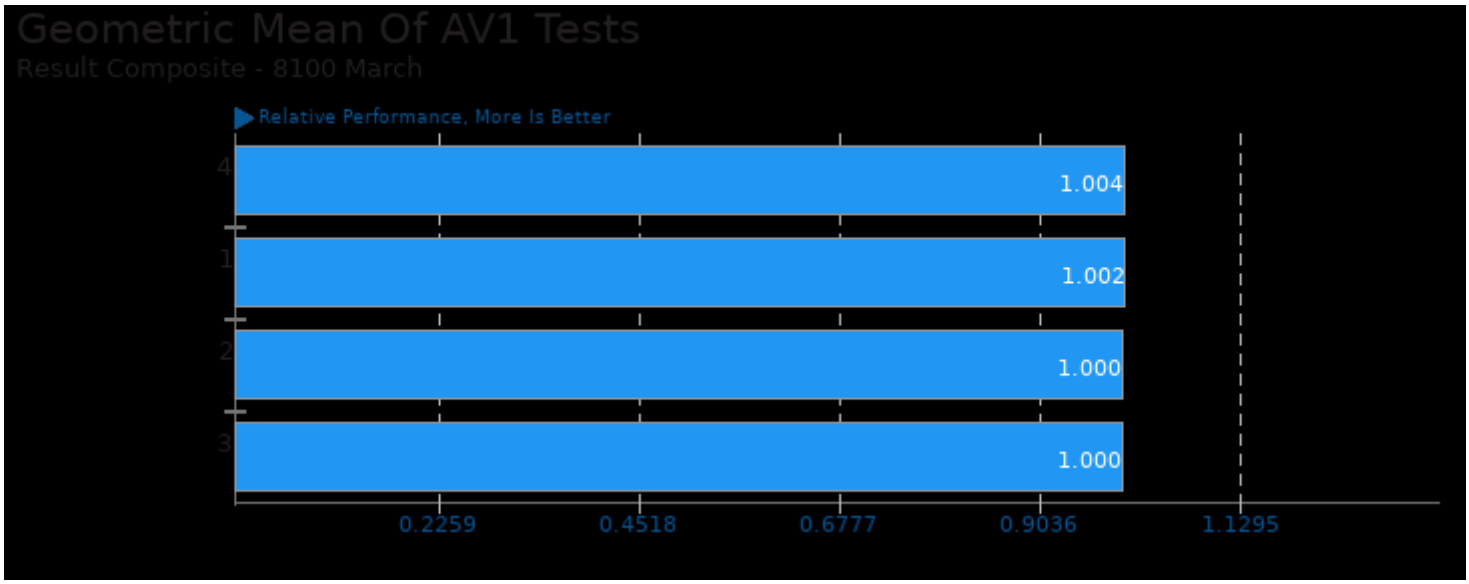

libavif avifenc 0.9.0
Encoder Speed: 10, Lossless
Seconds, Fewer Is Better
1
SE +/- 0.022, N = 3
9.938
3
SE +/- 0.036, N = 3
9.955
2
SE +/- 0.048, N = 3
9.968
3
6
9
12
15
1. (CXX) g++ options: -O3 -fPIC -lm
toyBrot Fractal Generator 2020-11-18
Implementation: OpenMP
ms, Fewer Is Better
2
SE +/- 56.71, N = 3
181755
4
SE +/- 55.98, N = 3
181775
3
SE +/- 15.14, N = 3
181863
1
SE +/- 31.09, N = 3
181925
40K
80K
120K
160K
200K
1. (CXX) g++ options: -O3 -lpthread
toyBrot Fractal Generator 2020-11-18
Implementation: C++ Tasks
ms, Fewer Is Better
1
SE +/- 22.30, N = 3
182681
3
SE +/- 27.51, N = 3
182705
4
SE +/- 12.20, N = 3
182719
2
SE +/- 41.07, N = 3
182725
40K
80K
120K
160K
200K
1. (CXX) g++ options: -O3 -lpthread

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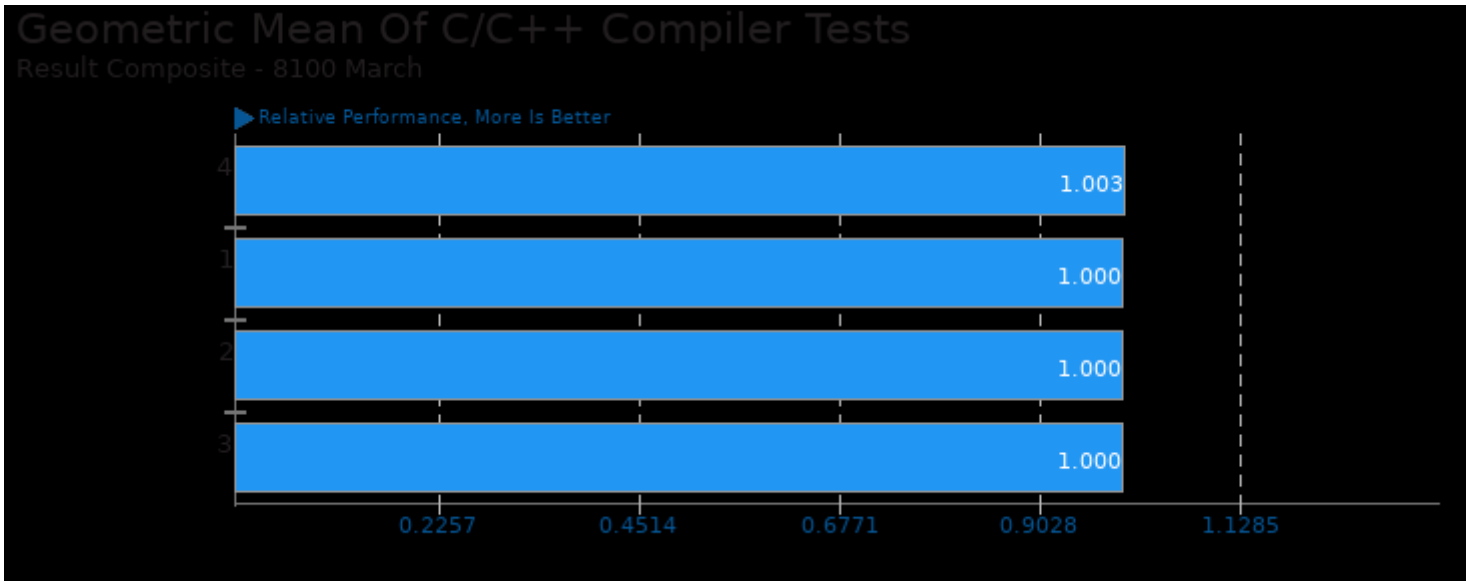

toyBrot Fractal Generator 2020-11-18
Implementation: C++ Threads
ms, Fewer Is Better
4
SE +/- 71.34, N = 3
182266
3
SE +/- 36.01, N = 3
182320
2
SE +/- 134.69, N = 3
182333
1
SE +/- 34.12, N = 3
182407
40K
80K
120K
160K
200K
1. (CXX) g++ options: -O3 -lpthread

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

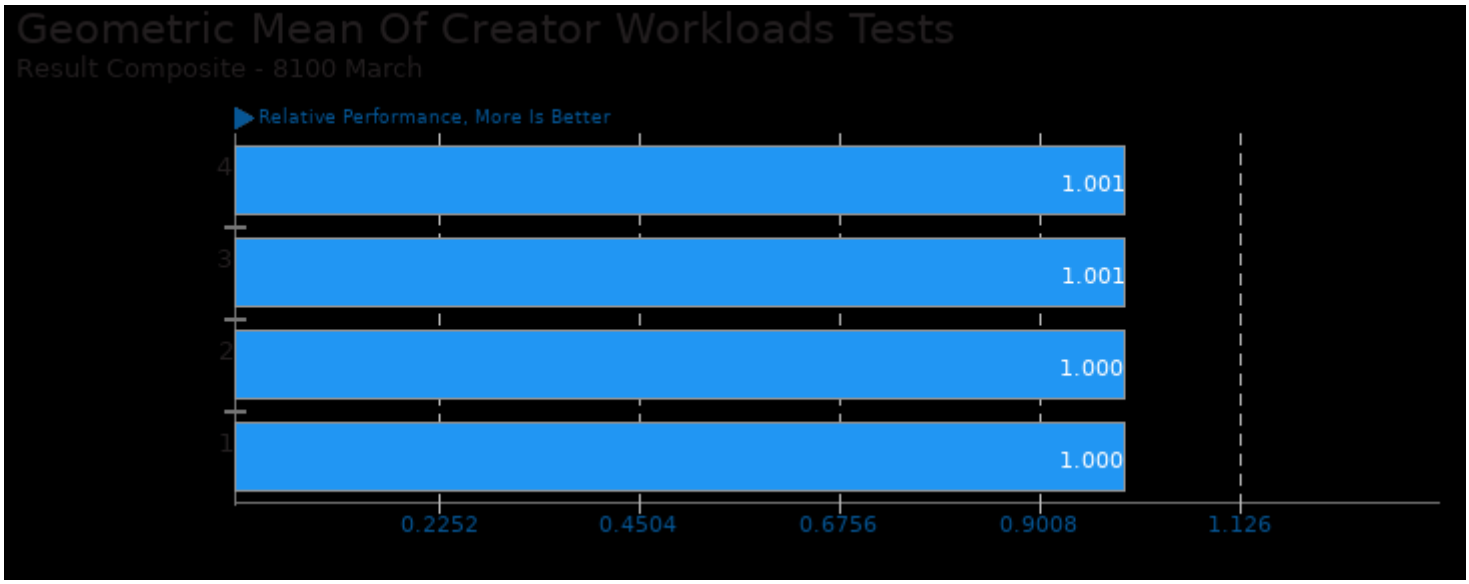


Geometric mean based upon tests: pts/dav1d and pts/avifenc

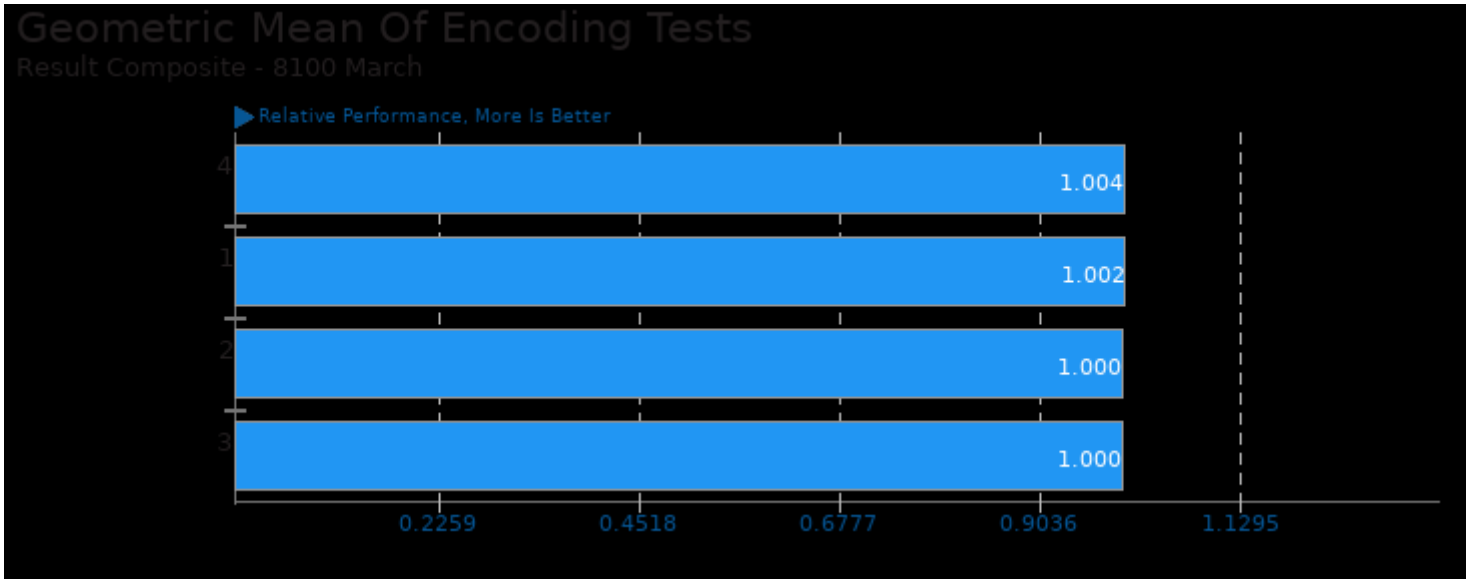


Geometric mean based upon tests: pts/dav1d and pts/toybrot

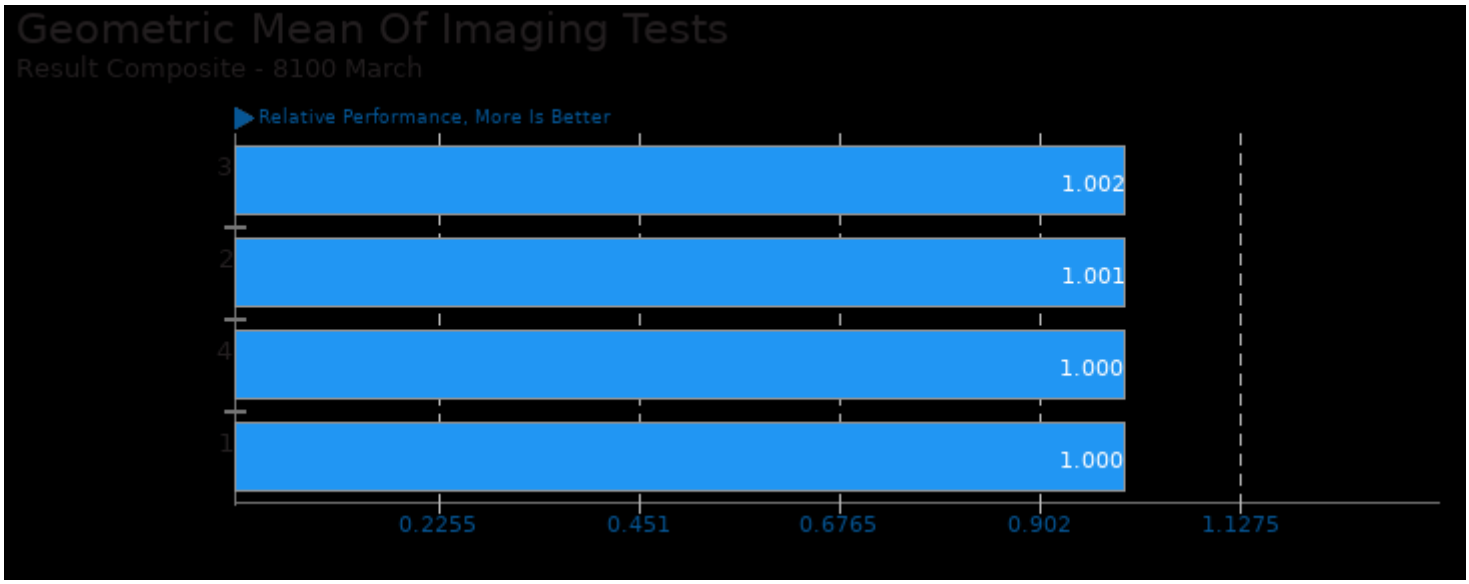
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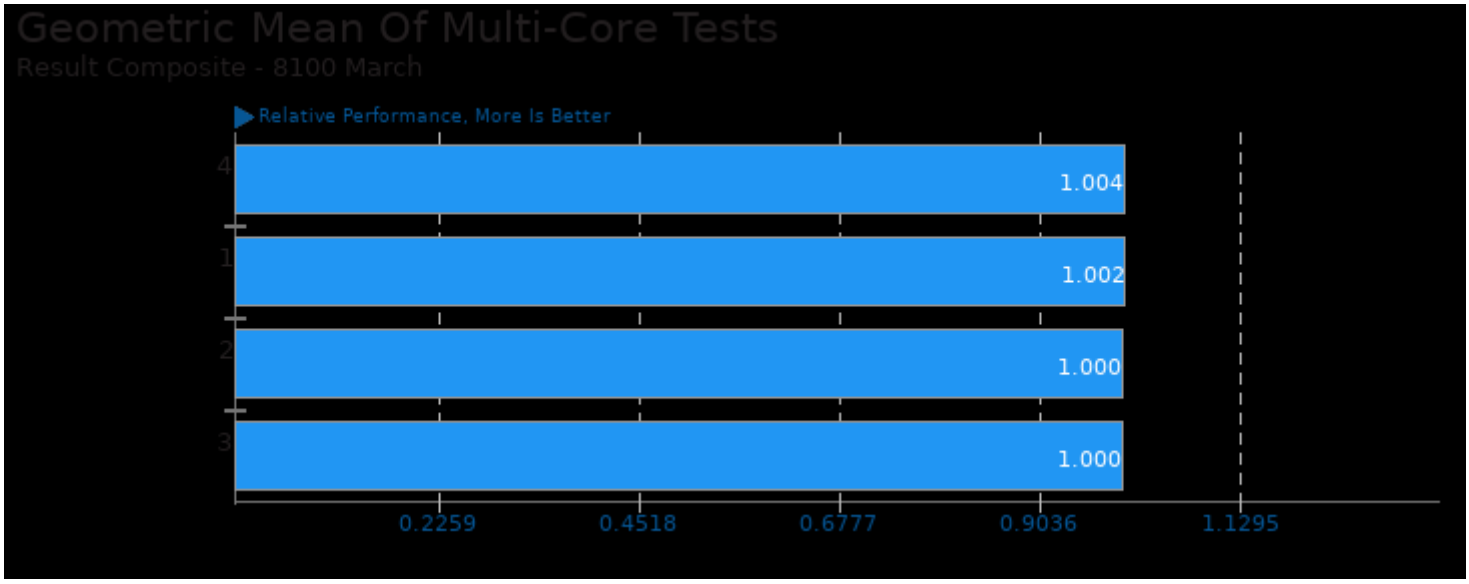
Geometric mean based upon tests: pts/dav1d, pts/avifenc, pts/jpegxl and pts/jpegxl-decode



Geometric mean based upon tests: pts/dav1d and pts/avifenc

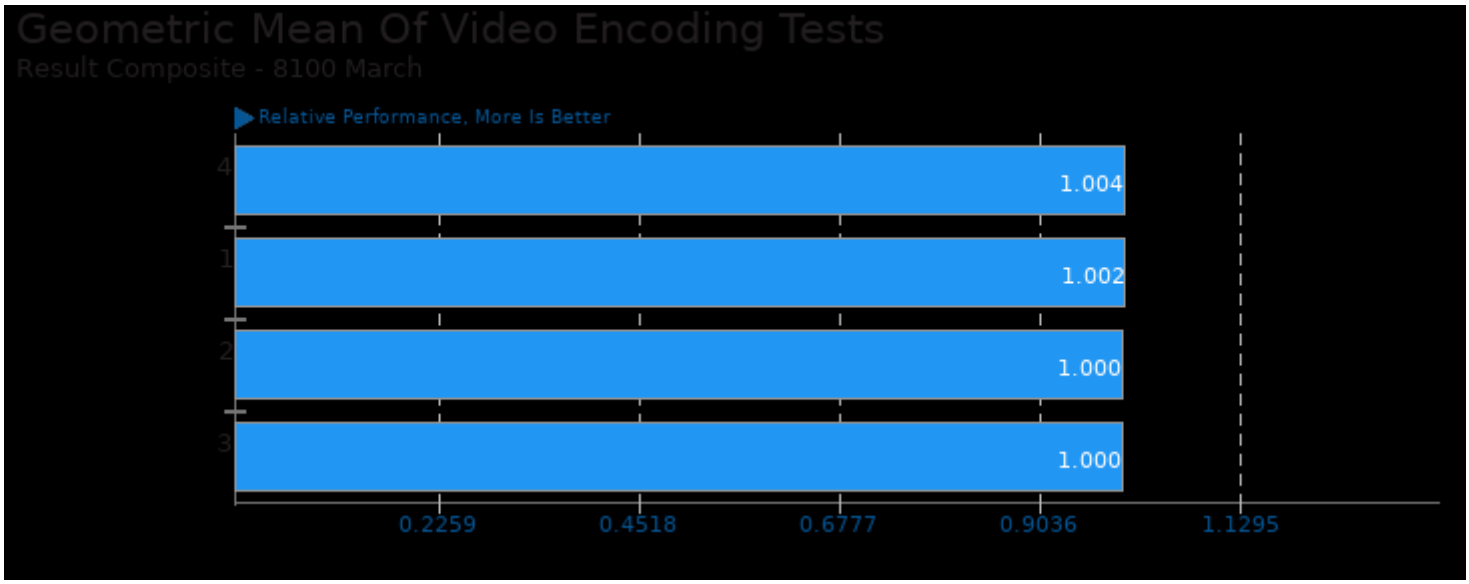


Geometric mean based upon tests: pts/jpegxl, pts/jpegxl-decode and pts/avifenc



Geometric mean based upon tests: pts/dav1d and pts/avifenc

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Geometric mean based upon tests: pts/dav1d and pts/avifenc

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