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ARMv8 Cortex-A72 testing with a BCM2835 Raspberry Pi 400 Rev 1.0 and V3D 4.2 4GB on Debian 10 via the Phoronix Test Suite.

Automated Executive Summary

3 had the most wins, coming in first place for 38% of the tests.

Based on the geometric mean of all complete results, the fastest (2) was 1.023x the speed of the slowest (1). 3 was 0.998x the speed of 2, 5 was 0.999x the speed of 3, 4 was 0.99x the speed of 5, 1 was 0.991x the speed of 4.

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

GLmark2 (Resolution: 1920 x 1080) at 1.125x
dav1d (Video Input: Summer Nature 1080p) at 1.117x
dav1d (Video Input: Chimera 1080p 10-bit) at 1.076x
GLmark2 (Resolution: 1024 x 768) at 1.073x
GLmark2 (Resolution: 1280 x 1024) at 1.048x
JPEG XL libjxl (Input: JPEG - Encode Speed: 7) at 1.034x
JPEG XL libjxl (Input: JPEG - Encode Speed: 5) at 1.033x
JPEG XL libjxl (Input: JPEG - Encode Speed: 8) at 1.027x
GLmark2 (Resolution: 800 x 600) at 1.026x

dav1d (Video Input: Summer Nature 4K) at 1.021x.

Test Systems:

1

2

3

4

5

Processor: ARMv8 Cortex-A72 @ 1.80GHz (4 Cores), Motherboard: BCM2835 Raspberry Pi 400 Rev 1.0, Memory: 4096MB, Disk: 32GB GB1QT, Graphics: V3D 4.2 4GB, Monitor: DELL P2210H

OS: Debian 10, Kernel: 5.4.51-v8+ (aarch64), Desktop: LXDE 0.10.0, Display Server: X Server 1.20.4, OpenGL: 2.1 Mesa 19.3.2, Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

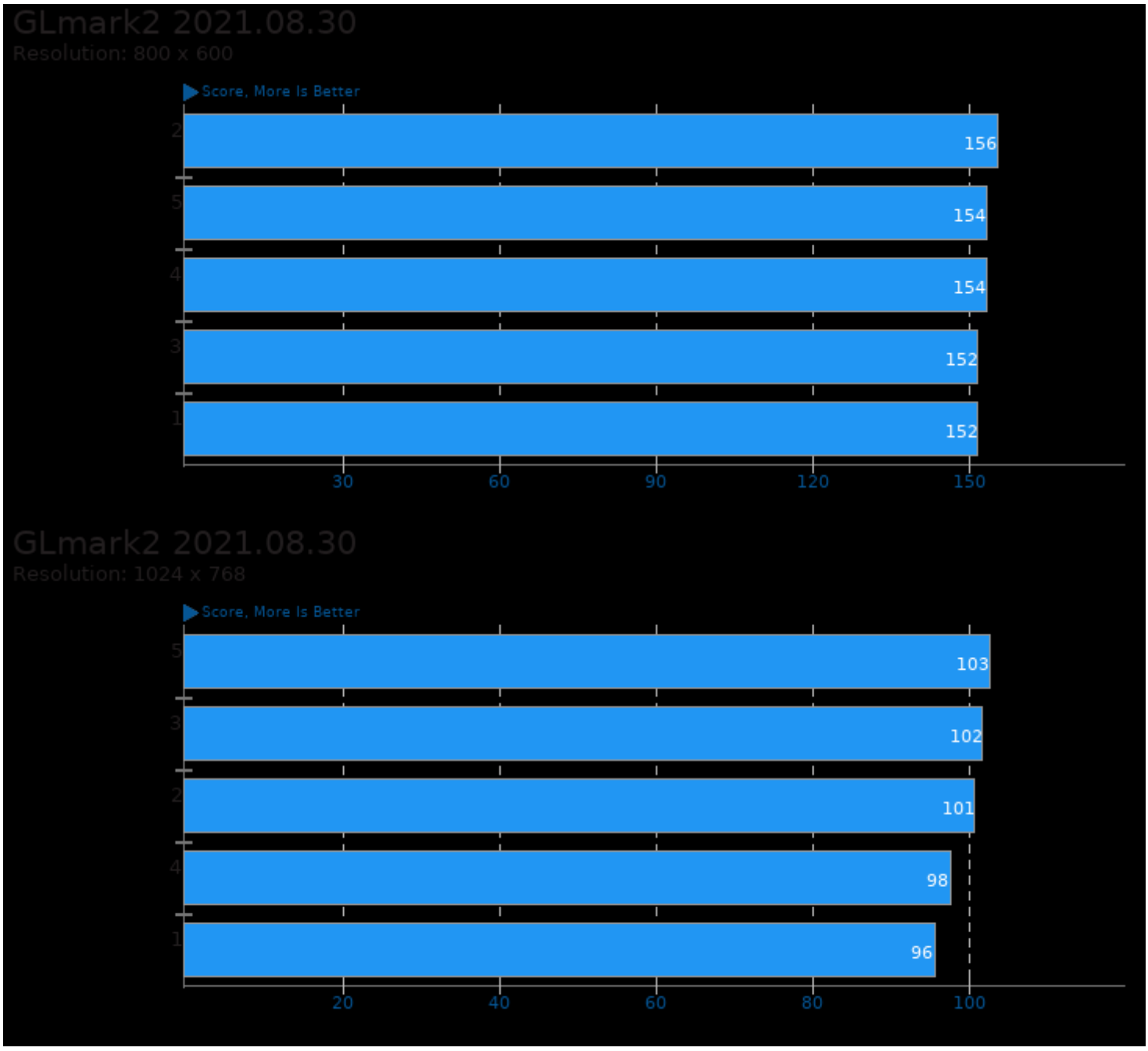
Kernel Notes: snd_bcm2835.enable_compat_alsa=0 snd_bcm2835.enable_hdmi=1 snd_bcm2835.enable_headphones=1
Compiler Notes: --build=aarch64-linux-gnu --disable-libphobos --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only -v
Processor Notes: Scaling Governor: cpufreq-dt ondemand
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Vulnerable + spectre_v1: Mitigation of __user pointer sanitization + spectre_v2: Vulnerable + srbds: Not affected + tsx_async_abort: Not affected

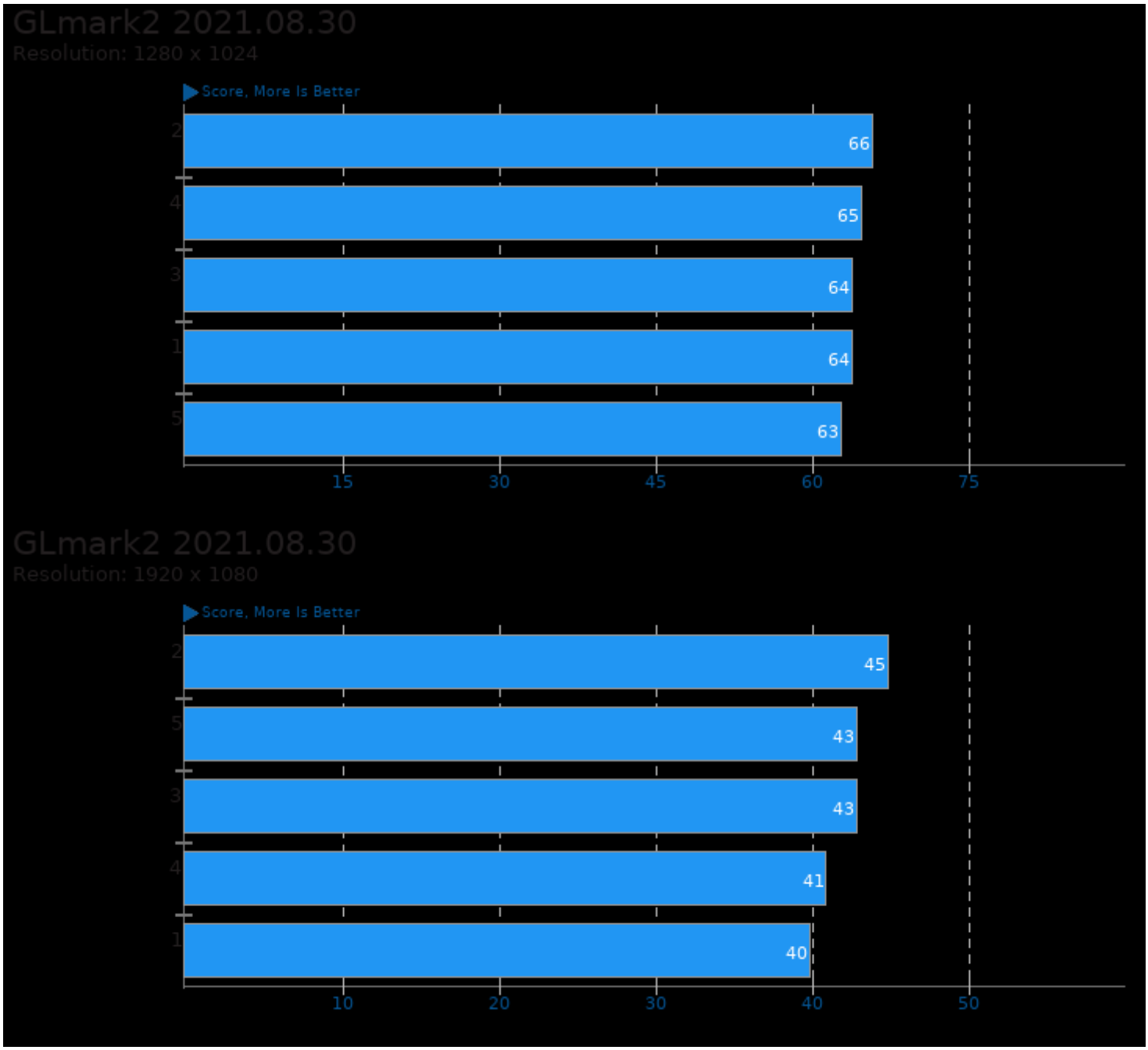
	1	2	3	4	5
GLmark2 - 800 x 600 (Score)	152	156	152	154	154
Normalized	97.44%	100%	97.44%	98.72%	98.72%
GLmark2 - 1024 x 768 (Score)	96	101	102	98	103
Normalized	93.2%	98.06%	99.03%	95.15%	100%
GLmark2 - 1280 x 1024 (Score)	64	66	64	65	63
Normalized	96.97%	100%	96.97%	98.48%	95.45%
GLmark2 - 1920 x 1080 (Score)	40	45	43	41	43
Normalized	88.89%	100%	95.56%	91.11%	95.56%
JPEG XL libjxl - PNG - 5 (MP/s)	3.21	3.23	3.22	3.24	3.25
Normalized	98.77%	99.38%	99.08%	99.69%	100%
JPEG XL libjxl - PNG - 7 (MP/s)	1.23	1.24	1.25	1.25	1.25
Normalized	98.4%	99.2%	100%	100%	100%
JPEG XL libjxl - JPEG - 5 (MP/s)	12.88	13.21	13.23	13.24	13.31
Normalized	96.77%	99.25%	99.4%	99.47%	100%

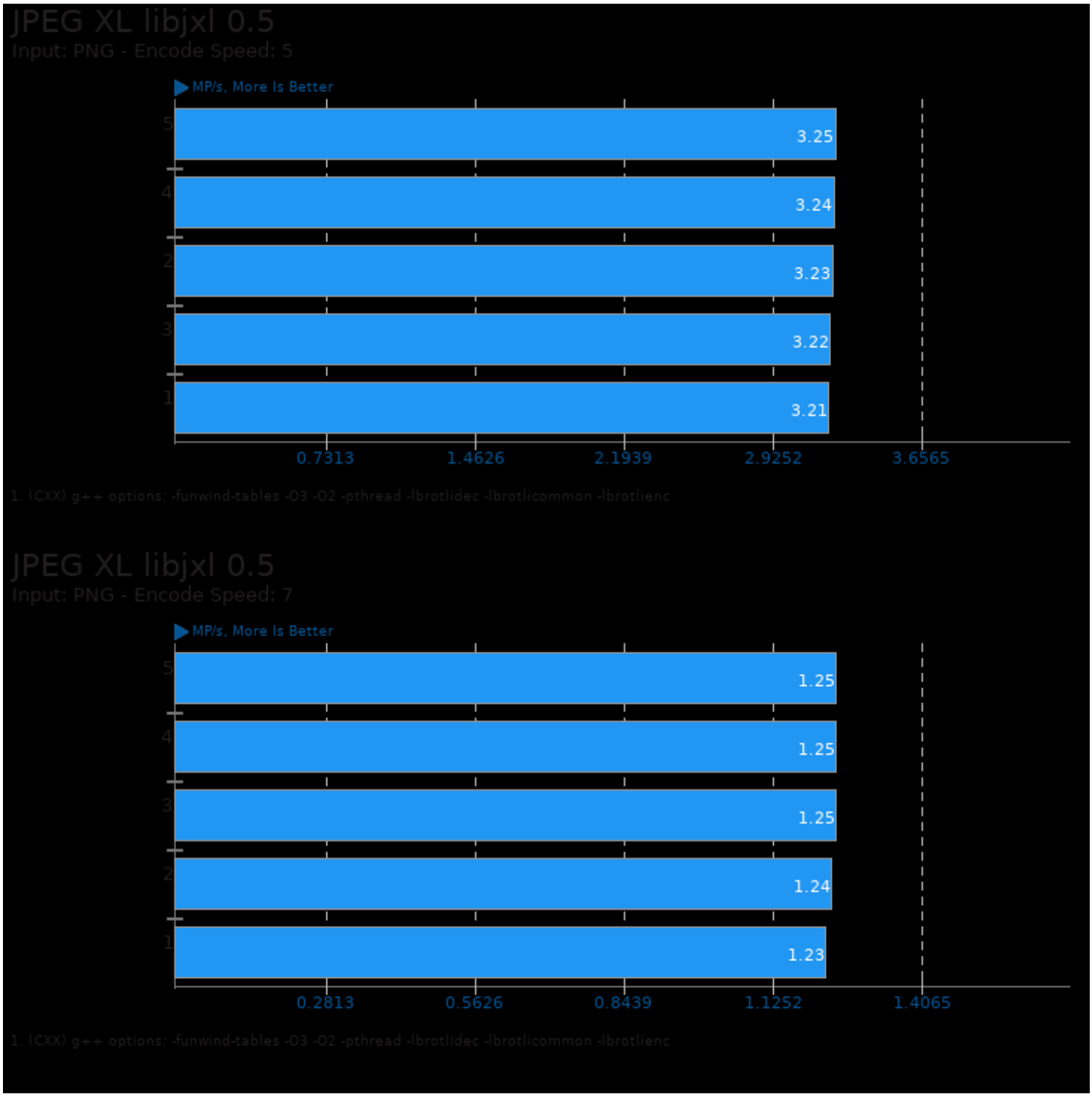
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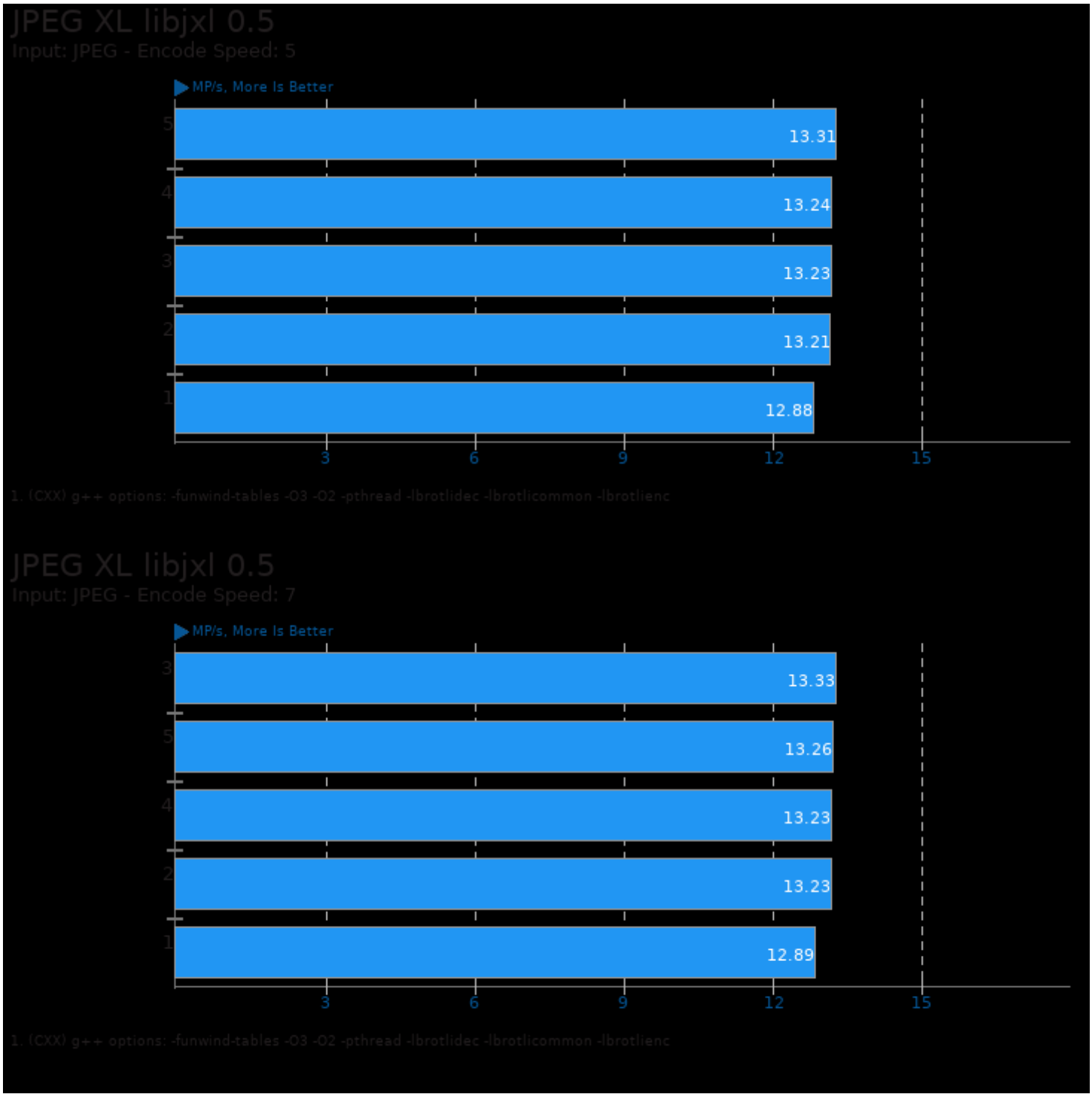
JPEG XL libjxl - JPEG - 7 (MP/s)	**12.89**	13.23	**13.33**	13.23	13.26
Normalized	96.7%	99.25%	100%	99.25%	99.47%
JPEG XL libjxl - JPEG - 8 (MP/s)	**6.38**	6.51	6.54	6.54	**6.55**
Normalized	97.4%	99.39%	99.85%	99.85%	100%
JPEG XL Decoding libjxl - 1	**6.84**	6.9	**6.95**	6.94	6.94
Normalized	98.42%	99.28%	100%	99.86%	99.86%
JPEG XL Decoding libjxl - All (MP/s)	21.22	**21.15**	**21.39**	21.19	21.32
Normalized	99.21%	98.88%	100%	99.06%	99.67%
dav1d - Chimera 1080p (FPS)	54.49	54.57	**54.73**	54.56	**54.34**
Normalized	99.56%	99.71%	100%	99.69%	99.29%
dav1d - Summer Nature 4K (FPS)	13.18	**13.26**	13.12	**12.99**	13.13
Normalized	99.4%	100%	98.94%	97.96%	99.02%
dav1d - S.N.1 (FPS)	54.15	55.04	**55.17**	**49.37**	54.3
Normalized	98.15%	99.76%	100%	89.49%	98.42%
dav1d - C.1.1.b (FPS)	**30.85**	32.6	**33.21**	32.84	32.88
Normalized	92.89%	98.16%	100%	98.89%	99.01%
OpenSSL - SHA256 (byte/s)	**439512100**	442335200	442911010	**442956970**	442283900
Normalized	99.22%	99.86%	99.99%	100%	99.85%
OpenSSL - RSA4096 (sign/s)	**115.3**	**115.4**	**115.3**	**115.3**	**115.3**
Normalized	99.91%	100%	99.91%	99.91%	99.91%
OpenSSL - RSA4096 (verify/s)	**8927**	8925	8924	**8923**	8925
Normalized	100%	99.98%	99.97%	99.96%	99.98%

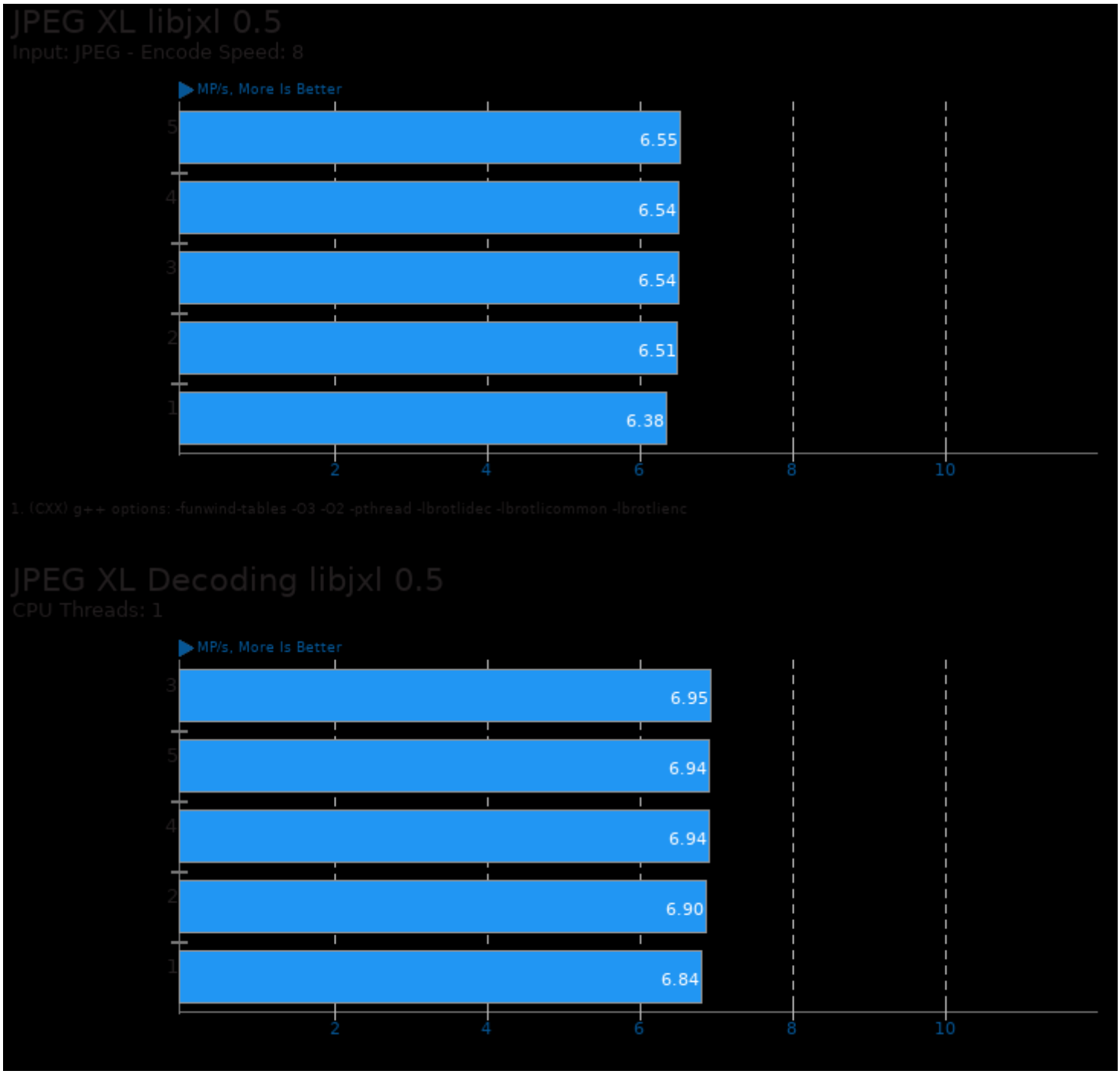
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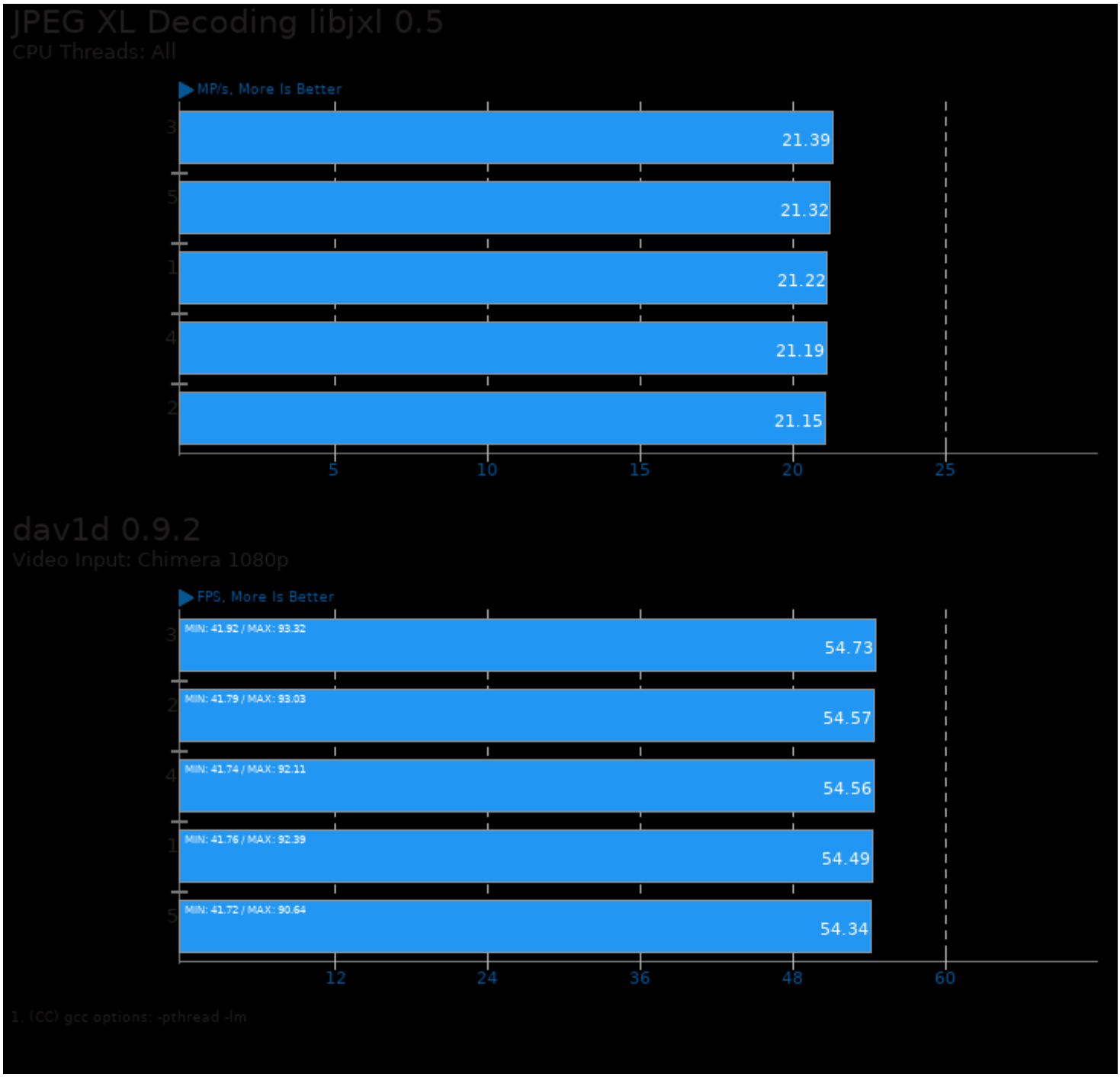

GLmark2 2021.08.30
Resolution: 800 x 600
Score, More Is Better
2
5
4
3
1
156
154
154
152
152
30
60
90
120
150
GLmark2 2021.08.30
Resolution: 1024 x 768
Score, More Is Better
5
3
2
4
1
103
102
101
98
96
20
40
60
80
100

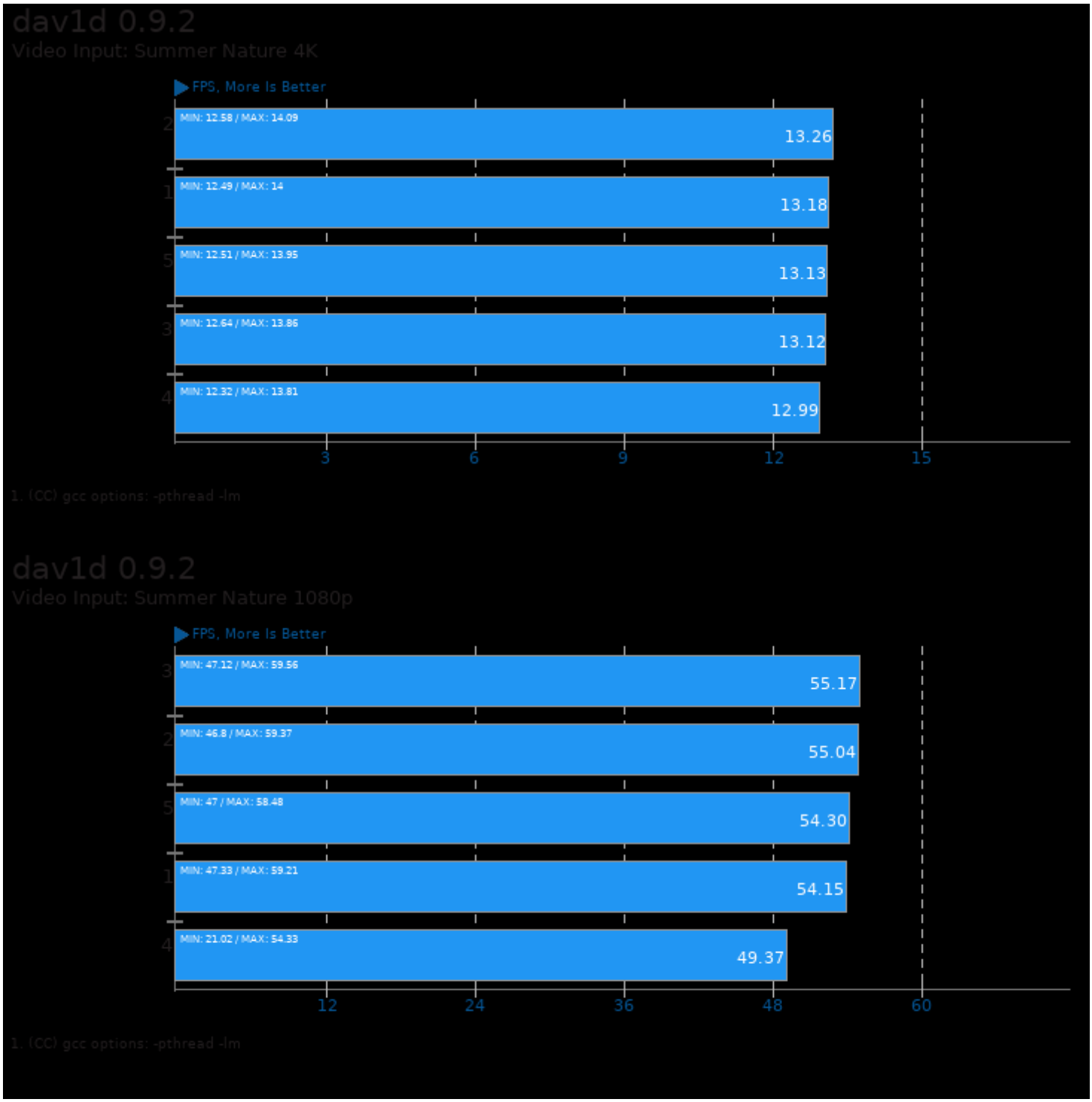

GLmark2 2021.08.30
Resolution: 1280 x 1024
Score, More Is Better
2
66
4
65
3
64
1
64
5
63
15
30
45
60
75
GLmark2 2021.08.30
Resolution: 1920 x 1080
Score, More Is Better
2
45
5
43
3
43
4
41
1
40
10
20
30
40
50

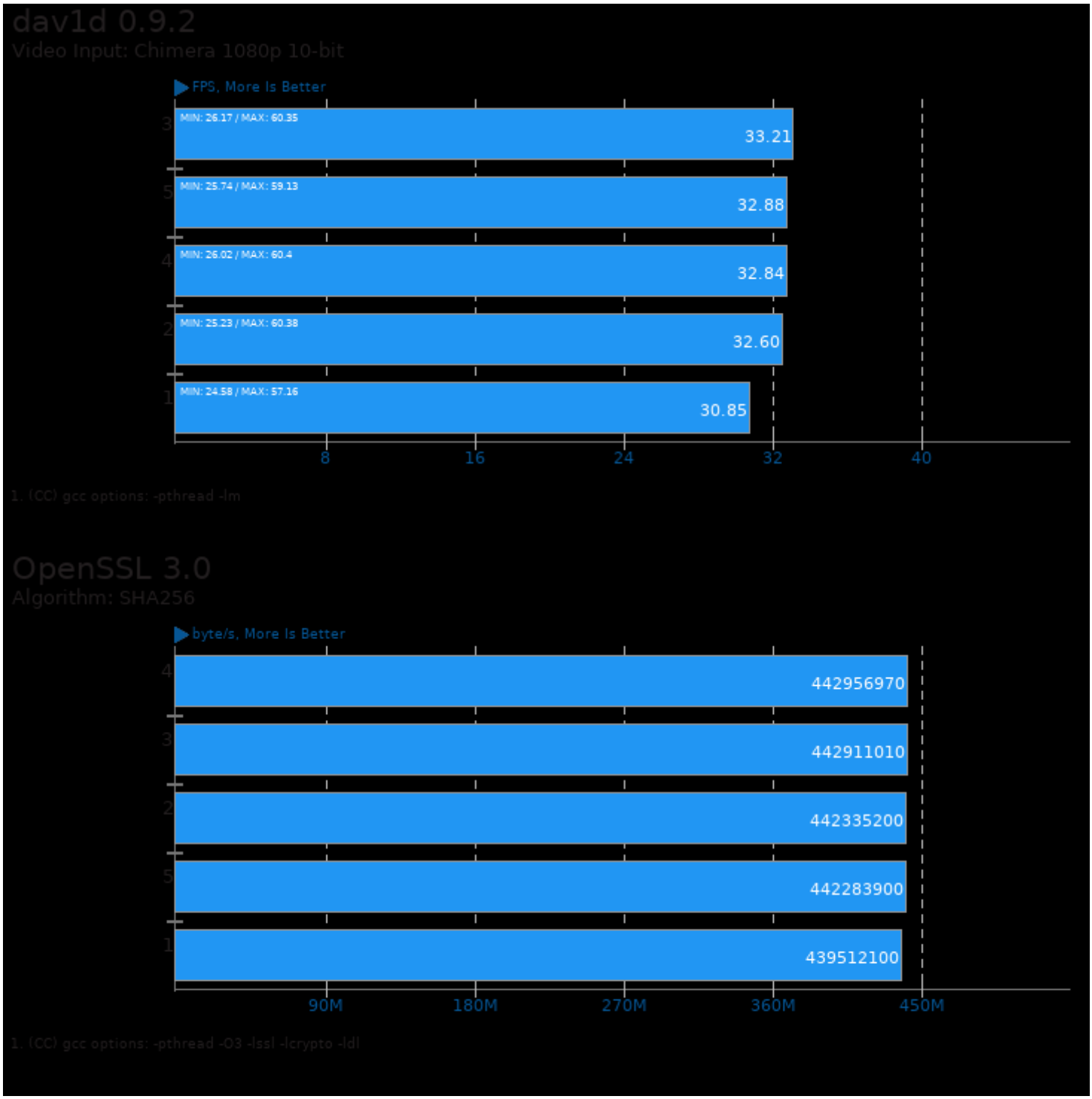

JPEG XL libjxl 0.5
Input: PNG - Encode Speed: 5
MP/s, More Is Better
5
4
2
3
1
3.25
3.24
3.23
3.22
3.21
0.7313
1.4626
2.1939
2.9252
3.6565
1. (CXX) g++ options: -funwind-tables -O3 -O2 -pthread -lbrotlidec -lbrotlicommon -lbrotlienc
JPEG XL libjxl 0.5
Input: PNG - Encode Speed: 7
MP/s, More Is Better
5
4
3
2
1
1.25
1.25
1.25
1.24
1.23
0.2813
0.5626
0.8439
1.1252
1.4065
1. (CXX) g++ options: -funwind-tables -O3 -O2 -pthread -lbrotlidec -lbrotlicommon -lbrotlienc


JPEG XL libjxl 0.5
Input: JPEG - Encode Speed: 5
MP/s, More Is Better
13.31
13.24
13.23
13.21
12.88
5
4
3
2
1
3
6
9
12
15
1. (CXX) g++ options: -funwind-tables -O3 -O2 -pthread -lbrotlidec -lbrotlicommon -lbrotlienc
JPEG XL libjxl 0.5
Input: JPEG - Encode Speed: 7
MP/s, More Is Better
13.33
13.26
13.23
13.23
12.89
3
5
4
2
1
3
6
9
12
15
1. (CXX) g++ options: -funwind-tables -O3 -O2 -pthread -lbrotlidec -lbrotlicommon -lbrotlienc

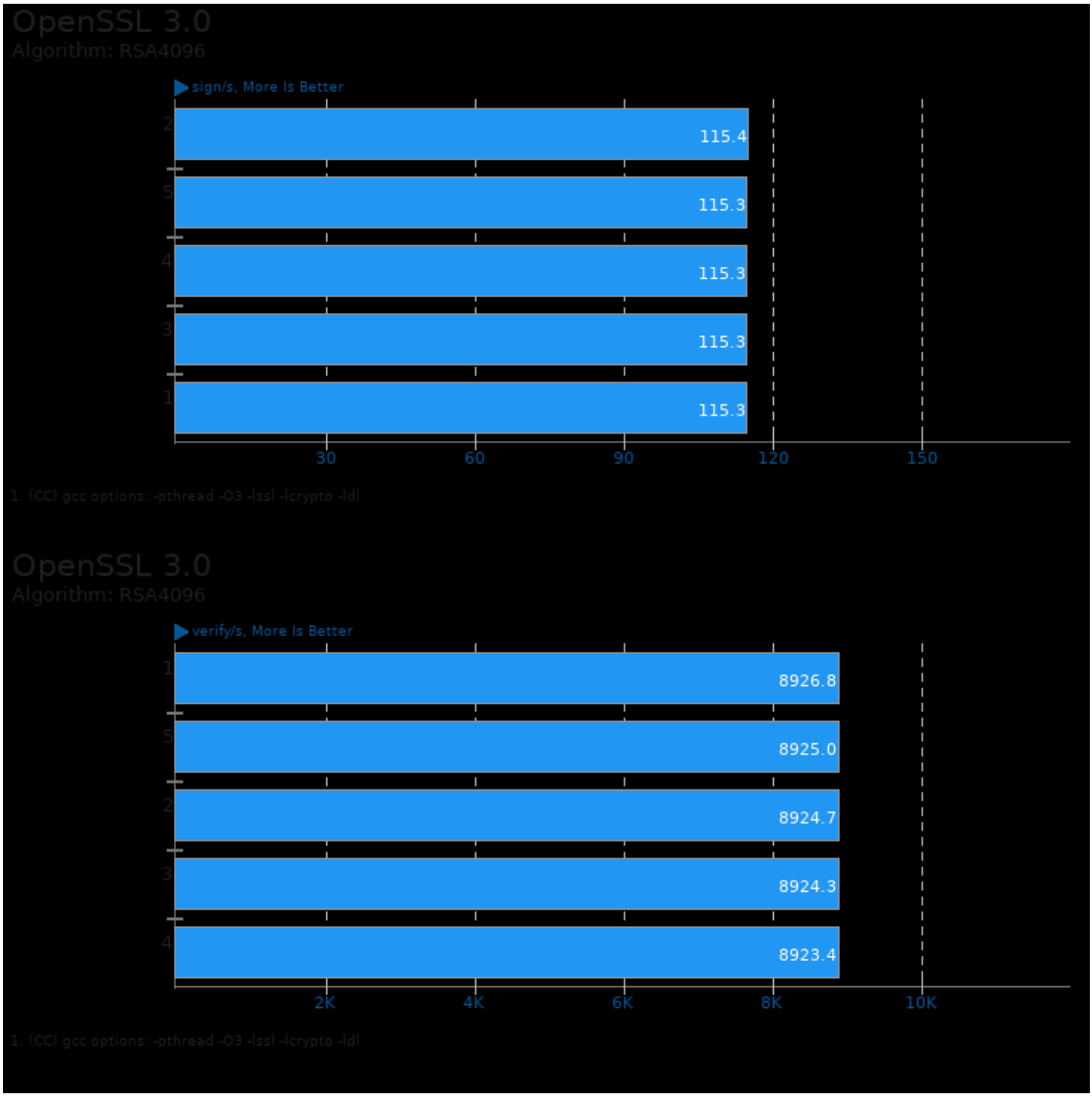

JPEG XL libjxl 0.5
Input: JPEG - Encode Speed: 8
MP/s, More Is Better
6.55
6.54
6.54
6.51
6.38
1. (CXX) g++ options: -funwind-tables -O3 -O2 -pthread -lbrotlidec -lbrotlicommon -lbrotlienc
JPEG XL Decoding libjxl 0.5
CPU Threads: 1
MP/s, More Is Better
6.95
6.94
6.94
6.90
6.84


JPEG XL Decoding libjxl 0.5
CPU Threads: All
MP/s, More Is Better
3
21.39
5
21.32
1
21.22
4
21.19
2
21.15
5
10
15
20
25
dav1d 0.9.2
Video Input: Chimera 1080p
FPS, More Is Better
3
MIN: 41.92 / MAX: 93.32
54.73
2
MIN: 41.79 / MAX: 93.03
54.57
4
MIN: 41.74 / MAX: 92.11
54.56
1
MIN: 41.76 / MAX: 92.39
54.49
5
MIN: 41.72 / MAX: 90.64
54.34
12
24
36
48
60
1. (CC) gcc options: -pthread -lm

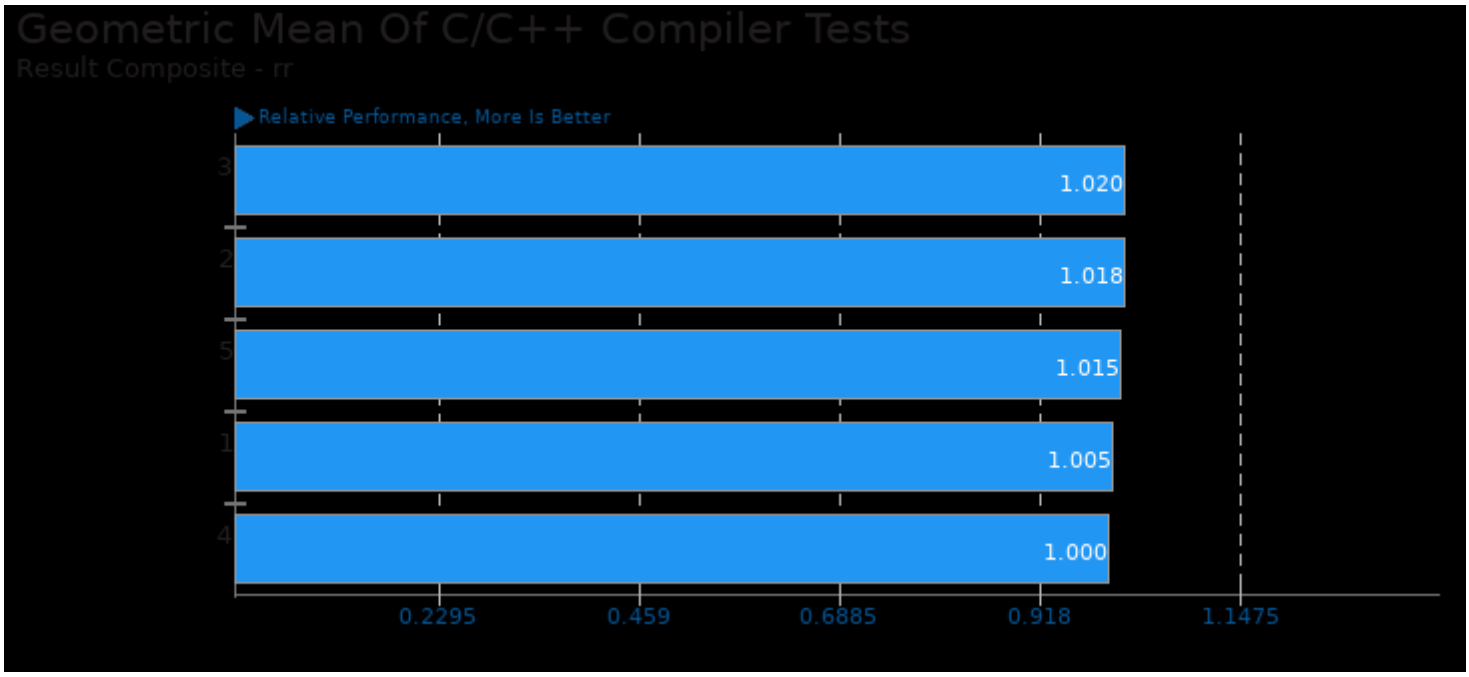

dav1d 0.9.2
Video Input: Summer Nature 4K
FPS, More Is Better
MIN: 12.58 / MAX: 14.09
13.26
MIN: 12.49 / MAX: 14
13.18
MIN: 12.51 / MAX: 13.95
13.13
MIN: 12.64 / MAX: 13.86
13.12
MIN: 12.32 / MAX: 13.81
12.99
3
6
9
12
15
1. (CC) gcc options: -pthread -lm
dav1d 0.9.2
Video Input: Summer Nature 1080p
FPS, More Is Better
MIN: 47.12 / MAX: 59.56
55.17
MIN: 46.8 / MAX: 59.37
55.04
MIN: 47 / MAX: 58.48
54.30
MIN: 47.33 / MAX: 59.21
54.15
MIN: 21.02 / MAX: 54.33
49.37
12
24
36
48
60
1. (CC) gcc options: -pthread -lm


dav1d 0.9.2
Video Input: Chimera 1080p 10-bit
FPS, More Is Better
MIN: 26.17 / MAX: 60.35
33.21
MIN: 25.74 / MAX: 59.13
32.88
MIN: 26.02 / MAX: 60.4
32.84
MIN: 25.23 / MAX: 60.38
32.60
MIN: 24.58 / MAX: 57.16
30.85
3
5
4
2
1
8
16
24
32
40
1. (CC) gcc options: -pthread -lm
OpenSSL 3.0
Algorithm: SHA256
byte/s, More Is Better
442956970
442911010
442335200
442283900
439512100
4
3
2
5
1
90M
180M
270M
360M
450M
1. (CC) gcc options: -pthread -O3 -lssl -lcrypto -ldl

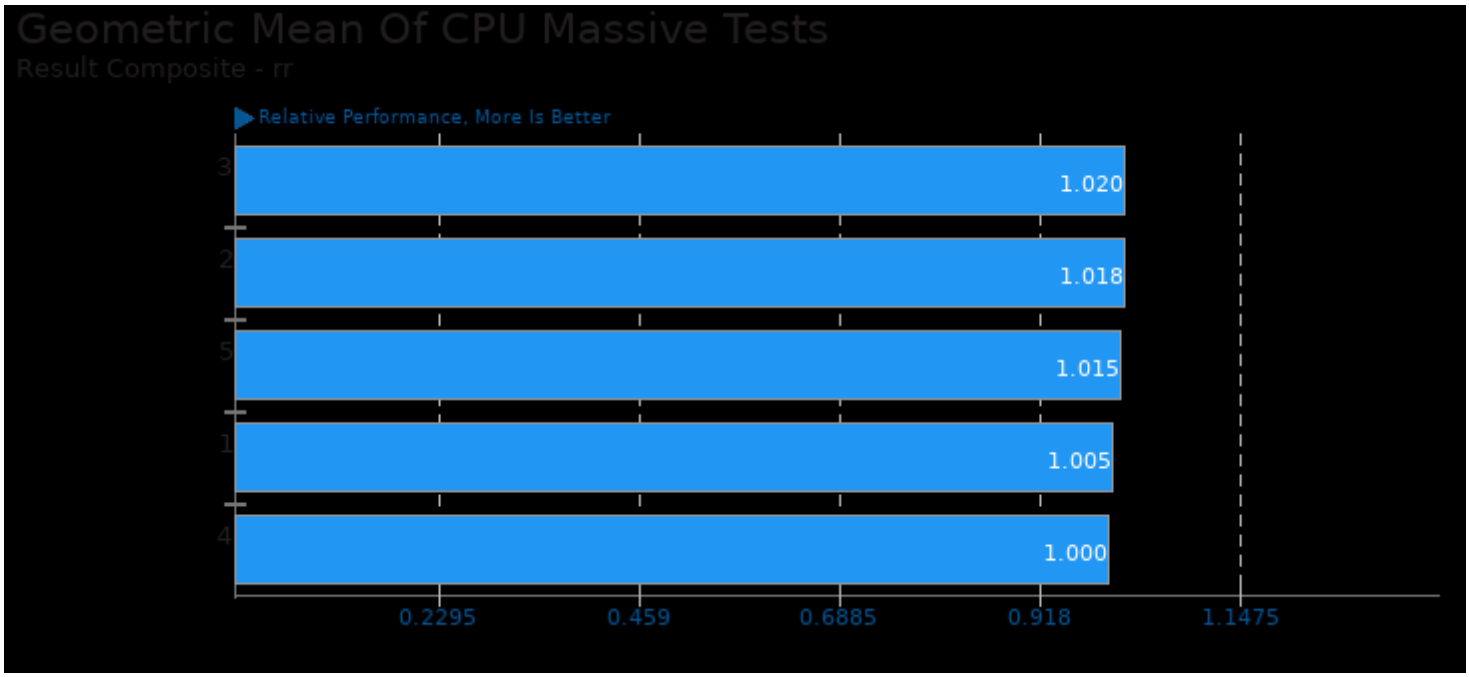
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OpenSSL 3.0
Algorithm: RSA4096
sign/s, More Is Better
115.4
115.3
115.3
115.3
115.3
30
60
90
120
150
1. (CC) gcc options: -pthread -O3 -lssl -lcrypto -ldl
OpenSSL 3.0
Algorithm: RSA4096
verify/s, More Is Better
8926.8
8925.0
8924.7
8924.3
8923.4
2K
4K
6K
8K
10K
1. (CC) gcc options: -pthread -O3 -lssl -lcrypto -ldl

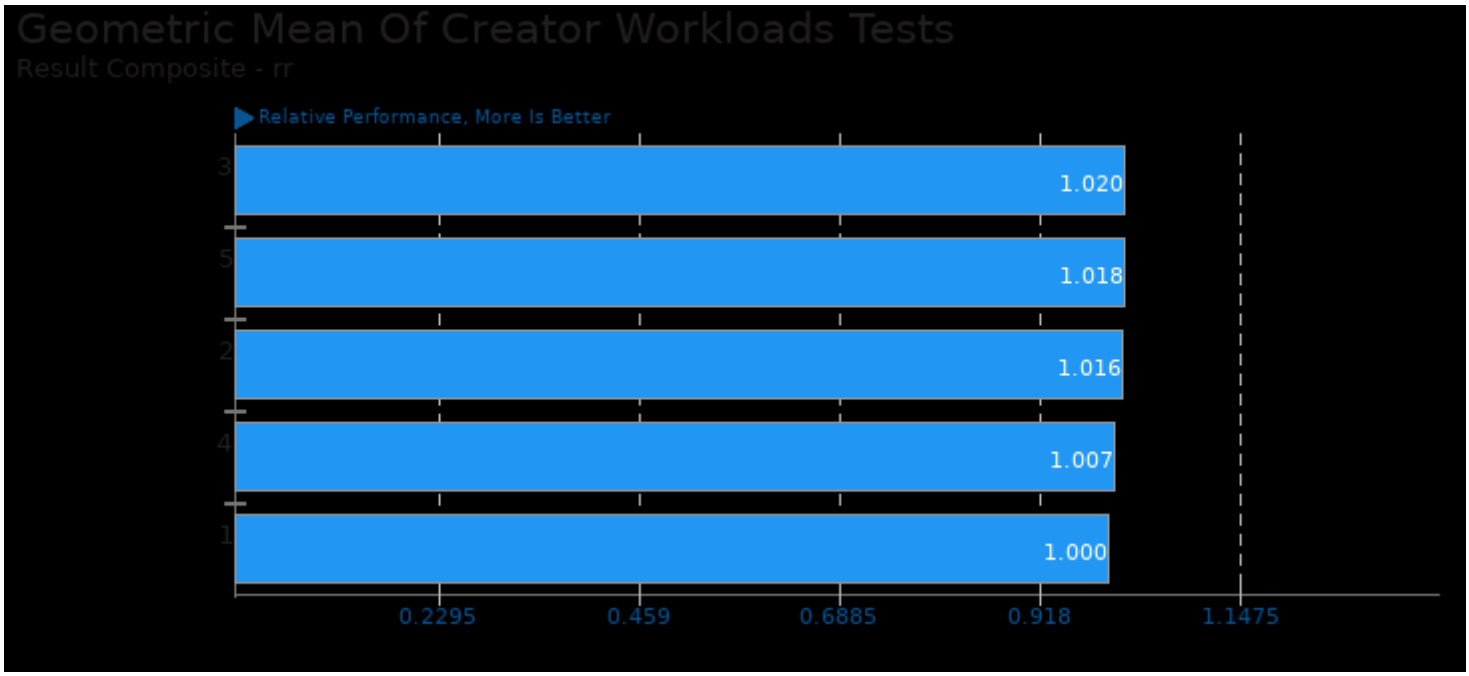
These geometric means are based upon test groupings / test suites for this result file.



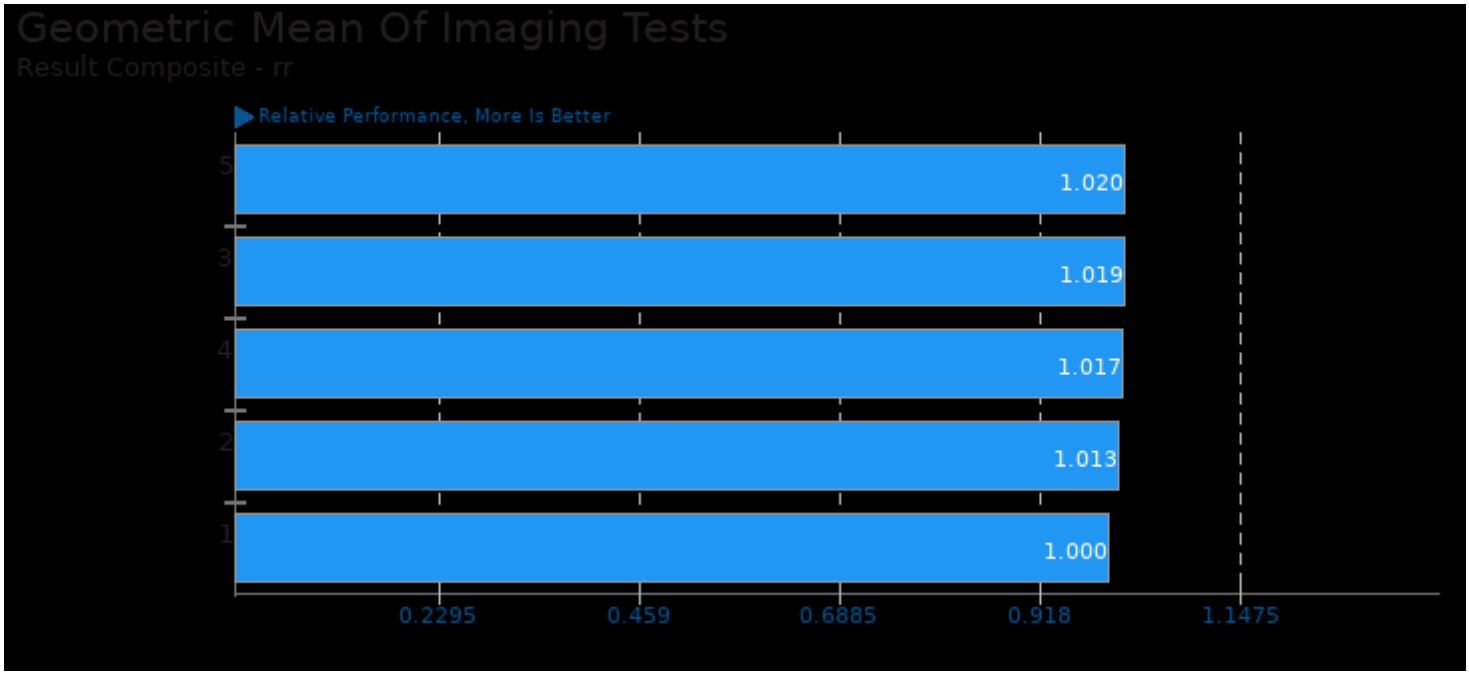
Geometric mean based upon tests: pts/dav1d and pts/openssl



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

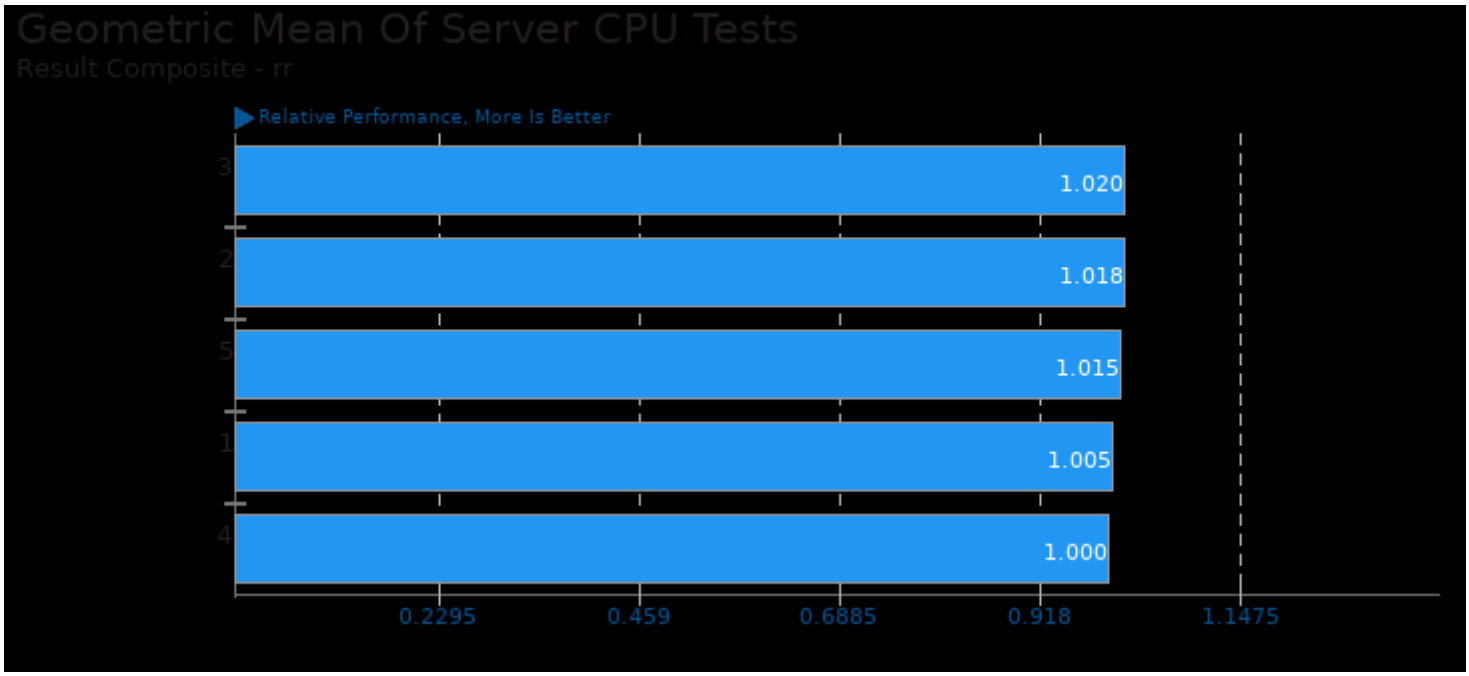


Geometric mean based upon tests: pts/dav1d, pts/jpegxl and pts/jpegxl-decode



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

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

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 19:29.