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2200G AMD

AMD Ryzen 3 2200G testing with a ASUS PRIME B350M-E (5220 BIOS) and ASUS AMD Radeon Vega / Mobile 2GB on Ubuntu 22.04 via the Phoronix Test Suite.

Automated Executive Summary

B had the most wins, coming in first place for 35% of the tests.

Based on the geometric mean of all complete results, the fastest (D) was 1.005x the speed of the slowest (C). B was 0.999x the speed of D, A was 1x the speed of B, C was 0.997x the speed of A.

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

LuxCoreRender (Scene: Danish Mood - Acceleration: CPU) at 1.4x
LeelaChessZero (Backend: Eigen) at 1.216x
Stress-NG (Test: IO_uring) at 1.16x
LZ4 Compression (Compression Level: 3 - Compression Speed) at 1.159x
Cpuminer-Opt (Algorithm: Quad SHA-256, Pyrite) at 1.124x
Cpuminer-Opt (Algorithm: Myriad-Groestl) at 1.117x
Cpuminer-Opt (Algorithm: Skeincoin) at 1.115x
Cpuminer-Opt (Algorithm: Triple SHA-256, Onecoin) at 1.107x
Xcompact3d Incompact3d (Input: input.i3d 129 Cells Per Direction) at 1.105x

Stress-NG (Test: CPU Cache) at 1.095x.

Test Systems:

A

Processor: AMD Ryzen 3 2200G @ 3.50GHz (4 Cores), Motherboard: ASUS PRIME B350M-E (5220 BIOS), Chipset: AMD Raven/Raven2, Memory: 6GB, Disk: Samsung SSD 970 EVO 250GB, Graphics: ASUS AMD Radeon Vega / Mobile (1100/1600MHz), Audio: AMD Raven/Raven2/Fenghuang, Monitor: MX279, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 22.04, Kernel: 5.13.0-19-generic (x86_64), Desktop: GNOME Shell 40.5, Display Server: X Server + Wayland, OpenGL: 4.6 Mesa 21.2.2 (LLVM 12.0.1), Vulkan: 1.2.182, Compiler: GCC 11.2.0, 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-bootstrap --enable-cet --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++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-serialization=2 --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-11-pWTZs6/gcc-11-11.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-11-pWTZs6/gcc-11-11.2.0/debian/tmp-gcn/usr --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-build-config=bootstrap-lto-lean --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 schedutil (Boost: Enabled) - CPU Microcode: 0x8101016
Graphics Notes: BAR1 / Visible vRAM Size: 2048 MB
Python Notes: Python 3.9.9
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: disabled RSB filling + srbds: Not affected + tsx_async_abort: Not affected

B

C

D

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	A	B	C	D
yquake2 - Vulkan - 1920 x 1080 (FPS)	973.8	**967.8**	972.3	**975.3**
Normalized	99.85%	99.23%	99.69%	100%
yquake2 - OpenGL 1.x - 1920 x 1080 (FPS)	367.2	**368.7**	366	**365.7**
Normalized	99.59%	100%	99.27%	99.19%
yquake2 - OpenGL 3.x - 1920 x 1080 (FPS)	**493.4**	**495.3**	494.1	494.9
Normalized	99.62%	100%	99.76%	99.92%
yquake2 - Software CPU - 1920 x 1080 (FPS)	**92.3**	93.1	**93.4**	93.3
Normalized	98.82%	99.68%	100%	99.89%
GLmark2 - 1920 x 1080 (Score)	**2571**	2574	**2575**	2572
Normalized	99.84%	99.96%	100%	99.88%
ParaView - Wavelet Volume - 1920 x 1080 (Frames / Sec)	**62.96**	**63.36**	63.03	63.29
Normalized	99.37%	100%	99.48%	99.89%
ParaView - Wavelet Volume - 1920 x 1080 (MiVoxels / Sec)	**1007**	**1014**	1008	1013
Normalized	99.37%	100%	99.48%	99.9%
ParaView - Wavelet Contour - 1920 x 1080 (Frames / Sec)	52.48	**52.47**	**52.54**	52.52
Normalized	99.89%	99.87%	100%	99.96%
ParaView - Wavelet Contour - 1920 x 1080 (MiPolys / Sec)	546.946	**546.798**	**547.554**	547.277
Normalized	99.89%	99.86%	100%	99.95%
C-Blosc - blosclz (MB/s)	**7411**	7469	7430	**7472**
Normalized	99.18%	99.97%	99.44%	100%
QuantLib (MFLOPS)	**2116**	2109	**2106**	2112
Normalized	100%	99.66%	99.52%	99.82%
Etcpak - DXT1 (Mpx/s)	**1417**	1419	1420	**1421**
Normalized	99.73%	99.91%	99.96%	100%
Etcpak - ETC1 (Mpx/s)	220.669	**220.765**	220.651	**220.206**
Normalized	99.96%	100%	99.95%	99.75%
Etcpak - ETC2 (Mpx/s)	**134.365**	**134.422**	134.406	134.399
Normalized	99.96%	100%	99.99%	99.98%
Etcpak - ETC1 + Dithering (Mpx/s)	205.049	205	**204.874**	**205.056**
Normalized	100%	99.97%	99.91%	100%
LeelaChessZero - BLAS (Nodes/s)	287	**272**	**295**	286
Normalized	97.29%	92.2%	100%	96.95%
LeelaChessZero - Eigen (Nodes/s)	292	**259**	298	**315**
Normalized	92.7%	82.22%	94.6%	100%

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NAMD - ATPase Simulation - 327,506 Atoms (days/ns)	6.53034	6.51217	6.51643	6.48494
Normalized	99.3%	99.58%	99.52%	100%
toyBrot Fractal Generator - TBB (ms)	132169	135470	135485	135649
Normalized	100%	97.56%	97.55%	97.43%
toyBrot Fractal Generator - OpenMP (ms)	132017	132319	132366	132411
Normalized	100%	99.77%	99.74%	99.7%
toyBrot Fractal Generator - C++ Tasks (ms)	132216	132480	132630	132570
Normalized	100%	99.8%	99.69%	99.73%
toyBrot Fractal Generator - C++ Threads (ms)	132488	132785	132879	132973
Normalized	100%	99.78%	99.71%	99.64%
Algebraic Multi-Grid Benchmark (Figure Of Merit)	218607200	219117500	218051200	218620000
Normalized	99.77%	100%	99.51%	99.77%
Timed HMMer Search - P.D.S (sec)	128.459	128.528	128.001	128.475
Normalized	99.64%	99.59%	100%	99.63%
Xcompact3d Incompact3d - i.i.1.C.P.D (sec)	59.4985275	63.2934532	58.9098892	65.0965652
Normalized	99.01%	93.07%	100%	90.5%
BLAKE2 (Cycles/Byte)	5.91	5.93	5.93	5.91
Normalized	100%	99.66%	99.66%	100%
simdjson - Kostya (GB/s)	2.37	2.4	2.37	2.37
Normalized	98.75%	100%	98.75%	98.75%
simdjson - LargeRand (GB/s)	0.83	0.83	0.83	0.83
simdjson - PartialTweets (GB/s)	2.73	2.73	2.73	2.74
Normalized	99.64%	99.64%	99.64%	100%
simdjson - DistinctUserID (GB/s)	3.16	3.17	3.16	3.17
Normalized	99.68%	100%	99.68%	100%
GNU GMP GMPbench - Total Time (GMPbench Score)	4584	4577	4577	4579
Normalized	100%	99.85%	99.86%	99.89%
Xmrig - Monero - 1M (H/s)	1163	1164	1165	1164
Normalized	99.85%	99.91%	100%	99.9%
Xmrig - Wownero - 1M (H/s)	1702	1704	1705	1705
Normalized	99.81%	99.91%	99.98%	100%
LZ4 Compression - 1 - Compression Speed (MB/s)	7678	7732	7642	8025
Normalized	95.67%	96.34%	95.22%	100%
LZ4 Compression - 1 - D.S (MB/s)	8677	8772	8731	8650
Normalized	98.91%	100%	99.53%	98.61%
LZ4 Compression - 3 - Compression Speed (MB/s)	42.24	38.8	39.78	36.44
Normalized	100%	91.86%	94.18%	86.27%
LZ4 Compression - 3 - D.S (MB/s)	8560	8566	8513	8530
Normalized	99.92%	100%	99.38%	99.58%
LZ4 Compression - 9 - Compression Speed (MB/s)	39.95	39.82	39.56	42.18
Normalized	94.71%	94.4%	93.79%	100%
LZ4 Compression - 9 - D.S (MB/s)	8531	8518	8564	8558

Normalized	99.62%	99.47%	100%	99.93%
Zstd Compression - 3 - Compression Speed (MB/s)	1328	1336	1338	1336
Normalized	99.26%	99.87%	100%	99.83%
Zstd Compression - 3 - D.S (MB/s)	3075	3071	3081	3074
Normalized	99.81%	99.69%	100%	99.78%
Zstd Compression - 8 - Compression Speed (MB/s)	175.4	179	177.9	176.5
Normalized	97.99%	100%	99.39%	98.6%
Zstd Compression - 8 - D.S (MB/s)	3187	3192	3191	3185
Normalized	99.82%	100%	99.96%	99.77%
Zstd Compression - 19 - Compression Speed (MB/s)	13.2	13.2	13.2	13.2
Zstd Compression - 19 - D.S (MB/s)	2632	2633	2632	2612
Normalized	99.97%	100%	99.98%	99.22%
Zstd Compression - 3, Long Mode - Compression Speed (MB/s)	550.6	566.5	577	566.7
Normalized	95.42%	98.18%	100%	98.21%
Zstd Compression - 3, Long Mode - D.S (MB/s)	3269	3291	3271	3278
Normalized	99.34%	100%	99.4%	99.6%
Zstd Compression - 8, Long Mode - Compression Speed (MB/s)	176.6	176.8	176	176
Normalized	99.89%	100%	99.55%	99.55%
Zstd Compression - 8, Long Mode - D.S (MB/s)	3386	3403	3383	3387
Normalized	99.49%	100%	99.4%	99.53%
Zstd Compression - 19, Long Mode - Compression Speed (MB/s)	11.4	11.4	11.4	11.4
Zstd Compression - 19, Long Mode - D.S (MB/s)	2702	2672	2689	2691
Normalized	100%	98.86%	99.5%	99.58%
Zstd Compression - 3 - Compression Speed (MB/s)	1224	1234	1228	1222
Normalized	99.18%	100%	99.52%	99.02%
Zstd Compression - 3 - D.S (MB/s)	2784	2753	2769	2771
Normalized	100%	98.9%	99.48%	99.55%
Zstd Compression - 8 - Compression Speed (MB/s)	167.5	168.2	168.3	167.2
Normalized	99.52%	99.94%	100%	99.35%
Zstd Compression - 8 - D.S (MB/s)	2865	2863	2874	2883
Normalized	99.4%	99.31%	99.68%	100%
Zstd Compression - 19 - Compression Speed (MB/s)	12.3	12.2	12.3	12.2
Normalized	100%	99.19%	100%	99.19%
Zstd Compression - 19 - D.S (MB/s)	2485	2479	2477	2481
Normalized	100%	99.75%	99.67%	99.81%
Zstd Compression - 3, Long Mode - Compression Speed (MB/s)	205.3	208.8	204.5	205.1
Normalized	98.32%	100%	97.94%	98.23%

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Zstd Compression - 3, Long Mode - D.S (MB/s)	2941	2954	2955	2947
Normalized	99.56%	99.99%	100%	99.75%
Zstd Compression - 8, Long Mode - Compression Speed (MB/s)	163.2	162.6	162.4	164.6
Normalized	99.15%	98.78%	98.66%	100%
Zstd Compression - 8, Long Mode - D.S (MB/s)	3054	3059	3064	3067
Normalized	99.59%	99.75%	99.89%	100%
Zstd Compression - 19, Long Mode - Compression Speed (MB/s)	10.24	10.26	10.25	10.18
Normalized	99.81%	100%	99.9%	99.22%
Zstd Compression - 19, Long Mode - D.S (MB/s)	2536	2556	2547	2557
Normalized	99.2%	99.96%	99.6%	100%
JPEG XL libjxl - PNG - 5 (MP/s)	14.63	14.6	14.48	14.66
Normalized	99.8%	99.59%	98.77%	100%
JPEG XL libjxl - PNG - 7 (MP/s)	4.72	4.73	4.66	4.71
Normalized	99.79%	100%	98.52%	99.58%
JPEG XL libjxl - PNG - 8 (MP/s)	0.53	0.55	0.52	0.55
Normalized	96.36%	100%	94.55%	100%
JPEG XL libjxl - JPEG - 5 (MP/s)	44.98	44.91	45.64	45.35
Normalized	98.55%	98.4%	100%	99.36%
JPEG XL libjxl - JPEG - 7 (MP/s)	44.45	44.7	45.23	44.55
Normalized	98.28%	98.83%	100%	98.5%
JPEG XL libjxl - JPEG - 8 (MP/s)	17.95	17.97	17.91	18.27
Normalized	98.25%	98.36%	98.03%	100%
JPEG XL Decoding libjxl - 1 (MP/s)	35.56	35.92	35.68	35.72
Normalized	99%	100%	99.33%	99.44%
JPEG XL Decoding libjxl - All (MP/s)	109.7	110.07	105.56	109.1
Normalized	99.66%	100%	95.9%	99.12%
srsRAN - OFDM_Test (Samples / Second)	73900000	75200000	75100000	73400000
Normalized	98.27%	100%	99.87%	97.61%
srsRAN - 4.P.1.P.M.6.Q (eNb Mb/s)	266.4	262.5	265.5	260.7
Normalized	100%	98.54%	99.66%	97.86%
srsRAN - 4.P.1.P.M.6.Q (UE Mb/s)	85.5	85.4	85.6	83.8
Normalized	99.88%	99.77%	100%	97.9%
srsRAN - 4.P.1.P.S.6.Q (eNb Mb/s)	289.8	291.4	291	289.3
Normalized	99.45%	100%	99.86%	99.28%
srsRAN - 4.P.1.P.S.6.Q (UE Mb/s)	104.1	104.1	101.5	103
Normalized	100%	100%	97.5%	98.94%
srsRAN - 4.P.1.P.M.2.Q (eNb Mb/s)	288.8	292.4	291.6	289
Normalized	98.77%	100%	99.73%	98.84%
srsRAN - 4.P.1.P.M.2.Q (UE Mb/s)	90	92.6	91.6	89.4
Normalized	97.19%	100%	98.92%	96.54%
srsRAN - 4.P.1.P.S.2.Q (eNb Mb/s)	313	315.2	314.9	311.2
Normalized	99.3%	100%	99.9%	98.73%
srsRAN - 4.P.1.P.S.2.Q (UE Mb/s)	108.4	109.8	109.5	105.6
Normalized	98.72%	100%	99.73%	96.17%
srsRAN - 5.P.T.5.P.S.6.Q (eNb Mb/s)	78.4	78.3	78.3	79.3
Normalized	98.87%	98.74%	98.74%	100%

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srsRAN - 5.P.T.5.P.S.6.Q (UE Mb/s)	**42.3**	42.5	**42.3**	**42.9**
Normalized	98.6%	99.07%	98.6%	100%
Botan - KASUMI (MiB/s)	**83.912**	83.902	83.754	**83.606**
Normalized	100%	99.99%	99.81%	99.64%
Botan - KASUMI - Decrypt (MiB/s)	**81.955**	81.77	81.788	**79.765**
Normalized	100%	99.77%	99.8%	97.33%
Botan - AES-256 (MiB/s)	**4953**	5034	5067	**5070**
Normalized	97.7%	99.28%	99.94%	100%
Botan - AES-256 - Decrypt (MiB/s)	**5034**	5037	5034	**5038**
Normalized	99.93%	99.98%	99.93%	100%
Botan - Twofish (MiB/s)	**302.209**	**286.436**	301.883	301.76
Normalized	100%	94.78%	99.89%	99.85%
Botan - Twofish - Decrypt (MiB/s)	**306.635**	**289.522**	296.399	306.157
Normalized	100%	94.42%	96.66%	99.84%
Botan - Blowfish (MiB/s)	367.182	**367.442**	367.248	**367.171**
Normalized	99.93%	100%	99.95%	99.93%
Botan - Blowfish - Decrypt (MiB/s)	**367.608**	367.842	367.953	**367.998**
Normalized	99.89%	99.96%	99.99%	100%
Botan - CAST-256 (MiB/s)	**127.523**	127.778	127.778	**127.781**
Normalized	99.8%	100%	100%	100%
Botan - CAST-256 - Decrypt (MiB/s)	**127.796**	128.003	127.976	**128.024**
Normalized	99.82%	99.98%	99.96%	100%
Botan - ChaCha20Poly1305 (MiB/s)	453.085	**452.27**	452.77	**453.445**
Normalized	99.92%	99.74%	99.85%	100%
Botan - ChaCha20Poly1305 - Decrypt (MiB/s)	451.059	**451.889**	**450.774**	451.387
Normalized	99.82%	100%	99.75%	99.89%
LuaRadio - F.B.t.B.F.F (MiB/s)	470	**475.4**	**462.7**	471.6
Normalized	98.86%	100%	97.33%	99.2%
LuaRadio - F.D.F (MiB/s)	**370.7**	369.3	**367.2**	368.9
Normalized	100%	99.62%	99.06%	99.51%
LuaRadio - Hilbert Transform (MiB/s)	87.4	**87.3**	**87.5**	**87.5**
Normalized	99.89%	99.77%	100%	100%
LuaRadio - Complex Phase (MiB/s)	521.9	**521.3**	523.4	**524.4**
Normalized	99.52%	99.41%	99.81%	100%
GNU Radio - F.B.t.B.F.F (MiB/s)	**439.7**	430.5	**411.7**	433.6
Normalized	100%	97.91%	93.63%	98.61%
GNU Radio - S.S.C (MiB/s)	**2816**	2867	**2931**	2852
Normalized	96.08%	97.81%	100%	97.32%
GNU Radio - FIR Filter (MiB/s)	423.8	**422.9**	425.4	**427.5**
Normalized	99.13%	98.92%	99.51%	100%
GNU Radio - IIR Filter (MiB/s)	320.9	**322.9**	315.3	**308.1**
Normalized	99.38%	100%	97.65%	95.42%
GNU Radio - F.D.F (MiB/s)	667.5	674.5	**688.5**	**659.8**
Normalized	96.95%	97.97%	100%	95.83%
GNU Radio - Hilbert Transform (MiB/s)	367.3	376.8	**367**	**384.5**
Normalized	95.53%	98%	95.45%	100%
LuxCoreRender - DLSC - CPU (M samples/sec)	**0.53**	**0.53**	**0.54**	**0.54**
Normalized	98.15%	98.15%	100%	100%

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LuxCoreRender - Danish Mood - CPU (M samples/sec)	0.11	0.11	**0.1**	**0.14**
Normalized	78.57%	78.57%	71.43%	100%
LuxCoreRender - Orange Juice - CPU (M samples/sec)	**0.81**	**0.82**	**0.82**	**0.81**
Normalized	98.78%	100%	100%	98.78%
LuxCoreRender - LuxCore Benchmark - CPU (M samples/sec)	**0.18**	**0.18**	**0.17**	**0.18**
Normalized	100%	100%	94.44%	100%
LuxCoreRender - R.C.a.P - CPU (M samples/sec)	2.39	**2.41**	**2.38**	2.39
Normalized	99.17%	100%	98.76%	99.17%
dav1d - Chimera 1080p (FPS)	**206.09**	205.76	**198.55**	203.74
Normalized	100%	99.84%	96.34%	98.86%
dav1d - Summer Nature 4K (FPS)	61.39	**61.63**	**59.34**	60.67
Normalized	99.61%	100%	96.28%	98.44%
dav1d - S.N.1 (FPS)	**214.8**	214.13	**210.67**	213.86
Normalized	100%	99.69%	98.08%	99.56%
dav1d - C.1.1.b (FPS)	162.88	**164.1**	**160.88**	163.23
Normalized	99.26%	100%	98.04%	99.47%
AOM AV1 - Speed 0 Two-Pass - Bosphorus 4K (FPS)	0.04	0.04	0.04	0.04
AOM AV1 - Speed 4 Two-Pass - Bosphorus 4K (FPS)	**1.26**	**1.27**	**1.26**	**1.26**
Normalized	99.21%	100%	99.21%	99.21%
AOM AV1 - Speed 6 Realtime - Bosphorus 4K (FPS)	**4.23**	4.22	**4.19**	4.21
Normalized	100%	99.76%	99.05%	99.53%
AOM AV1 - Speed 6 Two-Pass - Bosphorus 4K (FPS)	2.56	2.56	2.56	2.56
AOM AV1 - Speed 8 Realtime - Bosphorus 4K (FPS)	14.84	**14.86**	**14.71**	14.8
Normalized	99.87%	100%	98.99%	99.6%
AOM AV1 - Speed 9 Realtime - Bosphorus 4K (FPS)	20.79	**21.29**	**20.45**	20.66
Normalized	97.65%	100%	96.05%	97.04%
AOM AV1 - Speed 10 Realtime - Bosphorus 4K (FPS)	24.18	**24.45**	**23.04**	23.85
Normalized	98.9%	100%	94.23%	97.55%
AOM AV1 - Speed 0 Two-Pass - Bosphorus 1080p (FPS)	0.09	0.09	0.09	0.09
AOM AV1 - Speed 4 Two-Pass - Bosphorus 1080p (FPS)	**3.12**	**3.12**	**3.11**	**3.12**
Normalized	100%	100%	99.68%	100%
AOM AV1 - Speed 6 Realtime - Bosphorus 1080p (FPS)	3.91	3.91	**3.89**	**3.93**
Normalized	99.49%	99.49%	98.98%	100%
AOM AV1 - Speed 6 Two-Pass - Bosphorus 1080p (FPS)	8.22	**8.26**	**8.2**	8.25
Normalized	99.52%	100%	99.27%	99.88%

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AOM AV1 - Speed 8 Realtime - Bosphorus 1080p (FPS)	53.91	**55.3**	**52.92**	54.01
Normalized	97.49%	100%	95.7%	97.67%
AOM AV1 - Speed 9 Realtime - Bosphorus 1080p (FPS)	69.27	**69.77**	**67.07**	68.36
Normalized	99.28%	100%	96.13%	97.98%
AOM AV1 - Speed 10 Realtime - Bosphorus 1080p (FPS)	**79.03**	78.74	**75.62**	77.67
Normalized	100%	99.63%	95.69%	98.28%
Kvazaar - Bosphorus 4K - Slow (FPS)	**2.05**	**2.05**	**2.04**	**2.04**
Normalized	100%	100%	99.51%	99.51%
Kvazaar - Bosphorus 4K - Medium	2.08	**2.09**	**2.07**	2.08
Normalized	99.52%	100%	99.04%	99.52%
Kvazaar - Bosphorus 1080p - Slow (FPS)	**10.99**	**10.99**	11.03	**11.04**
Normalized	99.55%	99.55%	99.91%	100%
Kvazaar - Bosphorus 1080p - Medium (FPS)	**11.22**	**11.33**	11.28	11.25
Normalized	99.03%	100%	99.56%	99.29%
Kvazaar - Bosphorus 4K - Very Fast (FPS)	4.66	**4.68**	**4.64**	**4.64**
Normalized	99.57%	100%	99.15%	99.15%
Kvazaar - Bosphorus 4K - Ultra Fast (FPS)	**8.09**	8.08	**8.01**	8.05
Normalized	100%	99.88%	99.01%	99.51%
Kvazaar - Bosphorus 1080p - Very Fast (FPS)	21.49	**21.58**	**21.36**	21.42
Normalized	99.58%	100%	98.98%	99.26%
Kvazaar - Bosphorus 1080p - Ultra Fast (FPS)	**36.42**	36.12	**35.94**	36.17
Normalized	100%	99.18%	98.68%	99.31%
rav1e - 1 (FPS)	**0.196**	0.197	**0.199**	**0.196**
Normalized	98.49%	98.99%	100%	98.49%
rav1e - 5 (FPS)	1.004	**1.007**	**1.003**	1.005
Normalized	99.7%	100%	99.6%	99.8%
rav1e - 6 (FPS)	1.309	**1.352**	**1.281**	1.312
Normalized	96.82%	100%	94.75%	97.04%
rav1e - 10 (FPS)	3.9	**3.943**	**3.795**	3.889
Normalized	98.91%	100%	96.25%	98.63%
SVT-AV1 - Preset 4 - Bosphorus 4K (FPS)	0.437	**0.438**	**0.435**	**0.438**
Normalized	99.77%	100%	99.32%	100%
SVT-AV1 - Preset 8 - Bosphorus 4K (FPS)	4.367	4.359	**4.355**	**4.383**
Normalized	99.63%	99.45%	99.36%	100%
SVT-AV1 - Preset 4 - Bosphorus 1080p (FPS)	1.429	**1.442**	**1.428**	1.433
Normalized	99.1%	100%	99.03%	99.38%
SVT-AV1 - Preset 8 - Bosphorus 1080p (FPS)	16.092	**16.257**	**16.058**	16.118
Normalized	98.99%	100%	98.78%	99.14%

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SVT-HEVC - 1 - Bosphorus 1080p	2.48	**2.5**	**2.47**	2.49
Normalized	99.2%	100%	98.8%	99.6%
SVT-HEVC - 7 - Bosphorus 1080p	**32.98**	32.89	32.89	**32.79**
Normalized	100%	99.73%	99.73%	99.42%
SVT-HEVC - 10 - Bosphorus 1080p (FPS)	**70.04**	**71.61**	71.02	70.83
Normalized	97.81%	100%	99.18%	98.91%
SVT-VP9 - VMAF Optimized - Bosphorus 1080p (FPS)	**60.53**	60.41	**59.94**	60.31
Normalized	100%	99.8%	99.03%	99.64%
SVT-VP9 - P.S.O - Bosphorus 1080p (FPS)	**61.46**	61.3	60.95	**60.72**
Normalized	100%	99.74%	99.17%	98.8%
SVT-VP9 - V.Q.O - Bosphorus 1080p (FPS)	**48.63**	**49.32**	49.01	49.02
Normalized	98.6%	100%	99.37%	99.39%
VP9 libvpx Encoding - Speed 0 - Bosphorus 4K (FPS)	2.04	2.02	**2**	**2.05**
Normalized	99.51%	98.54%	97.56%	100%
VP9 libvpx Encoding - Speed 5 - Bosphorus 4K (FPS)	5.51	**5.46**	5.48	**5.54**
Normalized	99.46%	98.56%	98.92%	100%
VP9 libvpx Encoding - Speed 0 - Bosphorus 1080p (FPS)	4.94	4.94	**4.93**	**4.96**
Normalized	99.6%	99.6%	99.4%	100%
VP9 libvpx Encoding - Speed 5 - Bosphorus 1080p (FPS)	17.85	**16.87**	17.96	**18.02**
Normalized	99.06%	93.62%	99.67%	100%
Intel Open Image Denoise - RT.hdr_alb_nrm.3840x2160 (Images / Sec)	0.08	0.08	0.08	0.08
Intel Open Image Denoise - RT.ldr_alb_nrm.3840x2160 (Images / Sec)	0.08	0.08	0.08	0.08
Intel Open Image Denoise - RTLightmap.hdr.4096x4096 (Images / Sec)	0.04	0.04	0.04	
Coremark - CoreMark Size 666 - I.P.S (Iterations/Sec)	103835	**103708**	**104004**	
Normalized	99.84%	99.71%	100%	
7-Zip Compression - Compression Rating (MIPS)	**21926**	22080	**22095**	
Normalized	99.24%	99.93%	100%	
7-Zip Compression - D.R (MIPS)	**15083**	15067	**15022**	
Normalized	100%	99.89%	99.6%	
Stockfish - Total Time (Nodes/s)	6994007	**6904019**	**7119635**	
Normalized	98.24%	96.97%	100%	
Timed FFmpeg Compilation - Time To Compile (sec)	169.43	**168.64**	**169.677**	
Normalized	99.53%	100%	99.39%	

Timed GCC Compilation - Time To Compile (sec)	2715	**2697**	**2737**
Normalized	99.31%	100%	98.53%
Timed GDB GNU Debugger Compilation - Time To Compile (sec)	167.657	**167.087**	**168.13**
Normalized	99.66%	100%	99.38%
Timed Godot Game Engine Compilation - Time To Compile (sec)	**375.881**	**376.752**	376.176
Normalized	100%	99.77%	99.92%
Timed Linux Kernel Compilation - Time To Compile (sec)	**300.328**	**299.191**	299.908
Normalized	99.62%	100%	99.76%
Timed LLVM Compilation - Ninja (sec)	2197	**2193**	**2199**
Normalized	99.79%	100%	99.7%
Timed LLVM Compilation - Unix Makefiles (sec)	**2214**	2222	**2223**
Normalized	100%	99.63%	99.6%
Timed Mesa Compilation - Time To Compile (sec)	153.141	**153.077**	**153.445**
Normalized	99.96%	100%	99.76%
Timed Node.js Compilation - Time To Compile (sec)	**1968**	**1974**	1970
Normalized	100%	99.73%	99.9%
C-Ray - Total Time - 4.1.R.P.P (sec)	161.735	**161.633**	**162.074**
Normalized	99.94%	100%	99.73%
Primesieve - 1.P.N.G (sec)	**55.636**	55.761	**55.795**
Normalized	100%	99.78%	99.72%
Smallpt - G.I.R.1.S (sec)	**37.499**	**37.443**	37.457
Normalized	99.85%	100%	99.96%
Tungsten Renderer - Hair (sec)	**89.649**	89.7875	**89.964**
Normalized	100%	99.85%	99.65%
Tungsten Renderer - Water Caustic (sec)	**61.9158**	61.9965	**62.6743**
Normalized	100%	99.87%	98.79%
Tungsten Renderer - Non-Exponential (sec)	22.2333	**22.1517**	**22.2551**
Normalized	99.63%	100%	99.54%
Tungsten Renderer - Volumetric Caustic (sec)	**29.5977**	29.6287	**29.6464**
Normalized	100%	99.9%	99.84%
Timed Wasmer Compilation - Time To Compile (sec)	**197.164**	**199.207**	199.05
Normalized	100%	98.97%	99.05%
Cython Benchmark - N-Queens (sec)	29.913	**29.536**	**30.455**
Normalized	98.74%	100%	96.98%
FLAC Audio Encoding - WAV To FLAC (sec)	**18.73**	18.869	**19.273**
Normalized	100%	99.26%	97.18%
Opus Codec Encoding - WAV To Opus Encode (sec)	8.887	**8.881**	**8.909**
Normalized	99.93%	100%	99.69%

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Gcrypt Library (sec)	248.521	**247.833**	**249.216**
Normalized	99.72%	100%	99.45%
Helsing - 12 digit (sec)	16.578	**16.59**	**16.574**
Normalized	99.98%	99.9%	100%
Tachyon - Total Time (sec)	**292.3108**	**291.8086**	292.1148
Normalized	99.83%	100%	99.9%
VOSK Speech Recognition Toolkit	**23.683**	**23.683**	**23.732**
Normalized	100%	100%	99.79%
Google SynthMark - VoiceMark_100 (Voices)	**573.759**	**579.217**	579.164
Normalized	99.06%	100%	99.99%
Cpuminer-Opt - Magi (kH/s)	**111**	110.89	**110.83**
Normalized	100%	99.9%	99.85%
Cpuminer-Opt - x25x (kH/s)	**90.93**	91.53	**91.55**
Normalized	99.32%	99.98%	100%
Cpuminer-Opt - Deepcoin (kH/s)	**1694**	1700	**1723**
Normalized	98.3%	98.68%	100%
Cpuminer-Opt - Ringcoin (kH/s)	660.54	**636.19**	**669.3**
Normalized	98.69%	95.05%	100%
Cpuminer-Opt - Blake-2 S (kH/s)	**58200**	57960	**57230**
Normalized	100%	99.59%	98.33%
Cpuminer-Opt - Garlicoin (kH/s)	**434.81**	**404.09**	414.81
Normalized	100%	92.93%	95.4%
Cpuminer-Opt - Skeincoin (kH/s)	**14750**	14360	**13230**
Normalized	100%	97.36%	89.69%
Cpuminer-Opt - Myriad-Groestl (kH/s)	5706	**5117**	**5717**
Normalized	99.8%	89.51%	100%
Cpuminer-Opt - LBC, LBRY Credits (kH/s)	**3710**	3913	**3955**
Normalized	93.81%	98.95%	100%
Cpuminer-Opt - Q.S.2.P (kH/s)	**17720**	**15770**	17610
Normalized	100%	89%	99.38%
Cpuminer-Opt - T.S.2.O (kH/s)	40530	**39940**	**44220**
Normalized	91.66%	90.32%	100%
SecureMark - SecureMark-TLS	178160	**178882**	**177049**
Normalized	99.6%	100%	98.98%
OpenJPEG - N.C.P.M (ms)	56931	**56155**	**57263**
Normalized	98.64%	100%	98.07%
OpenSSL - SHA256 (byte/s)	3251191810	**3256477090**	**3196951770**
Normalized	99.84%	100%	98.17%
OpenSSL - RSA4096 (sign/s)	741.9	**736.3**	**743.3**
Normalized	99.81%	99.06%	100%
OpenSSL - RSA4096 (verify/s)	**48306**	48349	**48382**
Normalized	99.84%	99.93%	100%
Liquid-DSP - 1 - 256 - 57 (samples/s)	**52023000**	**51742000**	51928000
Normalized	100%	99.46%	99.82%
Liquid-DSP - 2 - 256 - 57 (samples/s)	**104170000**	104150000	**104100000**
Normalized	100%	99.98%	99.93%
Liquid-DSP - 4 - 256 - 57 (samples/s)	204650000	**204580000**	**205280000**
Normalized	99.69%	99.66%	100%
OpenSSL (sign/s)	**744.5**	**744.1**	**744.5**
Normalized	100%	99.95%	100%
OpenSSL (verify/s)	**48441**	48482	**48562**

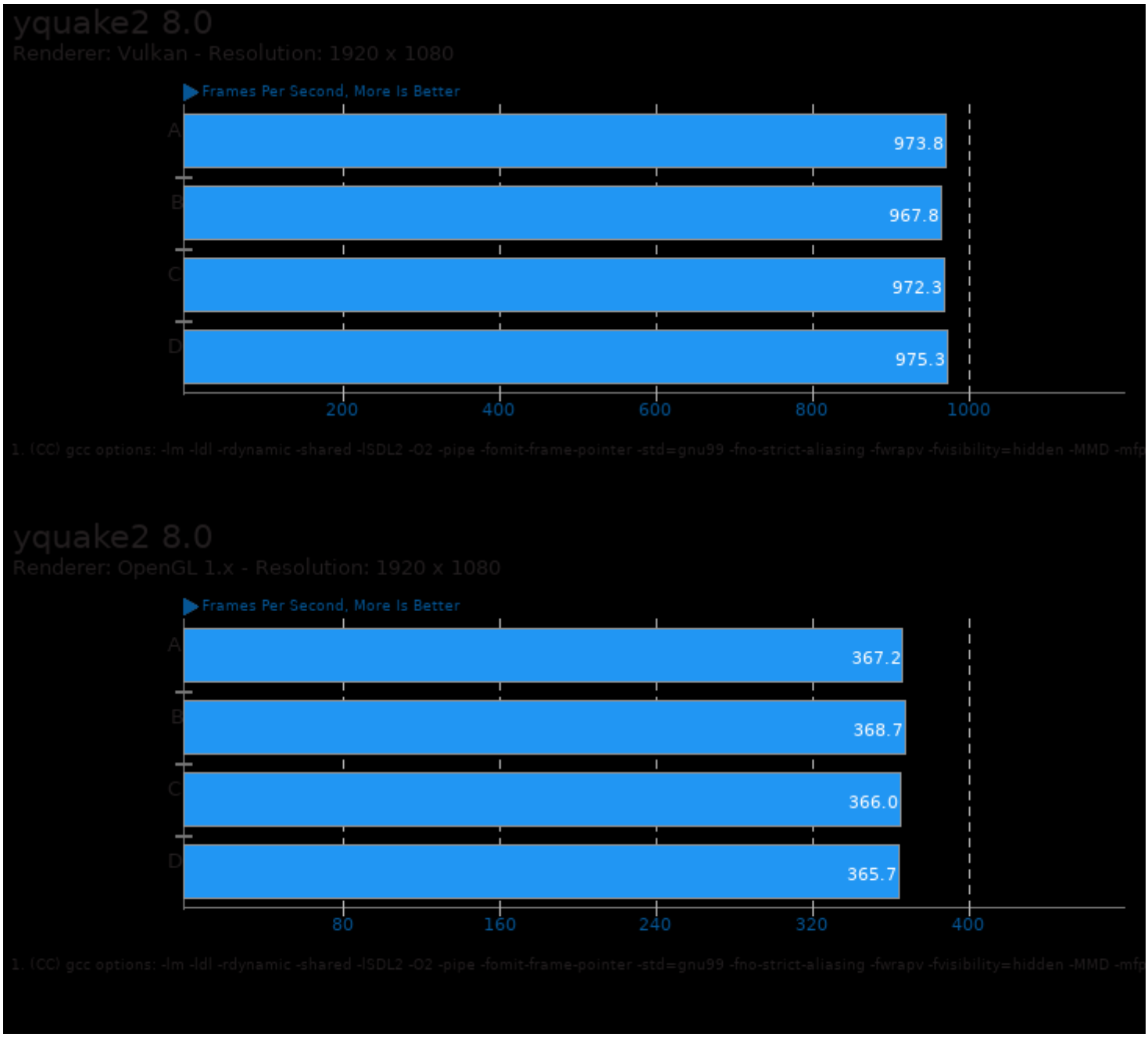
Normalized	99.75%	99.84%	100%
ASKAP - tConvolve MT - Gridding (Million Grid Points/sec)	1010	998.148	1007
Normalized	100%	98.78%	99.62%
ASKAP - tConvolve MT - Degridding (Million Grid Points/sec)	1252	1240	1243
Normalized	100%	99.07%	99.3%
ASKAP - tConvolve MPI - Degridding (Mpix/sec)	1058	1050	1050
Normalized	100%	99.2%	99.2%
ASKAP - tConvolve MPI - Gridding (Mpix/sec)	874.652	868.86	874.652
Normalized	100%	99.34%	100%
ASKAP - tConvolve OpenMP - Gridding (Million Grid Points/sec)	893.477	890.488	893.477
Normalized	100%	99.67%	100%
ASKAP - tConvolve OpenMP - Degridding (Million Grid Points/sec)	1372	1416	1387
Normalized	96.91%	100%	97.92%
ASKAP - H.C.O (Iterations/sec)	163.666	162.602	162.602
Normalized	100%	99.35%	99.35%
KeyDB (Ops/sec)	244943	253268	265494
Normalized	92.26%	95.4%	100%
GROMACS - MPI CPU - water_GMX50_bare (Ns/Day)	0.346	0.344	0.344
Normalized	100%	99.42%	99.42%
TensorFlow Lite - SqueezeNet (us)	421423	412946	415066
Normalized	97.99%	100%	99.49%
TensorFlow Lite - Inception V4 (us)	6032590	5998120	6087430
Normalized	99.43%	100%	98.53%
TensorFlow Lite - NASNet Mobile (us)	296685	297123	297549
Normalized	100%	99.85%	99.71%
TensorFlow Lite - Mobilenet Float (us)	278927	280083	279778
Normalized	100%	99.59%	99.7%
TensorFlow Lite - Mobilenet Quant	297117	297946	298831
Normalized	100%	99.72%	99.43%
TensorFlow Lite - I.R.V (us)	5384380	5379740	5395570
Normalized	99.91%	100%	99.71%
ASTC Encoder - Medium (sec)	8.5383	8.5468	8.6396
Normalized	100%	99.9%	98.83%
ASTC Encoder - Thorough (sec)	29.2193	29.2367	29.3596
Normalized	100%	99.94%	99.52%
ASTC Encoder - Exhaustive (sec)	261.0462	261.2553	261.7135
Normalized	100%	99.92%	99.75%
Basis Universal - ETC1S (sec)	42.546	42.689	43.634
Normalized	100%	99.67%	97.51%
Basis Universal - UASTC Level 0 (sec)	11.766	11.895	11.812
Normalized	100%	98.92%	99.61%
Basis Universal - UASTC Level 2 (sec)	84.187	84.469	84.523
Normalized	100%	99.67%	99.6%
Basis Universal - UASTC Level 3 (sec)	172.398	172.742	172.683
Normalized	100%	99.8%	99.83%

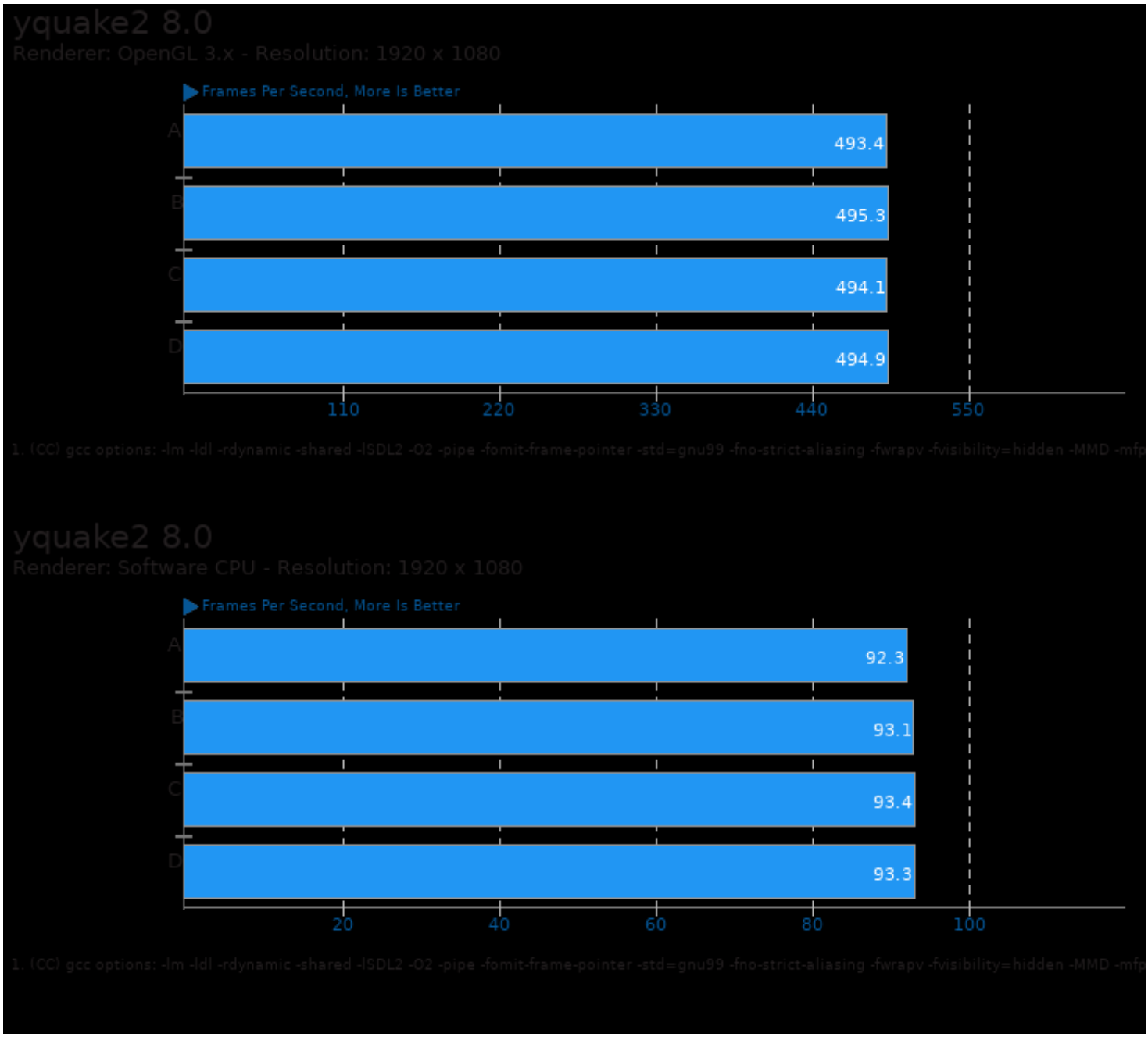
KTX-Software toktx - UASTC 3 (sec)	**36.262**	36.384	**36.442**
Normalized	100%	99.66%	99.51%
KTX-Software toktx - Zstd Compression 9 (sec)	4.358	**4.305**	**4.407**
Normalized	98.78%	100%	97.69%
KTX-Software toktx - Z.C.1 (sec)	27.014	**26.527**	**27.042**
Normalized	98.2%	100%	98.1%
KTX-Software toktx - U.3.Z.C.1 (sec)	**43.331**	43.584	**43.594**
Normalized	100%	99.42%	99.4%
KTX-Software toktx - U.4.Z.C.1 (sec)	**1113**	1114	**1116**
Normalized	100%	99.92%	99.77%
GIMP - resize (sec)	**13.165**	13.599	**14.334**
Normalized	100%	96.81%	91.84%
GIMP - rotate (sec)	**14.867**	**14.912**	14.889
Normalized	100%	99.7%	99.85%
GIMP - auto-levels (sec)	16.947	**16.838**	**17.078**
Normalized	99.36%	100%	98.59%
GIMP - unsharp-mask (sec)	18.574	**18.645**	**18.322**
Normalized	98.64%	98.27%	100%
Stress-NG - MMAP (Bogo Ops/s)	**17.25**	17.36	**17.39**
Normalized	99.19%	99.83%	100%
Stress-NG - NUMA (Bogo Ops/s)	**81.84**	**78.57**	78.72
Normalized	100%	96%	96.19%
Stress-NG - MEMFD (Bogo Ops/s)	101.88	**103.25**	**96.63**
Normalized	98.67%	100%	93.59%
Stress-NG - Atomic (Bogo Ops/s)	**357333**	**352405**	352620
Normalized	100%	98.62%	98.68%
Stress-NG - Crypto (Bogo Ops/s)	**910.17**	906.86	**906.37**
Normalized	100%	99.64%	99.58%
Stress-NG - Malloc (Bogo Ops/s)	13737838	**13725605**	**13746942**
Normalized	99.93%	99.84%	100%
Stress-NG - Forking (Bogo Ops/s)	**19203**	**18820**	18944
Normalized	100%	98.01%	98.65%
Stress-NG - IO_uring (Bogo Ops/s)	4912	**4262**	**4944**
Normalized	99.34%	86.2%	100%
Stress-NG - SENDFILE (Bogo Ops/s)	47740	**47688**	**47745**
Normalized	99.99%	99.88%	100%
Stress-NG - CPU Cache (Bogo Ops/s)	**470.2**	**514.86**	482.47
Normalized	91.33%	100%	93.71%
Stress-NG - CPU Stress (Bogo Ops/s)	**6443**	6440	**6422**
Normalized	100%	99.95%	99.68%
Stress-NG - Semaphores (Bogo	284508	**283920**	**292817**
Normalized	97.16%	96.96%	100%
Stress-NG - Matrix Math (Bogo Ops/s)	17312	**17326**	**17268**
Normalized	99.92%	100%	99.66%
Stress-NG - Vector Math (Bogo Ops/s)	13115	**13117**	**13093**
Normalized	99.99%	100%	99.82%
Stress-NG - Memory Copying (Bogo Ops/s)	**968.97**	**1010**	971.57
Normalized	95.95%	100%	96.21%
Stress-NG - Socket Activity (Bogo	**2905**	**2721**	2796
Normalized	100%	93.66%	96.25%

Stress-NG - Context Switching (Bogo Ops/s)	**1015831**	1014302	**997361**
Normalized	100%	99.85%	98.18%
Stress-NG - G.C.S.F (Bogo Ops/s)	**386541**	380881	**375667**
Normalized	100%	98.54%	97.19%
Stress-NG - G.Q.D.S (Bogo Ops/s)	41.97	**42.73**	**41.37**
Normalized	98.22%	100%	96.82%
Stress-NG - S.V.M.P (Bogo Ops/s)	**3365569**	**3355188**	3359436
Normalized	100%	99.69%	99.82%
Mobile Neural Network - mobilenetV3 (ms)	1.828	**1.823**	**1.832**
Normalized	99.73%	100%	99.51%
Mobile Neural Network - squeezenetv1.1 (ms)	4.639	**4.628**	**4.681**
Normalized	99.76%	100%	98.87%
Mobile Neural Network - resnet-v2-50 (ms)	43.812	**43.922**	**41.789**
Normalized	95.38%	95.14%	100%
Mobile Neural Network - SqueezeNetV1.0 (ms)	**8.632**	8.597	**8.527**
Normalized	98.78%	99.19%	100%
Mobile Neural Network - MobileNetV2_224 (ms)	4.648	**4.666**	**4.647**
Normalized	99.98%	99.59%	100%
Mobile Neural Network - mobilenet-v1-1.0 (ms)	**6.384**	**6.344**	6.352
Normalized	99.37%	100%	99.87%
Mobile Neural Network - inception-v3 (ms)	**53.569**	53.481	**53.356**
Normalized	99.6%	99.77%	100%
NCNN - CPU - mobilenet (ms)	**35.04**	35.06	**35.2**
Normalized	100%	99.94%	99.55%
NCNN - CPU-v2-v2 - mobilenet-v2 (ms)	**8.17**	8.16	**8.15**
Normalized	99.76%	99.88%	100%
NCNN - CPU-v3-v3 - mobilenet-v3 (ms)	7.21	**7.23**	**7.1**
Normalized	98.47%	98.2%	100%
NCNN - CPU - shufflenet-v2 (ms)	**5.56**	5.46	**5.33**
Normalized	95.86%	97.62%	100%
NCNN - CPU - mnasnet (ms)	7.48	**7.47**	**7.6**
Normalized	99.87%	100%	98.29%
NCNN - CPU - efficientnet-b0 (ms)	12.37	**12.28**	**12.58**
Normalized	99.27%	100%	97.62%
NCNN - CPU - blazeface (ms)	**1.96**	**1.96**	**1.86**
Normalized	94.9%	94.9%	100%
NCNN - CPU - googlenet (ms)	25.57	**24.76**	**25.74**
Normalized	96.83%	100%	96.19%
NCNN - CPU - vgg16 (ms)	**97.6**	97.24	**97.18**
Normalized	99.57%	99.94%	100%
NCNN - CPU - resnet18 (ms)	**23.22**	**22.65**	23.1
Normalized	97.55%	100%	98.05%
NCNN - CPU - alexnet (ms)	**18.49**	18.14	**18.06**
Normalized	97.67%	99.56%	100%

2200G AMD

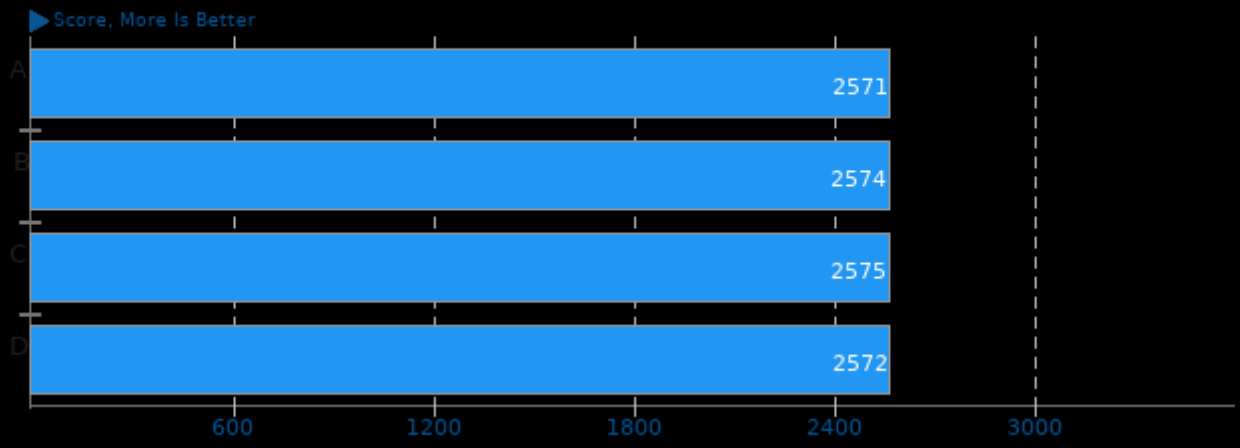
NCNN - CPU - resnet50 (ms)	**51.84**	51.99	**52.2**
Normalized	100%	99.71%	99.31%
NCNN - CPU - yolov4-tiny (ms)	43.98	**43.92**	**44.23**
Normalized	99.86%	100%	99.3%
NCNN - CPU - squeezenet_ssd (ms)	48.26	**48.07**	**48.42**
Normalized	99.61%	100%	99.28%
NCNN - CPU - regnety_400m (ms)	11.87	**11.69**	**11.89**
Normalized	98.48%	100%	98.32%


yquake2 8.0
Renderer: Vulkan - Resolution: 1920 x 1080
Frames Per Second, More Is Better
A
B
C
D
973.8
967.8
972.3
975.3
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 8.0
Renderer: OpenGL 1.x - Resolution: 1920 x 1080
Frames Per Second, More Is Better
A
B
C
D
367.2
368.7
366.0
365.7
80
160
240
320
400
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 8.0
Renderer: OpenGL 3.x - Resolution: 1920 x 1080
Frames Per Second, More Is Better
A
B
C
D
493.4
495.3
494.1
494.9
110
220
330
440
550
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 8.0
Renderer: Software CPU - Resolution: 1920 x 1080
Frames Per Second, More Is Better
A
B
C
D
92.3
93.1
93.4
93.3
20
40
60
80
100
1. (CC) gcc options: -lm -ldl -rdynamic -shared -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf

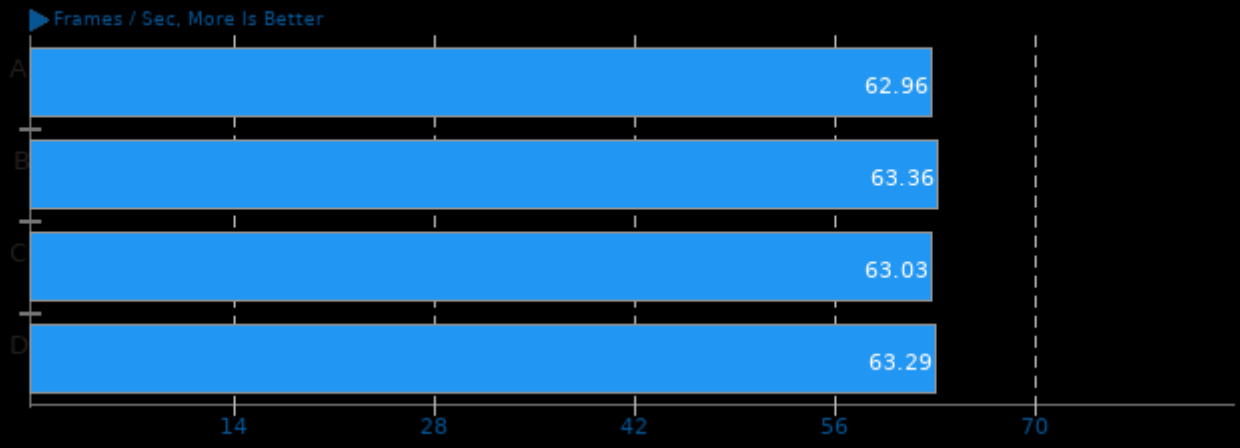
GLmark2 2021.08.30

Resolution: 1920 x 1080



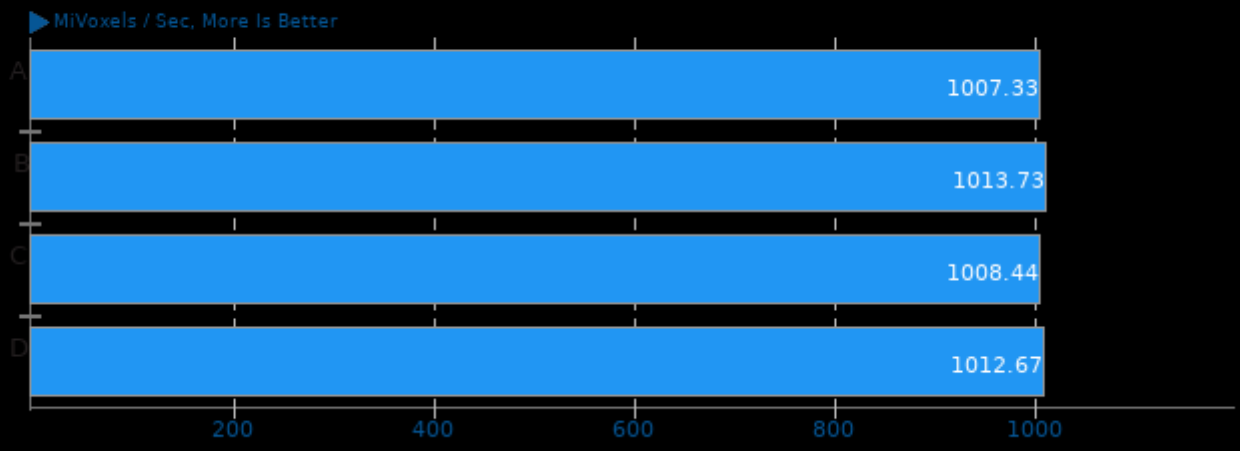
ParaView 5.9

Test: Wavelet Volume - Resolution: 1920 x 1080



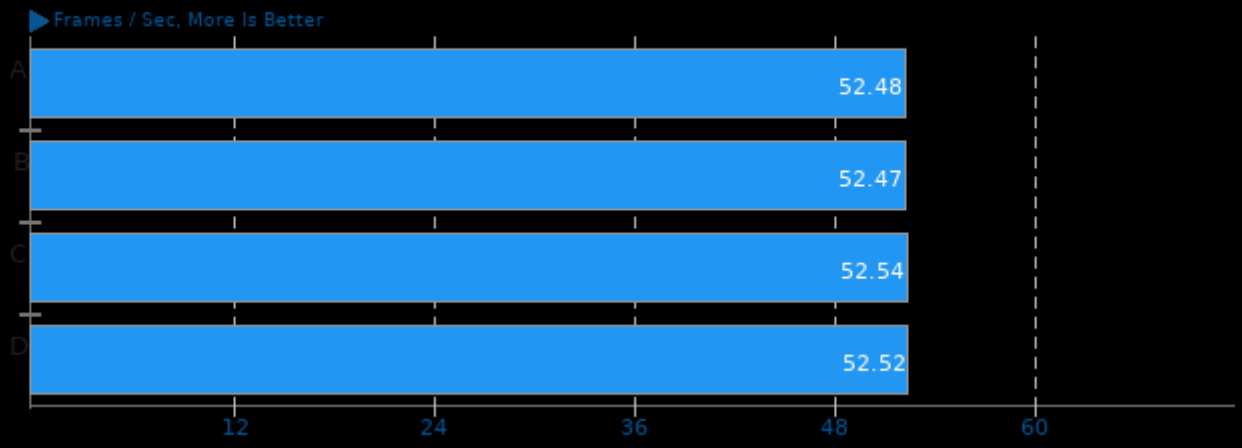
ParaView 5.9

Test: Wavelet Volume - Resolution: 1920 x 1080



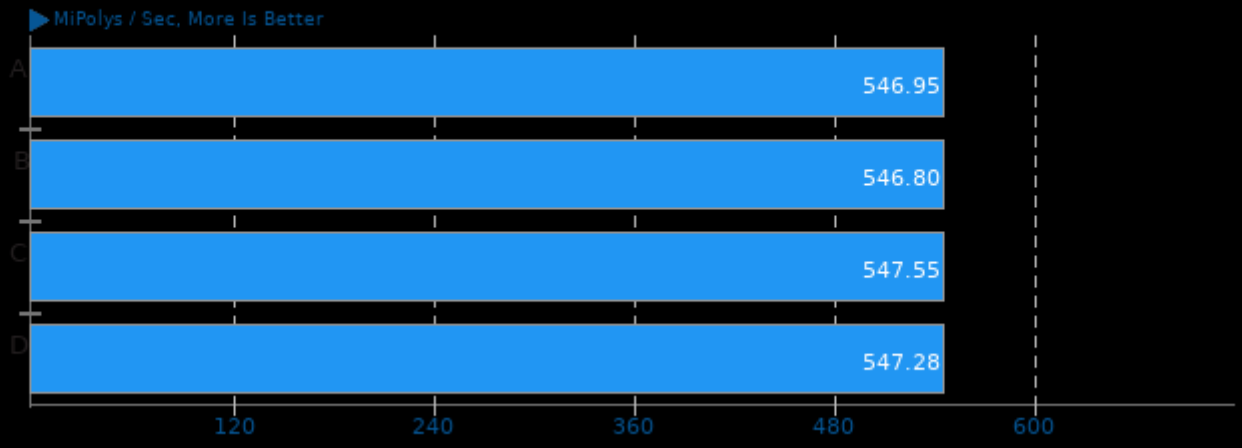
ParaView 5.9

Test: Wavelet Contour - Resolution: 1920 x 1080



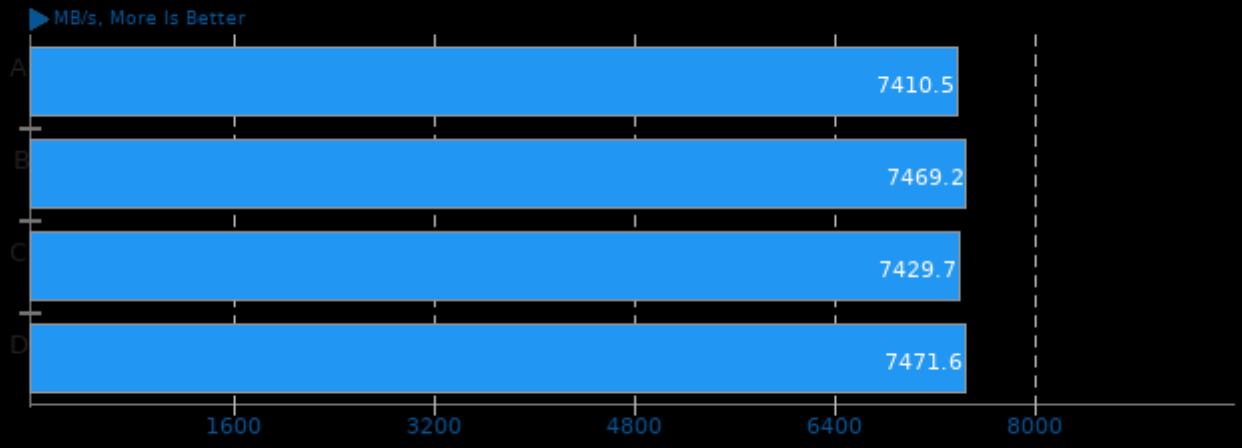
ParaView 5.9

Test: Wavelet Contour - Resolution: 1920 x 1080

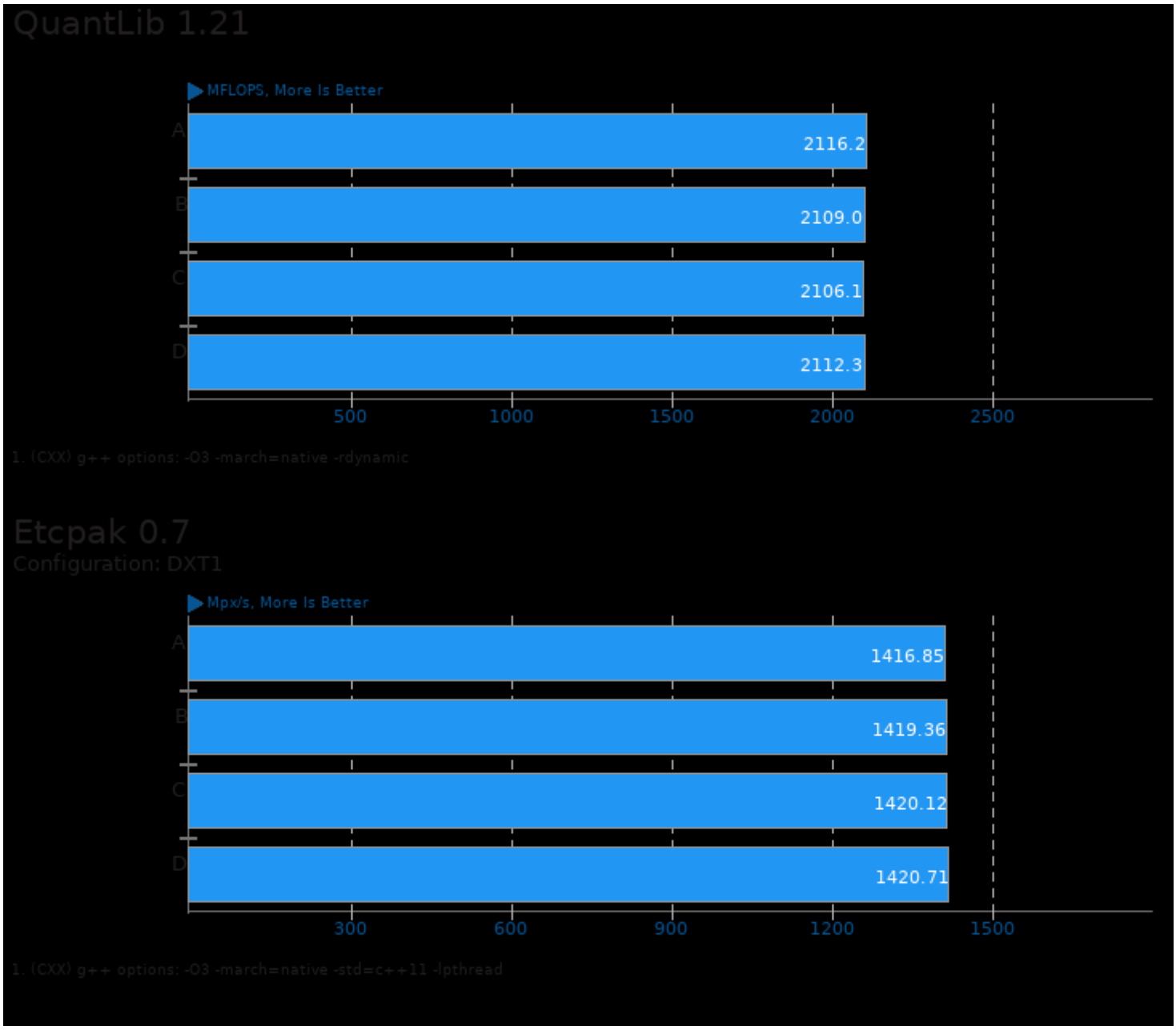


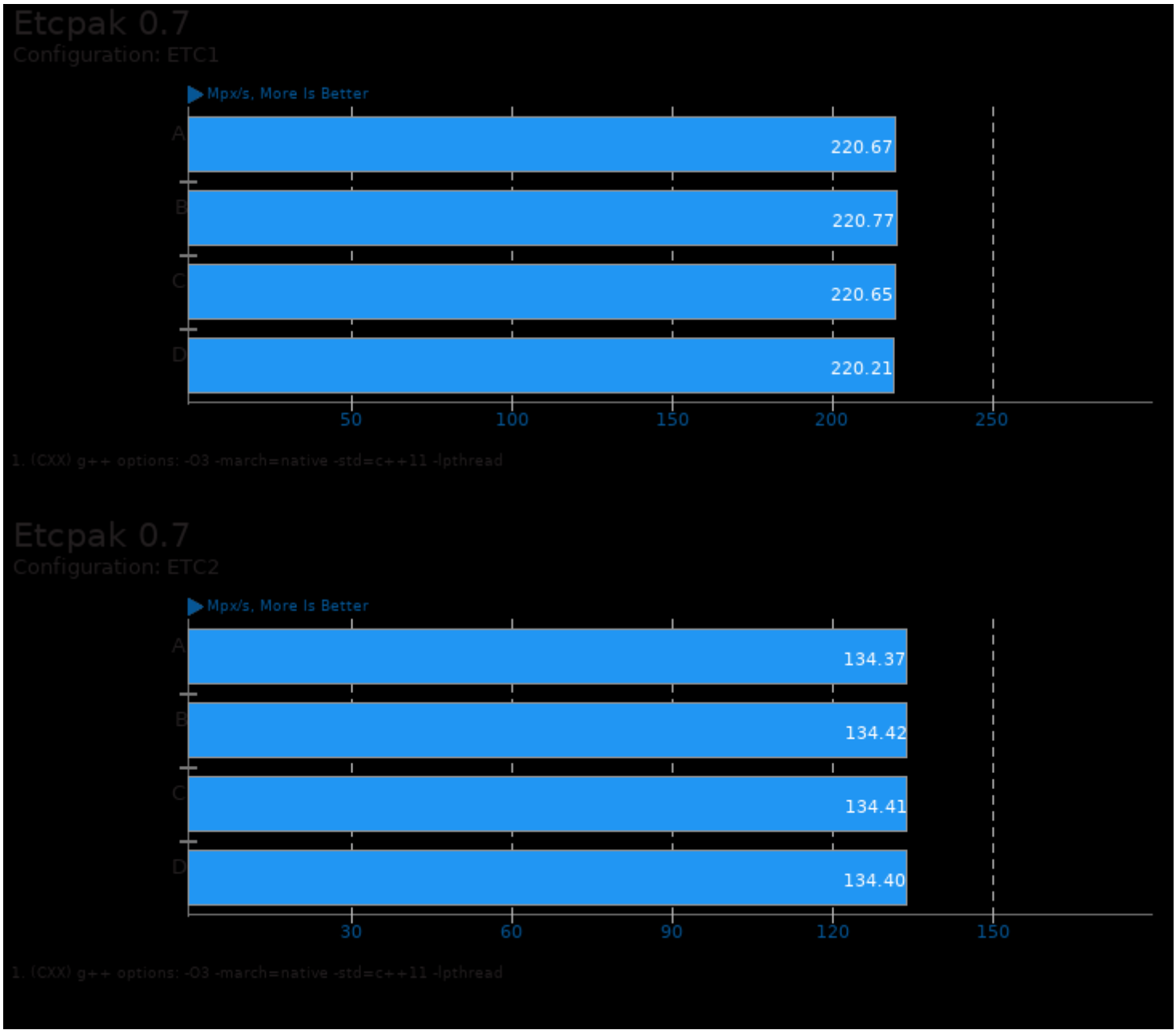
C-Blosc 2.0

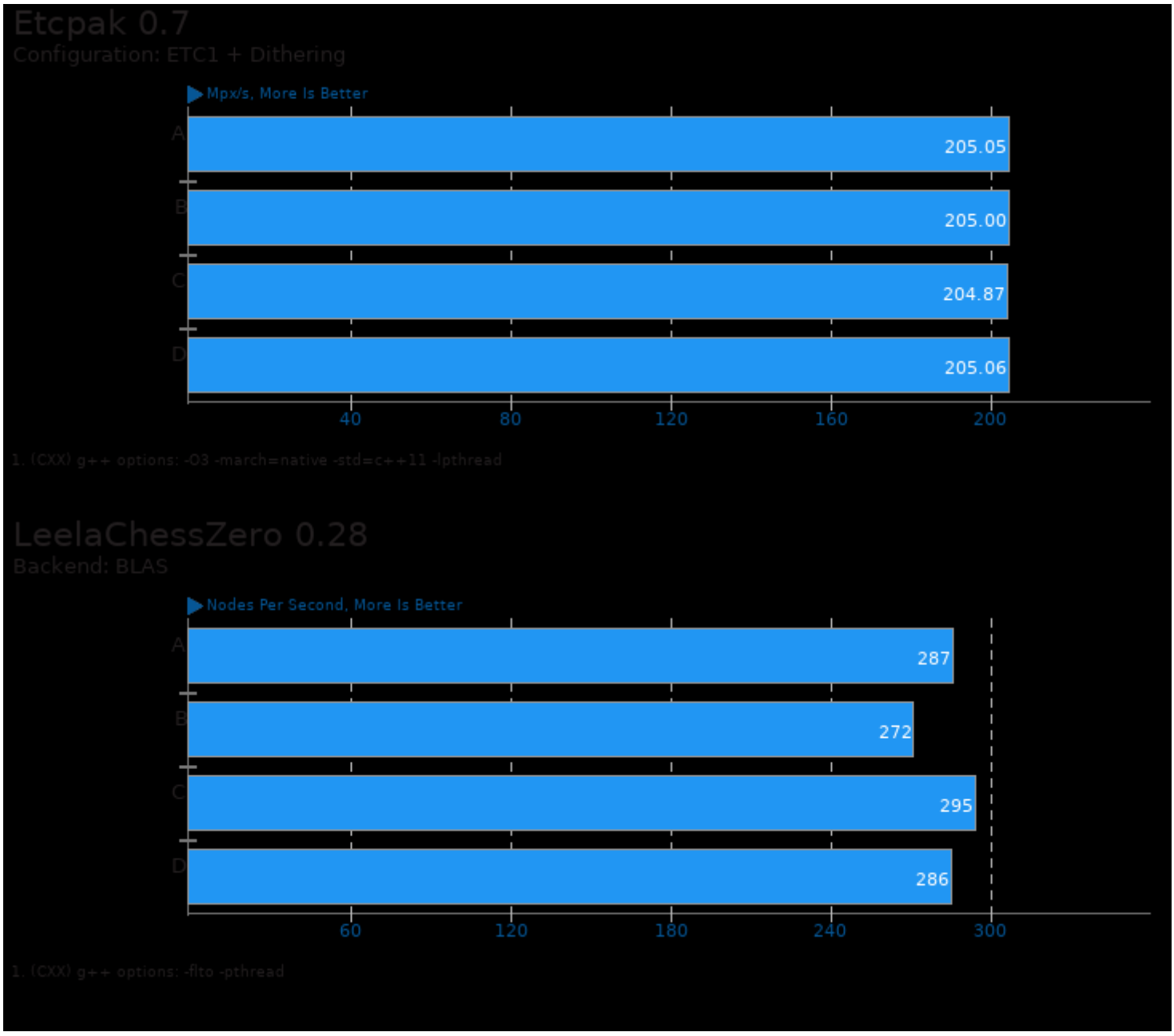
Compressor: blosclz

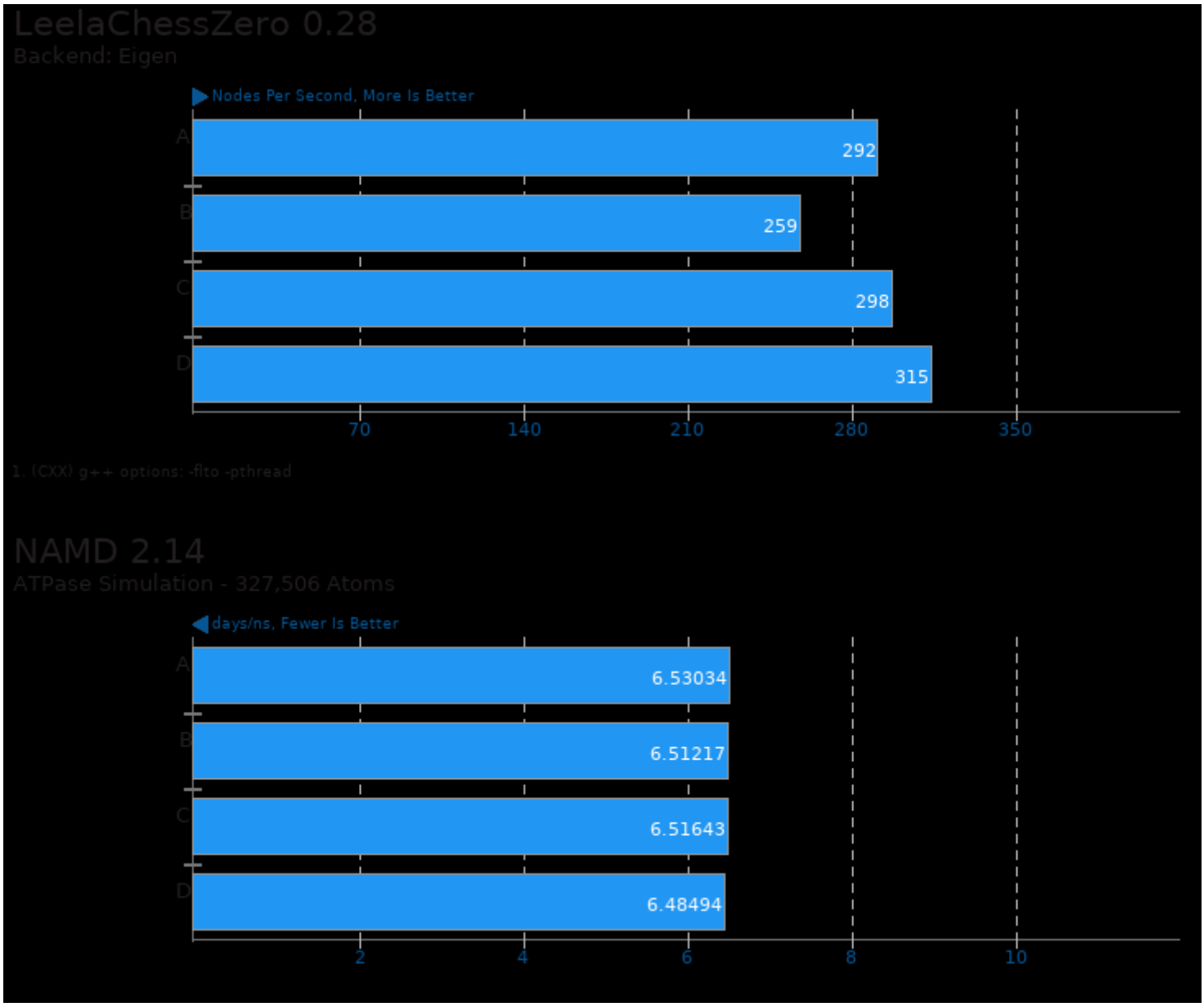


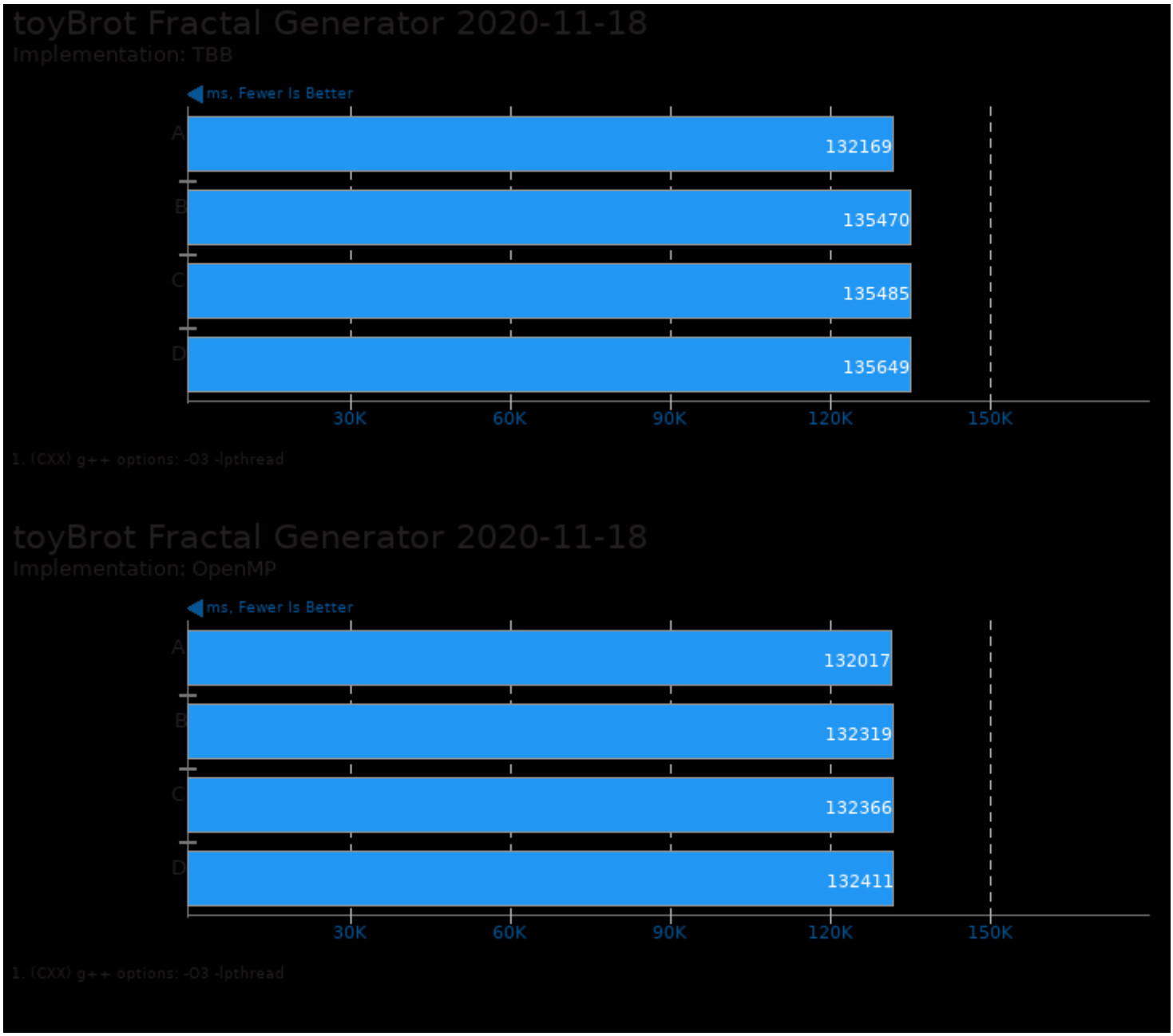
1. (CC) gcc options: -std=gnu99 -O3 -lrt -lm

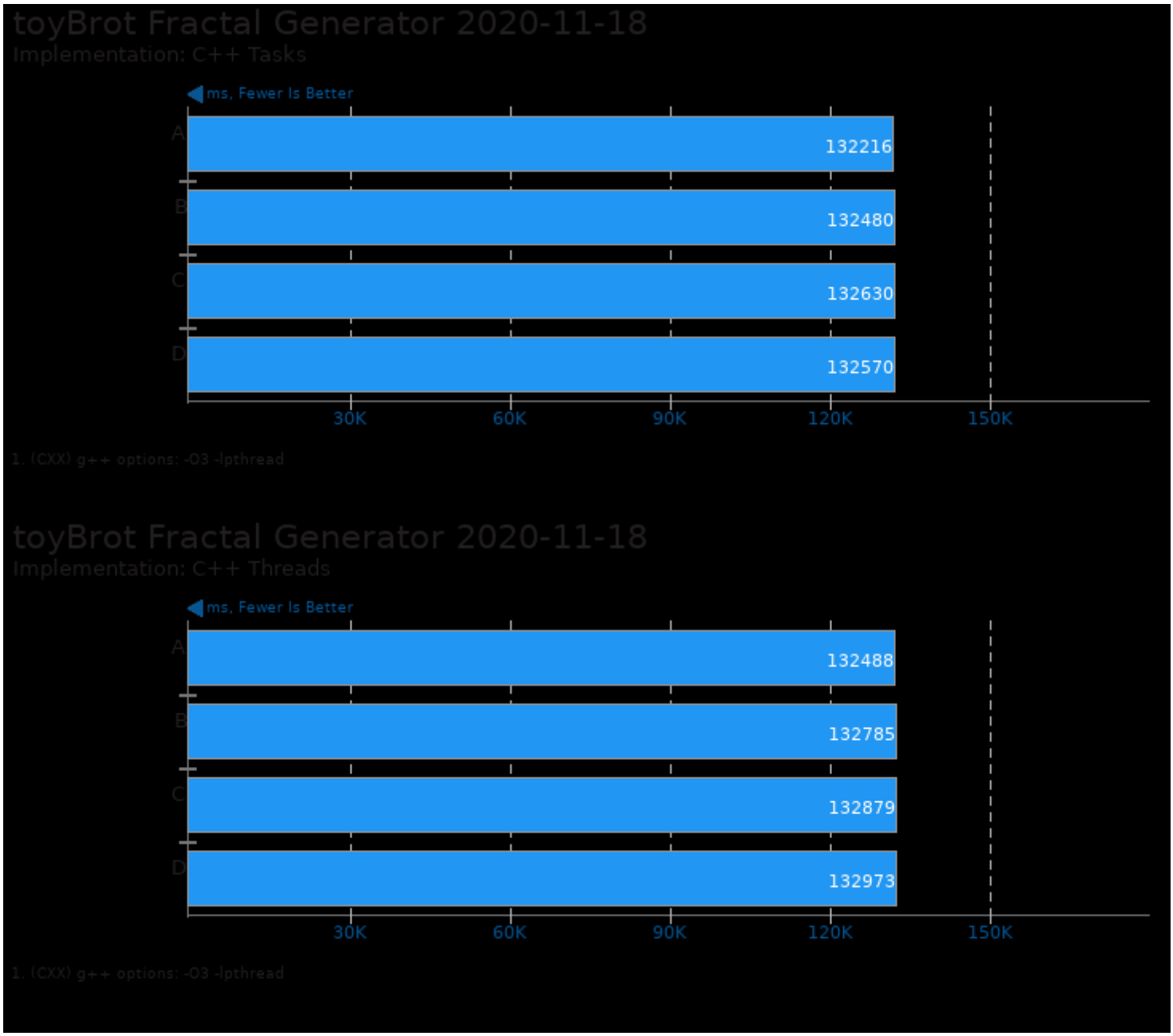

QuantLib 1.21
MFLOPS, More Is Better
A
2116.2
B
2109.0
C
2106.1
D
2112.3
500
1000
1500
2000
2500
1. (CXX) g++ options: -O3 -march=native -rdynamic
Etcpak 0.7
Configuration: DXT1
Mpx/s, More Is Better
A
1416.85
B
1419.36
C
1420.12
D
1420.71
300
600
900
1200
1500
1. (CXX) g++ options: -O3 -march=native -std=c++11 -lpthread


Etcpak 0.7
Configuration: ETC1
Mpx/s, More Is Better
A
220.67
B
220.77
C
220.65
D
220.21
50
100
150
200
250
1. (CXX) g++ options: -O3 -march=native -std=c++11 -lpthread
Etcpak 0.7
Configuration: ETC2
Mpx/s, More Is Better
A
134.37
B
134.42
C
134.41
D
134.40
30
60
90
120
150
1. (CXX) g++ options: -O3 -march=native -std=c++11 -lpthread

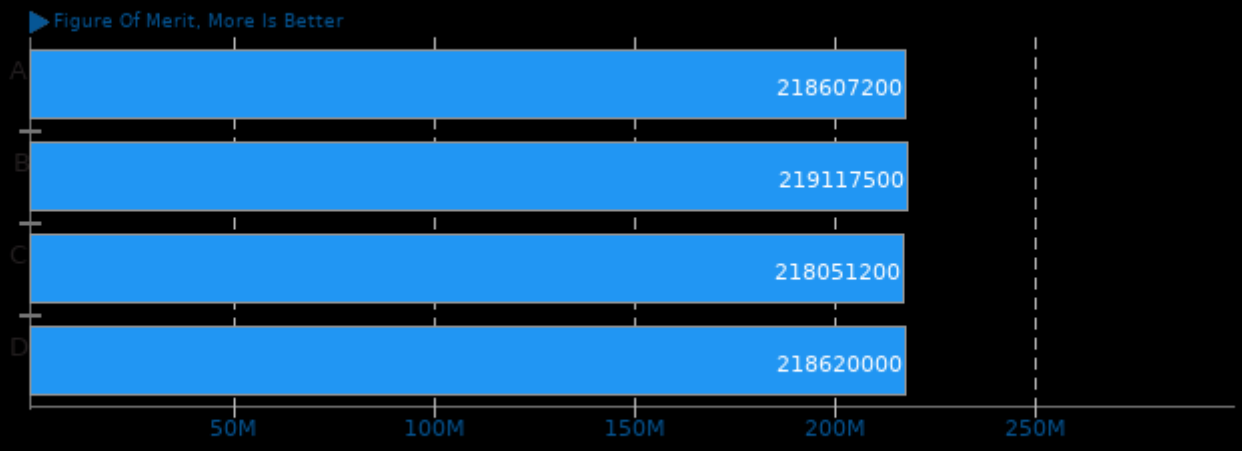

Etcpak 0.7
Configuration: ETC1 + Dithering
Mpx/s, More Is Better
A
205.05
B
205.00
C
204.87
D
205.06
40
80
120
160
200
1. (CXX) g++ options: -O3 -march=native -std=c++11 -lpthread
LeelaChessZero 0.28
Backend: BLAS
Nodes Per Second, More Is Better
A
287
B
272
C
295
D
286
60
120
180
240
300
1. (CXX) g++ options: -flto -pthread


LeelaChessZero 0.28
Backend: Eigen
Nodes Per Second, More Is Better
A
292
B
259
C
298
D
315
70
140
210
280
350
1. (CXX) g++ options: -flto -pthread
NAMD 2.14
ATPase Simulation - 327,506 Atoms
days/ns, Fewer Is Better
A
6.53034
B
6.51217
C
6.51643
D
6.48494
2
4
6
8
10


toyBrot Fractal Generator 2020-11-18
Implementation: TBB
ms, Fewer Is Better
A
B
C
D
132169
135470
135485
135649
30K
60K
90K
120K
150K
1. (CXX) g++ options: -O3 -lpthread
toyBrot Fractal Generator 2020-11-18
Implementation: OpenMP
ms, Fewer Is Better
A
B
C
D
132017
132319
132366
132411
30K
60K
90K
120K
150K
1. (CXX) g++ options: -O3 -lpthread


toyBrot Fractal Generator 2020-11-18
Implementation: C++ Tasks
ms, Fewer Is Better
A
B
C
D
132216
132480
132630
132570
30K
60K
90K
120K
150K
1. (CXX) g++ options: -O3 -lpthread
toyBrot Fractal Generator 2020-11-18
Implementation: C++ Threads
ms, Fewer Is Better
A
B
C
D
132488
132785
132879
132973
30K
60K
90K
120K
150K
1. (CXX) g++ options: -O3 -lpthread

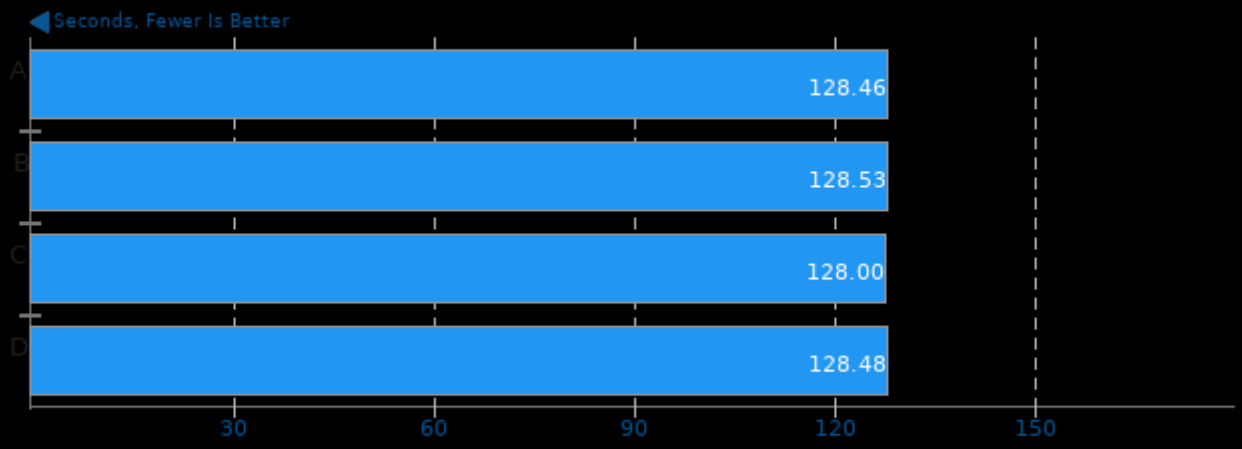
Algebraic Multi-Grid Benchmark 1.2



1. (CC) gcc options: -lparcsr_ls -lparcsr_mv -lseq_mv -lIJ_mv -lkrylov -lHYPRE_utilities -lm -fopenmp -lmpi

Timed HMMer Search 3.3.2

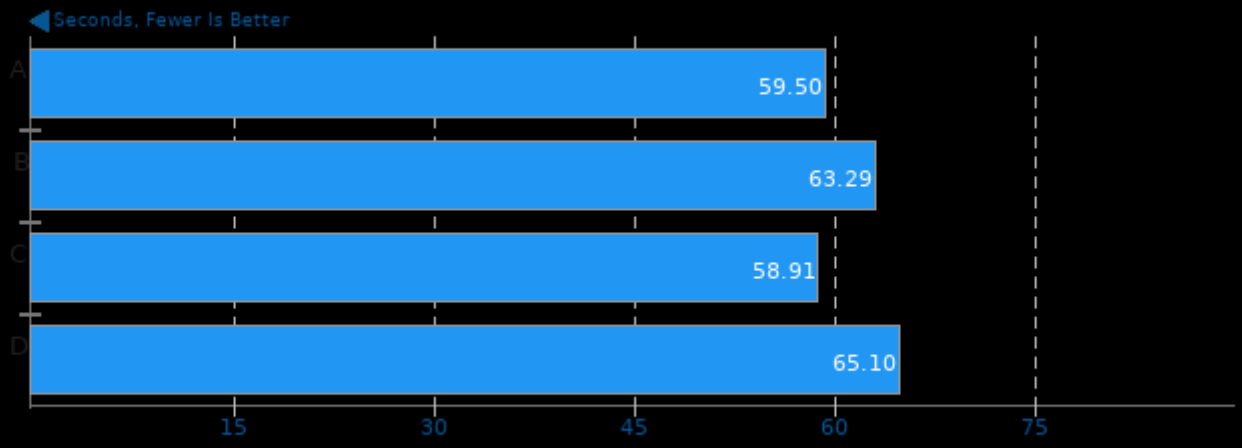
Pfam Database Search



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

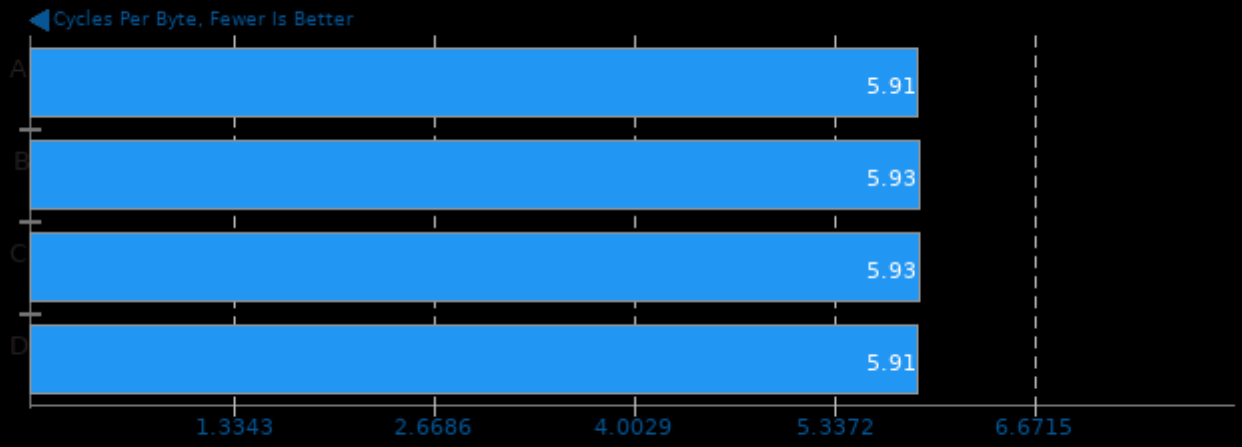
Xcompact3d Incompact3d 2021-03-11

Input: input.i3d 129 Cells Per Direction

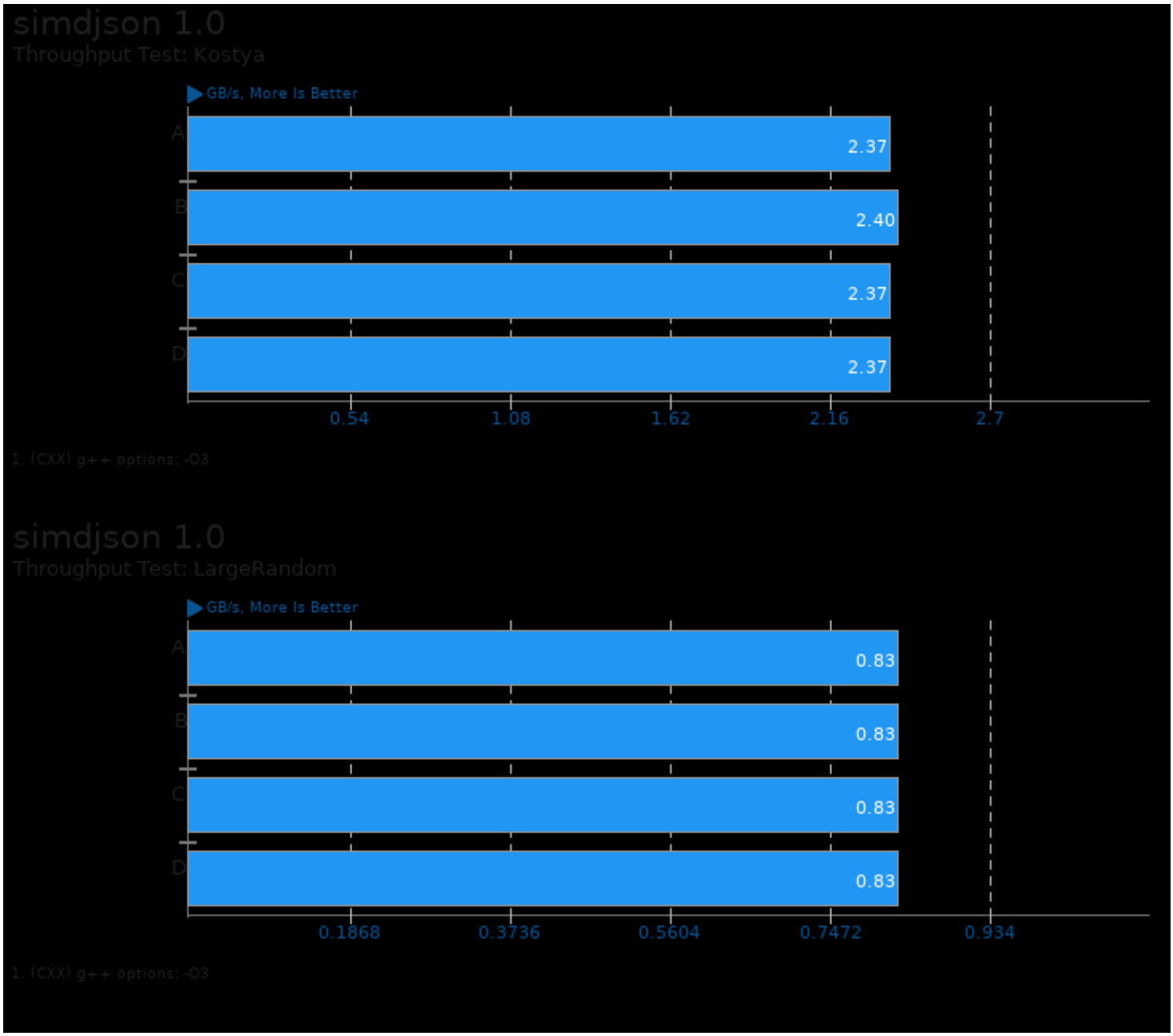


1. (F9X) gfortran options: -cpp -O2 -funroll-loops -floop-optimize -fcray-pointer -fbacktrace -lmpi_usempif08 -lmpi_mpifh -lmpi -lopen-rte -lopen-pal -lhwlo

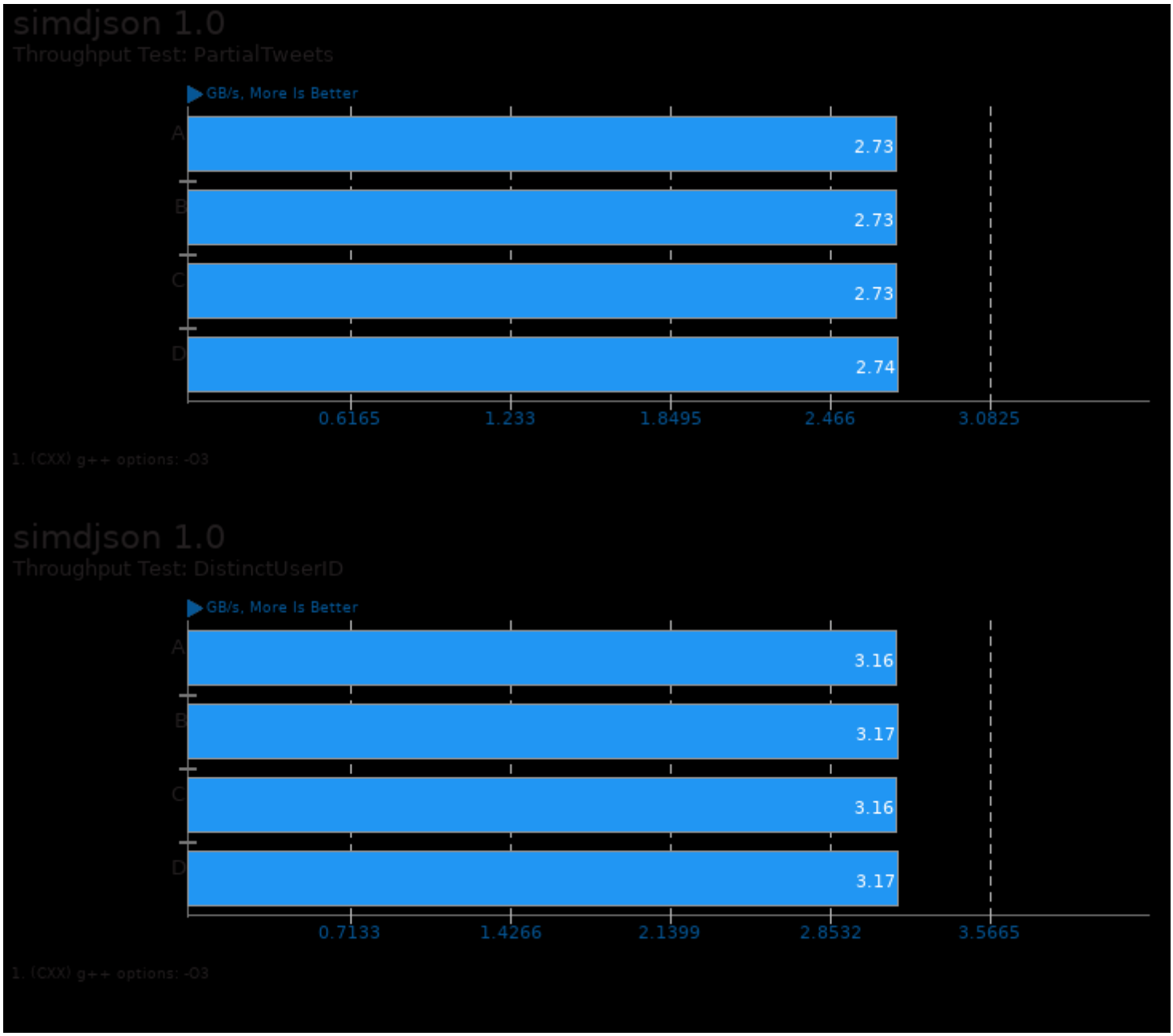
BLAKE2 20170307

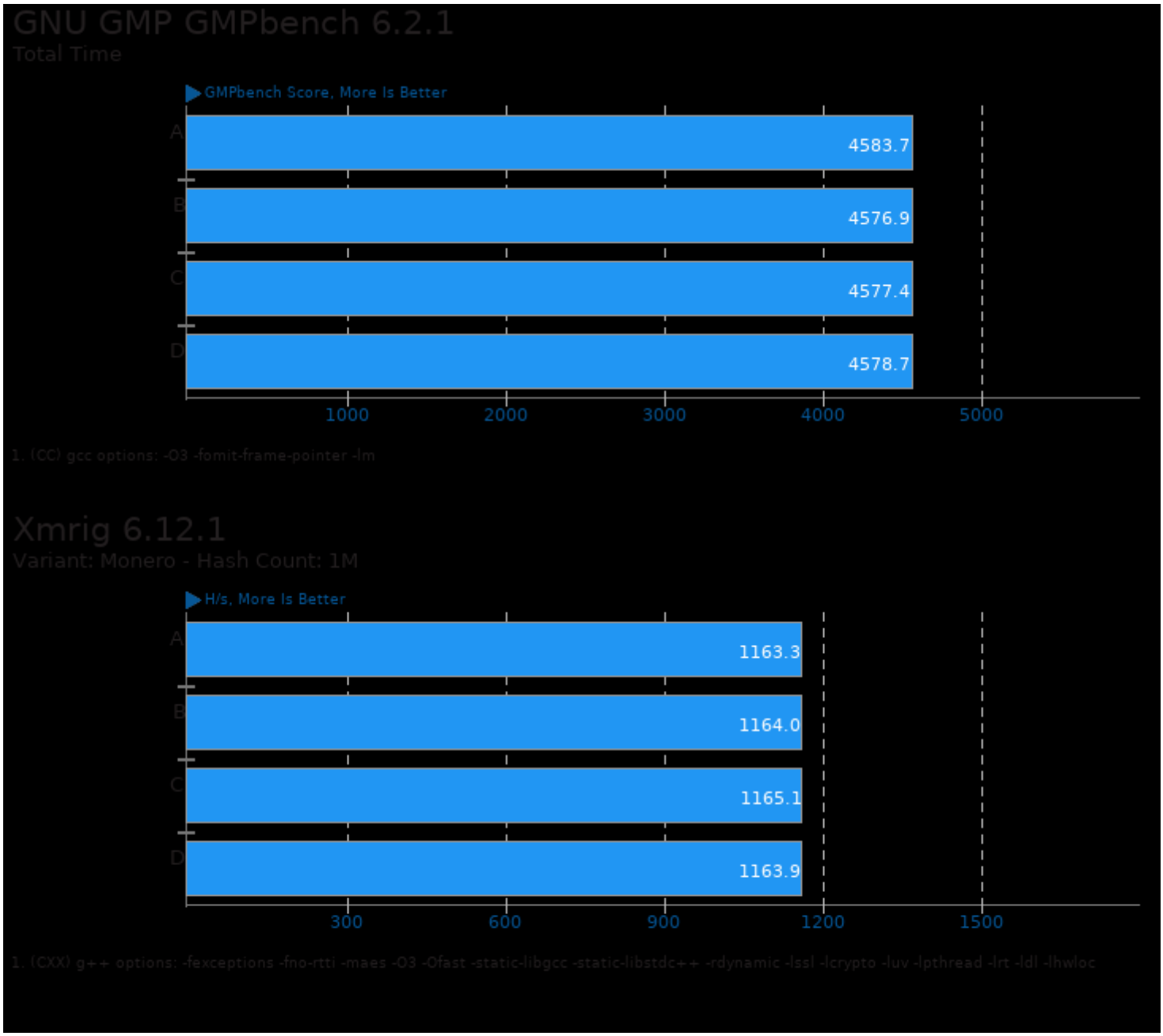


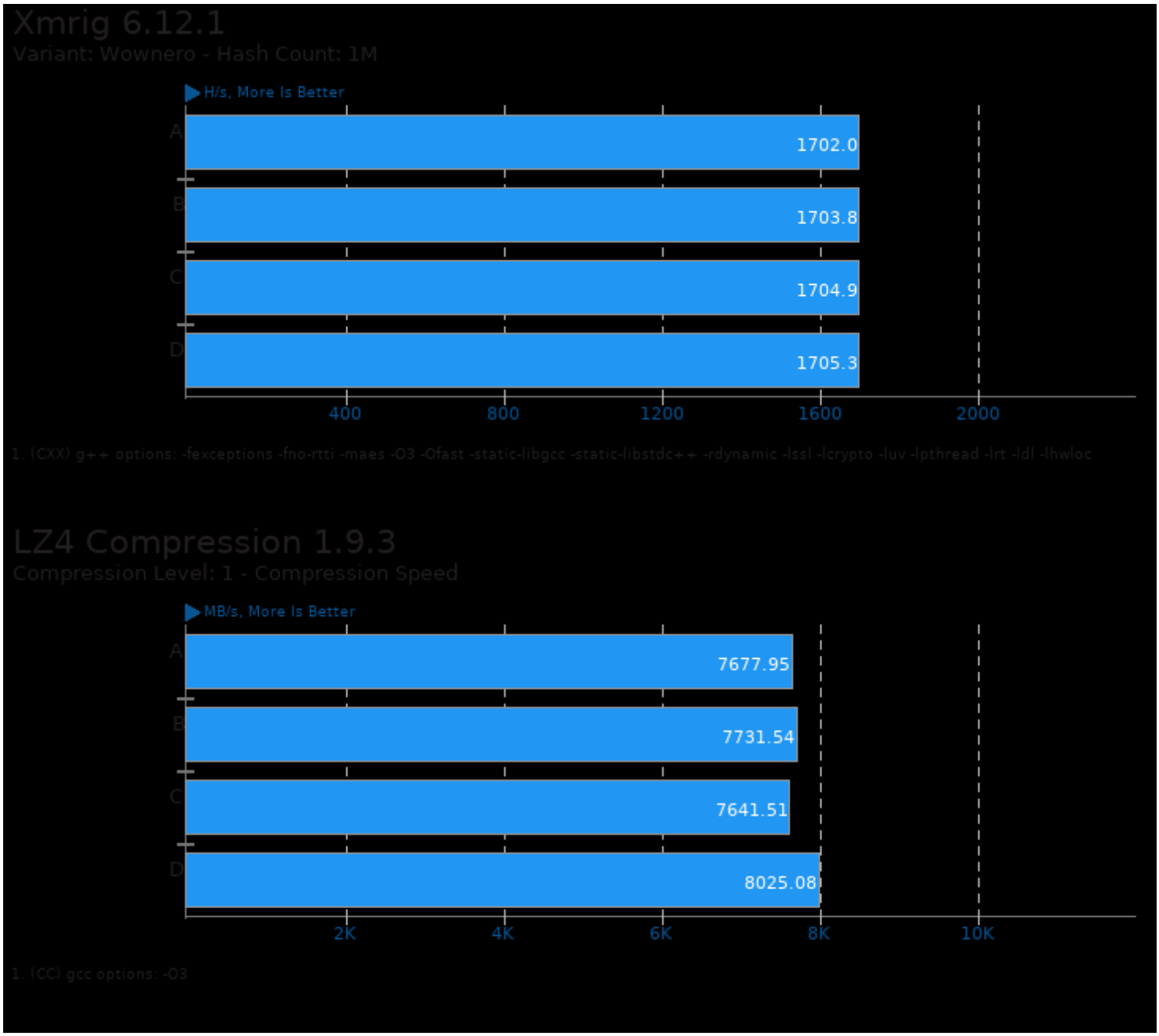
1. (CC) gcc options: -O3 -march=native -lcrypto -lz

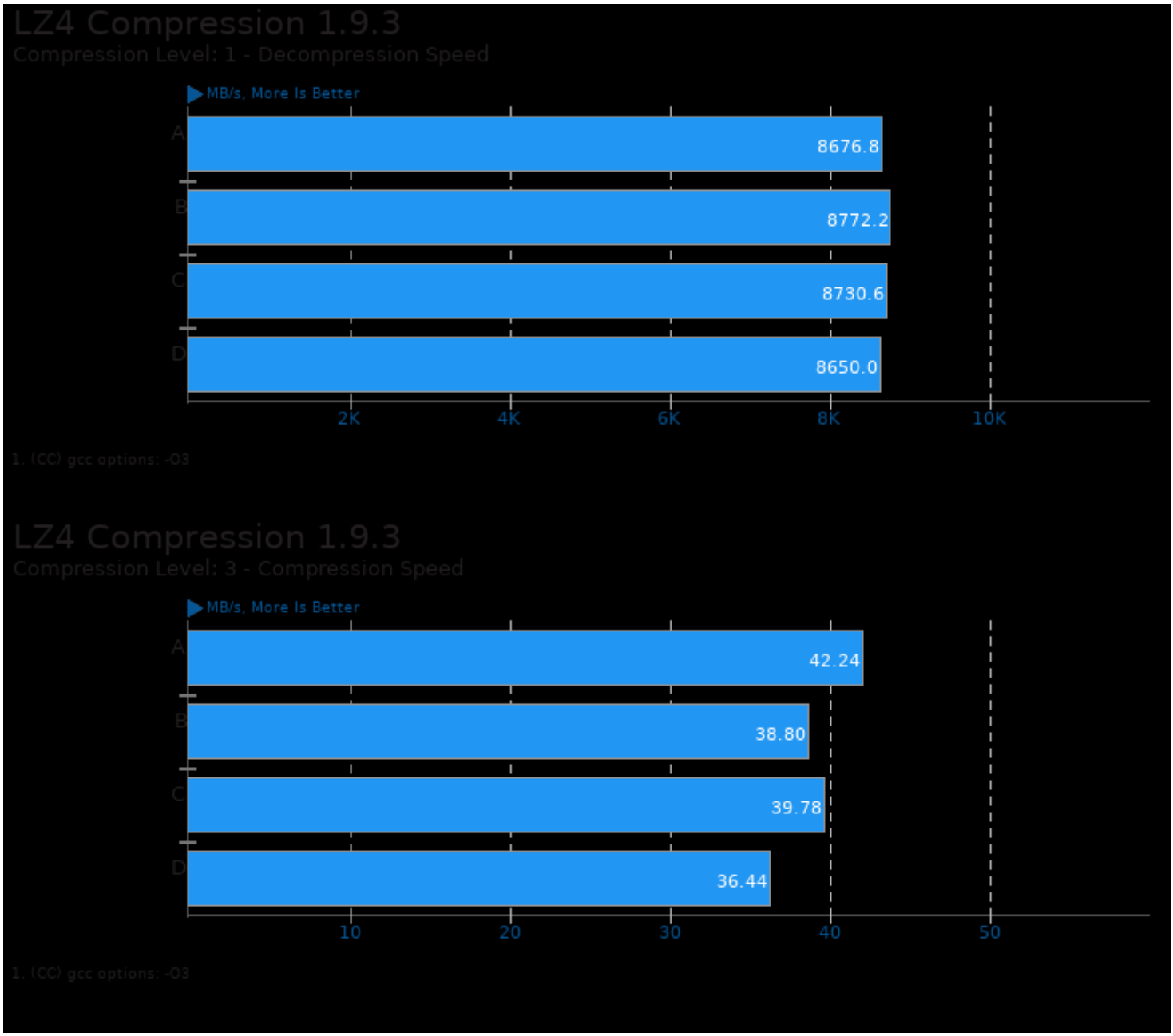

simdjson 1.0
Throughput Test: Kostya
GB/s, More Is Better
A
2.37
B
2.40
C
2.37
D
2.37
0.54
1.08
1.62
2.16
2.7
1. (CXX) g++ options: -O3

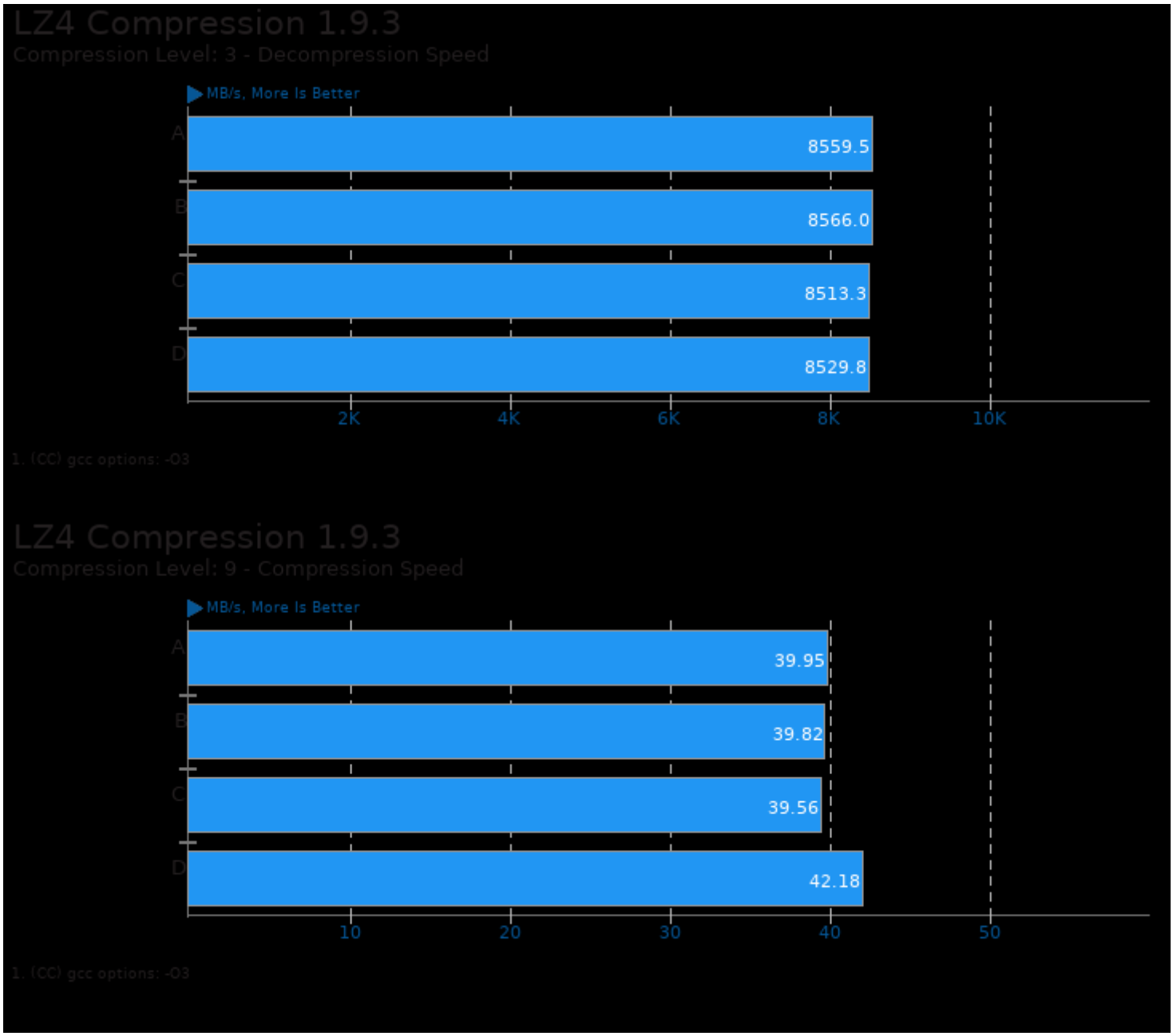
simdjson 1.0
Throughput Test: LargeRandom
GB/s, More Is Better
A
0.83
B
0.83
C
0.83
D
0.83
0.1868
0.3736
0.5604
0.7472
0.934
1. (CXX) g++ options: -O3

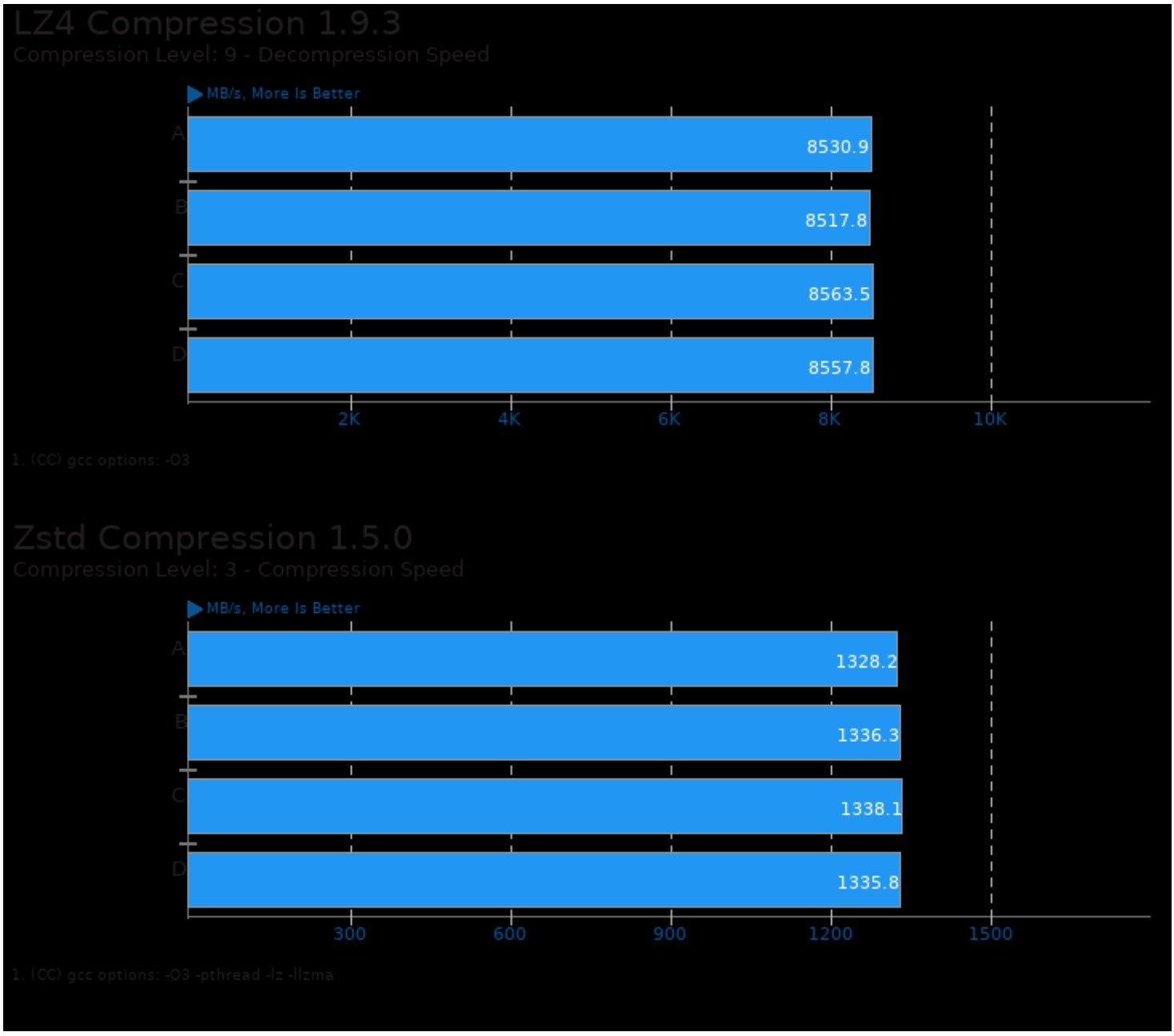

simdjson 1.0
Throughput Test: PartialTweets
GB/s, More Is Better
A
B
C
D
2.73
2.73
2.73
2.74
0.6165
1.233
1.8495
2.466
3.0825
1. (CXX) g++ options: -O3
simdjson 1.0
Throughput Test: DistinctUserID
GB/s, More Is Better
A
B
C
D
3.16
3.17
3.16
3.17
0.7133
1.4266
2.1399
2.8532
3.5665
1. (CXX) g++ options: -O3

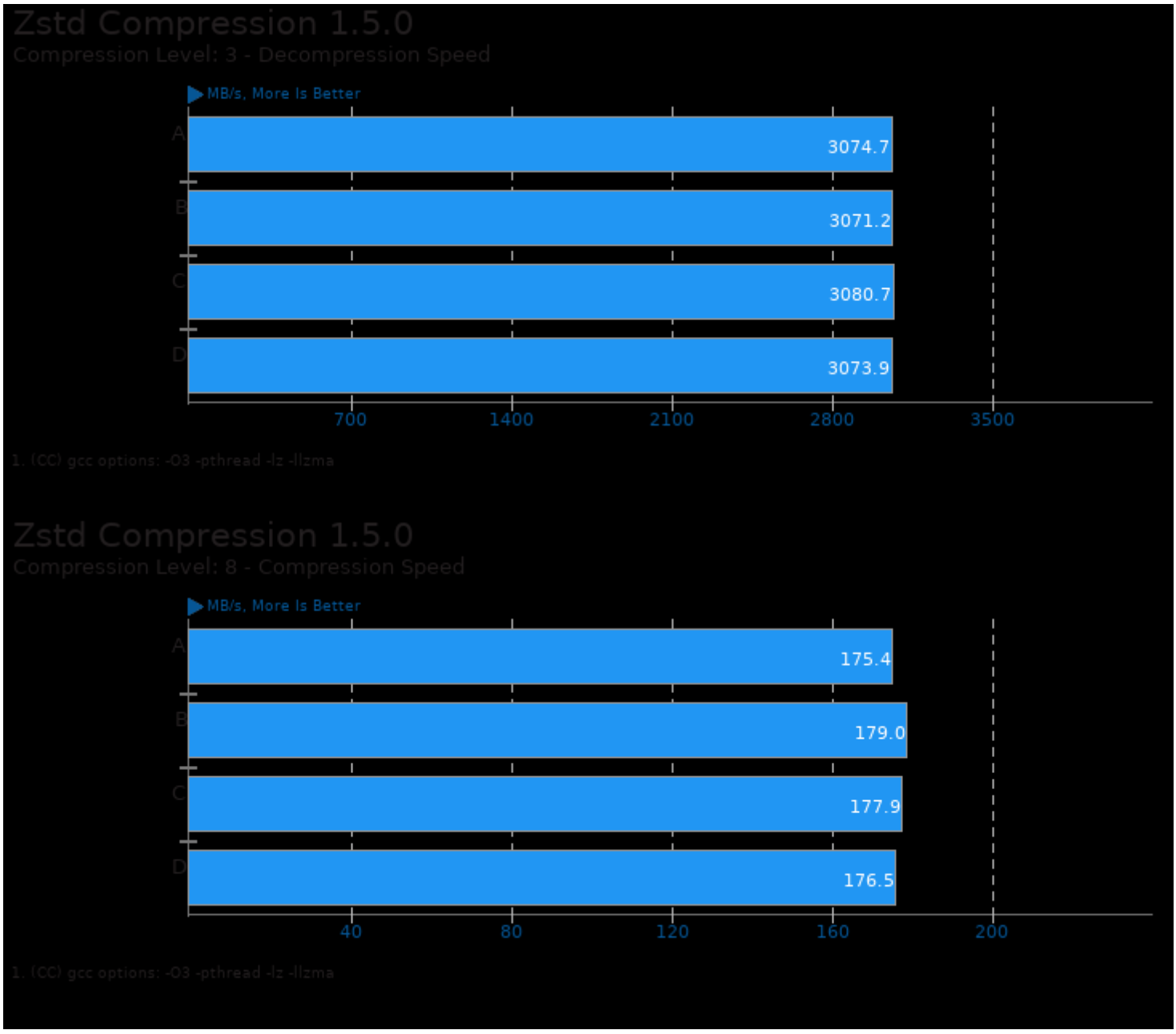

GNU GMP GMPbench 6.2.1
Total Time
GMPbench Score, More Is Better
A
B
C
D
4583.7
4576.9
4577.4
4578.7
1000
2000
3000
4000
5000
1. (CC) gcc options: -O3 -fomit-frame-pointer -lm
Xmrig 6.12.1
Variant: Monero - Hash Count: 1M
H/s, More Is Better
A
B
C
D
1163.3
1164.0
1165.1
1163.9
300
600
900
1200
1500
1. (CXX) g++ options: -fexceptions -fno-rtti -maes -O3 -Ofast -static-libgcc -static-libstdc++ -rdynamic -lssl -lcrypto -luv -lpthread -lrt -ldl -lhwloc

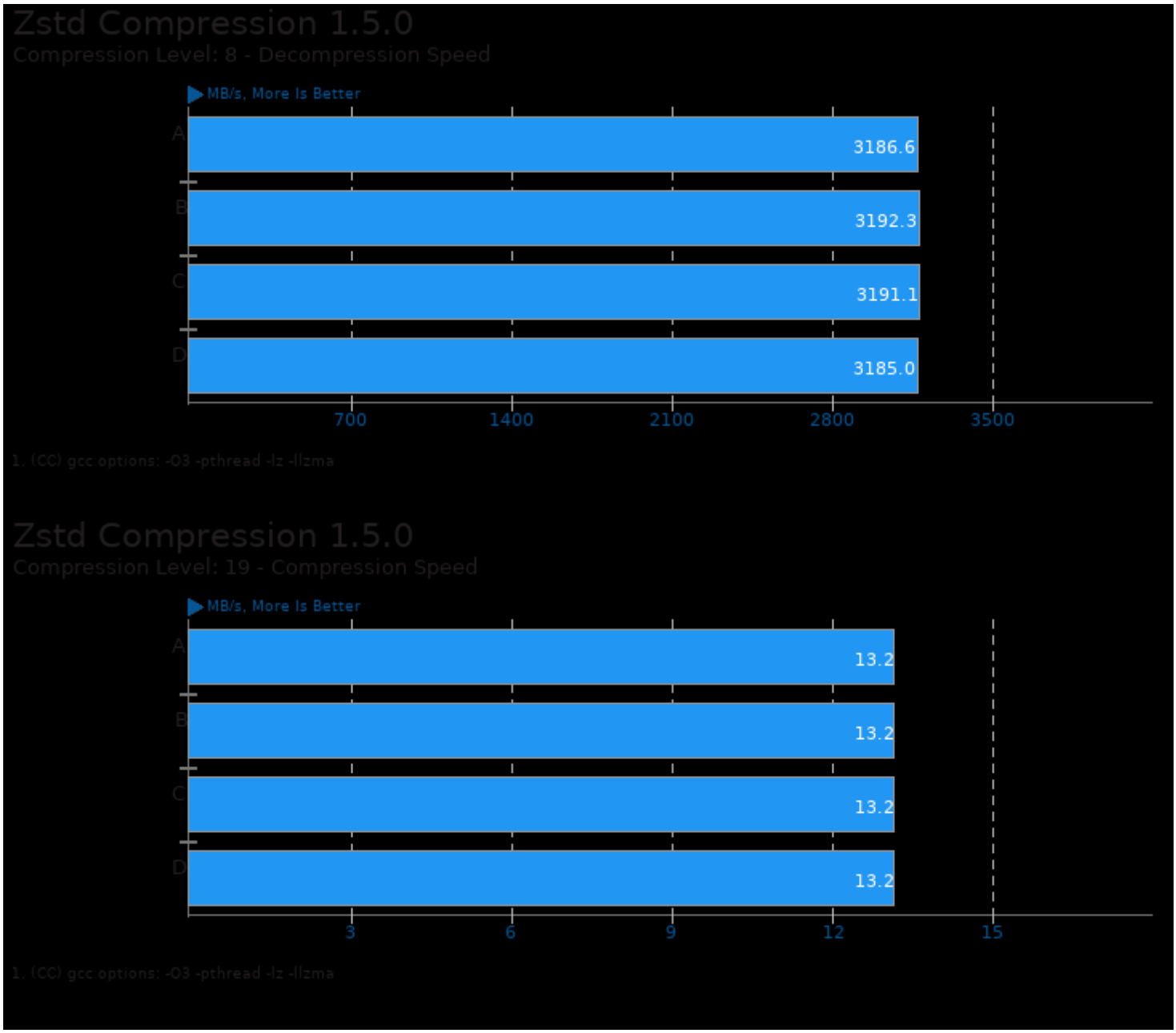

Xmrig 6.12.1
Variant: Wownero - Hash Count: 1M
H/s, More Is Better
A
1702.0
B
1703.8
C
1704.9
D
1705.3
400
800
1200
1600
2000
1. (CXX) g++ options: -fexceptions -fno-rtti -maes -O3 -Ofast -static-libgcc -static-libstdc++ -rdynamic -lssl -lcrypto -luv -lpthread -lrt -ldl -lhwloc
LZ4 Compression 1.9.3
Compression Level: 1 - Compression Speed
MB/s, More Is Better
A
7677.95
B
7731.54
C
7641.51
D
8025.08
2K
4K
6K
8K
10K
1. (CC) gcc options: -O3

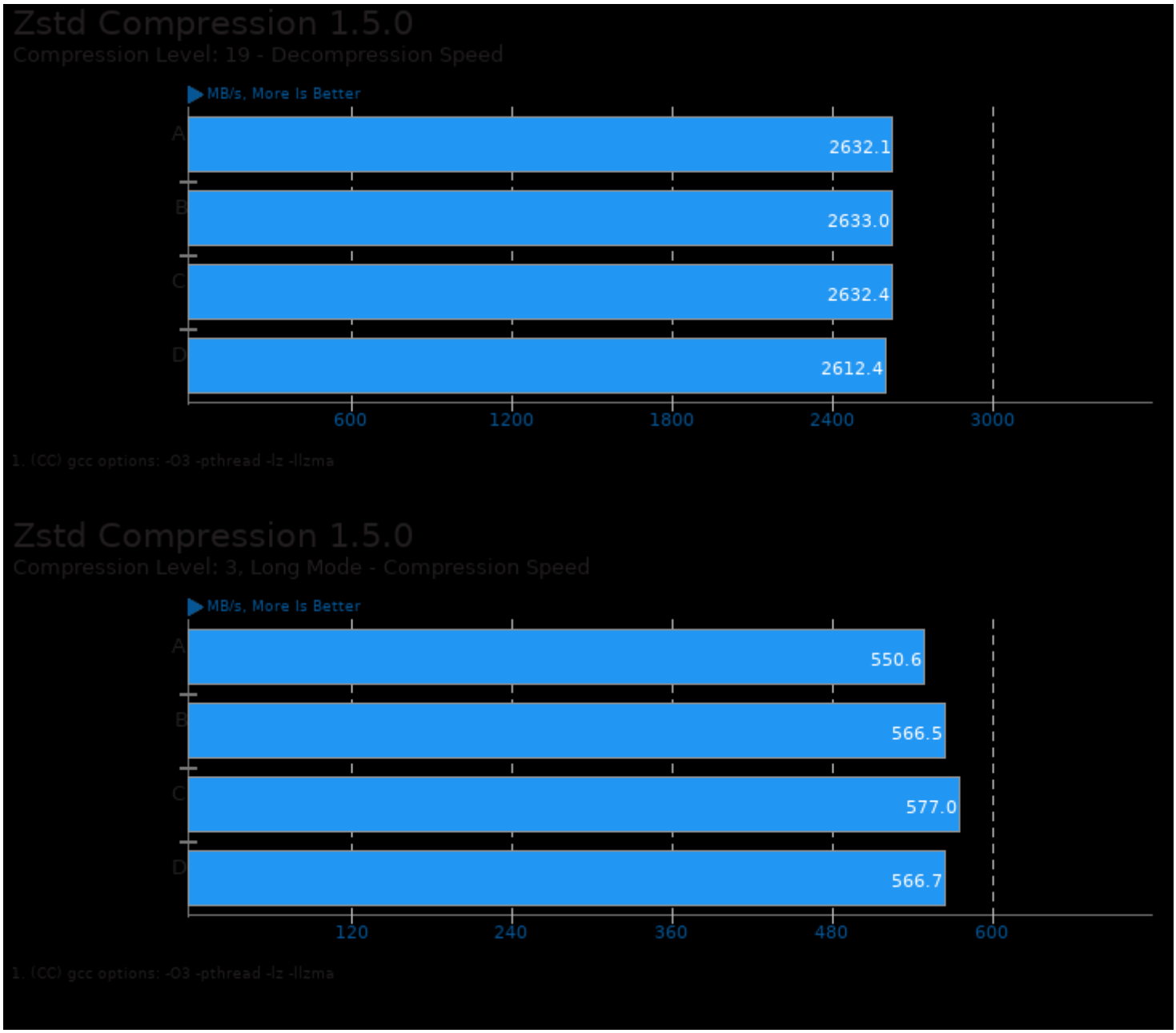

LZ4 Compression 1.9.3
Compression Level: 1 - Decompression Speed
MB/s, More Is Better
A
B
C
D
8676.8
8772.2
8730.6
8650.0
2K
4K
6K
8K
10K
1. (CC) gcc options: -O3
LZ4 Compression 1.9.3
Compression Level: 3 - Compression Speed
MB/s, More Is Better
A
B
C
D
42.24
38.80
39.78
36.44
10
20
30
40
50
1. (CC) gcc options: -O3

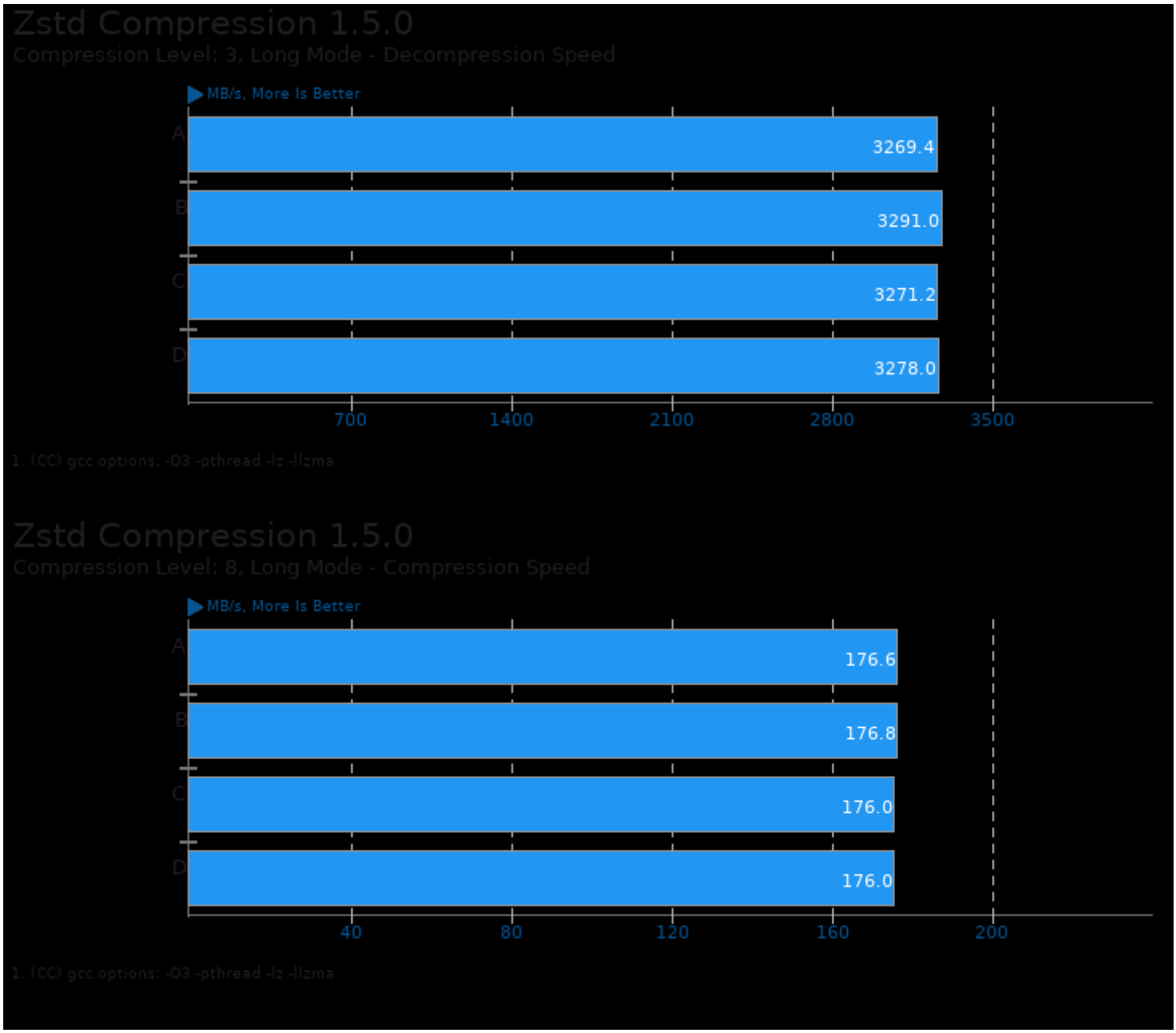

LZ4 Compression 1.9.3
Compression Level: 3 - Decompression Speed
MB/s, More Is Better
A
B
C
D
8559.5
8566.0
8513.3
8529.8
2K
4K
6K
8K
10K
1. (CC) gcc options: -O3
LZ4 Compression 1.9.3
Compression Level: 9 - Compression Speed
MB/s, More Is Better
A
B
C
D
39.95
39.82
39.56
42.18
10
20
30
40
50
1. (CC) gcc options: -O3

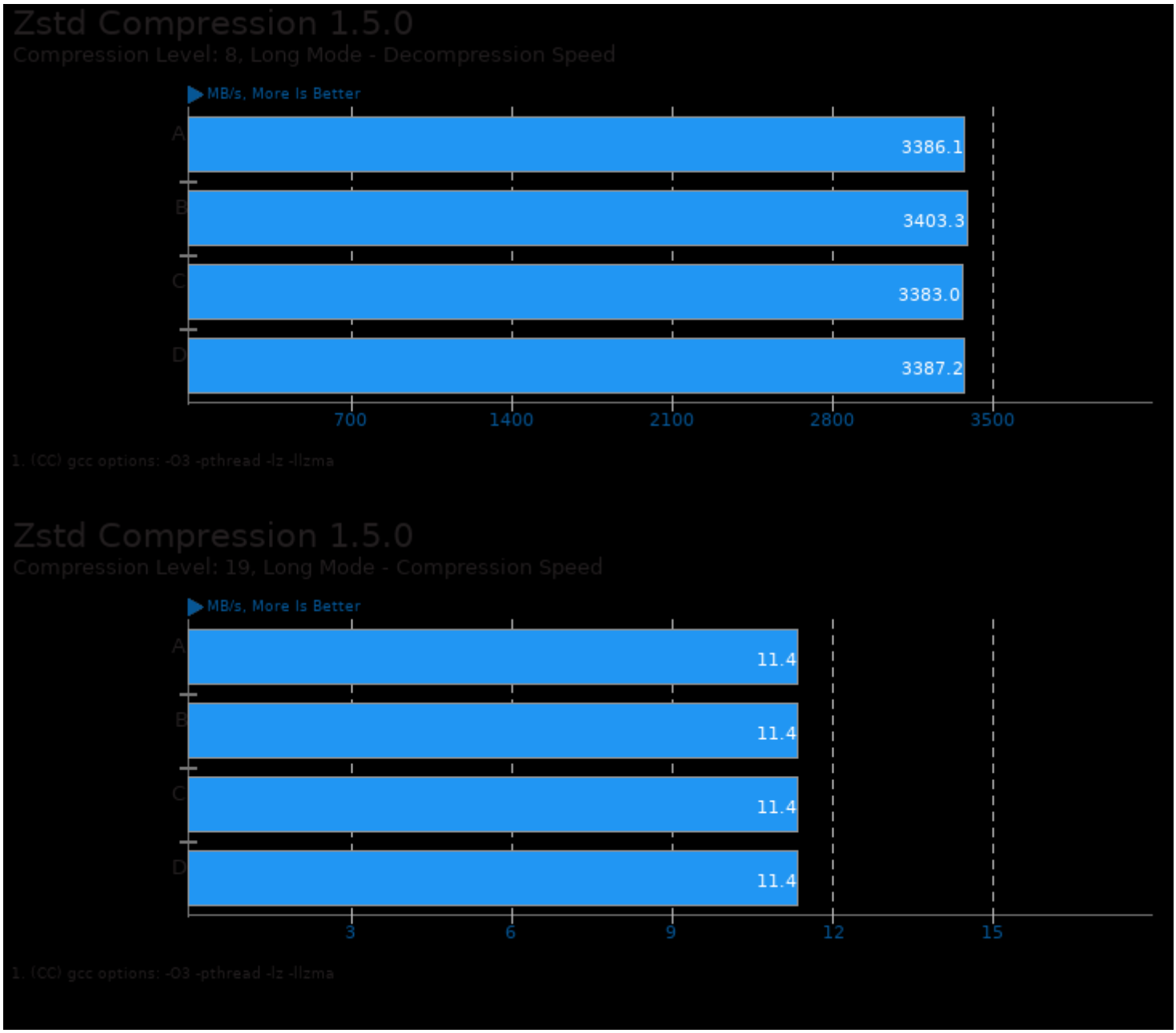

LZ4 Compression 1.9.3
Compression Level: 9 - Decompression Speed
MB/s, More Is Better
A
B
C
D
8530.9
8517.8
8563.5
8557.8
2K
4K
6K
8K
10K
1. (CC) gcc options: -O3
Zstd Compression 1.5.0
Compression Level: 3 - Compression Speed
MB/s, More Is Better
A
B
C
D
1328.2
1336.3
1338.1
1335.8
300
600
900
1200
1500
1. (CC) gcc options: -O3 -pthread -lz -llzma


Zstd Compression 1.5.0
Compression Level: 3 - Decompression Speed
MB/s, More Is Better
A
B
C
D
3074.7
3071.2
3080.7
3073.9
700
1400
2100
2800
3500
1. (CC) gcc options: -O3 -pthread -lz -llzma
Zstd Compression 1.5.0
Compression Level: 8 - Compression Speed
MB/s, More Is Better
A
B
C
D
175.4
179.0
177.9
176.5
40
80
120
160
200
1. (CC) gcc options: -O3 -pthread -lz -llzma

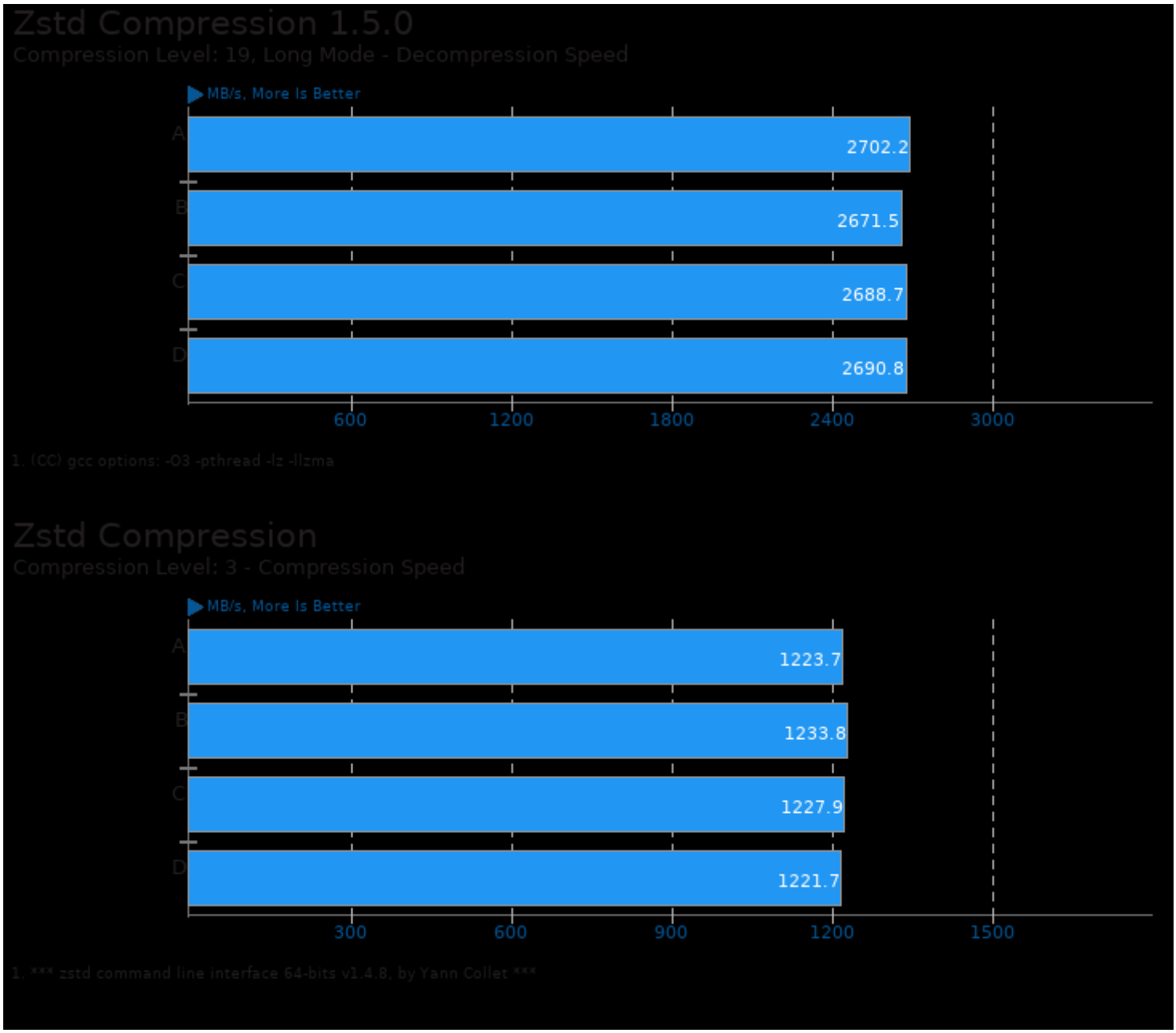

Zstd Compression 1.5.0
Compression Level: 8 - Decompression Speed
MB/s, More Is Better
A
B
C
D
3186.6
3192.3
3191.1
3185.0
700
1400
2100
2800
3500
1. (CC) gcc options: -O3 -pthread -lz -llzma
Zstd Compression 1.5.0
Compression Level: 19 - Compression Speed
MB/s, More Is Better
A
B
C
D
13.2
13.2
13.2
13.2
3
6
9
12
15
1. (CC) gcc options: -O3 -pthread -lz -llzma

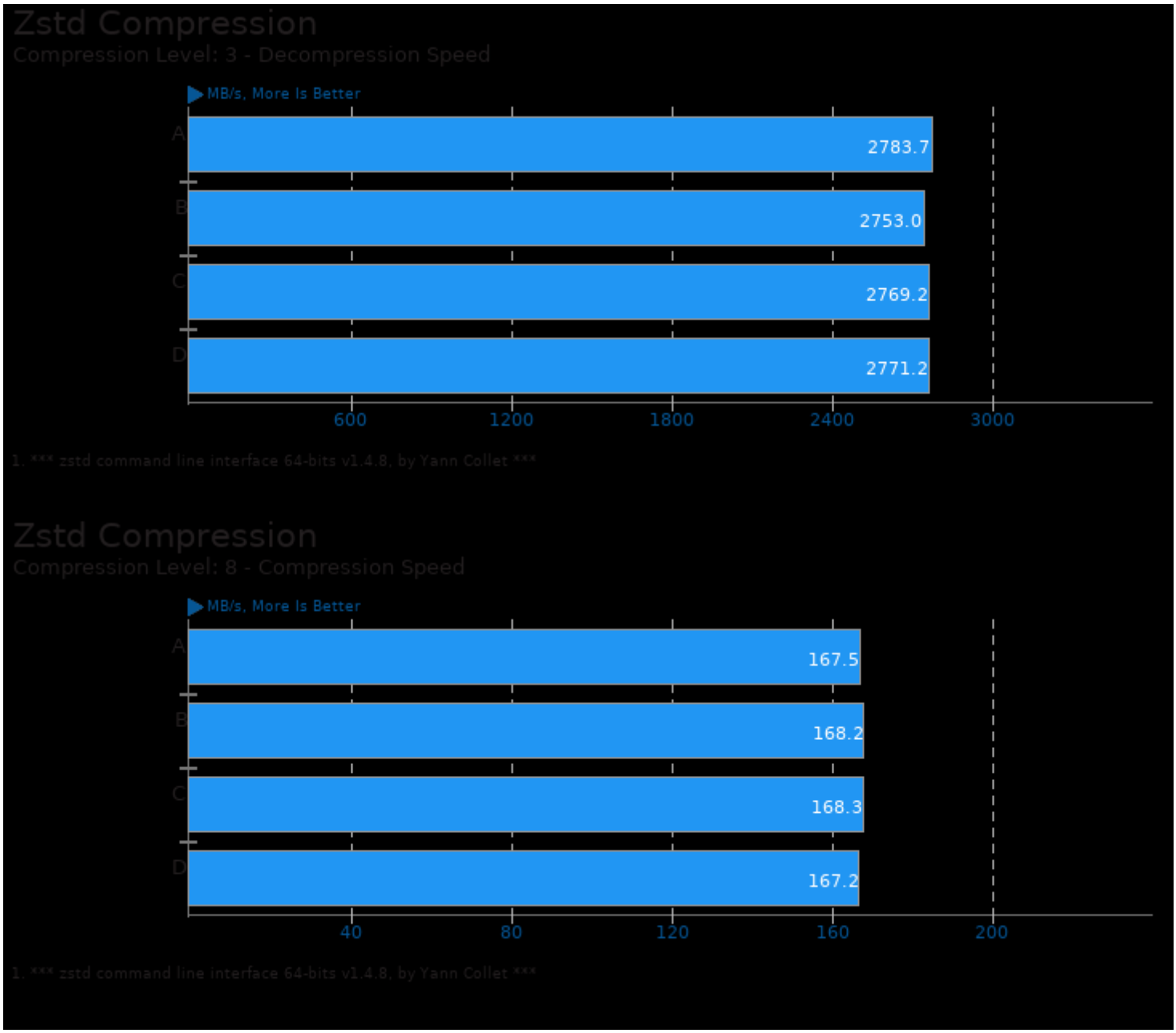

Zstd Compression 1.5.0
Compression Level: 19 - Decompression Speed
MB/s, More Is Better
A
B
C
D
2632.1
2633.0
2632.4
2612.4
600
1200
1800
2400
3000
1. (CC) gcc options: -O3 -pthread -lz -llzma
Zstd Compression 1.5.0
Compression Level: 3, Long Mode - Compression Speed
MB/s, More Is Better
A
B
C
D
550.6
566.5
577.0
566.7
120
240
360
480
600
1. (CC) gcc options: -O3 -pthread -lz -llzma

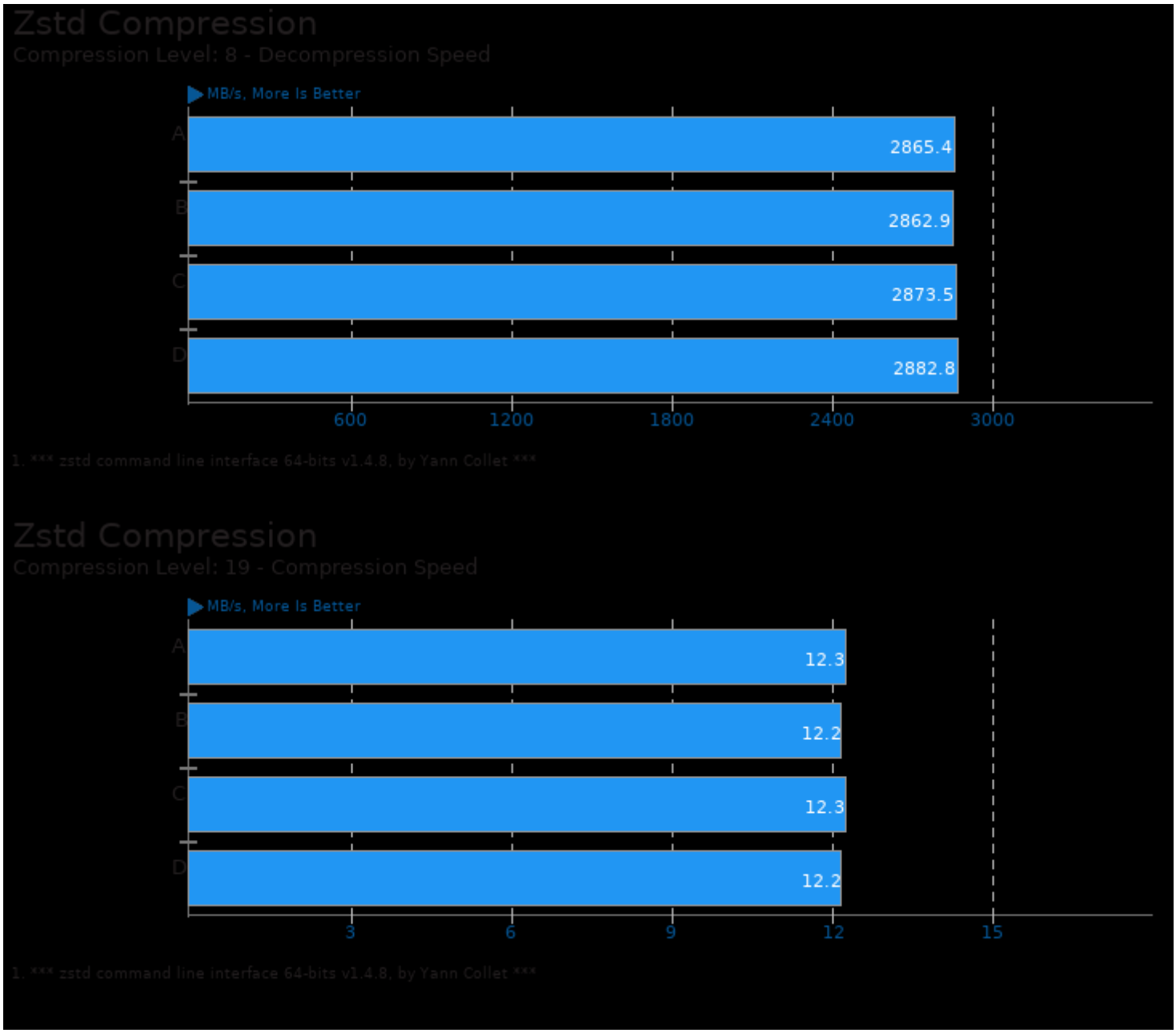

Zstd Compression 1.5.0
Compression Level: 3, Long Mode - Decompression Speed
MB/s, More Is Better
A
B
C
D
3269.4
3291.0
3271.2
3278.0
700
1400
2100
2800
3500
1. (CC) gcc options: -O3 -pthread -lz -llzma
Zstd Compression 1.5.0
Compression Level: 8, Long Mode - Compression Speed
MB/s, More Is Better
A
B
C
D
176.6
176.8
176.0
176.0
40
80
120
160
200
1. (CC) gcc options: -O3 -pthread -lz -llzma

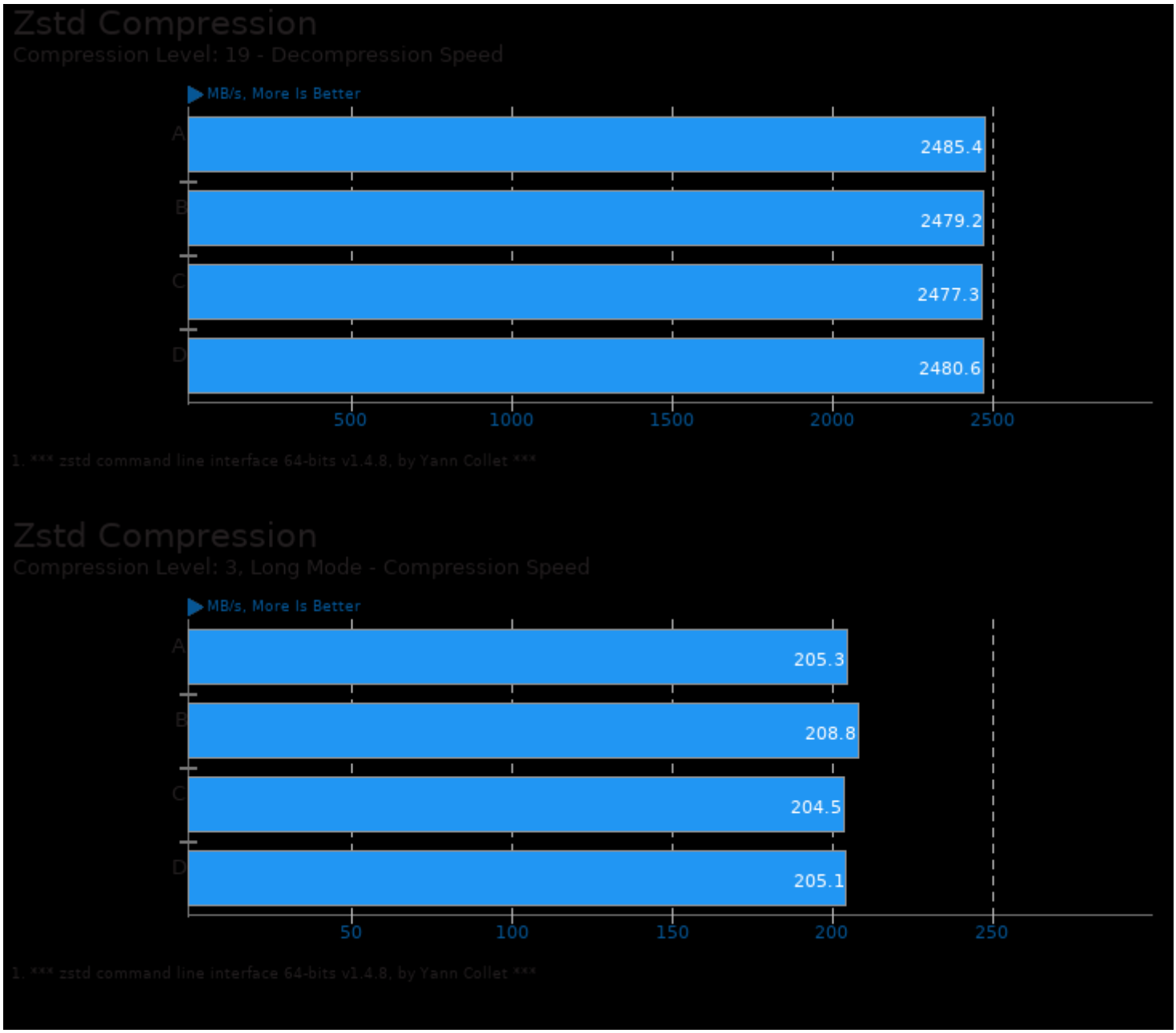

Zstd Compression 1.5.0
Compression Level: 8, Long Mode - Decompression Speed
MB/s, More Is Better
A
B
C
D
3386.1
3403.3
3383.0
3387.2
700
1400
2100
2800
3500
1. (CC) gcc options: -O3 -pthread -lz -llzma

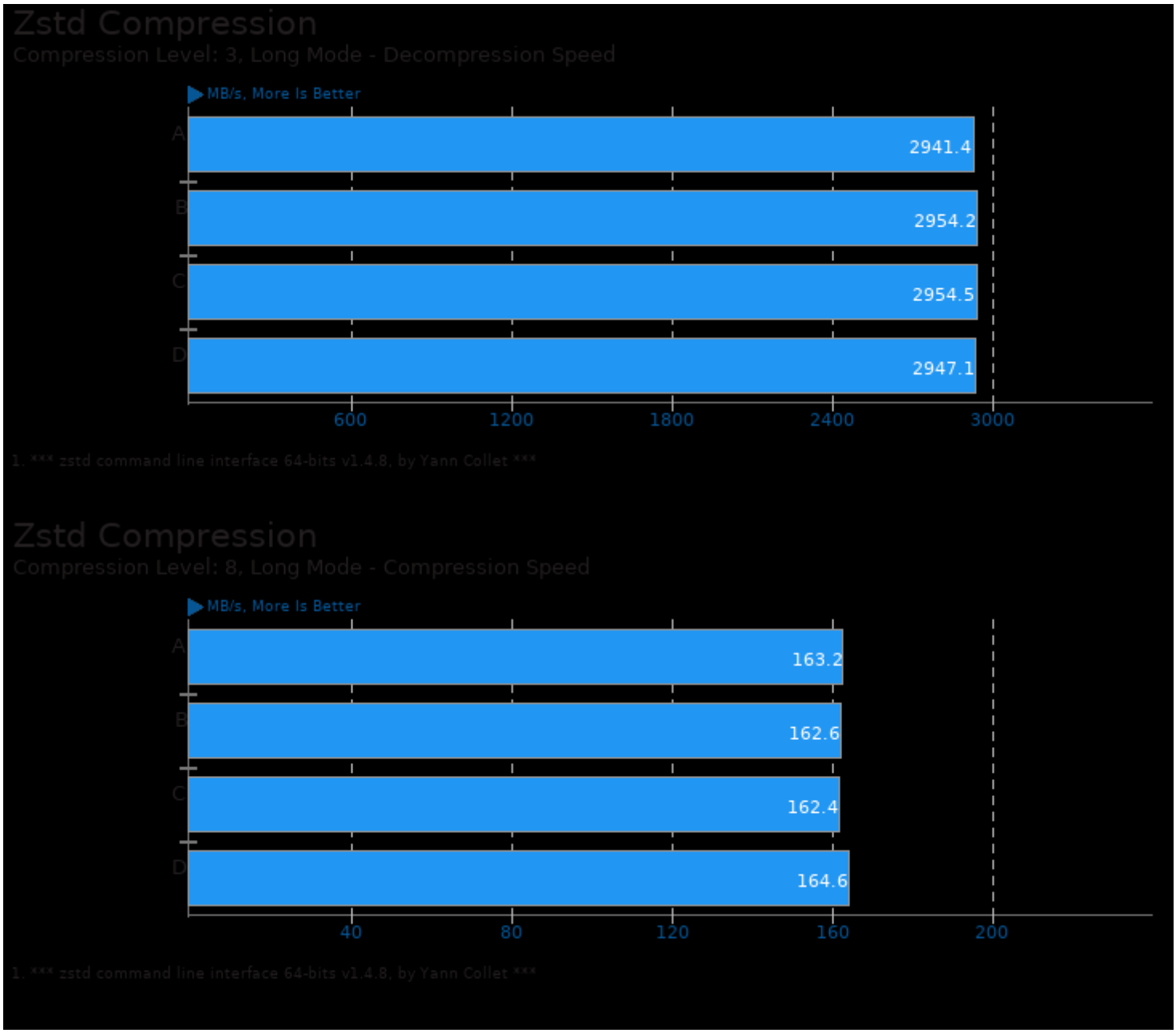
Zstd Compression 1.5.0
Compression Level: 19, Long Mode - Compression Speed
MB/s, More Is Better
A
B
C
D
11.4
11.4
11.4
11.4
3
6
9
12
15
1. (CC) gcc options: -O3 -pthread -lz -llzma

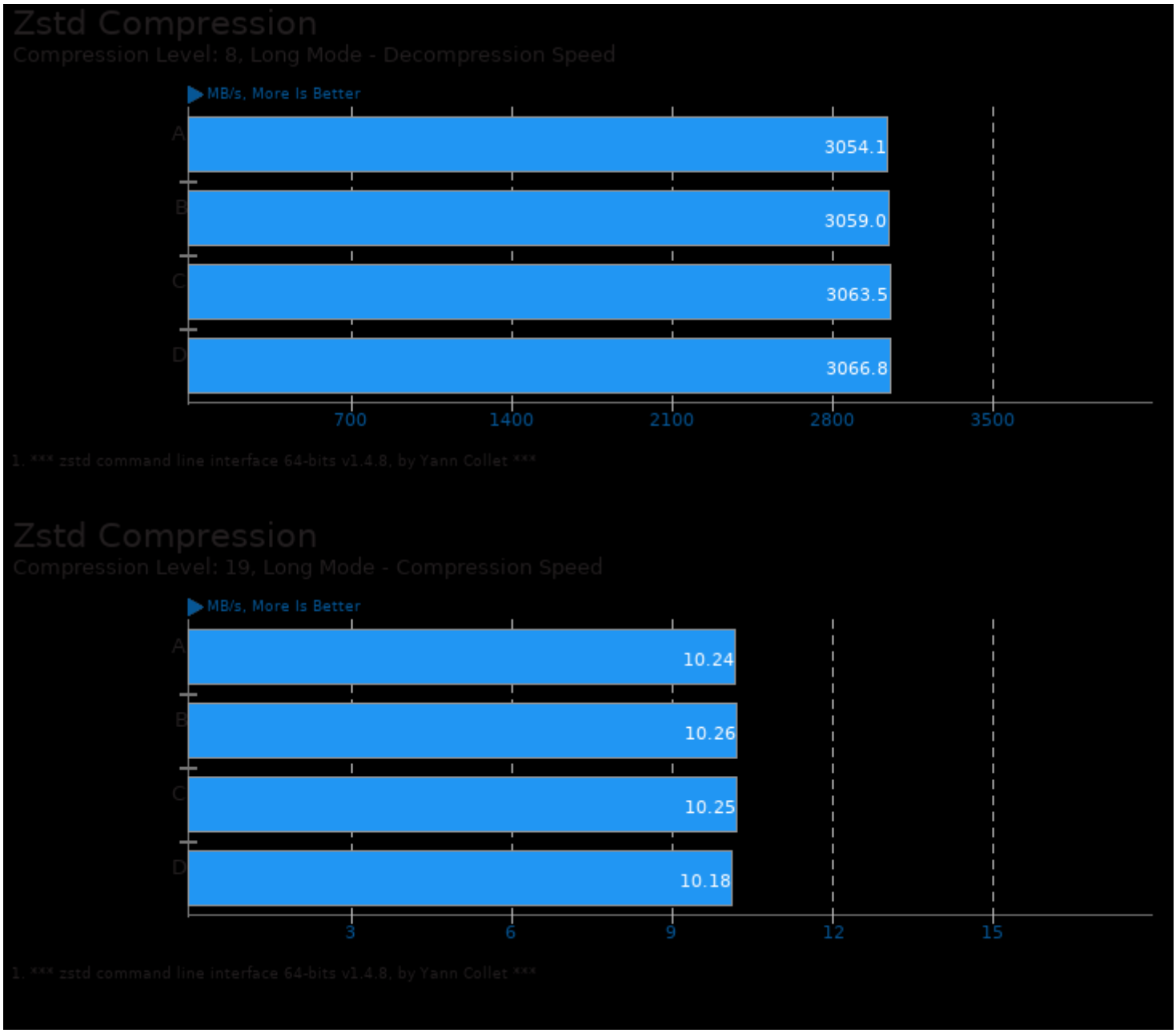

Zstd Compression 1.5.0
Compression Level: 19, Long Mode - Decompression Speed
MB/s, More Is Better
A
B
C
D
2702.2
2671.5
2688.7
2690.8
600
1200
1800
2400
3000
1. (CC) gcc options: -O3 -pthread -lz -llzma
Zstd Compression
Compression Level: 3 - Compression Speed
MB/s, More Is Better
A
B
C
D
1223.7
1233.8
1227.9
1221.7
300
600
900
1200
1500
1. *** zstd command line interface 64-bits v1.4.8, by Yann Collet ***

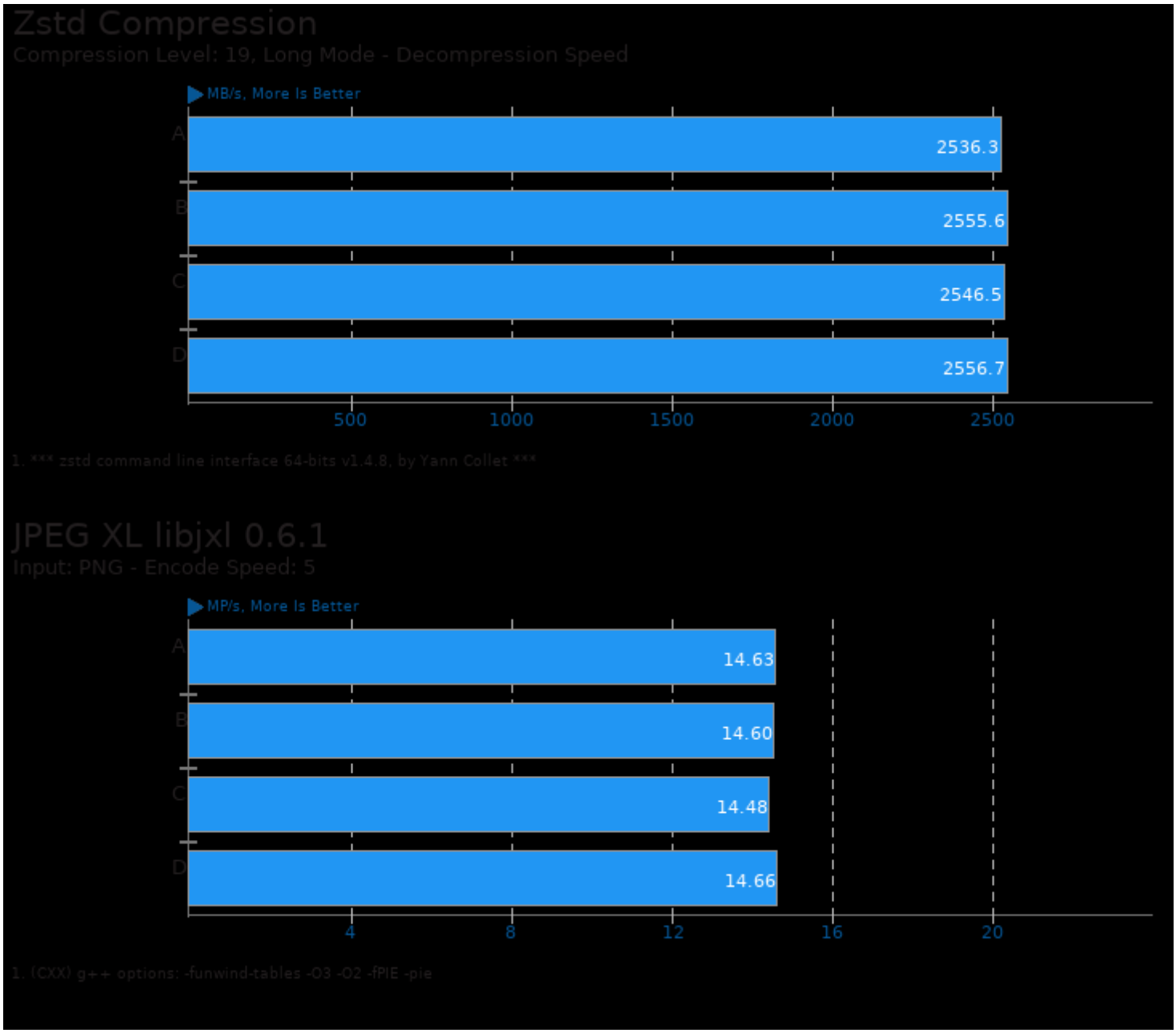

Zstd Compression
Compression Level: 3 - Decompression Speed
MB/s, More Is Better
A
B
C
D
2783.7
2753.0
2769.2
2771.2
600
1200
1800
2400
3000
1. *** zstd command line interface 64-bits v1.4.8, by Yann Collet ***
Zstd Compression
Compression Level: 8 - Compression Speed
MB/s, More Is Better
A
B
C
D
167.5
168.2
168.3
167.2
40
80
120
160
200
1. *** zstd command line interface 64-bits v1.4.8, by Yann Collet ***

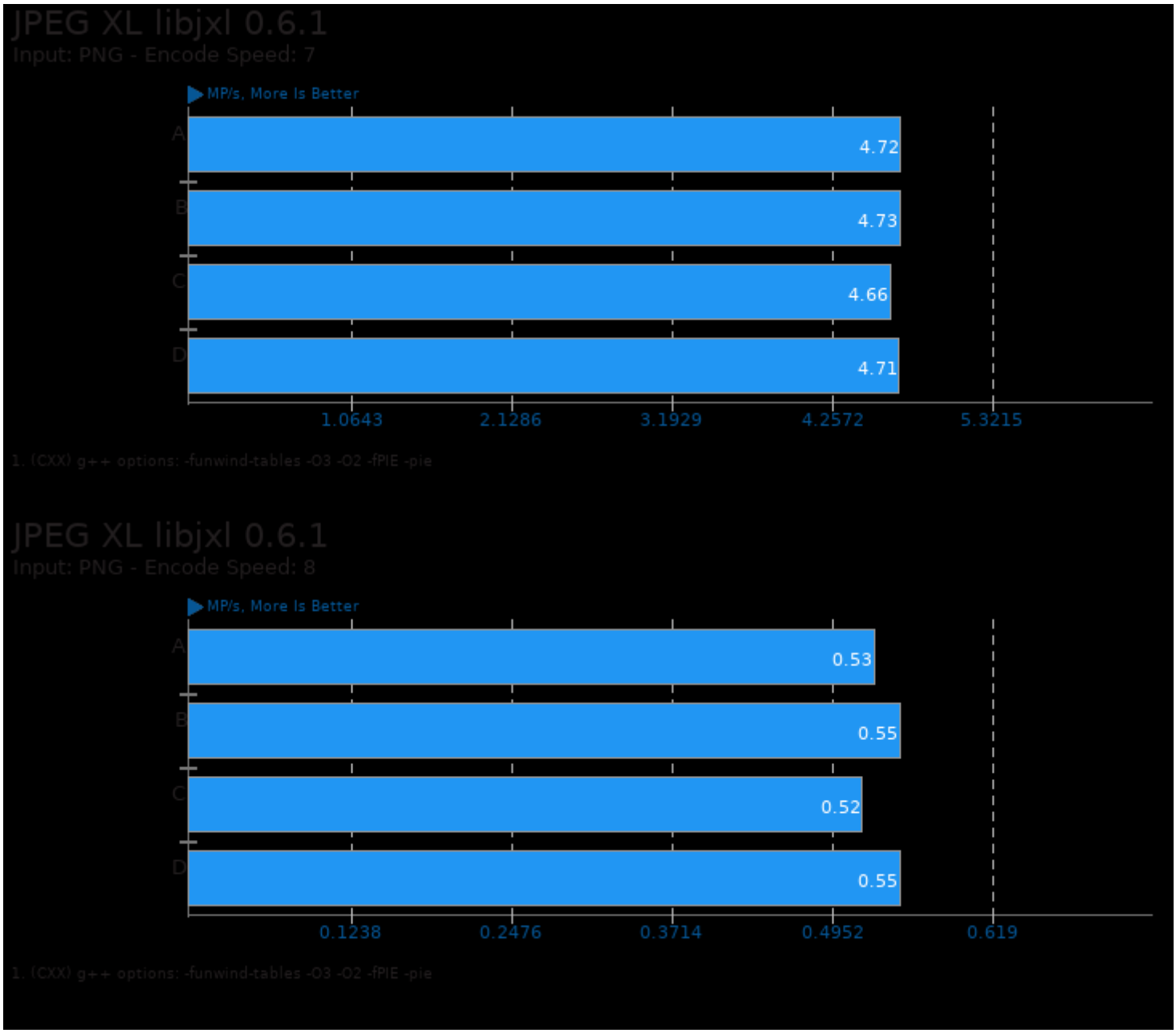

Zstd Compression
Compression Level: 8 - Decompression Speed
MB/s, More Is Better
A
B
C
D
2865.4
2862.9
2873.5
2882.8
600
1200
1800
2400
3000
1. *** zstd command line interface 64-bits v1.4.8, by Yann Collet ***
Zstd Compression
Compression Level: 19 - Compression Speed
MB/s, More Is Better
A
B
C
D
12.3
12.2
12.3
12.2
3
6
9
12
15
1. *** zstd command line interface 64-bits v1.4.8, by Yann Collet ***

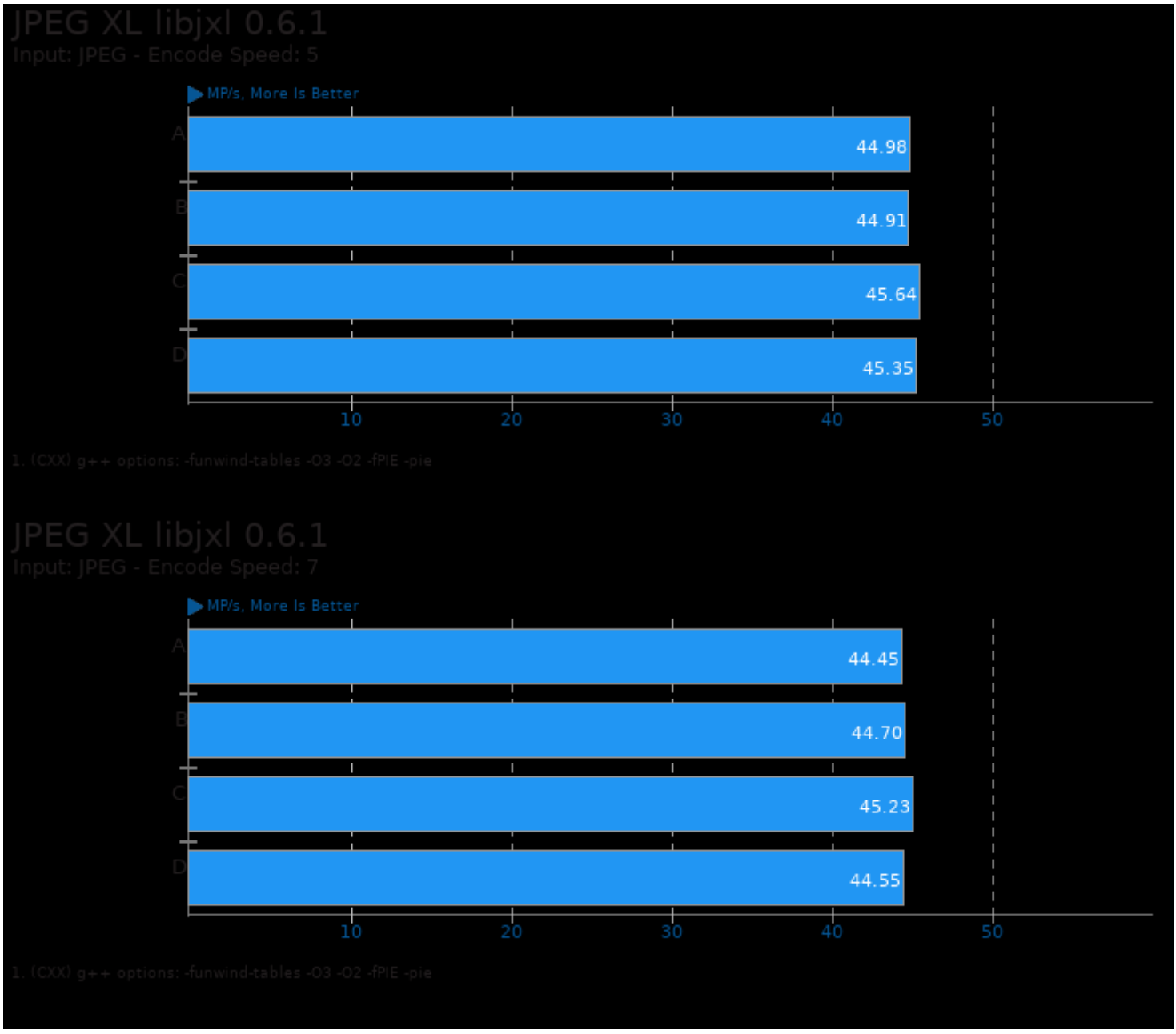

Zstd Compression
Compression Level: 19 - Decompression Speed
MB/s, More Is Better
A
B
C
D
2485.4
2479.2
2477.3
2480.6
500
1000
1500
2000
2500
1. *** zstd command line interface 64-bits v1.4.8, by Yann Collet ***
Zstd Compression
Compression Level: 3, Long Mode - Compression Speed
MB/s, More Is Better
A
B
C
D
205.3
208.8
204.5
205.1
50
100
150
200
250
1. *** zstd command line interface 64-bits v1.4.8, by Yann Collet ***


Zstd Compression
Compression Level: 3, Long Mode - Decompression Speed
MB/s, More Is Better
A
B
C
D
2941.4
2954.2
2954.5
2947.1
600
1200
1800
2400
3000
1. *** zstd command line interface 64-bits v1.4.8, by Yann Collet ***
Zstd Compression
Compression Level: 8, Long Mode - Compression Speed
MB/s, More Is Better
A
B
C
D
163.2
162.6
162.4
164.6
40
80
120
160
200
1. *** zstd command line interface 64-bits v1.4.8, by Yann Collet ***


Zstd Compression
Compression Level: 8, Long Mode - Decompression Speed
MB/s, More Is Better
A
B
C
D
3054.1
3059.0
3063.5
3066.8
700
1400
2100
2800
3500
1. *** zstd command line interface 64-bits v1.4.8, by Yann Collet ***
Zstd Compression
Compression Level: 19, Long Mode - Compression Speed
MB/s, More Is Better
A
B
C
D
10.24
10.26
10.25
10.18
3
6
9
12
15
1. *** zstd command line interface 64-bits v1.4.8, by Yann Collet ***

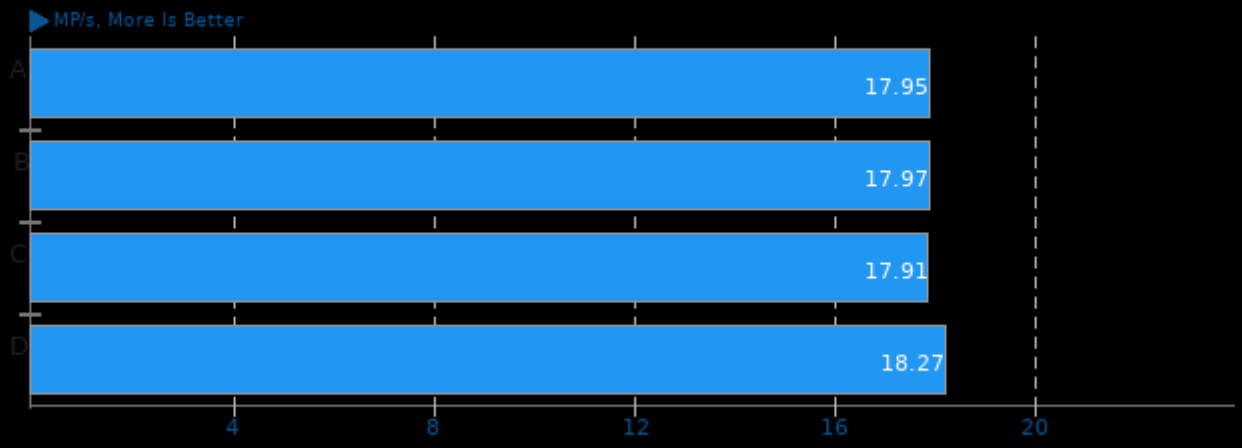

Zstd Compression
Compression Level: 19, Long Mode - Decompression Speed
MB/s, More Is Better
A
B
C
D
2536.3
2555.6
2546.5
2556.7
500
1000
1500
2000
2500
1. *** zstd command line interface 64-bits v1.4.8, by Yann Collet ***
JPEG XL libjxl 0.6.1
Input: PNG - Encode Speed: 5
MP/s, More Is Better
A
B
C
D
14.63
14.60
14.48
14.66
4
8
12
16
20
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie


JPEG XL libjxl 0.6.1
Input: PNG - Encode Speed: 7
MP/s, More Is Better
A
B
C
D
4.72
4.73
4.66
4.71
1.0643
2.1286
3.1929
4.2572
5.3215
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie
JPEG XL libjxl 0.6.1
Input: PNG - Encode Speed: 8
MP/s, More Is Better
A
B
C
D
0.53
0.55
0.52
0.55
0.1238
0.2476
0.3714
0.4952
0.619
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie


JPEG XL libjxl 0.6.1
Input: JPEG - Encode Speed: 5
MP/s, More Is Better
A
B
C
D
44.98
44.91
45.64
45.35
10
20
30
40
50
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie
JPEG XL libjxl 0.6.1
Input: JPEG - Encode Speed: 7
MP/s, More Is Better
A
B
C
D
44.45
44.70
45.23
44.55
10
20
30
40
50
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie

JPEG XL libjxl 0.6.1

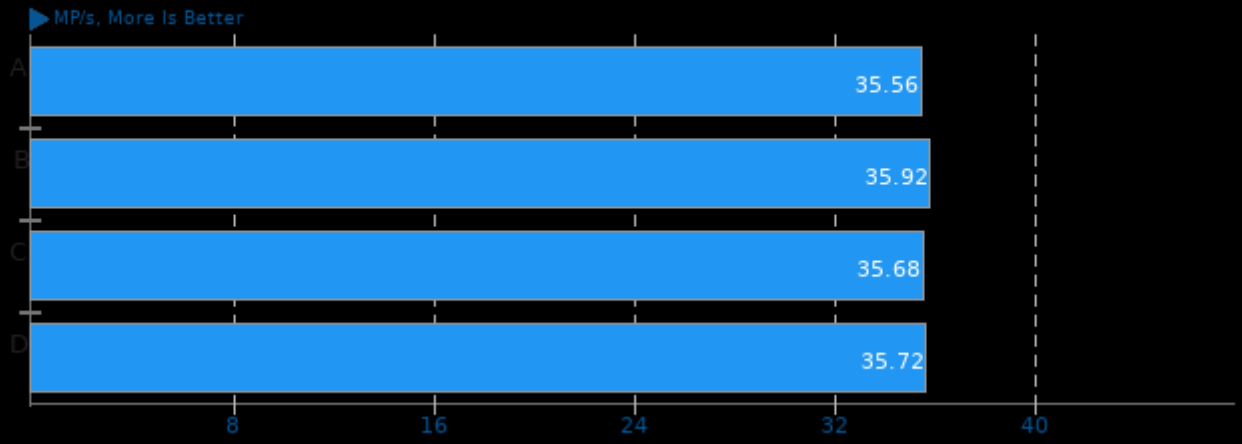
Input: JPEG - Encode Speed: 8



1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie

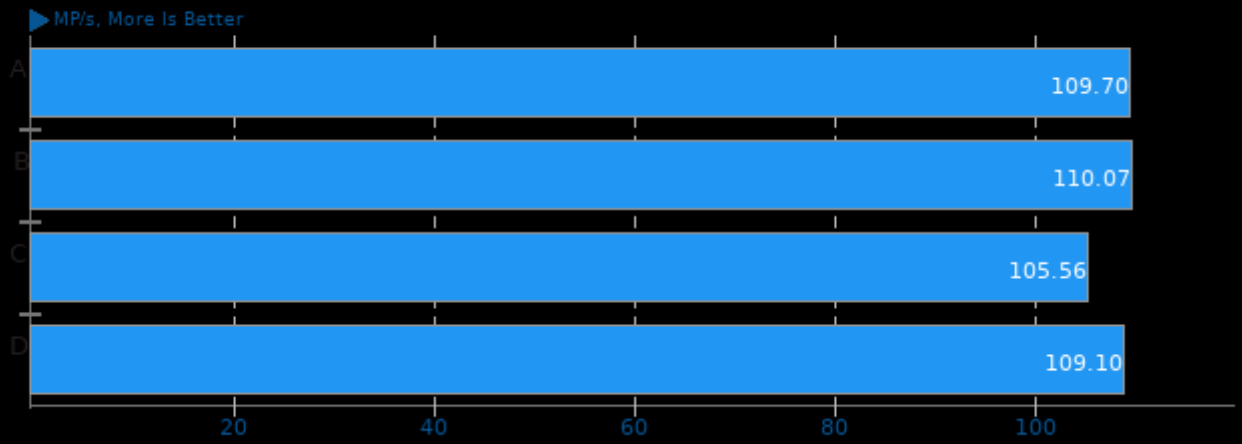
JPEG XL Decoding libjxl 0.6.1

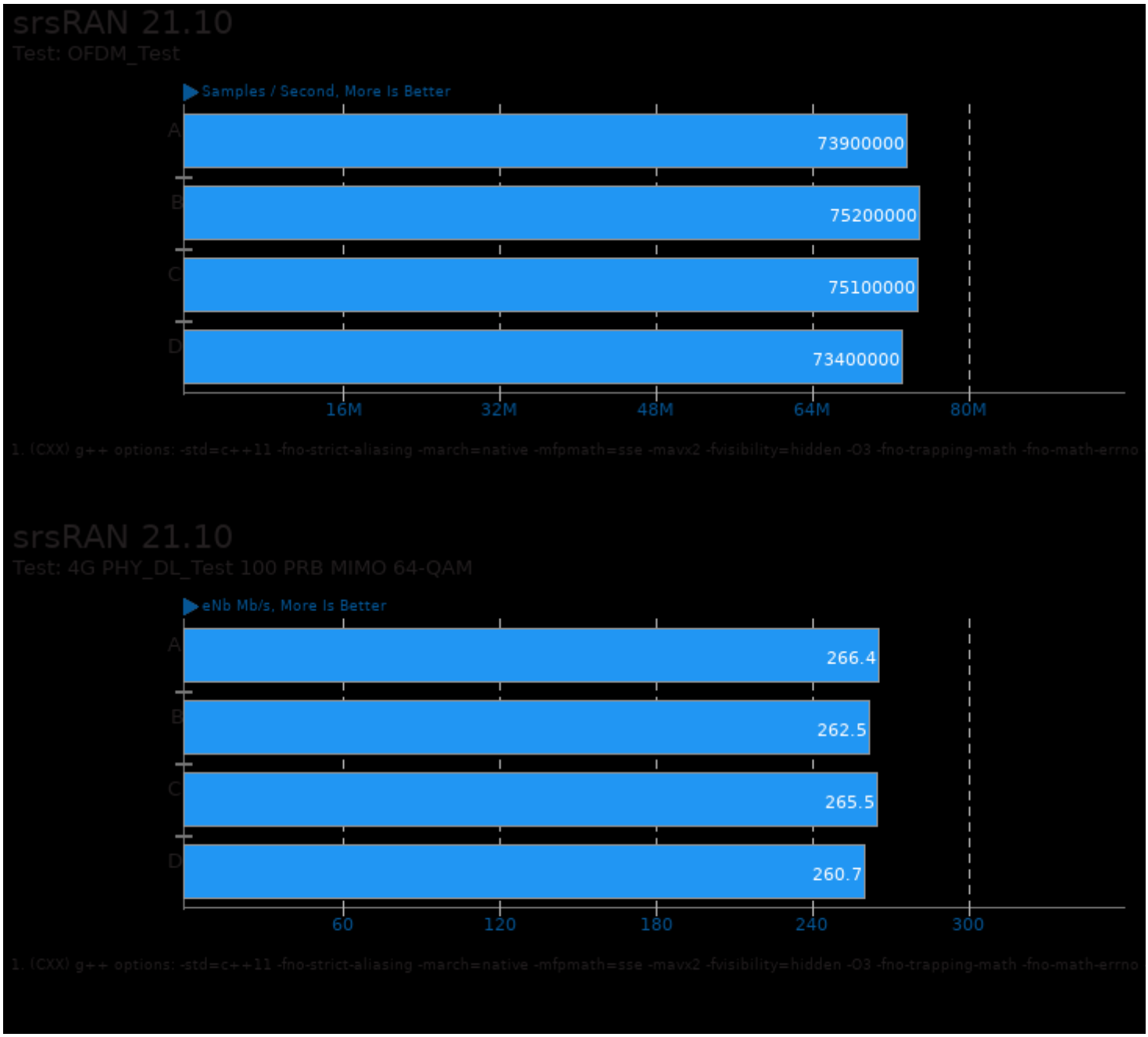
CPU Threads: 1

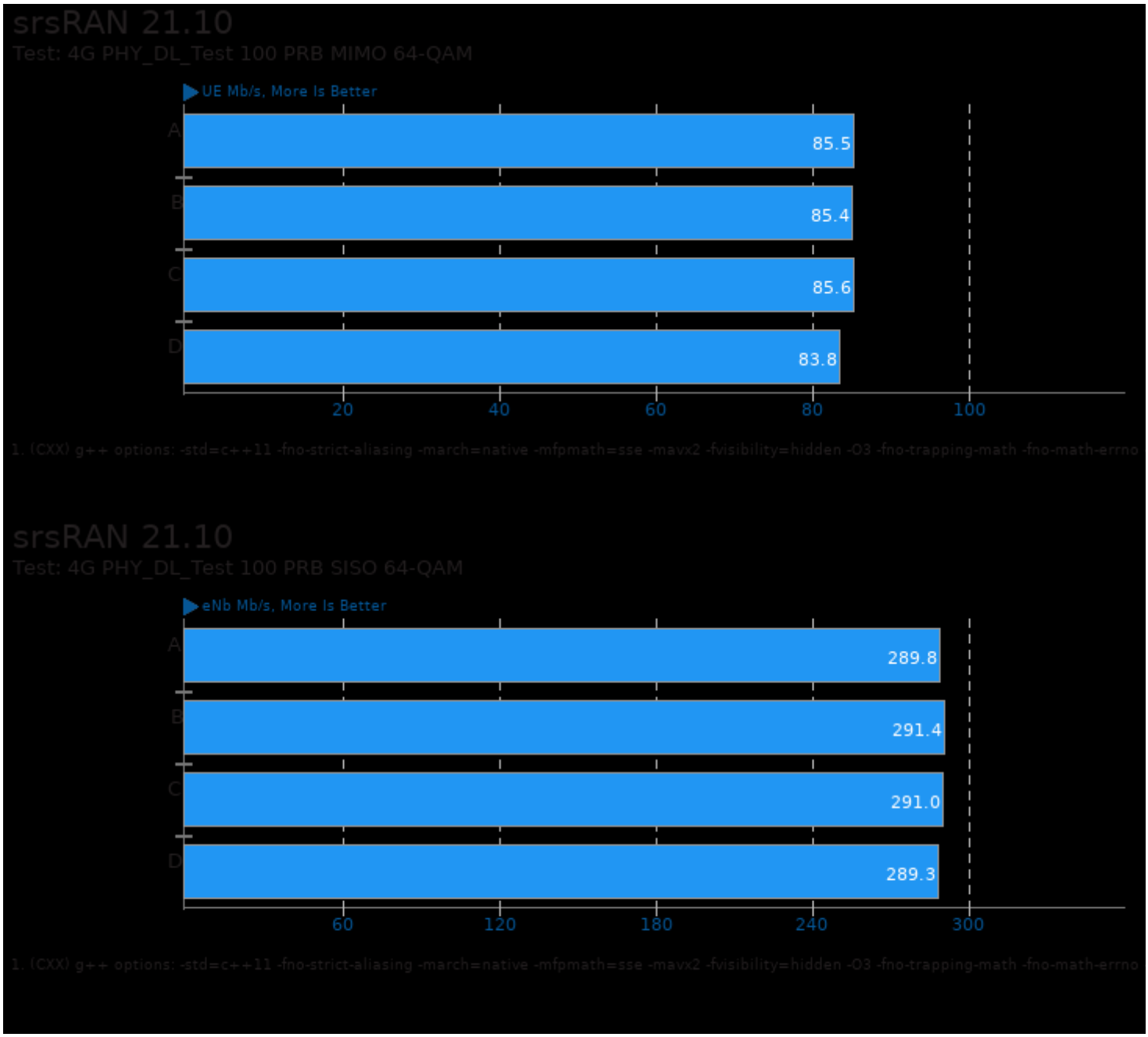


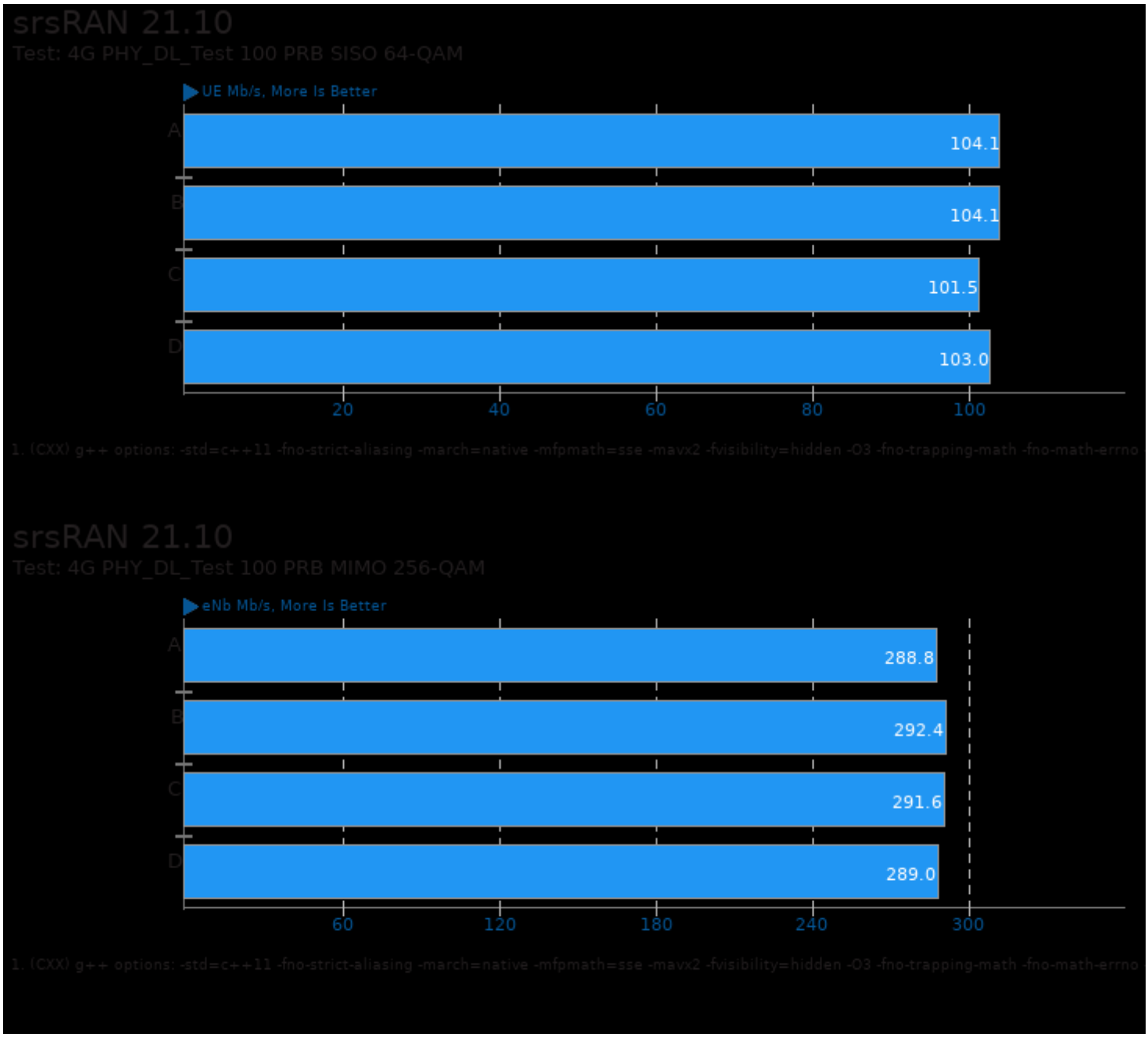
JPEG XL Decoding libjxl 0.6.1

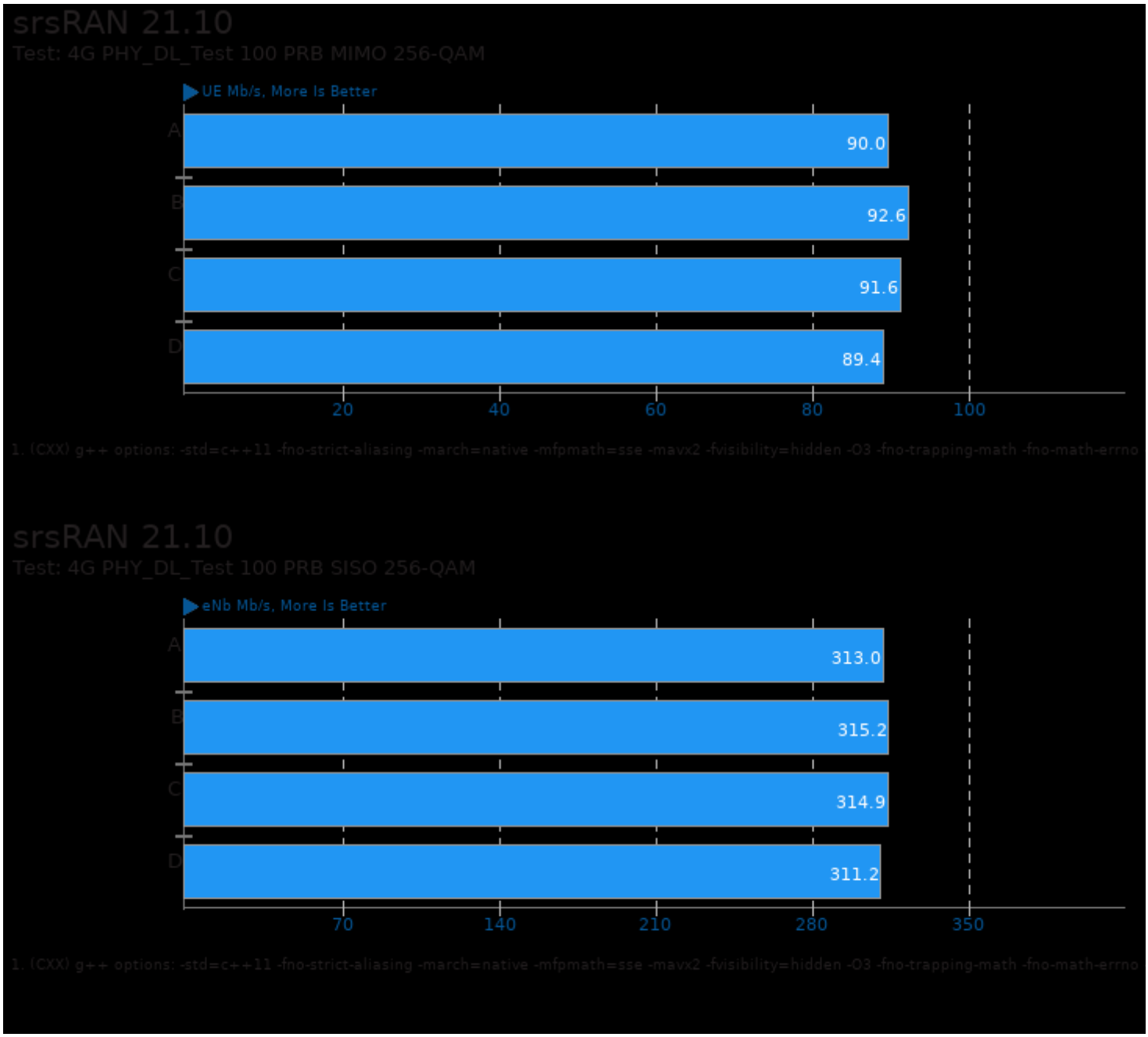
CPU Threads: All

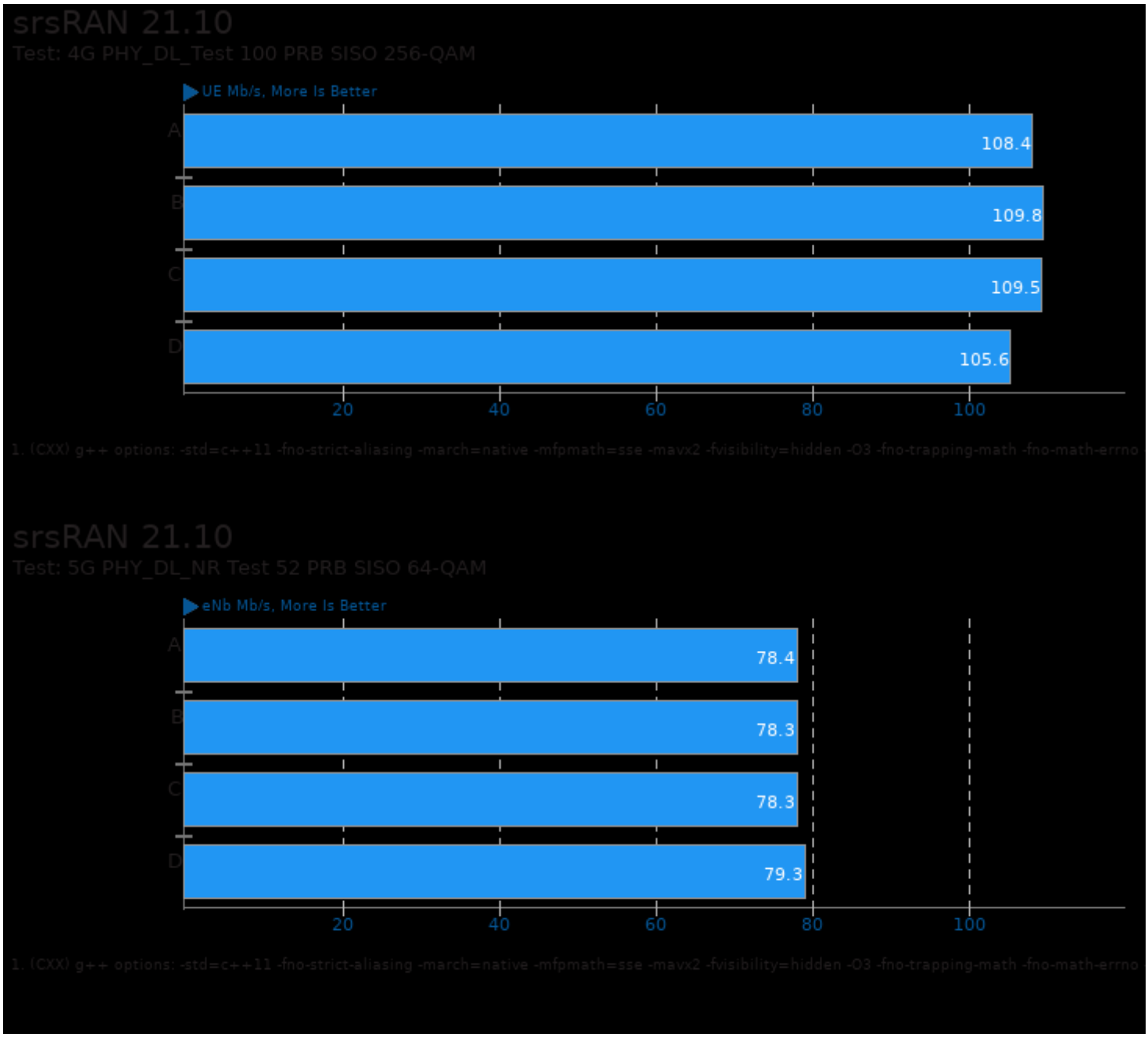



srsRAN 21.10
Test: OFDM_Test
Samples / Second, More Is Better
A
B
C
D
73900000
75200000
75100000
73400000
16M
32M
48M
64M
80M
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno
srsRAN 21.10
Test: 4G PHY_DL_Test 100 PRB MIMO 64-QAM
eNb Mb/s, More Is Better
A
B
C
D
266.4
262.5
265.5
260.7
60
120
180
240
300
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno


srsRAN 21.10
Test: 4G PHY_DL_Test 100 PRB MIMO 64-QAM
UE Mb/s, More Is Better
A
B
C
D
85.5
85.4
85.6
83.8
20
40
60
80
100
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno
srsRAN 21.10
Test: 4G PHY_DL_Test 100 PRB SISO 64-QAM
eNb Mb/s, More Is Better
A
B
C
D
289.8
291.4
291.0
289.3
60
120
180
240
300
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno

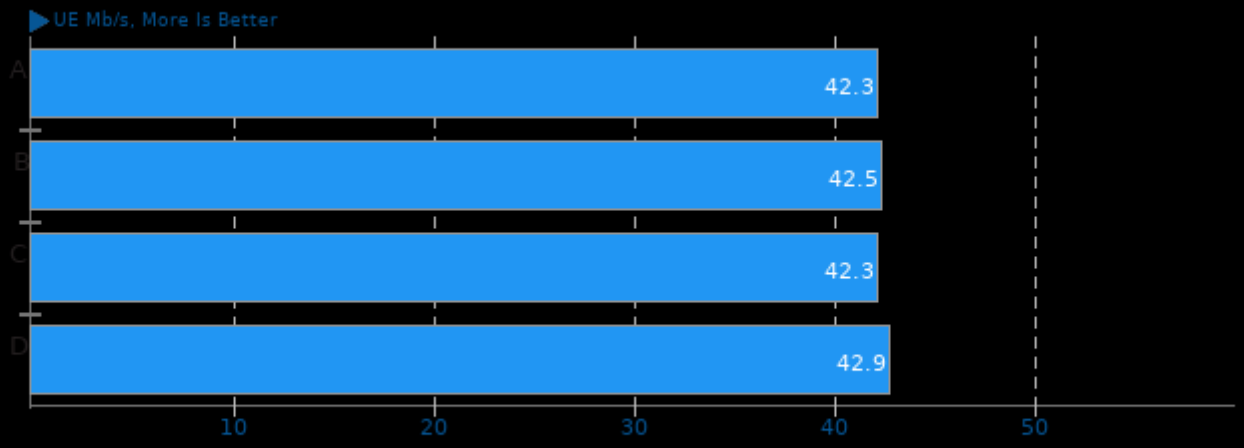

srsRAN 21.10
Test: 4G PHY_DL_Test 100 PRB SISO 64-QAM
UE Mb/s, More Is Better
A
104.1
B
104.1
C
101.5
D
103.0
20
40
60
80
100
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno
srsRAN 21.10
Test: 4G PHY_DL_Test 100 PRB MIMO 256-QAM
eNb Mb/s, More Is Better
A
288.8
B
292.4
C
291.6
D
289.0
60
120
180
240
300
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno


srsRAN 21.10
Test: 4G PHY_DL_Test 100 PRB MIMO 256-QAM
UE Mb/s, More Is Better
A
B
C
D
90.0
92.6
91.6
89.4
20
40
60
80
100
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno
srsRAN 21.10
Test: 4G PHY_DL_Test 100 PRB SISO 256-QAM
eNb Mb/s, More Is Better
A
B
C
D
313.0
315.2
314.9
311.2
70
140
210
280
350
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno


srsRAN 21.10
Test: 4G PHY_DL_Test 100 PRB SISO 256-QAM
UE Mb/s, More Is Better
A
B
C
D
108.4
109.8
109.5
105.6
20
40
60
80
100
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno
srsRAN 21.10
Test: 5G PHY_DL_NR Test 52 PRB SISO 64-QAM
eNb Mb/s, More Is Better
A
B
C
D
78.4
78.3
78.3
79.3
20
40
60
80
100
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno

srsRAN 21.10

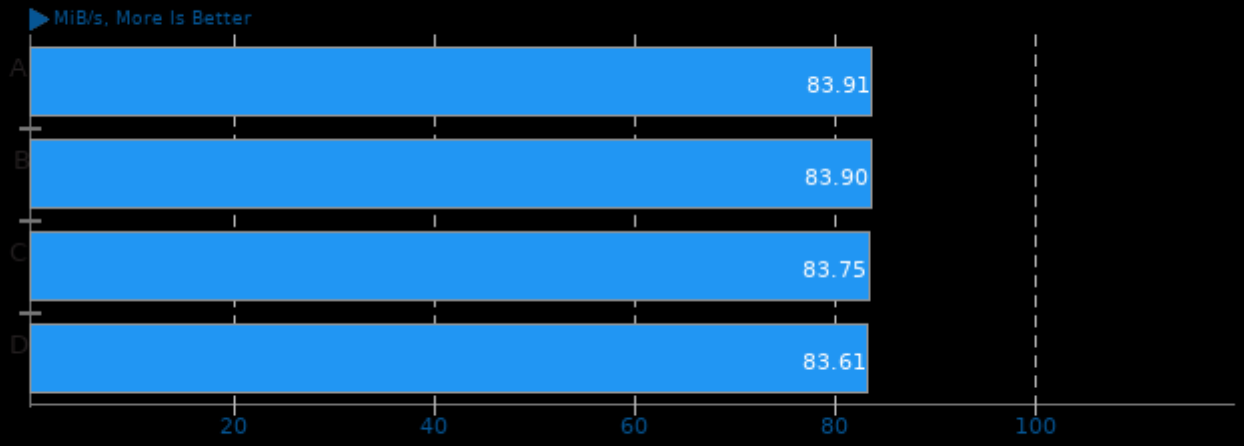
Test: 5G PHY_DL_NR Test 52 PRB SISO 64-QAM



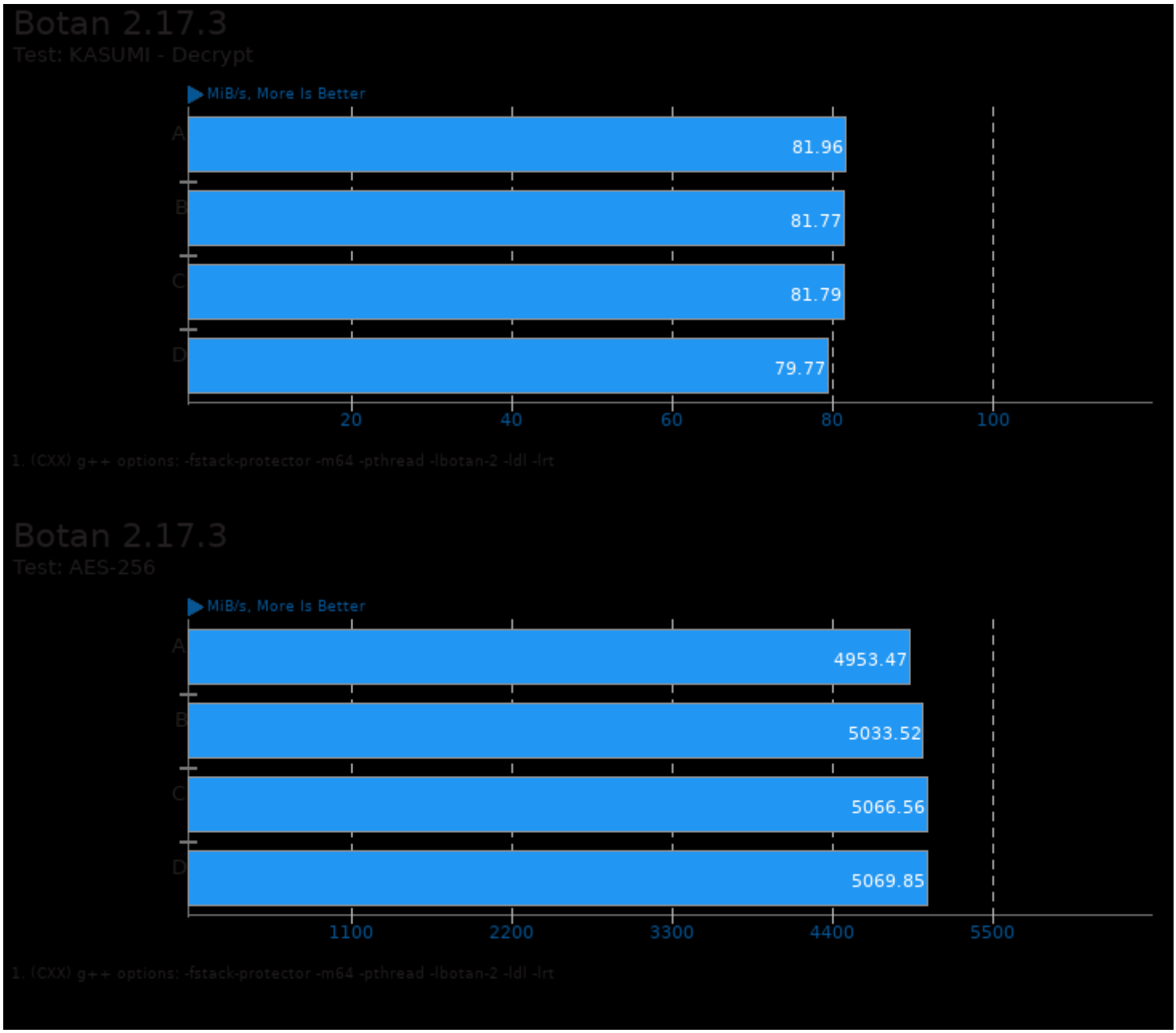
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno

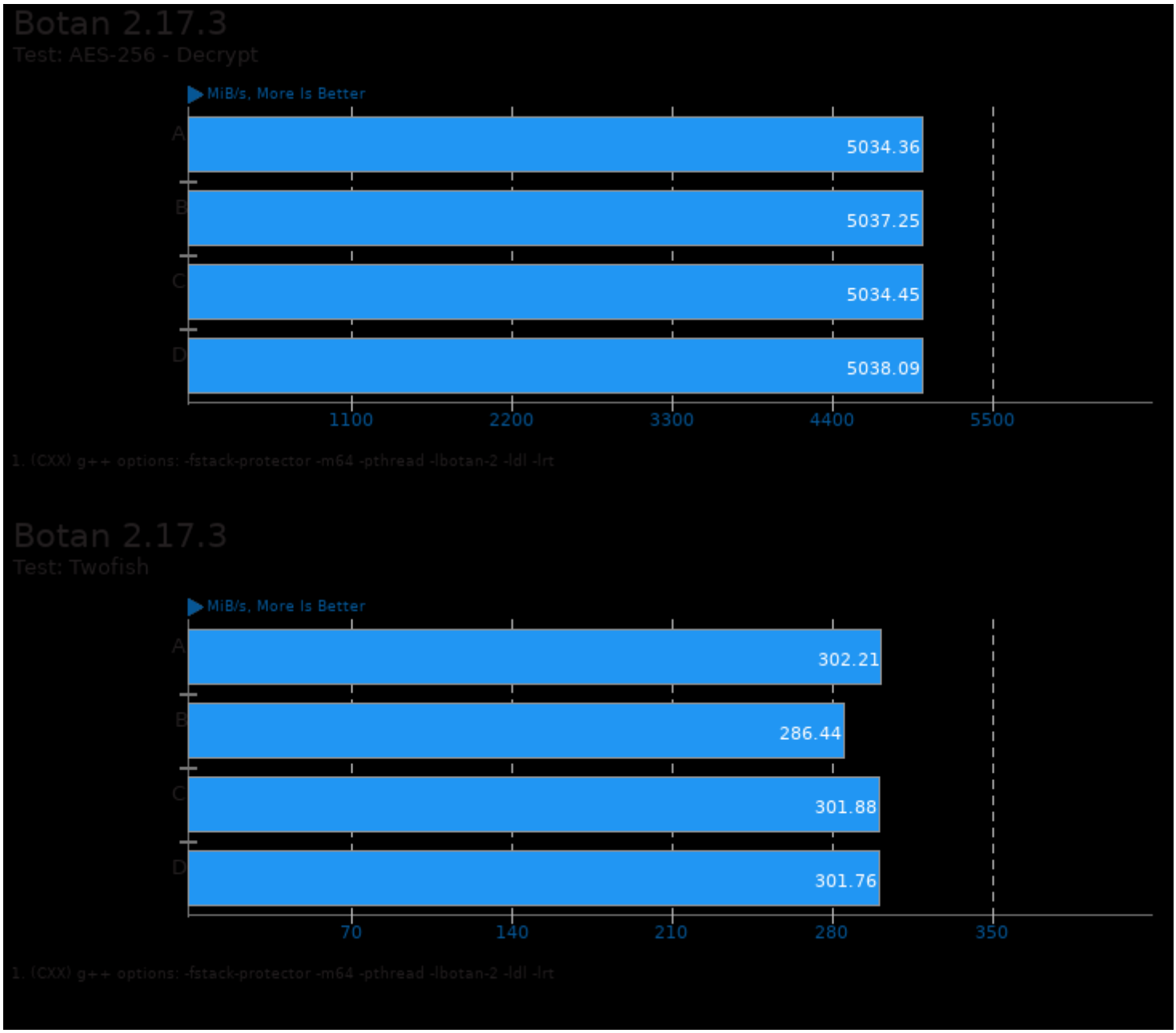
Botan 2.17.3

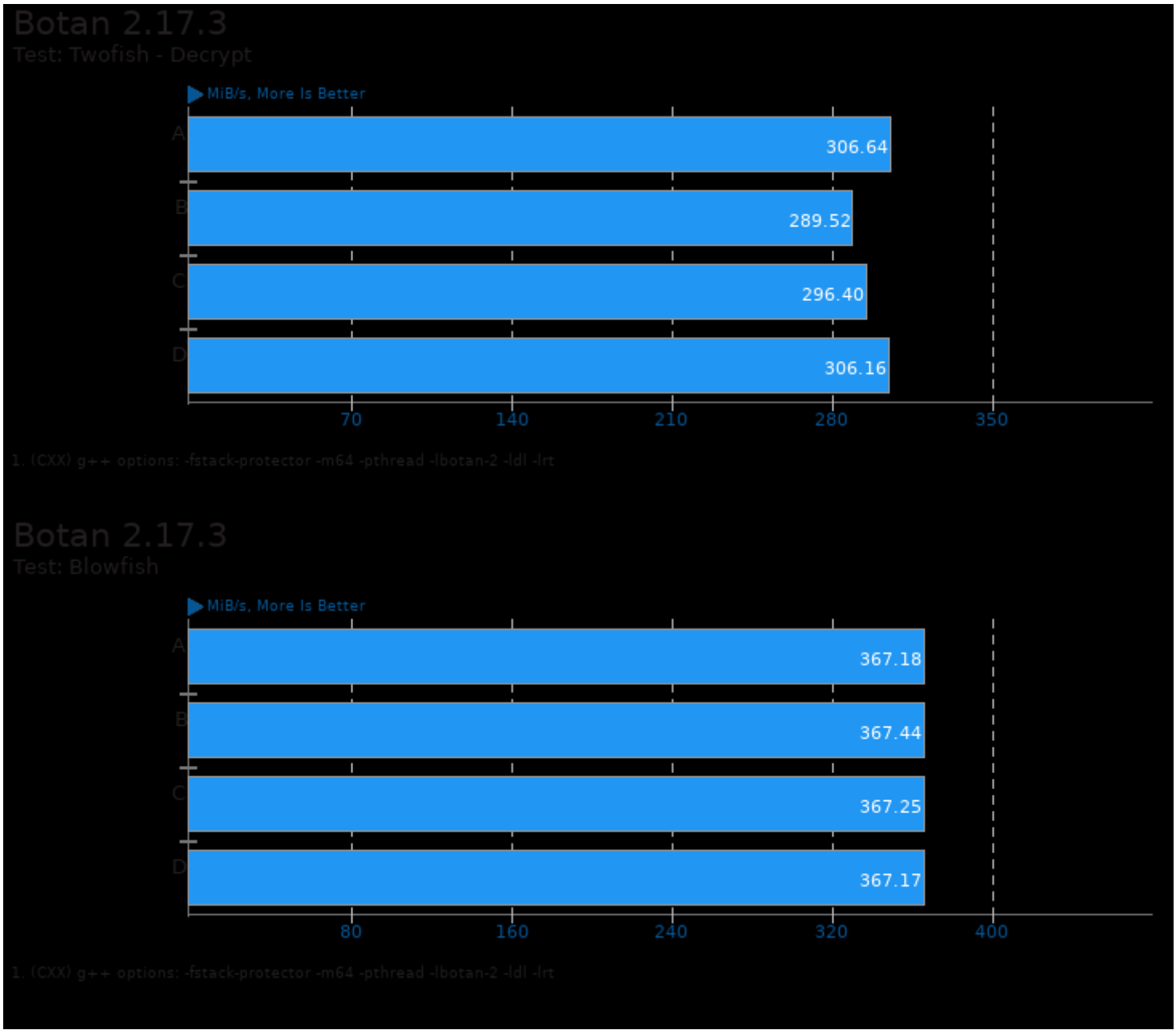
Test: KASUMI

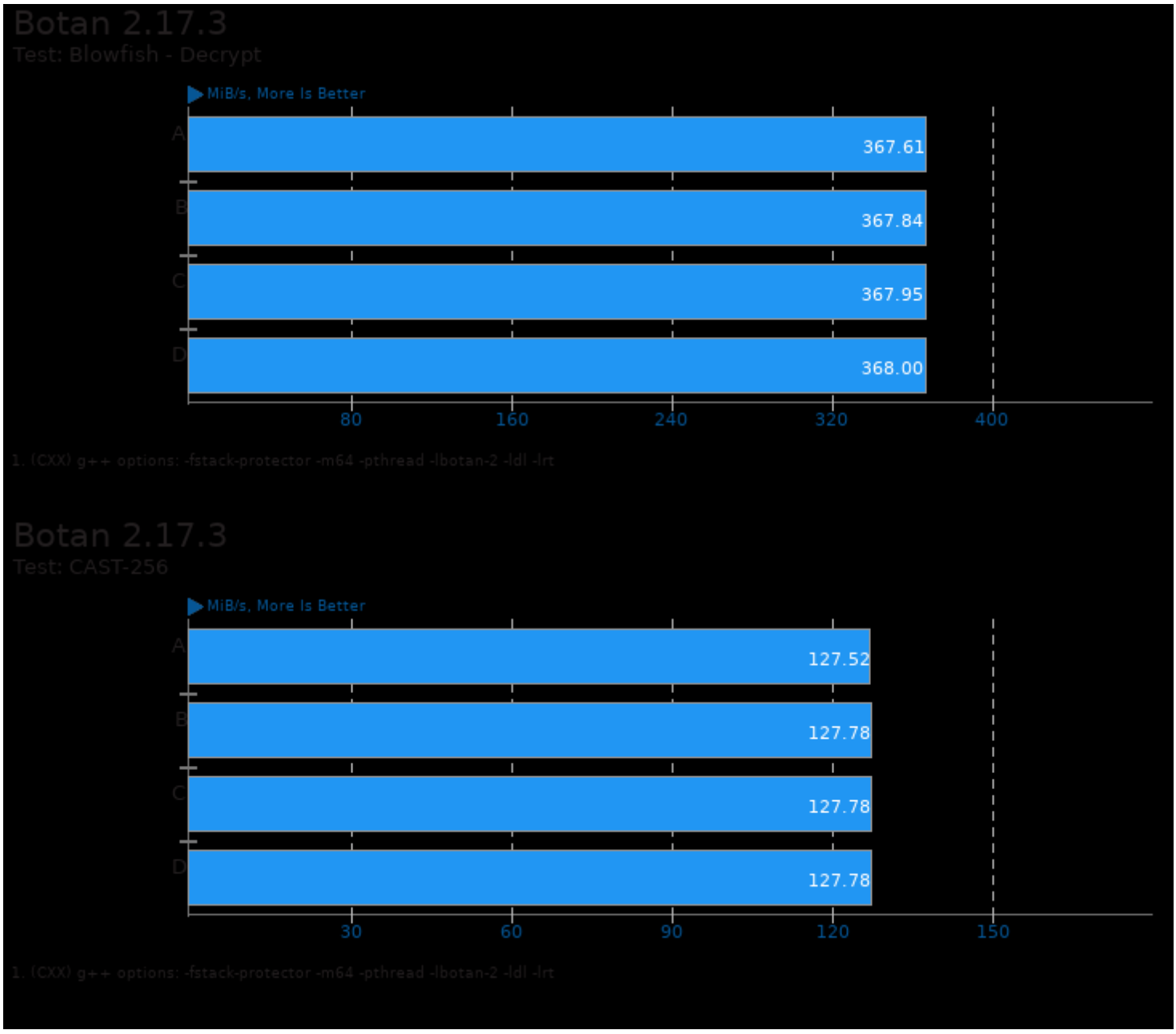


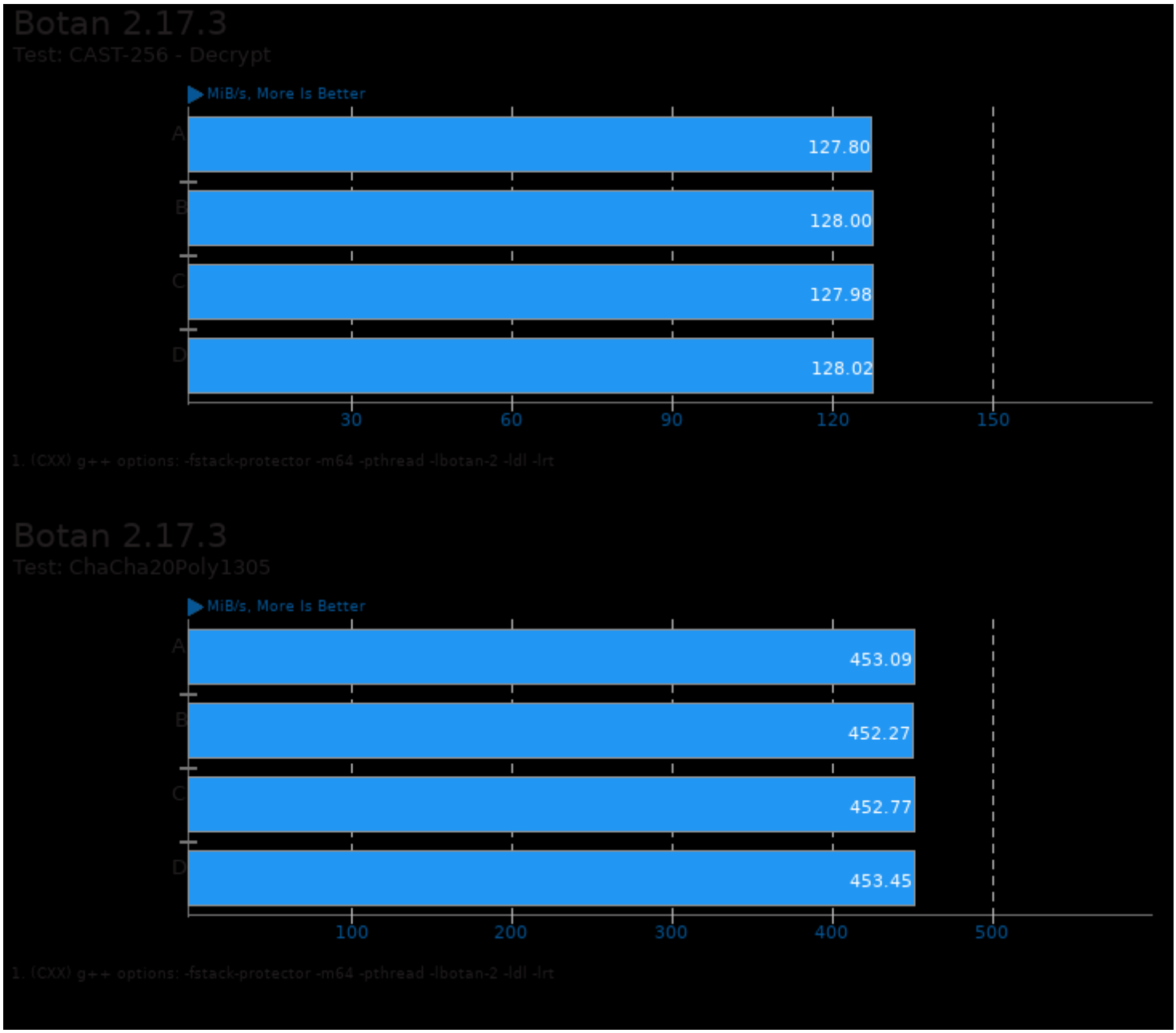
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt


Botan 2.17.3
Test: KASUMI - Decrypt
MiB/s, More Is Better
A
B
C
D
81.96
81.77
81.79
79.77
20
40
60
80
100
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Botan 2.17.3
Test: AES-256
MiB/s, More Is Better
A
B
C
D
4953.47
5033.52
5066.56
5069.85
1100
2200
3300
4400
5500
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt


Botan 2.17.3
Test: AES-256 - Decrypt
MiB/s, More Is Better
A
B
C
D
5034.36
5037.25
5034.45
5038.09
1100
2200
3300
4400
5500
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Botan 2.17.3
Test: Twofish
MiB/s, More Is Better
A
B
C
D
302.21
286.44
301.88
301.76
70
140
210
280
350
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

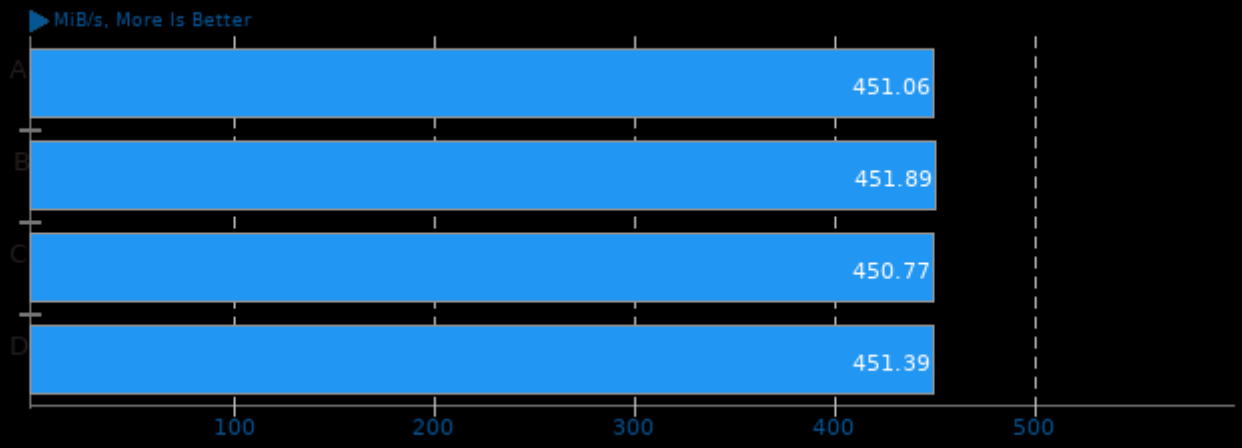

Botan 2.17.3
Test: Twofish - Decrypt
MiB/s, More Is Better
A
306.64
B
289.52
C
296.40
D
306.16
70
140
210
280
350
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Botan 2.17.3
Test: Blowfish
MiB/s, More Is Better
A
367.18
B
367.44
C
367.25
D
367.17
80
160
240
320
400
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt


Botan 2.17.3
Test: Blowfish - Decrypt
MiB/s, More Is Better
A
B
C
D
367.61
367.84
367.95
368.00
80
160
240
320
400
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Botan 2.17.3
Test: CAST-256
MiB/s, More Is Better
A
B
C
D
127.52
127.78
127.78
127.78
30
60
90
120
150
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt


Botan 2.17.3
Test: CAST-256 - Decrypt
MiB/s, More Is Better
A
B
C
D
127.80
128.00
127.98
128.02
30
60
90
120
150
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Botan 2.17.3
Test: ChaCha20Poly1305
MiB/s, More Is Better
A
B
C
D
453.09
452.27
452.77
453.45
100
200
300
400
500
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

Botan 2.17.3

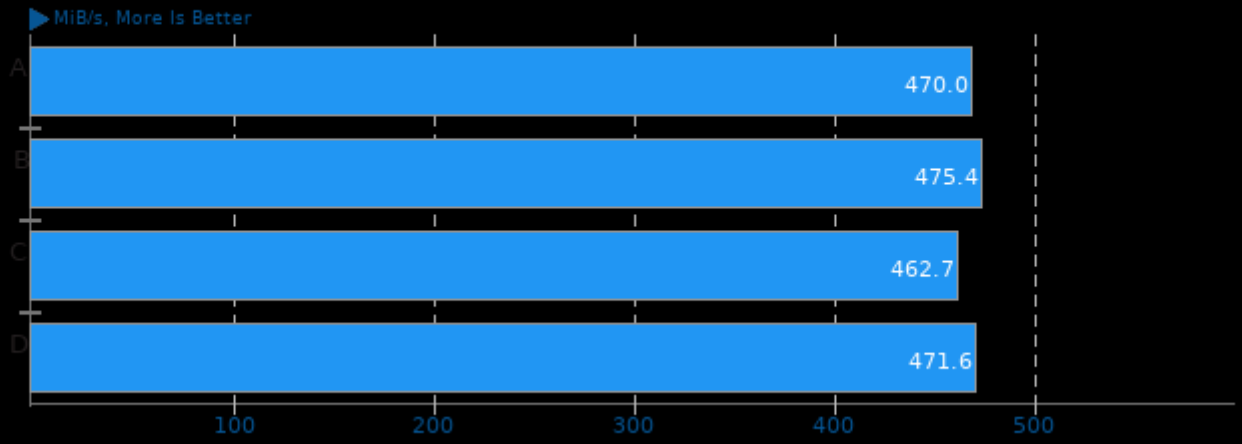
Test: ChaCha20Poly1305 - Decrypt



1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

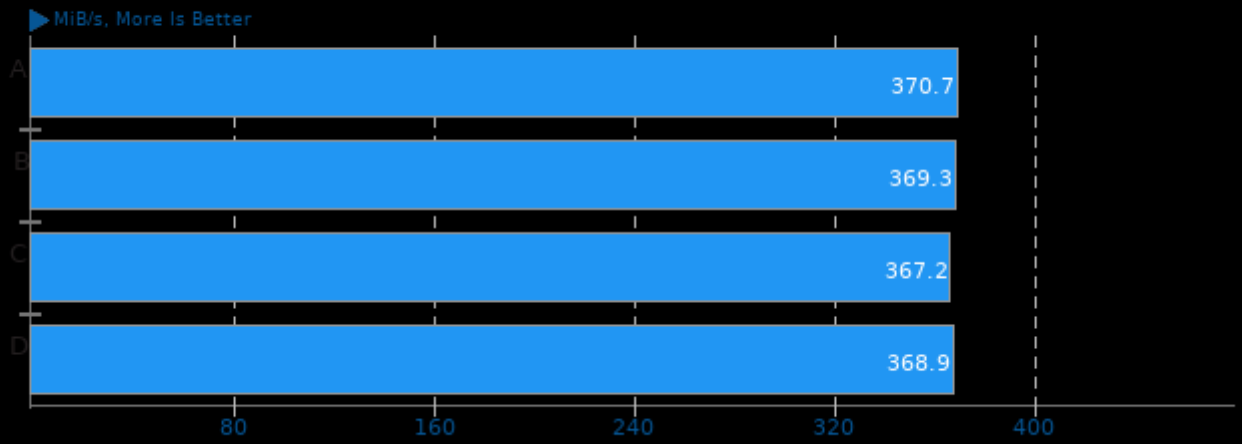
LuaRadio 0.9.1

Test: Five Back to Back FIR Filters



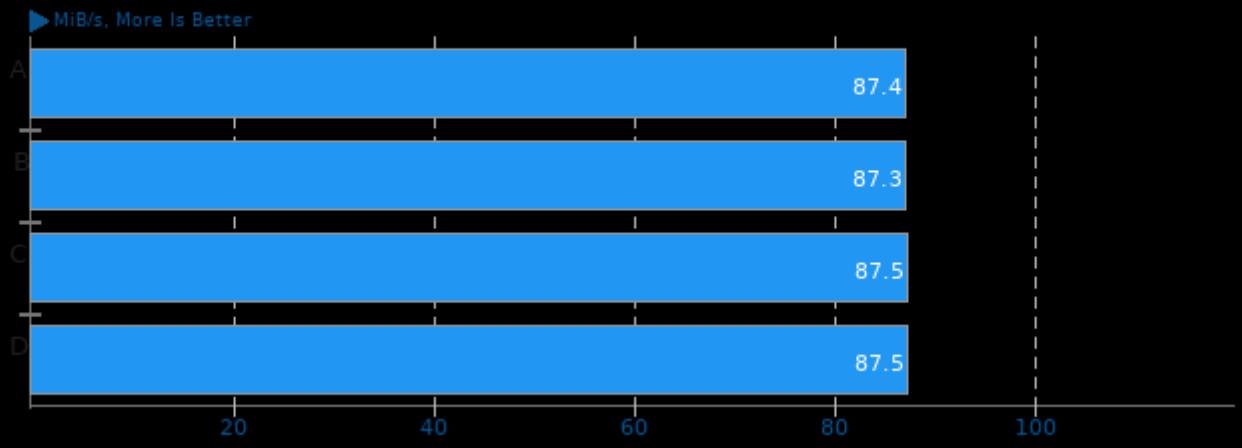
LuaRadio 0.9.1

Test: FM Deemphasis Filter



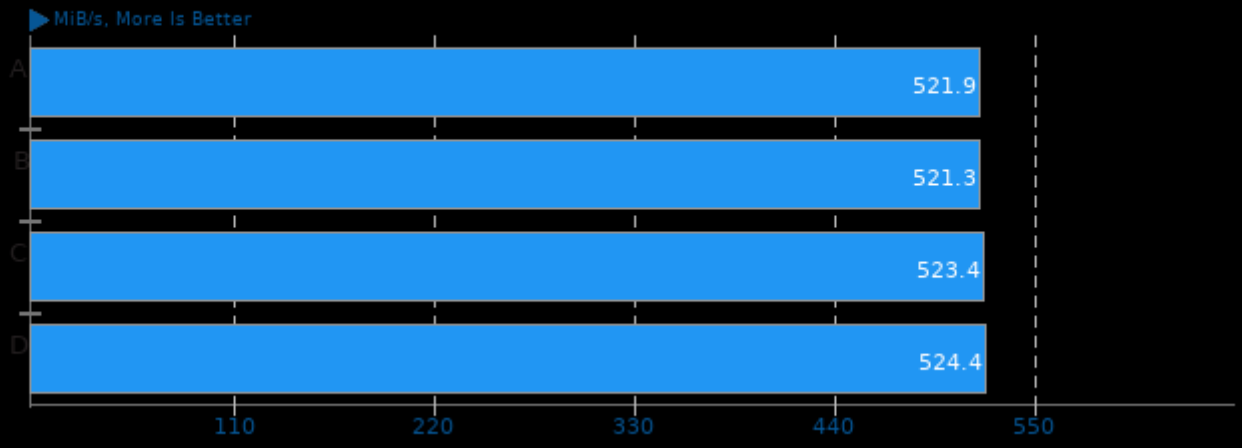
LuaRadio 0.9.1

Test: Hilbert Transform



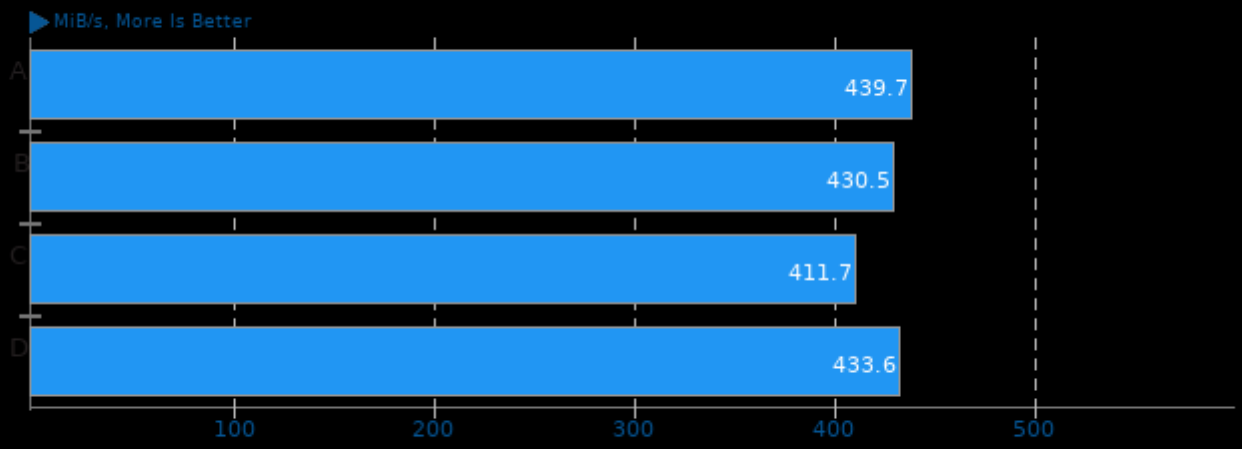
LuaRadio 0.9.1

Test: Complex Phase

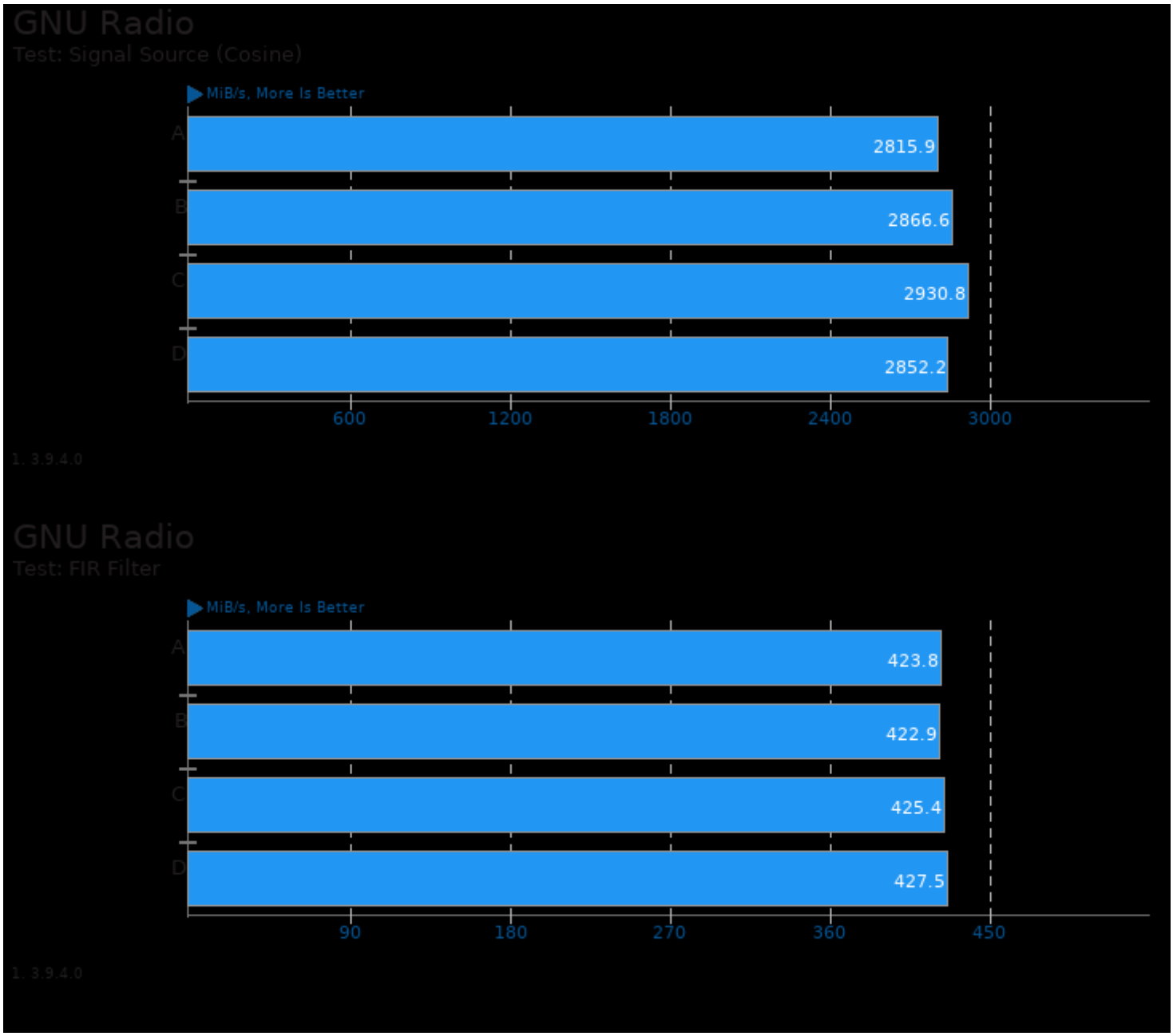


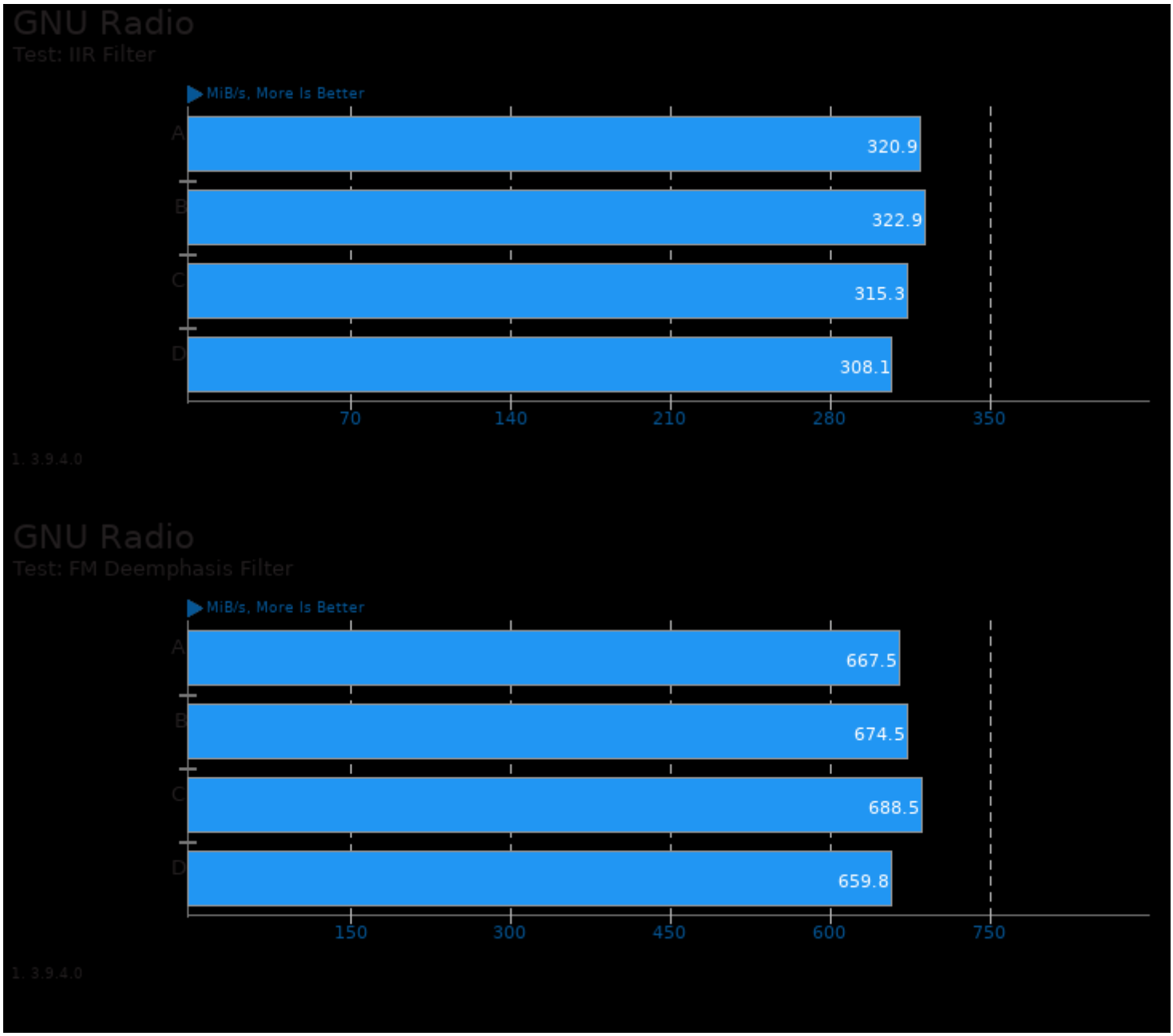
GNU Radio

Test: Five Back to Back FIR Filters



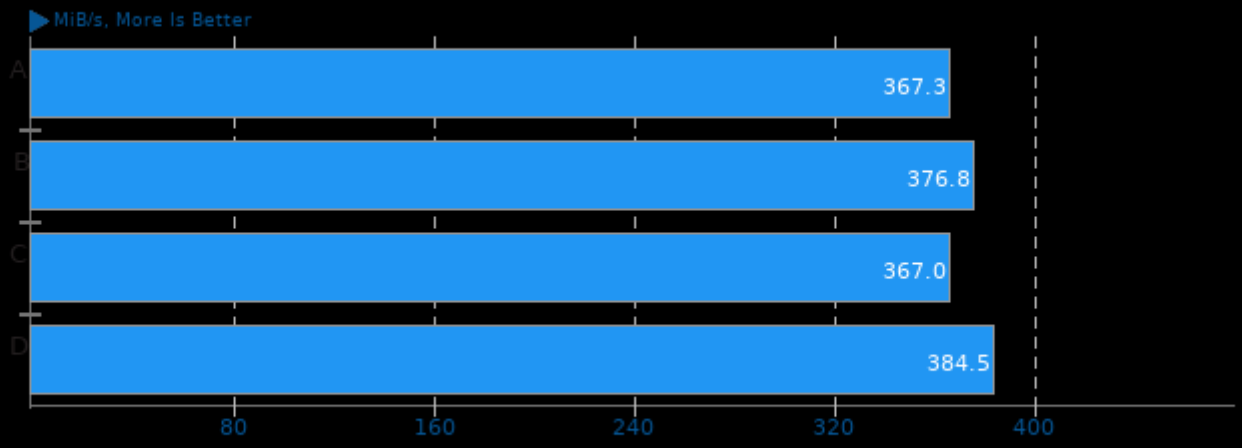
1. 3.9.4.0


GNU Radio
Test: Signal Source (Cosine)
MiB/s, More Is Better
A
2815.9
B
2866.6
C
2930.8
D
2852.2
600
1200
1800
2400
3000
1. 3.9.4.0
GNU Radio
Test: FIR Filter
MiB/s, More Is Better
A
423.8
B
422.9
C
425.4
D
427.5
90
180
270
360
450
1. 3.9.4.0


GNU Radio
Test: IIR Filter
MiB/s, More Is Better
A
320.9
B
322.9
C
315.3
D
308.1
70
140
210
280
350
1. 3.9.4.0
GNU Radio
Test: FM Deemphasis Filter
MiB/s, More Is Better
A
667.5
B
674.5
C
688.5
D
659.8
150
300
450
600
750
1. 3.9.4.0

GNU Radio

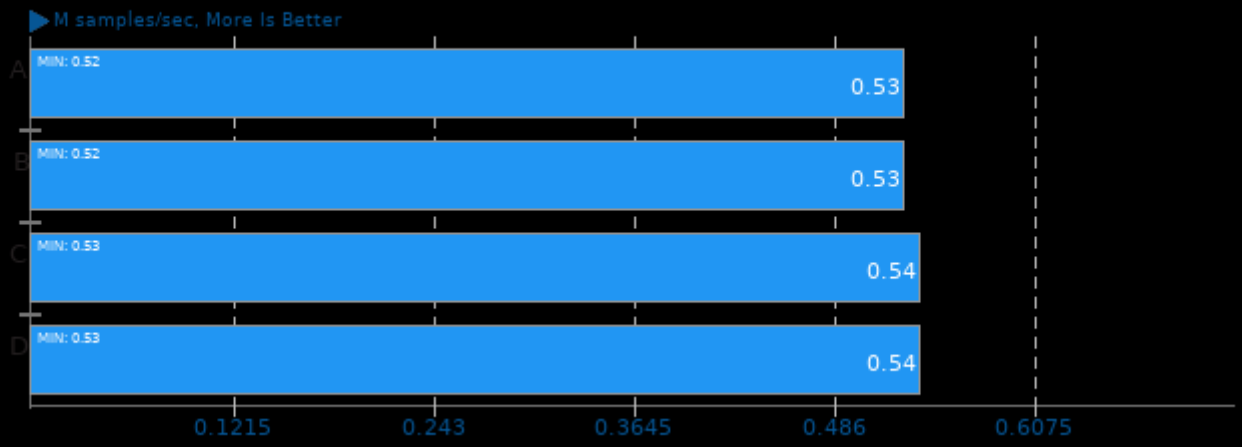
Test: Hilbert Transform



1. 3.9.4.0

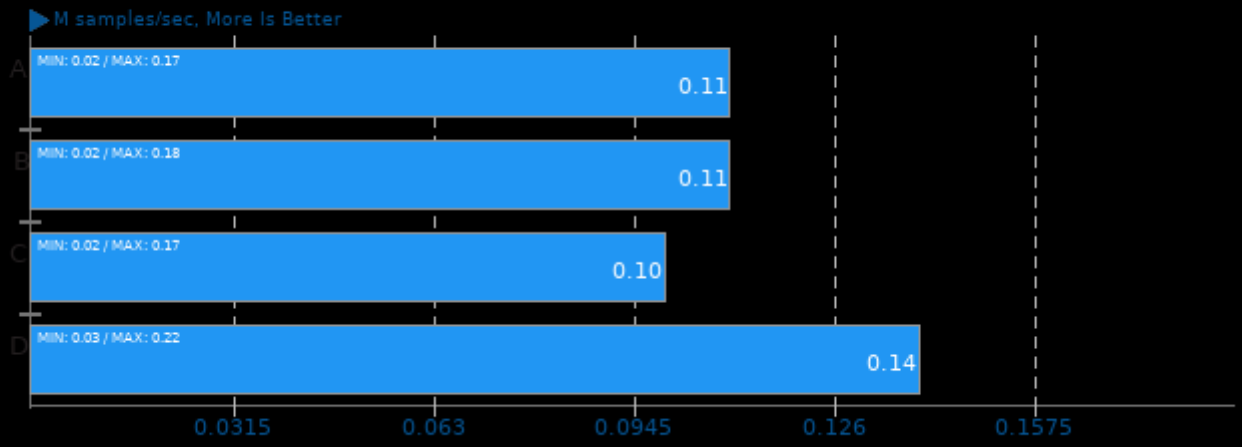
LuxCoreRender 2.6

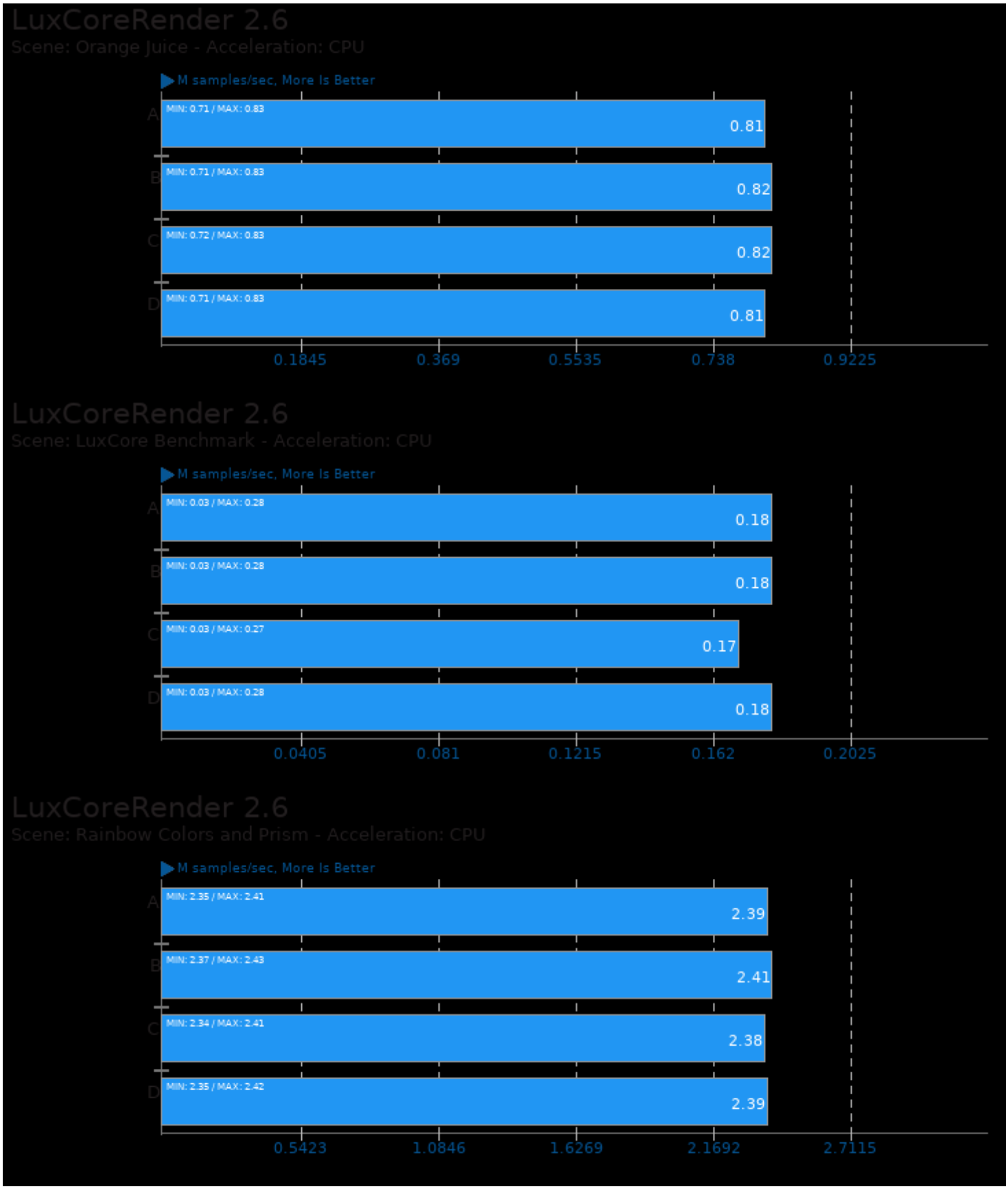
Scene: DLSC - Acceleration: CPU

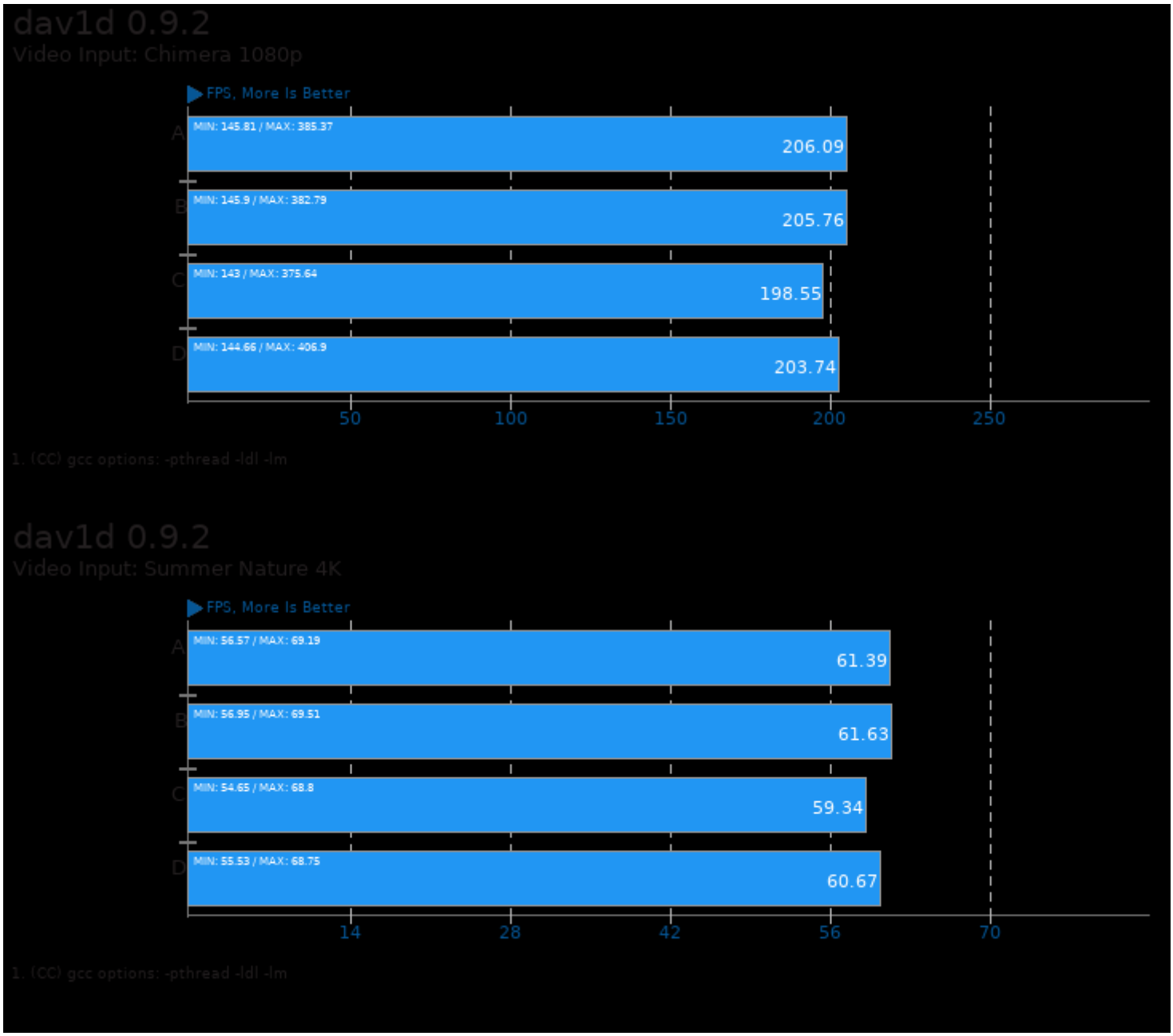


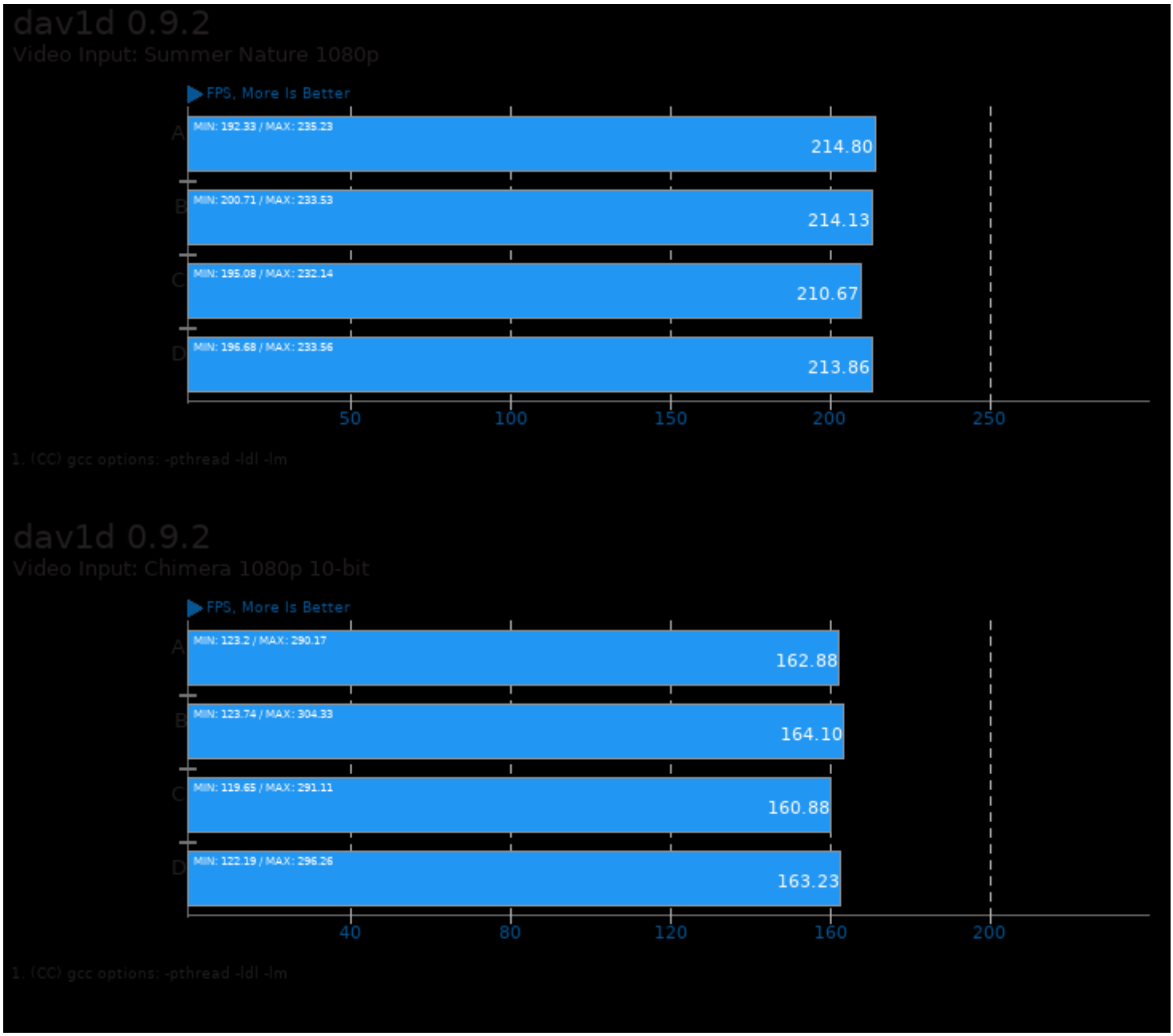
LuxCoreRender 2.6

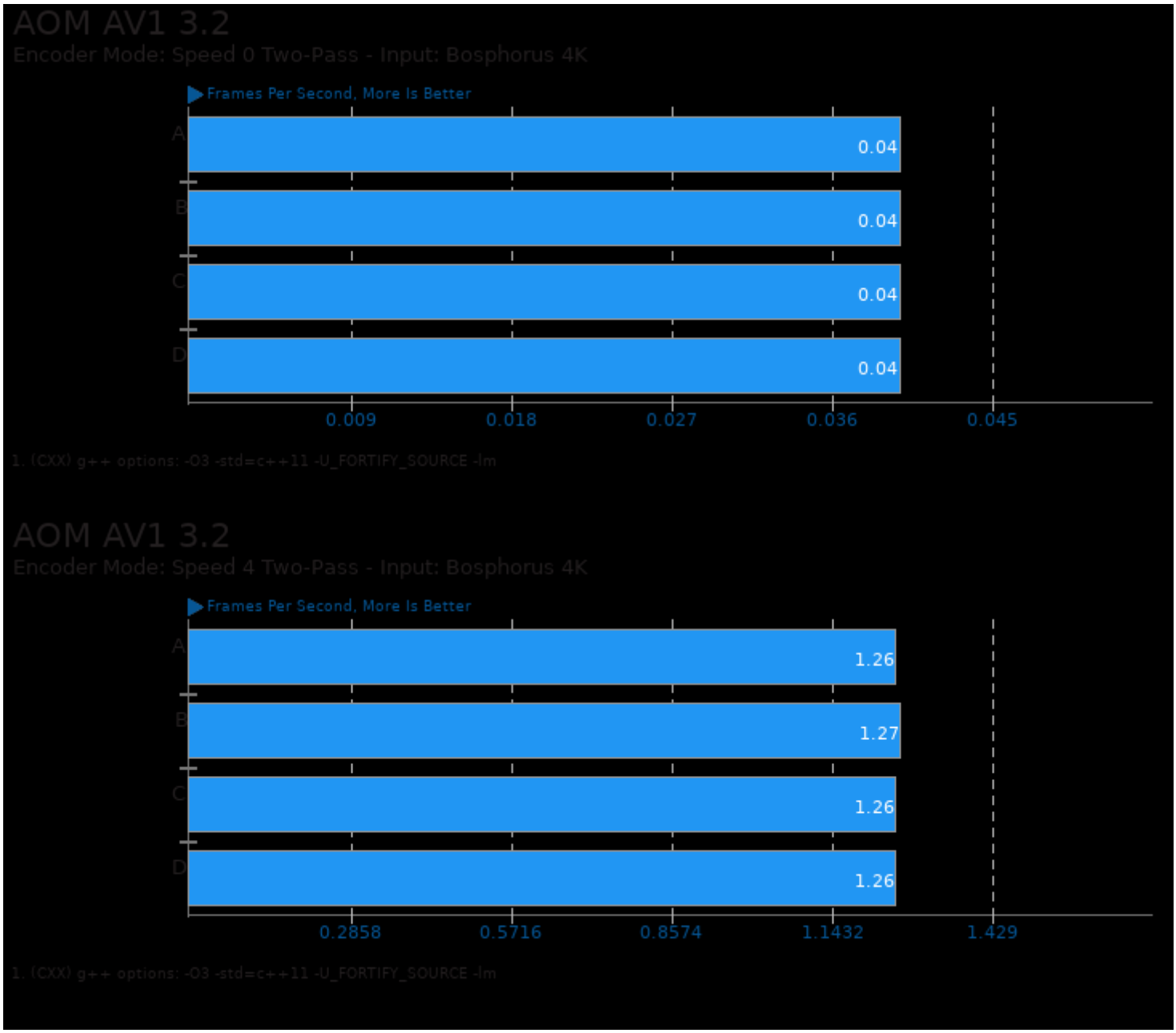
Scene: Danish Mood - Acceleration: CPU

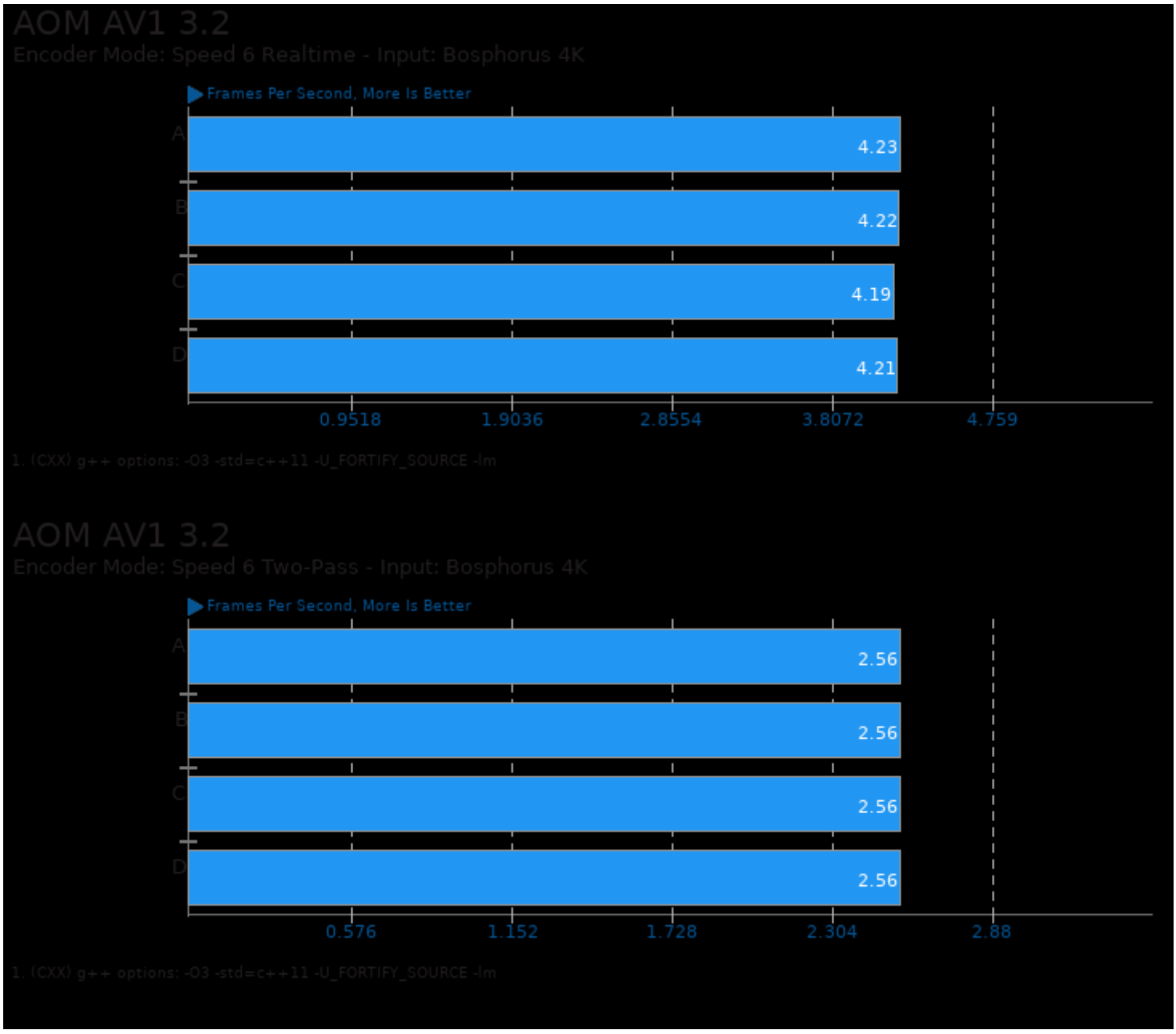


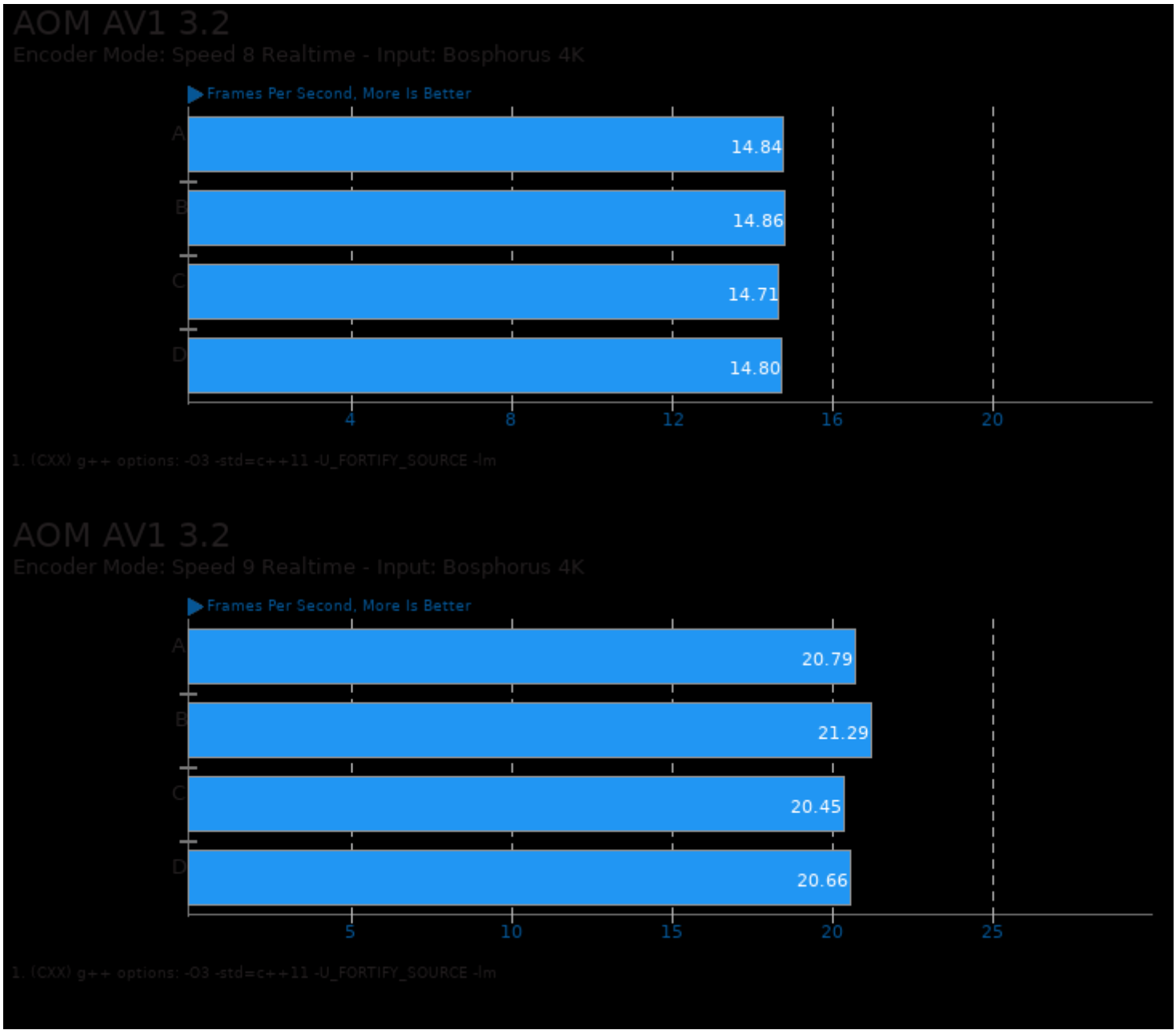

LuxCoreRender 2.6
Scene: Orange Juice - Acceleration: CPU
M samples/sec, More Is Better
A
MIN: 0.71 / MAX: 0.83
0.81
B
MIN: 0.71 / MAX: 0.83
0.82
C
MIN: 0.72 / MAX: 0.83
0.82
D
MIN: 0.71 / MAX: 0.83
0.81
0.1845
0.369
0.5535
0.738
0.9225
LuxCoreRender 2.6
Scene: LuxCore Benchmark - Acceleration: CPU
M samples/sec, More Is Better
A
MIN: 0.03 / MAX: 0.28
0.18
B
MIN: 0.03 / MAX: 0.28
0.18
C
MIN: 0.03 / MAX: 0.27
0.17
D
MIN: 0.03 / MAX: 0.28
0.18
0.0405
0.081
0.1215
0.162
0.2025
LuxCoreRender 2.6
Scene: Rainbow Colors and Prism - Acceleration: CPU
M samples/sec, More Is Better
A
MIN: 2.35 / MAX: 2.41
2.39
B
MIN: 2.37 / MAX: 2.43
2.41
C
MIN: 2.34 / MAX: 2.41
2.38
D
MIN: 2.35 / MAX: 2.42
2.39
0.5423
1.0846
1.6269
2.1692
2.7115

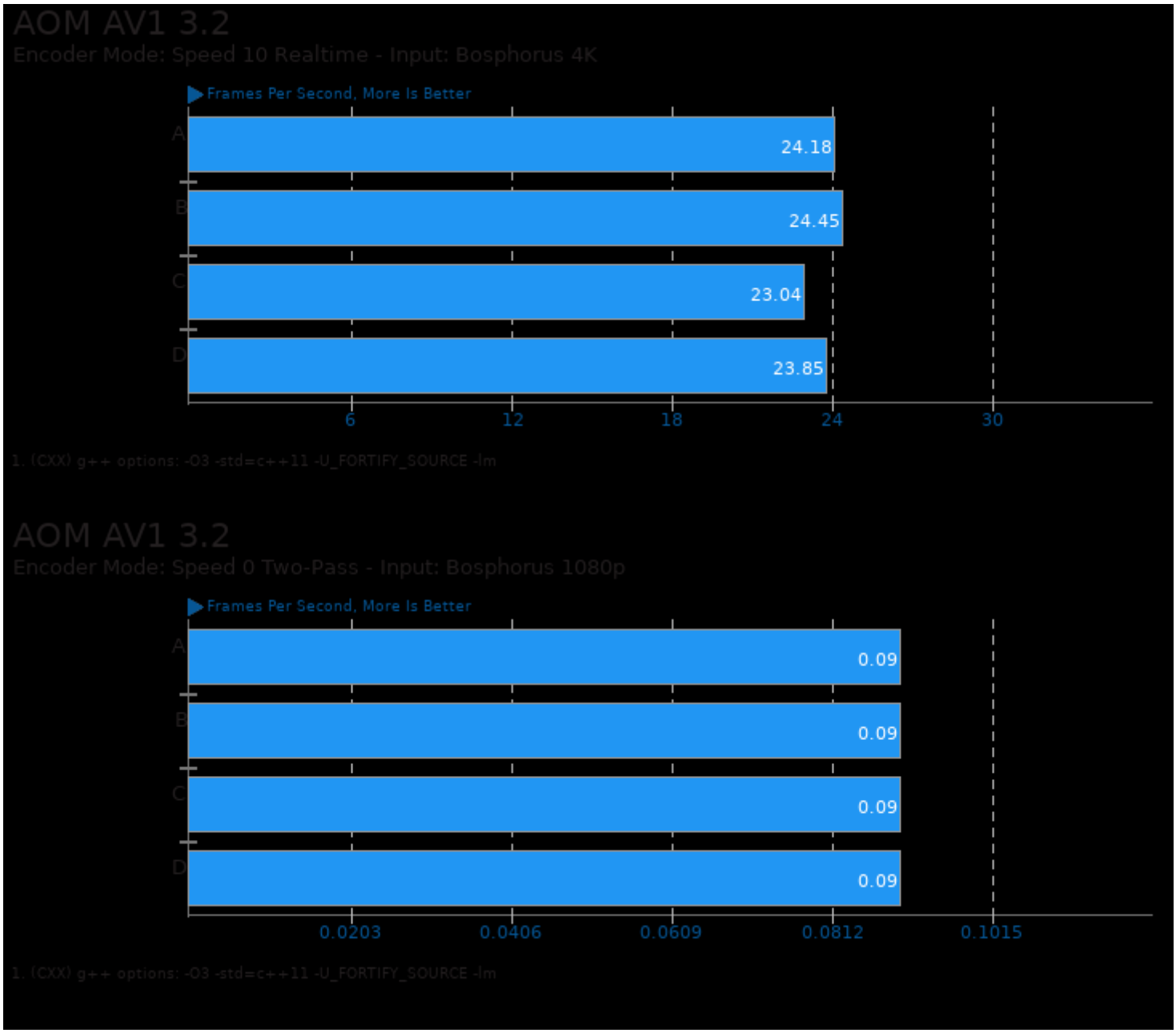

dav1d 0.9.2
Video Input: Chimera 1080p
FPS, More Is Better
A
MIN: 145.81 / MAX: 385.37
206.09
B
MIN: 145.9 / MAX: 382.79
205.76
C
MIN: 143 / MAX: 375.64
198.55
D
MIN: 144.66 / MAX: 406.9
203.74
50
100
150
200
250
1. (CC) gcc options: -pthread -ldl -lm
dav1d 0.9.2
Video Input: Summer Nature 4K
FPS, More Is Better
A
MIN: 56.57 / MAX: 69.19
61.39
B
MIN: 56.95 / MAX: 69.51
61.63
C
MIN: 54.65 / MAX: 68.8
59.34
D
MIN: 55.53 / MAX: 68.75
60.67
14
28
42
56
70
1. (CC) gcc options: -pthread -ldl -lm

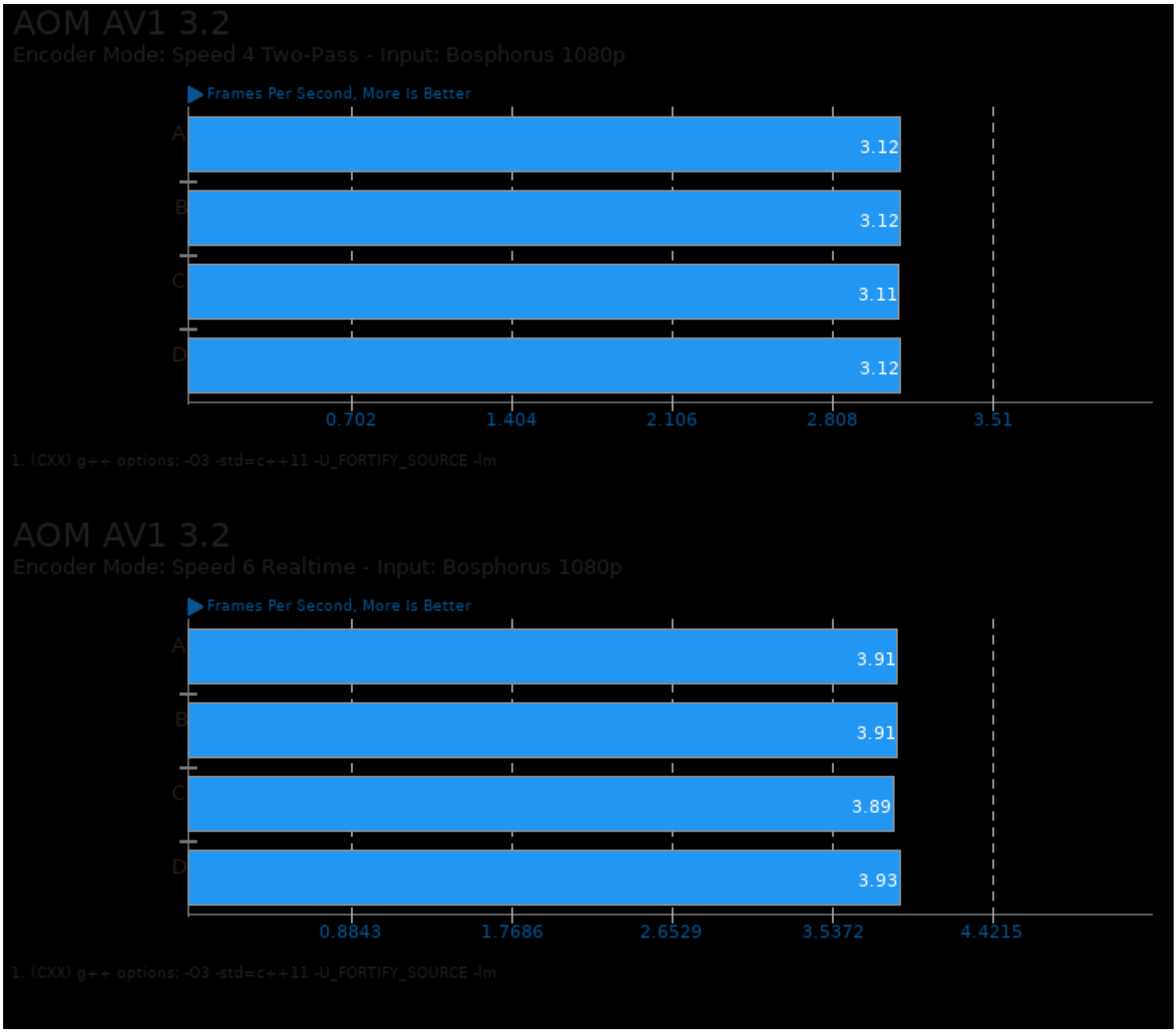

dav1d 0.9.2
Video Input: Summer Nature 1080p
FPS, More Is Better
A
MIN: 192.33 / MAX: 235.23
214.80
B
MIN: 200.71 / MAX: 233.53
214.13
C
MIN: 195.08 / MAX: 232.14
210.67
D
MIN: 196.68 / MAX: 233.56
213.86
50
100
150
200
250
1. (CC) gcc options: -pthread -ldl -lm
dav1d 0.9.2
Video Input: Chimera 1080p 10-bit
FPS, More Is Better
A
MIN: 123.2 / MAX: 290.17
162.88
B
MIN: 123.74 / MAX: 304.33
164.10
C
MIN: 119.65 / MAX: 291.11
160.88
D
MIN: 122.19 / MAX: 296.26
163.23
40
80
120
160
200
1. (CC) gcc options: -pthread -ldl -lm

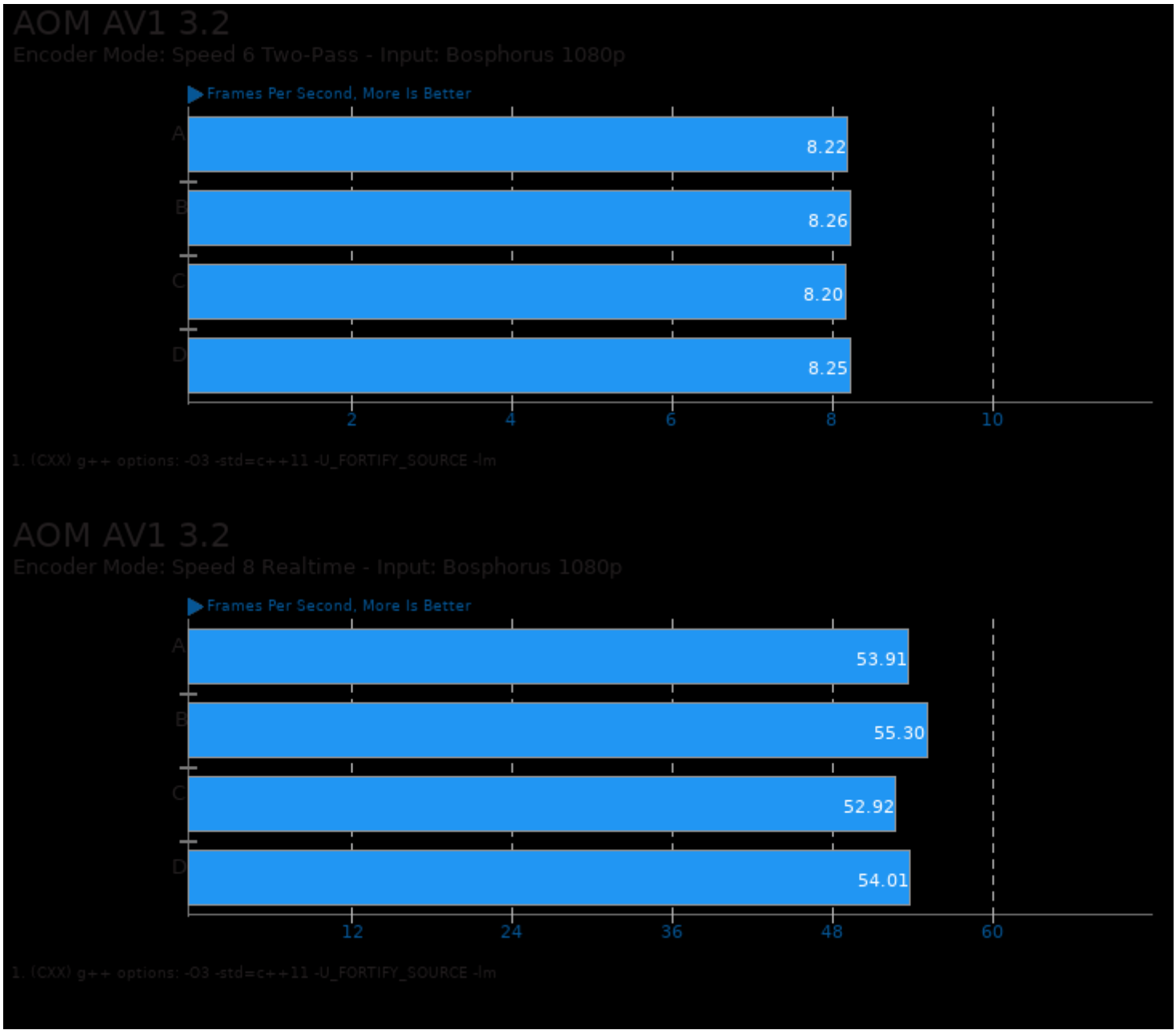

AOM AV1 3.2
Encoder Mode: Speed 0 Two-Pass - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
D
0.04
0.04
0.04
0.04
0.009
0.018
0.027
0.036
0.045
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm
AOM AV1 3.2
Encoder Mode: Speed 4 Two-Pass - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
D
1.26
1.27
1.26
1.26
0.2858
0.5716
0.8574
1.1432
1.429
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm

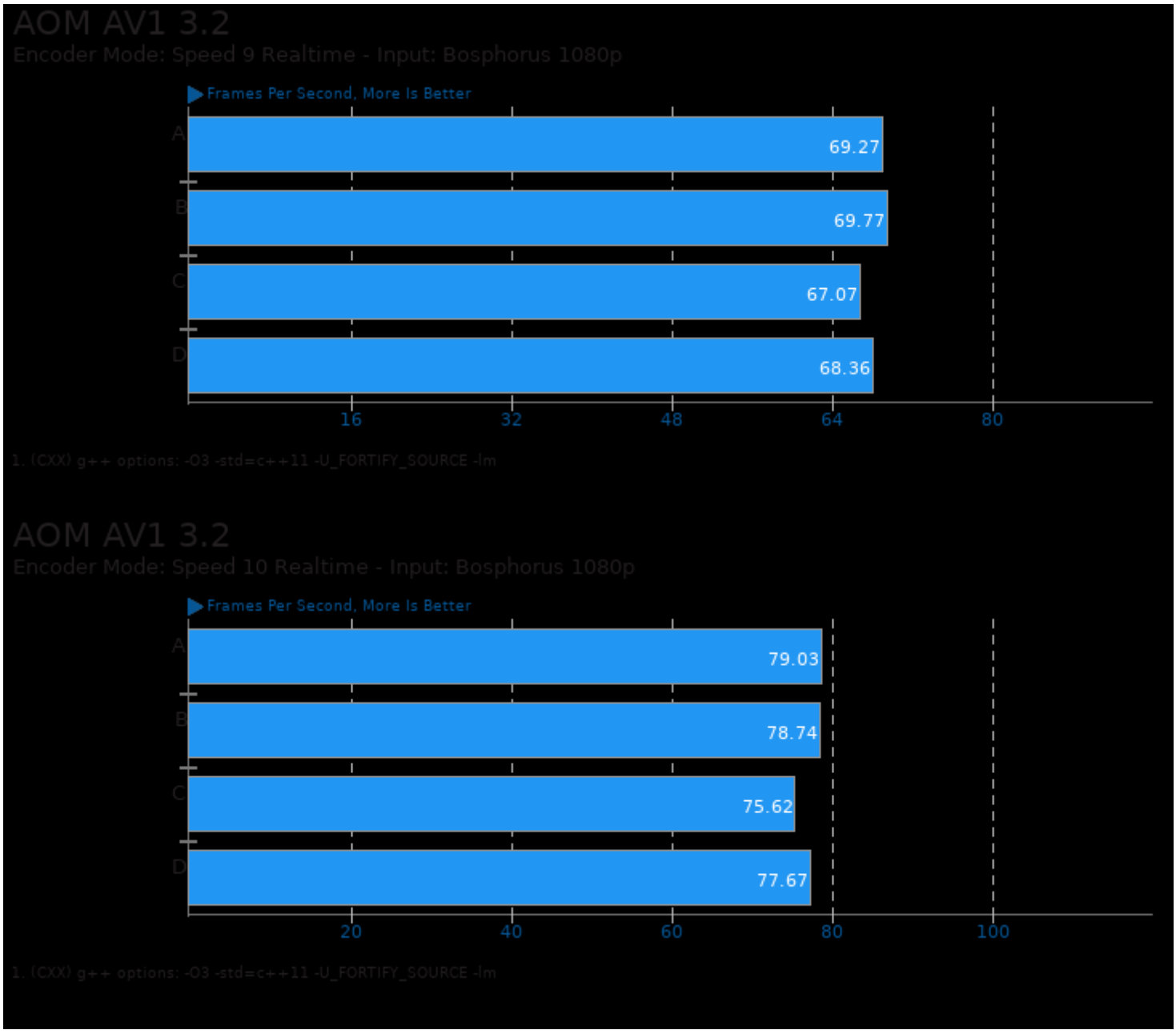

AOM AV1 3.2
Encoder Mode: Speed 6 Realtime - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
D
4.23
4.22
4.19
4.21
0.9518
1.9036
2.8554
3.8072
4.759
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm
AOM AV1 3.2
Encoder Mode: Speed 6 Two-Pass - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
D
2.56
2.56
2.56
2.56
0.576
1.152
1.728
2.304
2.88
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm

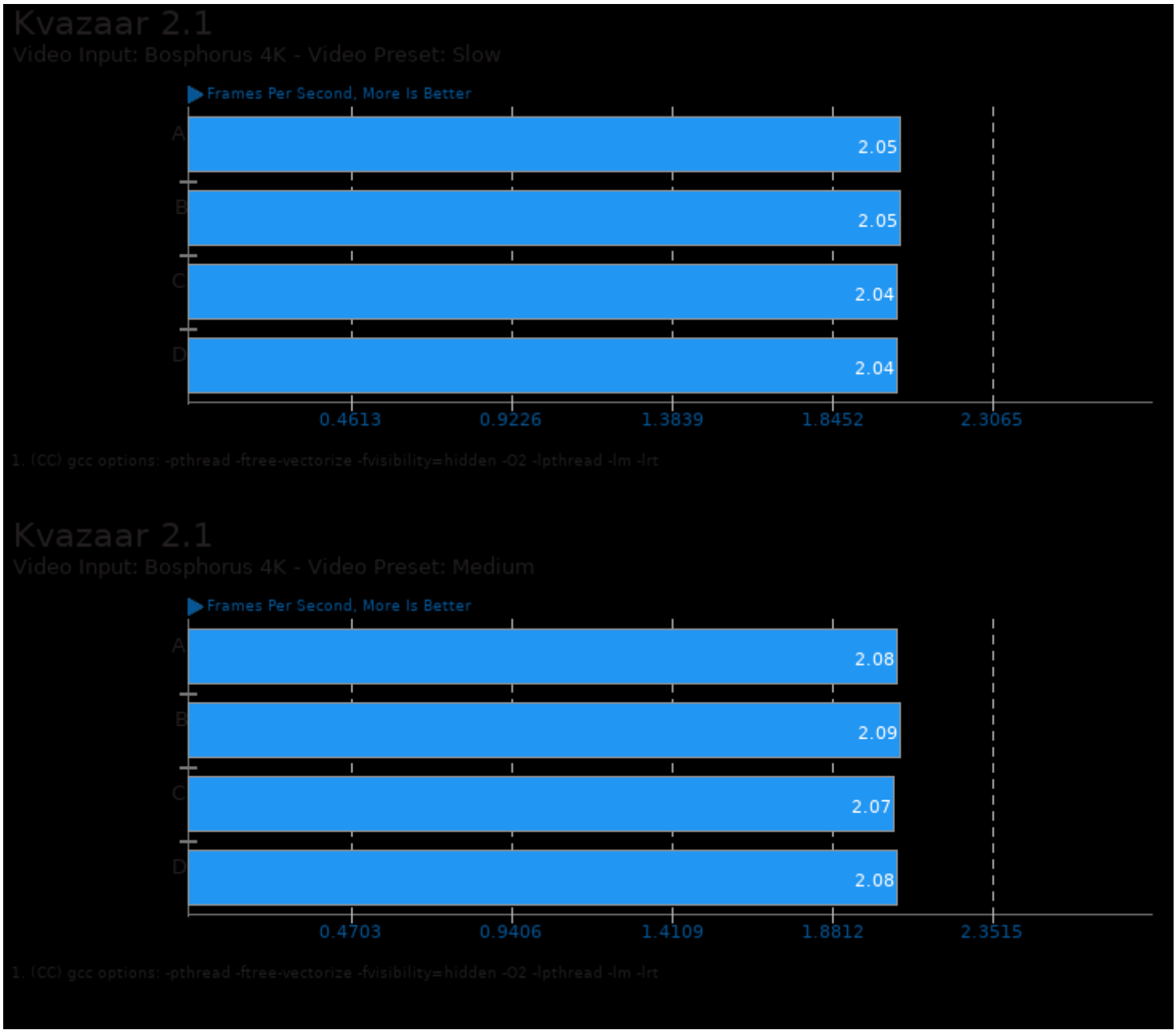

AOM AV1 3.2
Encoder Mode: Speed 8 Realtime - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
D
14.84
14.86
14.71
14.80
4
8
12
16
20
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm
AOM AV1 3.2
Encoder Mode: Speed 9 Realtime - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
D
20.79
21.29
20.45
20.66
5
10
15
20
25
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm

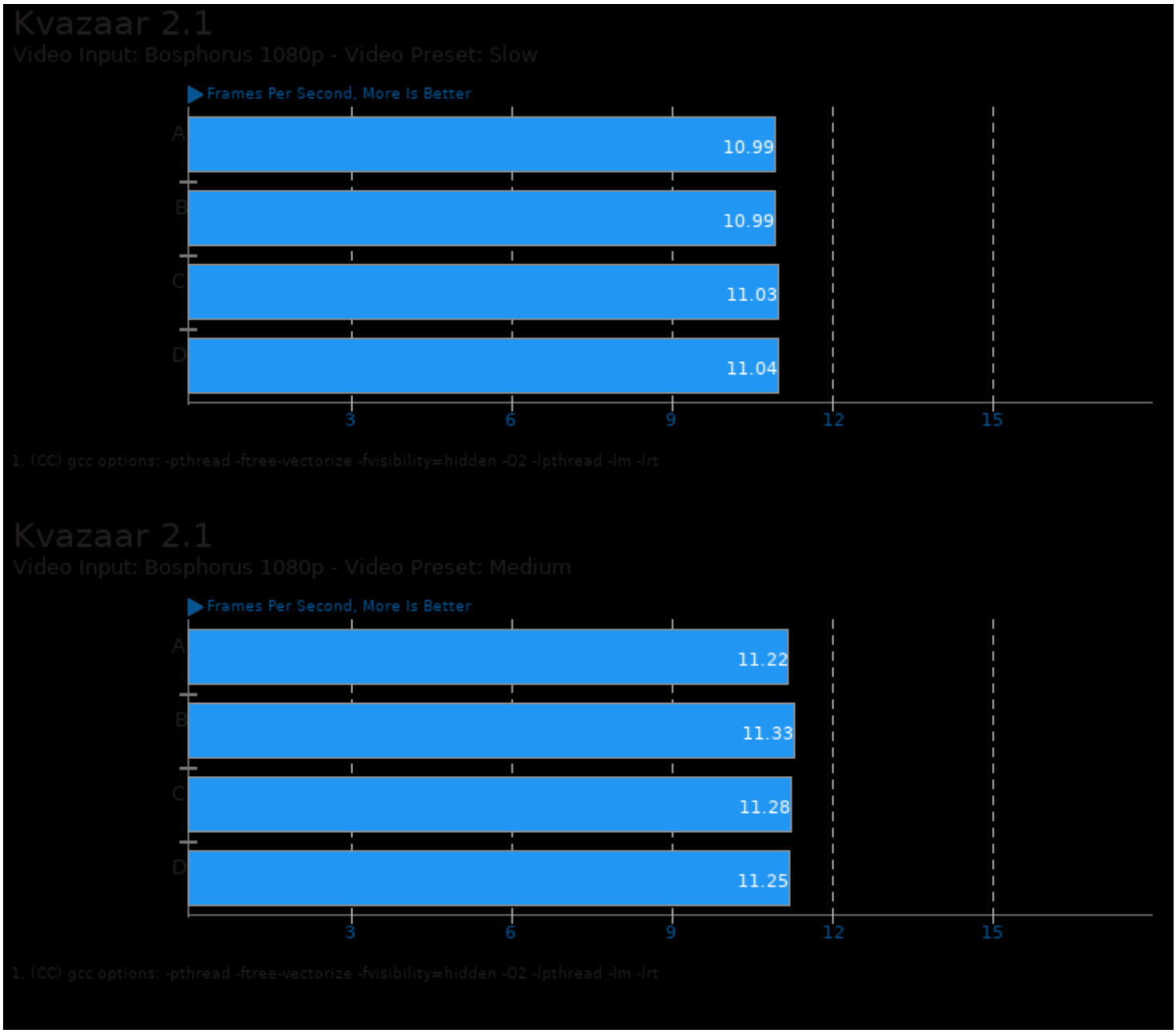

AOM AV1 3.2
Encoder Mode: Speed 10 Realtime - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
D
24.18
24.45
23.04
23.85
6
12
18
24
30
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm
AOM AV1 3.2
Encoder Mode: Speed 0 Two-Pass - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
D
0.09
0.09
0.09
0.09
0.0203
0.0406
0.0609
0.0812
0.1015
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm

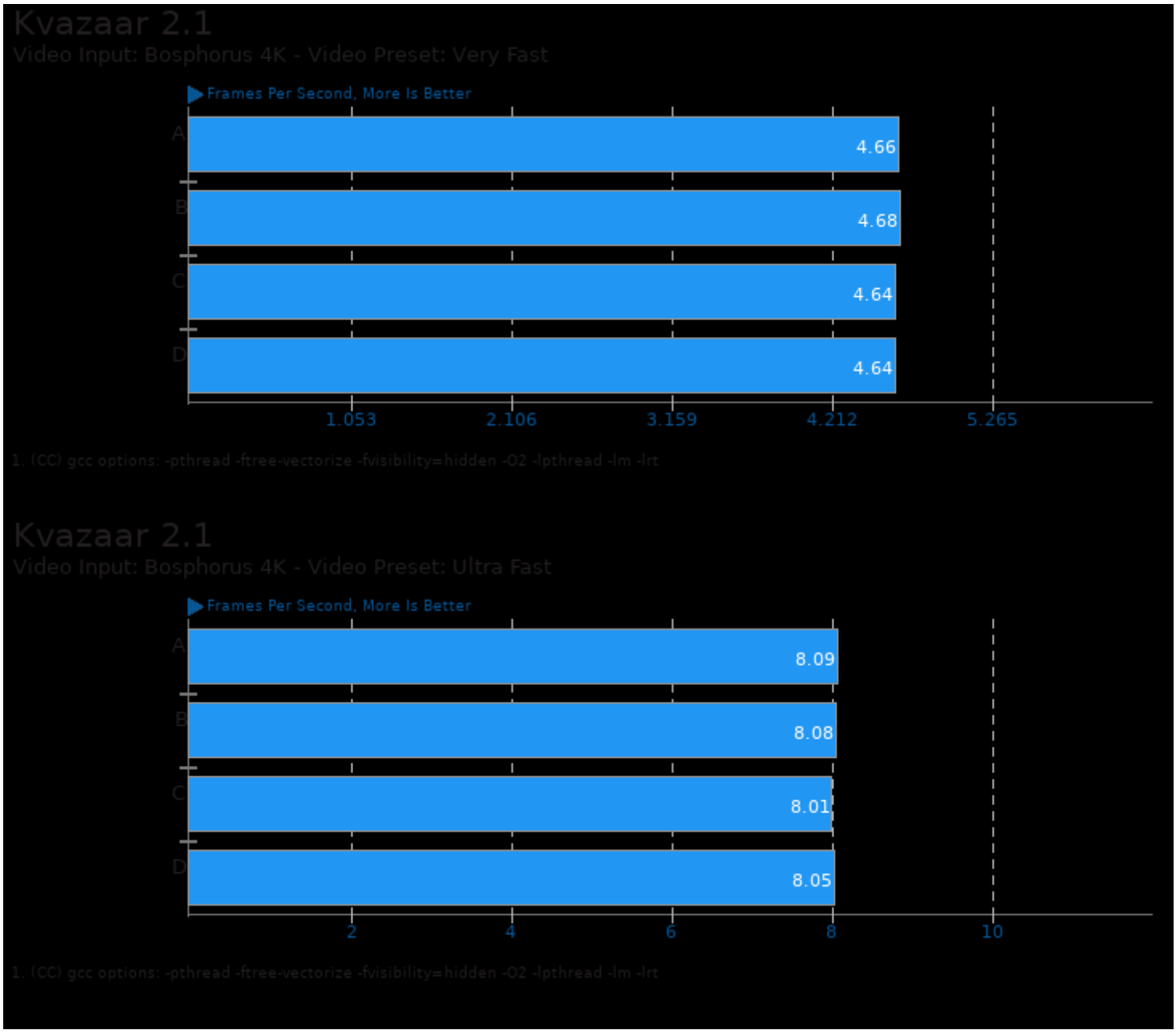

AOM AV1 3.2
Encoder Mode: Speed 4 Two-Pass - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
D
3.12
3.12
3.11
3.12
0.702
1.404
2.106
2.808
3.51
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm
AOM AV1 3.2
Encoder Mode: Speed 6 Realtime - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
D
3.91
3.91
3.89
3.93
0.8843
1.7686
2.6529
3.5372
4.4215
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm


AOM AV1 3.2
Encoder Mode: Speed 6 Two-Pass - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
D
8.22
8.26
8.20
8.25
2
4
6
8
10
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm
AOM AV1 3.2
Encoder Mode: Speed 8 Realtime - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
D
53.91
55.30
52.92
54.01
12
24
36
48
60
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm


AOM AV1 3.2
Encoder Mode: Speed 9 Realtime - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
D
69.27
69.77
67.07
68.36
16
32
48
64
80
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm
AOM AV1 3.2
Encoder Mode: Speed 10 Realtime - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
D
79.03
78.74
75.62
77.67
20
40
60
80
100
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm

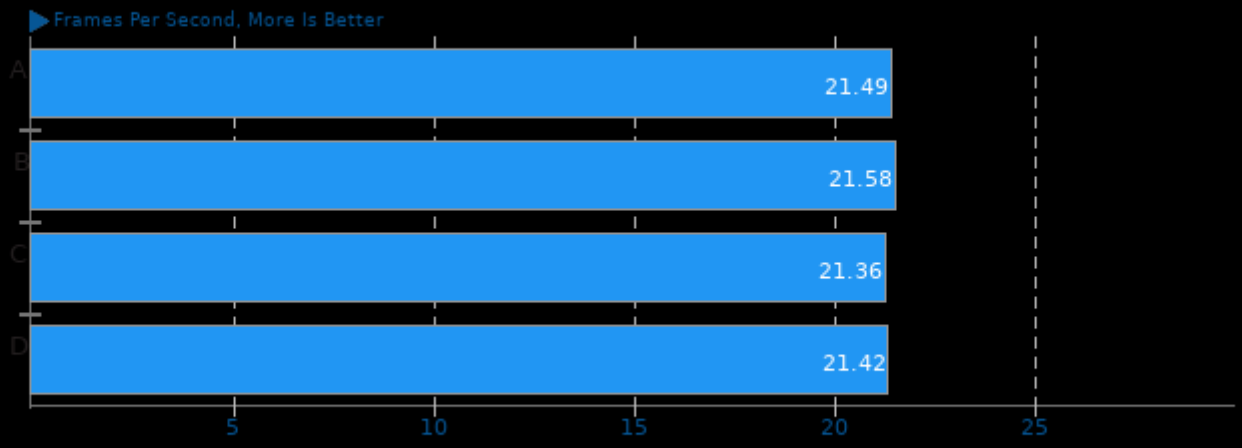

Kvazaar 2.1
Video Input: Bosphorus 4K - Video Preset: Slow
Frames Per Second, More Is Better
A
2.05
B
2.05
C
2.04
D
2.04
0.4613
0.9226
1.3839
1.8452
2.3065
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt
Kvazaar 2.1
Video Input: Bosphorus 4K - Video Preset: Medium
Frames Per Second, More Is Better
A
2.08
B
2.09
C
2.07
D
2.08
0.4703
0.9406
1.4109
1.8812
2.3515
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt


Kvazaar 2.1
Video Input: Bosphorus 1080p - Video Preset: Slow
Frames Per Second, More Is Better
A
10.99
B
10.99
C
11.03
D
11.04
3
6
9
12
15
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt
Kvazaar 2.1
Video Input: Bosphorus 1080p - Video Preset: Medium
Frames Per Second, More Is Better
A
11.22
B
11.33
C
11.28
D
11.25
3
6
9
12
15
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt


Kvazaar 2.1
Video Input: Bosphorus 4K - Video Preset: Very Fast
Frames Per Second, More Is Better
A
B
C
D
4.66
4.68
4.64
4.64
1.053
2.106
3.159
4.212
5.265
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt
Kvazaar 2.1
Video Input: Bosphorus 4K - Video Preset: Ultra Fast
Frames Per Second, More Is Better
A
B
C
D
8.09
8.08
8.01
8.05
2
4
6
8
10
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt

Kvazaar 2.1

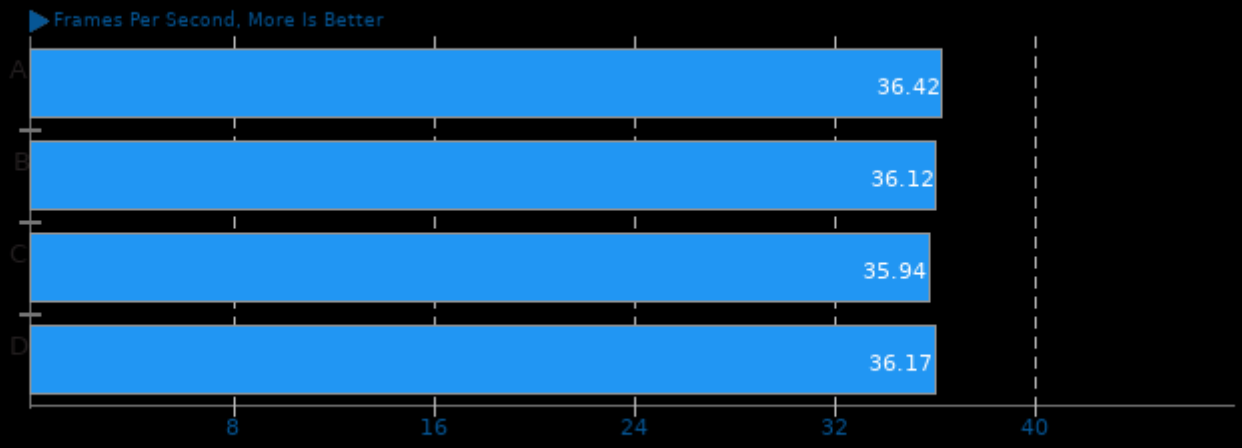
Video Input: Bosphorus 1080p - Video Preset: Very Fast



1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt

Kvazaar 2.1

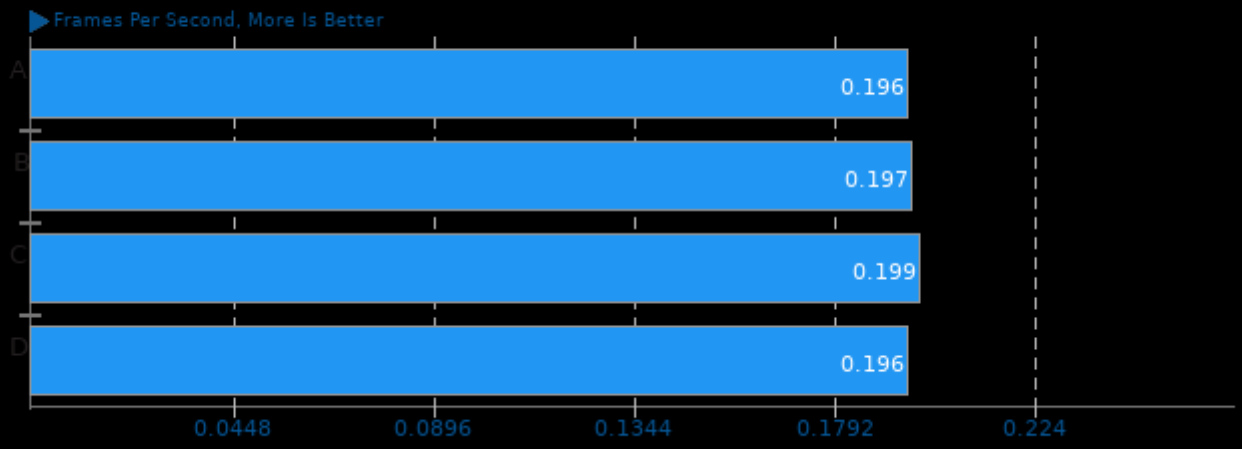
Video Input: Bosphorus 1080p - Video Preset: Ultra Fast

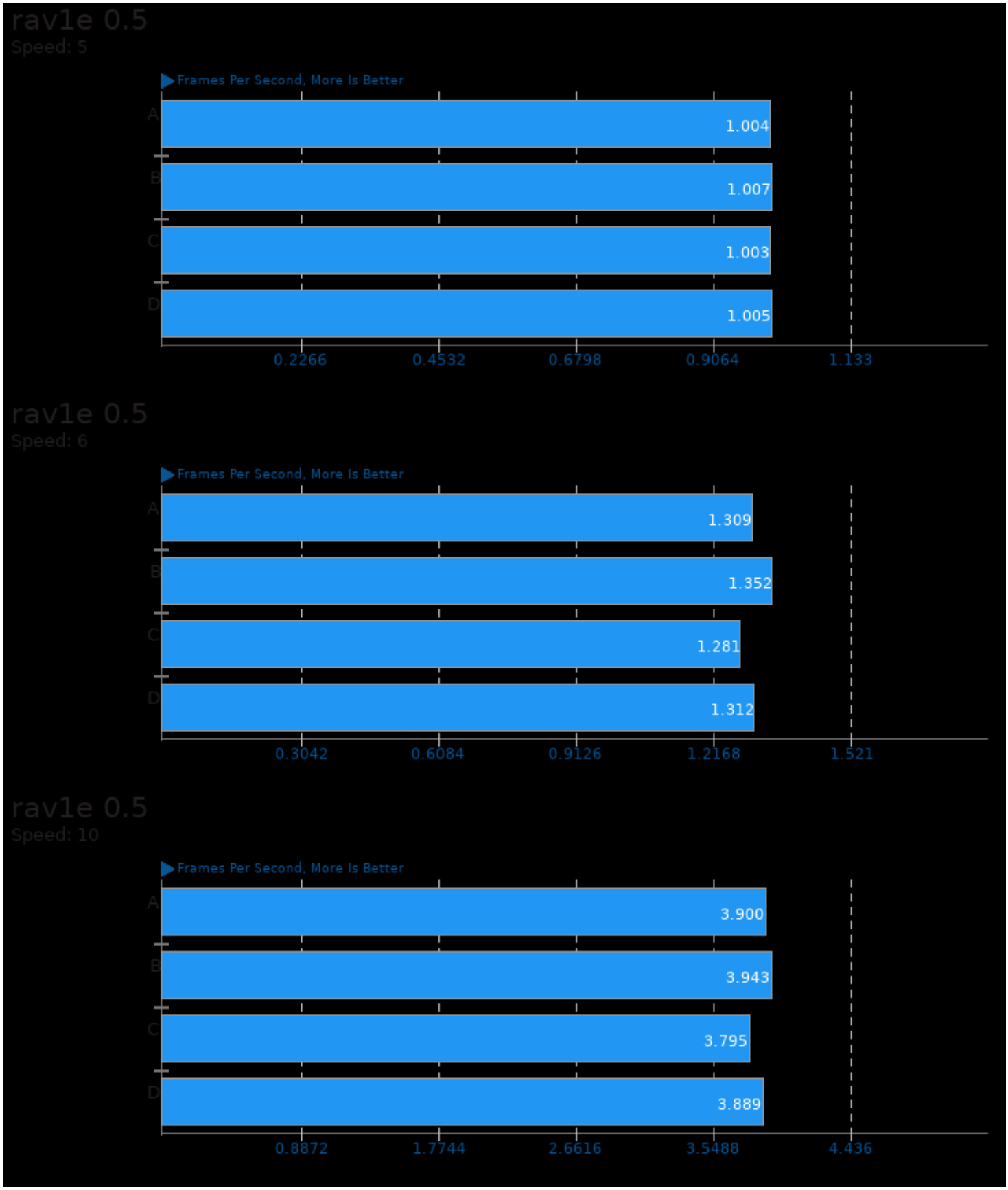


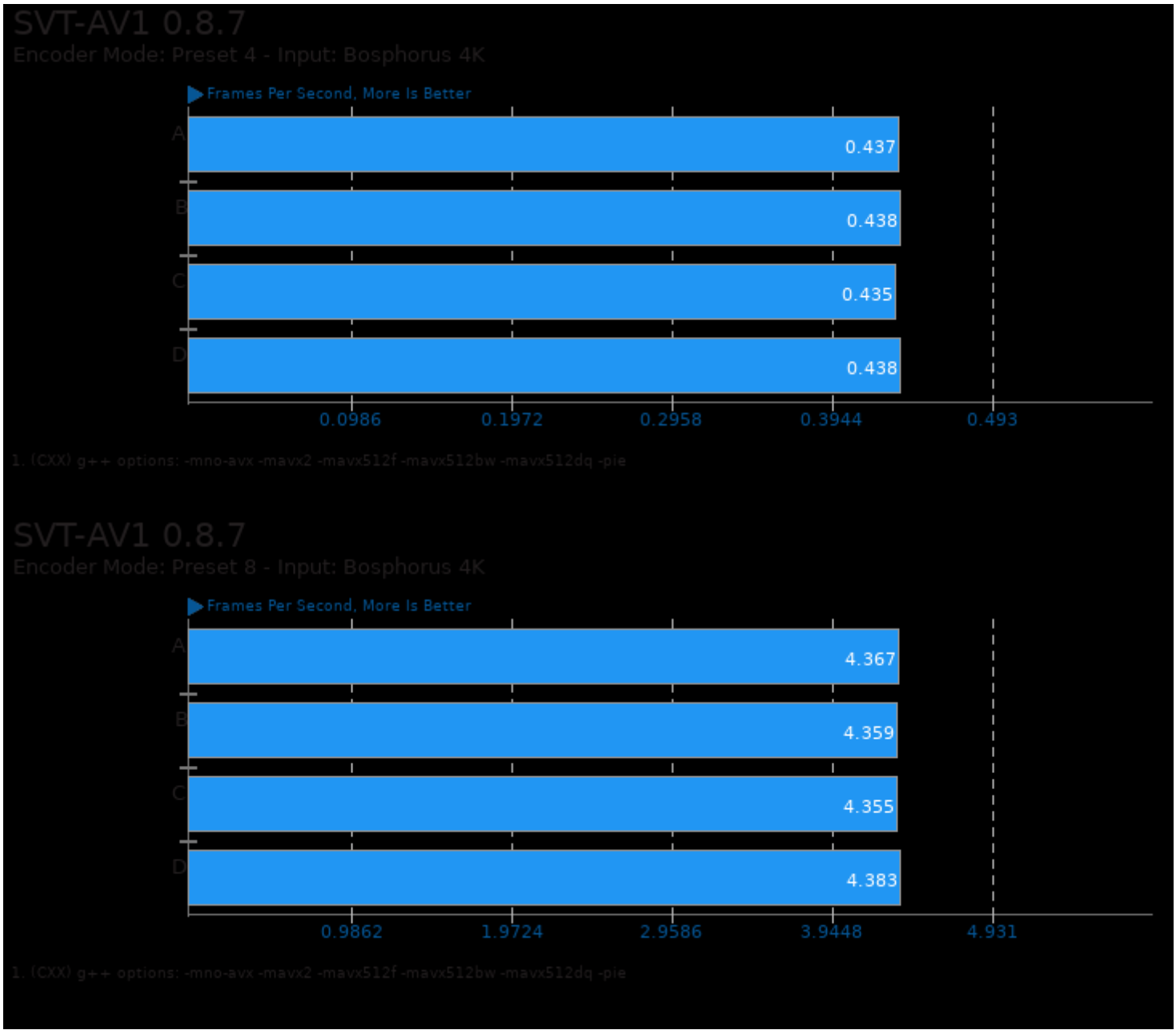
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt

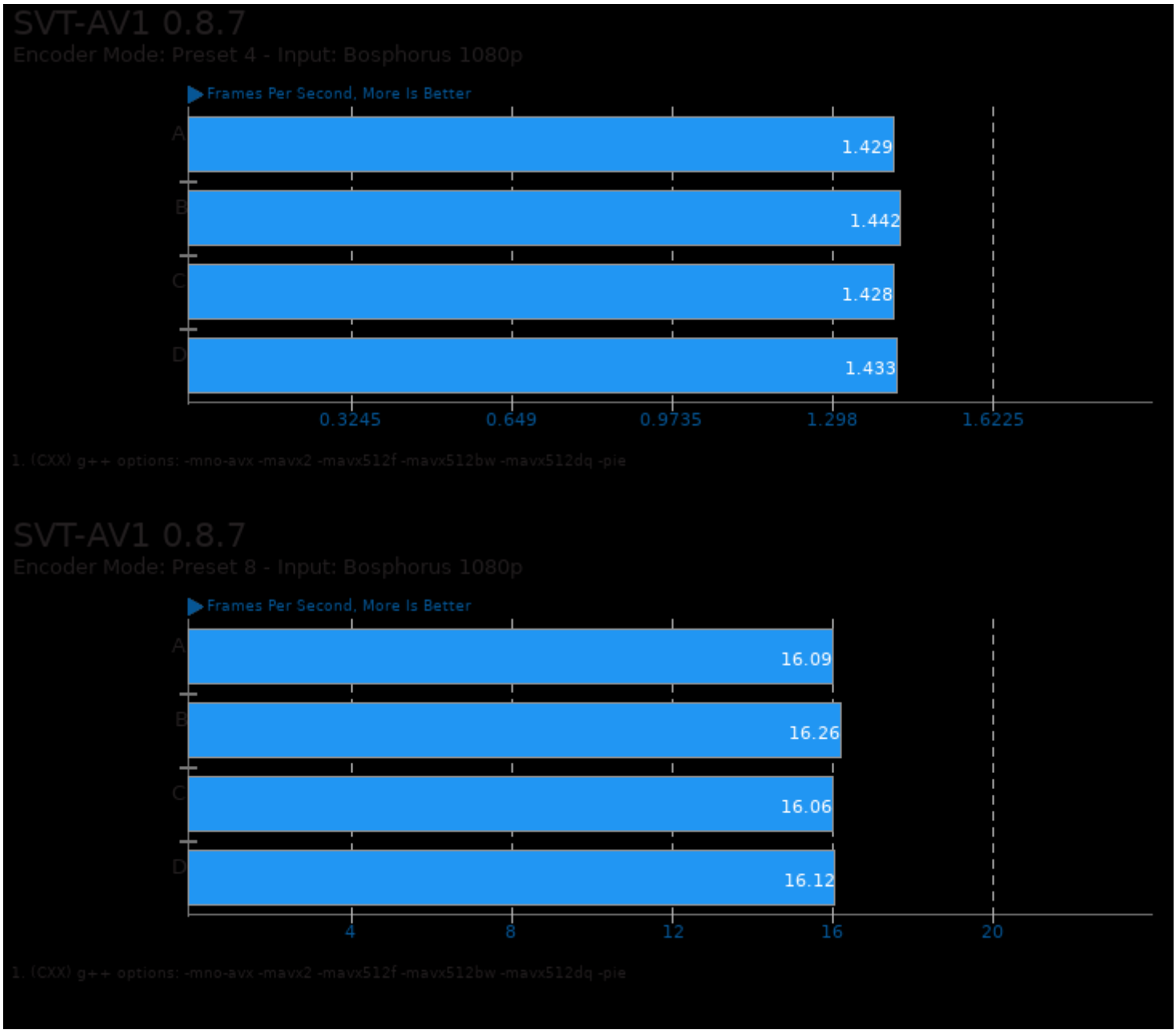
rav1e 0.5

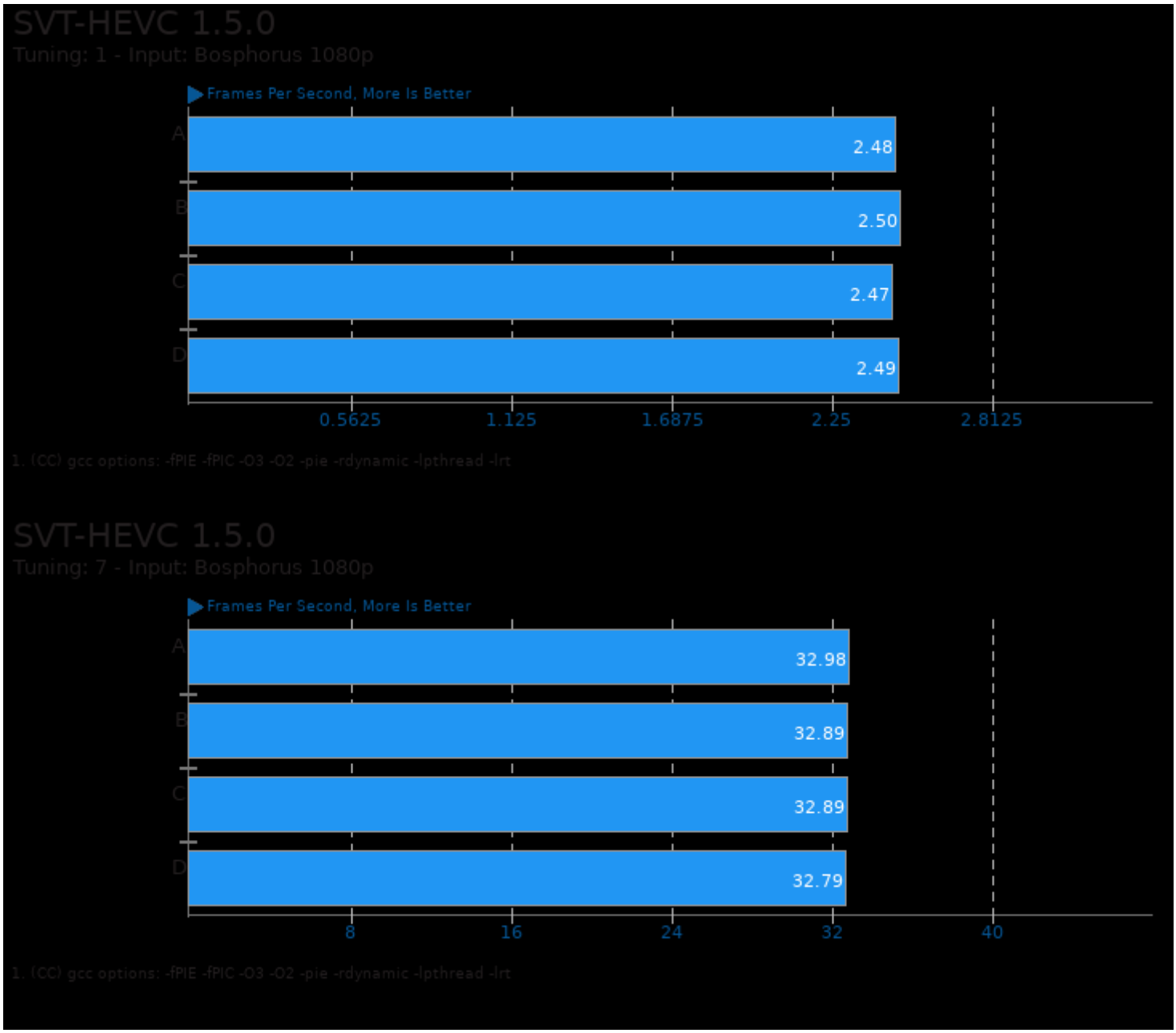
Speed: 1

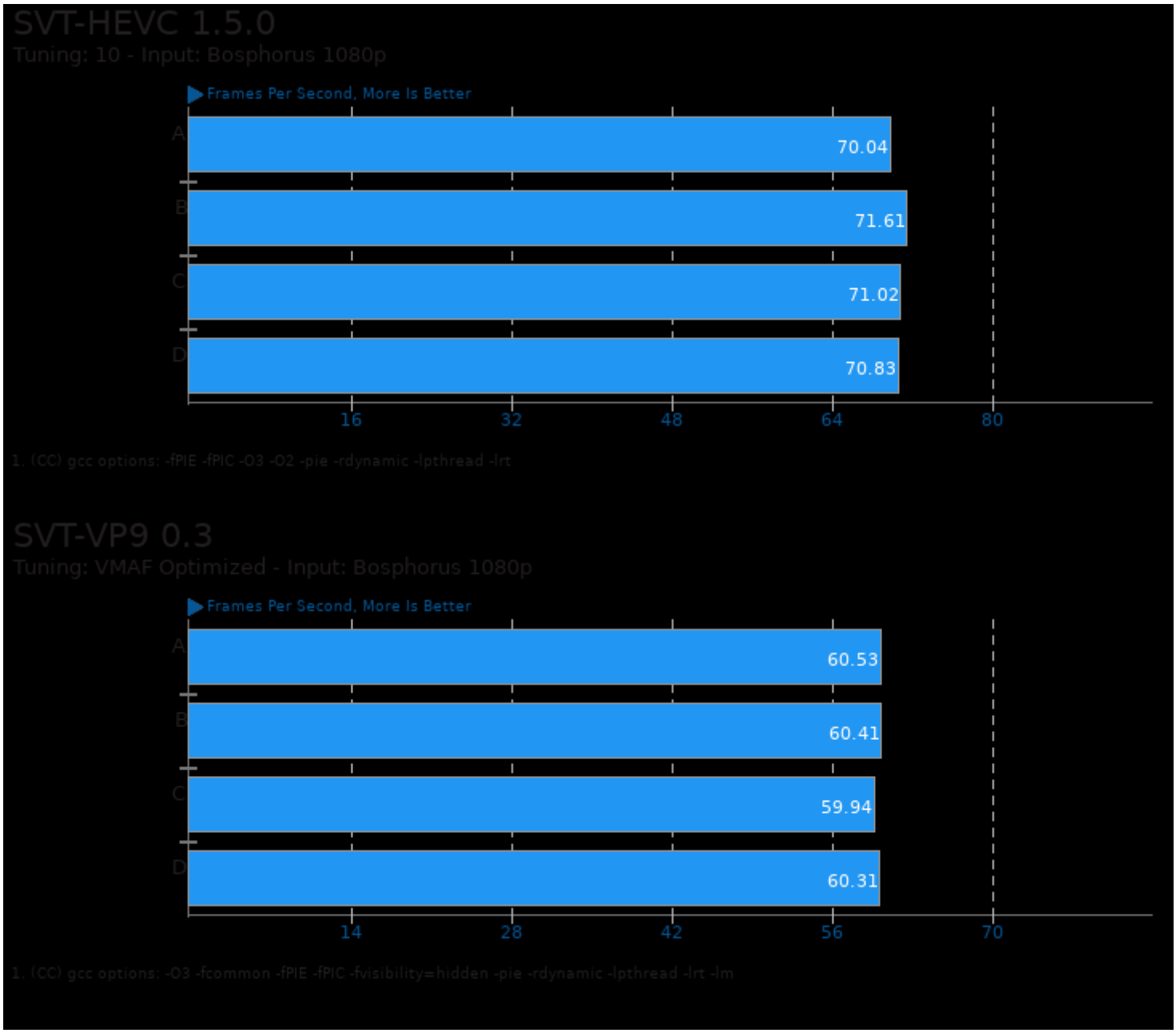


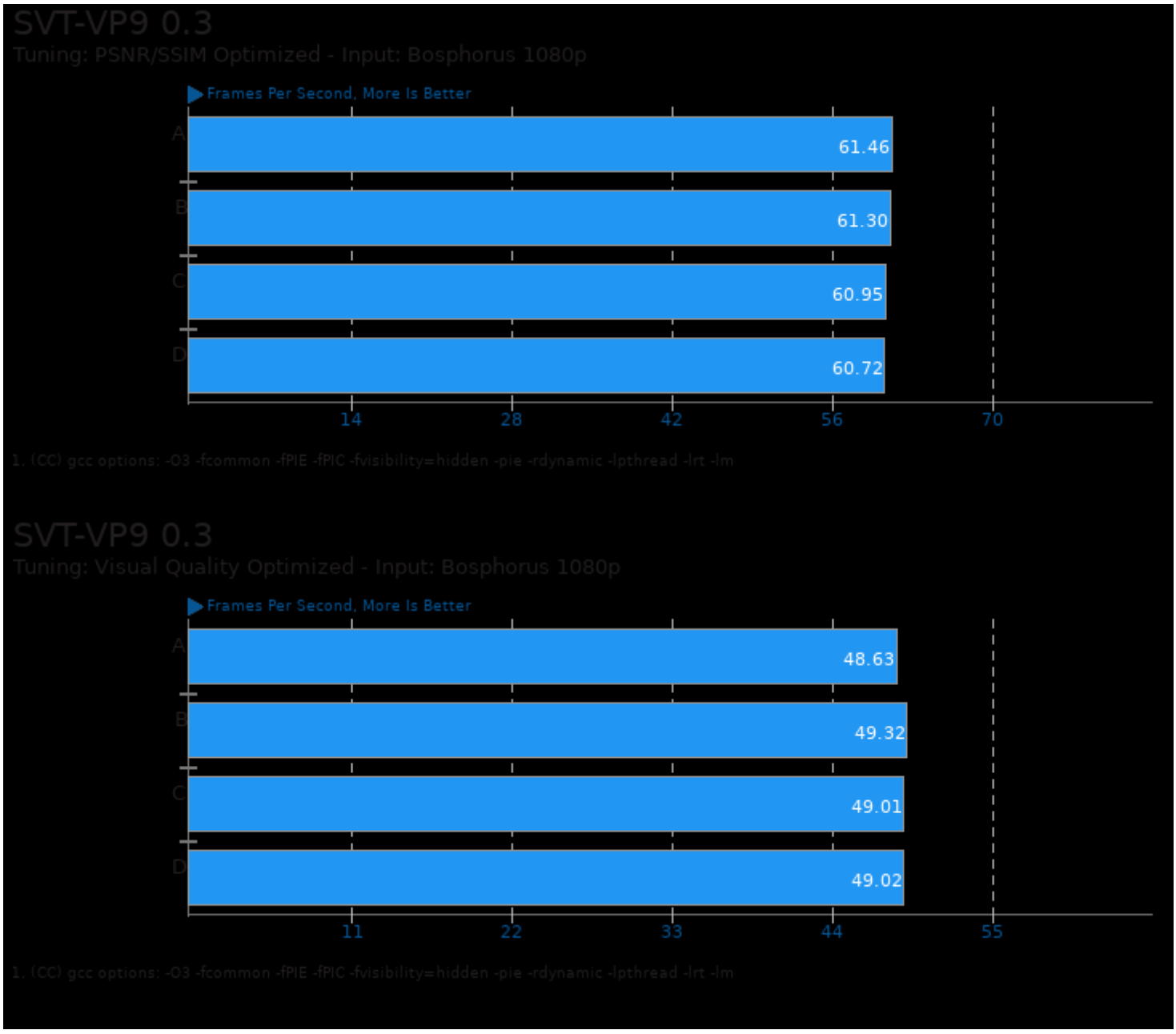

rav1e 0.5
Speed: 5
Frames Per Second, More Is Better
A
1.004
B
1.007
C
1.003
D
1.005
0.2266
0.4532
0.6798
0.9064
1.133
rav1e 0.5
Speed: 6
Frames Per Second, More Is Better
A
1.309
B
1.352
C
1.281
D
1.312
0.3042
0.6084
0.9126
1.2168
1.521
rav1e 0.5
Speed: 10
Frames Per Second, More Is Better
A
3.900
B
3.943
C
3.795
D
3.889
0.8872
1.7744
2.6616
3.5488
4.436

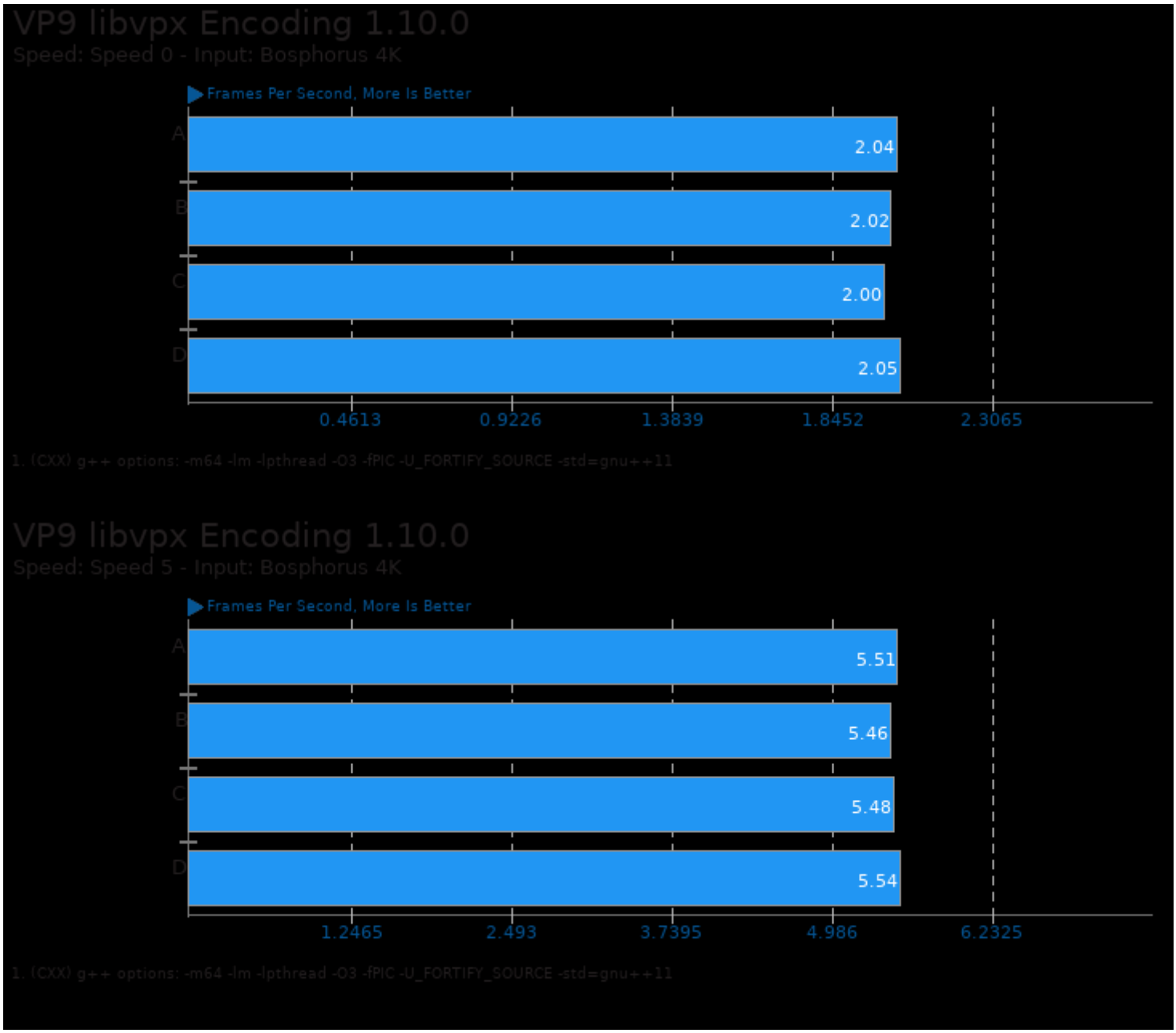

SVT-AV1 0.8.7
Encoder Mode: Preset 4 - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
D
0.437
0.438
0.435
0.438
0.0986
0.1972
0.2958
0.3944
0.493
1. (CXX) g++ options: -mno-avx -mavx2 -mavx512f -mavx512bw -mavx512dq -pie
SVT-AV1 0.8.7
Encoder Mode: Preset 8 - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
D
4.367
4.359
4.355
4.383
0.9862
1.9724
2.9586
3.9448
4.931
1. (CXX) g++ options: -mno-avx -mavx2 -mavx512f -mavx512bw -mavx512dq -pie


SVT-AV1 0.8.7
Encoder Mode: Preset 4 - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
1.429
B
1.442
C
1.428
D
1.433
0.3245
0.649
0.9735
1.298
1.6225
1. (CXX) g++ options: -mno-avx -mavx2 -mavx512f -mavx512bw -mavx512dq -pie
SVT-AV1 0.8.7
Encoder Mode: Preset 8 - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
16.09
B
16.26
C
16.06
D
16.12
4
8
12
16
20
1. (CXX) g++ options: -mno-avx -mavx2 -mavx512f -mavx512bw -mavx512dq -pie


SVT-HEVC 1.5.0
Tuning: 1 - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
2.48
B
2.50
C
2.47
D
2.49
0.5625
1.125
1.6875
2.25
2.8125
1. (CC) gcc options: -fPIE -fPIC -O3 -O2 -pie -rdynamic -lpthread -lrt
SVT-HEVC 1.5.0
Tuning: 7 - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
32.98
B
32.89
C
32.89
D
32.79
8
16
24
32
40
1. (CC) gcc options: -fPIE -fPIC -O3 -O2 -pie -rdynamic -lpthread -lrt

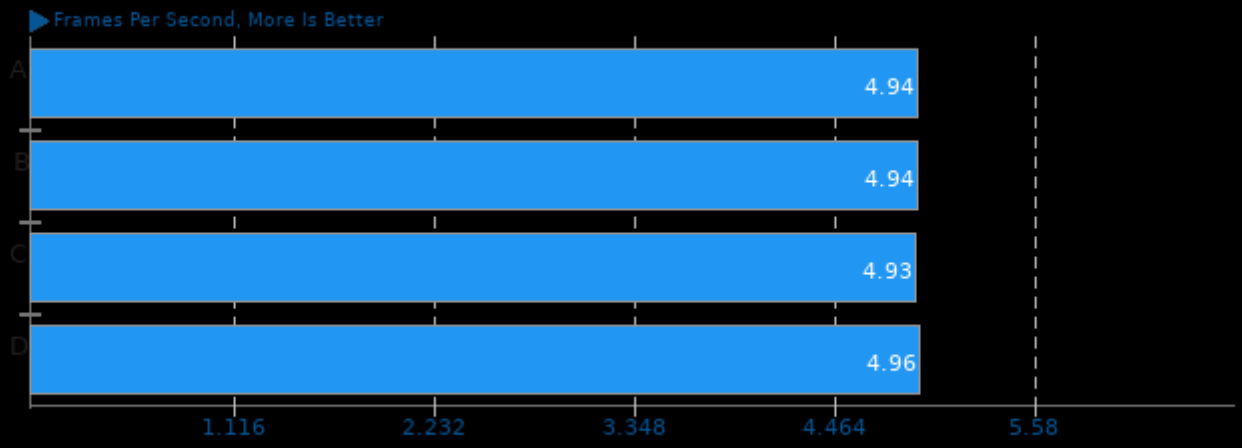

SVT-HEVC 1.5.0
Tuning: 10 - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
D
70.04
71.61
71.02
70.83
16
32
48
64
80
1. (CC) gcc options: -fPIE -fPIC -O3 -O2 -pie -rdynamic -lpthread -lrt
SVT-VP9 0.3
Tuning: VMAF Optimized - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
D
60.53
60.41
59.94
60.31
14
28
42
56
70
1. (CC) gcc options: -O3 -fcommon -fPIE -fPIC -fvisibility=hidden -pie -rdynamic -lpthread -lrt -lm


SVT-VP9 0.3
Tuning: PSNR/SSIM Optimized - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
D
61.46
61.30
60.95
60.72
14
28
42
56
70
1. (CC) gcc options: -O3 -fcommon -fPIE -fPIC -fvisibility=hidden -pie -rdynamic -lpthread -lrt -lm
SVT-VP9 0.3
Tuning: Visual Quality Optimized - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
D
48.63
49.32
49.01
49.02
11
22
33
44
55
1. (CC) gcc options: -O3 -fcommon -fPIE -fPIC -fvisibility=hidden -pie -rdynamic -lpthread -lrt -lm


VP9 libvpx Encoding 1.10.0
Speed: Speed 0 - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
D
2.04
2.02
2.00
2.05
0.4613
0.9226
1.3839
1.8452
2.3065
1. (CXX) g++ options: -m64 -lm -lpthread -O3 -fPIC -U_FORTIFY_SOURCE -std=gnu++11
VP9 libvpx Encoding 1.10.0
Speed: Speed 5 - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
D
5.51
5.46
5.48
5.54
1.2465
2.493
3.7395
4.986
6.2325
1. (CXX) g++ options: -m64 -lm -lpthread -O3 -fPIC -U_FORTIFY_SOURCE -std=gnu++11

VP9 libvpx Encoding 1.10.0

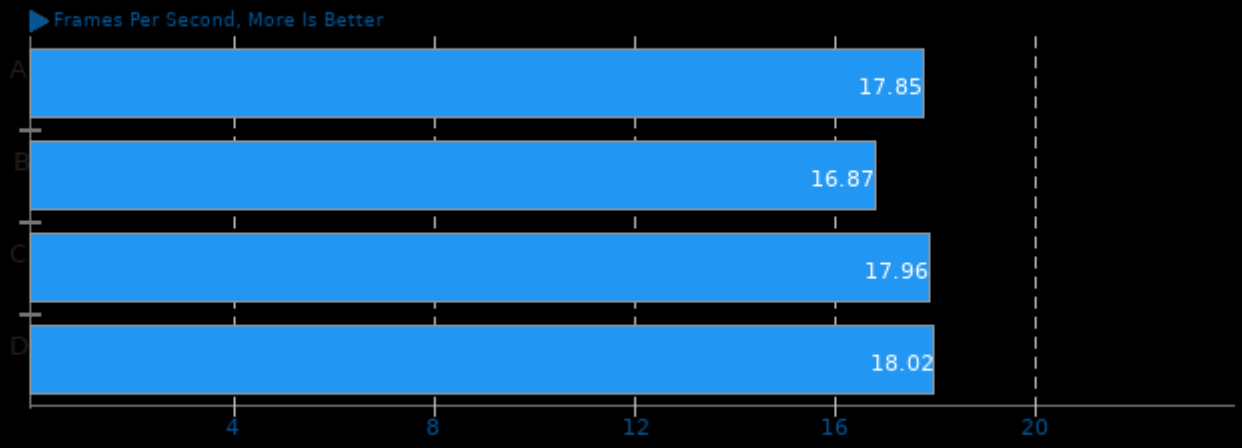
Speed: Speed 0 - Input: Bosphorus 1080p



1. (CXX) g++ options: -m64 -lm -lpthread -O3 -fPIC -U_FORTIFY_SOURCE -std=gnu++11

VP9 libvpx Encoding 1.10.0

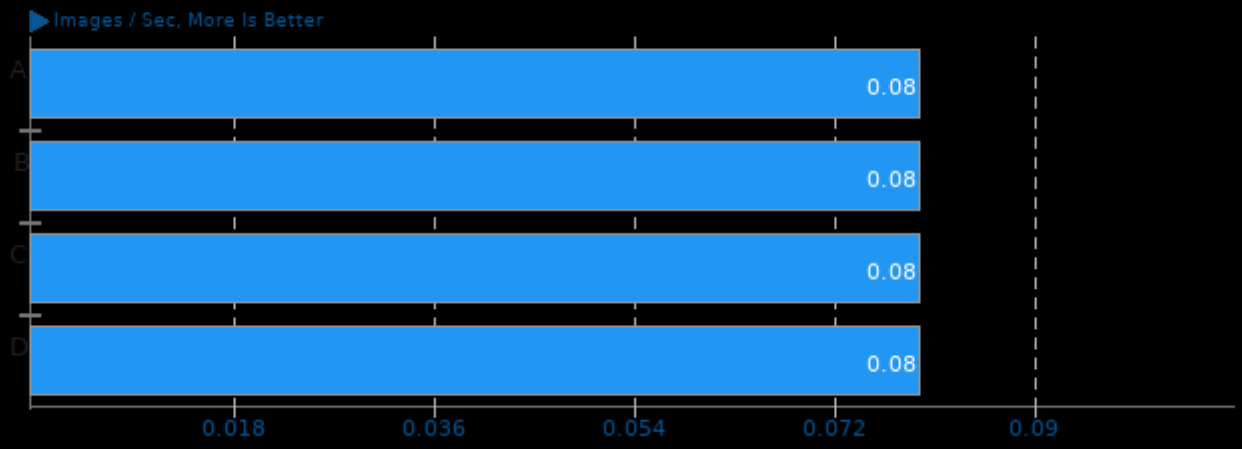
Speed: Speed 5 - Input: Bosphorus 1080p



1. (CXX) g++ options: -m64 -lm -lpthread -O3 -fPIC -U_FORTIFY_SOURCE -std=gnu++11

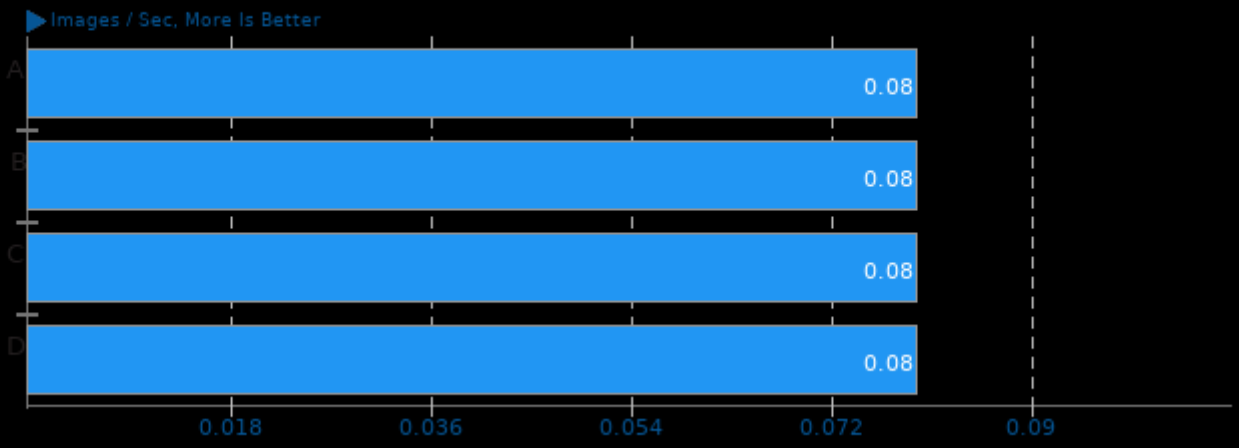
Intel Open Image Denoise 1.4.0

Run: RT.hdr_alb_nrm.3840x2160



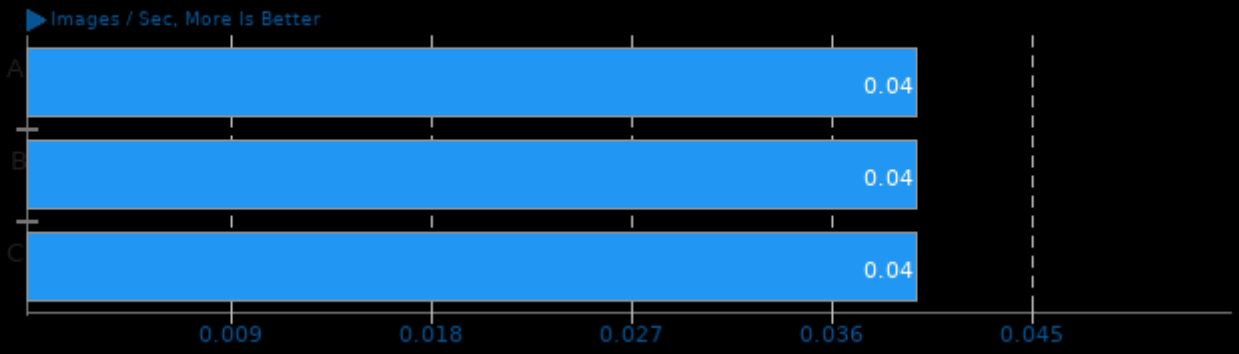
Intel Open Image Denoise 1.4.0

Run: RT.ldr_alb_nrm.3840x2160



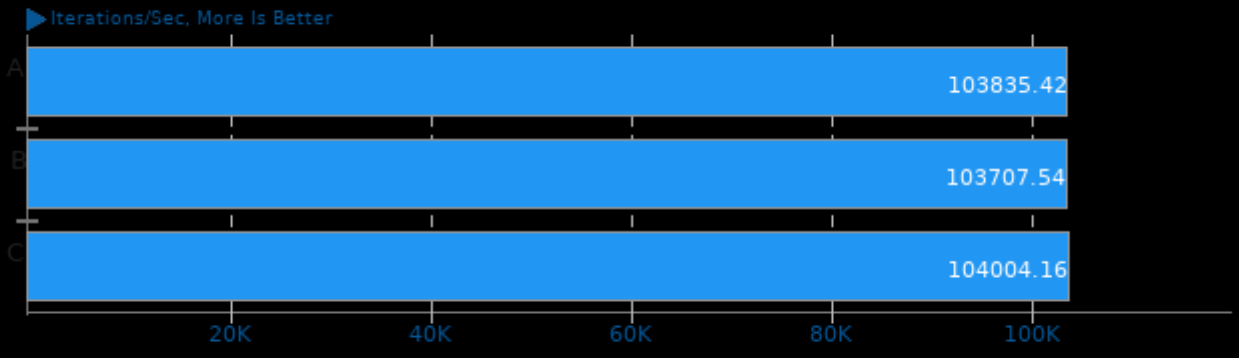
Intel Open Image Denoise 1.4.0

Run: RTLightmap.hdr.4096x4096



Coremark 1.0

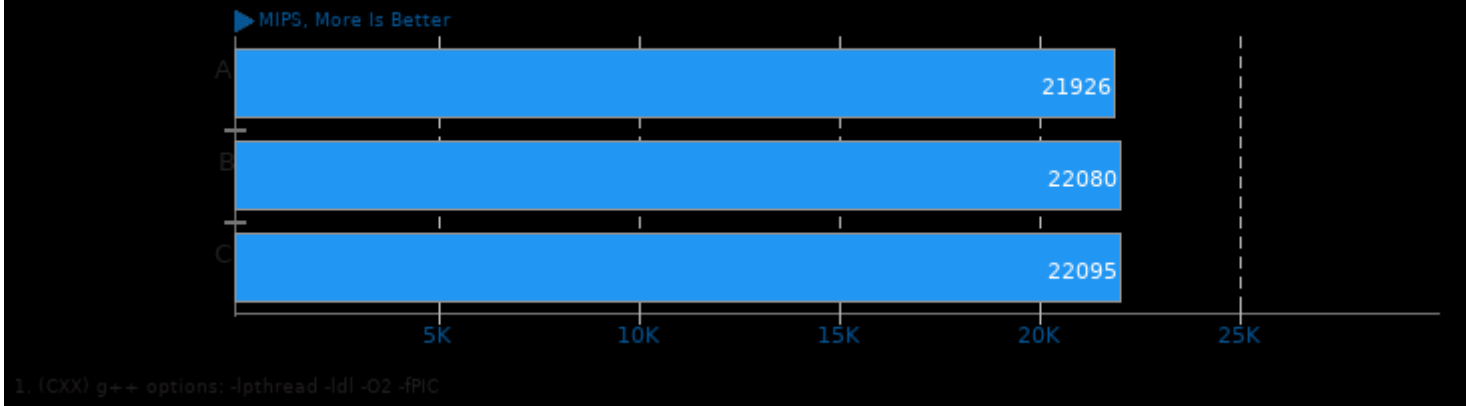
CoreMark Size 666 - Iterations Per Second



1. (CC) gcc options: -O2 -lrt" -lrt

7-Zip Compression 21.06

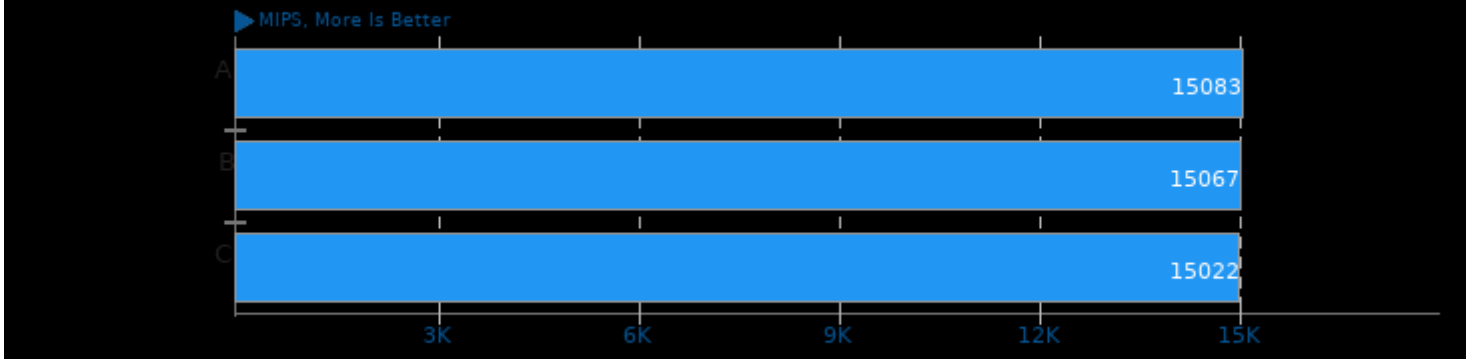
Test: Compression Rating



1. (CXX) g++ options: -lpthread -ldl -O2 -fPIC

7-Zip Compression 21.06

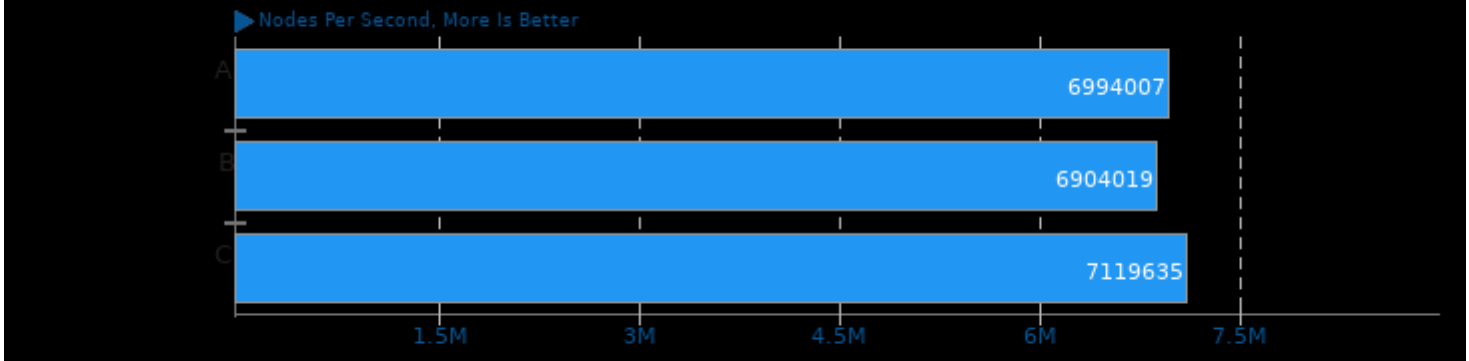
Test: Decompression Rating



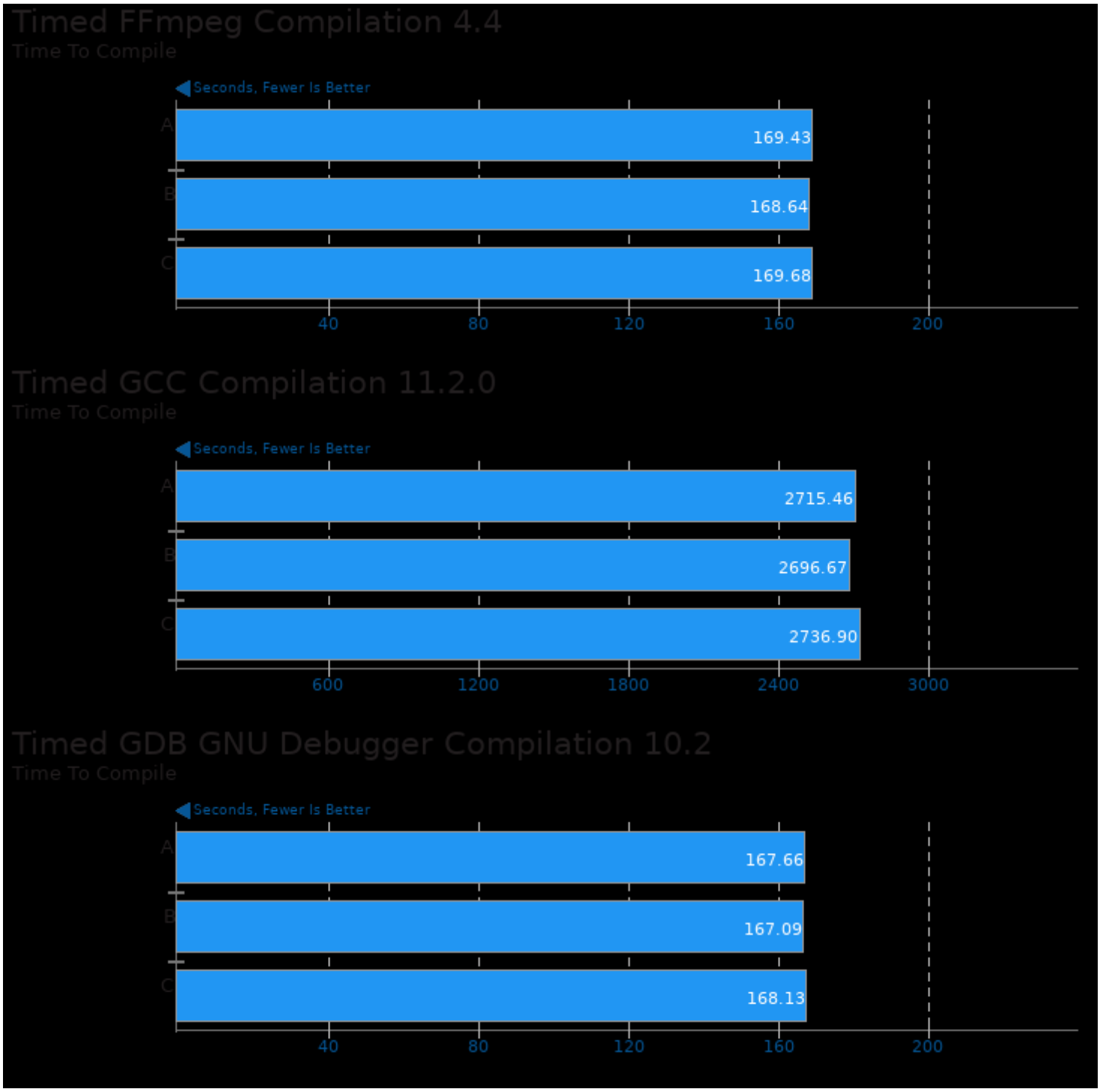
1. (CXX) g++ options: -lpthread -ldl -O2 -fPIC

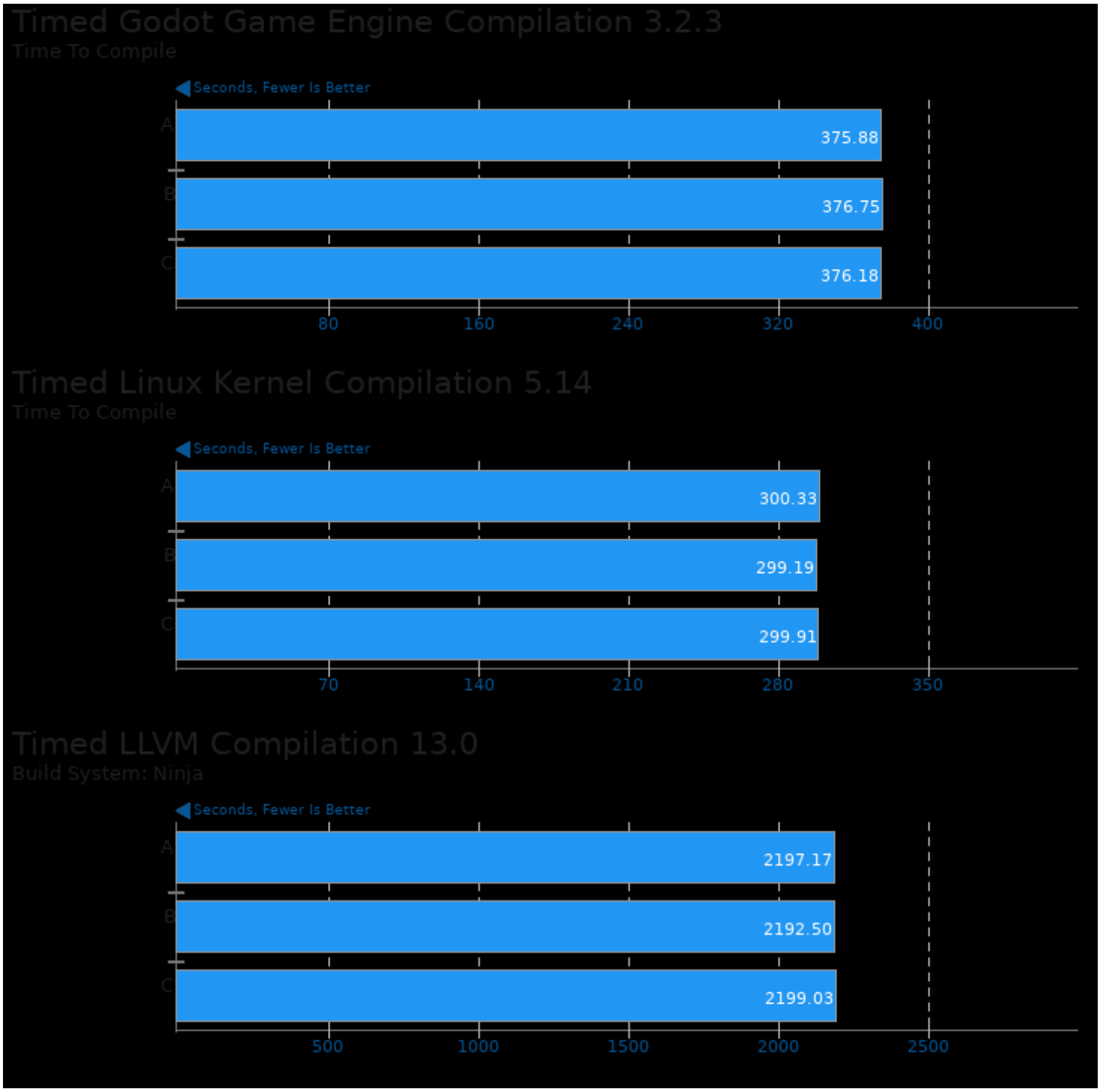
Stockfish 13

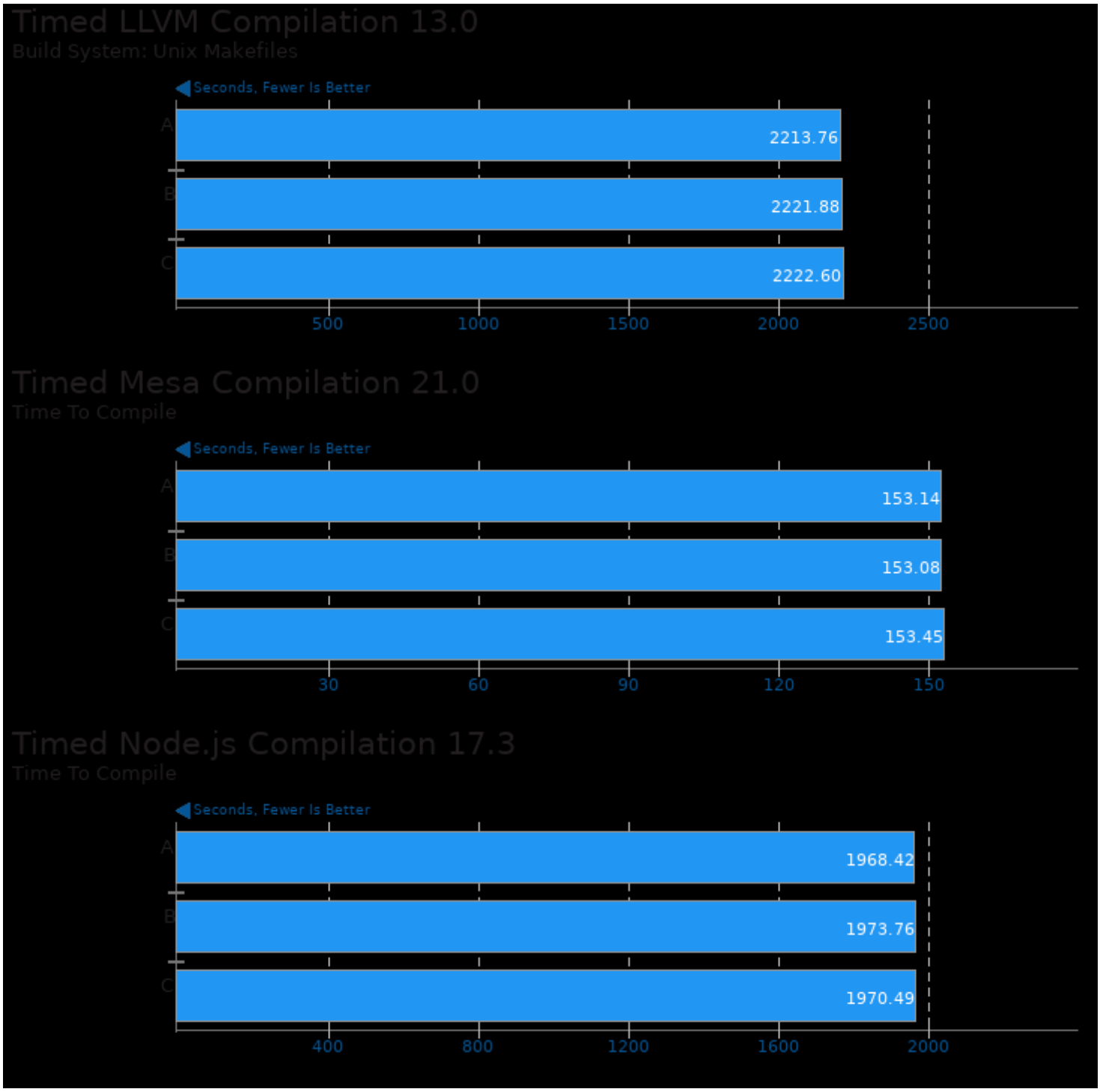
Total Time



1. (CXX) g++ options: -lgcov -m64 -lpthread -fno-exceptions -std=c++17 -fprofile-use -fno-peel-loops -fno-tracer -pedantic -O3 -msse -msse3 -mpopcnt -

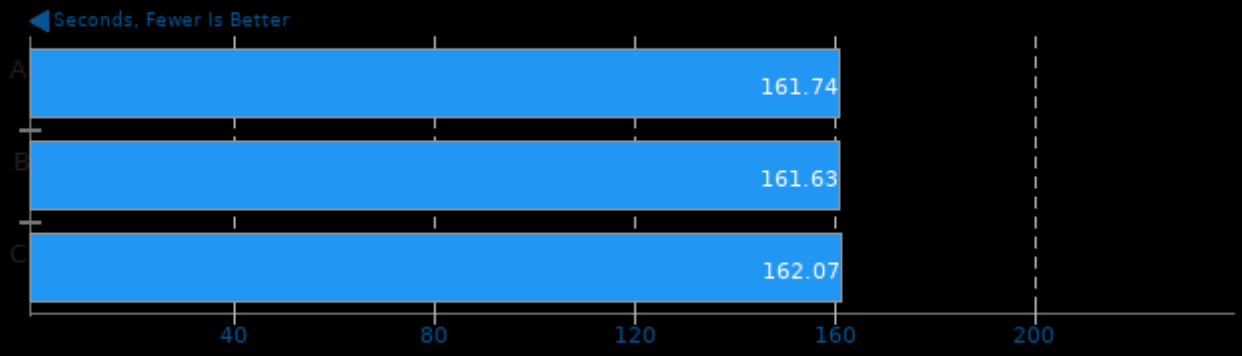

Timed FFmpeg Compilation 4.4
Time To Compile
Seconds, Fewer Is Better
A
B
C
169.43
168.64
169.68
40
80
120
160
200
Timed GCC Compilation 11.2.0
Time To Compile
Seconds, Fewer Is Better
A
B
C
2715.46
2696.67
2736.90
600
1200
1800
2400
3000
Timed GDB GNU Debugger Compilation 10.2
Time To Compile
Seconds, Fewer Is Better
A
B
C
167.66
167.09
168.13
40
80
120
160
200


Timed Godot Game Engine Compilation 3.2.3
Time To Compile
Seconds, Fewer Is Better
A
B
C
375.88
376.75
376.18
80
160
240
320
400
Timed Linux Kernel Compilation 5.14
Time To Compile
Seconds, Fewer Is Better
A
B
C
300.33
299.19
299.91
70
140
210
280
350
Timed LLVM Compilation 13.0
Build System: Ninja
Seconds, Fewer Is Better
A
B
C
2197.17
2192.50
2199.03
500
1000
1500
2000
2500


Timed LLVM Compilation 13.0
Build System: Unix Makefiles
Seconds, Fewer Is Better
A
B
C
2213.76
2221.88
2222.60
500
1000
1500
2000
2500
Timed Mesa Compilation 21.0
Time To Compile
Seconds, Fewer Is Better
A
B
C
153.14
153.08
153.45
30
60
90
120
150
Timed Node.js Compilation 17.3
Time To Compile
Seconds, Fewer Is Better
A
B
C
1968.42
1973.76
1970.49
400
800
1200
1600
2000

C-Ray 1.1

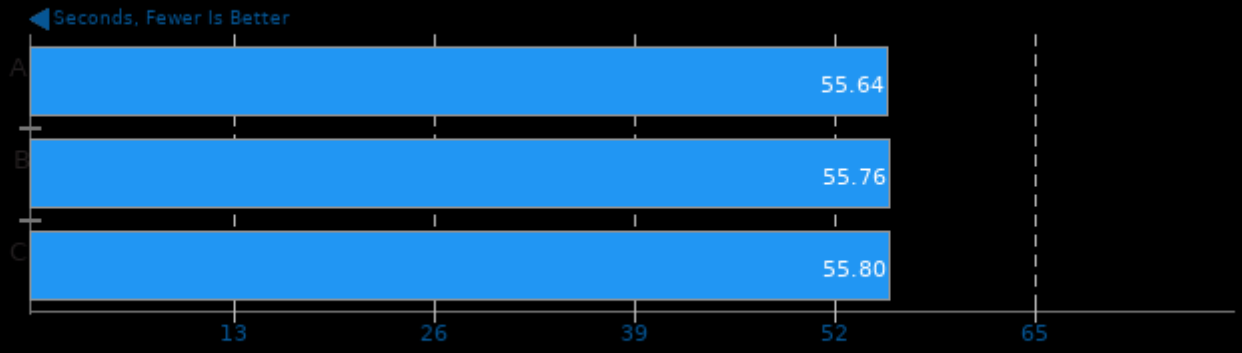
Total Time - 4K, 16 Rays Per Pixel



1. (CC) gcc options: -lm -lpthread -O3

Primesieve 7.7

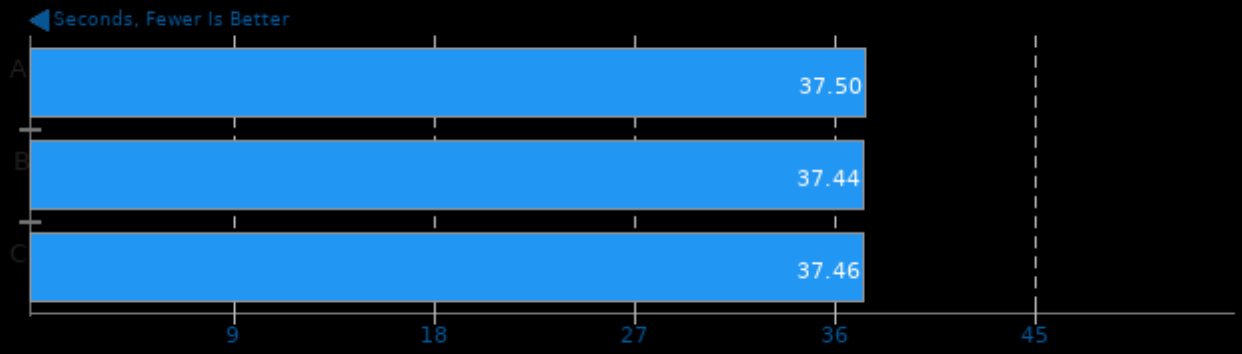
1e12 Prime Number Generation



1. (CXX) g++ options: -O3

Smallpt 1.0

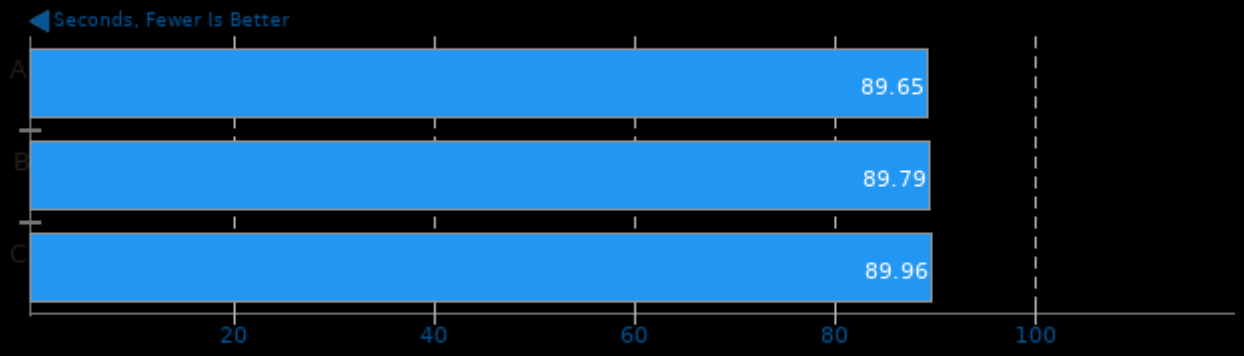
Global Illumination Renderer; 128 Samples



1. (CXX) g++ options: -fopenmp -O3

Tungsten Renderer 0.2.2

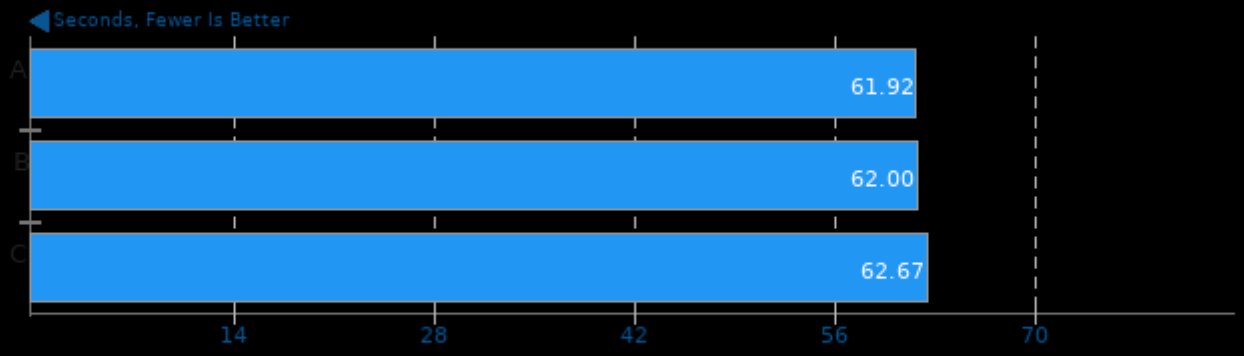
Scene: Hair



1. (CXX) g++ options: -std=c++0x -march=znver1 -msse2 -msse3 -mssse3 -msse4.1 -msse4.2 -msse4a -mfma -mbmi2 -mno-avx -mno-avx2 -mno-xop -m

Tungsten Renderer 0.2.2

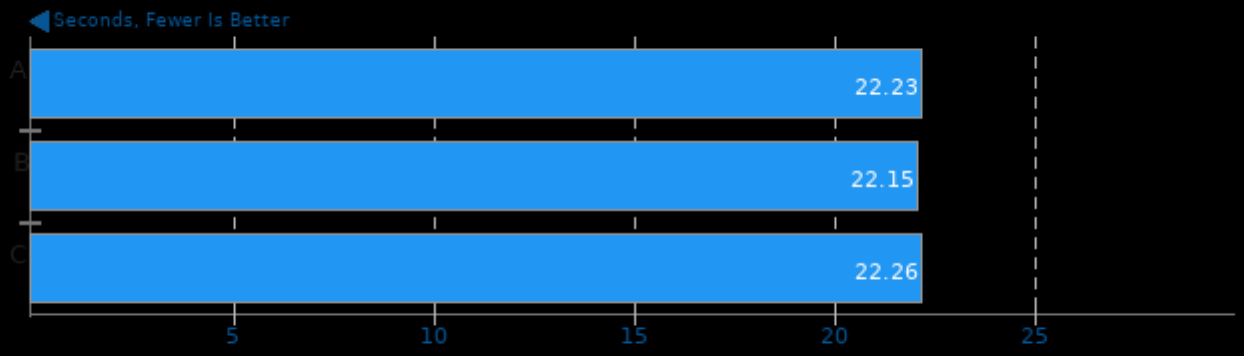
Scene: Water Caustic



1. (CXX) g++ options: -std=c++0x -march=znver1 -msse2 -msse3 -mssse3 -msse4.1 -msse4.2 -msse4a -mfma -mbmi2 -mno-avx -mno-avx2 -mno-xop -m

Tungsten Renderer 0.2.2

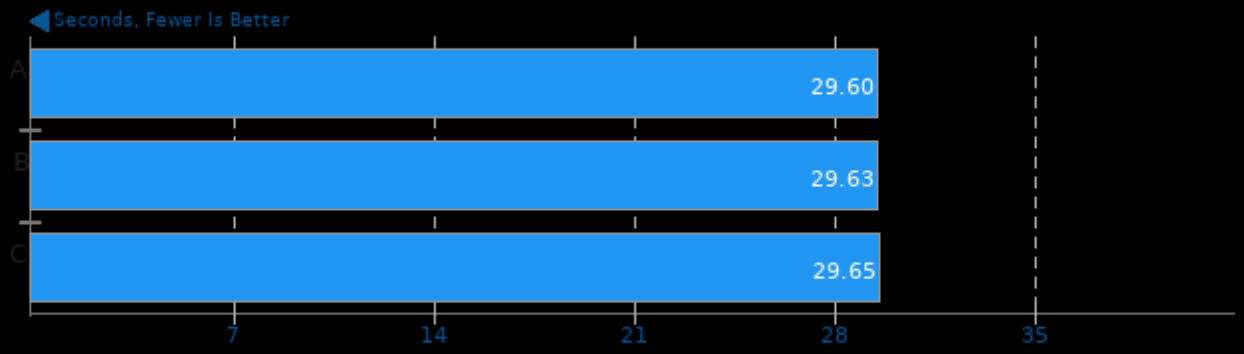
Scene: Non-Exponential



1. (CXX) g++ options: -std=c++0x -march=znver1 -msse2 -msse3 -mssse3 -msse4.1 -msse4.2 -msse4a -mfma -mbmi2 -mno-avx -mno-avx2 -mno-xop -m

Tungsten Renderer 0.2.2

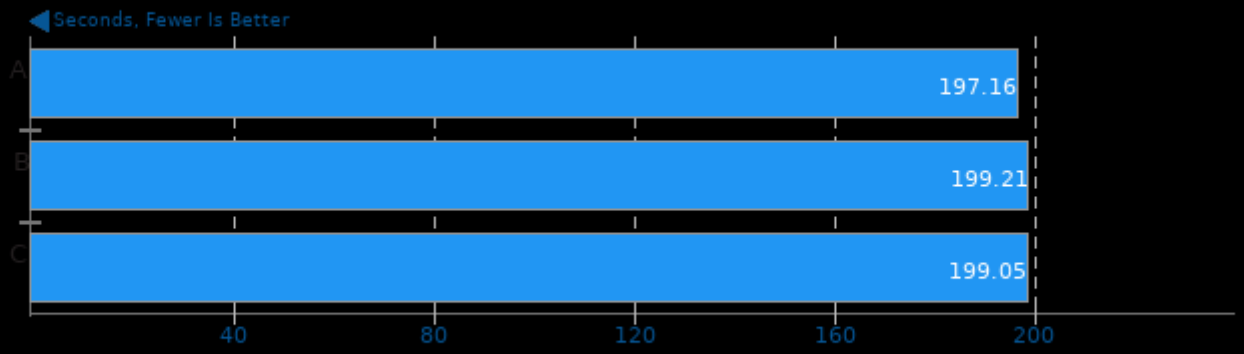
Scene: Volumetric Caustic



1. (CXX) g++ options: -std=c++0x -march=znver1 -msse2 -msse3 -mssse3 -msse4.1 -msse4.2 -msse4a -mfma -mbmi2 -mno-avx -mno-avx2 -mno-xop -m

Timed Wasmer Compilation 1.0.2

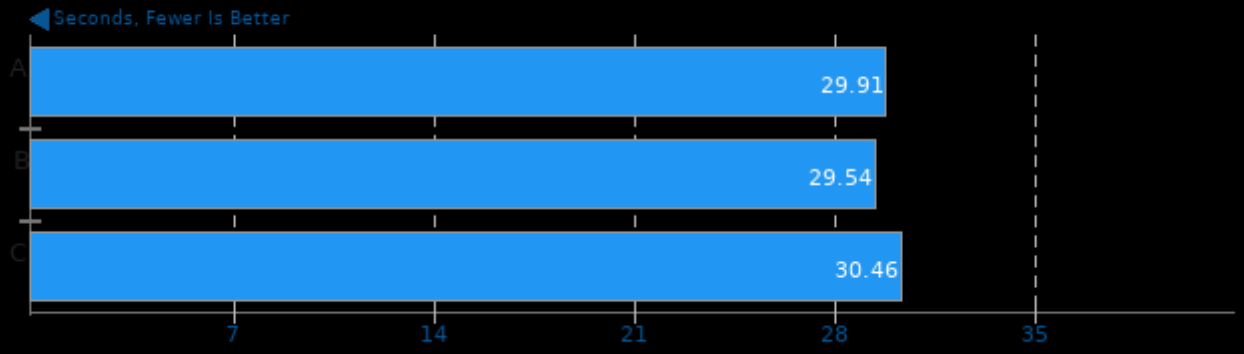
Time To Compile



1. (CC) gcc options: -m64 -ldl -lgcc_s -lutil -lrt -lpthread -lm -lc -pie -nodefaultlibs

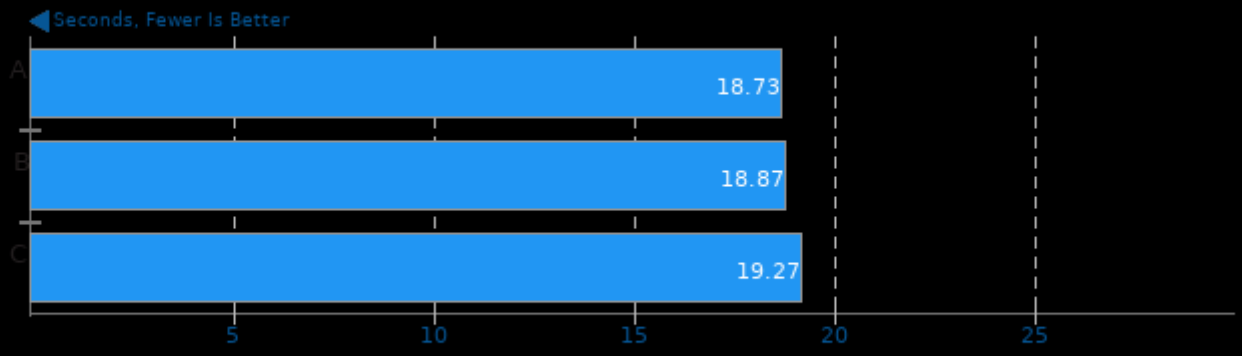
Cython Benchmark 0.29.21

Test: N-Queens



FLAC Audio Encoding 1.3.3

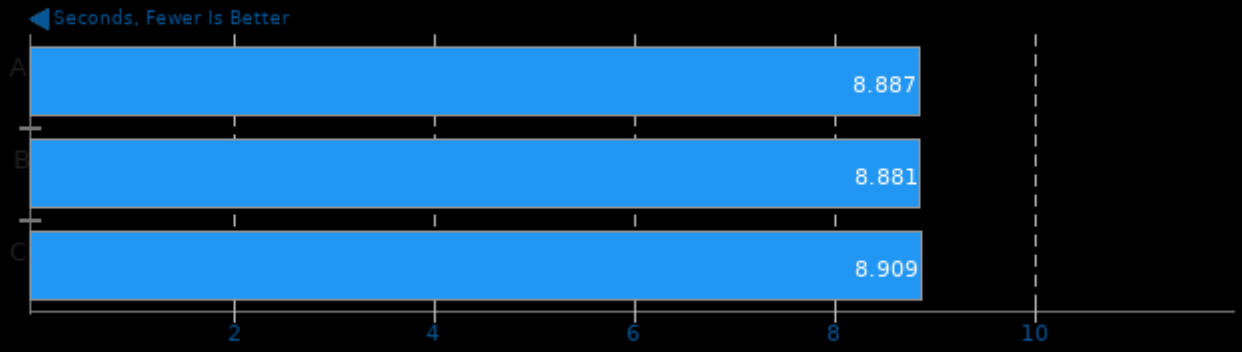
WAV To FLAC



1. (CXX) g++ options: -fvisibility=hidden -logg -lm

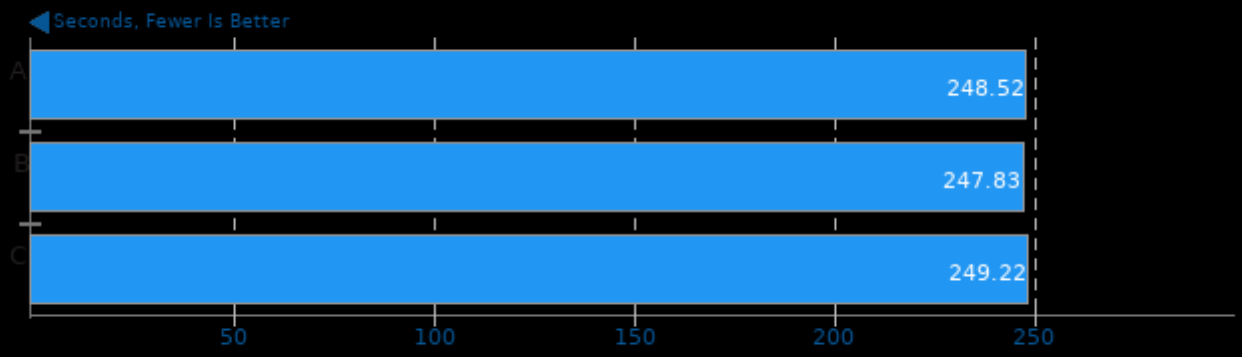
Opus Codec Encoding 1.3.1

WAV To Opus Encode



1. (CXX) g++ options: -fvisibility=hidden -logg -lm

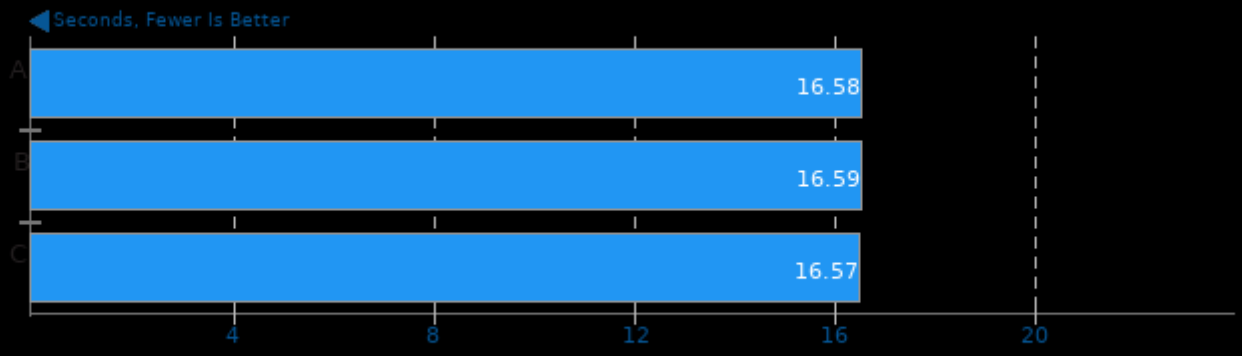
Gcrypt Library 1.9



1. (CC) gcc options: -O2 -fvisibility=hidden -lgpg-error

Helsing 1.0-beta

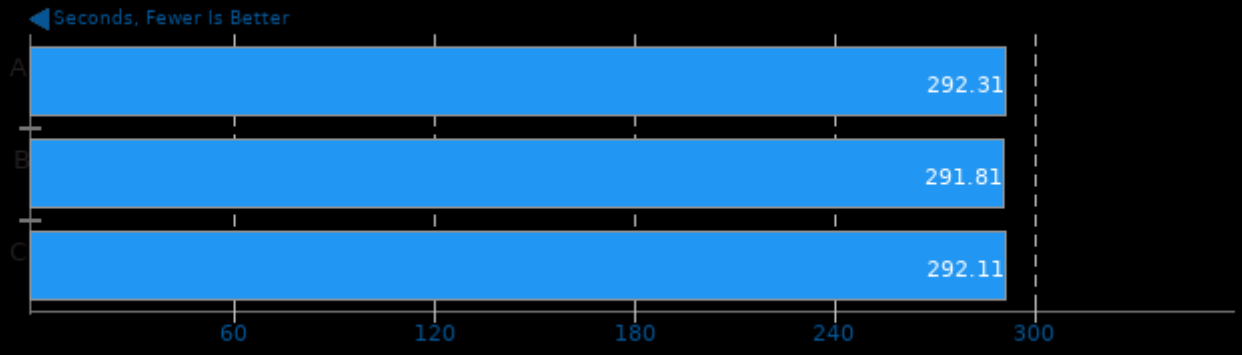
Digit Range: 12 digit



1. (CC) gcc options: -O2 -pthread

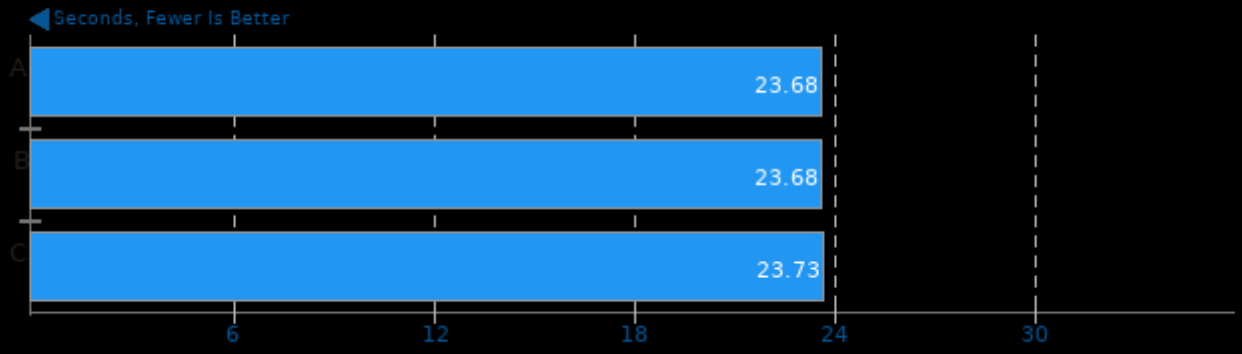
Tachyon 0.99b6

Total Time



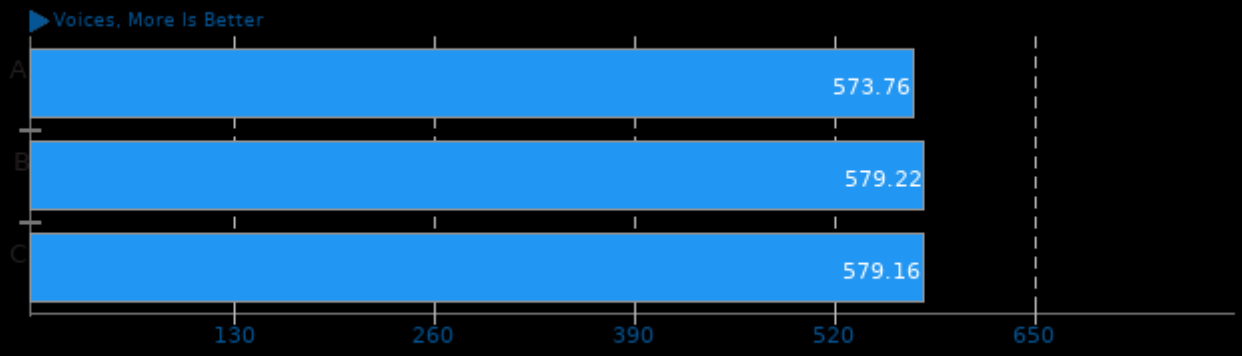
1. (CC) gcc options: -m64 -O3 -fomit-frame-pointer -ffast-math -ltachyon -lm -lpthread

VOSK Speech Recognition Toolkit 0.3.21



Google SynthMark 20201109

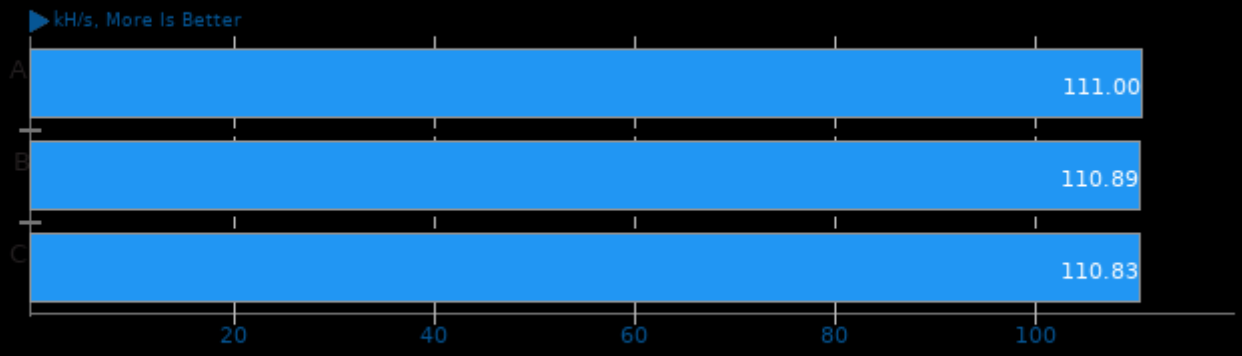
Test: VoiceMark_100



1. (CXX) g++ options: -lm -lpthread -std=c++11 -Ofast

Cpuminer-Opt 3.18

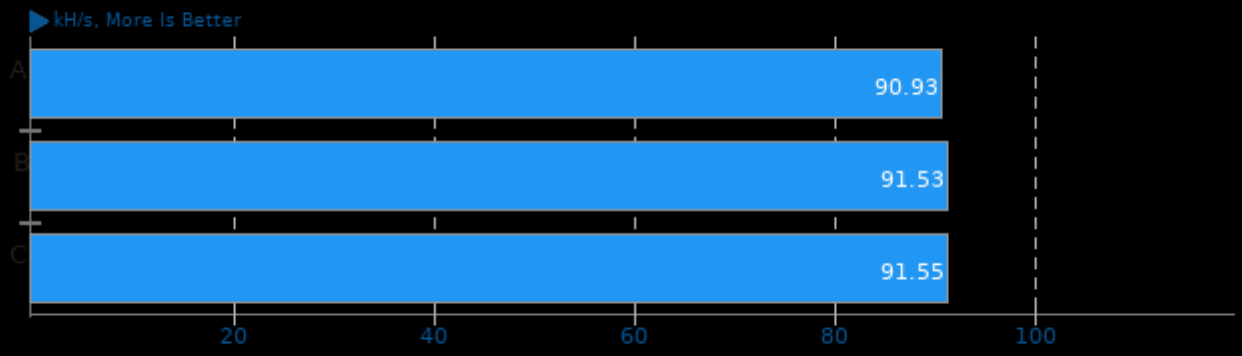
Algorithm: Magi



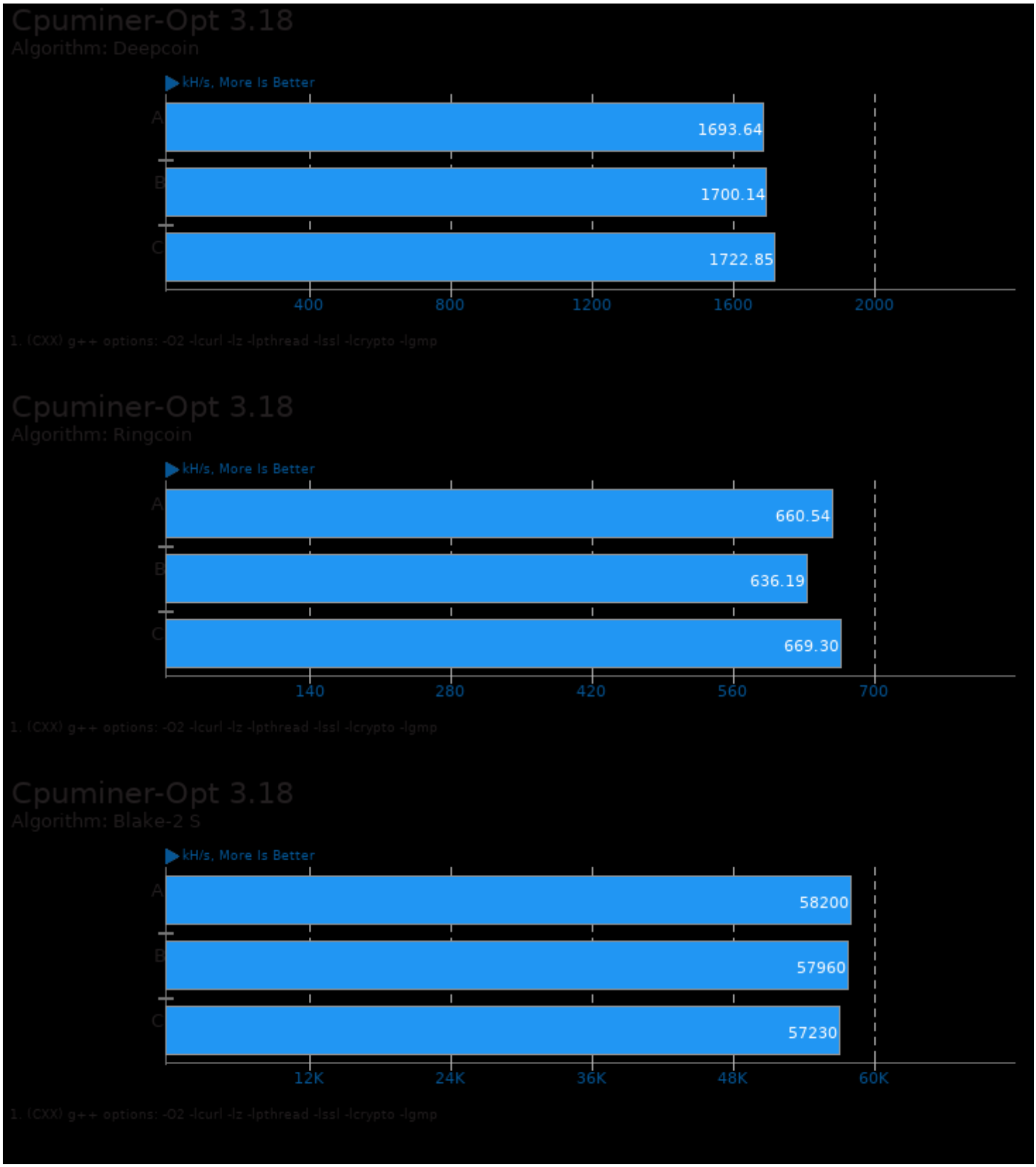
1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

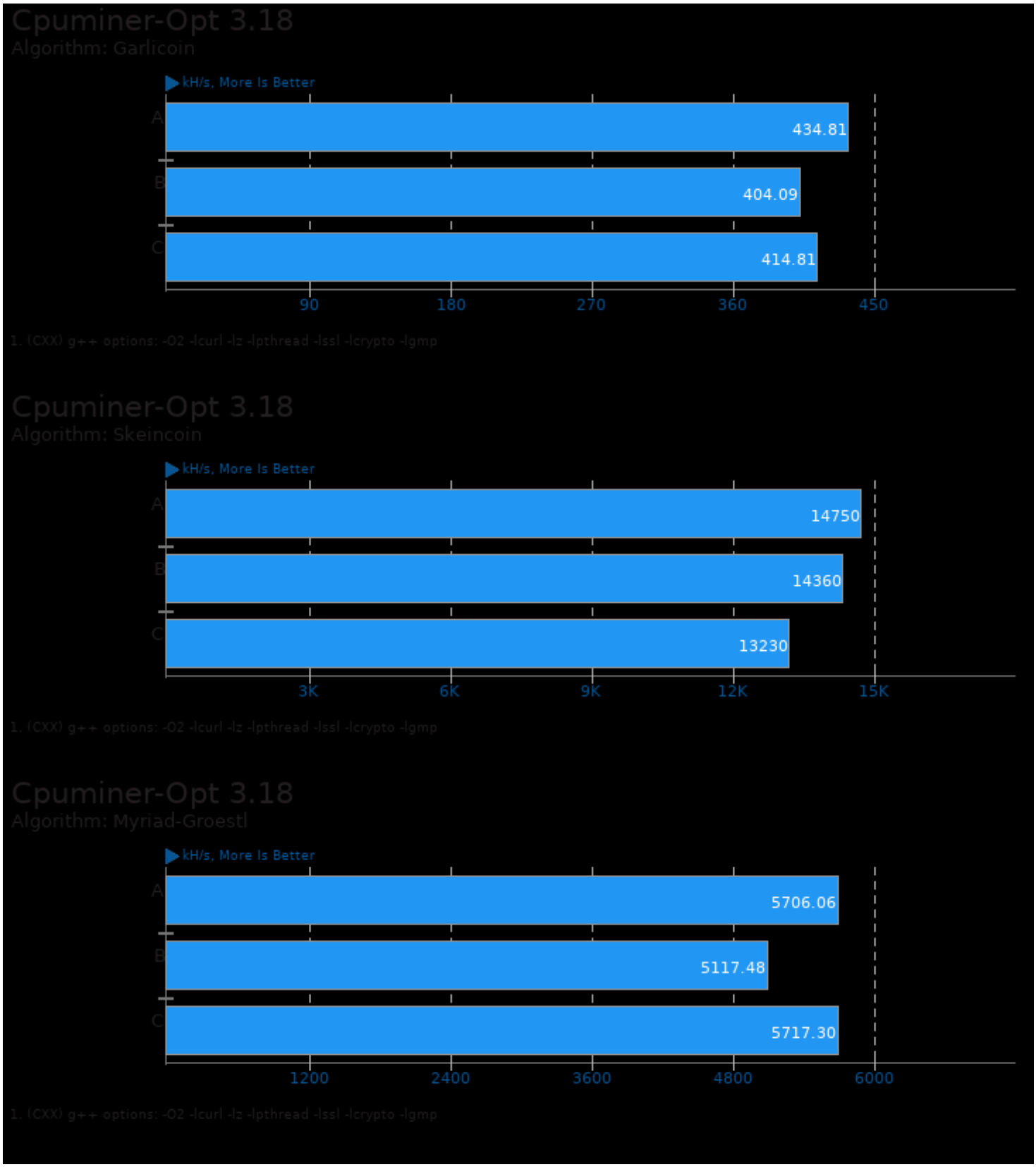
Cpuminer-Opt 3.18

Algorithm: x25x



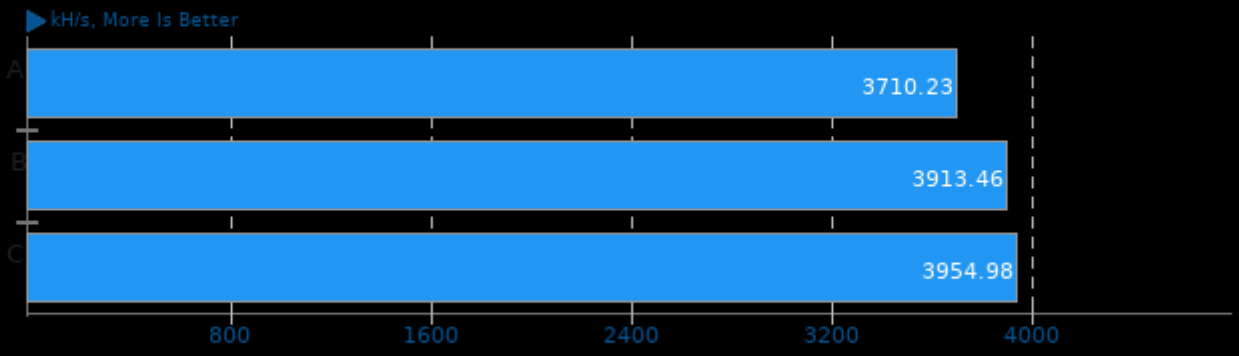
1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp


Cpuminer-Opt 3.18
Algorithm: Deepcoin
kH/s, More Is Better
A
B
C
1693.64
1700.14
1722.85
400
800
1200
1600
2000
1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp
Cpuminer-Opt 3.18
Algorithm: Ringcoin
kH/s, More Is Better
A
B
C
660.54
636.19
669.30
140
280
420
560
700
1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp
Cpuminer-Opt 3.18
Algorithm: Blake-2 S
kH/s, More Is Better
A
B
C
58200
57960
57230
12K
24K
36K
48K
60K
1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp


Cpuminer-Opt 3.18
Algorithm: Garlicoin
kH/s, More Is Better
A
B
C
434.81
404.09
414.81
90
180
270
360
450
1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp
Cpuminer-Opt 3.18
Algorithm: Skeincoin
kH/s, More Is Better
A
B
C
14750
14360
13230
3K
6K
9K
12K
15K
1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp
Cpuminer-Opt 3.18
Algorithm: Myriad-Groestl
kH/s, More Is Better
A
B
C
5706.06
5117.48
5717.30
1200
2400
3600
4800
6000
1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

Cpuminer-Opt 3.18

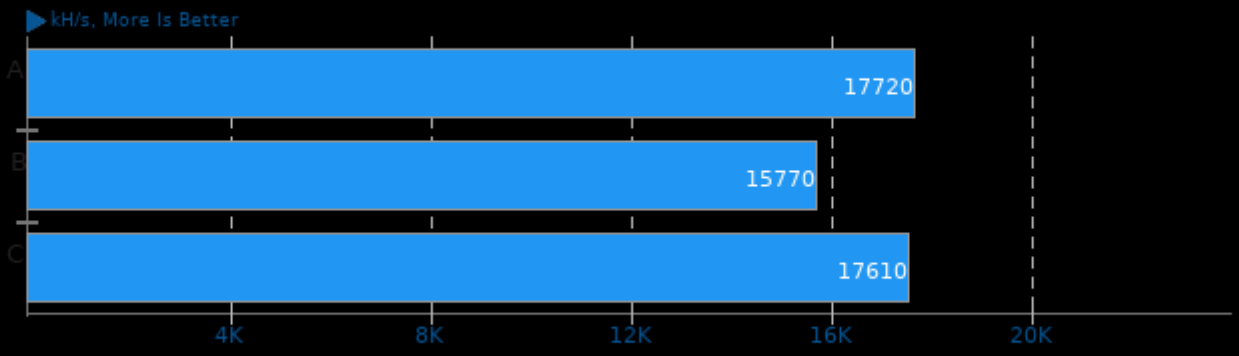
Algorithm: LBC, LBRY Credits



1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

Cpuminer-Opt 3.18

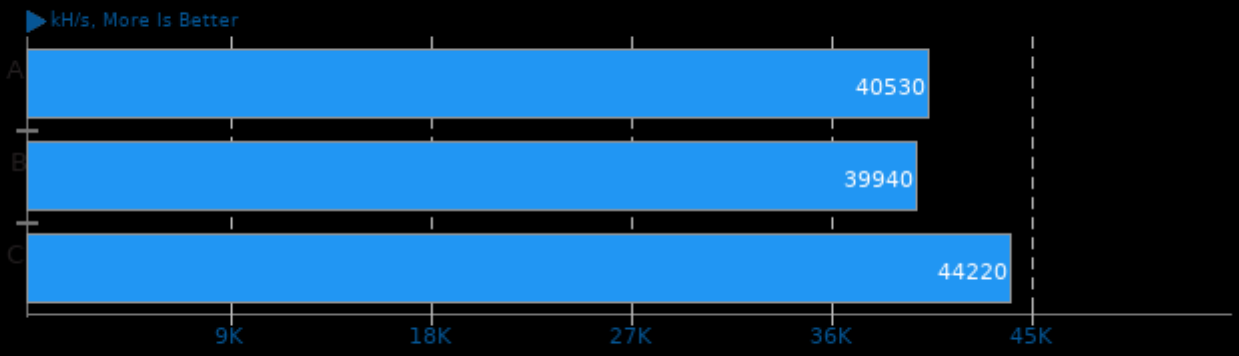
Algorithm: Quad SHA-256, Pyrite



1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

Cpuminer-Opt 3.18

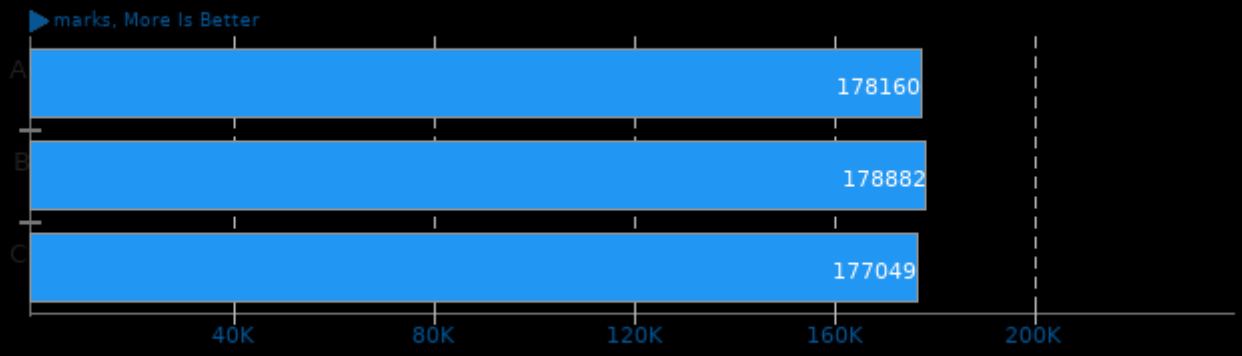
Algorithm: Triple SHA-256, Onecoin



1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

SecureMark 1.0.4

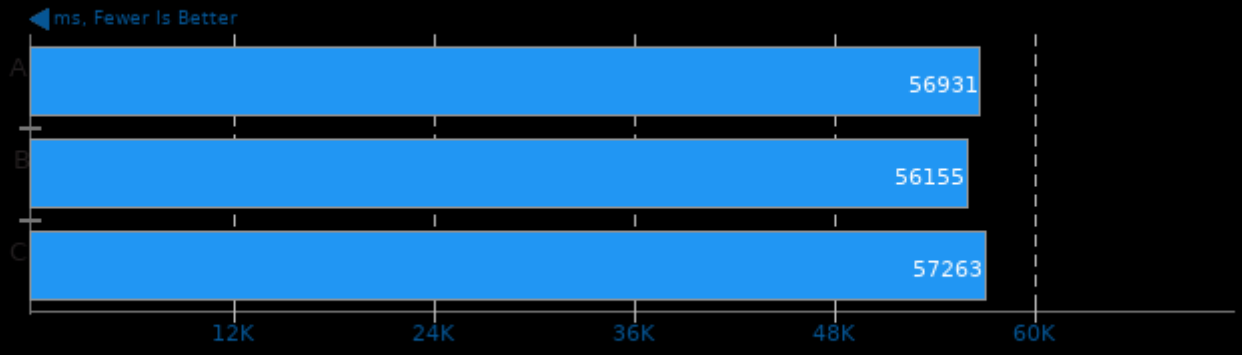
Benchmark: SecureMark-TLS



1. (CC) gcc options: -pedantic -O3

OpenJPEG 2.4

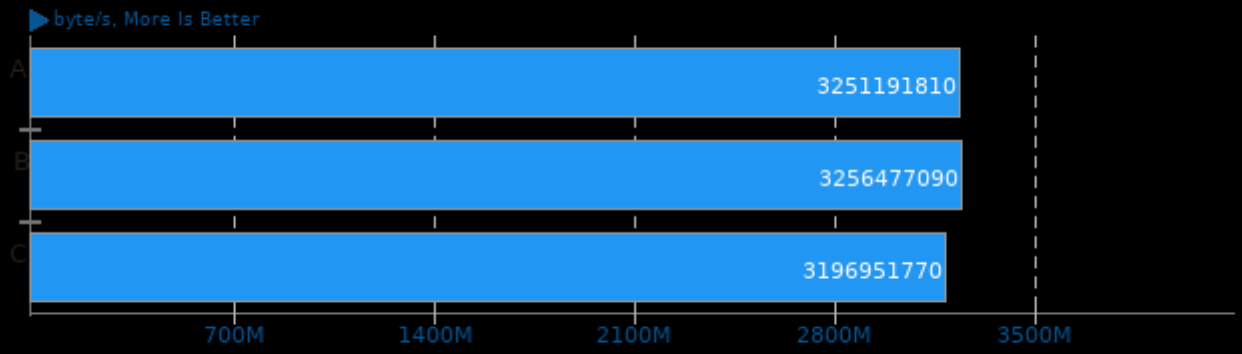
Encode: NASA Curiosity Panorama M34



1. (CXX) g++ options: -rdynamic

OpenSSL 3.0

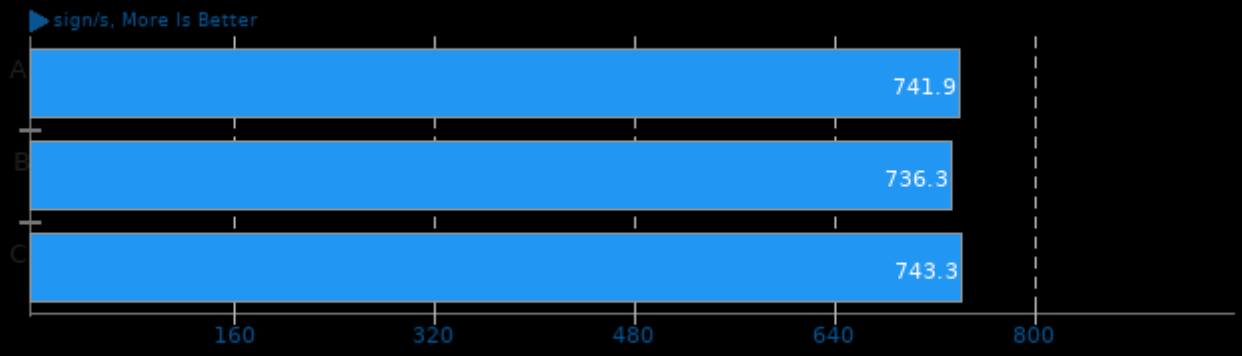
Algorithm: SHA256



1. (CC) gcc options: -pthread -m64 -O3 -lssl -lcrypto -ldl

OpenSSL 3.0

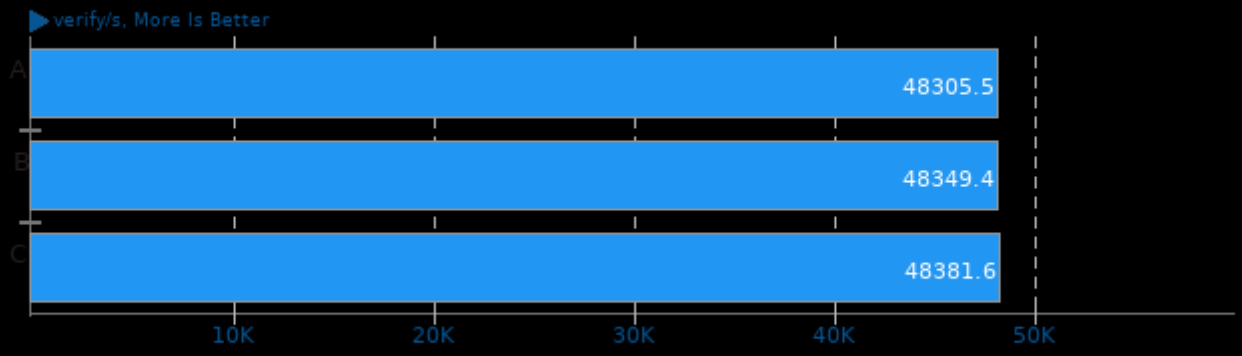
Algorithm: RSA4096



1. (CC) gcc options: -pthread -m64 -O3 -lssl -lcrypto -ldl

OpenSSL 3.0

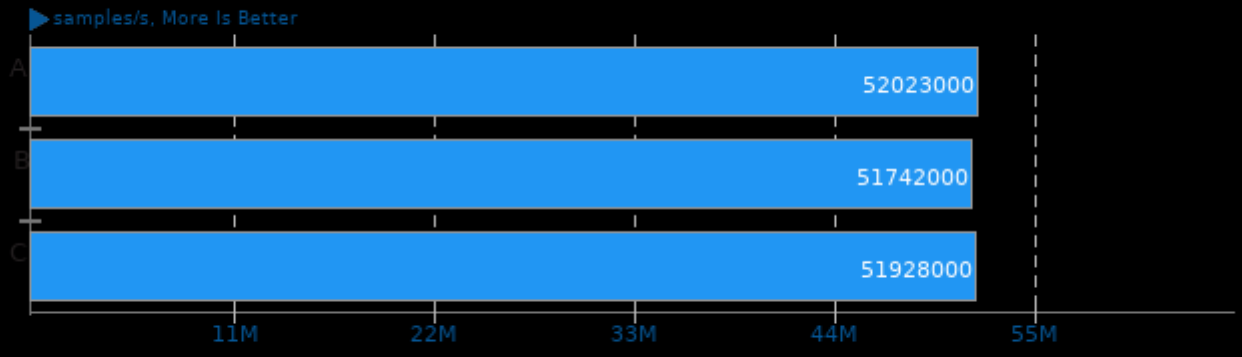
Algorithm: RSA4096



1. (CC) gcc options: -pthread -m64 -O3 -lssl -lcrypto -ldl

Liquid-DSP 2021.01.31

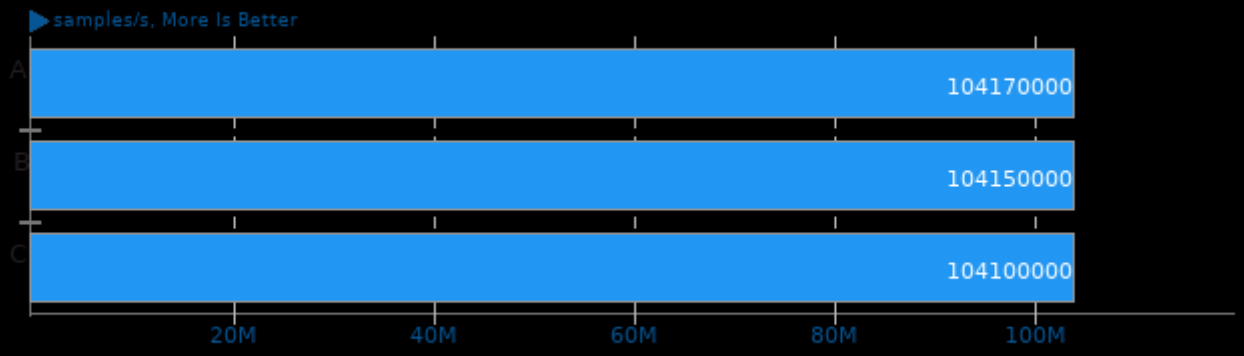
Threads: 1 - Buffer Length: 256 - Filter Length: 57



1. (CC) gcc options: -O3 -pthread -lm -lc -lliquid

Liquid-DSP 2021.01.31

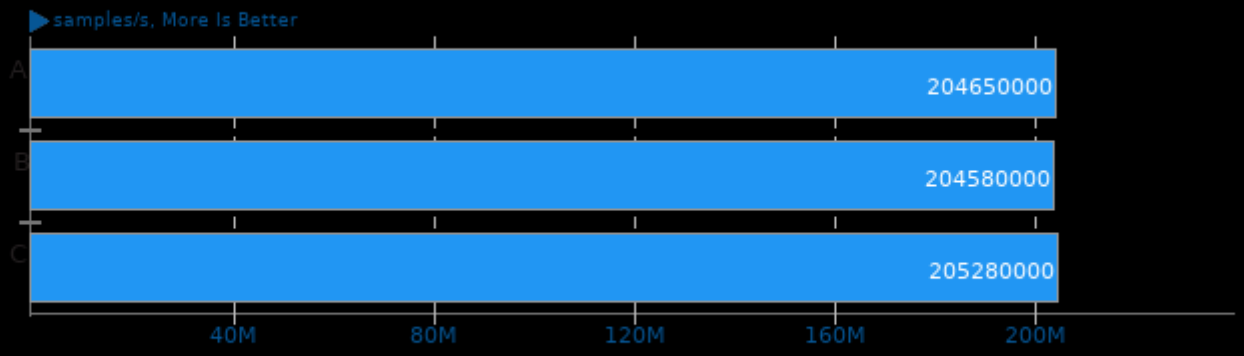
Threads: 2 - Buffer Length: 256 - Filter Length: 57



1. (CC) gcc options: -O3 -pthread -lm -lc -lliquid

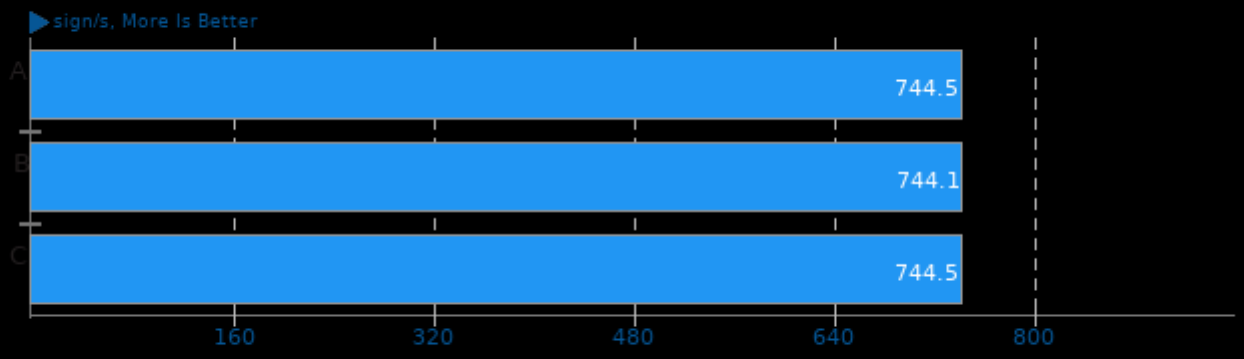
Liquid-DSP 2021.01.31

Threads: 4 - Buffer Length: 256 - Filter Length: 57



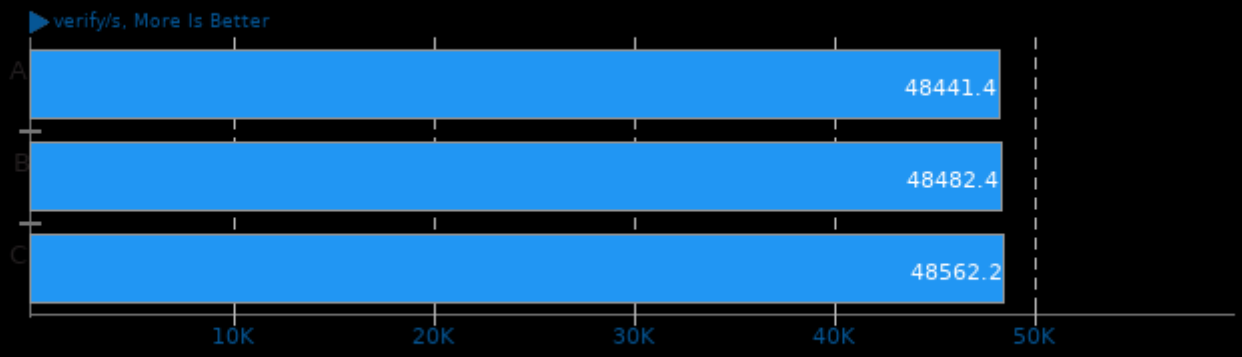
1. (CC) gcc options: -O3 -pthread -lm -lc -lliquid

OpenSSL



1. OpenSSL 3.0.0 7 sep 2021 (Library: OpenSSL 3.0.0 7 sep 2021)

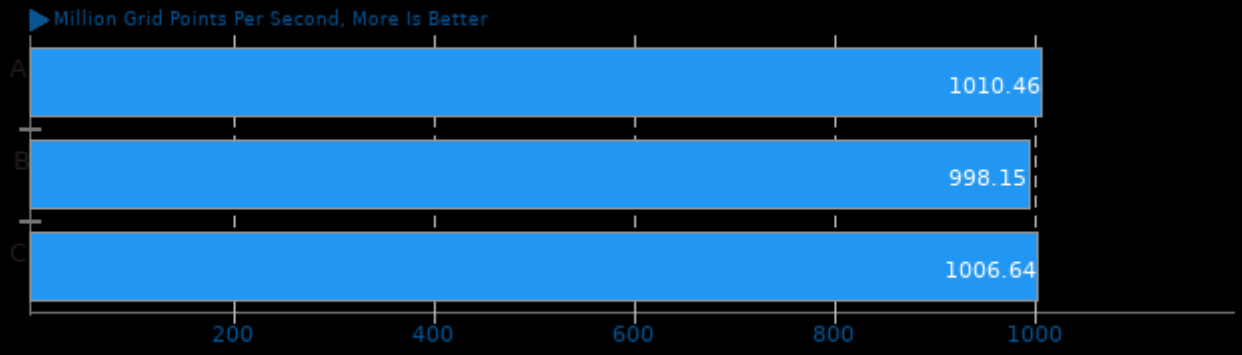
OpenSSL



1. OpenSSL 3.0.0 7 sep 2021 (Library: OpenSSL 3.0.0 7 sep 2021)

ASKAP 1.0

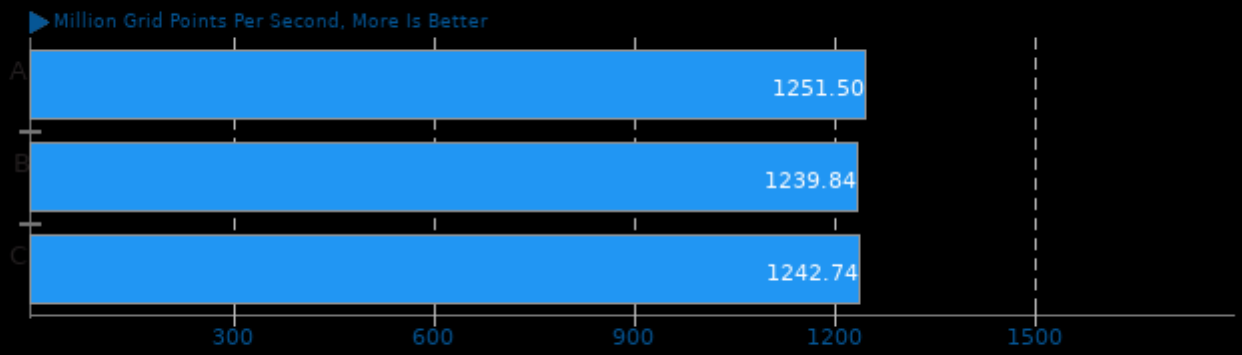
Test: tConvolve MT - Gridding



1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp

ASKAP 1.0

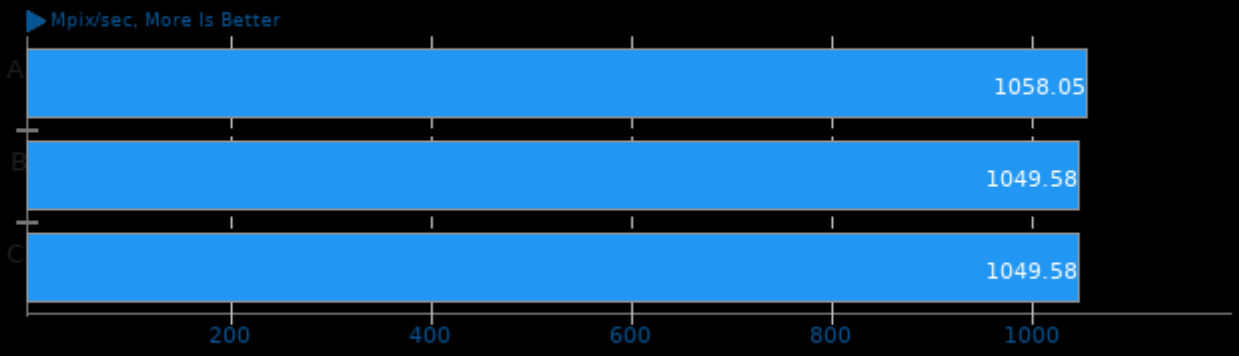
Test: tConvolve MT - Degridding



1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp

ASKAP 1.0

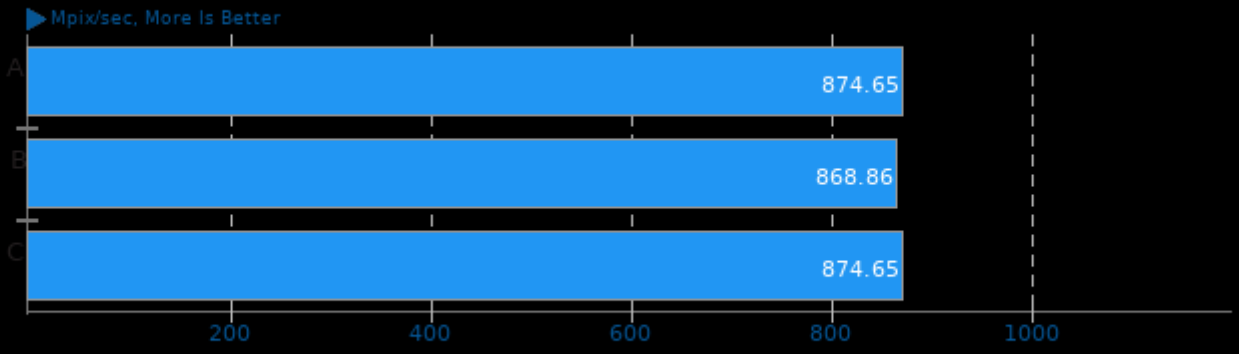
Test: tConvolve MPI - Degridding



1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp

ASKAP 1.0

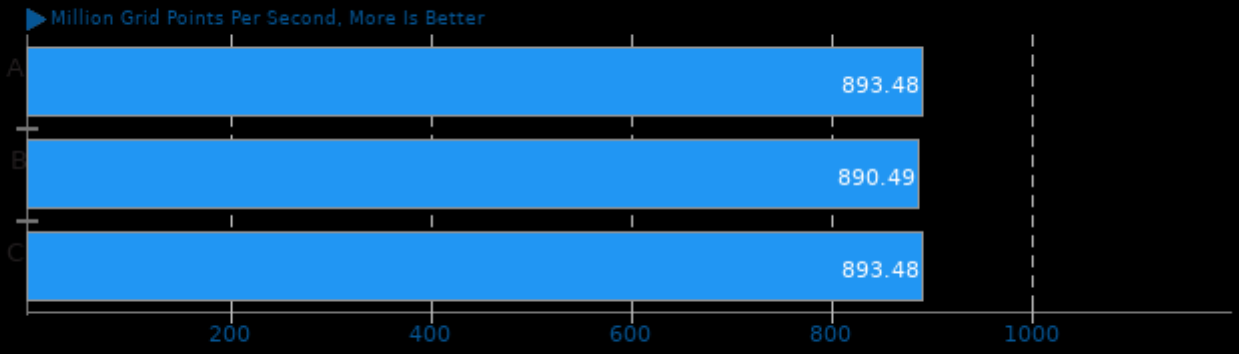
Test: tConvolve MPI - Gridding



1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp

ASKAP 1.0

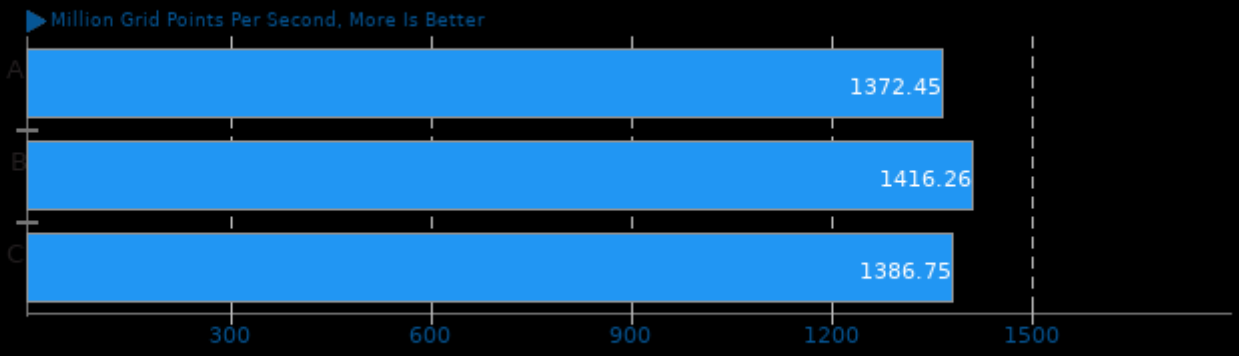
Test: tConvolve OpenMP - Gridding



1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp

ASKAP 1.0

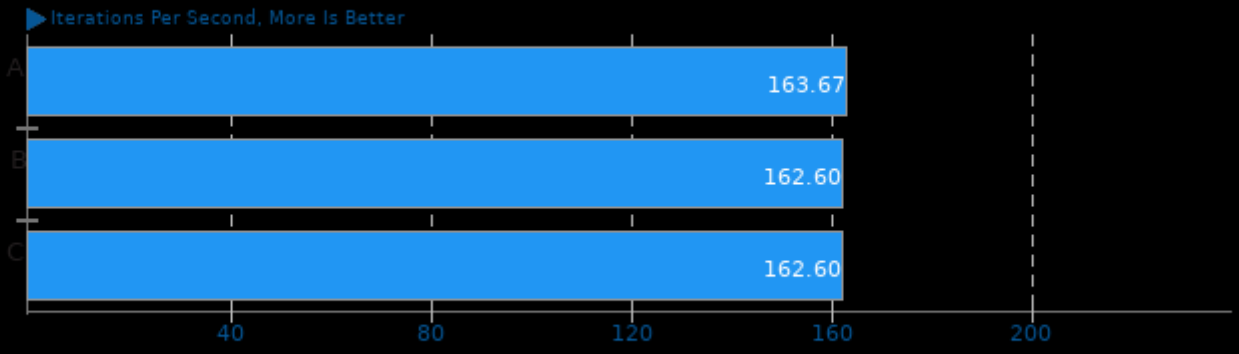
Test: tConvolve OpenMP - Degridding



1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp

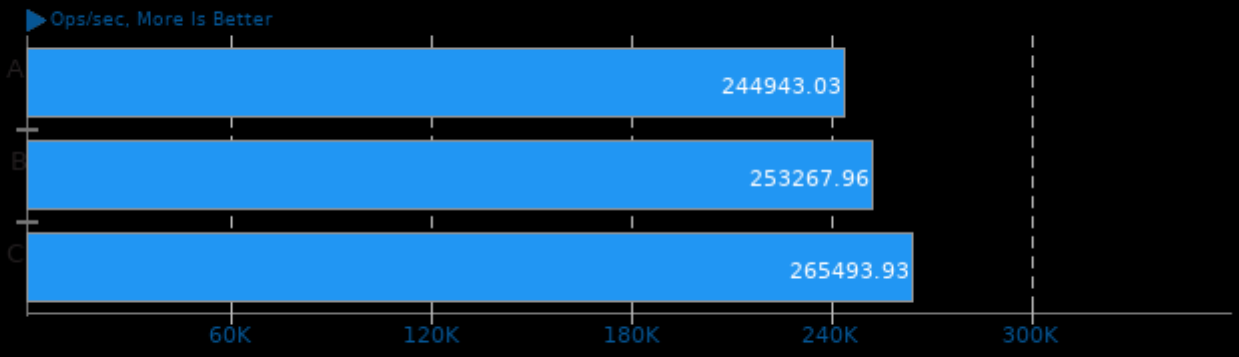
ASKAP 1.0

Test: Hogbom Clean OpenMP



1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp

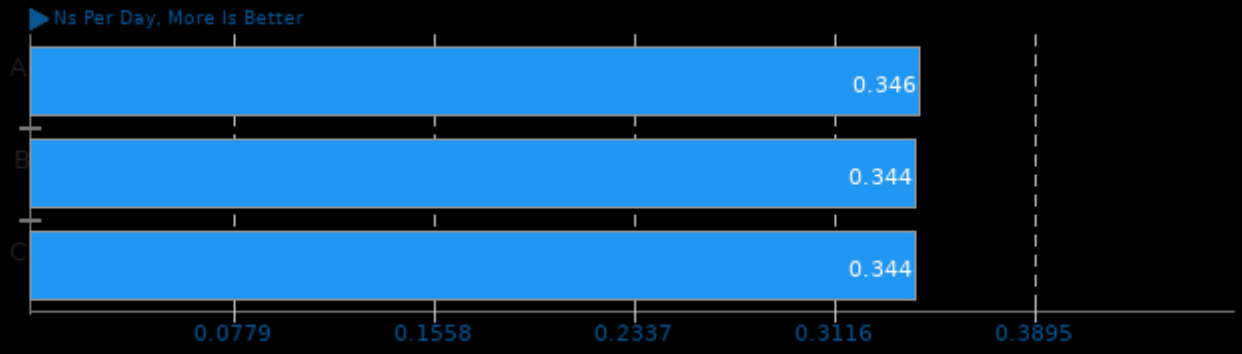
KeyDB 6.2.0



1. (CXX) g++ options: -O2 -levent_openssl -levent -lcrypto -lssl -lpthread -lz -lpcre

GROMACS 2021.2

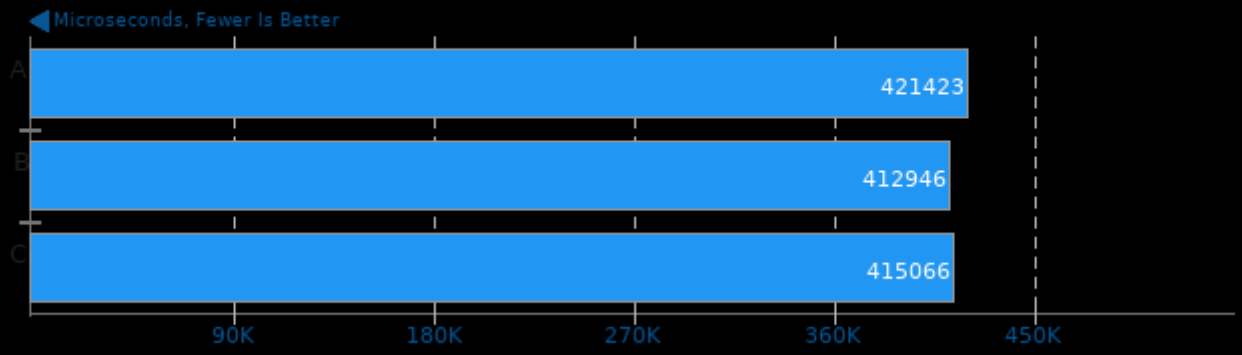
Implementation: MPI CPU - Input: water_GMX50_bare



1. (CXX) g++ options: -O3

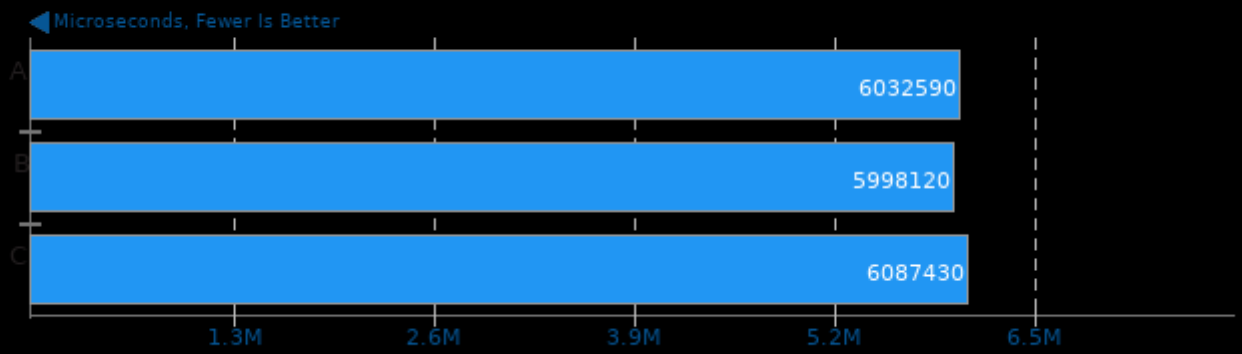
TensorFlow Lite 2020-08-23

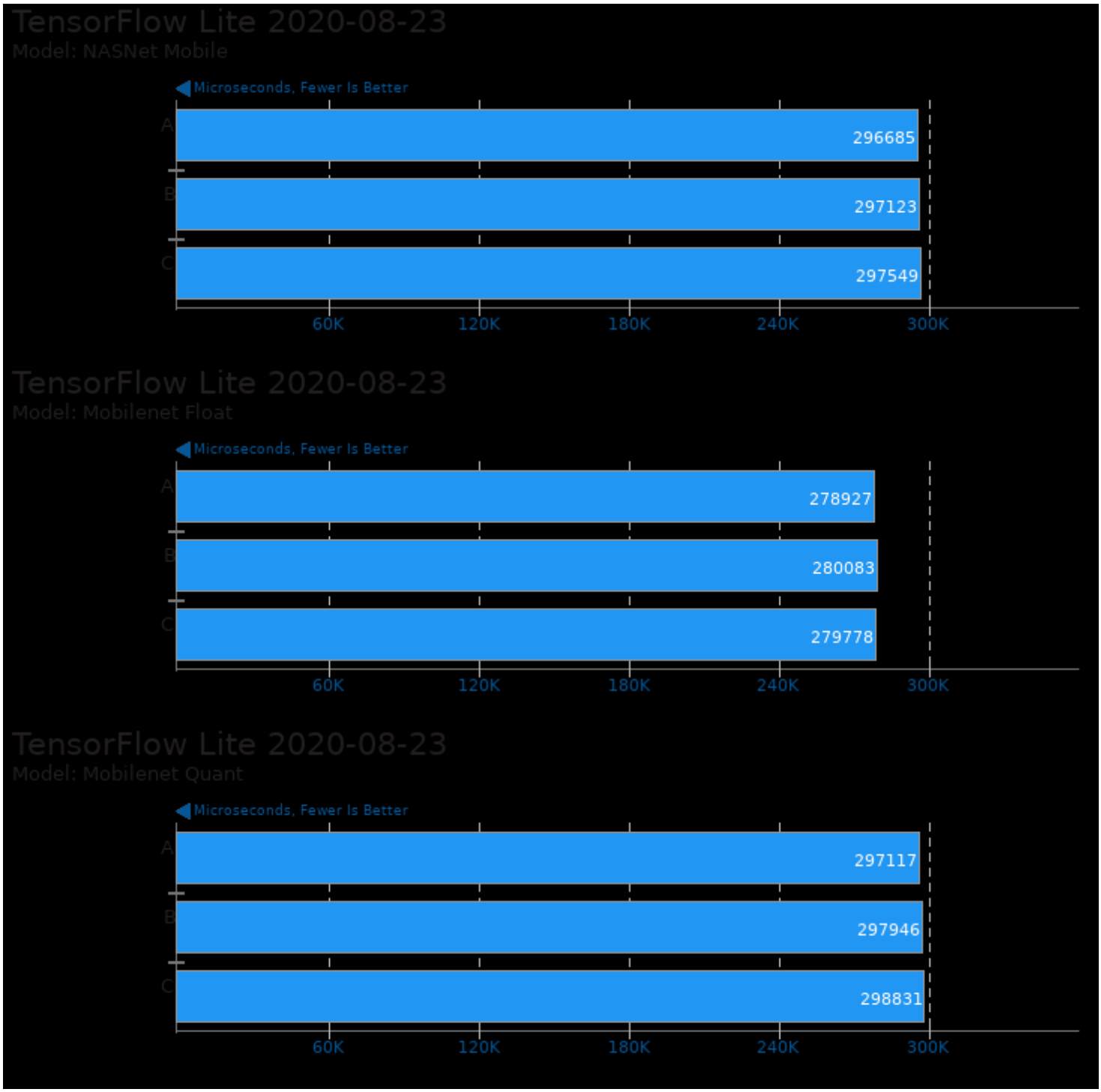
Model: SqueezeNet

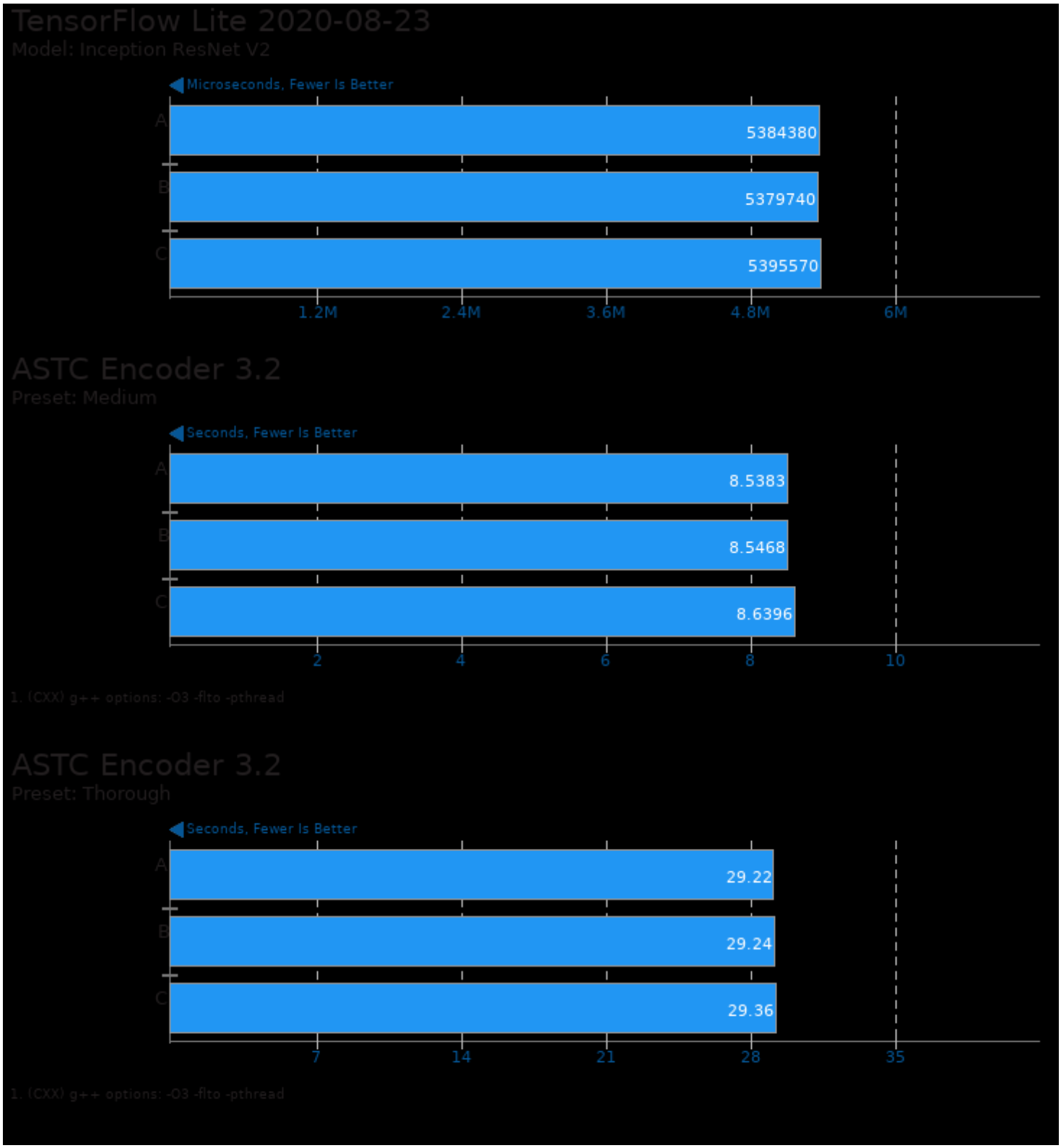


TensorFlow Lite 2020-08-23

Model: Inception V4

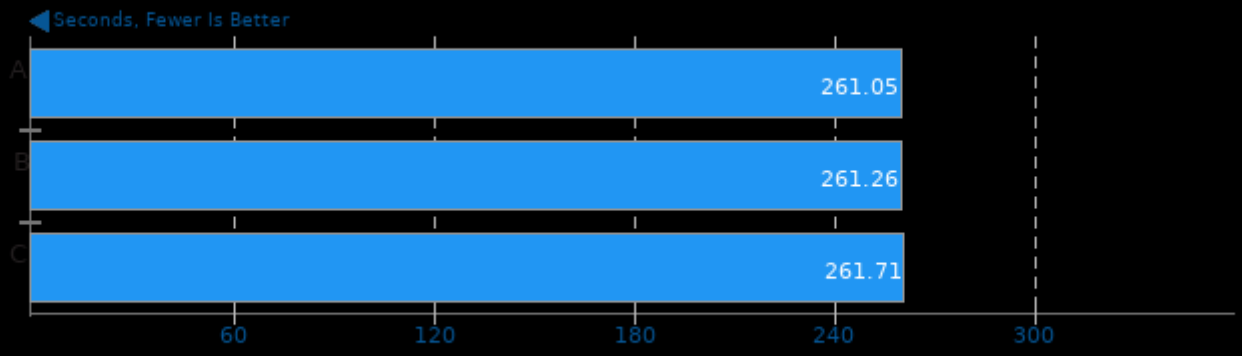



TensorFlow Lite 2020-08-23
Model: NASNet Mobile
Microseconds, Fewer Is Better
A
B
C
296685
297123
297549
60K
120K
180K
240K
300K
TensorFlow Lite 2020-08-23
Model: Mobilenet Float
Microseconds, Fewer Is Better
A
B
C
278927
280083
279778
60K
120K
180K
240K
300K
TensorFlow Lite 2020-08-23
Model: Mobilenet Quant
Microseconds, Fewer Is Better
A
B
C
297117
297946
298831
60K
120K
180K
240K
300K


TensorFlow Lite 2020-08-23
Model: Inception ResNet V2
Microseconds, Fewer Is Better
A
B
C
5384380
5379740
5395570
1.2M
2.4M
3.6M
4.8M
6M
ASTC Encoder 3.2
Preset: Medium
Seconds, Fewer Is Better
A
B
C
8.5383
8.5468
8.6396
2
4
6
8
10
1. (CXX) g++ options: -O3 -flto -pthread
ASTC Encoder 3.2
Preset: Thorough
Seconds, Fewer Is Better
A
B
C
29.22
29.24
29.36
7
14
21
28
35
1. (CXX) g++ options: -O3 -flto -pthread

ASTC Encoder 3.2

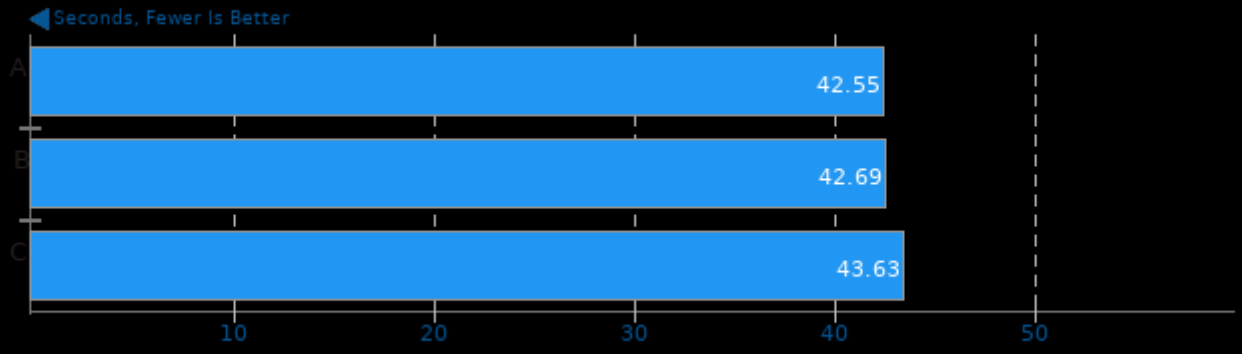
Preset: Exhaustive



1. (CXX) g++ options: -O3 -flto -pthread

Basis Universal 1.13

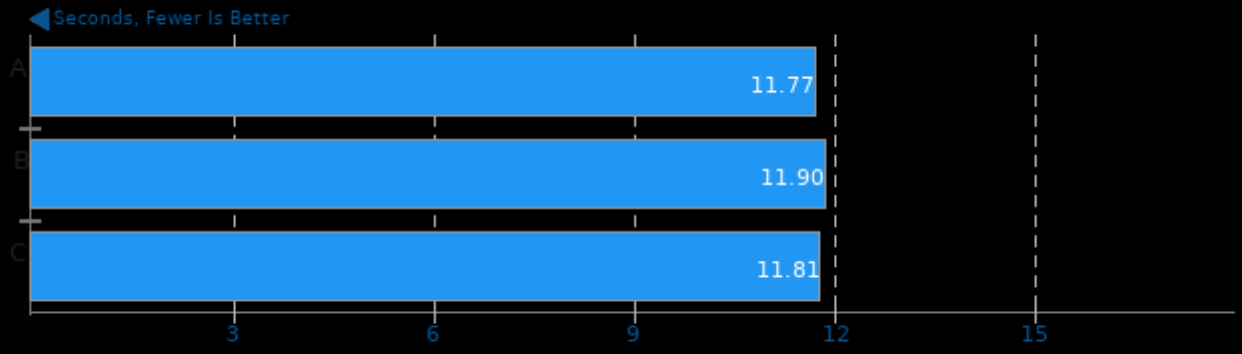
Settings: ETC1S



1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -O3 -rdynamic -lm -lpthread

Basis Universal 1.13

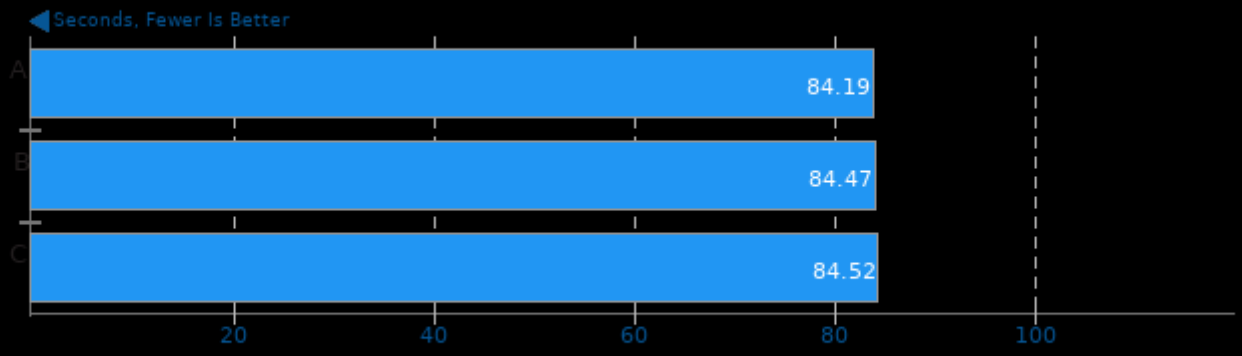
Settings: UASTC Level 0



1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -O3 -rdynamic -lm -lpthread

Basis Universal 1.13

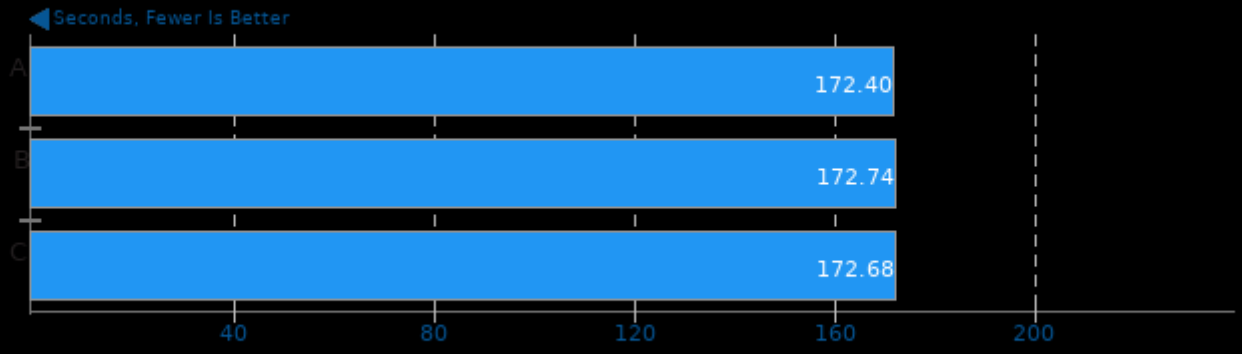
Settings: UASTC Level 2



1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -O3 -rdynamic -lm -lpthread

Basis Universal 1.13

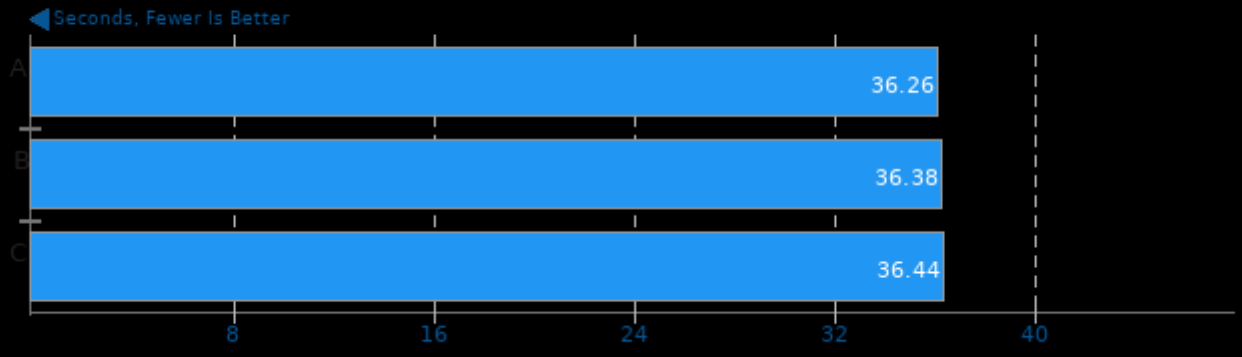
Settings: UASTC Level 3

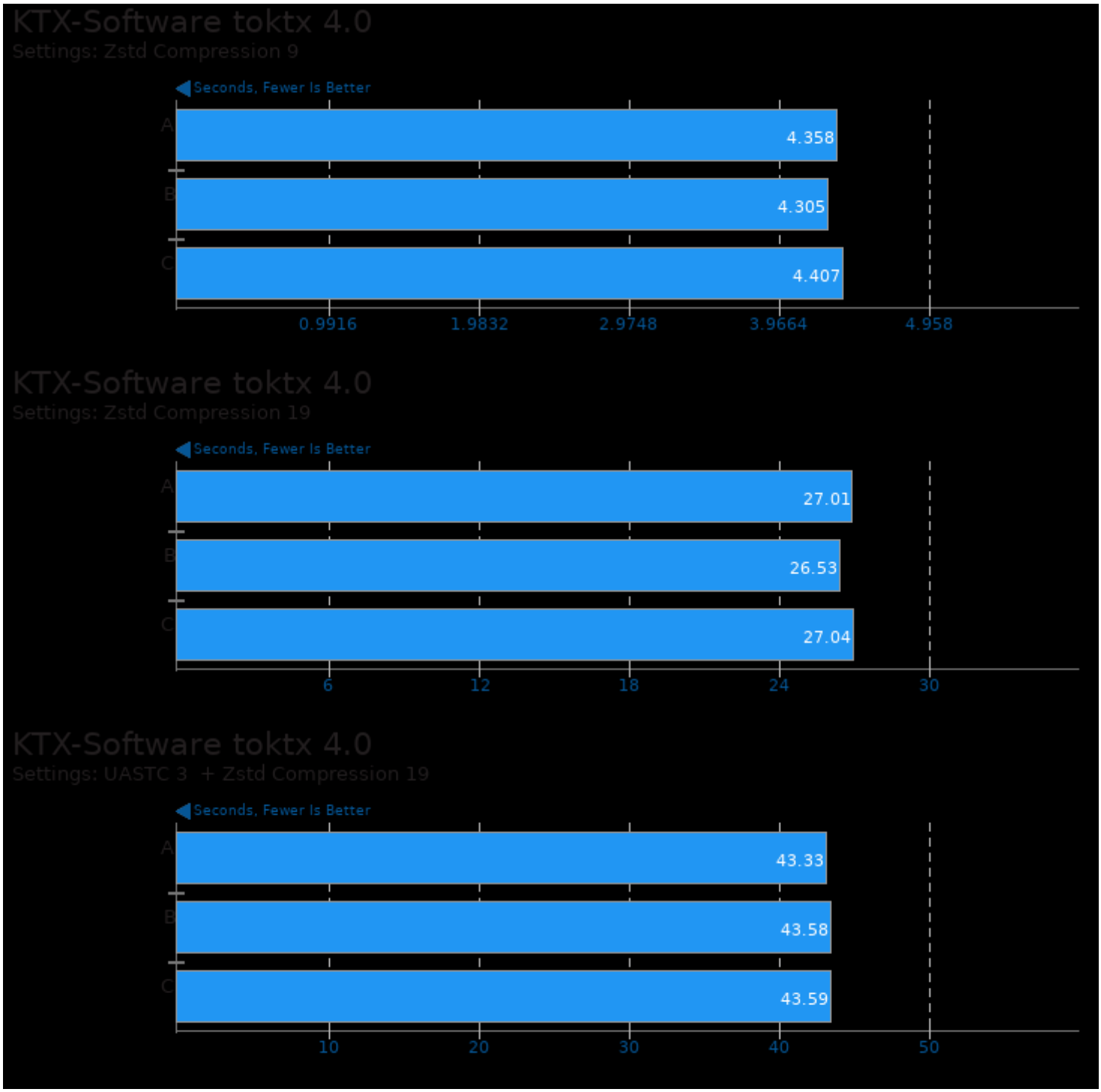


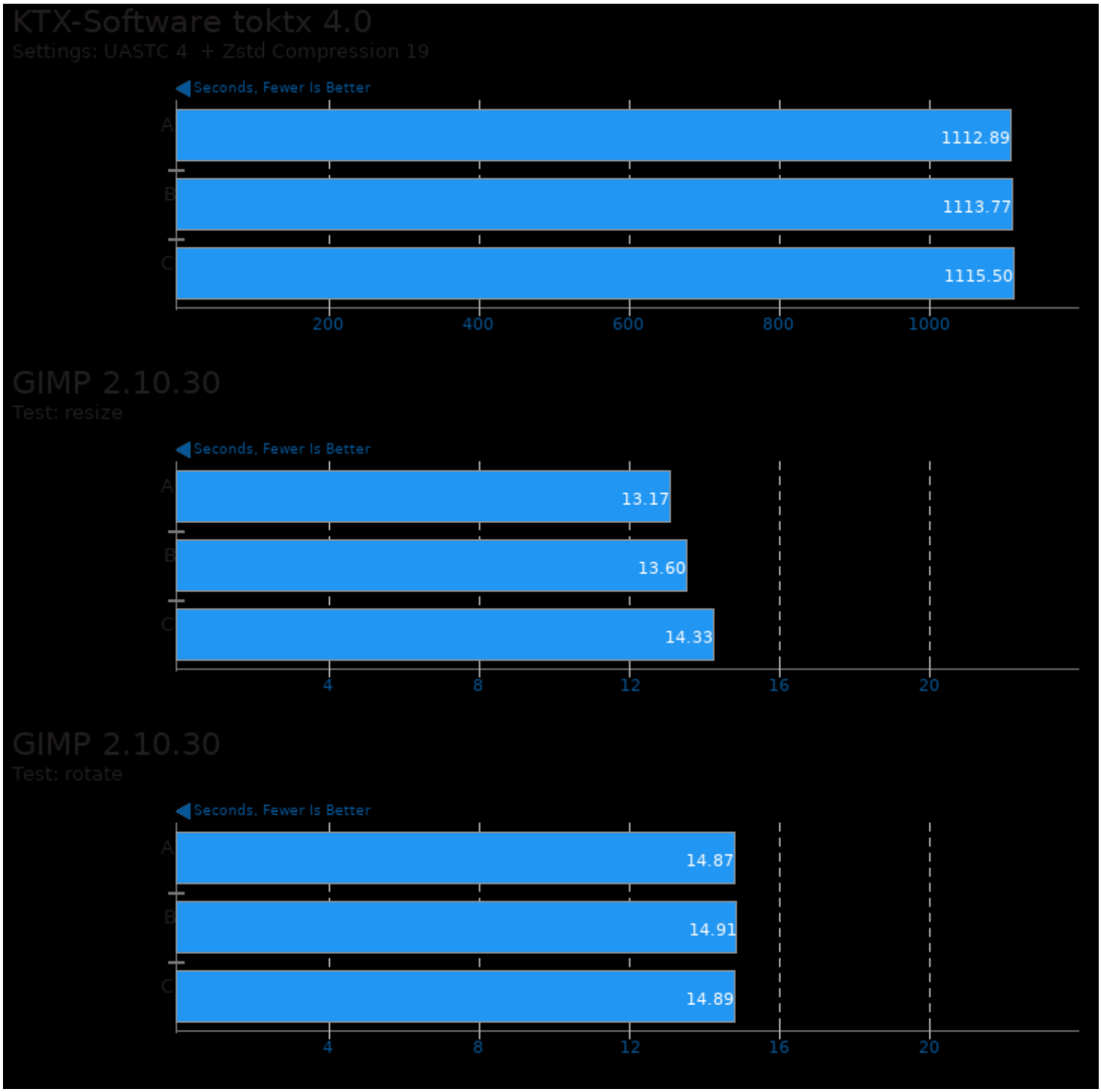
1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -O3 -rdynamic -lm -lpthread

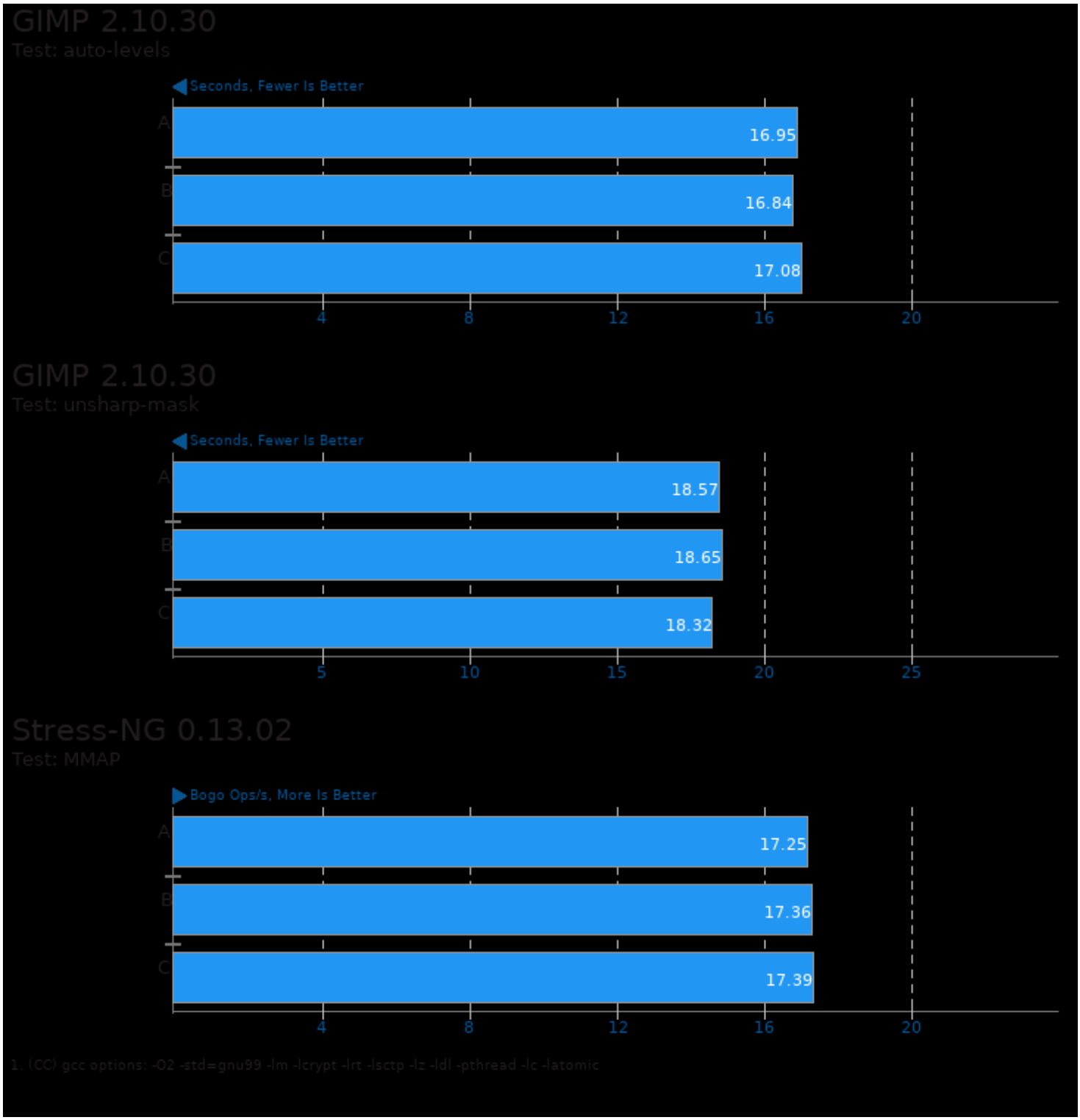
KTX-Software toktx 4.0

Settings: UASTC 3



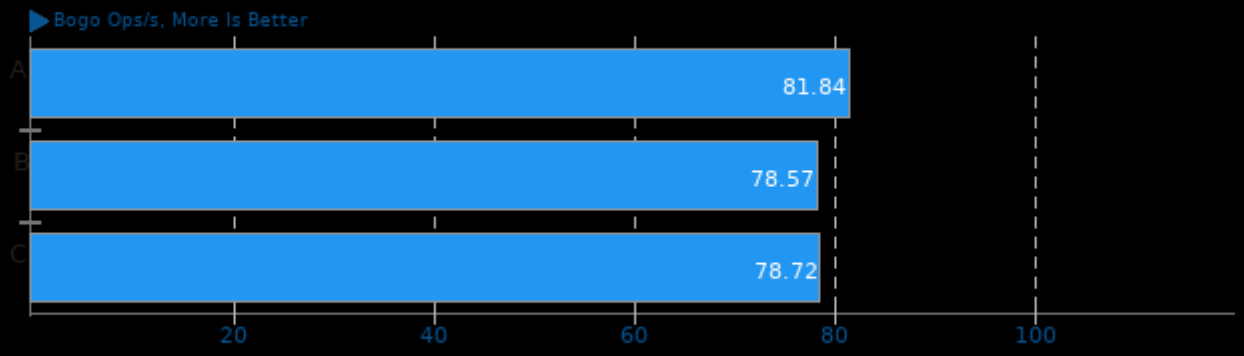

KTX-Software toktx 4.0
Settings: Zstd Compression 9
Seconds, Fewer Is Better
A
B
C
4.358
4.305
4.407
0.9916
1.9832
2.9748
3.9664
4.958
KTX-Software toktx 4.0
Settings: Zstd Compression 19
Seconds, Fewer Is Better
A
B
C
27.01
26.53
27.04
6
12
18
24
30
KTX-Software toktx 4.0
Settings: UASTC 3 + Zstd Compression 19
Seconds, Fewer Is Better
A
B
C
43.33
43.58
43.59
10
20
30
40
50


KTX-Software toktx 4.0
Settings: UASTC 4 + Zstd Compression 19
Seconds, Fewer Is Better
A
B
C
1112.89
1113.77
1115.50
200
400
600
800
1000
GIMP 2.10.30
Test: resize
Seconds, Fewer Is Better
A
B
C
13.17
13.60
14.33
4
8
12
16
20
GIMP 2.10.30
Test: rotate
Seconds, Fewer Is Better
A
B
C
14.87
14.91
14.89
4
8
12
16
20


GIMP 2.10.30
Test: auto-levels
Seconds, Fewer Is Better
A
B
C
16.95
16.84
17.08
4
8
12
16
20
GIMP 2.10.30
Test: unsharp-mask
Seconds, Fewer Is Better
A
B
C
18.57
18.65
18.32
5
10
15
20
25
Stress-NG 0.13.02
Test: MMAP
Bogo Ops/s, More Is Better
A
B
C
17.25
17.36
17.39
4
8
12
16
20
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

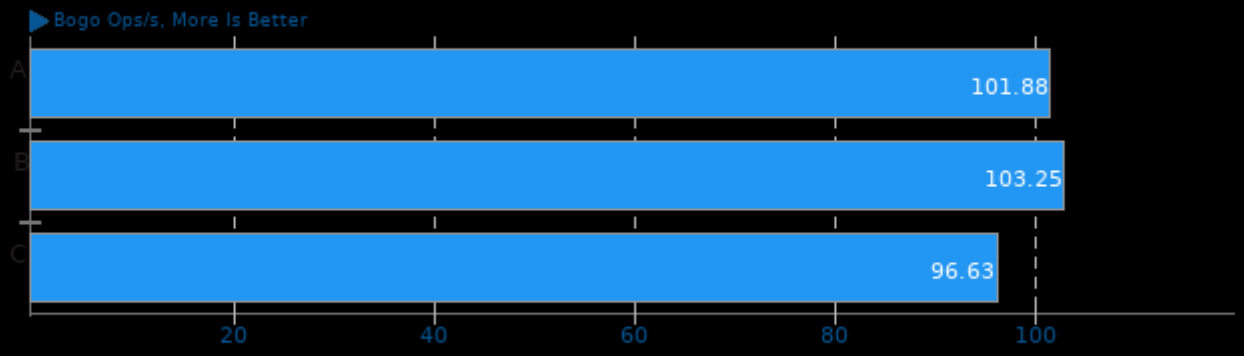
Test: NUMA



1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

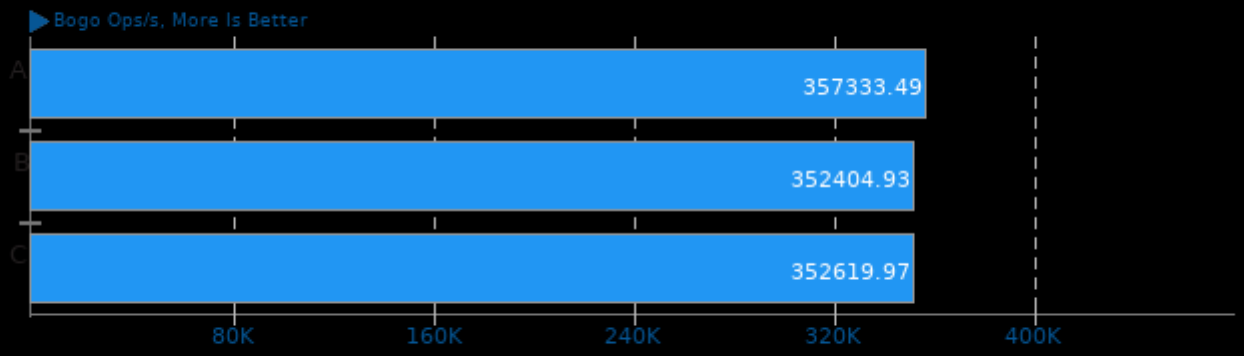
Test: MEMFD



1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

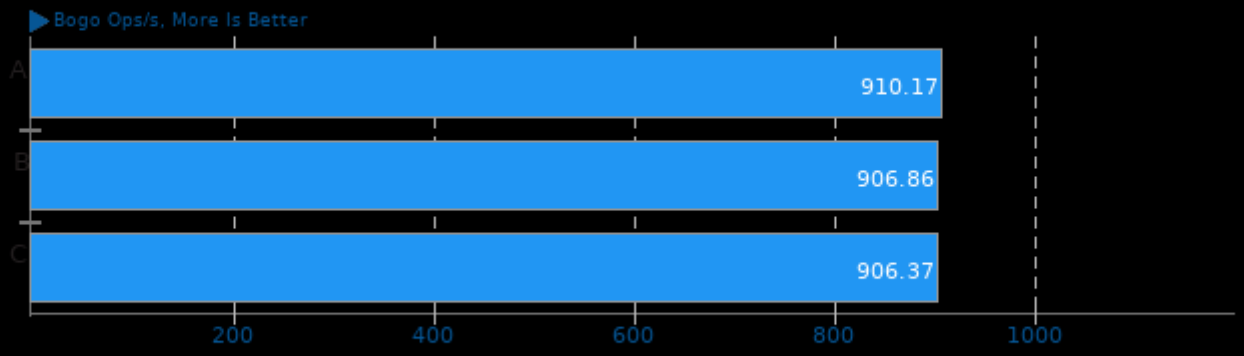
Test: Atomic



1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

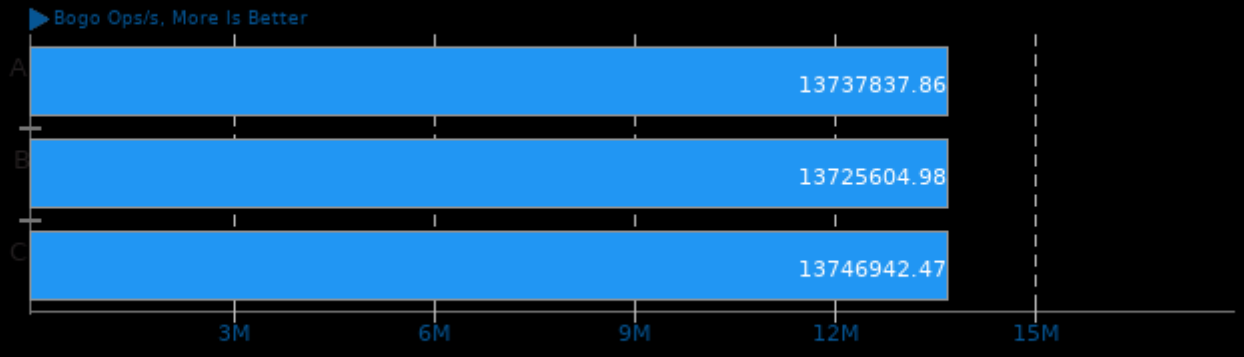
Test: Crypto



1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

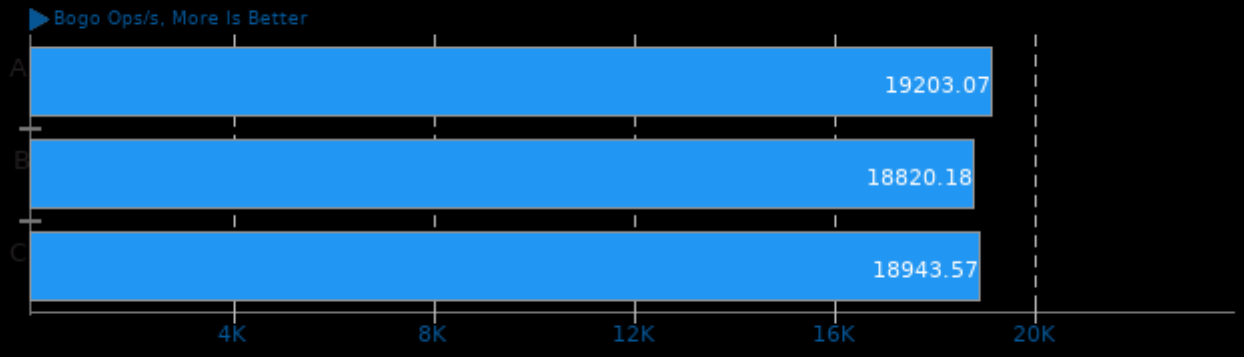
Test: Malloc



1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

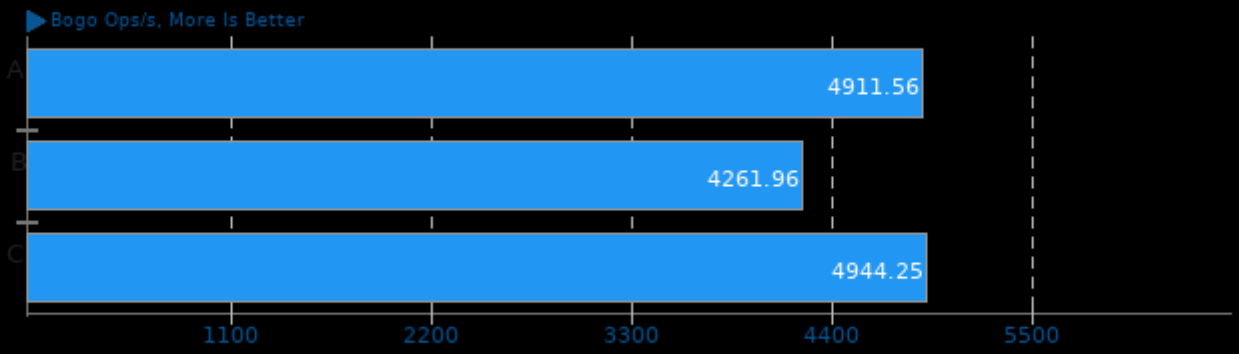
Test: Forking



1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

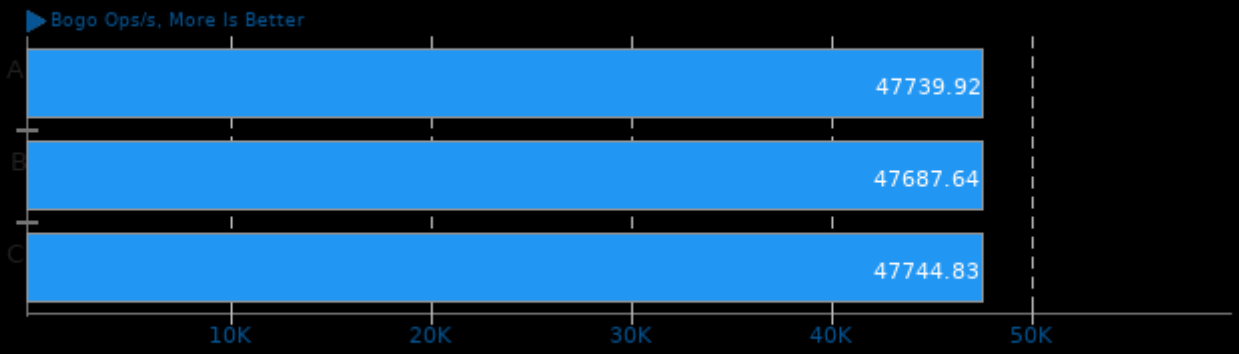
Test: IO_uring



1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

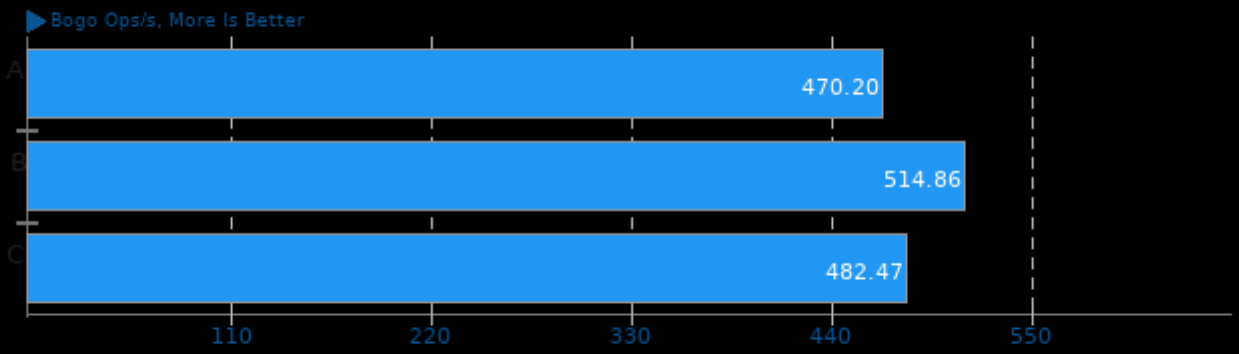
Test: SENDFILE



1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

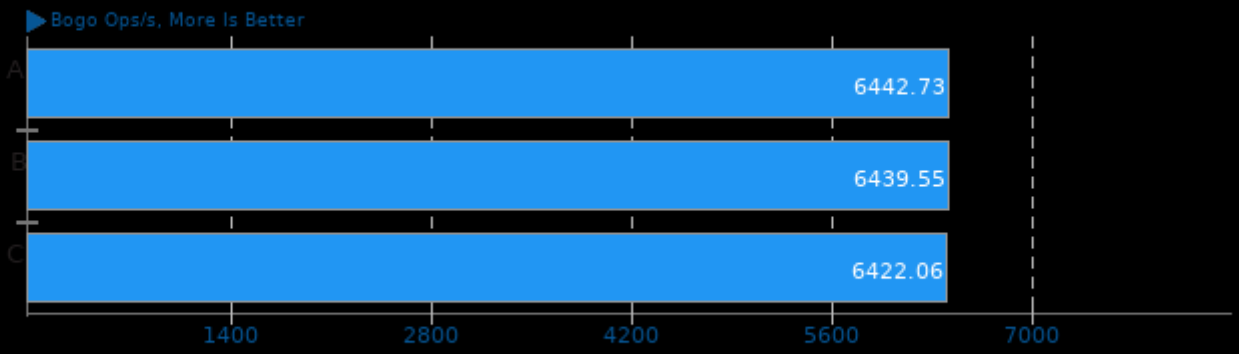
Test: CPU Cache



1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

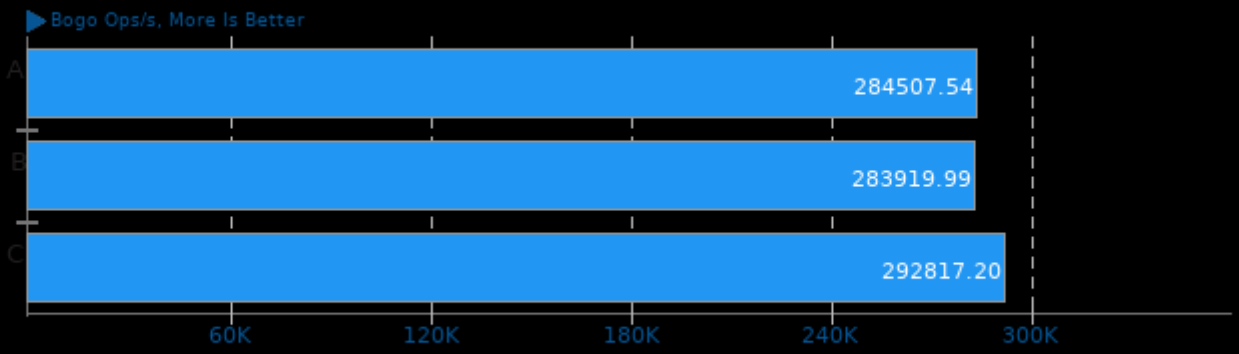
Test: CPU Stress



1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

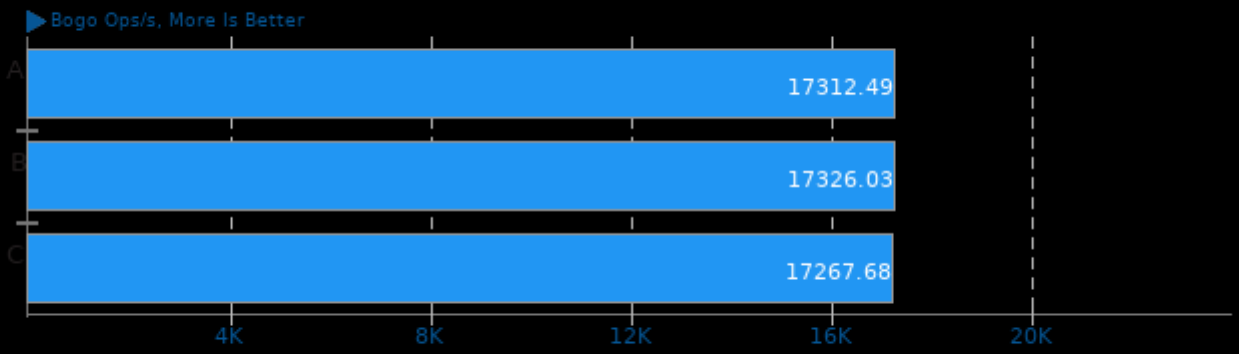
Test: Semaphores



1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

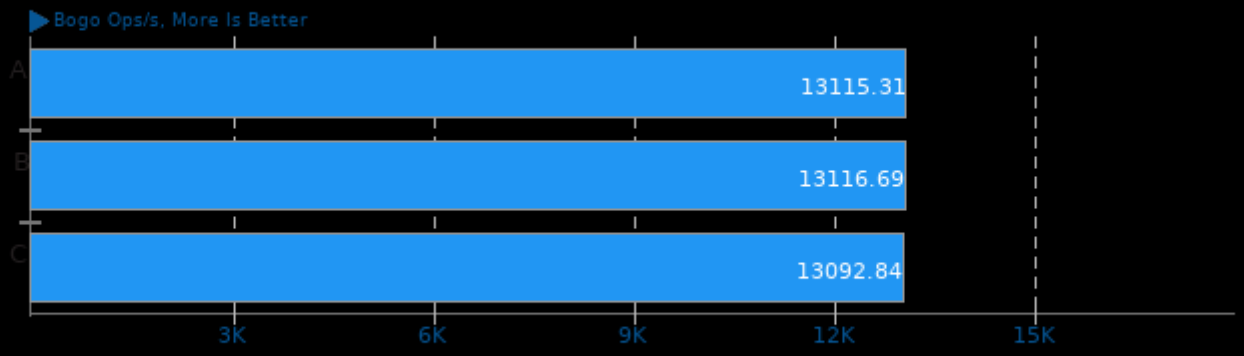
Test: Matrix Math



1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

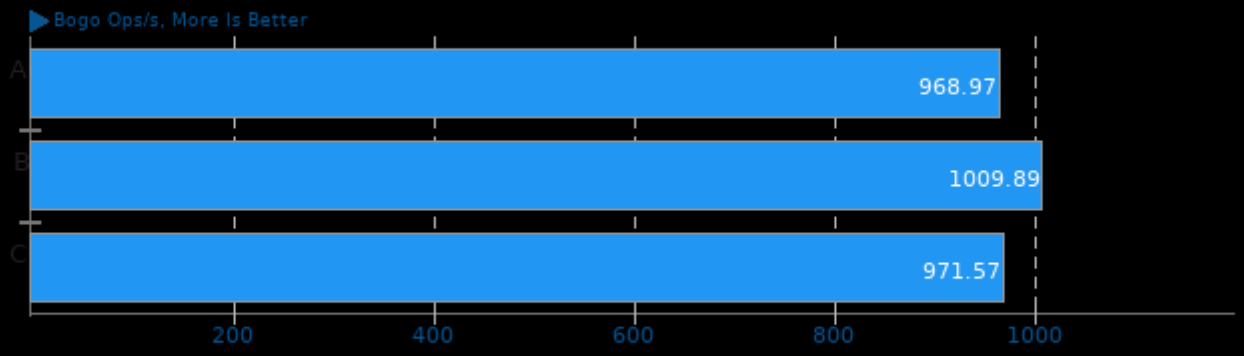
Test: Vector Math



1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

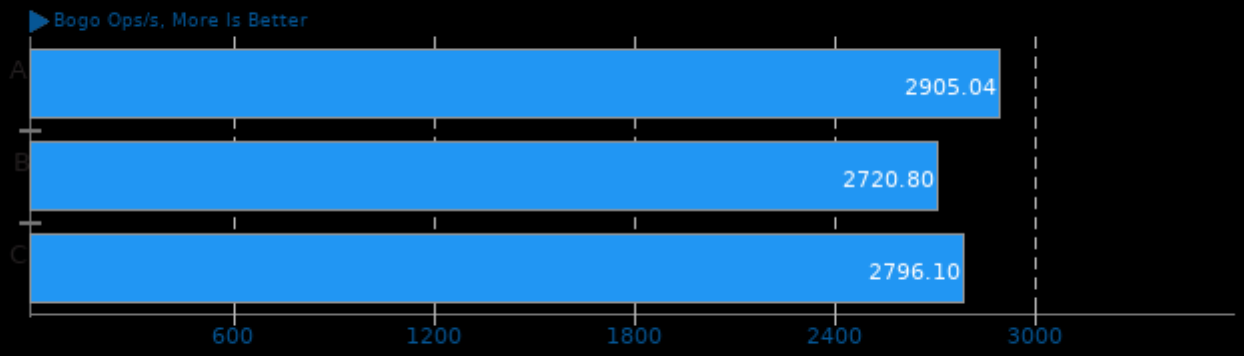
Test: Memory Copying



1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

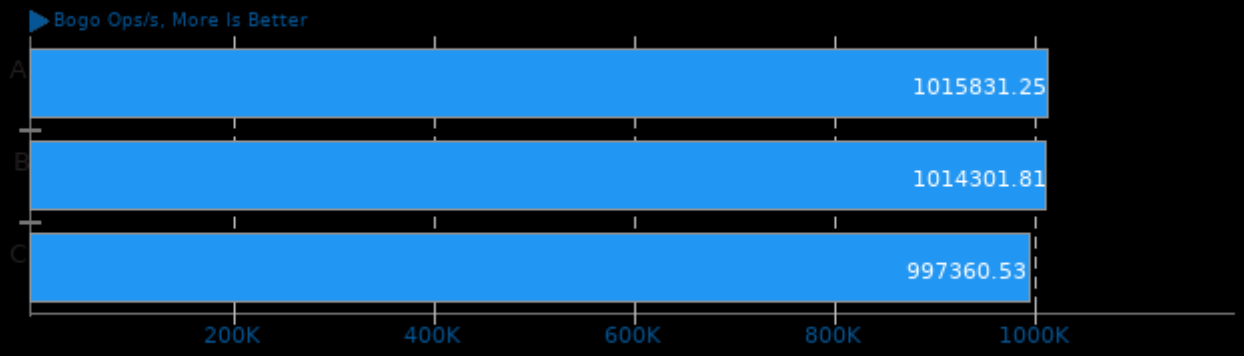
Test: Socket Activity



1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

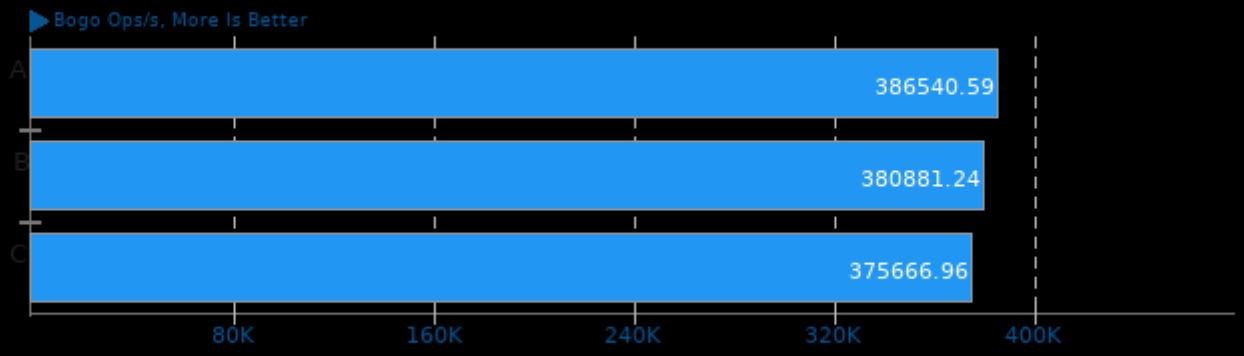
Test: Context Switching



1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

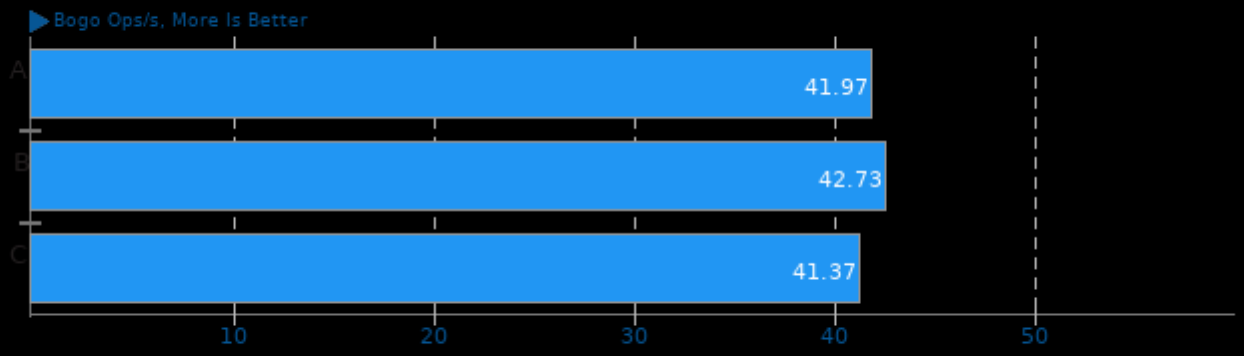
Test: Glibc C String Functions



1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

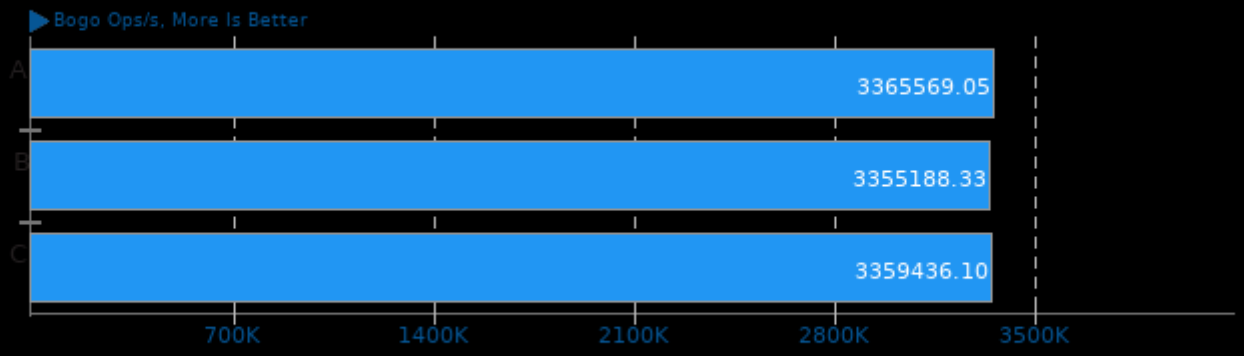
Test: Glibc Qsort Data Sorting



1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

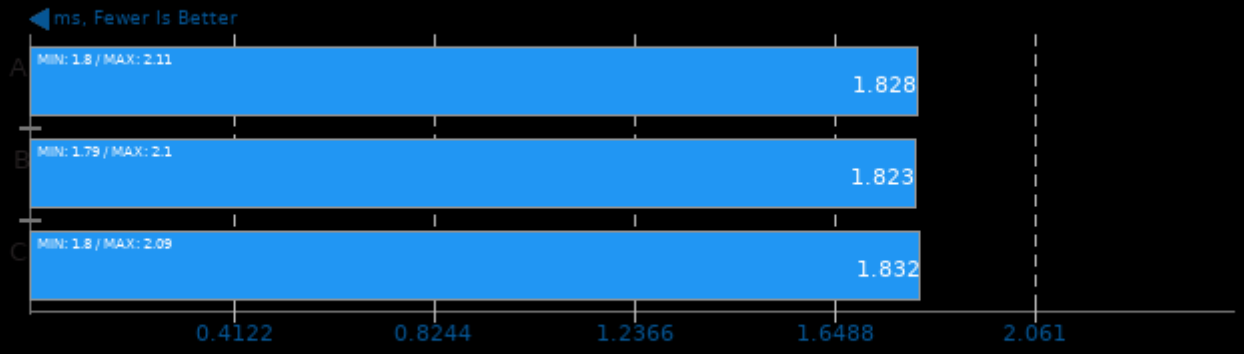
Test: System V Message Passing



1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Mobile Neural Network 1.2

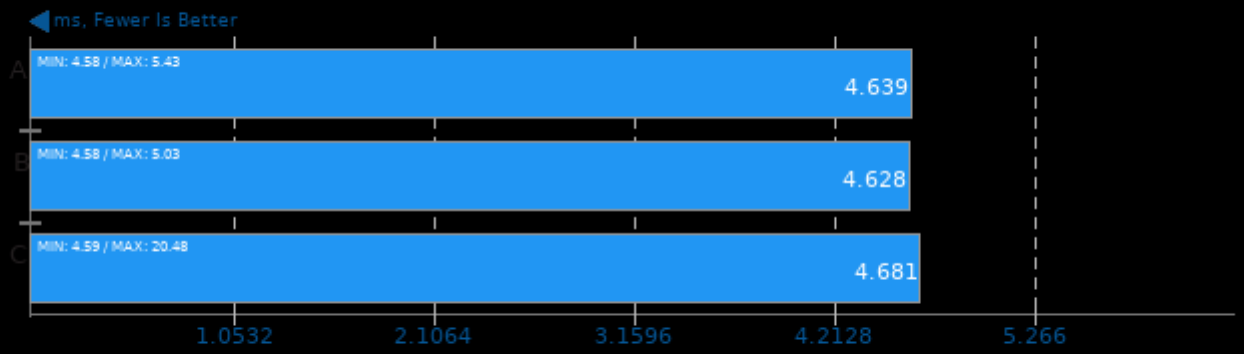
Model: mobilenetV3



1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fn

Mobile Neural Network 1.2

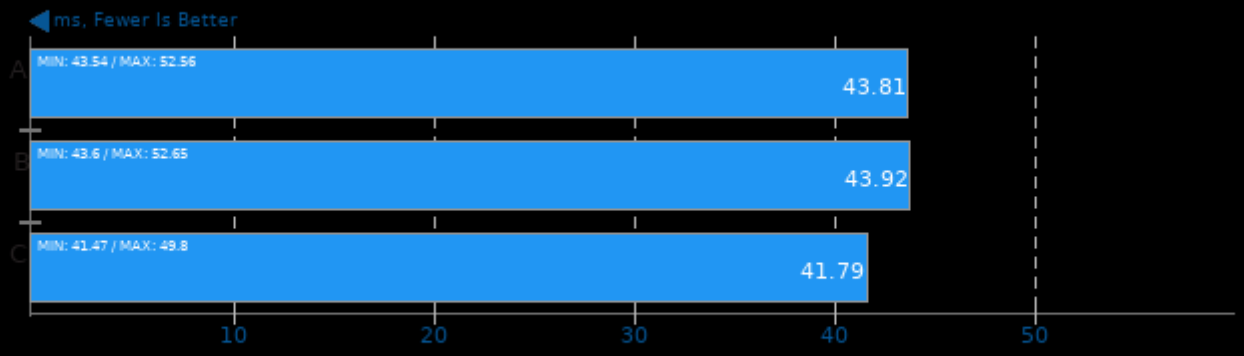
Model: squeezenetv1.1



1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fn

Mobile Neural Network 1.2

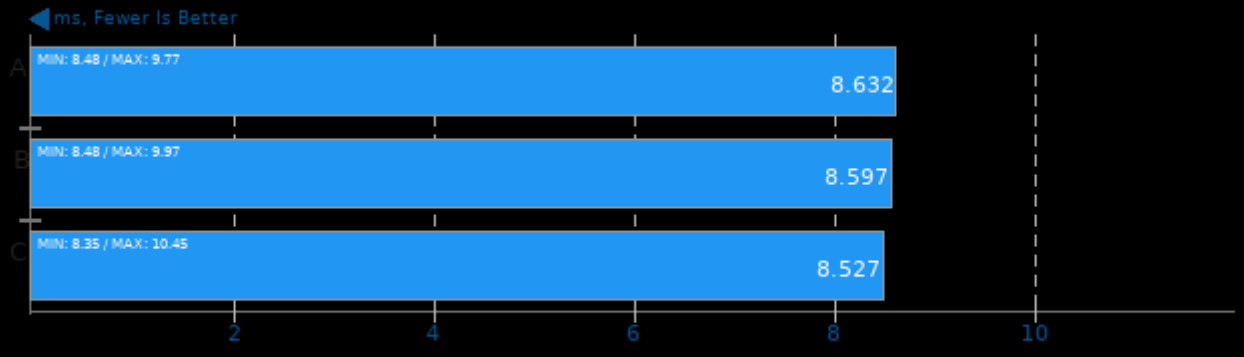
Model: resnet-v2-50



1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fn

Mobile Neural Network 1.2

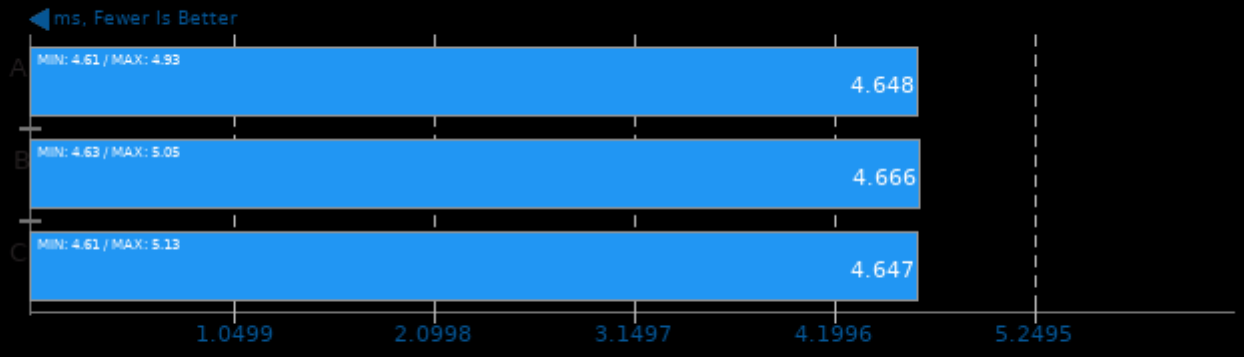
Model: SqueezeNetV1.0



1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fn

Mobile Neural Network 1.2

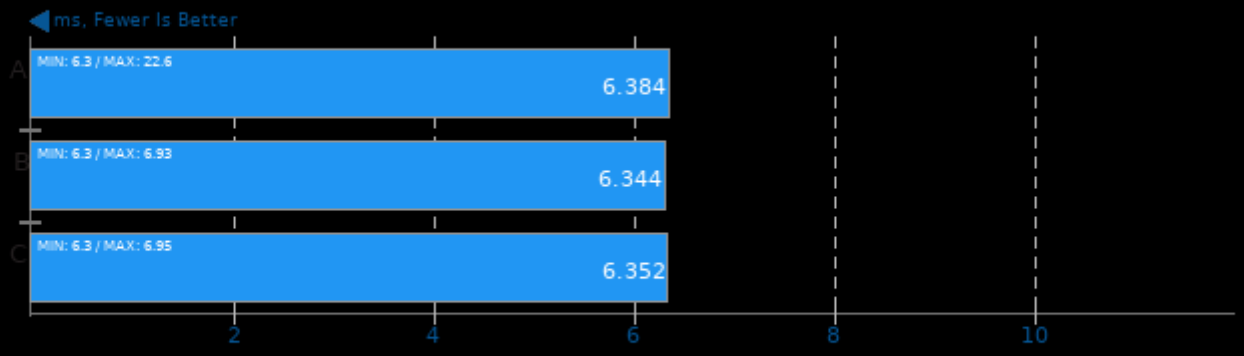
Model: MobileNetV2_224



1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fn

Mobile Neural Network 1.2

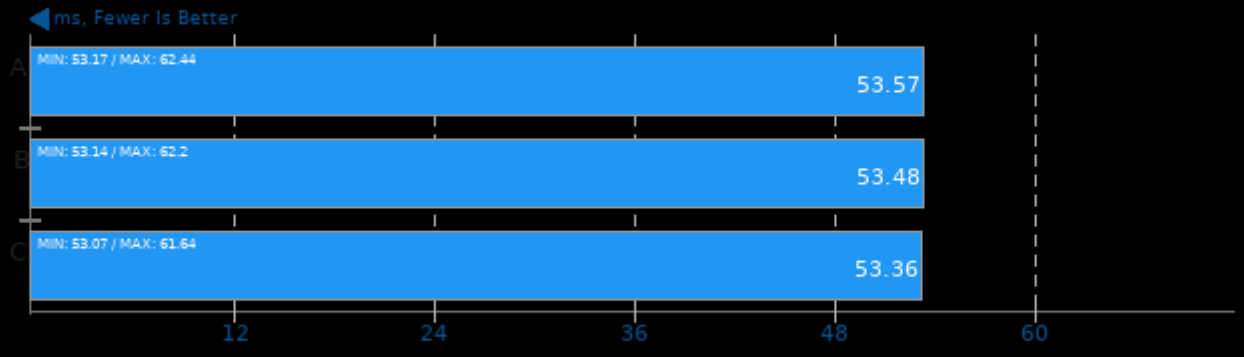
Model: mobilenet-v1-1.0



1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fv

Mobile Neural Network 1.2

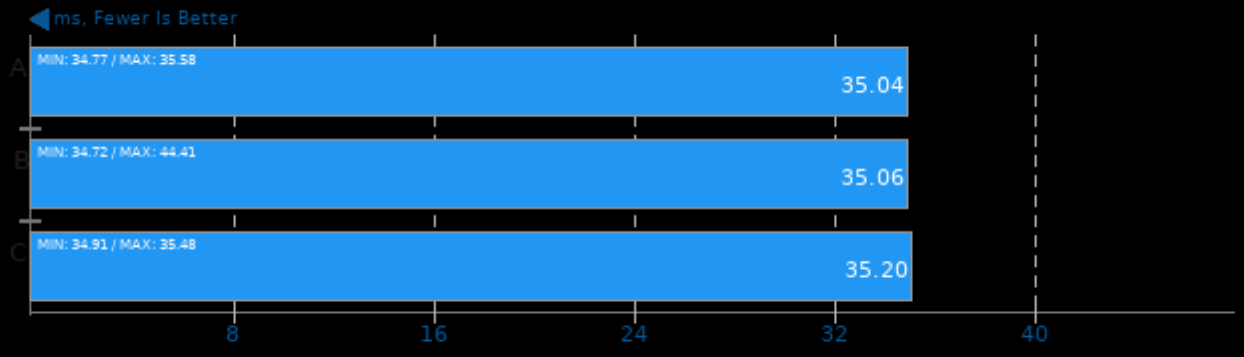
Model: inception-v3



1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fv

NCNN 20210720

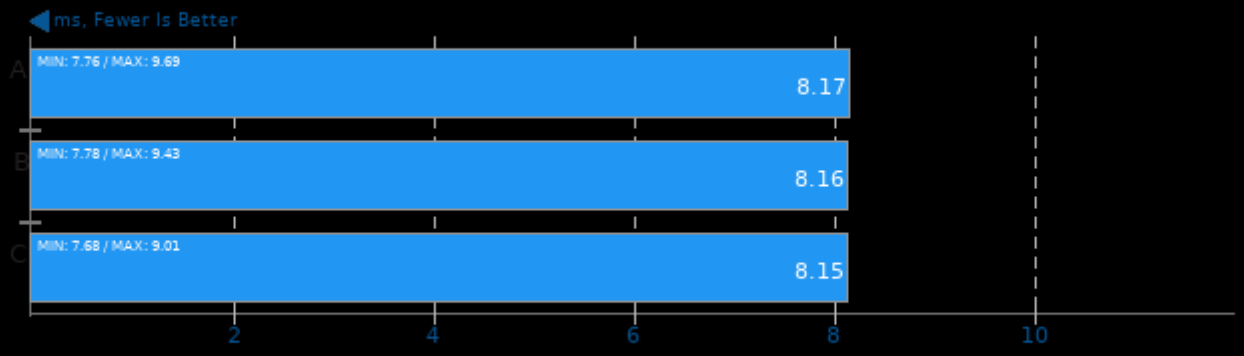
Target: CPU - Model: mobilenet



1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

NCNN 20210720

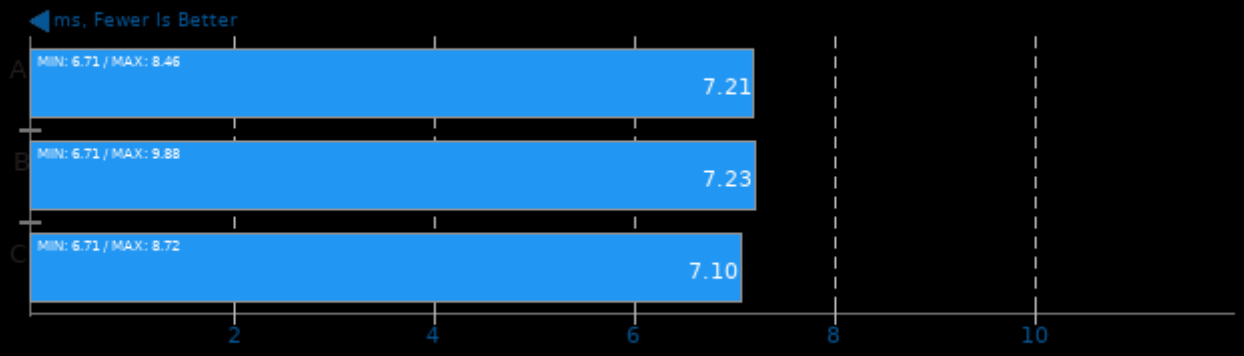
Target: CPU-v2-v2 - Model: mobilenet-v2



1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

NCNN 20210720

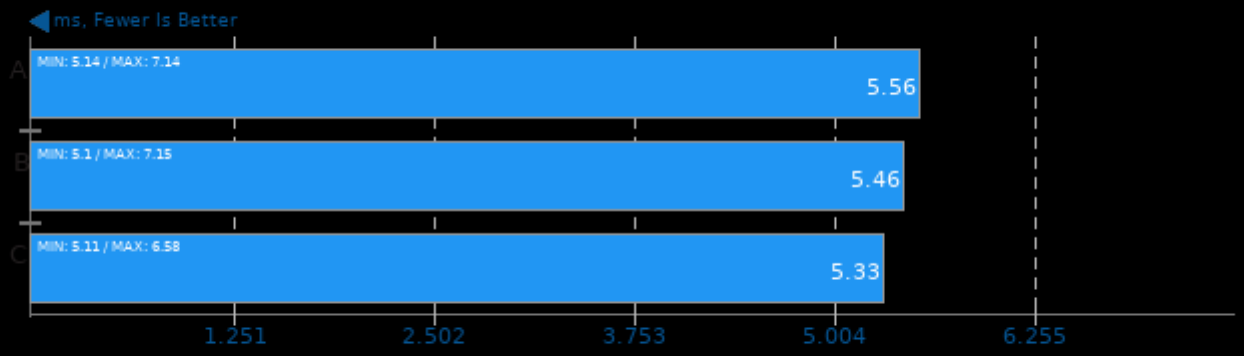
Target: CPU-v3-v3 - Model: mobilenet-v3



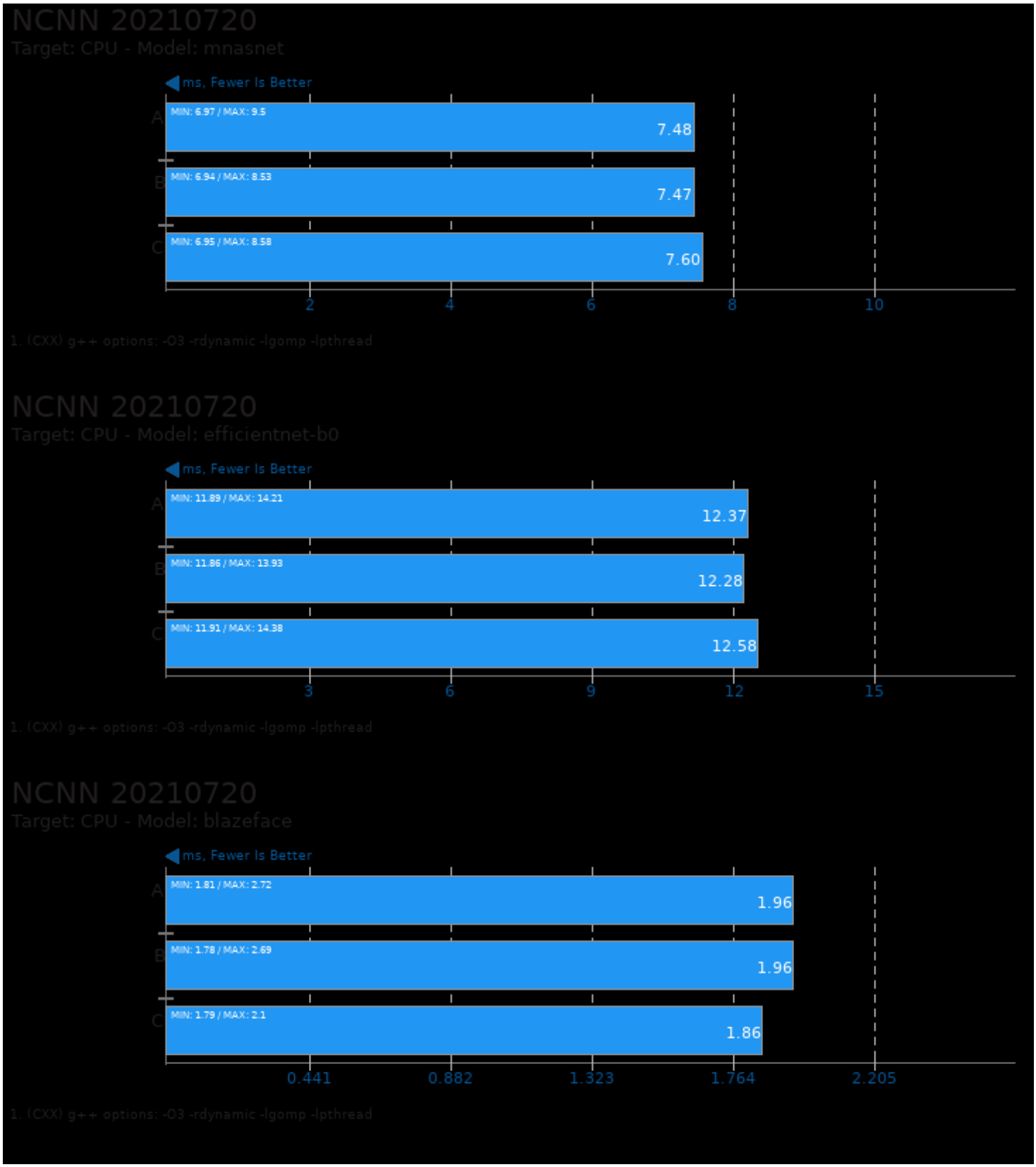
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

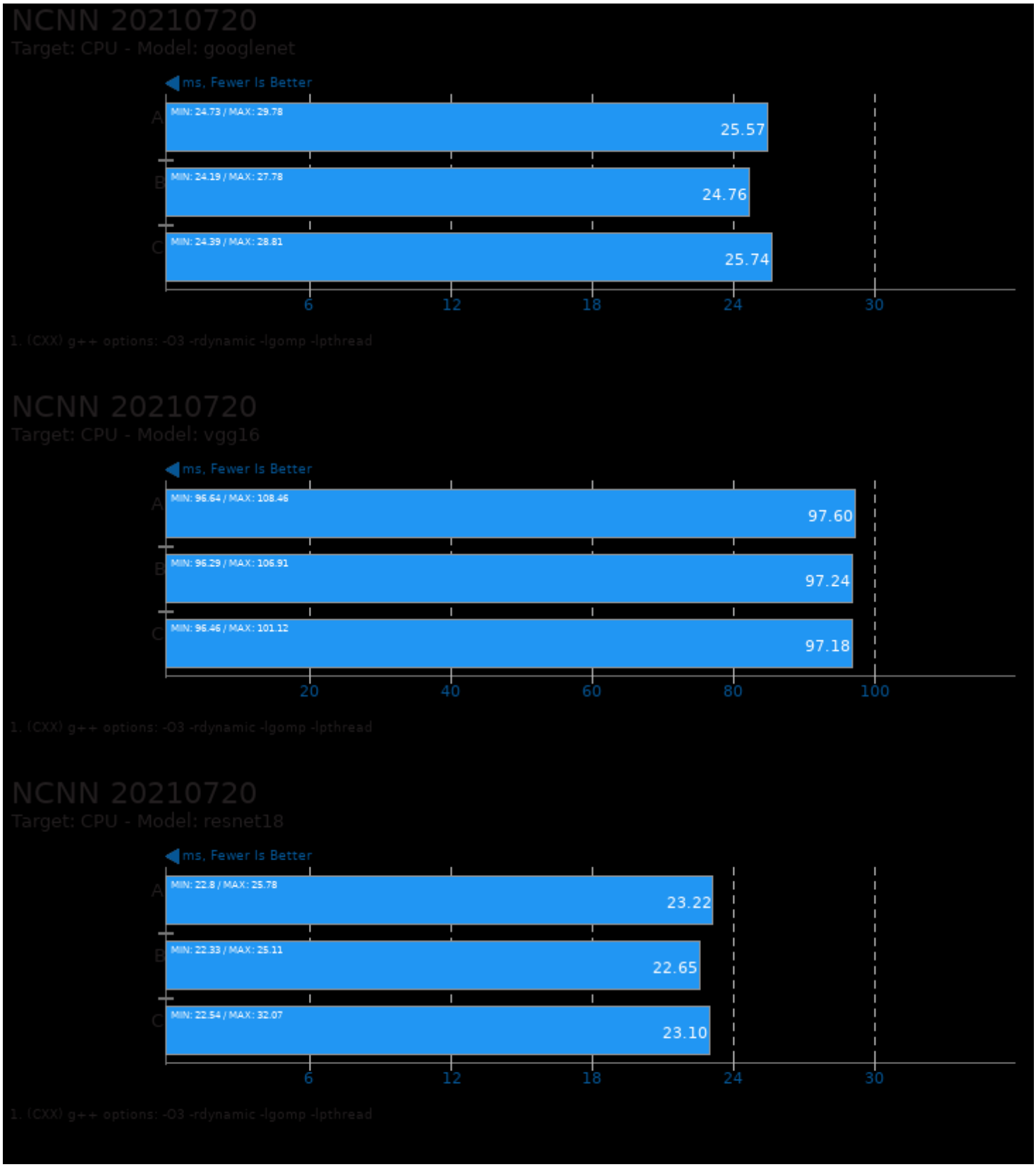
NCNN 20210720

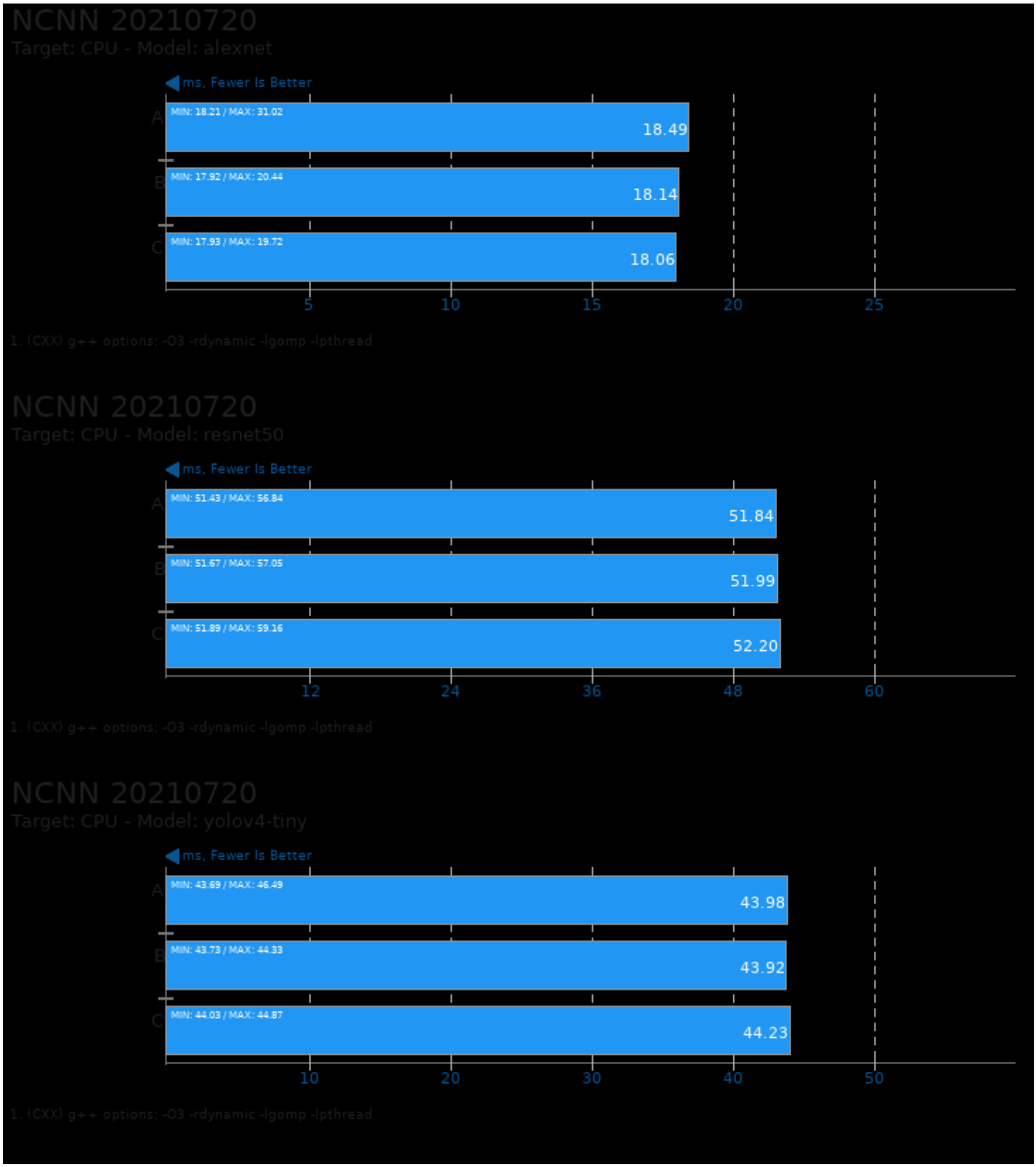
Target: CPU - Model: shufflenet-v2

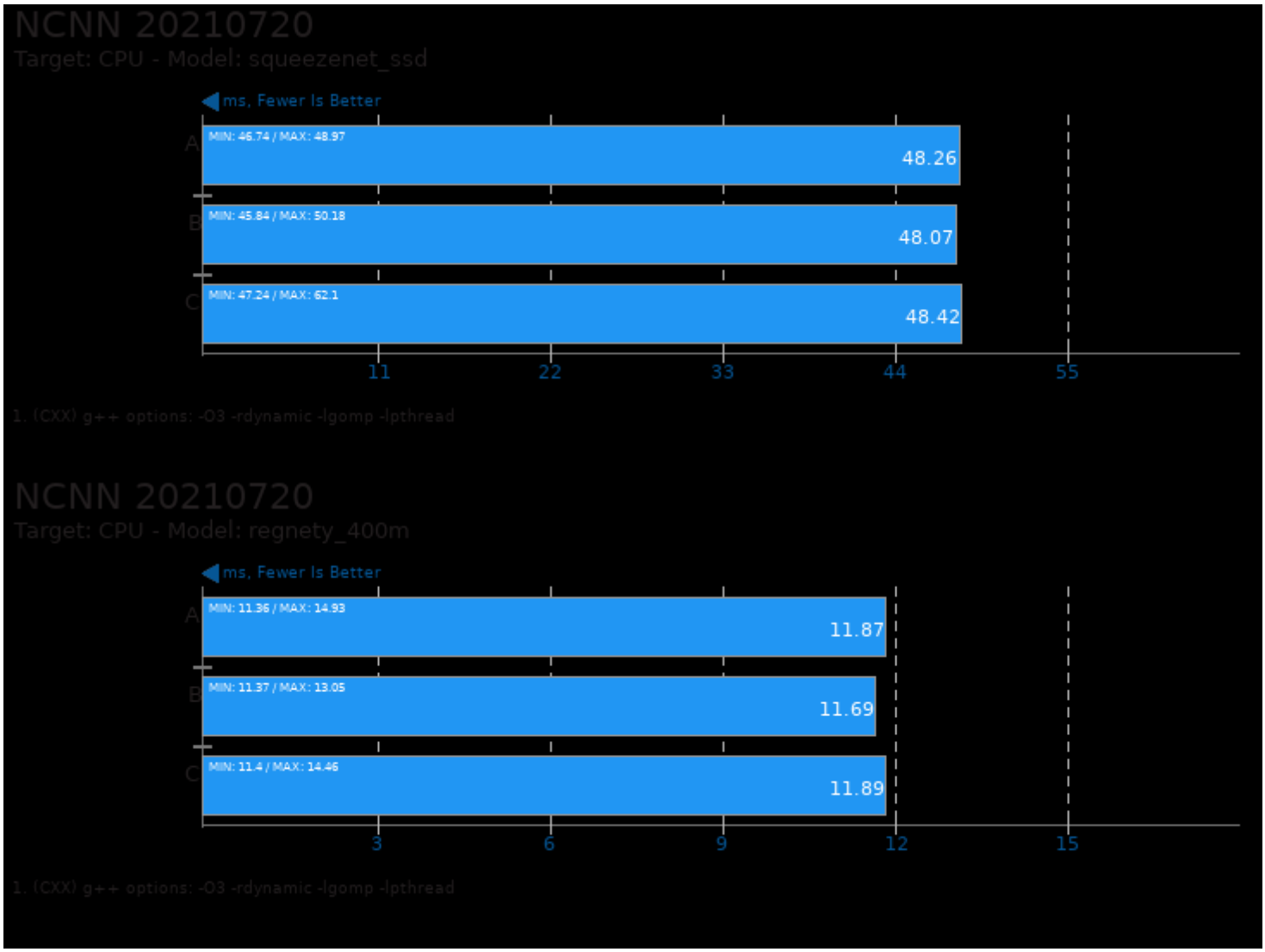


1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

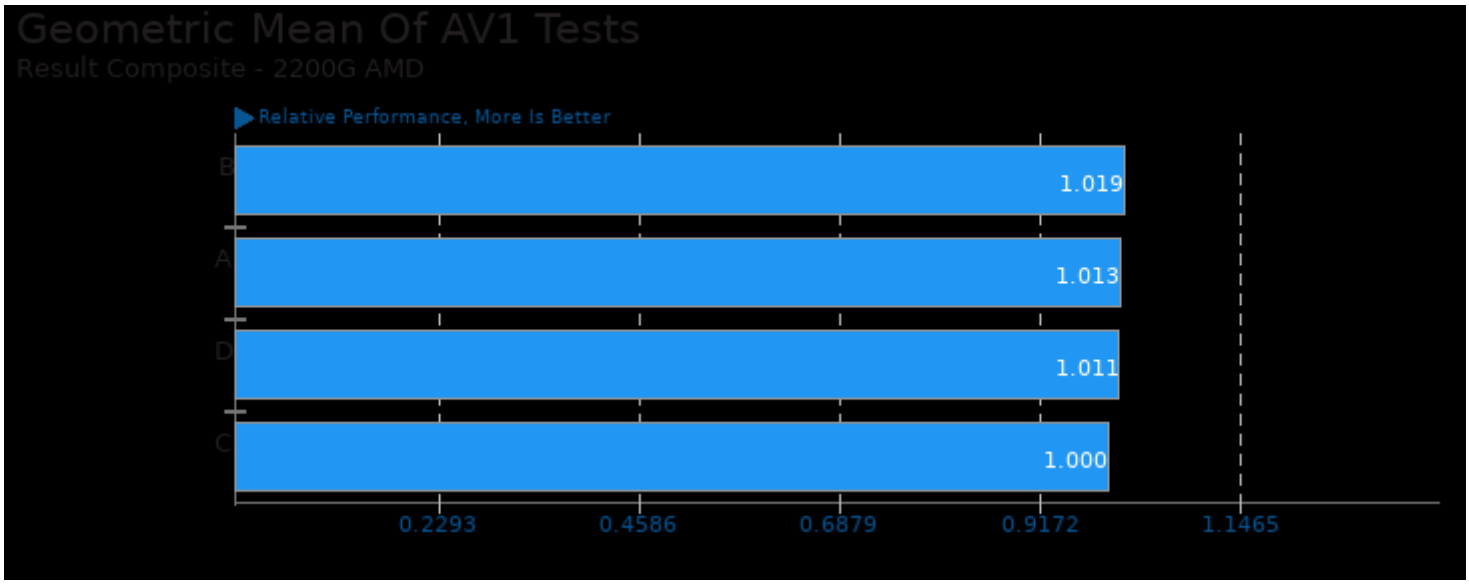

NCNN 20210720
Target: CPU - Model: mnasnet
ms, Fewer Is Better
A
MIN: 6.97 / MAX: 9.5
7.48
B
MIN: 6.94 / MAX: 8.53
7.47
C
MIN: 6.95 / MAX: 8.58
7.60
2
4
6
8
10
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20210720
Target: CPU - Model: efficientnet-b0
ms, Fewer Is Better
A
MIN: 11.89 / MAX: 14.21
12.37
B
MIN: 11.86 / MAX: 13.93
12.28
C
MIN: 11.91 / MAX: 14.38
12.58
3
6
9
12
15
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20210720
Target: CPU - Model: blazeface
ms, Fewer Is Better
A
MIN: 1.81 / MAX: 2.72
1.96
B
MIN: 1.78 / MAX: 2.69
1.96
C
MIN: 1.79 / MAX: 2.1
1.86
0.441
0.882
1.323
1.764
2.205
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread


NCNN 20210720
Target: CPU - Model: googlenet
ms, Fewer Is Better
A
MIN: 24.73 / MAX: 29.78
25.57
B
MIN: 24.19 / MAX: 27.78
24.76
C
MIN: 24.39 / MAX: 28.81
25.74
6
12
18
24
30
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20210720
Target: CPU - Model: vgg16
ms, Fewer Is Better
A
MIN: 96.64 / MAX: 108.46
97.60
B
MIN: 96.29 / MAX: 106.91
97.24
C
MIN: 96.46 / MAX: 101.12
97.18
20
40
60
80
100
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20210720
Target: CPU - Model: resnet18
ms, Fewer Is Better
A
MIN: 22.8 / MAX: 25.78
23.22
B
MIN: 22.33 / MAX: 25.11
22.65
C
MIN: 22.54 / MAX: 32.07
23.10
6
12
18
24
30
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

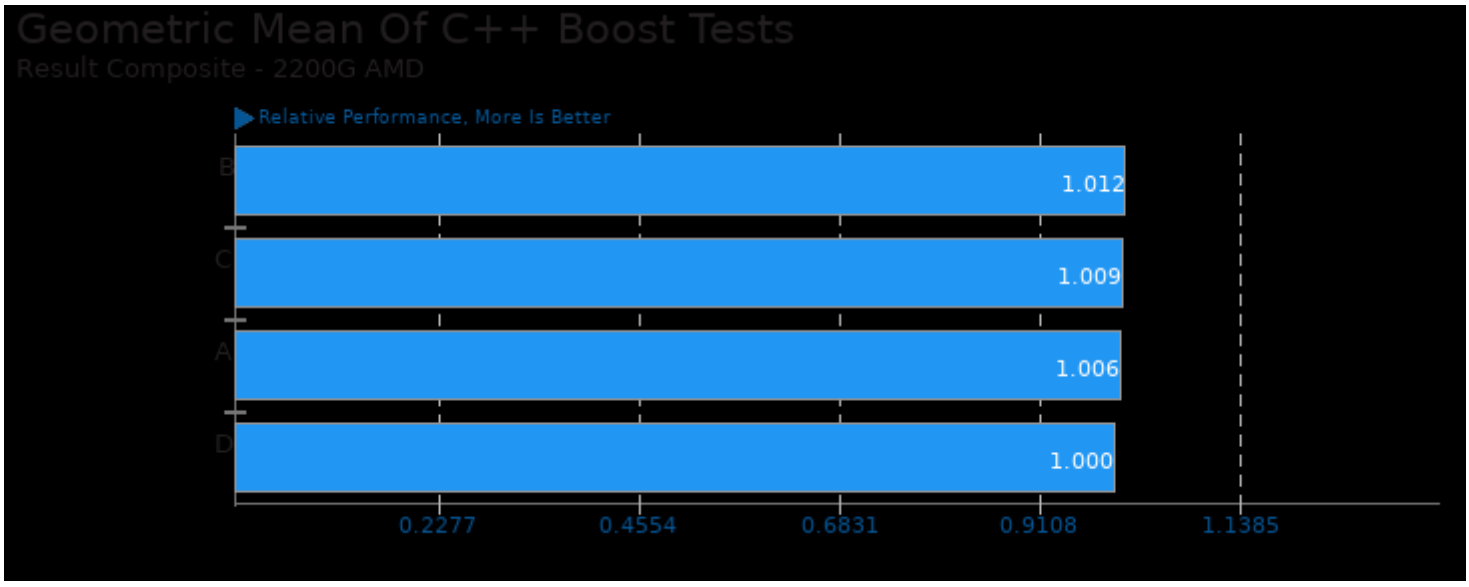

NCNN 20210720
Target: CPU - Model: alexnet
ms, Fewer Is Better
A
MIN: 18.21 / MAX: 31.02
18.49
B
MIN: 17.92 / MAX: 20.44
18.14
C
MIN: 17.93 / MAX: 19.72
18.06
5
10
15
20
25
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20210720
Target: CPU - Model: resnet50
ms, Fewer Is Better
A
MIN: 51.43 / MAX: 56.84
51.84
B
MIN: 51.67 / MAX: 57.05
51.99
C
MIN: 51.89 / MAX: 59.16
52.20
12
24
36
48
60
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20210720
Target: CPU - Model: yolov4-tiny
ms, Fewer Is Better
A
MIN: 43.69 / MAX: 46.49
43.98
B
MIN: 43.73 / MAX: 44.33
43.92
C
MIN: 44.03 / MAX: 44.87
44.23
10
20
30
40
50
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread


NCNN 20210720
Target: CPU - Model: squeezenet_ssd
ms, Fewer Is Better
A
MIN: 46.74 / MAX: 48.97
48.26
B
MIN: 45.84 / MAX: 50.18
48.07
C
MIN: 47.24 / MAX: 62.1
48.42
11
22
33
44
55
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20210720
Target: CPU - Model: regnety_400m
ms, Fewer Is Better
A
MIN: 11.36 / MAX: 14.93
11.87
B
MIN: 11.37 / MAX: 13.05
11.69
C
MIN: 11.4 / MAX: 14.46
11.89
3
6
9
12
15
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

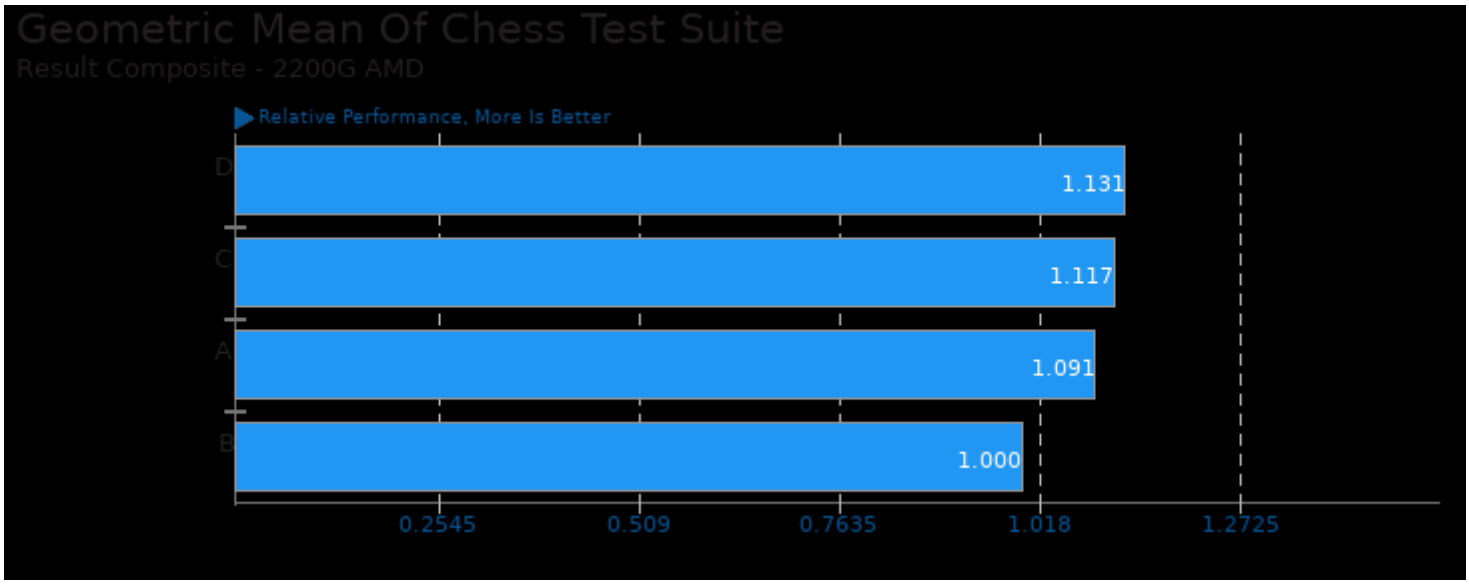
These geometric means are based upon test groupings / test suites for this result file.



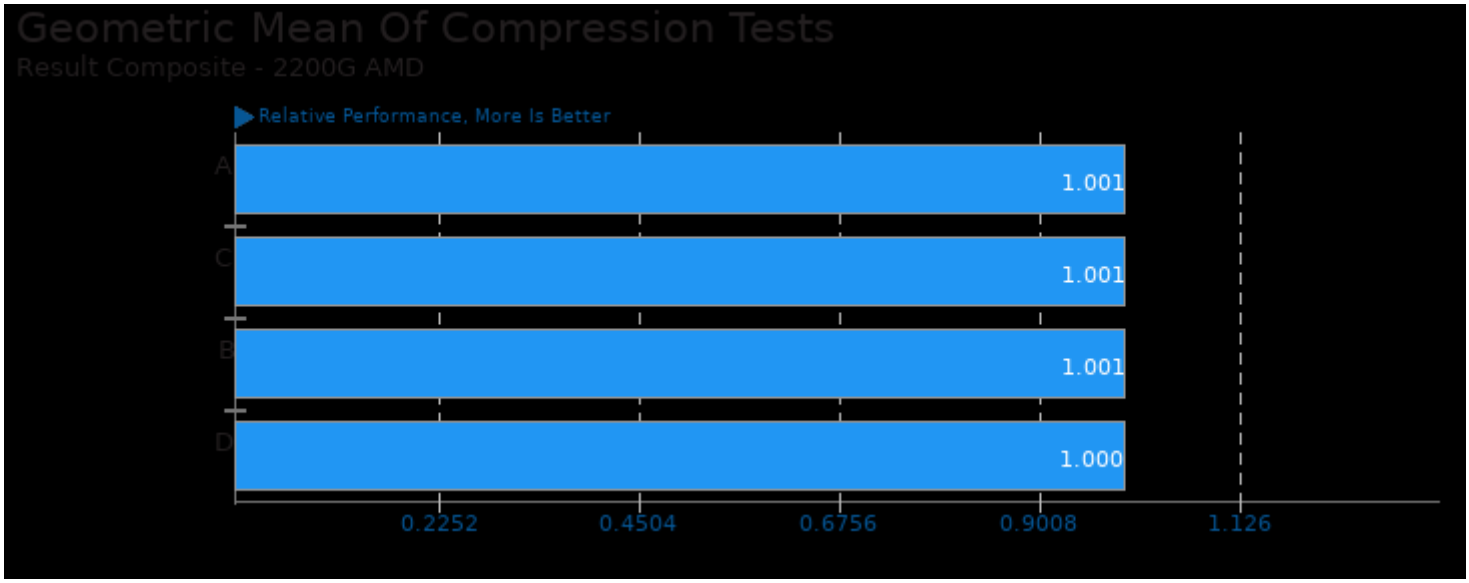
Geometric mean based upon tests: pts/dav1d, pts/aom-av1, pts/svt-av1 and pts/rav1e



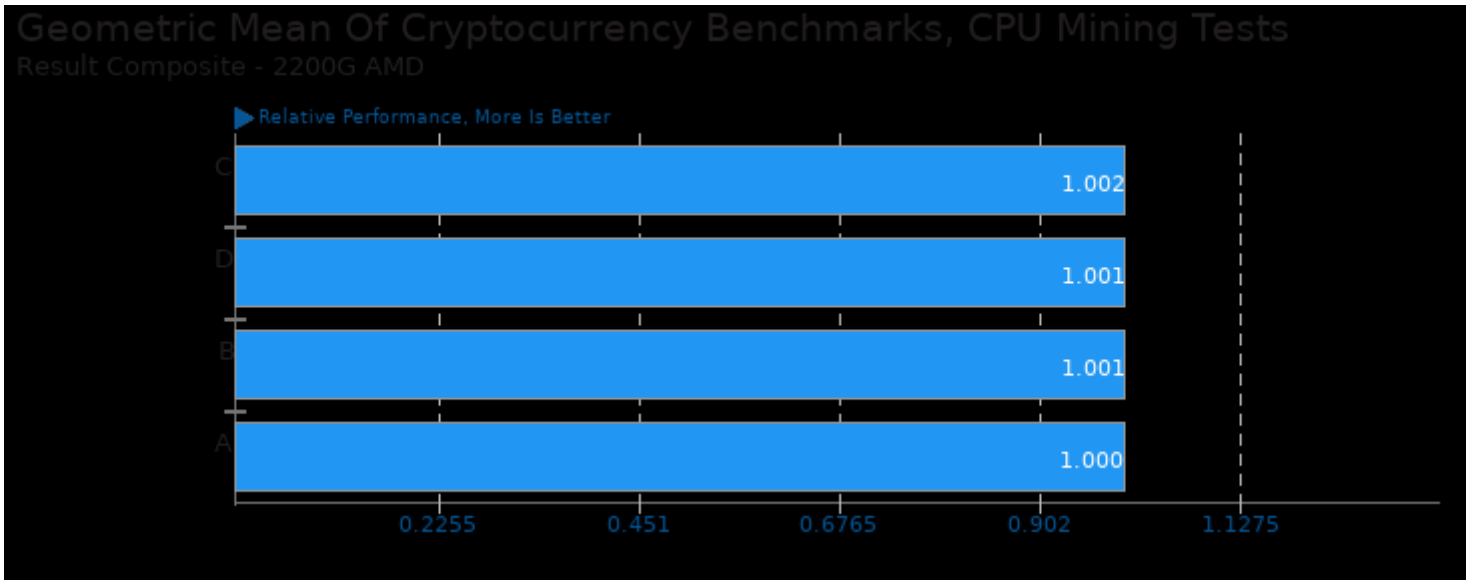
Geometric mean based upon tests: pts/quantlib and pts/srsran



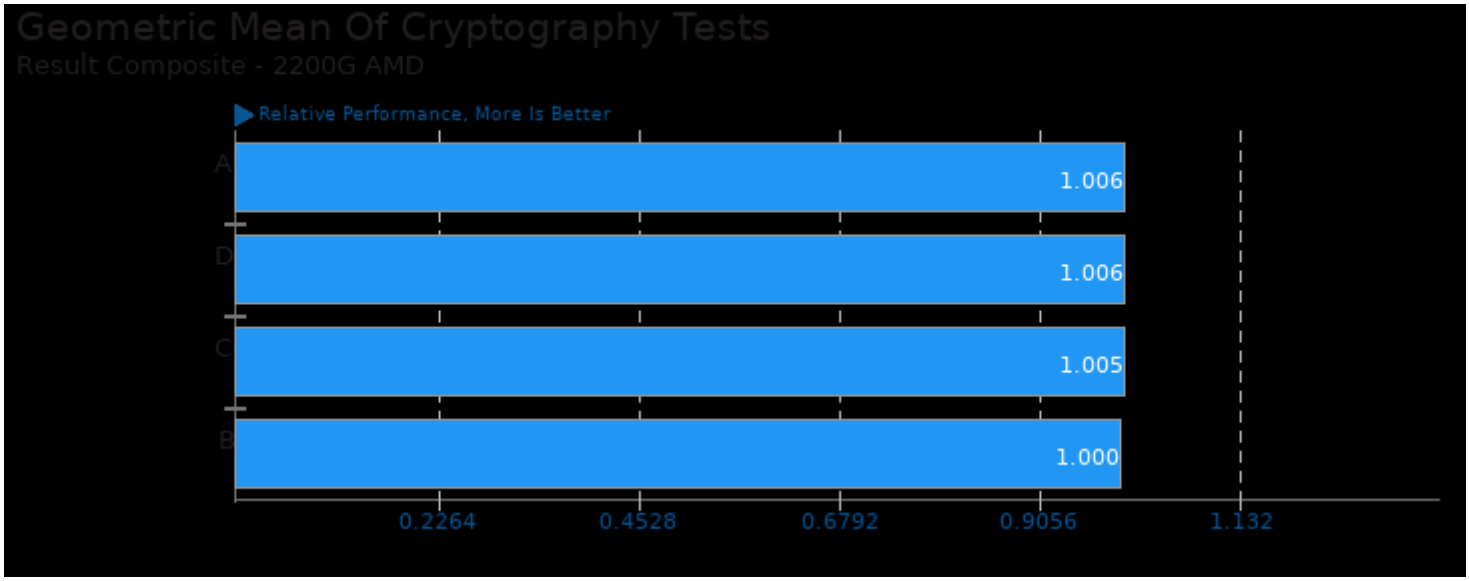
Geometric mean based upon tests: pts/lczero and pts/stockfish



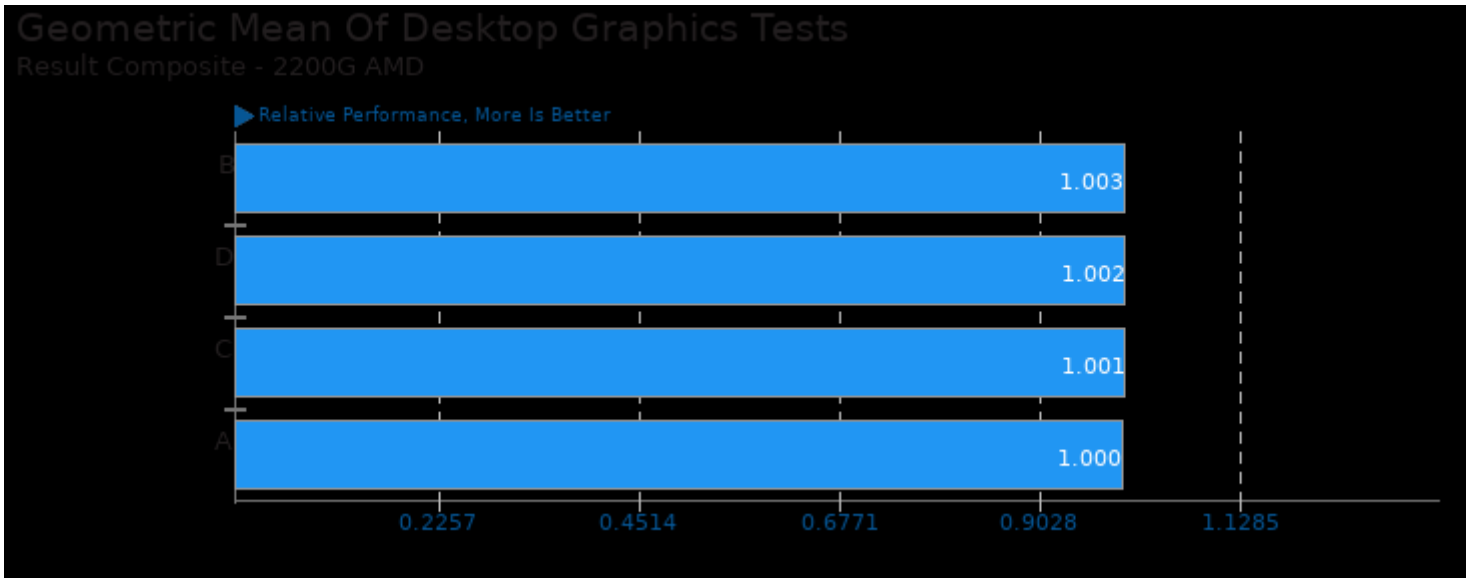
Geometric mean based upon tests: pts/compress-7zip, pts/compress-zstd, pts/compress-lz4 and pts/blosc



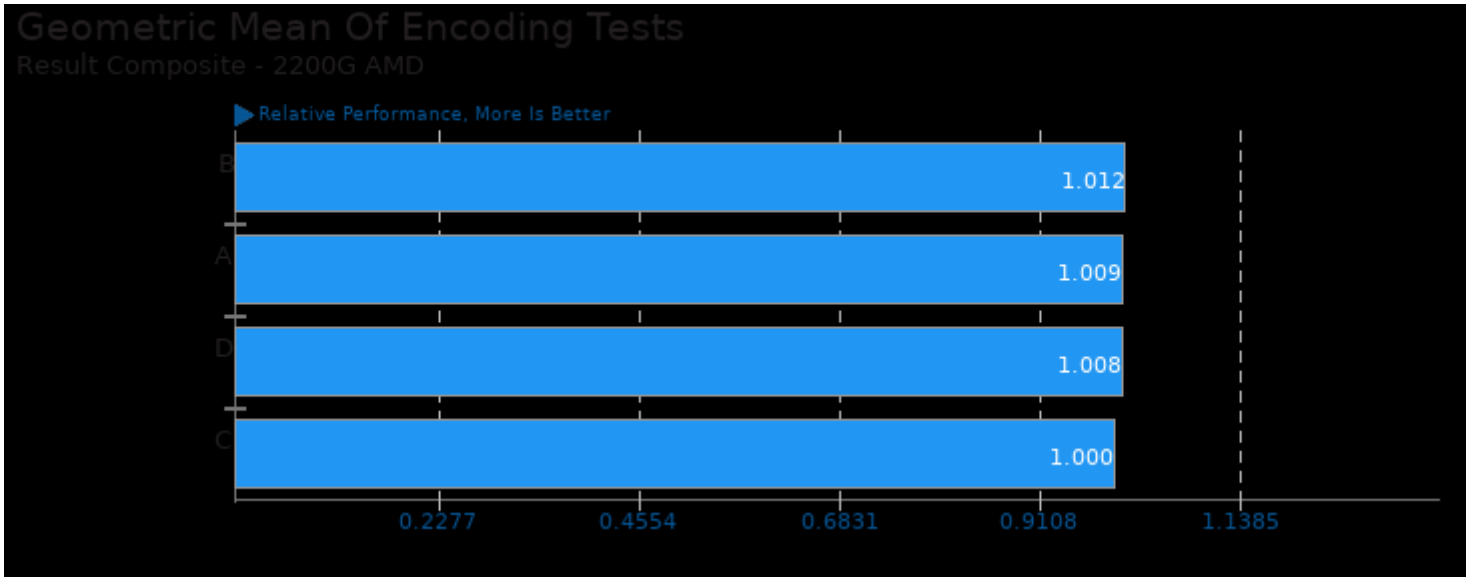
Geometric mean based upon tests: pts/cpuminer-opt and pts/xmrig



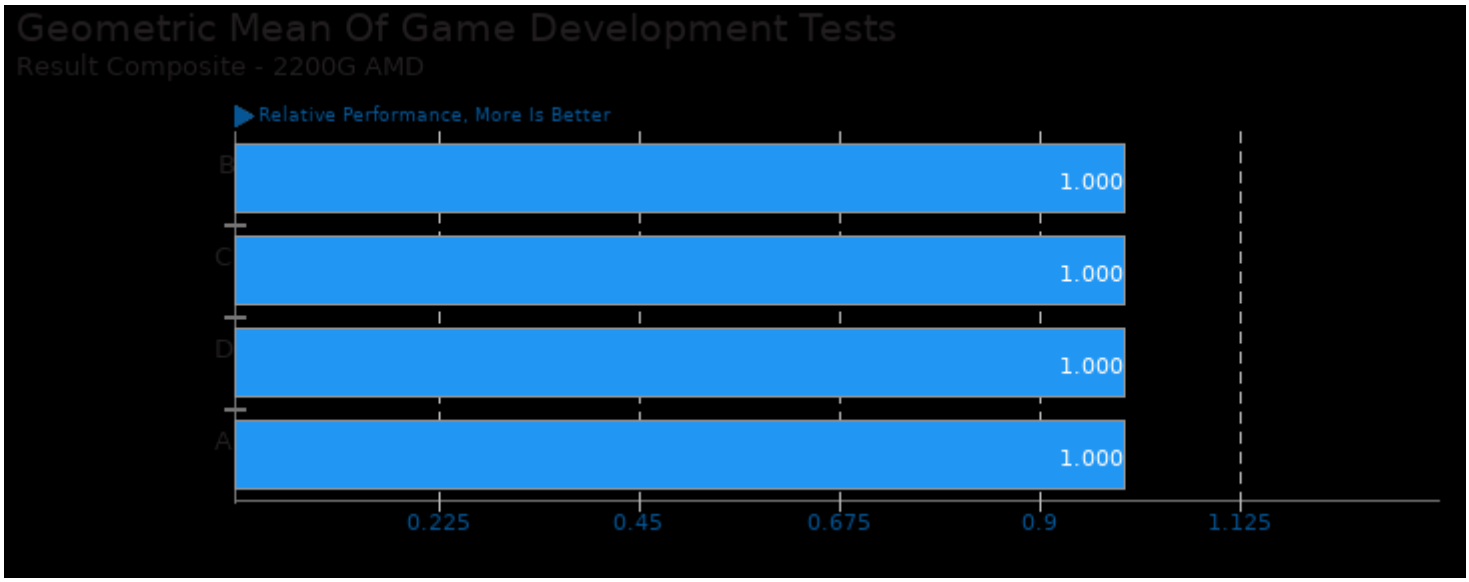
Geometric mean based upon tests: pts/openssl, pts/gcrypt, pts/blake2, pts/botan, pts/securemark, pts/cpuminer-opt and pts/xmrig



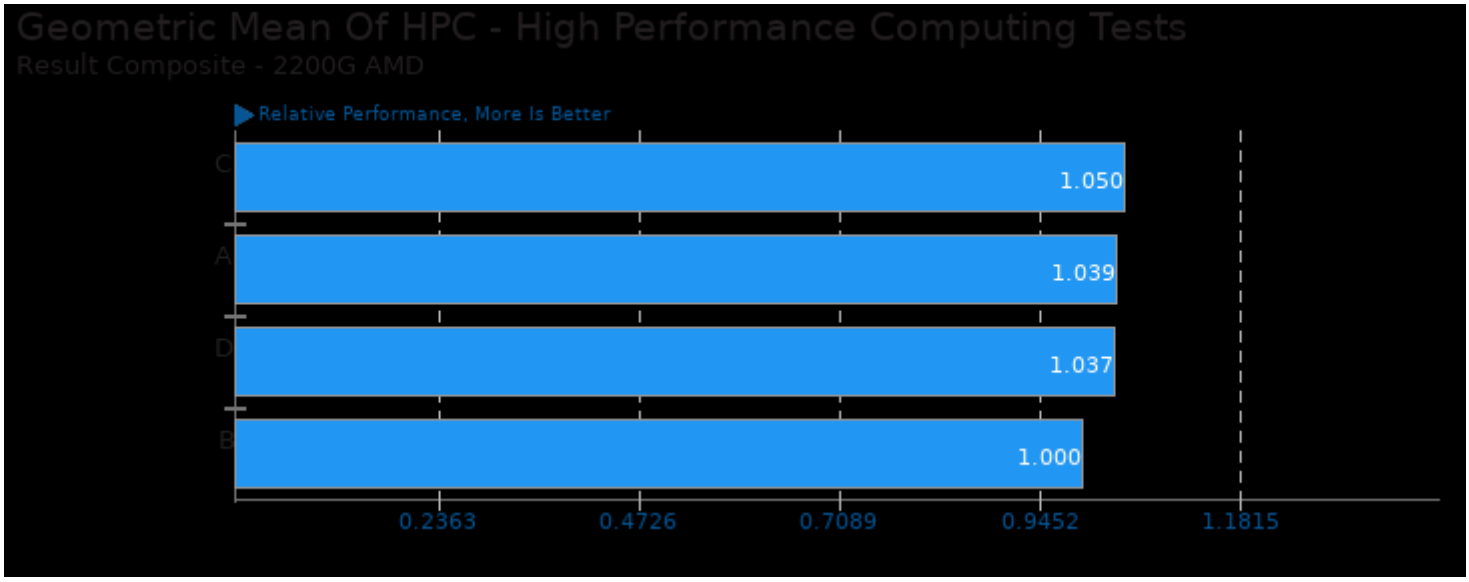
Geometric mean based upon tests: pts/paraview and pts/glmark2



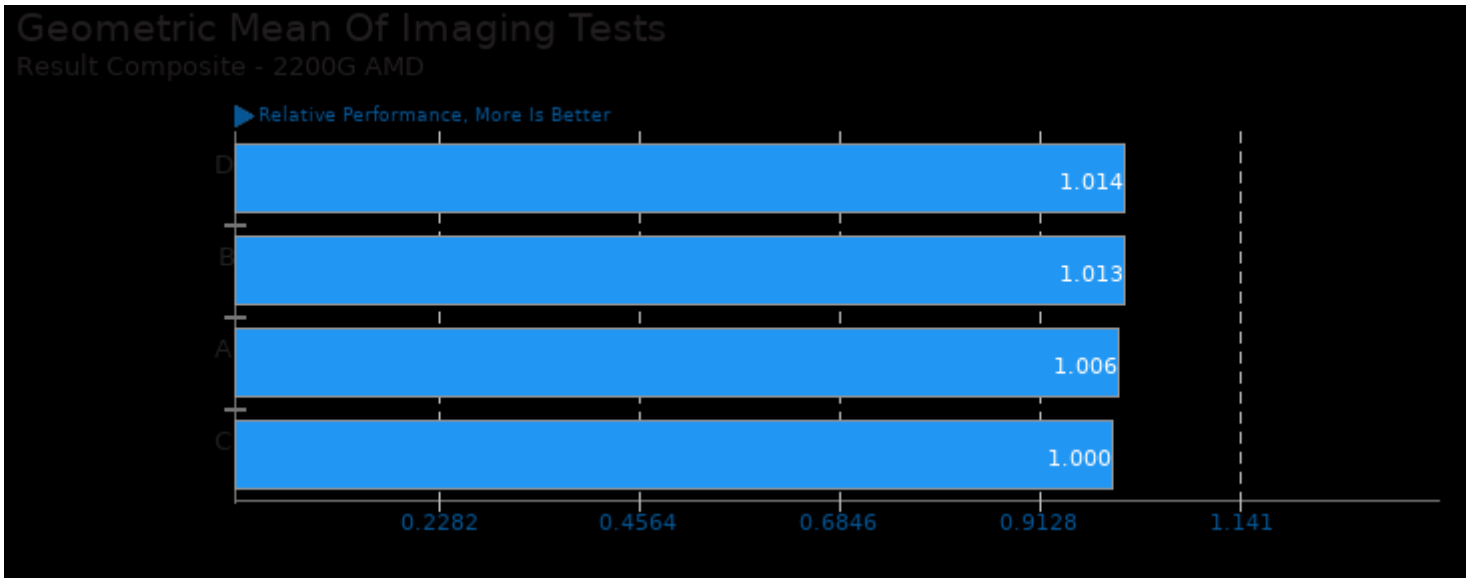
Geometric mean based upon tests: pts/encode-flac, pts/encode-opus, pts/svt-vp9, pts/svt-hevc, pts/kvazaar, pts/vpxenc, pts/dav1d, pts/aom-av1, pts/svt-av1 and pts/rav1e



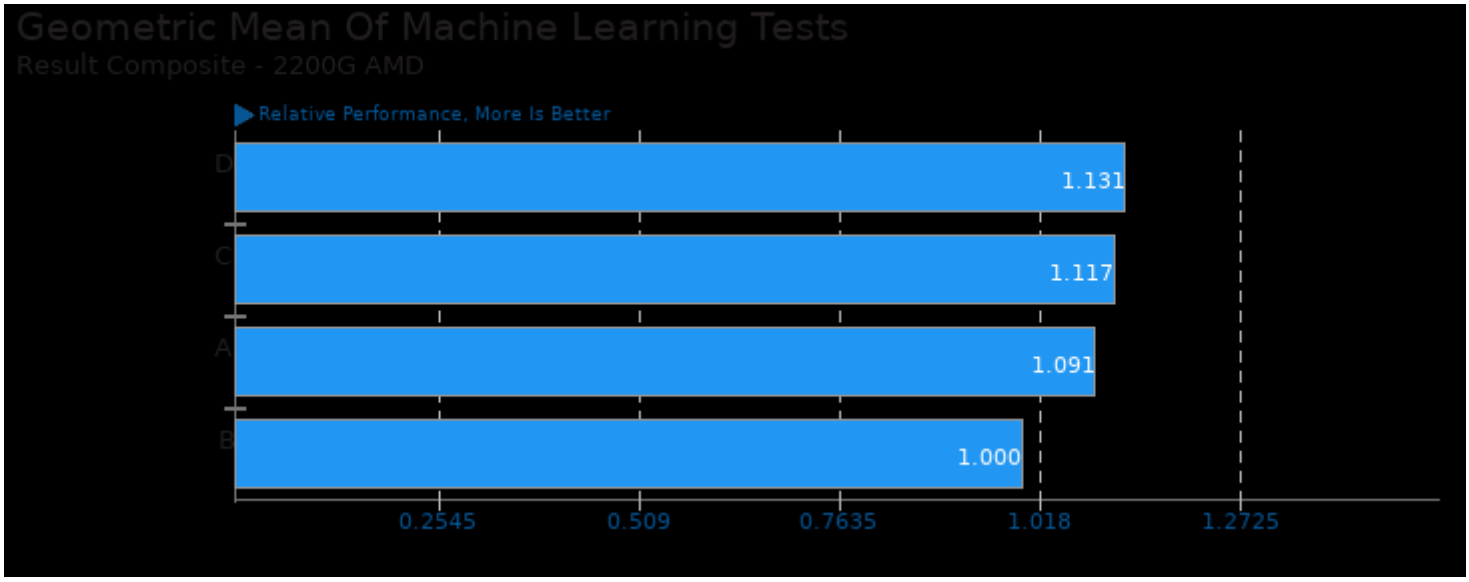
Geometric mean based upon tests: pts/basis, pts/astcenc, pts/etcpak, pts/toktx, pts/build-godot and pts/oidn



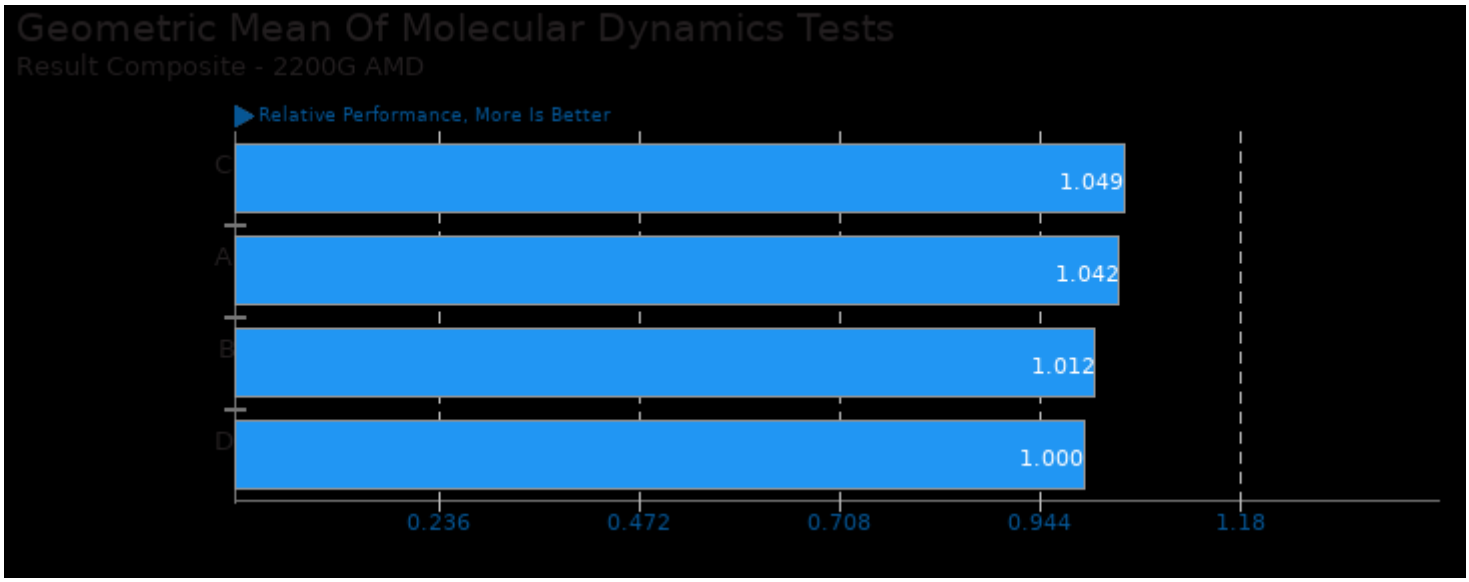
Geometric mean based upon tests: pts/askap, pts/amg, pts/namd, pts/gromacs, pts/incompact3d, pts/hmmer, pts/mnn, pts/ncnn, pts/tensorflow-lite and pts/lczero



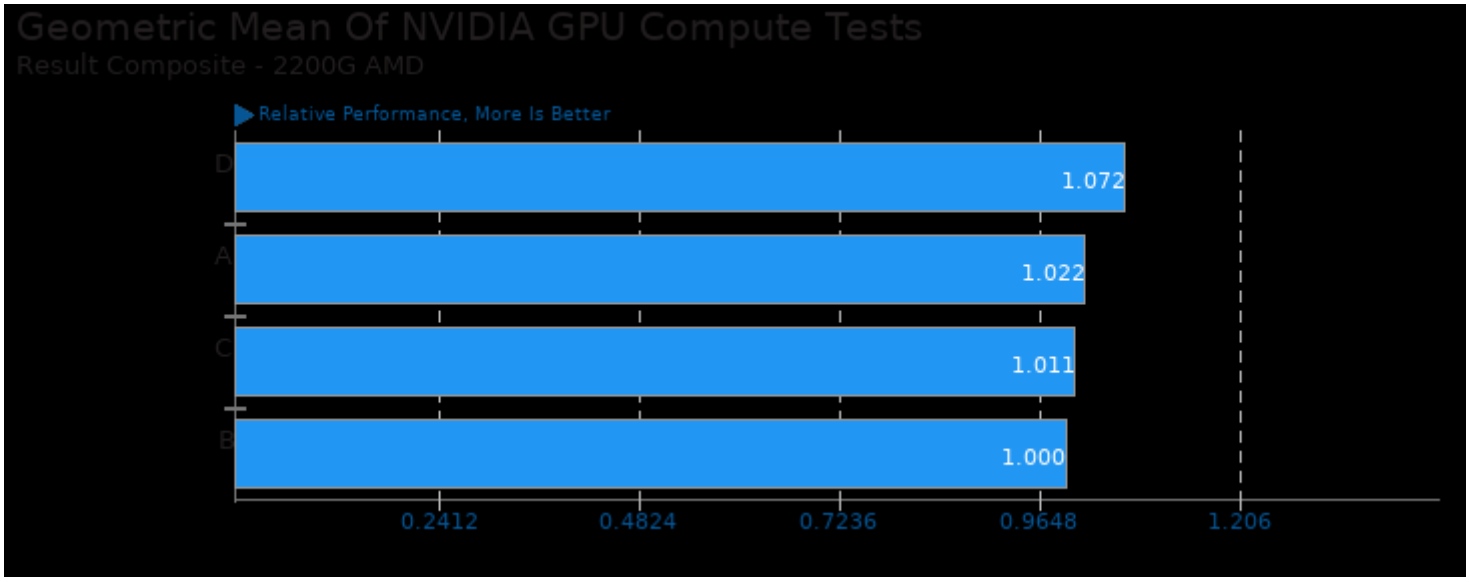
Geometric mean based upon tests: pts/openjpeg, pts/jpegxl, pts/jpegxl-decode and system/gimp



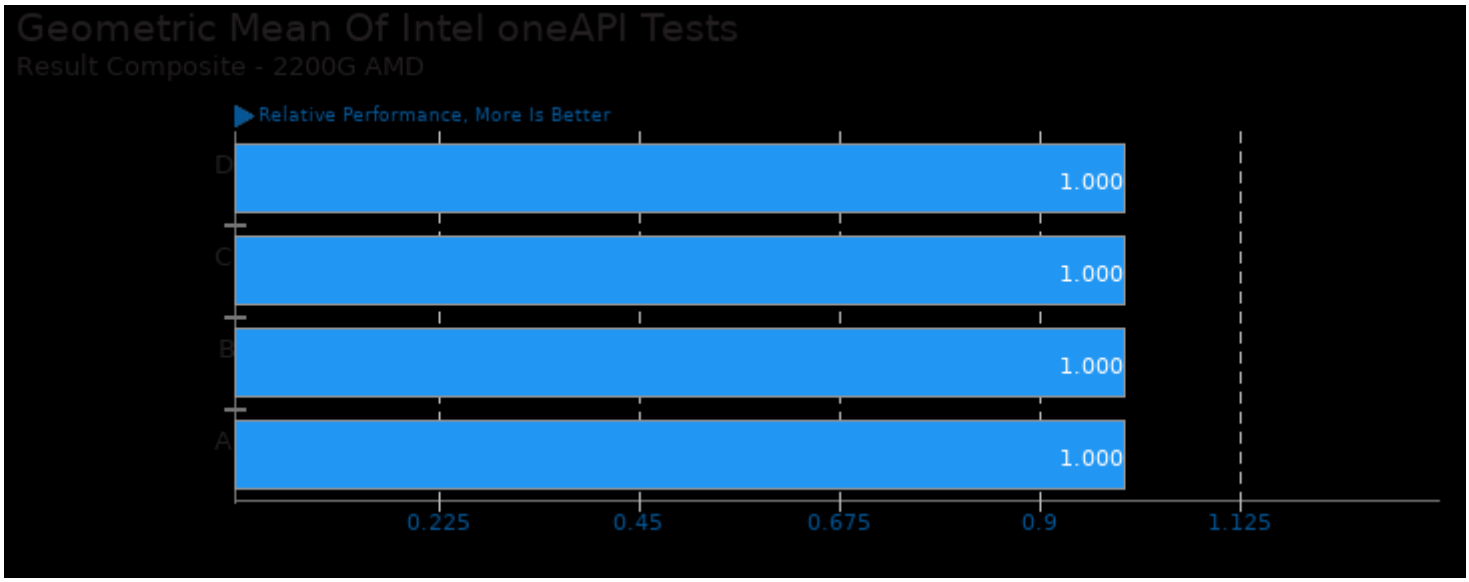
Geometric mean based upon tests: pts/mnn, pts/ncnn, pts/tensorflow-lite and pts/lczero



Geometric mean based upon tests: pts/namd, pts/gromacs and pts/incompact3d



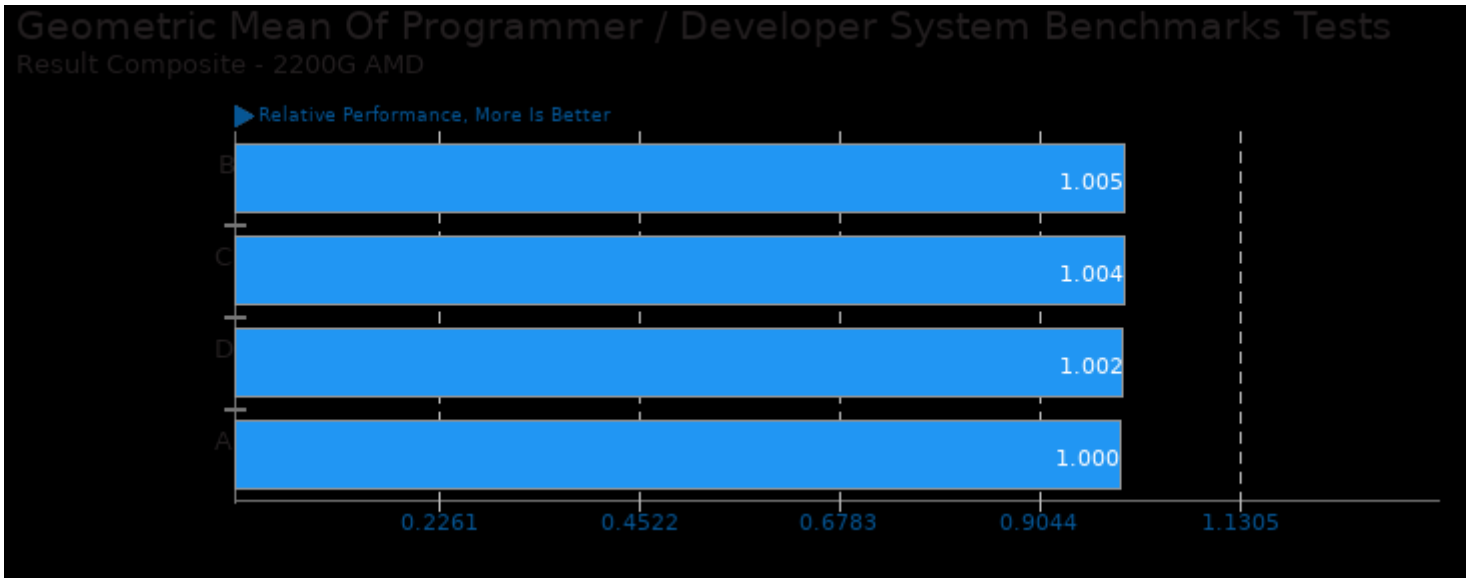
Geometric mean based upon tests: pts/gromacs, pts/luxcorerender, pts/lczero and pts/ncnn



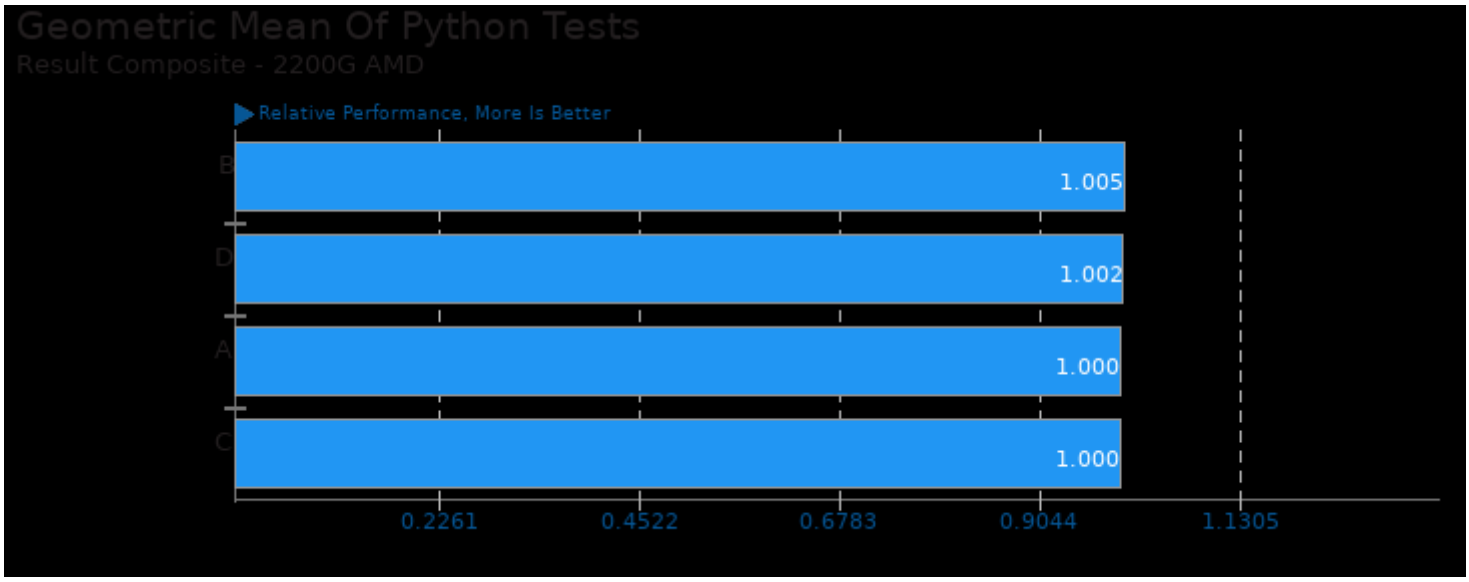
Geometric mean based upon tests: pts/oidn and pts/tungsten



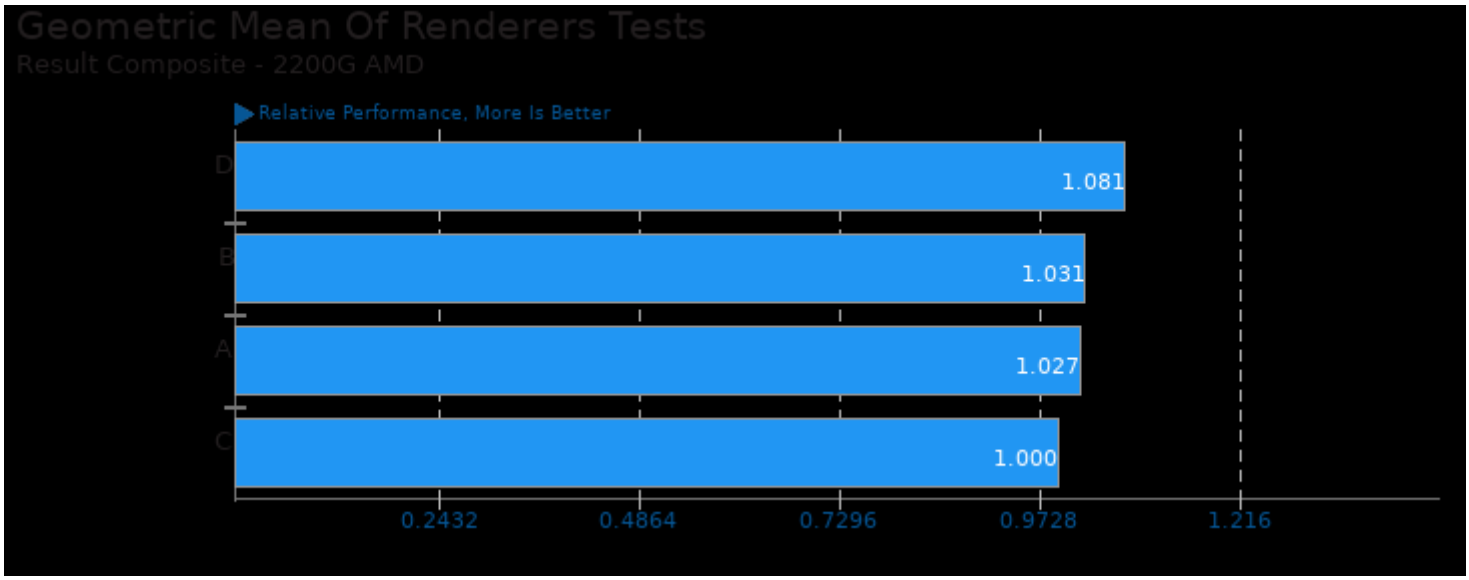
Geometric mean based upon tests: pts/amg, pts/hmmer, pts/incompact3d, pts/askap and pts/gromacs



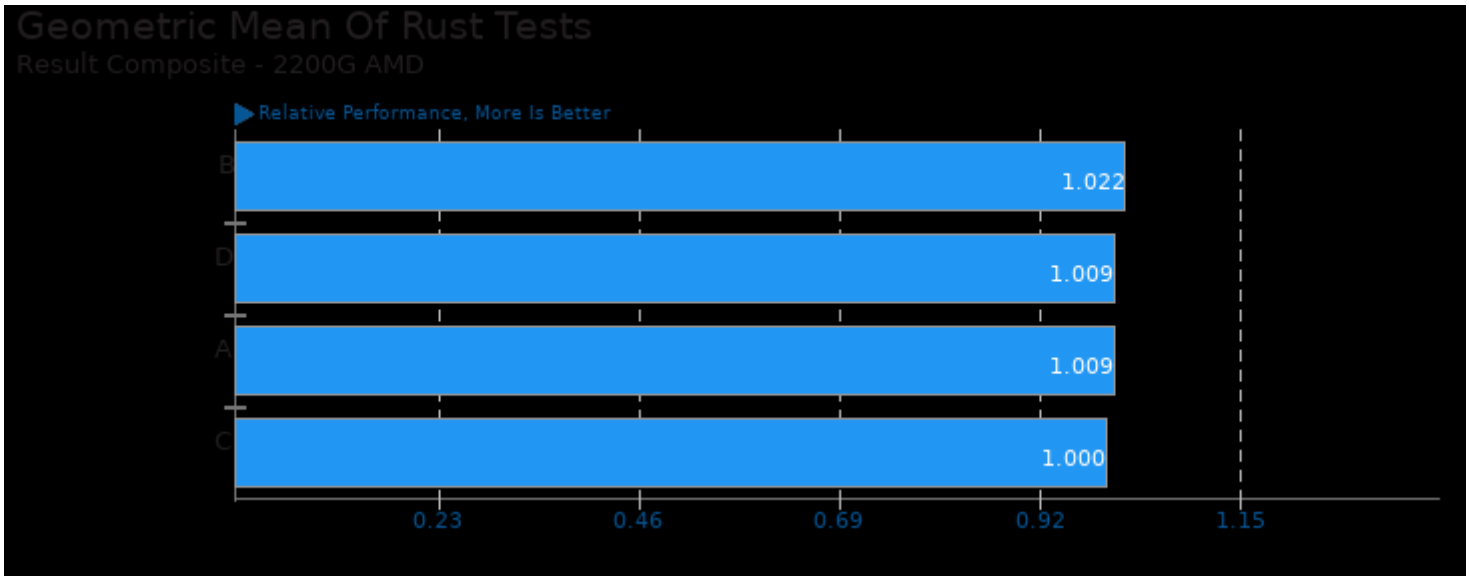
Geometric mean based upon tests: pts/simdjson, pts/blosc, pts/compress-zstd, pts/build-linux-kernel, pts/build-gcc, pts/build-gdb, pts/build-llvm, pts/build-ffmpeg, pts/build-godot, pts/build-wasmer, pts/build-nodejs, pts/build-mesa and pts/amg



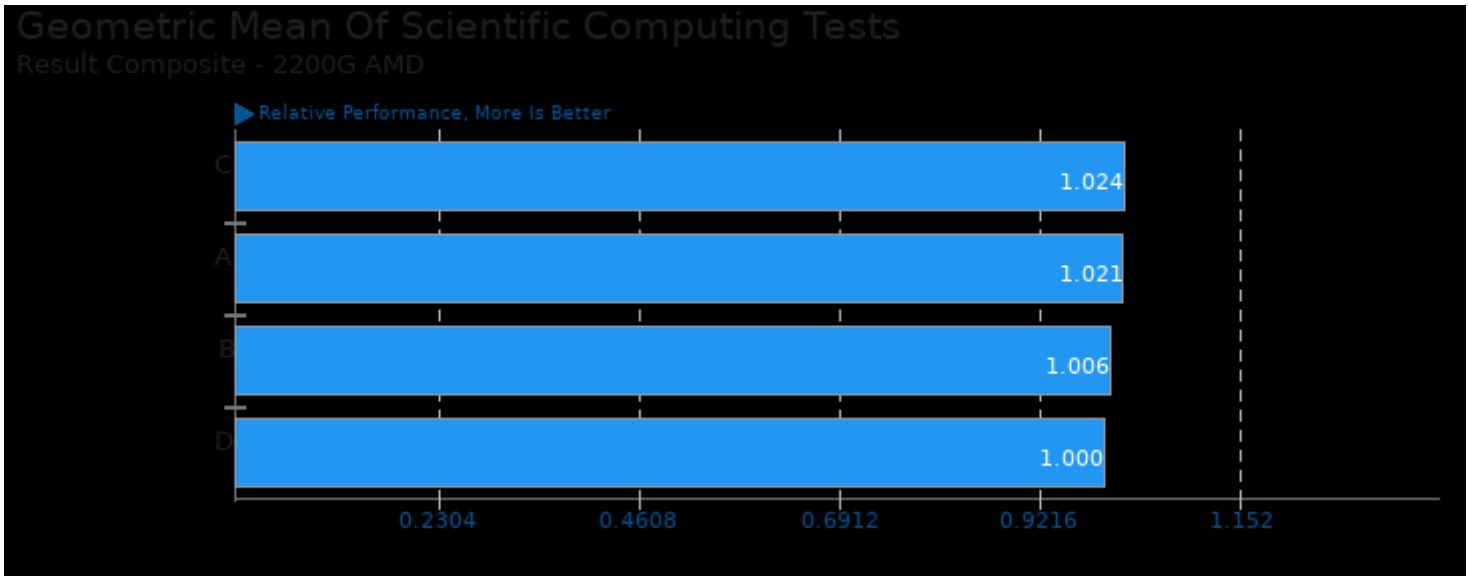
Geometric mean based upon tests: pts/glmark2, pts/paraview, system/gnuradio, pts/build-godot, pts/build-llvm, pts/build-mesa, pts/build-nodejs, pts/cython-bench and pts/vosk



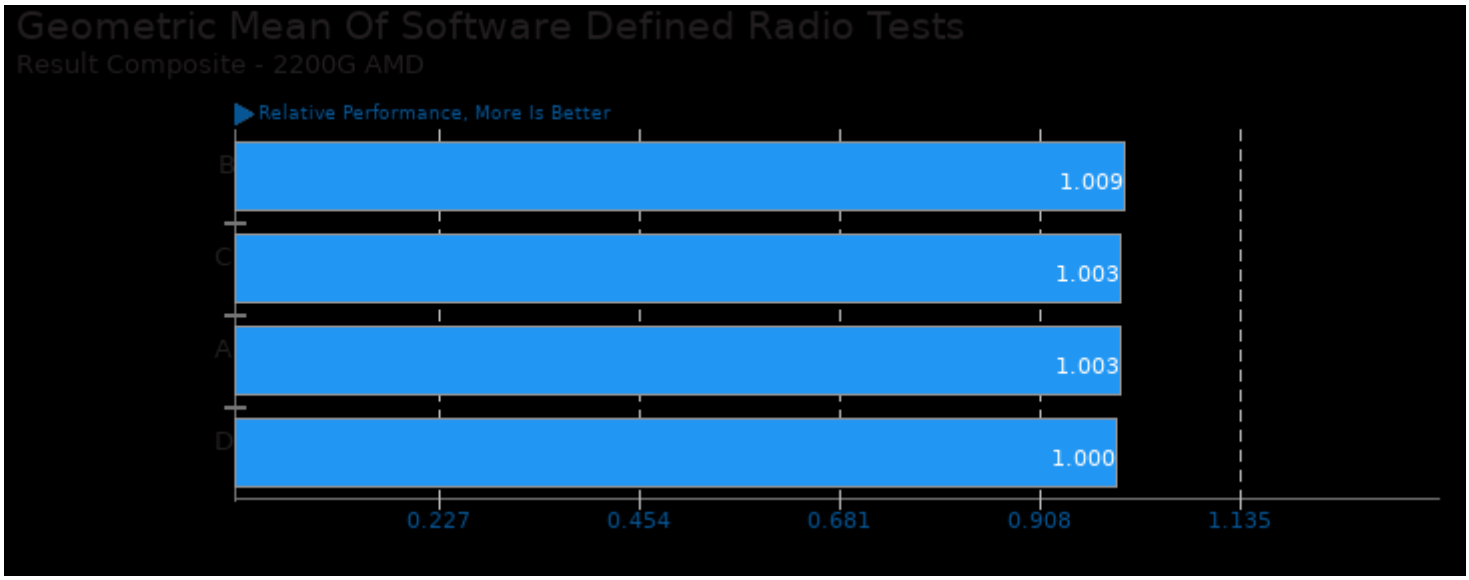
Geometric mean based upon tests: pts/c-ray, pts/tachyon, pts/tungsten, pts/luxcorerender and pts/smallpt



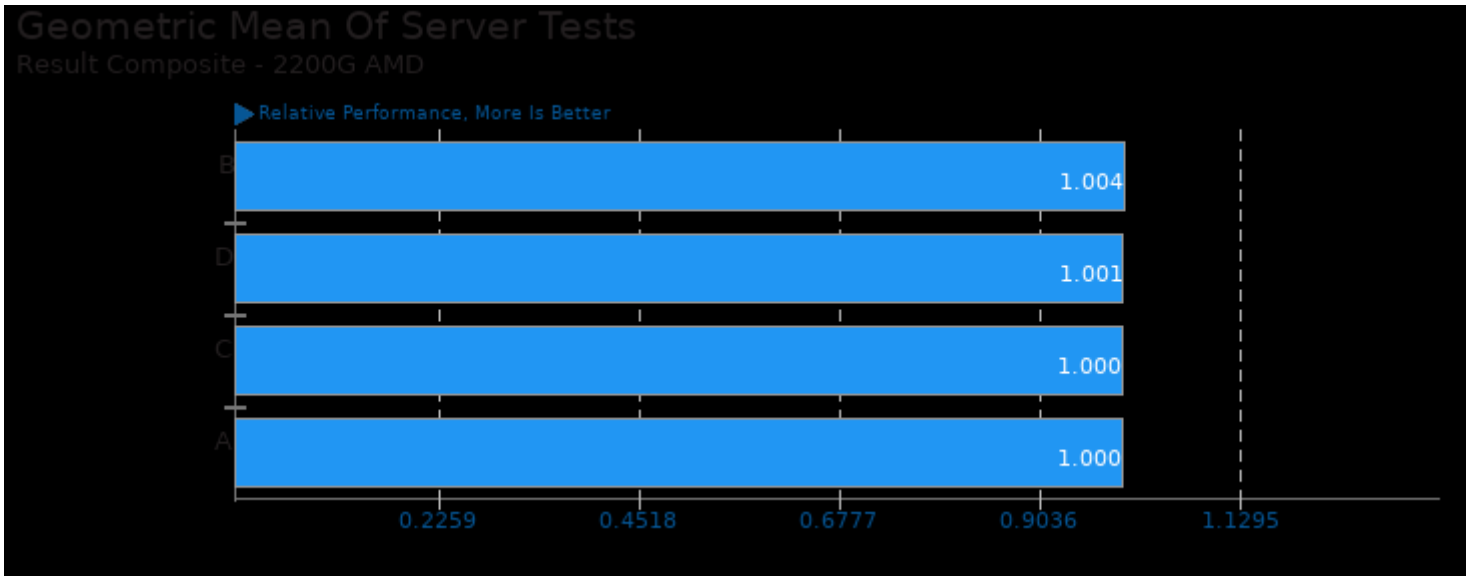
Geometric mean based upon tests: pts/rav1e and pts/build-wasmer



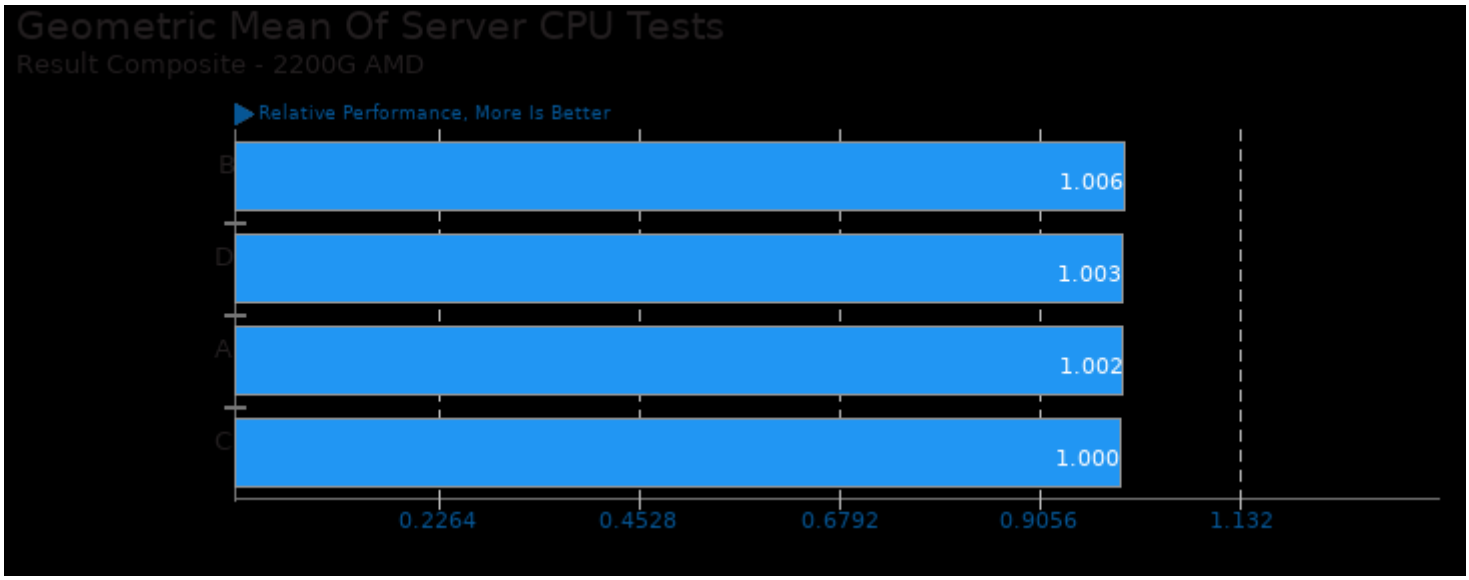
Geometric mean based upon tests: pts/amg, pts/namd, pts/gromacs, pts/incompact3d and pts/hmmer



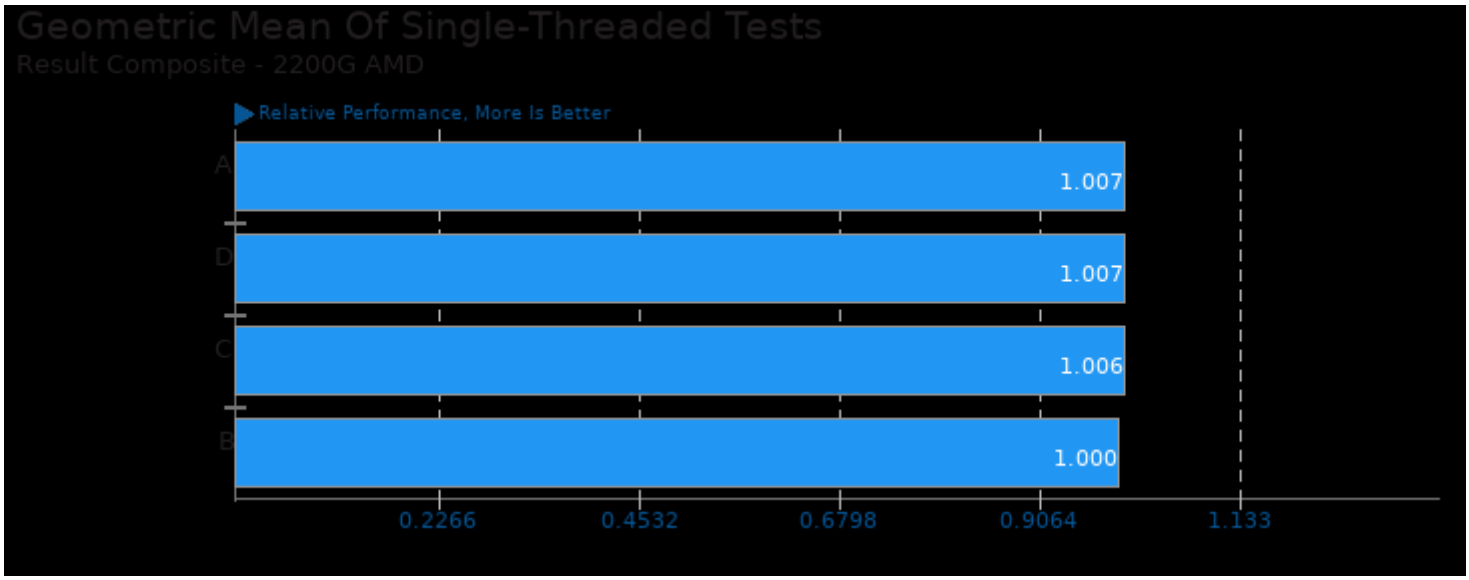
Geometric mean based upon tests: pts/liquid-dsp, pts/srsran, pts/luaradio and system/gnuradio



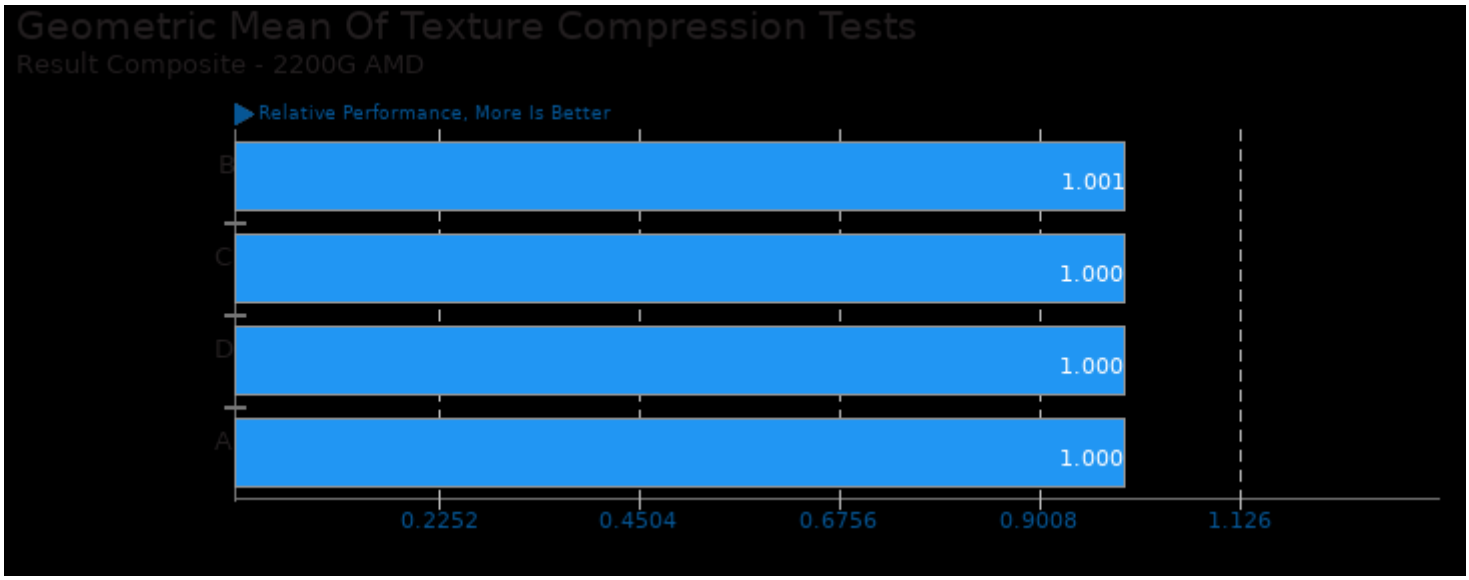
Geometric mean based upon tests: pts/keydb, pts/openssl and pts/simdjson



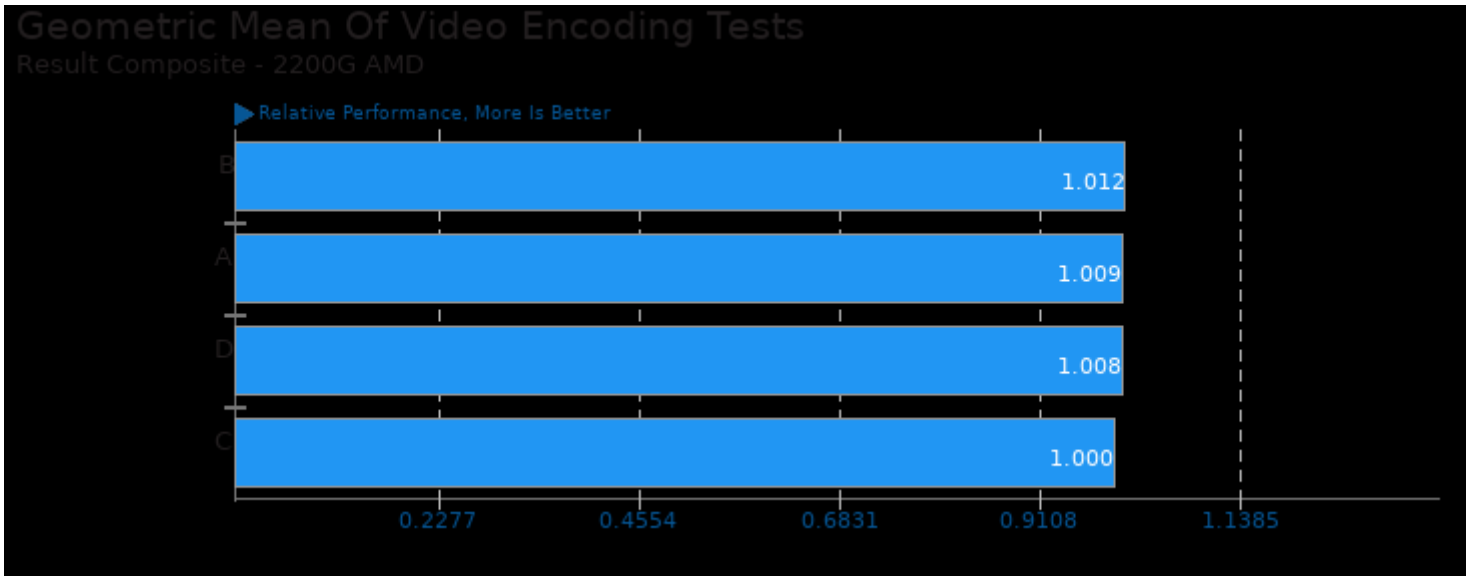
Geometric mean based upon tests: pts/namd, pts/svt-av1, pts/svt-hevc, pts/svt-vp9, pts/dav1d, pts/compress-7zip, pts/stockfish, pts/build-gcc, pts/build-linux-kernel, pts/build-llvm, pts/c-ray, pts/compress-zstd, pts/openssl, system/gimp, pts/stress-ng, pts/cython-bench and pts/cpuminer-opt



Geometric mean based upon tests: pts/blake2, pts/gmpbench, pts/botan and pts/encode-flac



Geometric mean based upon tests: pts/basis, pts/astcenc, pts/etcpak and pts/toktx



Geometric mean based upon tests: pts/svt-vp9, pts/svt-hevc, pts/kvazaar, pts/vpxenc, pts/dav1d, pts/aom-av1, pts/svt-av1 and pts/rav1e

This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 04:38.