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3950X sep

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

Automated Executive Summary

1 had the most wins, coming in first place for 44% of the tests.

Based on the geometric mean of all complete results, the fastest (1) was 1.009x the speed of the slowest (2A). 3 was 0.994x the speed of 1, 2 was 0.999x the speed of 3, 2A was 0.998x the speed of 2.

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

Stress-NG (Test: Context Switching) at 1.291x
Stress-NG (Test: Socket Activity) at 1.112x
yquake2 (Renderer: OpenGL 1.x - Resolution: 1920 x 1080) at 1.095x
simdjson (Throughput Test: DistinctUserID) at 1.062x
Stress-NG (Test: Glibc C String Functions) at 1.059x
yquake2 (Renderer: Software CPU - Resolution: 1920 x 1080) at 1.056x
simdjson (Throughput Test: PartialTweets) at 1.054x
Stress-NG (Test: Matrix Math) at 1.049x
Stress-NG (Test: SENDFILE) at 1.046x

JPEG XL libjxl (Input: PNG - Encode Speed: 8) at 1.045x.

Test Systems:

1

2

2A

3

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

OS: Ubuntu 20.04, Kernel: 5.11.0-27-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.9, OpenGL: 4.6 Mesa 20.0.8 (LLVM 10.0.0), Vulkan: 1.2.128, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-9-HskZEa/gcc-9-9.3.0/debian/tmp-nvptx/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand (Boost: Enabled) - CPU Microcode: 0x8701021
Graphics Notes: GLAMOR
Python Notes: Python 2.7.18 + Python 3.8.10
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional STIBP: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

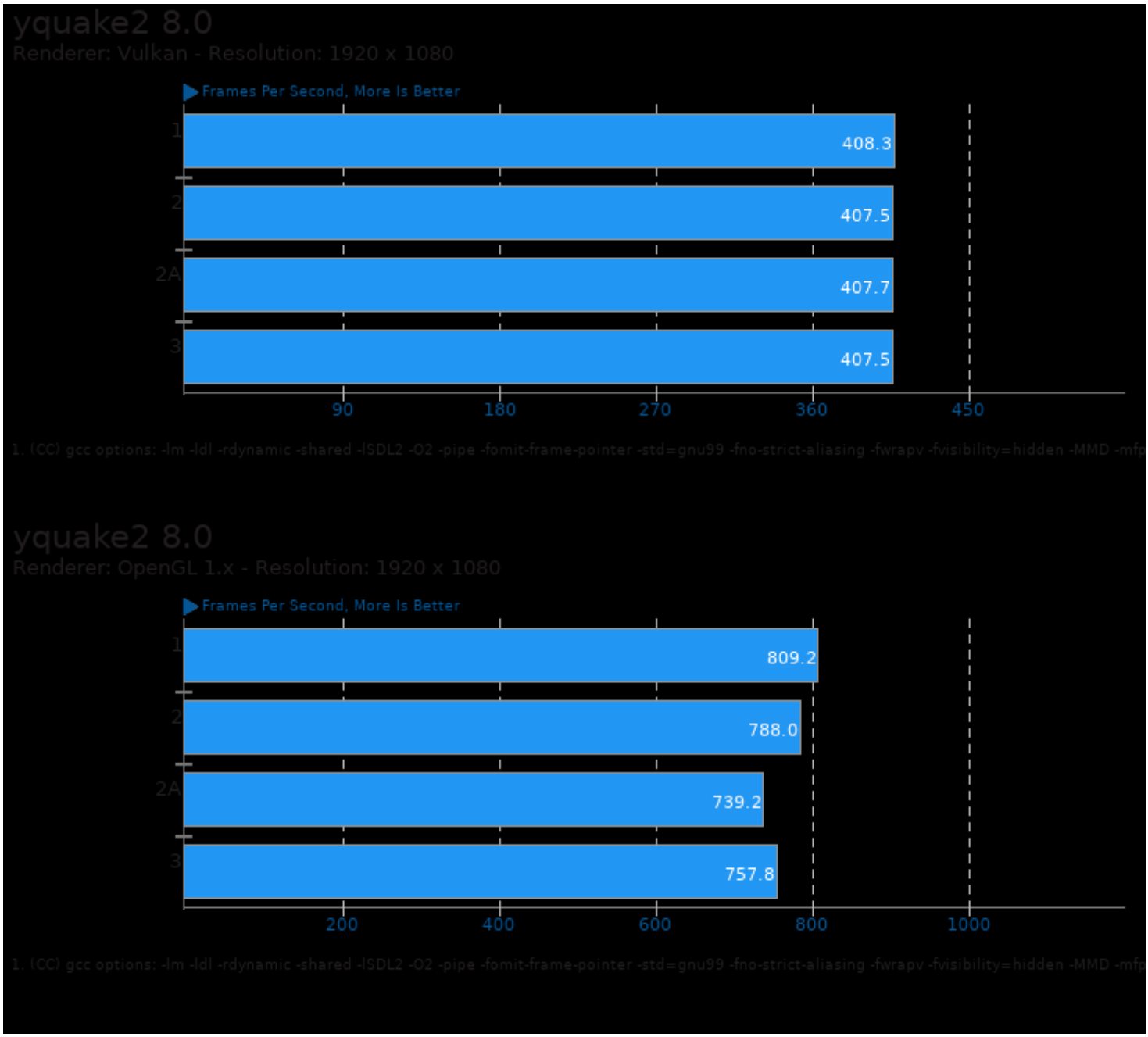
	1	2	2A	3
yquake2 - Vulkan - 1920 x 1080 (FPS)	**408.3**	**407.5**	407.7	**407.5**
Normalized	100%	99.8%	99.85%	99.8%
yquake2 - OpenGL 1.x - 1920 x 1080 (FPS)	**809.2**	788	**739.2**	757.8
Normalized	100%	97.38%	91.35%	93.65%
yquake2 - OpenGL 3.x - 1920 x 1080 (FPS)	989	**986**	992.2	**993.7**
Normalized	99.53%	99.23%	99.85%	100%

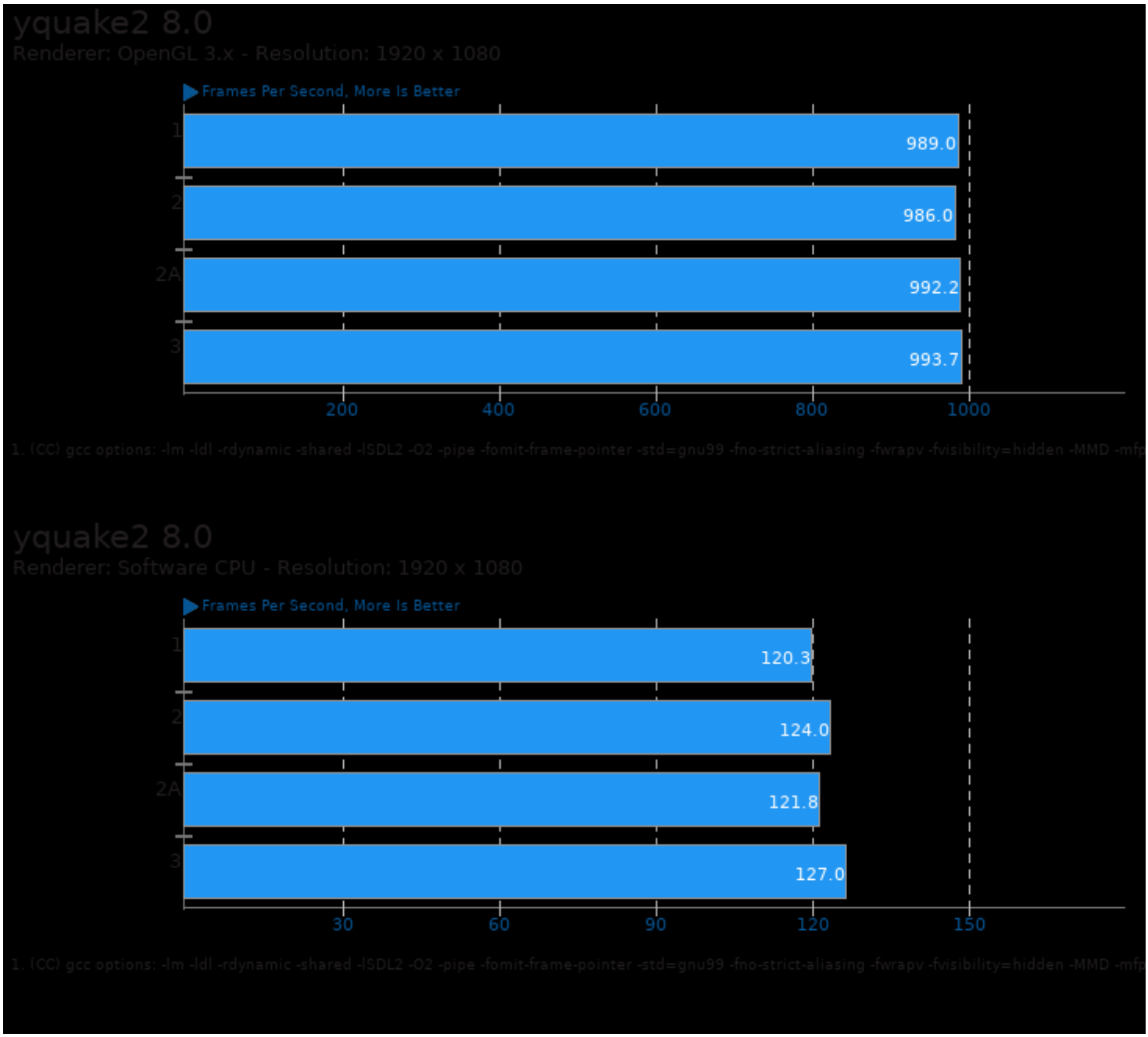
3950X sep

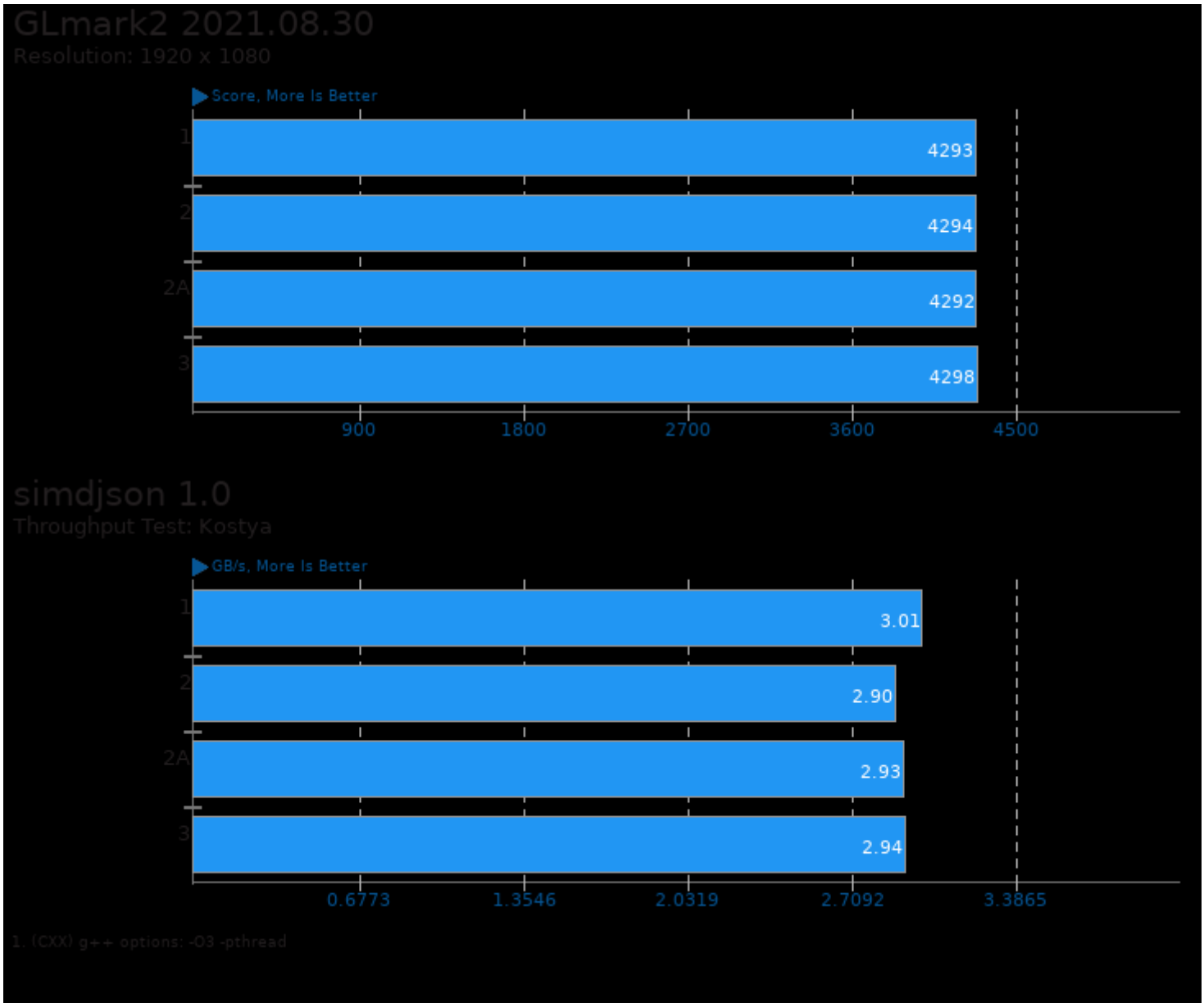
yquake2 - Software CPU - 1920 x 1080 (FPS)	120.3	124	121.8	127
Normalized	94.72%	97.64%	95.91%	100%
GLmark2 - 1920 x 1080 (Score)	4293	4294	4292	4298
Normalized	99.88%	99.91%	99.86%	100%
simdjson - Kostya (GB/s)	3.01	2.9	2.93	2.94
Normalized	100%	96.35%	97.34%	97.67%
simdjson - LargeRand (GB/s)	1.04	1.05	1.04	1.04
Normalized	99.05%	100%	99.05%	99.05%
simdjson - PartialTweets (GB/s)	4.03	4.1	3.89	3.97
Normalized	98.29%	100%	94.88%	96.83%
simdjson - DistinctUserID (GB/s)	4.52	4.33	4.6	4.57
Normalized	98.26%	94.13%	100%	99.35%
JPEG XL libjxl - PNG - 5 (MP/s)	50.14	50.93	50.33	50.6
Normalized	98.45%	100%	98.82%	99.35%
JPEG XL libjxl - PNG - 7 (MP/s)	11.4	11.34	11.29	11.39
Normalized	100%	99.47%	99.04%	99.91%
JPEG XL libjxl - PNG - 8 (MP/s)	0.92	0.9	0.93	0.89
Normalized	98.92%	96.77%	100%	95.7%
JPEG XL libjxl - JPEG - 5 (MP/s)	74.6	73.31	73.77	74.39
Normalized	100%	98.27%	98.89%	99.72%
JPEG XL libjxl - JPEG - 7 (MP/s)	75.05	74.27	74.35	73.38
Normalized	100%	98.96%	99.07%	97.77%
JPEG XL libjxl - JPEG - 8 (MP/s)	26.71	26.32	26.7	26.58
Normalized	100%	98.54%	99.96%	99.51%
JPEG XL Decoding libjxl - 1 (MP/s)	57.74	57.35	57.53	57.57
Normalized	100%	99.32%	99.64%	99.71%
JPEG XL Decoding libjxl - All (MP/s)	267.99	265.12	264.37	264.42
Normalized	100%	98.93%	98.65%	98.67%
dav1d - Chimera 1080p (FPS)	746.09		736.92	731.38
Normalized	100%		98.77%	98.03%
dav1d - Summer Nature 4K (FPS)	218.13		208.89	214.08
Normalized	100%		95.76%	98.14%
dav1d - S.N.1 (FPS)	733.76		739.54	725.6
Normalized	99.22%		100%	98.12%
dav1d - C.1.1.b (FPS)	509.83		499.79	502.9
Normalized	100%		98.03%	98.64%
OpenSSL - SHA256 (byte/s)	23146224660		23157648310	22872390980
Normalized	99.95%		100%	98.77%
OpenSSL - RSA4096 (sign/s)	4754		4758	4756
Normalized	99.9%		100%	99.94%
OpenSSL - RSA4096 (verify/s)	307961		307722	307893
Normalized	100%		99.92%	99.98%
Stress-NG - MMAP (Bogo Ops/s)	374.71		372.56	370.42
Normalized	100%		99.43%	98.86%
Stress-NG - NUMA (Bogo Ops/s)	420.81		415.54	421.65
Normalized	99.8%		98.55%	100%
Stress-NG - MEMFD (Bogo Ops/s)	1052		1052	1051
Normalized	100%		99.94%	99.88%
Stress-NG - Atomic (Bogo Ops/s)	571406		571776	570898
Normalized	99.94%		100%	99.85%
Stress-NG - Crypto (Bogo Ops/s)	4793		4800	4779
Normalized	99.86%		100%	99.57%

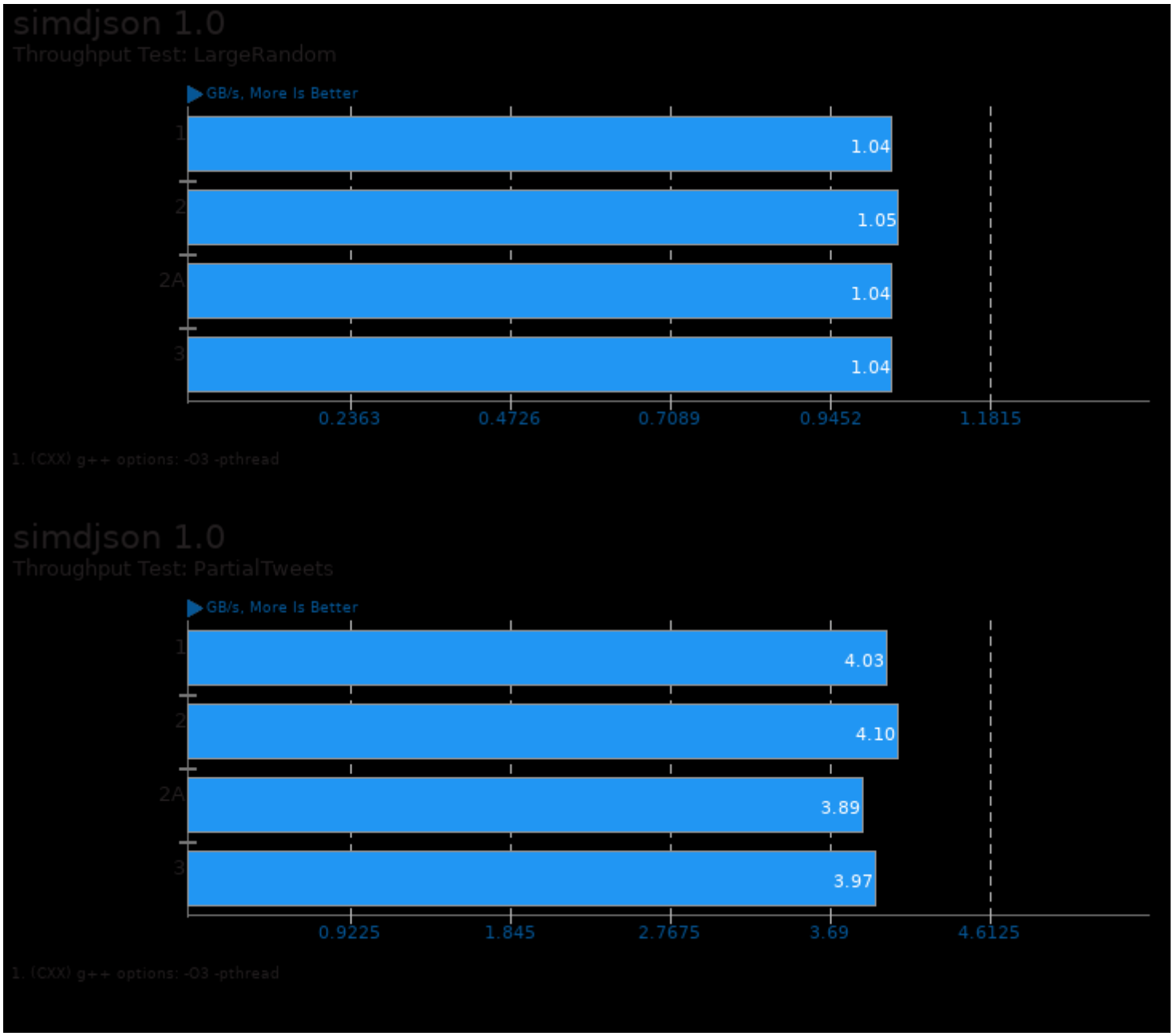
3950X sep

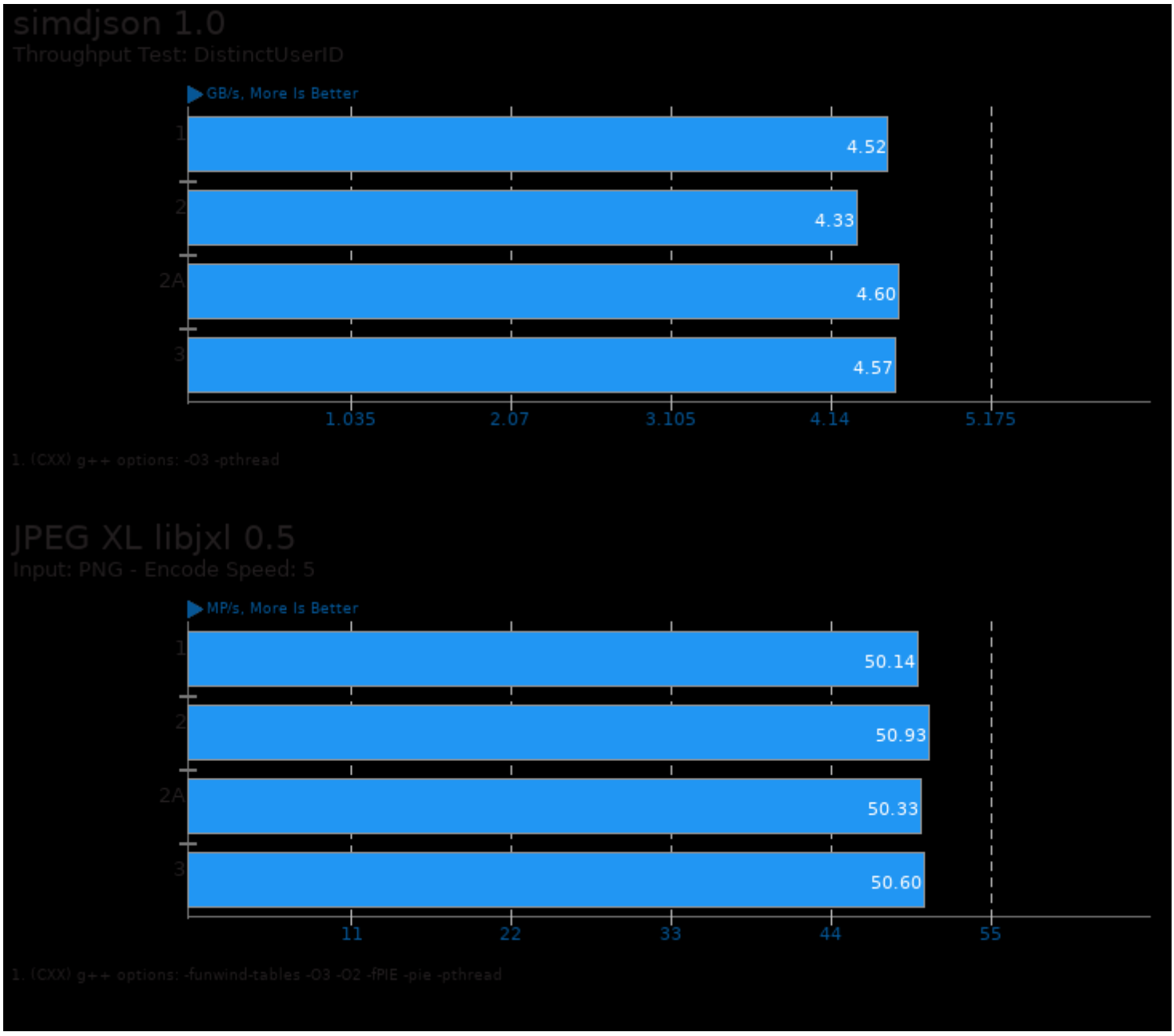
Stress-NG - Malloc (Bogo Ops/s)	**226404502**	225877279	**225849169**
Normalized	100%	99.77%	99.75%
Stress-NG - Forking (Bogo Ops/s)	51968	**51988**	**51719**
Normalized	99.96%	100%	99.48%
Stress-NG - SENDFILE (Bogo Ops/s)	**366667**	**383389**	382081
Normalized	95.64%	100%	99.66%
Stress-NG - CPU Cache (Bogo Ops/s)	**178.03**	**184.06**	179.46
Normalized	96.72%	100%	97.5%
Stress-NG - CPU Stress (Bogo Ops/s)	**42680**	**44254**	44188
Normalized	96.44%	100%	99.85%
Stress-NG - Semaphores (Bogo	**2424565**	2355968	**2345635**
Normalized	100%	97.17%	96.74%
Stress-NG - Matrix Math (Bogo Ops/s)	**82357**	**86420**	86041
Normalized	95.3%	100%	99.56%
Stress-NG - Vector Math (Bogo Ops/s)	**64900**	67103	**67144**
Normalized	96.66%	99.94%	100%
Stress-NG - Memory Copying (Bogo Ops/s)	**4377**	4503	**4517**
Normalized	96.9%	99.7%	100%
Stress-NG - Socket Activity (Bogo	**12550**	11498	**11281**
Normalized	100%	91.62%	89.89%
Stress-NG - Context Switching (Bogo Ops/s)	**6421682**	**8288866**	8250961
Normalized	77.47%	100%	99.54%
Stress-NG - G.C.S.F (Bogo Ops/s)	**1133979**	**1200477**	1190507
Normalized	94.46%	100%	99.17%
Stress-NG - G.Q.D.S (Bogo Ops/s)	**275.7**	**270.1**	271
Normalized	100%	97.97%	98.3%
Stress-NG - S.V.M.P (Bogo Ops/s)	4957868	**4954982**	**4969986**
Normalized	99.76%	99.7%	100%

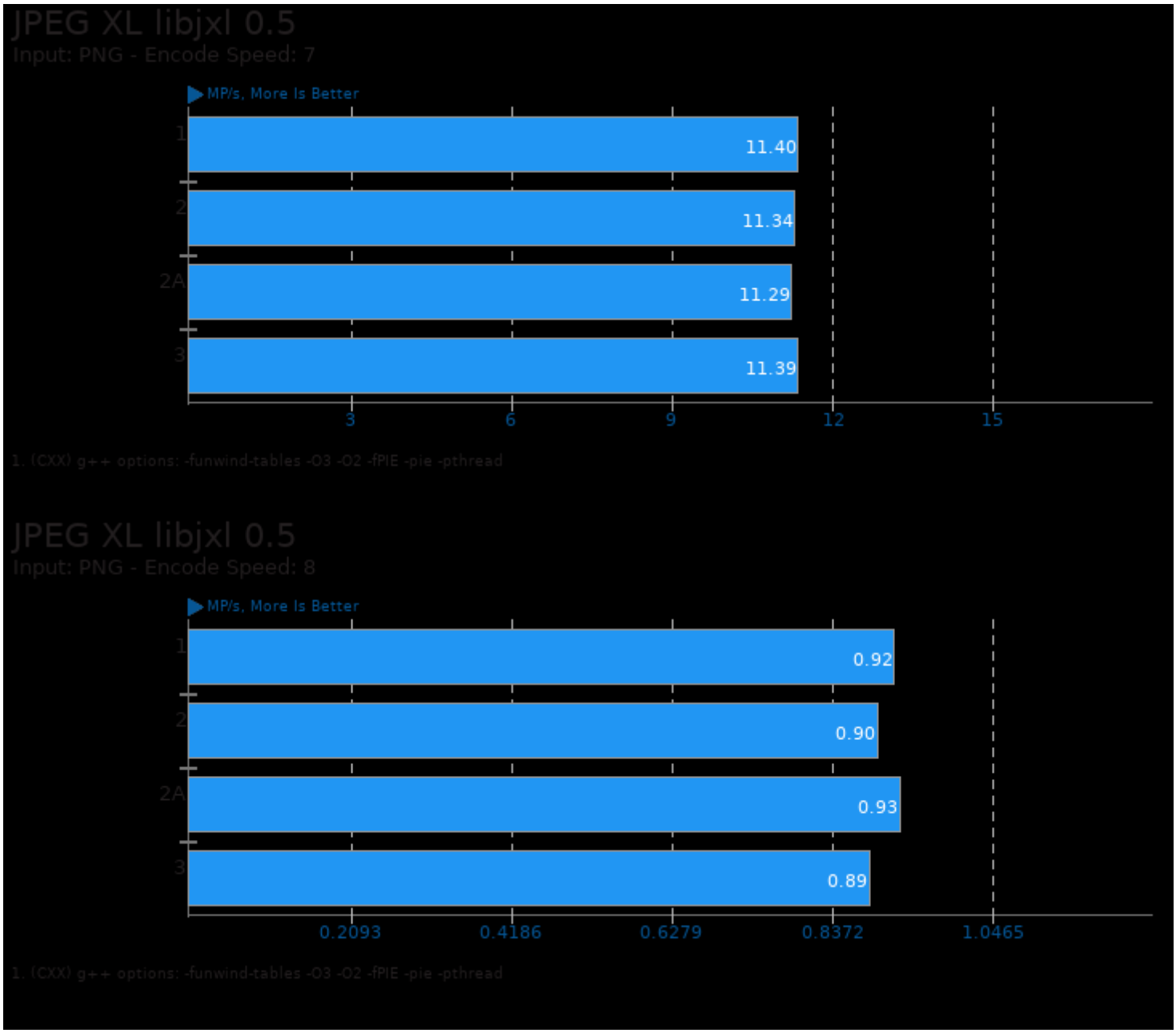

yquake2 8.0
Renderer: Vulkan - Resolution: 1920 x 1080
Frames Per Second, More Is Better
1
2
2A
3
408.3
407.5
407.7
407.5
90
180
270
360
450
1. (CC) gcc options: -lm -ldl -rdynamic -shared -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf
yquake2 8.0
Renderer: OpenGL 1.x - Resolution: 1920 x 1080
Frames Per Second, More Is Better
1
2
2A
3
809.2
788.0
739.2
757.8
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

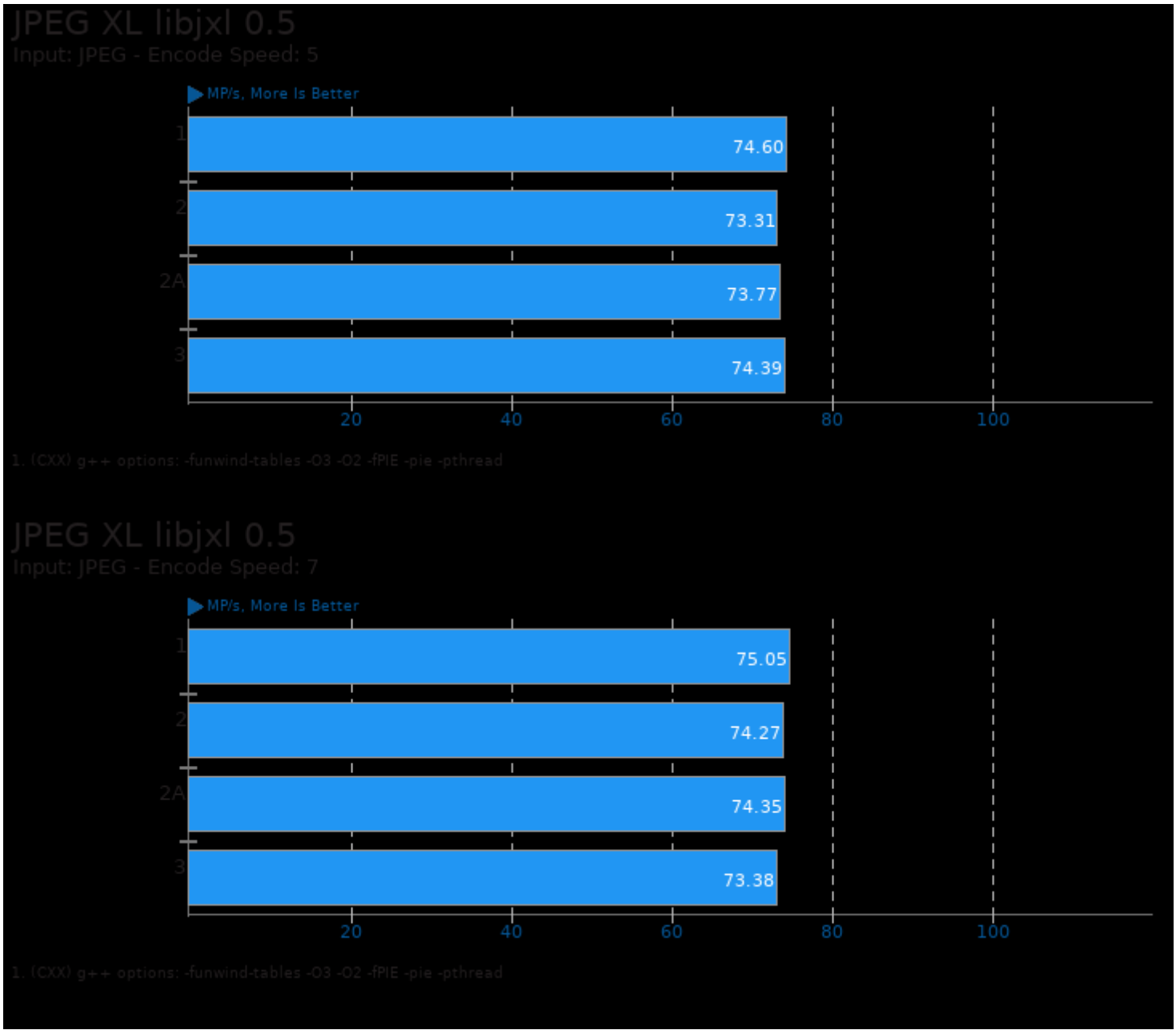

yquake2 8.0
Renderer: OpenGL 3.x - Resolution: 1920 x 1080
Frames Per Second, More Is Better
1
989.0
2
986.0
2A
992.2
3
993.7
200
400
600
800
1000
1. (CC) gcc options: -lm -ldl -rdynamic -shared -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf
yquake2 8.0
Renderer: Software CPU - Resolution: 1920 x 1080
Frames Per Second, More Is Better
1
120.3
2
124.0
2A
121.8
3
127.0
30
60
90
120
150
1. (CC) gcc options: -lm -ldl -rdynamic -shared -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf


GLmark2 2021.08.30
Resolution: 1920 x 1080
Score, More Is Better
1
2
2A
3
4293
4294
4292
4298
900
1800
2700
3600
4500
simdjson 1.0
Throughput Test: Kostya
GB/s, More Is Better
1
2
2A
3
3.01
2.90
2.93
2.94
0.6773
1.3546
2.0319
2.7092
3.3865
1. (CXX) g++ options: -O3 -pthread


simdjson 1.0
Throughput Test: LargeRandom
GB/s, More Is Better
1
2
2A
3
1.04
1.05
1.04
1.04
0.2363
0.4726
0.7089
0.9452
1.1815
1. (CXX) g++ options: -O3 -pthread
simdjson 1.0
Throughput Test: PartialTweets
GB/s, More Is Better
1
2
2A
3
4.03
4.10
3.89
3.97
0.9225
1.845
2.7675
3.69
4.6125
1. (CXX) g++ options: -O3 -pthread

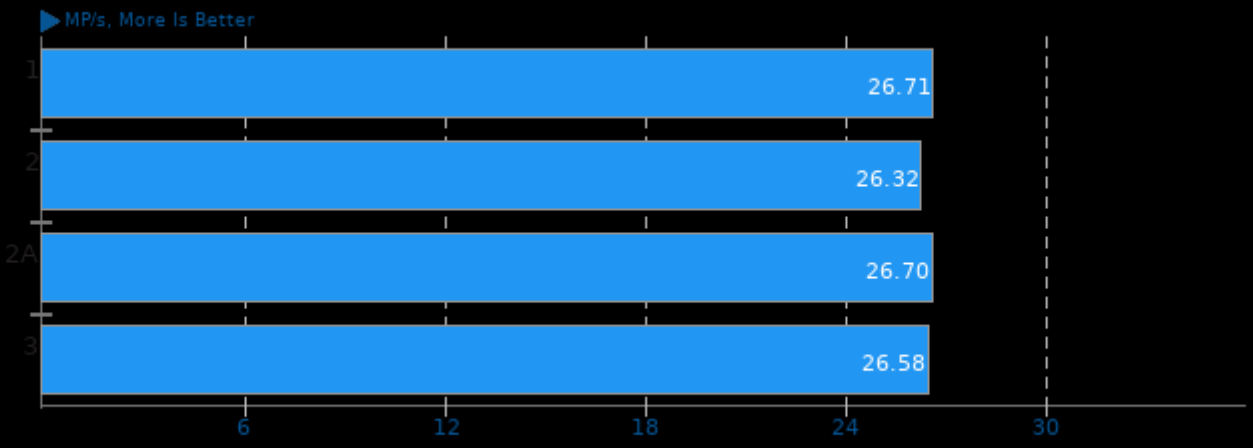

simdjson 1.0
Throughput Test: DistinctUserID
GB/s, More Is Better
1
2
2A
3
4.52
4.33
4.60
4.57
1.035
2.07
3.105
4.14
5.175
1. (CXX) g++ options: -O3 -pthread
JPEG XL libjxl 0.5
Input: PNG - Encode Speed: 5
MP/s, More Is Better
1
2
2A
3
50.14
50.93
50.33
50.60
11
22
33
44
55
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie -pthread


JPEG XL libjxl 0.5
Input: PNG - Encode Speed: 7
MP/s, More Is Better
1
2
2A
3
11.40
11.34
11.29
11.39
3
6
9
12
15
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie -pthread
JPEG XL libjxl 0.5
Input: PNG - Encode Speed: 8
MP/s, More Is Better
1
2
2A
3
0.92
0.90
0.93
0.89
0.2093
0.4186
0.6279
0.8372
1.0465
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie -pthread


JPEG XL libjxl 0.5
Input: JPEG - Encode Speed: 5
MP/s, More Is Better
1
2
2A
3
74.60
73.31
73.77
74.39
20
40
60
80
100
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie -pthread
JPEG XL libjxl 0.5
Input: JPEG - Encode Speed: 7
MP/s, More Is Better
1
2
2A
3
75.05
74.27
74.35
73.38
20
40
60
80
100
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie -pthread

JPEG XL libjxl 0.5

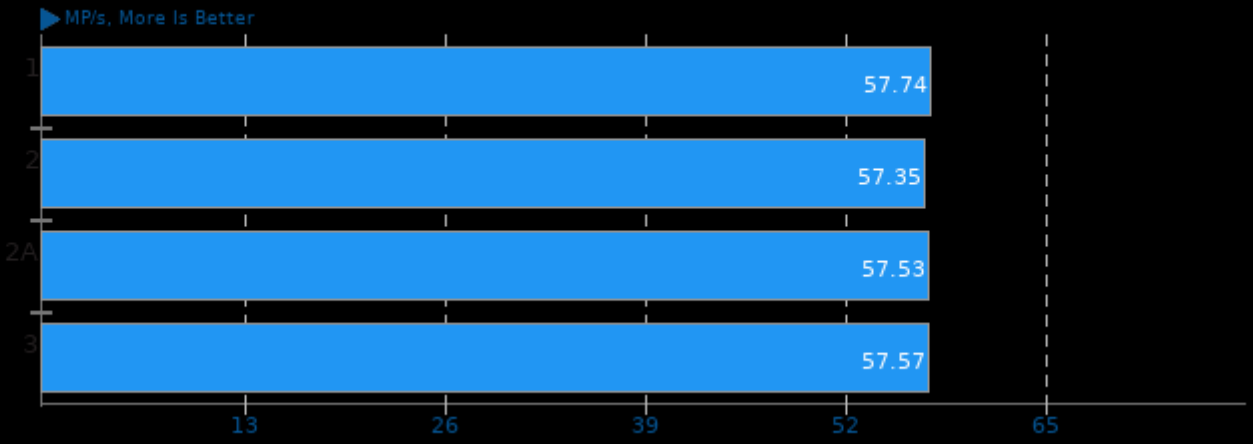
Input: JPEG - Encode Speed: 8



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

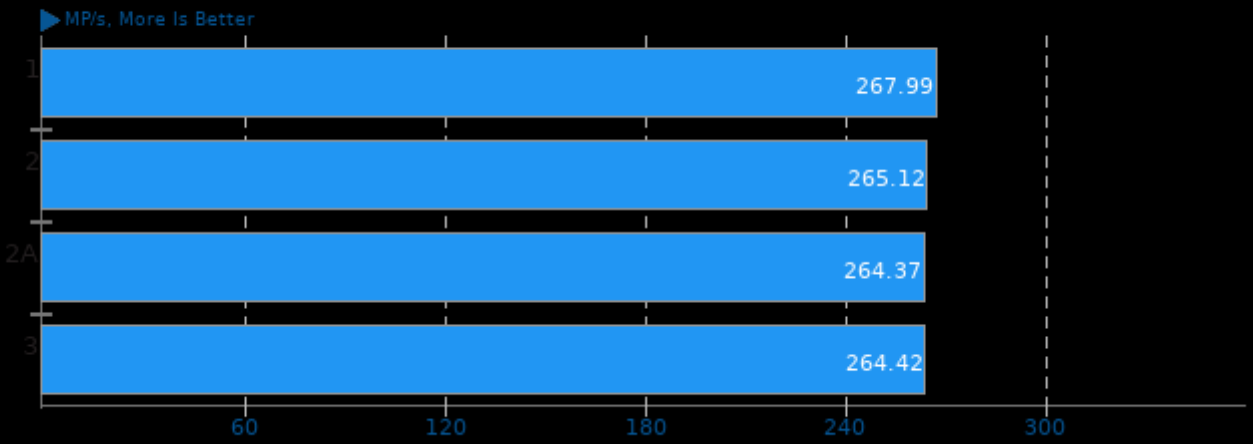
JPEG XL Decoding libjxl 0.5

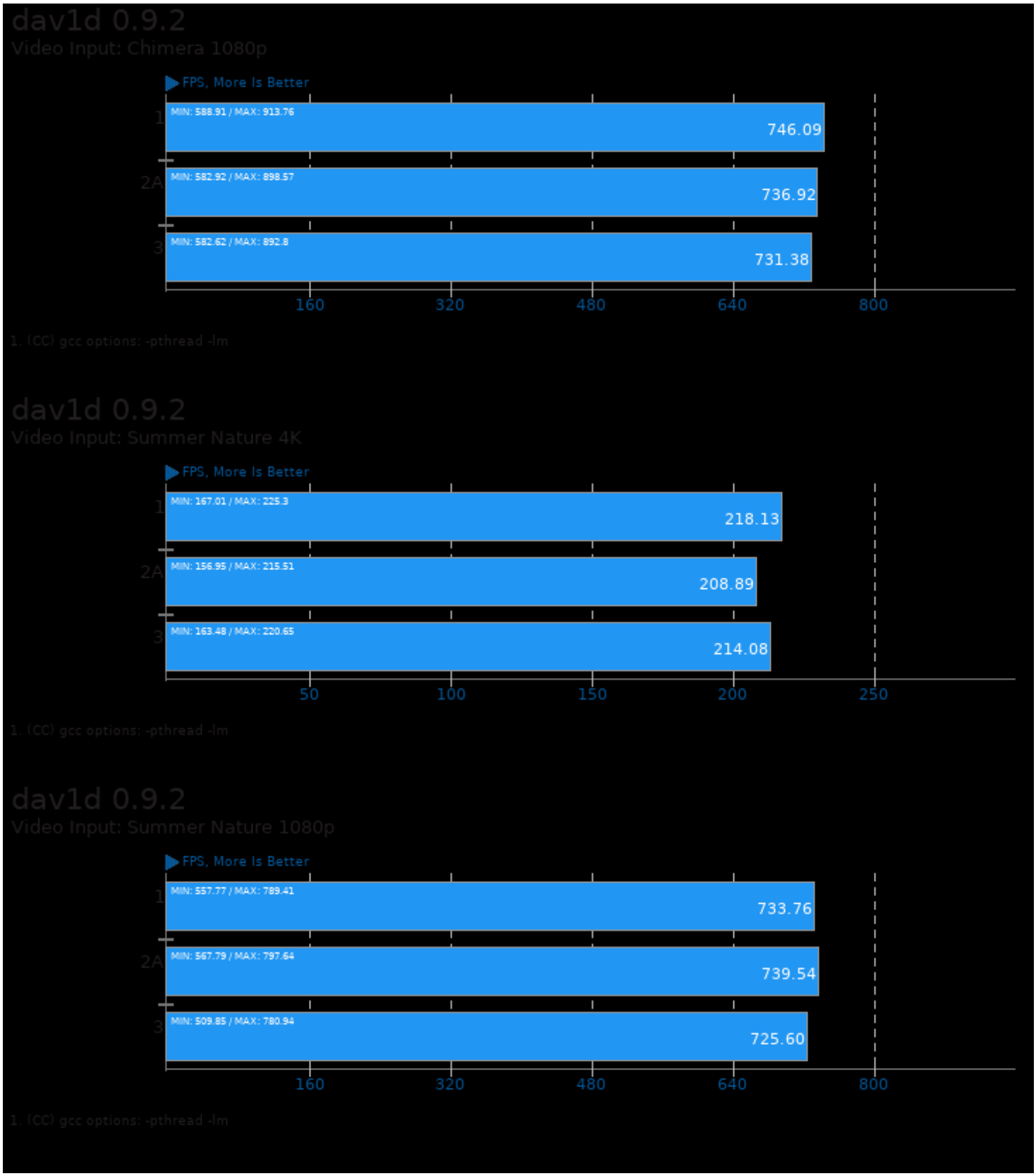
CPU Threads: 1



JPEG XL Decoding libjxl 0.5

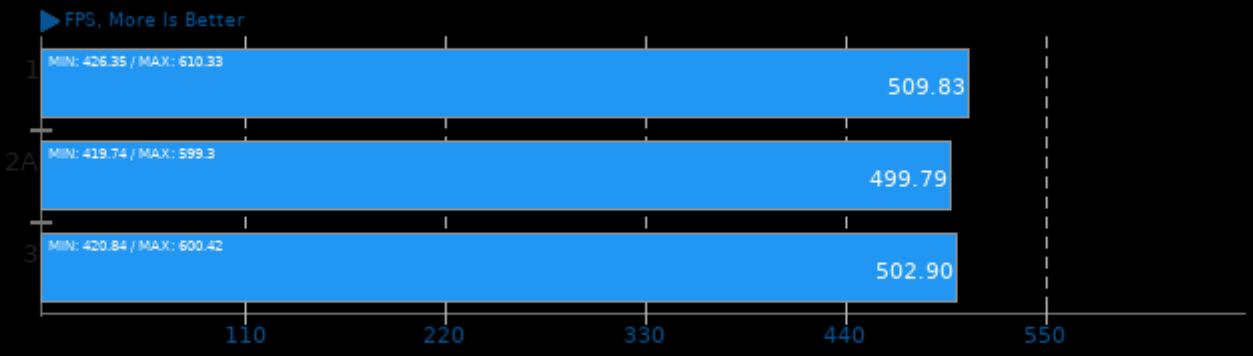
CPU Threads: All




dav1d 0.9.2
Video Input: Chimera 1080p
FPS, More Is Better
1
MIN: 588.91 / MAX: 913.76
746.09
2A
MIN: 582.92 / MAX: 898.57
736.92
3
MIN: 582.62 / MAX: 892.8
731.38
160
320
480
640
800
1. (CC) gcc options: -pthread -lm
dav1d 0.9.2
Video Input: Summer Nature 4K
FPS, More Is Better
1
MIN: 167.01 / MAX: 225.3
218.13
2A
MIN: 156.95 / MAX: 215.51
208.89
3
MIN: 163.48 / MAX: 220.65
214.08
50
100
150
200
250
1. (CC) gcc options: -pthread -lm
dav1d 0.9.2
Video Input: Summer Nature 1080p
FPS, More Is Better
1
MIN: 557.77 / MAX: 789.41
733.76
2A
MIN: 567.79 / MAX: 797.64
739.54
3
MIN: 509.85 / MAX: 780.94
725.60
160
320
480
640
800
1. (CC) gcc options: -pthread -lm

dav1d 0.9.2

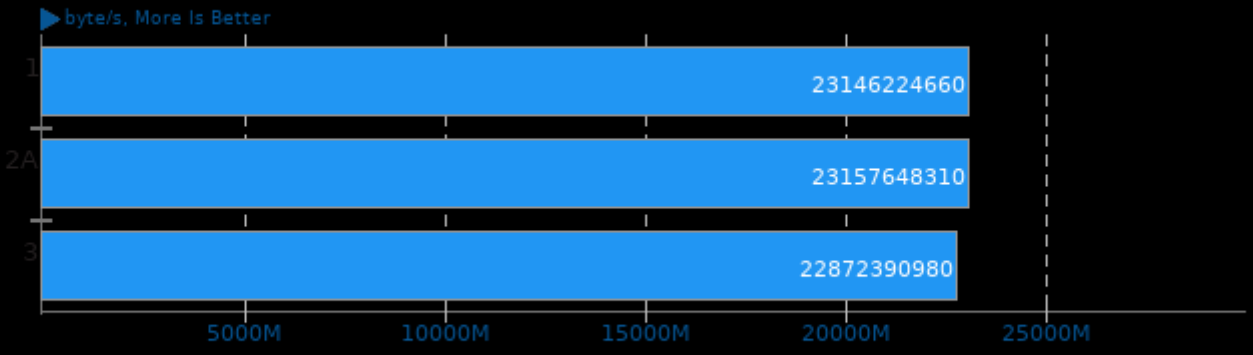
Video Input: Chimera 1080p 10-bit



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

OpenSSL 3.0

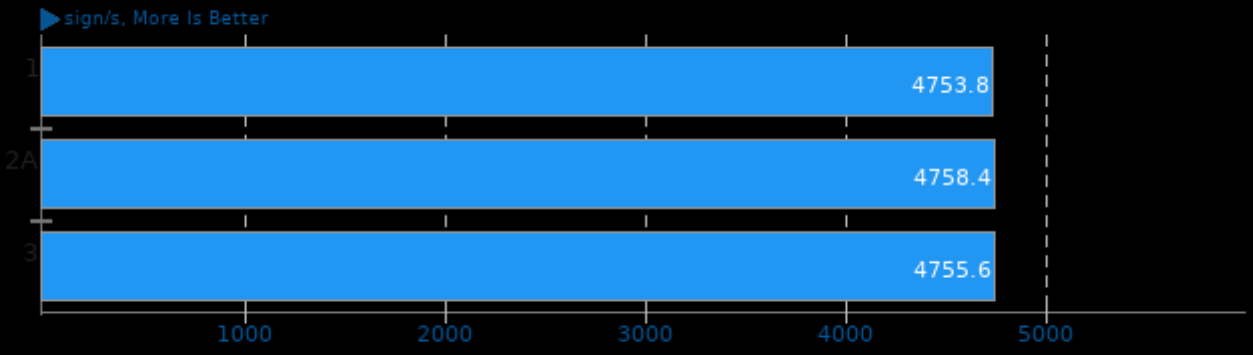
Algorithm: SHA256



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

OpenSSL 3.0

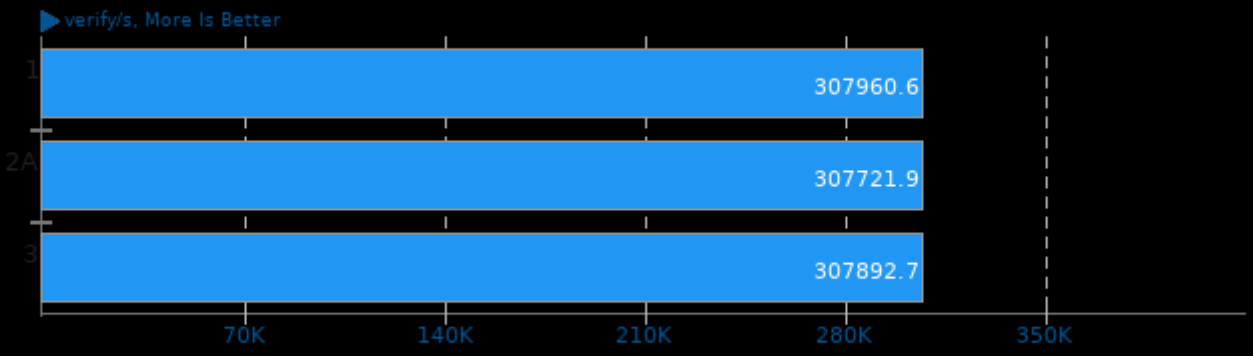
Algorithm: RSA4096



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

OpenSSL 3.0

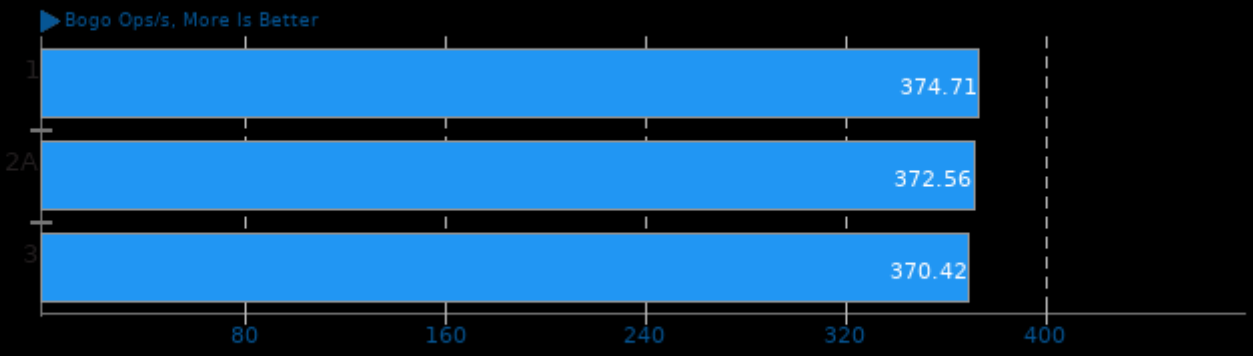
Algorithm: RSA4096



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

Stress-NG 0.13.02

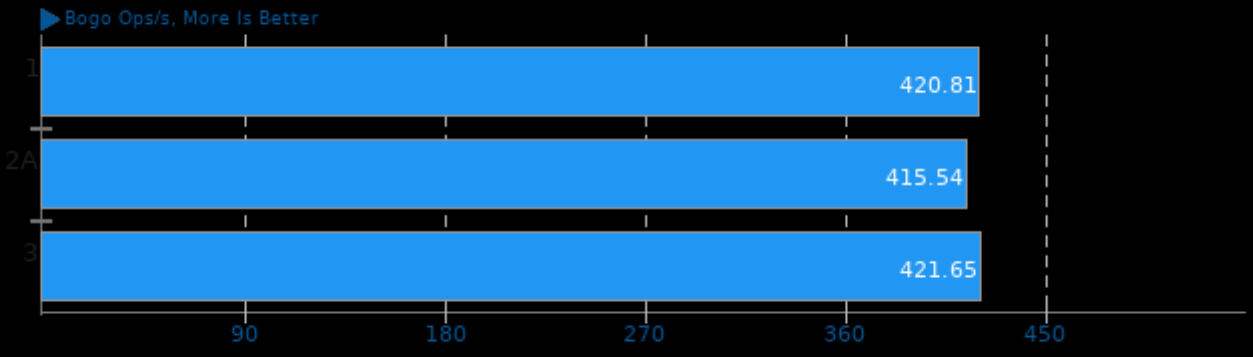
Test: MMAP



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

Stress-NG 0.13.02

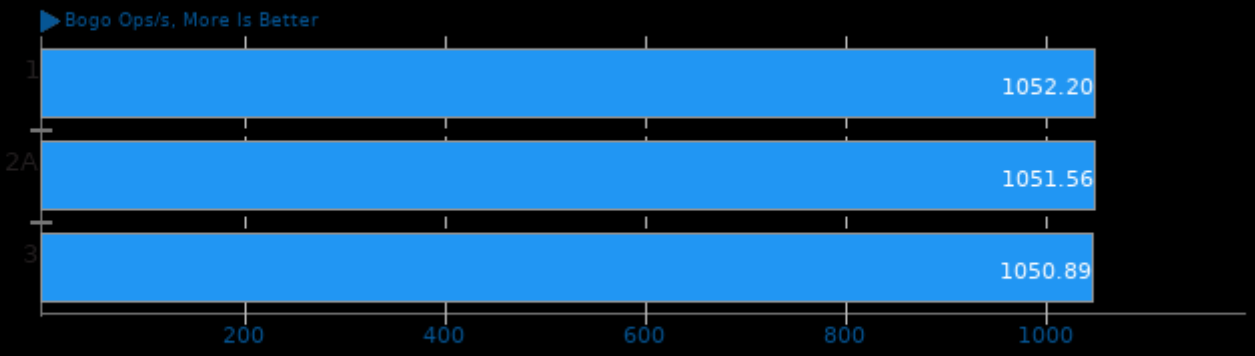
Test: NUMA



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

Stress-NG 0.13.02

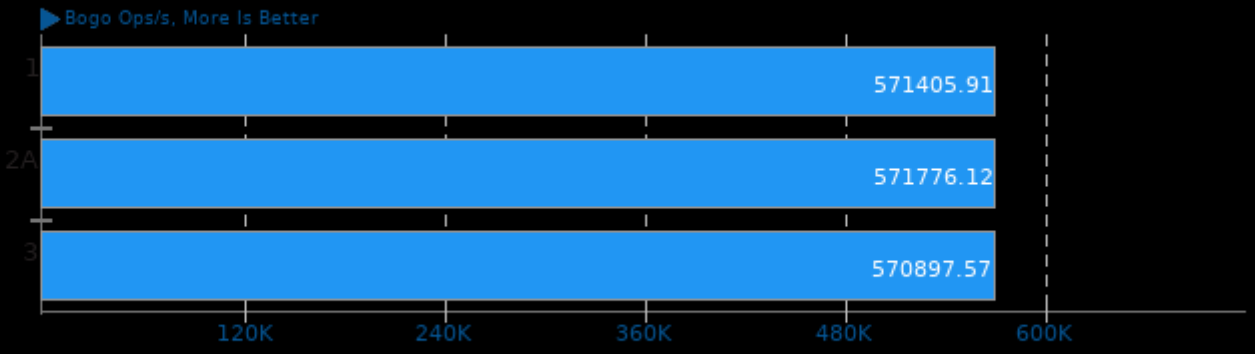
Test: MEMFD



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

Stress-NG 0.13.02

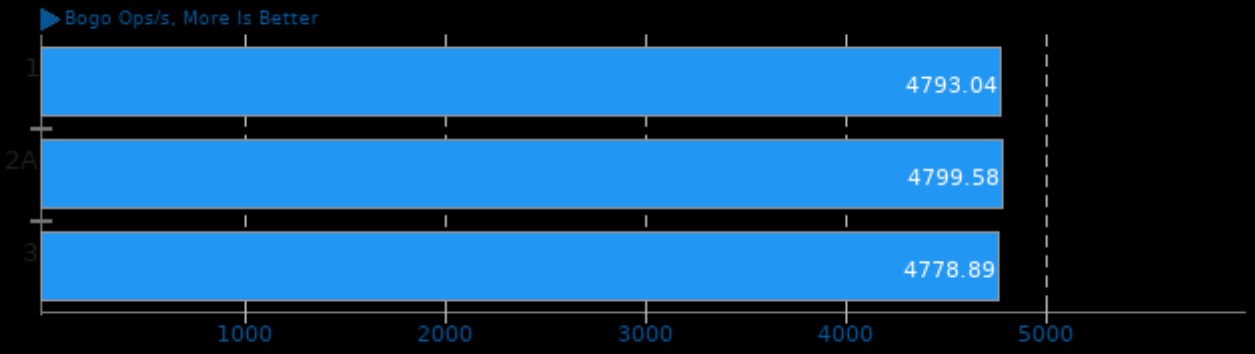
Test: Atomic



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

Stress-NG 0.13.02

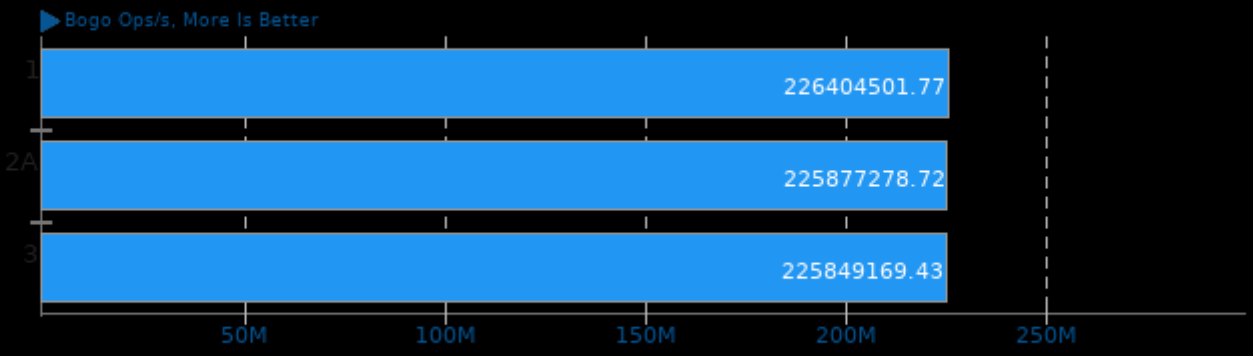
Test: Crypto



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

Stress-NG 0.13.02

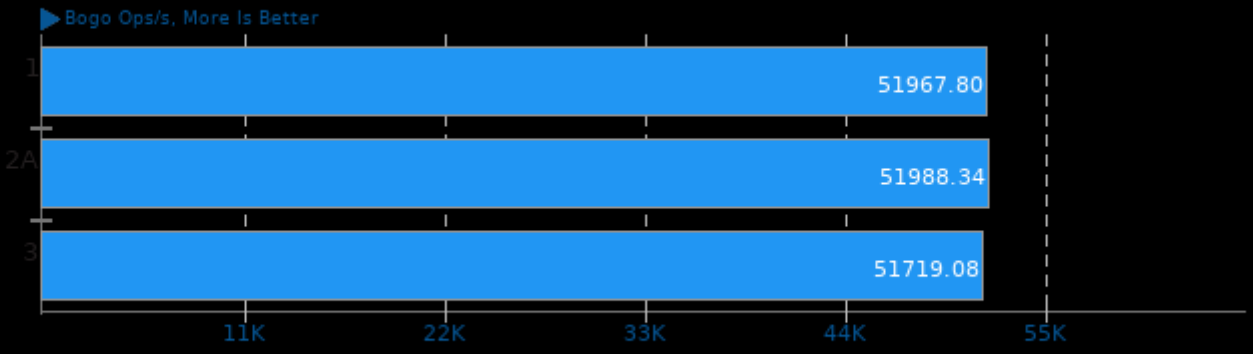
Test: Malloc



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

Stress-NG 0.13.02

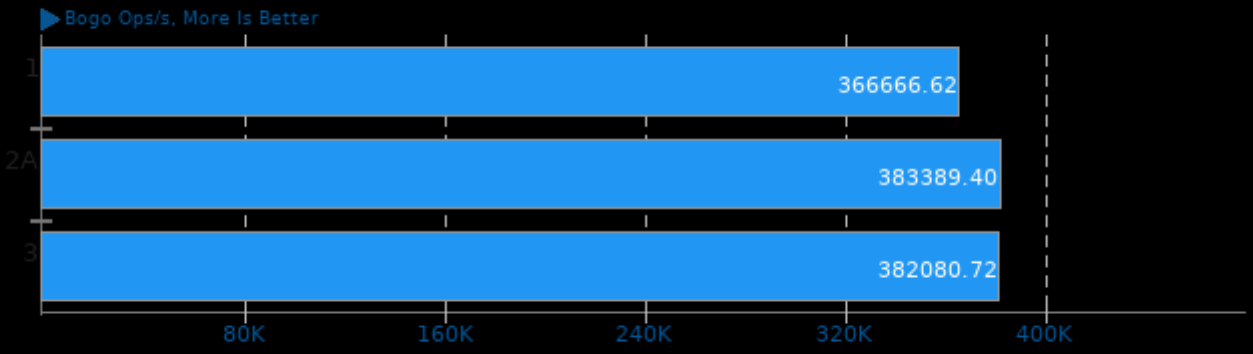
Test: Forking



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

Stress-NG 0.13.02

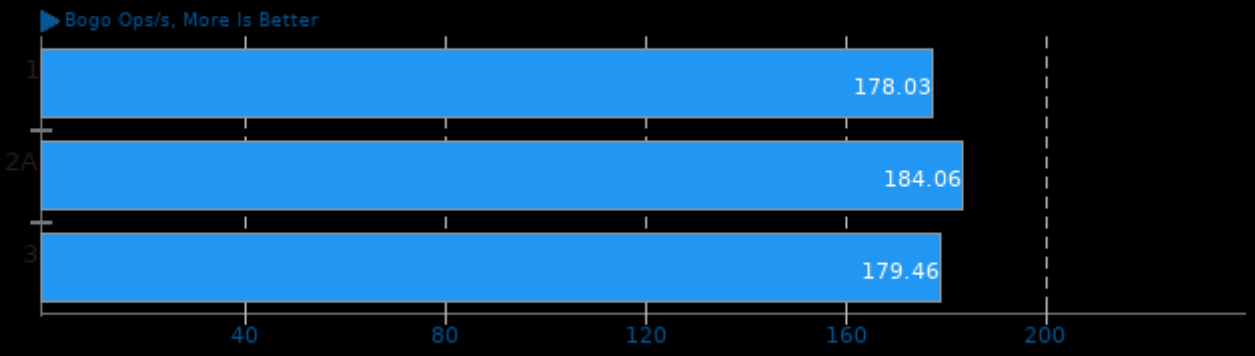
Test: SENDFILE



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

Stress-NG 0.13.02

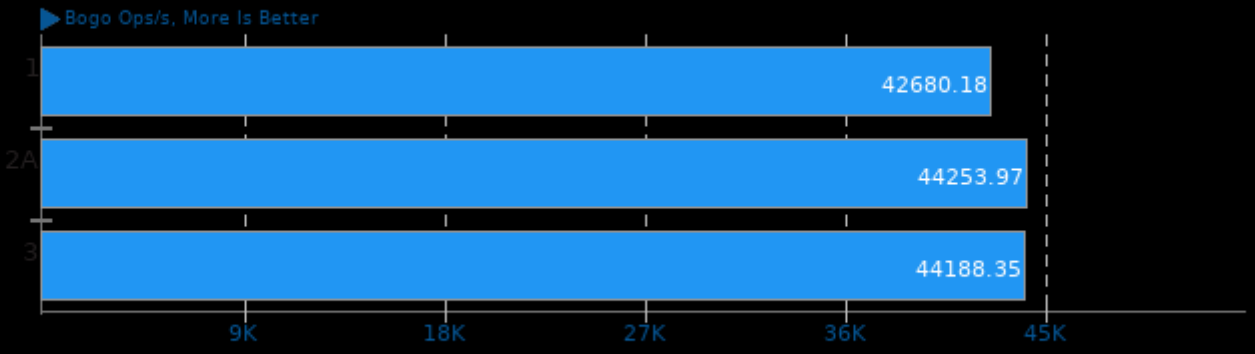
Test: CPU Cache



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

Stress-NG 0.13.02

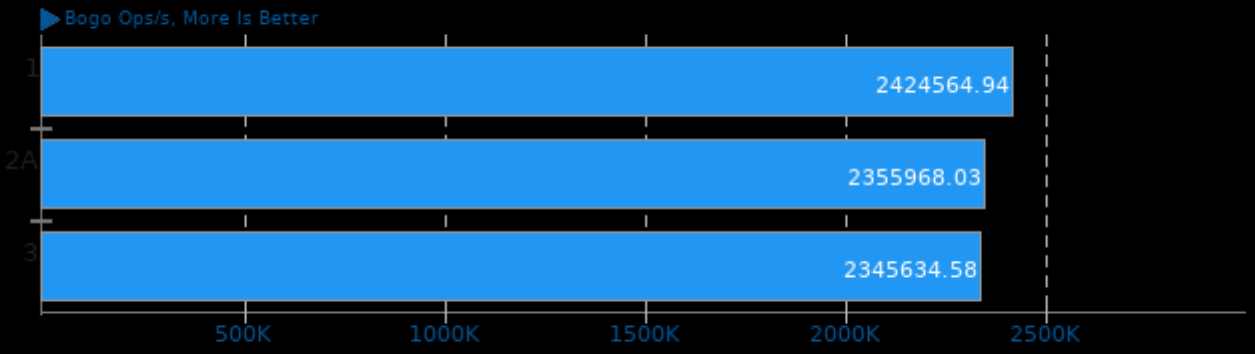
Test: CPU Stress



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

Stress-NG 0.13.02

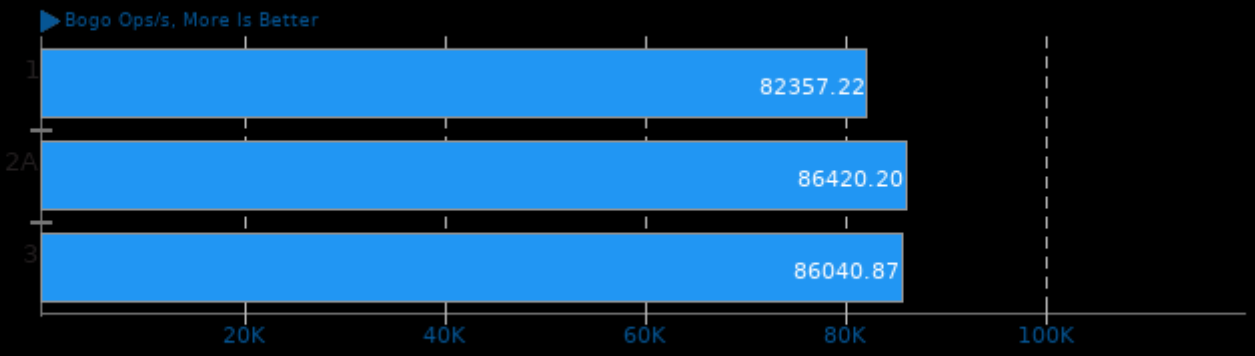
Test: Semaphores



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

Stress-NG 0.13.02

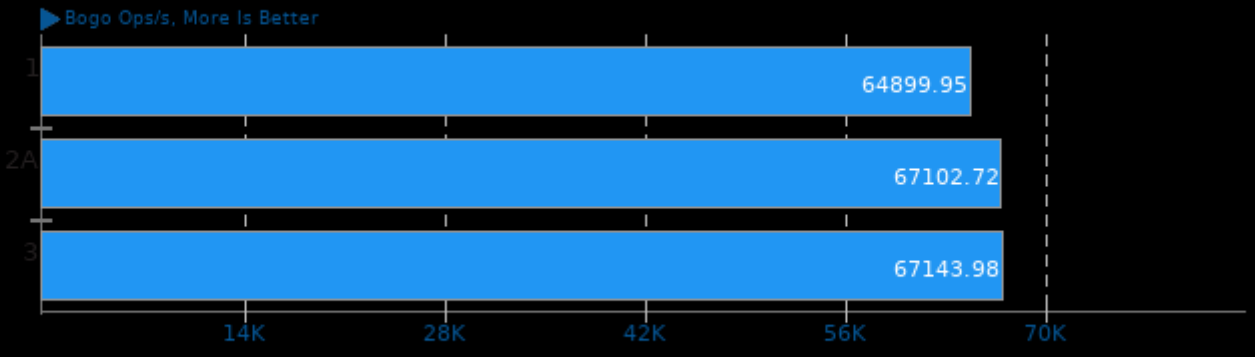
Test: Matrix Math



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

Stress-NG 0.13.02

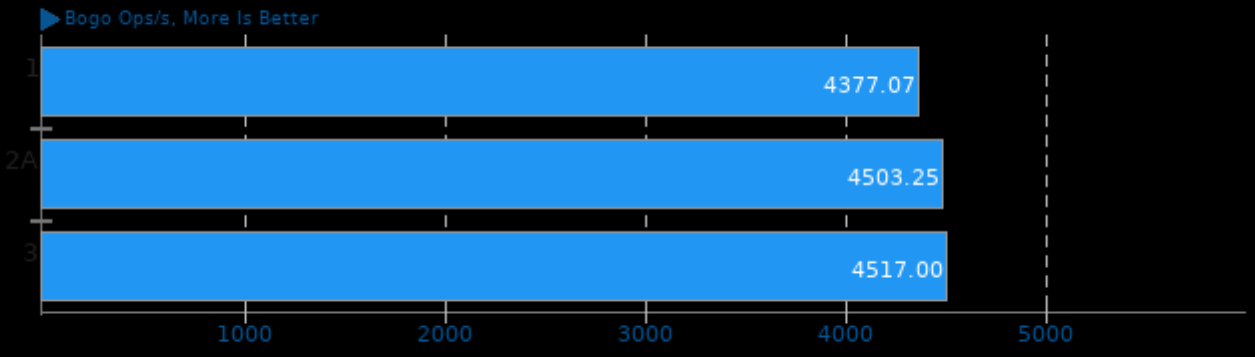
Test: Vector Math



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

Stress-NG 0.13.02

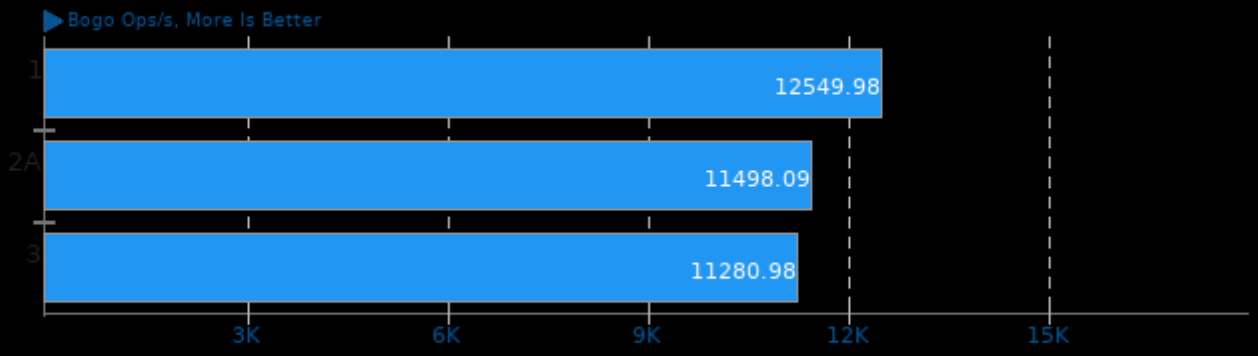
Test: Memory Copying



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

Stress-NG 0.13.02

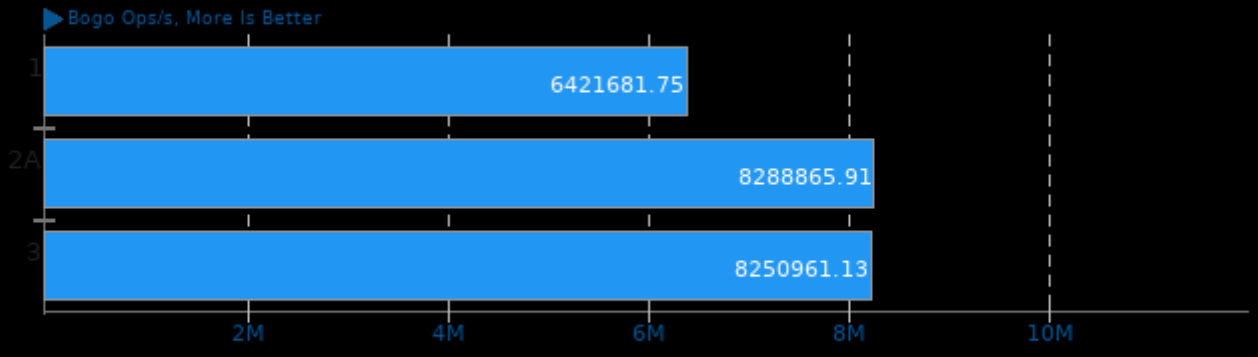
Test: Socket Activity



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

Stress-NG 0.13.02

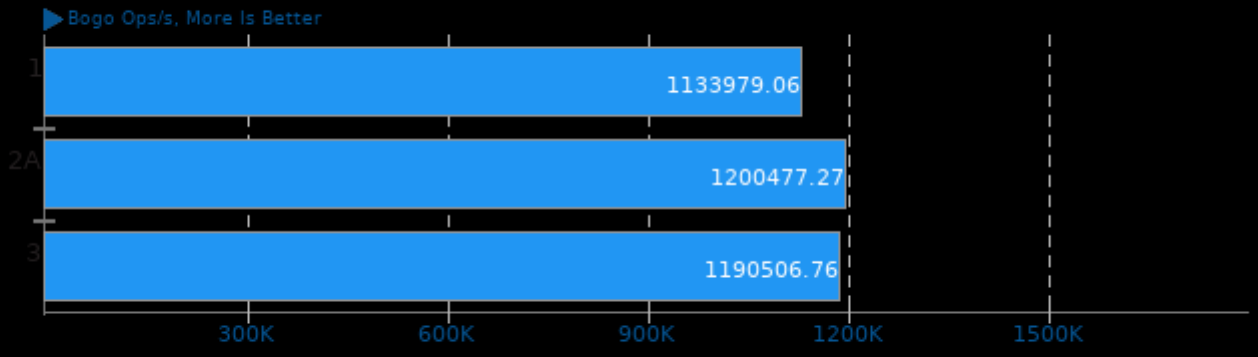
Test: Context Switching



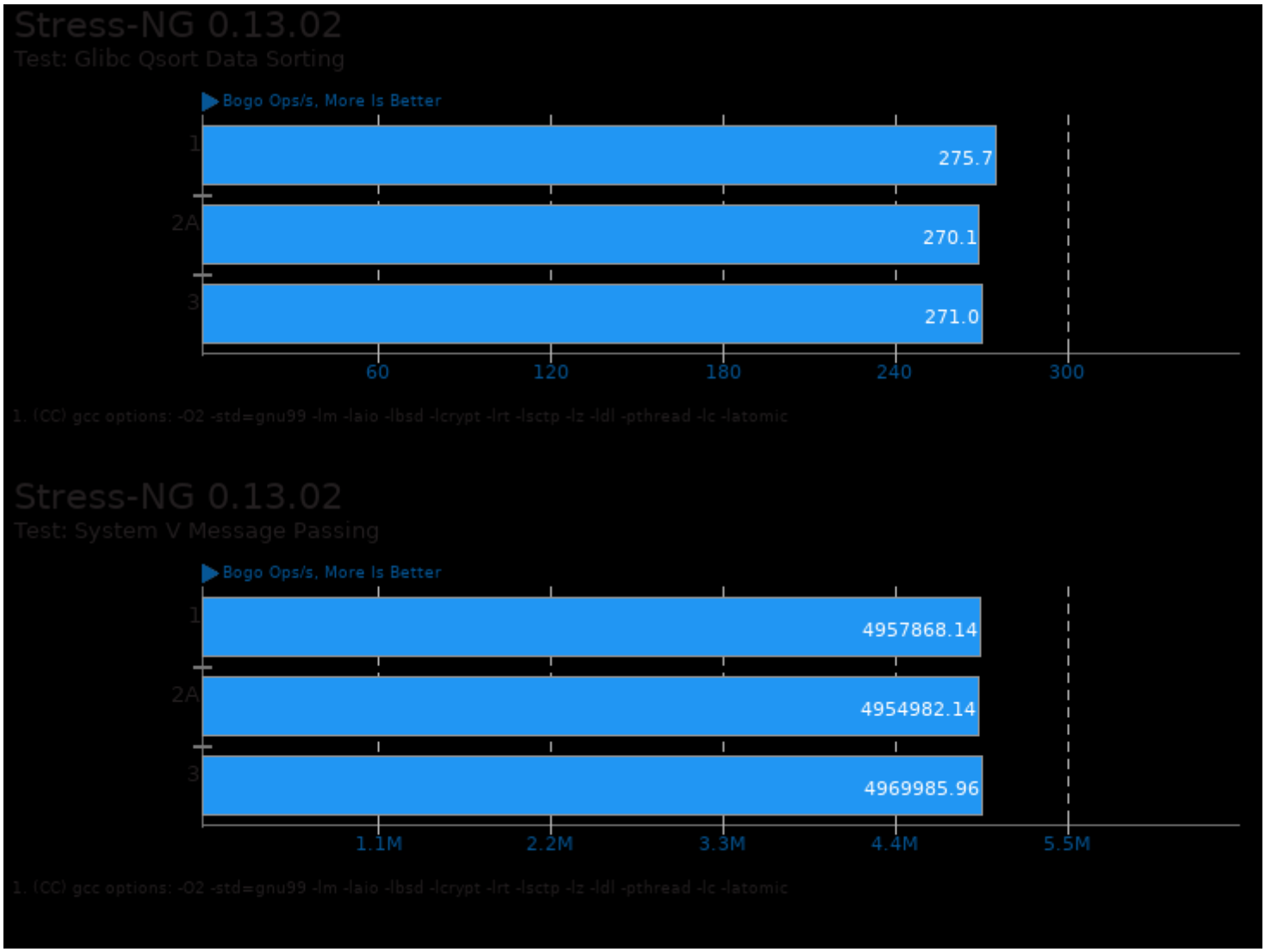
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lbsd -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Stress-NG 0.13.02

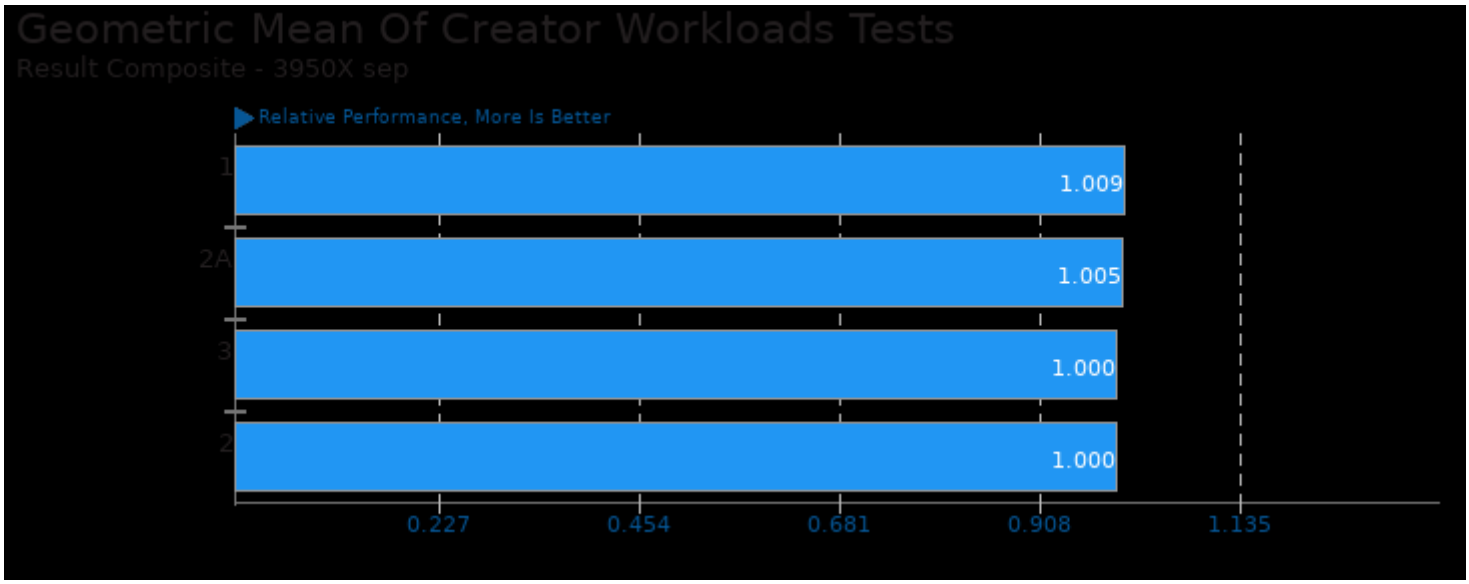
Test: Glibc C String Functions



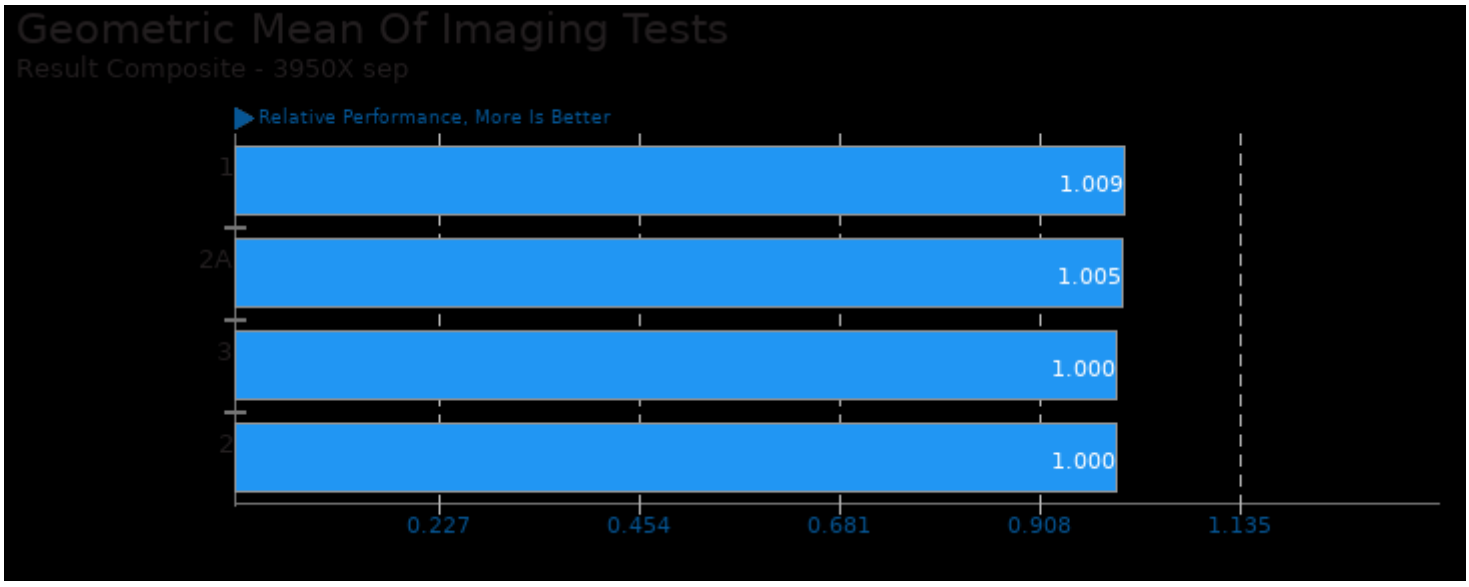
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lbsd -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic


Stress-NG 0.13.02
Test: Glibc Qsort Data Sorting
Bogo Ops/s, More Is Better
1
2A
3
275.7
270.1
271.0
60
120
180
240
300
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lbsd -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic
Stress-NG 0.13.02
Test: System V Message Passing
Bogo Ops/s, More Is Better
1
2A
3
4957868.14
4954982.14
4969985.96
1.1M
2.2M
3.3M
4.4M
5.5M
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lbsd -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

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

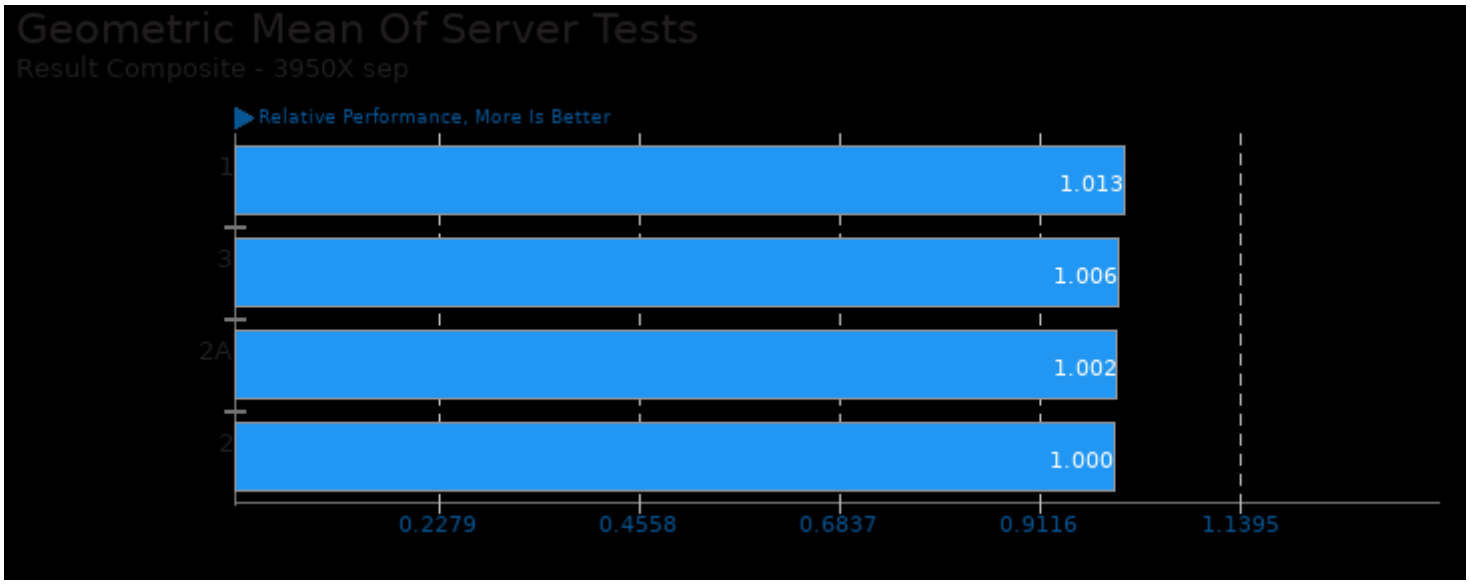


Geometric mean based upon tests: pts/dav1d, pts/jpegxl and pts/jpegxl-decode



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

3950X sep



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

This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 07:21.