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AMD EPYC Rome

AMD EPYC 7F52 16-Core testing with a Supermicro H11DSi-NT v2.00 (2.1 BIOS) and llvmpipe on Ubuntu 21.10 via the Phoronix Test Suite.

Automated Executive Summary

A had the most wins, coming in first place for 32% of the tests.

Based on the geometric mean of all complete results, the fastest (A) was 1.003x the speed of the slowest (B). C was 0.998x the speed of A, D was 1x the speed of C, B was 0.999x the speed of D.

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

Redis (Test: LPOP) at 1.551x
Stress-NG (Test: Glibc C String Functions) at 1.305x
ONNX Runtime (Model: shufflenet-v2-10 - Device: OpenMP CPU) at 1.267x
NCNN (Target: CPU - Model: mnasnet) at 1.266x
NCNN (Target: CPU - Model: shufflenet-v2) at 1.219x
Mobile Neural Network (Model: MobileNetV2_224) at 1.186x
NCNN (Target: CPU - Model: mobilenet) at 1.186x
PostgreSQL pgbench (Scaling Factor: 1 - Clients: 500 - Mode: Read Write) at 1.181x
PostgreSQL pgbench (Scaling Factor: 1 - Clients: 500 - Mode: Read Write - Average Latency) at 1.181x

LuxCoreRender (Scene: Rainbow Colors and Prism - Acceleration: CPU) at 1.173x.

Test Systems:

A

B

C

D

Processor: AMD EPYC 7F52 16-Core @ 3.50GHz (16 Cores / 32 Threads), Motherboard: Supermicro H11DSi-NT v2.00 (2.1 BIOS), Chipset: AMD Starship/Matisse, Memory: 64GB, Disk: 280GB INTEL SSDPE21D280GA, Graphics: llvmpipe, Monitor: VE228, Network: 2 x Intel 10G X550T

OS: Ubuntu 21.10, Kernel: 5.13.0-19-generic (x86_64), Desktop: GNOME Shell 40.5, Display Server: X Server + Wayland, OpenGL: 4.5 Mesa 21.2.2 (LLVM 12.0.1 256 bits), Vulkan: 1.1.182, 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-ZPT0kp/gcc-11-11.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-11-ZPT0kp/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: 0x8301034
Java Notes: OpenJDK Runtime Environment (build 11.0.12+7-Ubuntu-0ubuntu3)
Python Notes: Python 3.9.7
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 IBRS_FW STIBP: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

	A	B	C	D
Redis - LPOP (Reqs/sec)	**2140425**	1403554	**1380471**	1418239
Normalized	100%	65.57%	64.5%	66.26%
Stress-NG - G.C.S.F (Bogo Ops/s)	**2698915**	**2067583**	2695017	2643031
Normalized	100%	76.61%	99.86%	97.93%
ONNX Runtime - shufflenet-v2-10 - OpenMP CPU (Inferences/min)	13835	**10986**	13855	**13919**
Normalized	99.4%	78.93%	99.54%	100%
NCNN - CPU - mnasnet (ms)	**7.15**	7.58	7.31	**9.05**
Normalized	100%	94.33%	97.81%	79.01%
NCNN - CPU - shufflenet-v2 (ms)	9.26	9.15	**8.83**	**10.76**
Normalized	95.36%	96.5%	100%	82.06%

Mobile Neural Network - MobileNetV2_224 (ms)	**4.892**	4.98	**5.803**	5.021
Normalized	100%	98.23%	84.3%	97.43%
NCNN - CPU - mobilenet (ms)	19.64	**19.96**	19.68	**16.83**
Normalized	85.69%	84.32%	85.52%	100%
PostgreSQL pgbench - 1 - 500 - Read Write (TPS)	**1005**	884	**851**	887
Normalized	100%	87.96%	84.68%	88.26%
PostgreSQL pgbench - 1 - 500 - Read Write - Average Latency (ms)	**497.701**	565.773	**587.746**	563.748
Normalized	100%	87.97%	84.68%	88.28%
LuxCoreRender - R.C.a.P - CPU (M samples/sec)	8.99	**8.91**	9.47	**10.45**
Normalized	86.03%	85.26%	90.62%	100%
ONNX Runtime - bertsquad-10 - OpenMP CPU (Inferences/min)	625	**616**	**722**	650
Normalized	86.57%	85.32%	100%	90.03%
ONNX Runtime - super-resolution-10 - OpenMP CPU (Inferences/min)	4800	**5499**	4967	**4718**
Normalized	87.29%	100%	90.33%	85.8%
GNU Radio - F.B.t.B.F.F (MiB/s)	**450.8**	518.2	523.2	**523.5**
Normalized	86.11%	98.99%	99.94%	100%
LeelaChessZero - BLAS (Nodes/s)	1642	**1685**	**1479**	1622
Normalized	97.45%	100%	87.77%	96.26%
Apache Cassandra - Reads (Op/s)	**124837**	**141964**	125421	131780
Normalized	87.94%	100%	88.35%	92.83%
Renaissance - Scala Dotty (ms)	**884.6**	884.9	**1005**	889.7
Normalized	100%	99.97%	88.04%	99.43%
GNU Radio - F.D.F (MiB/s)	846.5	**761.9**	849.9	**864**
Normalized	97.97%	88.18%	98.37%	100%
Renaissance - Apache Spark Bayes (ms)	**690.4**	772.6	719.7	**779.9**
Normalized	100%	89.36%	95.93%	88.52%
Cpuminer-Opt - Garlicoin (kH/s)	**1528**	1586	1559	**1710**
Normalized	89.37%	92.76%	91.2%	100%
NCNN - CPU - squeezenet_ssd (ms)	**21.28**	21.11	20.87	**19.14**
Normalized	89.94%	90.67%	91.71%	100%
Cpuminer-Opt - Ringcoin (kH/s)	1864	1819	**2014**	**1812**
Normalized	92.52%	90.32%	100%	89.97%
Apache HTTP Server - 1 (Reqs/sec)	**8316**	**7486**	7692	7893
Normalized	100%	90.01%	92.49%	94.91%
LeelaChessZero - Eigen (Nodes/s)	1519	**1633**	**1471**	1517
Normalized	93.02%	100%	90.08%	92.9%
Facebook RocksDB - Read While Writing (Op/s)	2844661	**3107833**	2849465	**2810480**
Normalized	91.53%	100%	91.69%	90.43%
Redis - GET (Reqs/sec)	**1956953**	1872665	**1769912**	1845036
Normalized	100%	95.69%	90.44%	94.28%
Mobile Neural Network - SqueezeNetV1.0 (ms)	8.652	**7.881**	**8.658**	8.577
Normalized	91.09%	100%	91.03%	91.89%
Stress-NG - CPU Cache (Bogo Ops/s)	144.39	**142.79**	154.72	**156.73**

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Normalized	92.13%	91.11%	98.72%	100%
Kripke (Throughput FoM)	154286200	156477700	168730500	162211600
Normalized	91.44%	92.74%	100%	96.14%
Redis - SET (Reqs/sec)	1404530	1471694	1513098	1532836
Normalized	91.63%	96.01%	98.71%	100%
NCNN - CPU - alexnet (ms)	6.66	6.62	6.62	7.21
Normalized	99.4%	100%	100%	91.82%
JPEG XL Decoding libjxl - All (MP/s)	262.97	276.19	286.01	275.56
Normalized	91.94%	96.57%	100%	96.35%
LuaRadio - F.B.t.B.F.F (MiB/s)	460.6	446.9	460.9	425.4
Normalized	99.93%	96.96%	100%	92.3%
Natron - Spaceship (FPS)	3.9	3.8	3.8	4.1
Normalized	95.12%	92.68%	92.68%	100%
Redis - SADD (Reqs/sec)	1684952	1763702	1638807	1670865
Normalized	95.53%	100%	92.92%	94.74%
NCNN - CPU - efficientnet-b0 (ms)	10.97	10.93	11.03	11.6
Normalized	99.64%	100%	99.09%	94.22%
Stress-NG - IO_uring (Bogo Ops/s)	130359	129816	137570	131254
Normalized	94.76%	94.36%	100%	95.41%
VP9 libvpx Encoding - Speed 5 - Bosphorus 4K (FPS)	10.92	11.4	11.27	11.57
Normalized	94.38%	98.53%	97.41%	100%
AOM AV1 - Speed 0 Two-Pass - Bosphorus 4K (FPS)	0.18	0.18	0.17	0.18
Normalized	100%	100%	94.44%	100%
NCNN - CPU-v3-v3 - mobilenet-v3 (ms)	7.43	7.82	7.48	7.86
Normalized	100%	95.01%	99.33%	94.53%
Renaissance - G.A.U.J.F (ms)	2325	2418	2328	2287
Normalized	98.37%	94.59%	98.23%	100%
Stress-NG - NUMA (Bogo Ops/s)	295.14	299.07	311.37	301.29
Normalized	94.79%	96.05%	100%	96.76%
Botan - Blowfish (MiB/s)	374.672	394.704	394.833	394.492
Normalized	94.89%	99.97%	100%	99.91%
Renaissance - Savina Reactors.IO	10392	10786	10237	10325
Normalized	98.51%	94.91%	100%	99.15%
Botan - Blowfish - Decrypt (MiB/s)	373.929	393.96	393.819	393.33
Normalized	94.92%	100%	99.96%	99.84%
Stockfish - Total Time (Nodes/s)	48524647	49976300	47479804	47751831
Normalized	97.1%	100%	95%	95.55%
Renaissance - A.S.P (ms)	4174	3976	4032	4178
Normalized	95.25%	100%	98.6%	95.16%
AOM AV1 - Speed 9 Realtime - Bosphorus 4K (FPS)	48.73	48.16	48	46.38
Normalized	100%	98.83%	98.5%	95.18%
NCNN - CPU-v2-v2 - mobilenet-v2 (ms)	8.16	8.31	7.96	8.36
Normalized	97.55%	95.79%	100%	95.22%
Renaissance - ALS Movie Lens (ms)	8165	8008	8326	8404
Normalized	98.07%	100%	96.18%	95.29%
ASKAP - tConvolve OpenMP - Degridding (Million Grid Points/sec)	6339	6051	6339	6192
Normalized	100%	95.45%	100%	97.67%
Apache HTTP Server - 20 (Reqs/sec)	41568	43419	43492	42383
Normalized	95.58%	99.83%	100%	97.45%

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LuxCoreRender - Danish Mood - CPU (M samples/sec)	2.27	2.18	2.28	2.22
Normalized	99.56%	95.61%	100%	97.37%
Timed LLVM Compilation - Unix Makefiles (sec)	335.626	335.751	339.467	350.808
Normalized	100%	99.96%	98.87%	95.67%
NCNN - CPU - googlenet (ms)	16.9	16.8	16.79	17.49
Normalized	99.35%	99.94%	100%	96%
AOM AV1 - Speed 8 Realtime - Bosphorus 1080p (FPS)	85.73	83.44	83.49	86.88
Normalized	98.68%	96.04%	96.1%	100%
asmFish - 1.H.M.2.D (Nodes/s)	46412228	44632377	46468751	45400632
Normalized	99.88%	96.05%	100%	97.7%
Renaissance - Apache Spark ALS	1660	1727	1662	1713
Normalized	100%	96.17%	99.89%	96.95%
Numpy Benchmark (Score)	351.67	347.27	338.88	349.04
Normalized	100%	98.75%	96.36%	99.25%
Chia Blockchain VDF - S.A.O (IPS)	117200	121500	117100	119600
Normalized	96.46%	100%	96.38%	98.44%
Appleseed - Disney Material (sec)	122.625317	124.392365	121.794447	126.276707
Normalized	99.32%	97.91%	100%	96.45%
PostgreSQL pgbench - 100 - 500 - Read Only (TPS)	554442	548201	542035	535062
Normalized	100%	98.87%	97.76%	96.5%
SVT-VP9 - VMAF Optimized - Bosphorus 1080p (FPS)	265.49	272.58	275.08	266.6
Normalized	96.51%	99.09%	100%	96.92%
PostgreSQL pgbench - 100 - 500 - Read Only - Average Latency (ms)	0.902	0.912	0.922	0.934
Normalized	100%	98.9%	97.83%	96.57%
Facebook RocksDB - Rand Fill (Op/s)	636626	643776	631805	653731
Normalized	97.38%	98.48%	96.65%	100%
AOM AV1 - Speed 6 Two-Pass - Bosphorus 1080p (FPS)	17.74	17.23	17.27	17.15
Normalized	100%	97.13%	97.35%	96.67%
Timed Wasmer Compilation - Time To Compile (sec)	59.821	59.382	61.419	60.426
Normalized	99.27%	100%	96.68%	98.27%
Redis - LPUSH (Reqs/sec)	1329792	1342642	1333524	1373842
Normalized	96.79%	97.73%	97.07%	100%
PostgreSQL pgbench - 1 - 250 - Read Write (TPS)	1869	1810	1851	1845
Normalized	100%	96.84%	99.04%	98.72%
PostgreSQL pgbench - 1 - 250 - Read Write - Average Latency (ms)	133.728	138.086	135.085	135.506
Normalized	100%	96.84%	99%	98.69%
AOM AV1 - Speed 6 Two-Pass - Bosphorus 4K (FPS)	7.29	7.15	7.06	7.08
Normalized	100%	98.08%	96.84%	97.12%

LuxCoreRender - Orange Juice - CPU (M samples/sec)	**5.14**	**4.98**	5.01	5
Normalized	100%	96.89%	97.47%	97.28%
LuxCoreRender - LuxCore Benchmark - CPU (M samples/sec)	2.55	**2.58**	2.52	**2.5**
Normalized	98.84%	100%	97.67%	96.9%
LuxCoreRender - DLSC - CPU (M samples/sec)	3.18	**3.27**	**3.17**	3.26
Normalized	97.25%	100%	96.94%	99.69%
OpenSSL - SHA256 (byte/s)	**22548674150**	**21862246290**	22192533750	22179182190
Normalized	100%	96.96%	98.42%	98.36%
LuaRadio - Complex Phase (MiB/s)	**497.1**	**512.5**	507.8	504.6
Normalized	97%	100%	99.08%	98.46%
Renaissance - Rand Forest (ms)	**903.2**	876.9	891.3	**876.8**
Normalized	97.08%	99.99%	98.37%	100%
Renaissance - F.H.R (ms)	**2804**	2873	**2888**	2831
Normalized	100%	97.59%	97.11%	99.04%
ONNX Runtime - yolov4 - OpenMP CPU (Inferences/min)	**350**	347	**340**	349
Normalized	100%	99.14%	97.14%	99.71%
PostgreSQL pgbench - 1 - 1 - Read Only - Average Latency (ms)	**0.034**	**0.034**	**0.035**	**0.034**
Normalized	100%	100%	97.14%	100%
NCNN - CPU - yolov4-tiny (ms)	24.6	**24.16**	24.2	**24.87**
Normalized	98.21%	100%	99.83%	97.15%
OpenFOAM - Motorbike 30M (sec)	**32.73**	32.56	32.09	**31.81**
Normalized	97.19%	97.7%	99.13%	100%
Facebook RocksDB - Rand Read	**97009030**	95632732	96077569	**94296782**
Normalized	100%	98.58%	99.04%	97.2%
JPEG XL libjxl - JPEG - 5 (MP/s)	**69.61**	70.81	**71.55**	70.85
Normalized	97.29%	98.97%	100%	99.02%
NCNN - CPU - regnety_400m (ms)	20.34	**20.51**	**19.96**	20.27
Normalized	98.13%	97.32%	100%	98.47%
Mobile Neural Network - inception-v3 (ms)	29.955	29.295	**30.045**	**29.241**
Normalized	97.62%	99.82%	97.32%	100%
JPEG XL libjxl - JPEG - 7 (MP/s)	**68.87**	70.65	**70.74**	70.58
Normalized	97.36%	99.87%	100%	99.77%
PostgreSQL pgbench - 1 - 500 - Read Only (TPS)	573673	572324	**577533**	**562348**
Normalized	99.33%	99.1%	100%	97.37%
Cpuminer-Opt - x25x (kH/s)	**543.96**	543.58	**529.75**	536.74
Normalized	100%	99.93%	97.39%	98.67%
libavif avifenc - 0 (sec)	54.876	54.155	**53.83**	**55.272**
Normalized	98.09%	99.4%	100%	97.39%
JPEG XL Decoding libjxl - 1 (MP/s)	**51.15**	51.98	**52.52**	51.76
Normalized	97.39%	98.97%	100%	98.55%
Ngspice - C2670 (sec)	168.869	169.765	**170.504**	**166.074**
Normalized	98.34%	97.83%	97.4%	100%
PostgreSQL pgbench - 1 - 500 - Read Only - Average Latency (ms)	0.872	0.874	**0.866**	**0.889**
Normalized	99.31%	99.08%	100%	97.41%

ASKAP - tConvolve MPI - Degridding (Mpix/sec)	13456	13456	13810	13456
Normalized	97.44%	97.44%	100%	97.44%
libavif avifenc - 6, Lossless (sec)	37.423	38.027	37.198	37.052
Normalized	99.01%	97.44%	99.61%	100%
Xcompact3d Incompact3d - i.i.1.C.P.D (sec)	36.0911446	35.2049751	36.1263733	35.2909126
Normalized	97.54%	100%	97.45%	99.76%
ASKAP - tConvolve OpenMP - Gridding (Million Grid Points/sec)	6827	6656	6827	6827
Normalized	100%	97.5%	100%	100%
AOM AV1 - Speed 9 Realtime - Bosphorus 1080p (FPS)	100.5	98.24	99.97	100.75
Normalized	99.75%	97.51%	99.23%	100%
simdjson - Kostya (GB/s)	2.44	2.4	2.46	2.43
Normalized	99.19%	97.56%	100%	98.78%
GNU Radio - S.S.C (MiB/s)	3391	3337	3339	3309
Normalized	100%	98.4%	98.46%	97.57%
Ngspice - C7552 (sec)	126.181	127.204	127.089	124.193
Normalized	98.42%	97.63%	97.72%	100%
NCNN - CPU - blazeface (ms)	3.4	3.37	3.33	3.41
Normalized	97.94%	98.81%	100%	97.65%
TNN - CPU - SqueezeNet v2 (ms)	76.418	77.526	78.241	77.547
Normalized	100%	98.57%	97.67%	98.54%
PostgreSQL pgbench - 1 - 50 - Read Only (TPS)	525560	516049	528188	518400
Normalized	99.5%	97.7%	100%	98.15%
Apache Cassandra - Writes (Op/s)	146054	149481	148165	148621
Normalized	97.71%	100%	99.12%	99.42%
Timed Linux Kernel Compilation - Time To Compile (sec)	48.113	47.227	48.33	47.599
Normalized	98.16%	100%	97.72%	99.22%
Embree - Pathtracer - Asian Dragon (FPS)	20.9192	21.2924	20.8512	20.8215
Normalized	98.25%	100%	97.93%	97.79%
Chaos Group V-RAY - CPU (vsamples)	19484	19914	19768	
Normalized	97.84%	100%	99.27%	
libavif avifenc - 6 (sec)	11.162	10.926	11.006	10.961
Normalized	97.89%	100%	99.27%	99.68%
GNU Radio - IIR Filter (MiB/s)	572.5	566.5	567.8	578.6
Normalized	98.95%	97.91%	98.13%	100%
AOM AV1 - Speed 0 Two-Pass - Bosphorus 1080p (FPS)	0.48	0.48	0.47	0.48
Normalized	100%	100%	97.92%	100%
PostgreSQL pgbench - 1 - 50 - Read Only - Average Latency (ms)	0.095	0.097	0.095	0.096
Normalized	100%	97.94%	100%	98.96%
VP9 libvpx Encoding - Speed 0 - Bosphorus 4K (FPS)	5.85	5.84	5.75	5.87
Normalized	99.66%	99.49%	97.96%	100%
Facebook RocksDB - R.R.W.R (Op/s)	1981347	1941074	1962192	1950083
Normalized	100%	97.97%	99.03%	98.42%

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LuaRadio - F.D.F (MiB/s)	377.1	372.3	369.5	375
Normalized	100%	98.73%	97.98%	99.44%
C-Blosc - blosclz (MB/s)	22706	23099	23169	22943
Normalized	98%	99.7%	100%	99.02%
Facebook RocksDB - Seq Fill (Op/s)	720049	734629	723670	725238
Normalized	98.02%	100%	98.51%	98.72%
ONNX Runtime - fcn-resnet101-11 - OpenMP CPU (Inferences/min)	152	149	150	150
Normalized	100%	98.03%	98.68%	98.68%
SVT-VP9 - P.S.O - Bosphorus 1080p (FPS)	282.43	283.76	280.67	286.32
Normalized	98.64%	99.11%	98.03%	100%
Renaissance - A.U.C.T (ms)	19929	20122	20215	19826
Normalized	99.48%	98.53%	98.07%	100%
OpenVKL - vklBenchmark ISPC (Items / Sec)	52	52	51	52
Normalized	100%	100%	98.08%	100%
Blender - Classroom - CPU-Only (sec)	232.6	233.58	235.6	231.1
Normalized	99.36%	98.94%	98.09%	100%
High Performance Conjugate Gradient (GFLOP/s)	16.68	16.8433	16.8117	17.0044
Normalized	98.09%	99.05%	98.87%	100%
VP9 libvpx Encoding - Speed 5 - Bosphorus 1080p (FPS)	26.77	26.26	26.6	26.41
Normalized	100%	98.09%	99.36%	98.66%
NCNN - CPU - resnet18 (ms)	10.46	10.48	10.62	10.66
Normalized	100%	99.81%	98.49%	98.12%
Mobile Neural Network - mobilenetV3 (ms)	3.799	3.831	3.871	3.817
Normalized	100%	99.16%	98.14%	99.53%
libavif avifenc - 10 (sec)	3.725	3.657	3.719	3.688
Normalized	98.17%	100%	98.33%	99.16%
Stress-NG - Context Switching (Bogo Ops/s)	7581039	7456534	7474093	7443653
Normalized	100%	98.36%	98.59%	98.19%
Cython Benchmark - N-Queens (sec)	26.19	25.905	25.716	25.967
Normalized	98.19%	99.27%	100%	99.03%
ASKAP - tConvolve MT - Degridding (Million Grid Points/sec)	5594	5508	5511	5493
Normalized	100%	98.45%	98.51%	98.19%
dav1d - Summer Nature 4K (FPS)	245.29	248.77	247.21	244.28
Normalized	98.6%	100%	99.37%	98.2%
ASKAP - tConvolve MT - Gridding (Million Grid Points/sec)	3600	3544	3547	3535
Normalized	100%	98.46%	98.54%	98.22%
Cpuminer-Opt - Q.S.2.P (kH/s)	131500	132410	132130	130090
Normalized	99.31%	100%	99.79%	98.25%
nginx - 1000 (Reqs/sec)	151655	151880	149229	149645
Normalized	99.85%	100%	98.25%	98.53%
SVT-HEVC - 10 - Bosphorus 1080p (FPS)	336.89	342.08	337.84	336.13
Normalized	98.48%	100%	98.76%	98.26%

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ECP-CANDLE - P3B1 (sec)	**654.725**	648.971	**643.356**	654.497
Normalized	98.26%	99.13%	100%	98.3%
nginx - 200 (Reqs/sec)	**154272**	152931	152122	**151621**
Normalized	100%	99.13%	98.61%	98.28%
AOM AV1 - Speed 4 Two-Pass - Bosphorus 1080p (FPS)	5.85	**5.87**	5.85	**5.77**
Normalized	99.66%	100%	99.66%	98.3%
PostgreSQL pgbench - 1 - 100 - Read Write (TPS)	3535	**3480**	**3539**	3528
Normalized	99.89%	98.33%	100%	99.69%
PostgreSQL pgbench - 1 - 100 - Read Write - Average Latency (ms)	28.292	**28.738**	**28.259**	28.345
Normalized	99.88%	98.33%	100%	99.7%
Mobile Neural Network - squeezenetv1.1 (ms)	6.6	**6.653**	6.636	**6.545**
Normalized	99.17%	98.38%	98.63%	100%
ECP-CANDLE - P1B2 (sec)	**37.952**	37.629	**37.34**	37.412
Normalized	98.39%	99.23%	100%	99.81%
Cpuminer-Opt - T.S.2.O (kH/s)	266640	**265370**	266840	**269680**
Normalized	98.87%	98.4%	98.95%	100%
Stress-NG - G.Q.D.S (Bogo Ops/s)	**281.2**	**276.8**	277.5	280.83
Normalized	100%	98.44%	98.68%	99.87%
libavif avifenc - 2 (sec)	**29.365**	**28.909**	29.331	29.245
Normalized	98.45%	100%	98.56%	98.85%
Cpuminer-Opt - Blake-2 S (kH/s)	**590120**	**580970**	586380	586560
Normalized	100%	98.45%	99.37%	99.4%
PostgreSQL pgbench - 1 - 1 - Read Write - Average Latency (ms)	0.257	**0.258**	**0.254**	0.256
Normalized	98.83%	98.45%	100%	99.22%
OSPray - M.R - SciVis (FPS)	**15.87**	**15.625**	**15.625**	**15.87**
Normalized	100%	98.46%	98.46%	100%
SVT-HEVC - 7 - Bosphorus 1080p	174.52	176.42	**176.94**	**174.27**
Normalized	98.63%	99.71%	100%	98.49%
Timed Mesa Compilation - Time To Compile (sec)	27.594	27.419	**27.625**	**27.218**
Normalized	98.64%	99.27%	98.53%	100%
ASKAP - H.C.O (Iterations/sec)	**487.805**	**480.769**	483.092	**480.769**
Normalized	100%	98.56%	99.03%	98.56%
JPEG XL libjxl - JPEG - 8 (MP/s)	**26.16**	26.4	**26.54**	26.31
Normalized	98.57%	99.47%	100%	99.13%
QuantLib (MFLOPS)	**2626**	2615	**2589**	2604
Normalized	100%	99.58%	98.59%	99.14%
PHPBench - P.B.S (Score)	671804	678069	**670281**	**679880**
Normalized	98.81%	99.73%	98.59%	100%
Renaissance - I.M.D.S (ms)	5278	**5249**	**5322**	5263
Normalized	99.44%	100%	98.61%	99.73%
JPEG XL libjxl - PNG - 7 (MP/s)	**7.86**	7.95	**7.97**	7.89
Normalized	98.62%	99.75%	100%	99%
Embree - Pathtracer ISPC - Asian Dragon (FPS)	19.2697	**19.3379**	19.0974	**19.0713**
Normalized	99.65%	100%	98.76%	98.62%
Appleseed - Emily (sec)	**223.350141**	224.96032	225.169673	**226.453861**

	Normalized	100%	99.28%	99.19%	98.63%
PostgreSQL pgbench - 1 - 1 - Read Write (TPS)		3897	3876	3929	3900
	Normalized	99.19%	98.65%	100%	99.26%
NCNN - CPU - resnet50 (ms)		20.05	20.04	19.94	19.78
	Normalized	98.65%	98.7%	99.2%	100%
SVT-AV1 - Preset 8 - Bosphorus 1080p (FPS)		56.35	56.757	56.205	56.962
	Normalized	98.93%	99.64%	98.67%	100%
AOM AV1 - Speed 4 Two-Pass - Bosphorus 4K (FPS)		3.75	3.79	3.8	3.78
	Normalized	98.68%	99.74%	100%	99.47%
JPEG XL libjxl - PNG - 5 (MP/s)		51.84	52.21	52.32	52.53
	Normalized	98.69%	99.39%	99.6%	100%
Xcompact3d Incompact3d - i.i.1.C.P.D (sec)		8.85260391	8.9701004	8.94024277	8.92117882
	Normalized	100%	98.69%	99.02%	99.23%
AOM AV1 - Speed 8 Realtime - Bosphorus 4K (FPS)		35	34.74	35.16	35.19
	Normalized	99.46%	98.72%	99.91%	100%
LULESH (z/s)		8623	8573	8663	8682
	Normalized	99.31%	98.74%	99.77%	100%
Stress-NG - Forking (Bogo Ops/s)		46396	45983	45813	46157
	Normalized	100%	99.11%	98.75%	99.49%
NCNN - CPU - vgg16 (ms)		28.43	28.58	28.6	28.79
	Normalized	100%	99.48%	99.41%	98.75%
OpenSCAD - Pistol (sec)		117.187	116.512	117.977	117.151
	Normalized	99.42%	100%	98.76%	99.45%
Stress-NG - Matrix Math (Bogo Ops/s)		78189	77266	77864	78234
	Normalized	99.94%	98.76%	99.53%	100%
Embree - Pathtracer - Crown (FPS)		19.7658	19.8041	19.717	19.9637
	Normalized	99.01%	99.2%	98.76%	100%
BRL-CAD - V.P.M (VGR Performance Metric)		243883	246890	245406	
	Normalized	98.78%	100%	99.4%	
Mobile Neural Network - resnet-v2-50 (ms)		24.445	24.387	24.686	24.48
	Normalized	99.76%	100%	98.79%	99.62%
Pennant - leblancbig (Hydro Cycle Time - sec)		14.71975	14.58812	14.68187	14.54555
	Normalized	98.82%	99.71%	99.07%	100%
OpenSCAD - P.M.S (sec)		10.598	10.582	10.484	10.474
	Normalized	98.83%	98.98%	99.9%	100%
PostgreSQL pgbench - 100 - 1 - Read Write (TPS)		3480	3499	3521	3493
	Normalized	98.84%	99.38%	100%	99.2%
SVT-VP9 - V.Q.O - Bosphorus 1080p (FPS)		223.16	225.78	224.39	225.52
	Normalized	98.84%	100%	99.38%	99.88%
OpenSCAD - L.P.C.S (sec)		21.484	21.272	21.364	21.238
	Normalized	98.85%	99.84%	99.41%	100%
GNU Radio - FIR Filter (MiB/s)		653.2	651.4	646.1	647.9

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	Normalized	100%	99.72%	98.91%	99.19%
SecureMark - SecureMark-TLS	205382	205334	207575	206091
	Normalized	98.94%	98.92%	100%	99.29%
NWChem - C240 Buckyball (sec)	6249	6217	6182	6212
	Normalized	98.94%	99.45%	100%	99.52%
GNU Radio - Hilbert Transform (MiB/s)	401.6	405.9	402.1	402.6
	Normalized	98.94%	100%	99.06%	99.19%
PostgreSQL pgbench - 100 - 1 - Read Write - Average Latency (ms)	0.287	0.286	0.284	0.286
	Normalized	98.95%	99.3%	100%	99.3%
Cpuminer-Opt - Magi (kH/s)	872.74	865.65	863.62	864.06
	Normalized	100%	99.19%	98.96%	99.01%
PostgreSQL pgbench - 1 - 100 - Read Only - Average Latency (ms)	0.192	0.193	0.192	0.194
	Normalized	100%	99.48%	100%	98.97%
PostgreSQL pgbench - 1 - 100 - Read Only (TPS)	521657	519120	521028	516354
	Normalized	100%	99.51%	99.88%	98.98%
nginx - 500 (Reqs/sec)	151387	152313	151991	152906
	Normalized	99.01%	99.61%	99.4%	100%
VP9 libvpx Encoding - Speed 0 - Bosphorus 1080p (FPS)	12.27	12.15	12.19	12.15
	Normalized	100%	99.02%	99.35%	99.02%
PostgreSQL pgbench - 100 - 50 - Read Only - Average Latency (ms)	0.103	0.102	0.102	0.102
	Normalized	99.03%	100%	100%	100%
dav1d - Chimera 1080p (FPS)	558.94	561.7	564.18	561.87
	Normalized	99.07%	99.56%	100%	99.59%
Cpuminer-Opt - LBC, LBRY Credits (kH/s)	40450	40810	40800	40820
	Normalized	99.09%	99.98%	99.95%	100%
PostgreSQL pgbench - 100 - 50 - Read Only (TPS)	485159	489595	488382	488259
	Normalized	99.09%	100%	99.75%	99.73%
Pennant - sedovbig (Hydro Cycle Time - sec)	24.91585	24.78892	24.69115	24.74505
	Normalized	99.1%	99.61%	100%	99.78%
Stress-NG - S.V.M.P (Bogo Ops/s)	3813479	3824110	3828562	3794218
	Normalized	99.61%	99.88%	100%	99.1%
Helsing - 12 digit (sec)	3.011	3.001	2.984	3.002
	Normalized	99.1%	99.43%	100%	99.4%
libavif avifenc - 10, Lossless (sec)	6.481	6.459	6.423	6.443
	Normalized	99.11%	99.44%	100%	99.69%
Apache HTTP Server - 500 (Reqs/sec)	103813	104247	104137	104744
	Normalized	99.11%	99.53%	99.42%	100%
Stress-NG - Socket Activity (Bogo	10652	10718	10734	10746
	Normalized	99.12%	99.74%	99.89%	100%
SVT-AV1 - Preset 4 - Bosphorus 1080p (FPS)	4.982	5.026	5.003	4.989
	Normalized	99.12%	100%	99.54%	99.26%

PostgreSQL pgbench - 100 - 100 - Read Write (TPS)	**41797**	41645	**41433**	41779
Normalized	100%	99.64%	99.13%	99.96%
PostgreSQL pgbench - 100 - 100 - Read Write - Average Latency (ms)	**2.393**	2.401	**2.414**	2.394
Normalized	100%	99.67%	99.13%	99.96%
Cpuminer-Opt - Skeincoin (kH/s)	136560	136480	**136590**	**135430**
Normalized	99.98%	99.92%	100%	99.15%
Stress-NG - Memory Copying (Bogo Ops/s)	4389	**4421**	4414	**4384**
Normalized	99.27%	100%	99.83%	99.15%
Timed Godot Game Engine Compilation - Time To Compile (sec)	**73.111**	**72.531**	72.889	72.782
Normalized	99.21%	100%	99.51%	99.66%
Coremark - CoreMark Size 666 - I.P.S (Iterations/Sec)	**704458**	709849	**710085**	706363
Normalized	99.21%	99.97%	100%	99.48%
Embree - Pathtracer - Asian Dragon Obj (FPS)	20.3608	20.3787	**20.3231**	**20.4835**
Normalized	99.4%	99.49%	99.22%	100%
Blender - BMW27 - CPU-Only (sec)	80.98	80.62	**81.04**	**80.41**
Normalized	99.3%	99.74%	99.22%	100%
Smallpt - G.I.R.1.S (sec)	**5.661**	5.62	5.63	**5.617**
Normalized	99.22%	99.95%	99.77%	100%
Apache HTTP Server - 200 (Reqs/sec)	111393	**111903**	**111050**	111859
Normalized	99.54%	100%	99.24%	99.96%
Timed MrBayes Analysis - P.P.A (sec)	**104.234**	104.336	104.27	**105.034**
Normalized	100%	99.9%	99.97%	99.24%
SVT-AV1 - Preset 4 - Bosphorus 4K (FPS)	**1.611**	1.603	**1.599**	1.606
Normalized	100%	99.5%	99.26%	99.69%
Facebook RocksDB - Rand Fill Sync (Op/s)	**150877**	150802	150417	**149765**
Normalized	100%	99.95%	99.7%	99.26%
Timed FFmpeg Compilation - Time To Compile (sec)	**31.001**	30.858	30.961	**30.778**
Normalized	99.28%	99.74%	99.41%	100%
Xmrig - Monero - 1M (H/s)	**13522**	13573	13559	**13619**
Normalized	99.28%	99.66%	99.56%	100%
nginx - 100 (Reqs/sec)	152400	**153477**	**152392**	152662
Normalized	99.3%	100%	99.29%	99.47%
Stress-NG - Malloc (Bogo Ops/s)	338162843	338408972	**337236125**	**339623981**
Normalized	99.57%	99.64%	99.3%	100%
PostgreSQL pgbench - 100 - 250 - Read Write (TPS)	**38118**	**37852**	38001	37927
Normalized	100%	99.3%	99.69%	99.5%
PostgreSQL pgbench - 100 - 250 - Read Write - Average Latency (ms)	**6.559**	**6.605**	6.579	6.592
Normalized	100%	99.3%	99.7%	99.5%

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PostgreSQL pgbench - 1 - 250 - Read Only - Average Latency (ms)	0.431	0.432	0.429	0.431
Normalized	99.54%	99.31%	100%	99.54%
PostgreSQL pgbench - 100 - 100 - Read Only (TPS)	490976	487642	490149	489530
Normalized	100%	99.32%	99.83%	99.71%
CloverLeaf - L.E.H (sec)	19.36	19.23	19.28	19.33
Normalized	99.33%	100%	99.74%	99.48%
Apache HTTP Server - 1000	104416	104544	103843	104279
Normalized	99.88%	100%	99.33%	99.75%
nginx - 1 (Reqs/sec)	58574	58947	58558	58652
Normalized	99.37%	100%	99.34%	99.5%
SVT-AV1 - Preset 8 - Bosphorus 4K (FPS)	16.662	16.649	16.553	16.574
Normalized	100%	99.92%	99.35%	99.47%
PostgreSQL pgbench - 100 - 250 - Read Only - Average Latency (ms)	0.466	0.464	0.464	0.463
Normalized	99.36%	99.78%	99.78%	100%
PostgreSQL pgbench - 100 - 500 - Read Write - Average Latency (ms)	15.52	15.487	15.421	15.491
Normalized	99.36%	99.57%	100%	99.55%
PostgreSQL pgbench - 100 - 500 - Read Write (TPS)	32217	32284	32423	32277
Normalized	99.36%	99.57%	100%	99.55%
PostgreSQL pgbench - 1 - 250 - Read Only (TPS)	580488	578469	582157	580507
Normalized	99.71%	99.37%	100%	99.72%
VOSK Speech Recognition Toolkit	20.482	20.449	20.396	20.355
Normalized	99.38%	99.54%	99.8%	100%
Mobile Neural Network - mobilenet-v1-1.0 (ms)	3.384	3.383	3.404	3.398
Normalized	99.97%	100%	99.38%	99.56%
dav1d - S.N.1 (FPS)	511.36	510.59	509.25	508.23
Normalized	100%	99.85%	99.59%	99.39%
Apache HTTP Server - 100 (Reqs/sec)	95744	95782	95516	96103
Normalized	99.63%	99.67%	99.39%	100%
Timed Erlang/OTP Compilation - Time To Compile (sec)	120.25	120.447	120.832	120.983
Normalized	100%	99.84%	99.52%	99.39%
PostgreSQL pgbench - 100 - 250 - Read Only (TPS)	536452	538247	538933	539686
Normalized	99.4%	99.73%	99.86%	100%
Cpuminer-Opt - Deepcoin (kH/s)	14960	15050	14970	14990
Normalized	99.4%	100%	99.47%	99.6%
Stress-NG - CPU Stress (Bogo Ops/s)	46336	46471	46608	46564
Normalized	99.42%	99.7%	100%	99.9%
Embree - Pathtracer ISPC - Crown (FPS)	17.8444	17.9471	17.8879	17.8512
Normalized	99.43%	100%	99.67%	99.47%
Botan - AES-256 (MiB/s)	5211	5183	5213	5190
Normalized	99.97%	99.43%	100%	99.56%

AOM AV1 - Speed 6 Realtime - Bosphorus 4K (FPS)	12.83	**12.82**	**12.89**	**12.89**
Normalized	99.53%	99.46%	100%	100%
PostgreSQL pgbench - 1 - 1 - Read Only (TPS)	**29125**	29084	**28967**	29028
Normalized	100%	99.86%	99.46%	99.67%
dav1d - C.1.1.b (FPS)	**444.53**	**446.95**	446.07	445.75
Normalized	99.46%	100%	99.8%	99.73%
PostgreSQL pgbench - 100 - 50 - Read Write - Average Latency (ms)	**1.114**	**1.114**	1.113	**1.108**
Normalized	99.46%	99.46%	99.55%	100%
ASTC Encoder - Thorough (sec)	9.327	**9.3121**	**9.3619**	9.3172
Normalized	99.84%	100%	99.47%	99.95%
OSPray - San Miguel - Path Tracer (FPS)	**1.88**	**1.88**	**1.88**	**1.87**
Normalized	100%	100%	100%	99.47%
PostgreSQL pgbench - 100 - 50 - Read Write (TPS)	44898	**44893**	44922	**45127**
Normalized	99.49%	99.48%	99.55%	100%
Stress-NG - MMAP (Bogo Ops/s)	**256.62**	256.55	256.45	**255.29**
Normalized	100%	99.97%	99.93%	99.48%
Helsing - 14 digit (sec)	267.234	**266.576**	**267.956**	266.813
Normalized	99.75%	100%	99.48%	99.91%
Quantum ESPRESSO - AUSURF112 (sec)	396.99	396.29	**395.13**	**397.14**
Normalized	99.53%	99.71%	100%	99.49%
OpenFOAM - Motorbike 60M (sec)	264.66	264.52	**263.38**	**264.69**
Normalized	99.52%	99.57%	100%	99.51%
SVT-HEVC - 1 - Bosphorus 1080p	**14.21**	14.18	14.17	**14.14**
Normalized	100%	99.79%	99.72%	99.51%
PostgreSQL pgbench - 100 - 100 - Read Only - Average Latency (ms)	**0.204**	**0.205**	**0.204**	**0.204**
Normalized	100%	99.51%	100%	100%
Facebook RocksDB - Update Rand (Op/s)	**522631**	524704	523413	**525165**
Normalized	99.52%	99.91%	99.67%	100%
PostgreSQL pgbench - 100 - 1 - Read Only (TPS)	**26125**	26056	26095	**26003**
Normalized	100%	99.74%	99.89%	99.53%
Blender - Pabellon Barcelona - CPU-Only (sec)	259.17	**258.67**	**259.83**	258.96
Normalized	99.81%	100%	99.55%	99.89%
TNN - CPU - DenseNet (ms)	**3157**	**3144**	3152	3153
Normalized	99.58%	100%	99.76%	99.71%
Stress-NG - Atomic (Bogo Ops/s)	400787	**400262**	**401960**	400423
Normalized	99.71%	99.58%	100%	99.62%
ASTC Encoder - Medium (sec)	4.5472	**4.534**	**4.5525**	4.5354
Normalized	99.71%	100%	99.59%	99.97%
Appleseed - Material Tester (sec)	**185.13305**	185.830833	185.471834	**185.880503**
Normalized	100%	99.62%	99.82%	99.6%

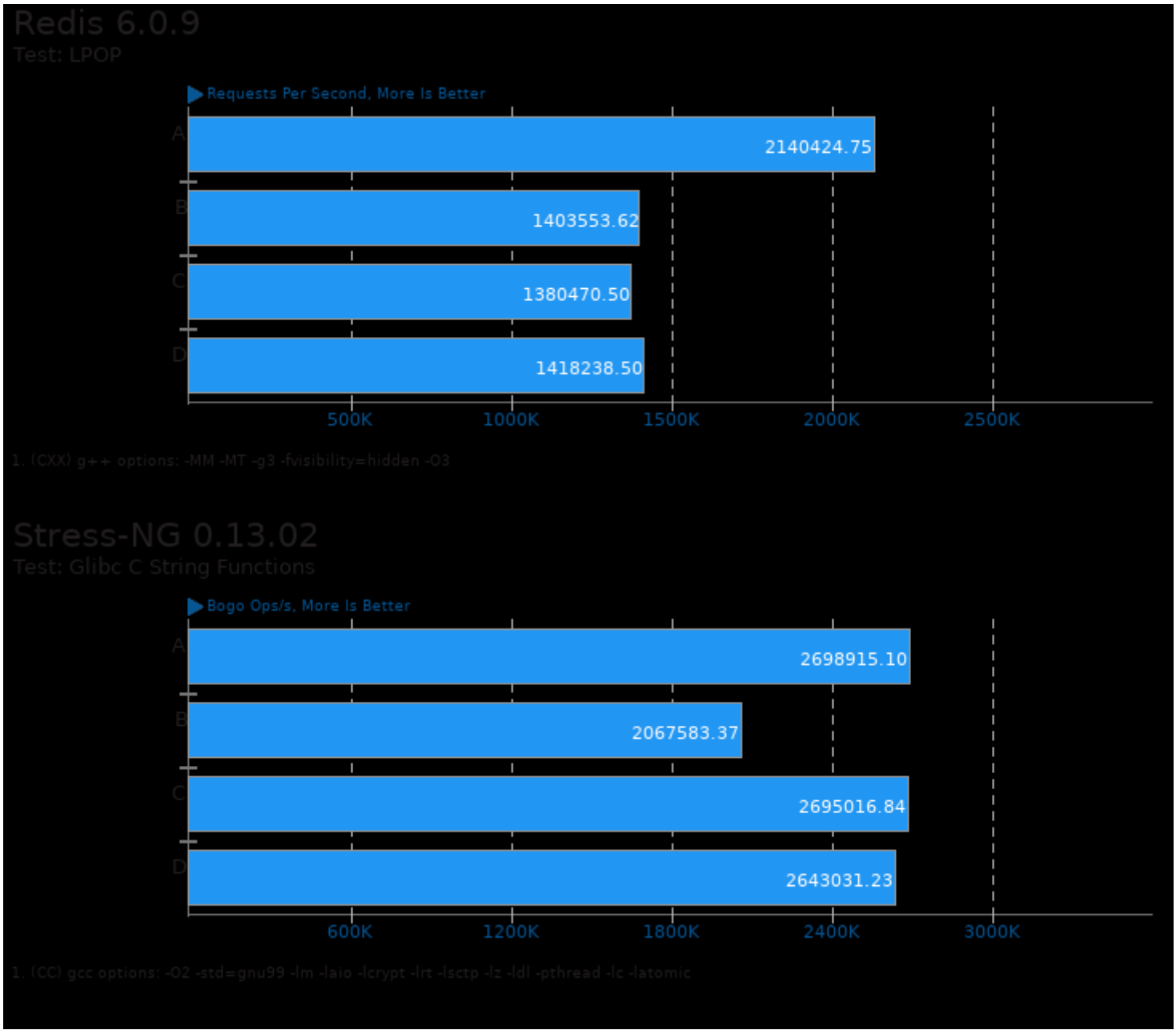
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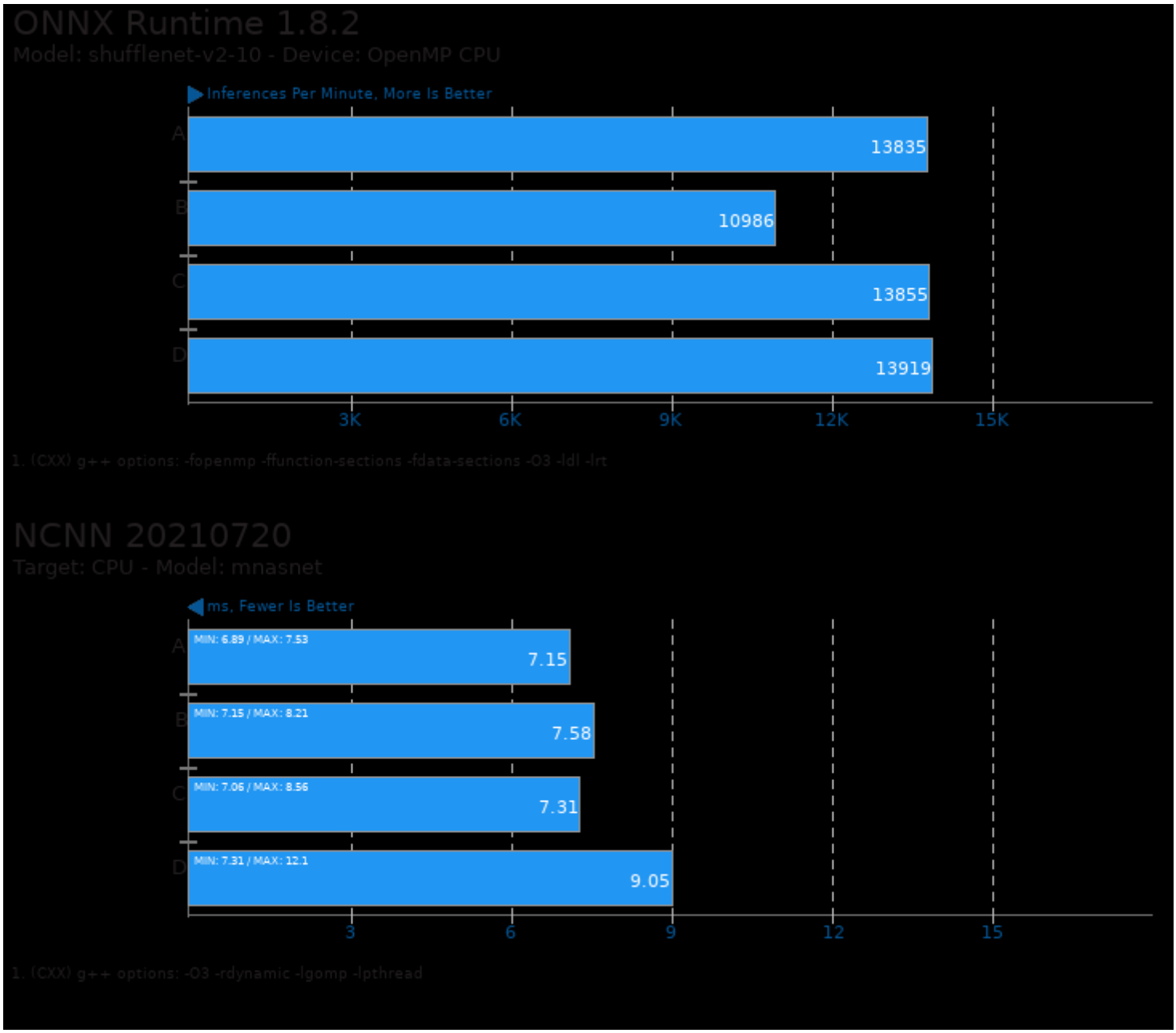
OSPray - XFrog Forest - Path Tracer (FPS)	2.51	2.52	2.52	2.51
Normalized	99.6%	100%	100%	99.6%
Stress-NG - SENDFILE (Bogo Ops/s)	325878	326781	325627	326904
Normalized	99.69%	99.96%	99.61%	100%
Botan - ChaCha20Poly1305 - Decrypt (MiB/s)	745.229	745.261	748.043	746.984
Normalized	99.62%	99.63%	100%	99.86%
Cpuminer-Opt - Myriad-Groestl (kH/s)	7974	7949	7961	7977
Normalized	99.97%	99.64%	99.8%	100%
ECP-CANDLE - P3B2 (sec)	925.644	925.987	928.633	926.744
Normalized	100%	99.96%	99.68%	99.88%
Embree - Pathtracer ISPC - Asian Dragon Obj (FPS)	17.3294	17.2741	17.3047	17.309
Normalized	100%	99.68%	99.86%	99.88%
Sysbench - RAM / Memory (MiB/sec)	2965	2972	2964	2973
Normalized	99.71%	99.96%	99.69%	100%
Blender - Barbershop - CPU-Only	341.81	342.26	341.41	342.38
Normalized	99.88%	99.75%	100%	99.72%
nginx - 20 (Reqs/sec)	154119	154503	154065	154316
Normalized	99.75%	100%	99.72%	99.88%
Timed LLVM Compilation - Ninja (sec)	299.277	299.978	299.705	299.137
Normalized	99.95%	99.72%	99.81%	100%
Timed GCC Compilation - Time To Compile (sec)	834.032	831.694	833.296	832.13
Normalized	99.72%	100%	99.81%	99.95%
Timed HMMer Search - P.D.S (sec)	100.066	100.272	99.996	100.217
Normalized	99.93%	99.72%	100%	99.78%
TNN - CPU - MobileNet v2 (ms)	289.415	288.876	288.63	289.096
Normalized	99.73%	99.91%	100%	99.84%
Xmrig - Wownero - 1M (H/s)	14146	14149	14164	14184
Normalized	99.73%	99.75%	99.86%	100%
Chia Blockchain VDF - Square Plain C++ (IPS)	150100	149700	150000	150100
Normalized	100%	99.73%	99.93%	100%
simdjson - DistinctUserID (GB/s)	3.95	3.95	3.96	3.95
Normalized	99.75%	99.75%	100%	99.75%
OpenSCAD - Mini-ITX Case (sec)	53.37	53.421	53.289	53.335
Normalized	99.85%	99.75%	100%	99.91%
libjpeg-turbo tjbench - D.T (Megapixels/sec)	200.781752	200.393346	200.715385	200.87627
Normalized	99.95%	99.76%	99.92%	100%
AOM AV1 - Speed 6 Realtime - Bosphorus 1080p (FPS)	21.9	21.95	21.95	21.95
Normalized	99.77%	100%	100%	100%
Blender - Fishy Cat - CPU-Only (sec)	105.77	105.61	105.77	105.84
Normalized	99.85%	100%	99.85%	99.78%
PostgreSQL pgbench - 1 - 50 - Read Write - Average Latency (ms)	10.734	10.733	10.711	10.716
Normalized	99.79%	99.8%	100%	99.95%

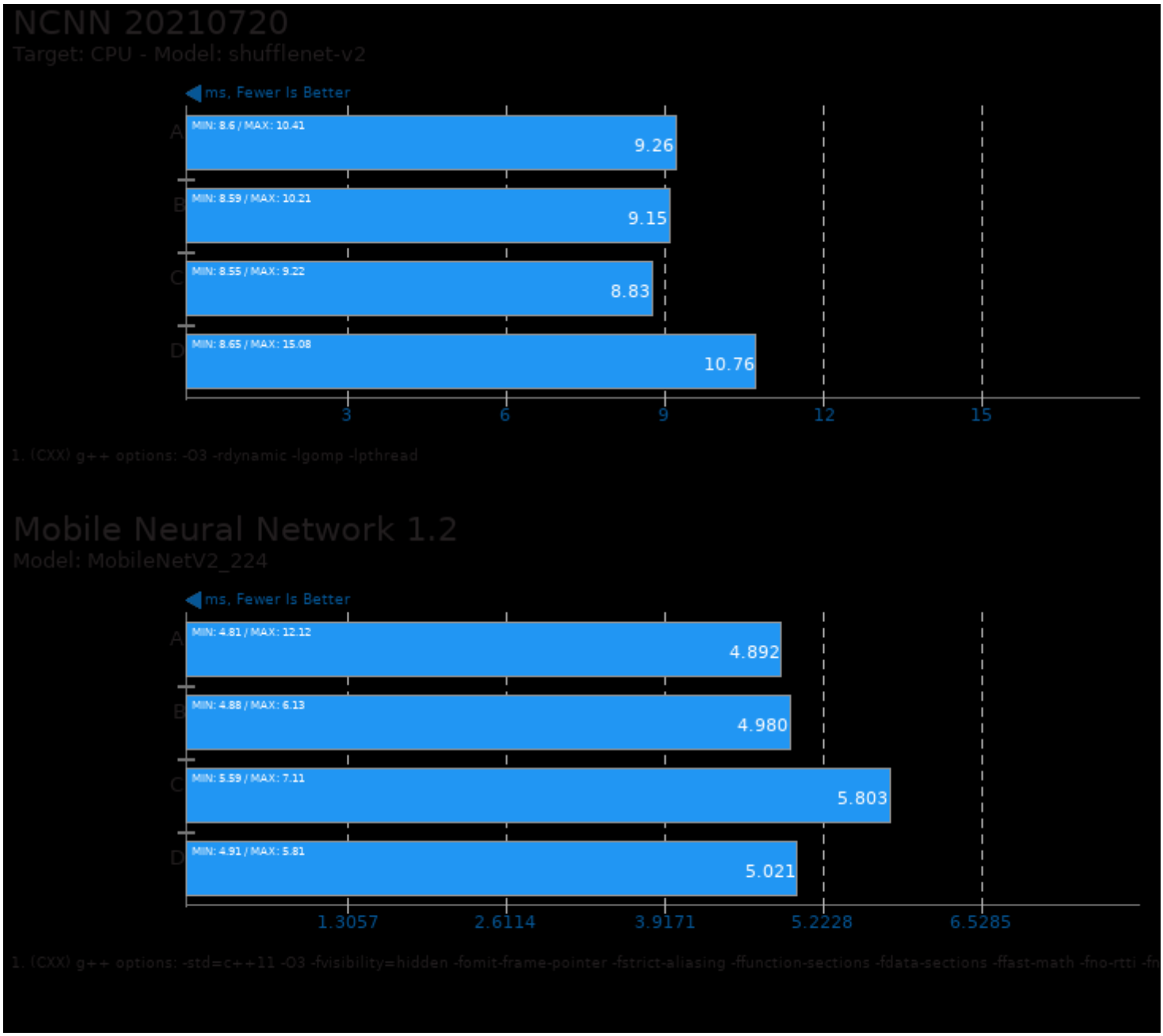
PostgreSQL pgbench - 1 - 50 - Read Write (TPS)	**4658**	4659	**4668**	4666
Normalized	99.79%	99.81%	100%	99.96%
NAMD - ATPase Simulation - 327,506 Atoms (days/ns)	**1.13482**	1.13454	**1.13262**	1.13357
Normalized	99.81%	99.83%	100%	99.92%
C-Ray - Total Time - 4.1.R.P.P (sec)	**33.395**	33.405	**33.459**	33.407
Normalized	100%	99.97%	99.81%	99.96%
Botan - AES-256 - Decrypt (MiB/s)	5192	**5185**	5190	**5195**
Normalized	99.95%	99.82%	99.91%	100%
Stress-NG - Semaphores (Bogo	2368813	**2366432**	2368622	**2370631**
Normalized	99.92%	99.82%	99.92%	100%
Botan - KASUMI - Decrypt (MiB/s)	86.995	**87.096**	**86.945**	87.006
Normalized	99.88%	100%	99.83%	99.9%
Google SynthMark - VoiceMark_100 (Voices)	**694.791**	**693.633**	694.297	693.943
Normalized	100%	99.83%	99.93%	99.88%
OpenSCAD - Retro Car (sec)	**5.445**	5.45	5.452	**5.453**
Normalized	100%	99.91%	99.87%	99.85%
TNN - CPU - SqueezeNet v1.1 (ms)	266.958	**266.849**	266.854	**267.216**
Normalized	99.96%	100%	100%	99.86%
Botan - CAST-256 (MiB/s)	136.899	136.883	**136.733**	**136.912**
Normalized	99.99%	99.98%	99.87%	100%
Botan - CAST-256 - Decrypt (MiB/s)	136.993	136.963	**136.85**	**137.025**
Normalized	99.98%	99.95%	99.87%	100%
Botan - ChaCha20Poly1305 (MiB/s)	**752.58**	753.482	753.052	**753.542**
Normalized	99.87%	99.99%	99.93%	100%
FLAC Audio Encoding - WAV To FLAC (sec)	15.213	15.215	**15.231**	**15.212**
Normalized	99.99%	99.98%	99.88%	100%
OpenSSL - RSA4096 (verify/s)	**298680**	298909	**298994**	298990
Normalized	99.89%	99.97%	100%	100%
OpenSSL - RSA4096 (sign/s)	**4608**	4610	**4613**	**4613**
Normalized	99.9%	99.94%	100%	100%
LuaRadio - Hilbert Transform (MiB/s)	**97.4**	**97.4**	**97.4**	**97.3**
Normalized	100%	100%	100%	99.9%
Botan - Twofish (MiB/s)	328.028	**328.129**	327.992	**327.858**
Normalized	99.97%	100%	99.96%	99.92%
Botan - Twofish - Decrypt (MiB/s)	**332.674**	332.781	332.835	**332.94**
Normalized	99.92%	99.95%	99.97%	100%
Stress-NG - MEMFD (Bogo Ops/s)	**706.5**	**706**	706.22	706.3
Normalized	100%	99.93%	99.96%	99.97%
Botan - KASUMI (MiB/s)	**89.862**	**89.806**	89.821	89.842
Normalized	100%	99.94%	99.95%	99.98%
ASTC Encoder - Exhaustive (sec)	42.1821	42.1897	**42.1944**	**42.1761**
Normalized	99.99%	99.97%	99.96%	100%
Stress-NG - Crypto (Bogo Ops/s)	**4593**	4595	**4595**	4594
Normalized	99.96%	100%	100%	99.98%
GNU GMP GMPbench - Total Time (GMPbench Score)	**5315**	5313	5313	**5313**
Normalized	100%	99.97%	99.97%	99.96%
Sysbench - CPU (Events/sec)	32725	**32729**	32726	**32722**
Normalized	99.99%	100%	99.99%	99.98%

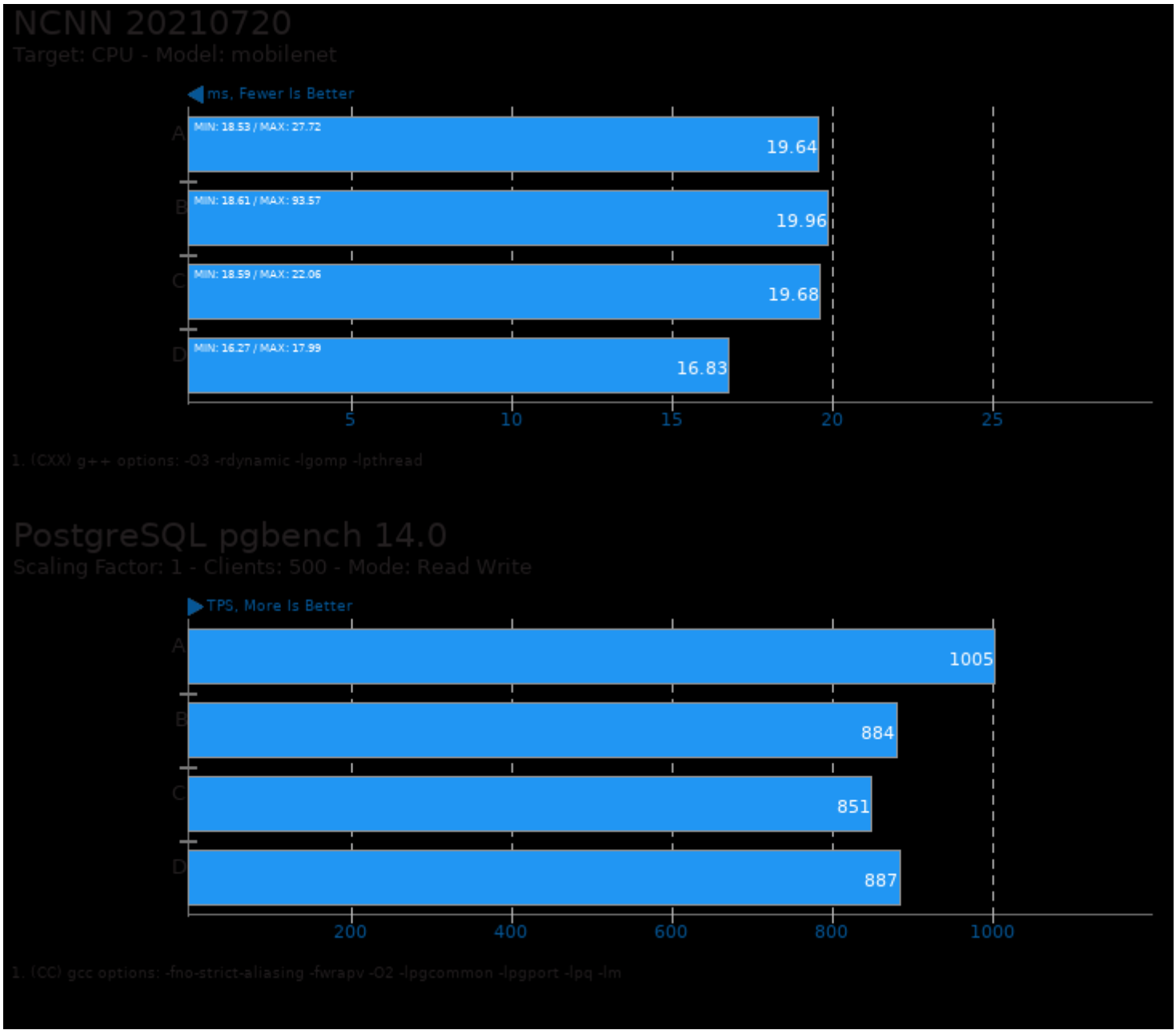
AMD EPYC Rome

Stress-NG - Vector Math (Bogo Ops/s)	**91516**	91525	**91528**	91525
Normalized	99.99%	100%	100%	100%
PostgreSQL pgbench - 100 - 1 - Read Only - Average Latency (ms)	0.038	0.038	0.038	0.038
ASKAP - tConvolve MPI - Gridding (Mpix/sec)	16400	16400	16400	16400
OpenVKL - v.S (Items / Sec)	32	32	32	32
Intel Open Image Denoise - RTLightmap.hdr.4096x4096 (Images / Sec)	0.34	0.34	0.34	0.34
Intel Open Image Denoise - RT.ldr_alb_nrm.3840x2160 (Images / Sec)	0.69	0.69	0.69	0.69
Intel Open Image Denoise - RT.hdr_alb_nrm.3840x2160 (Images / Sec)	0.69	0.69	0.69	0.69
OSPray - M.R - Path Tracer (FPS)	250	250	250	250
OSPray - NASA Streamlines - Path Tracer (FPS)	7.19	7.19	7.19	7.19
OSPray - NASA Streamlines - SciVis (FPS)	33.33	33.33	33.33	33.33
OSPray - XFrog Forest - SciVis (FPS)	4.72	4.72	4.72	4.72
OSPray - San Miguel - SciVis (FPS)	24.39	24.39	24.39	24.39
JPEG XL libjxl - PNG - 8 (MP/s)	0.81	0.81	0.81	0.81
simdjson - PartialTweets (GB/s)	3.51	3.51	3.51	3.51
simdjson - LargeRand (GB/s)	0.9	0.9	0.9	0.9


Redis 6.0.9
Test: LPOP
Requests Per Second, More Is Better
A
2140424.75
B
1403553.62
C
1380470.50
D
1418238.50
500K
1000K
1500K
2000K
2500K
1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3
Stress-NG 0.13.02
Test: Glibc C String Functions
Bogo Ops/s, More Is Better
A
2698915.10
B
2067583.37
C
2695016.84
D
2643031.23
600K
1200K
1800K
2400K
3000K
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

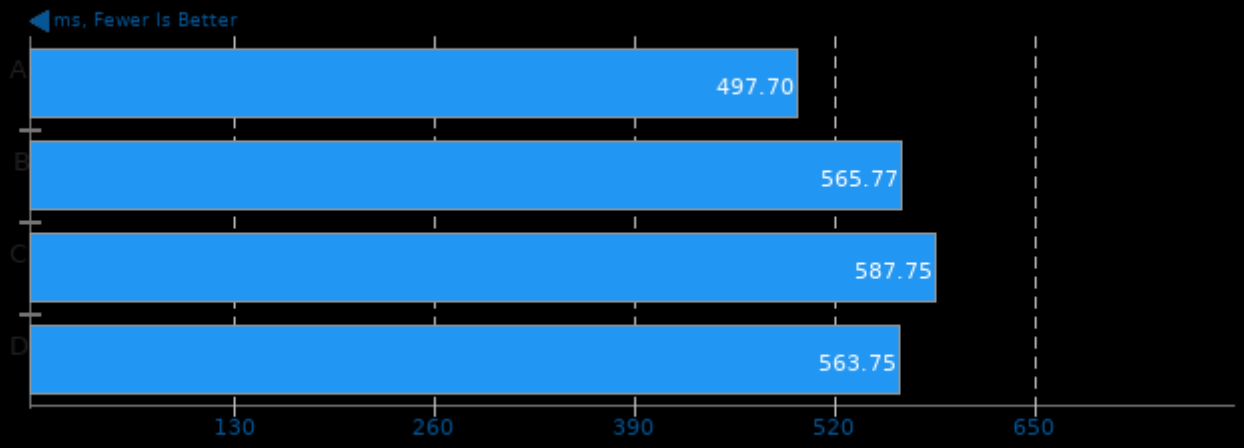

ONNX Runtime 1.8.2
Model: shufflenet-v2-10 - Device: OpenMP CPU
Inferences Per Minute, More Is Better
A
B
C
D
13835
10986
13855
13919
3K
6K
9K
12K
15K
1. (CXX) g++ options: -fopenmp -ffunction-sections -fdata-sections -O3 -ldl -lrt
NCNN 20210720
Target: CPU - Model: mnasnet
ms, Fewer Is Better
MIN: 6.89 / MAX: 7.53
7.15
MIN: 7.15 / MAX: 8.21
7.58
MIN: 7.06 / MAX: 8.56
7.31
MIN: 7.31 / MAX: 12.1
9.05
3
6
9
12
15
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread


NCNN 20210720
Target: CPU - Model: shufflenet-v2
ms, Fewer Is Better
A
MIN: 8.6 / MAX: 10.41
9.26
B
MIN: 8.59 / MAX: 10.21
9.15
C
MIN: 8.55 / MAX: 9.22
8.83
D
MIN: 8.65 / MAX: 15.08
10.76
3
6
9
12
15
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
Mobile Neural Network 1.2
Model: MobileNetV2_224
ms, Fewer Is Better
A
MIN: 4.81 / MAX: 12.12
4.892
B
MIN: 4.88 / MAX: 6.13
4.980
C
MIN: 5.59 / MAX: 7.11
5.803
D
MIN: 4.91 / MAX: 5.81
5.021
1.3057
2.6114
3.9171
5.2228
6.5285
1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fn


NCNN 20210720
Target: CPU - Model: mobilenet
ms, Fewer Is Better
A
MIN: 18.53 / MAX: 27.72
19.64
B
MIN: 18.61 / MAX: 93.57
19.96
C
MIN: 18.59 / MAX: 22.06
19.68
D
MIN: 16.27 / MAX: 17.99
16.83
5
10
15
20
25
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
PostgreSQL pgbench 14.0
Scaling Factor: 1 - Clients: 500 - Mode: Read Write
TPS, More Is Better
A
1005
B
884
C
851
D
887
200
400
600
800
1000
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

PostgreSQL pgbench 14.0

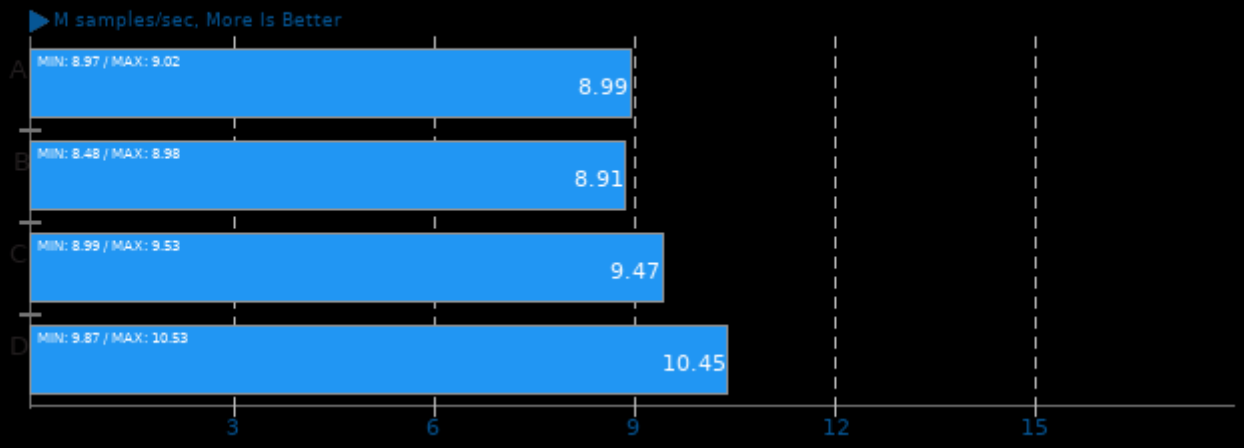
Scaling Factor: 1 - Clients: 500 - Mode: Read Write - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

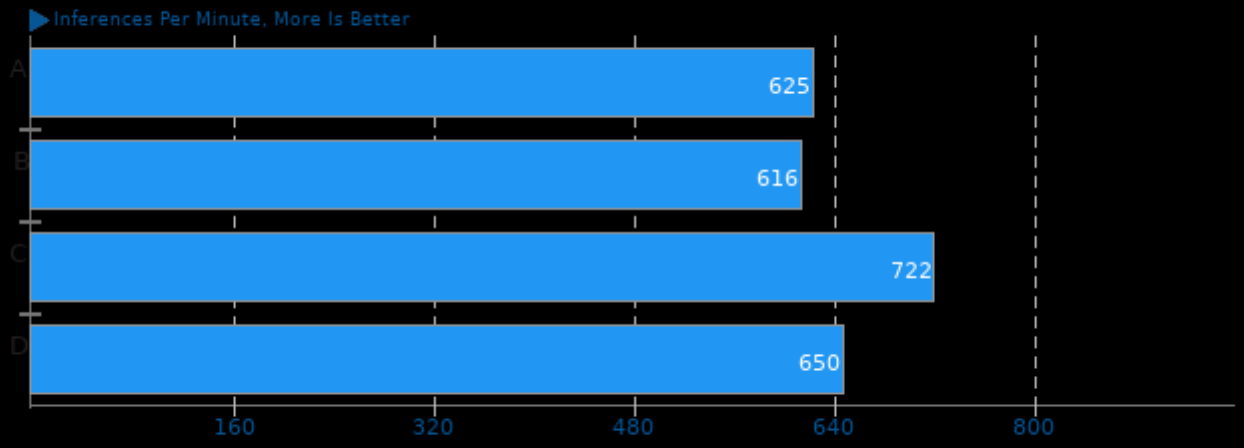
LuxCoreRender 2.5

Scene: Rainbow Colors and Prism - Acceleration: CPU

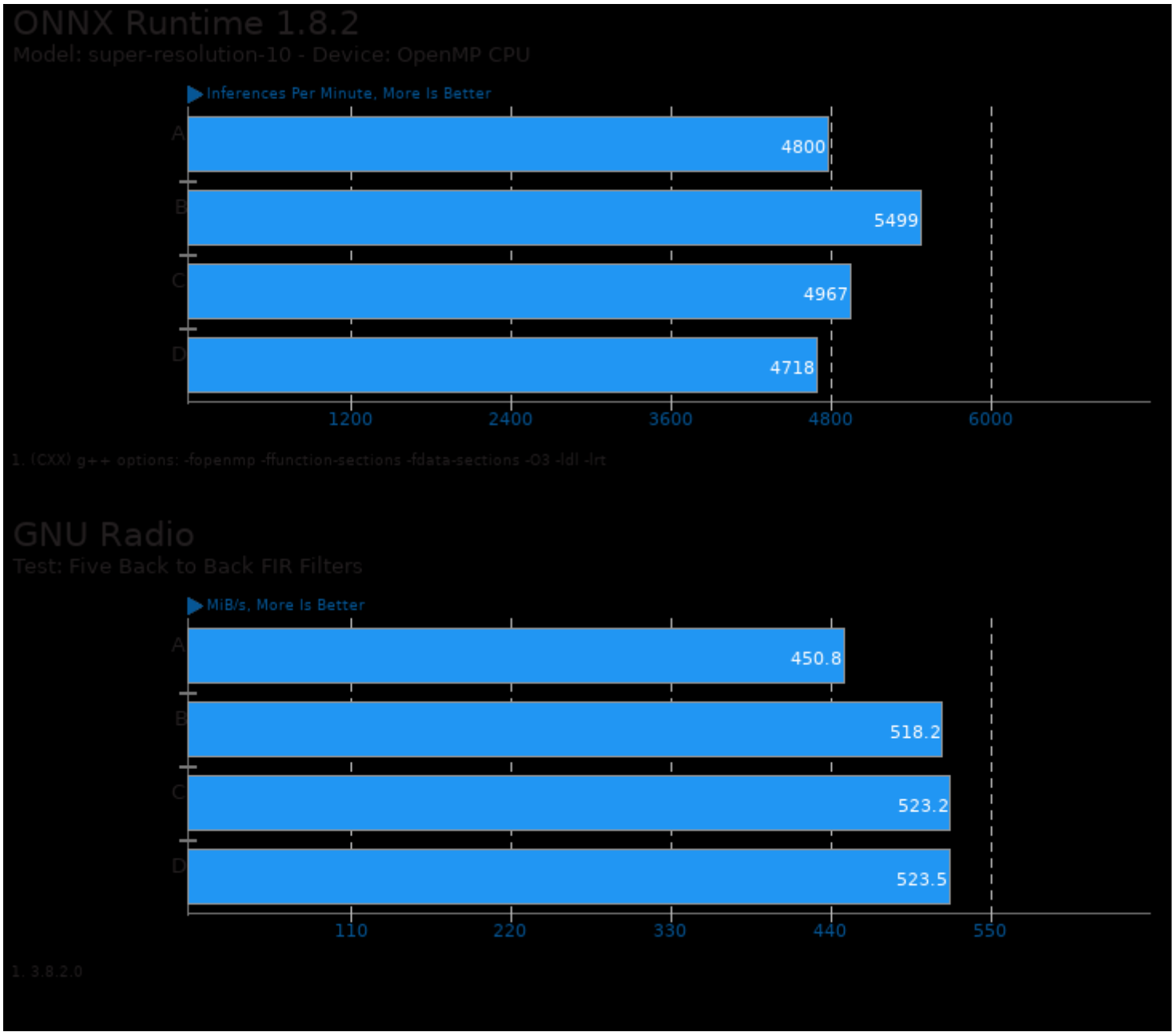


ONNX Runtime 1.8.2

Model: bertsquad-10 - Device: OpenMP CPU

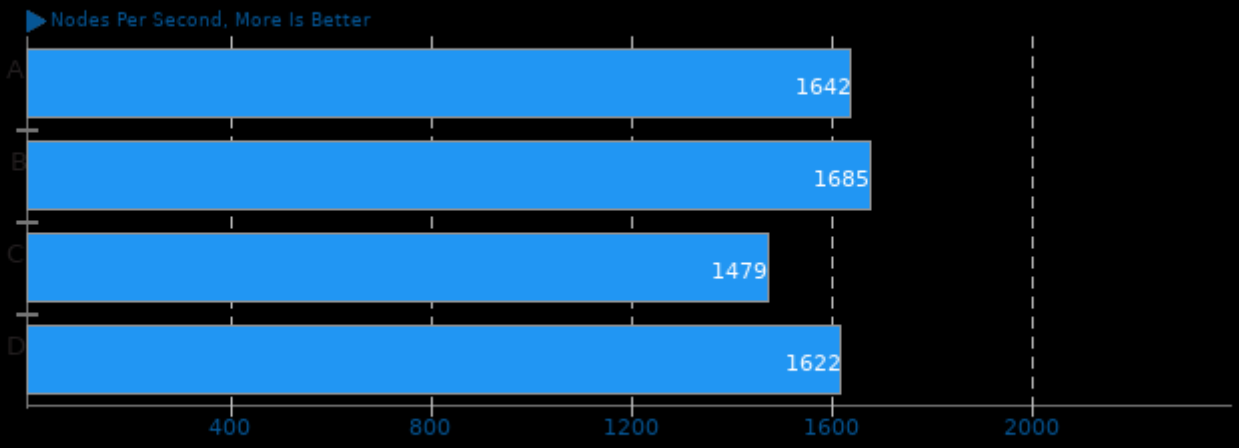


1. (CXX) g++ options: -fopenmp -ffunction-sections -fdata-sections -O3 -ldl -lrt


ONNX Runtime 1.8.2
Model: super-resolution-10 - Device: OpenMP CPU
Inferences Per Minute, More Is Better
A
4800
B
5499
C
4967
D
4718
1200
2400
3600
4800
6000
1. (CXX) g++ options: -fopenmp -ffunction-sections -fdata-sections -O3 -ldl -lrt
GNU Radio
Test: Five Back to Back FIR Filters
MiB/s, More Is Better
A
450.8
B
518.2
C
523.2
D
523.5
110
220
330
440
550
1. 3.8.2.0

LeelaChessZero 0.28

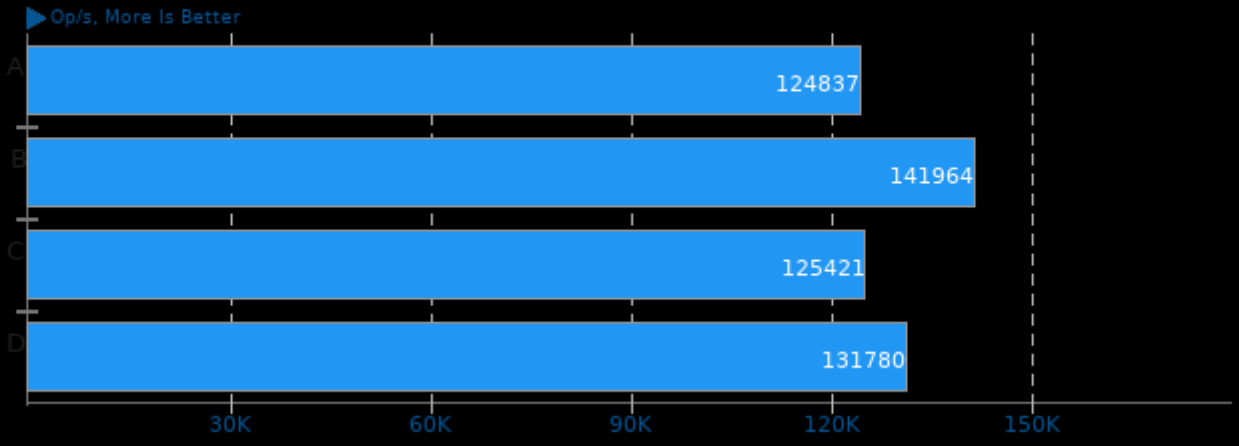
Backend: BLAS



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

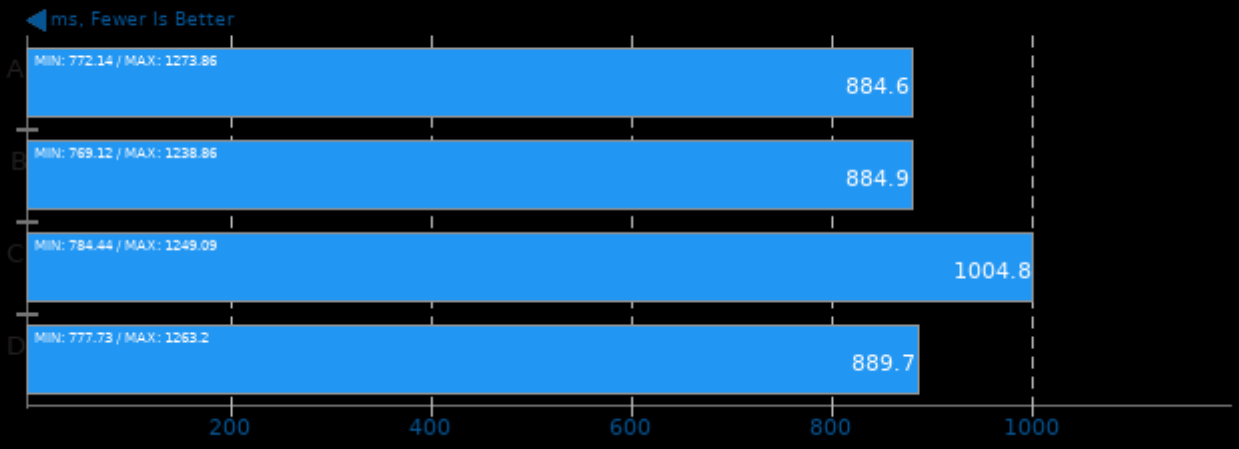
Apache Cassandra 4.0

Test: Reads



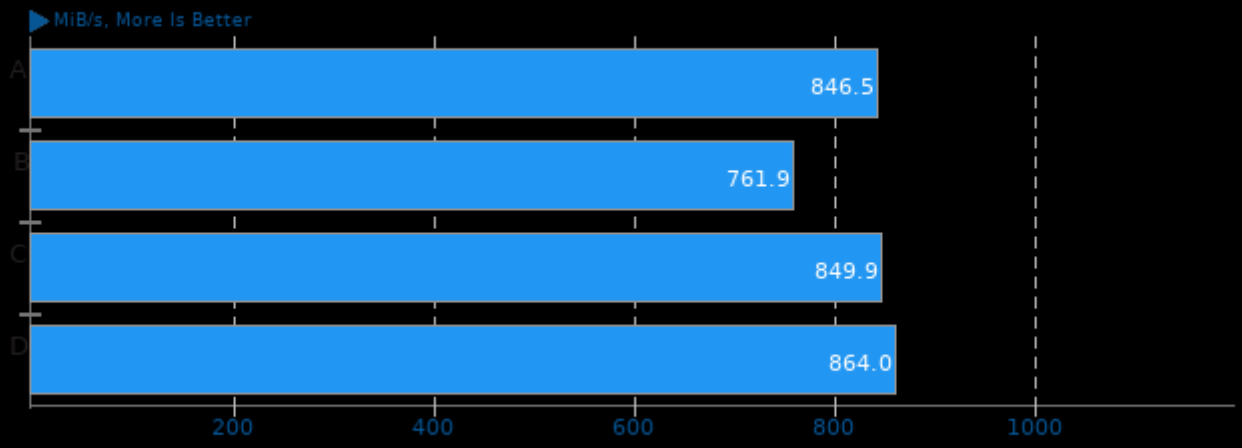
Renaissance 0.12

Test: Scala Dotty



GNU Radio

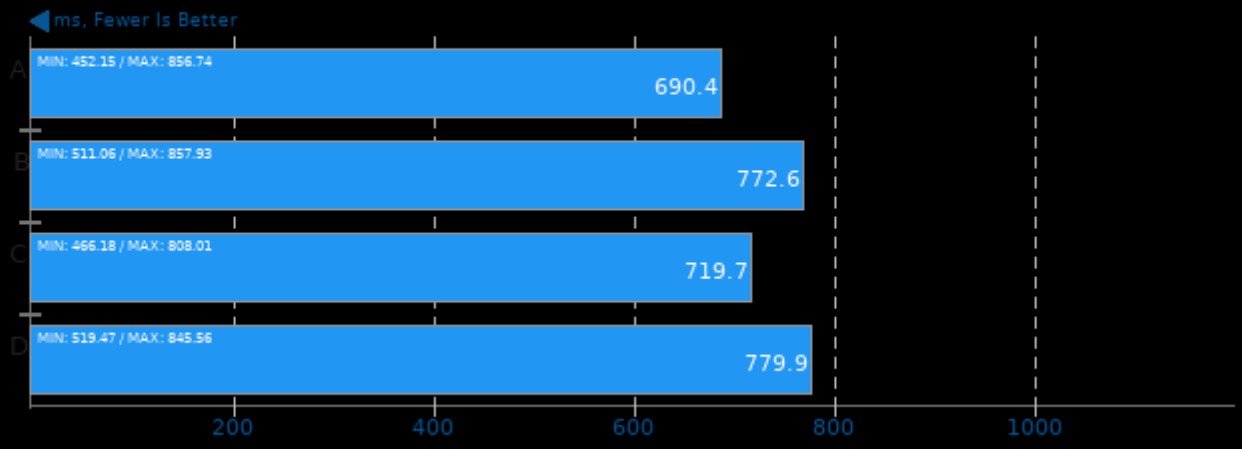
Test: FM Deemphasis Filter



1. 3.8.2.0

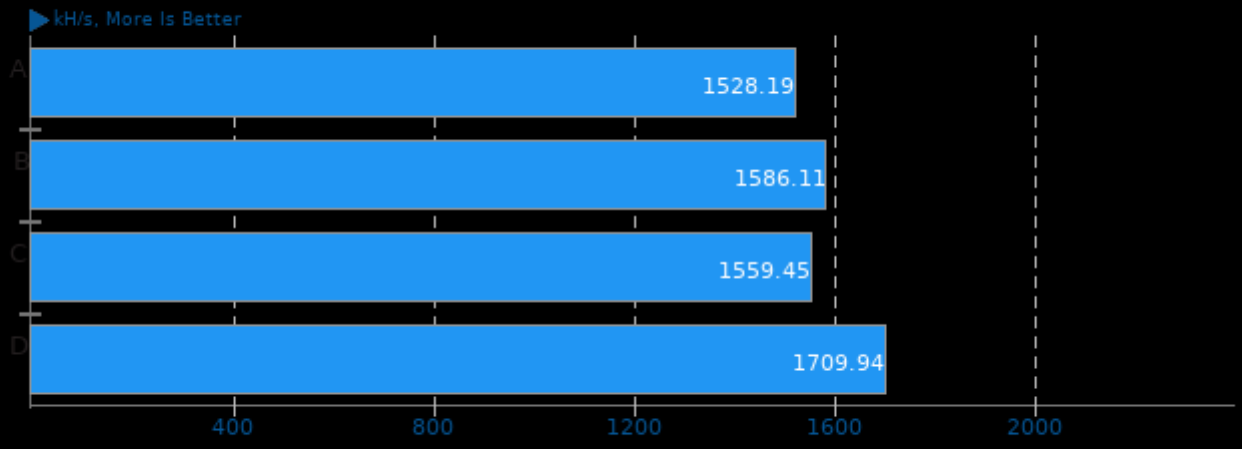
Renaissance 0.12

Test: Apache Spark Bayes

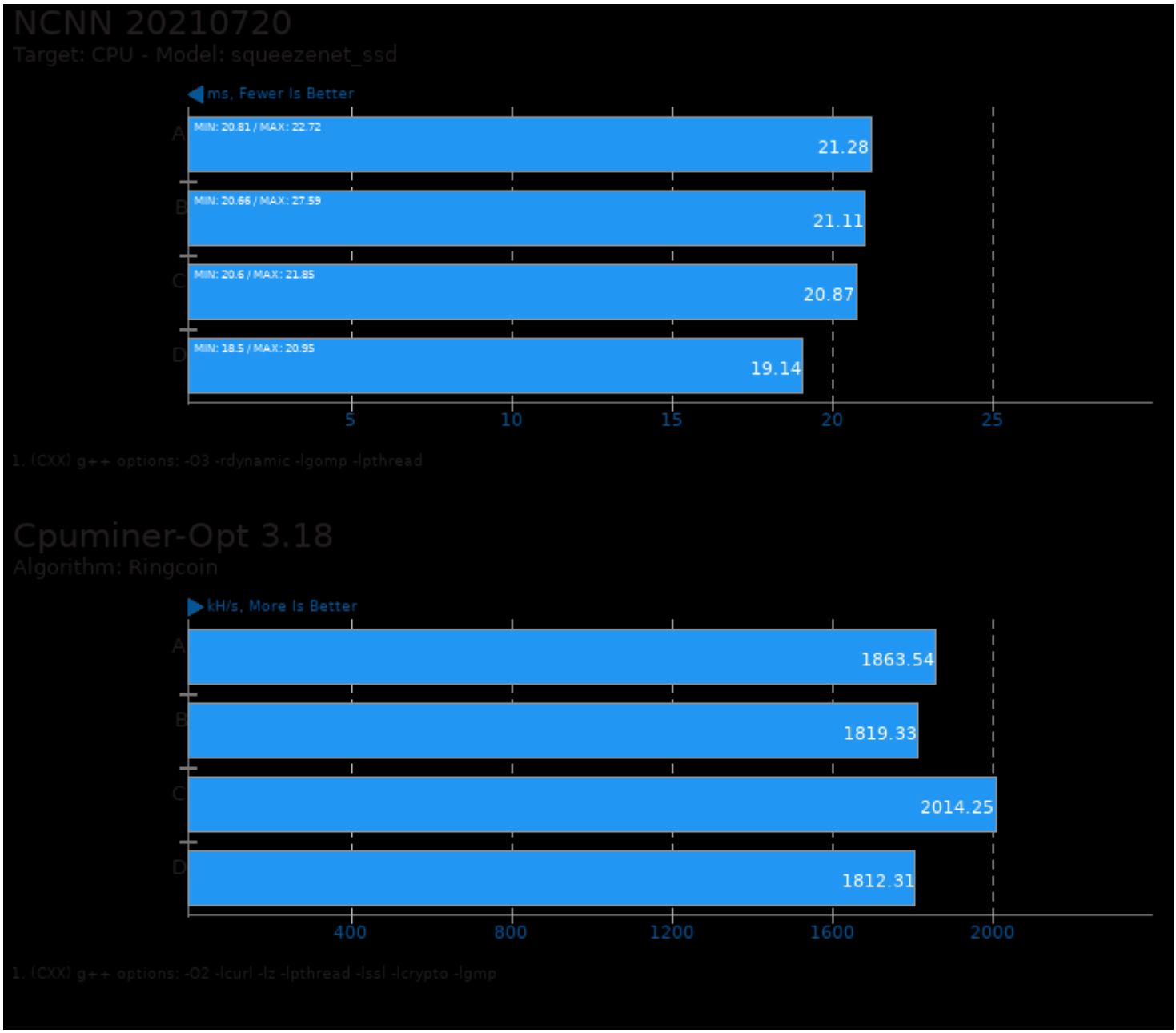


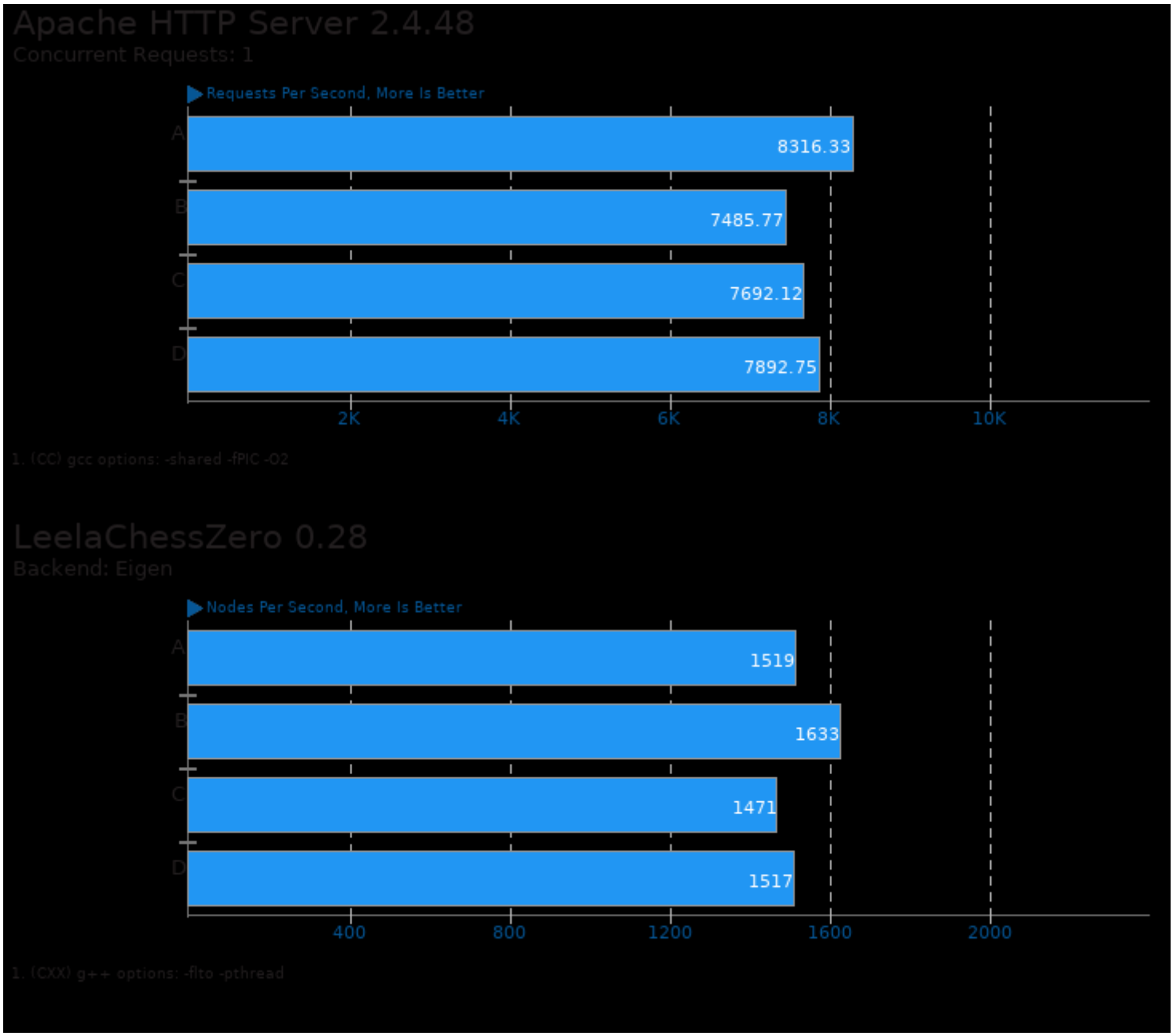
Cpuminer-Opt 3.18

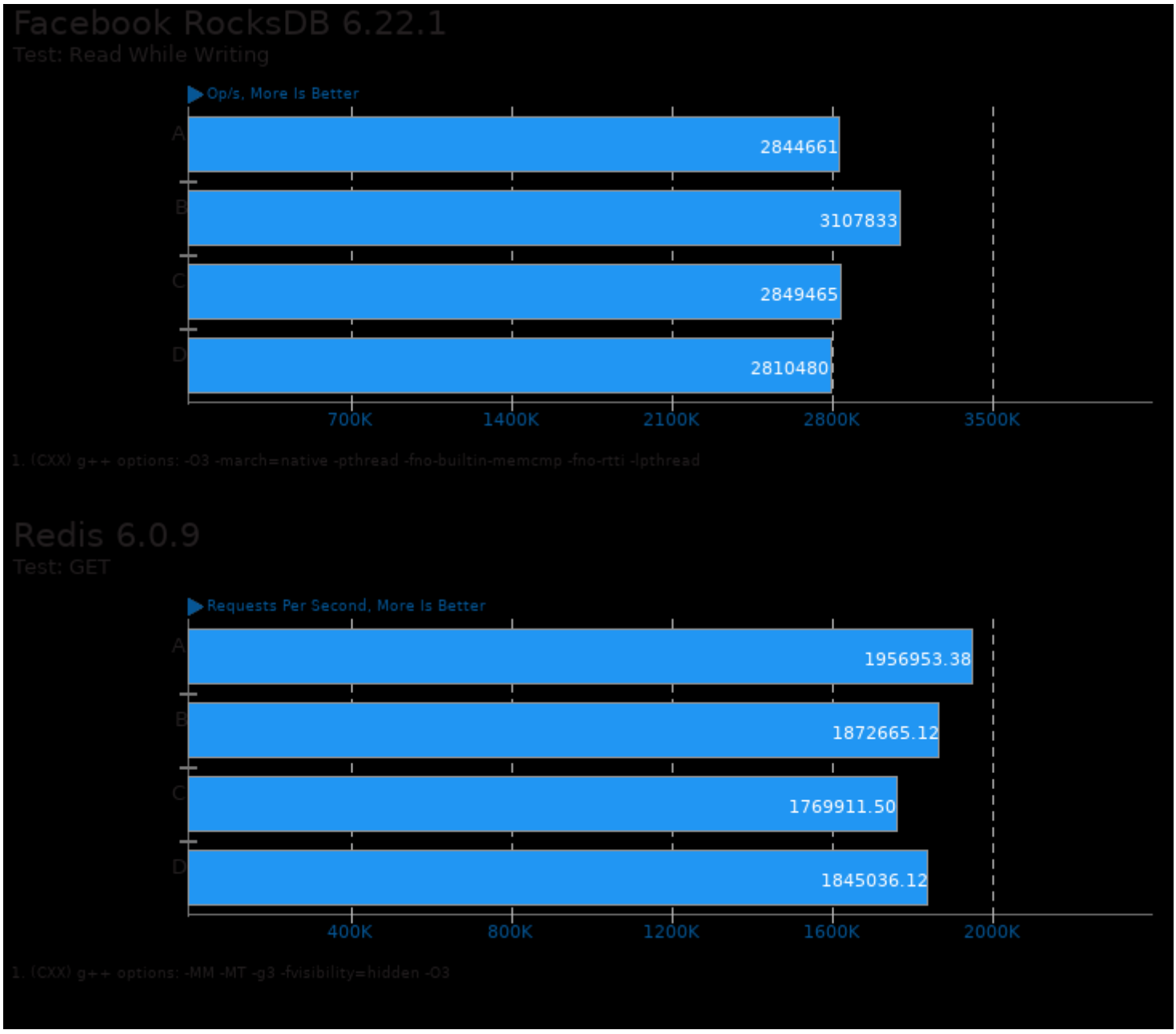
Algorithm: Garlicoin

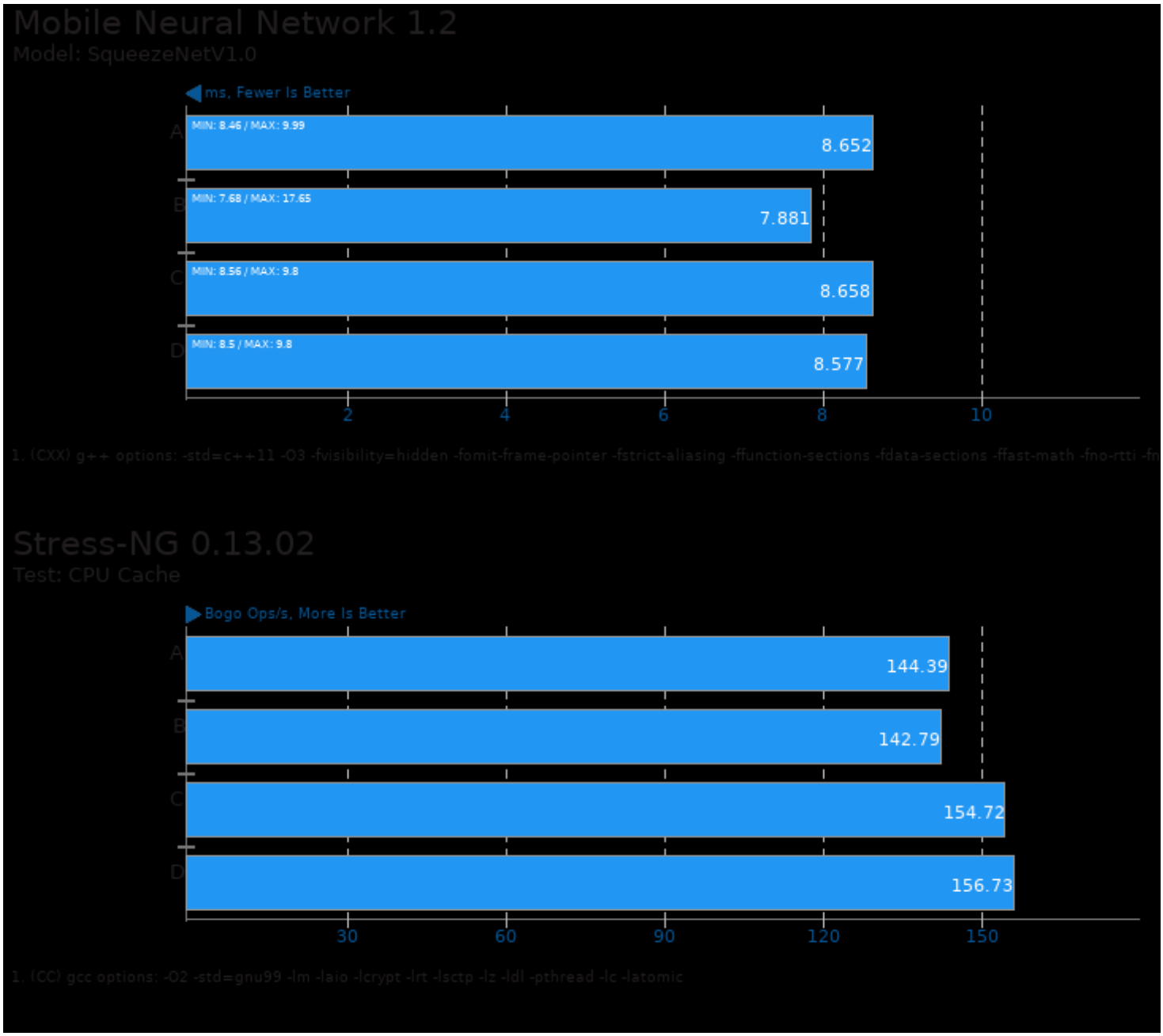


1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

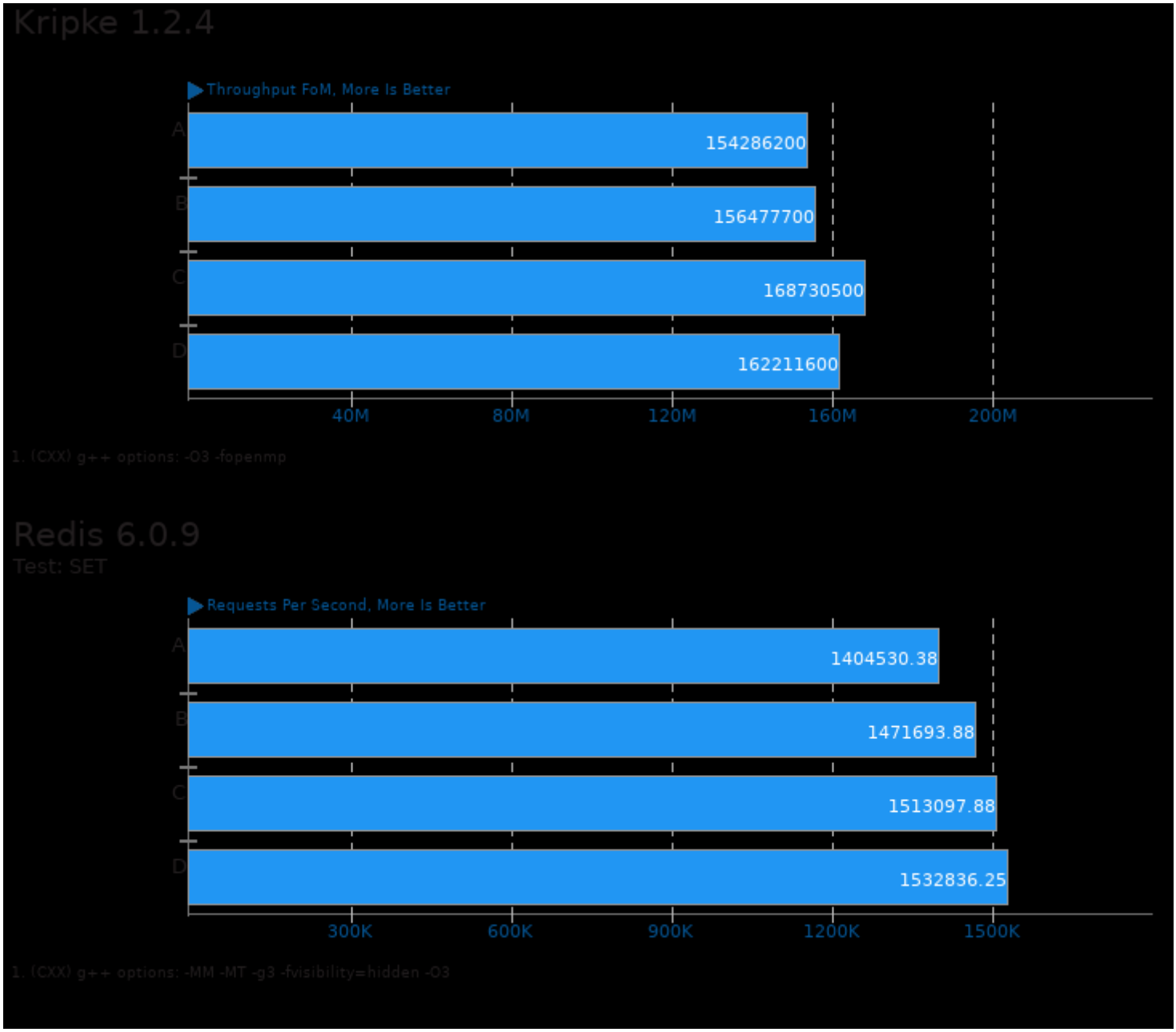

NCNN 20210720
Target: CPU - Model: squeezenet_ssd
ms, Fewer Is Better
A
MIN: 20.81 / MAX: 22.72
21.28
B
MIN: 20.66 / MAX: 27.59
21.11
C
MIN: 20.6 / MAX: 21.85
20.87
D
MIN: 18.5 / MAX: 20.95
19.14
5
10
15
20
25
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
Cpuminer-Opt 3.18
Algorithm: Ringcoin
kH/s, More Is Better
A
1863.54
B
1819.33
C
2014.25
D
1812.31
400
800
1200
1600
2000
1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp


Apache HTTP Server 2.4.48
Concurrent Requests: 1
Requests Per Second, More Is Better
A
8316.33
B
7485.77
C
7692.12
D
7892.75
2K
4K
6K
8K
10K
1. (CC) gcc options: -shared -fPIC -O2
LeelaChessZero 0.28
Backend: Eigen
Nodes Per Second, More Is Better
A
1519
B
1633
C
1471
D
1517
400
800
1200
1600
2000
1. (CXX) g++ options: -flto -pthread


Facebook RocksDB 6.22.1
Test: Read While Writing
Op/s, More Is Better
A
2844661
B
3107833
C
2849465
D
2810480
700K
1400K
2100K
2800K
3500K
1. (CXX) g++ options: -O3 -march=native -pthread -fno-builtin-memcmp -fno-rtti -lpthread
Redis 6.0.9
Test: GET
Requests Per Second, More Is Better
A
1956953.38
B
1872665.12
C
1769911.50
D
1845036.12
400K
800K
1200K
1600K
2000K
1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3


Mobile Neural Network 1.2
Model: SqueezeNetV1.0
ms, Fewer Is Better
A
MIN: 8.46 / MAX: 9.99
8.652
B
MIN: 7.68 / MAX: 17.65
7.881
C
MIN: 8.56 / MAX: 9.8
8.658
D
MIN: 8.5 / MAX: 9.8
8.577
2
4
6
8
10
1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fv
Stress-NG 0.13.02
Test: CPU Cache
Bogo Ops/s, More Is Better
A
144.39
B
142.79
C
154.72
D
156.73
30
60
90
120
150
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Kripke 1.2.4

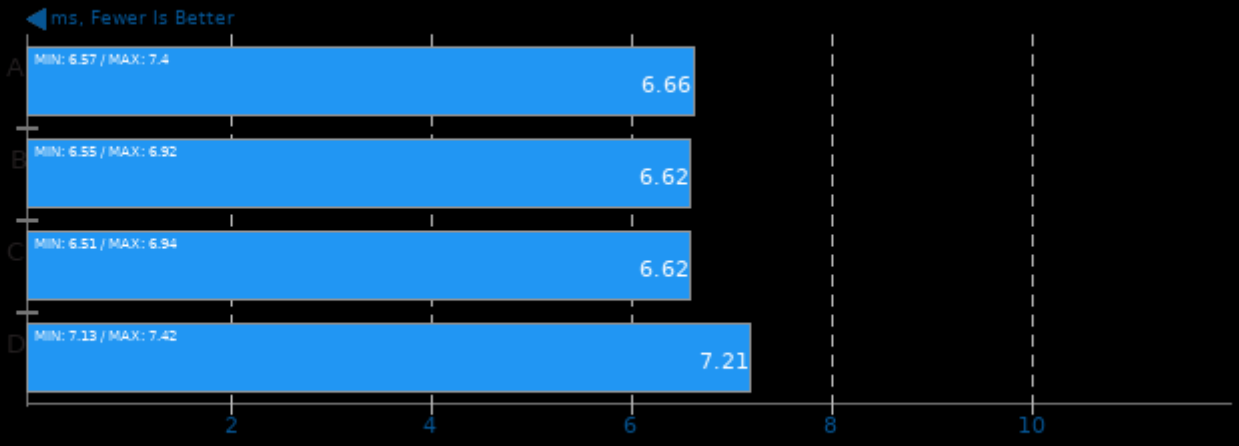


Redis 6.0.9

Test: SET

NCNN 20210720

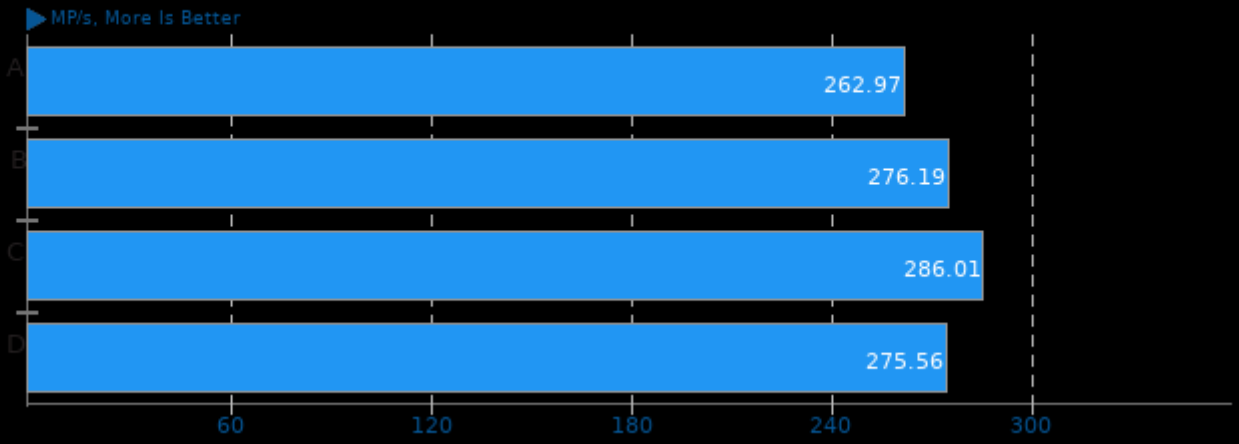
Target: CPU - Model: alexnet



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

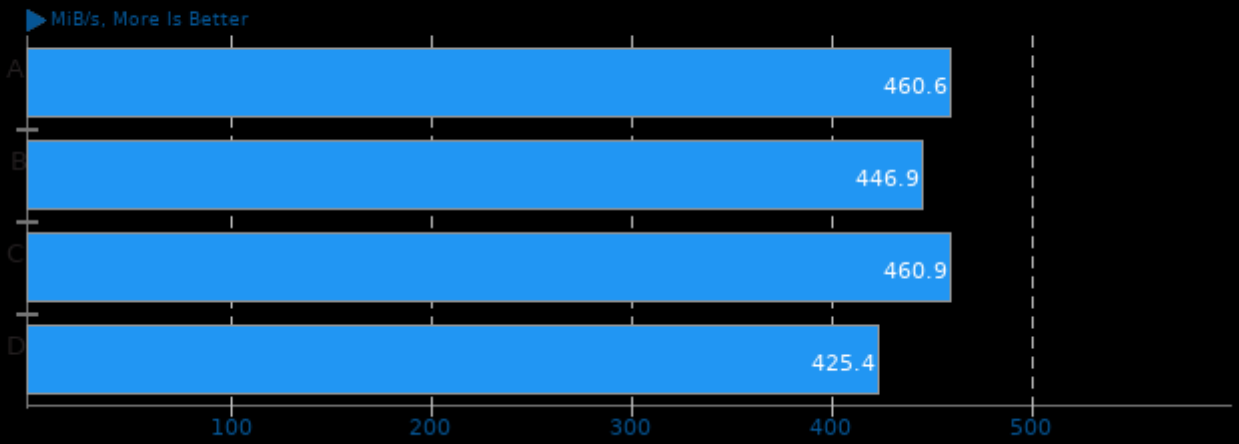
JPEG XL Decoding libjxl 0.5

CPU Threads: All



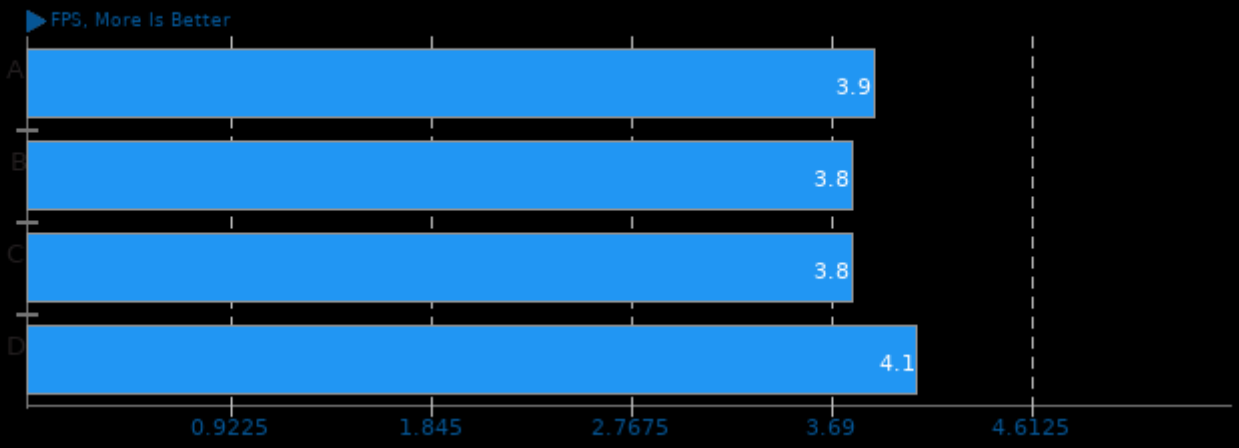
LuaRadio 0.9.1

Test: Five Back to Back FIR Filters



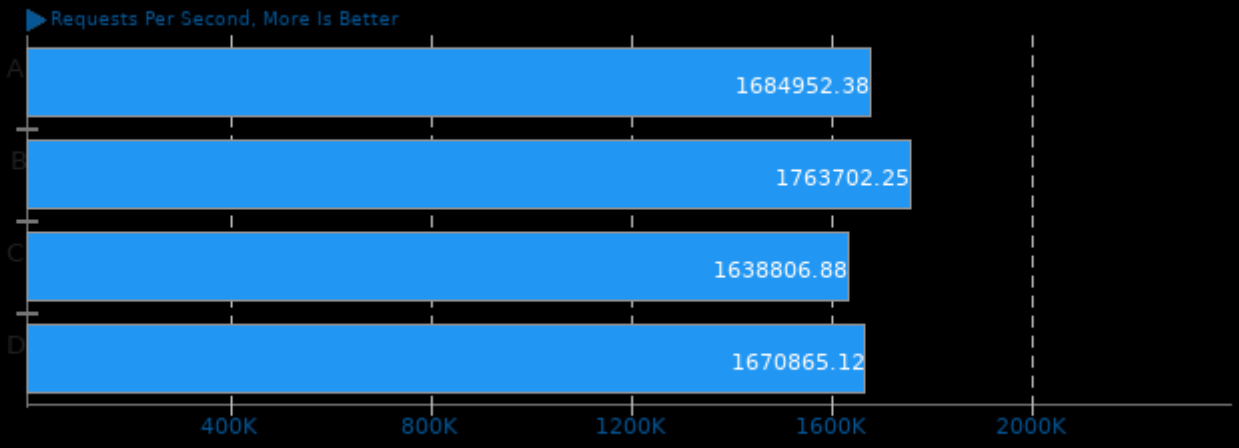
Natron 2.4

Input: Spaceship



Redis 6.0.9

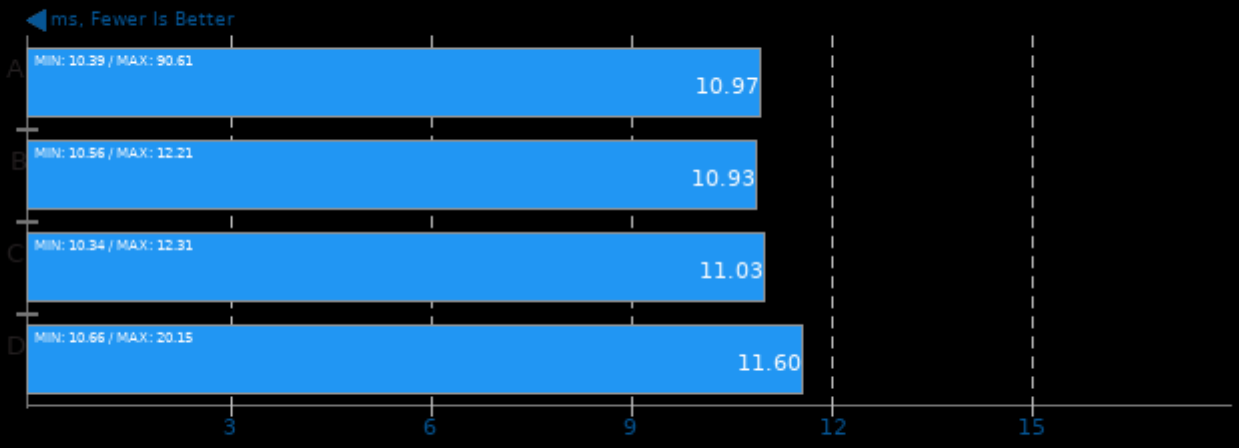
Test: SADD



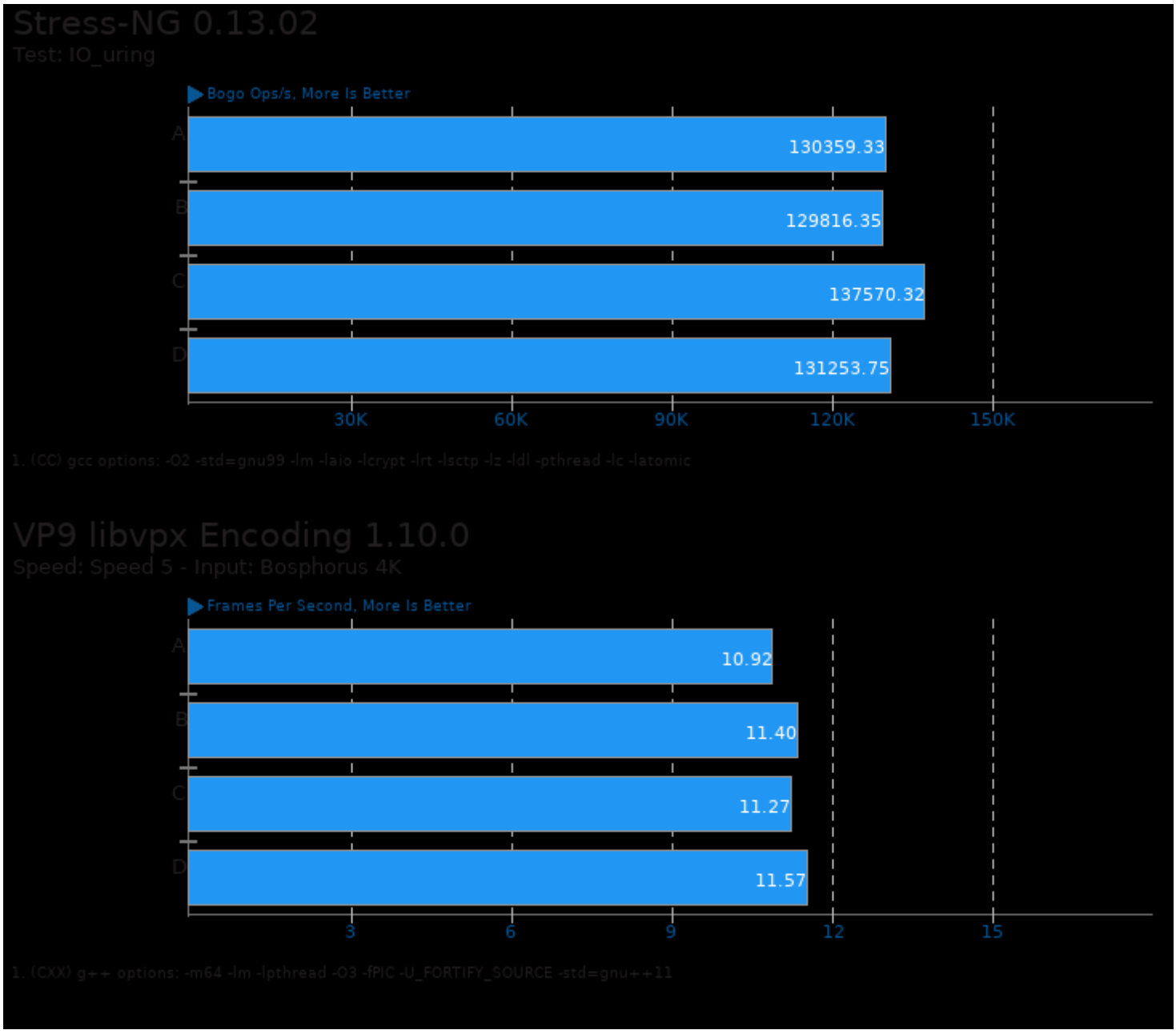
1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3

NCNN 20210720

Target: CPU - Model: efficientnet-b0

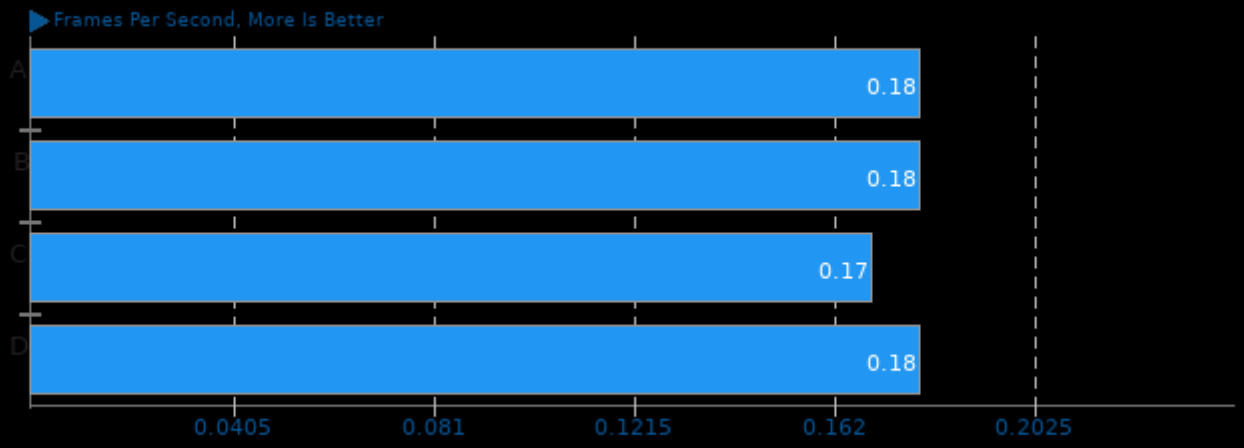


1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread


Stress-NG 0.13.02
Test: IO_uring
Bogo Ops/s, More Is Better
A
130359.33
B
129816.35
C
137570.32
D
131253.75
30K
60K
90K
120K
150K
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic
VP9 libvpx Encoding 1.10.0
Speed: Speed 5 - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
10.92
B
11.40
C
11.27
D
11.57
3
6
9
12
15
1. (CXX) g++ options: -m64 -lm -lpthread -O3 -fPIC -U_FORTIFY_SOURCE -std=gnu++11

AOM AV1 3.1

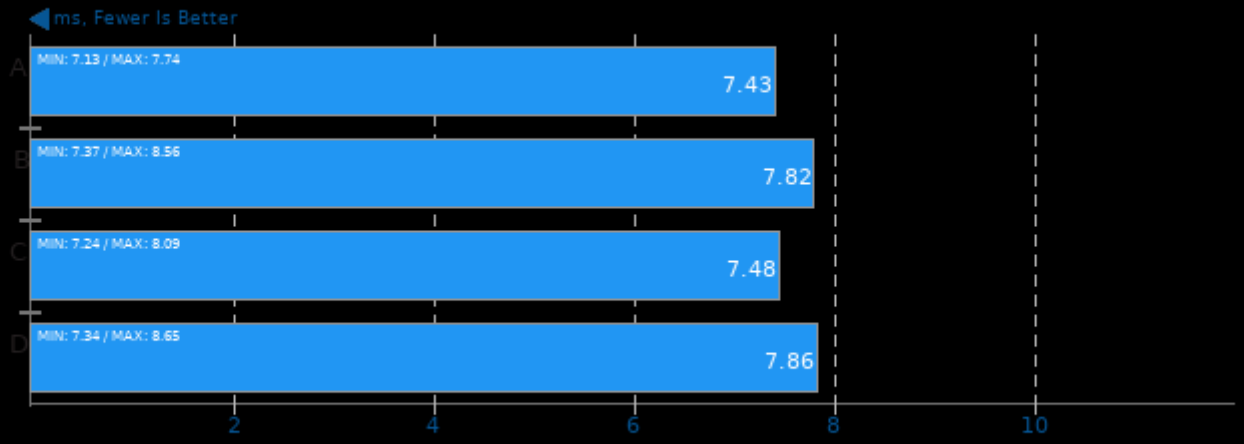
Encoder Mode: Speed 0 Two-Pass - Input: Bosphorus 4K



1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm

NCNN 20210720

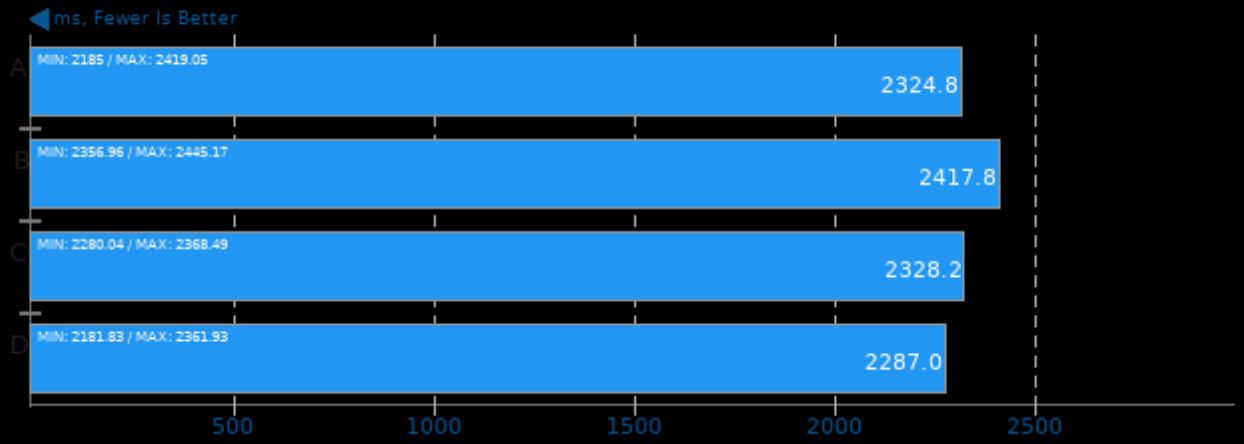
Target: CPU-v3-v3 - Model: mobilenet-v3



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

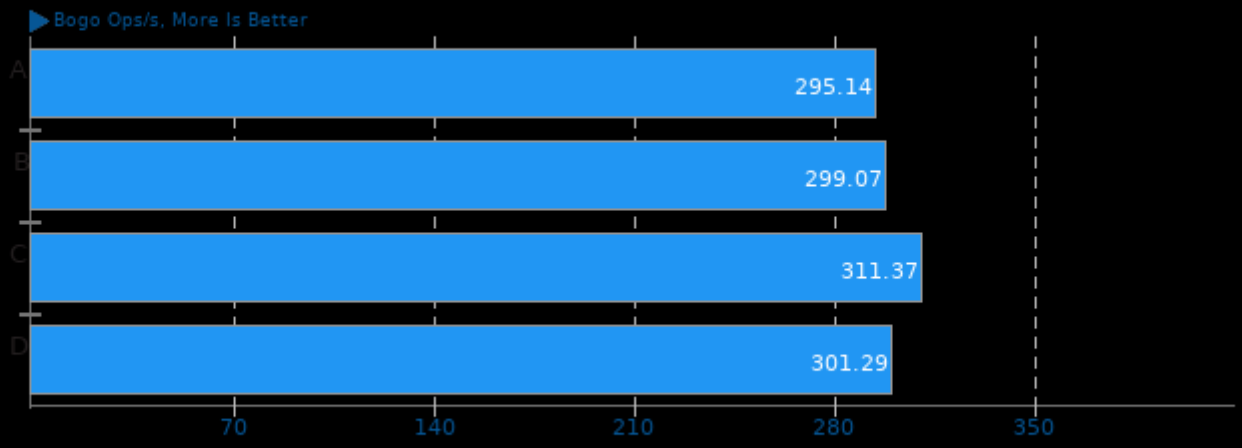
Renaissance 0.12

Test: Genetic Algorithm Using Jenetics + Futures



Stress-NG 0.13.02

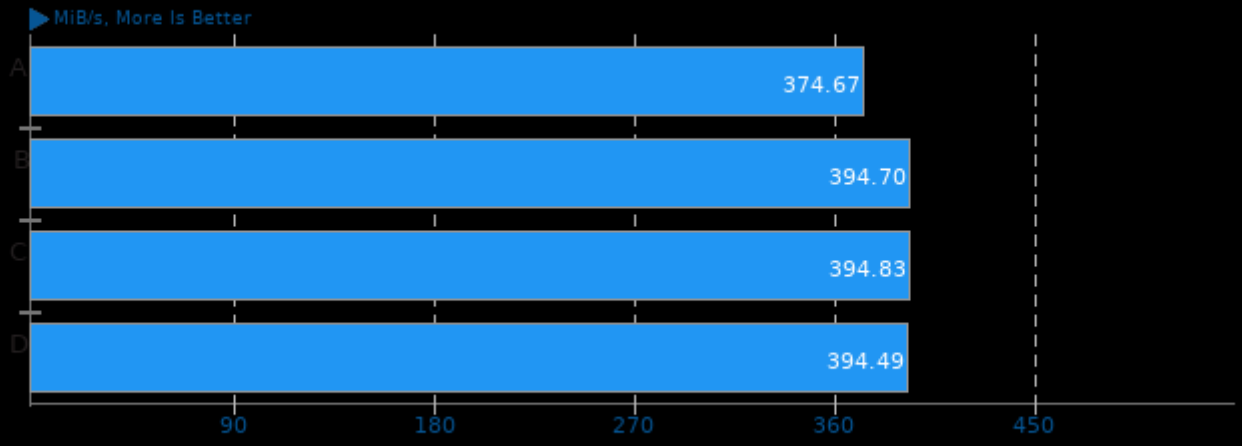
Test: NUMA



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

Botan 2.17.3

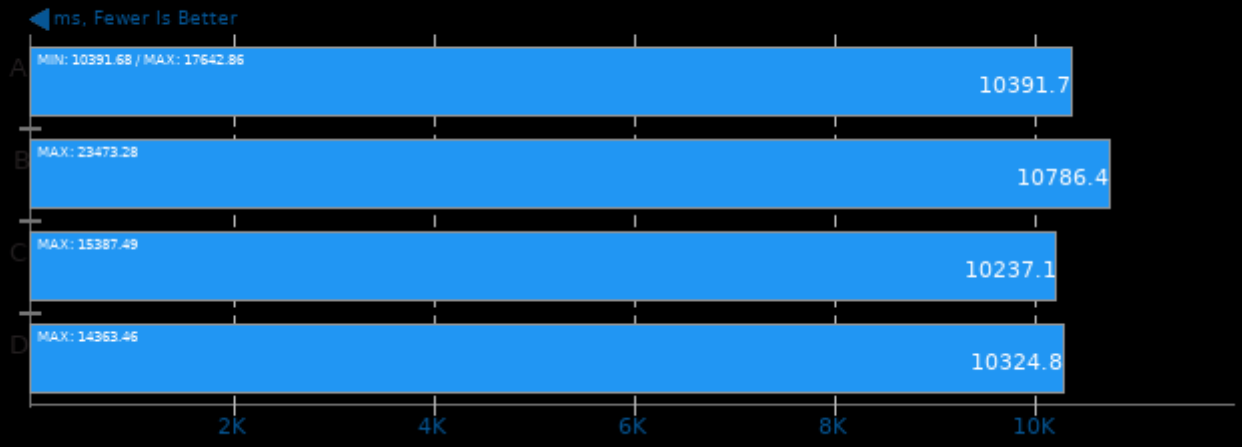
Test: Blowfish

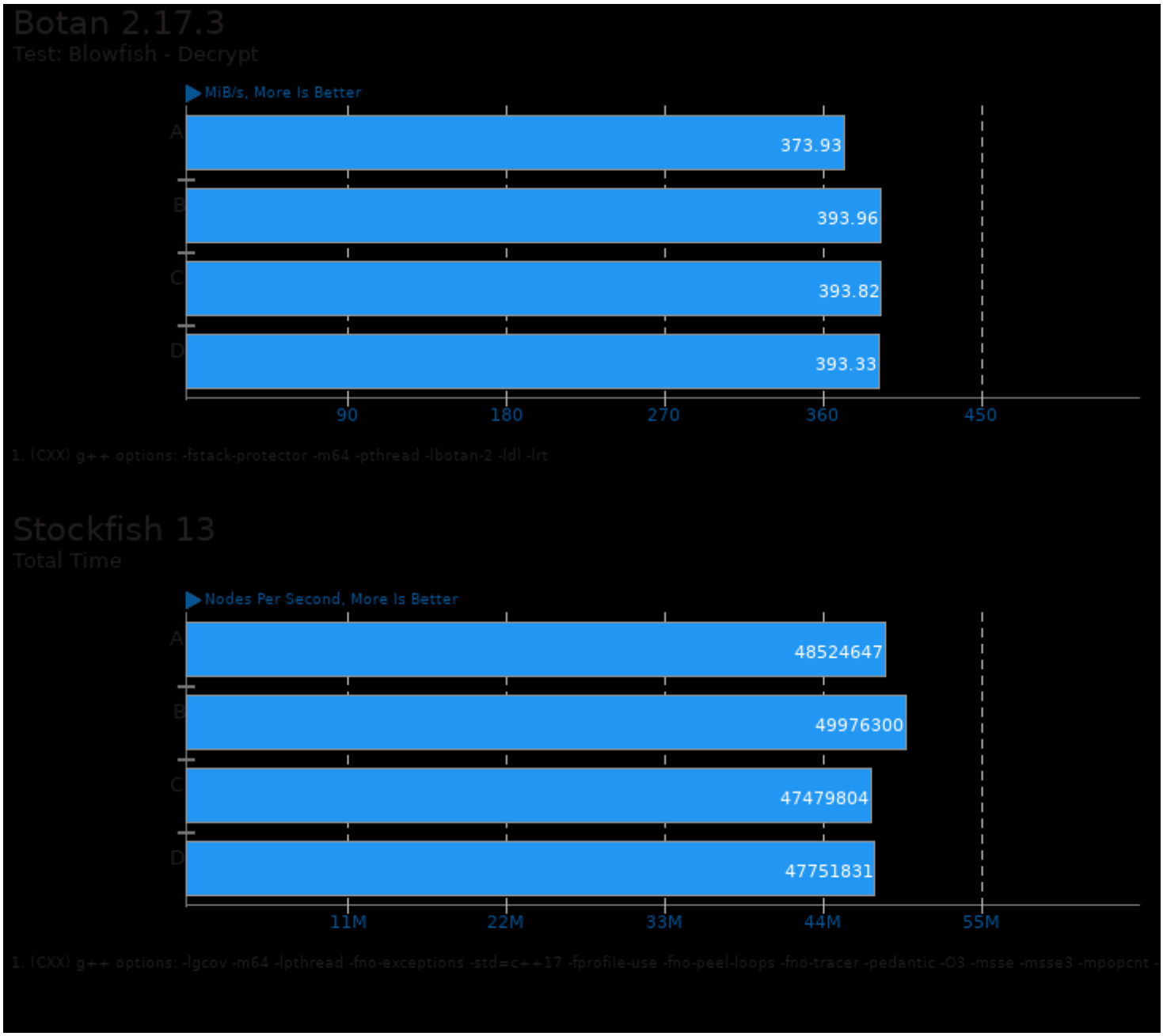


1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

Renaissance 0.12

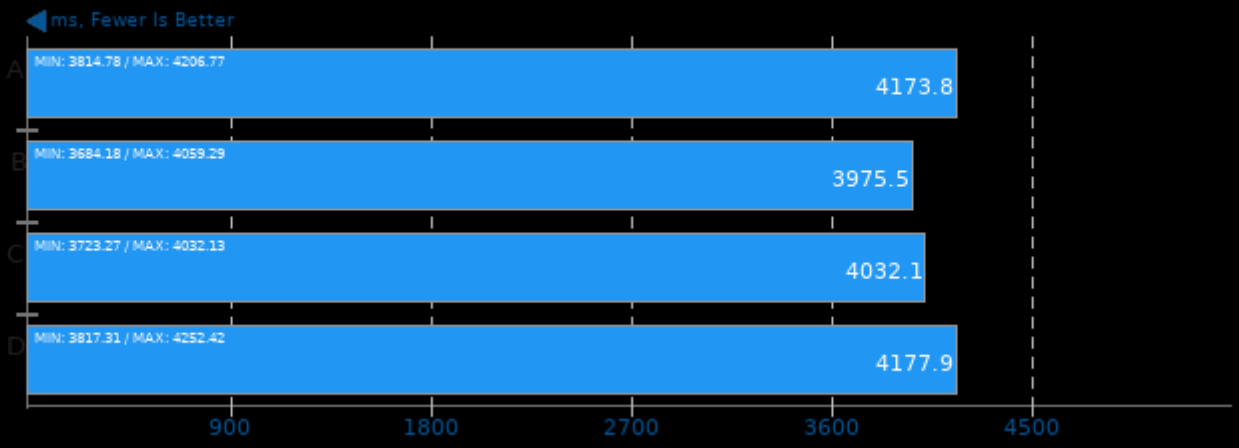
Test: Savina Reactors.IO




Botan 2.17.3
Test: Blowfish - Decrypt
MiB/s, More Is Better
A
373.93
B
393.96
C
393.82
D
393.33
90
180
270
360
450
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Stockfish 13
Total Time
Nodes Per Second, More Is Better
A
48524647
B
49976300
C
47479804
D
47751831
11M
22M
33M
44M
55M
1. (CXX) g++ options: -lgcov -m64 -lpthread -fno-exceptions -std=c++17 -fprofile-use -fno-peel-loops -fno-tracer -pedantic -O3 -msse -msse3 -mpopcnt

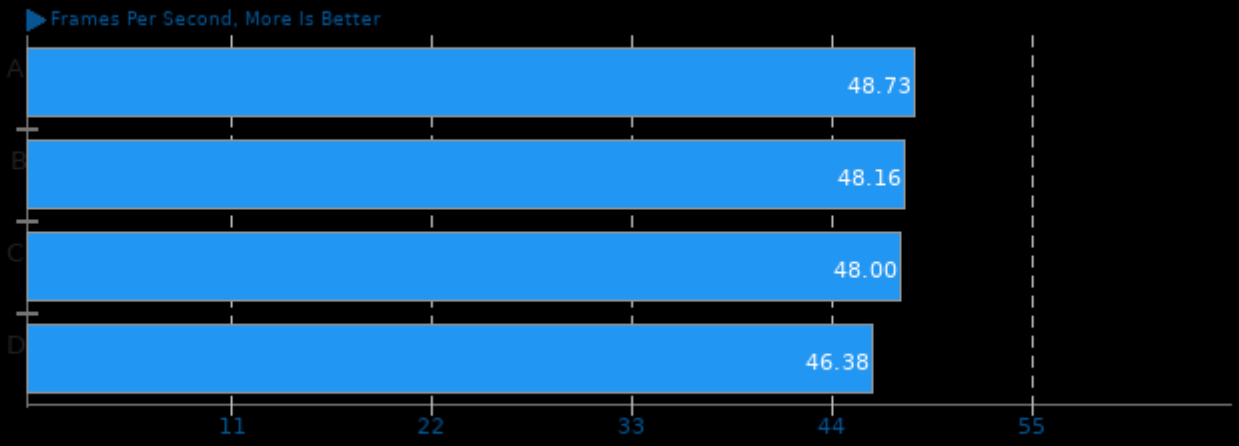
Renaissance 0.12

Test: Apache Spark PageRank



AOM AV1 3.1

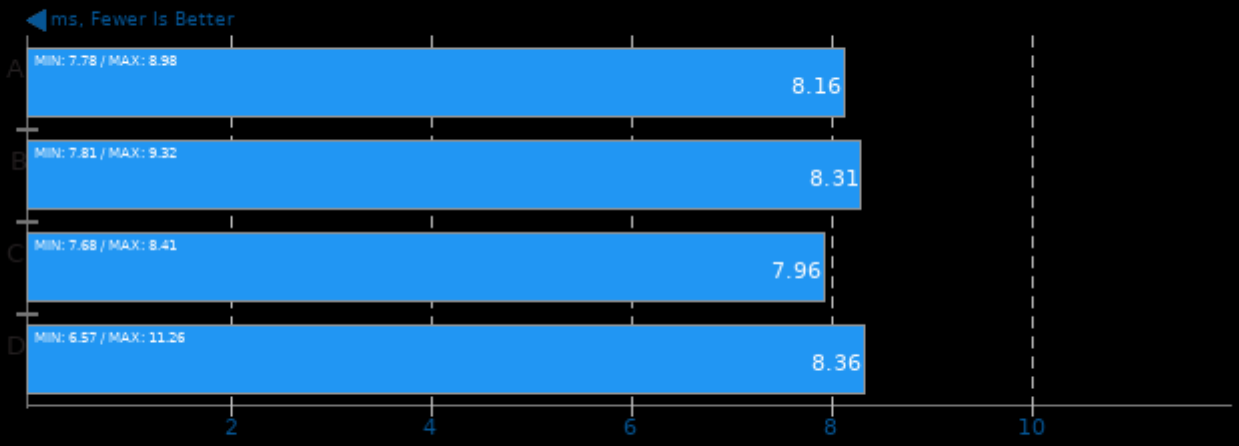
Encoder Mode: Speed 9 Realtime - Input: Bosphorus 4K



1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm

NCNN 20210720

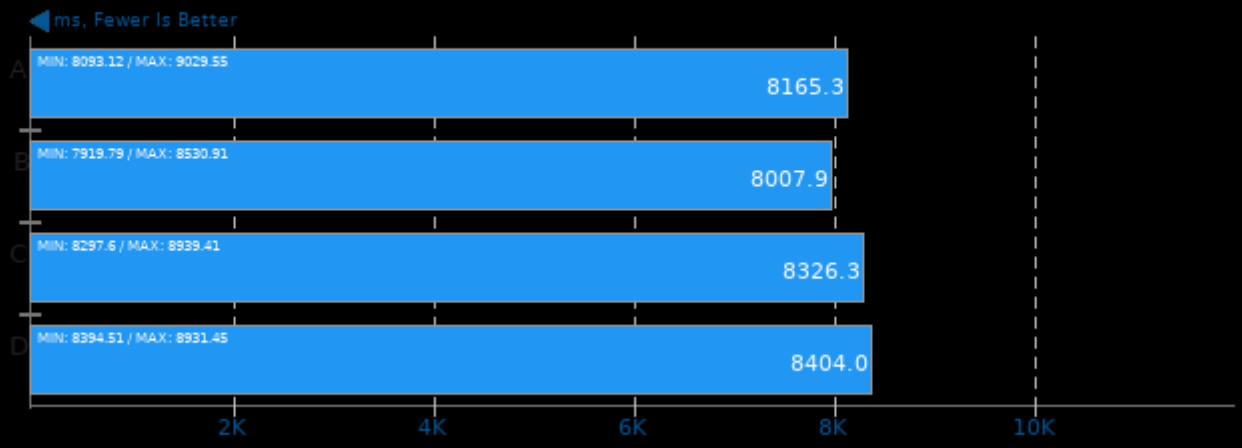
Target: CPU-v2-v2 - Model: mobilenet-v2



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

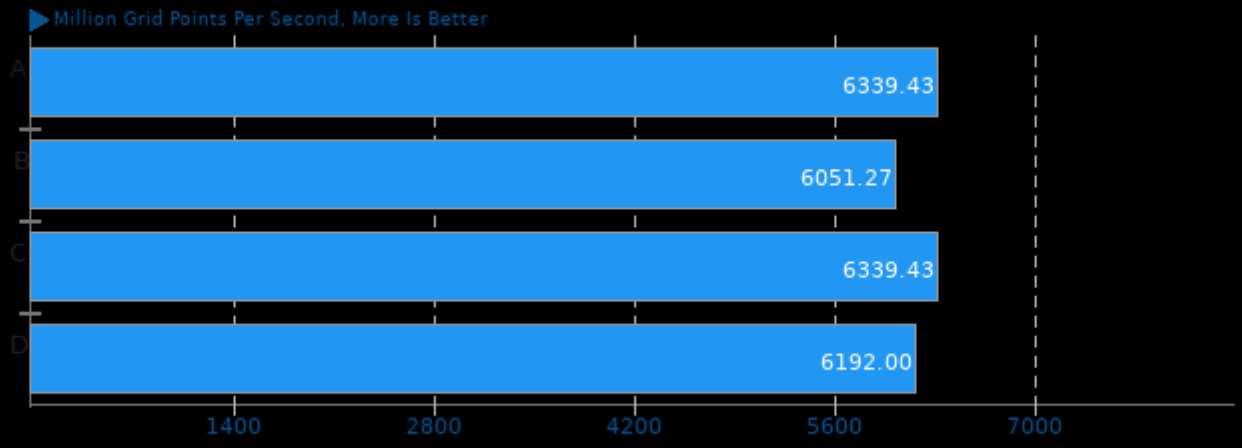
Renaissance 0.12

Test: ALS Movie Lens



ASKAP 1.0

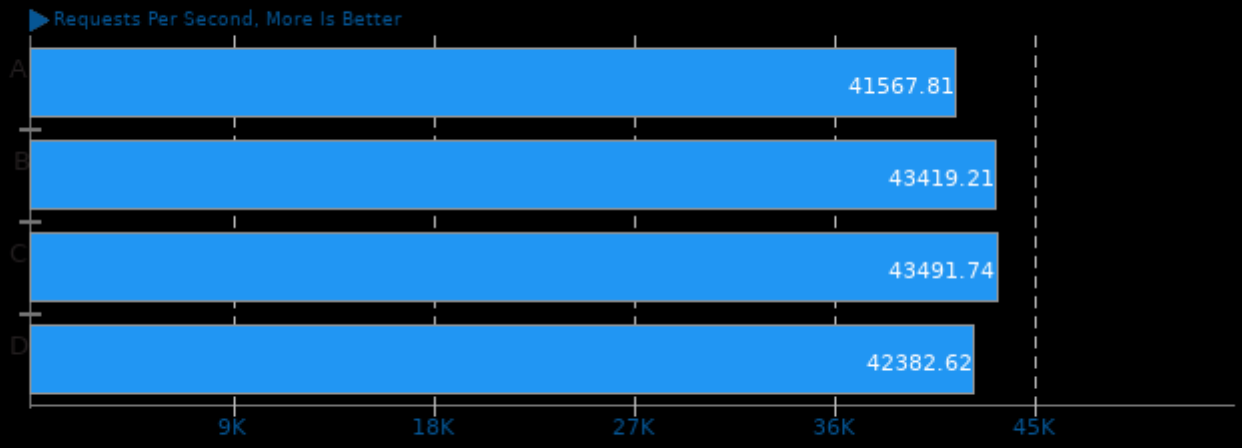
Test: tConvolve OpenMP - Degridding



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

Apache HTTP Server 2.4.48

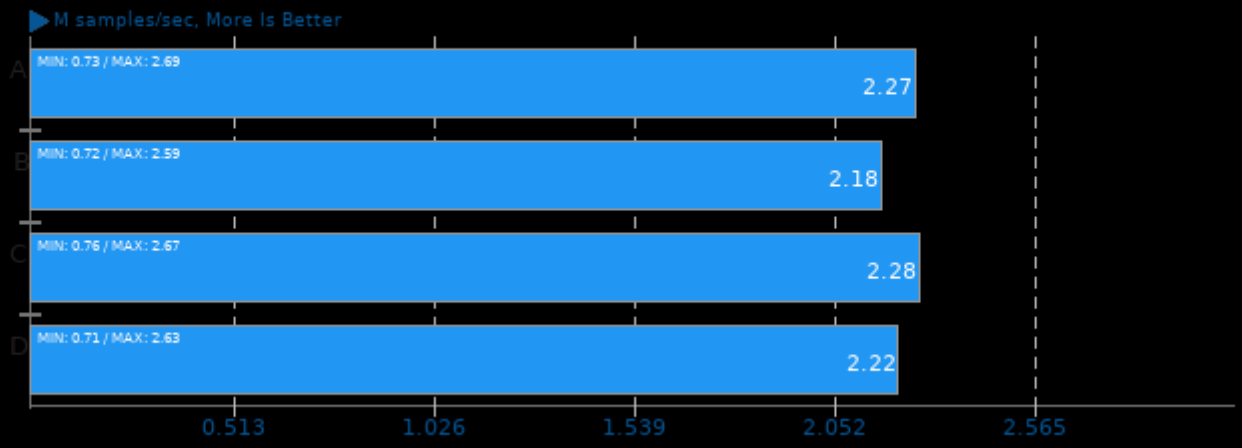
Concurrent Requests: 20



1. (CC) gcc options: -shared -fPIC -O2

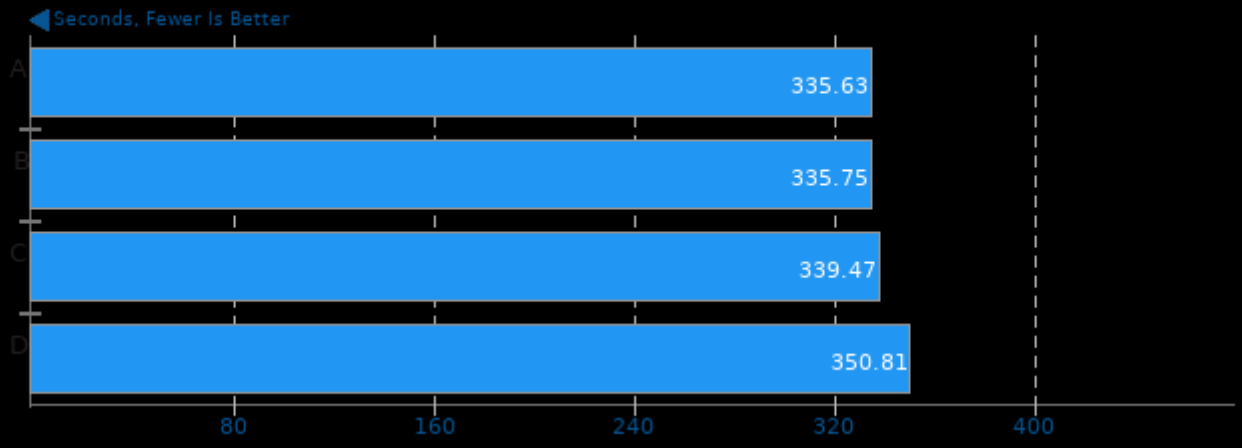
LuxCoreRender 2.5

Scene: Danish Mood - Acceleration: CPU



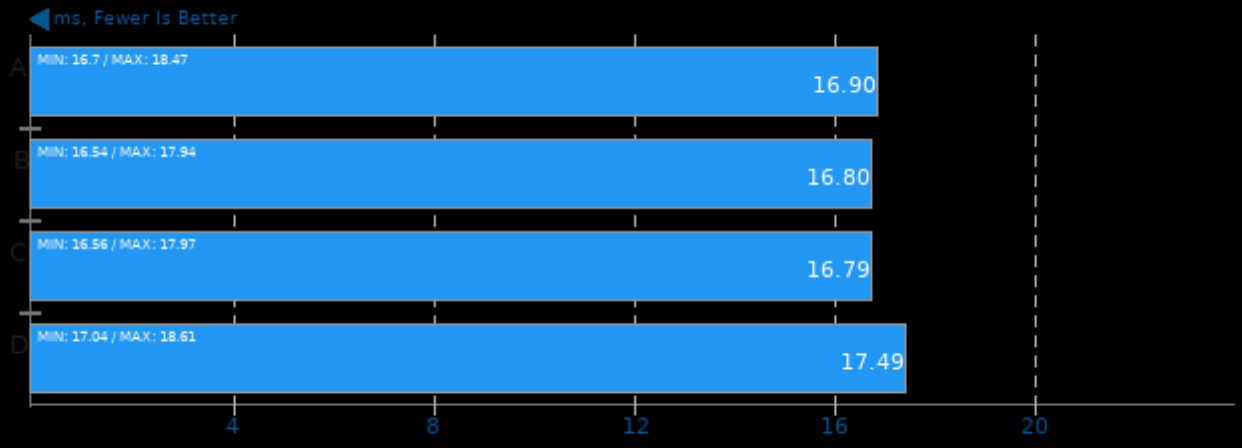
Timed LLVM Compilation 13.0

Build System: Unix Makefiles



NCNN 20210720

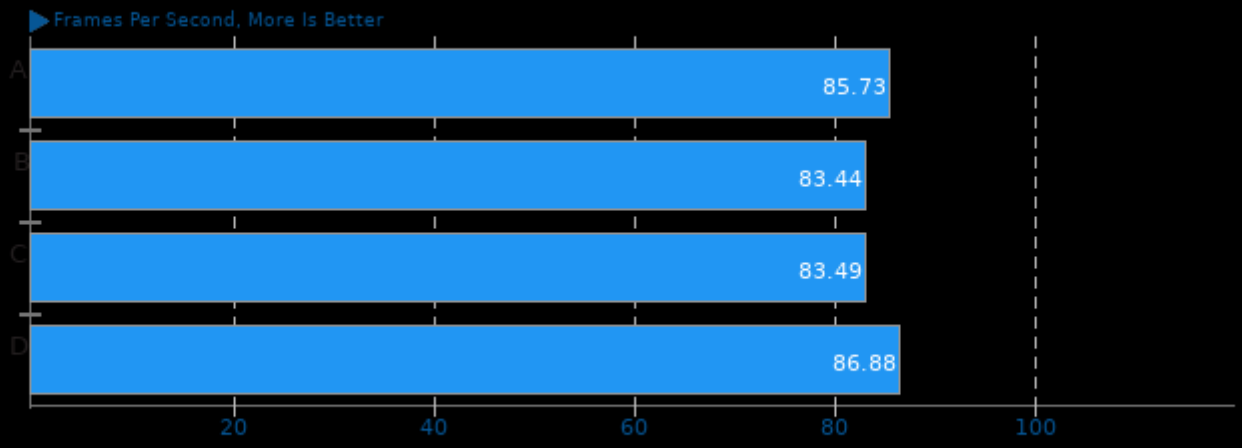
Target: CPU - Model: googlenet



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

AOM AV1 3.1

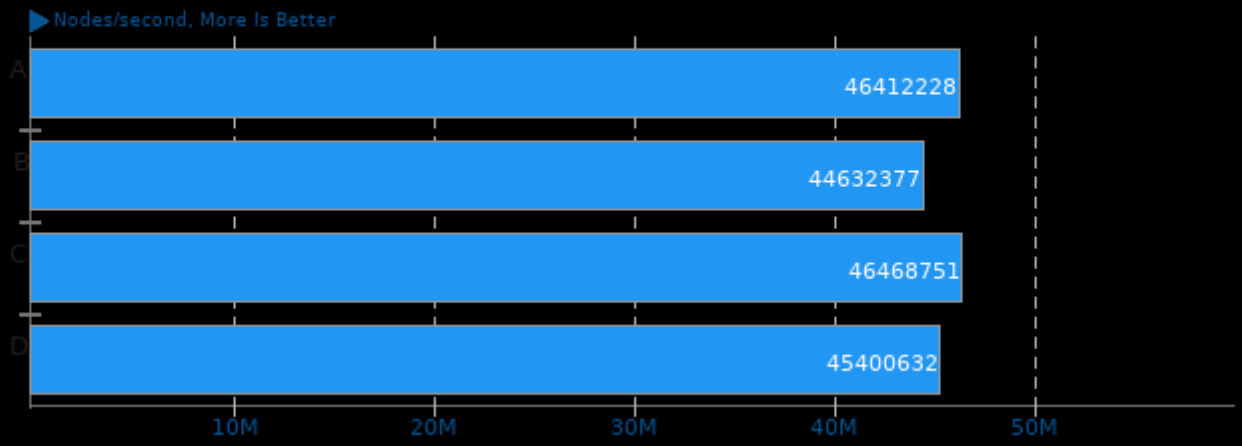
Encoder Mode: Speed 8 Realtime - Input: Bosphorus 1080p



1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm

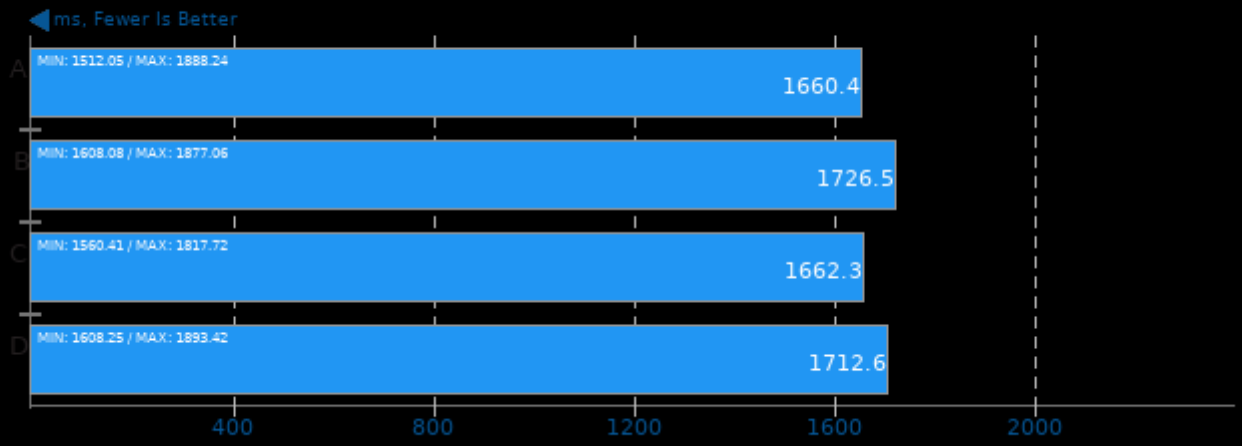
asmFish 2018-07-23

1024 Hash Memory, 26 Depth

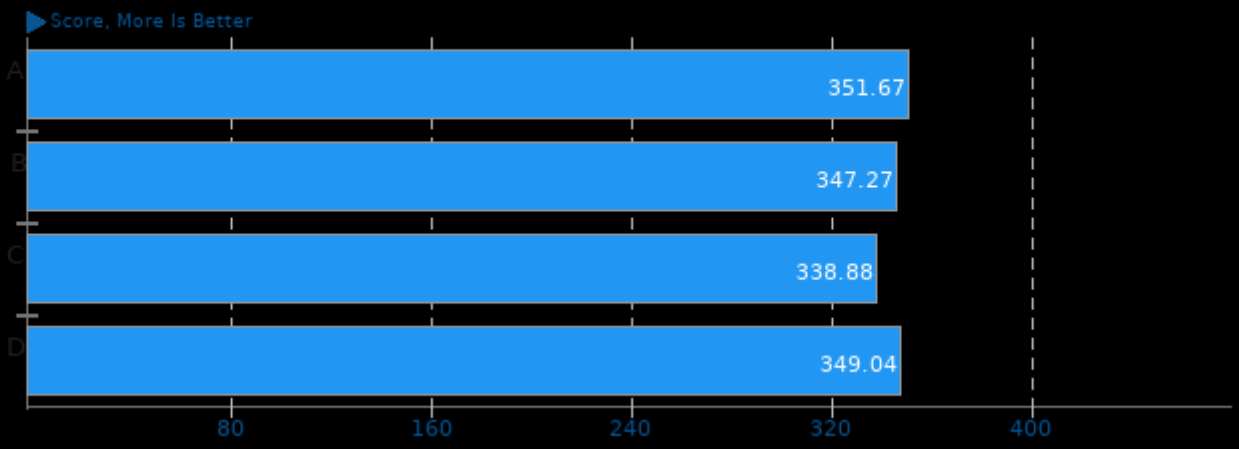


Renaissance 0.12

Test: Apache Spark ALS

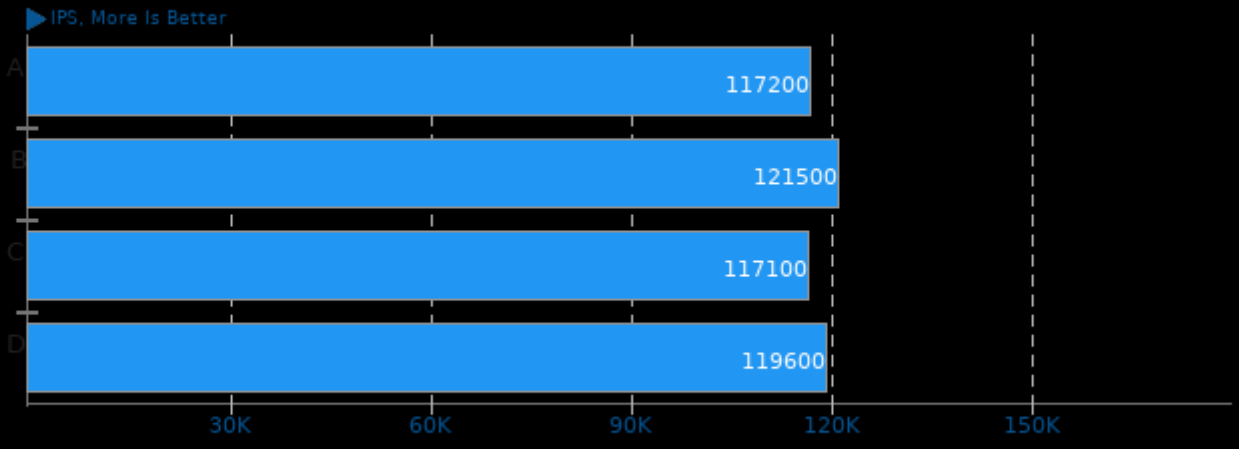


Numpy Benchmark



Chia Blockchain VDF 1.0.1

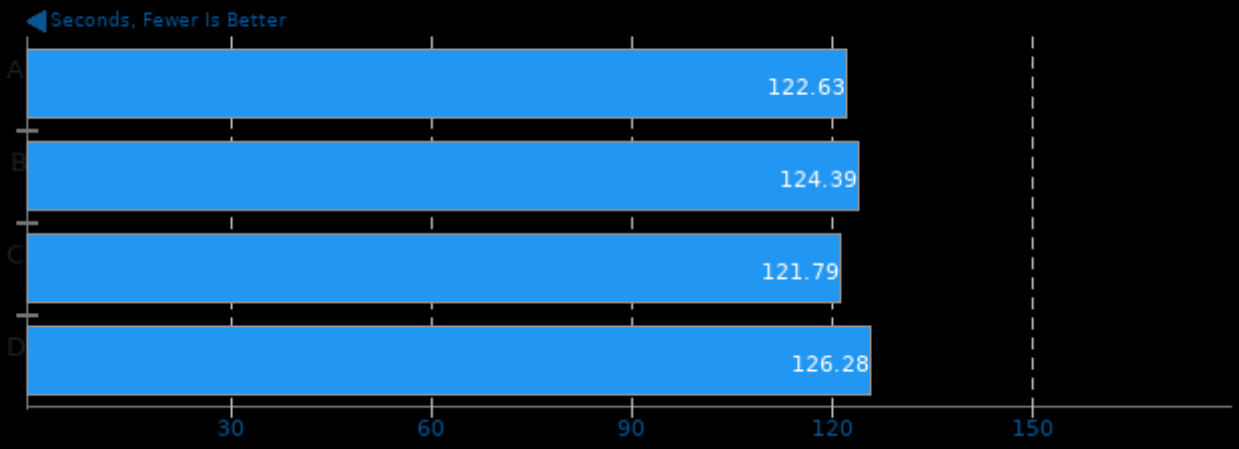
Test: Square Assembly Optimized

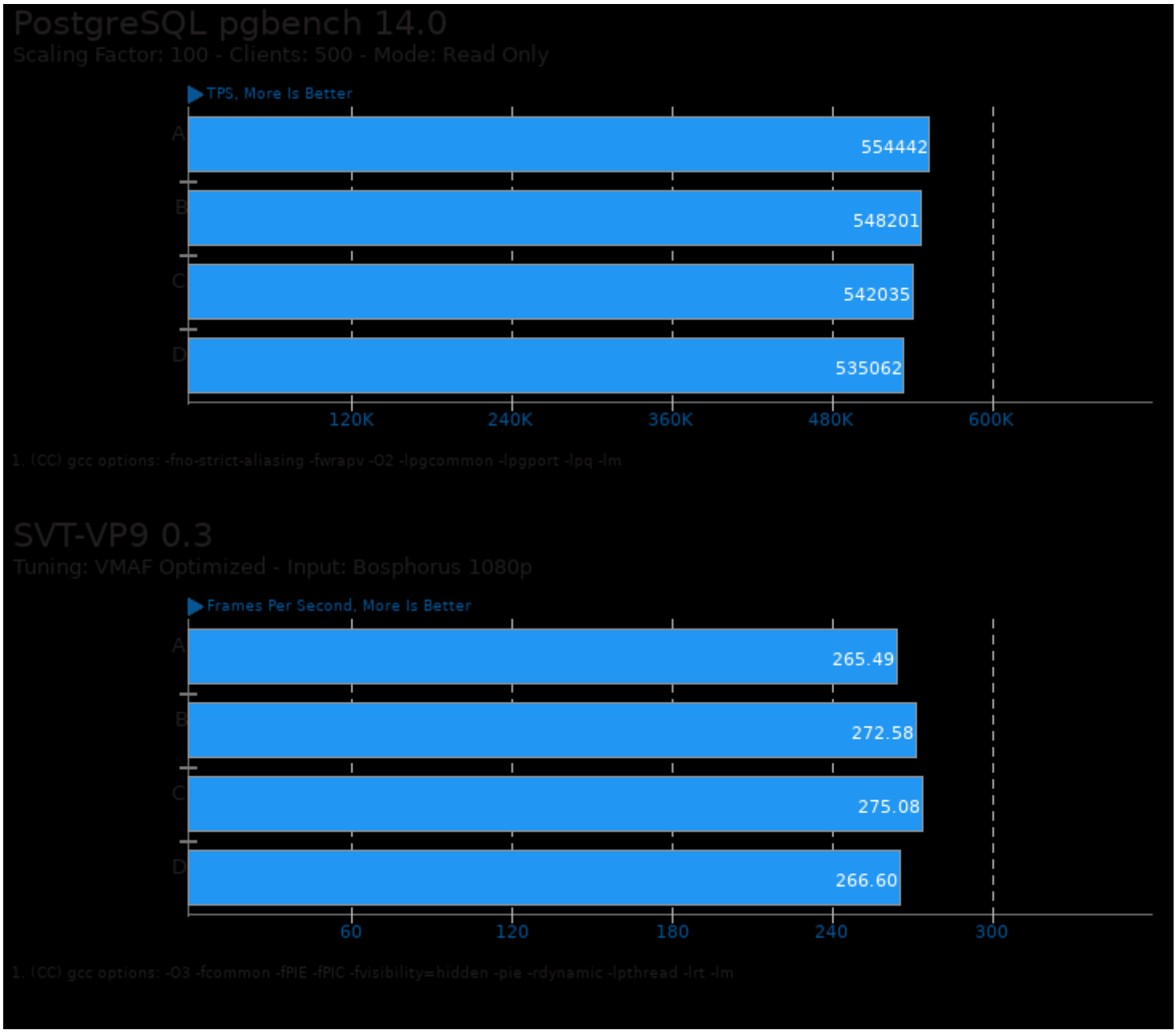


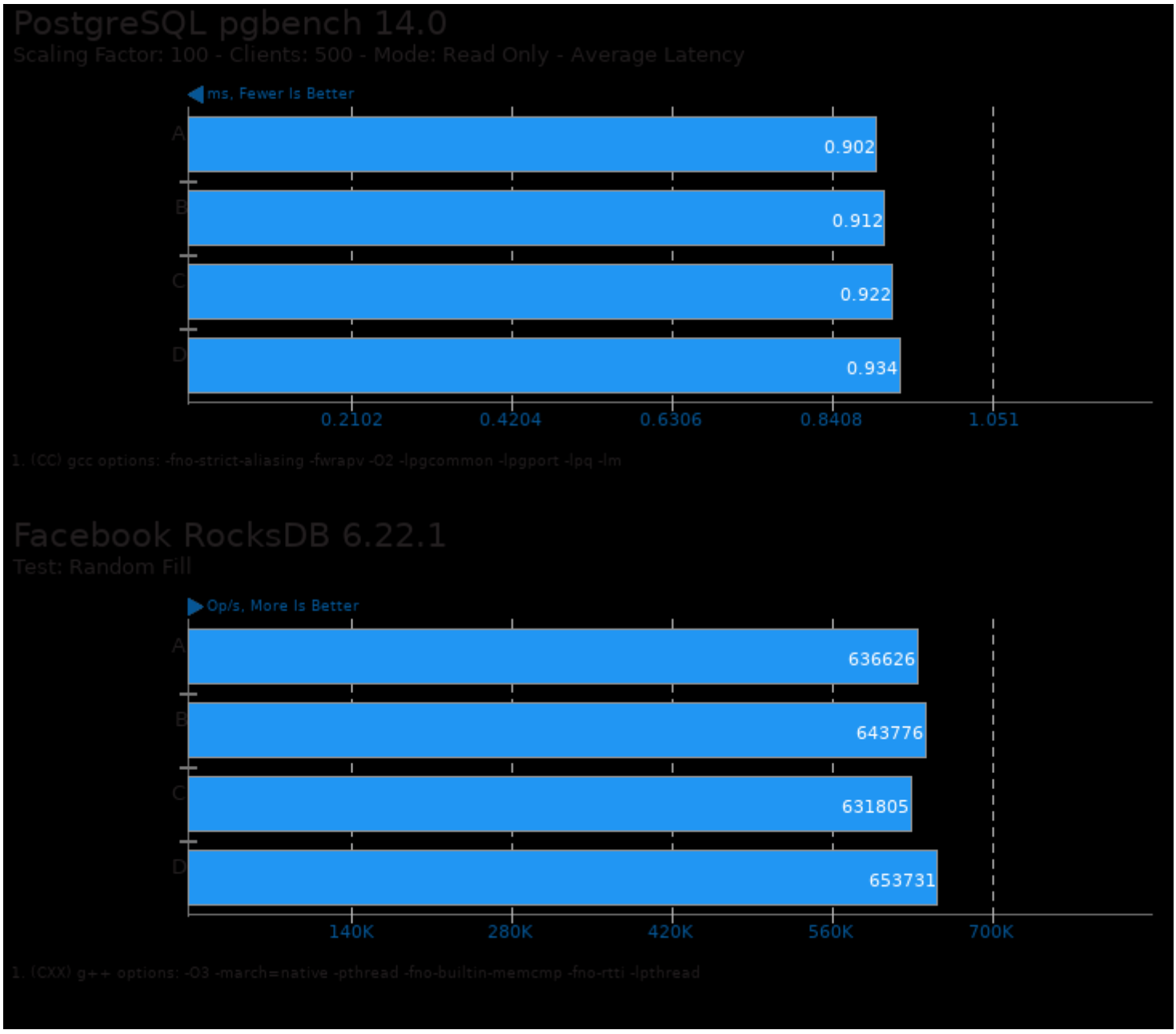
1. (CXX) g++ options: -flto -no-pie -lgmpxx -lgmp -lboost_system -pthread

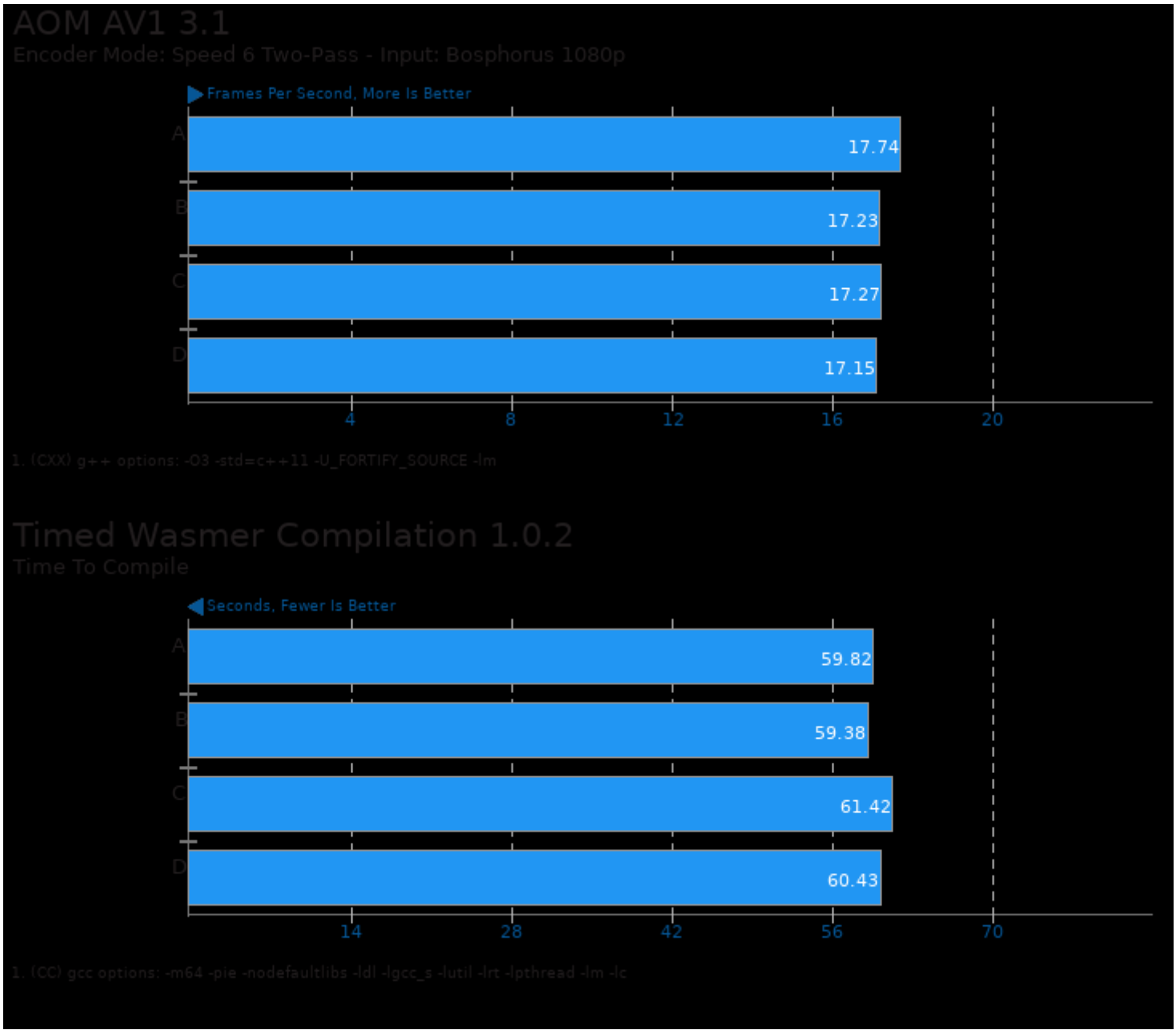
Appleseed 2.0 Beta

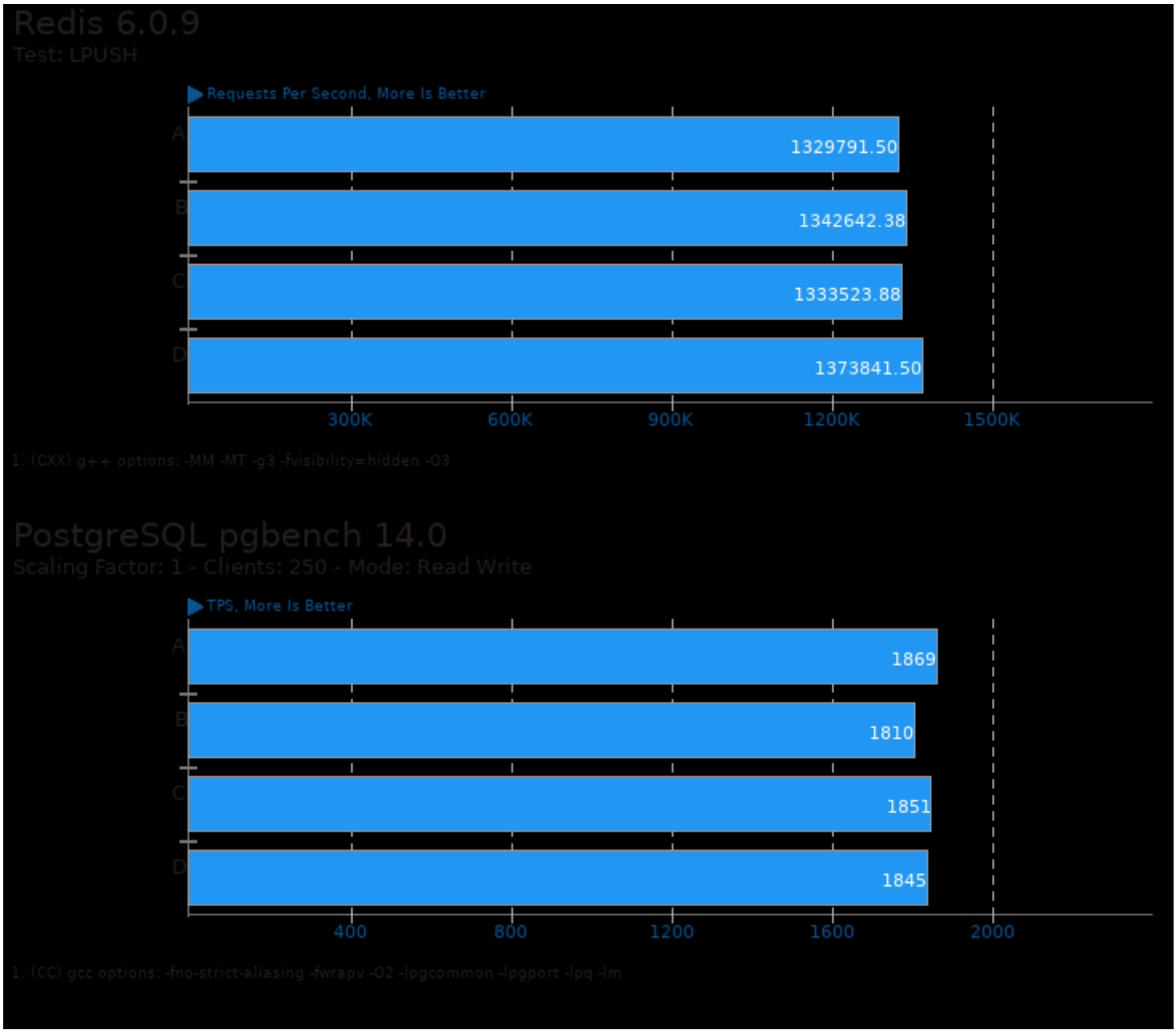
Scene: Disney Material




PostgreSQL pgbench 14.0
Scaling Factor: 100 - Clients: 500 - Mode: Read Only
TPS, More Is Better
A
554442
B
548201
C
542035
D
535062
120K
240K
360K
480K
600K
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
SVT-VP9 0.3
Tuning: VMAF Optimized - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
265.49
B
272.58
C
275.08
D
266.60
60
120
180
240
300
1. (CC) gcc options: -O3 -fcommon -fPIE -fPIC -fvisibility=hidden -pie -rdynamic -lpthread -lrt -lm

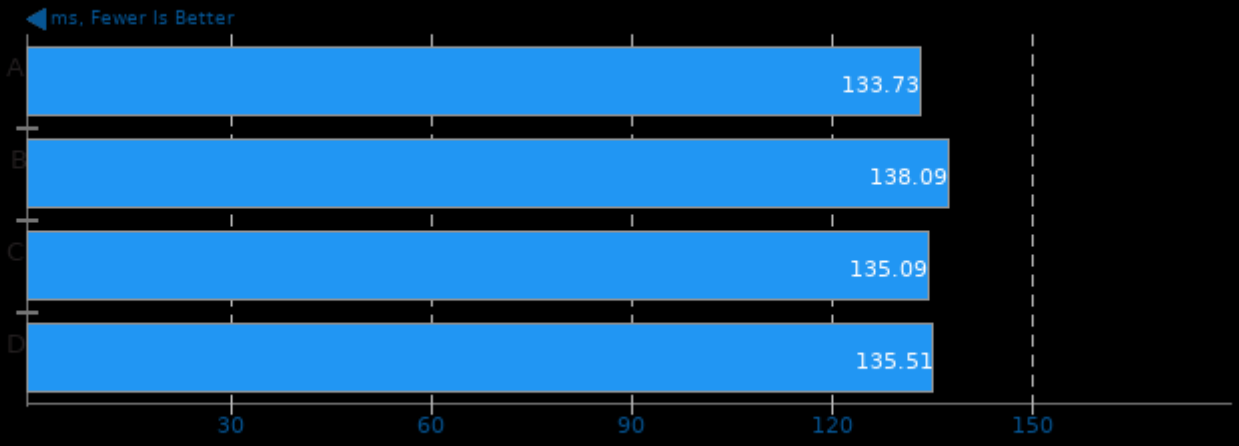

PostgreSQL pgbench 14.0
Scaling Factor: 100 - Clients: 500 - Mode: Read Only - Average Latency
ms, Fewer Is Better
A
B
C
D
0.902
0.912
0.922
0.934
0.2102
0.4204
0.6306
0.8408
1.051
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
Facebook RocksDB 6.22.1
Test: Random Fill
Op/s, More Is Better
A
B
C
D
636626
643776
631805
653731
140K
280K
420K
560K
700K
1. (CXX) g++ options: -O3 -march=native -pthread -fno-builtin-memcmp -fno-rtti -lpthread


AOM AV1 3.1
Encoder Mode: Speed 6 Two-Pass - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
D
17.74
17.23
17.27
17.15
4
8
12
16
20
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm
Timed Wasmer Compilation 1.0.2
Time To Compile
Seconds, Fewer Is Better
A
B
C
D
59.82
59.38
61.42
60.43
14
28
42
56
70
1. (CC) gcc options: -m64 -pie -nodefaultlibs -ldl -lgcc_s -lutil -lrt -lpthread -lm -lc


Redis 6.0.9
Test: LPUSH
Requests Per Second, More Is Better
A
B
C
D
1329791.50
1342642.38
1333523.88
1373841.50
300K
600K
900K
1200K
1500K
1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3
PostgreSQL pgbench 14.0
Scaling Factor: 1 - Clients: 250 - Mode: Read Write
TPS, More Is Better
A
B
C
D
1869
1810
1851
1845
400
800
1200
1600
2000
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

PostgreSQL pgbench 14.0

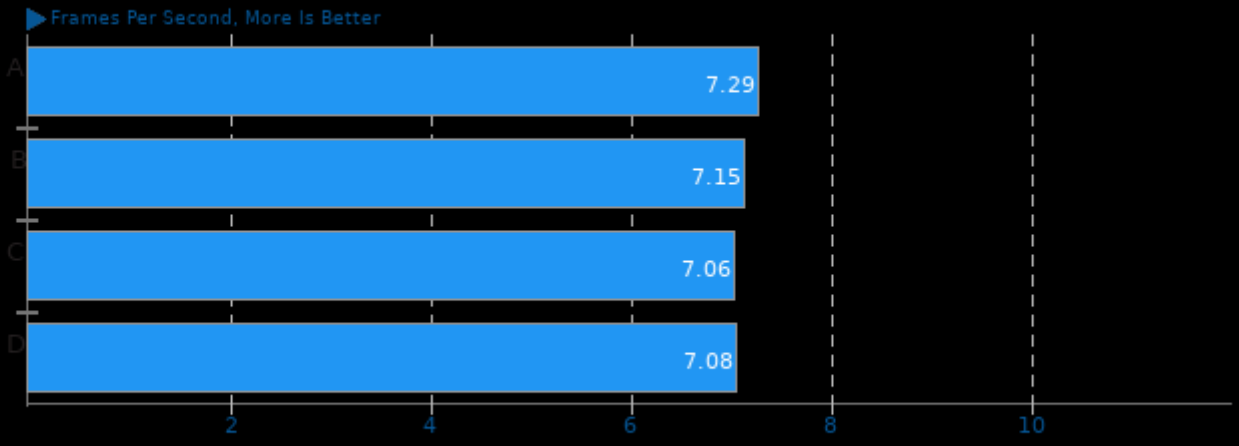
Scaling Factor: 1 - Clients: 250 - Mode: Read Write - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

AOM AV1 3.1

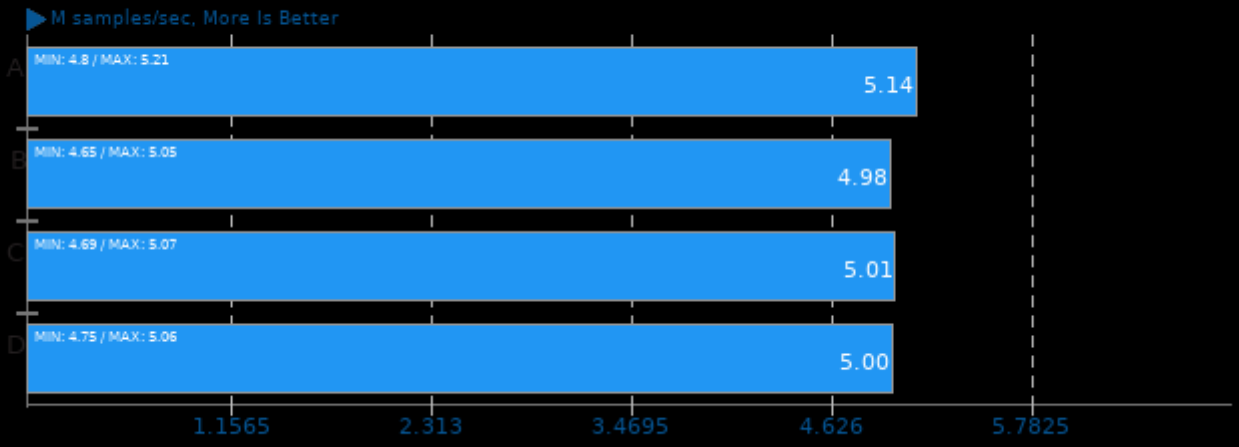
Encoder Mode: Speed 6 Two-Pass - Input: Bosphorus 4K

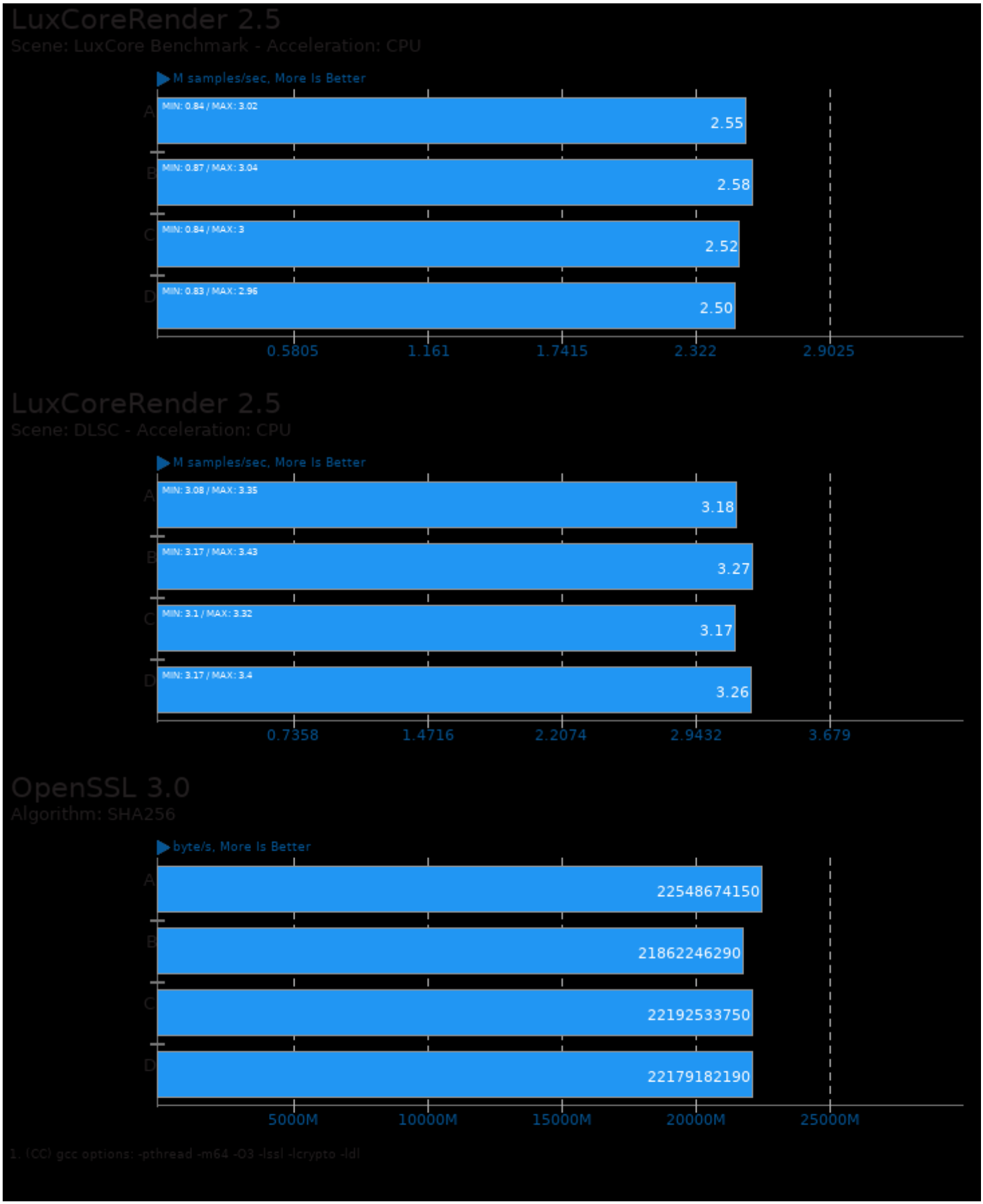


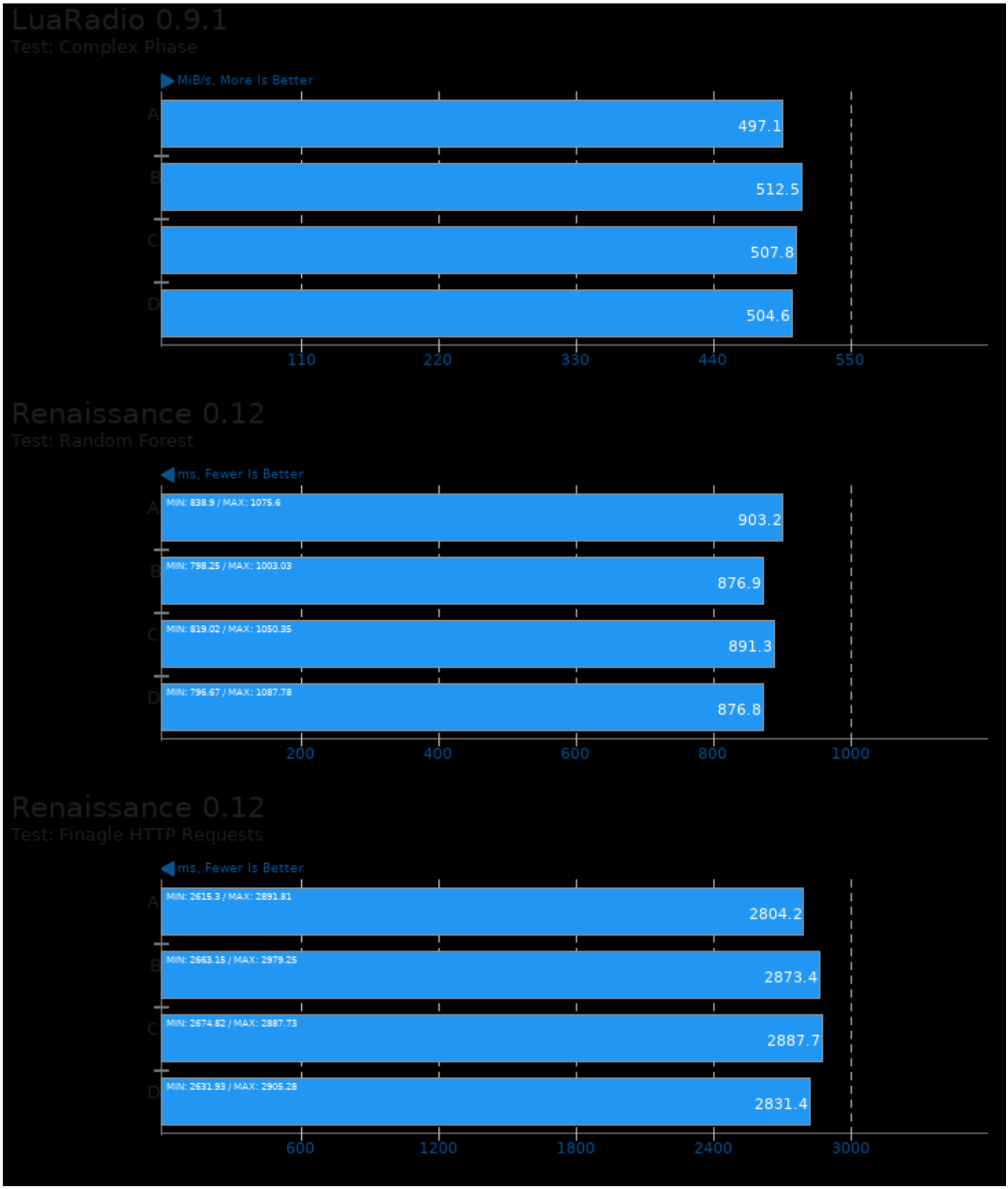
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm

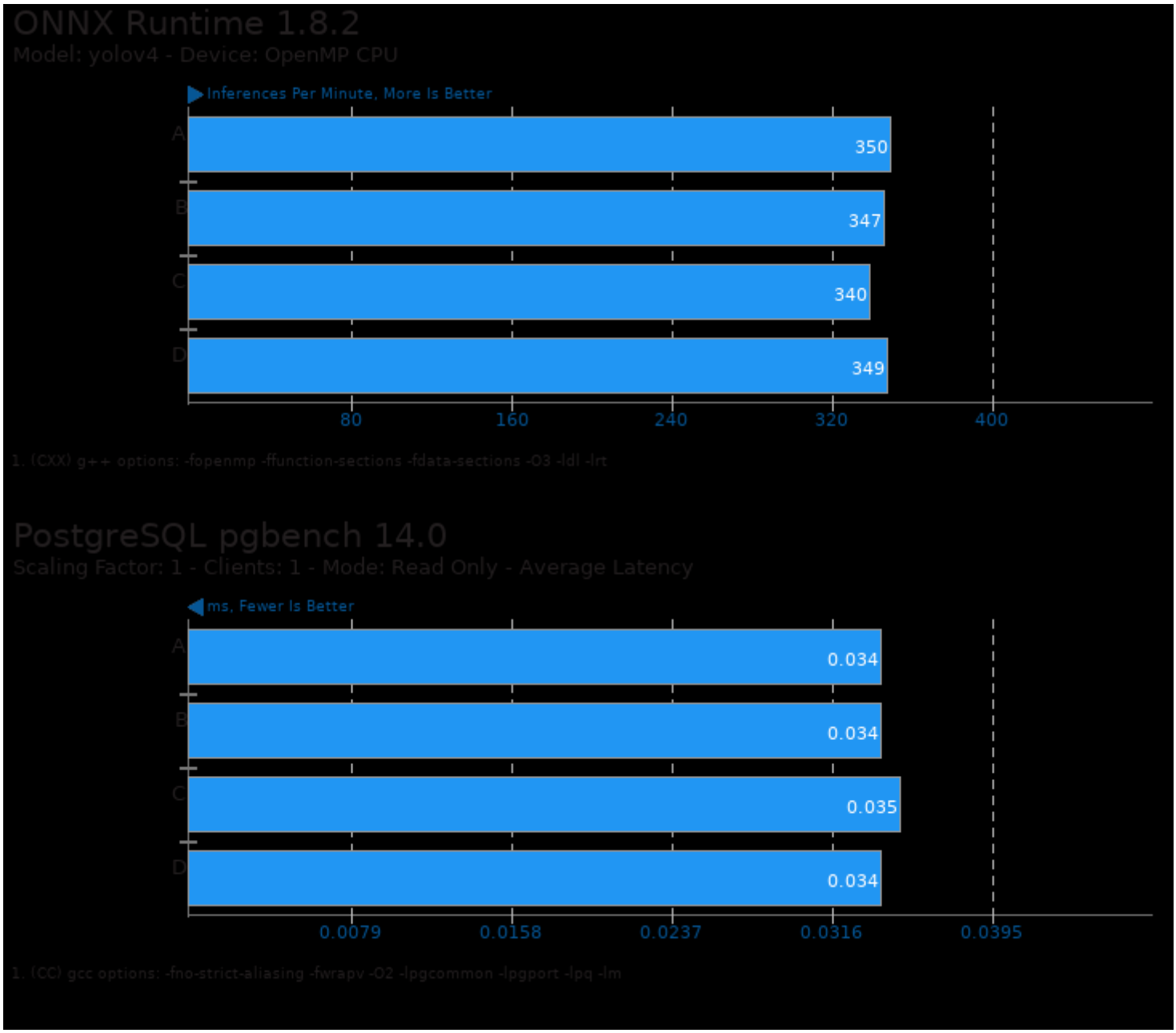
LuxCoreRender 2.5

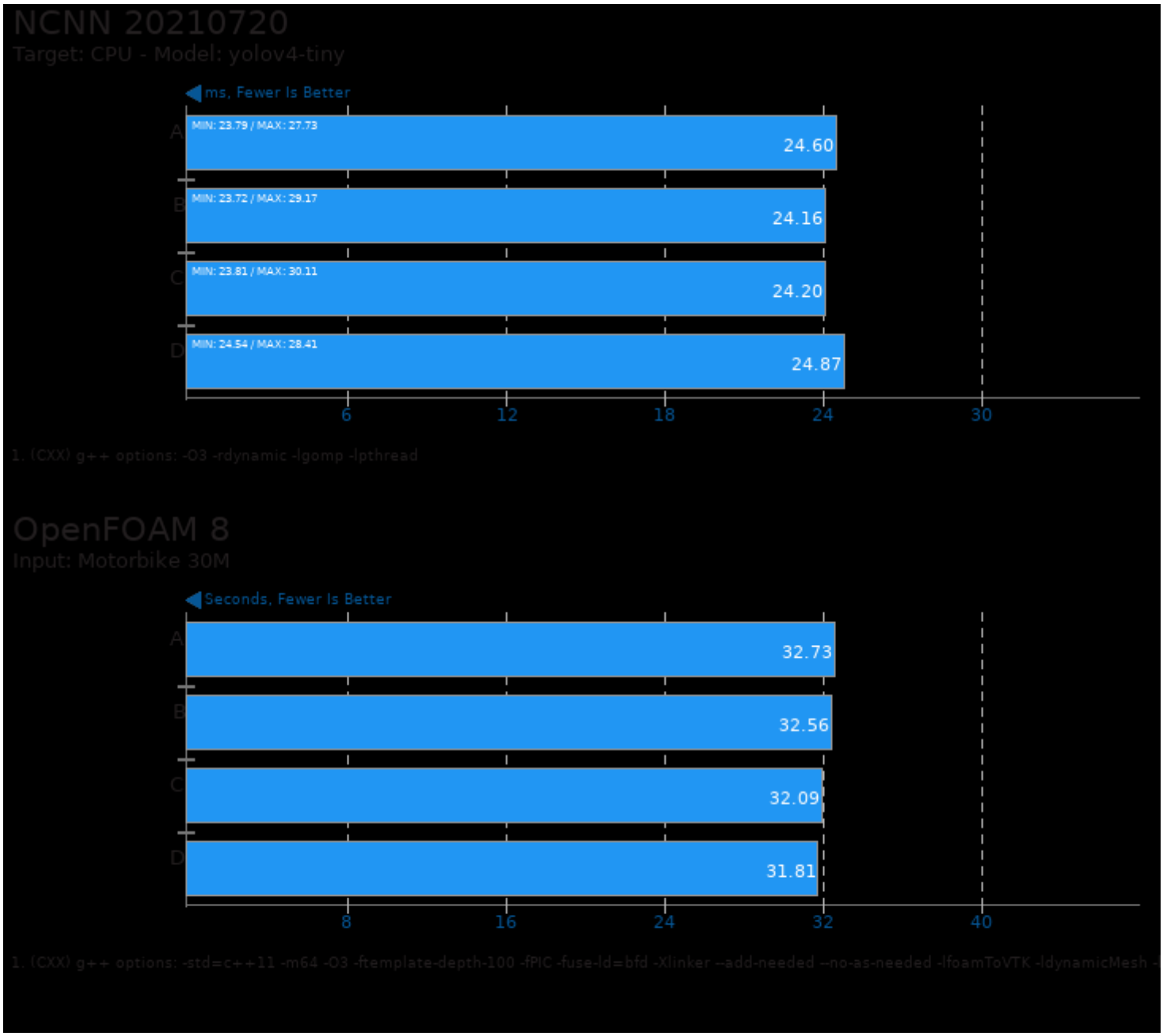
Scene: Orange Juice - Acceleration: CPU

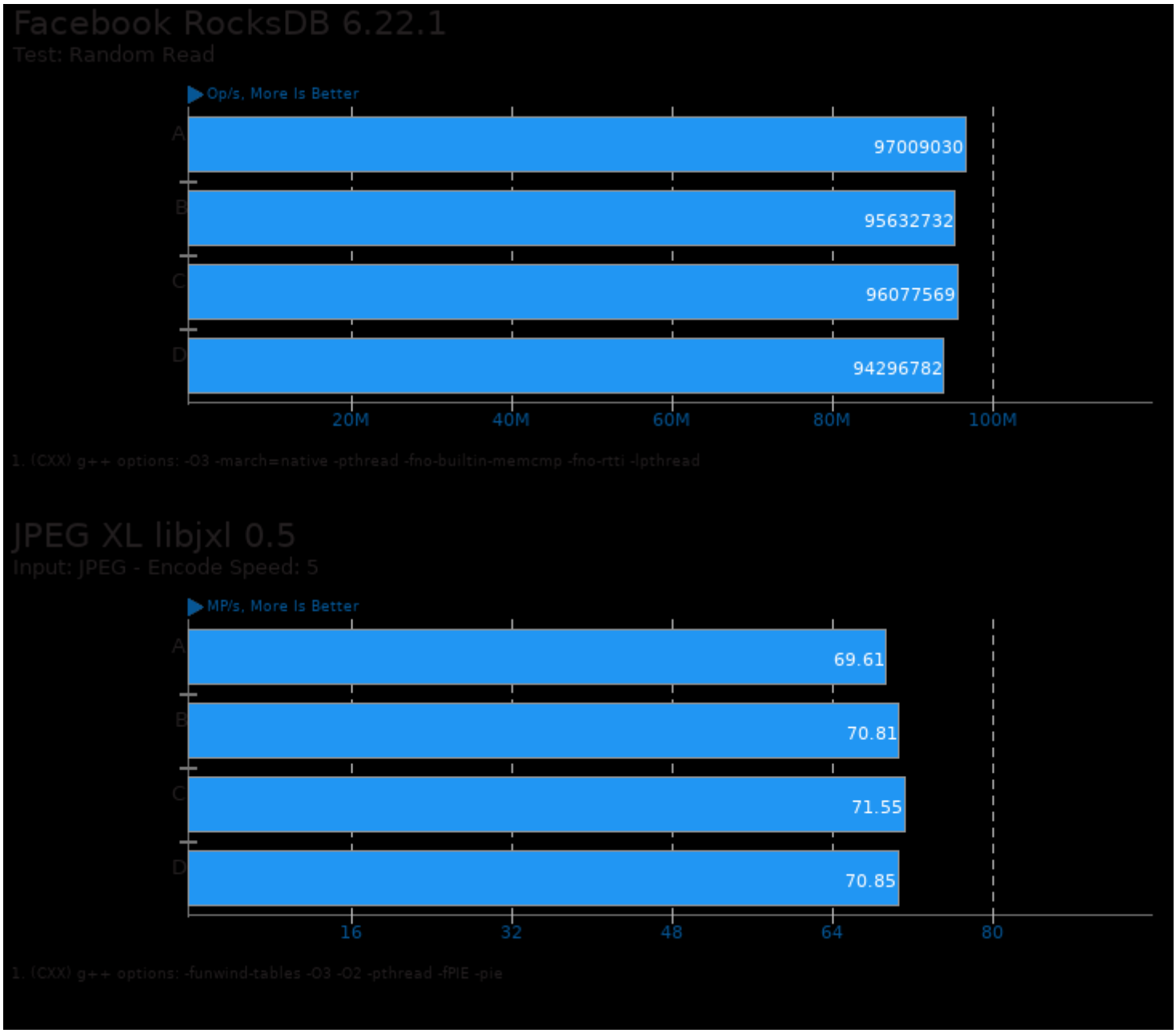


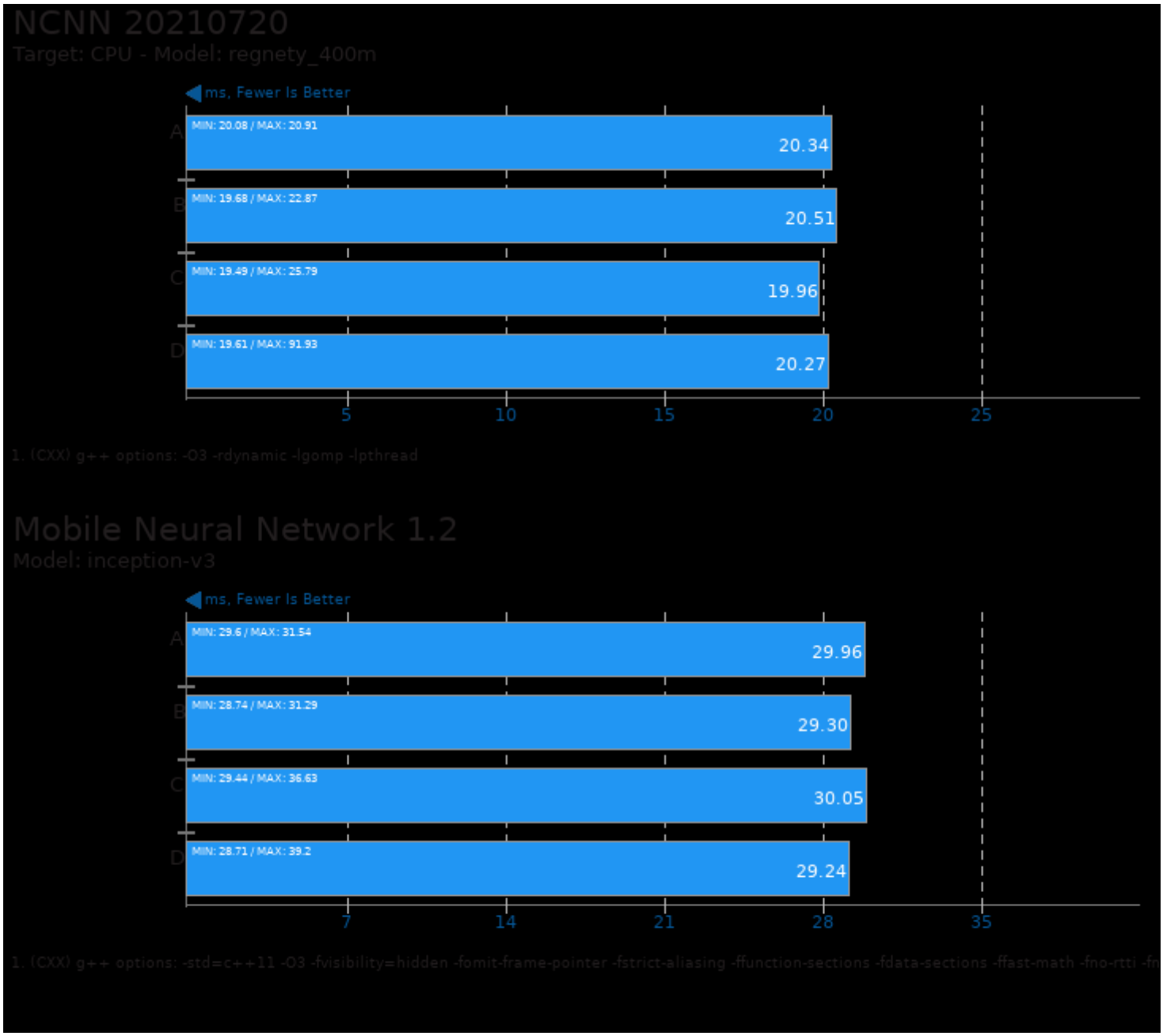

LuxCoreRender 2.5
Scene: LuxCore Benchmark - Acceleration: CPU
M samples/sec, More Is Better
A
MIN: 0.84 / MAX: 3.02
2.55
B
MIN: 0.87 / MAX: 3.04
2.58
C
MIN: 0.84 / MAX: 3
2.52
D
MIN: 0.83 / MAX: 2.96
2.50
0.5805
1.161
1.7415
2.322
2.9025
LuxCoreRender 2.5
Scene: DLSC - Acceleration: CPU
M samples/sec, More Is Better
A
MIN: 3.08 / MAX: 3.35
3.18
B
MIN: 3.17 / MAX: 3.43
3.27
C
MIN: 3.1 / MAX: 3.32
3.17
D
MIN: 3.17 / MAX: 3.4
3.26
0.7358
1.4716
2.2074
2.9432
3.679
OpenSSL 3.0
Algorithm: SHA256
byte/s, More Is Better
A
22548674150
B
21862246290
C
22192533750
D
22179182190
5000M
10000M
15000M
20000M
25000M
1. (CC) gcc options: -pthread -m64 -O3 -lssl -lcrypto -ldl

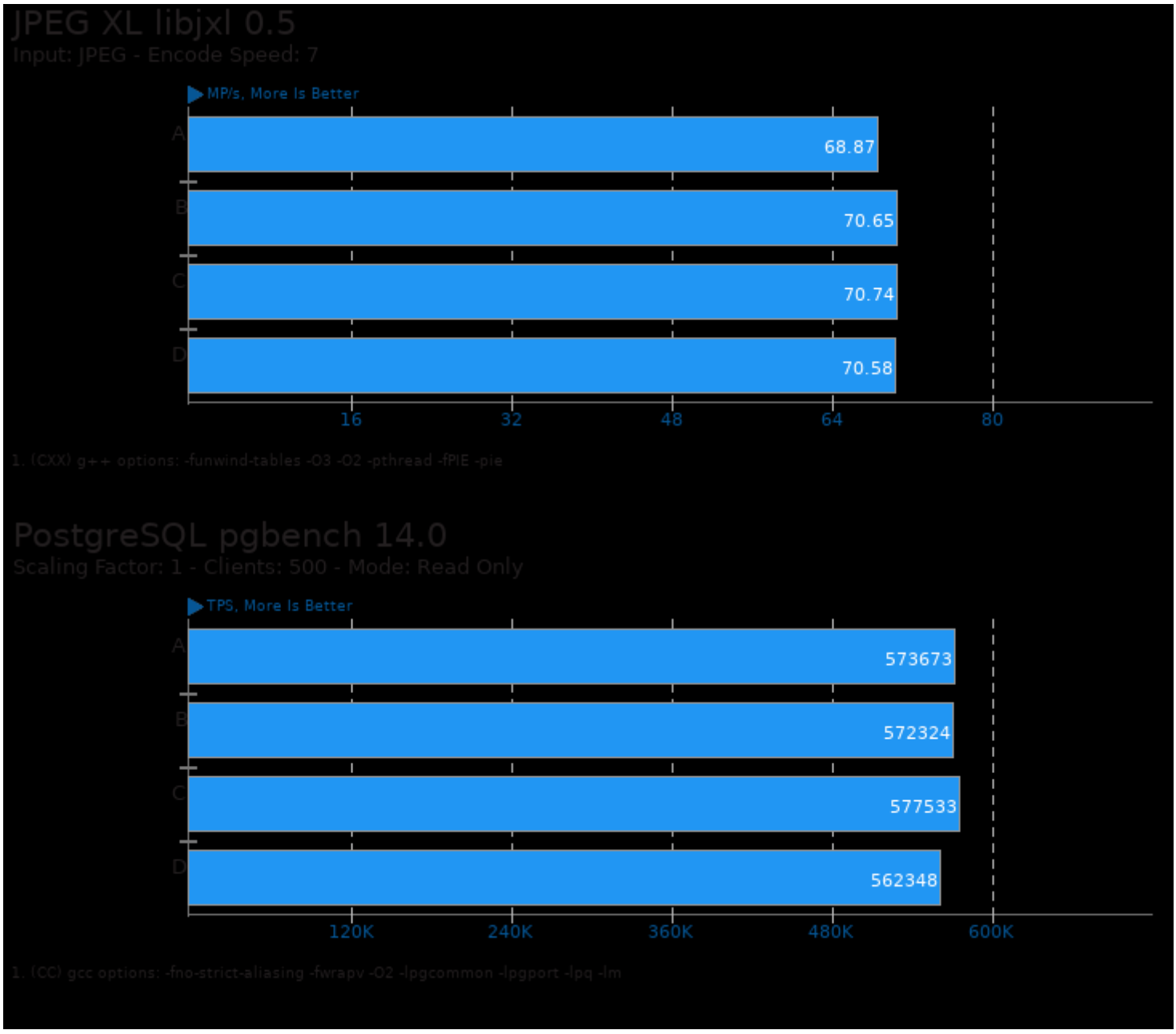

LuaRadio 0.9.1
Test: Complex Phase
MiB/s, More Is Better
A
497.1
B
512.5
C
507.8
D
504.6
110
220
330
440
550
Renaissance 0.12
Test: Random Forest
ms, Fewer Is Better
A
MIN: 838.9 / MAX: 1075.6
903.2
B
MIN: 798.25 / MAX: 1003.03
876.9
C
MIN: 819.02 / MAX: 1050.35
891.3
D
MIN: 796.67 / MAX: 1087.78
876.8
200
400
600
800
1000
Renaissance 0.12
Test: Finagle HTTP Requests
ms, Fewer Is Better
A
MIN: 2615.3 / MAX: 2891.81
2804.2
B
MIN: 2663.15 / MAX: 2979.25
2873.4
C
MIN: 2674.82 / MAX: 2887.73
2887.7
D
MIN: 2631.93 / MAX: 2905.28
2831.4
600
1200
1800
2400
3000


ONNX Runtime 1.8.2
Model: yolov4 - Device: OpenMP CPU
Inferences Per Minute, More Is Better
A
B
C
D
350
347
340
349
80
160
240
320
400
1. (CXX) g++ options: -fopenmp -ffunction-sections -fdata-sections -O3 -ldl -lrt
PostgreSQL pgbench 14.0
Scaling Factor: 1 - Clients: 1 - Mode: Read Only - Average Latency
ms, Fewer Is Better
A
B
C
D
0.034
0.034
0.035
0.034
0.0079
0.0158
0.0237
0.0316
0.0395
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm


NCNN 20210720
Target: CPU - Model: yolov4-tiny
ms, Fewer Is Better
A
MIN: 23.79 / MAX: 27.73
24.60
B
MIN: 23.72 / MAX: 29.17
24.16
C
MIN: 23.81 / MAX: 30.11
24.20
D
MIN: 24.54 / MAX: 28.41
24.87
6
12
18
24
30
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
OpenFOAM 8
Input: Motorbike 30M
Seconds, Fewer Is Better
A
32.73
B
32.56
C
32.09
D
31.81
8
16
24
32
40
1. (CXX) g++ options: -std=c++11 -m64 -O3 -ftemplate-depth-100 -fPIC -fuse-ld=bfd -Xlinker --add-needed --no-as-needed -lfoamToVTK -ldynamicMesh

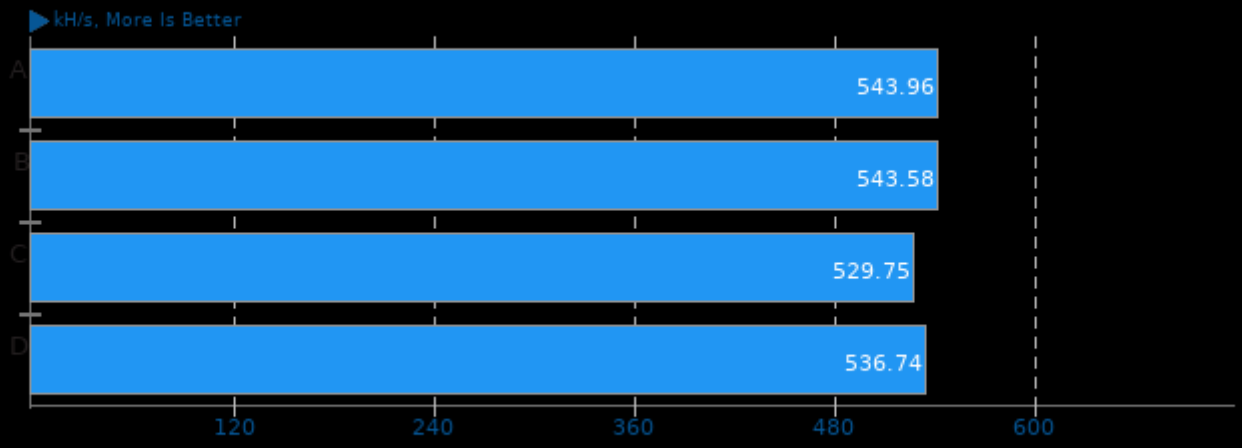

Facebook RocksDB 6.22.1
Test: Random Read
Op/s, More Is Better
A
B
C
D
97009030
95632732
96077569
94296782
20M
40M
60M
80M
100M
1. (CXX) g++ options: -O3 -march=native -pthread -fno-builtin-memcmp -fno-rtti -lpthread
JPEG XL libjxl 0.5
Input: JPEG - Encode Speed: 5
MP/s, More Is Better
A
B
C
D
69.61
70.81
71.55
70.85
16
32
48
64
80
1. (CXX) g++ options: -funwind-tables -O3 -O2 -pthread -fPIE -pie


NCNN 20210720
Target: CPU - Model: regnety_400m
ms, Fewer Is Better
A
MIN: 20.08 / MAX: 20.91
20.34
B
MIN: 19.68 / MAX: 22.87
20.51
C
MIN: 19.49 / MAX: 25.79
19.96
D
MIN: 19.61 / MAX: 91.93
20.27
5
10
15
20
25
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
Mobile Neural Network 1.2
Model: inception-v3
ms, Fewer Is Better
A
MIN: 29.6 / MAX: 31.54
29.96
B
MIN: 28.74 / MAX: 31.29
29.30
C
MIN: 29.44 / MAX: 36.63
30.05
D
MIN: 28.71 / MAX: 39.2
29.24
7
14
21
28
35
1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fn


JPEG XL libjxl 0.5
Input: JPEG - Encode Speed: 7
MP/s, More Is Better
A
B
C
D
68.87
70.65
70.74
70.58
16
32
48
64
80
1. (CXX) g++ options: -funwind-tables -O3 -O2 -pthread -fPIE -pie
PostgreSQL pgbench 14.0
Scaling Factor: 1 - Clients: 500 - Mode: Read Only
TPS, More Is Better
A
B
C
D
573673
572324
577533
562348
120K
240K
360K
480K
600K
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

Cpuminer-Opt 3.18

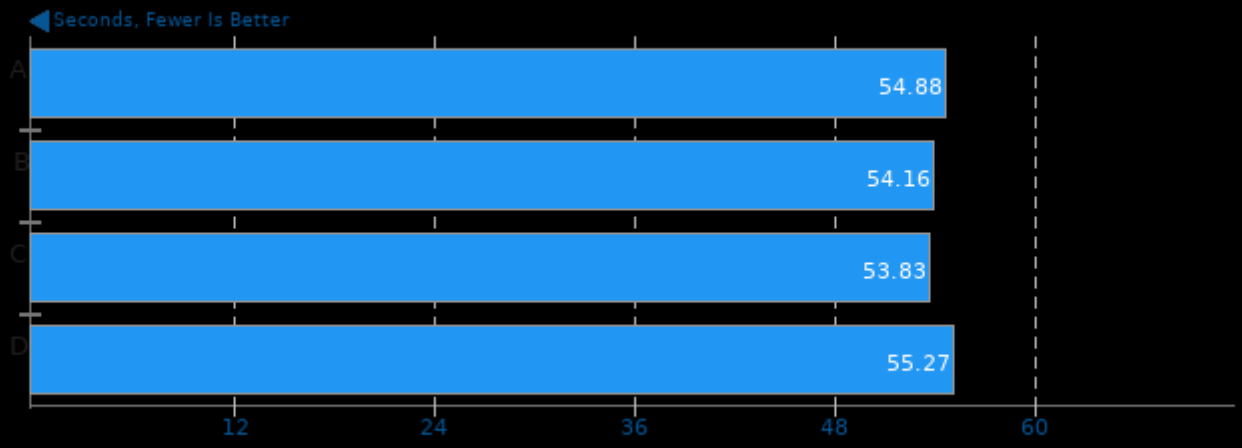
Algorithm: x25x



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

libavif avifenc 0.9.0

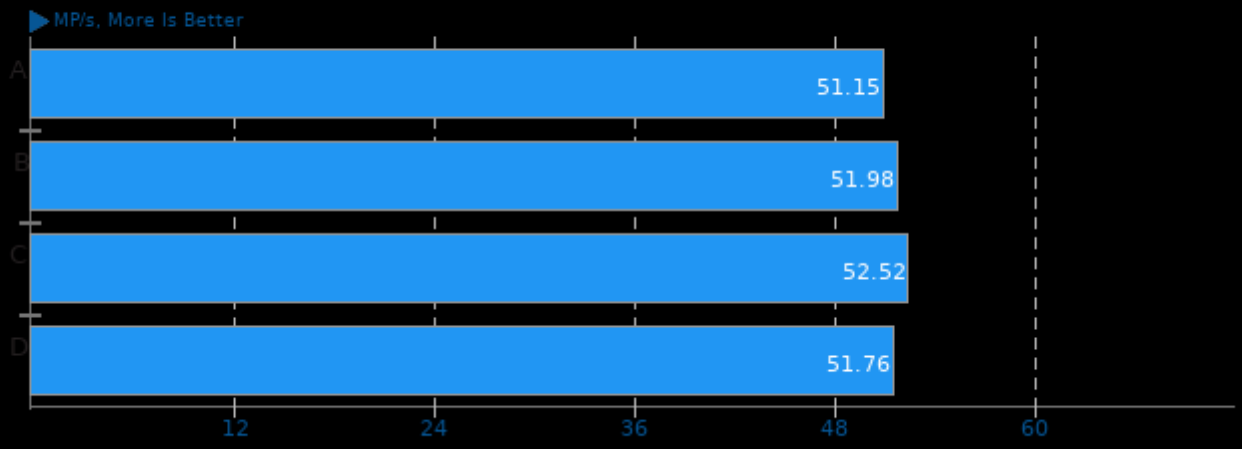
Encoder Speed: 0



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

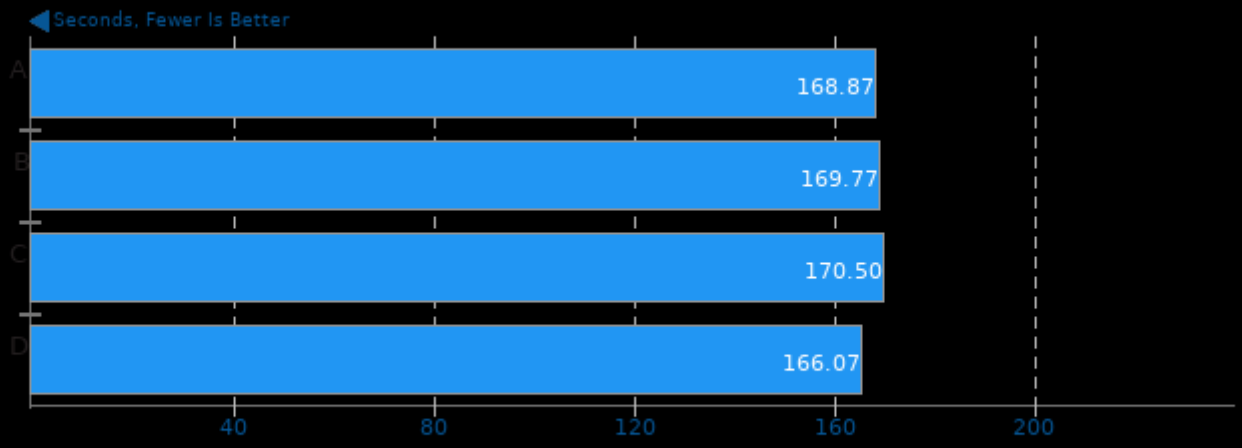
JPEG XL Decoding libjxl 0.5

CPU Threads: 1



Ngspice 34

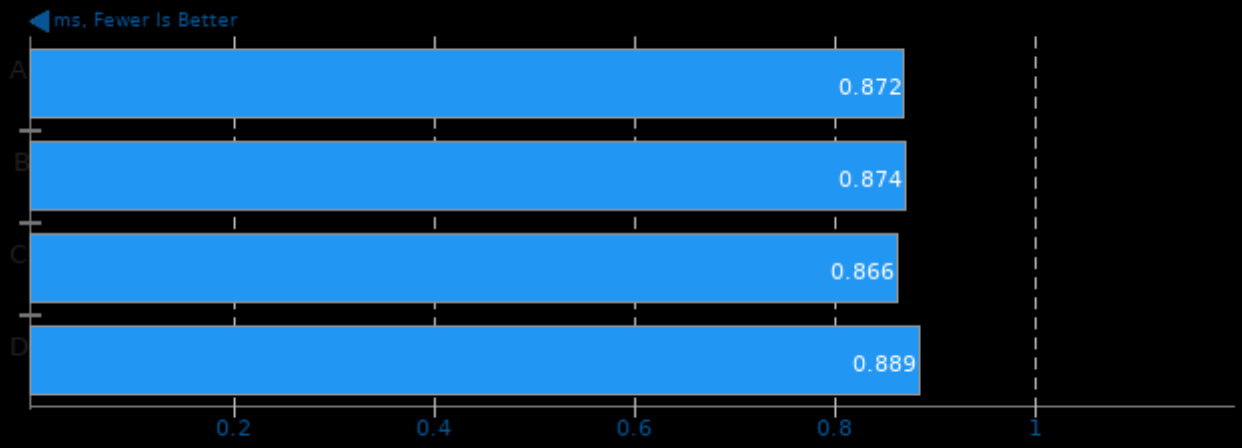
Circuit: C2670



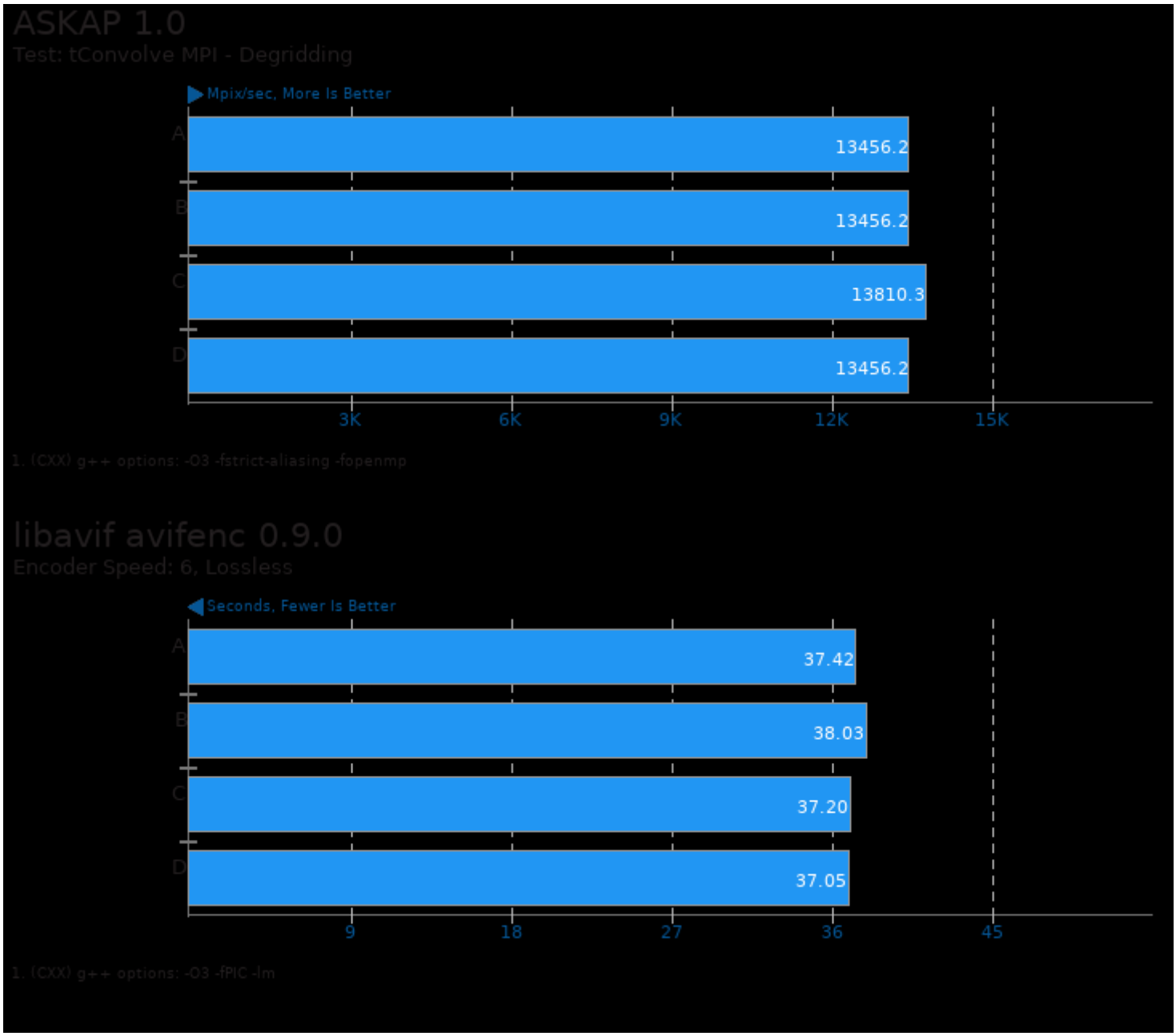
1. (CC) gcc options: -O0 -fopenmp -lm -lstdc++ -lfftw3 -lXaw -lXmu -lXt -lXext -lX11 -lXft -lfontconfig -lXrender -lfreetype -lSM -lICE

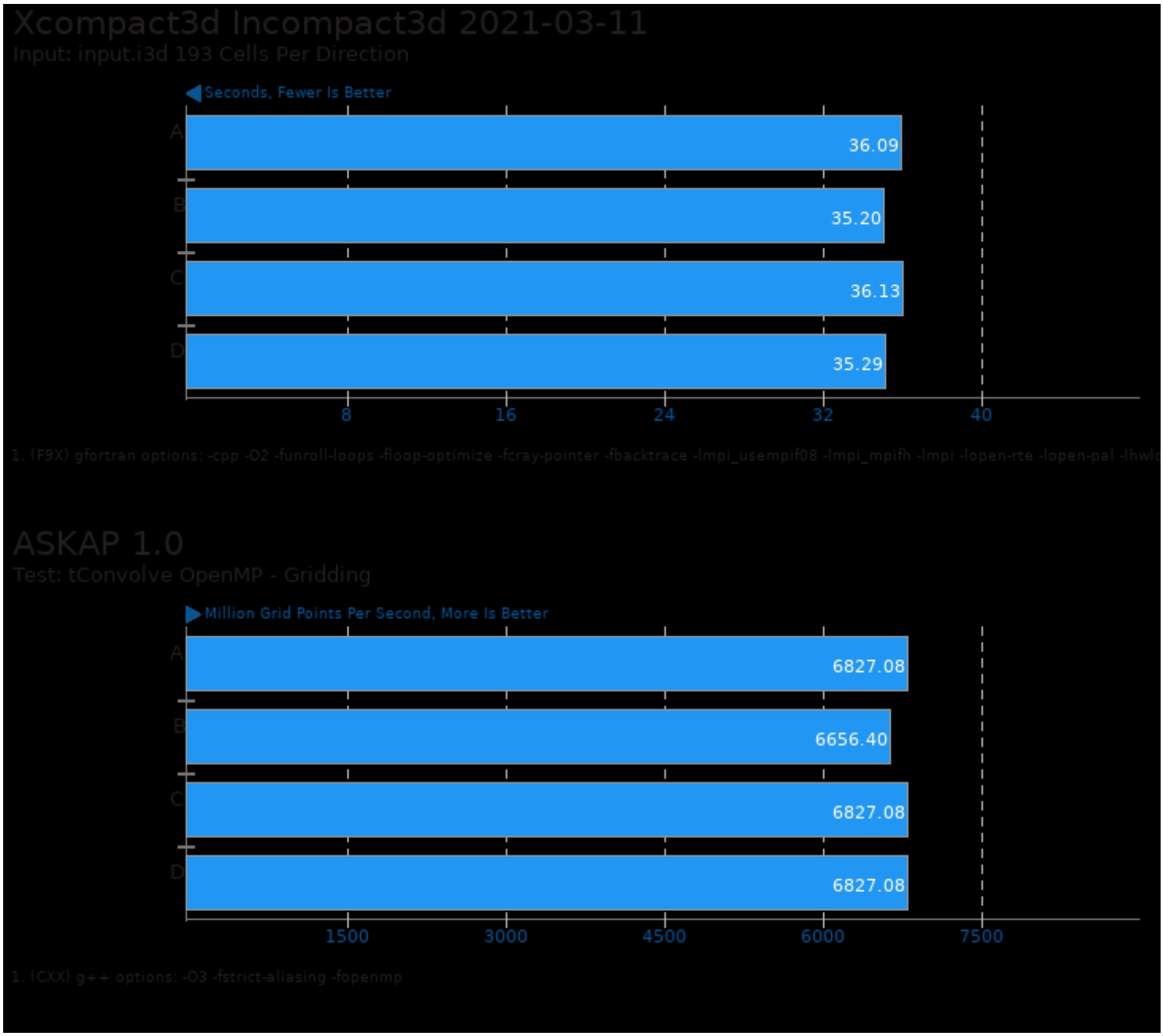
PostgreSQL pgbench 14.0

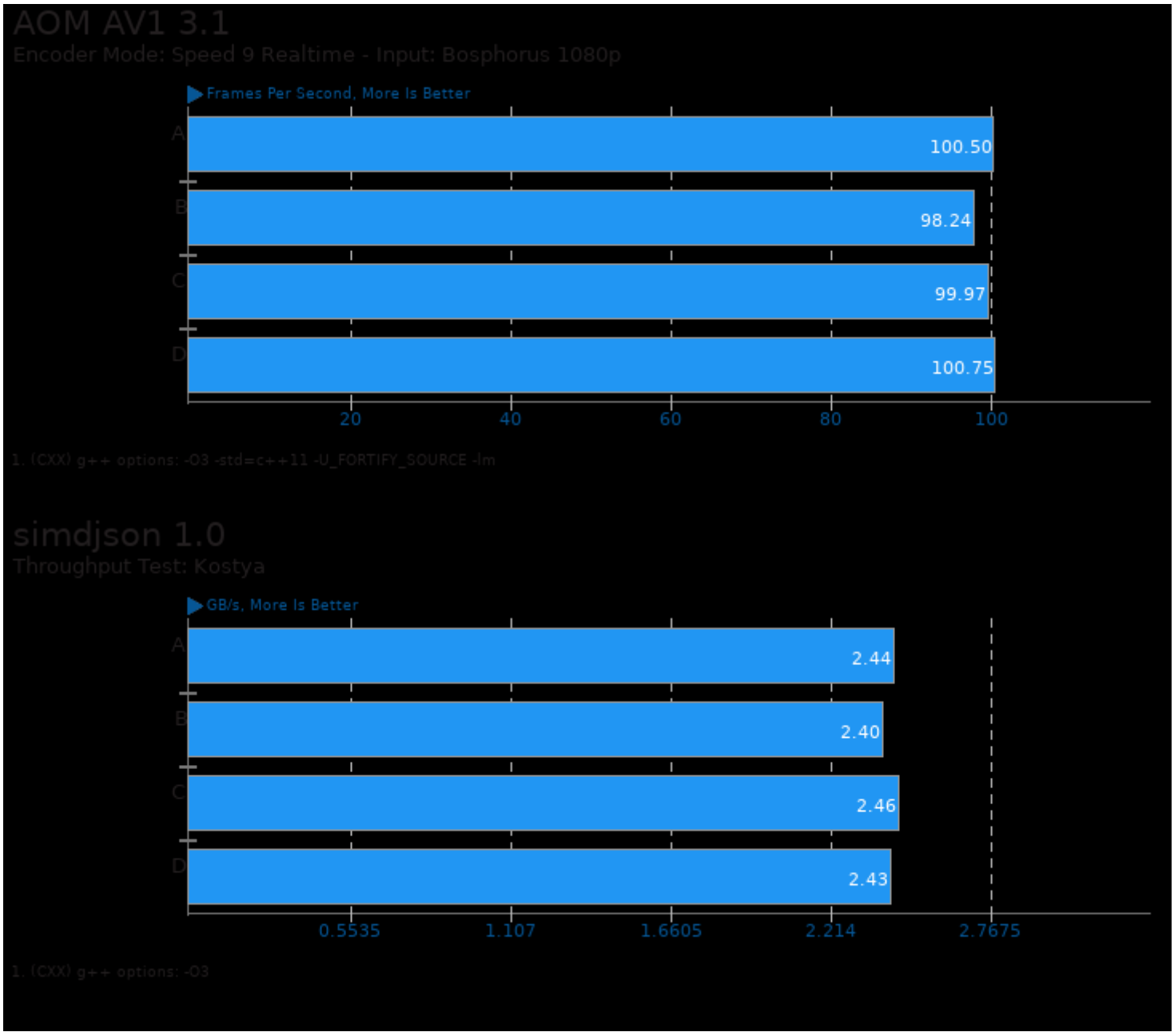
Scaling Factor: 1 - Clients: 500 - Mode: Read Only - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

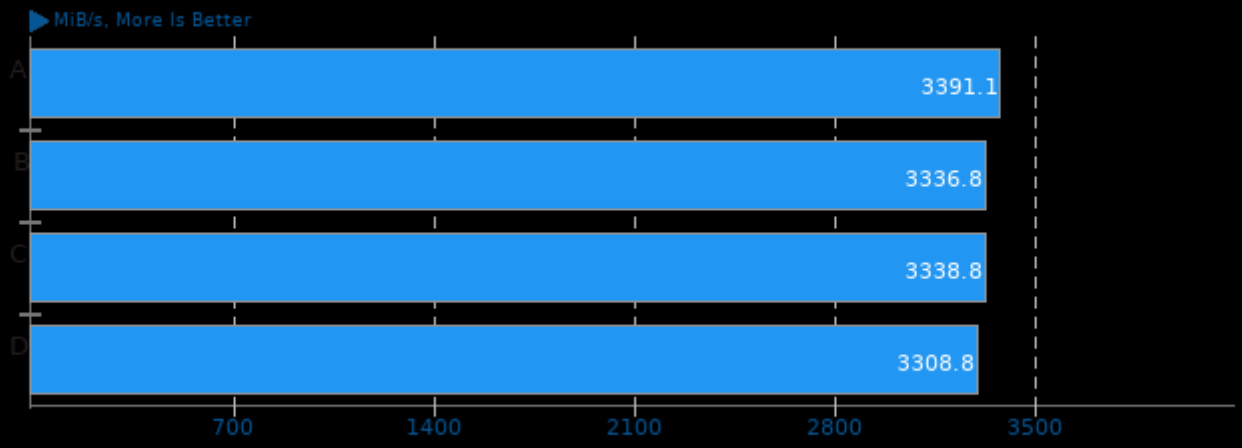

ASKAP 1.0
Test: tConvolve MPI - Degridding
Mpix/sec, More Is Better
A
13456.2
B
13456.2
C
13810.3
D
13456.2
3K
6K
9K
12K
15K
1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp
libavif avifenc 0.9.0
Encoder Speed: 6, Lossless
Seconds, Fewer Is Better
A
37.42
B
38.03
C
37.20
D
37.05
9
18
27
36
45
1. (CXX) g++ options: -O3 -fPIC -lm


Xcompact3d Incompact3d 2021-03-11
Input: input.i3d 193 Cells Per Direction
Seconds, Fewer Is Better
A
B
C
D
36.09
35.20
36.13
35.29
8
16
24
32
40
1. (F9X) gfortran options: -cpp -O2 -funroll-loops -floop-optimize -fcray-pointer -fbacktrace -lmpi_usempif08 -lmpi_mpifh -lmpi -lopen-rte -lopen-pal -lhwl
ASKAP 1.0
Test: tConvolve OpenMP - Gridding
Million Grid Points Per Second, More Is Better
A
B
C
D
6827.08
6656.40
6827.08
6827.08
1500
3000
4500
6000
7500
1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp


AOM AV1 3.1
Encoder Mode: Speed 9 Realtime - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
D
100.50
98.24
99.97
100.75
20
40
60
80
100
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm
simdjson 1.0
Throughput Test: Kostya
GB/s, More Is Better
A
B
C
D
2.44
2.40
2.46
2.43
0.5535
1.107
1.6605
2.214
2.7675
1. (CXX) g++ options: -O3

GNU Radio

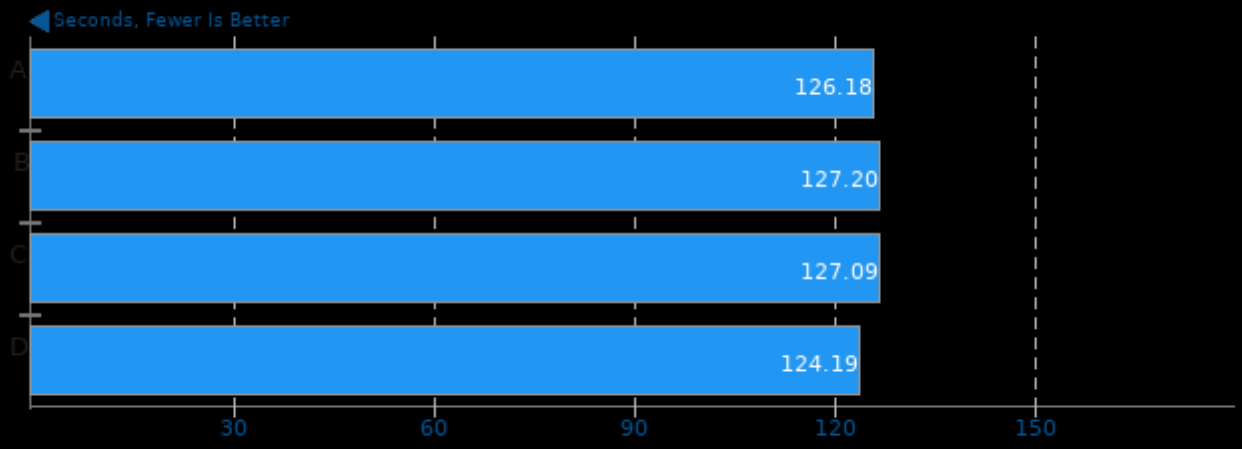
Test: Signal Source (Cosine)



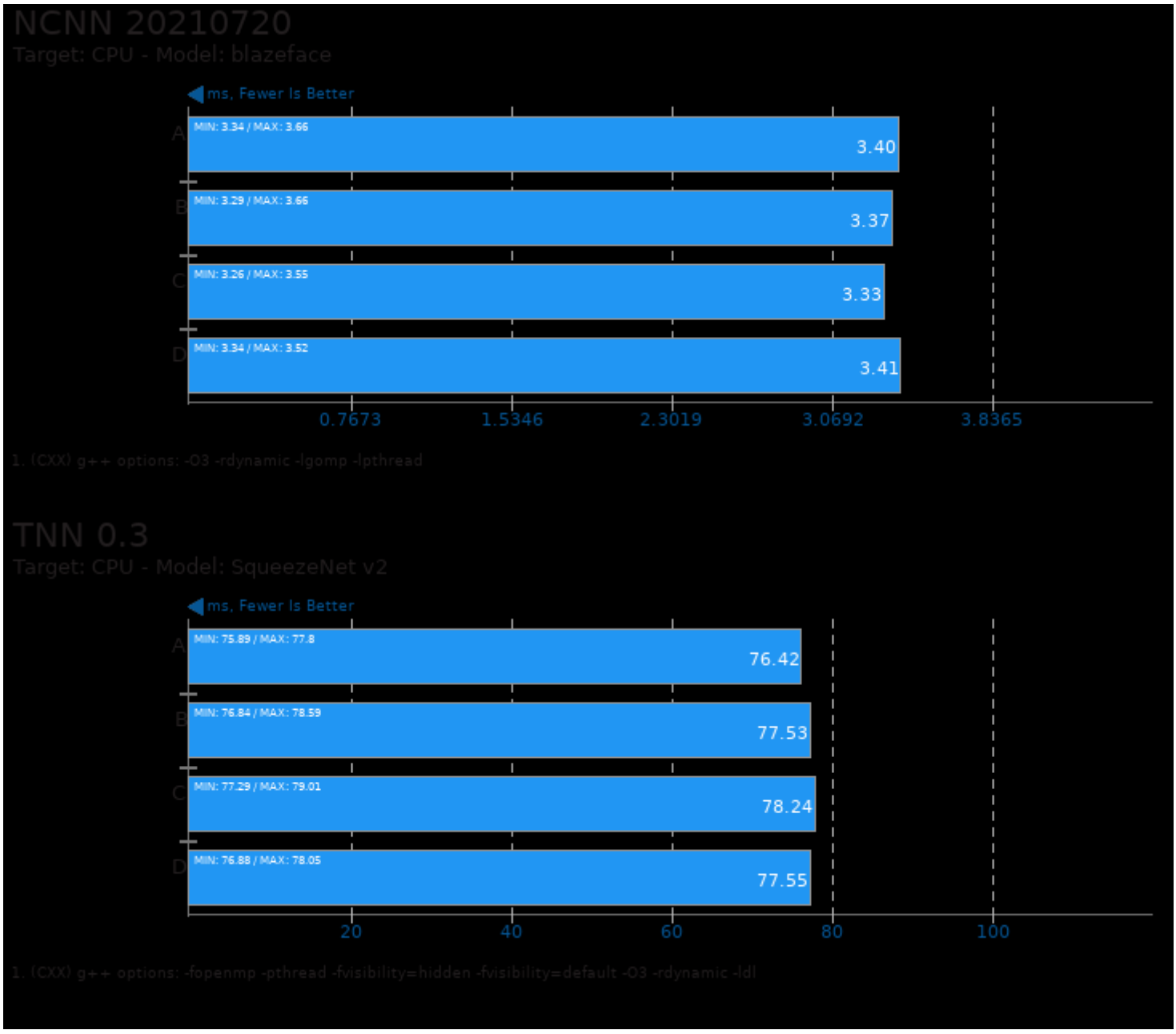
1. 3.8.2.0

Ngspice 34

Circuit: C7552

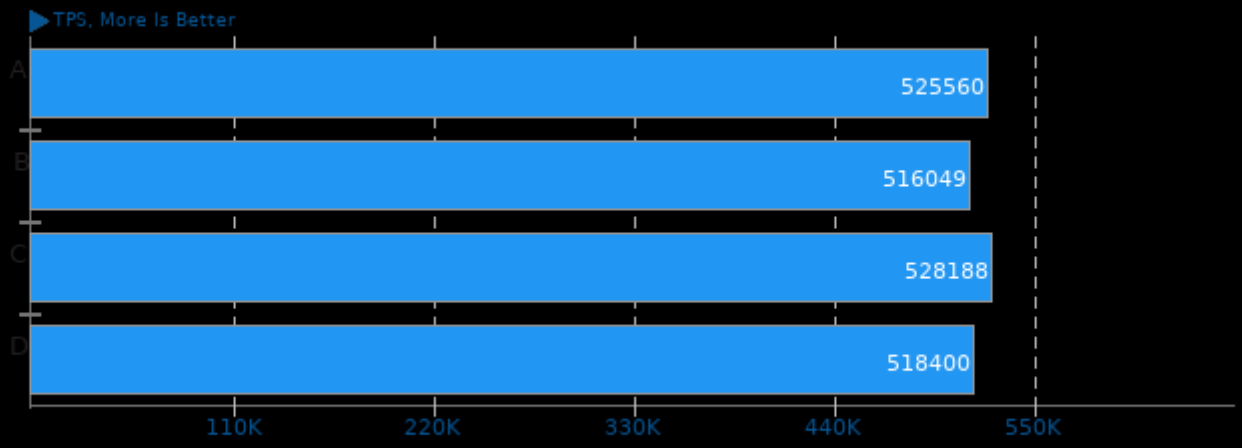


1. (CC) gcc options: -O0 -fopenmp -lm -lstdc++ -lfftw3 -lXaw -lXmu -lXt -lXext -lX11 -lXft -lfontconfig -lXrender -lfreetype -lSM -lICE


NCNN 20210720
Target: CPU - Model: blazeface
ms, Fewer Is Better
A
MIN: 3.34 / MAX: 3.66
3.40
B
MIN: 3.29 / MAX: 3.66
3.37
C
MIN: 3.26 / MAX: 3.55
3.33
D
MIN: 3.34 / MAX: 3.52
3.41
0.7673
1.5346
2.3019
3.0692
3.8365
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
TNN 0.3
Target: CPU - Model: SqueezeNet v2
ms, Fewer Is Better
A
MIN: 75.89 / MAX: 77.8
76.42
B
MIN: 76.84 / MAX: 78.59
77.53
C
MIN: 77.29 / MAX: 79.01
78.24
D
MIN: 76.88 / MAX: 78.05
77.55
20
40
60
80
100
1. (CXX) g++ options: -fopenmp -pthread -fvisibility=hidden -fvisibility=default -O3 -rdynamic -ldl

PostgreSQL pgbench 14.0

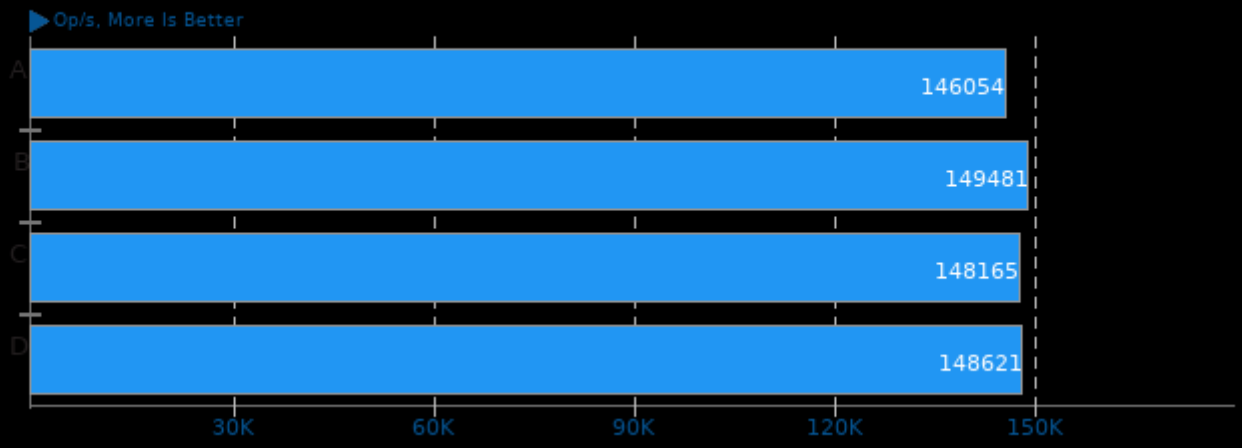
Scaling Factor: 1 - Clients: 50 - Mode: Read Only



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

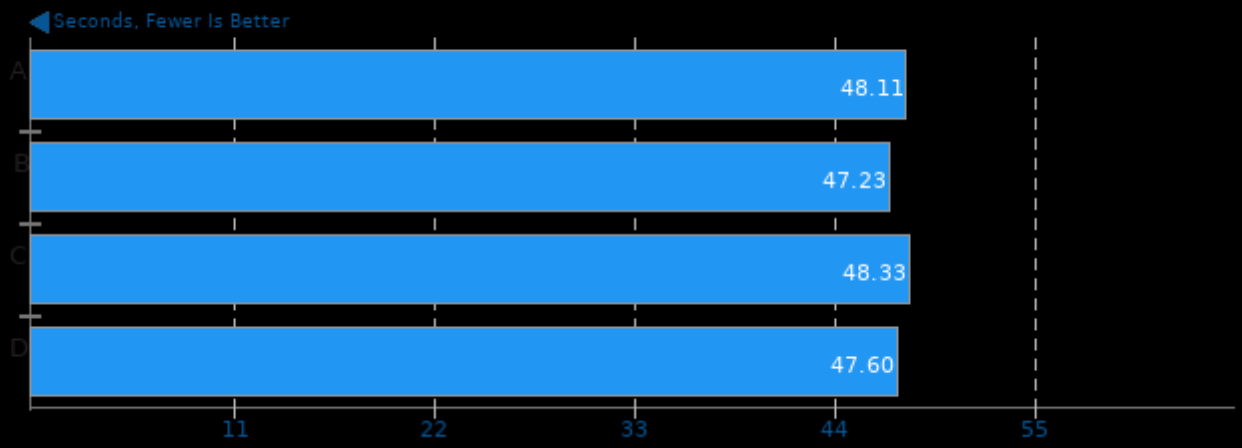
Apache Cassandra 4.0

Test: Writes



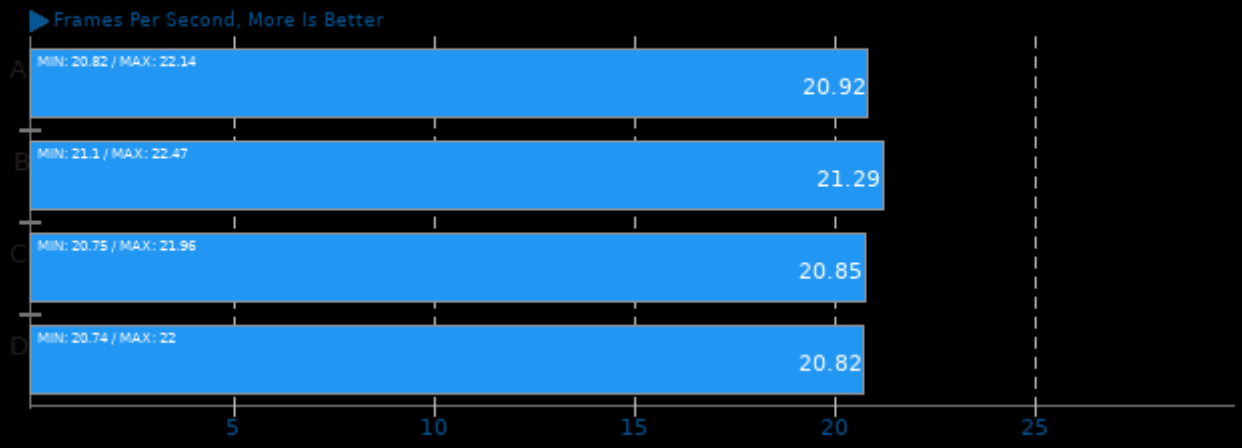
Timed Linux Kernel Compilation 5.14

Time To Compile



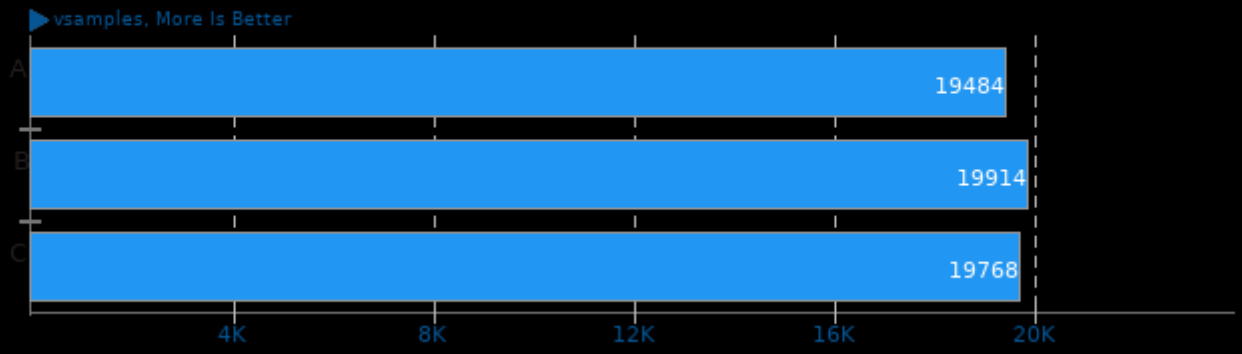
Embree 3.13

Binary: Pathtracer - Model: Asian Dragon



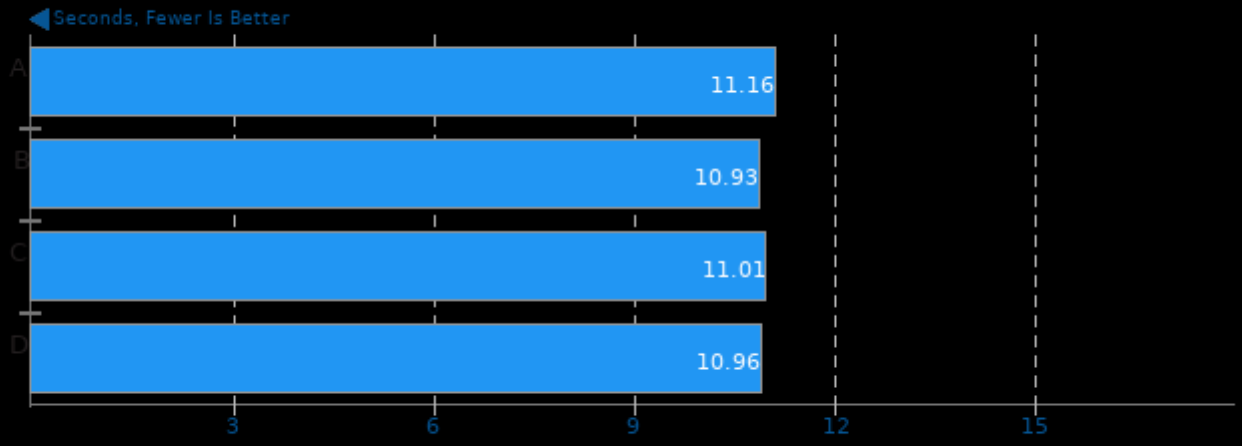
Chaos Group V-RAY 5

Mode: CPU



libavif avifenc 0.9.0

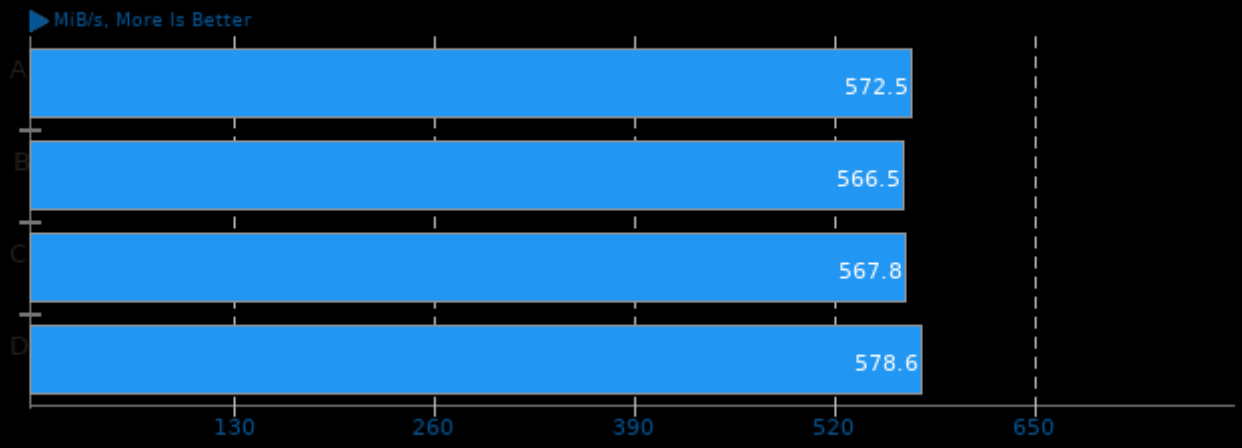
Encoder Speed: 6



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

GNU Radio

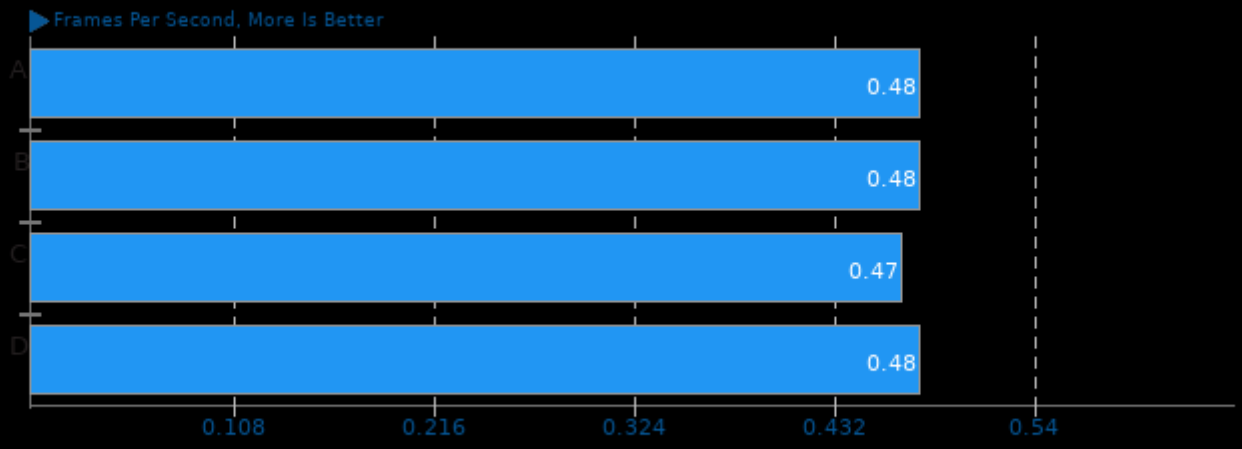
Test: IIR Filter



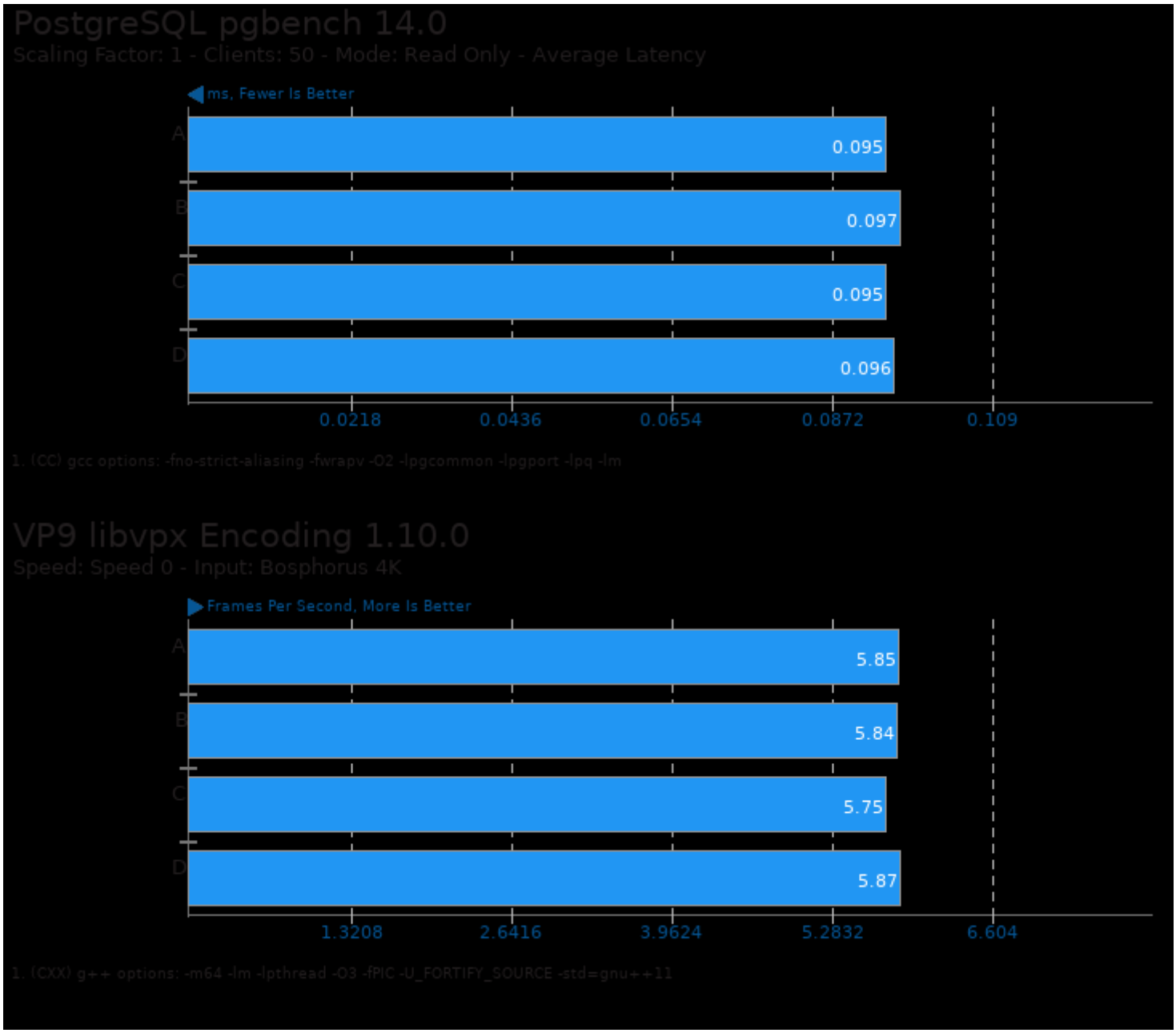
1. 3.8.2.0

AOM AV1 3.1

Encoder Mode: Speed 0 Two-Pass - Input: Bosphorus 1080p

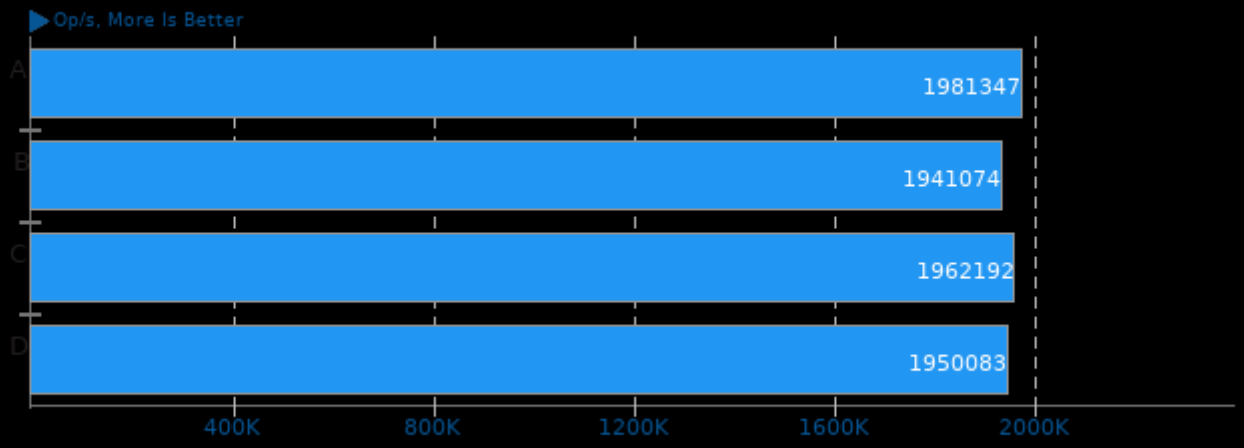


1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm


PostgreSQL pgbench 14.0
Scaling Factor: 1 - Clients: 50 - Mode: Read Only - Average Latency
ms, Fewer Is Better
A
B
C
D
0.095
0.097
0.095
0.096
0.0218
0.0436
0.0654
0.0872
0.109
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
VP9 libvpx Encoding 1.10.0
Speed: Speed 0 - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
D
5.85
5.84
5.75
5.87
1.3208
2.6416
3.9624
5.2832
6.604
1. (CXX) g++ options: -m64 -lm -lpthread -O3 -fPIC -U_FORTIFY_SOURCE -std=gnu++11

Facebook RocksDB 6.22.1

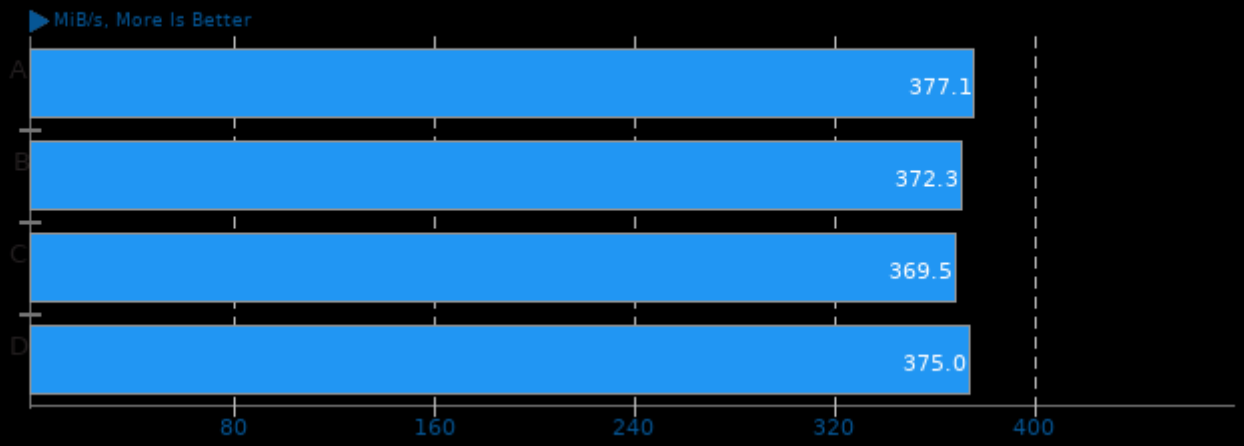
Test: Read Random Write Random



1. (CXX) g++ options: -O3 -march=native -pthread -fno-builtin-memcmp -fno-rtti -lpthread

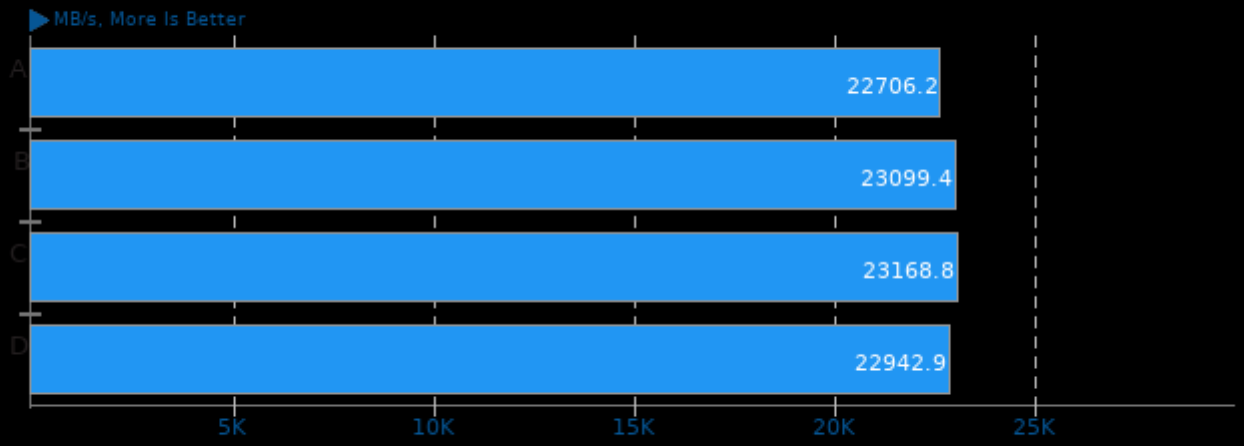
LuaRadio 0.9.1

Test: FM Deemphasis Filter

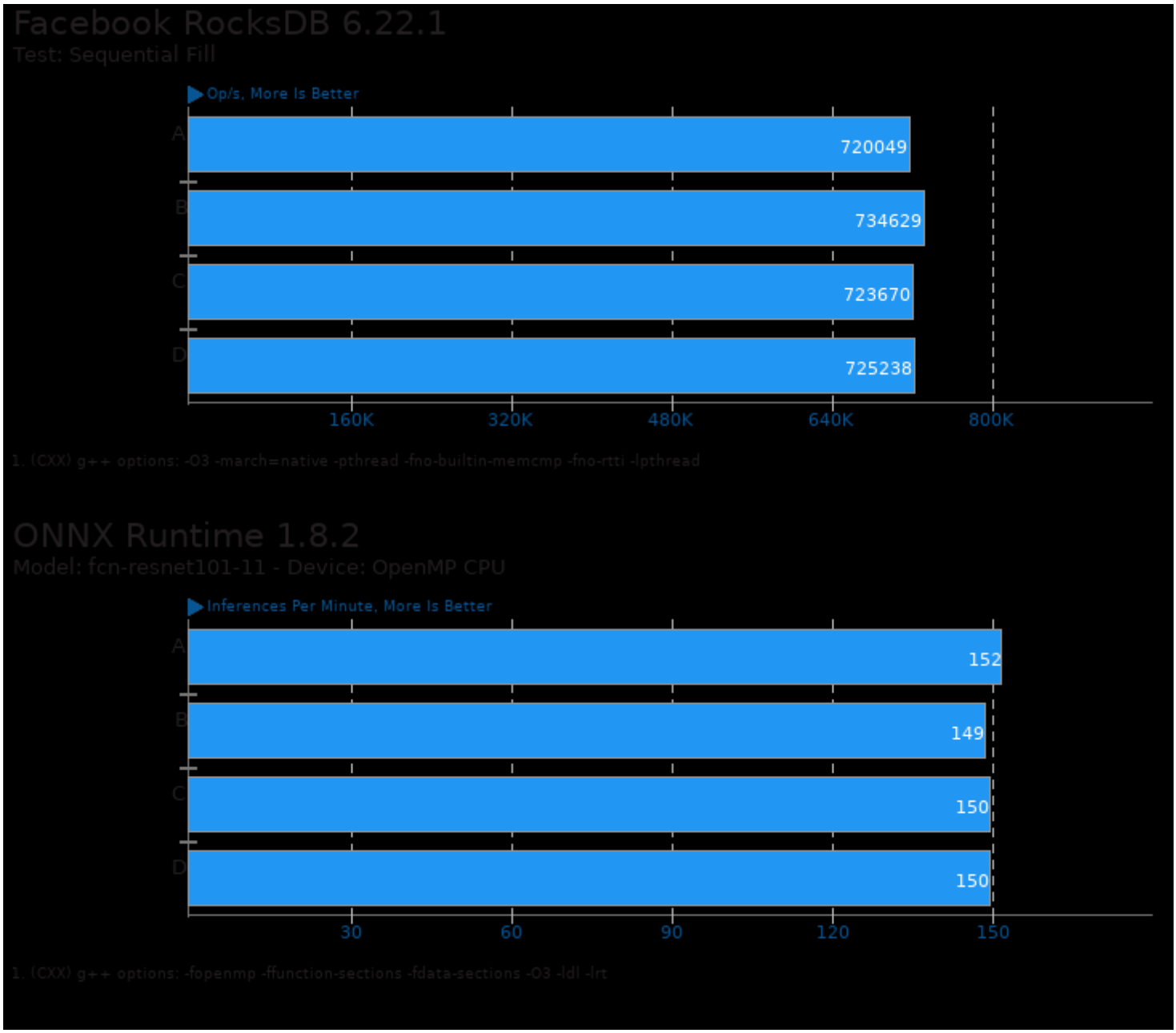


C-Blosc 2.0

Compressor: blosclz

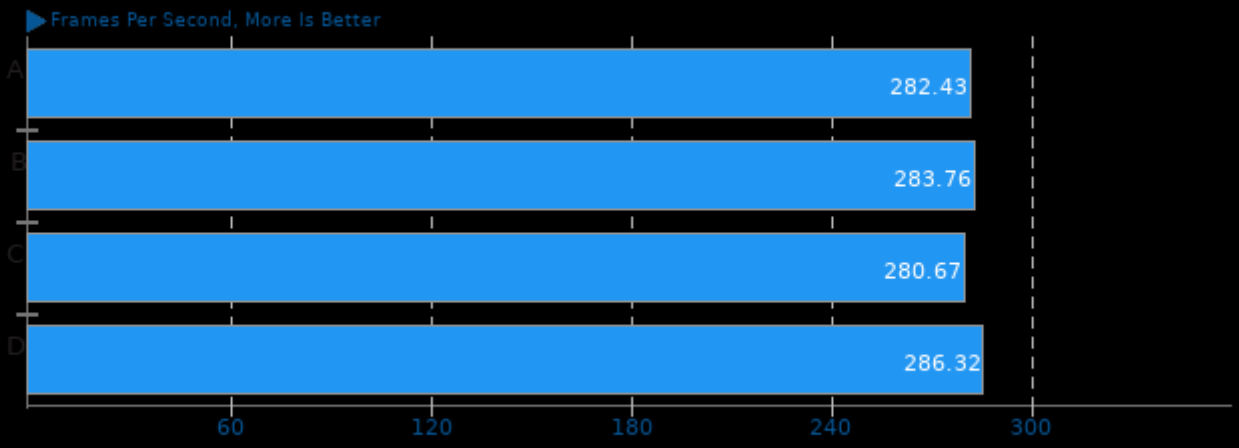


1. (CC) gcc options: -std=gnu99 -O3 -lrt -lm


Facebook RocksDB 6.22.1
Test: Sequential Fill
Op/s, More Is Better
A
B
C
D
720049
734629
723670
725238
160K
320K
480K
640K
800K
1. (CXX) g++ options: -O3 -march=native -pthread -fno-builtin-memcmp -fno-rtti -lpthread
ONNX Runtime 1.8.2
Model: fcn-resnet101-11 - Device: OpenMP CPU
Inferences Per Minute, More Is Better
A
B
C
D
152
149
150
150
30
60
90
120
150
1. (CXX) g++ options: -fopenmp -ffunction-sections -fdata-sections -O3 -ldl -lrt

SVT-VP9 0.3

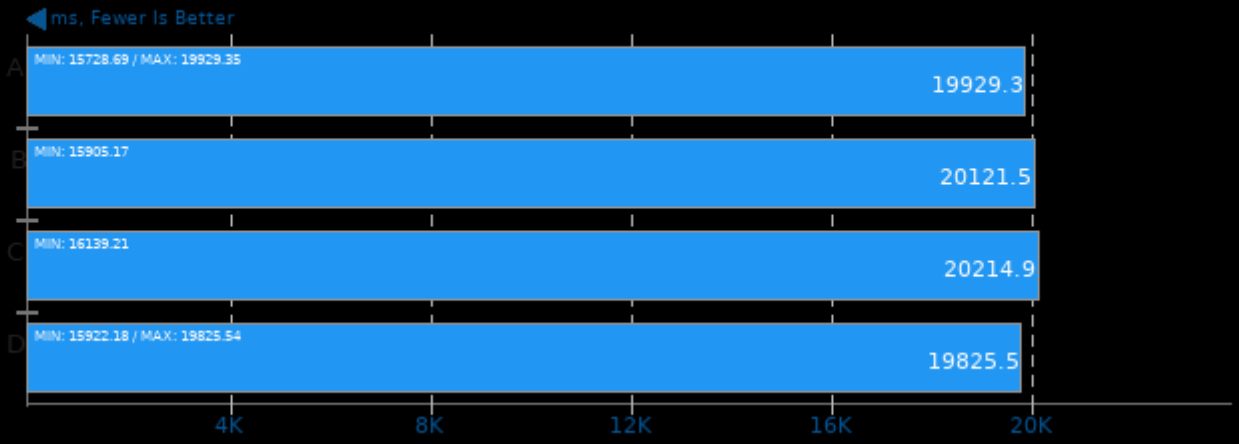
Tuning: PSNR/SSIM Optimized - Input: Bosphorus 1080p



1. (CC) gcc options: -O3 -fcommon -fPIE -fPIC -fvisibility=hidden -pie -rdynamic -lpthread -lrt -lm

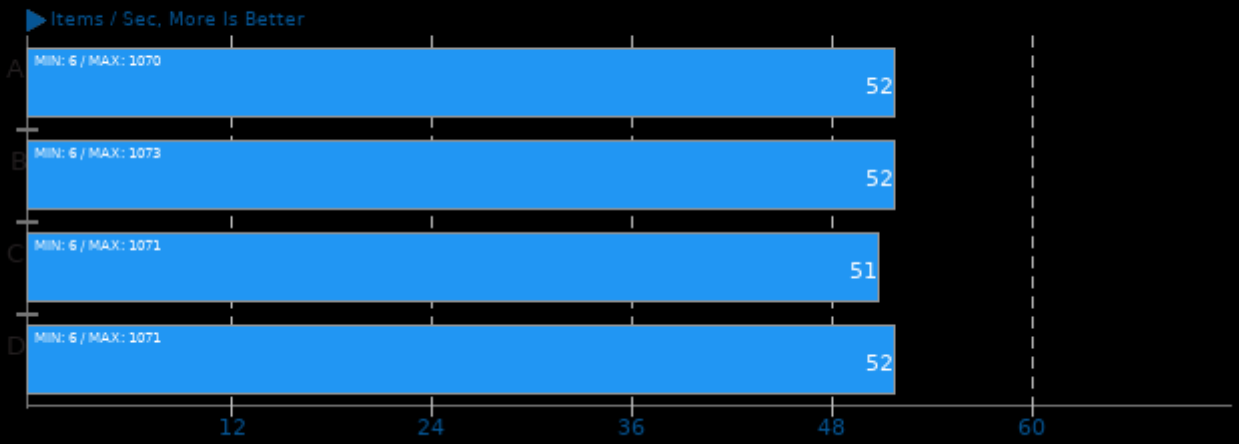
Renaissance 0.12

Test: Akka Unbalanced Cobwebbed Tree



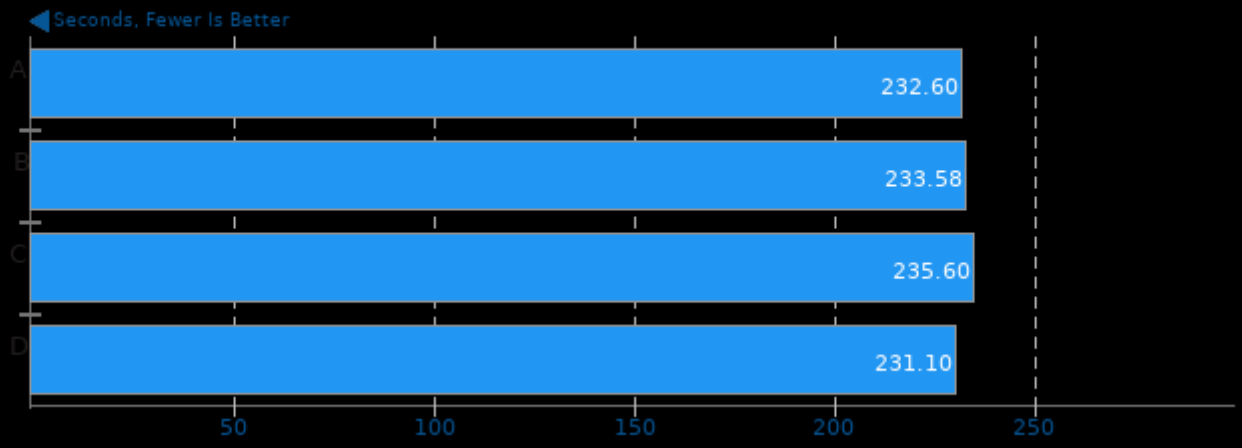
OpenVKL 1.0

Benchmark: vklBenchmark ISPC

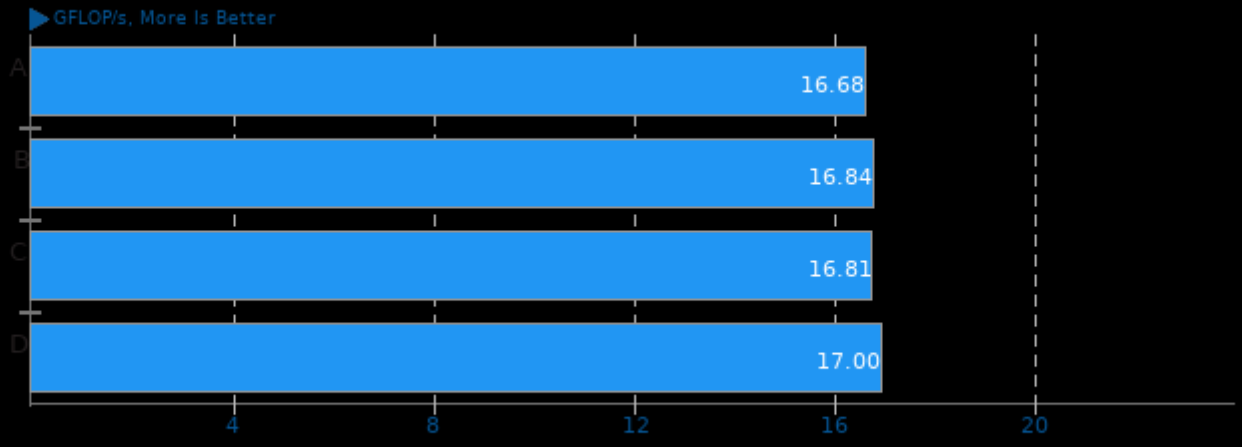


Blender 2.92

Blend File: Classroom - Compute: CPU-Only



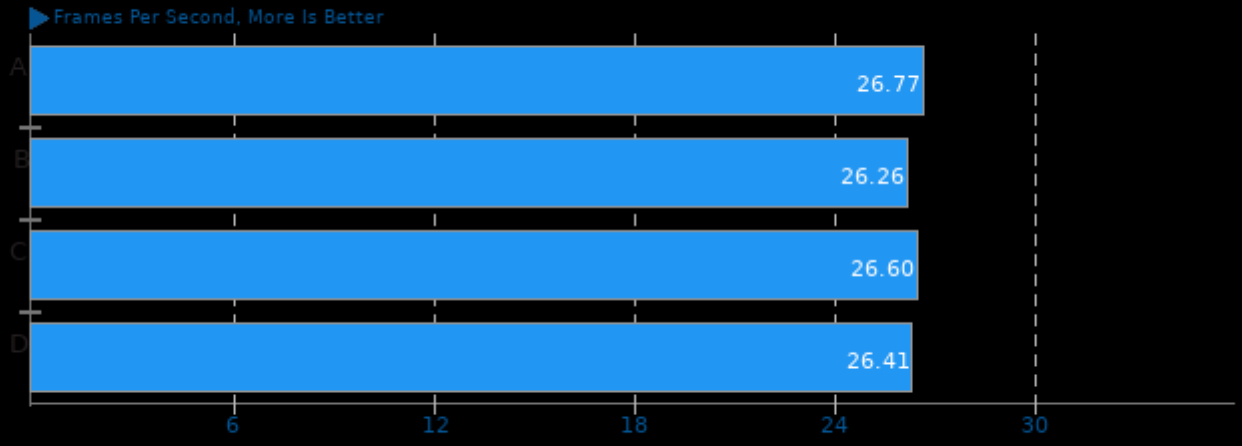
High Performance Conjugate Gradient 3.1



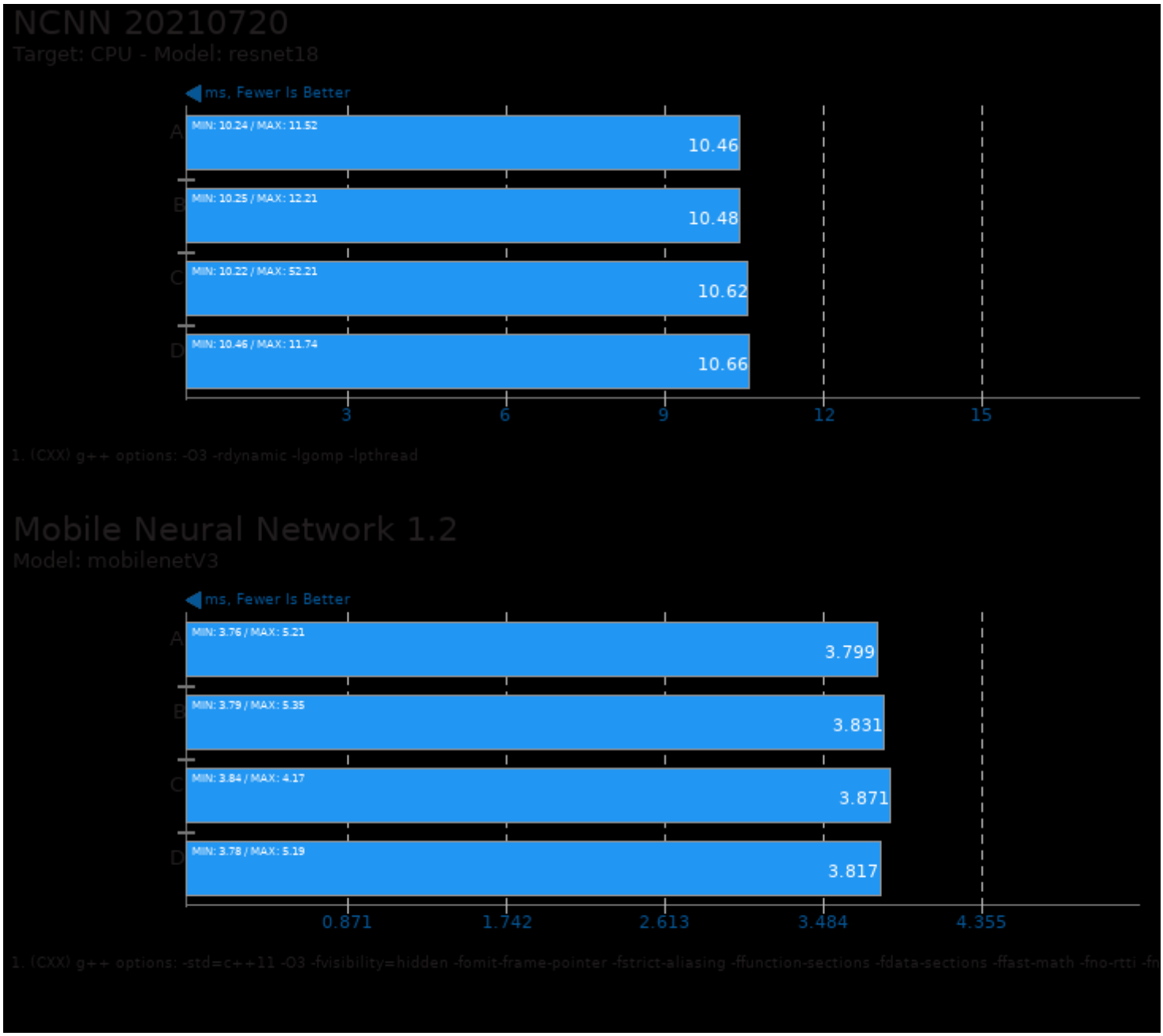
1. (CXX) g++ options: -O3 -ffast-math -ftree-vectorize -lmpi_cxx -lmpi

VP9 libvpx Encoding 1.10.0

Speed: Speed 5 - Input: Bosphorus 1080p

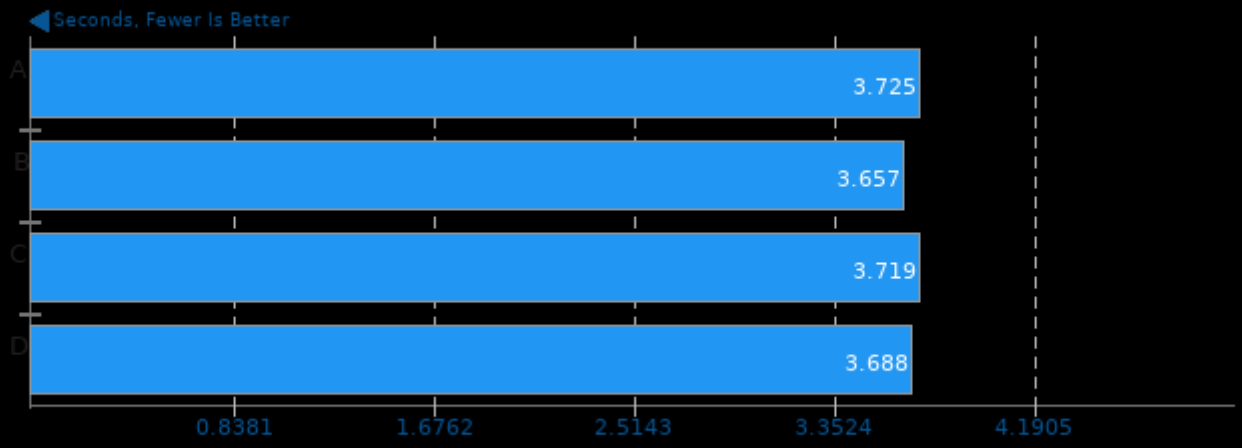


1. (CXX) g++ options: -m64 -lm -lpthread -O3 -fPIC -U_FORTIFY_SOURCE -std=gnu++11


NCNN 20210720
Target: CPU - Model: resnet18
ms, Fewer Is Better
A
MIN: 10.24 / MAX: 11.52
10.46
B
MIN: 10.25 / MAX: 12.21
10.48
C
MIN: 10.22 / MAX: 52.21
10.62
D
MIN: 10.46 / MAX: 11.74
10.66
3
6
9
12
15
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
Mobile Neural Network 1.2
Model: mobilenetV3
ms, Fewer Is Better
A
MIN: 3.76 / MAX: 5.21
3.799
B
MIN: 3.79 / MAX: 5.35
3.831
C
MIN: 3.84 / MAX: 4.17
3.871
D
MIN: 3.78 / MAX: 5.19
3.817
0.871
1.742
2.613
3.484
4.355
1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fn

libavif avifenc 0.9.0

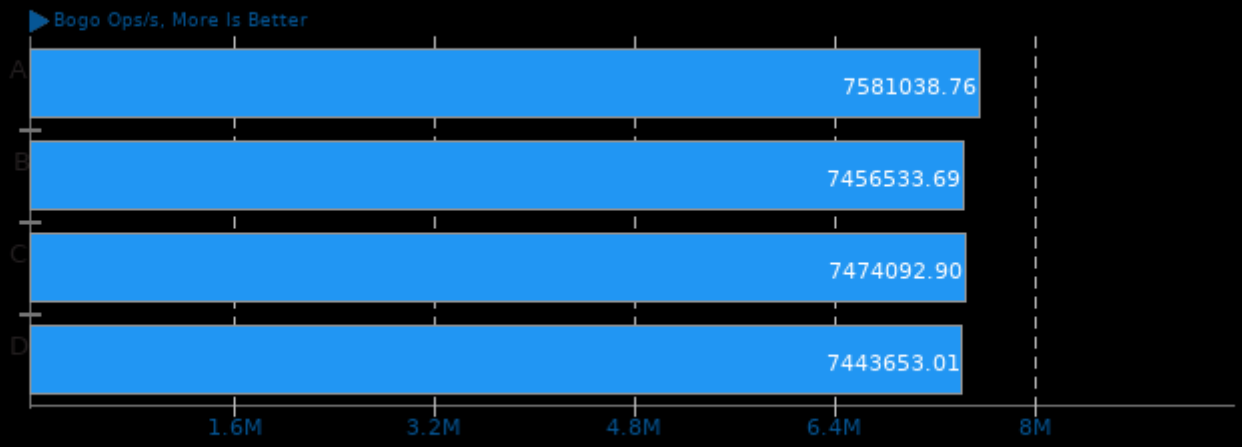
Encoder Speed: 10



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

Stress-NG 0.13.02

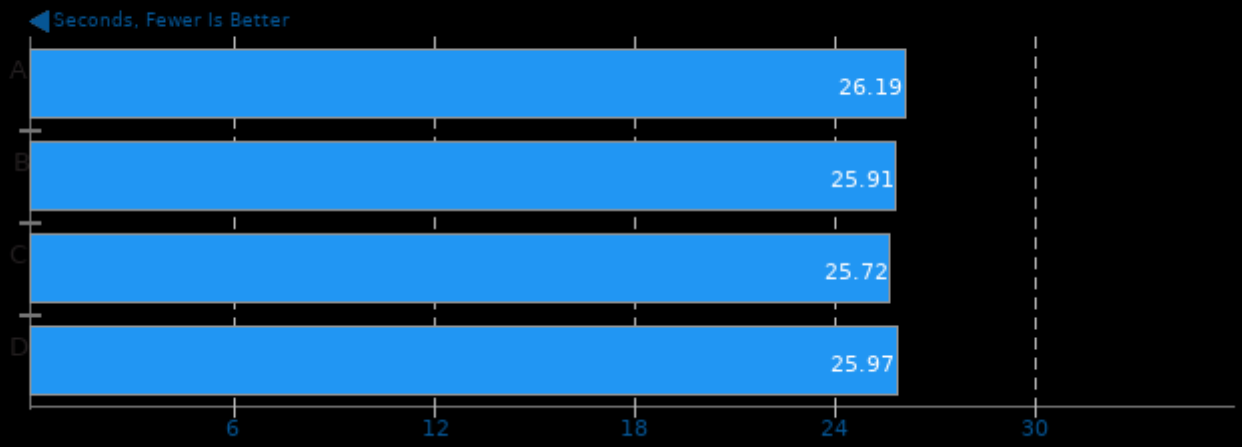
Test: Context Switching

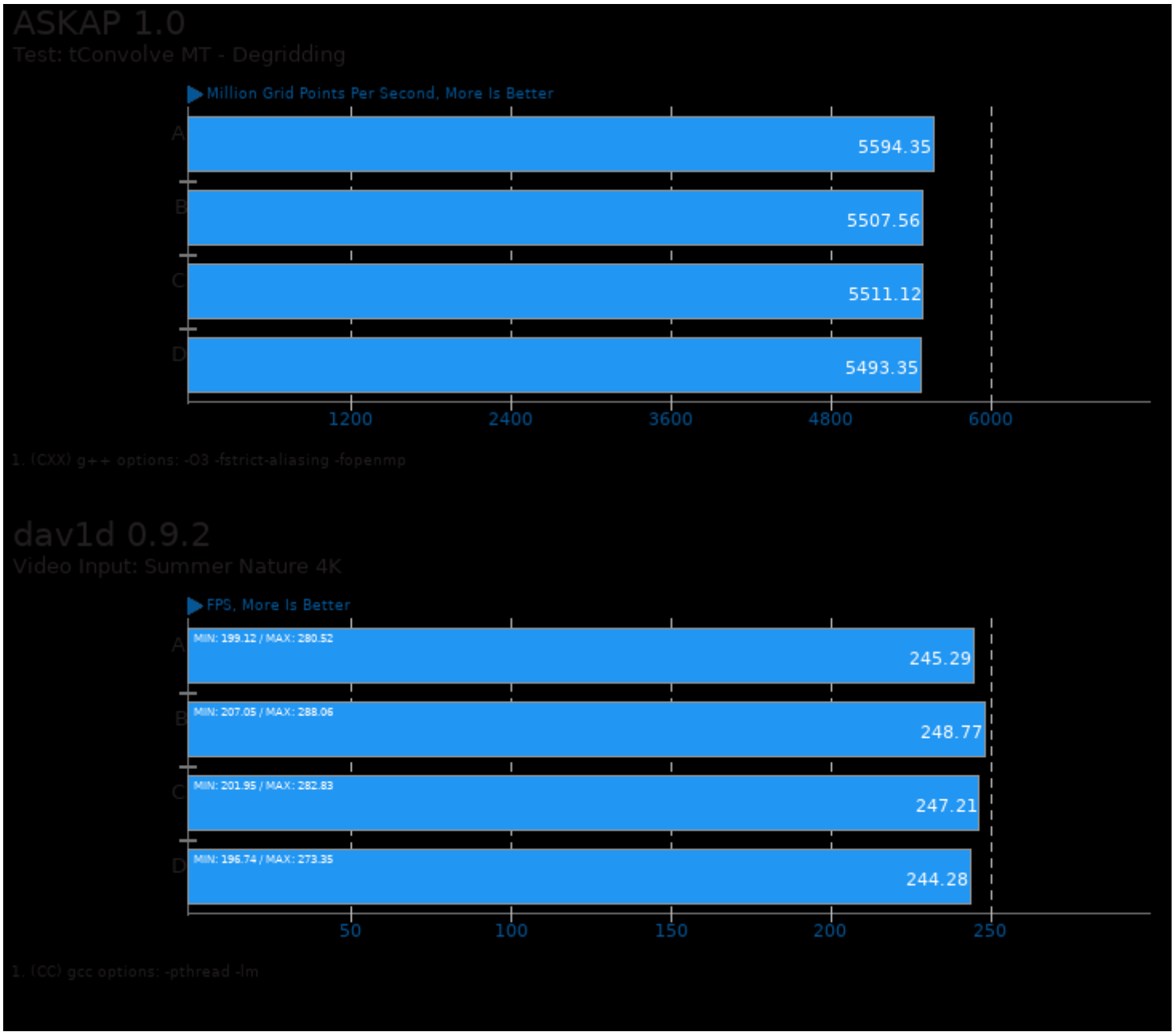


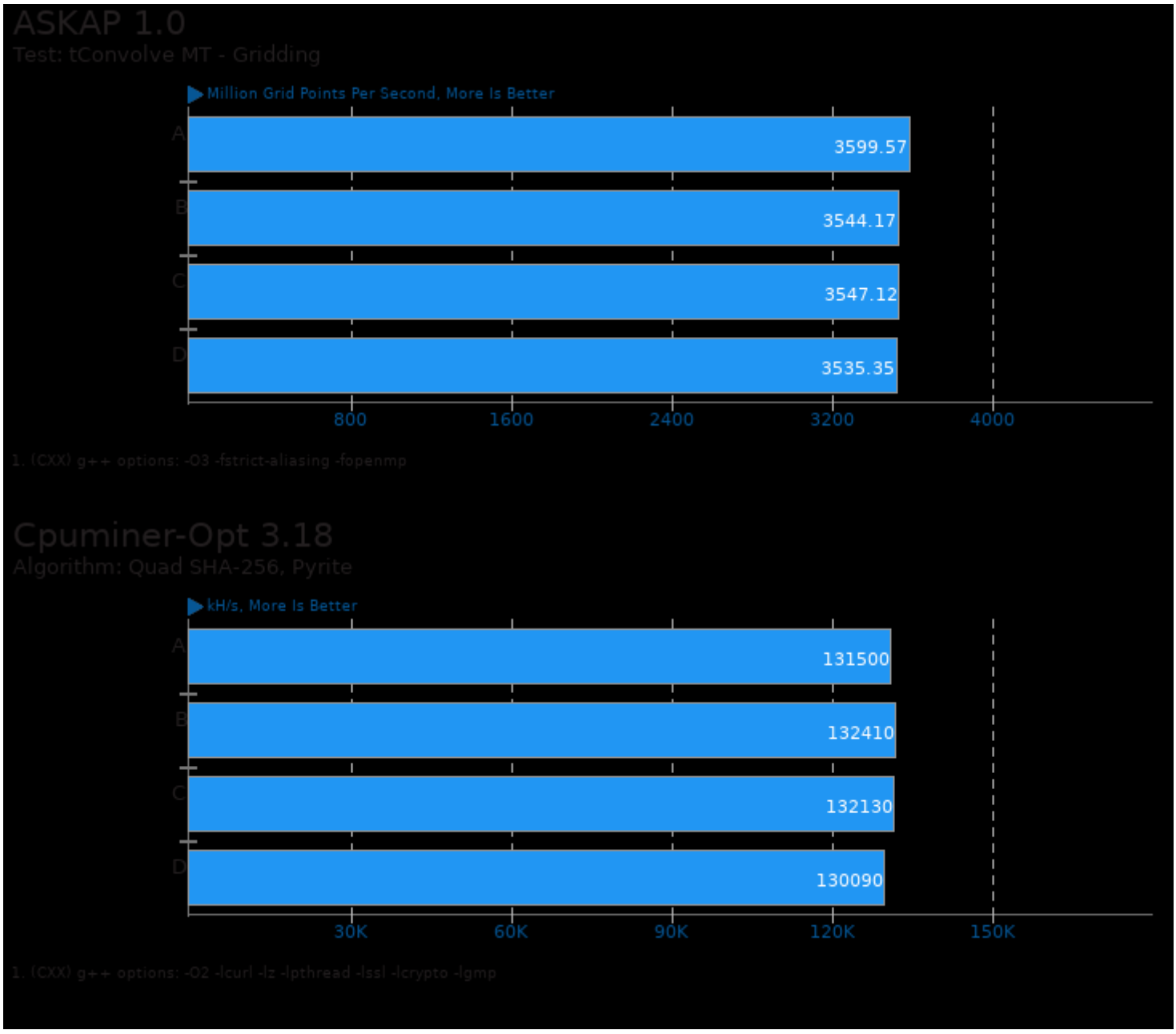
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Cython Benchmark 0.29.21

Test: N-Queens

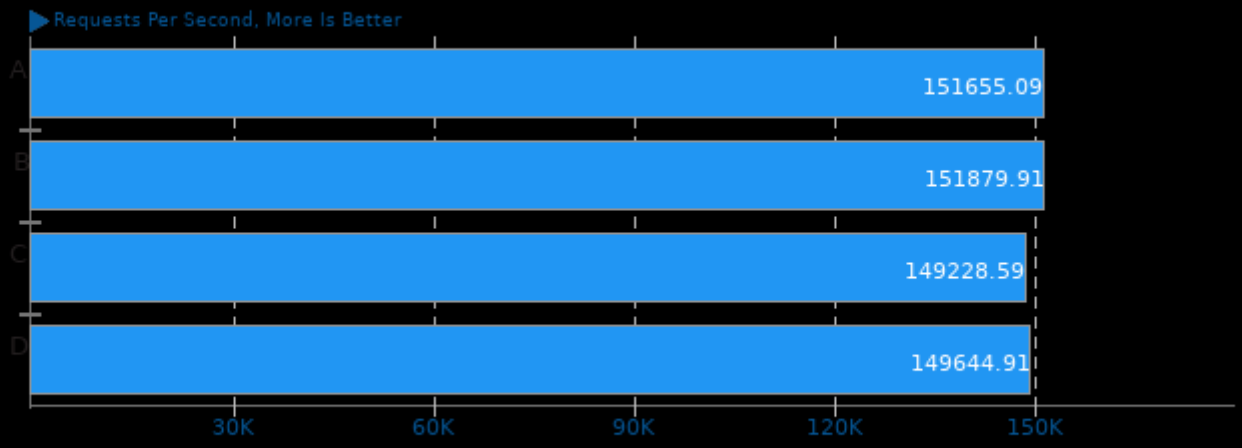



ASKAP 1.0
Test: tConvolve MT - Degridding
Million Grid Points Per Second, More Is Better
A
5594.35
B
5507.56
C
5511.12
D
5493.35
1200
2400
3600
4800
6000
1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp
dav1d 0.9.2
Video Input: Summer Nature 4K
FPS, More Is Better
A
MIN: 199.12 / MAX: 280.52
245.29
B
MIN: 207.05 / MAX: 288.06
248.77
C
MIN: 201.95 / MAX: 282.83
247.21
D
MIN: 196.74 / MAX: 273.35
244.28
50
100
150
200
250
1. (CC) gcc options: -pthread -lm


ASKAP 1.0
Test: tConvolve MT - Gridding
Million Grid Points Per Second, More Is Better
A
B
C
D
3599.57
3544.17
3547.12
3535.35
800
1600
2400
3200
4000
1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp
Cpuminer-Opt 3.18
Algorithm: Quad SHA-256, Pyrite
kH/s, More Is Better
A
B
C
D
131500
132410
132130
130090
30K
60K
90K
120K
150K
1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

nginx 1.21.1

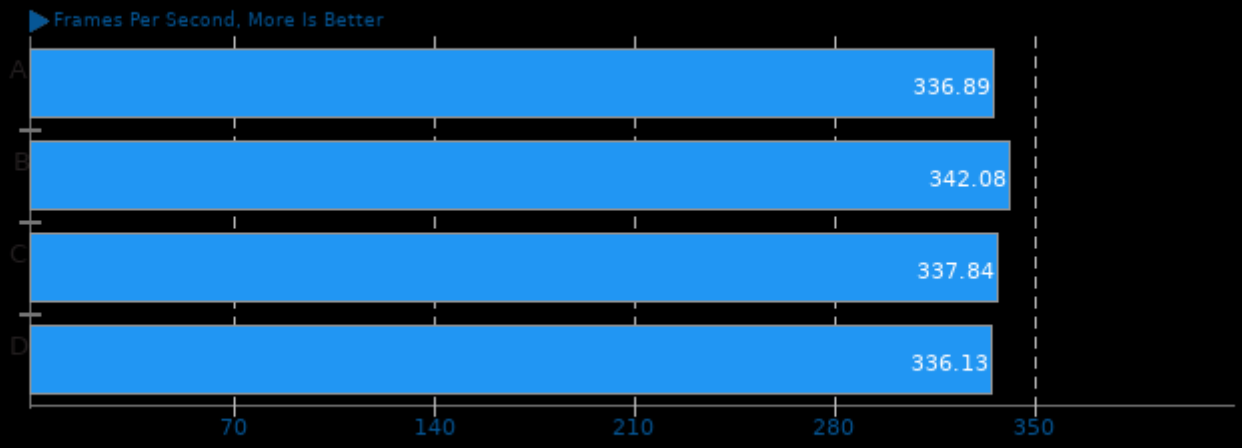
Concurrent Requests: 1000



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

SVT-HEVC 1.5.0

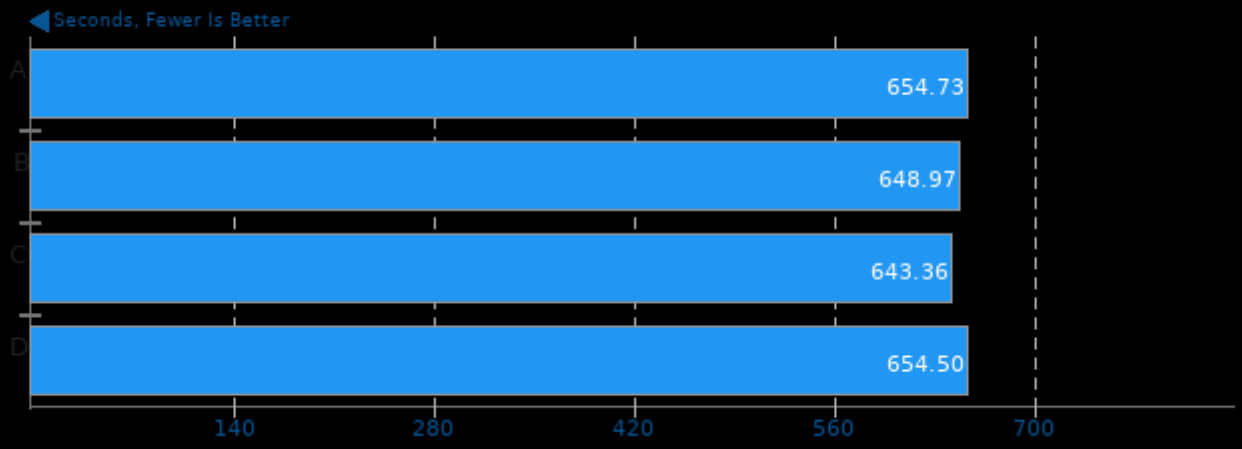
Tuning: 10 - Input: Bosphorus 1080p

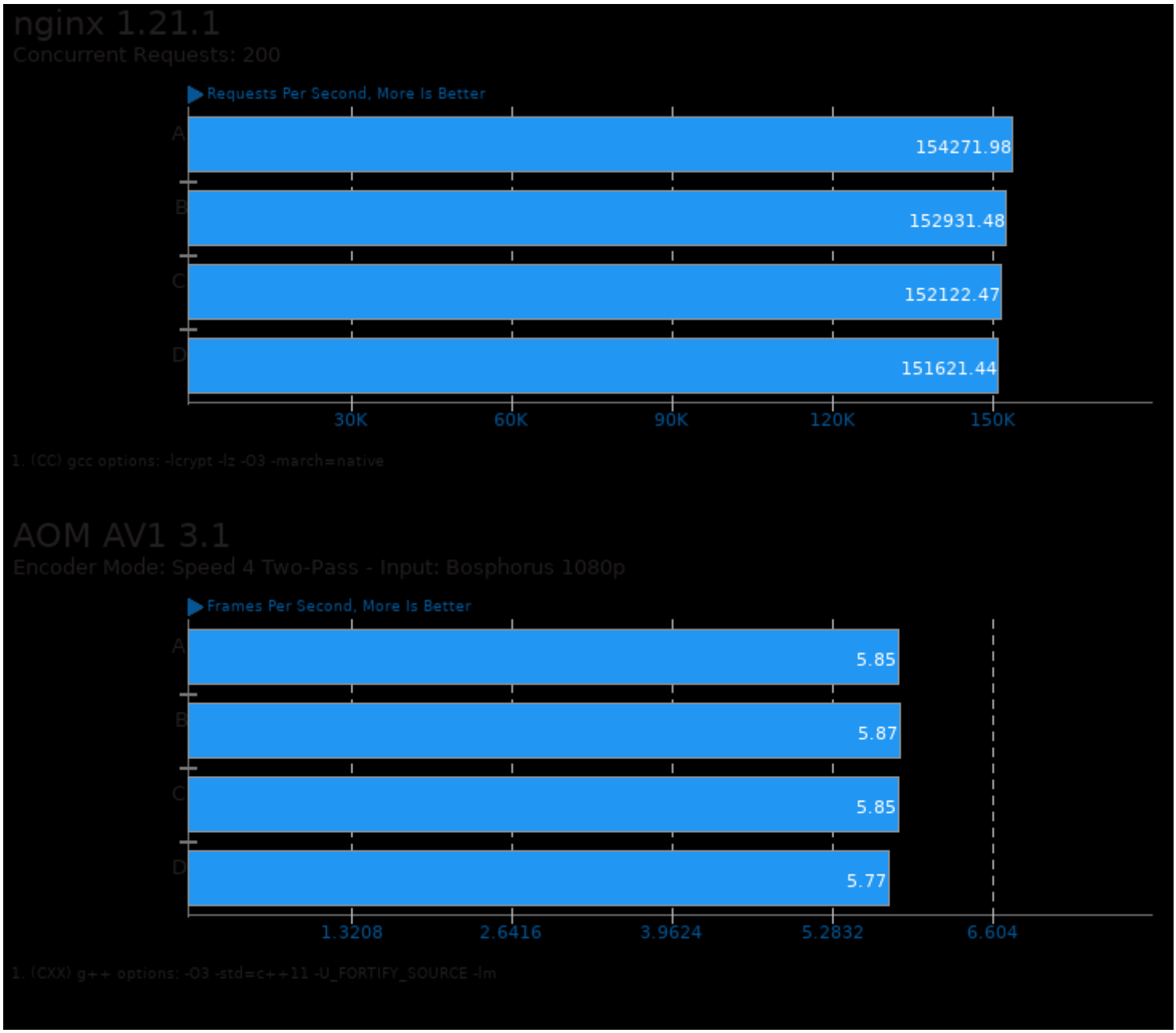


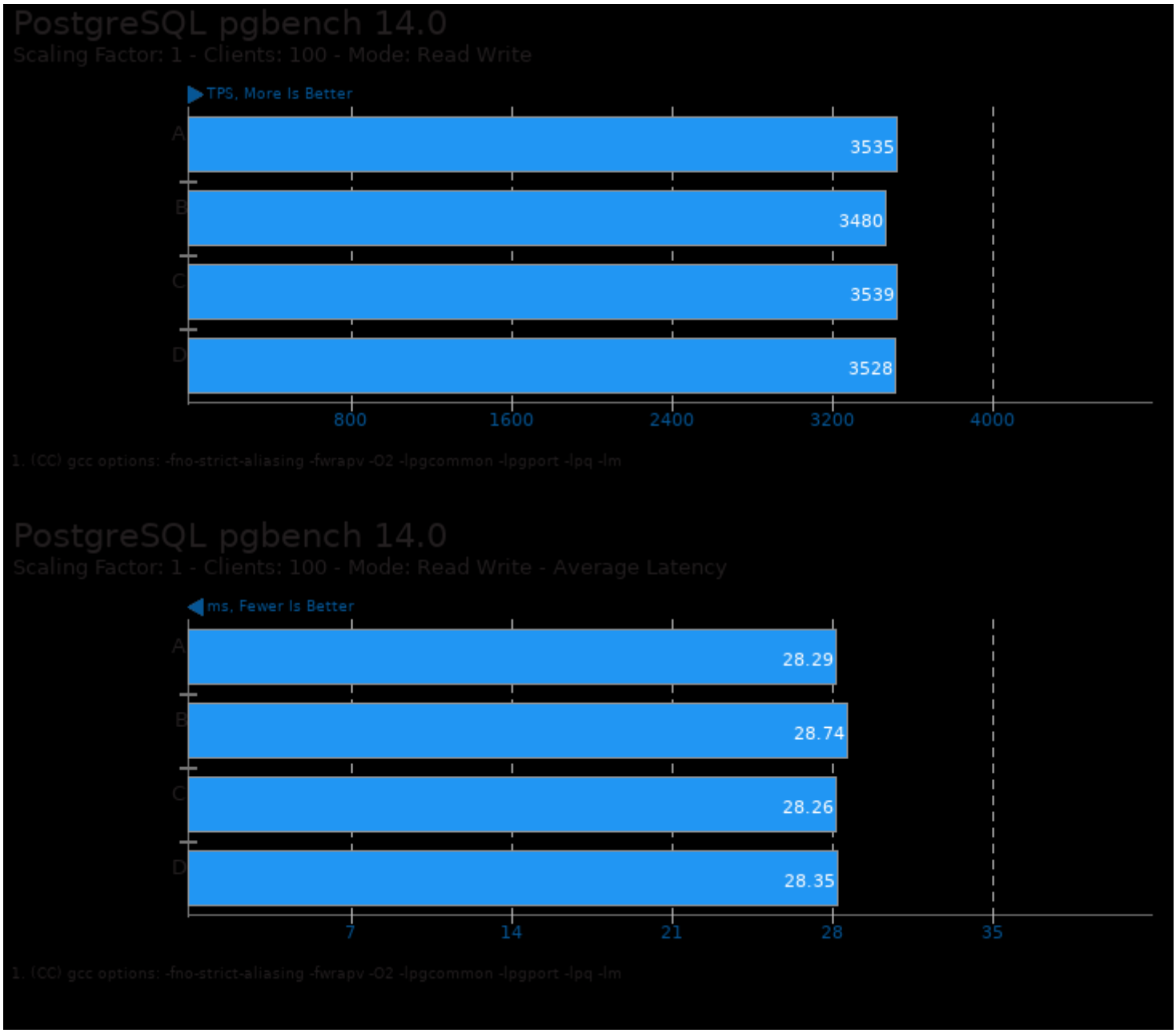
1. (CC) gcc options: -fPIE -fPIC -O3 -O2 -pie -rdynamic -lpthread -lrt

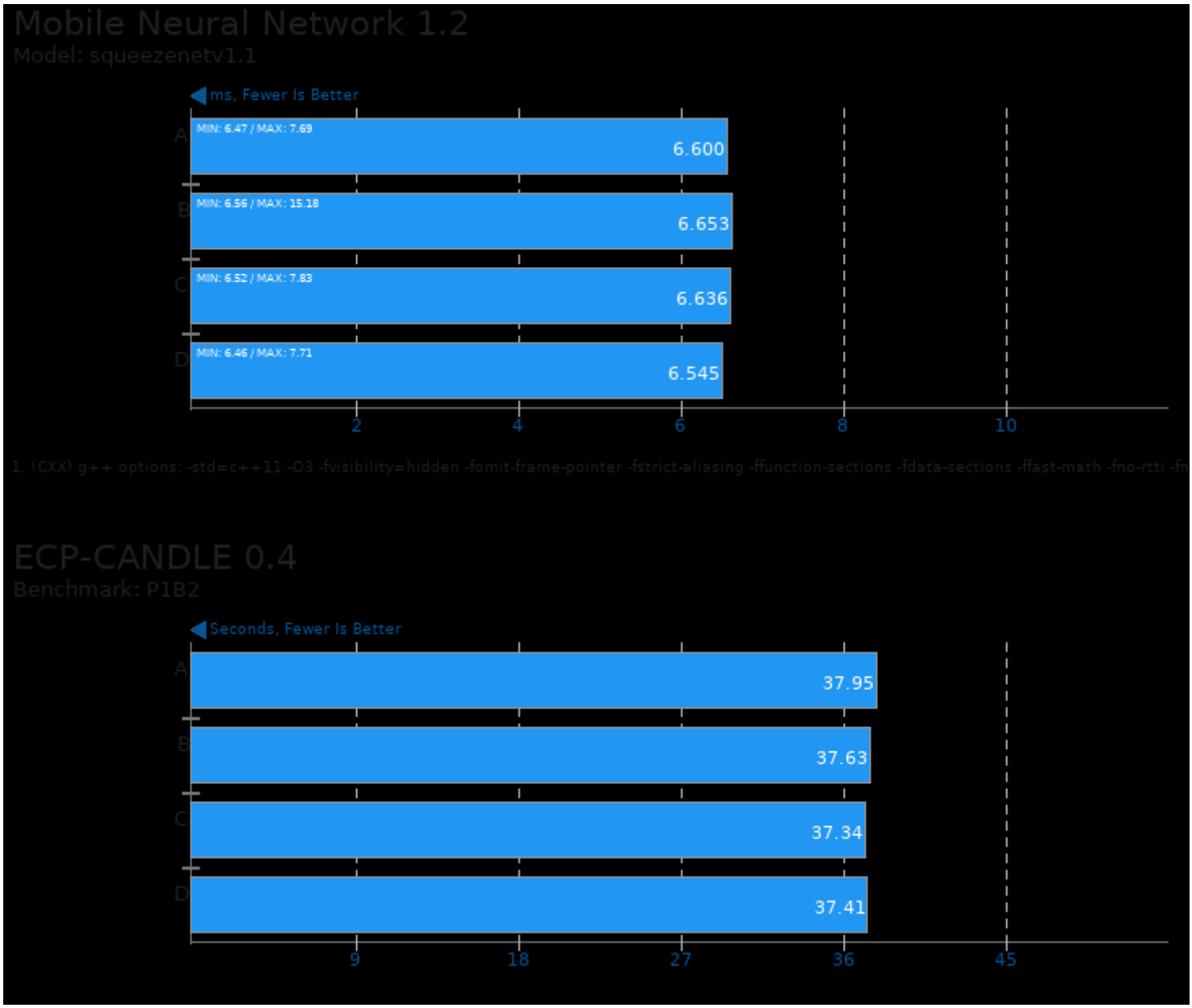
ECP-CANDLE 0.4

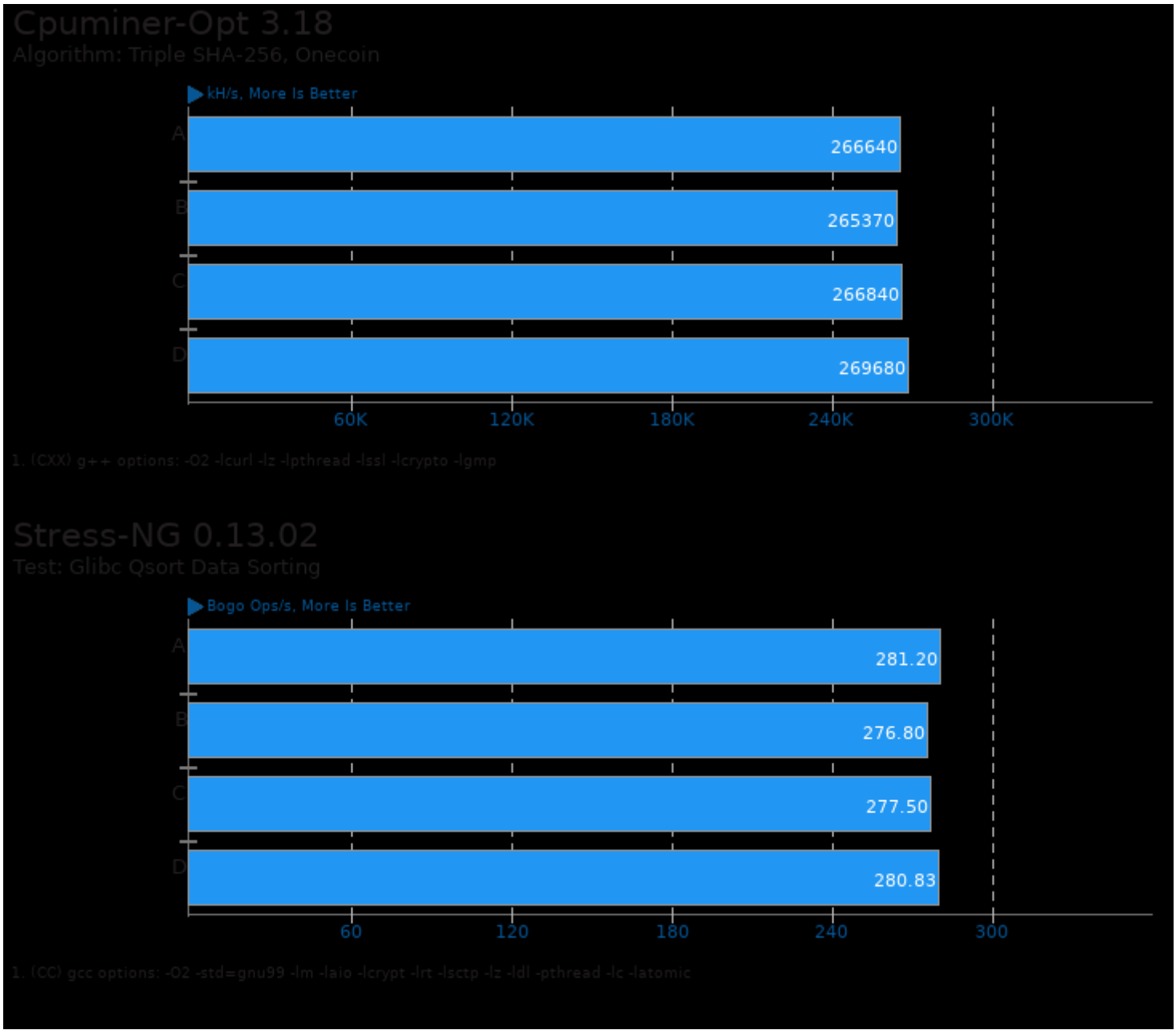
Benchmark: P3B1

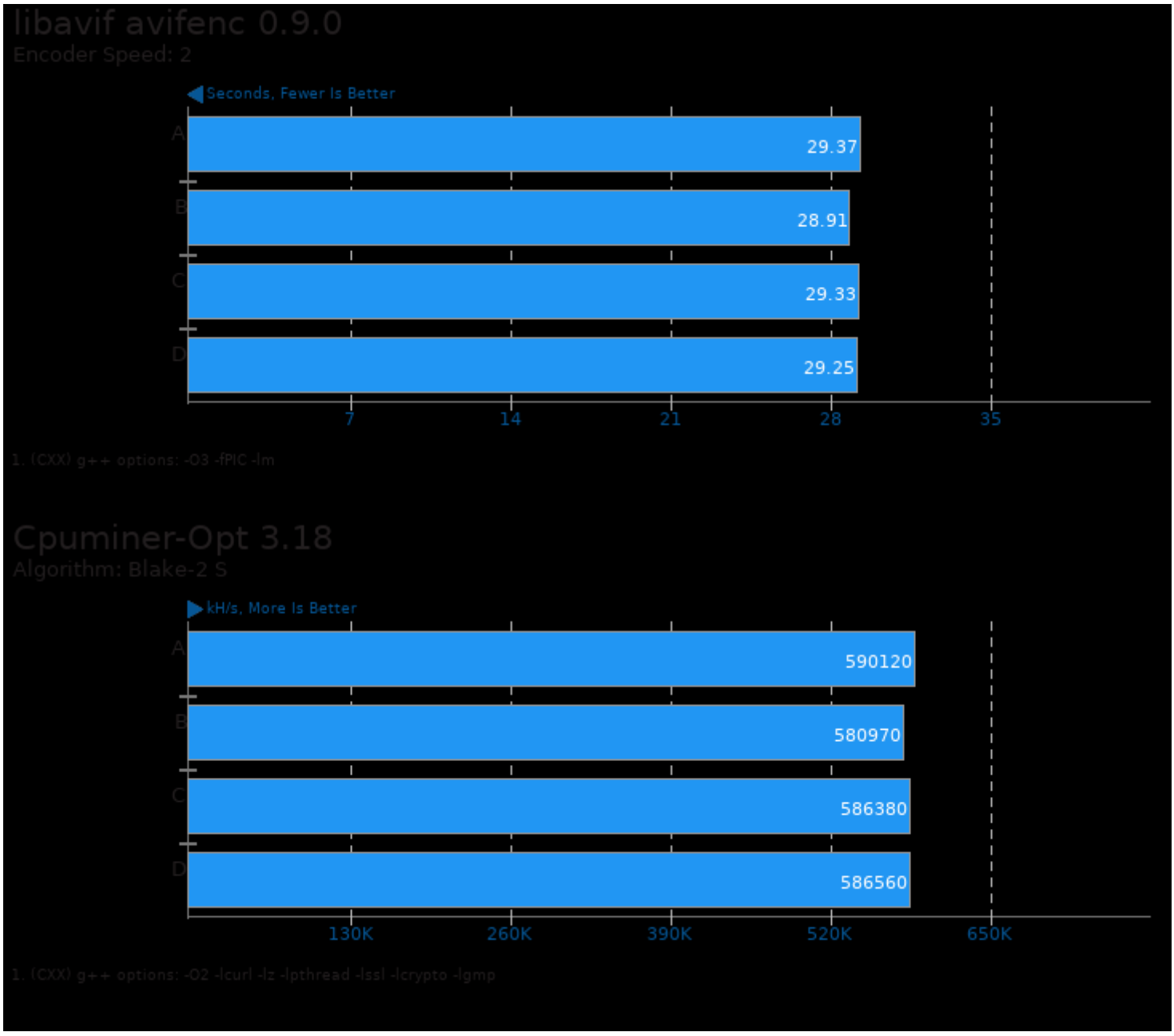



nginx 1.21.1
Concurrent Requests: 200
Requests Per Second, More Is Better
A
B
C
D
154271.98
152931.48
152122.47
151621.44
30K
60K
90K
120K
150K
1. (CC) gcc options: -lcrypt -lz -O3 -march=native
AOM AV1 3.1
Encoder Mode: Speed 4 Two-Pass - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
D
5.85
5.87
5.85
5.77
1.3208
2.6416
3.9624
5.2832
6.604
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm


PostgreSQL pgbench 14.0
Scaling Factor: 1 - Clients: 100 - Mode: Read Write
TPS, More Is Better
A
3535
B
3480
C
3539
D
3528
800
1600
2400
3200
4000
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
PostgreSQL pgbench 14.0
Scaling Factor: 1 - Clients: 100 - Mode: Read Write - Average Latency
ms, Fewer Is Better
A
28.29
B
28.74
C
28.26
D
28.35
7
14
21
28
35
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

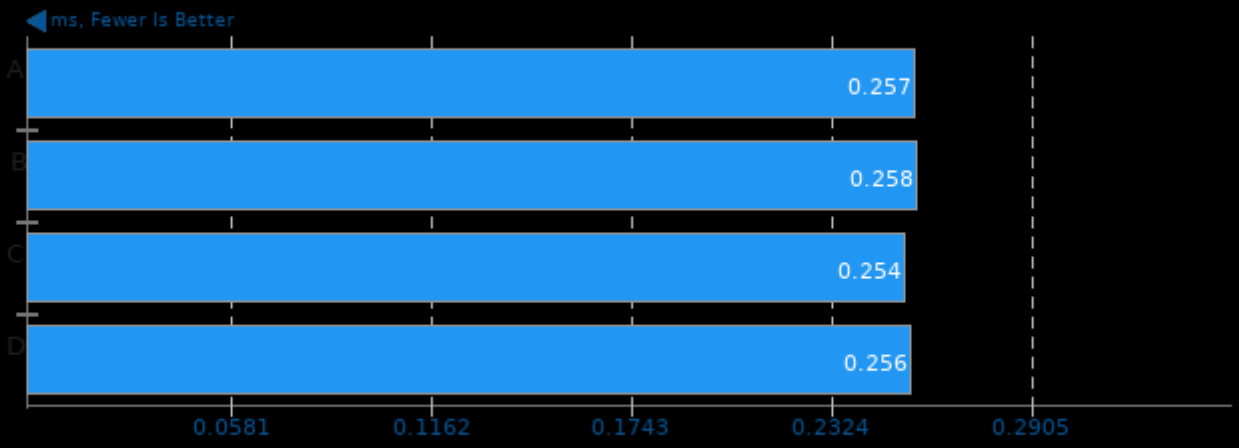

Mobile Neural Network 1.2
Model: squeezenetv1.1
ms, Fewer Is Better
A
MIN: 6.47 / MAX: 7.69
6.600
B
MIN: 6.56 / MAX: 15.18
6.653
C
MIN: 6.52 / MAX: 7.83
6.636
D
MIN: 6.46 / MAX: 7.71
6.545
2
4
6
8
10
1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fr
ECP-CANDLE 0.4
Benchmark: P1B2
Seconds, Fewer Is Better
A
37.95
B
37.63
C
37.34
D
37.41
9
18
27
36
45


Cpuminer-Opt 3.18
Algorithm: Triple SHA-256, Onecoin
kH/s, More Is Better
A
B
C
D
266640
265370
266840
269680
60K
120K
180K
240K
300K
1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp
Stress-NG 0.13.02
Test: Glibc Qsort Data Sorting
Bogo Ops/s, More Is Better
A
B
C
D
281.20
276.80
277.50
280.83
60
120
180
240
300
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic


libavif avifenc 0.9.0
Encoder Speed: 2
Seconds, Fewer Is Better
A
B
C
D
29.37
28.91
29.33
29.25
7
14
21
28
35
1. (CXX) g++ options: -O3 -fPIC -lm
Cpuminer-Opt 3.18
Algorithm: Blake-2 S
kH/s, More Is Better
A
B
C
D
590120
580970
586380
586560
130K
260K
390K
520K
650K
1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

PostgreSQL pgbench 14.0

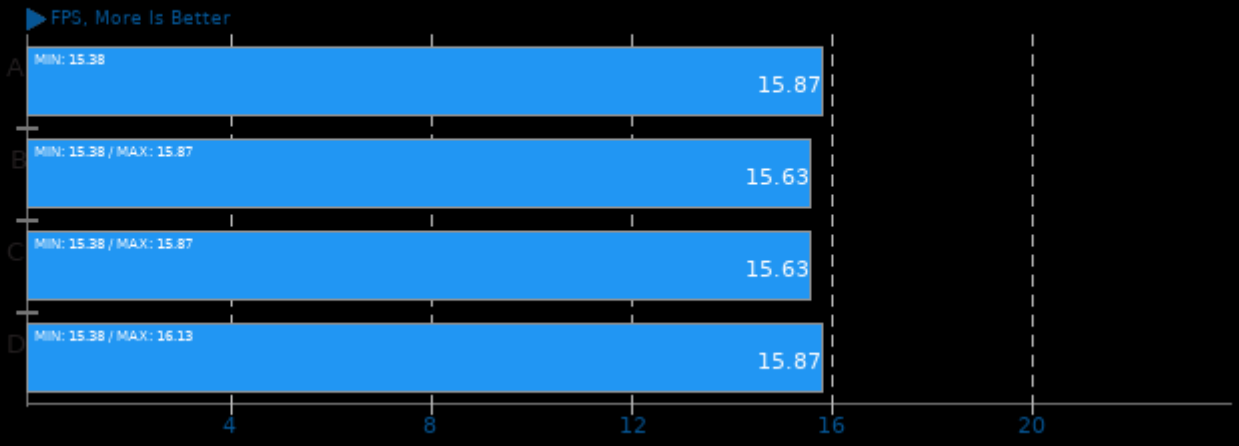
Scaling Factor: 1 - Clients: 1 - Mode: Read Write - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

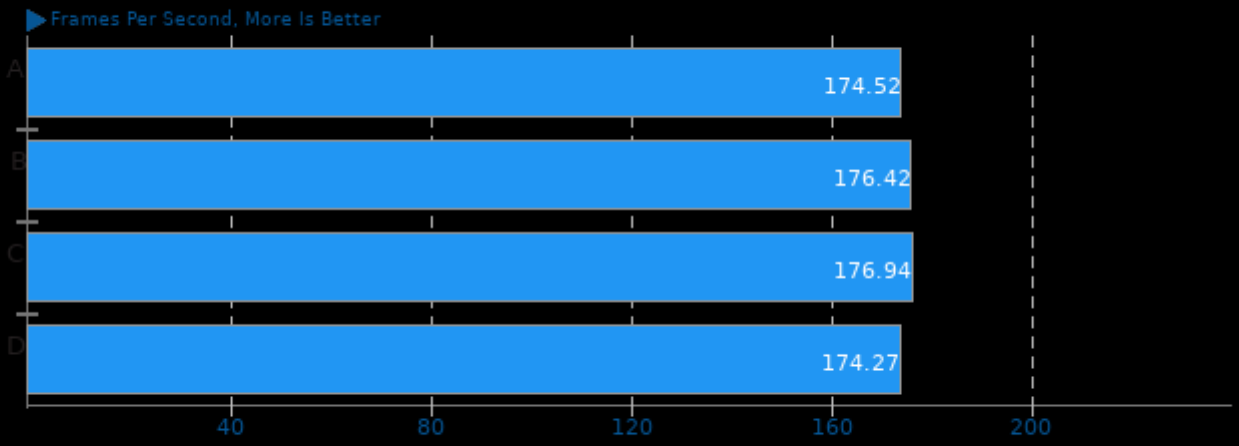
OSPray 1.8.5

Demo: Magnetic Reconnection - Renderer: SciVis



SVT-HEVC 1.5.0

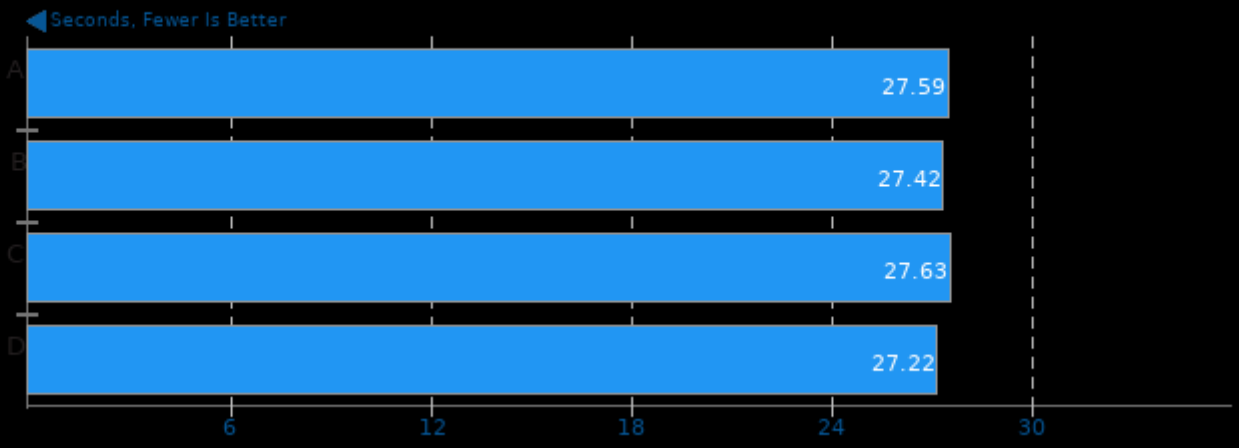
Tuning: 7 - Input: Bosphorus 1080p



1. (CC) gcc options: -fPIE -fPIC -O3 -O2 -pie -rdynamic -lpthread -lrt

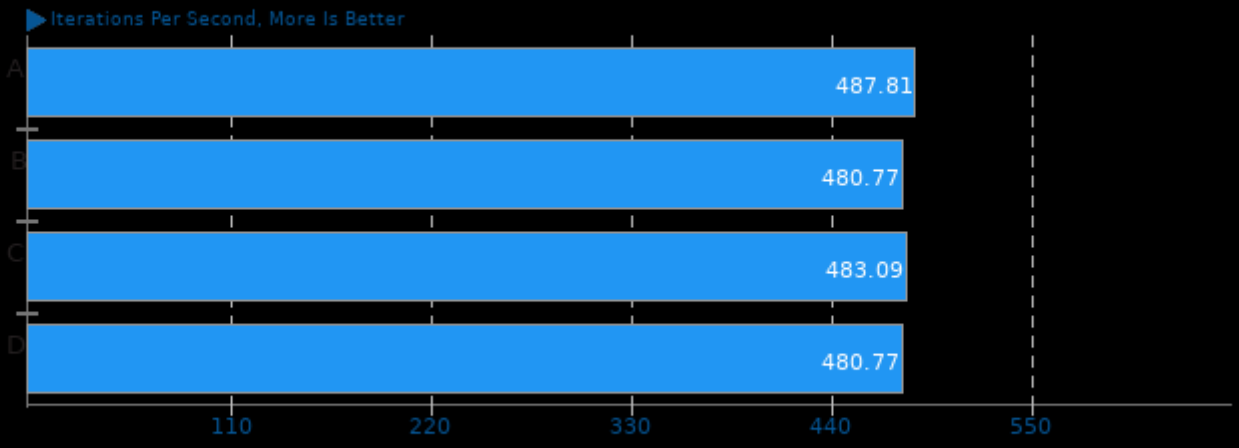
Timed Mesa Compilation 21.0

Time To Compile



ASKAP 1.0

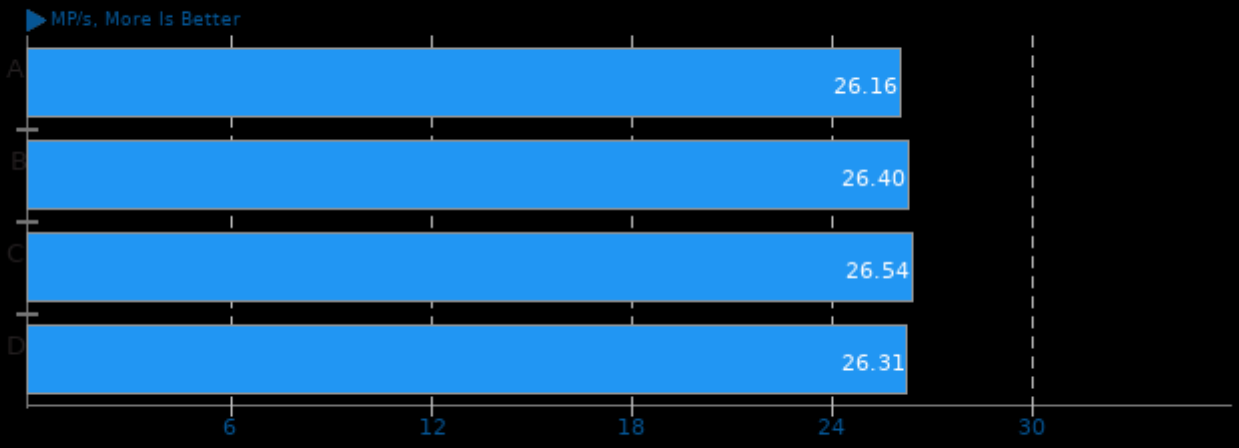
Test: Hogbom Clean OpenMP



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

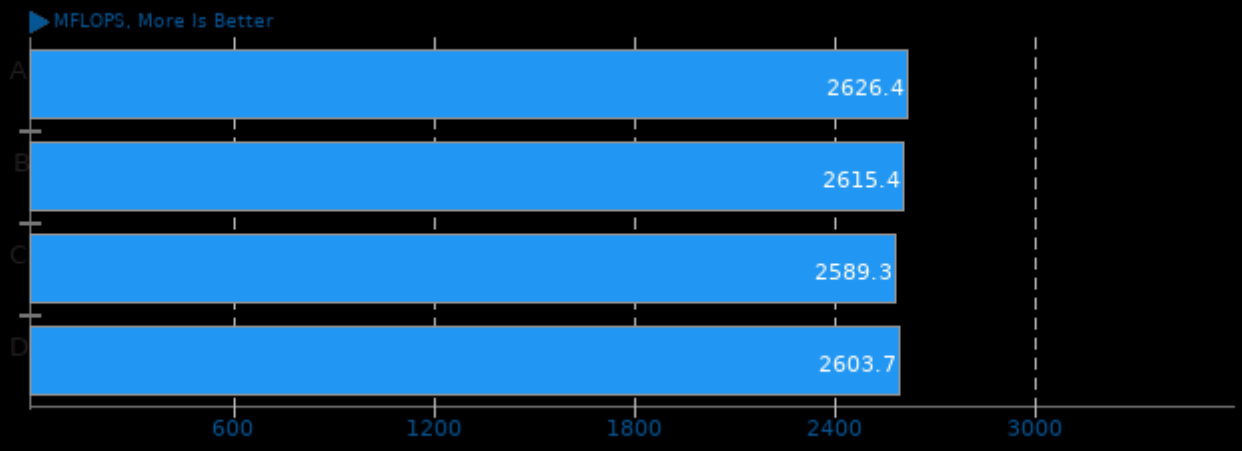
JPEG XL libjxl 0.5

Input: JPEG - Encode Speed: 8



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

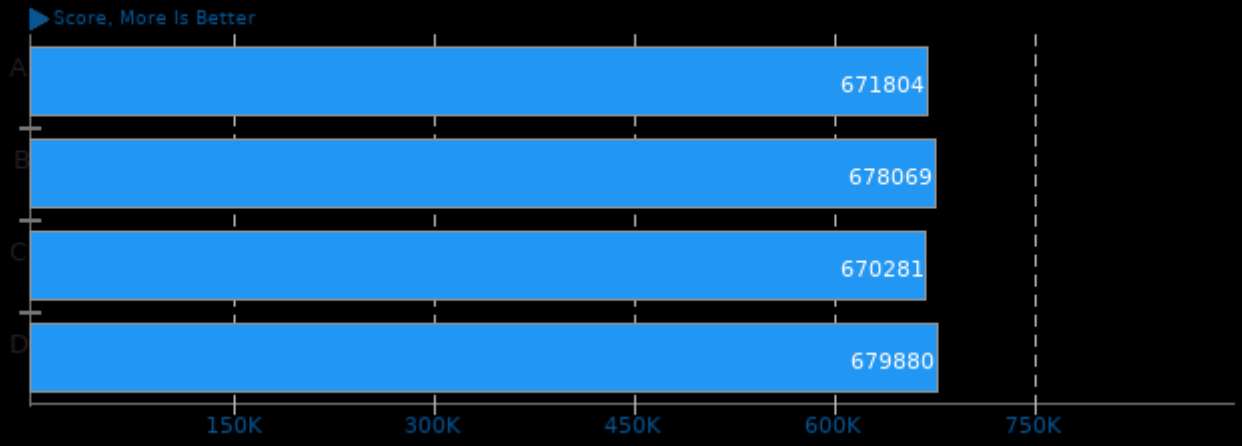
QuantLib 1.21



1. (CXX) g++ options: -O3 -march=native -rdynamic

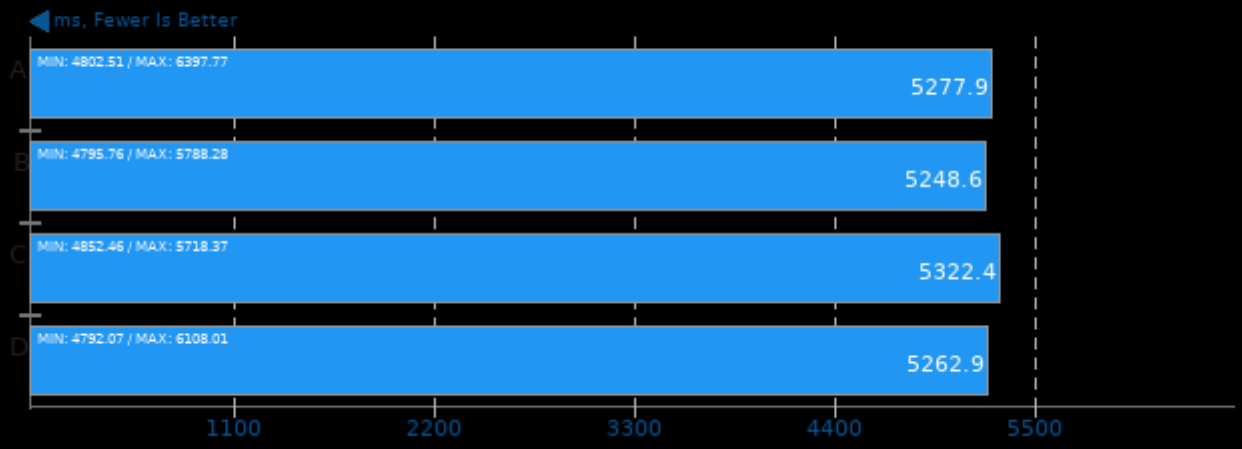
PHPBench 0.8.1

PHP Benchmark Suite



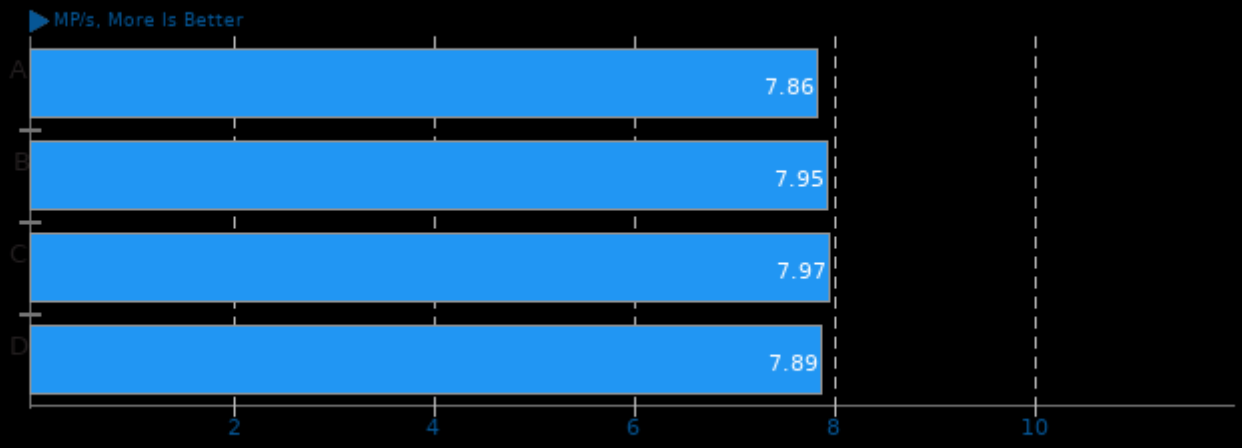
Renaissance 0.12

Test: In-Memory Database Shootout



JPEG XL libjxl 0.5

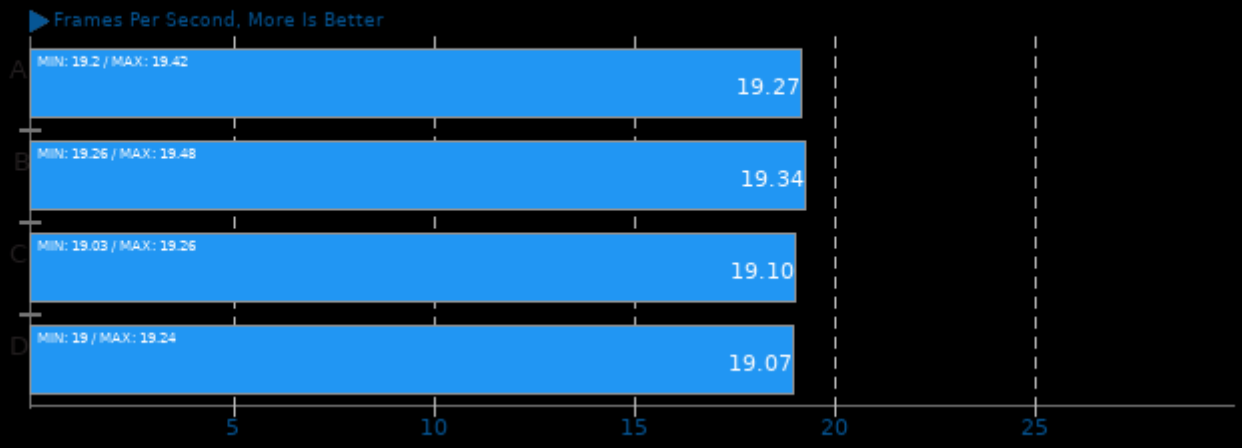
Input: PNG - Encode Speed: 7



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

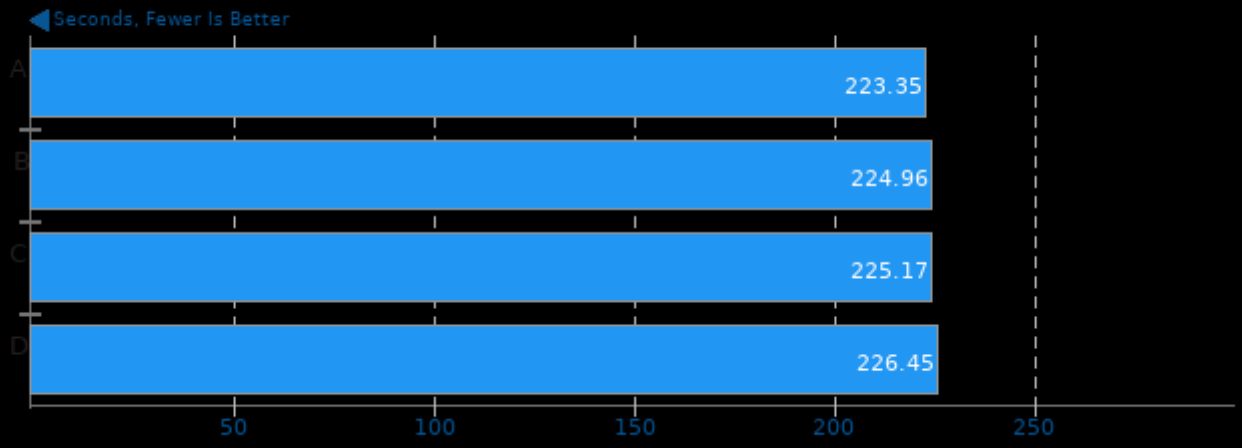
Embree 3.13

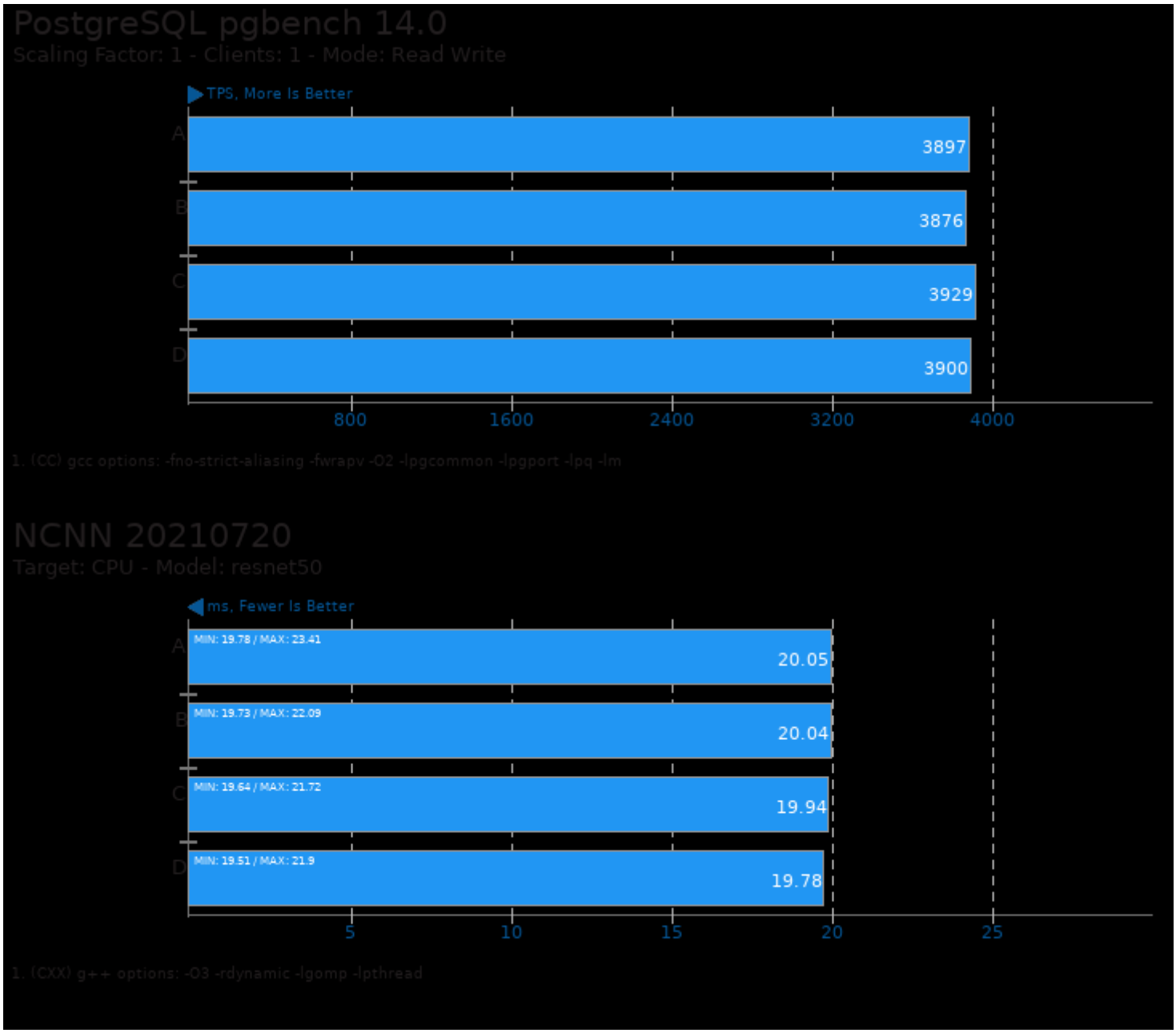
Binary: Pathtracer ISPC - Model: Asian Dragon

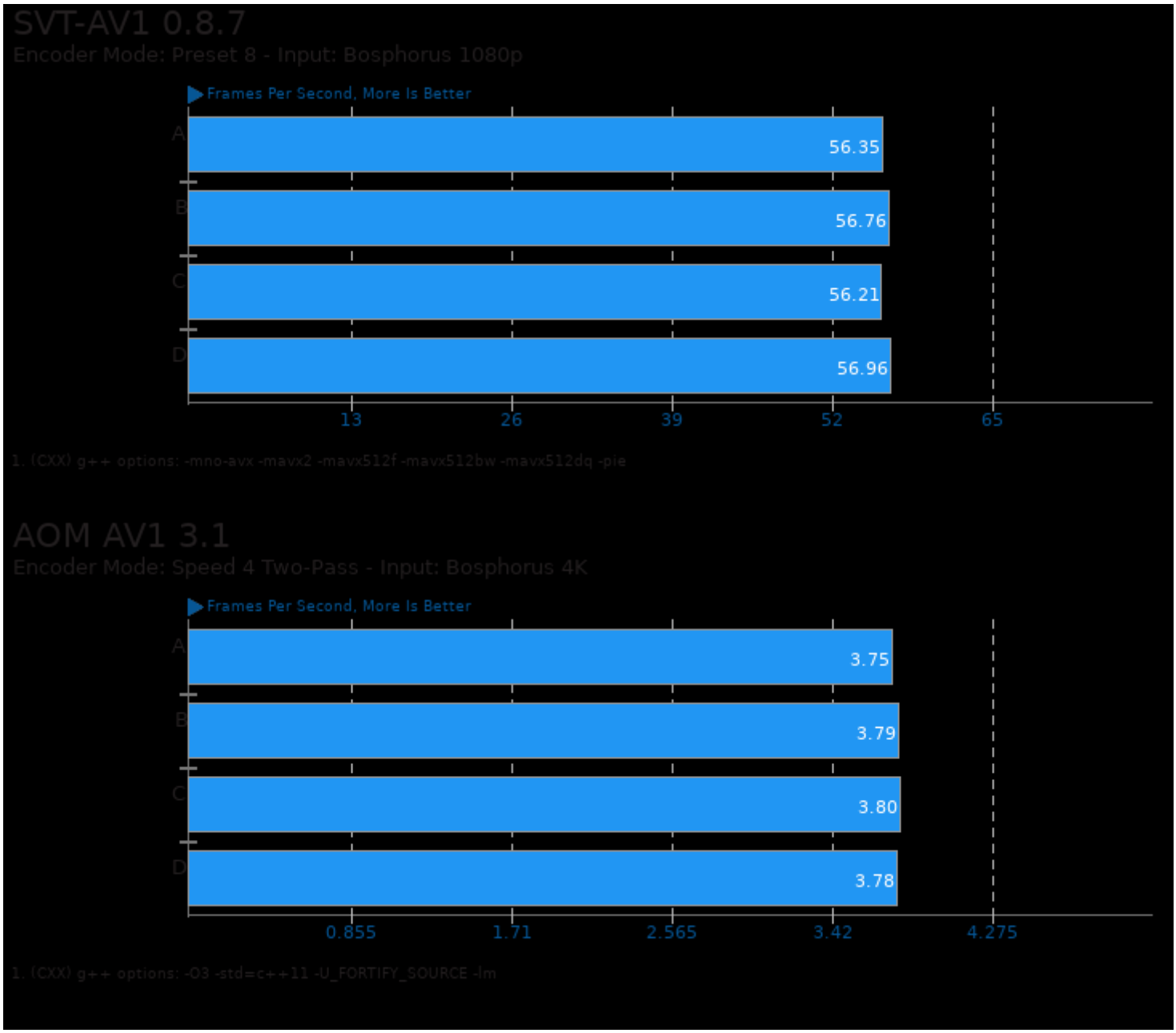


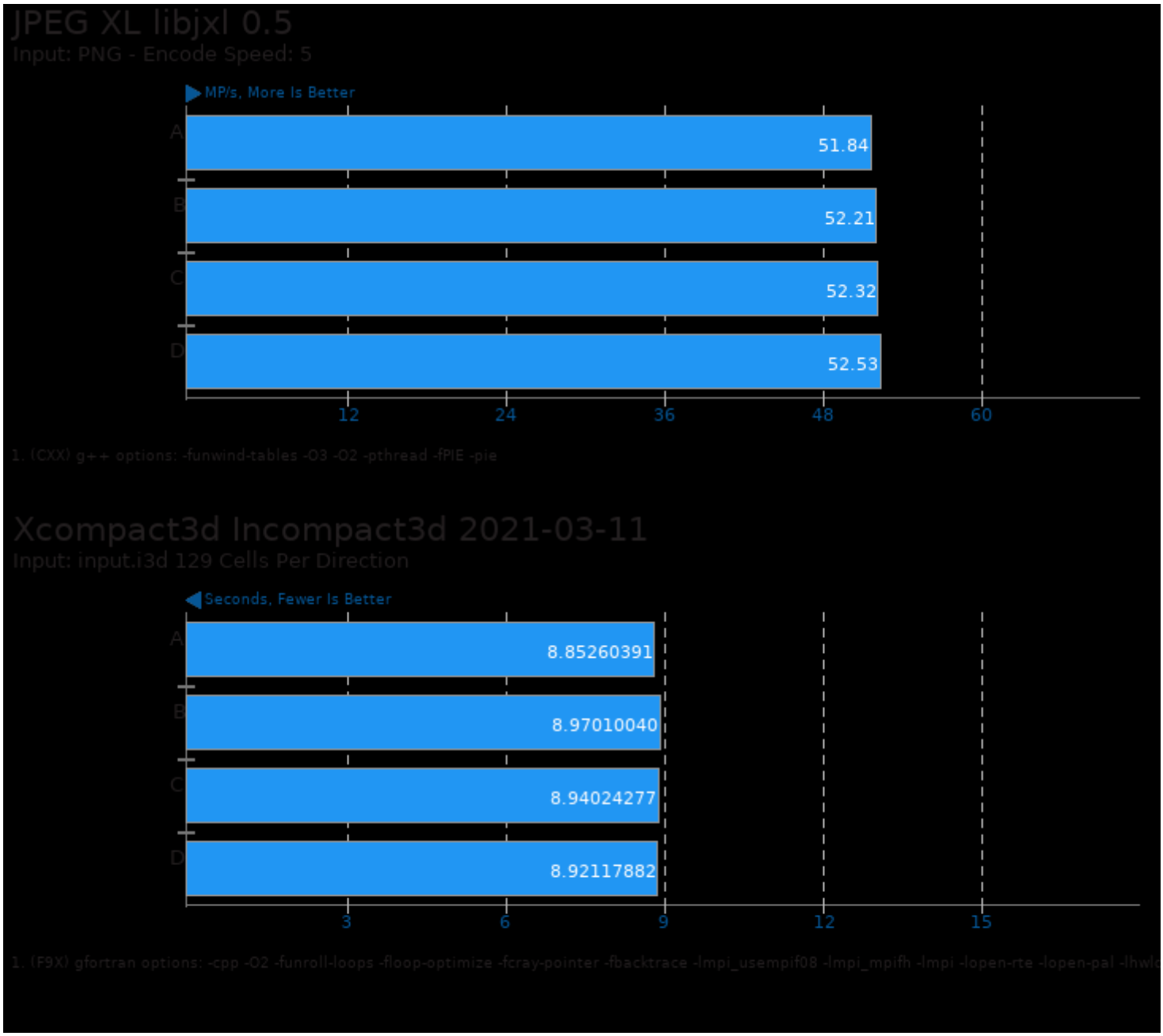
Appleseed 2.0 Beta

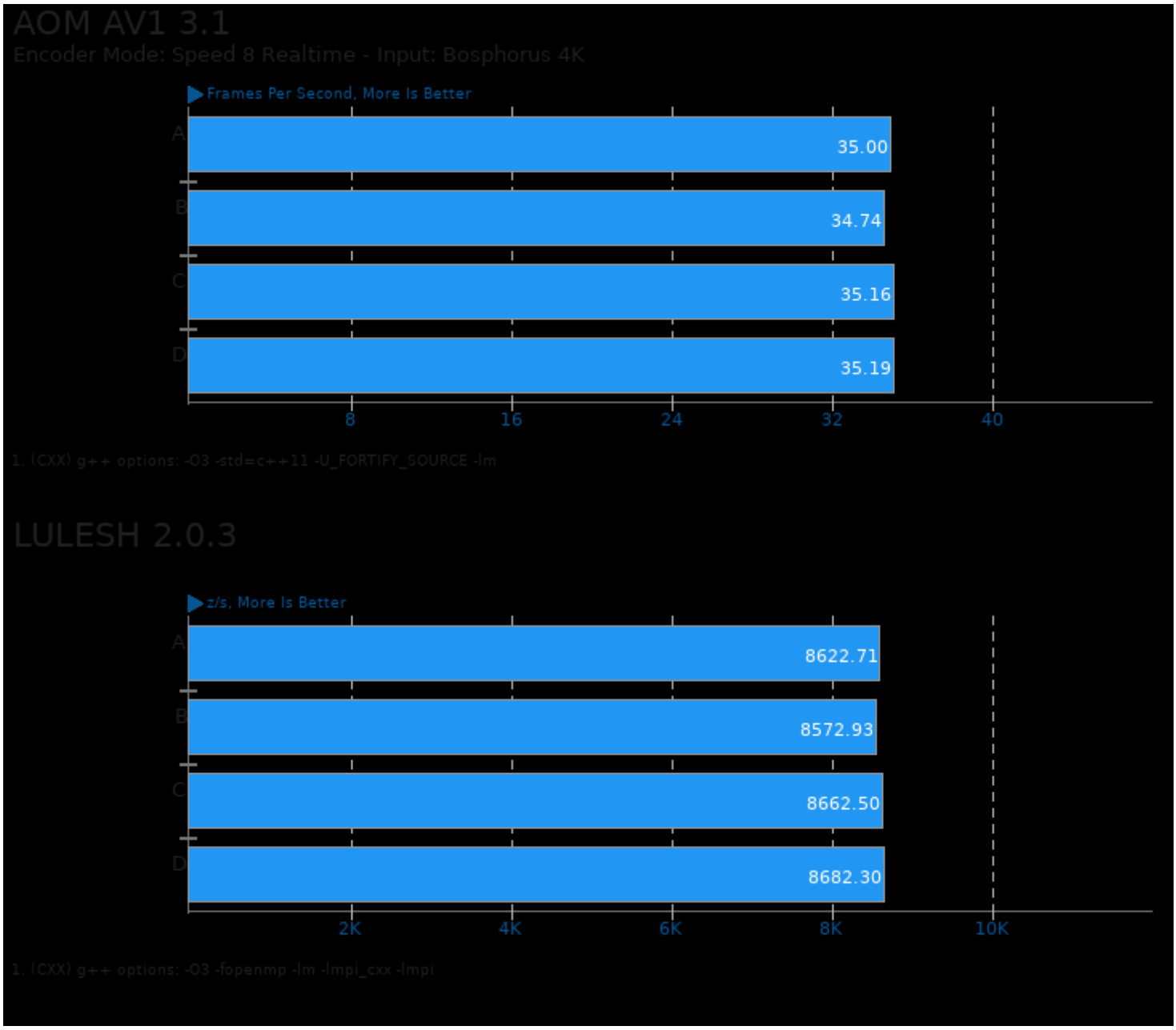
Scene: Emily




PostgreSQL pgbench 14.0
Scaling Factor: 1 - Clients: 1 - Mode: Read Write
TPS, More Is Better
A
3897
B
3876
C
3929
D
3900
800
1600
2400
3200
4000
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
NCNN 20210720
Target: CPU - Model: resnet50
ms, Fewer Is Better
A
MIN: 19.78 / MAX: 23.41
20.05
B
MIN: 19.73 / MAX: 22.09
20.04
C
MIN: 19.64 / MAX: 21.72
19.94
D
MIN: 19.51 / MAX: 21.9
19.78
5
10
15
20
25
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

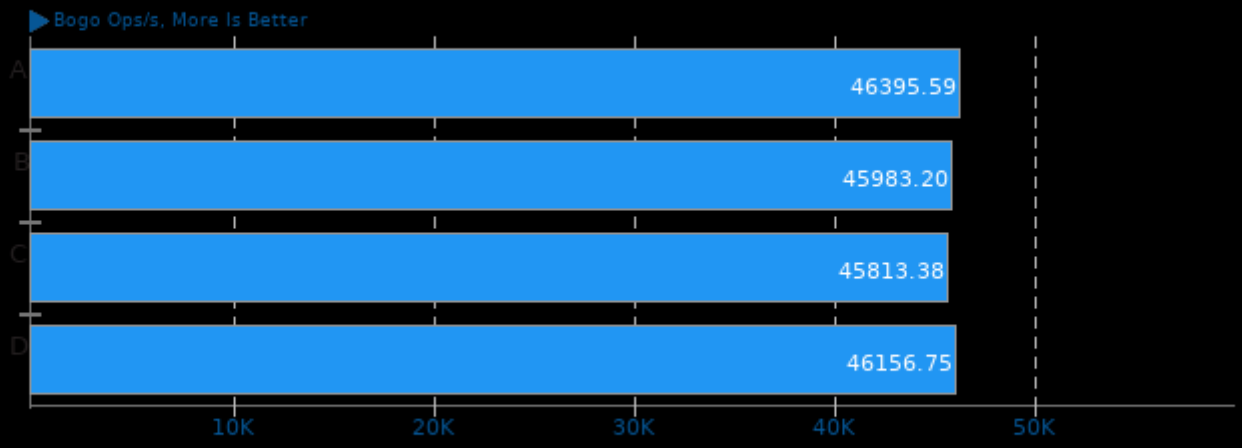

SVT-AV1 0.8.7
Encoder Mode: Preset 8 - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
D
56.35
56.76
56.21
56.96
13
26
39
52
65
1. (CXX) g++ options: -mno-avx -mavx2 -mavx512f -mavx512bw -mavx512dq -pie
AOM AV1 3.1
Encoder Mode: Speed 4 Two-Pass - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
D
3.75
3.79
3.80
3.78
0.855
1.71
2.565
3.42
4.275
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm


JPEG XL libjxl 0.5
Input: PNG - Encode Speed: 5
MP/s, More Is Better
A
B
C
D
51.84
52.21
52.32
52.53
12
24
36
48
60
1. (CXX) g++ options: -funwind-tables -O3 -O2 -pthread -fPIE -pie
Xcompact3d Incompact3d 2021-03-11
Input: input.i3d 129 Cells Per Direction
Seconds, Fewer Is Better
A
B
C
D
8.85260391
8.97010040
8.94024277
8.92117882
3
6
9
12
15
1. (F9X) gfortran options: -cpp -O2 -funroll-loops -floop-optimize -fcray-pointer -fbacktrace -lmpi_usempif08 -lmpi_mpifh -lmpi -lopen-rte -lopen-pal -lhwl


AOM AV1 3.1
Encoder Mode: Speed 8 Realtime - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
D
35.00
34.74
35.16
35.19
8
16
24
32
40
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm
LULESH 2.0.3
z/s, More Is Better
A
B
C
D
8622.71
8572.93
8662.50
8682.30
2K
4K
6K
8K
10K
1. (CXX) g++ options: -O3 -fopenmp -lm -lmpi_cxx -lmpi

Stress-NG 0.13.02

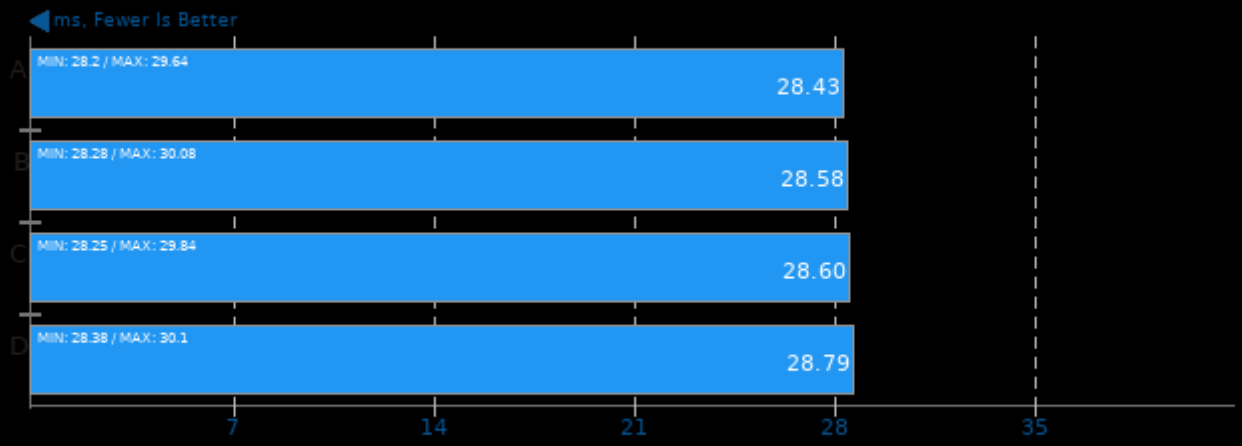
Test: Forking



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

NCNN 20210720

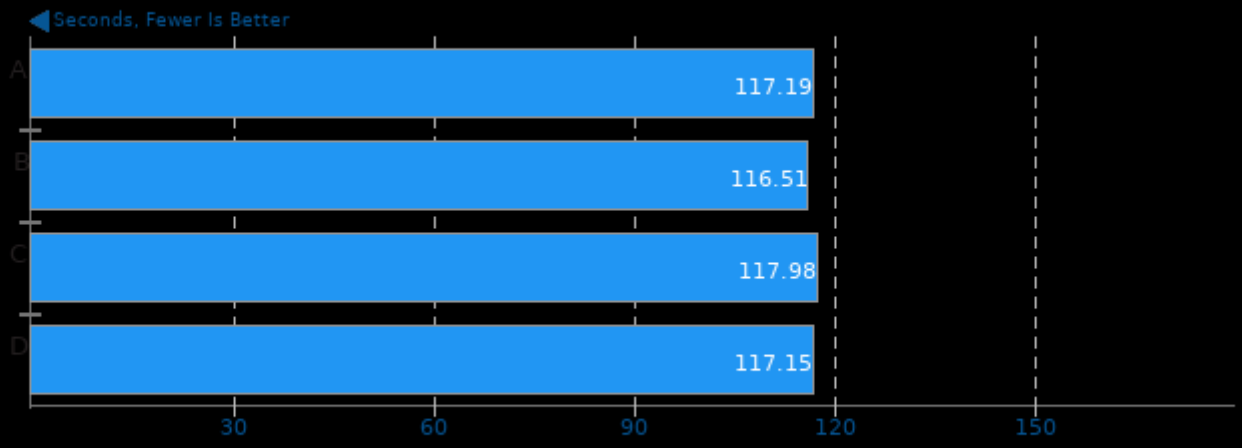
Target: CPU - Model: vgg16



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

OpenSCAD

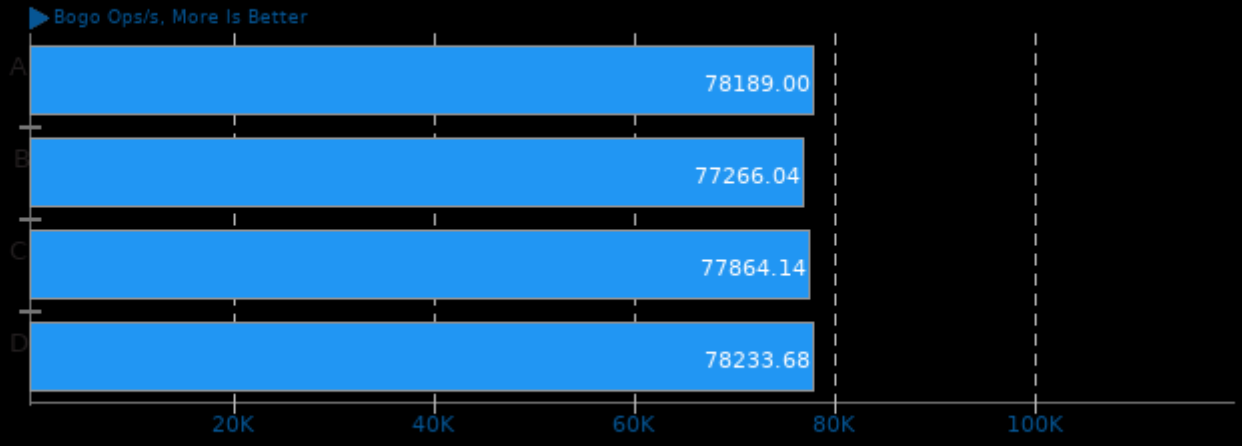
Render: Pistol



1. OpenSCAD version 2021.01

Stress-NG 0.13.02

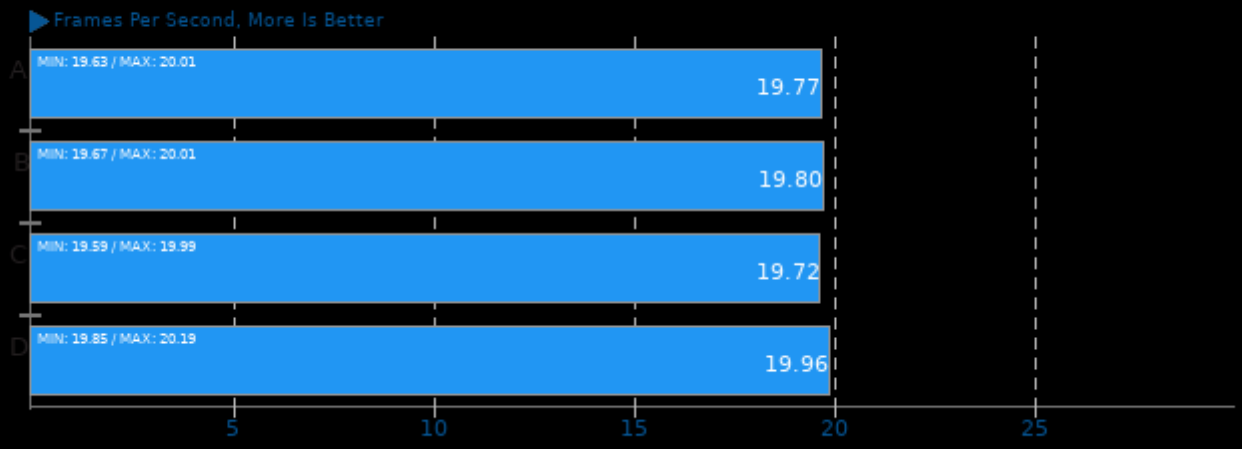
Test: Matrix Math

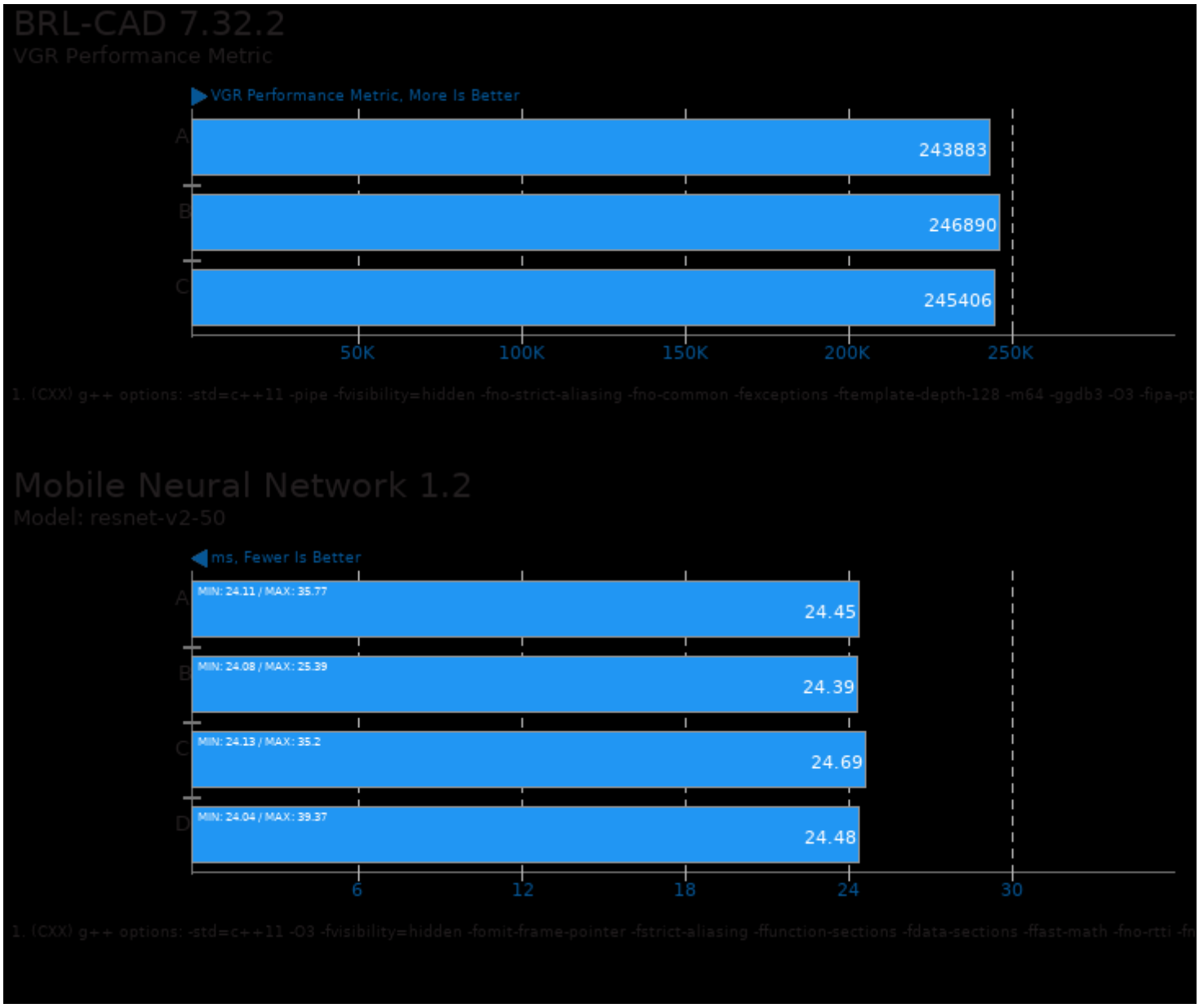


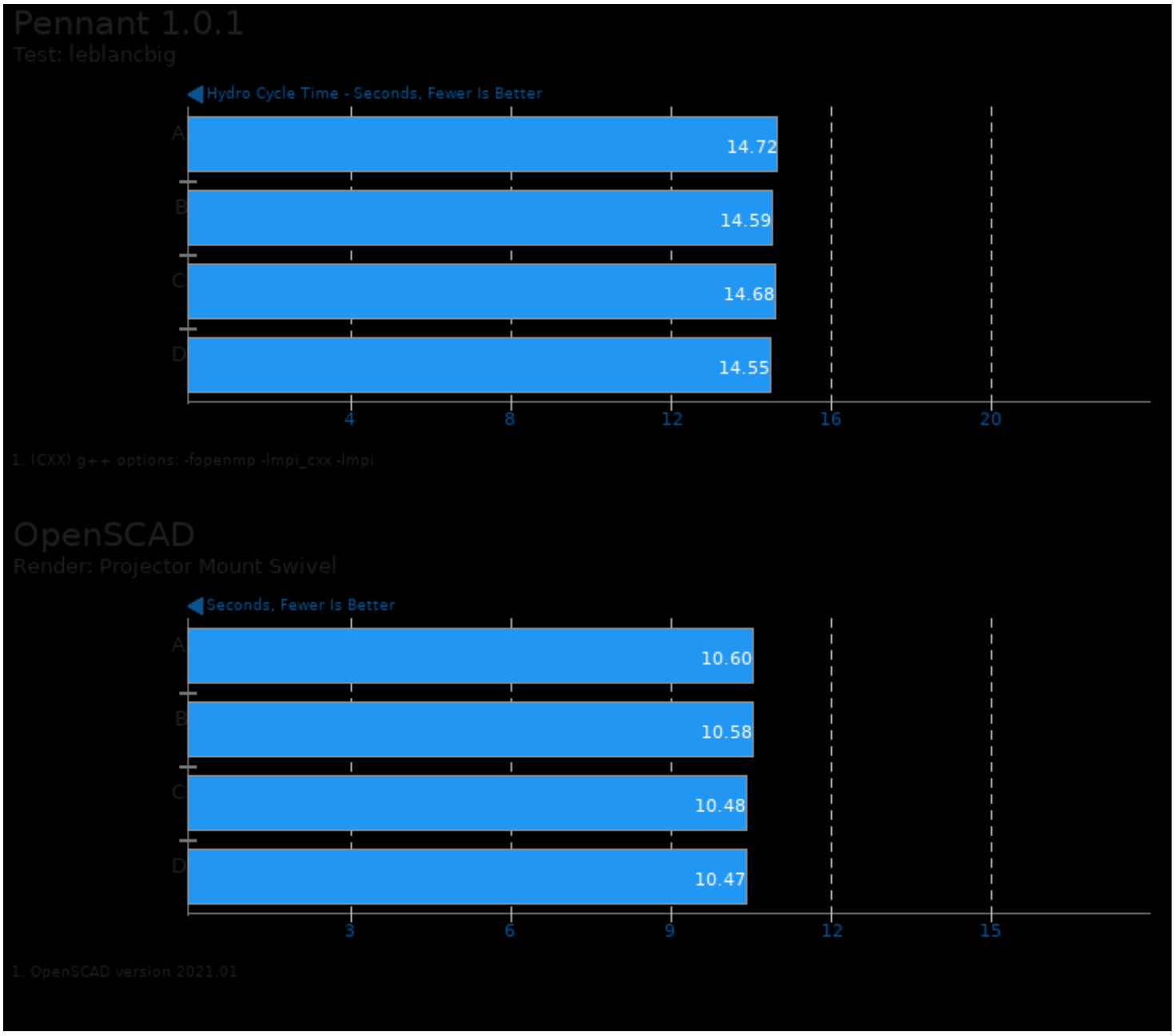
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

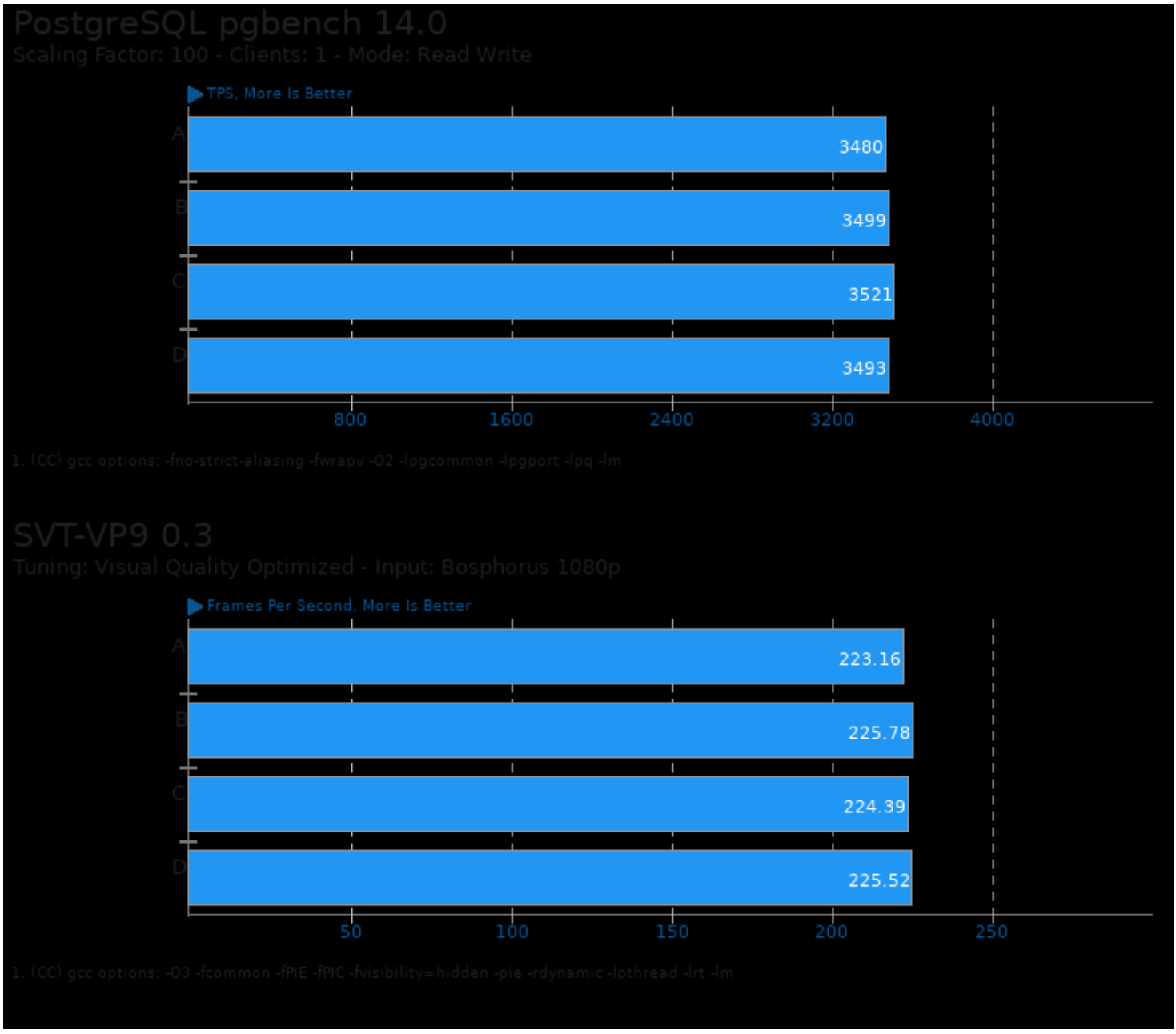
Embree 3.13

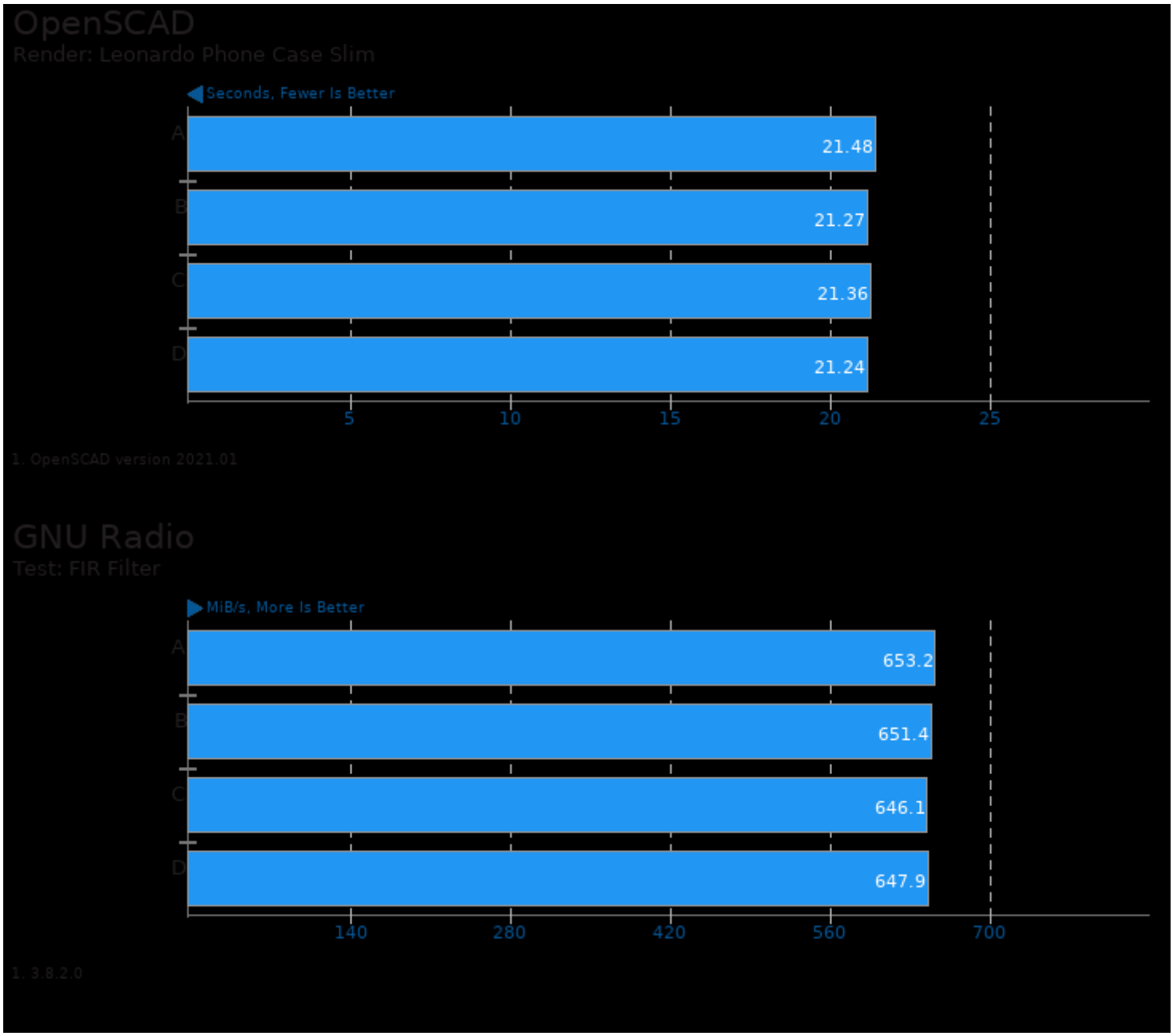
Binary: Pathtracer - Model: Crown

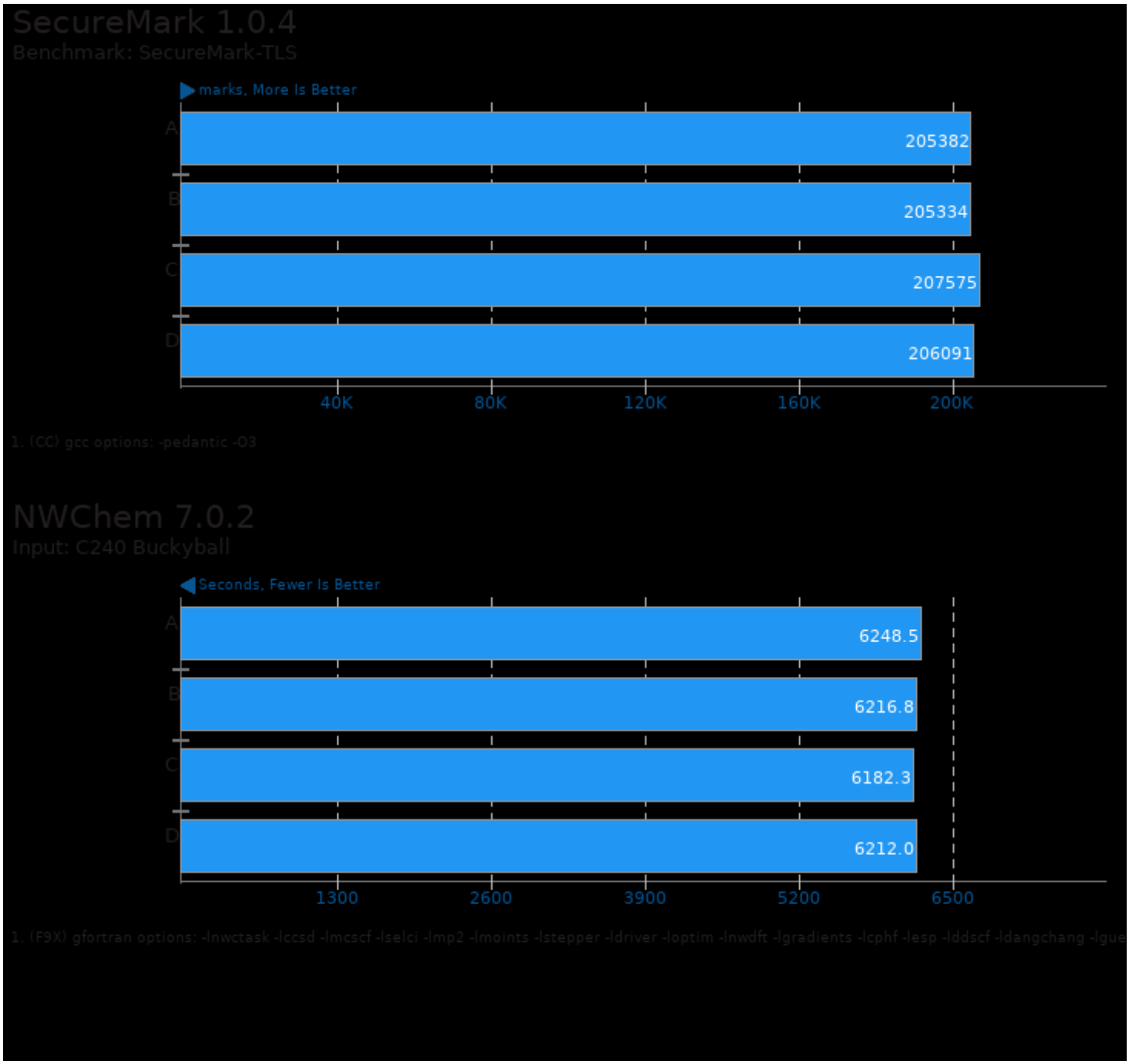


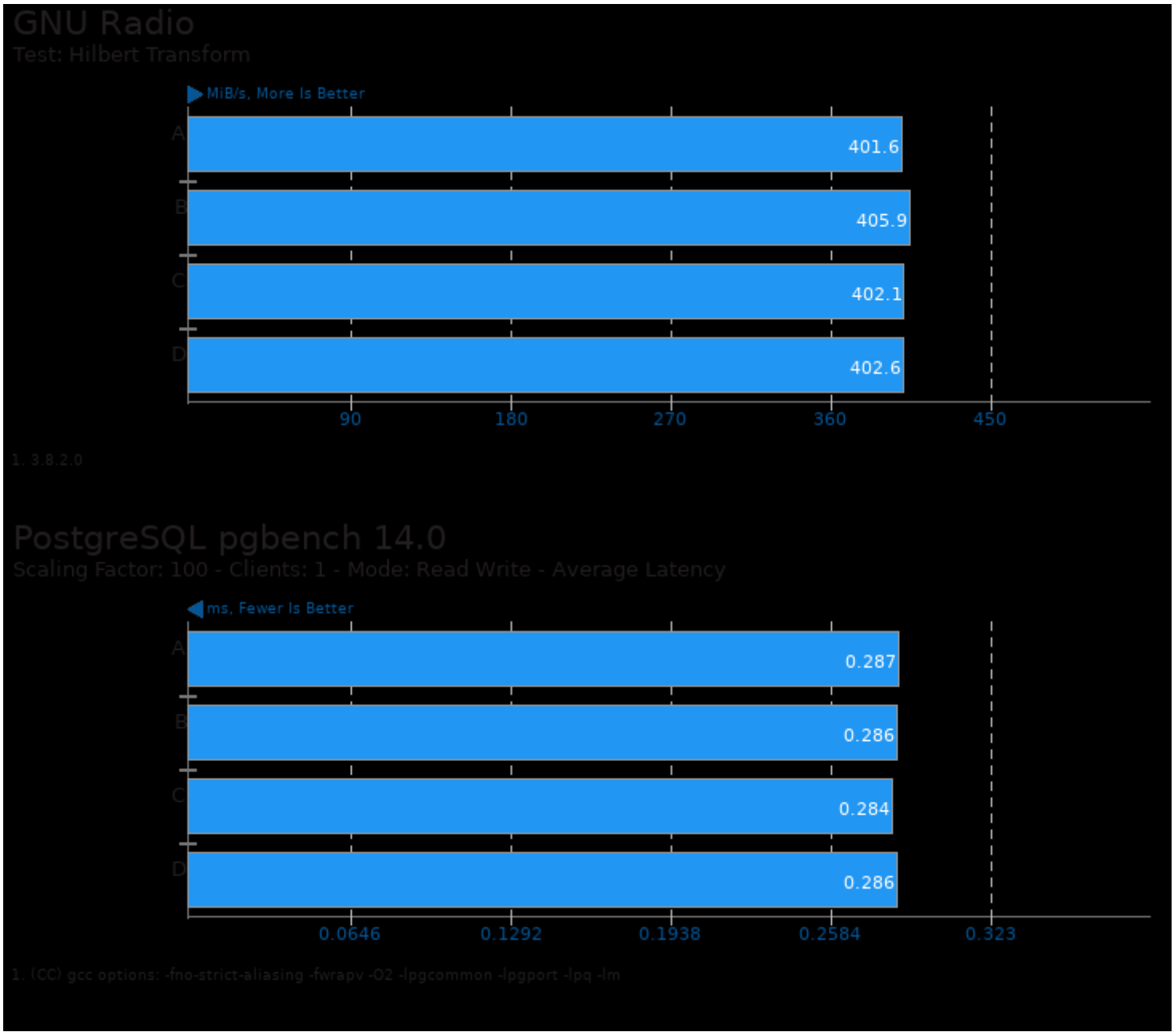

BRL-CAD 7.32.2
VGR Performance Metric
VGR Performance Metric, More Is Better
A
B
C
243883
246890
245406
50K
100K
150K
200K
250K
1. (CXX) g++ options: -std=c++11 -pipe -fvisibility=hidden -fno-strict-aliasing -fno-common -fexceptions -ftemplate-depth-128 -m64 -ggdb3 -O3 -fipa-pt
Mobile Neural Network 1.2
Model: resnet-v2-50
ms, Fewer Is Better
A
B
C
D
MIN: 24.11 / MAX: 35.77
24.45
MIN: 24.08 / MAX: 25.39
24.39
MIN: 24.13 / MAX: 35.2
24.69
MIN: 24.04 / MAX: 39.37
24.48
6
12
18
24
30
1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fv

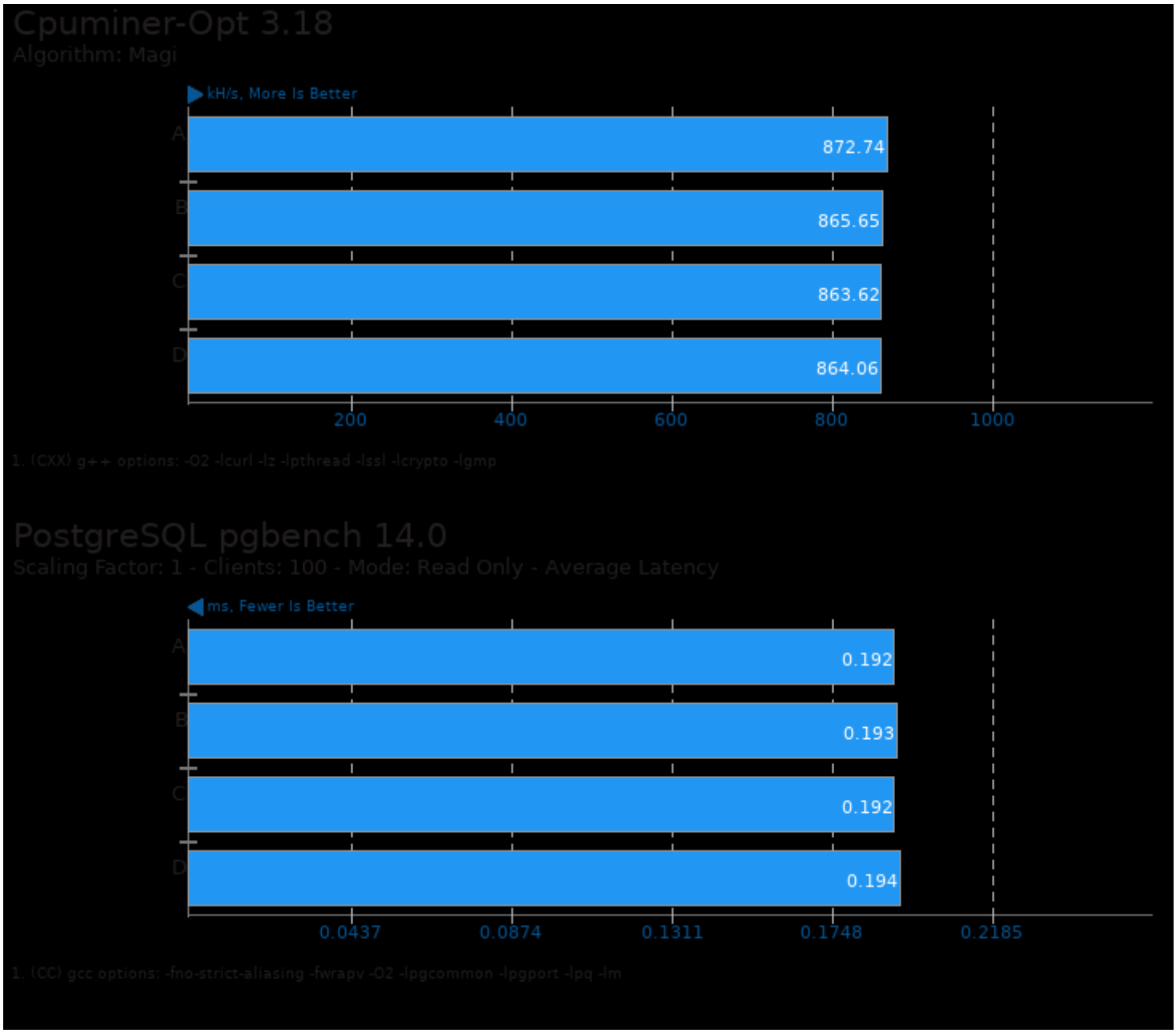

Pennant 1.0.1
Test: leblancbig
Hydro Cycle Time - Seconds, Fewer Is Better
A
B
C
D
14.72
14.59
14.68
14.55
4
8
12
16
20
1. (CXX) g++ options: -fopenmp -lmpi_cxx -lmpi
OpenSCAD
Render: Projector Mount Swivel
Seconds, Fewer Is Better
A
B
C
D
10.60
10.58
10.48
10.47
3
6
9
12
15
1. OpenSCAD version 2021.01

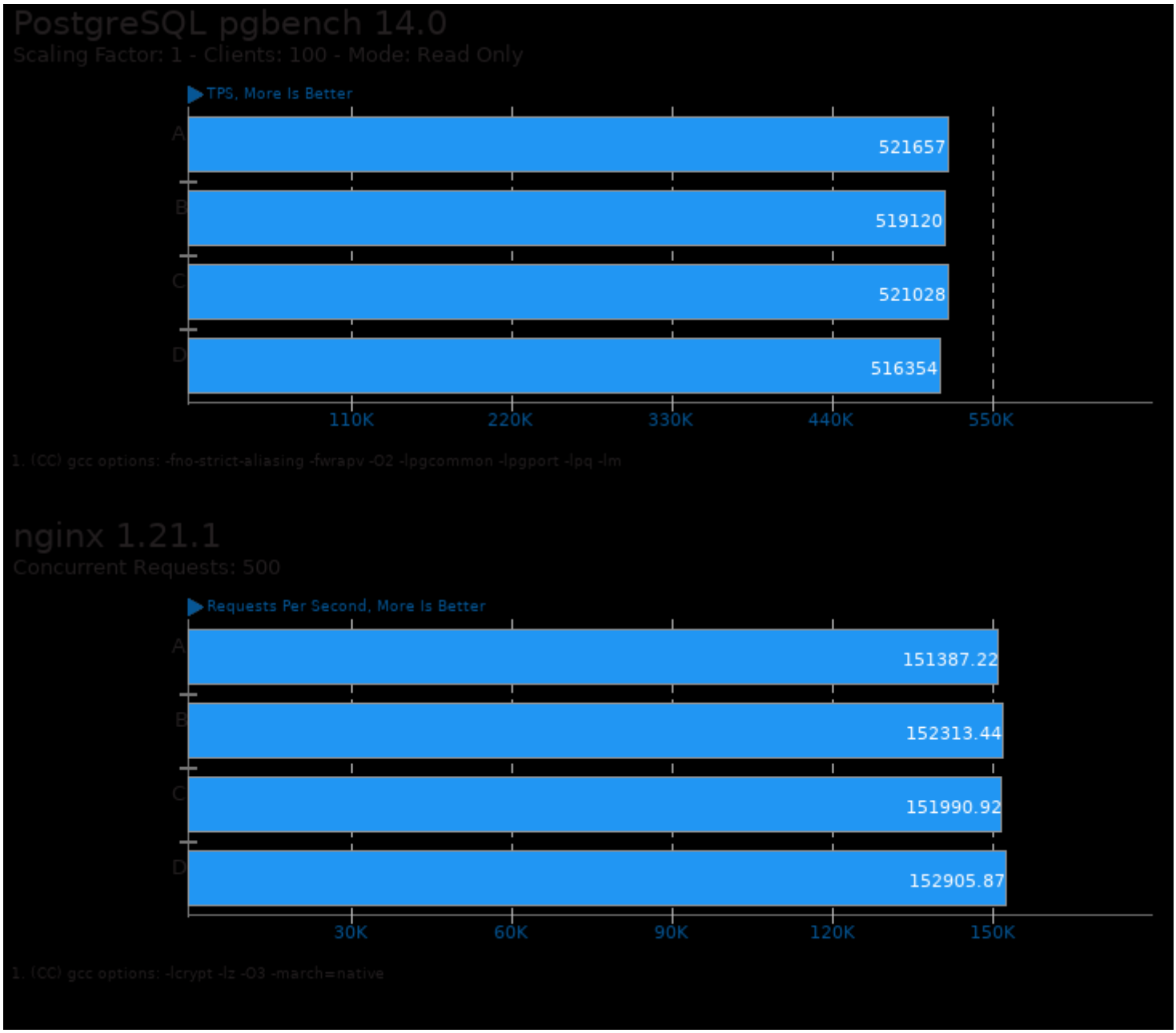

PostgreSQL pgbench 14.0
Scaling Factor: 100 - Clients: 1 - Mode: Read Write
TPS, More Is Better
A
B
C
D
3480
3499
3521
3493
800
1600
2400
3200
4000
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
SVT-VP9 0.3
Tuning: Visual Quality Optimized - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
D
223.16
225.78
224.39
225.52
50
100
150
200
250
1. (CC) gcc options: -O3 -fcommon -fPIE -fPIC -fvisibility=hidden -pie -rdynamic -lpthread -lrt -lm

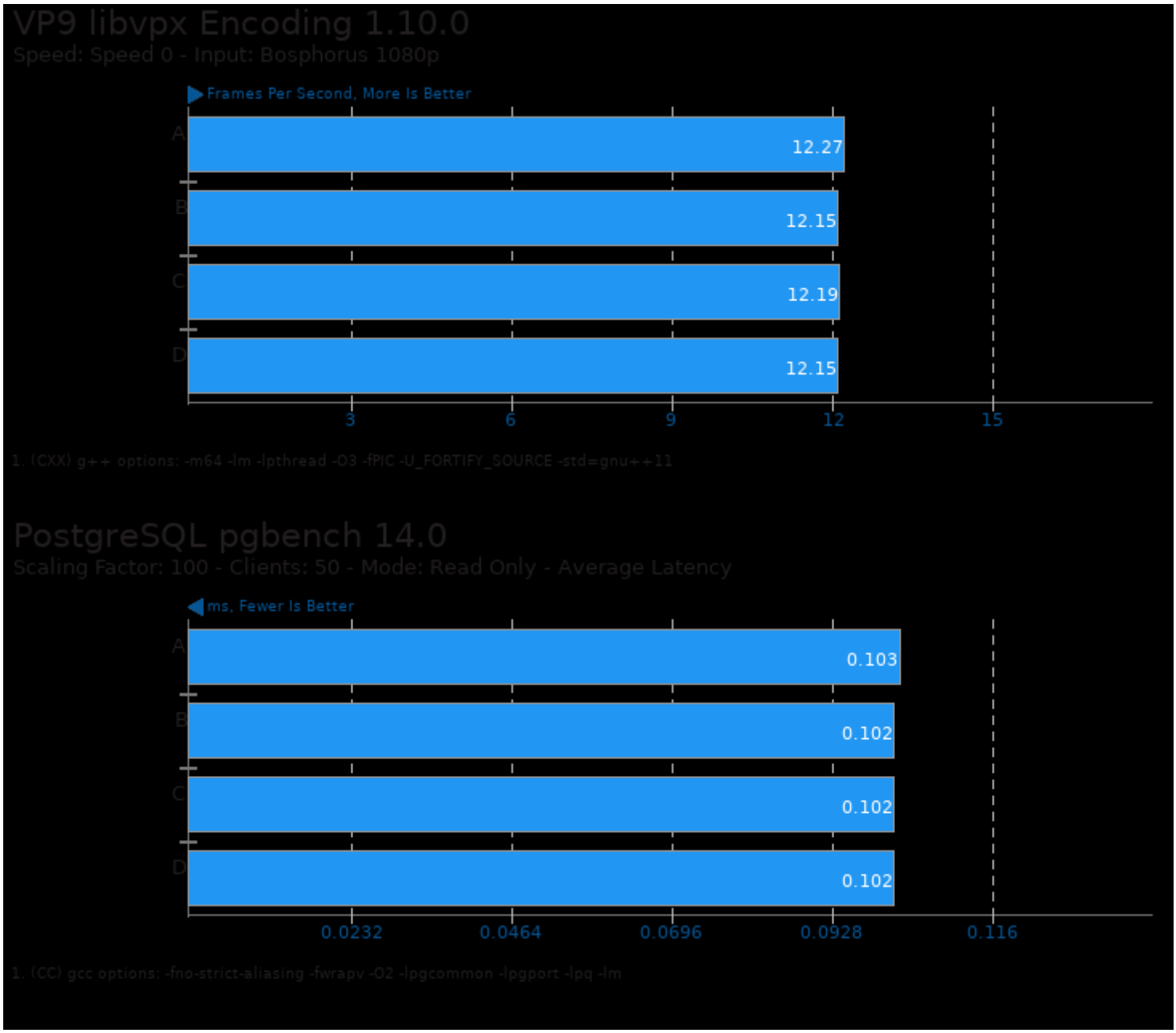

OpenSCAD
Render: Leonardo Phone Case Slim
Seconds, Fewer Is Better
A
B
C
D
21.48
21.27
21.36
21.24
5
10
15
20
25
1. OpenSCAD version 2021.01
GNU Radio
Test: FIR Filter
MiB/s, More Is Better
A
B
C
D
653.2
651.4
646.1
647.9
140
280
420
560
700
1. 3.8.2.0

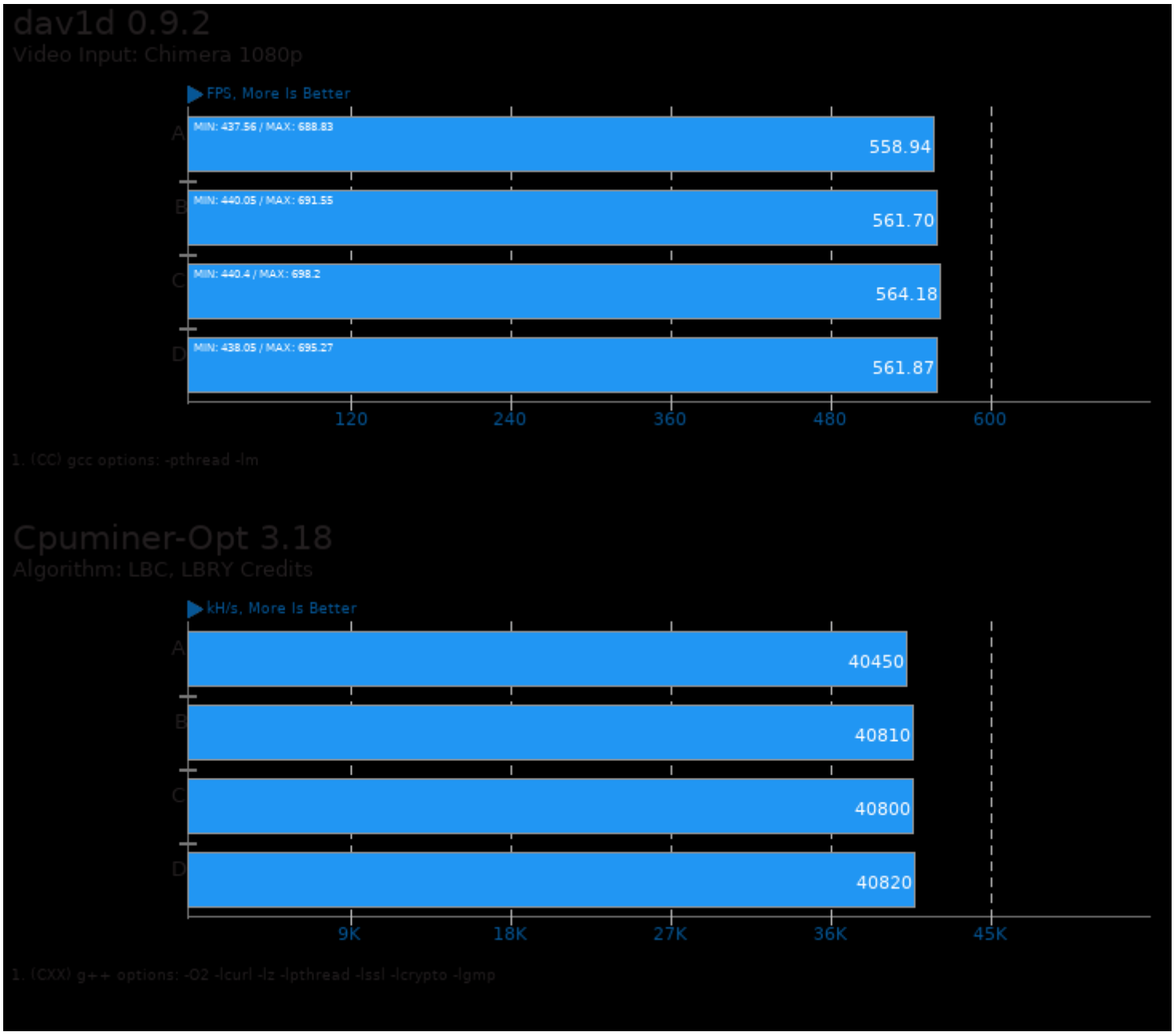

SecureMark 1.0.4
Benchmark: SecureMark-TLS
marks, More Is Better
A
205382
B
205334
C
207575
D
206091
40K
80K
120K
160K
200K
1. (CC) gcc options: -pedantic -O3
NWChem 7.0.2
Input: C240 Buckyball
Seconds, Fewer Is Better
A
6248.5
B
6216.8
C
6182.3
D
6212.0
1300
2600
3900
5200
6500
1. (F9X) gfortran options: -lnwctask -lccsd -lmcscf -lselci -lmp2 -lmoints -lstepper -ldriver -loptim -lnwdft -lgradients -lcphf -lesp -lddscf -ldangchang -lgue

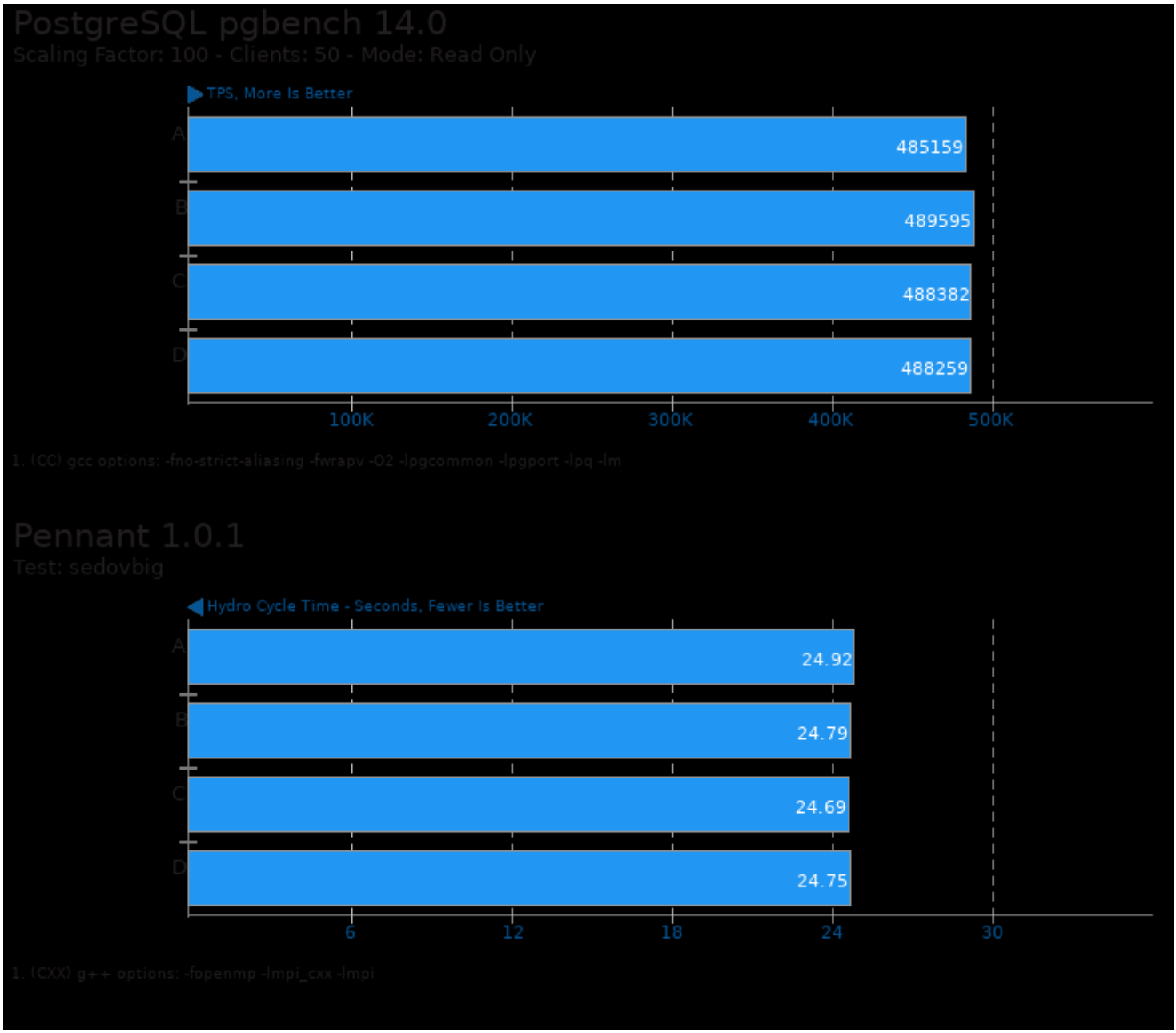

GNU Radio
Test: Hilbert Transform
MiB/s, More Is Better
A
B
C
D
401.6
405.9
402.1
402.6
90
180
270
360
450
1. 3.8.2.0
PostgreSQL pgbench 14.0
Scaling Factor: 100 - Clients: 1 - Mode: Read Write - Average Latency
ms, Fewer Is Better
A
B
C
D
0.287
0.286
0.284
0.286
0.0646
0.1292
0.1938
0.2584
0.323
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

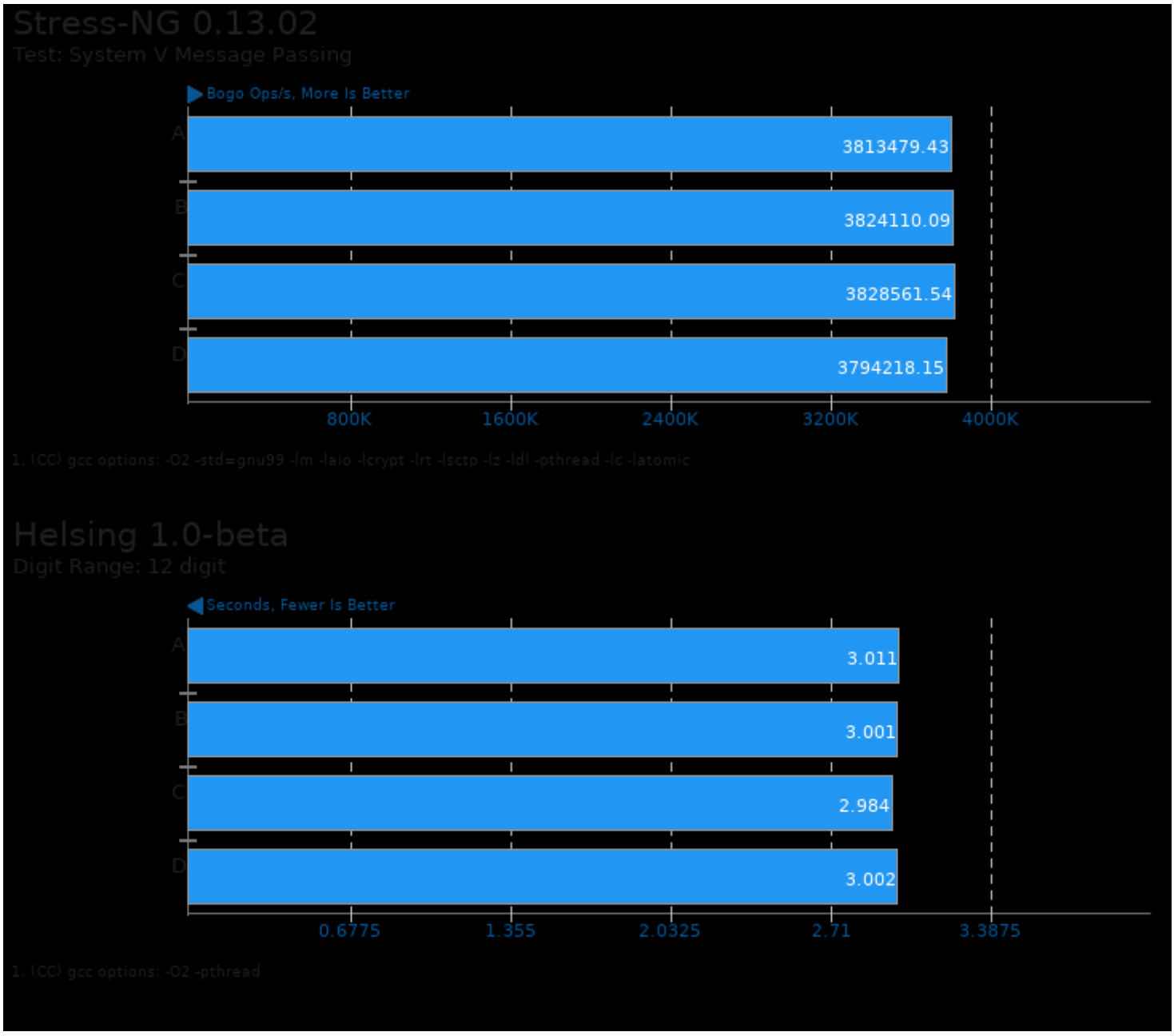

Cpuminer-Opt 3.18
Algorithm: Magi
kH/s, More Is Better
A
872.74
B
865.65
C
863.62
D
864.06
200
400
600
800
1000
1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp
PostgreSQL pgbench 14.0
Scaling Factor: 1 - Clients: 100 - Mode: Read Only - Average Latency
ms, Fewer Is Better
A
0.192
B
0.193
C
0.192
D
0.194
0.0437
0.0874
0.1311
0.1748
0.2185
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

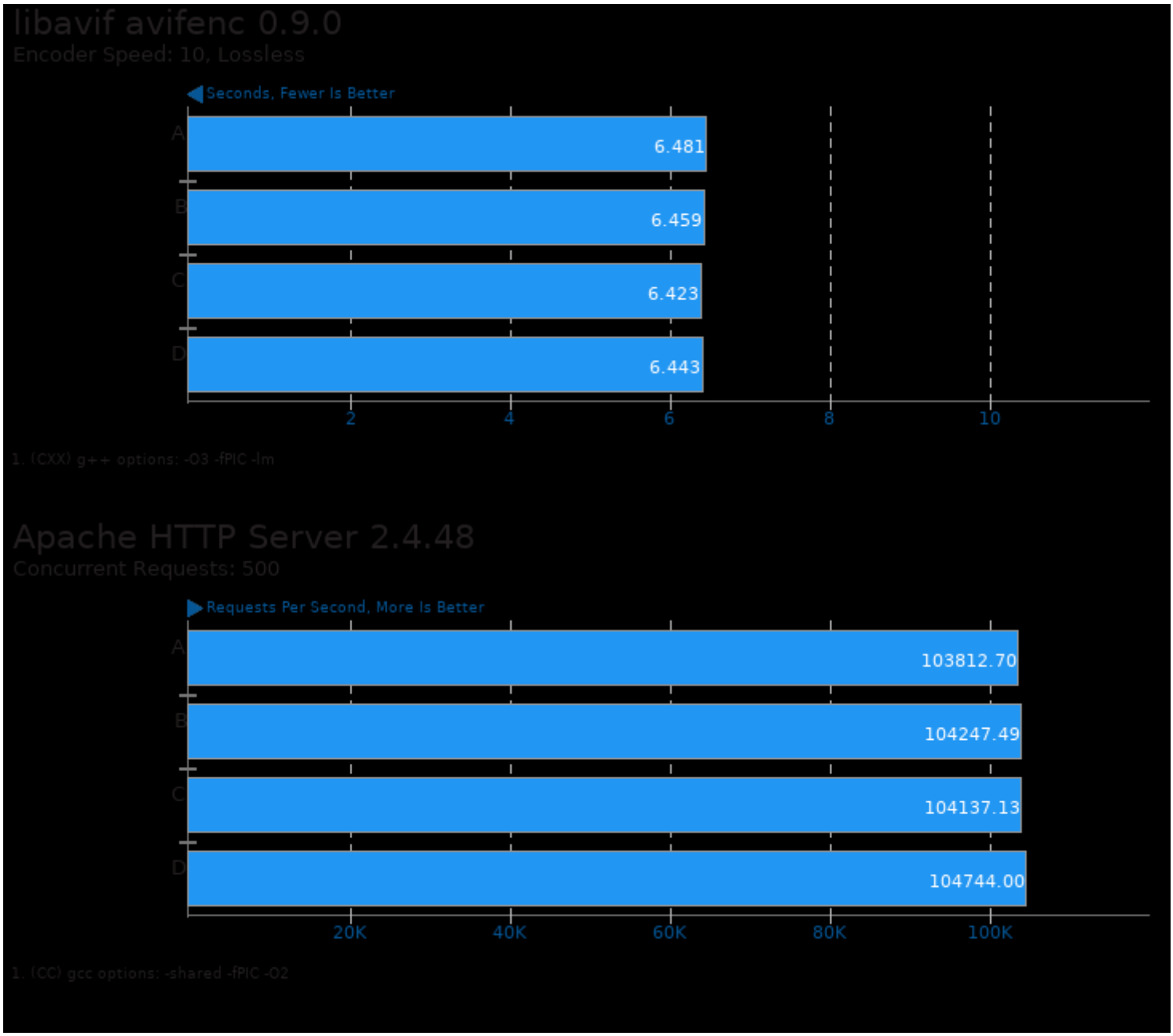

PostgreSQL pgbench 14.0
Scaling Factor: 1 - Clients: 100 - Mode: Read Only
TPS, More Is Better
A
521657
B
519120
C
521028
D
516354
110K
220K
330K
440K
550K
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
nginx 1.21.1
Concurrent Requests: 500
Requests Per Second, More Is Better
A
151387.22
B
152313.44
C
151990.92
D
152905.87
30K
60K
90K
120K
150K
1. (CC) gcc options: -lcrypt -lz -O3 -march=native


VP9 libvpx Encoding 1.10.0
Speed: Speed 0 - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
D
12.27
12.15
12.19
12.15
3
6
9
12
15
1. (CXX) g++ options: -m64 -lm -lpthread -O3 -fPIC -U_FORTIFY_SOURCE -std=gnu++11
PostgreSQL pgbench 14.0
Scaling Factor: 100 - Clients: 50 - Mode: Read Only - Average Latency
ms, Fewer Is Better
A
B
C
D
0.103
0.102
0.102
0.102
0.0232
0.0464
0.0696
0.0928
0.116
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm


dav1d 0.9.2
Video Input: Chimera 1080p
FPS, More Is Better
A
MIN: 437.56 / MAX: 688.83
558.94
B
MIN: 440.05 / MAX: 691.55
561.70
C
MIN: 440.4 / MAX: 698.2
564.18
D
MIN: 438.05 / MAX: 695.27
561.87
120
240
360
480
600
1. (CC) gcc options: -pthread -lm
Cpuminer-Opt 3.18
Algorithm: LBC, LBRY Credits
kH/s, More Is Better
A
40450
B
40810
C
40800
D
40820
9K
18K
27K
36K
45K
1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

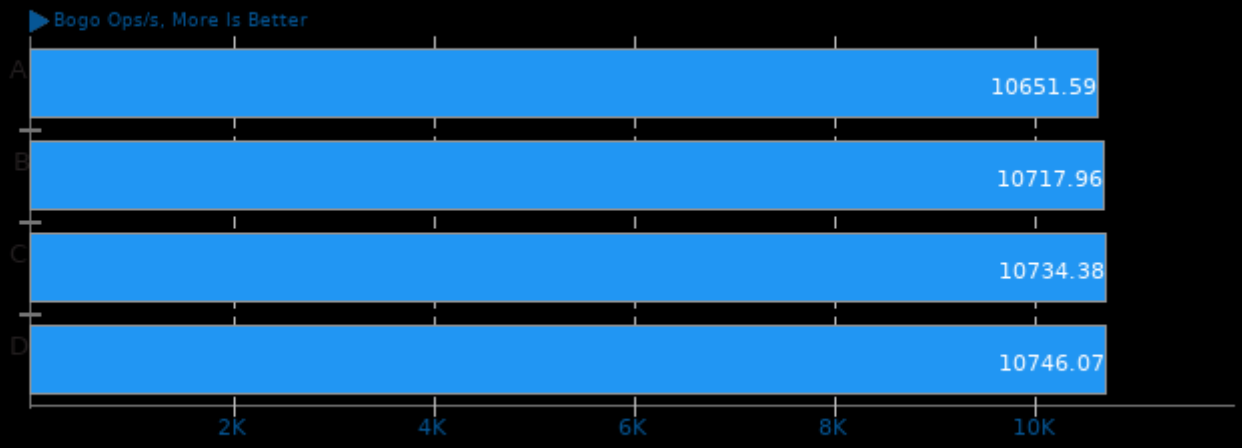

PostgreSQL pgbench 14.0
Scaling Factor: 100 - Clients: 50 - Mode: Read Only
TPS, More Is Better
A
B
C
D
485159
489595
488382
488259
100K
200K
300K
400K
500K
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
Pennant 1.0.1
Test: sedovbig
Hydro Cycle Time - Seconds, Fewer Is Better
A
B
C
D
24.92
24.79
24.69
24.75
6
12
18
24
30
1. (CXX) g++ options: -fopenmp -lmpi_cxx -lmpi


Stress-NG 0.13.02
Test: System V Message Passing
Bogo Ops/s, More Is Better
A
B
C
D
3813479.43
3824110.09
3828561.54
3794218.15
800K
1600K
2400K
3200K
4000K
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic
Helsing 1.0-beta
Digit Range: 12 digit
Seconds, Fewer Is Better
A
B
C
D
3.011
3.001
2.984
3.002
0.6775
1.355
2.0325
2.71
3.3875
1. (CC) gcc options: -O2 -pthread


libavif avifenc 0.9.0
Encoder Speed: 10, Lossless
Seconds, Fewer Is Better
A
B
C
D
6.481
6.459
6.423
6.443
2
4
6
8
10
1. (CXX) g++ options: -O3 -fPIC -lm
Apache HTTP Server 2.4.48
Concurrent Requests: 500
Requests Per Second, More Is Better
A
B
C
D
103812.70
104247.49
104137.13
104744.00
20K
40K
60K
80K
100K
1. (CC) gcc options: -shared -fPIC -O2

Stress-NG 0.13.02

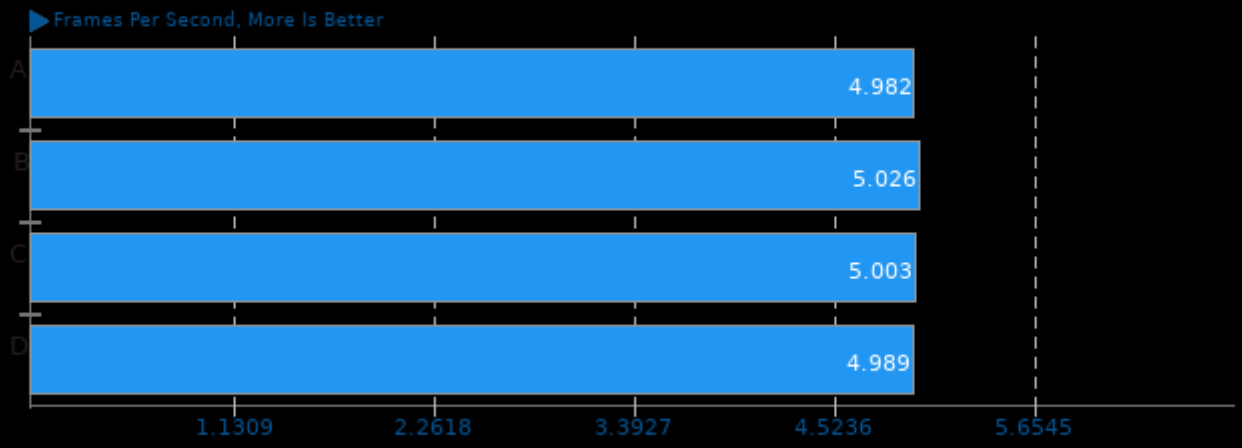
Test: Socket Activity



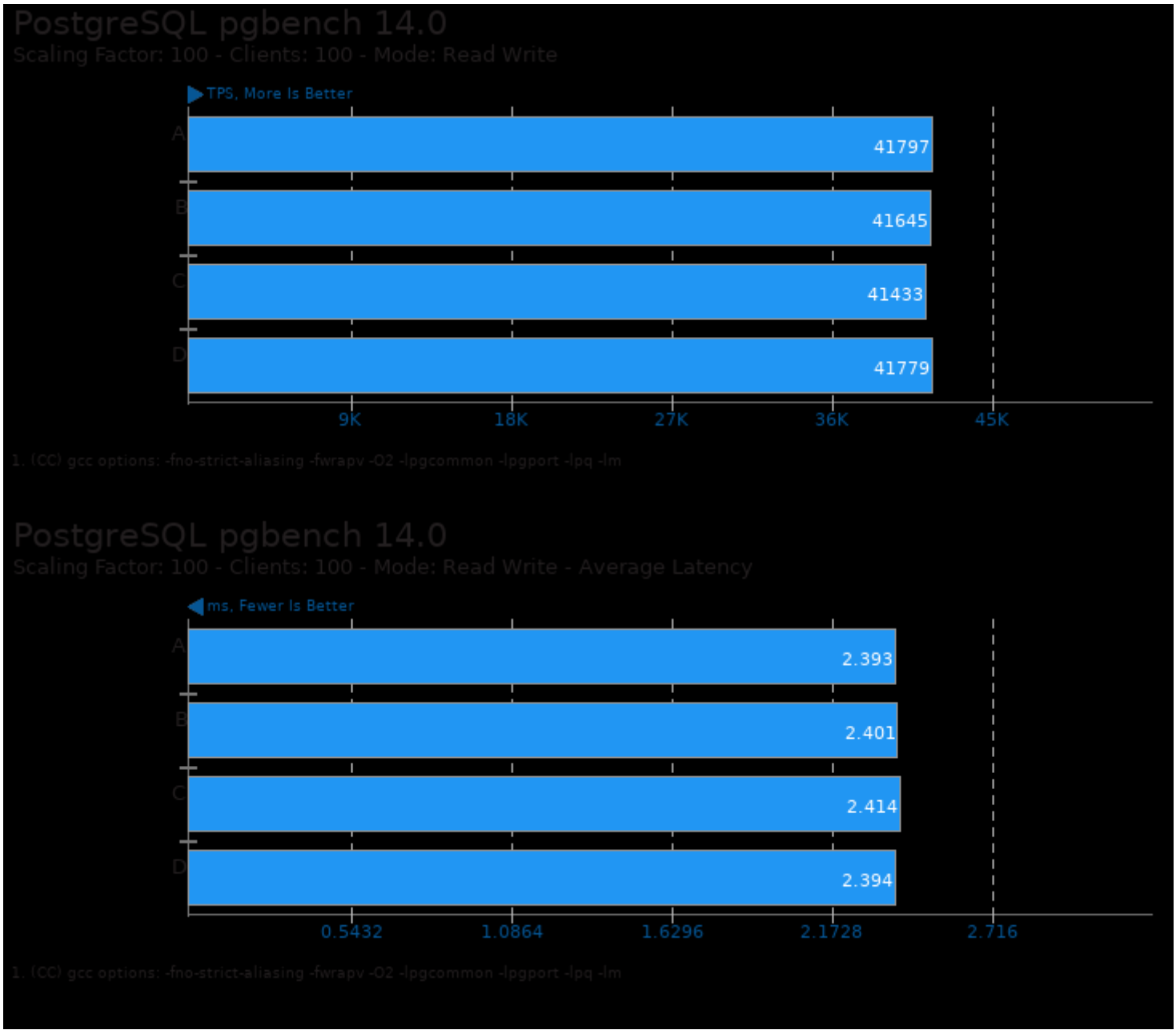
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

SVT-AV1 0.8.7

Encoder Mode: Preset 4 - Input: Bosphorus 1080p

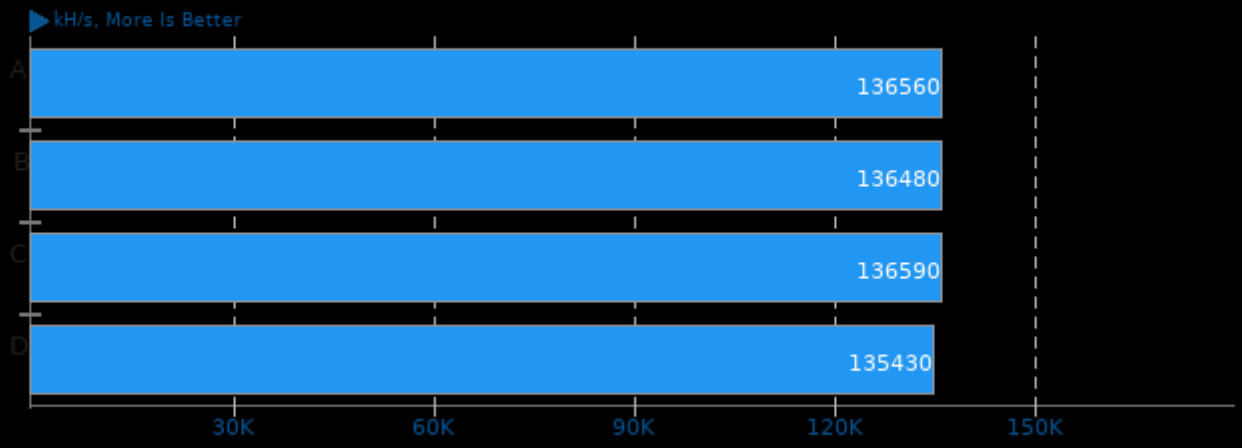


1. (CXX) g++ options: -mno-avx -mavx2 -mavx512f -mavx512bw -mavx512dq -pie


PostgreSQL pgbench 14.0
Scaling Factor: 100 - Clients: 100 - Mode: Read Write
TPS, More Is Better
A
41797
B
41645
C
41433
D
41779
9K
18K
27K
36K
45K
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
PostgreSQL pgbench 14.0
Scaling Factor: 100 - Clients: 100 - Mode: Read Write - Average Latency
ms, Fewer Is Better
A
2.393
B
2.401
C
2.414
D
2.394
0.5432
1.0864
1.6296
2.1728
2.716
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

Cpuminer-Opt 3.18

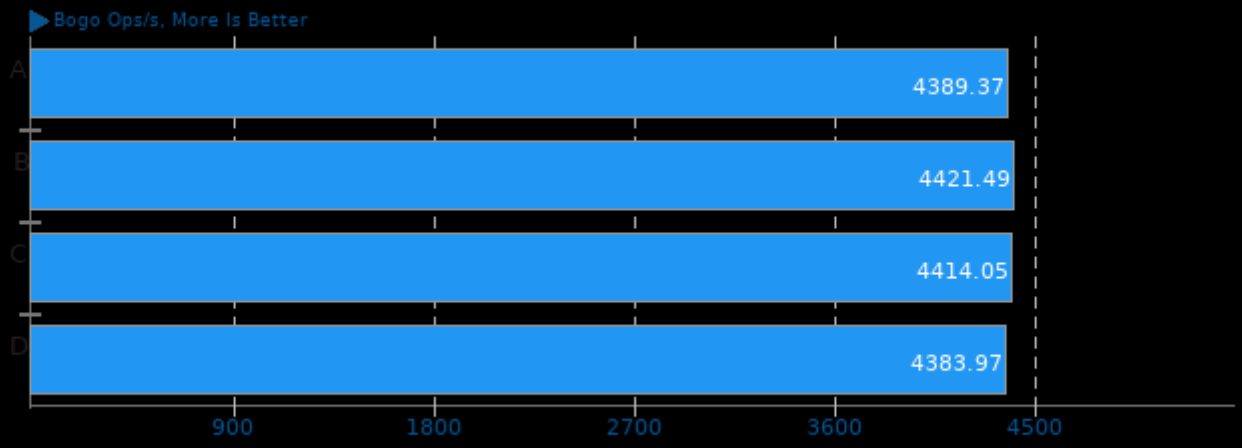
Algorithm: Skeincoin



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

Stress-NG 0.13.02

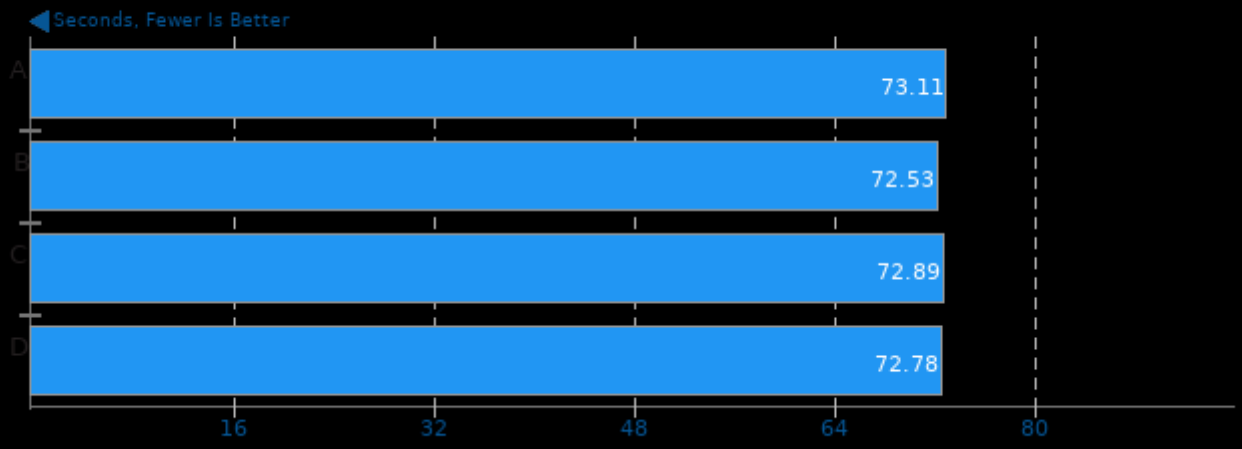
Test: Memory Copying



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

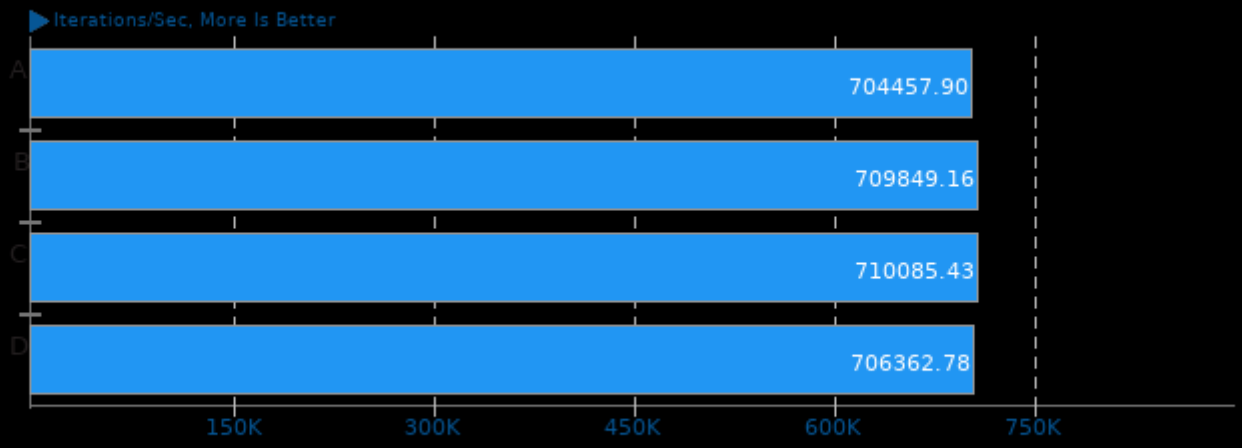
Timed Godot Game Engine Compilation 3.2.3

Time To Compile



Coremark 1.0

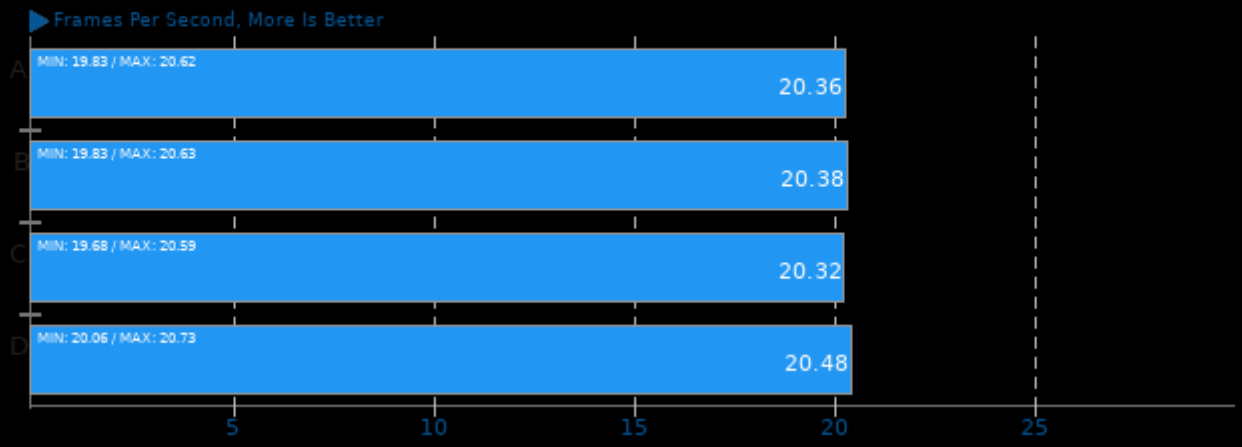
CoreMark Size 666 - Iterations Per Second



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

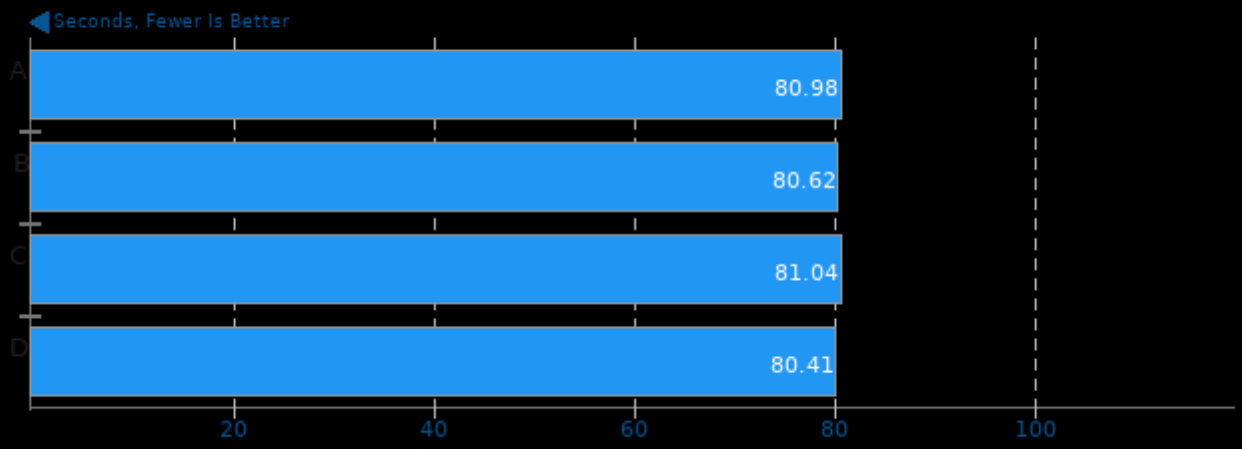
Embree 3.13

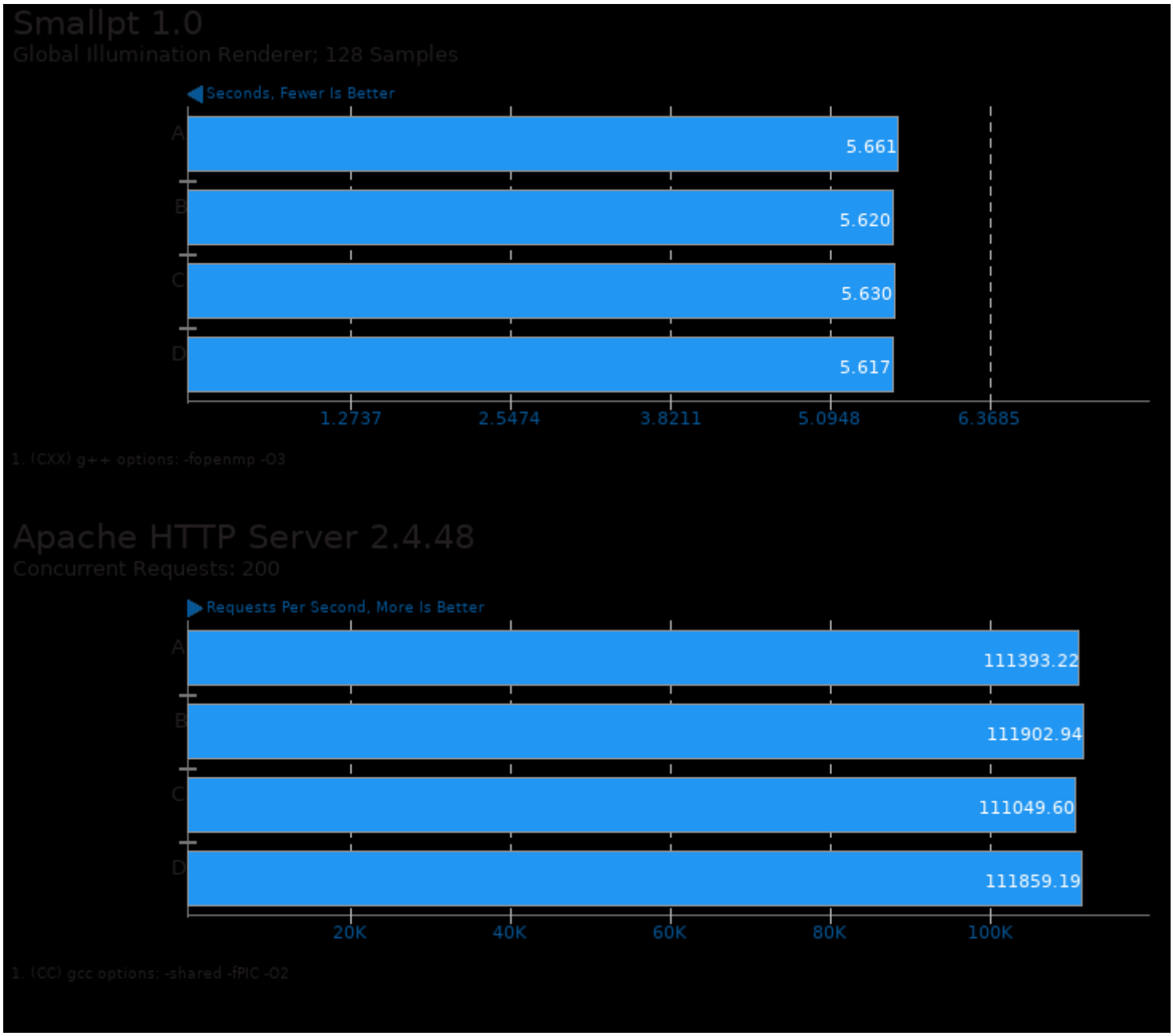
Binary: Pathtracer - Model: Asian Dragon Obj

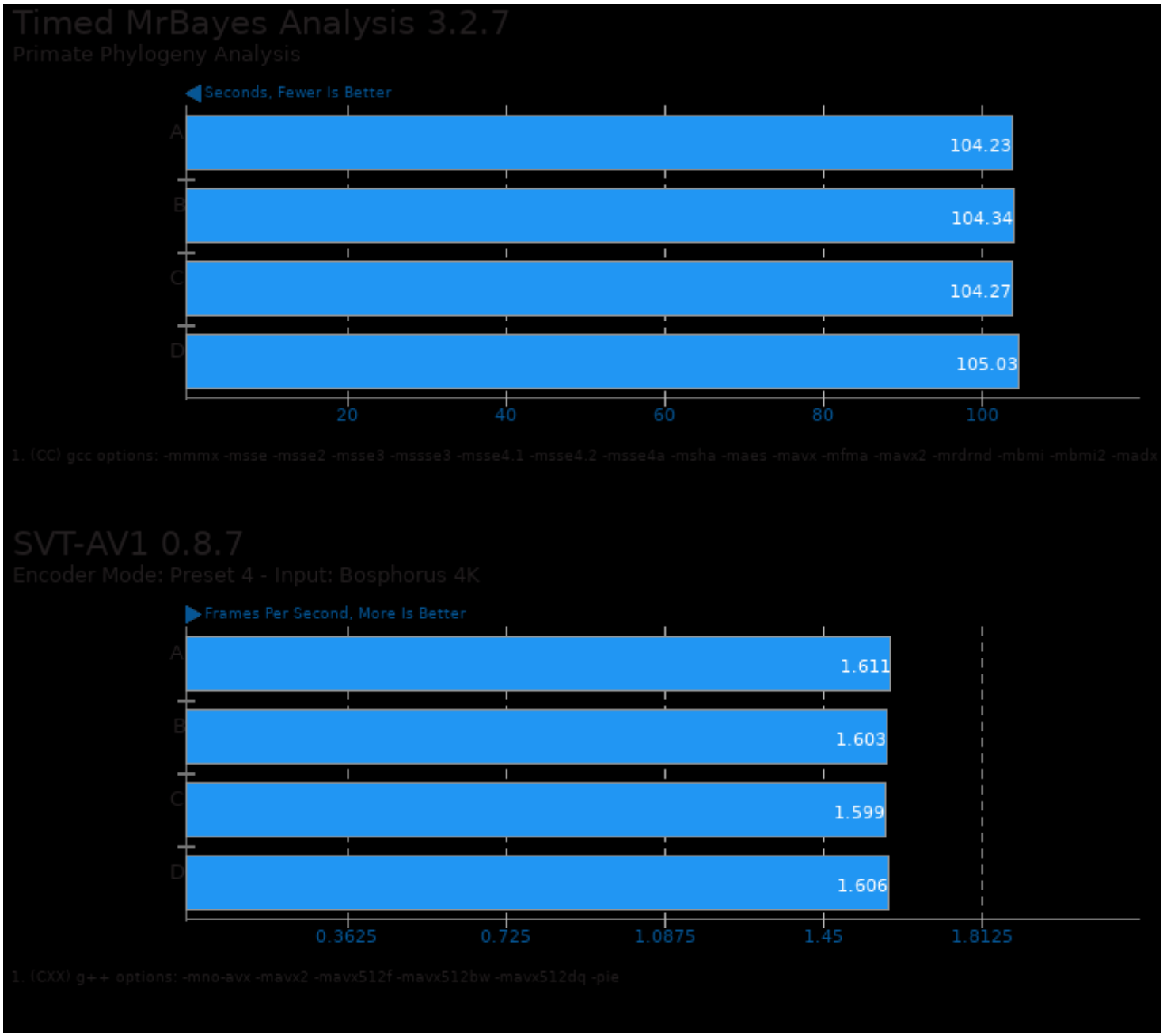


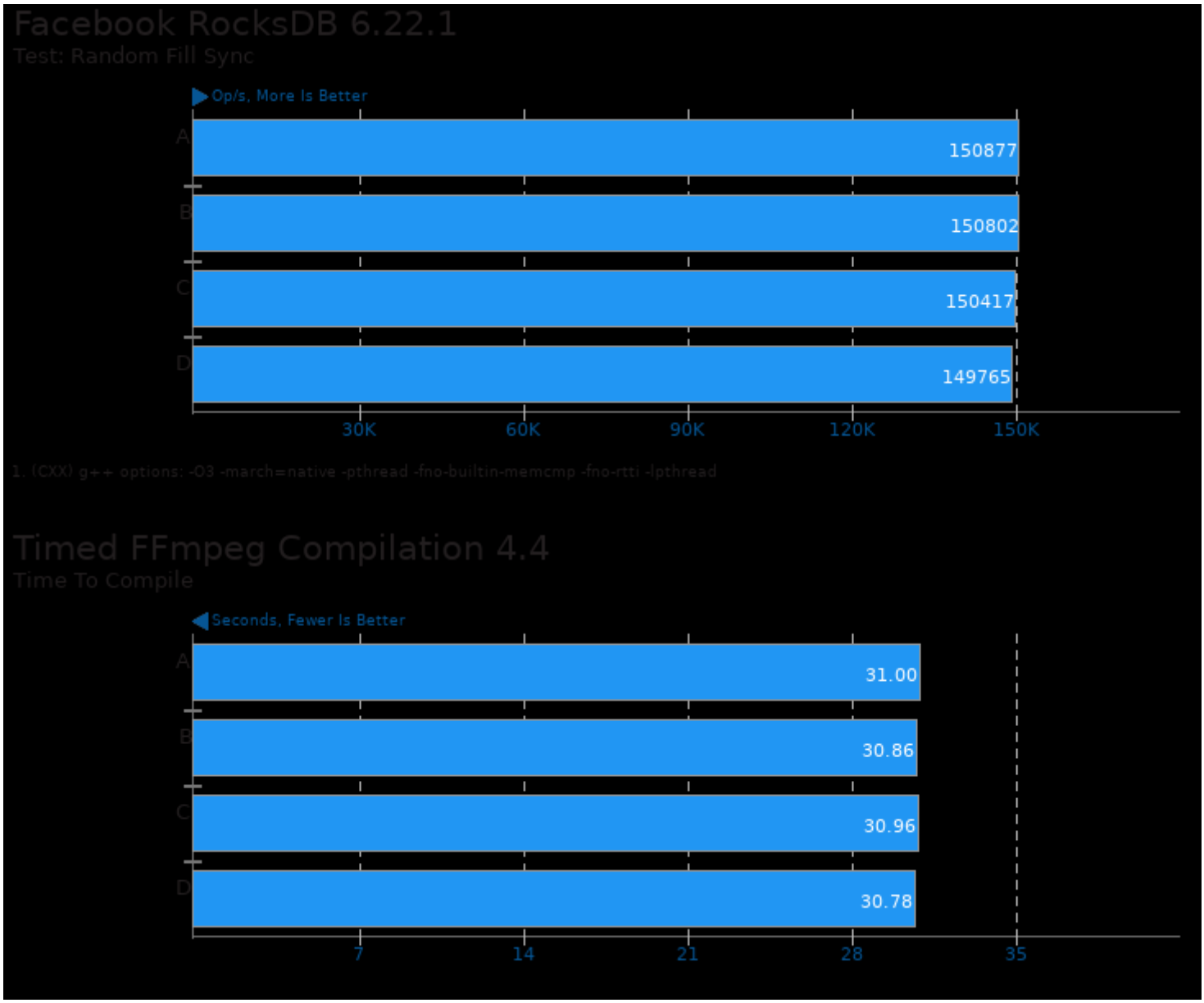
Blender 2.92

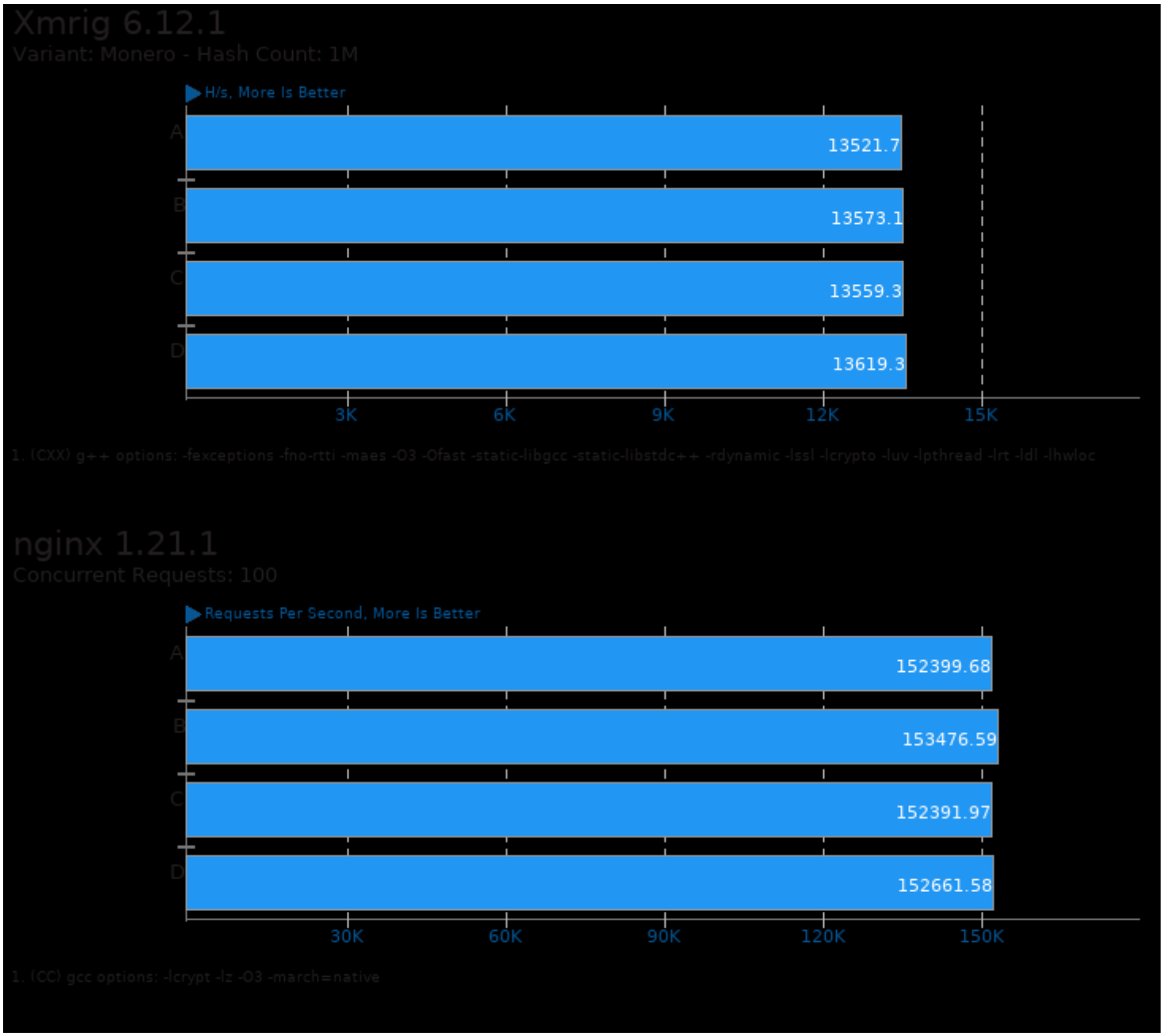
Blend File: BMW27 - Compute: CPU-Only

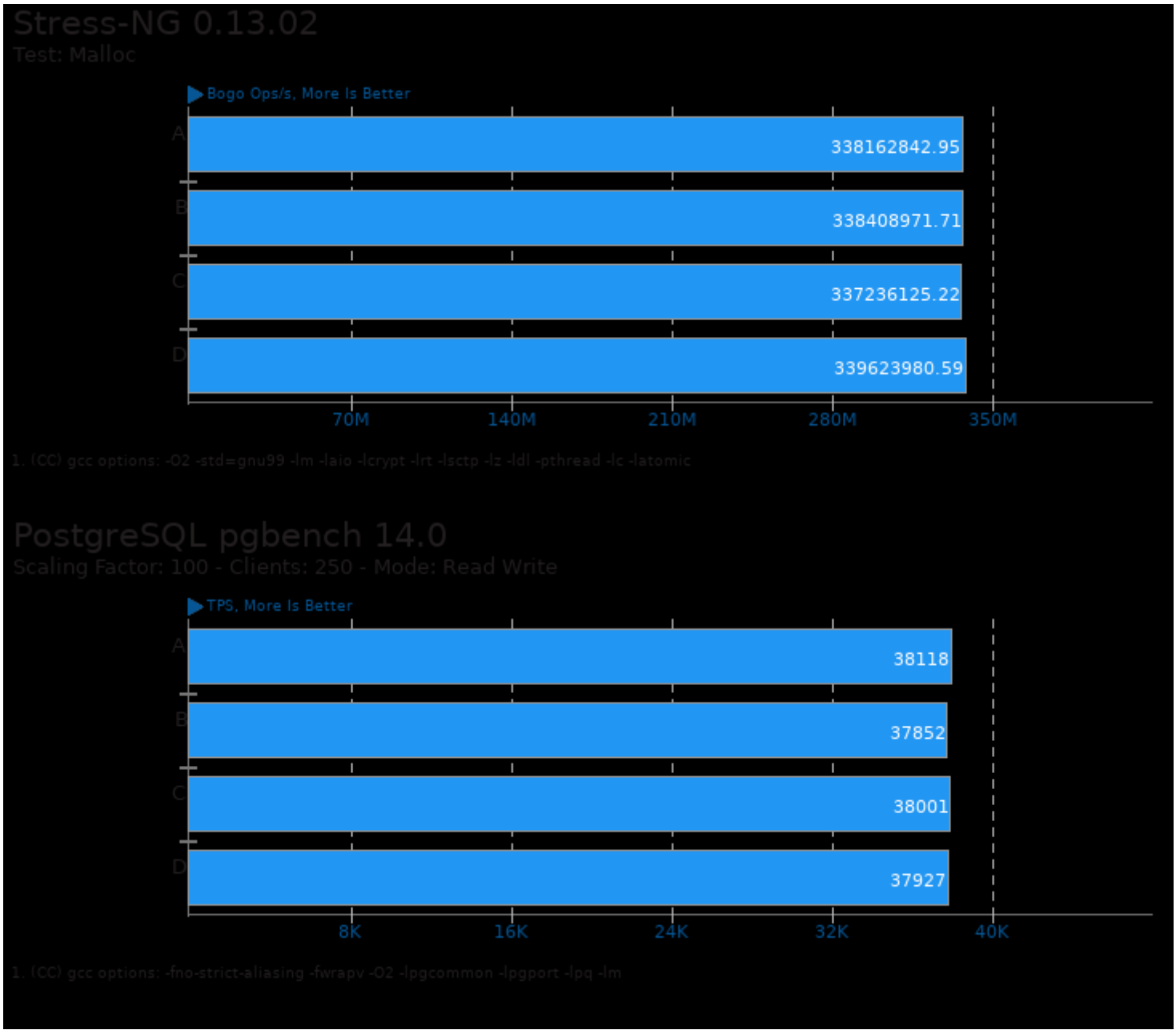


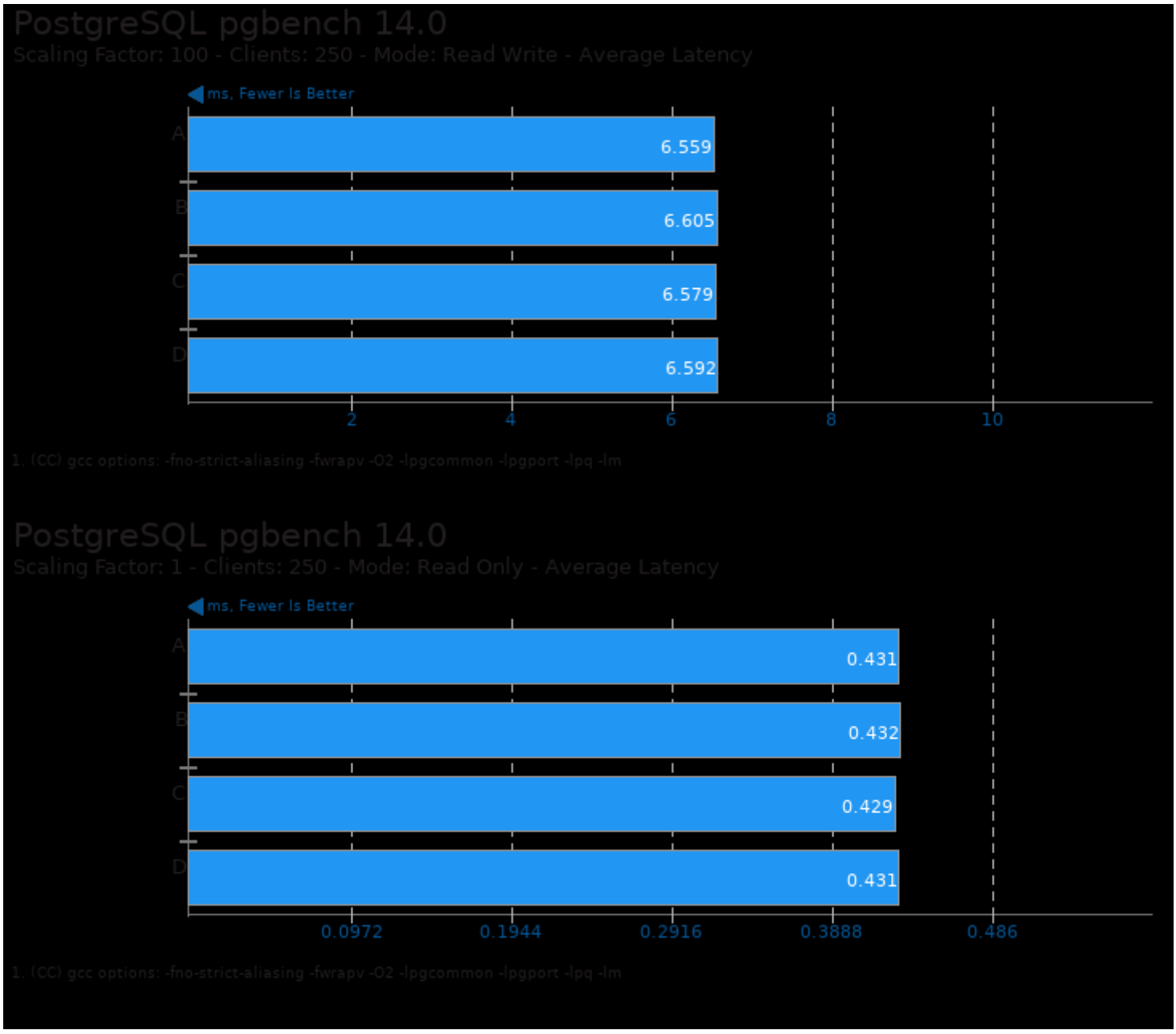

Smallpt 1.0
Global Illumination Renderer; 128 Samples
Seconds, Fewer Is Better
A
B
C
D
5.661
5.620
5.630
5.617
1.2737
2.5474
3.8211
5.0948
6.3685
1. (CXX) g++ options: -fopenmp -O3
Apache HTTP Server 2.4.48
Concurrent Requests: 200
Requests Per Second, More Is Better
A
B
C
D
111393.22
111902.94
111049.60
111859.19
20K
40K
60K
80K
100K
1. (CC) gcc options: -shared -fPIC -O2

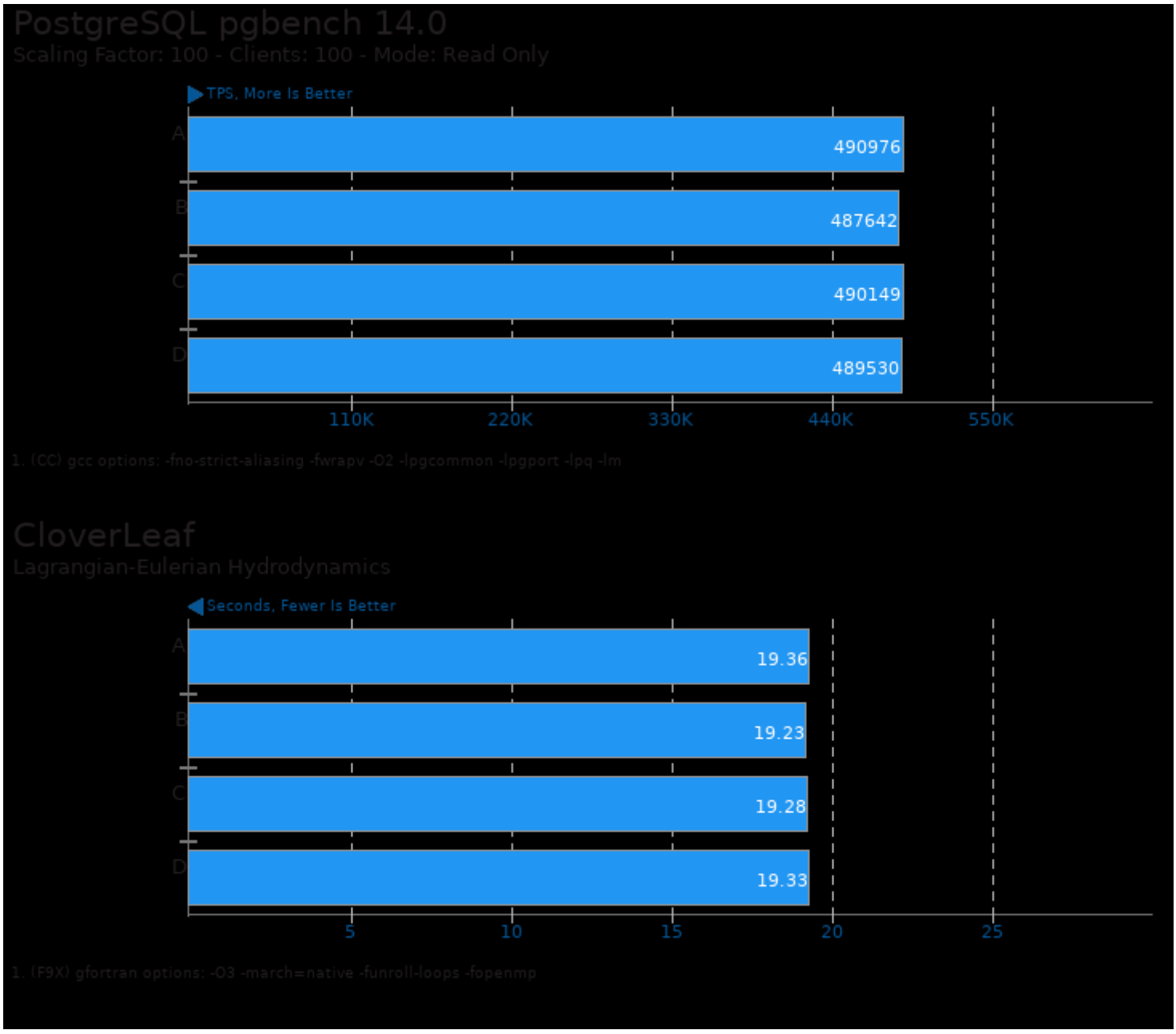

Timed MrBayes Analysis 3.2.7
Primate Phylogeny Analysis
Seconds, Fewer Is Better
A
B
C
D
104.23
104.34
104.27
105.03
20
40
60
80
100
1. (CC) gcc options: -mmmx -msse -msse2 -msse3 -mssse3 -msse4.1 -msse4.2 -msse4a -msha -maes -mavx -mfma -mavx2 -mrdrnd -mbmi -mbmi2 -madx
SVT-AV1 0.8.7
Encoder Mode: Preset 4 - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
D
1.611
1.603
1.599
1.606
0.3625
0.725
1.0875
1.45
1.8125
1. (CXX) g++ options: -mno-avx -mavx2 -mavx512f -mavx512bw -mavx512dq -pie

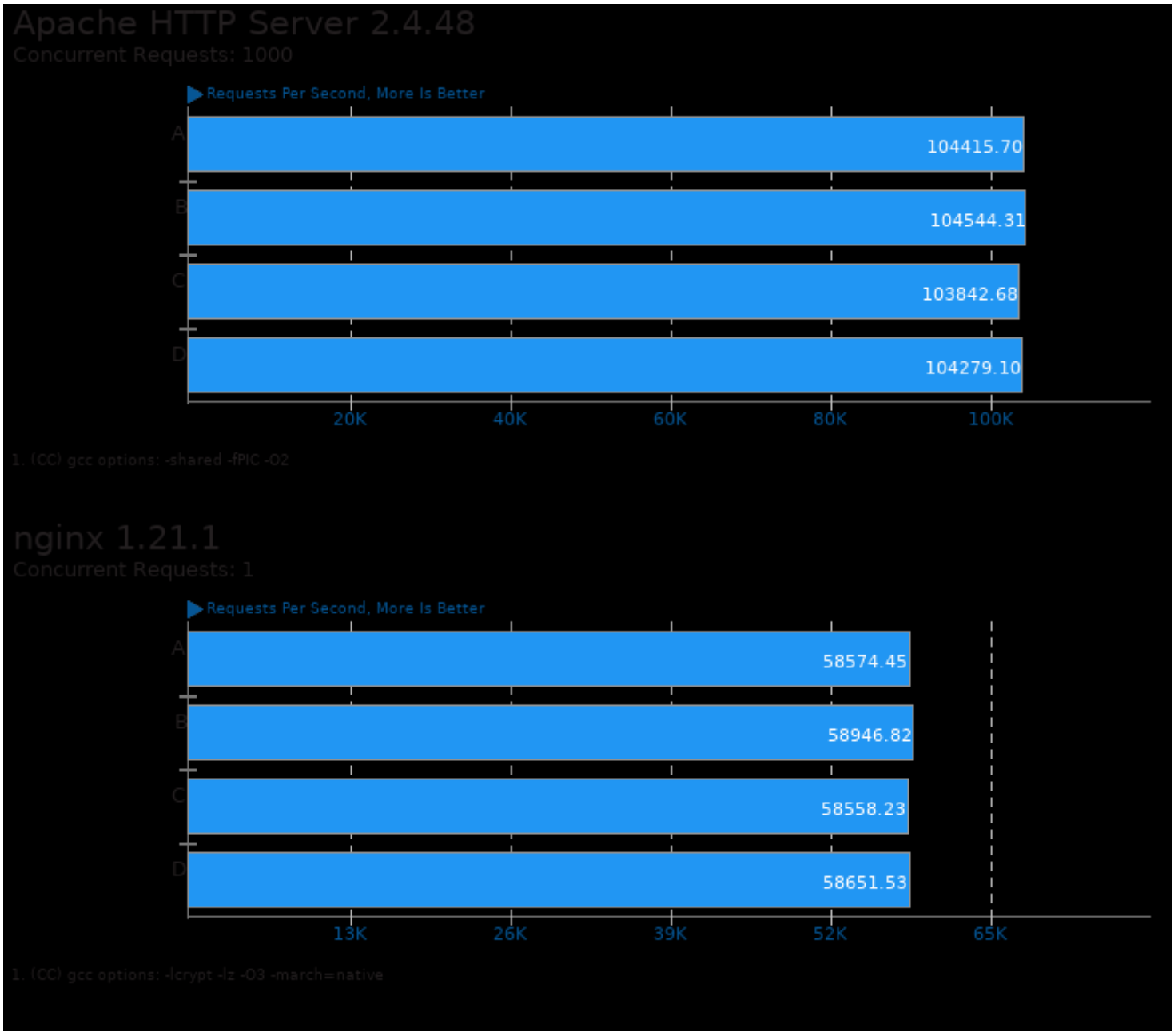

Facebook RocksDB 6.22.1
Test: Random Fill Sync
Op/s, More Is Better
A
B
C
D
150877
150802
150417
149765
30K
60K
90K
120K
150K
1. (CXX) g++ options: -O3 -march=native -pthread -fno-builtin-memcmp -fno-rtti -lpthread
Timed FFmpeg Compilation 4.4
Time To Compile
Seconds, Fewer Is Better
A
B
C
D
31.00
30.86
30.96
30.78
7
14
21
28
35

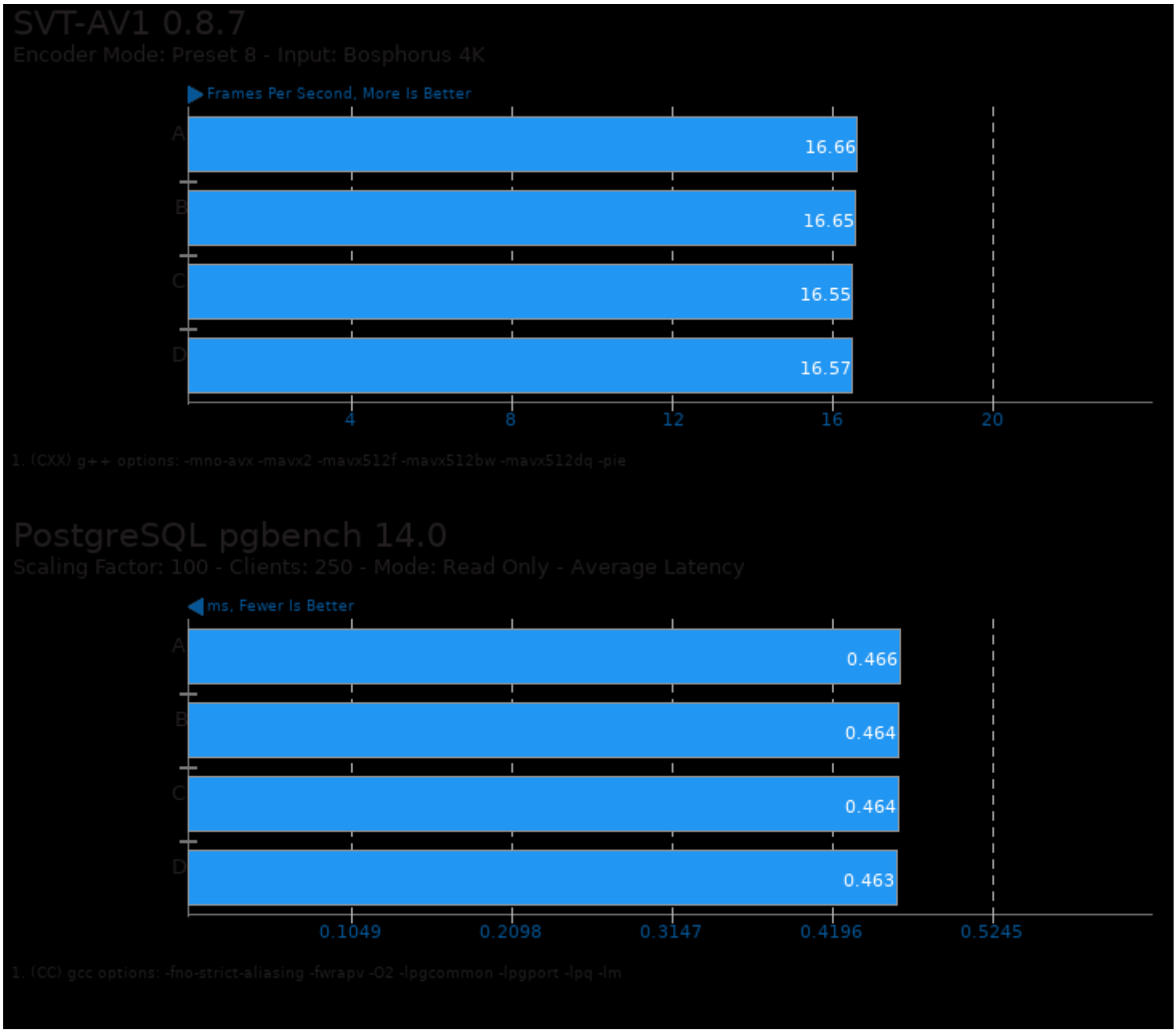

Xmrig 6.12.1
Variant: Monero - Hash Count: 1M
H/s, More Is Better
A
13521.7
B
13573.1
C
13559.3
D
13619.3
3K
6K
9K
12K
15K
1. (CXX) g++ options: -fexceptions -fno-rtti -maes -O3 -Ofast -static-libgcc -static-libstdc++ -rdynamic -lssl -lcrypto -luv -lpthread -lrt -ldl -lhwloc
nginx 1.21.1
Concurrent Requests: 100
Requests Per Second, More Is Better
A
152399.68
B
153476.59
C
152391.97
D
152661.58
30K
60K
90K
120K
150K
1. (CC) gcc options: -lcrypt -lz -O3 -march=native

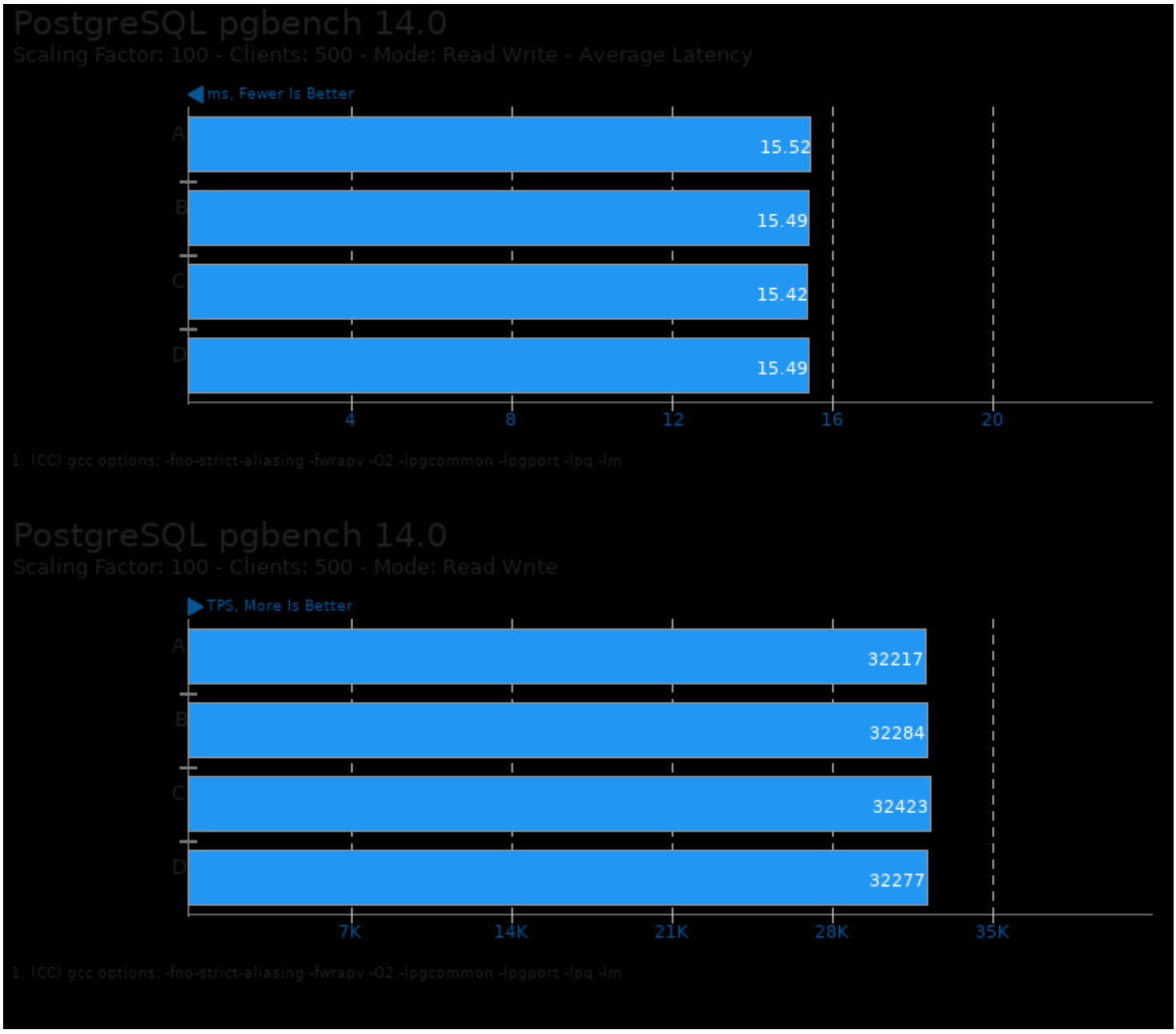

Stress-NG 0.13.02
Test: Malloc
Bogo Ops/s, More Is Better
A
338162842.95
B
338408971.71
C
337236125.22
D
339623980.59
70M
140M
210M
280M
350M
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic
PostgreSQL pgbench 14.0
Scaling Factor: 100 - Clients: 250 - Mode: Read Write
TPS, More Is Better
A
38118
B
37852
C
38001
D
37927
8K
16K
24K
32K
40K
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

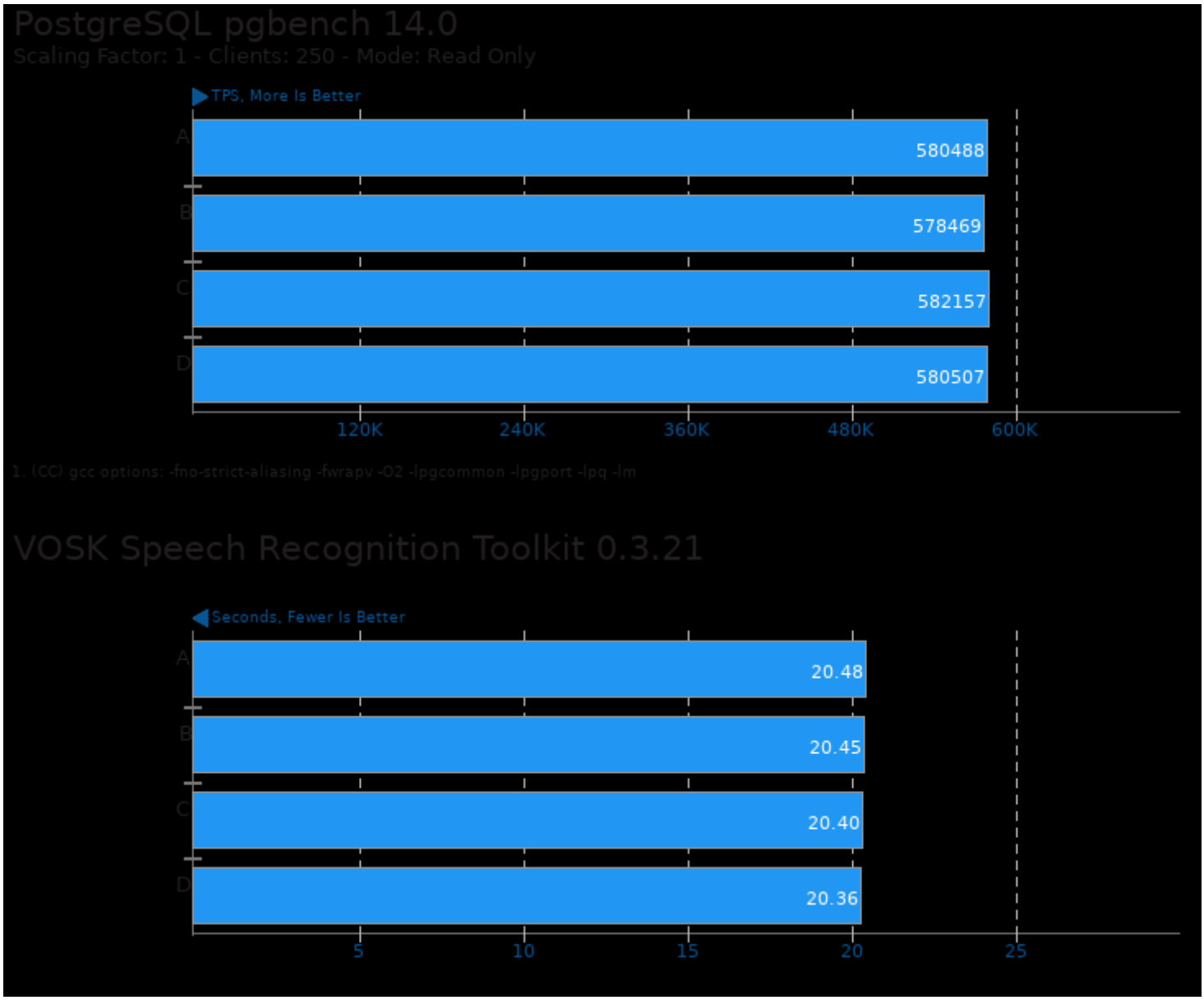

PostgreSQL pgbench 14.0
Scaling Factor: 100 - Clients: 250 - Mode: Read Write - Average Latency
ms, Fewer Is Better
A
B
C
D
6.559
6.605
6.579
6.592
2
4
6
8
10
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
PostgreSQL pgbench 14.0
Scaling Factor: 1 - Clients: 250 - Mode: Read Only - Average Latency
ms, Fewer Is Better
A
B
C
D
0.431
0.432
0.429
0.431
0.0972
0.1944
0.2916
0.3888
0.486
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

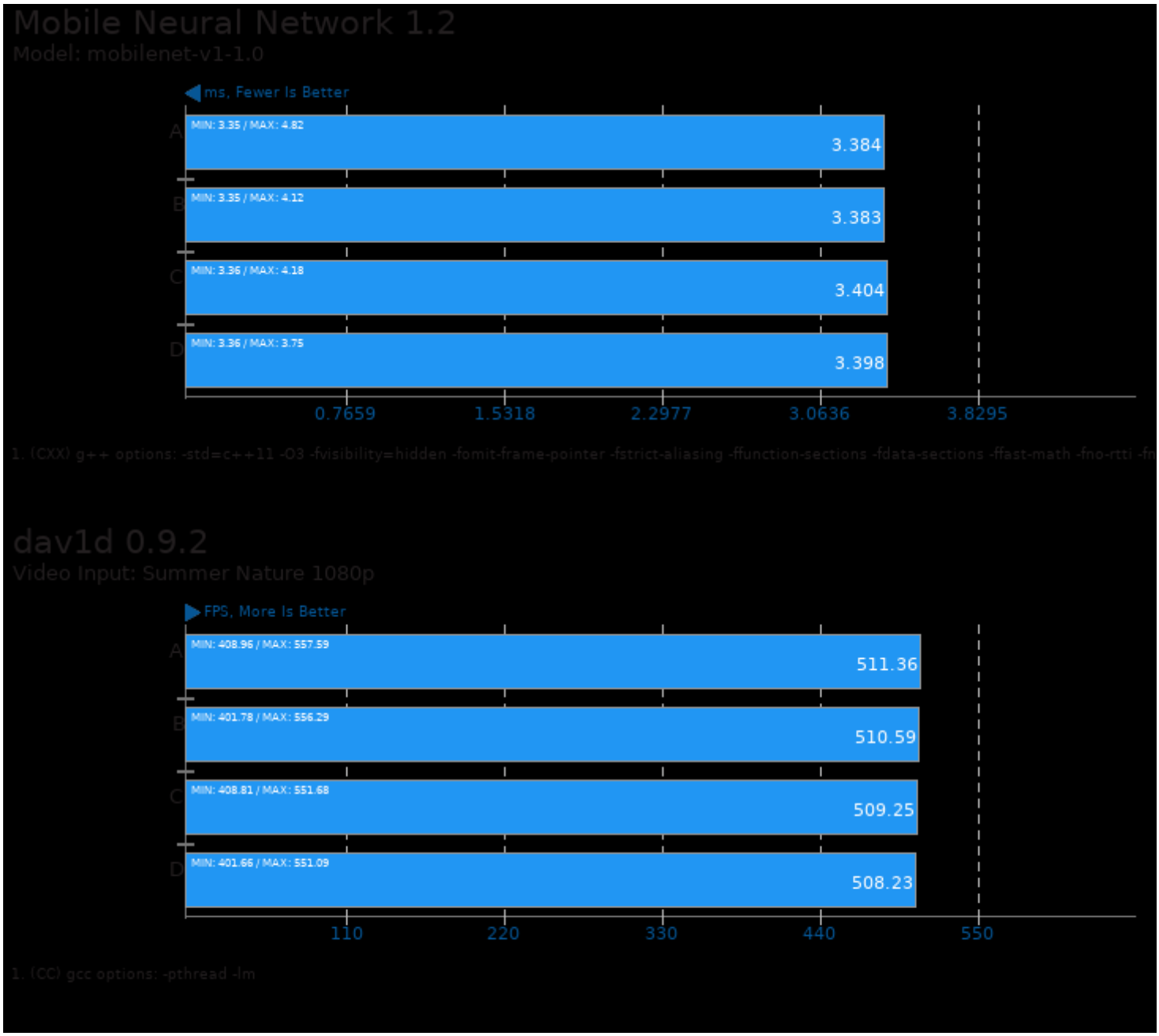

PostgreSQL pgbench 14.0
Scaling Factor: 100 - Clients: 100 - Mode: Read Only
TPS, More Is Better
A
B
C
D
490976
487642
490149
489530
110K
220K
330K
440K
550K
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
CloverLeaf
Lagrangian-Eulerian Hydrodynamics
Seconds, Fewer Is Better
A
B
C
D
19.36
19.23
19.28
19.33
5
10
15
20
25
1. (F9X) gfortran options: -O3 -march=native -funroll-loops -fopenmp


Apache HTTP Server 2.4.48
Concurrent Requests: 1000
Requests Per Second, More Is Better
A
104415.70
B
104544.31
C
103842.68
D
104279.10
20K
40K
60K
80K
100K
1. (CC) gcc options: -shared -fPIC -O2
nginx 1.21.1
Concurrent Requests: 1
Requests Per Second, More Is Better
A
58574.45
B
58946.82
C
58558.23
D
58651.53
13K
26K
39K
52K
65K
1. (CC) gcc options: -lcrypt -lz -O3 -march=native


SVT-AV1 0.8.7
Encoder Mode: Preset 8 - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
D
16.66
16.65
16.55
16.57
4
8
12
16
20
1. (CXX) g++ options: -mno-avx -mavx2 -mavx512f -mavx512bw -mavx512dq -pie
PostgreSQL pgbench 14.0
Scaling Factor: 100 - Clients: 250 - Mode: Read Only - Average Latency
ms, Fewer Is Better
A
B
C
D
0.466
0.464
0.464
0.463
0.1049
0.2098
0.3147
0.4196
0.5245
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

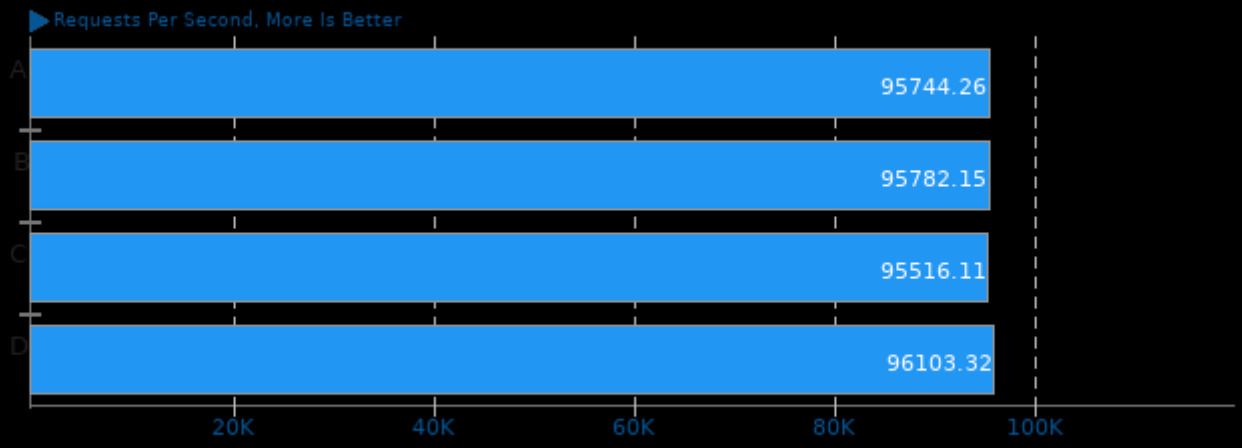

PostgreSQL pgbench 14.0
Scaling Factor: 100 - Clients: 500 - Mode: Read Write - Average Latency
ms, Fewer Is Better
A
15.52
B
15.49
C
15.42
D
15.49
4
8
12
16
20
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
PostgreSQL pgbench 14.0
Scaling Factor: 100 - Clients: 500 - Mode: Read Write
TPS, More Is Better
A
32217
B
32284
C
32423
D
32277
7K
14K
21K
28K
35K
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm


PostgreSQL pgbench 14.0
Scaling Factor: 1 - Clients: 250 - Mode: Read Only
TPS, More Is Better
A
580488
B
578469
C
582157
D
580507
120K
240K
360K
480K
600K
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
VOSK Speech Recognition Toolkit 0.3.21
Seconds, Fewer Is Better
A
20.48
B
20.45
C
20.40
D
20.36
5
10
15
20
25


Mobile Neural Network 1.2
Model: mobilenet-v1-1.0
ms, Fewer Is Better
A
MIN: 3.35 / MAX: 4.82
3.384
B
MIN: 3.35 / MAX: 4.12
3.383
C
MIN: 3.36 / MAX: 4.18
3.404
D
MIN: 3.36 / MAX: 3.75
3.398
0.7659
1.5318
2.2977
3.0636
3.8295
1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fr
dav1d 0.9.2
Video Input: Summer Nature 1080p
FPS, More Is Better
A
MIN: 408.96 / MAX: 557.59
511.36
B
MIN: 401.78 / MAX: 556.29
510.59
C
MIN: 408.81 / MAX: 551.68
509.25
D
MIN: 401.66 / MAX: 551.09
508.23
110
220
330
440
550
1. (CC) gcc options: -pthread -lm

Apache HTTP Server 2.4.48

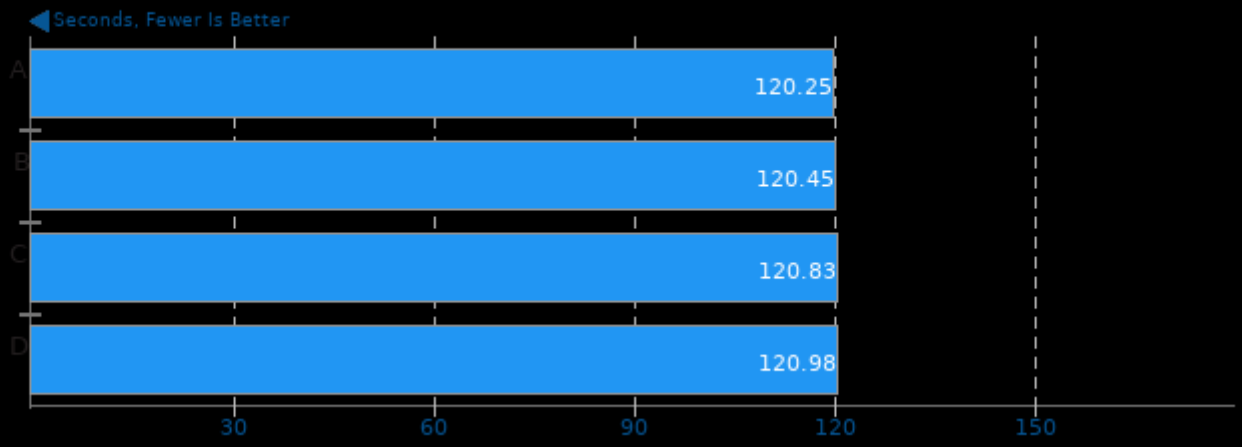
Concurrent Requests: 100



1. (CC) gcc options: -shared -fPIC -O2

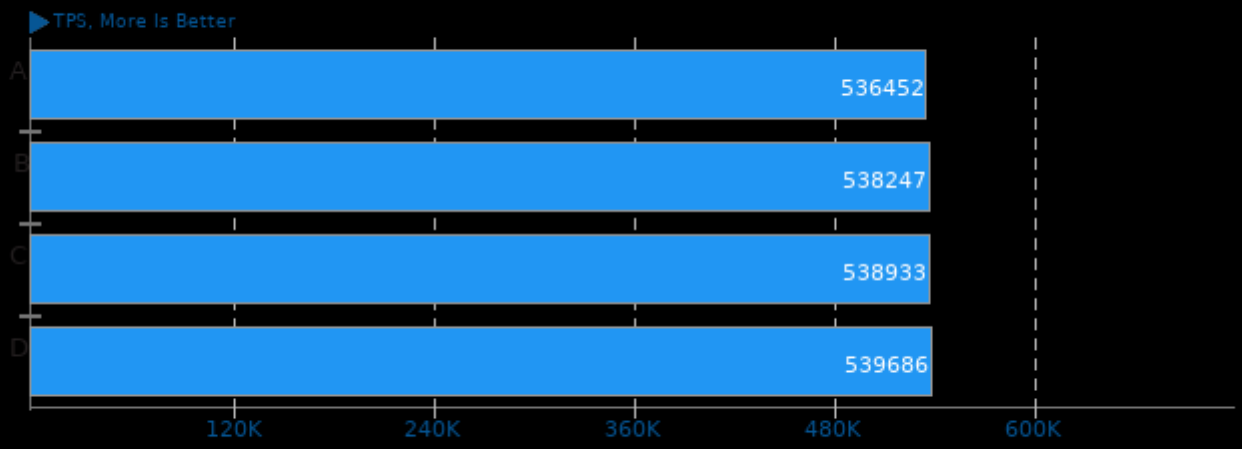
Timed Erlang/OTP Compilation 23.2

Time To Compile



PostgreSQL pgbench 14.0

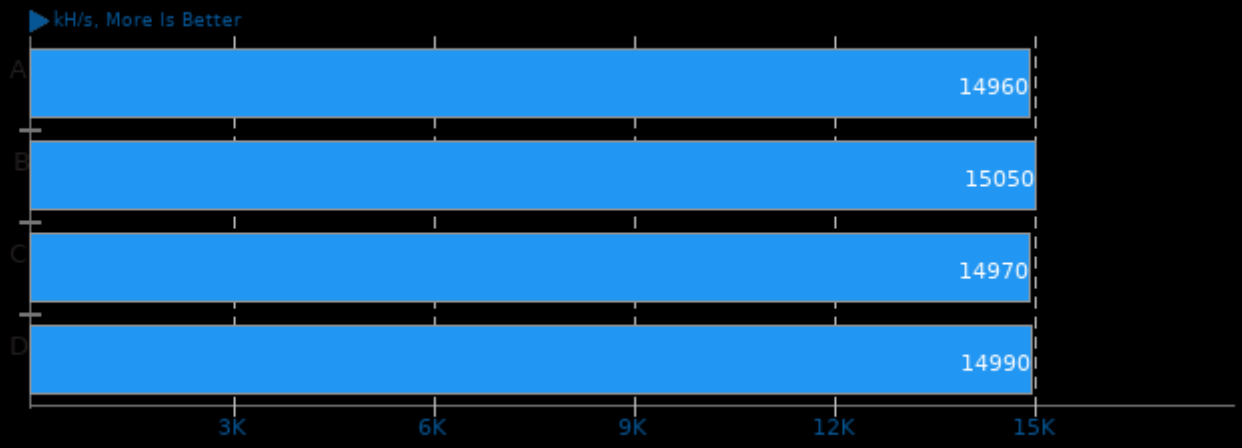
Scaling Factor: 100 - Clients: 250 - Mode: Read Only



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

Cpuminer-Opt 3.18

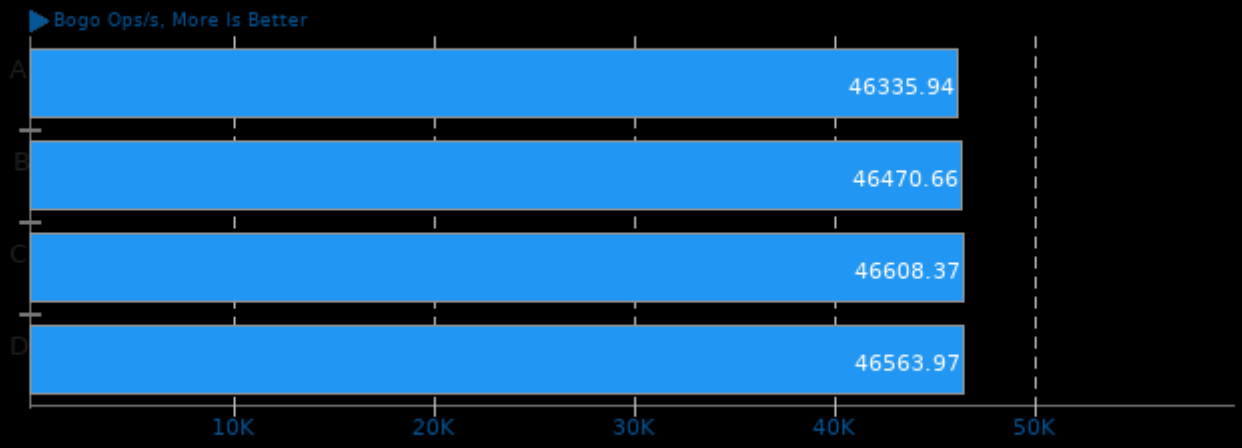
Algorithm: Deepcoin



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

Stress-NG 0.13.02

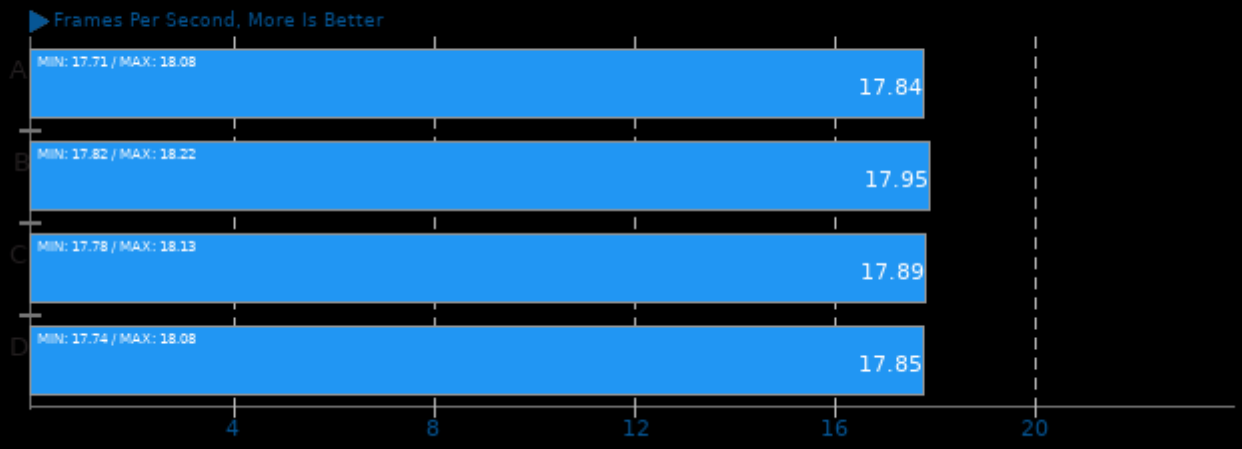
Test: CPU Stress

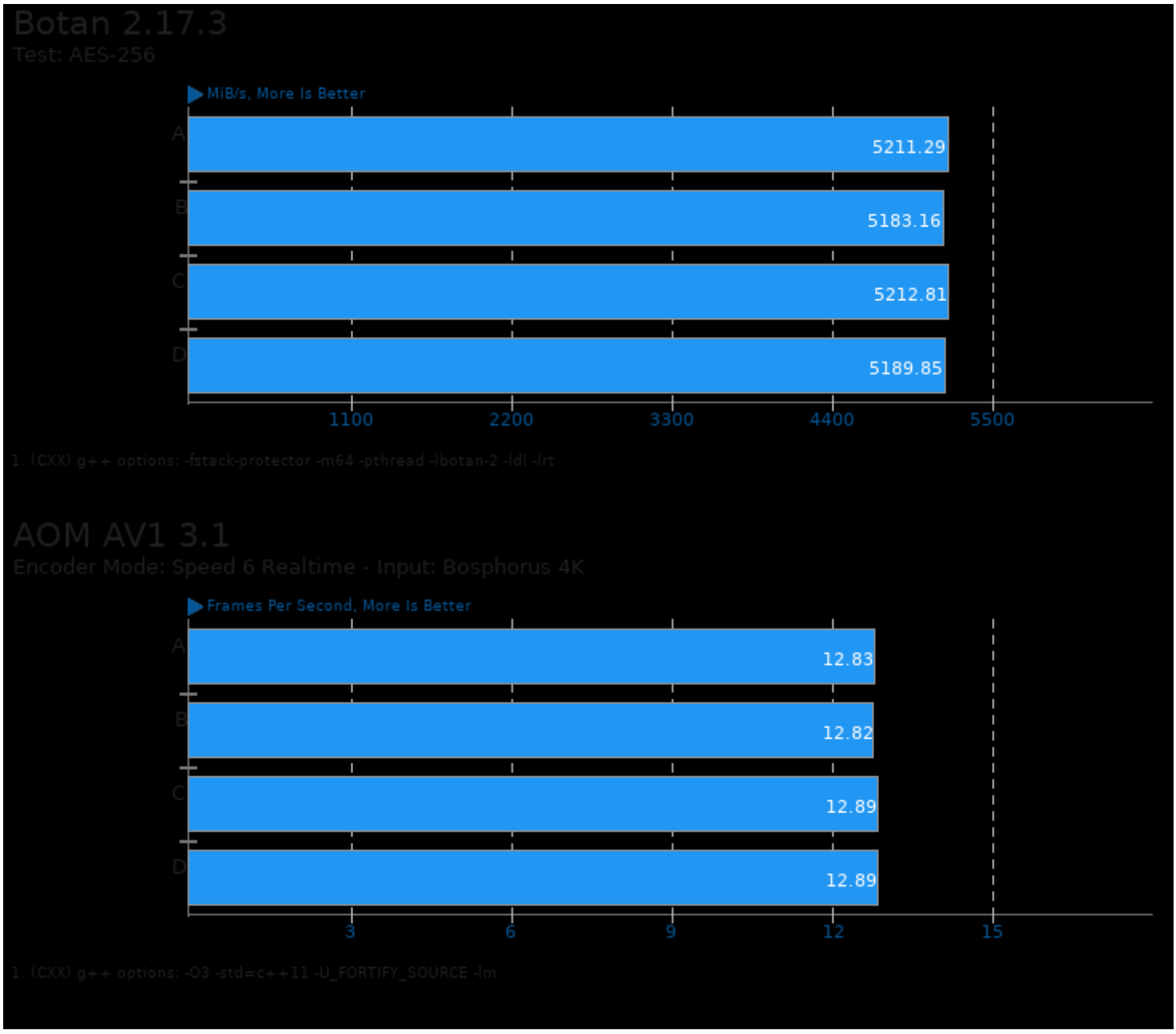


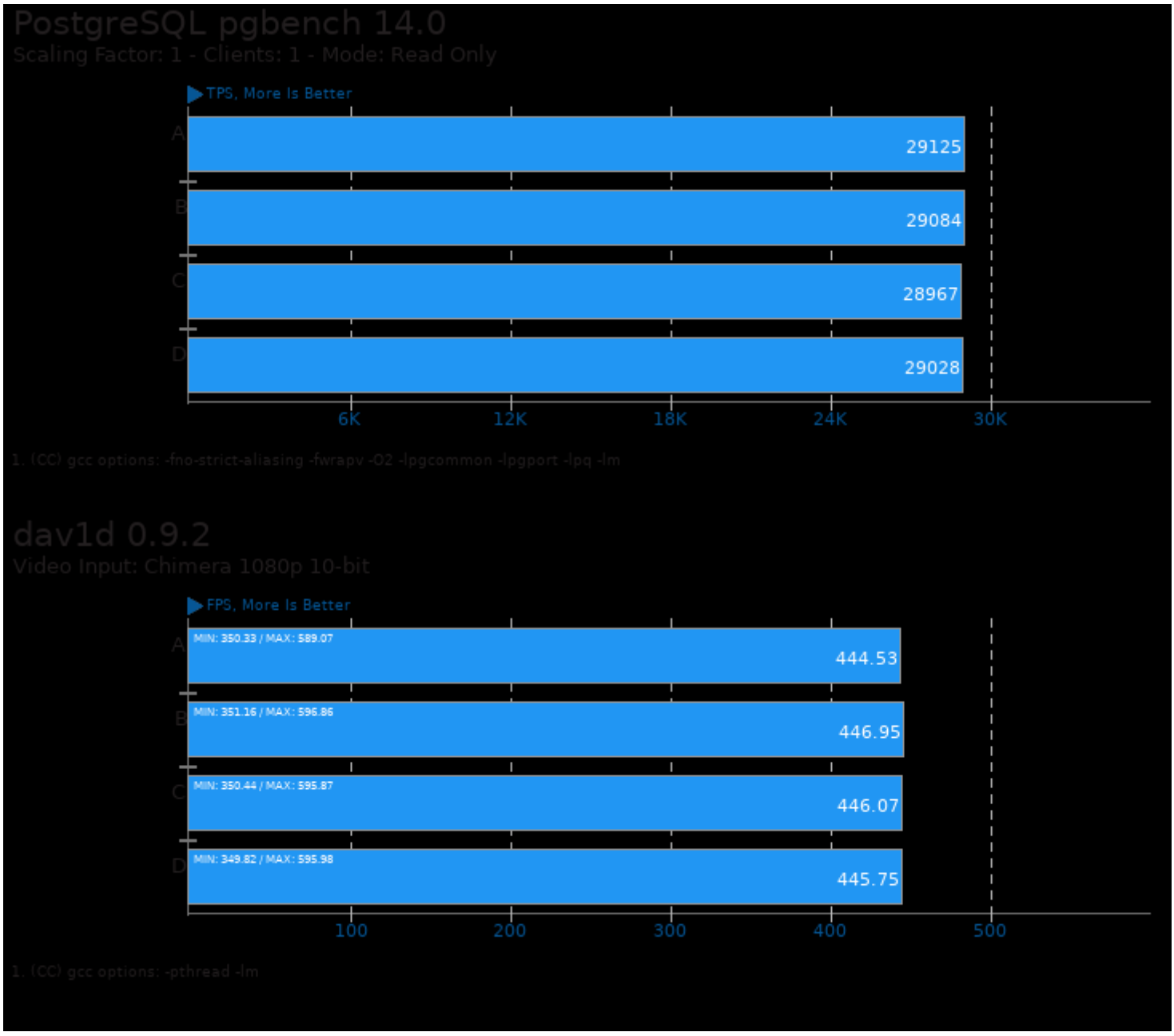
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

Embree 3.13

Binary: Pathtracer ISPC - Model: Crown

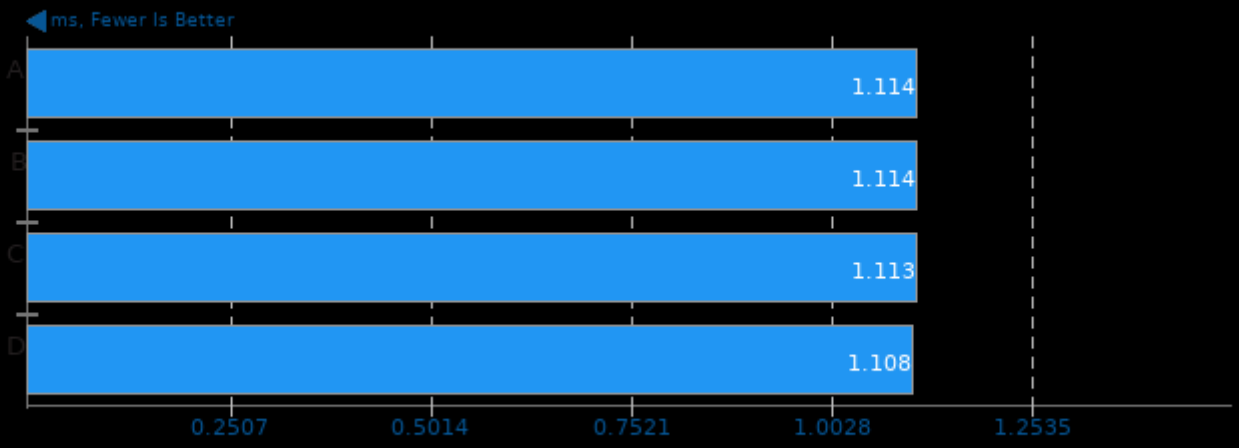



Botan 2.17.3
Test: AES-256
MiB/s, More Is Better
A
B
C
D
5211.29
5183.16
5212.81
5189.85
1100
2200
3300
4400
5500
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
AOM AV1 3.1
Encoder Mode: Speed 6 Realtime - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
D
12.83
12.82
12.89
12.89
3
6
9
12
15
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm


PostgreSQL pgbench 14.0
Scaling Factor: 1 - Clients: 1 - Mode: Read Only
TPS, More Is Better
A
29125
B
29084
C
28967
D
29028
6K
12K
18K
24K
30K
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
dav1d 0.9.2
Video Input: Chimera 1080p 10-bit
FPS, More Is Better
A
MIN: 350.33 / MAX: 589.07
444.53
B
MIN: 351.16 / MAX: 596.86
446.95
C
MIN: 350.44 / MAX: 595.87
446.07
D
MIN: 349.82 / MAX: 595.98
445.75
100
200
300
400
500
1. (CC) gcc options: -pthread -lm

PostgreSQL pgbench 14.0

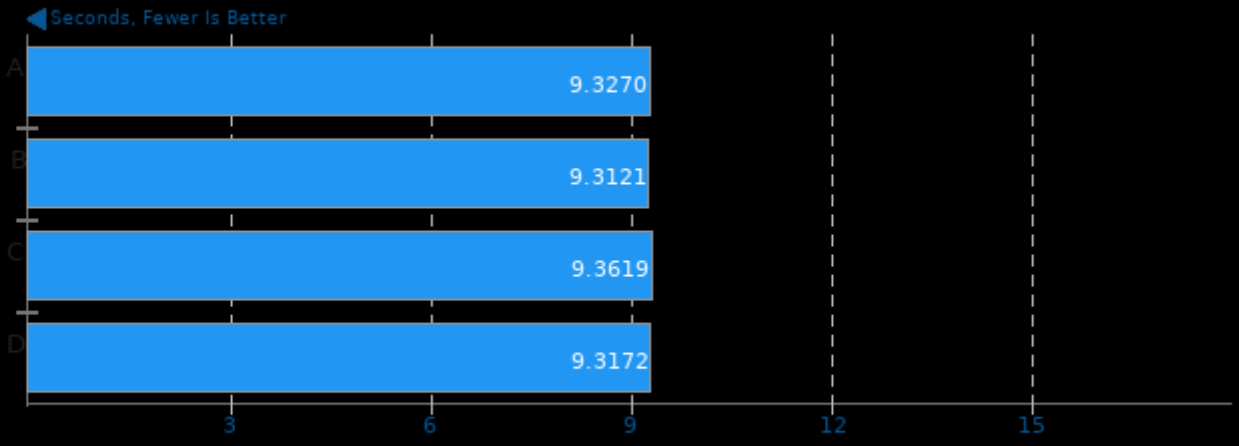
Scaling Factor: 100 - Clients: 50 - Mode: Read Write - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

ASTC Encoder 3.2

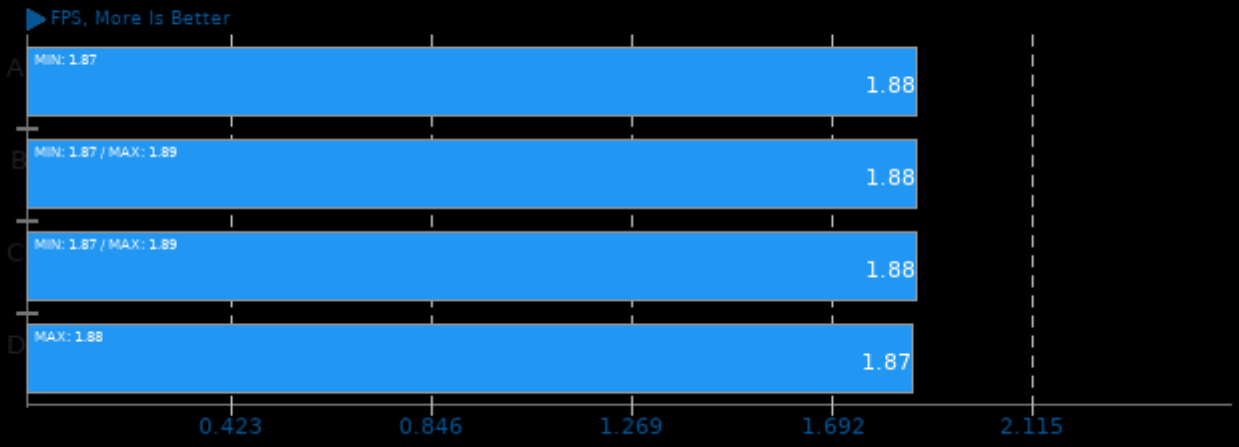
Preset: Thorough

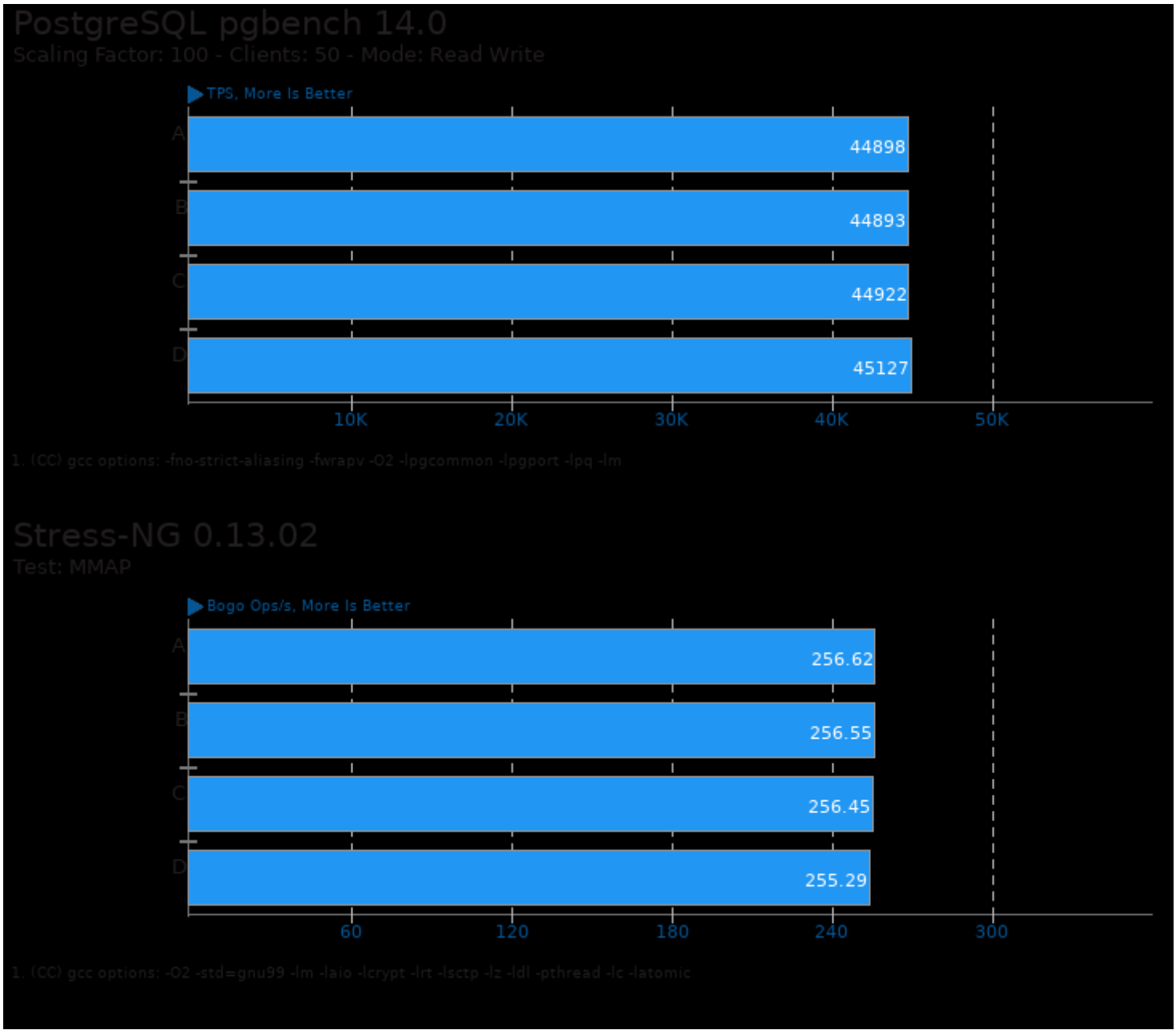


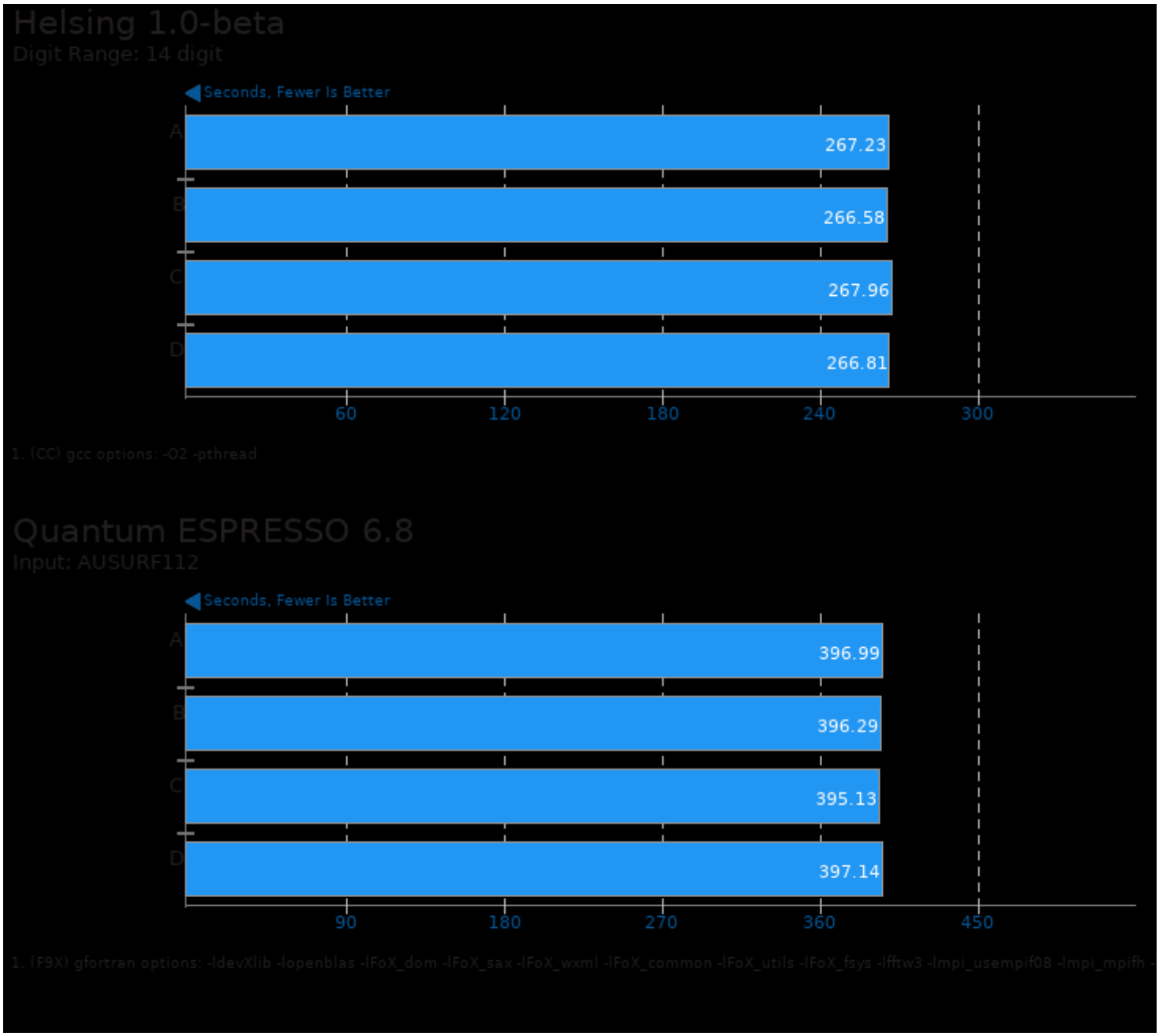
1. (CXX) g++ options: -O3 -flto -pthread

OSPray 1.8.5

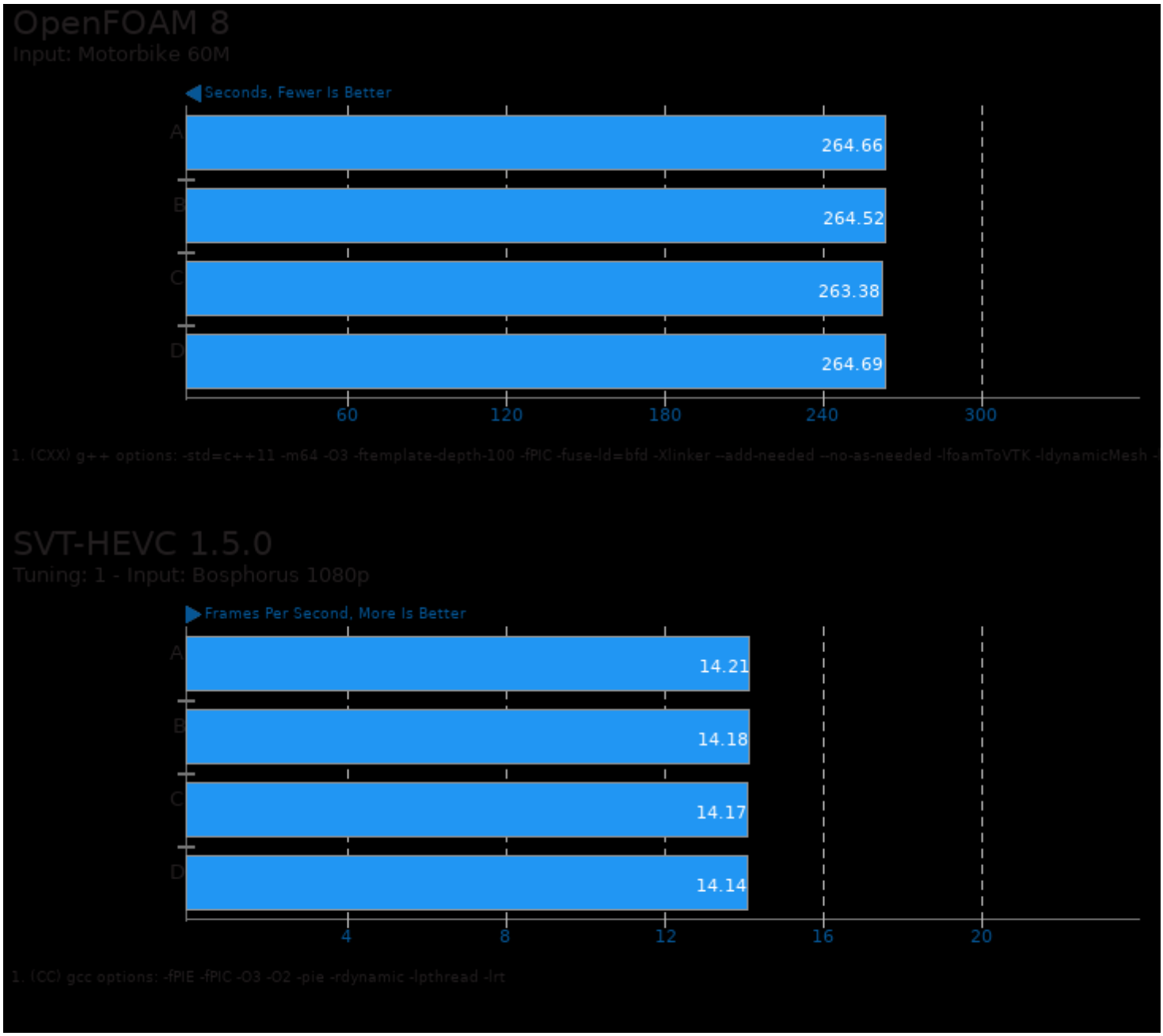
Demo: San Miguel - Renderer: Path Tracer

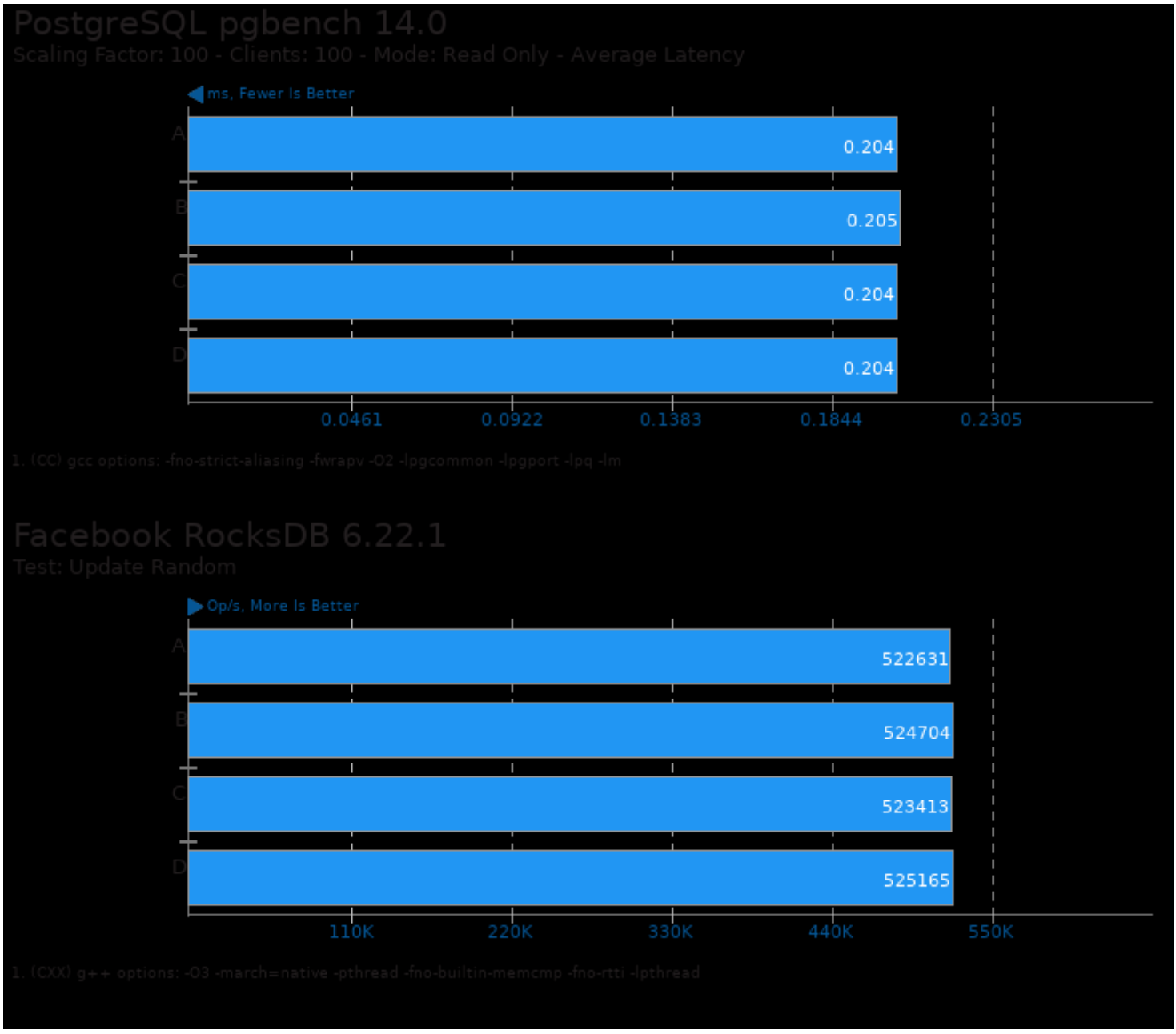



PostgreSQL pgbench 14.0
Scaling Factor: 100 - Clients: 50 - Mode: Read Write
TPS, More Is Better
A
B
C
D
44898
44893
44922
45127
10K
20K
30K
40K
50K
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
Stress-NG 0.13.02
Test: MMAP
Bogo Ops/s, More Is Better
A
B
C
D
256.62
256.55
256.45
255.29
60
120
180
240
300
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic


Helsing 1.0-beta
Digit Range: 14 digit
Seconds, Fewer Is Better
A
B
C
D
267.23
266.58
267.96
266.81
60
120
180
240
300
1. (CC) gcc options: -O2 -pthread

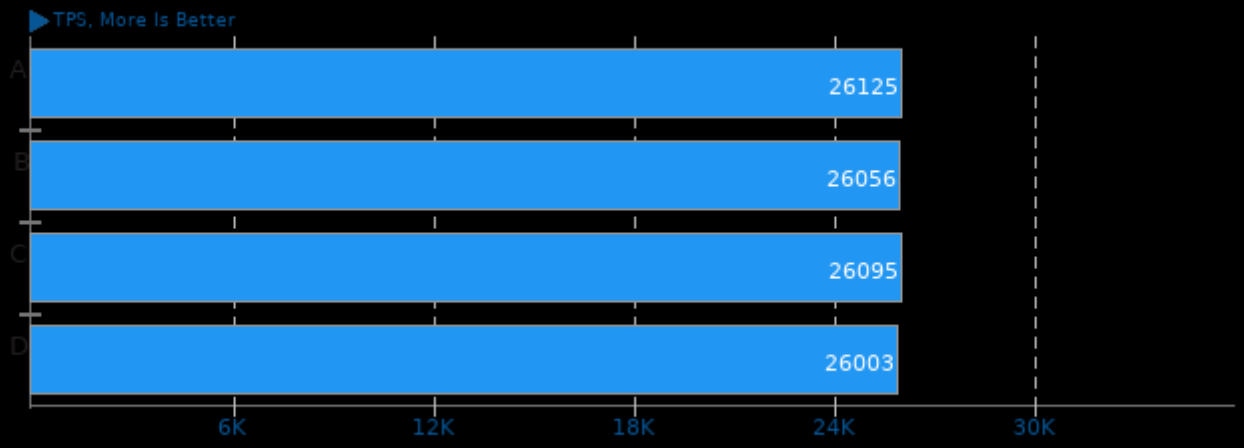
Quantum ESPRESSO 6.8
Input: AUSURF112
Seconds, Fewer Is Better
A
B
C
D
396.99
396.29
395.13
397.14
90
180
270
360
450
1. (F9X) gfortran options: -ldevXlib -lopenblas -lFoX_dom -lFoX_sax -lFoX_wxml -lFoX_common -lFoX_utils -lFoX_fsys -lfftw3 -lmpi_usempif08 -lmpi_mpifh


OpenFOAM 8
Input: Motorbike 60M
Seconds, Fewer Is Better
A
B
C
D
264.66
264.52
263.38
264.69
60
120
180
240
300
1. (CXX) g++ options: -std=c++11 -m64 -O3 -ftemplate-depth-100 -fPIC -fuse-ld=bfd -Xlinker --add-needed --no-as-needed -lfoamToVTK -ldynamicMesh
SVT-HEVC 1.5.0
Tuning: 1 - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
D
14.21
14.18
14.17
14.14
4
8
12
16
20
1. (CC) gcc options: -fPIE -fPIC -O3 -O2 -pie -rdynamic -lpthread -lrt


PostgreSQL pgbench 14.0
Scaling Factor: 100 - Clients: 100 - Mode: Read Only - Average Latency
ms, Fewer Is Better
A
B
C
D
0.204
0.205
0.204
0.204
0.0461
0.0922
0.1383
0.1844
0.2305
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
Facebook RocksDB 6.22.1
Test: Update Random
Op/s, More Is Better
A
B
C
D
522631
524704
523413
525165
110K
220K
330K
440K
550K
1. (CXX) g++ options: -O3 -march=native -pthread -fno-builtin-memcmp -fno-rtti -lpthread

PostgreSQL pgbench 14.0

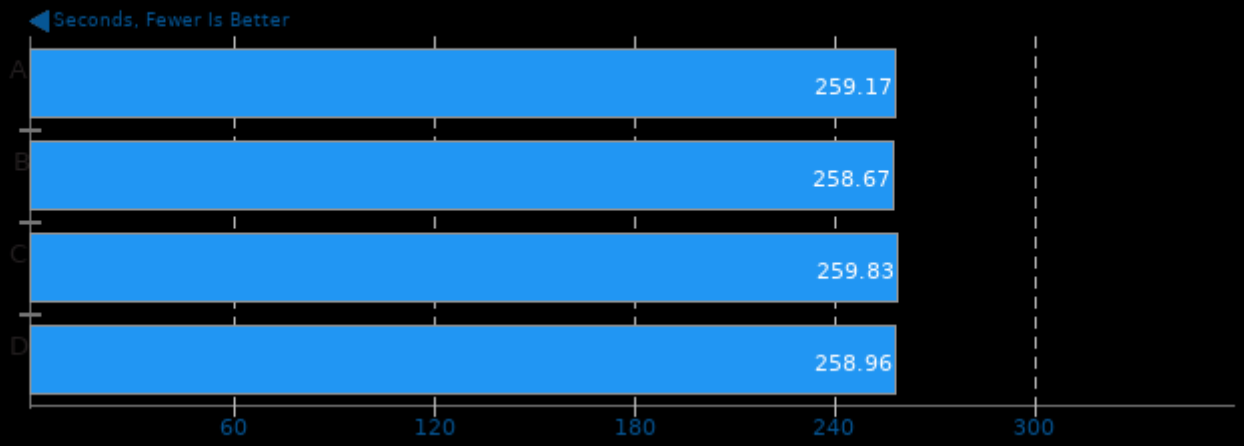
Scaling Factor: 100 - Clients: 1 - Mode: Read Only



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

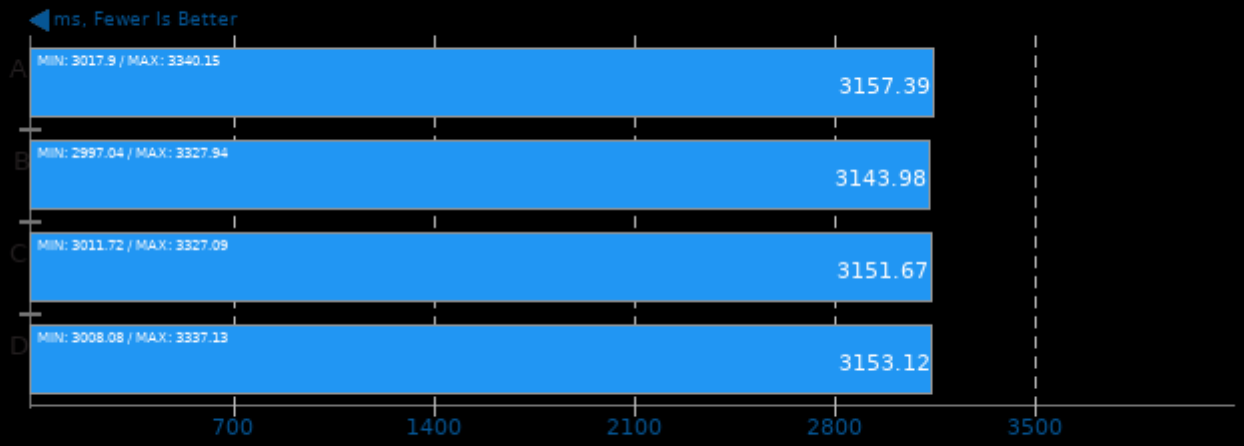
Blender 2.92

Blend File: Pabellon Barcelona - Compute: CPU-Only



TNN 0.3

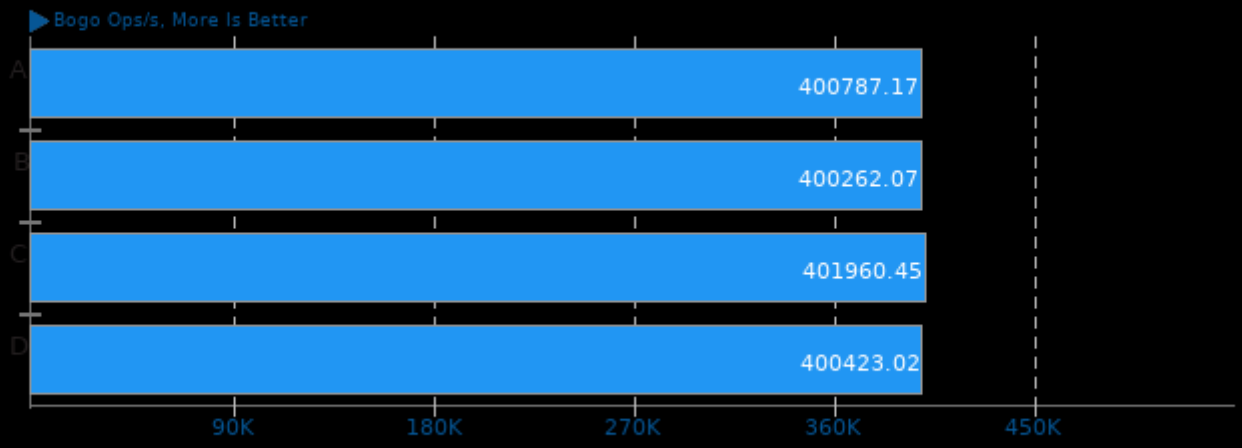
Target: CPU - Model: DenseNet



1. (CXX) g++ options: -fopenmp -pthread -fvisibility=hidden -fvisibility=default -O3 -rdynamic -ldl

Stress-NG 0.13.02

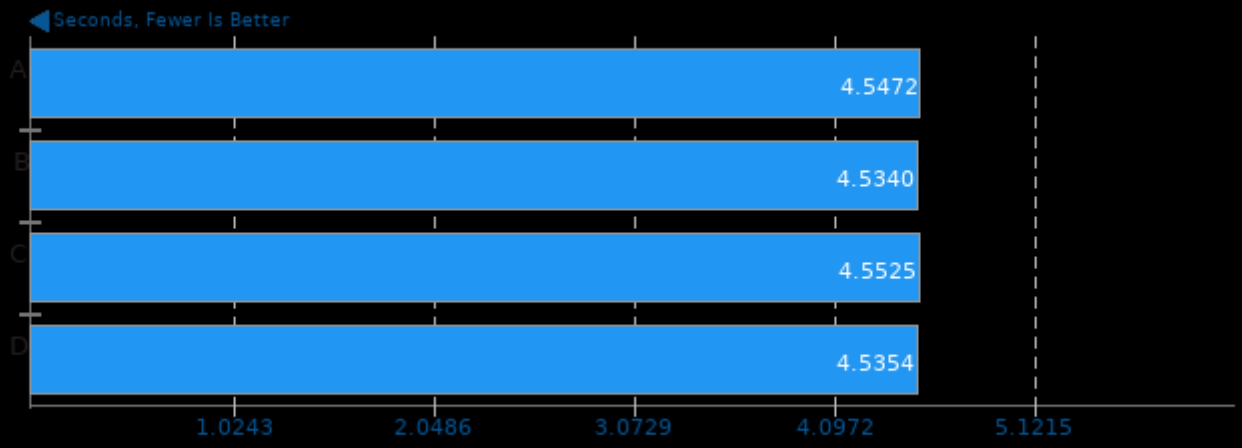
Test: Atomic



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

ASTC Encoder 3.2

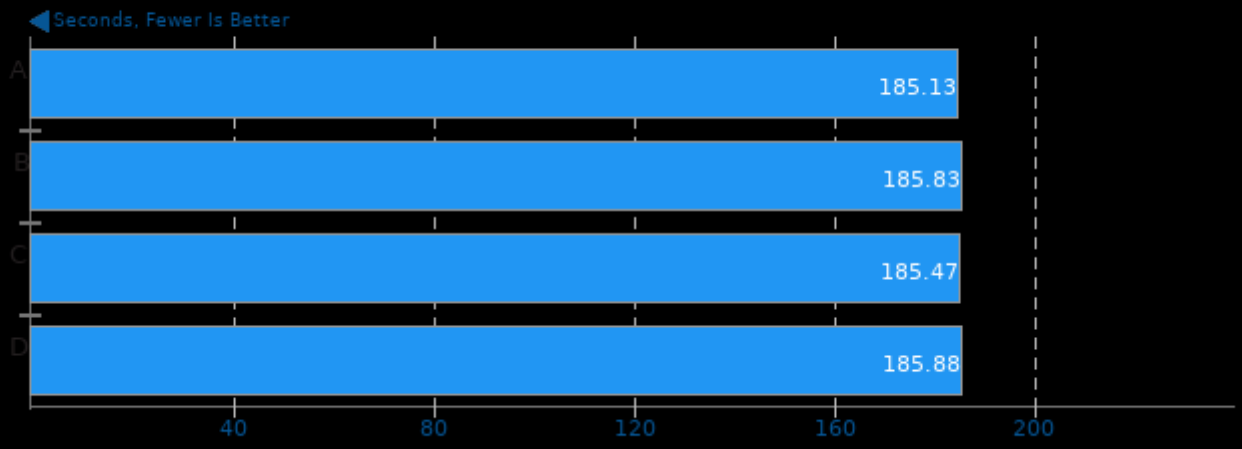
Preset: Medium



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

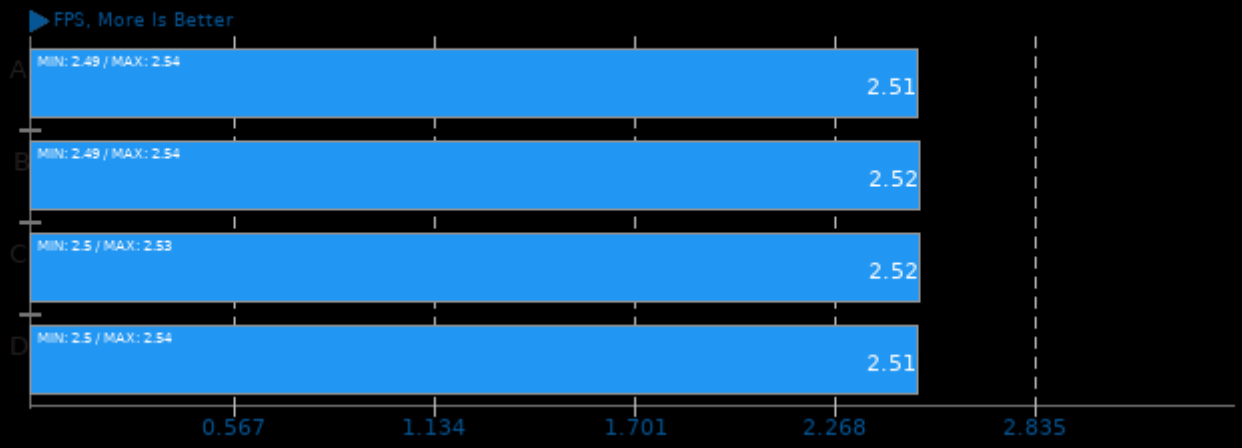
Appleseed 2.0 Beta

Scene: Material Tester



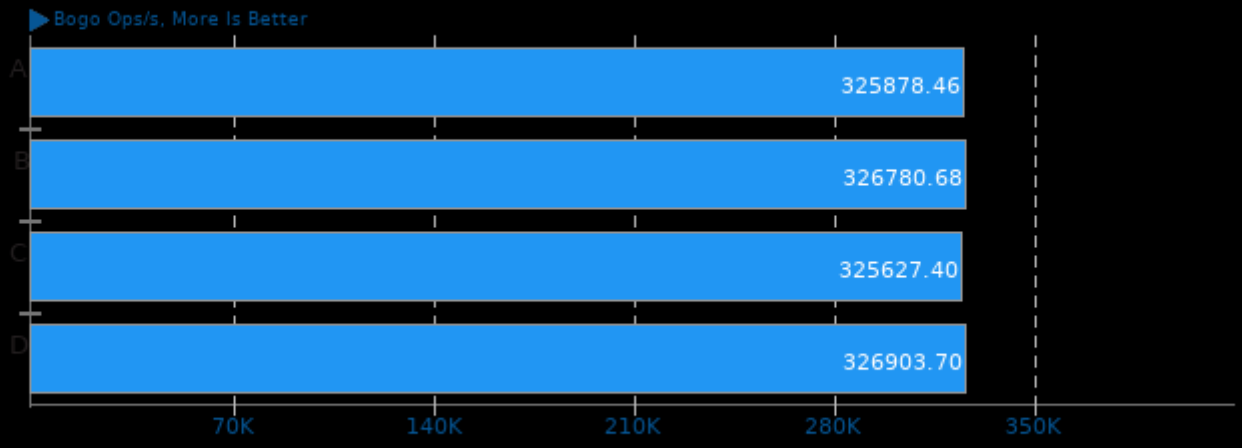
OSPray 1.8.5

Demo: XFrog Forest - Renderer: Path Tracer



Stress-NG 0.13.02

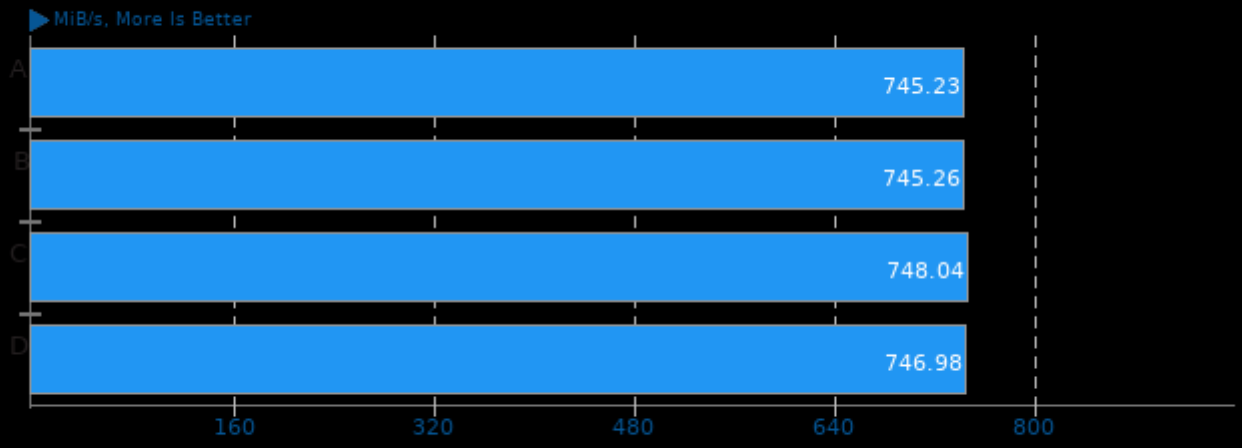
Test: SENDFILE



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

Botan 2.17.3

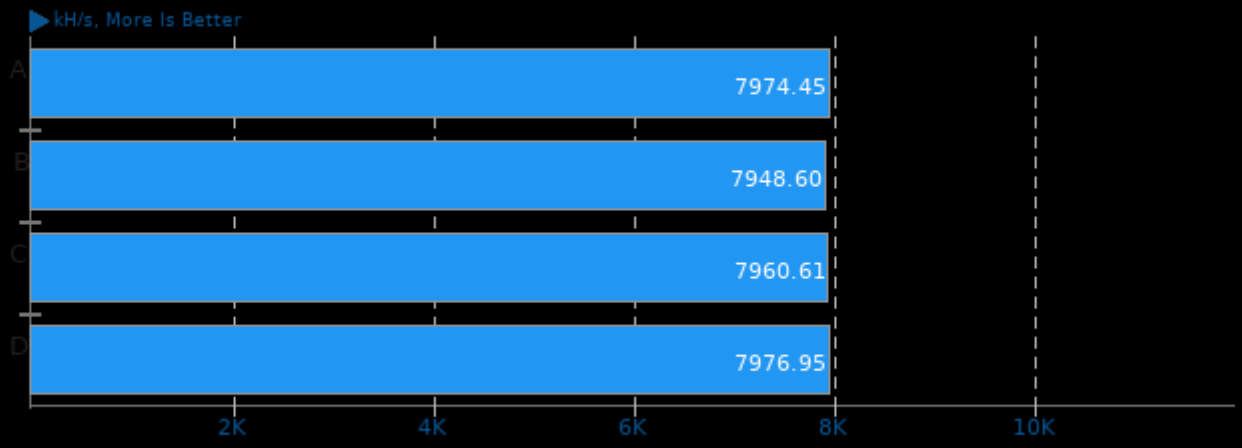
Test: ChaCha20Poly1305 - Decrypt



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

Cpuminer-Opt 3.18

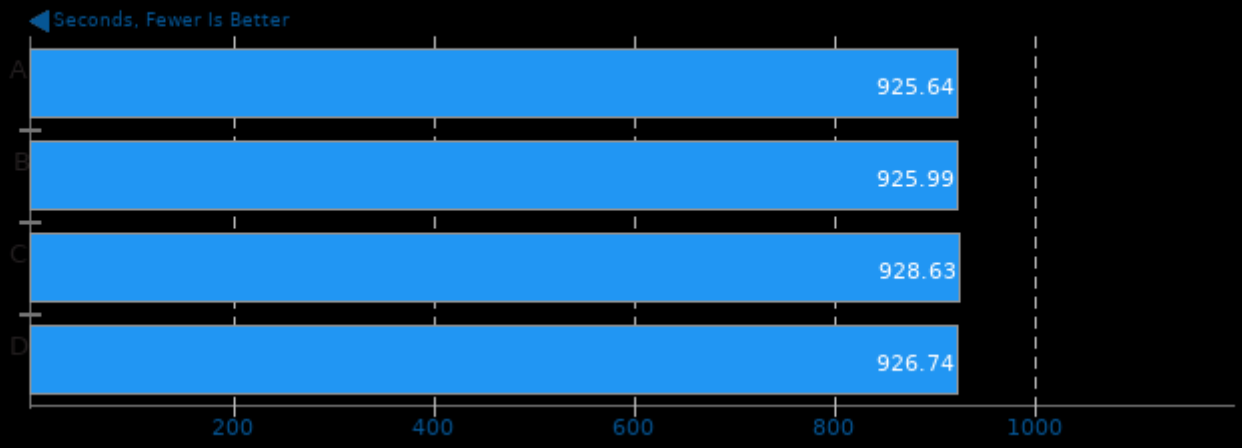
Algorithm: Myriad-Groestl



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

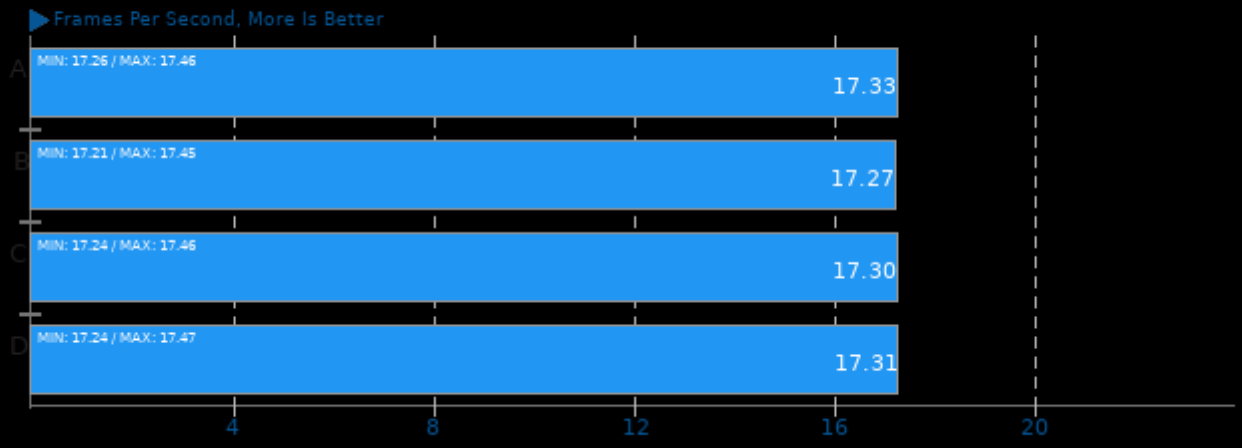
ECP-CANDLE 0.4

Benchmark: P3B2



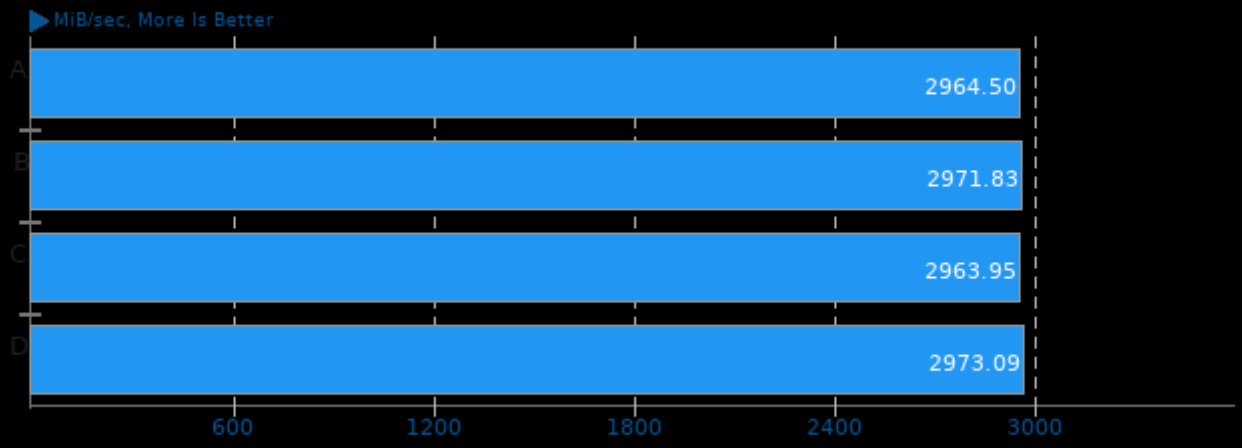
Embree 3.13

Binary: Pathtracer ISPC - Model: Asian Dragon Obj



Sysbench 1.0.20

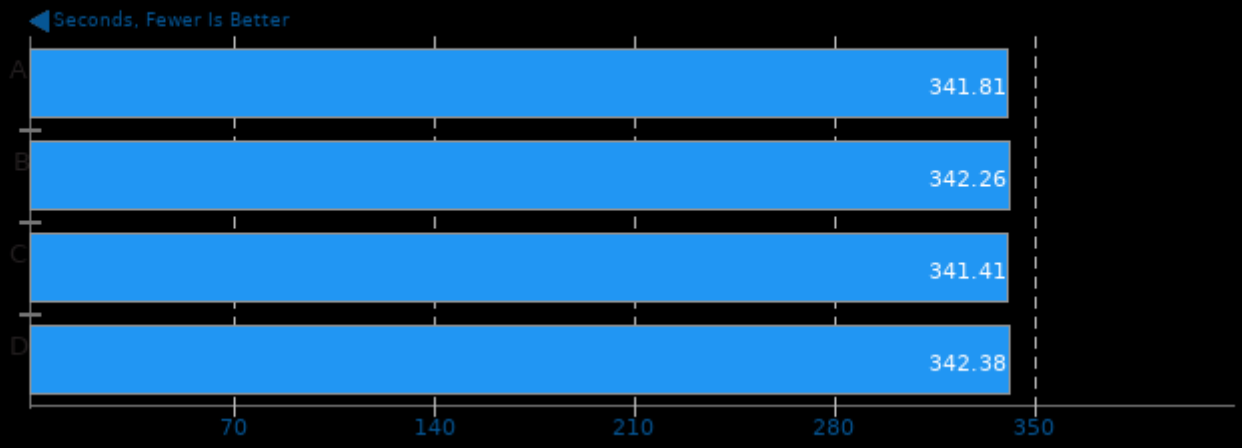
Test: RAM / Memory



1. (CC) gcc options: -O2 -funroll-loops -rdynamic -ldl -laio -lm

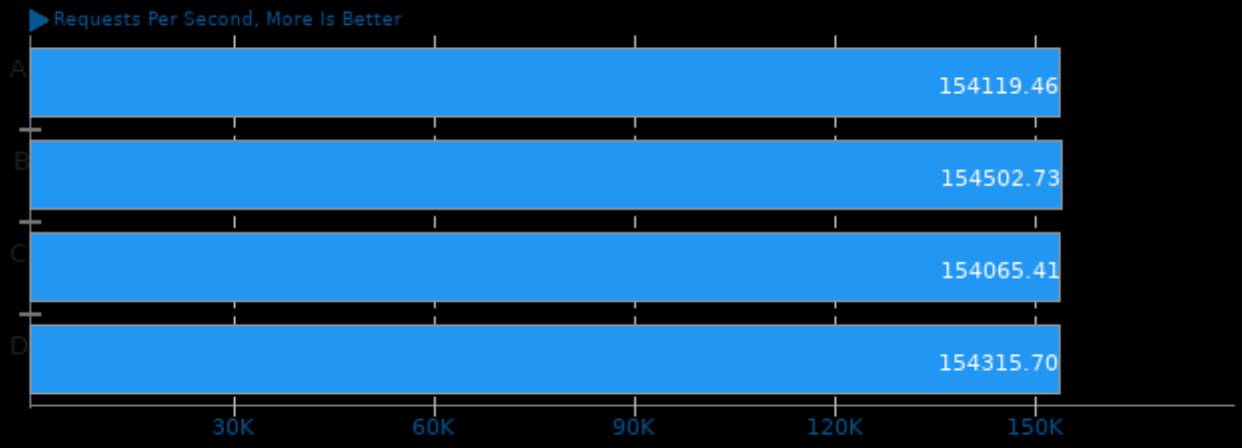
Blender 2.92

Blend File: Barbershop - Compute: CPU-Only



nginx 1.21.1

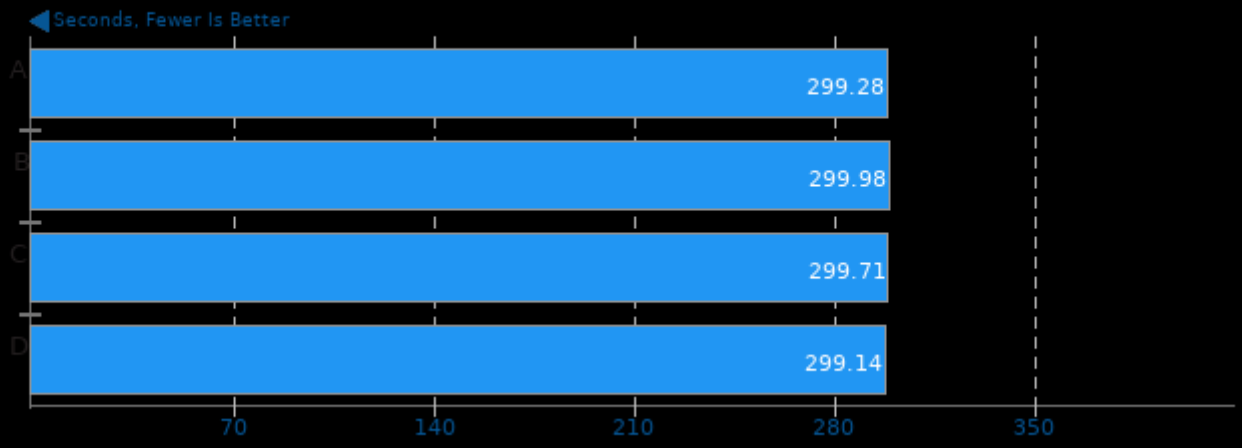
Concurrent Requests: 20



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

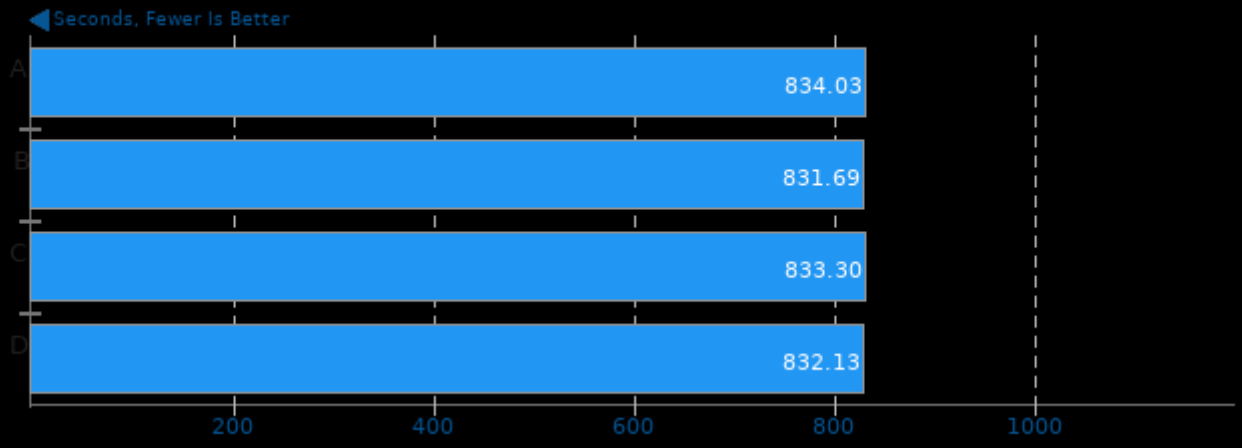
Timed LLVM Compilation 13.0

Build System: Ninja



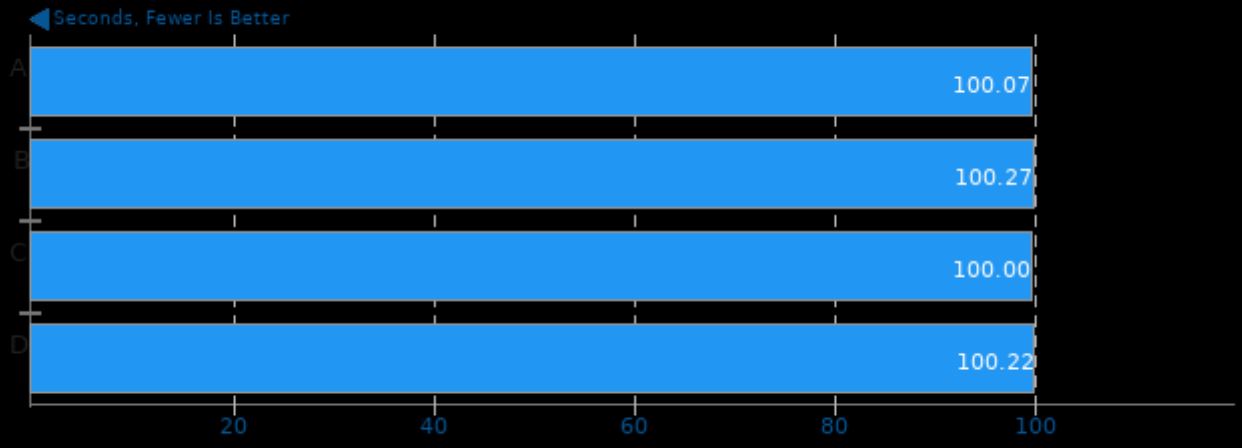
Timed GCC Compilation 11.2.0

Time To Compile

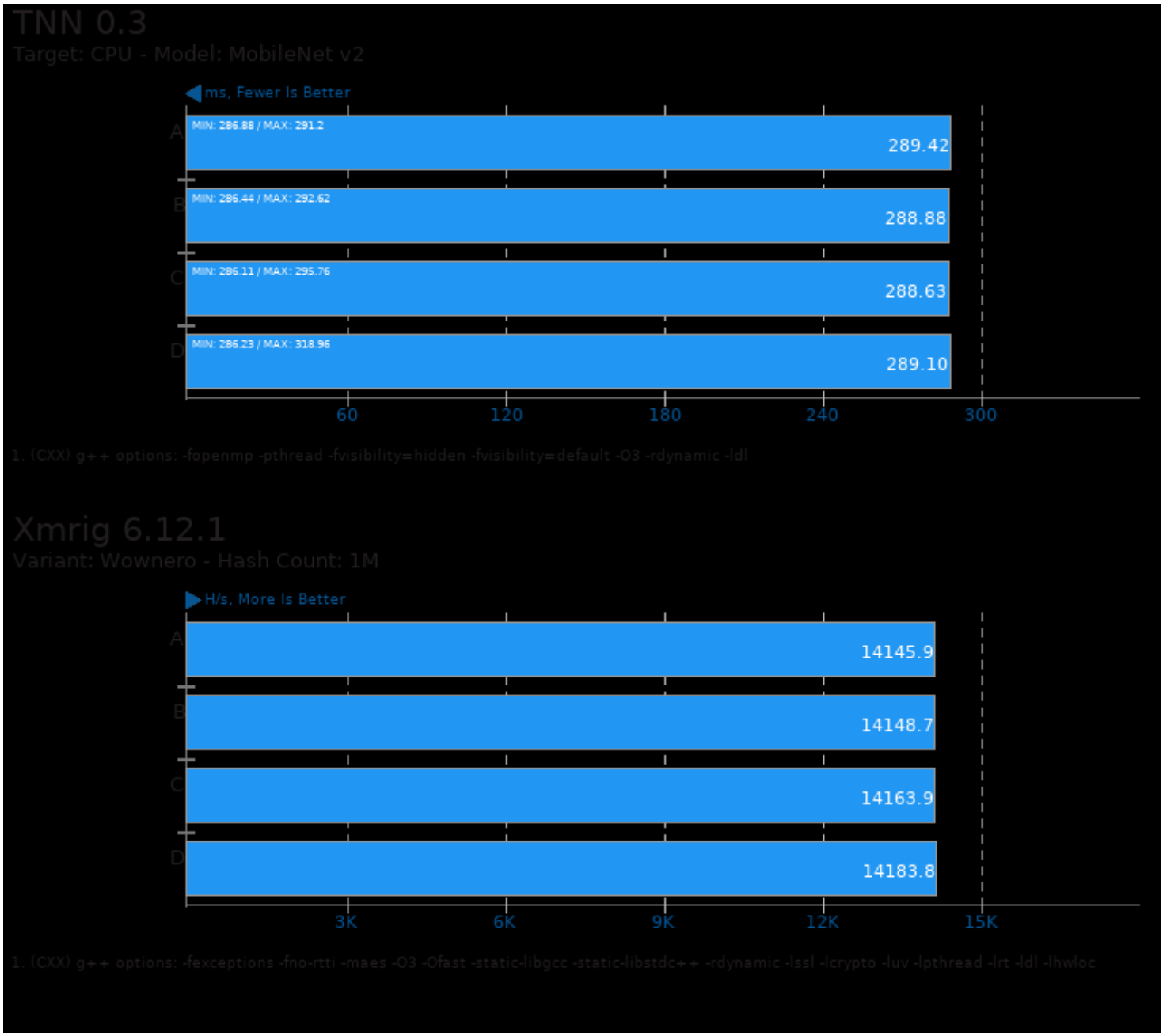


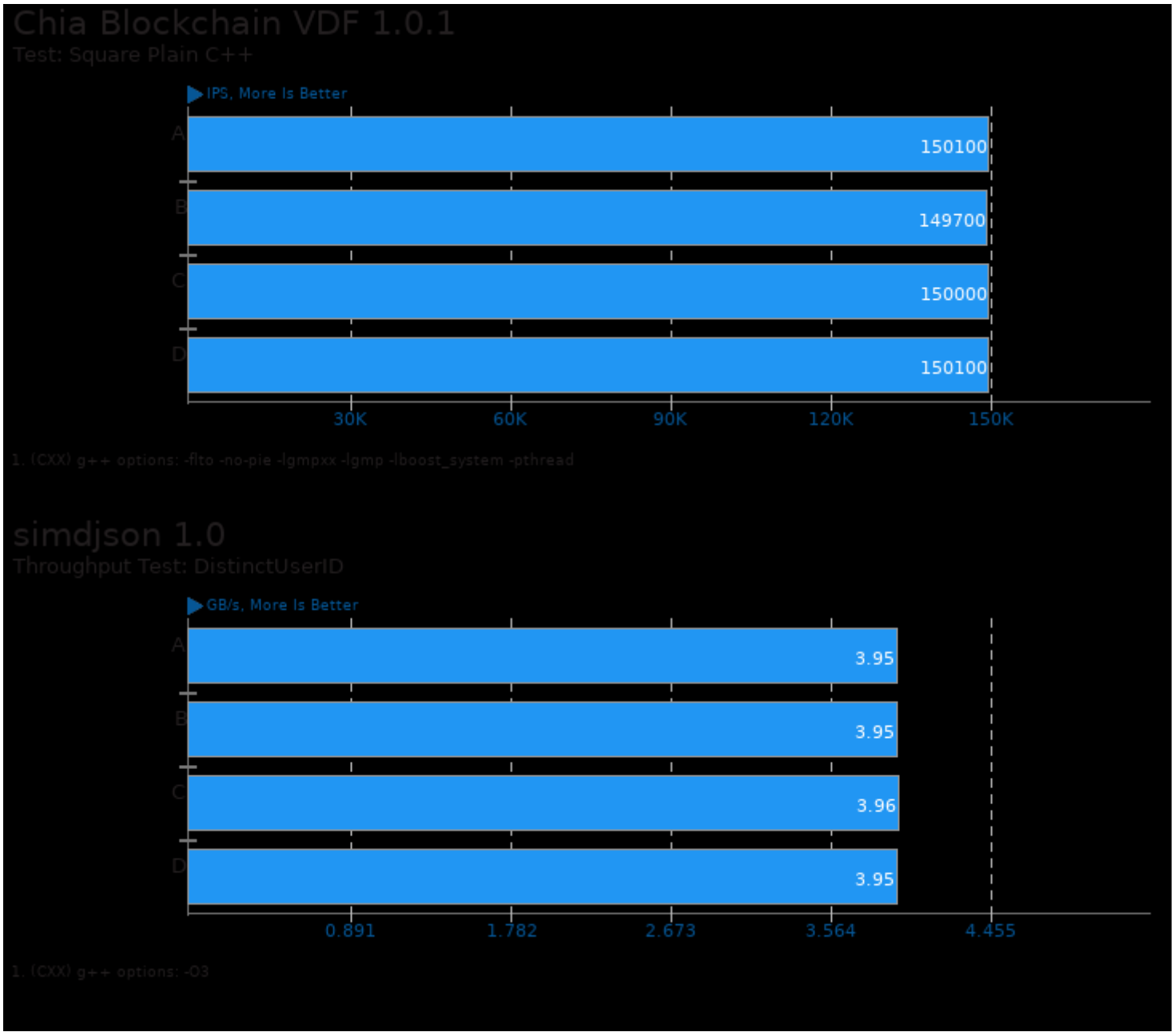
Timed HMMer Search 3.3.2

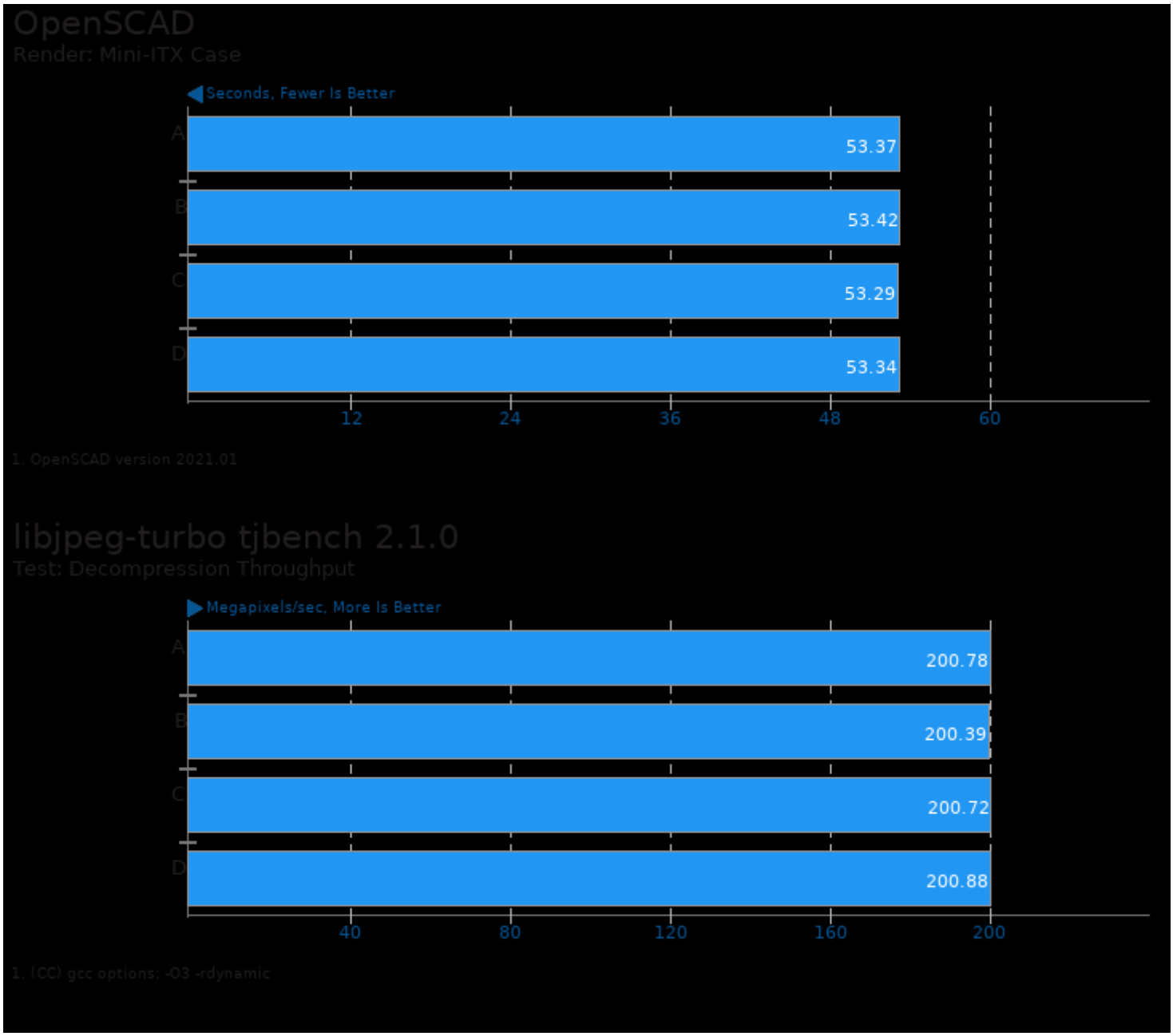
Pfam Database Search



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

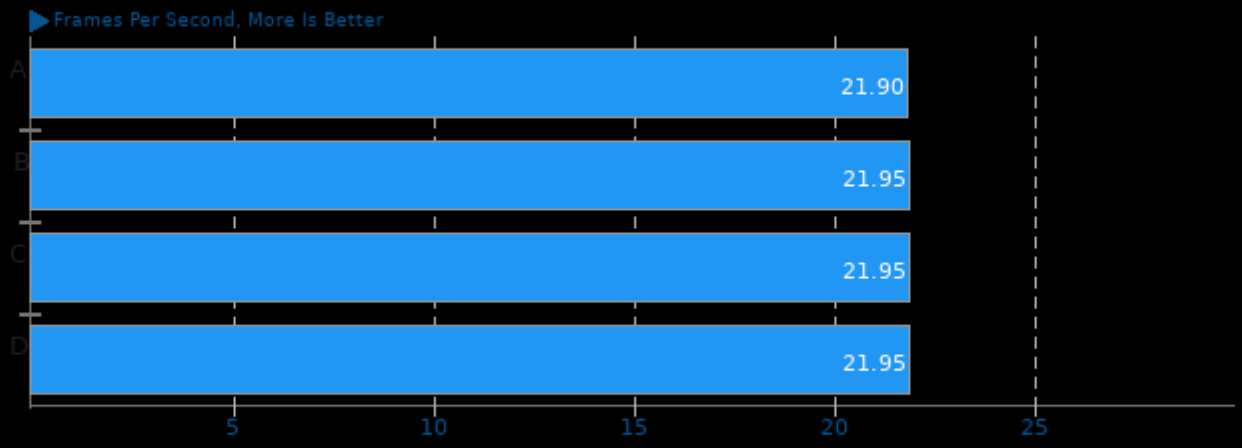

TNN 0.3
Target: CPU - Model: MobileNet v2
ms, Fewer Is Better
A
MIN: 286.88 / MAX: 291.2
289.42
B
MIN: 286.44 / MAX: 292.62
288.88
C
MIN: 286.11 / MAX: 295.76
288.63
D
MIN: 286.23 / MAX: 318.96
289.10
60
120
180
240
300
1. (CXX) g++ options: -fopenmp -pthread -fvisibility=hidden -fvisibility=default -O3 -rdynamic -ldl
Xmrig 6.12.1
Variant: Wownero - Hash Count: 1M
H/s, More Is Better
A
14145.9
B
14148.7
C
14163.9
D
14183.8
3K
6K
9K
12K
15K
1. (CXX) g++ options: -fexceptions -fno-rtti -maes -O3 -Ofast -static-libgcc -static-libstdc++ -rdynamic -lssl -lcrypto -luv -lpthread -lrt -ldl -lhwloc


Chia Blockchain VDF 1.0.1
Test: Square Plain C++
IPS, More Is Better
A
B
C
D
150100
149700
150000
150100
30K
60K
90K
120K
150K
1. (CXX) g++ options: -flto -no-pie -lgmpxx -lgmp -lboost_system -pthread
simdjson 1.0
Throughput Test: DistinctUserID
GB/s, More Is Better
A
B
C
D
3.95
3.95
3.96
3.95
0.891
1.782
2.673
3.564
4.455
1. (CXX) g++ options: -O3


OpenSCAD
Render: Mini-ITX Case
Seconds, Fewer Is Better
A
B
C
D
53.37
53.42
53.29
53.34
12
24
36
48
60
1. OpenSCAD version 2021.01
libjpeg-turbo tjbench 2.1.0
Test: Decompression Throughput
Megapixels/sec, More Is Better
A
B
C
D
200.78
200.39
200.72
200.88
40
80
120
160
200
1. (CC) gcc options: -O3 -rdynamic

AOM AV1 3.1

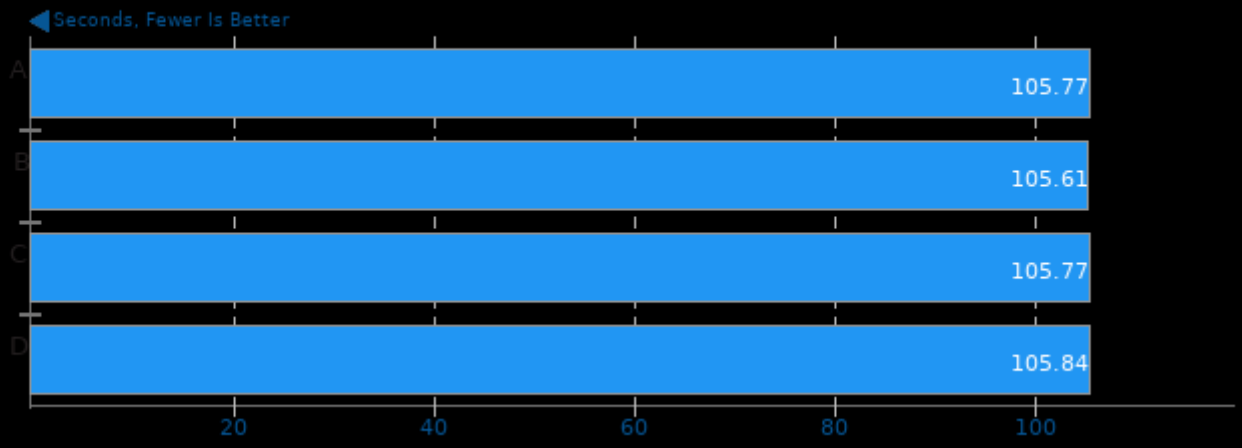
Encoder Mode: Speed 6 Realtime - Input: Bosphorus 1080p



1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm

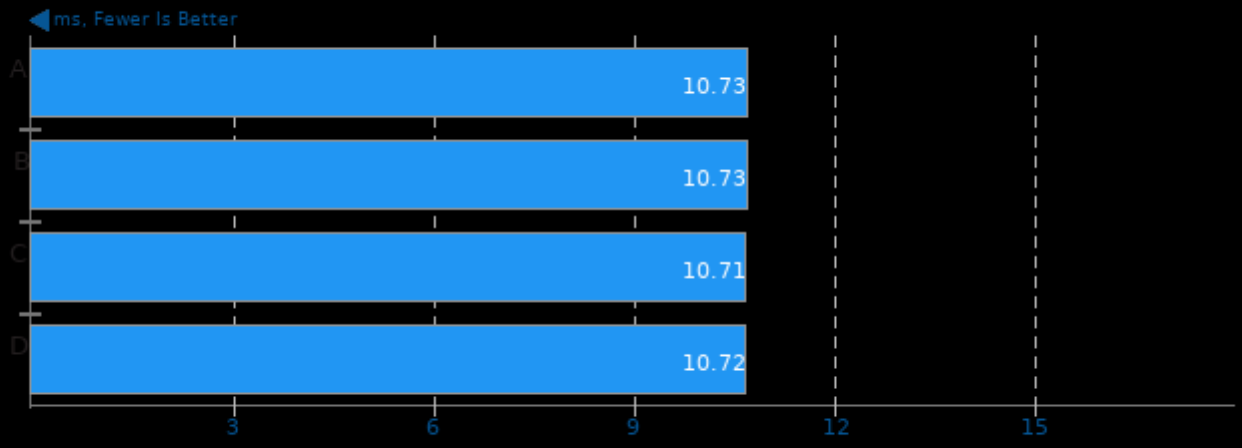
Blender 2.92

Blend File: Fishy Cat - Compute: CPU-Only



PostgreSQL pgbench 14.0

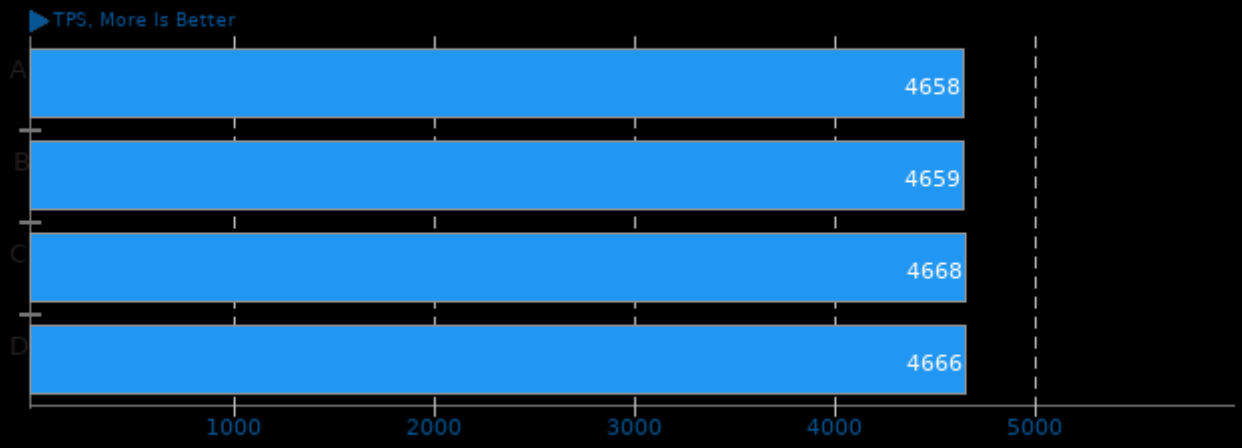
Scaling Factor: 1 - Clients: 50 - Mode: Read Write - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

PostgreSQL pgbench 14.0

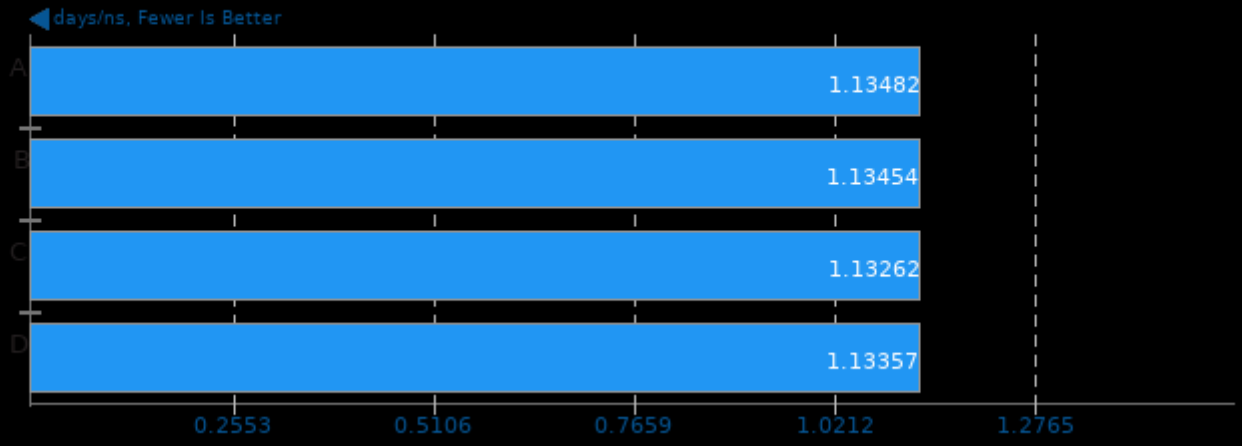
Scaling Factor: 1 - Clients: 50 - Mode: Read Write



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

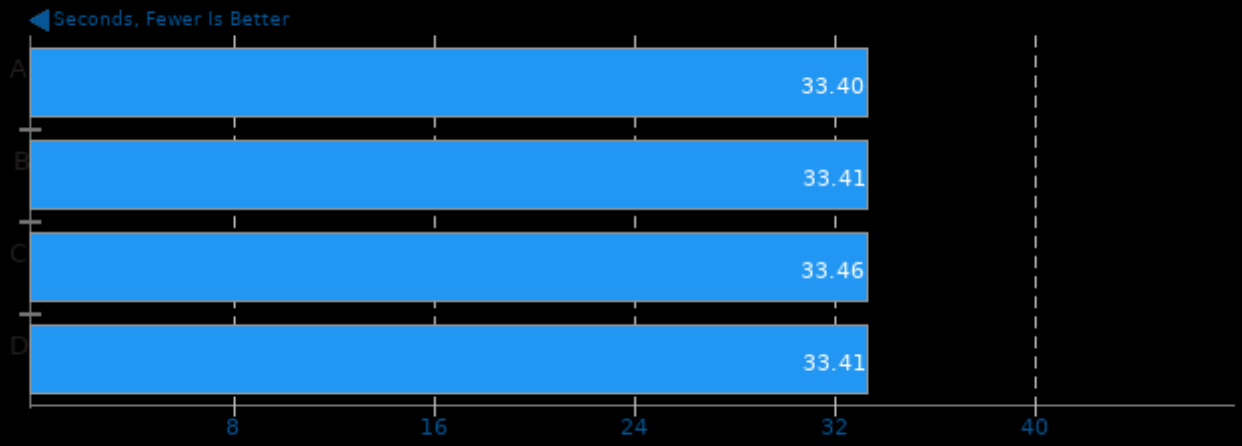
NAMD 2.14

ATPase Simulation - 327,506 Atoms

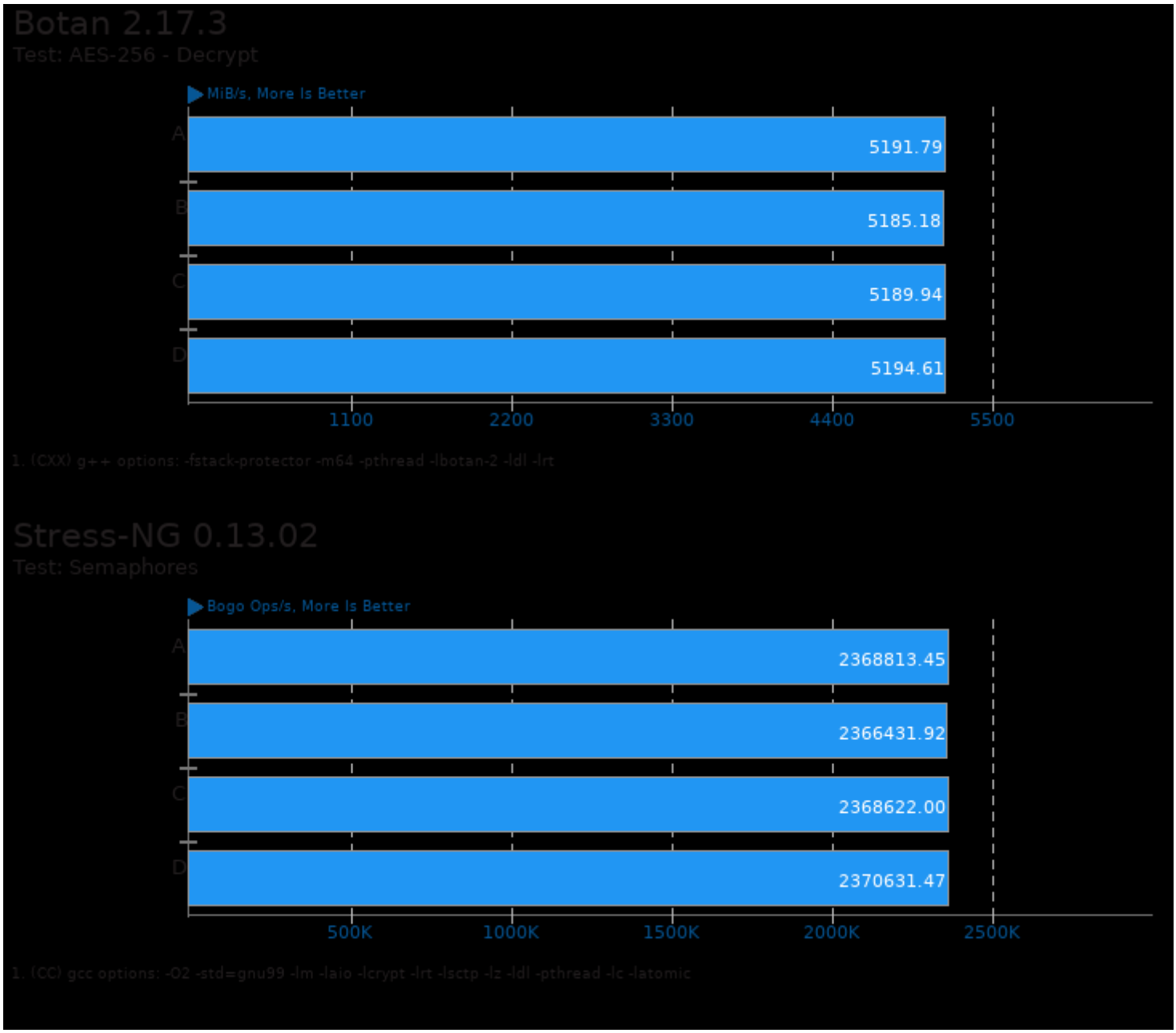


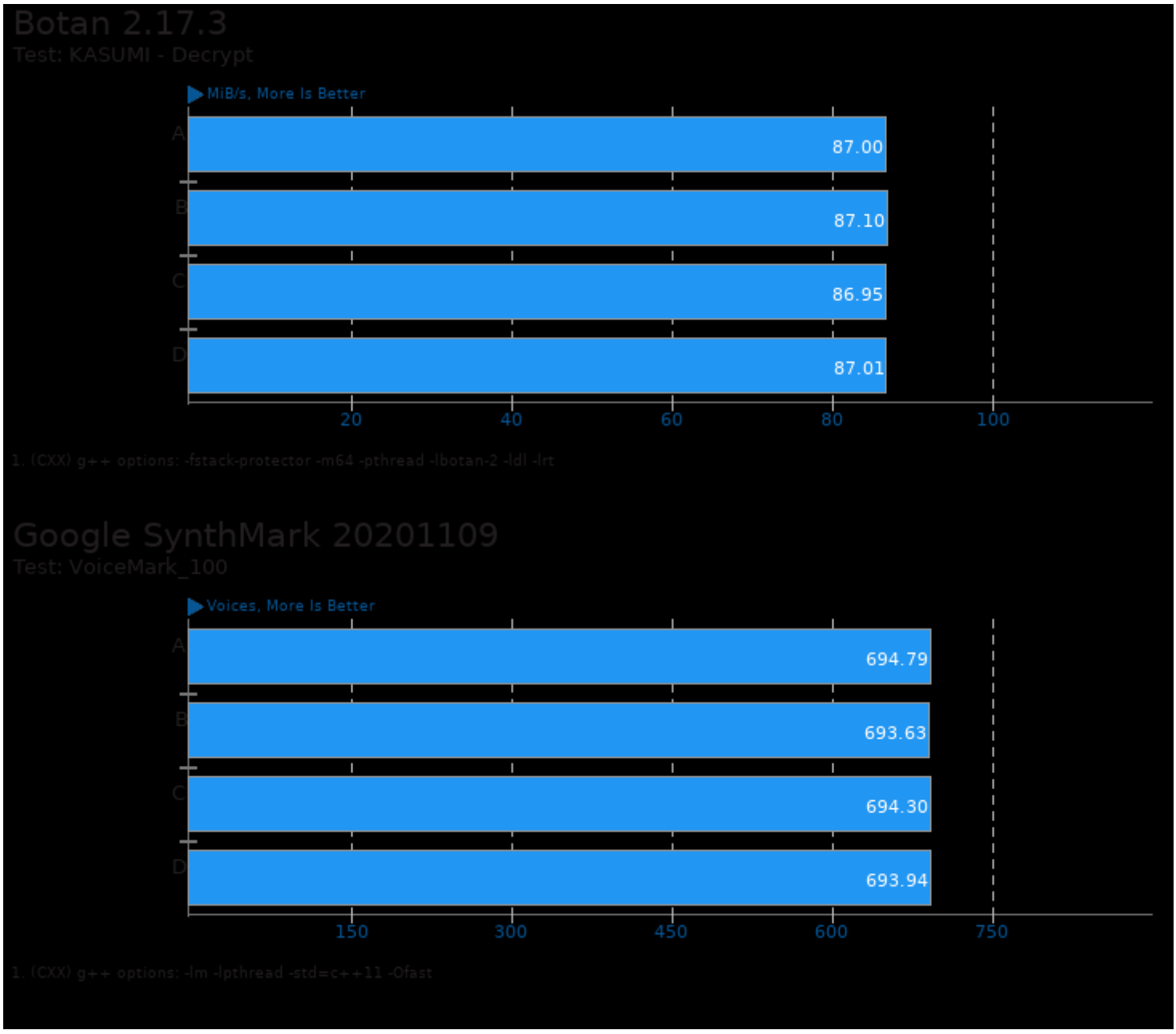
C-Ray 1.1

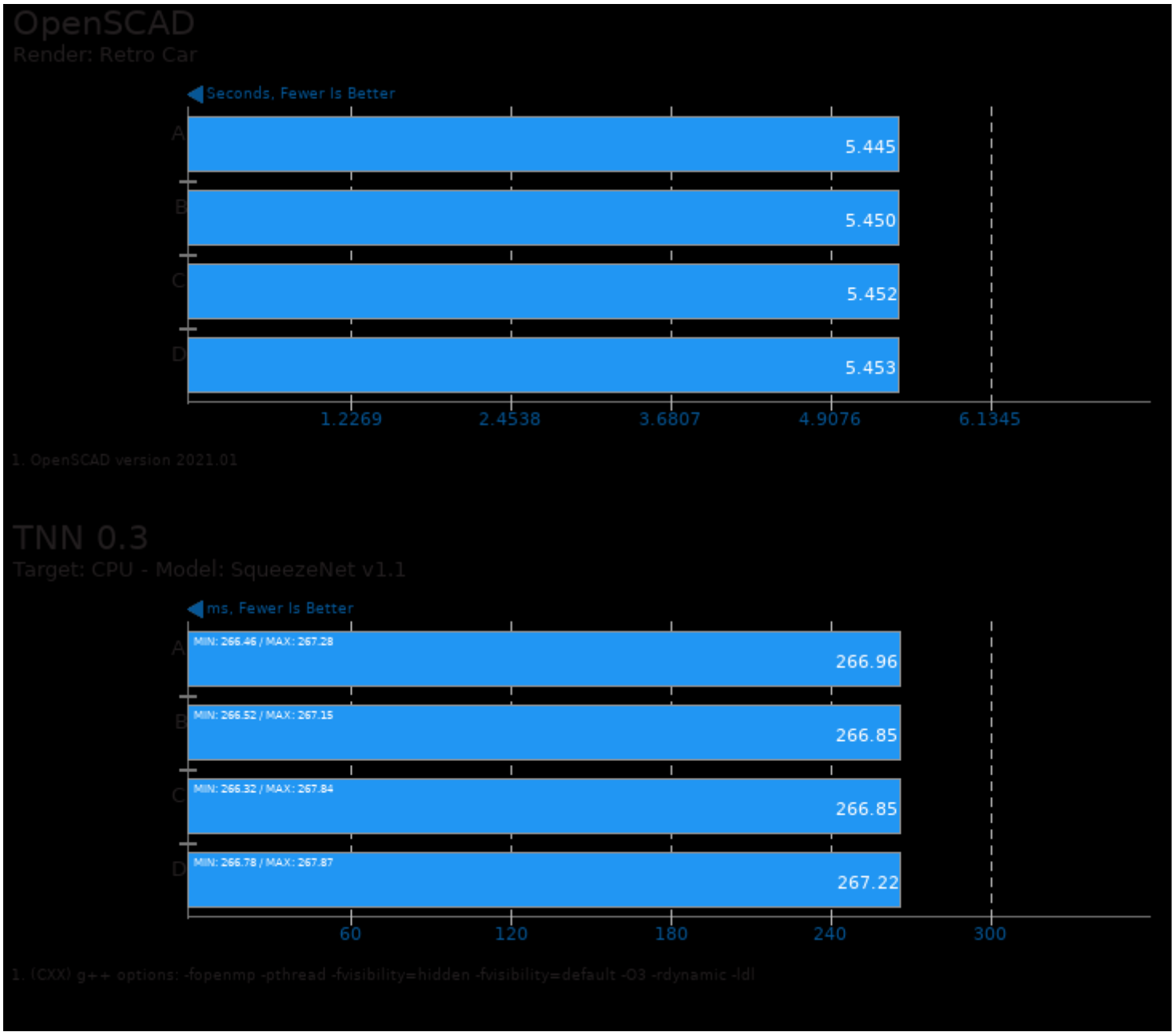
Total Time - 4K, 16 Rays Per Pixel

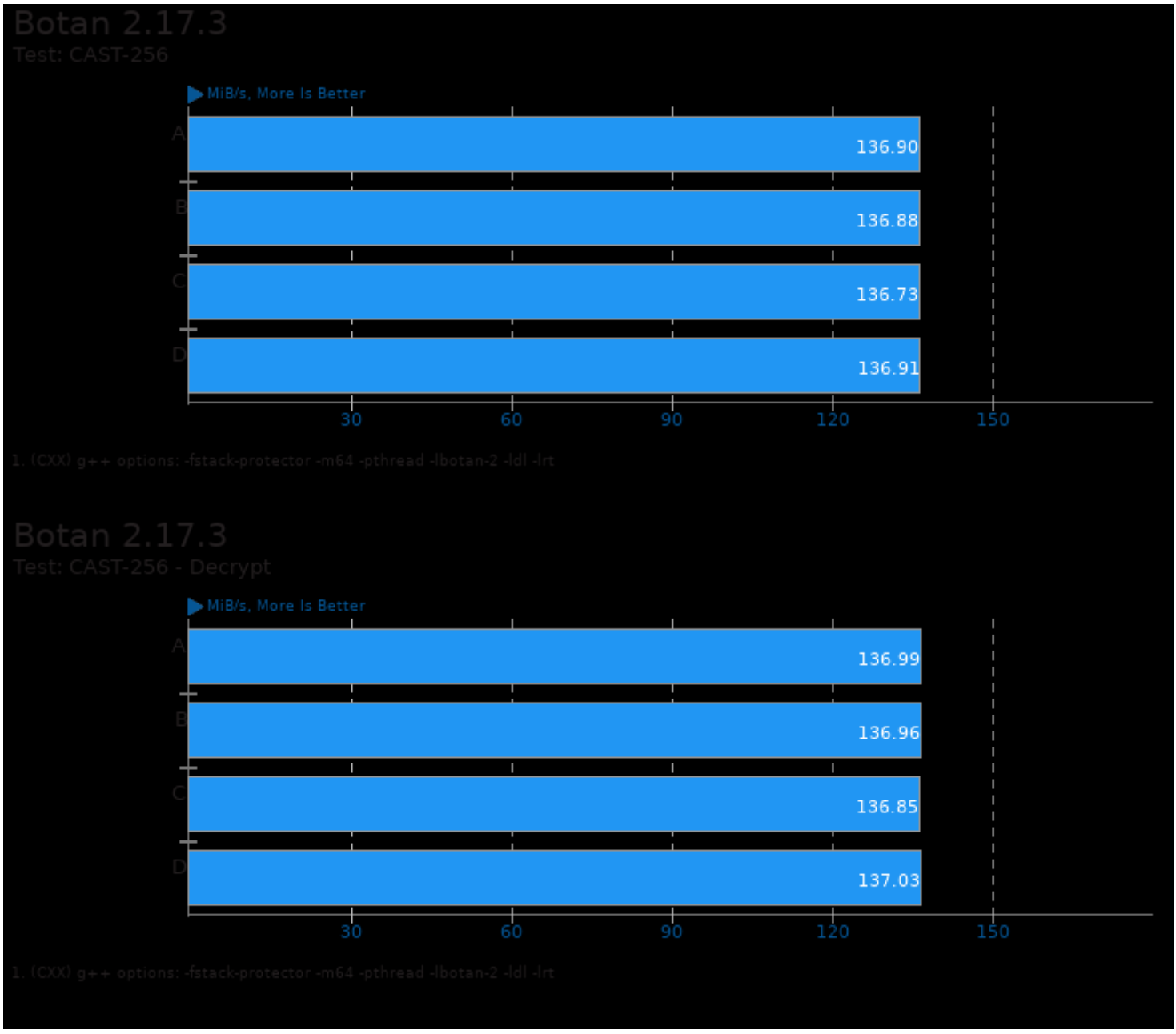


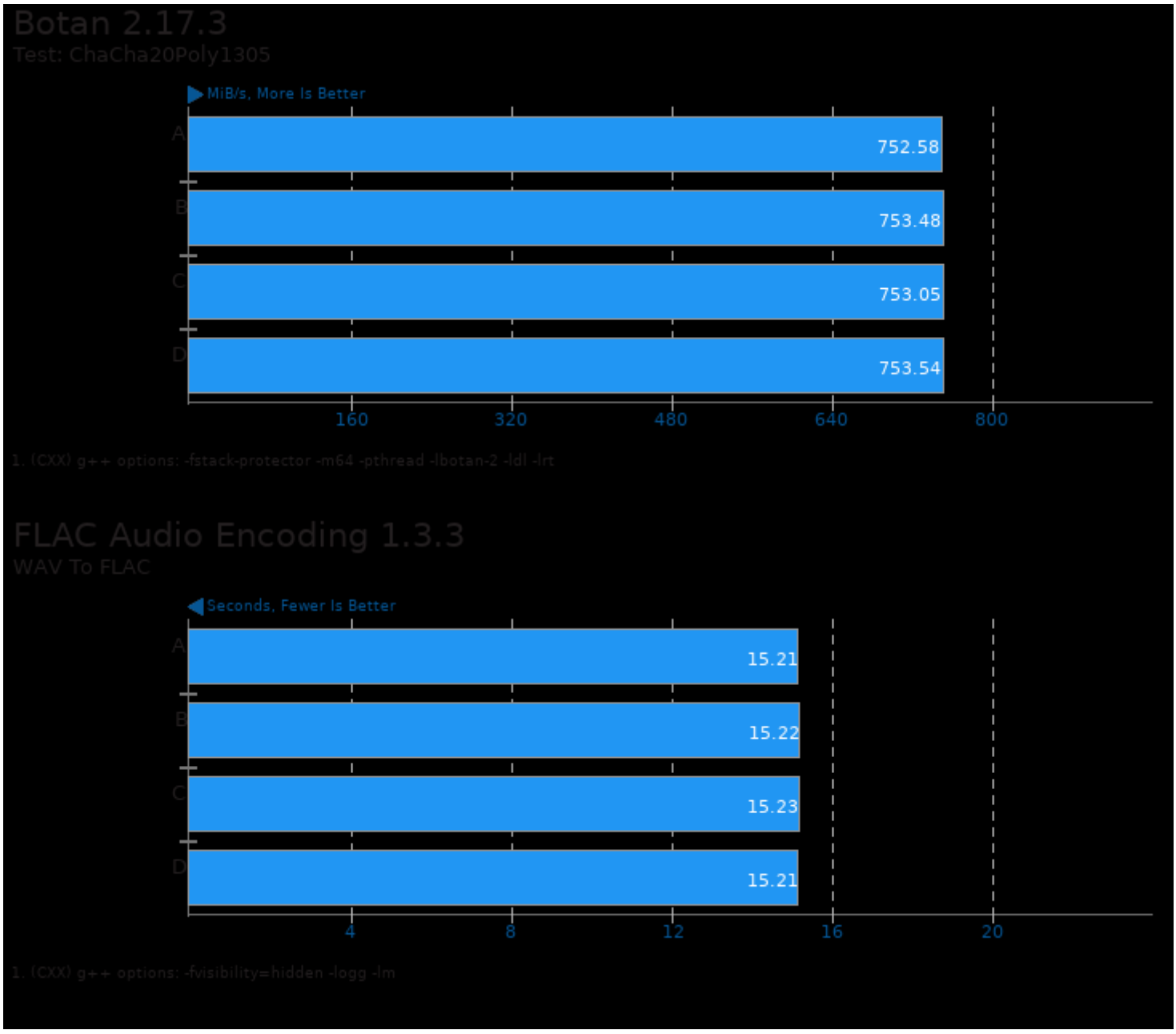
1. (CC) gcc options: -lm -lpthread -O3


Botan 2.17.3
Test: AES-256 - Decrypt
MiB/s, More Is Better
A
B
C
D
5191.79
5185.18
5189.94
5194.61
1100
2200
3300
4400
5500
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Stress-NG 0.13.02
Test: Semaphores
Bogo Ops/s, More Is Better
A
B
C
D
2368813.45
2366431.92
2368622.00
2370631.47
500K
1000K
1500K
2000K
2500K
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic


Botan 2.17.3
Test: KASUMI - Decrypt
MiB/s, More Is Better
A
B
C
D
87.00
87.10
86.95
87.01
20
40
60
80
100
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Google SynthMark 20201109
Test: VoiceMark_100
Voices, More Is Better
A
B
C
D
694.79
693.63
694.30
693.94
150
300
450
600
750
1. (CXX) g++ options: -lm -lpthread -std=c++11 -Ofast

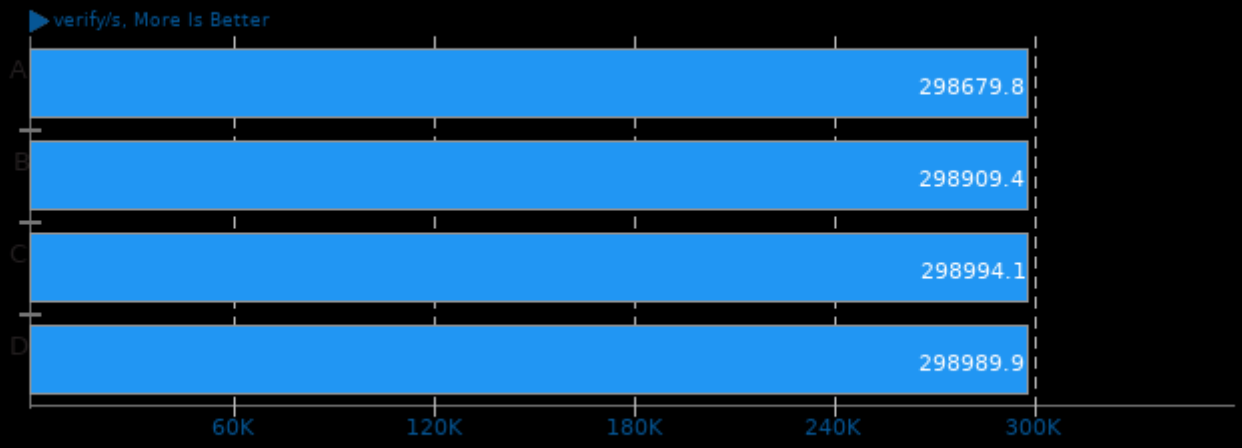

OpenSCAD
Render: Retro Car
Seconds, Fewer Is Better
A
B
C
D
5.445
5.450
5.452
5.453
1.2269
2.4538
3.6807
4.9076
6.1345
1. OpenSCAD version 2021.01
TNN 0.3
Target: CPU - Model: SqueezeNet v1.1
ms, Fewer Is Better
MIN: 266.46 / MAX: 267.28
266.96
MIN: 266.52 / MAX: 267.15
266.85
MIN: 266.32 / MAX: 267.84
266.85
MIN: 266.78 / MAX: 267.87
267.22
60
120
180
240
300
1. (CXX) g++ options: -fopenmp -pthread -fvisibility=hidden -fvisibility=default -O3 -rdynamic -ldl


Botan 2.17.3
Test: CAST-256
MiB/s, More Is Better
A
B
C
D
136.90
136.88
136.73
136.91
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
136.99
136.96
136.85
137.03
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
752.58
753.48
753.05
753.54
160
320
480
640
800
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
FLAC Audio Encoding 1.3.3
WAV To FLAC
Seconds, Fewer Is Better
A
B
C
D
15.21
15.22
15.23
15.21
4
8
12
16
20
1. (CXX) g++ options: -fvisibility=hidden -logg -lm

OpenSSL 3.0

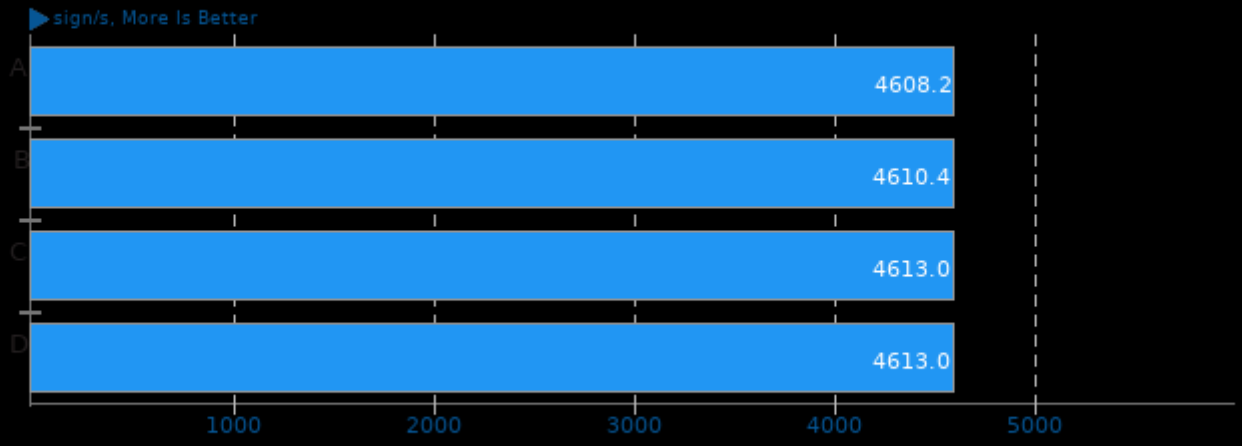
Algorithm: RSA4096



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

OpenSSL 3.0

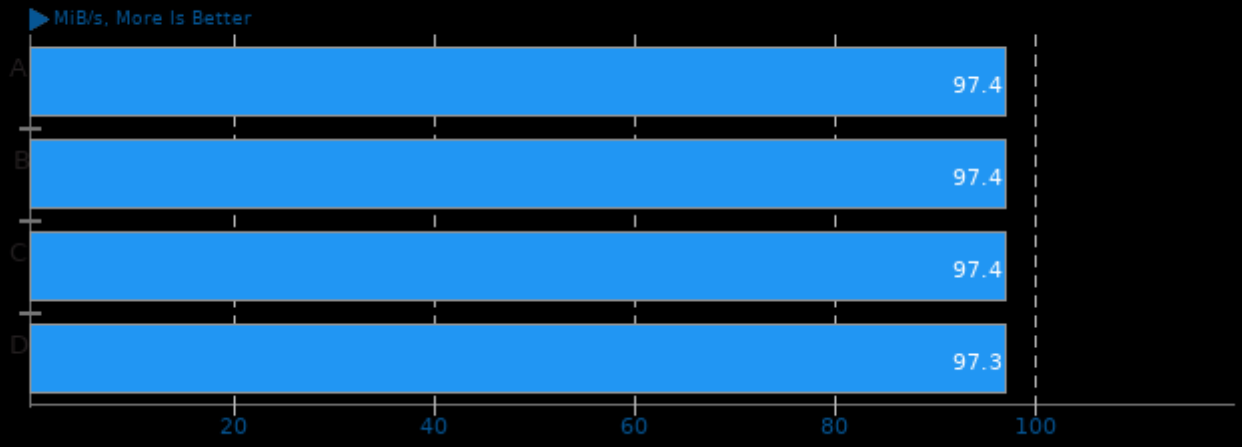
Algorithm: RSA4096

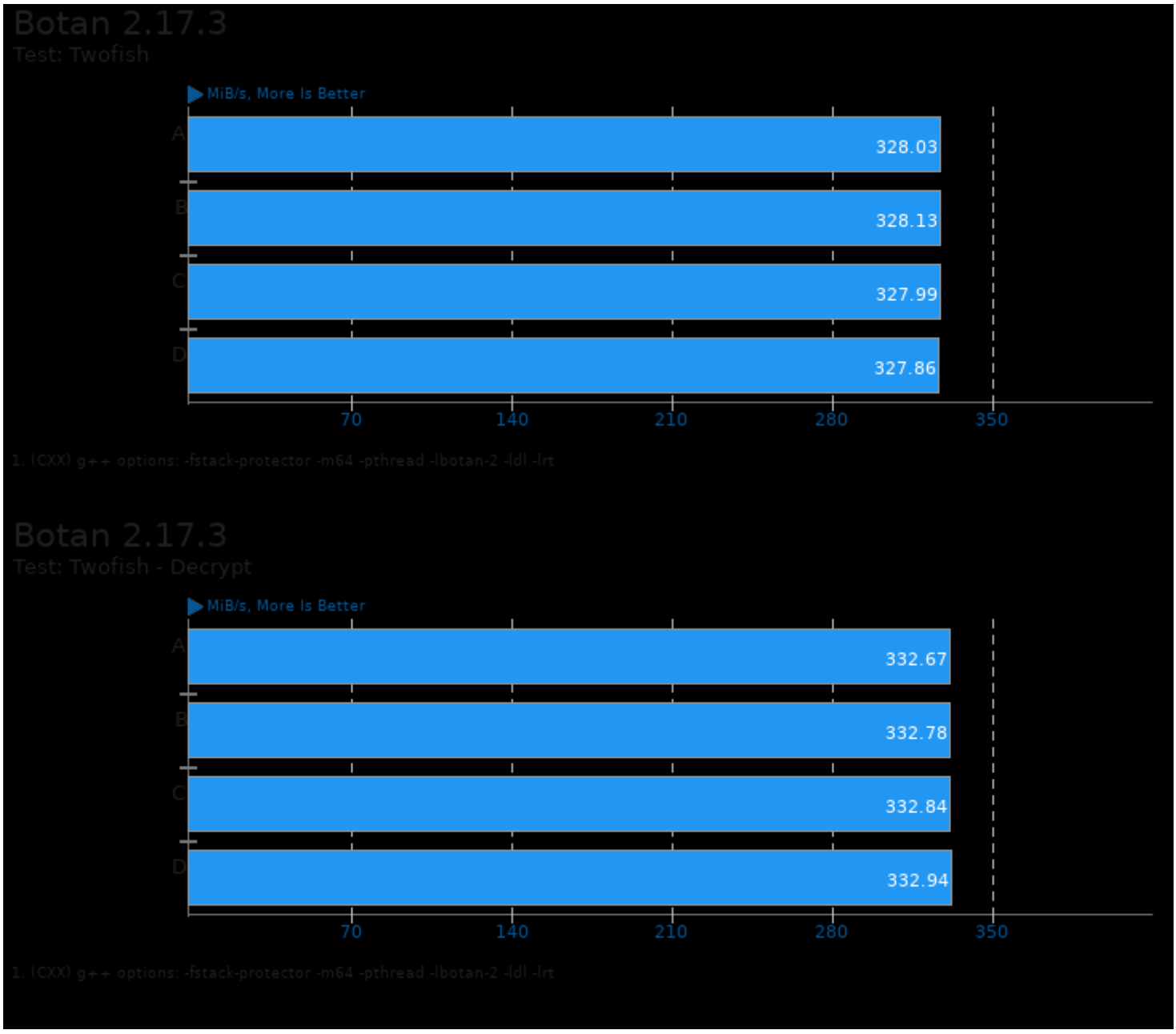


1. (CC) gcc options: -pthread -m64 -O3 -lssl -lcrypto -ldl

LuaRadio 0.9.1

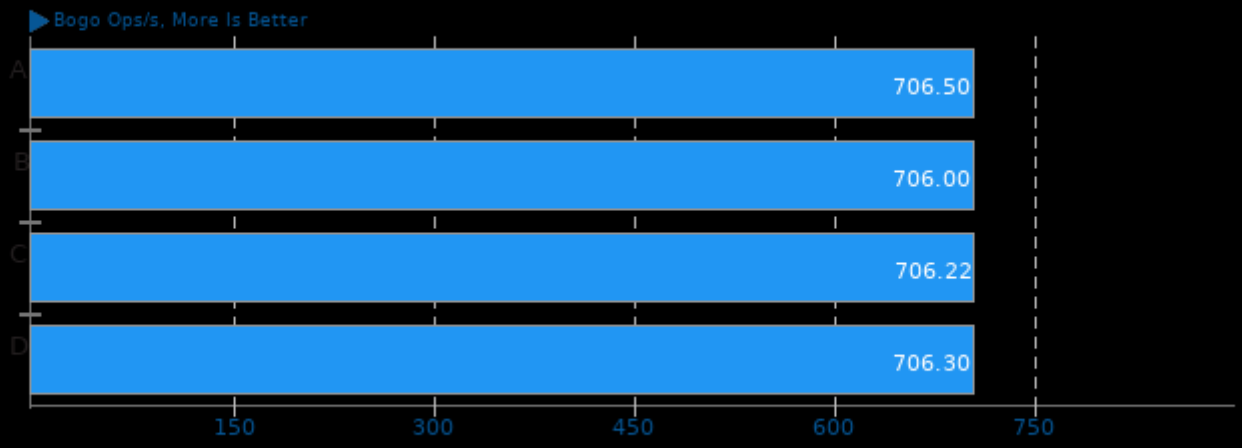
Test: Hilbert Transform




Botan 2.17.3
Test: Twofish
MiB/s, More Is Better
A
B
C
D
328.03
328.13
327.99
327.86
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
B
C
D
332.67
332.78
332.84
332.94
70
140
210
280
350
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

Stress-NG 0.13.02

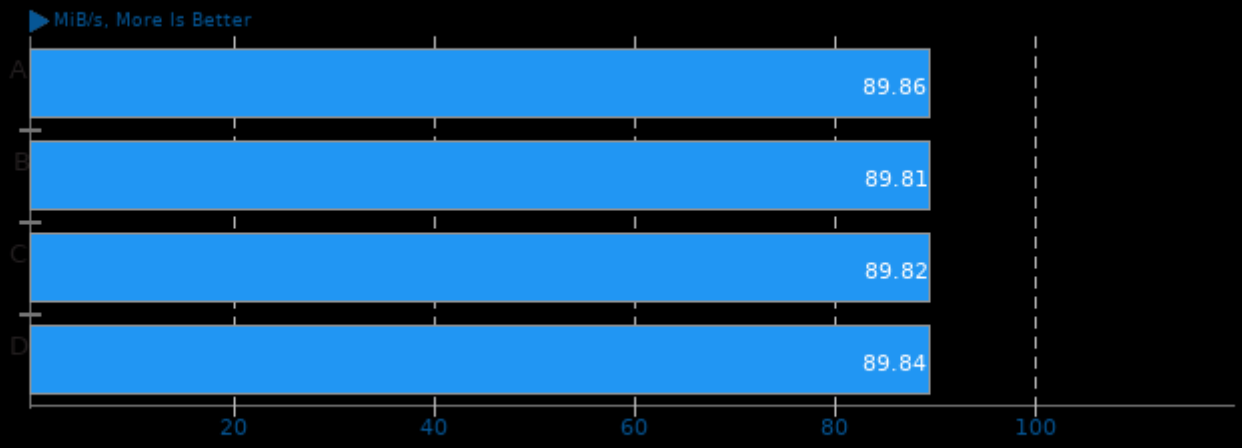
Test: MEMFD



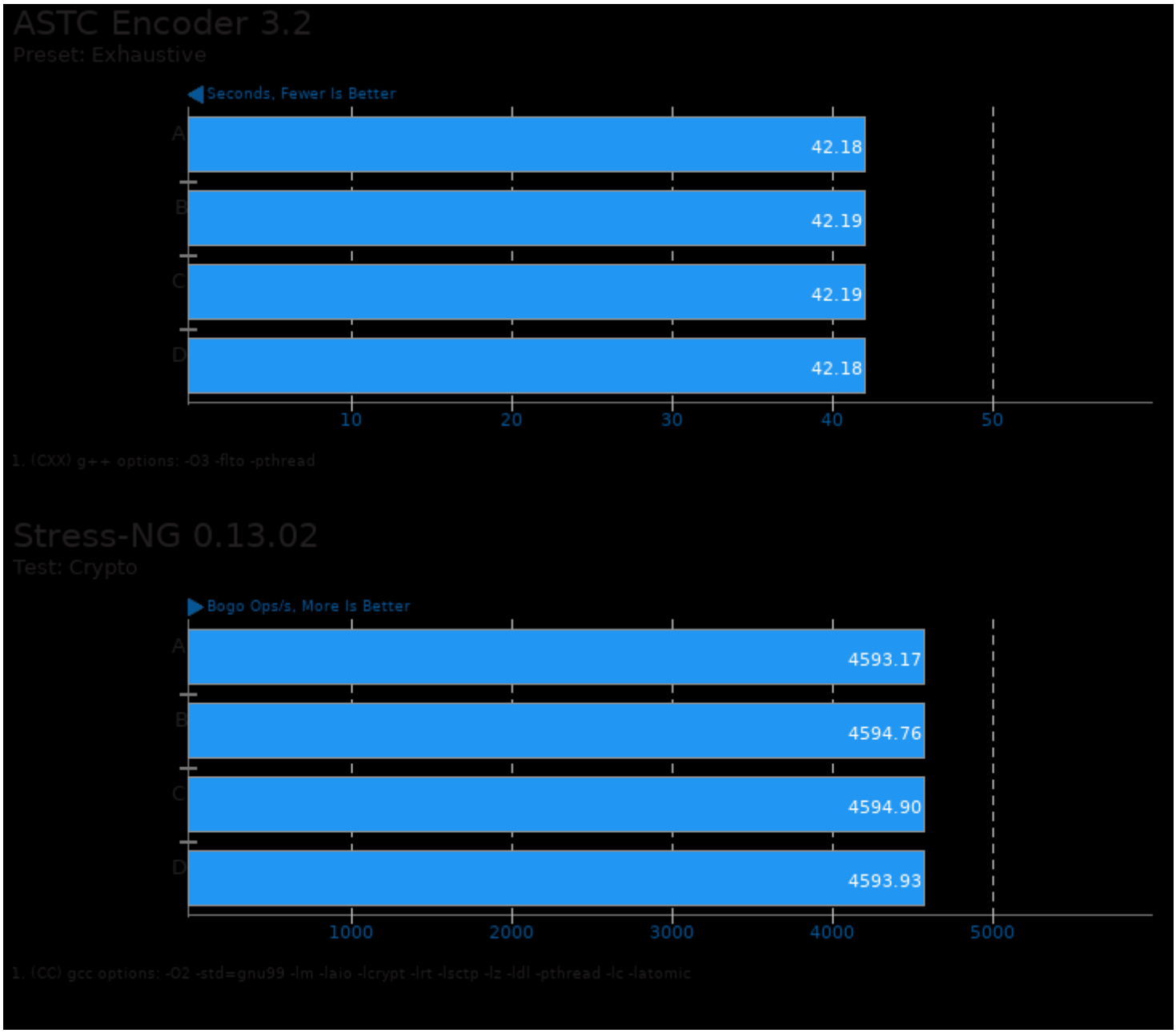
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic

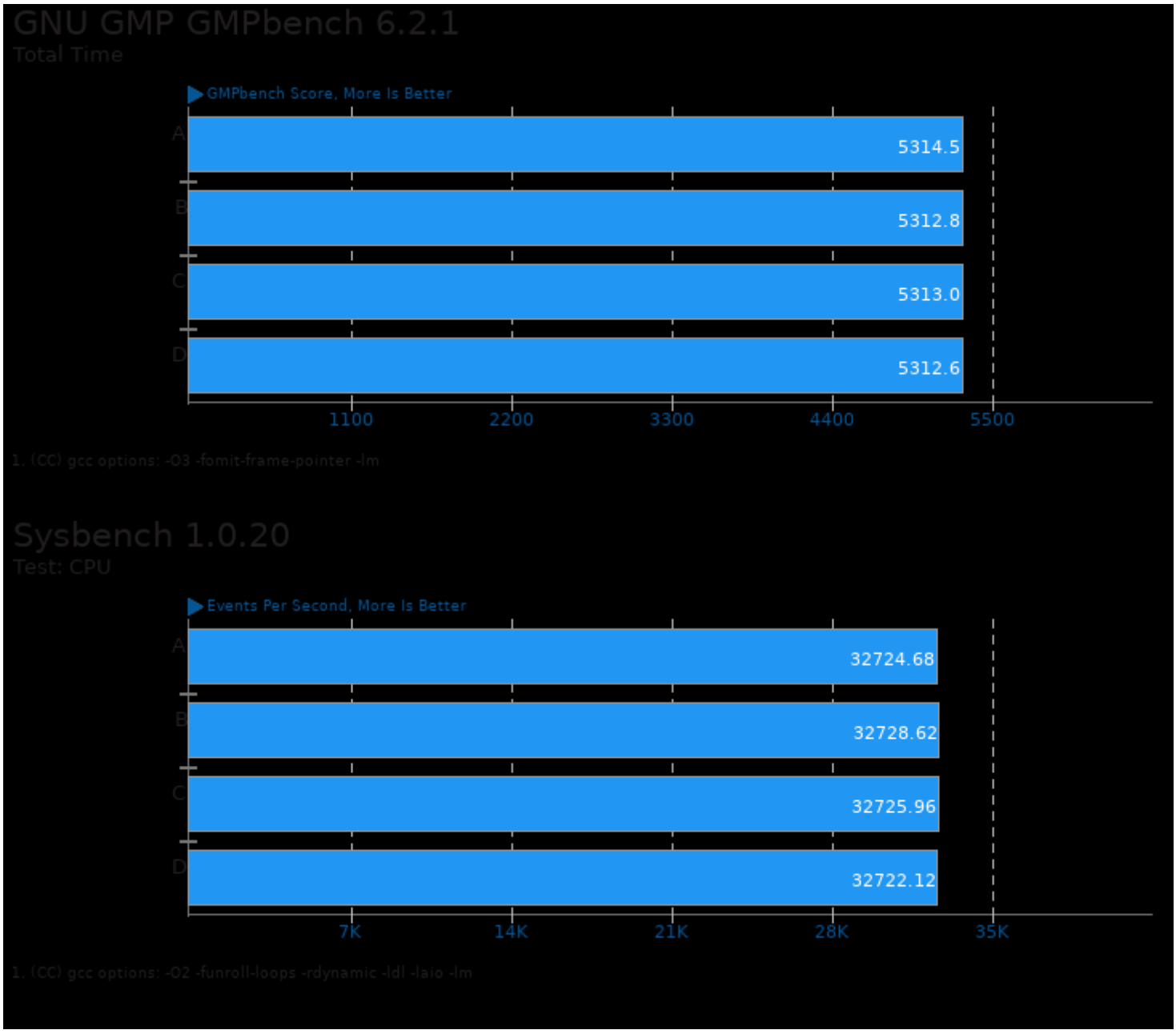
Botan 2.17.3

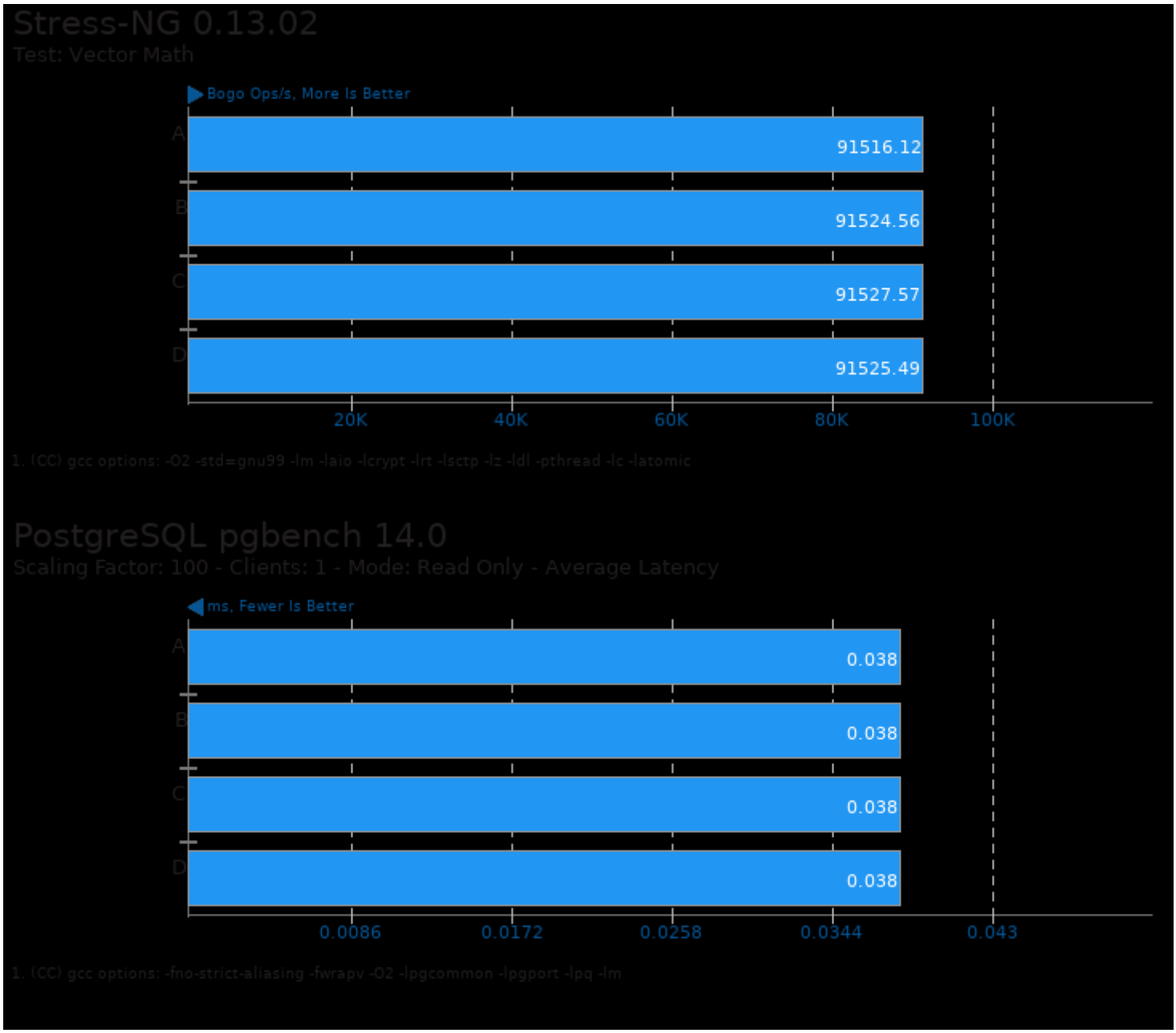
Test: KASUMI



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

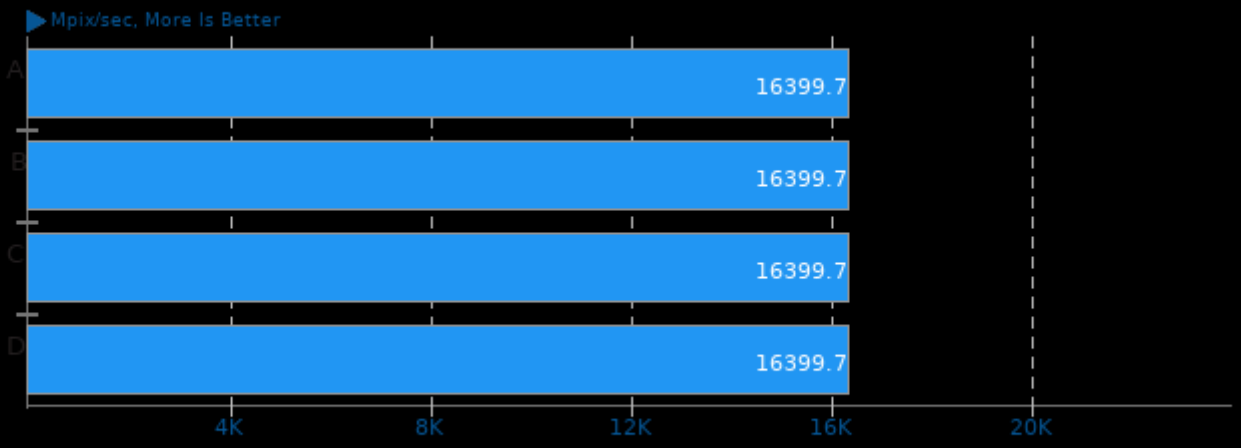

ASTC Encoder 3.2
Preset: Exhaustive
Seconds, Fewer Is Better
A
B
C
D
42.18
42.19
42.19
42.18
10
20
30
40
50
1. (CXX) g++ options: -O3 -flto -pthread
Stress-NG 0.13.02
Test: Crypto
Bogo Ops/s, More Is Better
A
B
C
D
4593.17
4594.76
4594.90
4593.93
1000
2000
3000
4000
5000
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic


GNU GMP GMPbench 6.2.1
Total Time
GMPbench Score, More Is Better
A
B
C
D
5314.5
5312.8
5313.0
5312.6
1100
2200
3300
4400
5500
1. (CC) gcc options: -O3 -fomit-frame-pointer -lm
Sysbench 1.0.20
Test: CPU
Events Per Second, More Is Better
A
B
C
D
32724.68
32728.62
32725.96
32722.12
7K
14K
21K
28K
35K
1. (CC) gcc options: -O2 -funroll-loops -rdynamic -ldl -laio -lm


Stress-NG 0.13.02
Test: Vector Math
Bogo Ops/s, More Is Better
A
B
C
D
91516.12
91524.56
91527.57
91525.49
20K
40K
60K
80K
100K
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lsctp -lz -ldl -pthread -lc -latomic
PostgreSQL pgbench 14.0
Scaling Factor: 100 - Clients: 1 - Mode: Read Only - Average Latency
ms, Fewer Is Better
A
B
C
D
0.038
0.038
0.038
0.038
0.0086
0.0172
0.0258
0.0344
0.043
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

ASKAP 1.0

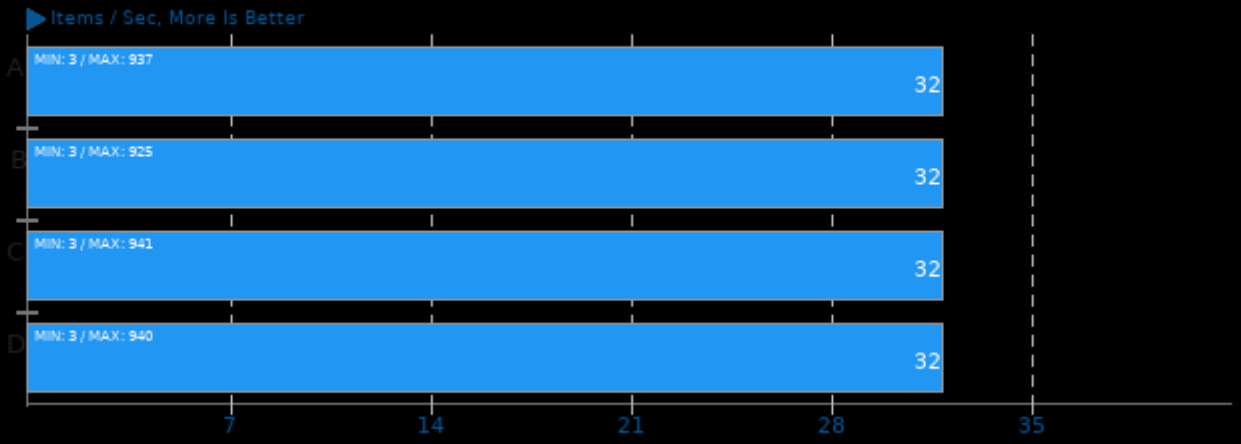
Test: tConvolve MPI - Gridding



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

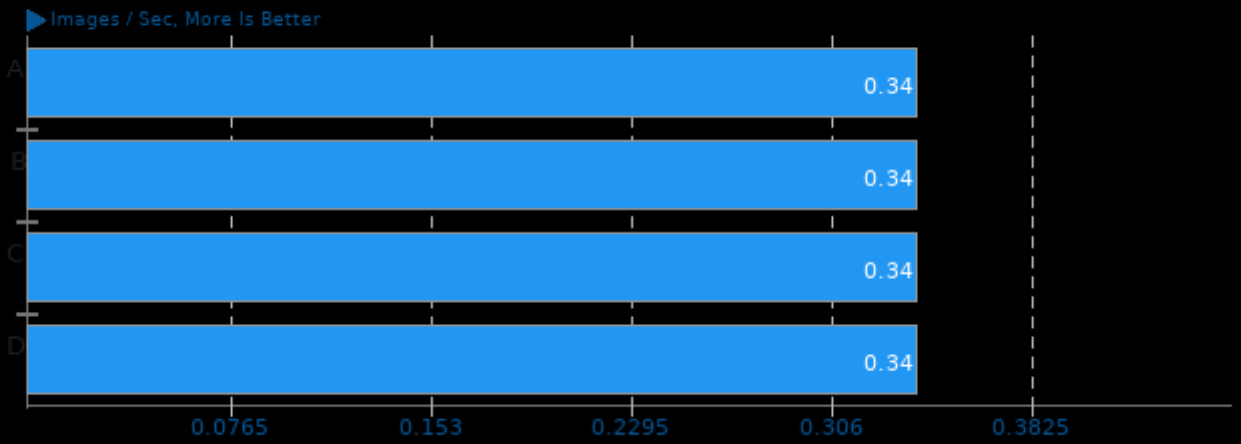
OpenVKL 1.0

Benchmark: vklBenchmark Scalar



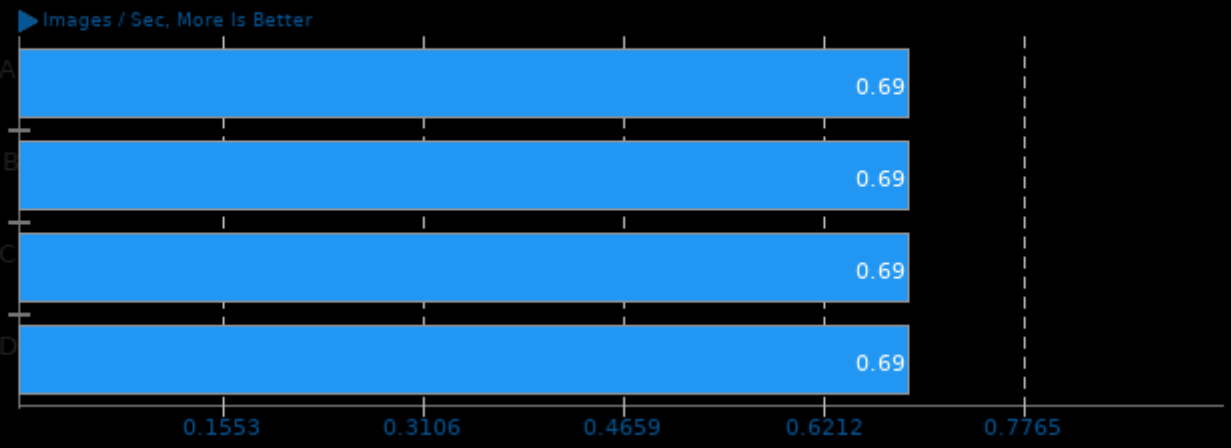
Intel Open Image Denoise 1.4.0

Run: RTLightmap.hdr.4096x4096



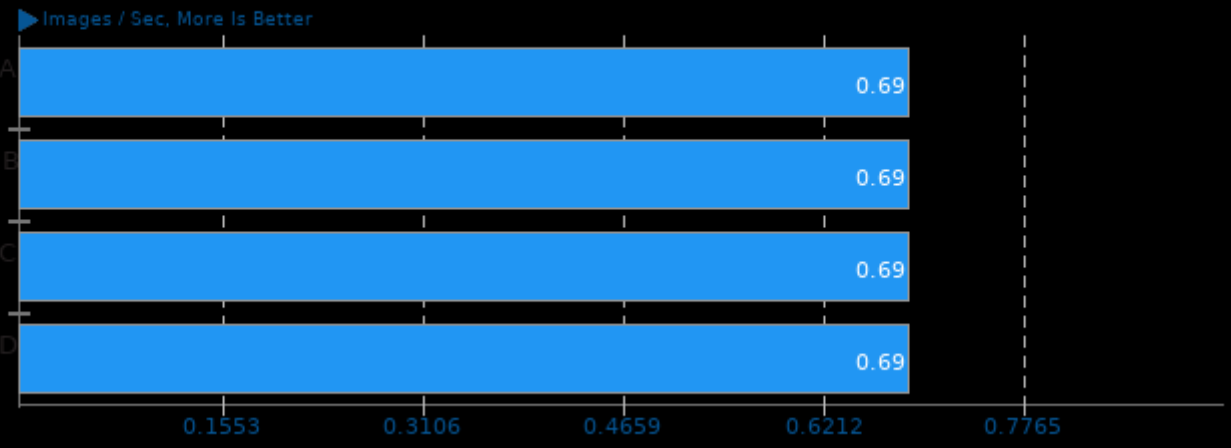
Intel Open Image Denoise 1.4.0

Run: RT.ldr_alb_nrm.3840x2160



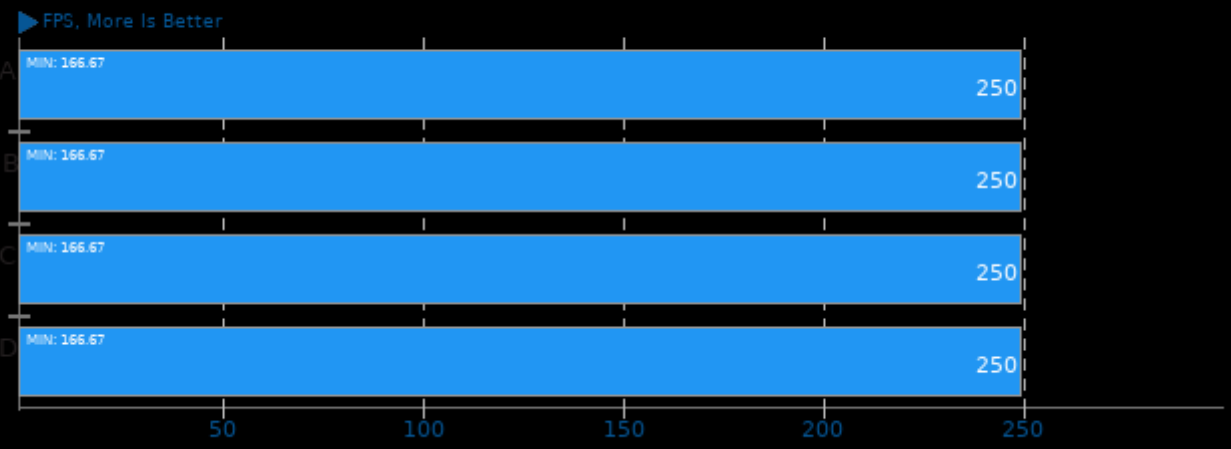
Intel Open Image Denoise 1.4.0

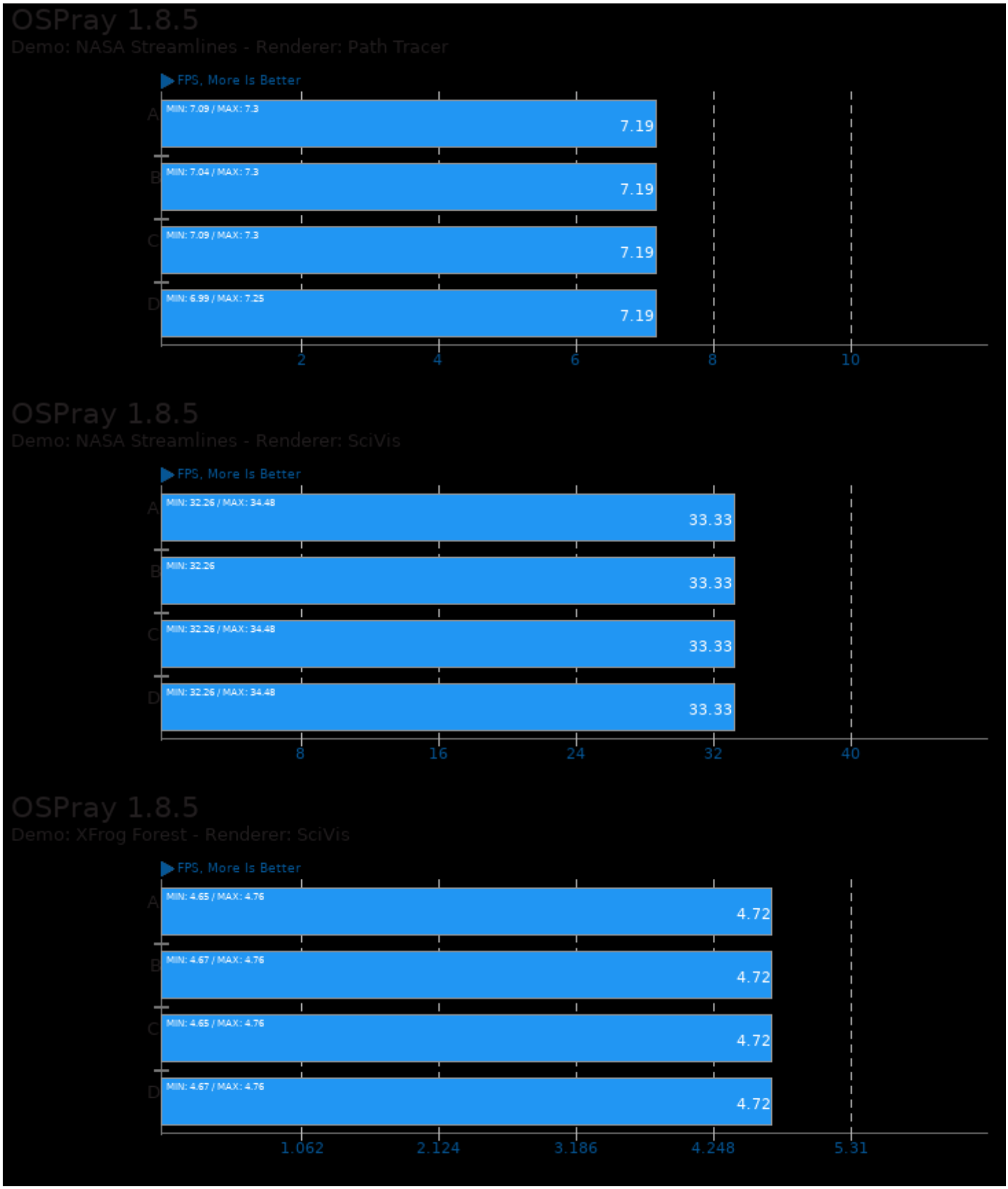
Run: RT.hdr_alb_nrm.3840x2160



OSPray 1.8.5

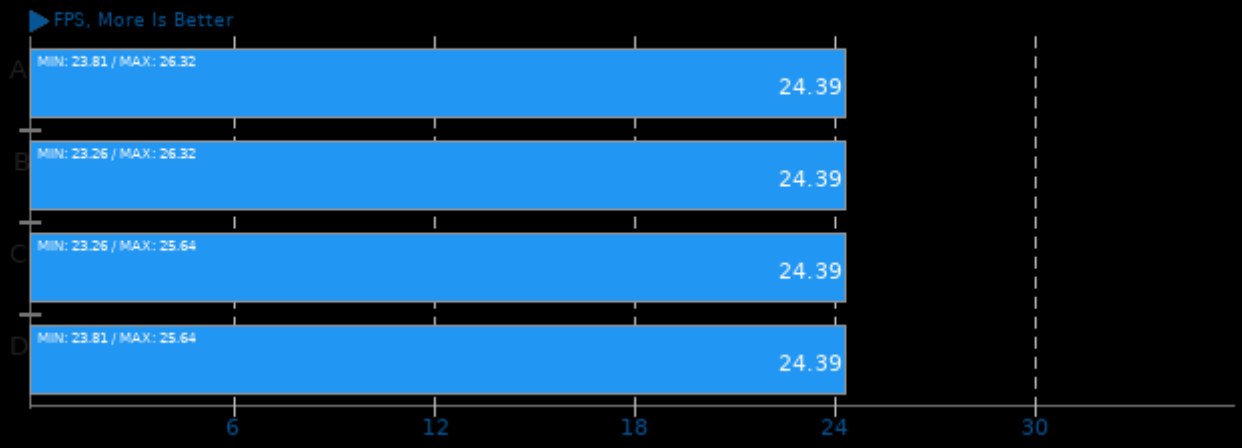
Demo: Magnetic Reconnection - Renderer: Path Tracer




OSPray 1.8.5
Demo: NASA Streamlines - Renderer: Path Tracer
FPS, More Is Better
A
MIN: 7.09 / MAX: 7.3
7.19
B
MIN: 7.04 / MAX: 7.3
7.19
C
MIN: 7.09 / MAX: 7.3
7.19
D
MIN: 6.99 / MAX: 7.25
7.19
2
4
6
8
10
OSPray 1.8.5
Demo: NASA Streamlines - Renderer: SciVis
FPS, More Is Better
A
MIN: 32.26 / MAX: 34.48
33.33
B
MIN: 32.26
33.33
C
MIN: 32.26 / MAX: 34.48
33.33
D
MIN: 32.26 / MAX: 34.48
33.33
8
16
24
32
40
OSPray 1.8.5
Demo: XFrog Forest - Renderer: SciVis
FPS, More Is Better
A
MIN: 4.65 / MAX: 4.76
4.72
B
MIN: 4.67 / MAX: 4.76
4.72
C
MIN: 4.65 / MAX: 4.76
4.72
D
MIN: 4.67 / MAX: 4.76
4.72
1.062
2.124
3.186
4.248
5.31

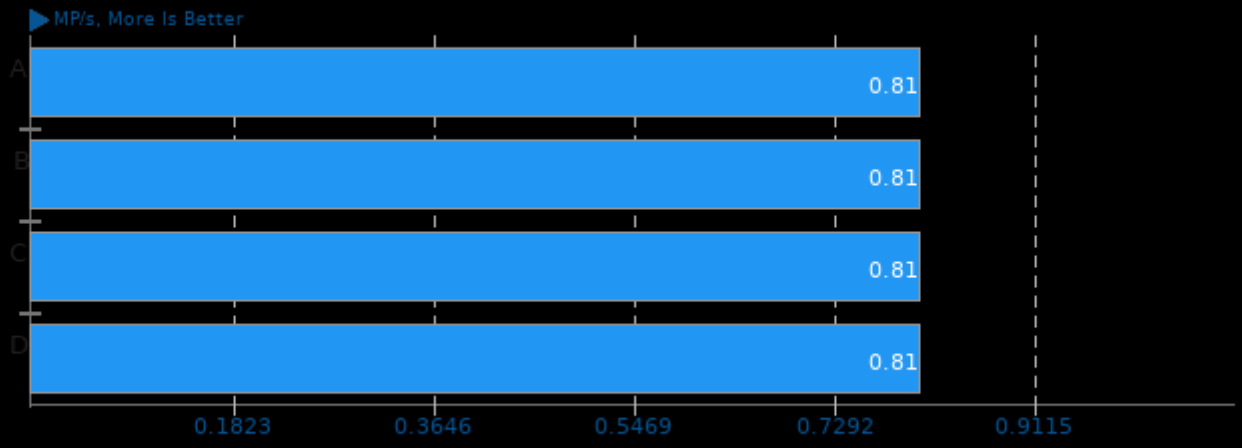
OSPray 1.8.5

Demo: San Miguel - Renderer: SciVis



JPEG XL libjxl 0.5

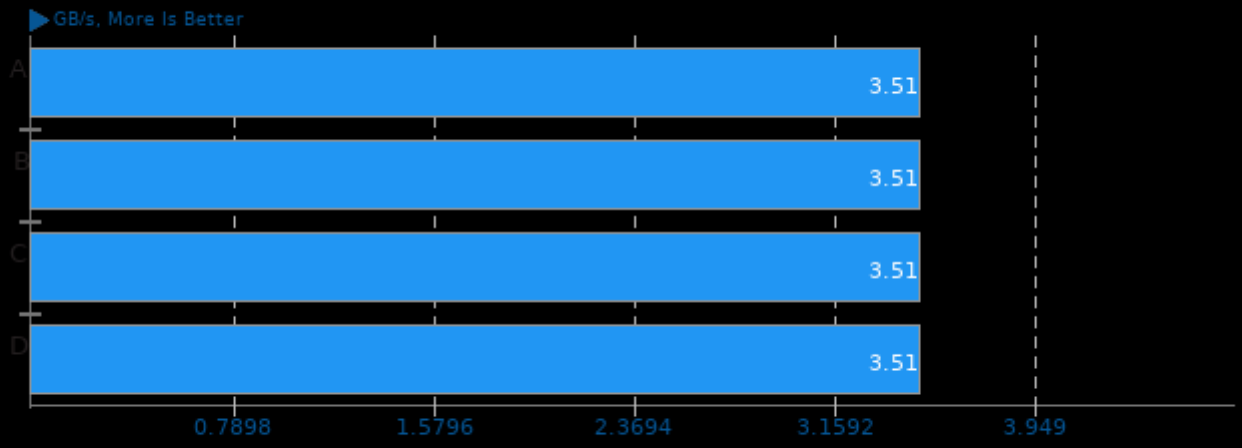
Input: PNG - Encode Speed: 8



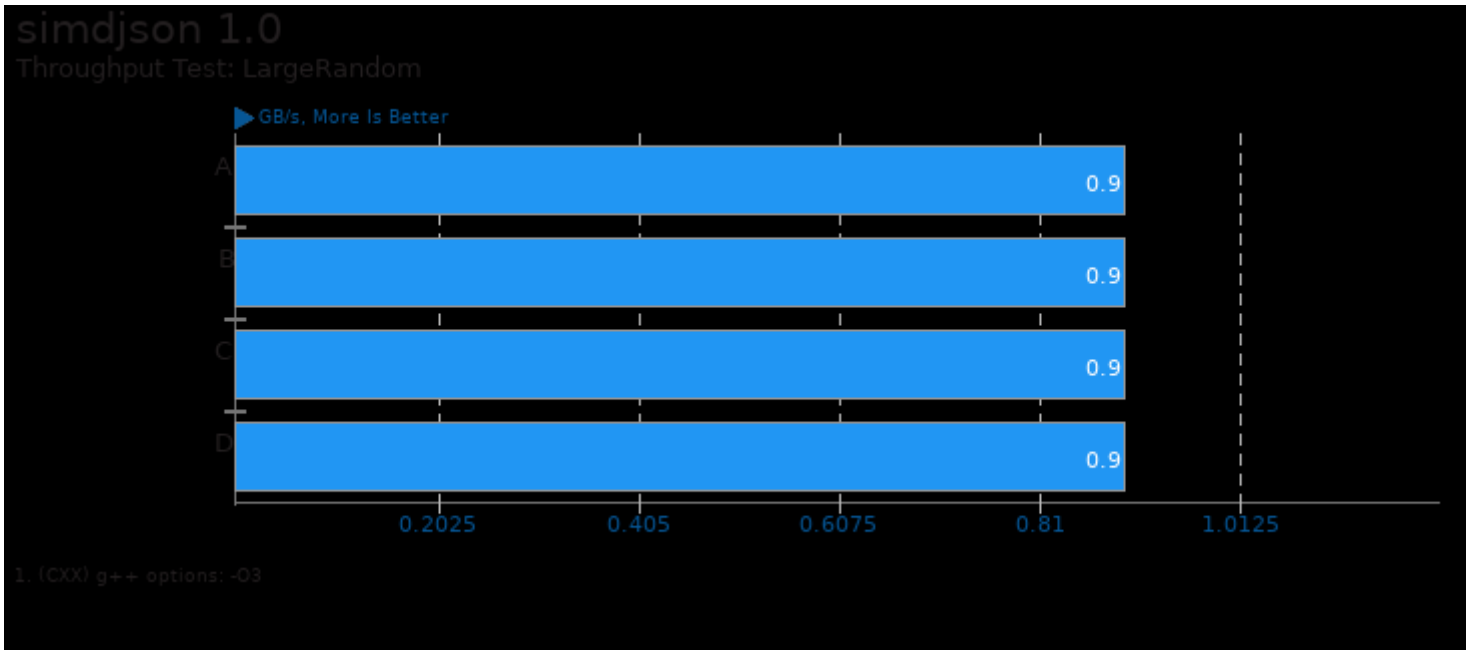
1. (CXX) g++ options: -funwind-tables -O3 -O2 -pthread -fPIE -pie

simdjson 1.0

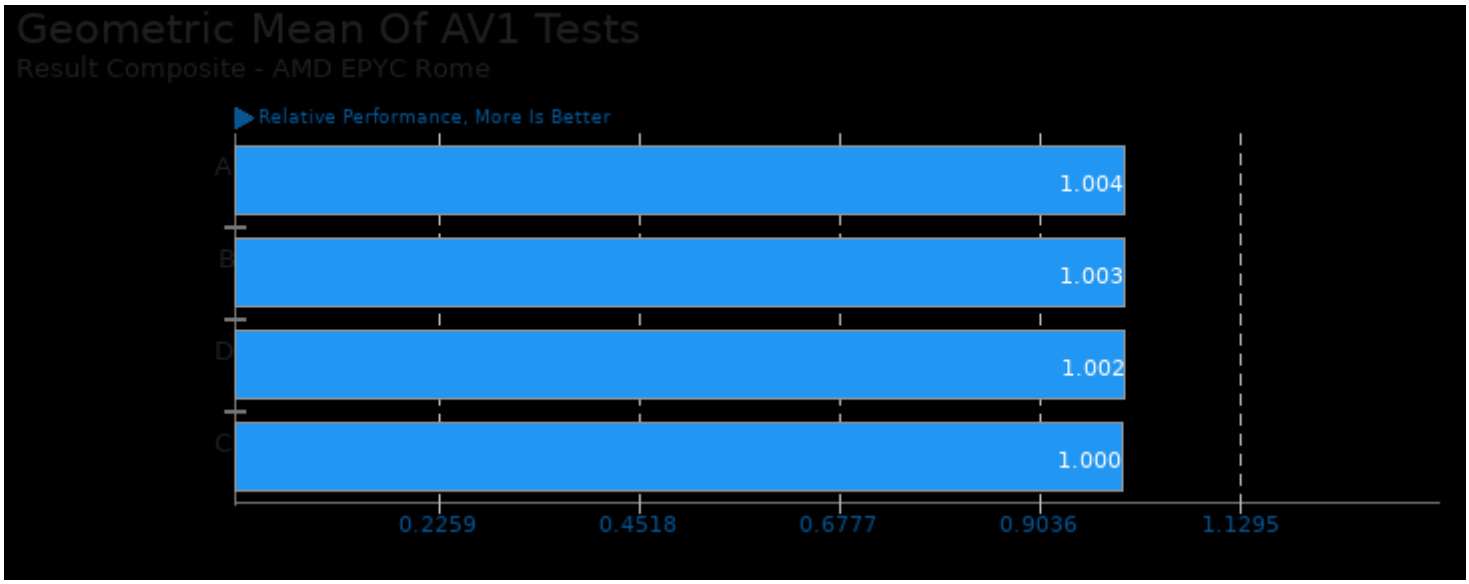
Throughput Test: PartialTweets



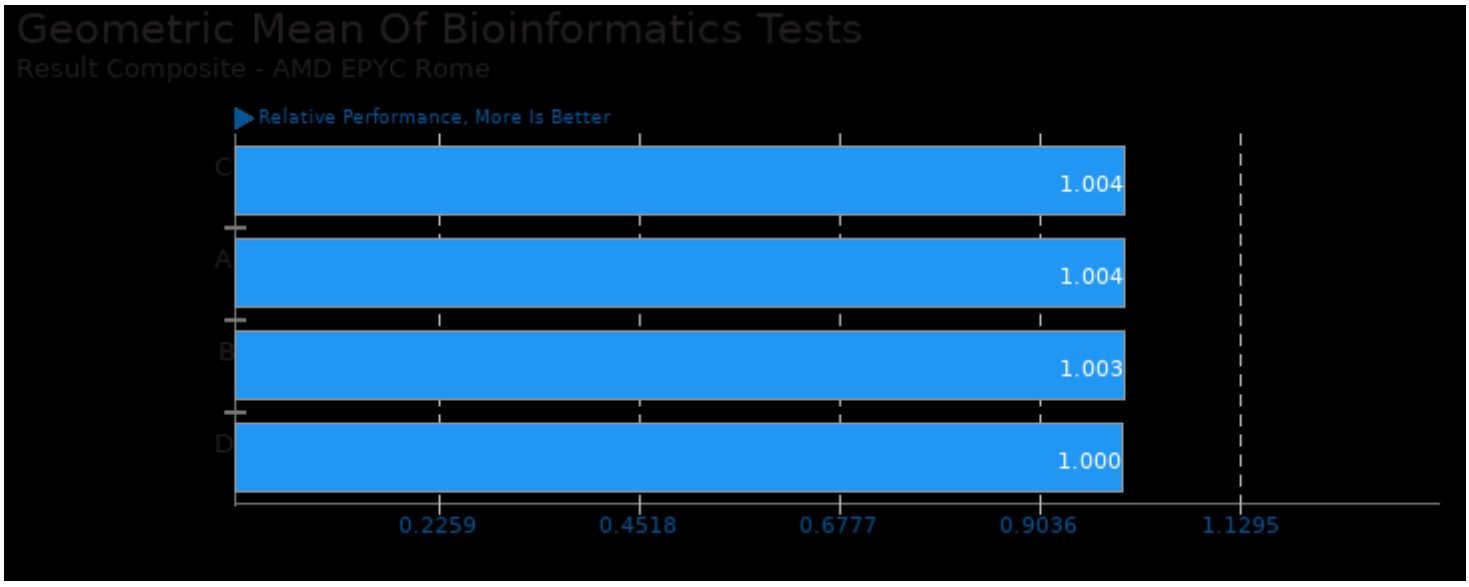
1. (CXX) g++ options: -O3


simdjson 1.0
Throughput Test: LargeRandom
GB/s, More Is Better
A
B
C
D
0.9
0.9
0.9
0.9
0.2025
0.405
0.6075
0.81
1.0125
1. (CXX) g++ options: -O3

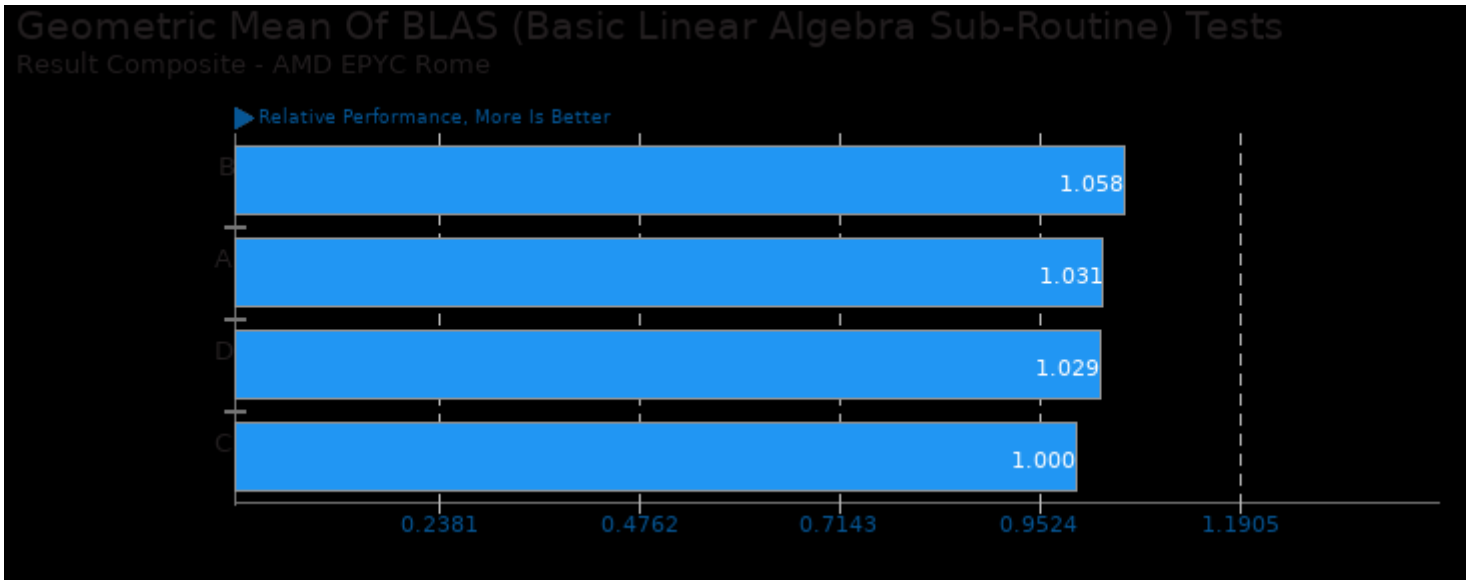
These geometric means are based upon test groupings / test suites for this result file.



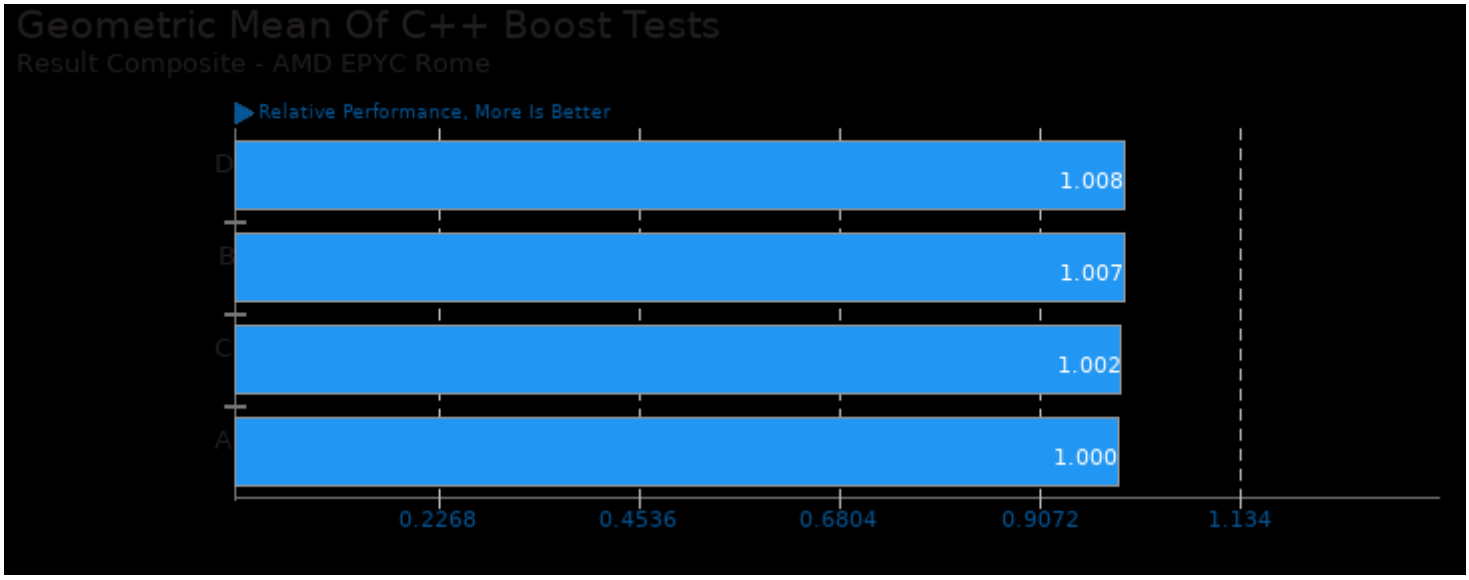
Geometric mean based upon tests: pts/dav1d, pts/aom-av1, pts/svt-av1 and pts/avifenc



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



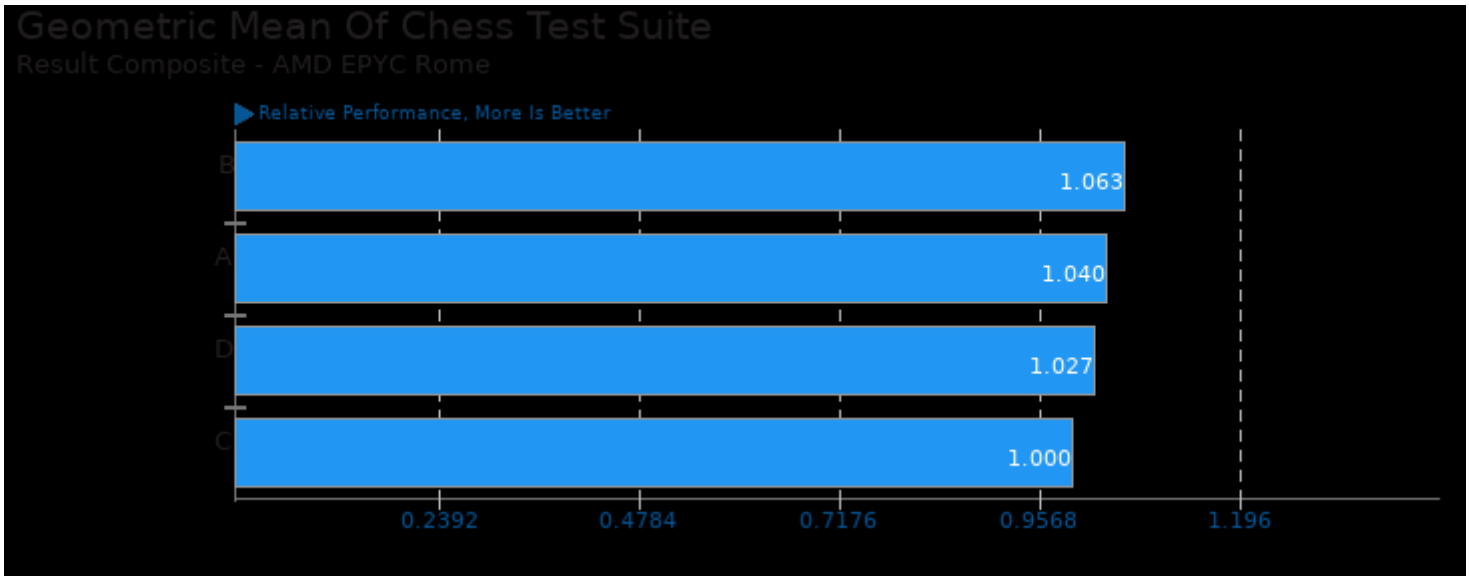
Geometric mean based upon tests: pts/lczero, pts/nwchem and pts/qe



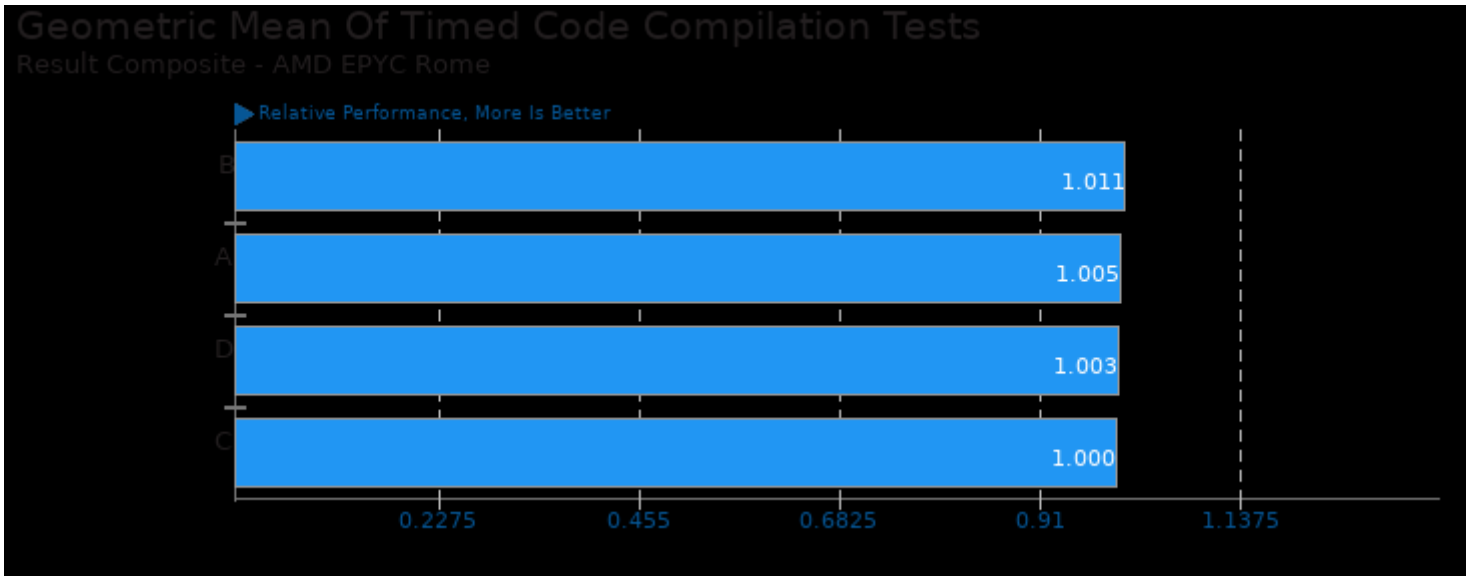
Geometric mean based upon tests: pts/chia-vdf, pts/openfoam and pts/quantlib



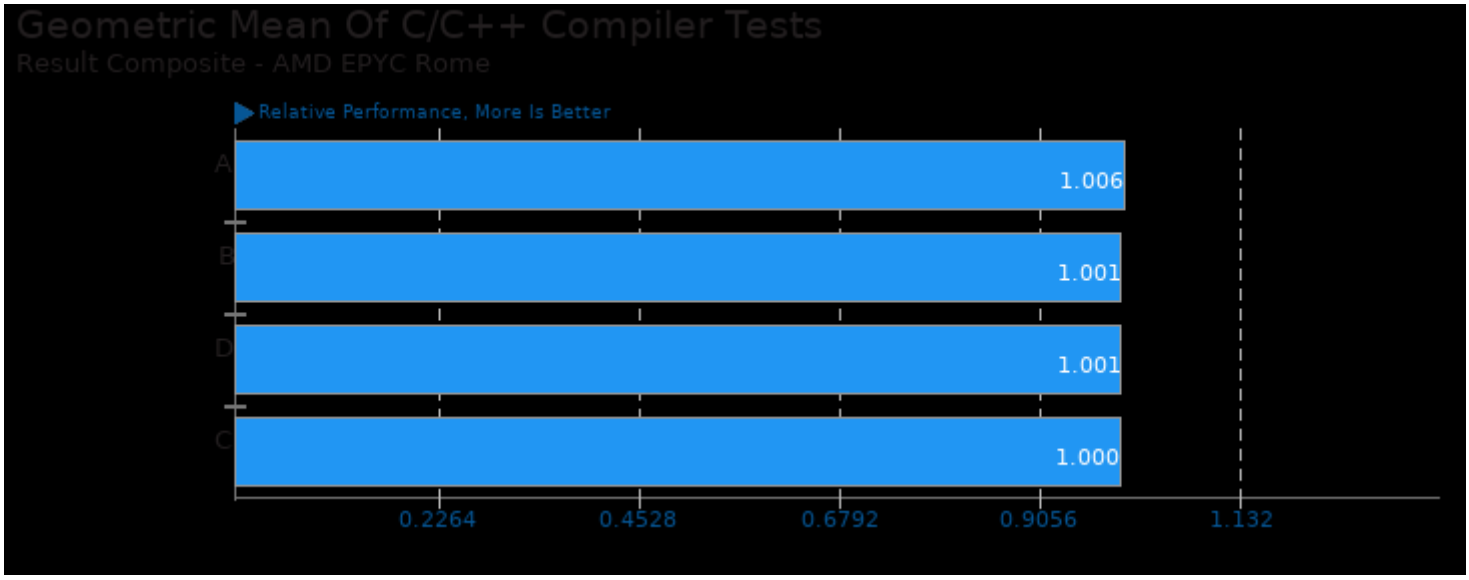
Geometric mean based upon tests: system/openscad and pts/brl-cad



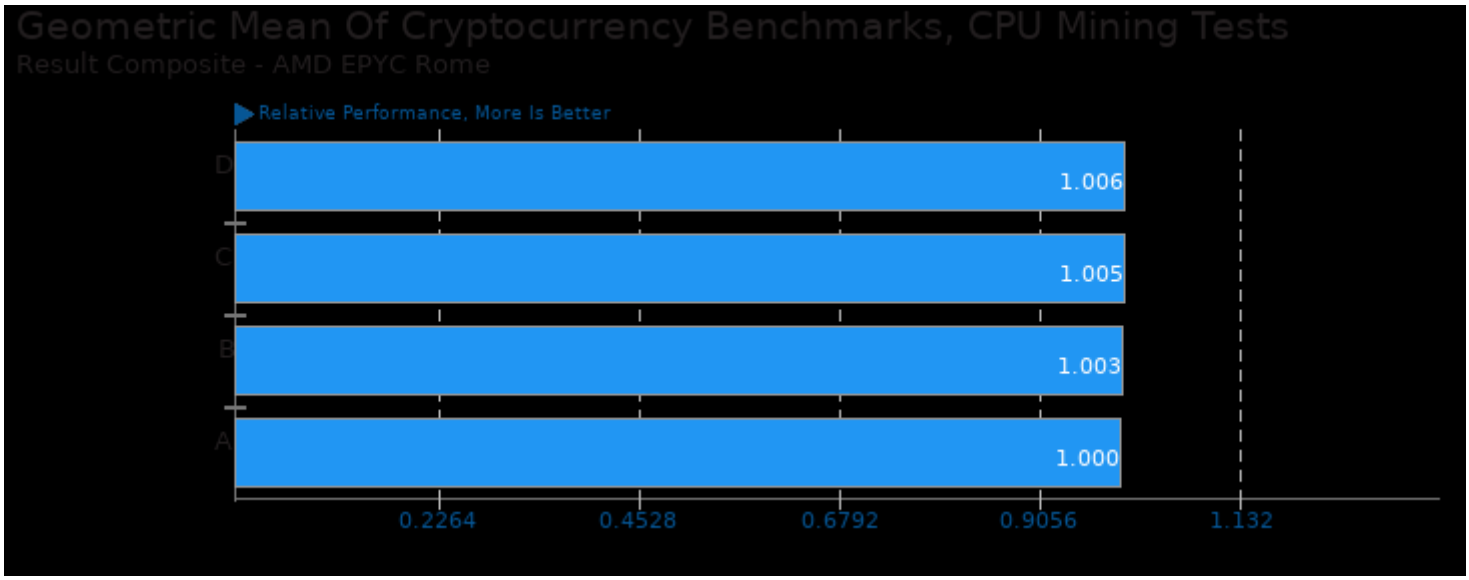
Geometric mean based upon tests: pts/lczero, pts/stockfish and pts/asmfish



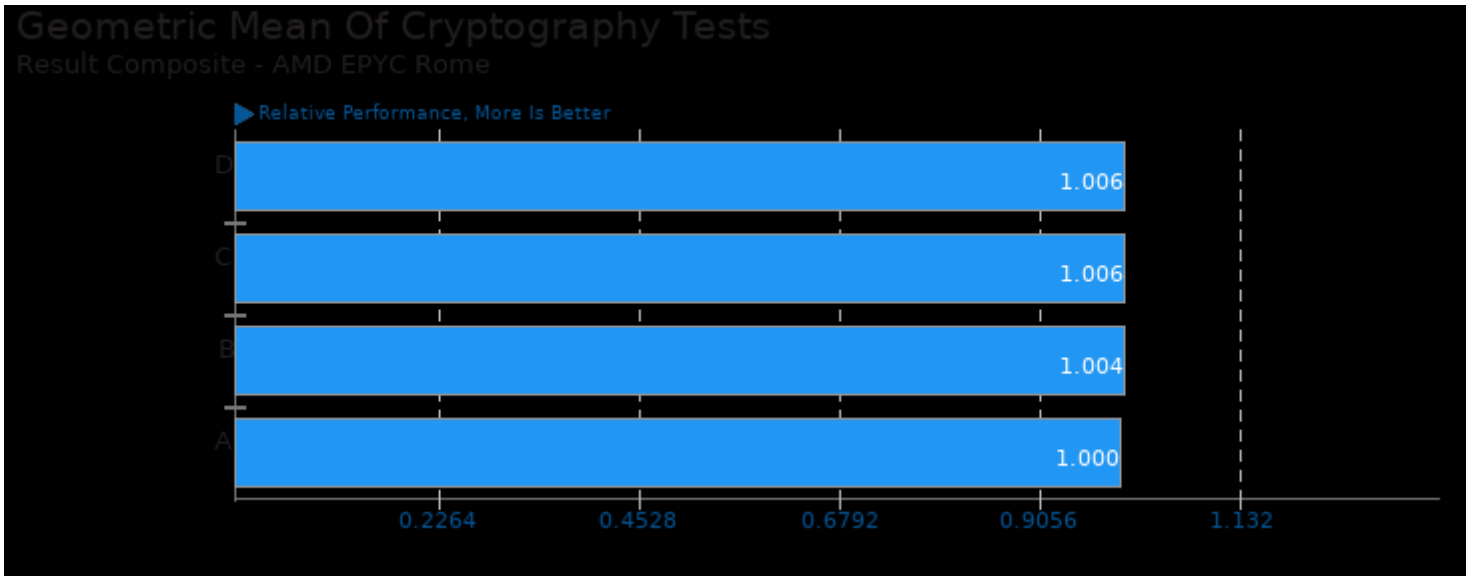
Geometric mean based upon tests: pts/build-linux-kernel, pts/build-gcc, pts/build-llvm, pts/build-ffmpeg, pts/build-godot, pts/build-erlang, pts/build-wasmer and pts/build-mesa



Geometric mean based upon tests: pts/vpxenc, pts/stockfish, pts/hmmer, pts/build-llvm, pts/c-ray, pts/encode-flac, pts/pgbench, pts/apache, pts/mrbayes, pts/dav1d, pts/openssl, pts/nginx, pts/aom-av1, pts/svt-av1, pts/svt-vp9 and pts/build-ffmpeg



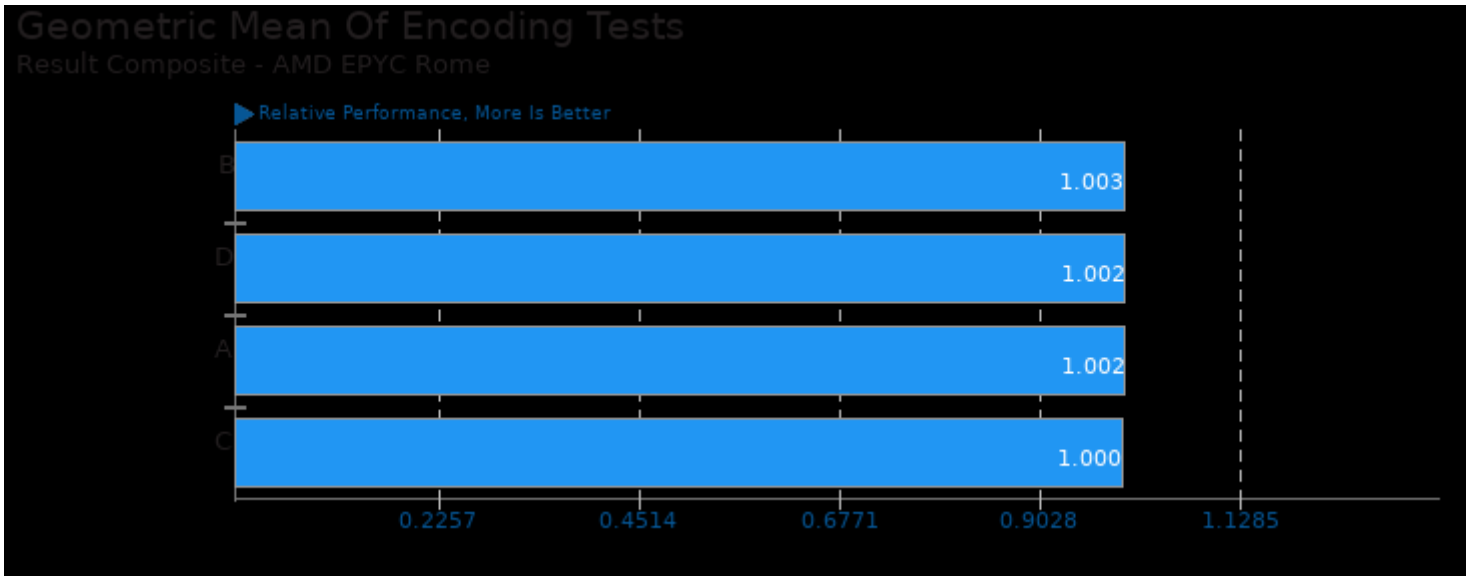
Geometric mean based upon tests: pts/cpuminer-opt, pts/xmrig and pts/chia-vdf



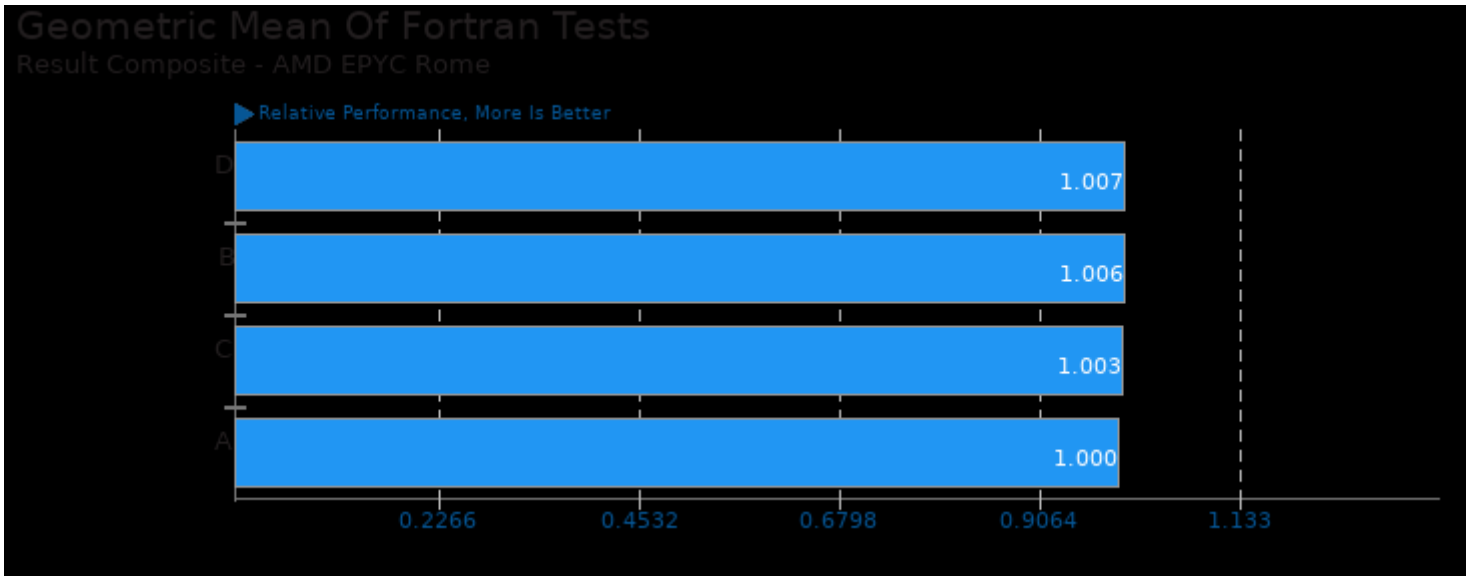
Geometric mean based upon tests: pts/openssl, pts/botan, pts/securemark, pts/cpuminer-opt, pts/xmrig and pts/chia-vdf



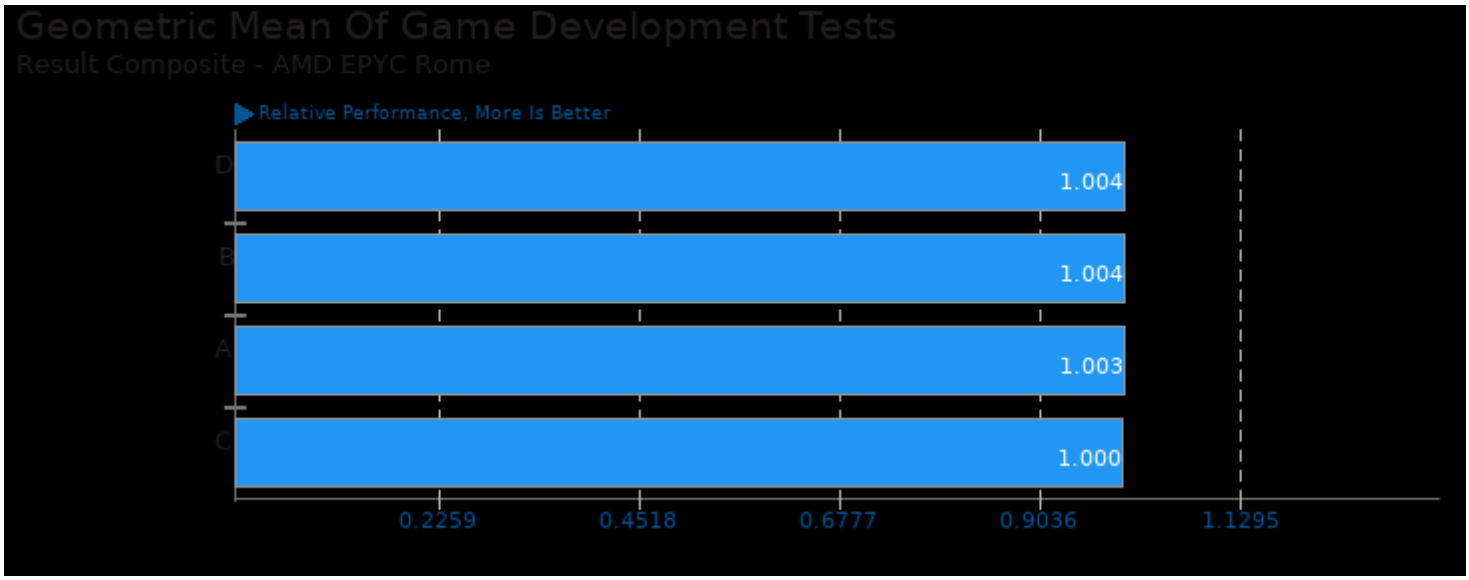
Geometric mean based upon tests: pts/redis, pts/rocksdb, pts/cassandra and pts/pgbench



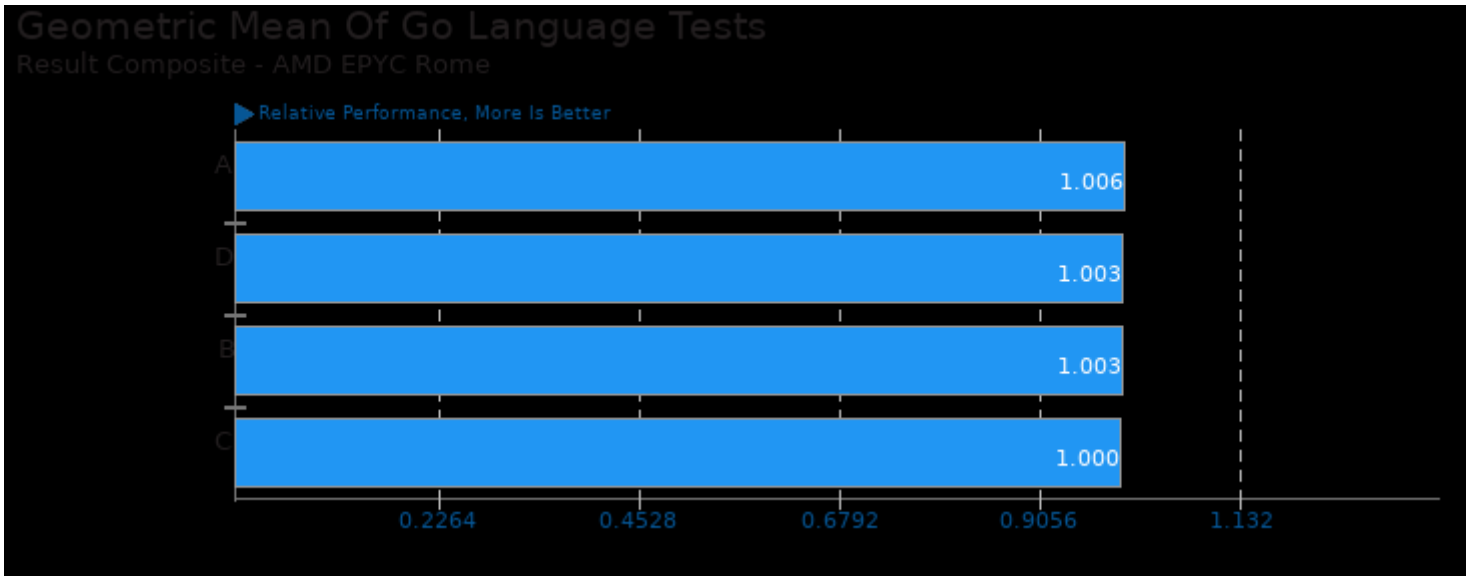
Geometric mean based upon tests: pts/encode-flac, pts/svt-vp9, pts/svt-hevc, pts/vpxenc, pts/dav1d, pts/aom-av1, pts/svt-av1 and pts/avifenc



Geometric mean based upon tests: pts/incompact3d, pts/hpcg, pts/nwchem, pts/cloverleaf and pts/qe



Geometric mean based upon tests: pts/astcenc, pts/build-godot, pts/blender, pts/oidn and pts/openvkl



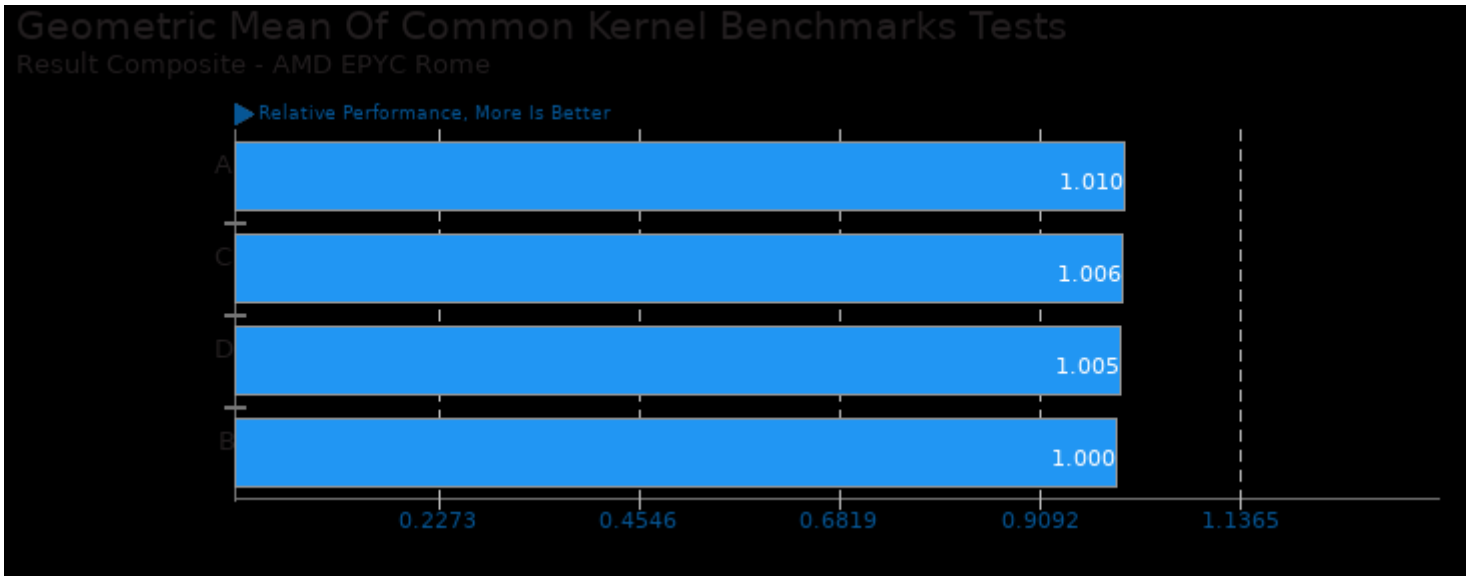
Geometric mean based upon tests: pts/apache and pts/nginx



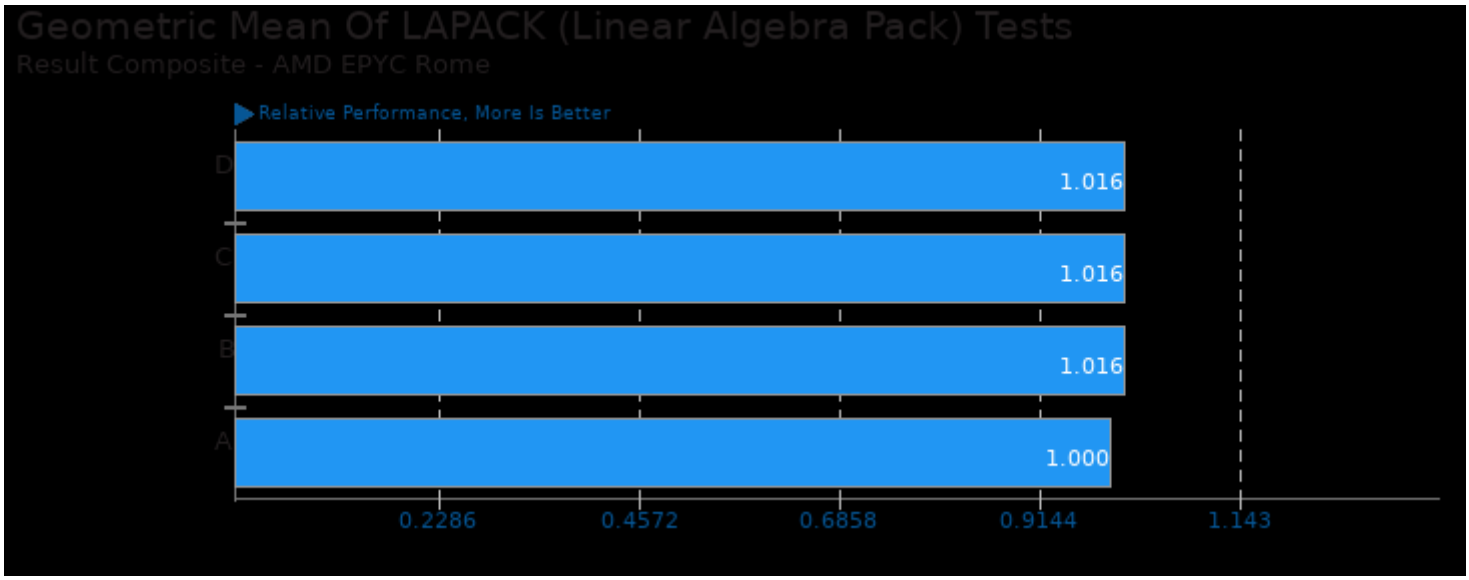
Geometric mean based upon tests: pts/jpegxl, pts/jpegxl-decode, pts/tjbench and pts/avifenc



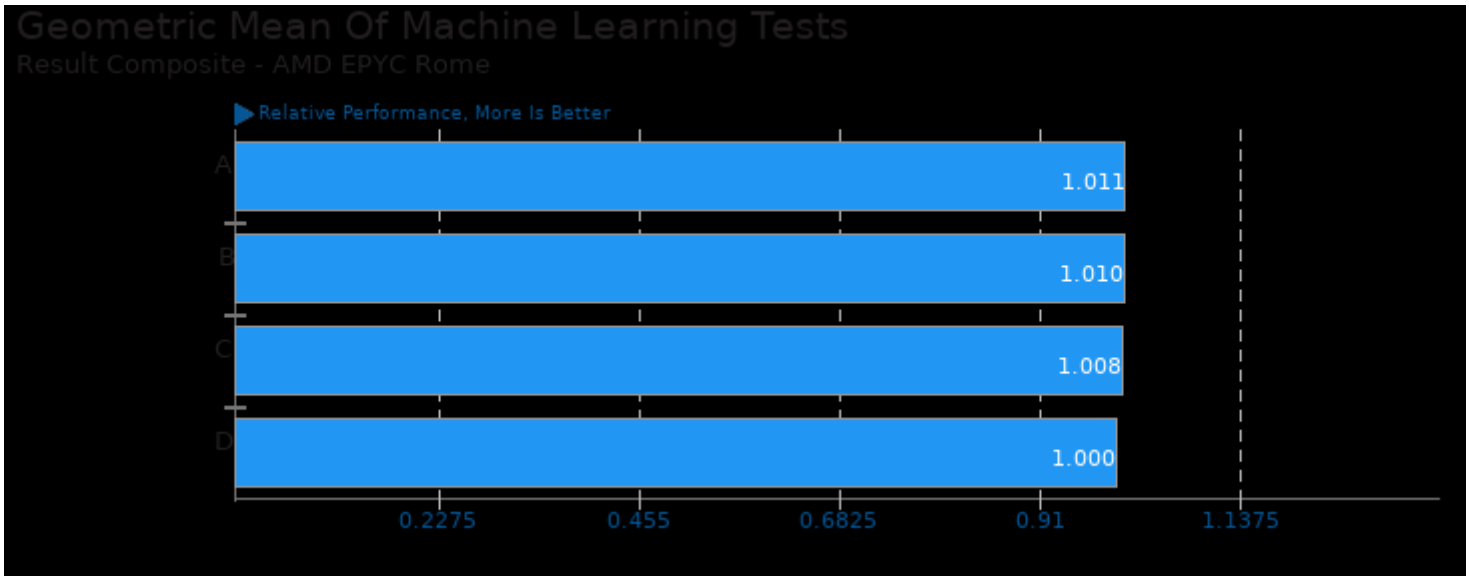
Geometric mean based upon tests: pts/cassandra and pts/renaissance



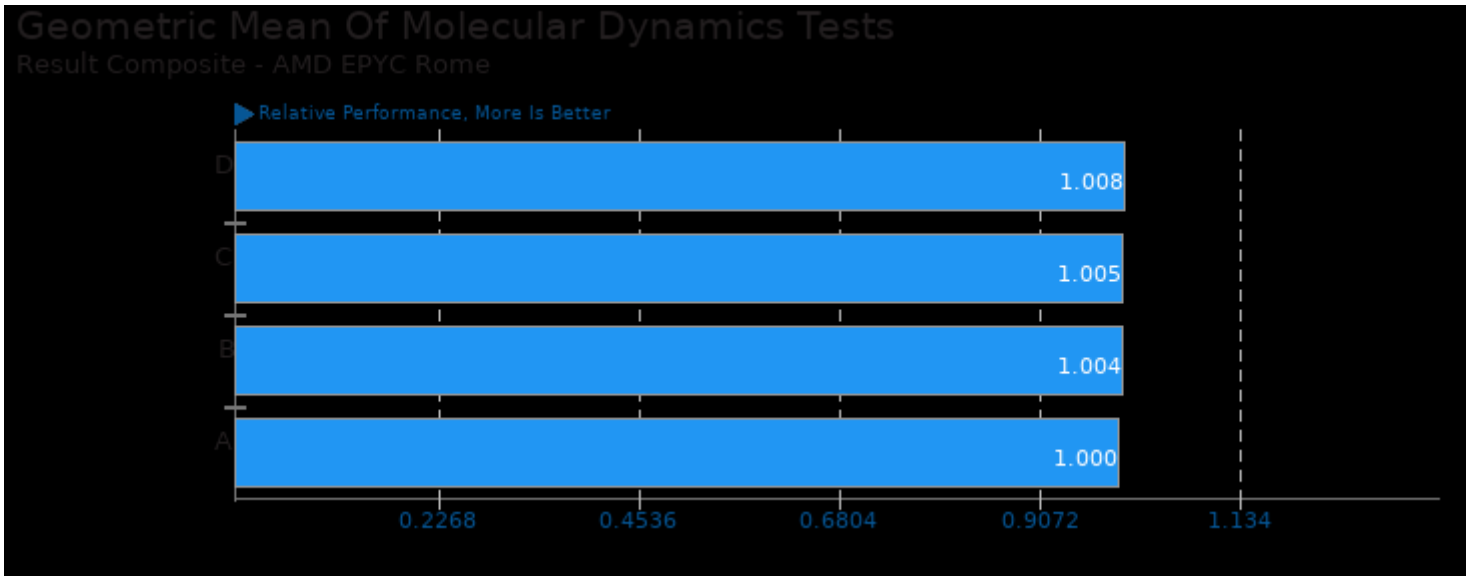
Geometric mean based upon tests: pts/apache, pts/pgbench, pts/openssl, pts/stress-ng and pts/rocksdb



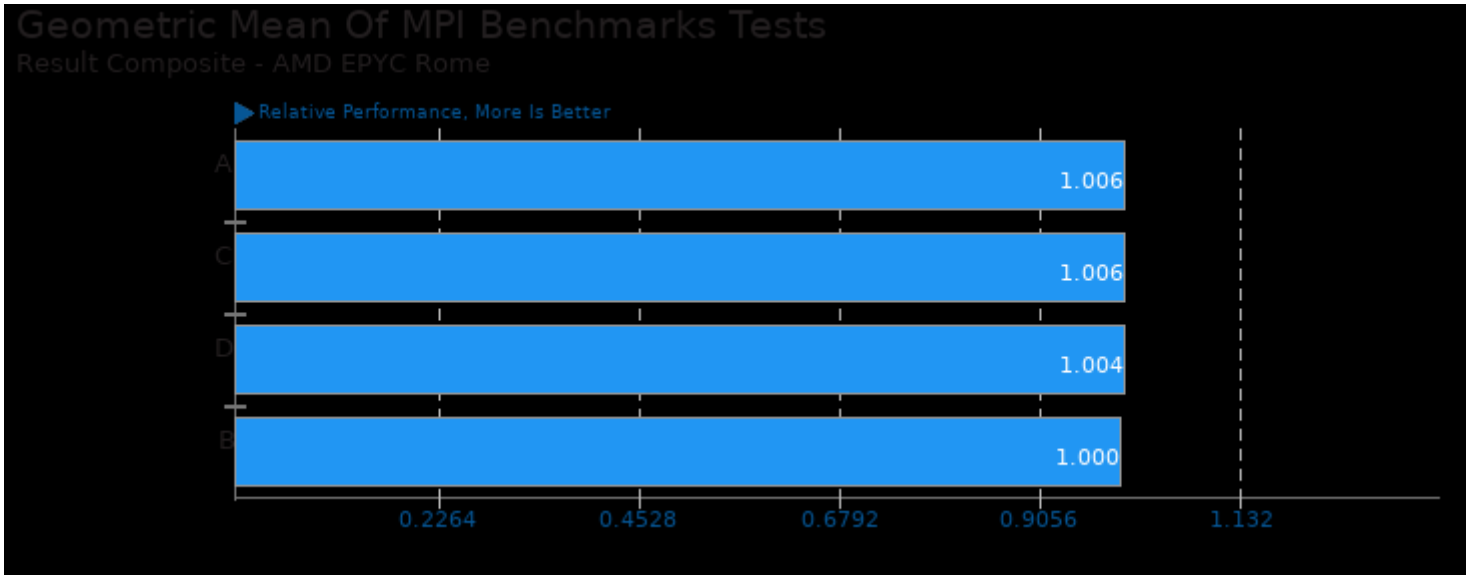
Geometric mean based upon tests: pts/nwchem and pts/qe



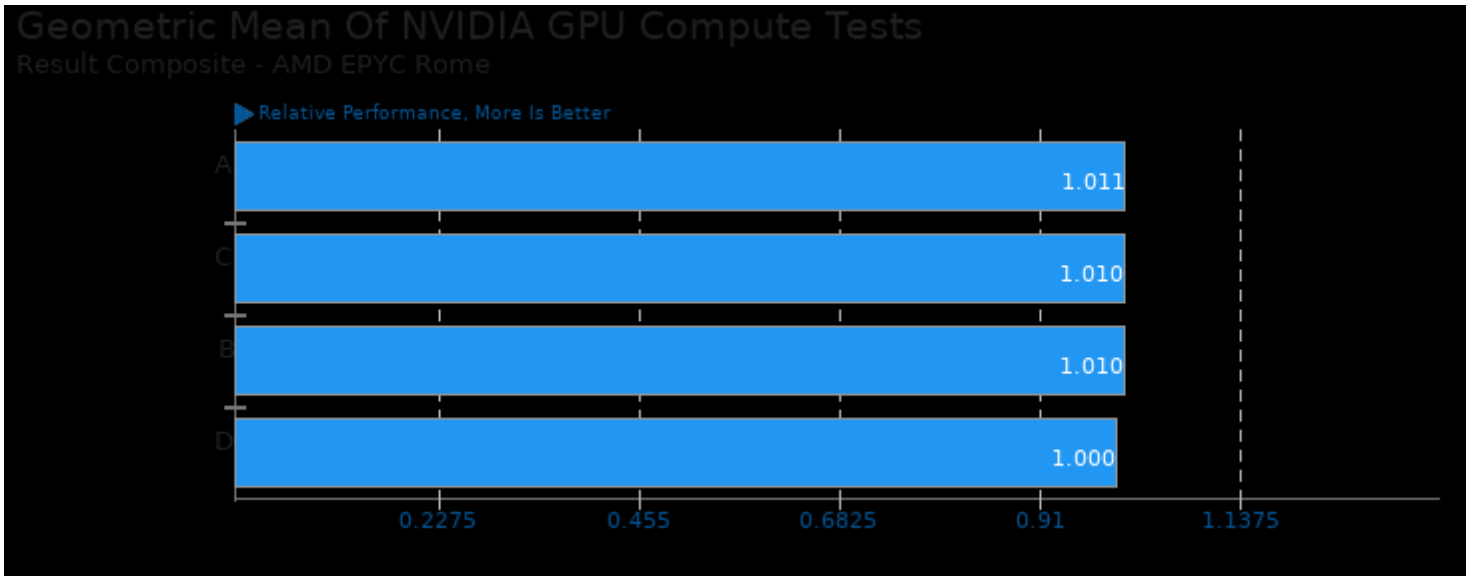
Geometric mean based upon tests: pts/mnn, pts/ncnn, pts/tnn, pts/numpy, pts/ecp-candle, pts/onnx and pts/lczero



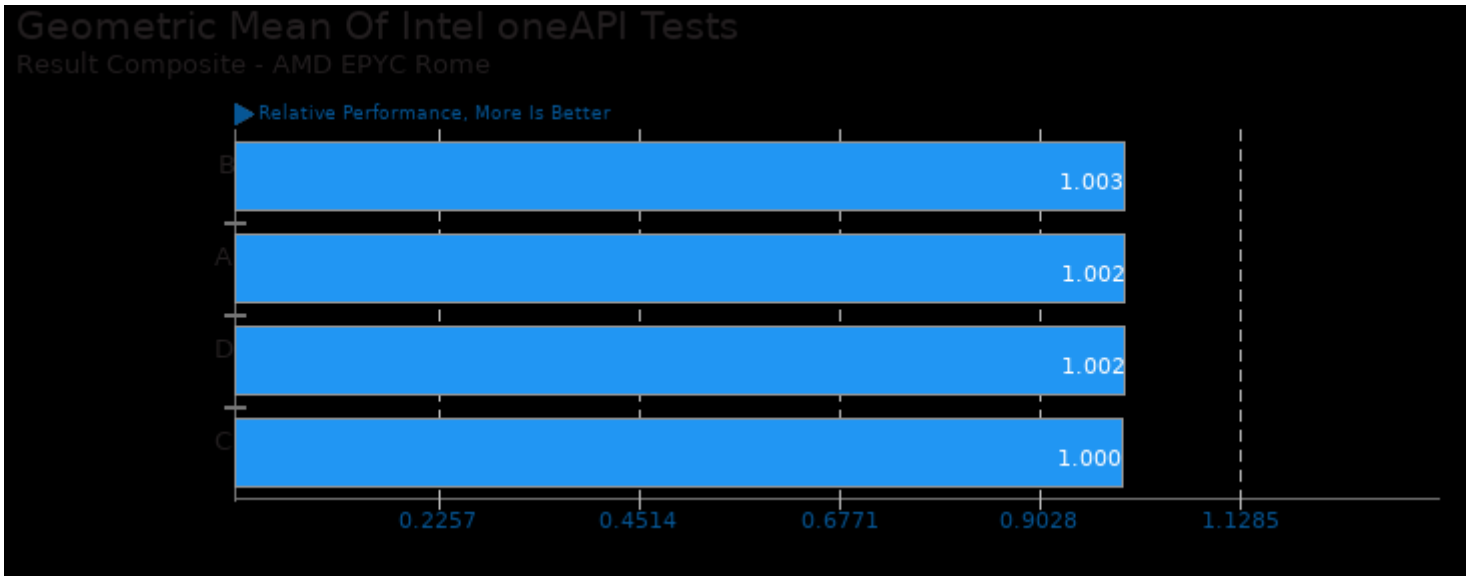
Geometric mean based upon tests: pts/namd, pts/nwchem, pts/cloverleaf, pts/lulesh, pts/pennant, pts/incompact3d and pts/openfoam



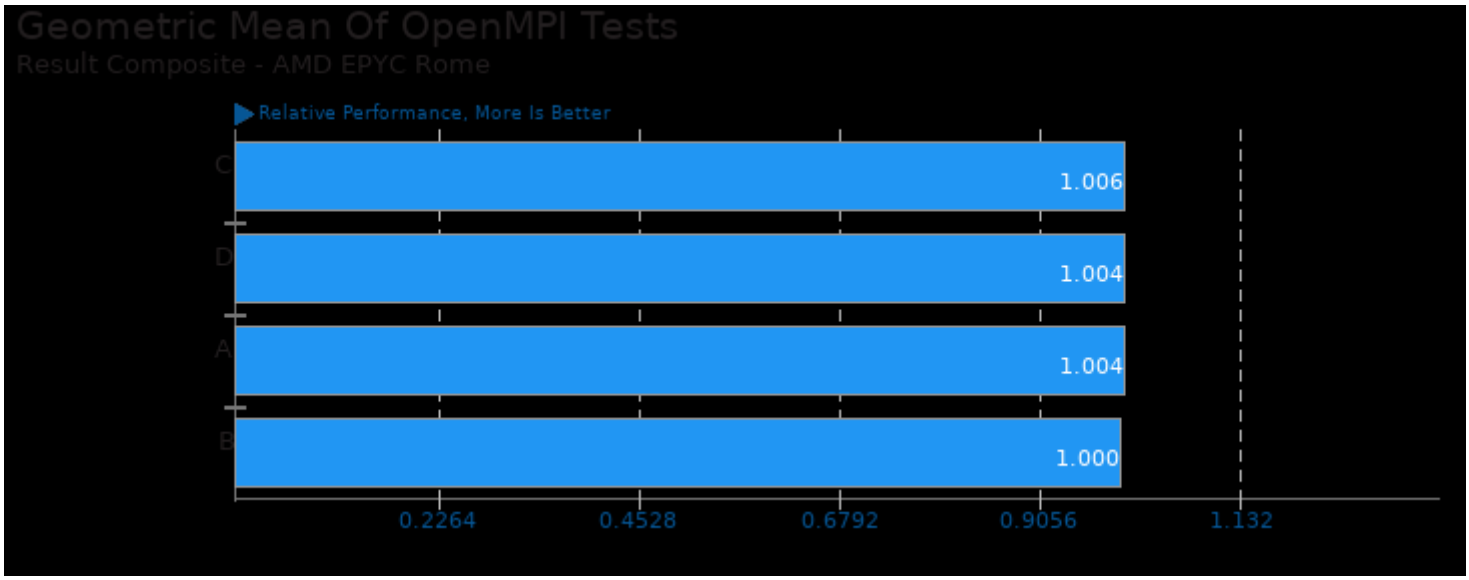
Geometric mean based upon tests: pts/askap, pts/incompact3d, pts/pennant, pts/hpcg and pts/mrbayes



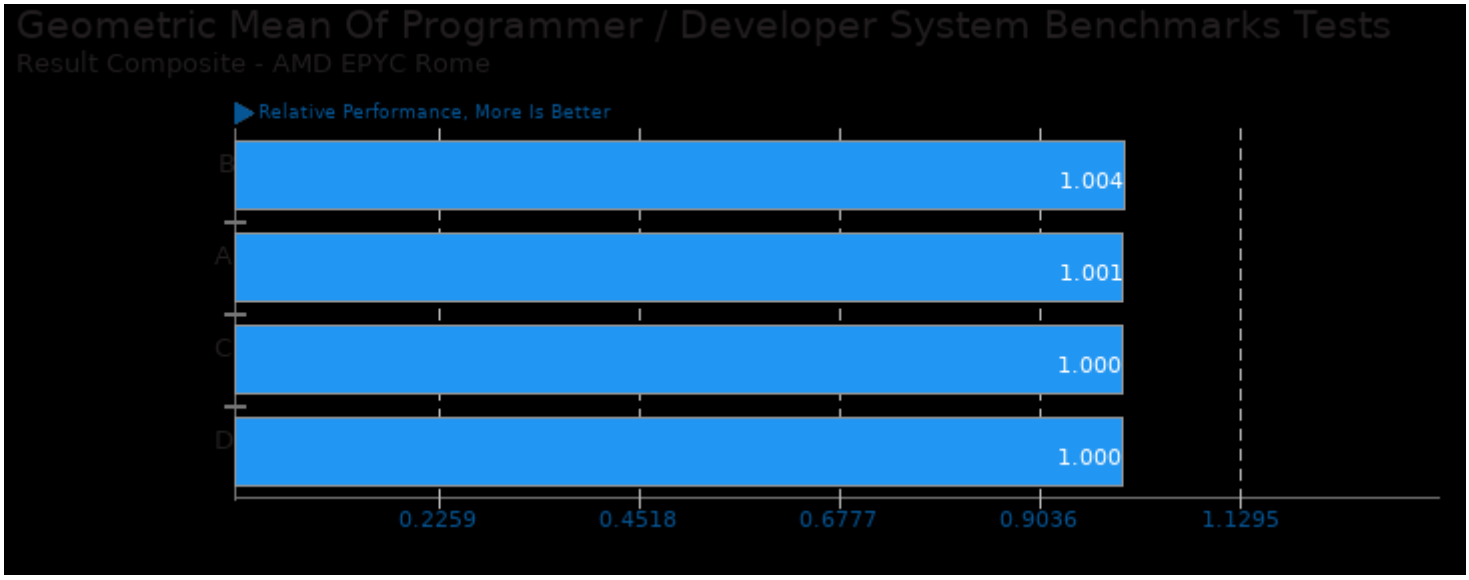
Geometric mean based upon tests: pts/luxcorerender, pts/lczero, pts/v-ray, pts/blender and pts/ncnn



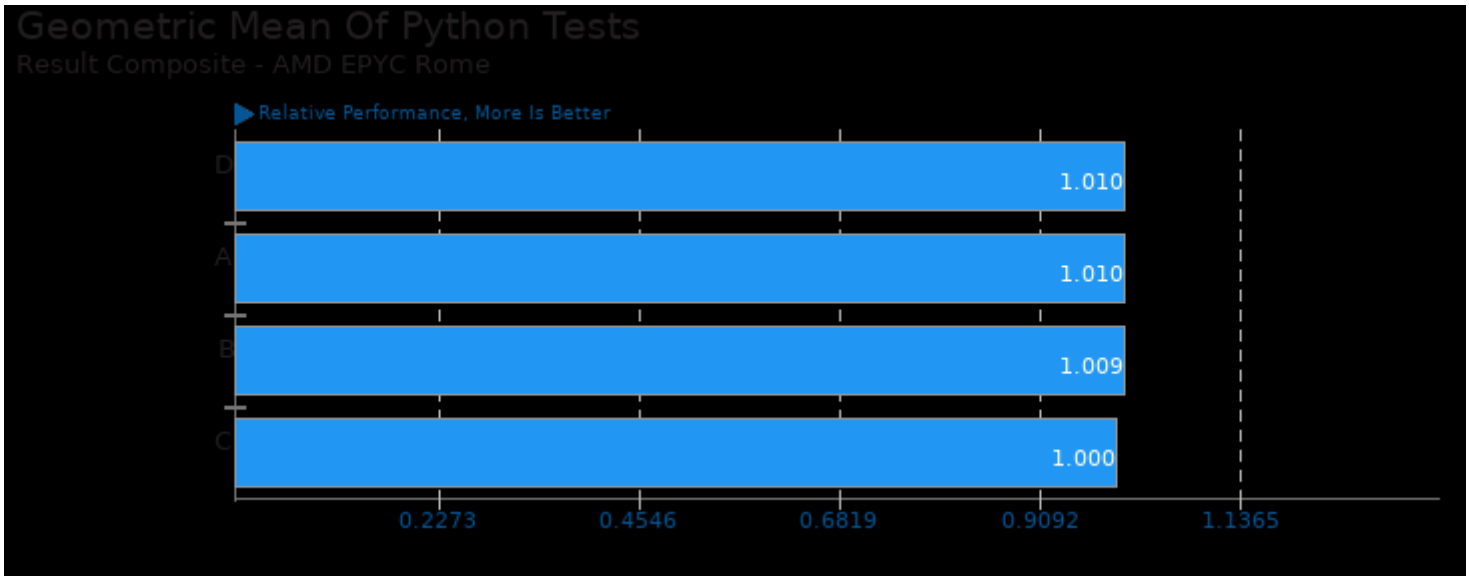
Geometric mean based upon tests: pts/embree, pts/oidn, pts/ospray and pts/openvkl



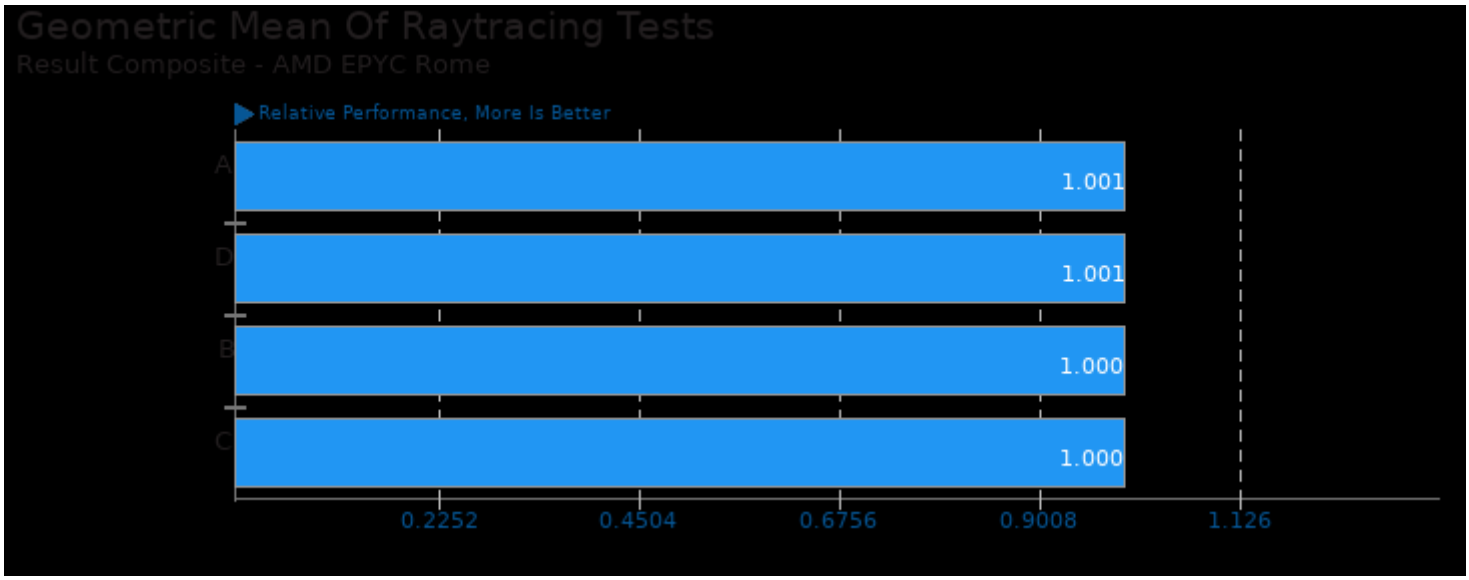
Geometric mean based upon tests: pts/askap, pts/openfoam, pts/incompact3d, pts/hpcg, pts/lulesh, pts/pennant, pts/nwchem, pts/mrbayes, pts/cloverleaf, pts/qe and pts/hmmer



Geometric mean based upon tests: pts/simdjson, pts/blosc, pts/build-linux-kernel, pts/build-gcc, pts/build-llvm, pts/build-ffmpeg, pts/build-godot, pts/build-erlang, pts/build-wasmer and pts/build-mesa



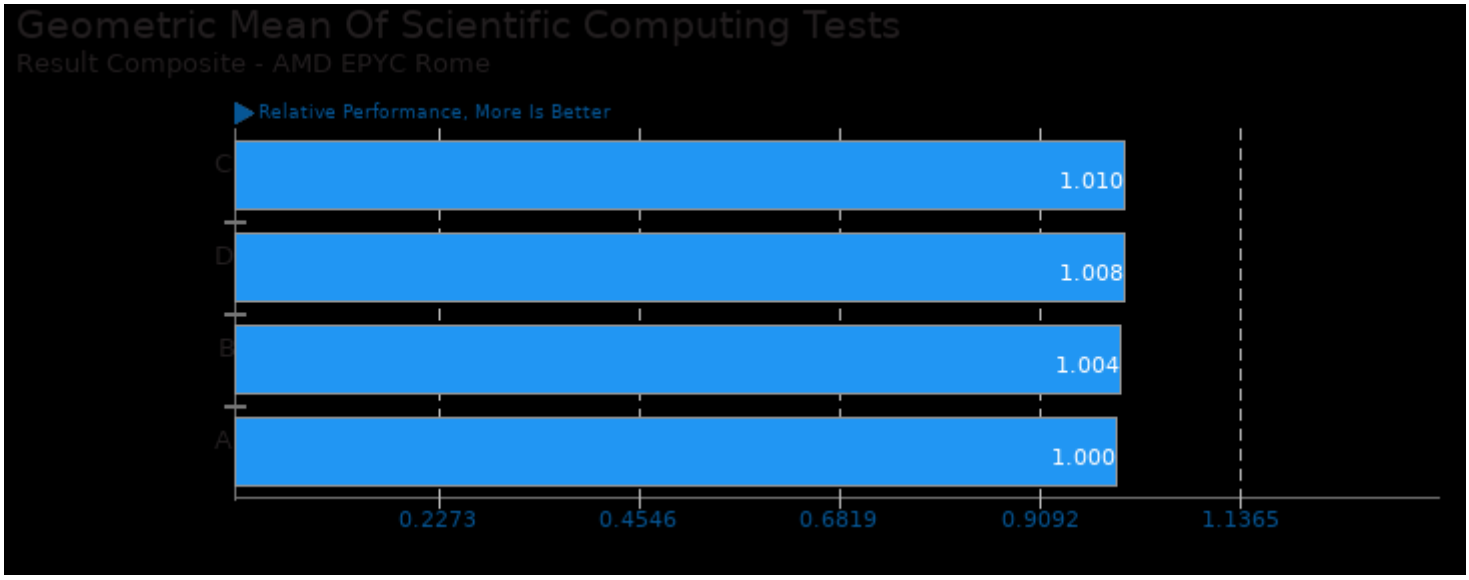
Geometric mean based upon tests: pts/cython-bench and pts/numpy



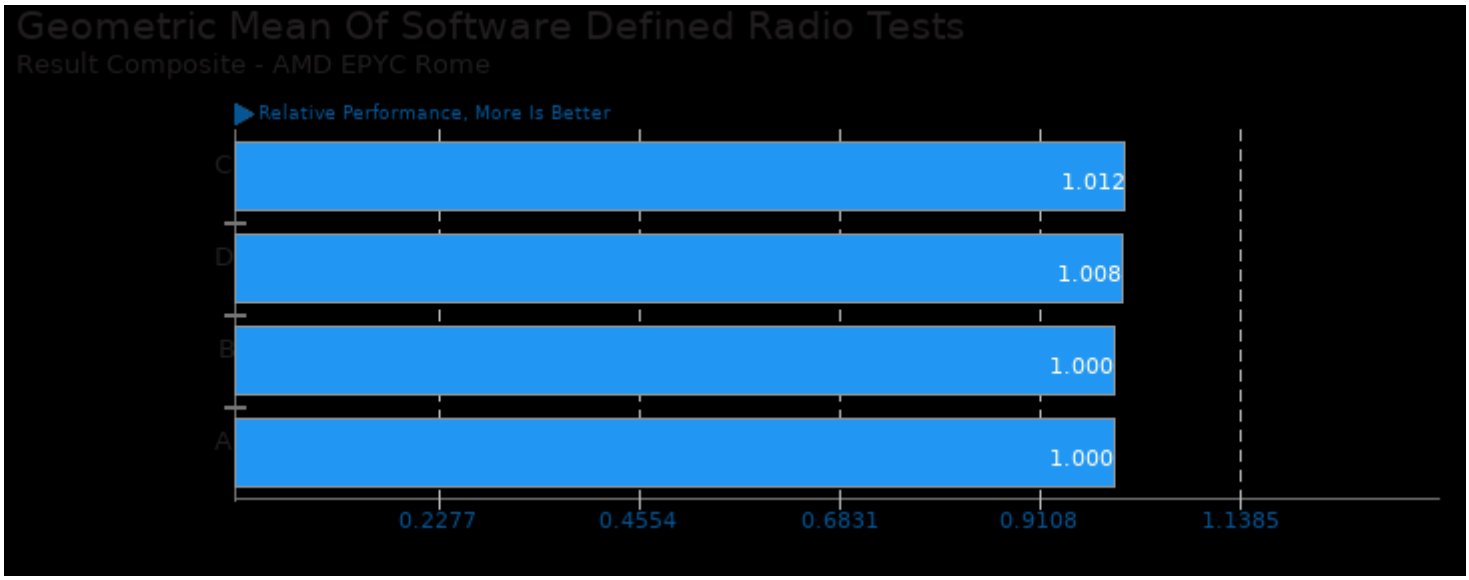
Geometric mean based upon tests: pts/ospray and pts/c-ray



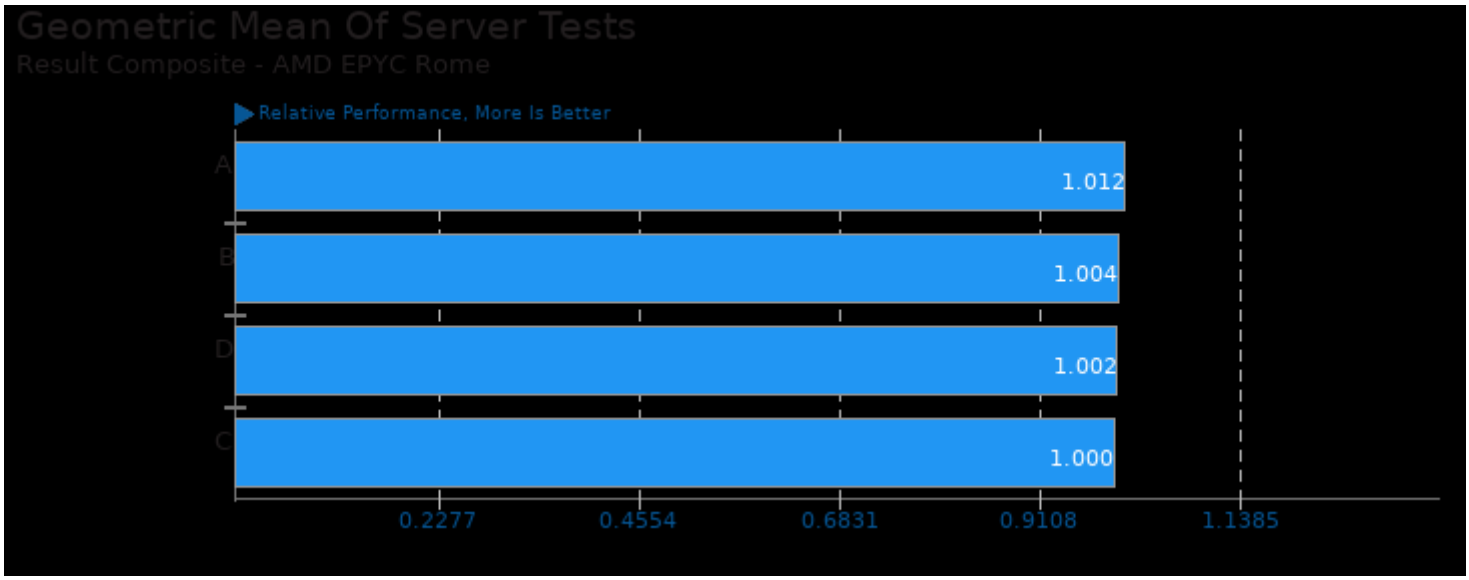
Geometric mean based upon tests: pts/ospray, pts/c-ray, pts/blender, pts/appleseed, pts/luxcorerender, pts/smallpt, pts/v-ray and pts/natron



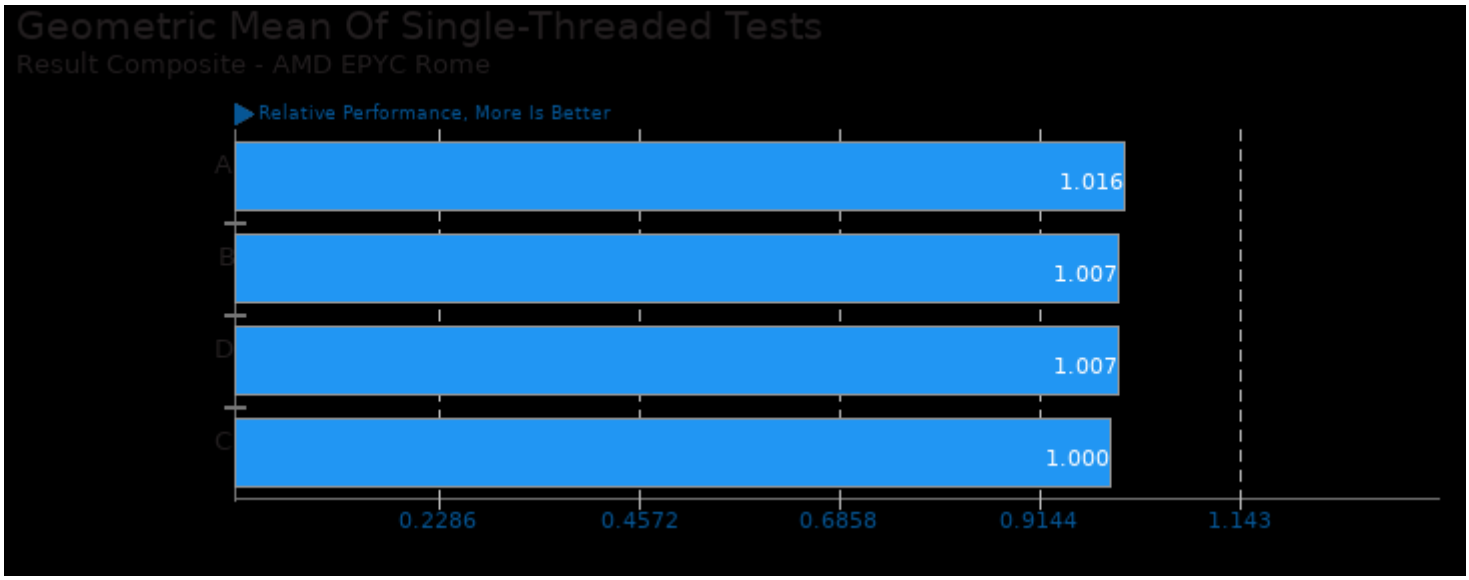
Geometric mean based upon tests: pts/namd, pts/nwchem, pts/cloverleaf, pts/lulesh, pts/pennant, pts/incompact3d, pts/openfoam, pts/mrbayes, pts/hmmer, pts/qe and pts/kripke



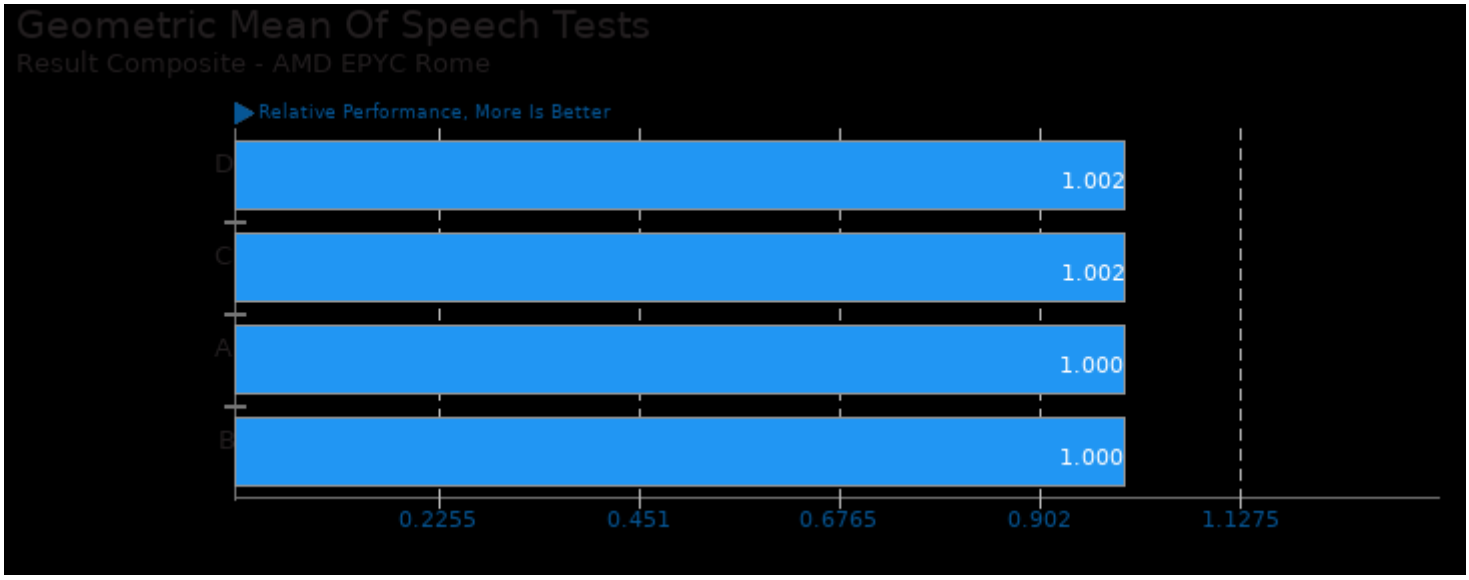
Geometric mean based upon tests: pts/luaradio and system/gnuradio



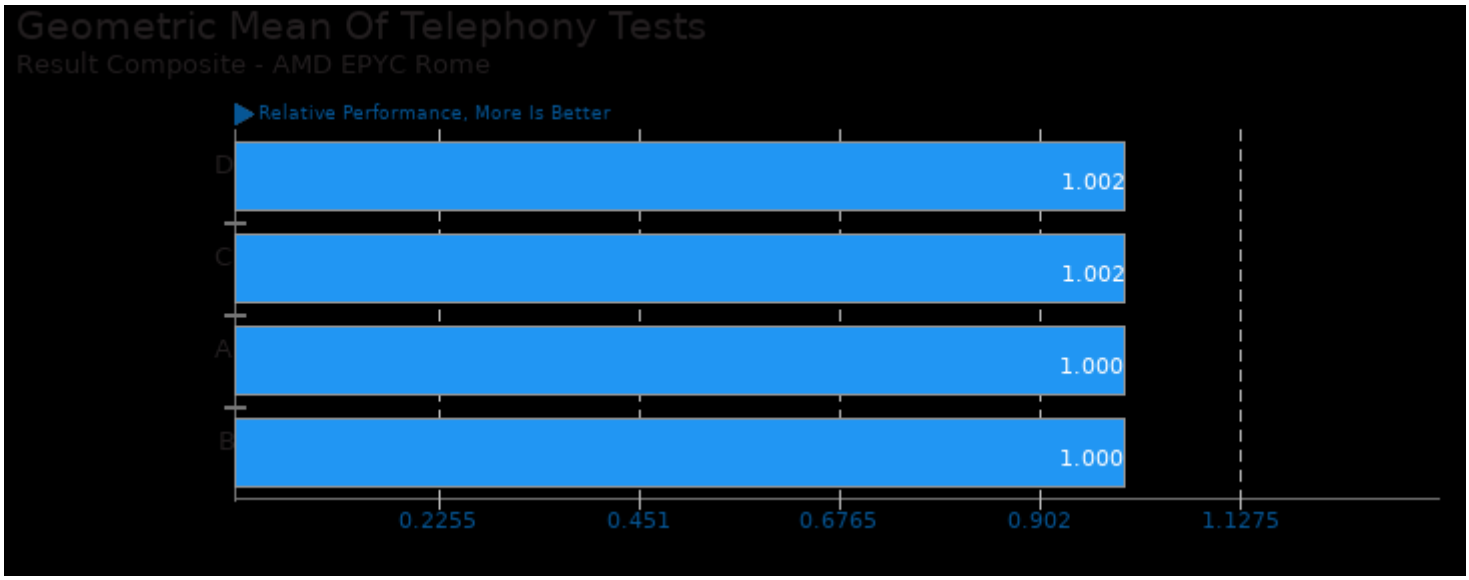
Geometric mean based upon tests: pts/apache, pts/nginx, pts/pgbench, pts/redis, pts/cassandra, pts/rocksdb, pts/phpbench, pts/openssl and pts/simdjson



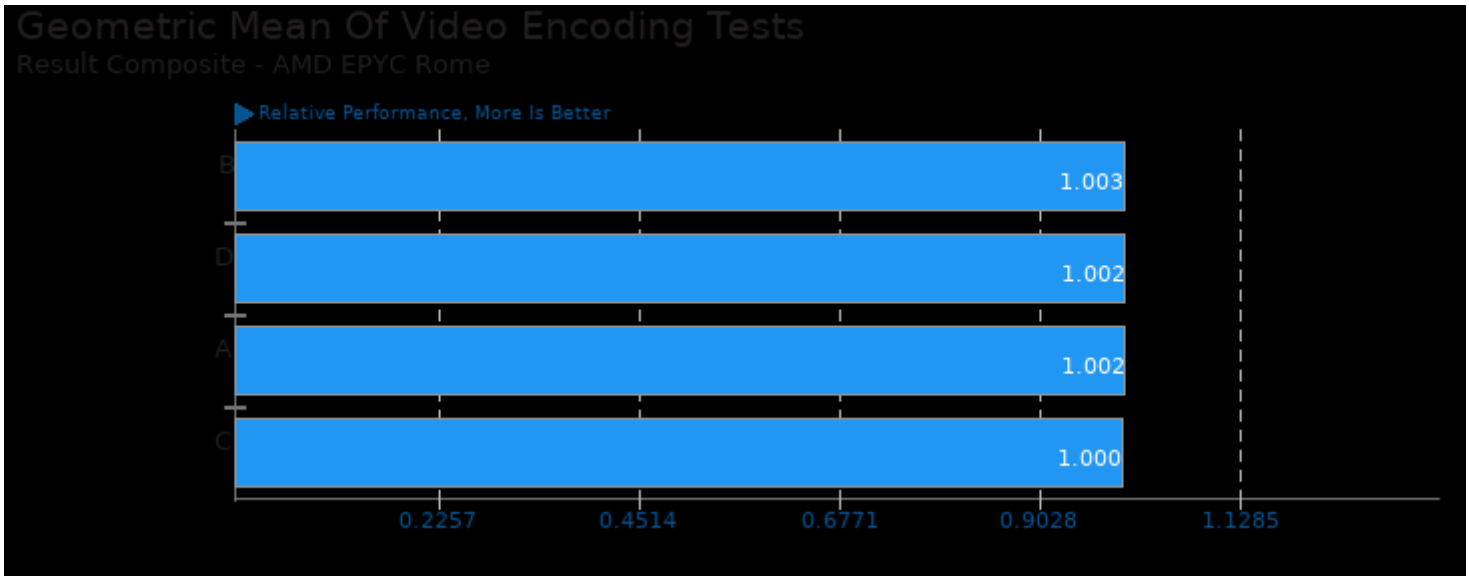
Geometric mean based upon tests: pts/gmpbench, pts/botan, pts/numpy, pts/encode-flac, pts/tjbench, pts/redis, pts/phpbench and pts/nginx



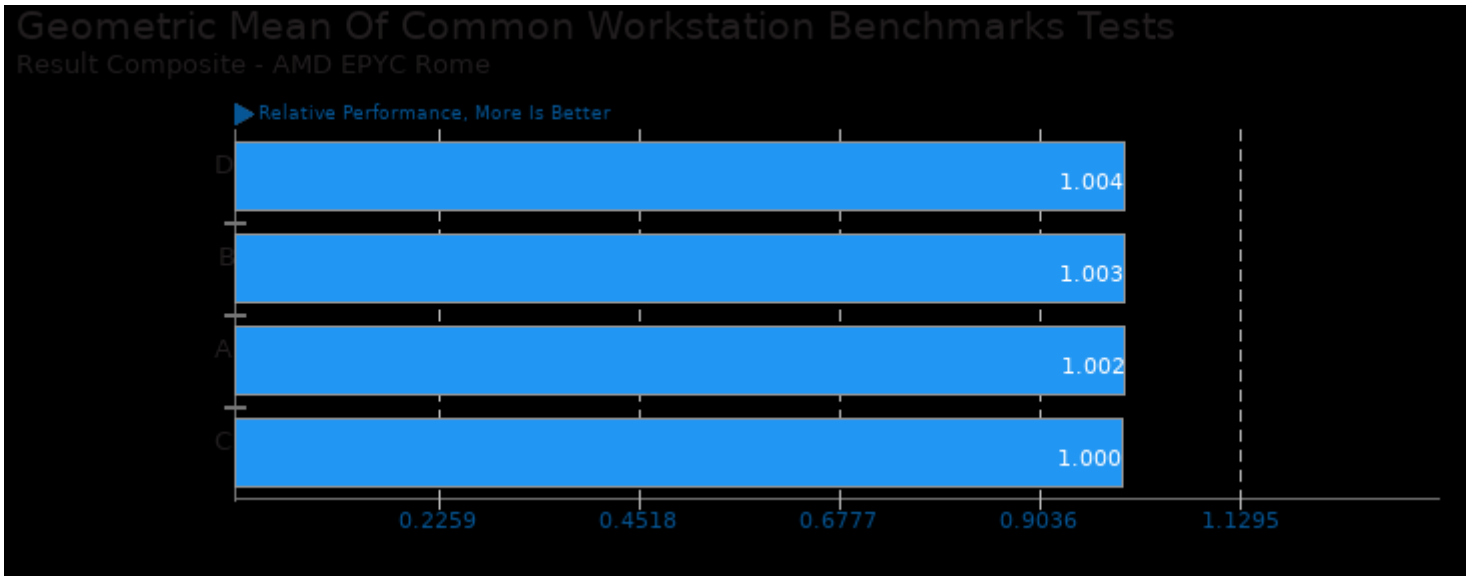
Geometric mean based upon tests: pts/vosk and pts/synthmark



Geometric mean based upon tests: pts/vosk and pts/synthmark



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



Geometric mean based upon tests: pts/blender, pts/brl-cad and pts/sysbench

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