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9900k-june-2022

Intel Core i9-9900K testing with a ASRock Z390M Pro4 (P4.20 BIOS) and Intel UHD 630 CFL GT2 3GB on Ubuntu 20.04 via the Phoronix Test Suite.

Automated Executive Summary

C had the most wins, coming in first place for 33% of the tests.

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

Stress-NG (Test: CPU Cache) at 1.368x
Stress-NG (Test: Futex) at 1.283x
perf-bench (Benchmark: Epoll Wait) at 1.215x
Renaissance (Test: In-Memory Database Shootout) at 1.198x
Stress-NG (Test: Atomic) at 1.17x
Renaissance (Test: Scala Dotty) at 1.125x
Stress-NG (Test: Context Switching) at 1.123x
libgav1 (Video Input: Chimera 1080p 10-bit) at 1.106x
perf-bench (Benchmark: Futex Lock-Pi) at 1.106x
Google Draco (Model: Lion) at 1.069x.

Test Systems:

A

AA

AAA

B

C

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASRock Z390M Pro4 (P4.20 BIOS), Chipset: Intel Cannon Lake PCH, Memory: 16GB, Disk: 240GB Corsair Force MP510, Graphics: Intel UHD 630 CFL GT2 3GB (1200MHz), Audio: Realtek ALC892, Monitor: MX279, Network: Intel I219-V

OS: Ubuntu 20.04, Kernel: 5.9.0-050900rc1daily20200819-generic (x86_64) 20200818, Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, OpenGL: 4.6 Mesa 20.0.4, OpenCL: OpenCL 2.1, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate powersave (EPP: balance_performance) - CPU Microcode: 0xd6 - Thermald 1.9.1
Java Notes: OpenJDK Runtime Environment (build 11.0.8+10-post-Ubuntu-0ubuntu120.04)
Python Notes: Python 2.7.18rc1 + Python 3.8.2
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Not affected + mds: Vulnerable; SMT vulnerable + meltdown: Not affected + spec_store_bypass: Vulnerable + spectre_v1: Vulnerable: __user pointer sanitization and usercopy barriers only; no swapgs barriers + spectre_v2: Vulnerable IBPB: disabled STIBP: disabled + srbds: Vulnerable + tsx_async_abort: Vulnerable

	A	AA	AAA	B	C
Stress-NG - CPU Cache (Bogo Ops/s)			**129.06**	144.73	**176.59**
Normalized			73.08%	81.96%	100%
Stress-NG - Futex (Bogo Ops/s)			1849514	**1927725**	**1502492**
Normalized			95.94%	100%	77.94%
perf-bench - Epoll Wait (ops/sec)	148161		147698	**148844**	**122552**
Normalized	99.54%		99.23%	100%	82.34%
Renaissance - I.M.D.S (ms)	3090		**2905**	**3480**	3464
Normalized	94%		100%	83.47%	83.87%
Stress-NG - Atomic (Bogo Ops/s)			166632	**166060**	**194270**
Normalized			85.77%	85.48%	100%
Renaissance - Scala Dotty (ms)	**843.8**		**750.3**	756.5	763.2
Normalized	88.92%		100%	99.18%	98.31%
Stress-NG - Context Switching (Bogo Ops/s)			**3879899**	4059089	**4355739**
Normalized			89.08%	93.19%	100%

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libgav1 - C.1.1.b (FPS)	66.44	61.82	68.39	68.16
Normalized	97.15%	90.39%	100%	99.66%
perf-bench - Futex Lock-Pi (ops/sec)	573	543	525	518
Normalized	100%	94.76%	91.62%	90.4%
Google Draco - Lion (ms)		4512	4314	4219
Normalized		93.51%	97.8%	100%
Renaissance - G.A.U.J.F (ms)	2018	2051	1989	2118
Normalized	98.55%	96.99%	100%	93.92%
yquake2 - OpenGL 3.x - Off - On - 1920 x 1080 (FPS)	132.8	141.3	140.7	139
Normalized	93.98%	100%	99.58%	98.37%
Stress-NG - Socket Activity (Bogo Ops/s)		6310	6664	6708
Normalized		94.06%	99.35%	100%
Renaissance - A.S.P (ms)	3076	3108	2975	3154
Normalized	96.7%	95.7%	100%	94.32%
yquake2 - OpenGL 3.x - On - Off - 1920 x 1080 (FPS)	389.2	411.5	410.9	409.3
Normalized	94.58%	100%	99.85%	99.47%
Renaissance - Apache Spark ALS (ms)	22434	22307	23569	23348
Normalized	99.43%	100%	94.65%	95.54%
x264 - Bosphorus 1080p (FPS)		103.74	103.1	108.87
Normalized		95.29%	94.7%	100%
perf-bench - Futex Hash	6662493	6992823	6635321	6659088
Normalized	95.28%	100%	94.89%	95.23%
yquake2 - OpenGL 3.x - On - On - 1920 x 1080 (FPS)	133.6	140.7	139.9	138.9
Normalized	94.95%	100%	99.43%	98.72%
yquake2 - Vulkan - On - Off - 1920 x 1080 (FPS)	258.9	271.2	272.5	270.3
Normalized	95.01%	99.52%	100%	99.19%
yquake2 - Vulkan - Off - Off - 1920 x 1080 (FPS)	273.6	284.8	287.5	284.7
Normalized	95.17%	99.06%	100%	99.03%
yquake2 - OpenGL ES 3.x - Off - On - 1920 x 1080 (FPS)	134.5	141.3	140.9	139.1
Normalized	95.19%	100%	99.72%	98.44%
yquake2 - OpenGL ES 3.x - On - On - 1920 x 1080 (FPS)	133.7	140	140.4	138.4
Normalized	95.23%	99.72%	100%	98.58%
oneDNN - IP Shapes 1D - u8s8f32 - CPU (ms)		1.40629	1.44768	1.37942
Normalized		98.09%	95.28%	100%
yquake2 - OpenGL ES 3.x - Off - Off - 1920 x 1080 (FPS)	426.5	443.2	446.3	444.4
Normalized	95.56%	99.31%	100%	99.57%
oneDNN - IP Shapes 1D - f32 - CPU (ms)		3.70266	3.60186	3.76878
Normalized		97.28%	100%	95.57%

Renaissance - ALS Movie Lens (ms)	15928	**15998**	**15293**	15409
Normalized	96.01%	95.59%	100%	99.25%
WebP2 Image Encode - Default (sec)		**3.934**	**4.107**	4.046
Normalized		100%	95.79%	97.23%
yquake2 - OpenGL 3.x - Off - Off - 1920 x 1080 (FPS)	**426.5**	441.3	**444.8**	440.4
Normalized	95.89%	99.21%	100%	99.01%
Parallel BZIP2 Compression - F.1.0.R.a.m.i.C (sec)		8.744	**8.703**	**9.062**
Normalized		99.53%	100%	96.04%
yquake2 - OpenGL ES 3.x - On - Off - 1920 x 1080 (FPS)	**392.8**	**408.5**	402.3	406.4
Normalized	96.16%	100%	98.48%	99.49%
TensorFlow Lite - Mobilenet Quant (us)		4286	**4250**	**4414**
Normalized		99.16%	100%	96.28%
perf-bench - Memcpy 1MB (GB/sec)	**34.120632**	32.967173	32.963167	**32.933653**
Normalized	100%	96.62%	96.61%	96.52%
TensorFlow Lite - I.R.V (us)		45486	**44471**	**45990**
Normalized		97.77%	100%	96.7%
WebP2 Image Encode - Q.1.C.E.5 (sec)		7.117	**7.163**	**6.928**
Normalized		97.34%	96.72%	100%
Facebook RocksDB - Read While Writing (Op/s)		**1692265**	**1748480**	1729311
Normalized		96.78%	100%	98.9%
perf-bench - Syscall Basic (ops/sec)	27249805	27172288	**26439295**	**27312524**
Normalized	99.77%	99.49%	96.8%	100%
Stress-NG - MEMFD (Bogo		855.14	**877.33**	**850.12**
Normalized		97.47%	100%	96.9%
TensorFlow Lite - Mobilenet Float (us)		**2311**	2324	**2382**
Normalized		100%	99.43%	96.99%
Stress-NG - Malloc (Bogo Ops/s)		**7796434**	8002059	**8032431**
Normalized		97.06%	99.62%	100%
perf-bench - Sched Pipe	286509	**286406**	**294941**	290628
Normalized	97.14%	97.11%	100%	98.54%
Stress-NG - Matrix Math (Bogo Ops/s)		**45011**	45293	**46338**
Normalized		97.14%	97.75%	100%
Renaissance - A.U.C.T (ms)	10471	10499	**10431**	**10737**
Normalized	99.62%	99.35%	100%	97.15%
Stress-NG - NUMA (Bogo Ops/s)		**170.24**	173.55	**175.11**
Normalized		97.22%	99.11%	100%
SVT-HEVC - 10 - Bosphorus 4K (FPS)		**67.77**	69.36	**69.42**
Normalized		97.62%	99.91%	100%

TensorFlow Lite - Inception V4		48552	48651	49632
Normalized		100%	99.8%	97.82%
Renaissance - F.H.R (ms)	3886	3873	3956	3890
Normalized	99.66%	100%	97.9%	99.55%
SVT-AV1 - Preset 8 - Bosphorus 4K (FPS)		22.644	22.173	22.611
Normalized		100%	97.92%	99.85%
Facebook RocksDB - R.R.W.R (Op/s)		1495319	1464259	1473776
Normalized		100%	97.92%	98.56%
Stress-NG - Crypto (Bogo Ops/s)		10907	11005	11124
Normalized		98.04%	98.93%	100%
perf-bench - Memset 1MB (GB/sec)	55.411731	54.343471	55.275955	54.497013
Normalized	100%	98.07%	99.75%	98.35%
Glibc Benchmarks - sin (ns)	64.9632	63.7587	63.7753	63.7441
Normalized	98.12%	99.98%	99.95%	100%
yquake2 - S.C.C.L - Off - Off - 1920 x 1080 (FPS)	105.4	107.4	106.7	106.6
Normalized	98.14%	100%	99.35%	99.26%
Renaissance - Savina Reactors.IO (ms)	8470	8573	8630	8493
Normalized	100%	98.79%	98.14%	99.73%
oneDNN - M.M.B.S.T - u8s8f32 - CPU (ms)		1.53043	1.50304	1.52413
Normalized		98.21%	100%	98.62%
oneDNN - D.B.s - f32 - CPU (ms)		9.32842	9.49623	9.44632
Normalized		100%	98.23%	98.75%
GROMACS - MPI CPU - water_GMX50_bare (Ns/Day)		0.854	0.845	0.839
Normalized		100%	98.95%	98.24%
yquake2 - Software CPU - Off - Off - 1920 x 1080 (FPS)	113	113.9	111.9	113.9
Normalized	99.21%	100%	98.24%	100%
yquake2 - S.C.C.L - Off - On - 1920 x 1080 (FPS)	105.2	106.7	107	106.3
Normalized	98.32%	99.72%	100%	99.35%
oneDNN - C.B.S.A - u8s8f32 - CPU (ms)		17.4381	17.7094	17.4203
Normalized		99.9%	98.37%	100%
x264 - Bosphorus 4K (FPS)		23.78	23.4	23.69
Normalized		100%	98.4%	99.62%
Google Draco - Church Facade (ms)		6349	6452	6360
Normalized		100%	98.4%	99.83%
SVT-VP9 - P.S.O - Bosphorus 1080p (FPS)		162.06	159.51	159.48
Normalized		100%	98.43%	98.41%
yquake2 - Vulkan - On - On - 1920 x 1080 (FPS)	25.8	25.7	26.1	26
Normalized	98.85%	98.47%	100%	99.62%

Quantum ESPRESSO - AUSURF112 (sec)	**763.58**	**752.03**	757.3	756.22
Normalized	98.49%	100%	99.3%	99.45%
SVT-AV1 - Preset 12 - Bosphorus 4K (FPS)		**92.309**	**90.913**	91.662
Normalized		100%	98.49%	99.3%
TensorFlow Lite - NASNet Mobile (us)		10214	**10304**	**10149**
Normalized		99.36%	98.49%	100%
yquake2 - Vulkan - Off - On - 1920 x 1080 (FPS)	**26.7**	26.8	**27.1**	27
Normalized	98.52%	98.89%	100%	99.63%
Blender - Classroom - CPU-Only (sec)		**498.2**	494.31	**490.96**
Normalized		98.55%	99.32%	100%
SVT-AV1 - Preset 12 - Bosphorus 1080p (FPS)		356.172	**353.72**	**358.763**
Normalized		99.28%	98.59%	100%
oneDNN - D.B.s - u8s8f32 - CPU (ms)		**3.72125**	3.72831	**3.77243**
Normalized		100%	99.81%	98.64%
yquake2 - S.C.C.L - On - Off - 1920 x 1080 (FPS)	103	**103.7**	103.4	**102.3**
Normalized	99.32%	100%	99.71%	98.65%
7-Zip Compression - Compression Rating (MIPS)		62169	**62800**	**61982**
Normalized		99%	100%	98.7%
Blender - Pabellon Barcelona - CPU-Only (sec)		634.06	**637.82**	**629.52**
Normalized		99.28%	98.7%	100%
libavif avifenc - 10, Lossless		**6.687**	6.663	**6.602**
Normalized		98.73%	99.08%	100%
Glibc Benchmarks - atanh (ns)	**34.7962**	34.3849	34.3748	**34.3682**
Normalized	98.77%	99.95%	99.98%	100%
Renaissance - Rand Forest (ms)	609.2	**613.7**	**606.2**	608.0
Normalized	99.51%	98.78%	100%	99.7%
Stress-NG - Forking (Bogo		**50907**	50744	**50286**
Normalized		100%	99.68%	98.78%
Renaissance - Apache Spark Bayes (ms)	**1807**	**1785**	1795	1806
Normalized	98.78%	100%	99.44%	98.86%
Facebook RocksDB - Update Rand (Op/s)		**435602**	431472	**430318**
Normalized		100%	99.05%	98.79%
oneDNN - IP Shapes 3D - f32 - CPU (ms)		**11.5136**	**11.6538**	11.6261
Normalized		100%	98.8%	99.03%
Stress-NG - CPU Stress (Bogo Ops/s)		**18224**	18161	**18008**
Normalized		100%	99.65%	98.81%

SVT-AV1 - Preset 10 - Bosphorus 1080p (FPS)		175.325	**174.811**	**176.835**
Normalized		99.15%	98.86%	100%
WebP2 Image Encode - Q.7.C.E.7 (sec)		247.763	**249.352**	**246.636**
Normalized		99.55%	98.91%	100%
yquake2 - Software CPU - On - Off - 1920 x 1080 (FPS)	**109.4**	**110.6**	**110.6**	110.2
Normalized	98.92%	100%	100%	99.64%
OSPray - gravity_spheres_volume/dim_512/scivis/real_time (Items/sec)		**2.03096**	2.04595	**2.05277**
Normalized		98.94%	99.67%	100%
Glibc Benchmarks - ffsll (ns)	**5.11607**	**5.06243**	5.06308	5.0631
Normalized	98.95%	100%	99.99%	99.99%
Timed MPlayer Compilation - Time To Compile (sec)		**42.962**	**42.512**	42.777
Normalized		98.95%	100%	99.38%
OSPray Studio - 2 - 1080p - 1 - Path Tracer (ms)		**3202**	3179	**3169**
Normalized		98.97%	99.69%	100%
yquake2 - Software CPU - On - On - 1920 x 1080 (FPS)	**109.6**	**110.7**	110.1	109.8
Normalized	99.01%	100%	99.46%	99.19%
OSPray Studio - 3 - 1080p - 32 - Path Tracer (ms)		**131747**	**130461**	130641
Normalized		99.02%	100%	99.86%
Glibc Benchmarks - tanh (ns)	**37.5805**	37.2701	**37.2225**	37.2717
Normalized	99.05%	99.87%	100%	99.87%
libavif avifenc - 6 (sec)		**11.971**	**12.085**	11.977
Normalized		100%	99.06%	99.95%
libgav1 - Summer Nature 4K	75.99	**76.51**	76.15	**75.79**
Normalized	99.32%	100%	99.53%	99.06%
libgav1 - S.N.1 (FPS)	**293.91**	293.02	292.86	**291.25**
Normalized	100%	99.7%	99.64%	99.09%
libavif avifenc - 6, Lossless (sec)		**15.835**	**15.692**	15.712
Normalized		99.1%	100%	99.87%
Facebook RocksDB - Rand Read (Op/s)		**38980050**	**39334842**	39203565
Normalized		99.1%	100%	99.67%
libavif avifenc - 0 (sec)		203.008	**204.584**	**202.762**
Normalized		99.88%	99.11%	100%
Glibc Benchmarks - pthread_once (ns)	**5.10061**	5.06094	5.05947	**5.05531**
Normalized	99.11%	99.89%	99.92%	100%
oneDNN - IP Shapes 3D - u8s8f32 - CPU (ms)		**2.08948**	**2.07097**	2.07154
Normalized		99.11%	100%	99.97%
SVT-AV1 - Preset 10 - Bosphorus 4K (FPS)		**64.965**	**65.545**	65.005
Normalized		99.12%	100%	99.18%

libavif avifenc - 2 (sec)		92.823	**92.56**	**93.376**
Normalized		99.72%	100%	99.13%
OSPray - particle_volume/ao/real_time (Items/sec)		**14.0319**	**14.1489**	14.13
Normalized		99.17%	100%	99.87%
SVT-VP9 - V.Q.O - Bosphorus 4K (FPS)		**41.34**	41.02	**41**
Normalized		100%	99.23%	99.18%
Glibc Benchmarks - sincos (ns)	**42.5467**	**42.2017**	42.2381	42.2156
Normalized	99.19%	100%	99.91%	99.97%
WebP2 Image Encode - Q.9.C.E.7 (sec)		**528.789**	529.315	**533.094**
Normalized		100%	99.9%	99.19%
7-Zip Compression - D.R (MIPS)		**53444**	53753	**53879**
Normalized		99.19%	99.77%	100%
yquake2 - Software CPU - Off - On - 1920 x 1080 (FPS)	**112.9**	**113.8**	113.4	**113.8**
Normalized	99.21%	100%	99.65%	100%
oneDNN - D.B.s - u8s8f32 - CPU (ms)		**2.04687**	**2.03075**	2.038
Normalized		99.21%	100%	99.64%
OSPray Studio - 2 - 1080p - 16 - Path Tracer (ms)		**61058**	60821	**60595**
Normalized		99.24%	99.63%	100%
Glibc Benchmarks - exp (ns)	16.5304	16.5867	**16.6205**	**16.4973**
Normalized	99.8%	99.46%	99.26%	100%
OSPray - gravity_spheres_volume/dim_512/ao/real_time (Items/sec)		2.0707	**2.06833**	**2.08368**
Normalized		99.38%	99.26%	100%
SVT-AV1 - Preset 4 - Bosphorus 1080p (FPS)		**5.116**	5.09	**5.081**
Normalized		100%	99.49%	99.32%
simdjson - Kostya (GB/s)	**2.96**	2.95	**2.94**	2.95
Normalized	100%	99.66%	99.32%	99.66%
yquake2 - S.C.C.L - On - On - 1920 x 1080 (FPS)	103.3	**103.2**	**103.9**	**103.9**
Normalized	99.42%	99.33%	100%	100%
Stress-NG - Vector Math (Bogo Ops/s)		34182	**34079**	**34308**
Normalized		99.63%	99.33%	100%
OSPray Studio - 3 - 1080p - 1 - Path Tracer (ms)		**3779**	**3754**	3757
Normalized		99.34%	100%	99.92%
SVT-HEVC - 1 - Bosphorus 4K (FPS)		**1.57**	**1.56**	**1.57**
Normalized		100%	99.36%	100%
Glibc Benchmarks - asinh (ns)	**29.5789**	29.4026	29.4267	**29.3922**
Normalized	99.37%	99.96%	99.88%	100%

OSPray Studio - 3 - 1080p - 16 - Path Tracer (ms)		**70402**	70226	**69963**
Normalized		99.38%	99.63%	100%
oneDNN - C.B.S.A - f32 - CPU (ms)		19.8572	**19.9209**	**19.8019**
Normalized		99.72%	99.4%	100%
TensorFlow Lite - SqueezeNet		**3430**	3411	**3410**
Normalized		99.41%	99.97%	100%
OSPray Studio - 2 - 1080p - 32 - Path Tracer (ms)		**111820**	111361	**111160**
Normalized		99.41%	99.82%	100%
simdjson - TopTweet (GB/s)	5.15	5.16	**5.17**	**5.14**
Normalized	99.61%	99.81%	100%	99.42%
Java JMH - Throughput (Ops/s)		**16924749328**	16995883817	**17023434877**
Normalized		99.42%	99.84%	100%
Stress-NG - G.C.S.F (Bogo		**520052**	**523032**	521893
Normalized		99.43%	100%	99.78%
OSPray Studio - 1 - 1080p - 1 - Path Tracer (ms)		**3085**	3073	**3068**
Normalized		99.45%	99.84%	100%
Blender - Barbershop - CPU-Only (sec)		1890	**1896**	**1886**
Normalized		99.76%	99.47%	100%
SVT-VP9 - P.S.O - Bosphorus 4K (FPS)		**47.78**	**48.02**	47.96
Normalized		99.5%	100%	99.88%
GPAW - Carbon Nanotube (sec)		**346.284**	**348.013**	346.929
Normalized		100%	99.5%	99.81%
OSPray - gravity_spheres_volume/dim_512/pathtracer/real_time		2.87137	**2.87073**	**2.8848**
Normalized		99.53%	99.51%	100%
SVT-AV1 - Preset 4 - Bosphorus 4K (FPS)		**1.648**	**1.64**	**1.648**
Normalized		100%	99.51%	100%
SVT-HEVC - 1 - Bosphorus 1080p (FPS)		**6.29**	**6.26**	6.28
Normalized		100%	99.52%	99.84%
SVT-HEVC - 7 - Bosphorus 1080p (FPS)		**108.75**	109.03	**109.27**
Normalized		99.52%	99.78%	100%
Glibc Benchmarks - cos (ns)	73.6853	**73.6613**	**74.0071**	73.7043
Normalized	99.97%	100%	99.53%	99.94%
Tachyon - Total Time (sec)		**180.0366**	179.6673	**179.2075**
Normalized		99.54%	99.74%	100%
SVT-VP9 - VMAF Optimized - Bosphorus 4K (FPS)		**46.04**	45.85	**45.83**
Normalized		100%	99.59%	99.54%
oneDNN - R.N.N.I - bf16bf16bf16 - CPU (ms)		2092	**2100**	**2091**
Normalized		99.94%	99.56%	100%

Blender - Fishy Cat - CPU-Only (sec)		**245.7**	**244.61**	244.67
Normalized		99.56%	100%	99.98%
simdjson - PartialTweets (GB/s)	**4.5**	4.51	**4.5**	**4.52**
Normalized	99.56%	99.78%	99.56%	100%
Nettle - aes256 (Mbyte/s)	**7913**	7907	**7878**	7904
Normalized	100%	99.92%	99.56%	99.89%
OSPray Studio - 1 - 1080p - 32 - Path Tracer (ms)		**108689**	108562	**108221**
Normalized		99.57%	99.69%	100%
Stress-NG - Memory Copying (Bogo Ops/s)		**2749**	2756	**2760**
Normalized		99.6%	99.87%	100%
oneDNN - R.N.N.I - f32 - CPU		2086	**2090**	**2082**
Normalized		99.8%	99.6%	100%
simdjson - DistinctUserID (GB/s)	**5.21**	**5.21**	**5.21**	**5.19**
Normalized	100%	100%	100%	99.62%
SVT-VP9 - VMAF Optimized - Bosphorus 1080p (FPS)		**158.29**	**158.85**	158.51
Normalized		99.65%	100%	99.79%
SVT-HEVC - 10 - Bosphorus 1080p (FPS)		**228.31**	**227.53**	**228.31**
Normalized		100%	99.66%	100%
Etcpak - Single-Threaded - ETC2 (Mpx/s)	**260.269**	260.198	**259.413**	259.63
Normalized	100%	99.97%	99.67%	99.75%
SVT-AV1 - Preset 8 - Bosphorus 1080p (FPS)		**85.937**	**86.218**	86.034
Normalized		99.67%	100%	99.79%
WebP2 Image Encode - Q.1.L.C (sec)		1139	**1139**	**1136**
Normalized		99.7%	99.69%	100%
Stress-NG - S.V.M.P (Bogo		**7833022**	**7808741**	7828497
Normalized		100%	99.69%	99.94%
oneDNN - M.M.B.S.T - f32 - CPU (ms)		**3.99825**	**4.01064**	4.00071
Normalized		100%	99.69%	99.94%
OpenJPEG - N.C.P.M (ms)		**62229**	62273	**62421**
Normalized		100%	99.93%	99.69%
Stress-NG - G.Q.D.S (Bogo		**122.97**	**122.6**	122.8
Normalized		100%	99.7%	99.86%
OSPray Studio - 1 - 1080p - 16 - Path Tracer (ms)		**49465**	49427	**49335**
Normalized		99.74%	99.81%	100%
OSPray - particle_volume/scivis/real_time (Items/sec)		**13.7372**	13.7356	**13.7018**
Normalized		100%	99.99%	99.74%
libgav1 - Chimera 1080p (FPS)	214.37	214.47	**214.26**	**214.81**
Normalized	99.8%	99.84%	99.74%	100%

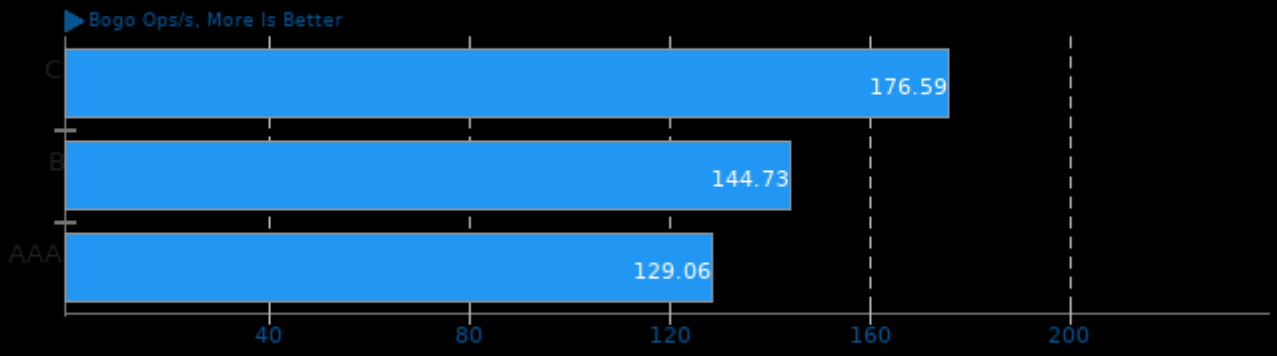
oneDNN - R.N.N.I - u8s8f32 - CPU (ms)		2087	2086	2082
Normalized		99.75%	99.8%	100%
SVT-HEVC - 7 - Bosphorus 4K (FPS)		32.01	32.02	32.09
Normalized		99.75%	99.78%	100%
Timed Gem5 Compilation - Time To Compile (sec)		523.204	521.934	522.692
Normalized		99.76%	100%	99.85%
oneDNN - R.N.N.T - u8s8f32 - CPU (ms)		3771	3776	3779
Normalized		100%	99.86%	99.78%
Stress-NG - SENDFILE (Bogo Ops/s)		135386	135277	135086
Normalized		100%	99.92%	99.78%
OSPray - particle_volume/pathtracer/real_time (Items/sec)		180.672	180.441	180.282
Normalized		100%	99.87%	99.78%
Timed Linux Kernel Compilation - defconfig (sec)		110.221	110.316	110.458
Normalized		100%	99.91%	99.79%
Stress-NG - MMAP (Bogo Ops/s)		137.3	137.48	137.58
Normalized		99.8%	99.93%	100%
SVT-VP9 - V.Q.O - Bosphorus 1080p (FPS)		135.21	135.06	134.94
Normalized		100%	99.89%	99.8%
Timed Linux Kernel Compilation - allmodconfig (sec)		1425	1424	1422
Normalized		99.82%	99.84%	100%
Glibc Benchmarks - ffs (ns)	5.06493	5.05835	5.06587	5.06239
Normalized	99.87%	100%	99.85%	99.92%
Nettle - chacha (Mbyte/s)	1545	1544	1545	1546
Normalized	99.92%	99.86%	99.92%	100%
Glibc Benchmarks - log2 (ns)	21.1591	21.176	21.1531	21.1459
Normalized	99.94%	99.86%	99.97%	100%
Nettle - poly1305-aes (Mbyte/s)	4693	4691	4698	4692
Normalized	99.9%	99.86%	100%	99.87%
Glibc Benchmarks - sqrt (ns)	5.07877	5.07677	5.07195	5.07526
Normalized	99.87%	99.91%	100%	99.93%
Glibc Benchmarks - modf (ns)	5.79535	5.79986	5.79641	5.79223
Normalized	99.95%	99.87%	99.93%	100%
Glibc Benchmarks - sinh (ns)	26.3662	26.3846	26.3554	26.3508
Normalized	99.94%	99.87%	99.98%	100%
oneDNN - R.N.N.T - bf16bf16bf16 - CPU (ms)		3773	3778	3776
Normalized		100%	99.87%	99.92%
oneDNN - R.N.N.T - f32 - CPU (ms)		3768	3767	3764
Normalized		99.89%	99.91%	100%
Nettle - sha512 (Mbyte/s)	625.88	626.53	626.3	625.88
Normalized	99.9%	100%	99.96%	99.9%

9900k-june-2022

Blender - BMW27 - CPU-Only (sec)		**177.06**	177.02	**176.91**
Normalized		99.92%	99.94%	100%
Etcpak - Multi-Threaded - ETC2 (Mpx/s)	2329	2329	**2330**	**2328**
Normalized	99.98%	99.98%	100%	99.93%
oneDNN - D.B.s - f32 - CPU (ms)		6.33016	**6.32909**	**6.33111**
Normalized		99.98%	100%	99.97%
Stress-NG - Semaphores (Bogo Ops/s)		**1081941**	**1081737**	1081914
Normalized		100%	99.98%	100%
Stress-NG - x86_64 RdRand (Bogo Ops/s)		156092	**156093**	**156090**
Normalized		100%	100%	100%
simdjson - LargeRand (GB/s)	1.04	1.04	1.04	1.04

Stress-NG 0.14

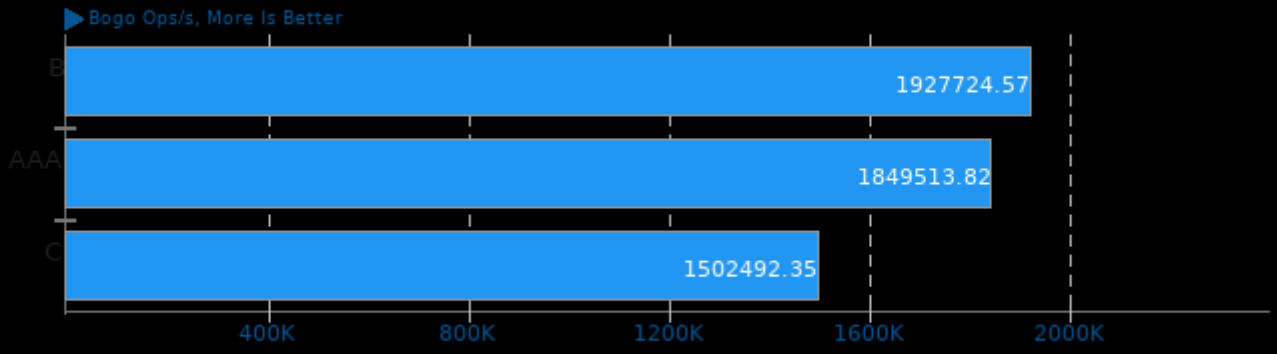
Test: CPU Cache



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

Stress-NG 0.14

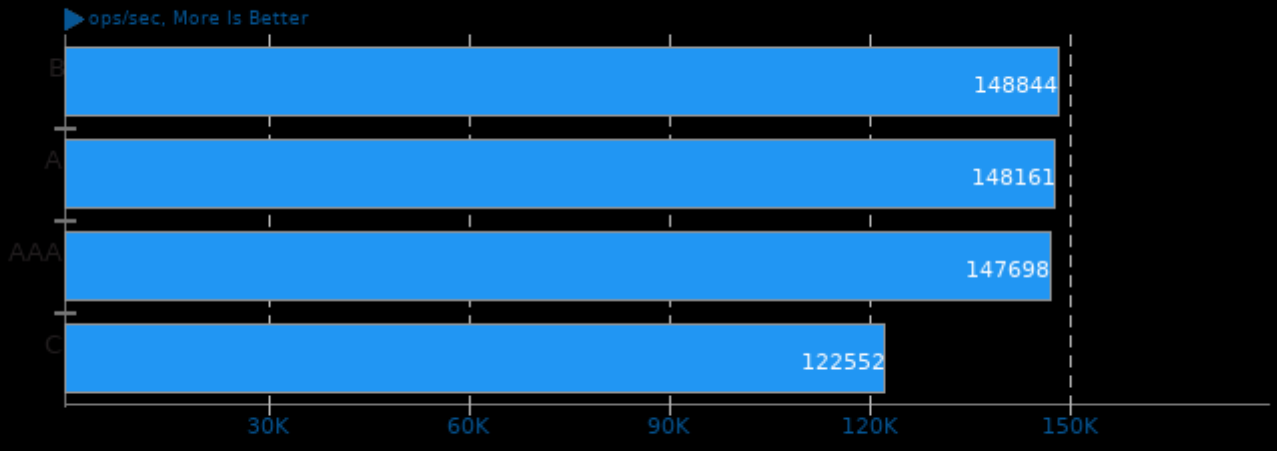
Test: Futex



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

perf-bench

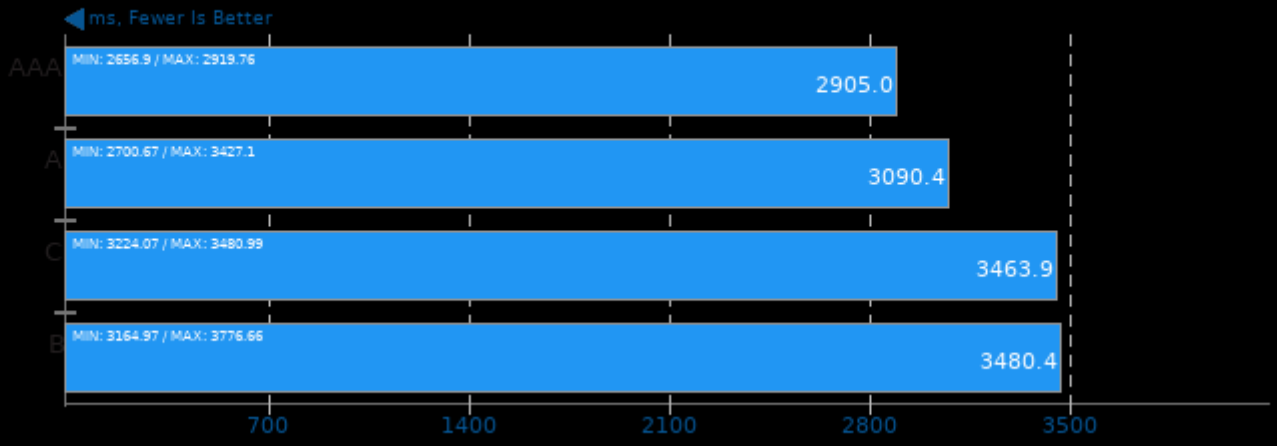
Benchmark: Epoll Wait



1. (CC) gcc options: -O6 -ggdb3 -funwind-tables -std=gnu99 -lunwind-x86_64 -lunwind -llzma -Xlinker -export-dynamic -lpthread -lrt -lm -ldl -lelf -lcrypto -

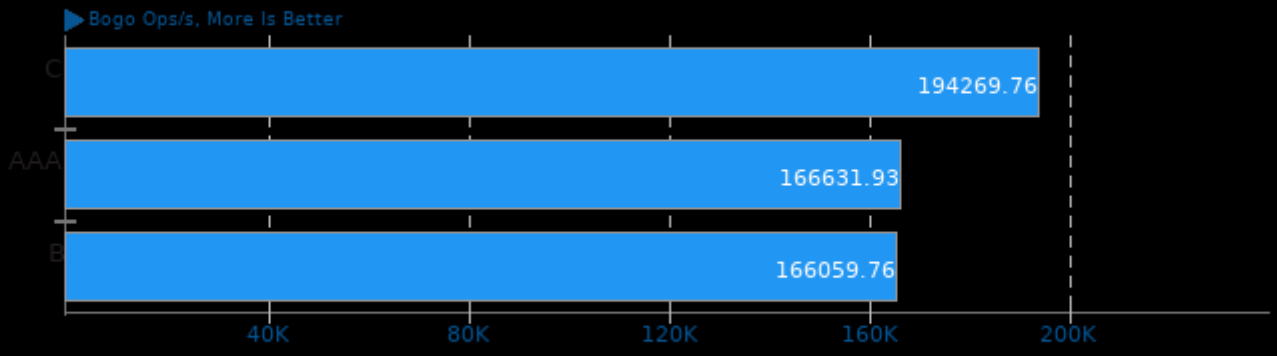
Renaissance 0.14

Test: In-Memory Database Shootout



Stress-NG 0.14

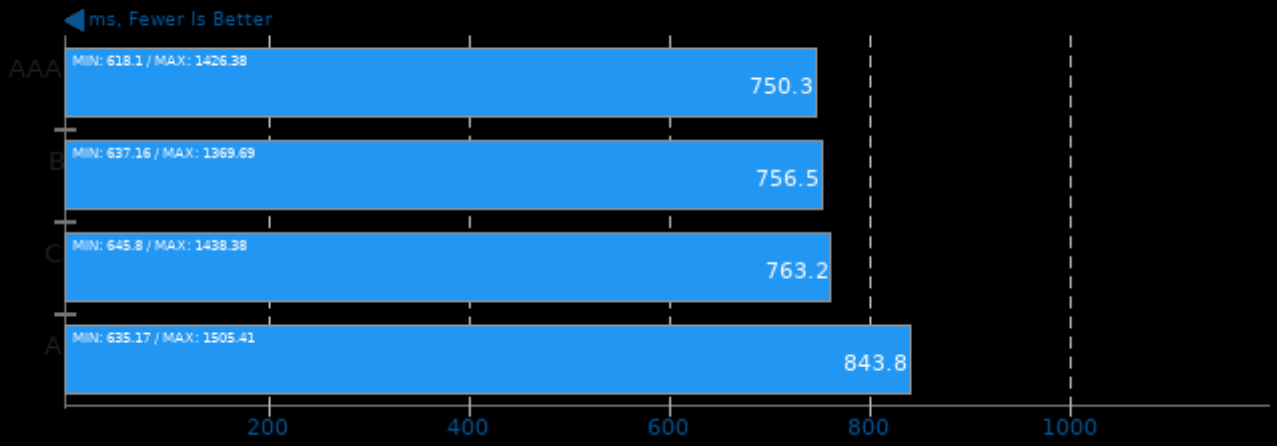
Test: Atomic



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

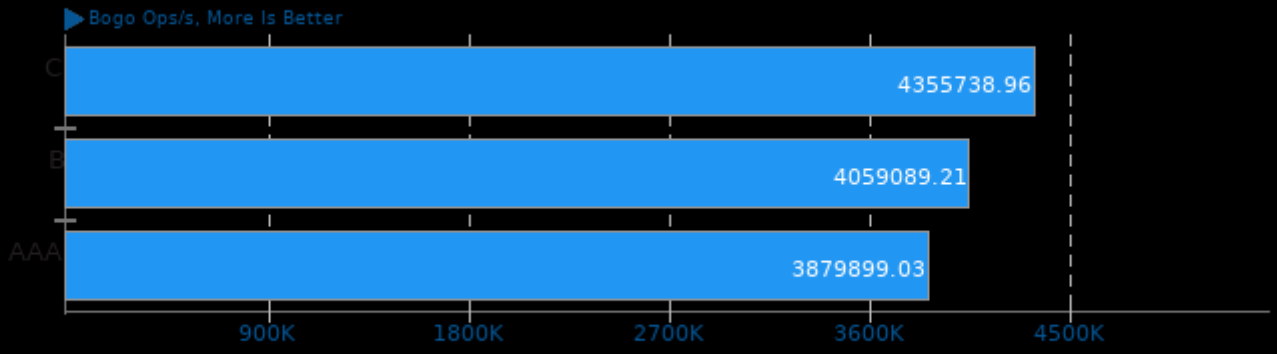
Renaissance 0.14

Test: Scala Dotty



Stress-NG 0.14

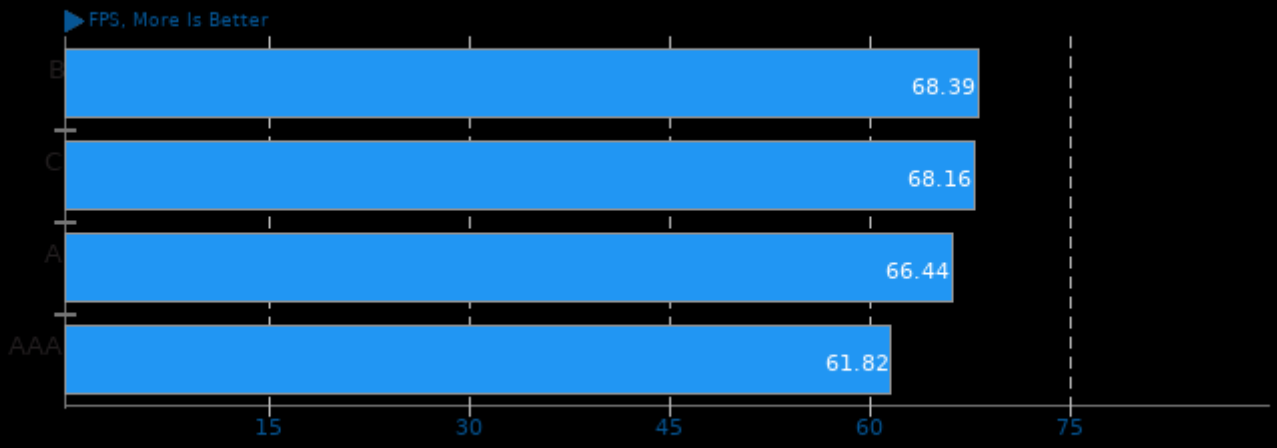
Test: Context Switching



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

libgav1 0.17

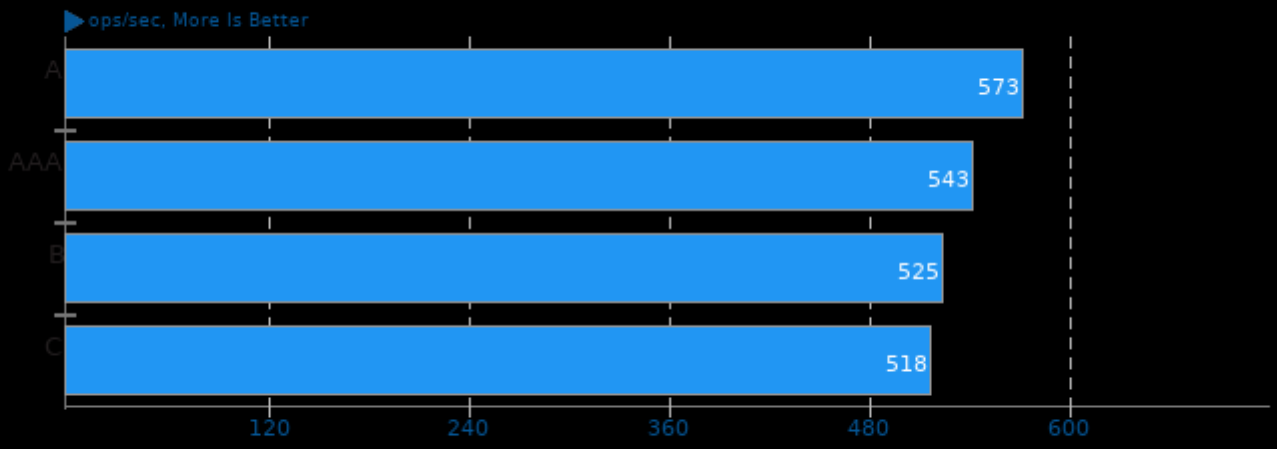
Video Input: Chimera 1080p 10-bit



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

perf-bench

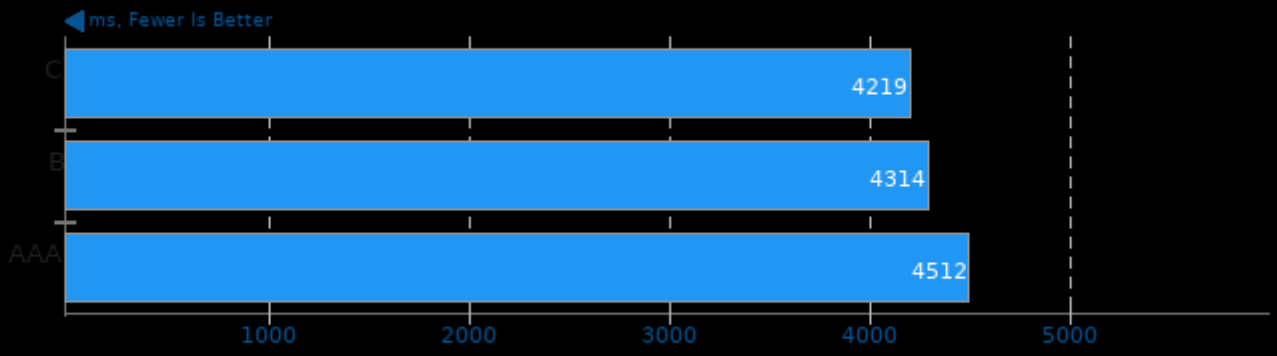
Benchmark: Futex Lock-Pi



1. (CC) gcc options: -O6 -ggdb3 -funwind-tables -std=gnu99 -lunwind-x86_64 -lunwind -llzma -Xlinker -export-dynamic -lpthread -lrt -lm -ldl -lelf -lcrypto -

Google Draco 1.5.0

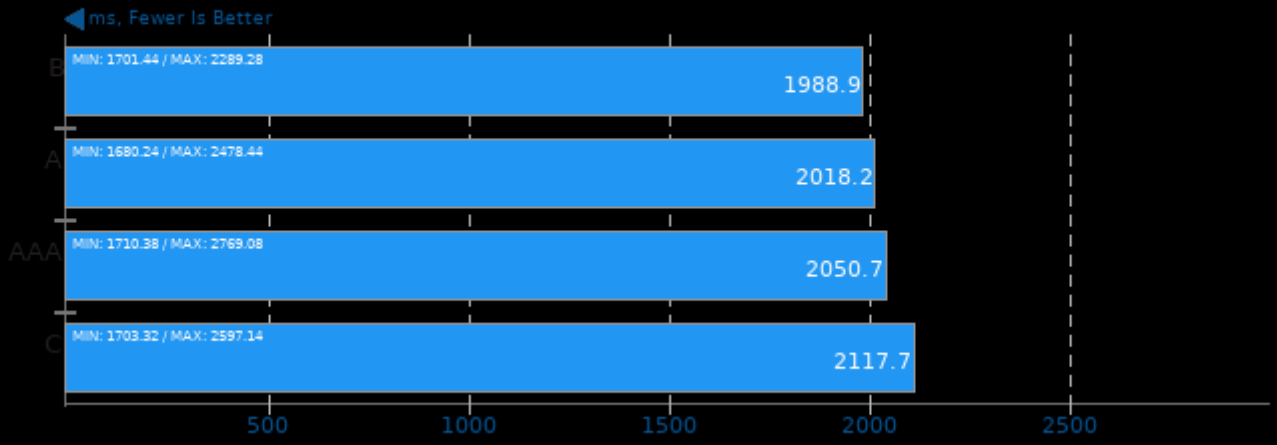
Model: Lion



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

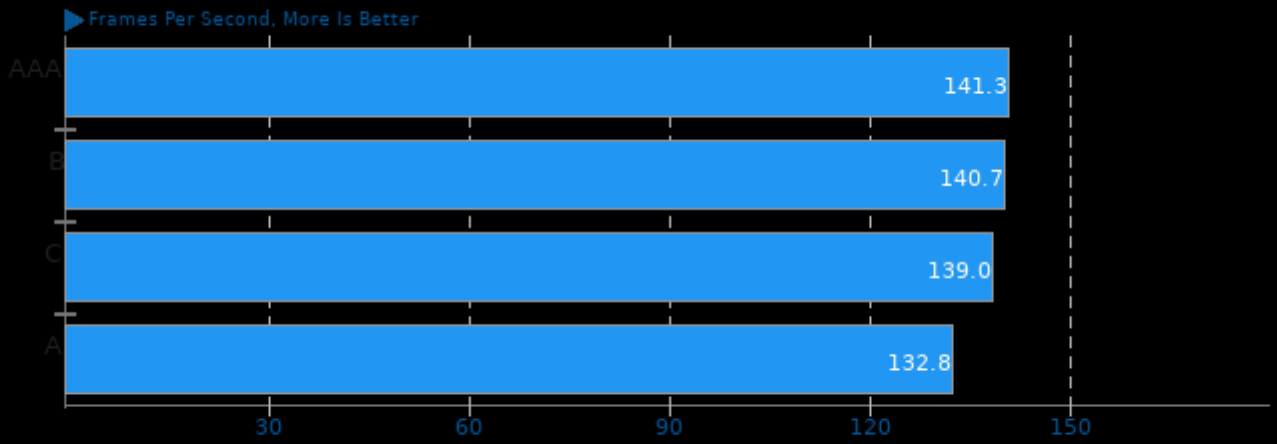
Renaissance 0.14

Test: Genetic Algorithm Using Jenetics + Futures



yquake2 8.10

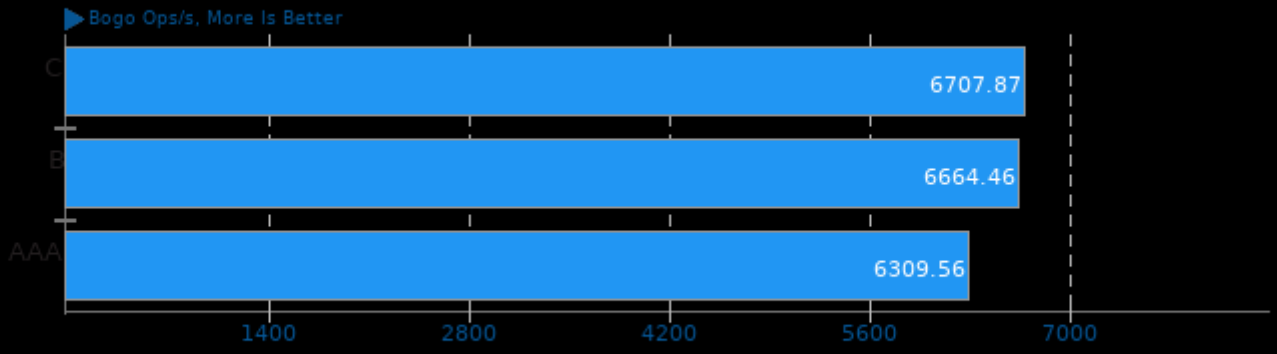
Renderer: OpenGL 3.x - AF: Off - MSAA: On - Resolution: 1920 x 1080



1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf

Stress-NG 0.14

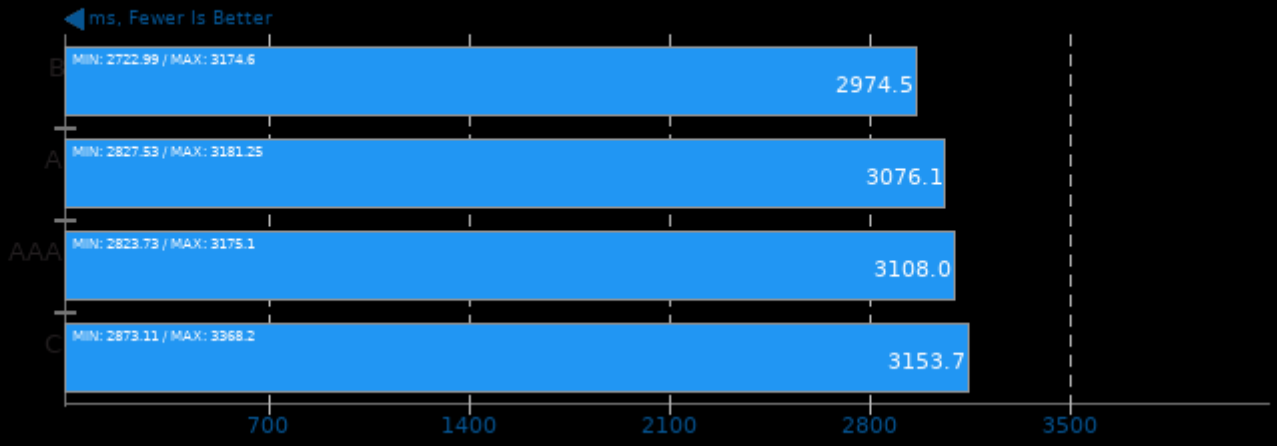
Test: Socket Activity



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

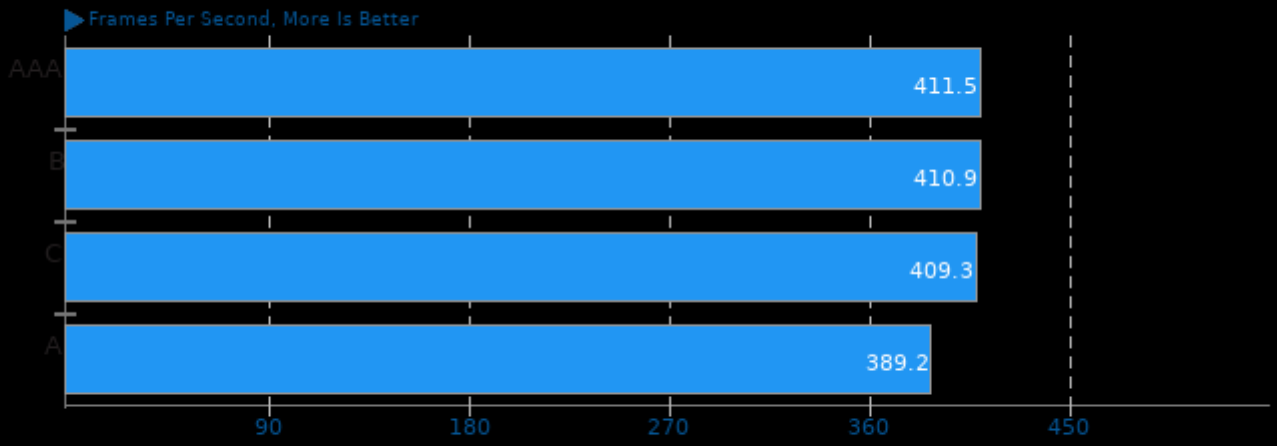
Renaissance 0.14

Test: Apache Spark PageRank



yquake2 8.10

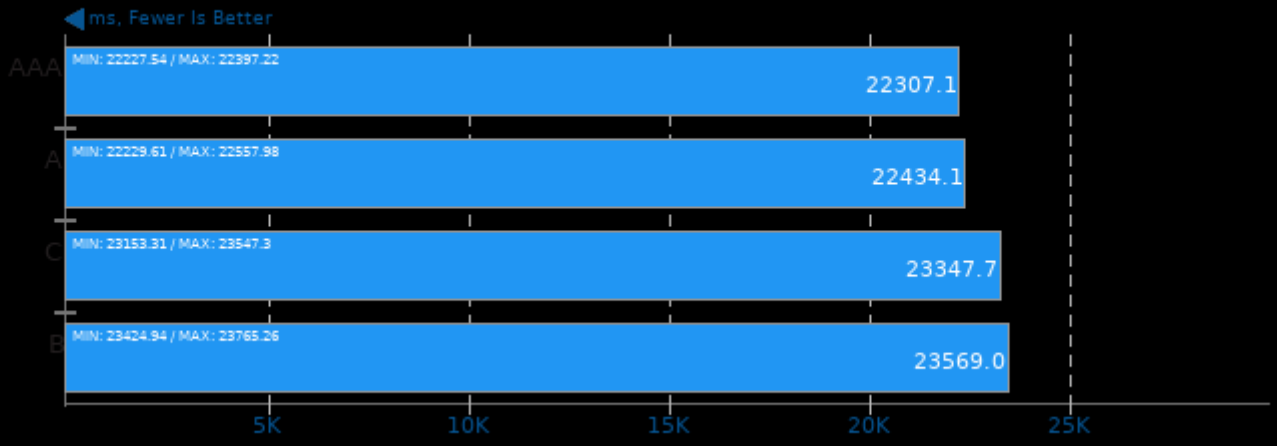
Renderer: OpenGL 3.x - AF: On - MSAA: Off - Resolution: 1920 x 1080



1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mfp

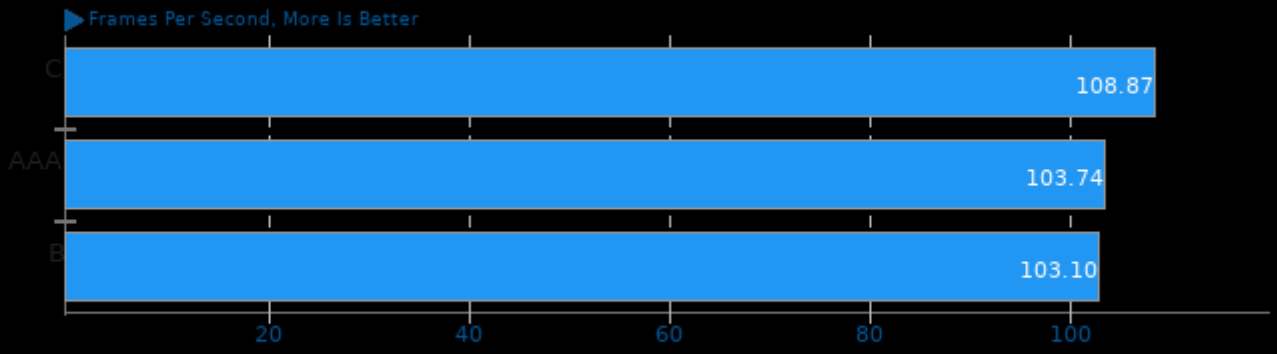
Renaissance 0.14

Test: Apache Spark ALS



x264 2022-02-22

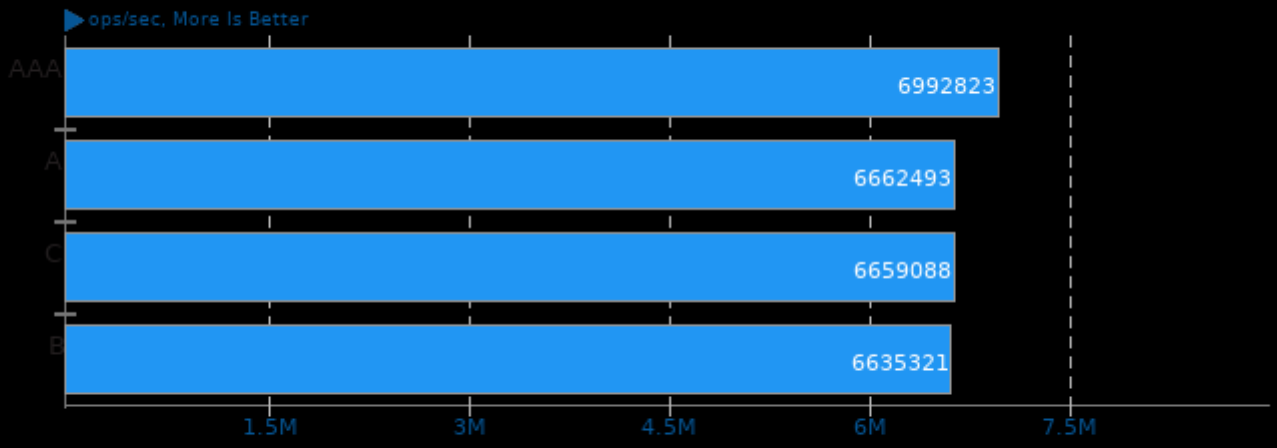
Video Input: Bosphorus 1080p



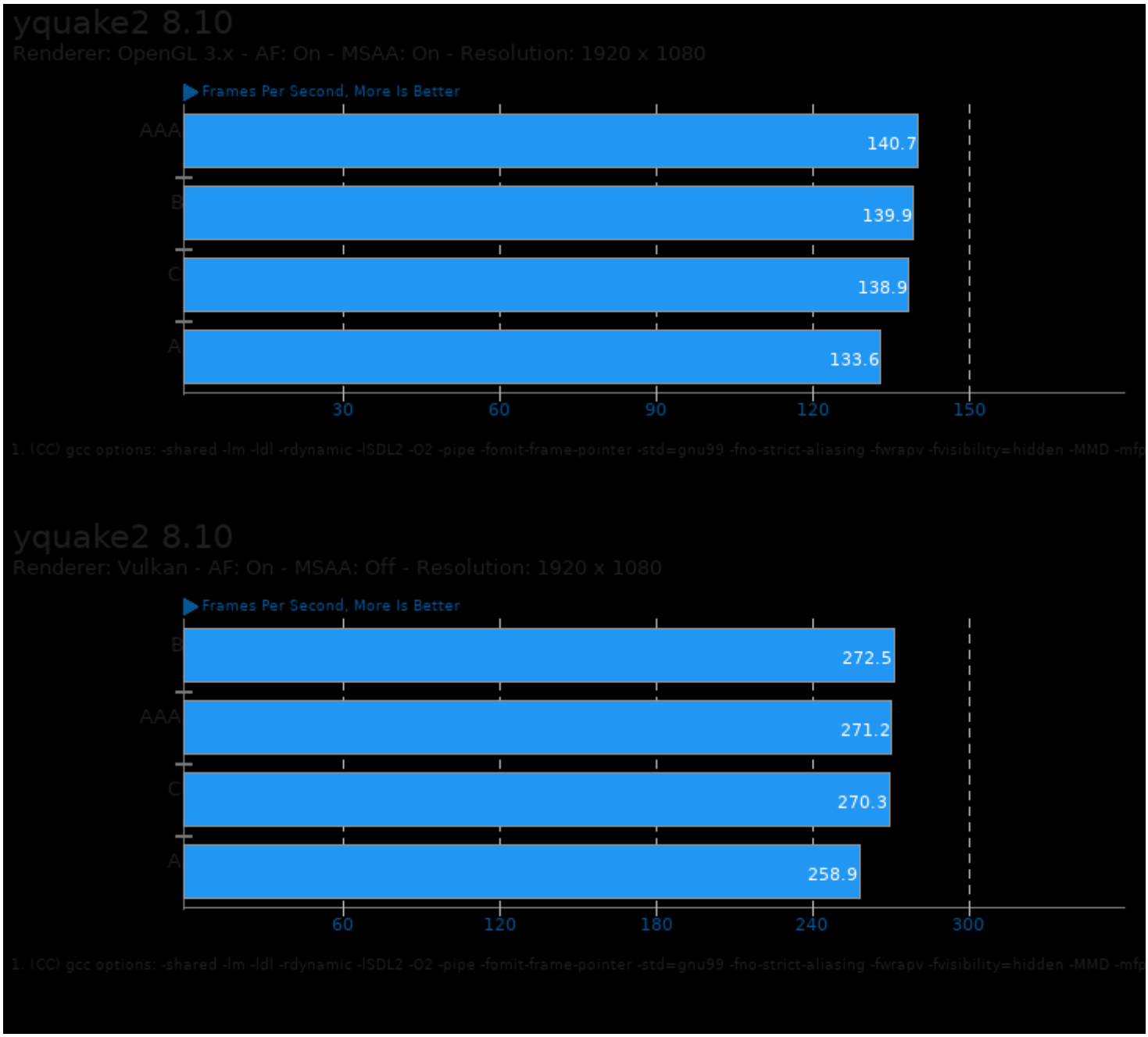
1. (CC) gcc options: -ldl -lavformat -lavcodec -lavutil -lswscale -m64 -lm -lpthread -O3 -flto

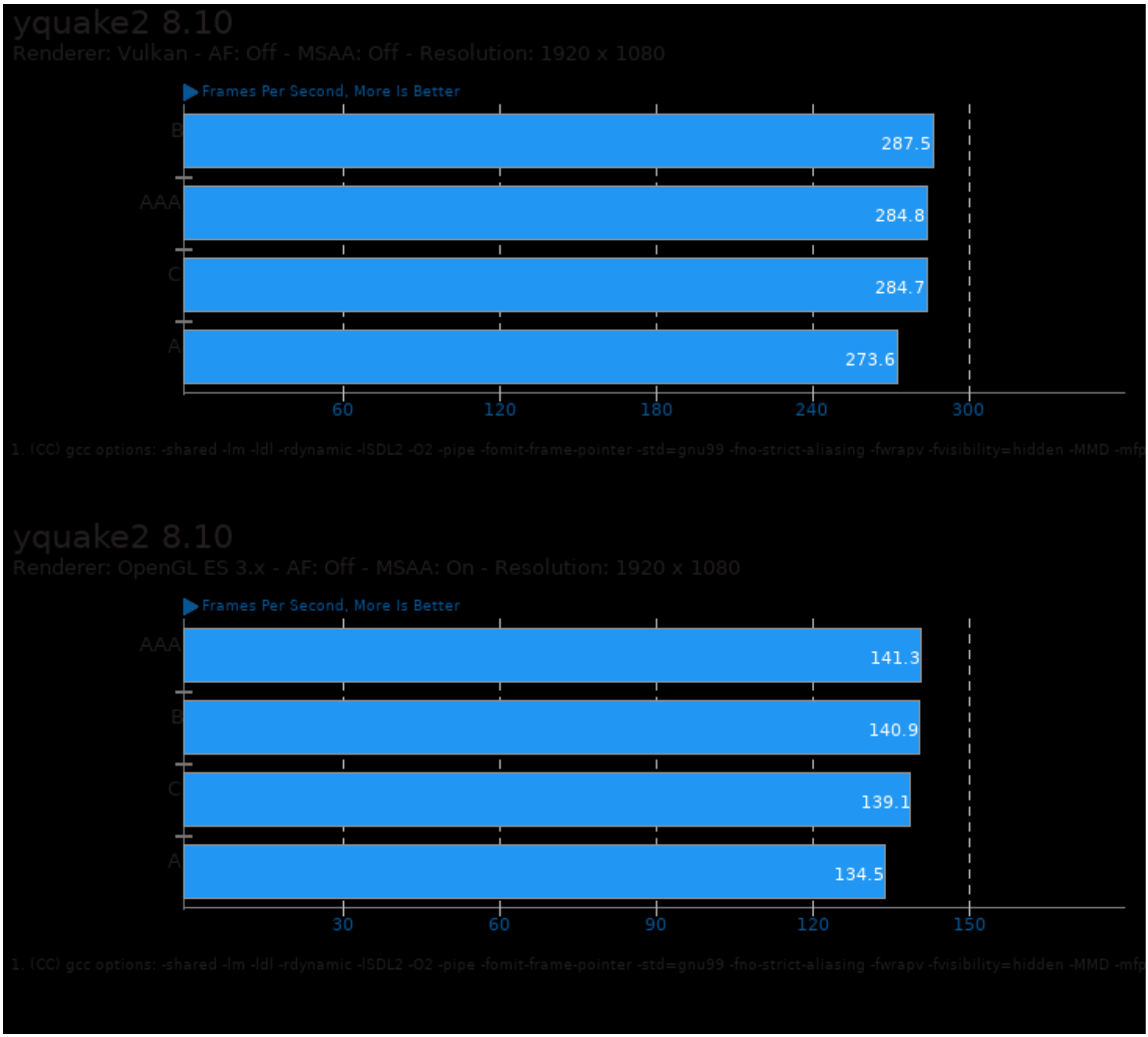
perf-bench

Benchmark: Futex Hash



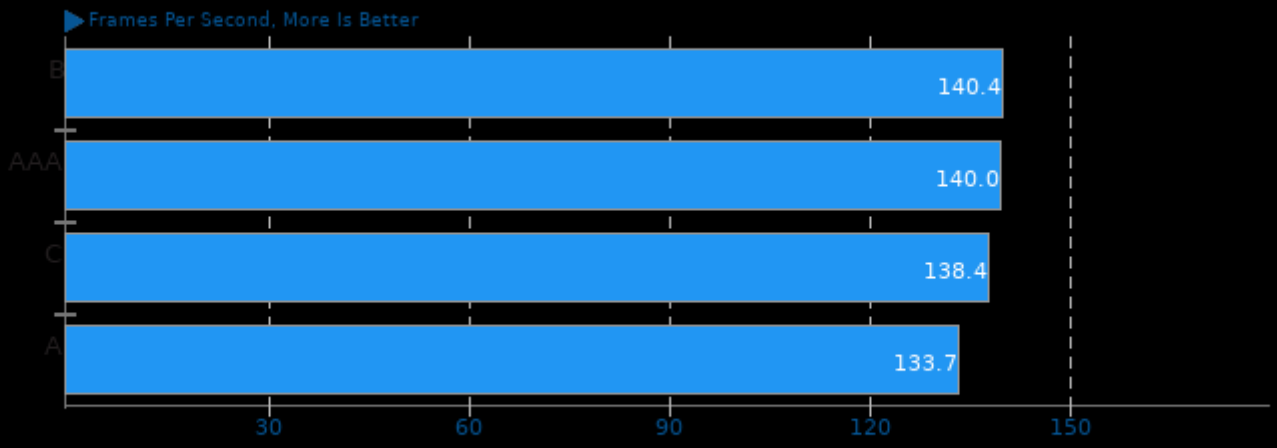
1. (CC) gcc options: -O6 -ggdb3 -funwind-tables -std=gnu99 -lunwind-x86_64 -lunwind -llzma -Xlinker -export-dynamic -lpthread -lrt -lm -ldl -lelf -lcrypto -


yquake2 8.10
Renderer: OpenGL 3.x - AF: On - MSAA: On - Resolution: 1920 x 1080
Frames Per Second, More Is Better
AAA
140.7
B
139.9
C
138.9
A
133.6
30
60
90
120
150
1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf
yquake2 8.10
Renderer: Vulkan - AF: On - MSAA: Off - Resolution: 1920 x 1080
Frames Per Second, More Is Better
B
272.5
AAA
271.2
C
270.3
A
258.9
60
120
180
240
300
1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf


yquake2 8.10
Renderer: Vulkan - AF: Off - MSAA: Off - Resolution: 1920 x 1080
Frames Per Second, More Is Better
B
287.5
AAA
284.8
C
284.7
A
273.6
60
120
180
240
300
1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf
yquake2 8.10
Renderer: OpenGL ES 3.x - AF: Off - MSAA: On - Resolution: 1920 x 1080
Frames Per Second, More Is Better
AAA
141.3
B
140.9
C
139.1
A
134.5
30
60
90
120
150
1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf

yquake2 8.10

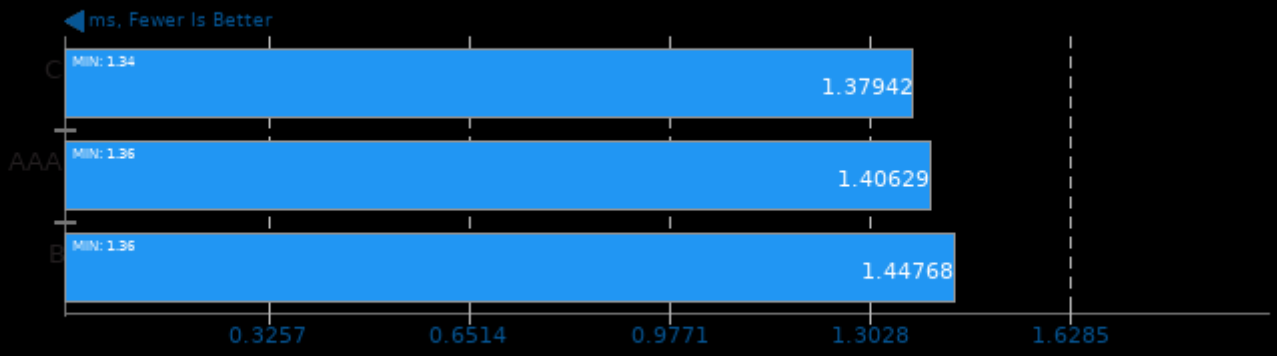
Renderer: OpenGL ES 3.x - AF: On - MSAA: On - Resolution: 1920 x 1080



1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf

oneDNN 2.6

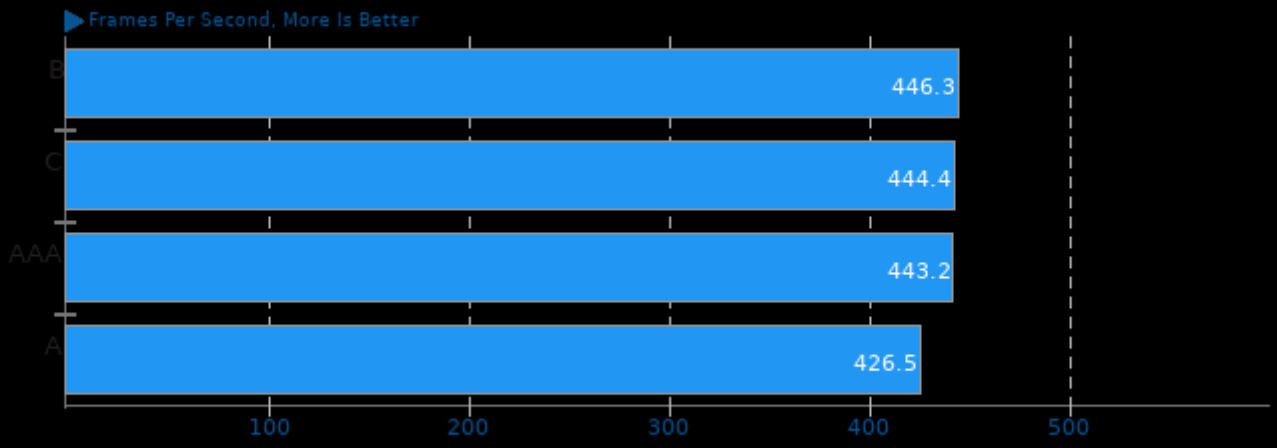
Harness: IP Shapes 1D - Data Type: u8s8f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -fopenmp -msse4.1 -fPIC -std=c++11 -pie -lpthread -ldl

yquake2 8.10

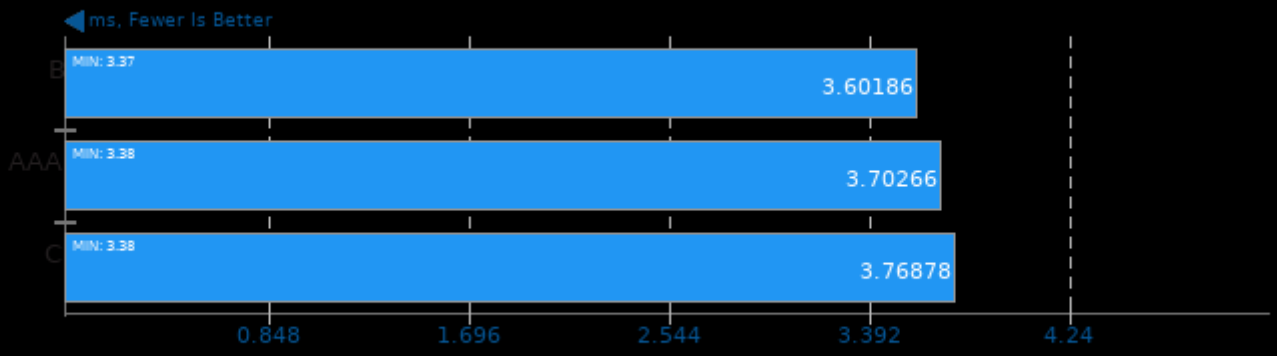
Renderer: OpenGL ES 3.x - AF: Off - MSAA: Off - Resolution: 1920 x 1080



1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf

oneDNN 2.6

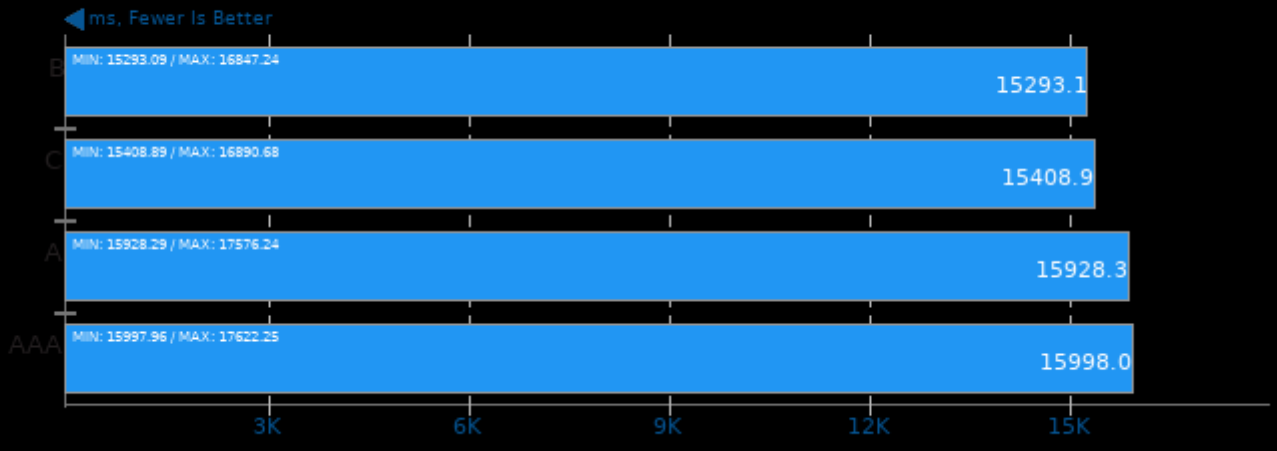
Harness: IP Shapes 1D - Data Type: f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -fopenmp -msse4.1 -fPIC -std=c++11 -pie -lpthread -ldl

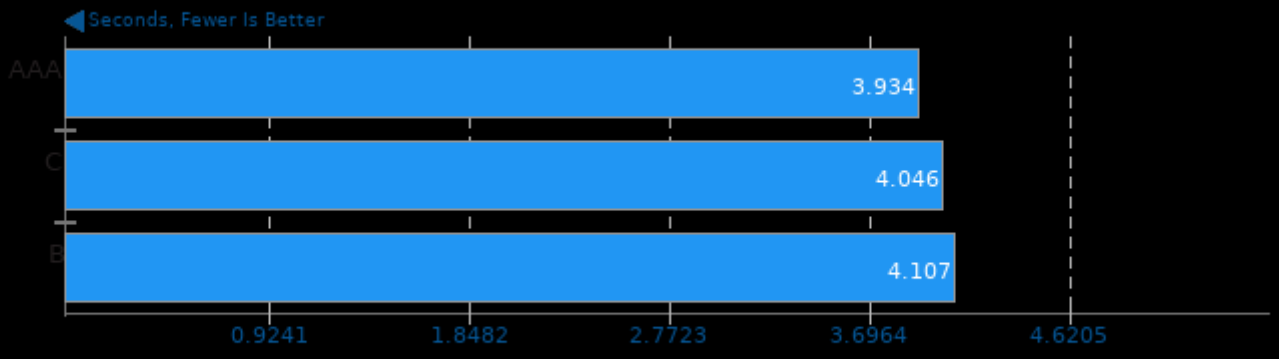
Renaissance 0.14

Test: ALS Movie Lens



WebP2 Image Encode 20220422

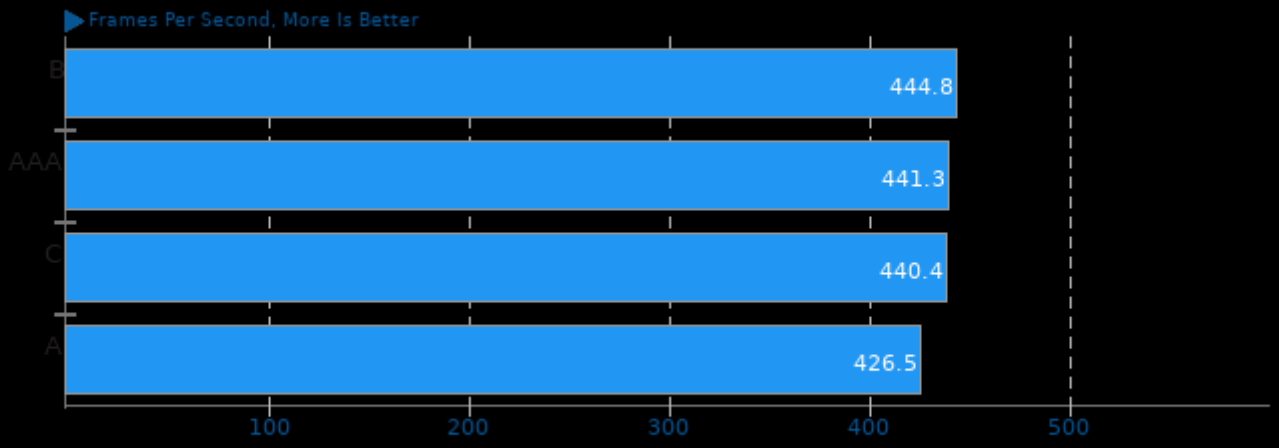
Encode Settings: Default



1. (CXX) g++ options: -msse4.2 -fno-rtti -O3 -ldl -lpthread

yquake2 8.10

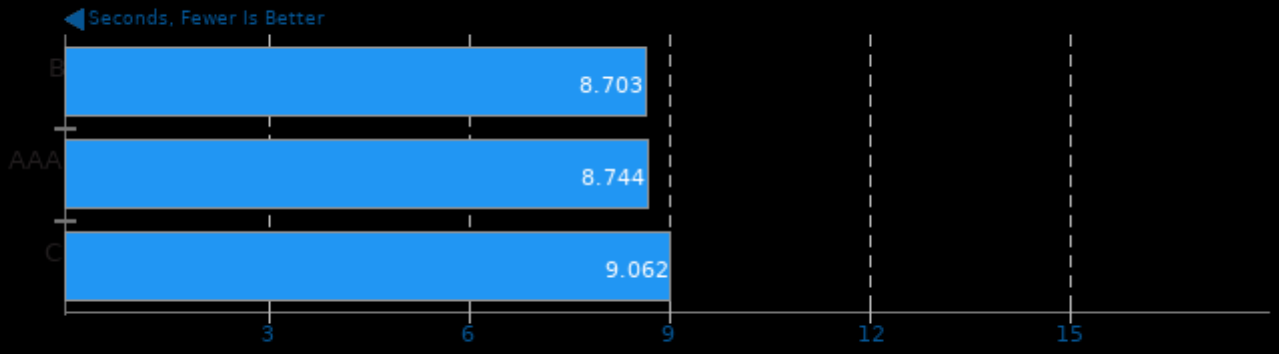
Renderer: OpenGL 3.x - AF: Off - MSAA: Off - Resolution: 1920 x 1080



1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mfp

Parallel BZIP2 Compression 1.1.13

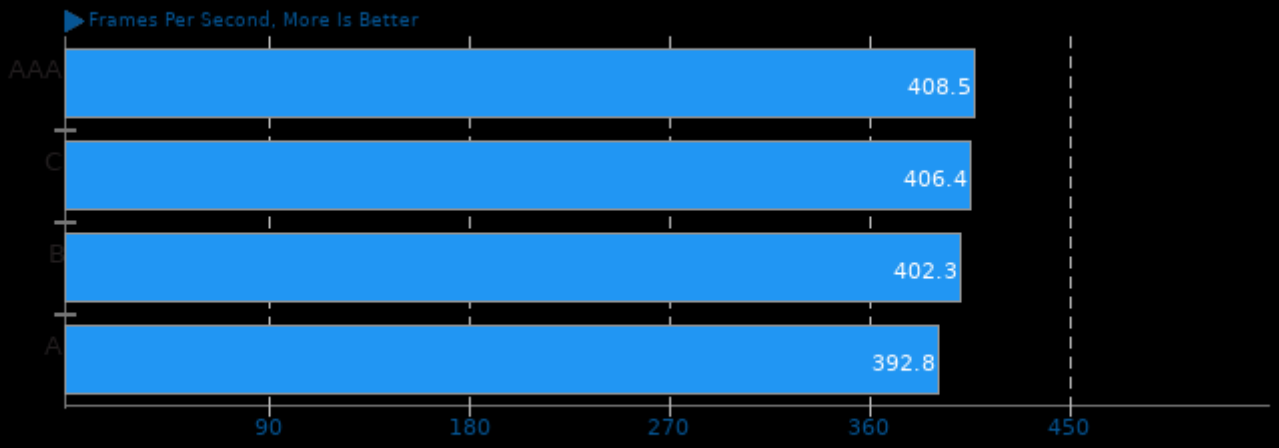
FreeBSD-13.0-RELEASE-amd64-memstick.img Compression



1. (CXX) g++ options: -O2 -pthread -lbz2 -lpthread

yquake2 8.10

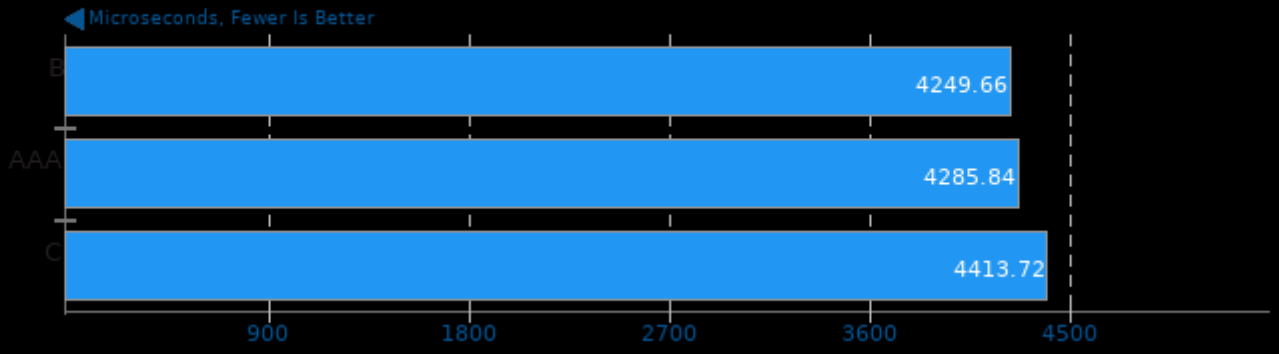
Renderer: OpenGL ES 3.x - AF: On - MSAA: Off - Resolution: 1920 x 1080



1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf

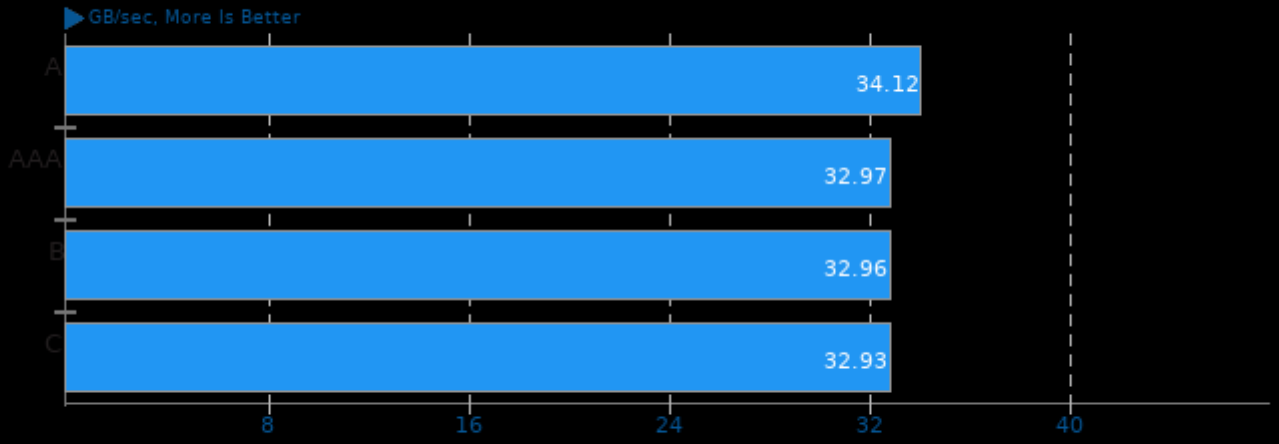
TensorFlow Lite 2022-05-18

Model: Mobilenet Quant



perf-bench

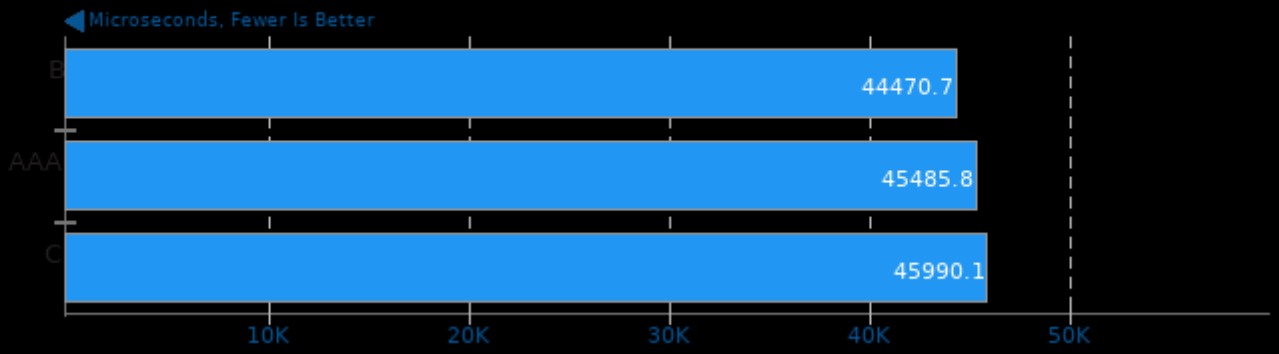
Benchmark: Memcpy 1MB



1. (CC) gcc options: -O6 -ggdb3 -funwind-tables -std=gnu99 -lunwind-x86_64 -lunwind -llzma -Xlinker -export-dynamic -lpthread -lrt -lm -ldl -lelf -lcrypto

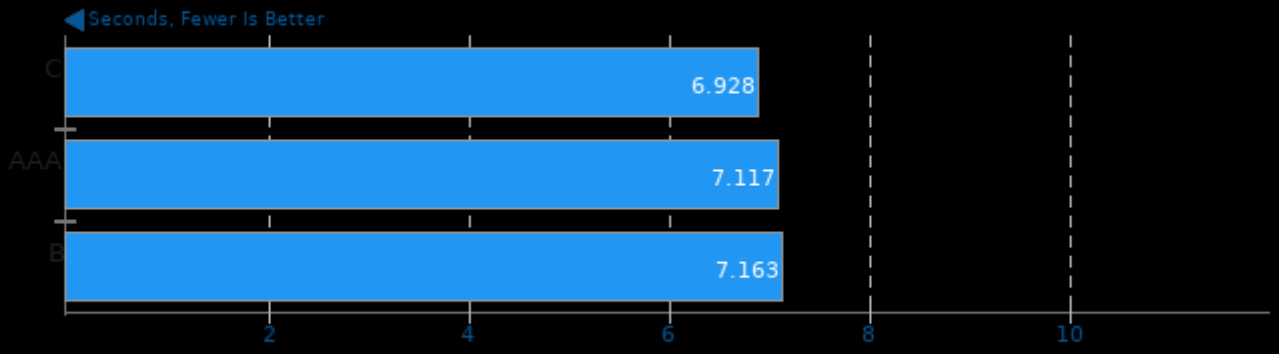
TensorFlow Lite 2022-05-18

Model: Inception ResNet V2



WebP2 Image Encode 20220422

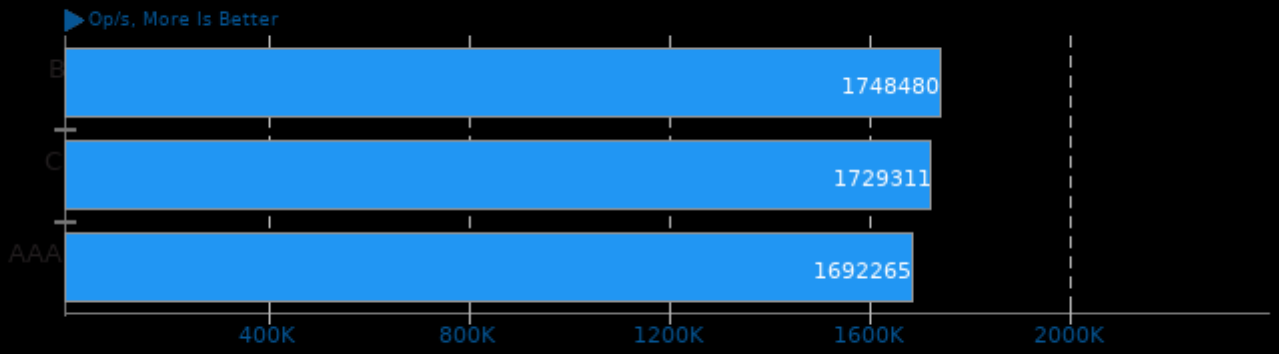
Encode Settings: Quality 100, Compression Effort 5



1. (CXX) g++ options: -msse4.2 -fno-rtti -O3 -ldl -lpthread

Facebook RocksDB 7.0.1

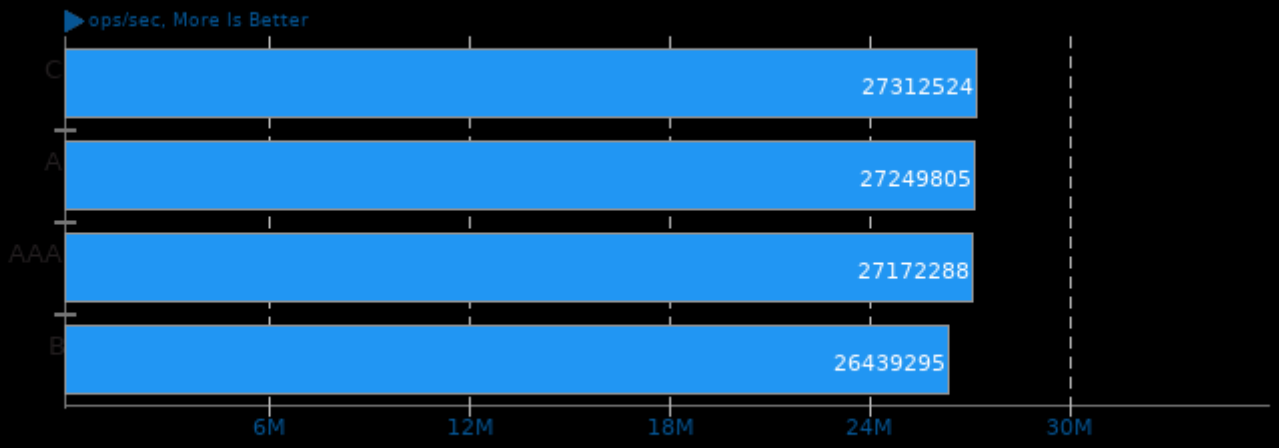
Test: Read While Writing



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

perf-bench

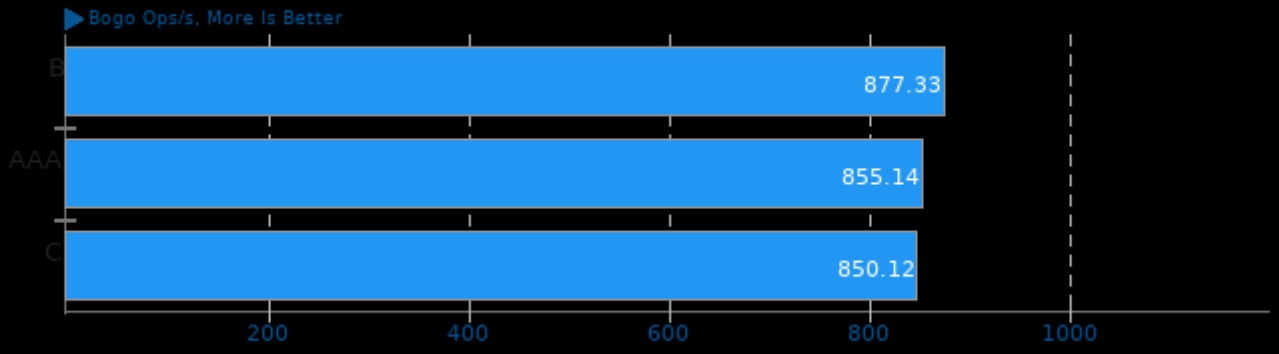
Benchmark: Syscall Basic



1. (CC) gcc options: -O6 -ggdb3 -funwind-tables -std=gnu99 -lunwind-x86_64 -lunwind -llzma -Xlinker -export-dynamic -lpthread -lrt -lm -ldl -lelf -lcrypto -

Stress-NG 0.14

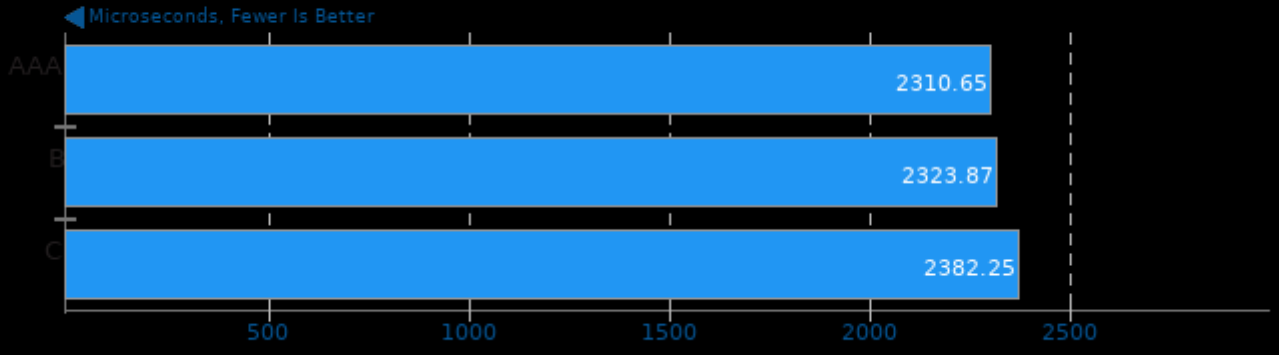
Test: MEMFD



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

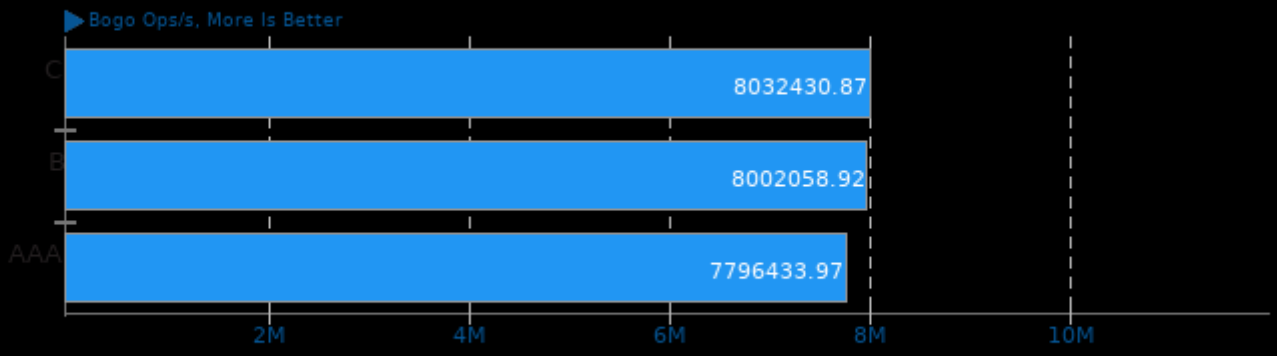
TensorFlow Lite 2022-05-18

Model: Mobilenet Float



Stress-NG 0.14

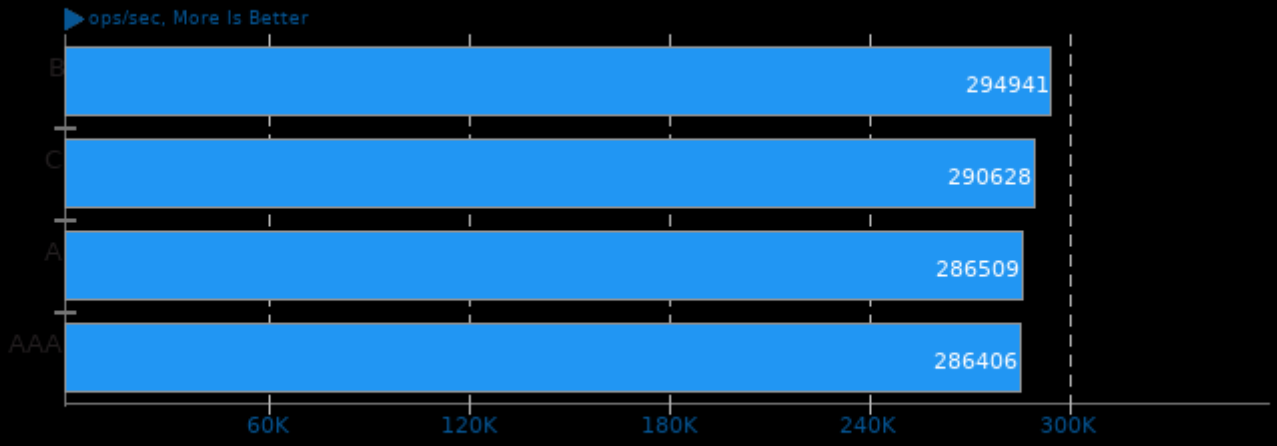
Test: Malloc



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

perf-bench

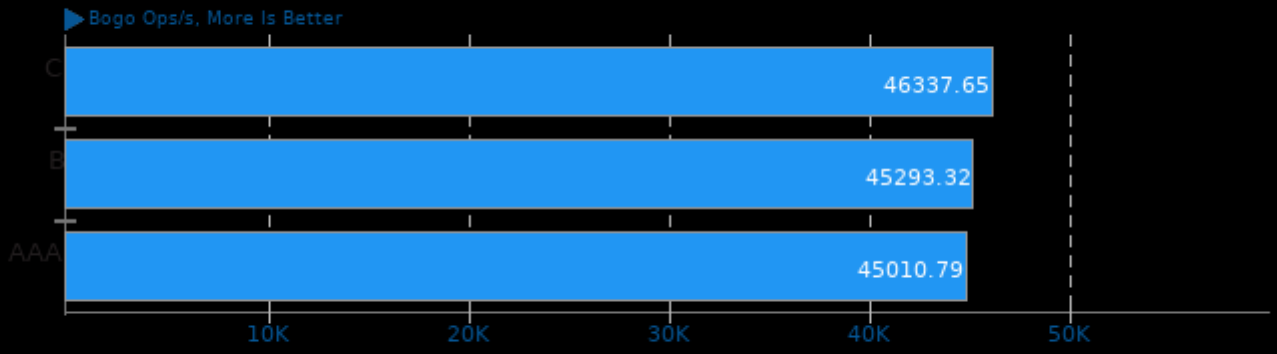
Benchmark: Sched Pipe



1. (CC) gcc options: -O6 -ggdb3 -funwind-tables -std=gnu99 -lunwind-x86_64 -lunwind -llzma -Xlinker -export-dynamic -lpthread -lrt -lm -ldl -lelf -lcrypto -

Stress-NG 0.14

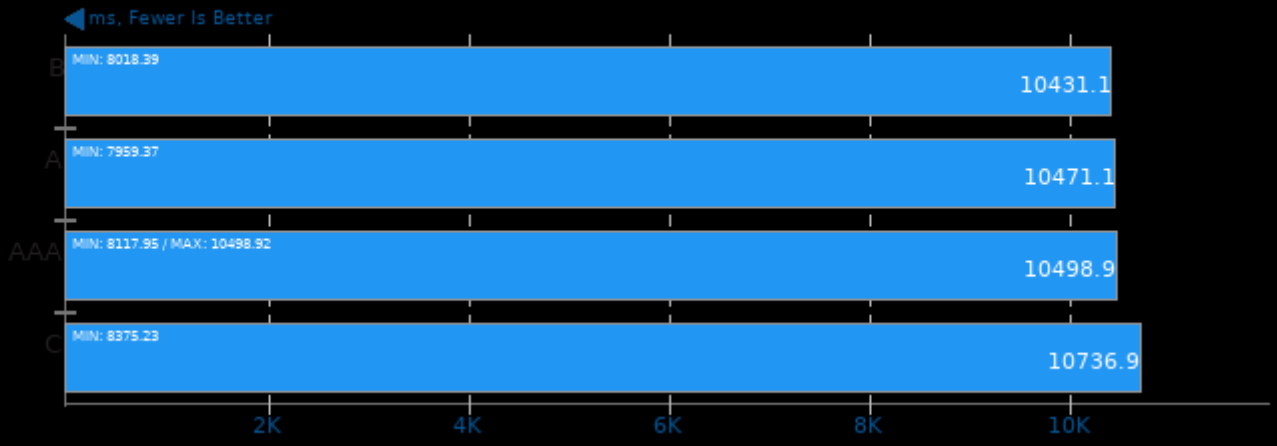
Test: Matrix Math



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

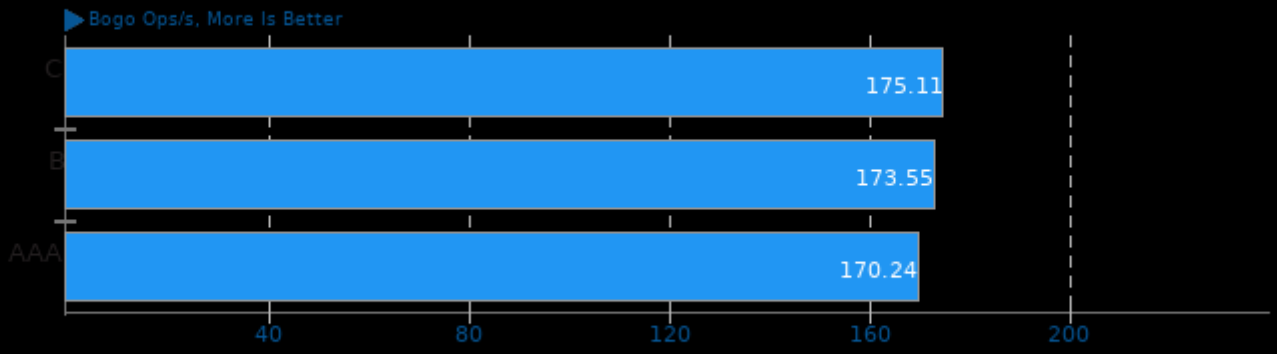
Renaissance 0.14

Test: Akka Unbalanced Cobwebbed Tree



Stress-NG 0.14

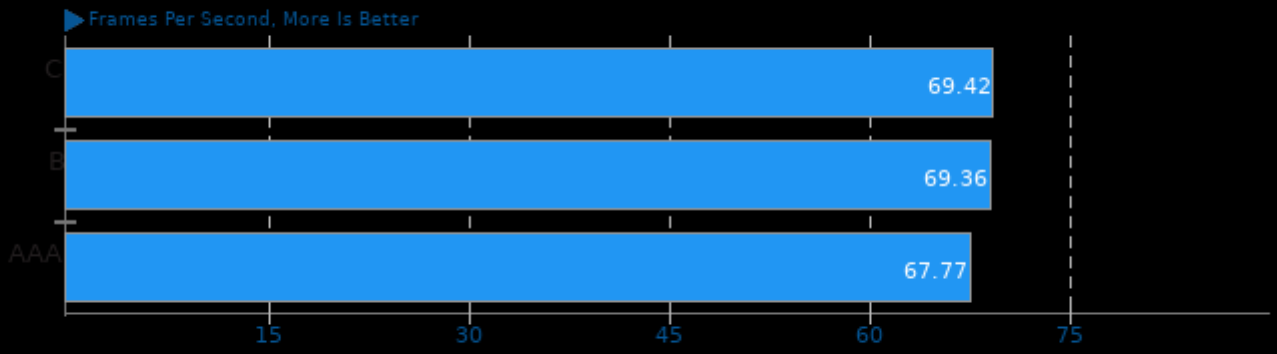
Test: NUMA



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

SVT-HEVC 1.5.0

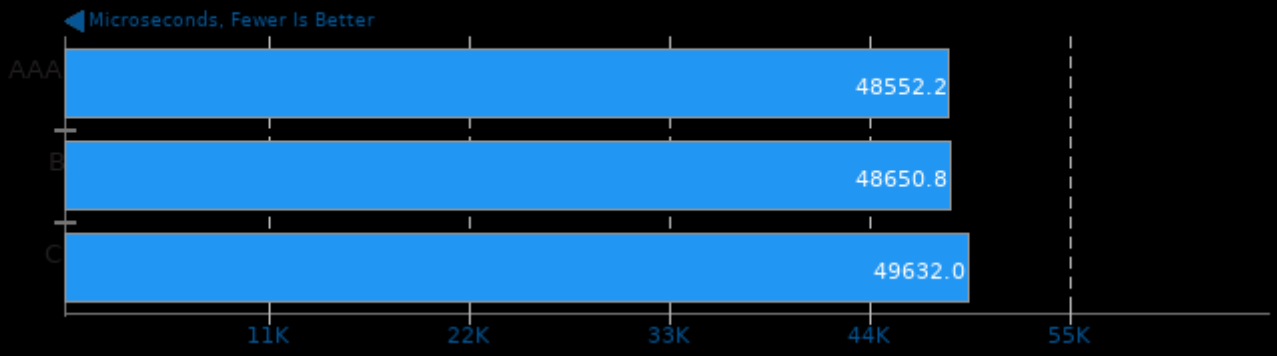
Tuning: 10 - Input: Bosphorus 4K



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

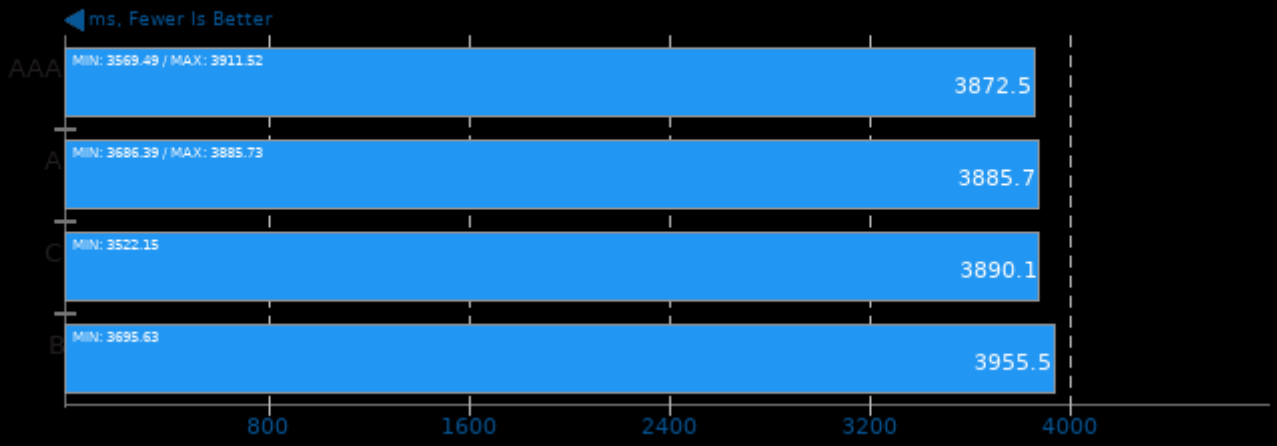
TensorFlow Lite 2022-05-18

Model: Inception V4



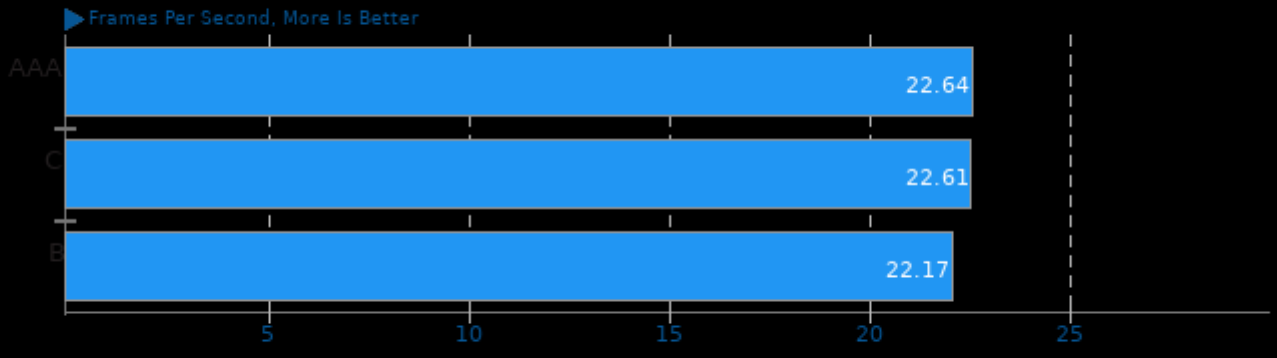
Renaissance 0.14

Test: Finagle HTTP Requests



SVT-AV1 1.0

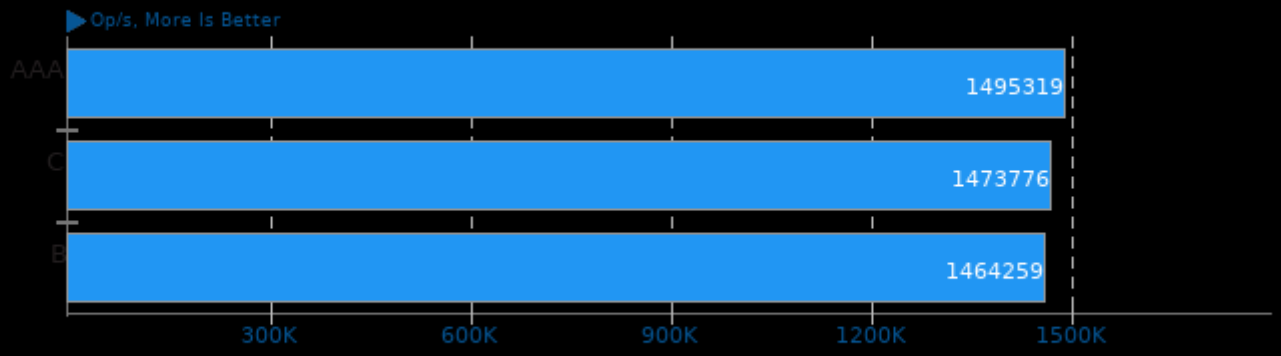
Encoder Mode: Preset 8 - Input: Bosphorus 4K



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

Facebook RocksDB 7.0.1

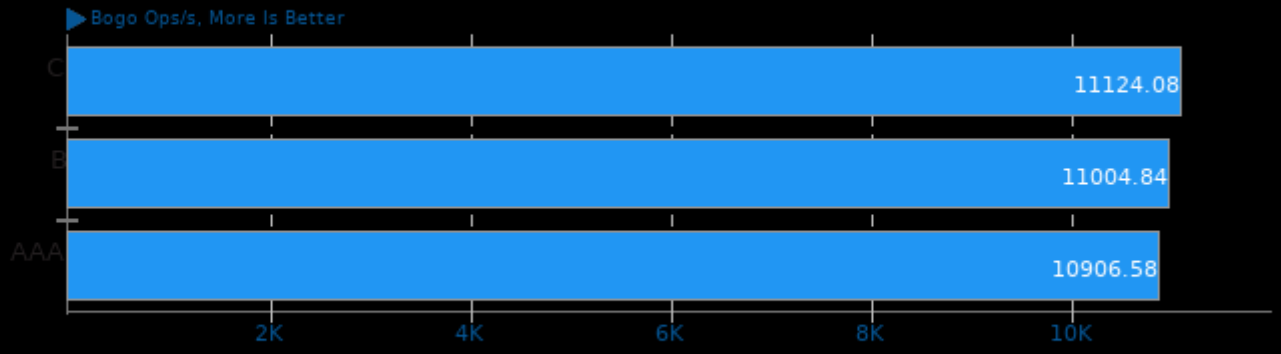
Test: Read Random Write Random



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

Stress-NG 0.14

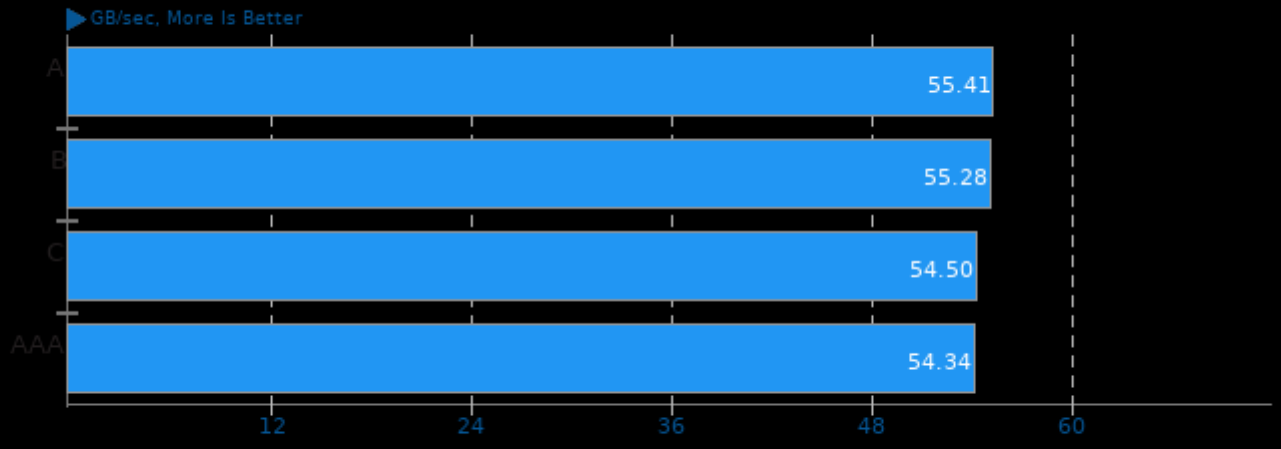
Test: Crypto



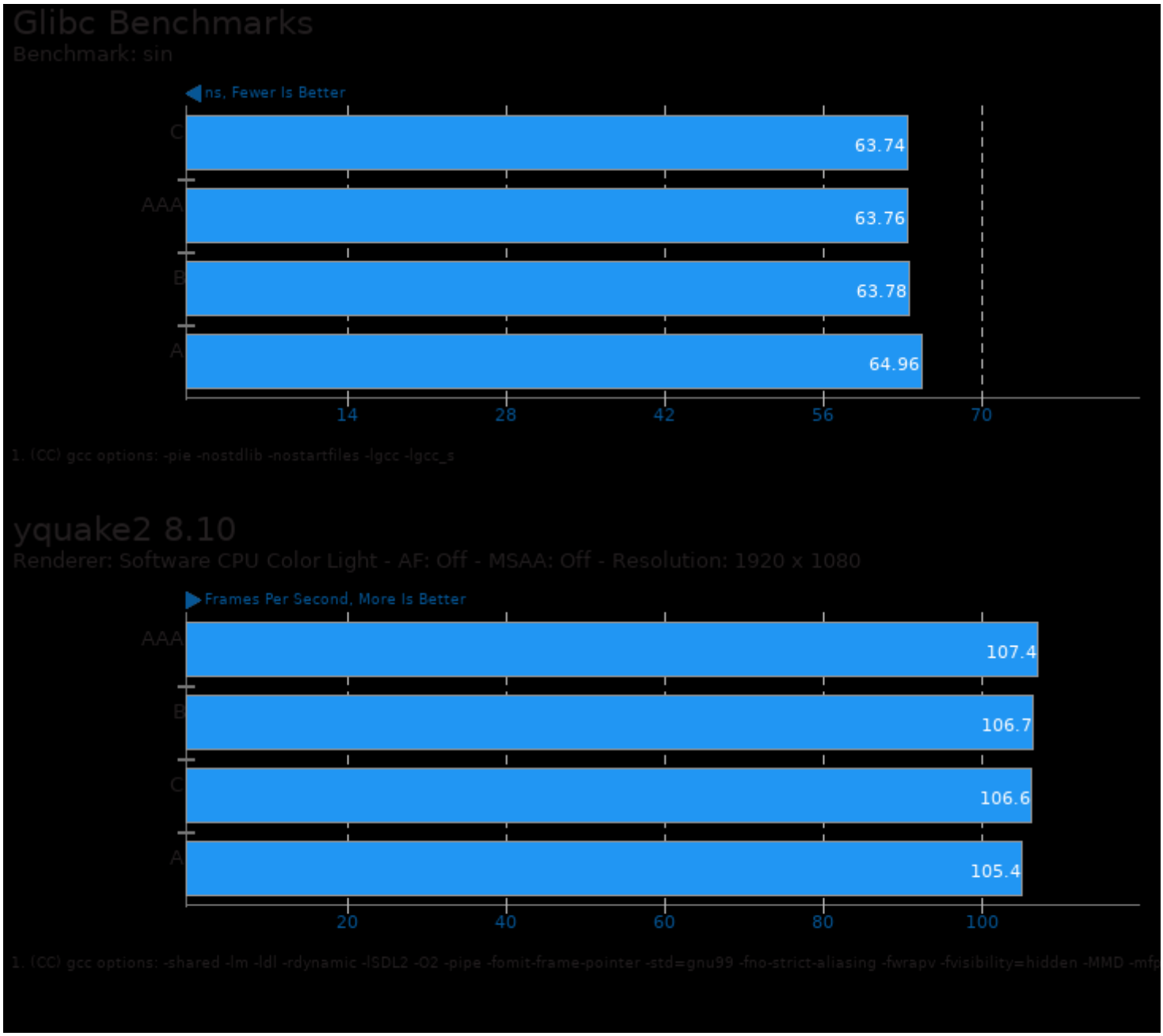
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lbsd -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread

perf-bench

Benchmark: Memset 1MB

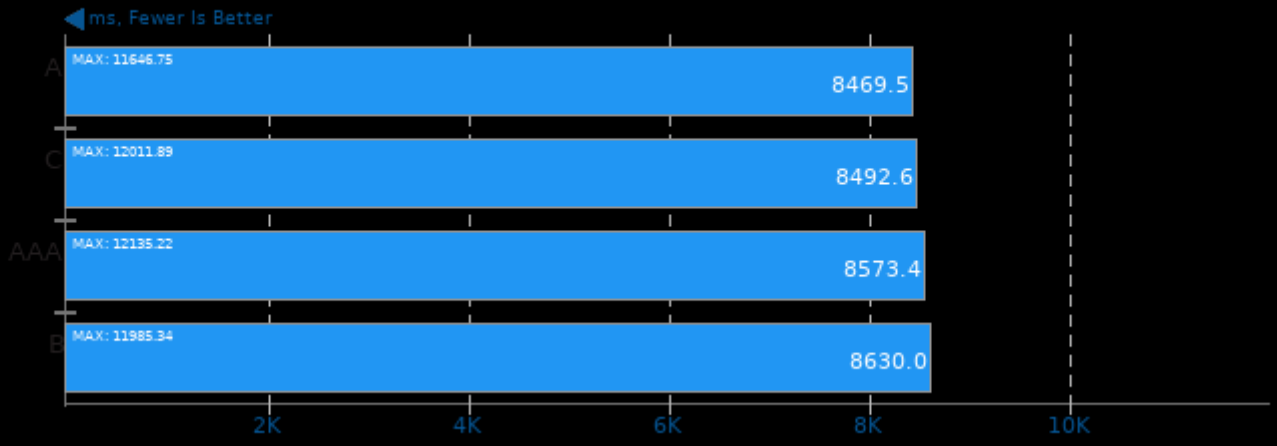


1. (CC) gcc options: -O6 -ggdb3 -funwind-tables -std=gnu99 -lunwind-x86_64 -lunwind -llzma -Xlinker -export-dynamic -lpthread -lrt -lm -ldl -lelf -lcrypto


Glibc Benchmarks
Benchmark: sin
ns, Fewer Is Better
C
AAA
B
A
63.74
63.76
63.78
64.96
14
28
42
56
70
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s
yquake2 8.10
Renderer: Software CPU Color Light - AF: Off - MSAA: Off - Resolution: 1920 x 1080
Frames Per Second, More Is Better
AAA
B
C
A
107.4
106.7
106.6
105.4
20
40
60
80
100
1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf

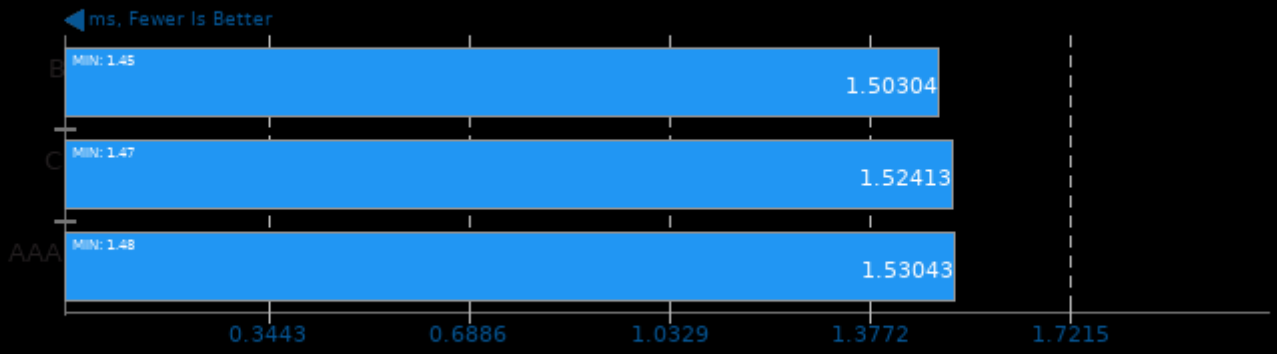
Renaissance 0.14

Test: Savina Reactors.IO



oneDNN 2.6

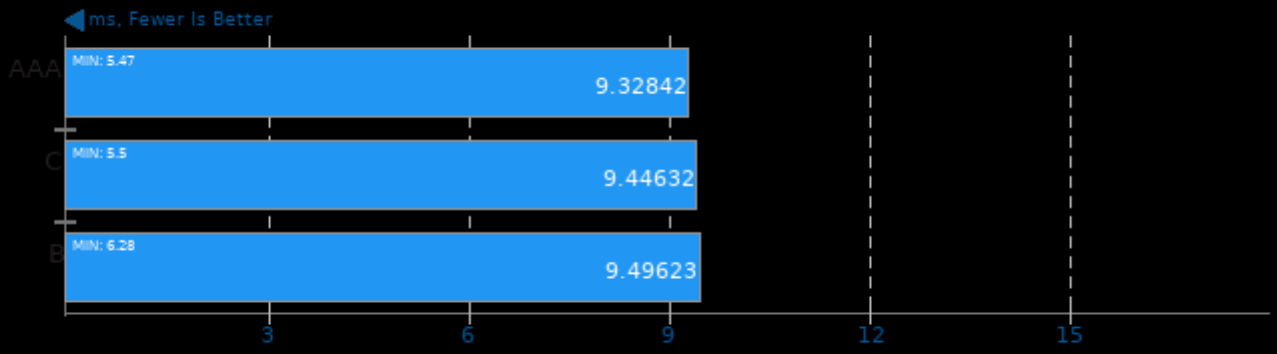
Harness: Matrix Multiply Batch Shapes Transformer - Data Type: u8s8f32 - Engine: CPU



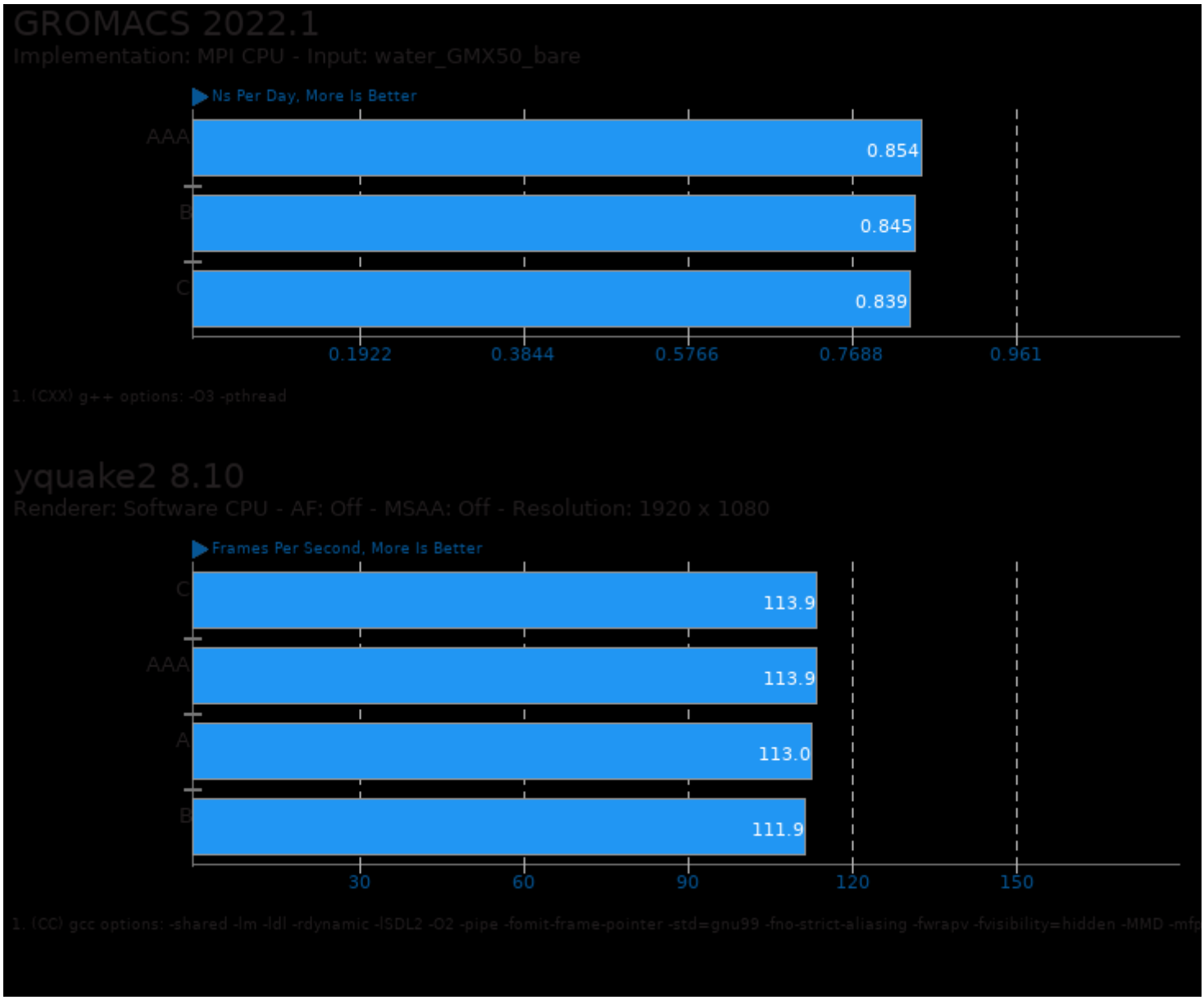
1. (CXX) g++ options: -O3 -march=native -fopenmp -msse4.1 -fPIC -std=c++11 -pie -lpthread -ldl

oneDNN 2.6

Harness: Deconvolution Batch shapes_1d - Data Type: f32 - Engine: CPU

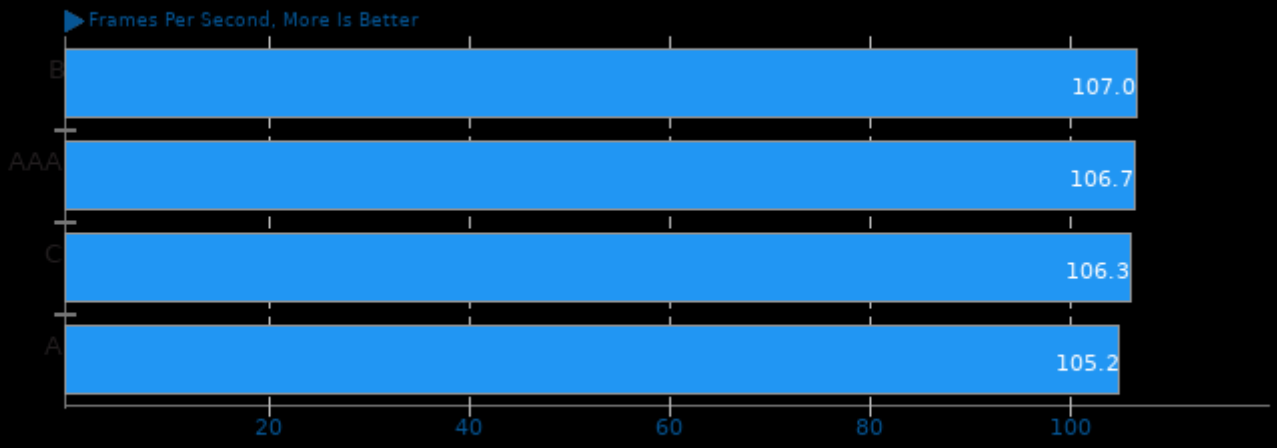


1. (CXX) g++ options: -O3 -march=native -fopenmp -msse4.1 -fPIC -std=c++11 -pie -lpthread -ldl


GROMACS 2022.1
Implementation: MPI CPU - Input: water_GMX50_bare
Ns Per Day, More Is Better
AAA
B
C
0.854
0.845
0.839
0.1922
0.3844
0.5766
0.7688
0.961
1. (CXX) g++ options: -O3 -pthread
yquake2 8.10
Renderer: Software CPU - AF: Off - MSAA: Off - Resolution: 1920 x 1080
Frames Per Second, More Is Better
C
AAA
A
B
113.9
113.9
113.0
111.9
30
60
90
120
150
1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf

yquake2 8.10

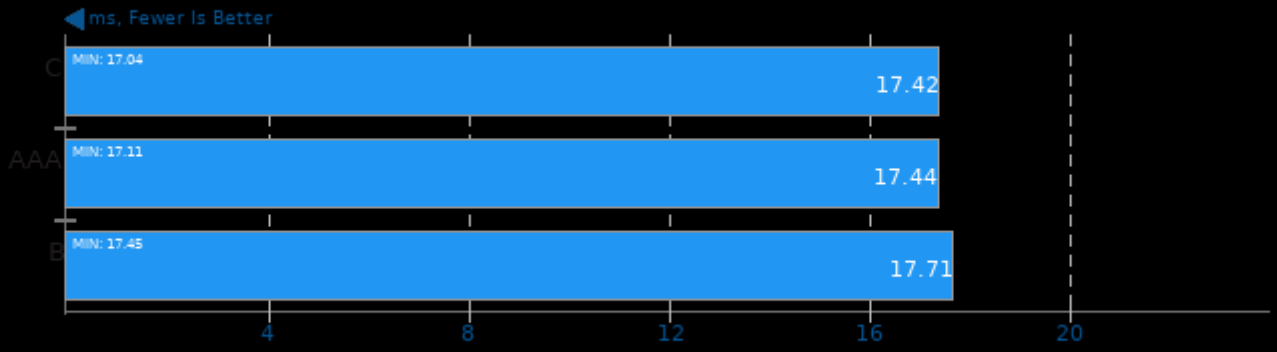
Renderer: Software CPU Color Light - AF: Off - MSAA: On - Resolution: 1920 x 1080



1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf

oneDNN 2.6

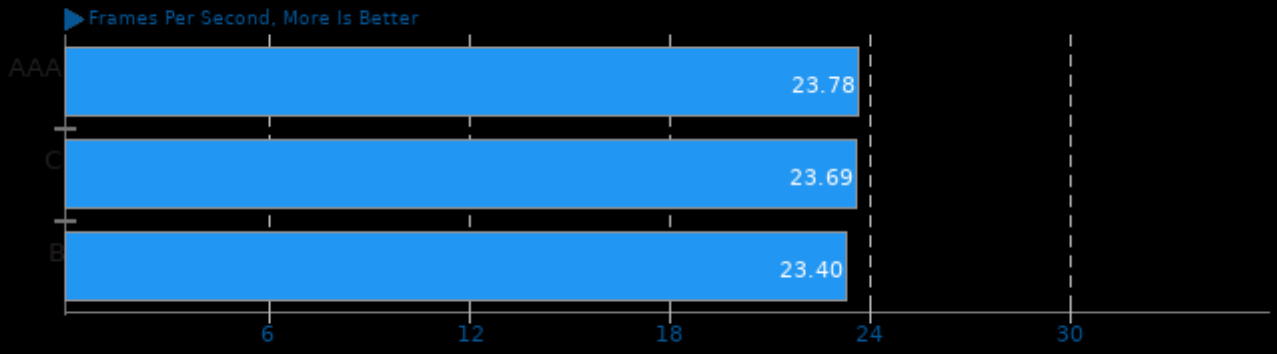
Harness: Convolution Batch Shapes Auto - Data Type: u8s8f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -fopenmp -msse4.1 -fPIC -std=c++11 -pie -lpthread -ldl

x264 2022-02-22

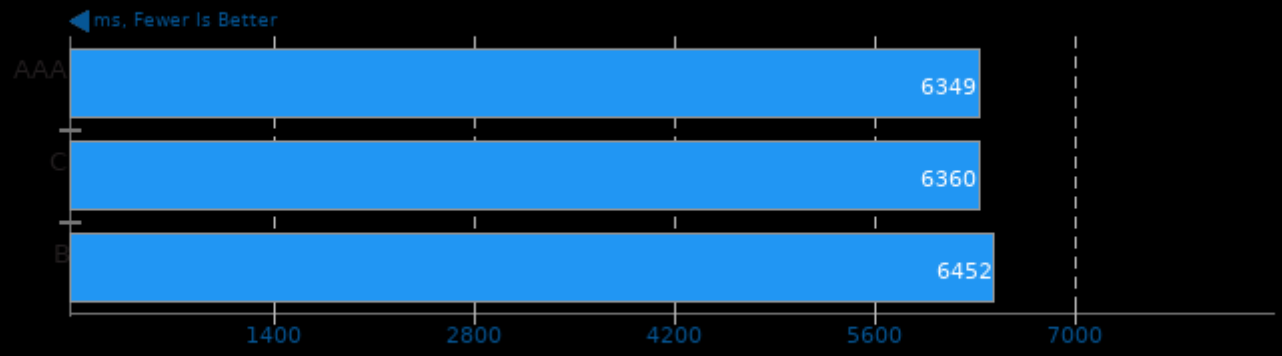
Video Input: Bosphorus 4K



1. (CC) gcc options: -ldl -lavformat -lavcodec -lavutil -lswscale -m64 -lm -lpthread -O3 -flto

Google Draco 1.5.0

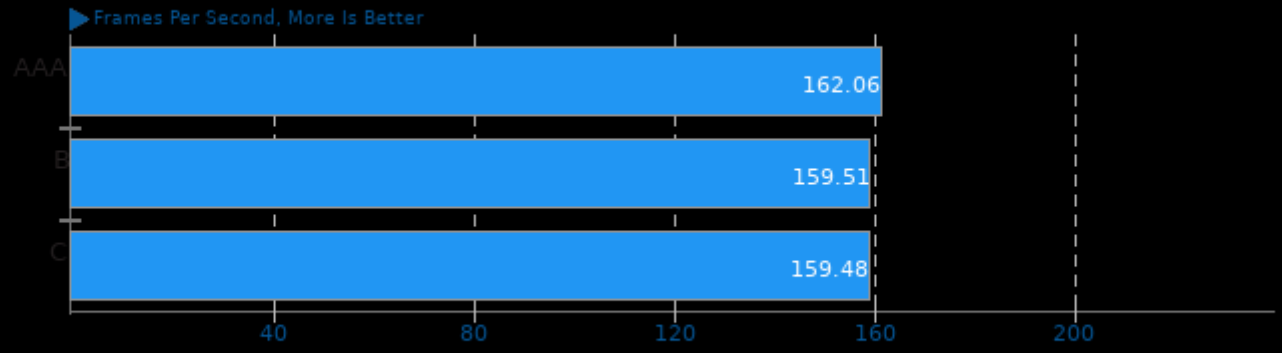
Model: Church Facade



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

SVT-VP9 0.3

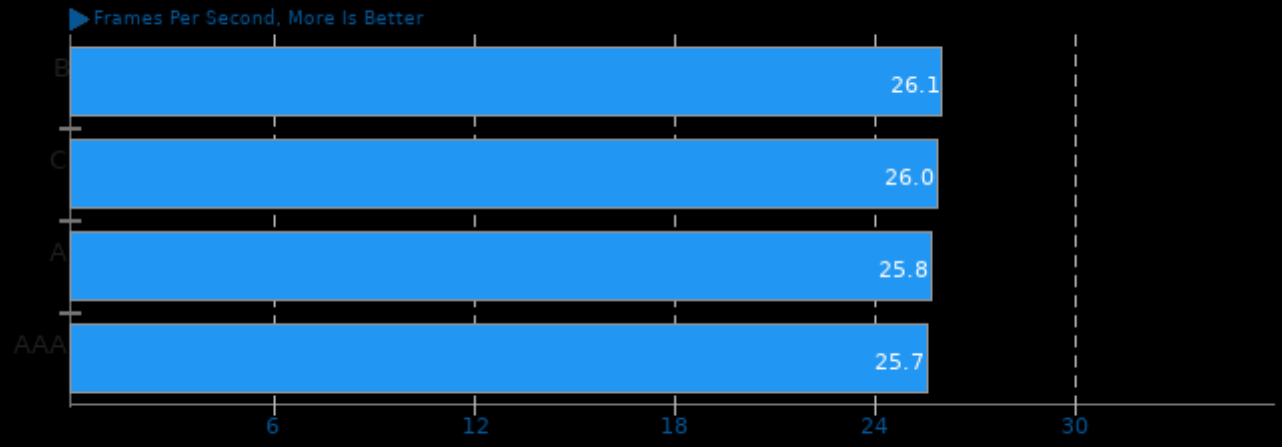
Tuning: PSNR/SSIM Optimized - Input: Bosphorus 1080p



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

yquake2 8.10

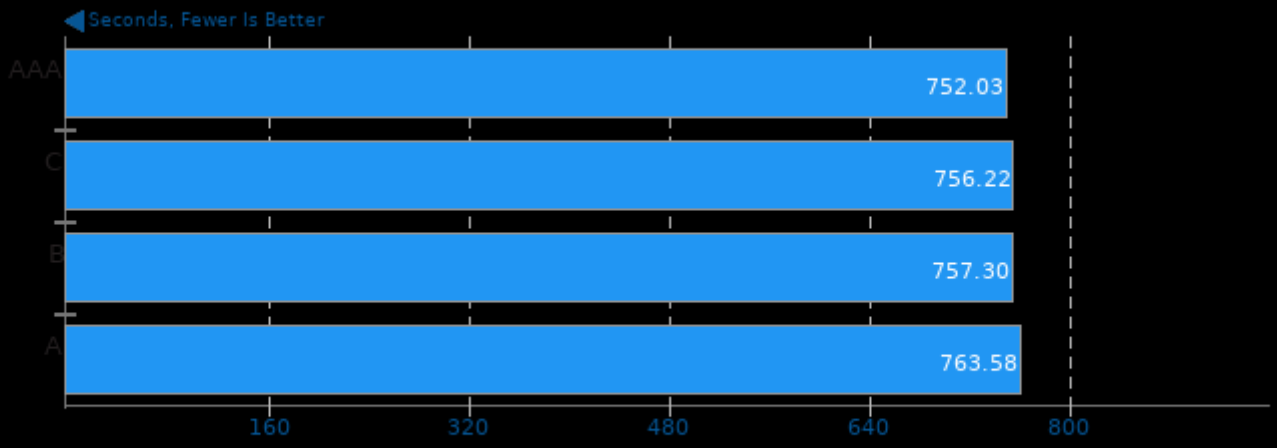
Renderer: Vulkan - AF: On - MSAA: On - Resolution: 1920 x 1080



1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf

Quantum ESPRESSO 7.0

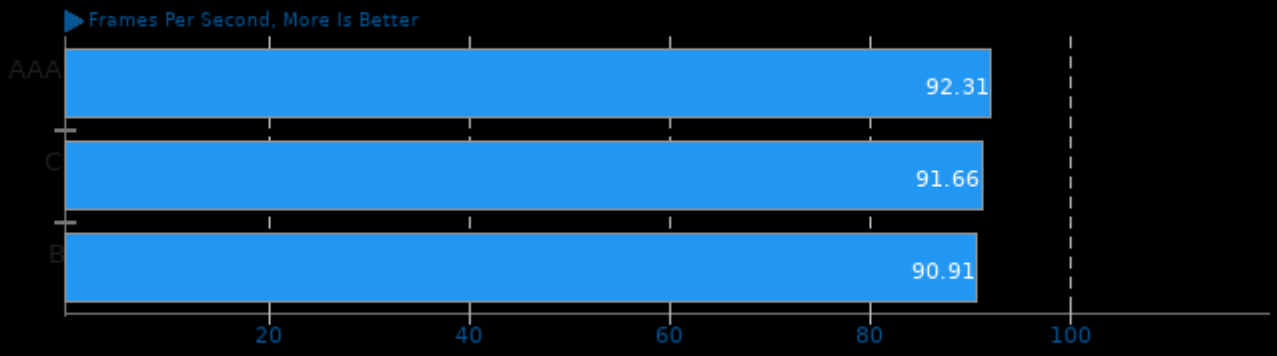
Input: AUSURF112



1. (F9X) gfortran options: -pthread -fopenmp -ldevXlib -lopenblas -lFoX_dom -lFoX_sax -lFoX_wxml -lFoX_common -lFoX_utils -lFoX_fsys -lfftw3_omp -lfftw

SVT-AV1 1.0

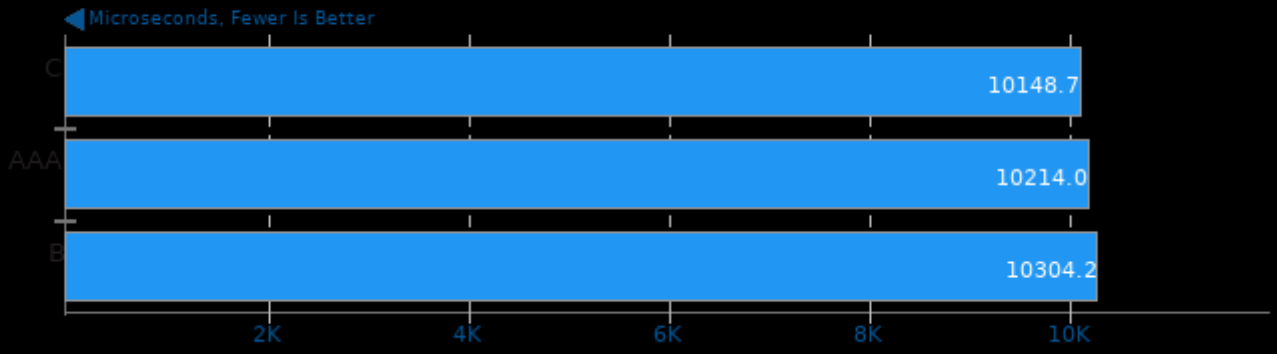
Encoder Mode: Preset 12 - Input: Bosphorus 4K



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

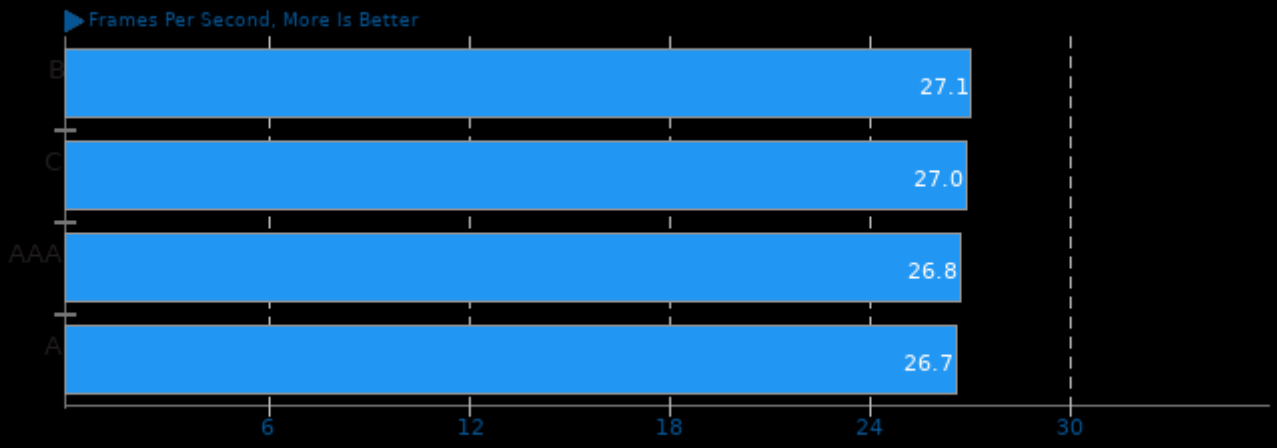
TensorFlow Lite 2022-05-18

Model: NASNet Mobile



yquake2 8.10

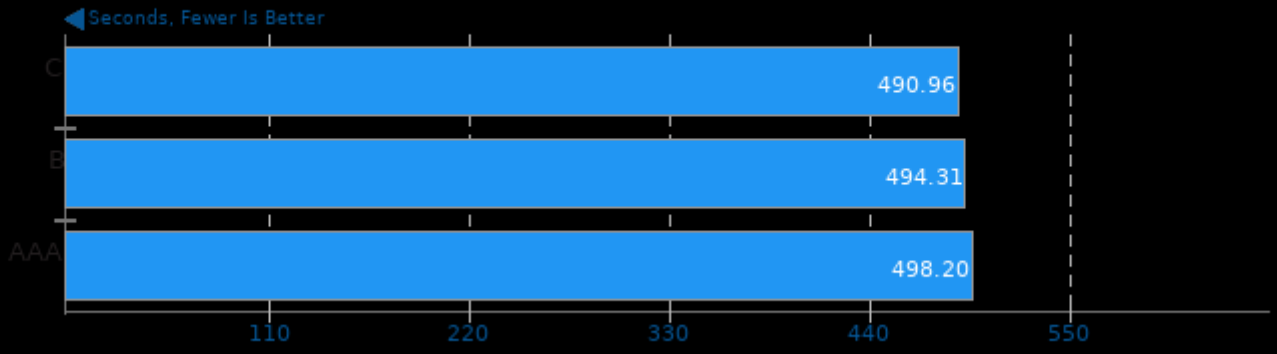
Renderer: Vulkan - AF: Off - MSAA: On - Resolution: 1920 x 1080



1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf

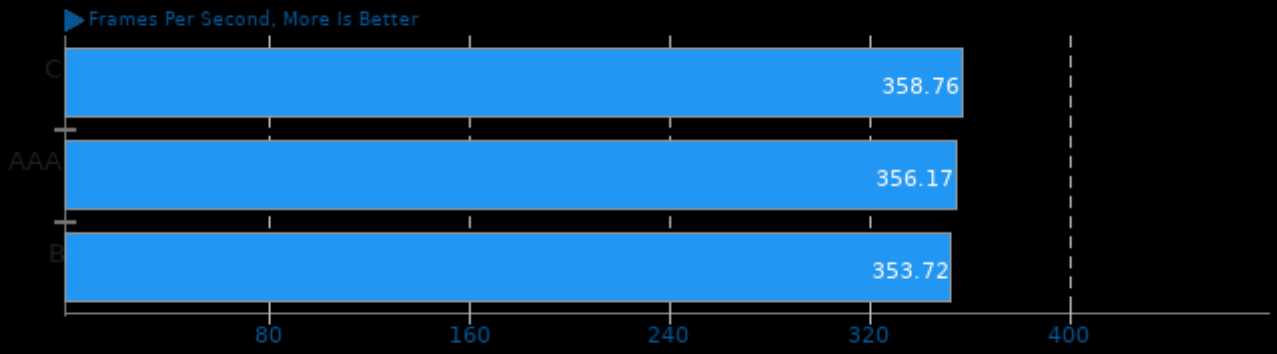
Blender 3.2

Blend File: Classroom - Compute: CPU-Only



SVT-AV1 1.0

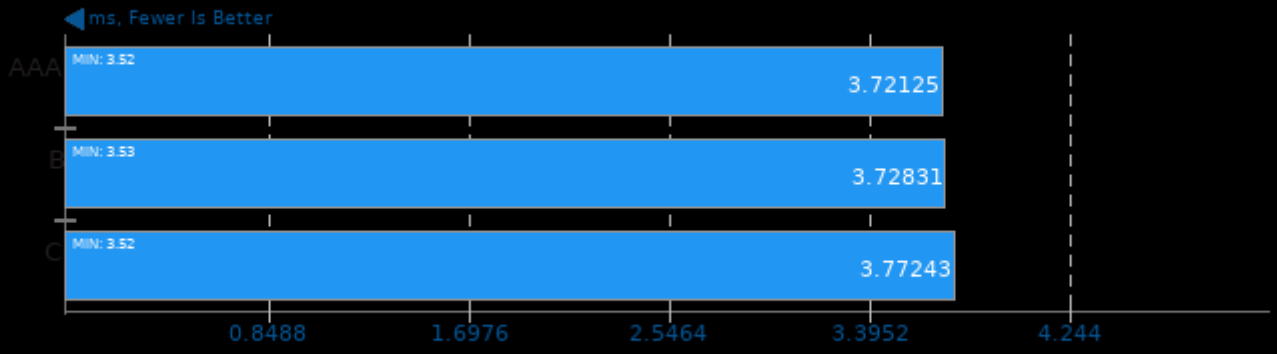
Encoder Mode: Preset 12 - Input: Bosphorus 1080p



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

oneDNN 2.6

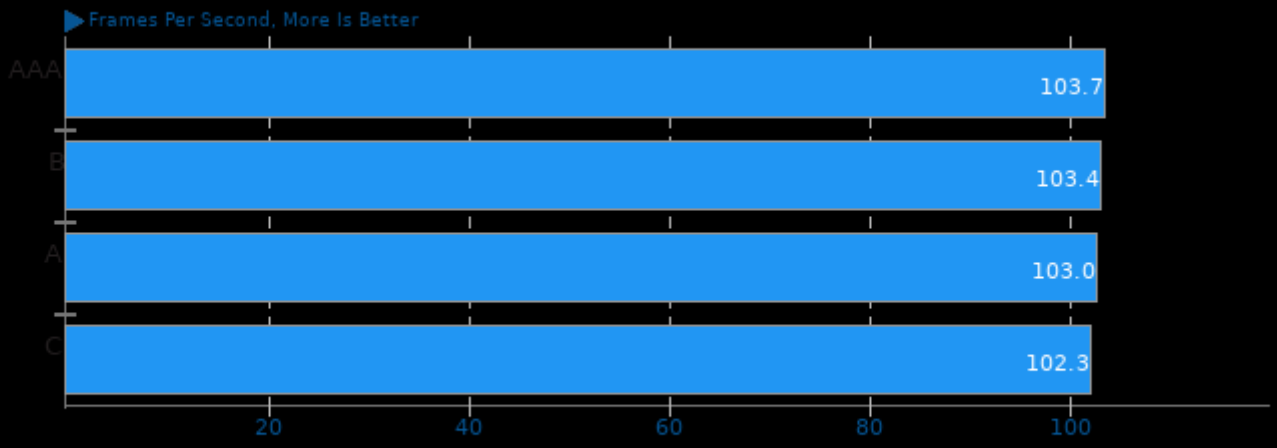
Harness: Deconvolution Batch shapes_3d - Data Type: u8s8f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -fopenmp -msse4.1 -fPIC -std=c++11 -pie -lpthread -ldl

yquake2 8.10

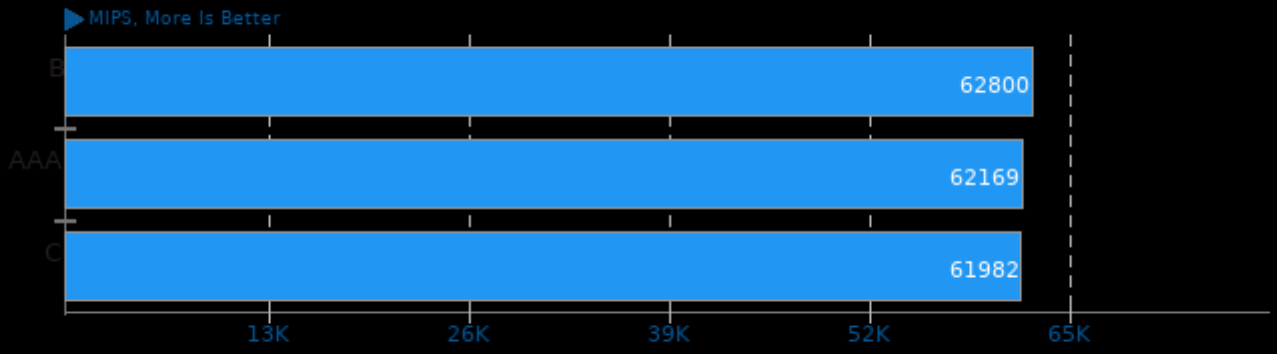
Renderer: Software CPU Color Light - AF: On - MSAA: Off - Resolution: 1920 x 1080



1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mfp

7-Zip Compression 22.00

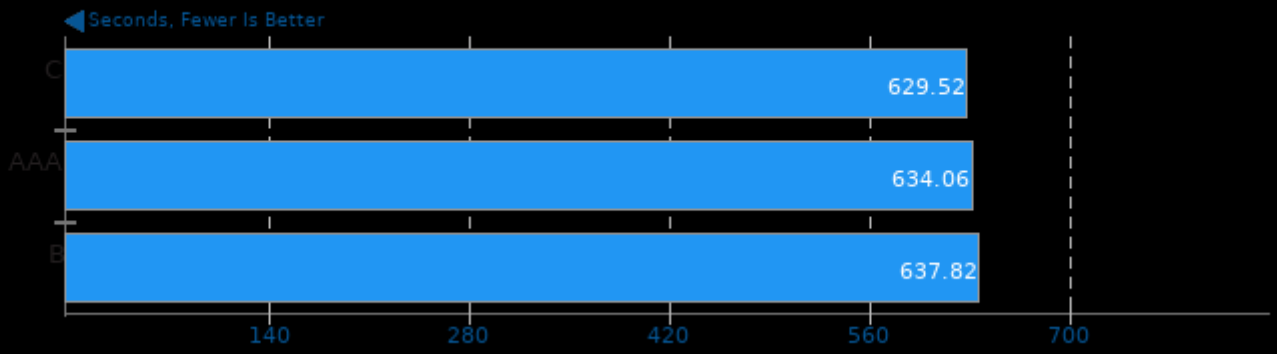
Test: Compression Rating



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

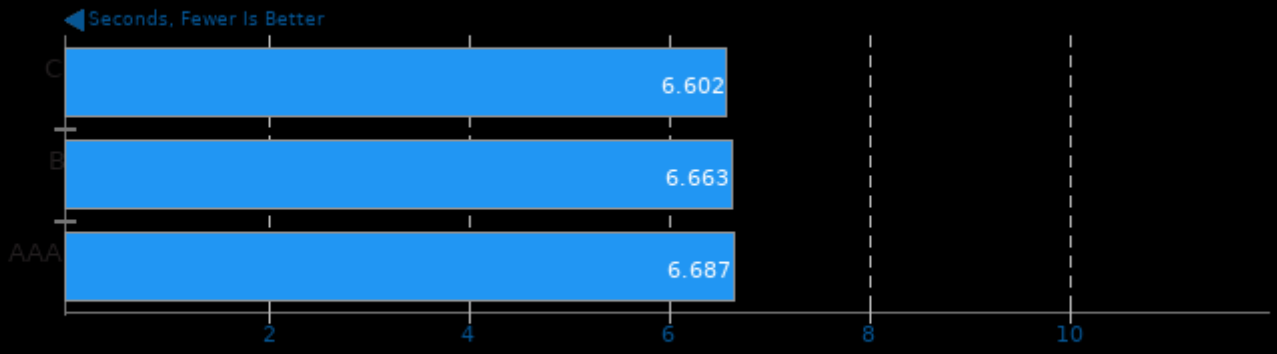
Blender 3.2

Blend File: Pabellon Barcelona - Compute: CPU-Only



libavif avifenc 0.10

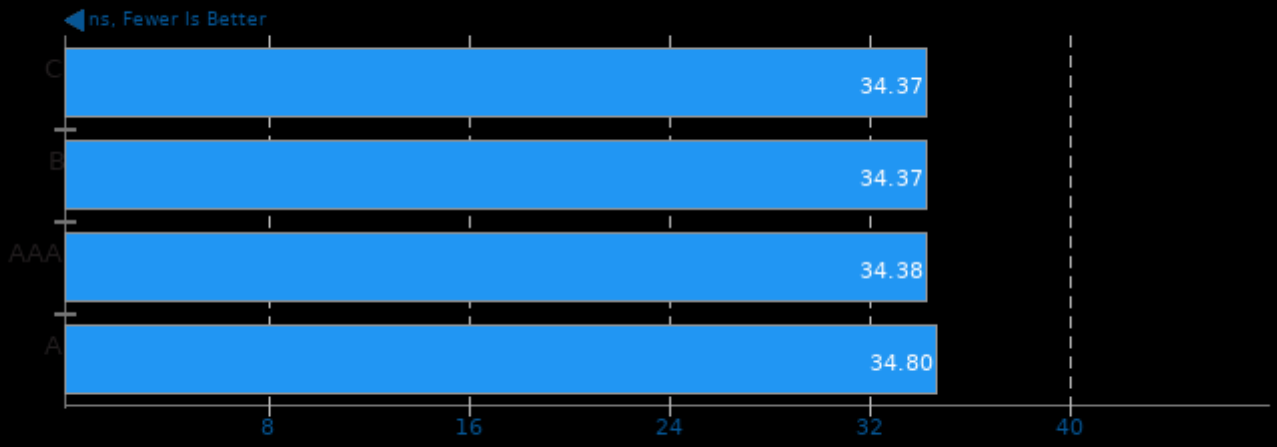
Encoder Speed: 10, Lossless



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

Glibc Benchmarks

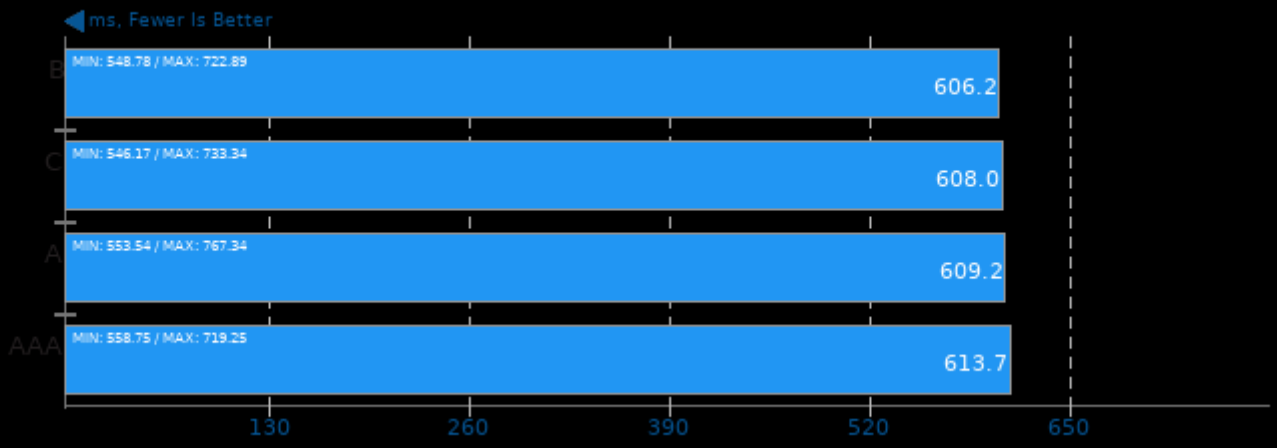
Benchmark: atanh



1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

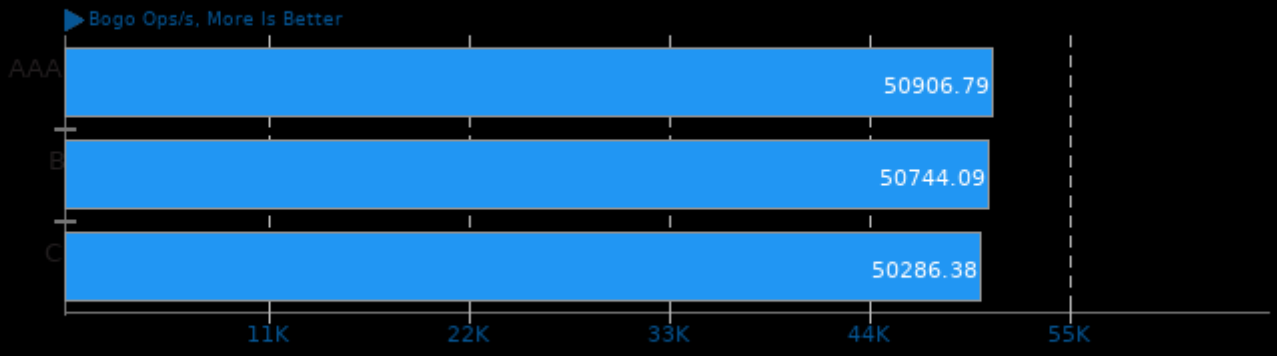
Renaissance 0.14

Test: Random Forest



Stress-NG 0.14

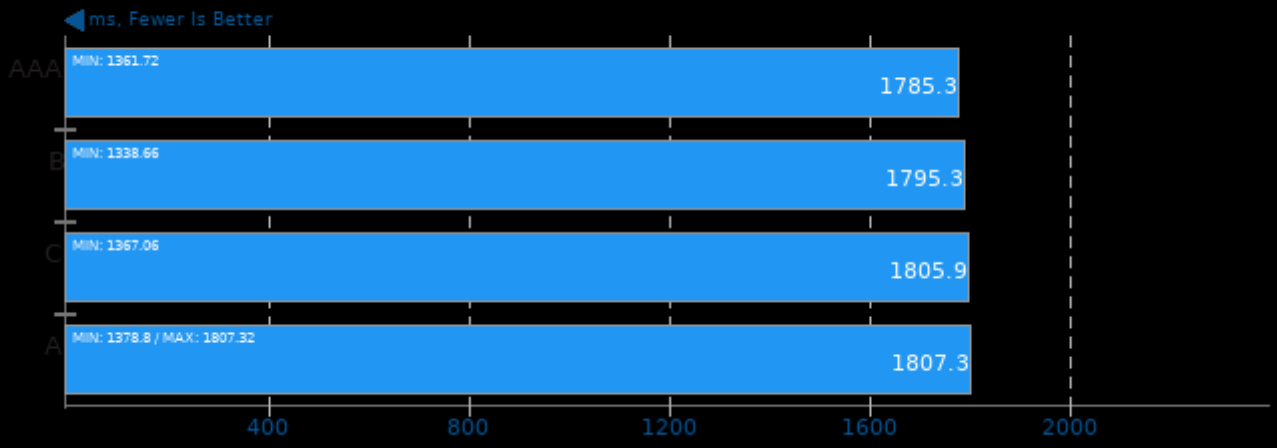
Test: Forking



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

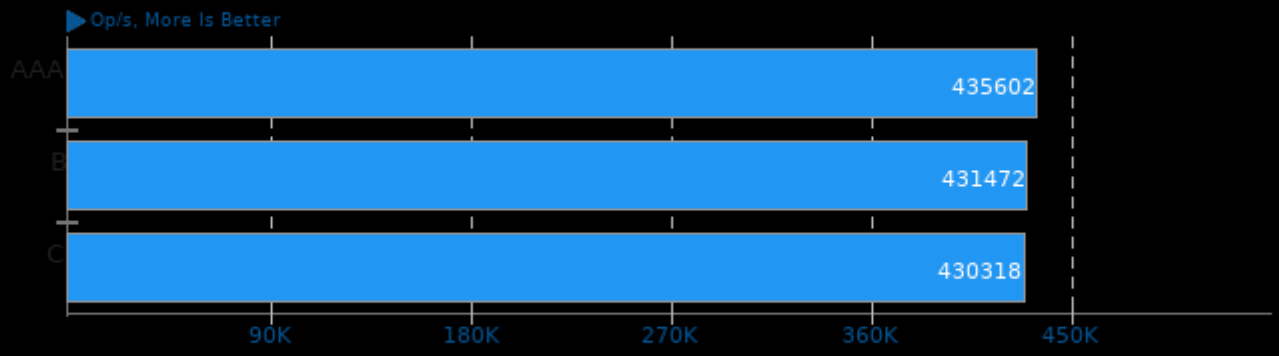
Renaissance 0.14

Test: Apache Spark Bayes



Facebook RocksDB 7.0.1

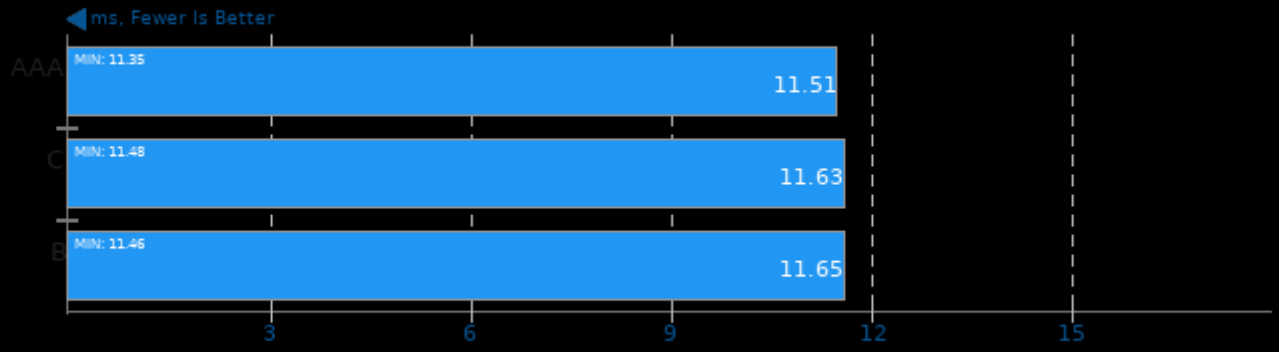
Test: Update Random



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

oneDNN 2.6

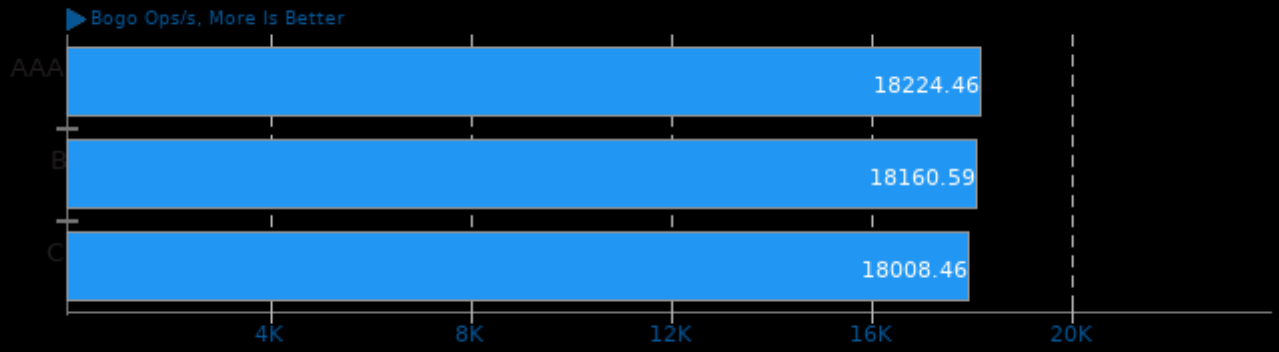
Harness: IP Shapes 3D - Data Type: f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -fopenmp -msse4.1 -fPIC -std=c++11 -pie -lpthread -ldl

Stress-NG 0.14

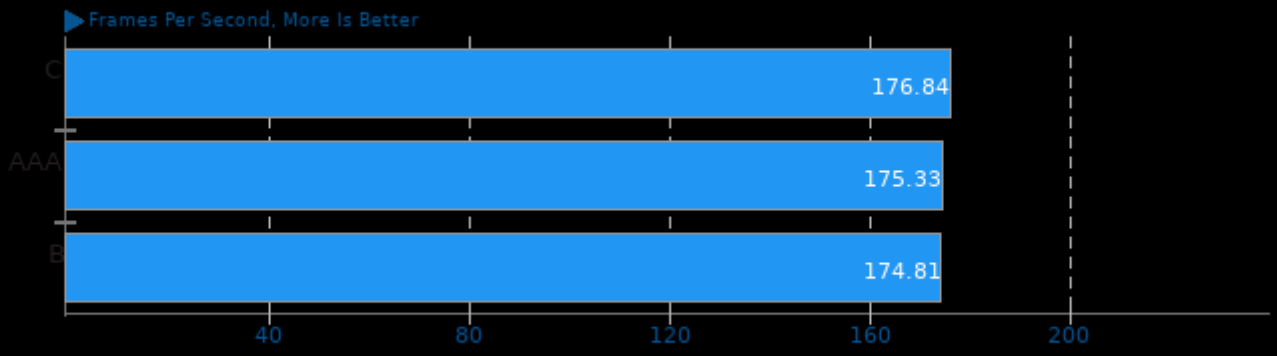
Test: CPU Stress



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

SVT-AV1 1.0

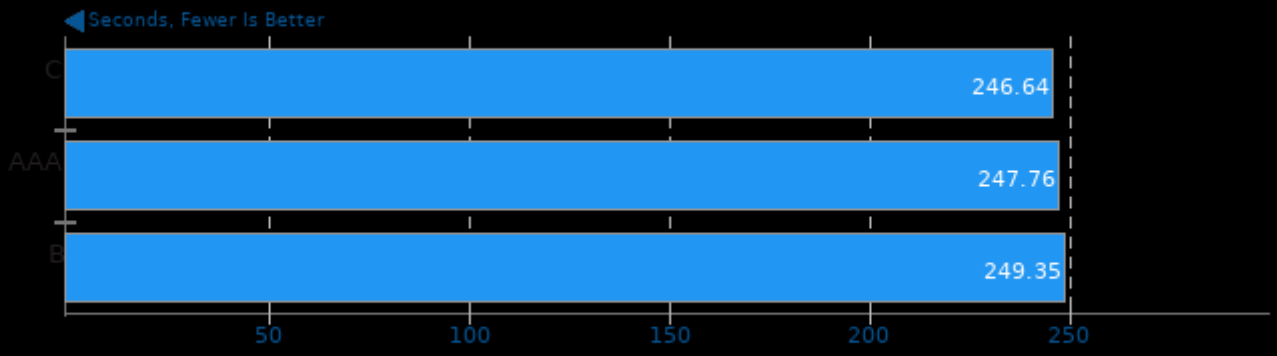
Encoder Mode: Preset 10 - Input: Bosphorus 1080p



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

WebP2 Image Encode 20220422

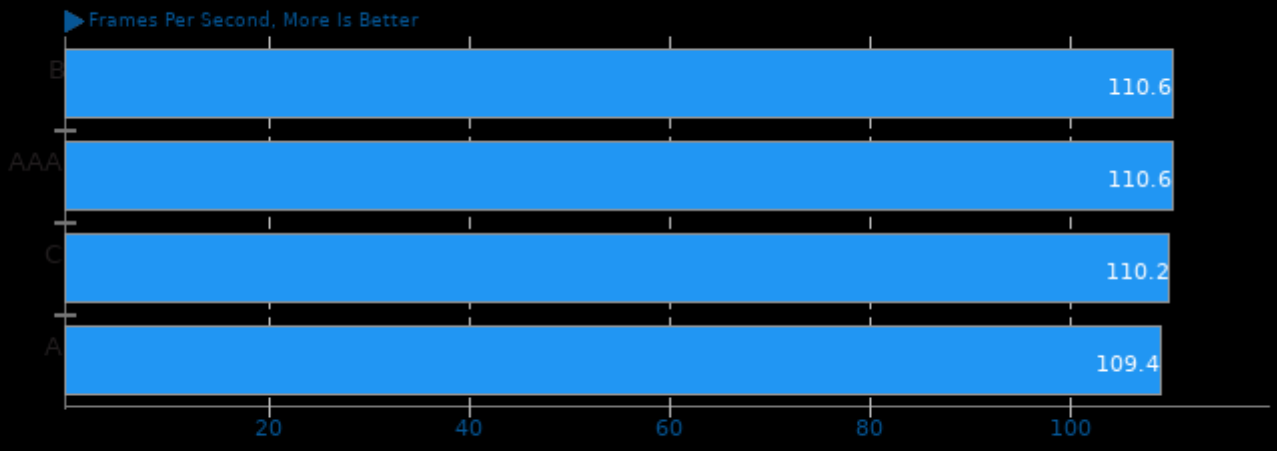
Encode Settings: Quality 75, Compression Effort 7



1. (CXX) g++ options: -msse4.2 -fno-rtti -O3 -ldl -lpthread

yquake2 8.10

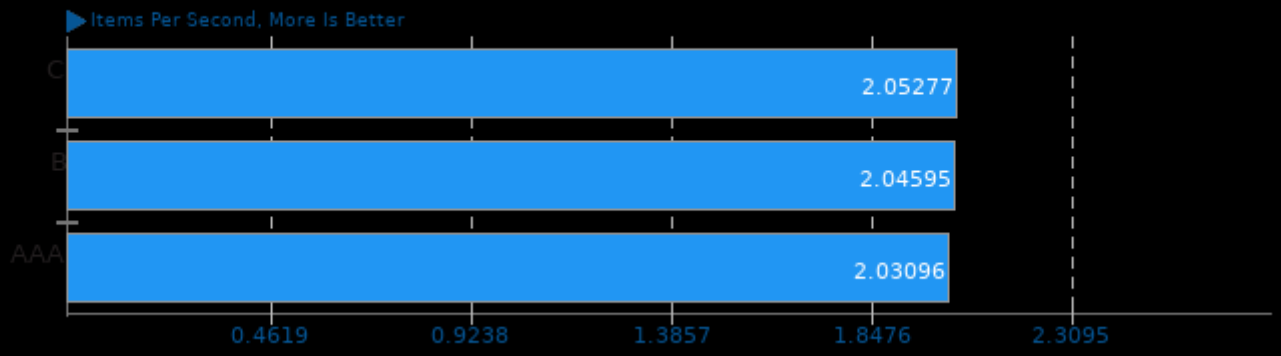
Renderer: Software CPU - AF: On - MSAA: Off - Resolution: 1920 x 1080



1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf

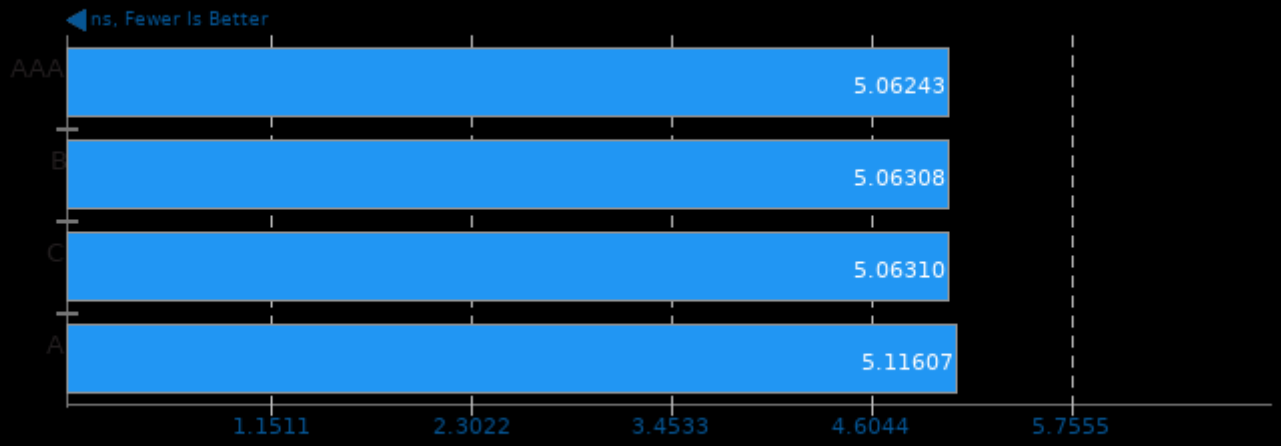
OSPray 2.9

Benchmark: gravity_spheres_volume/dim_512/scivis/real_time



Glibc Benchmarks

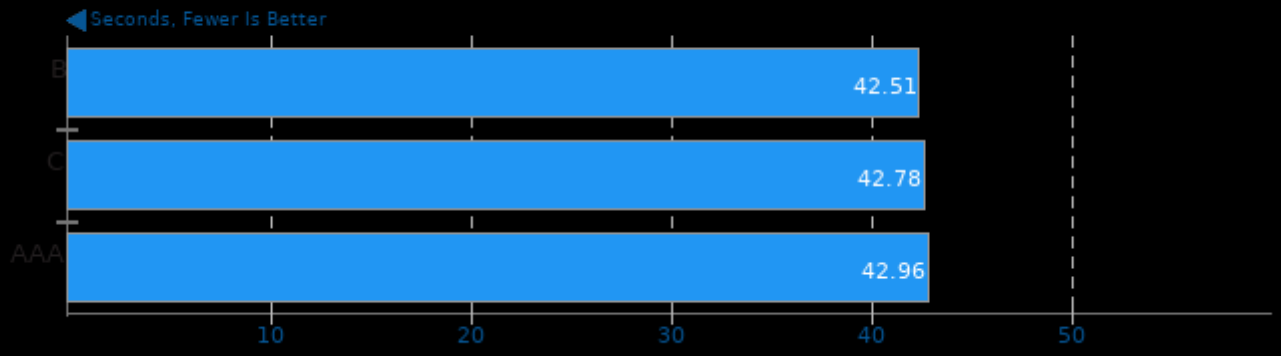
Benchmark: ffsll



1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

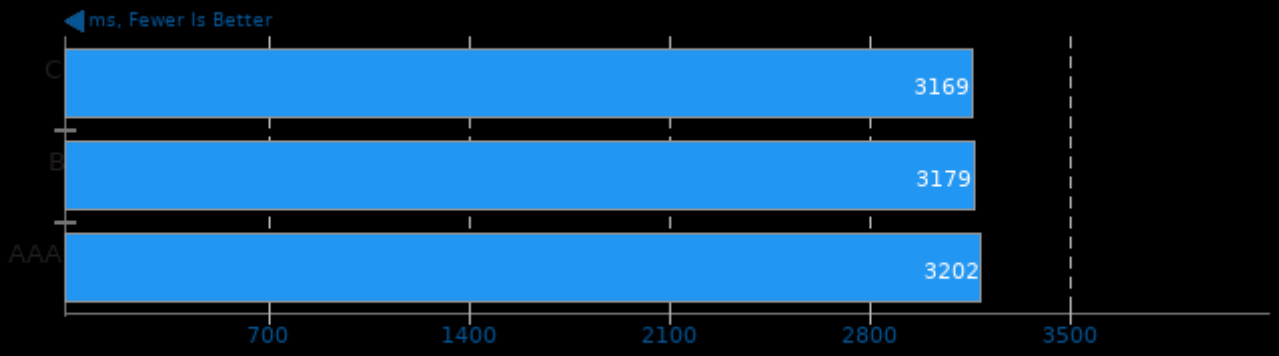
Timed MPlayer Compilation 1.5

Time To Compile



OSPray Studio 0.10

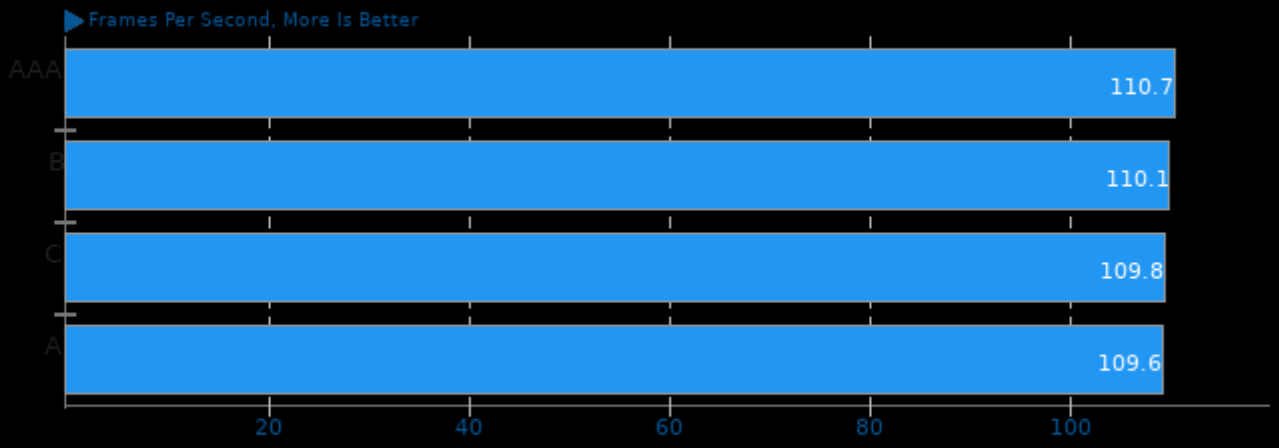
Camera: 2 - Resolution: 1080p - Samples Per Pixel: 1 - Renderer: Path Tracer



1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread

yquake2 8.10

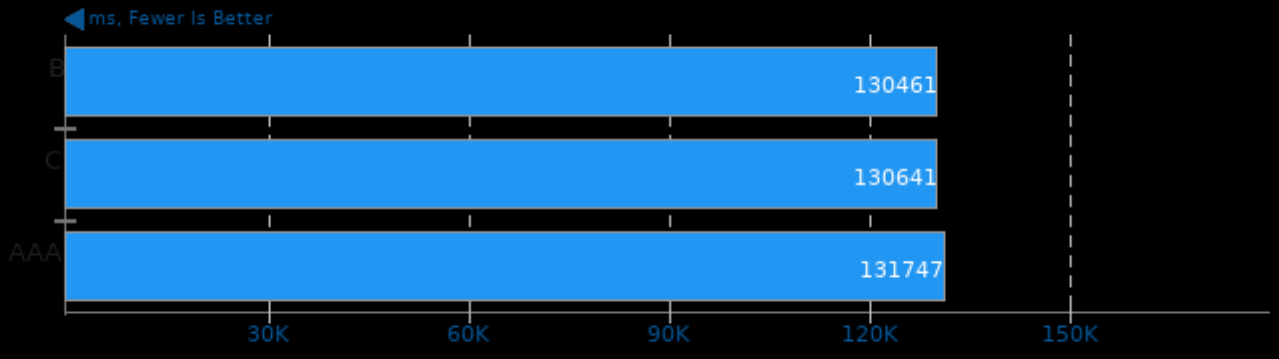
Renderer: Software CPU - AF: On - MSAA: On - Resolution: 1920 x 1080



1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mfp

OSPray Studio 0.10

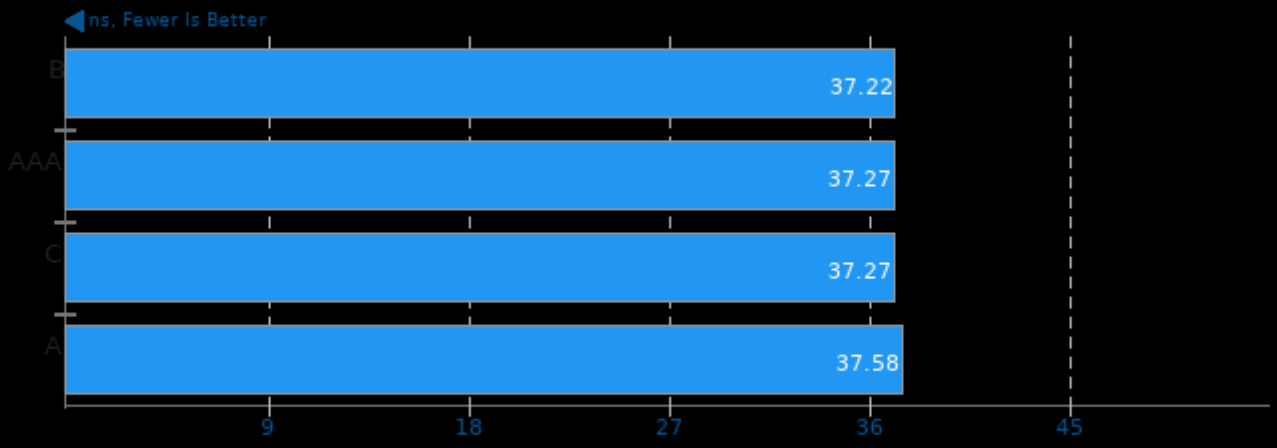
Camera: 3 - Resolution: 1080p - Samples Per Pixel: 32 - Renderer: Path Tracer



1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread

Glibc Benchmarks

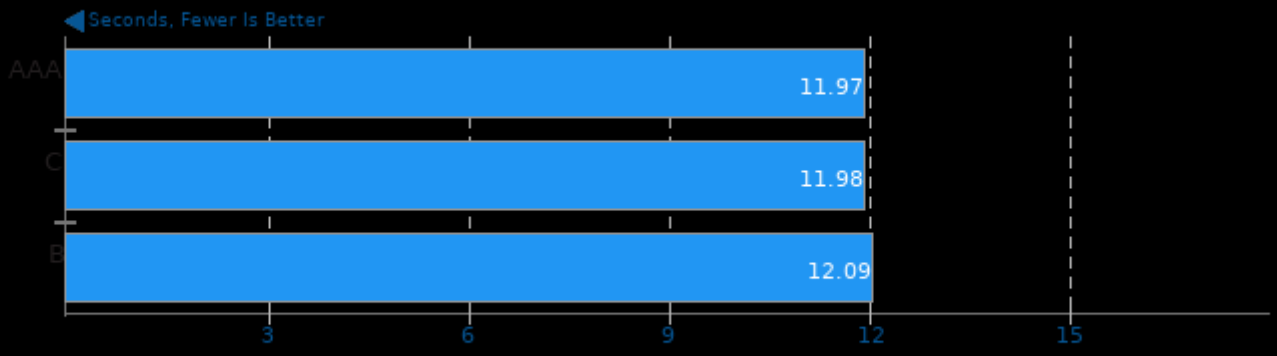
Benchmark: tanh



1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

libavif avifenc 0.10

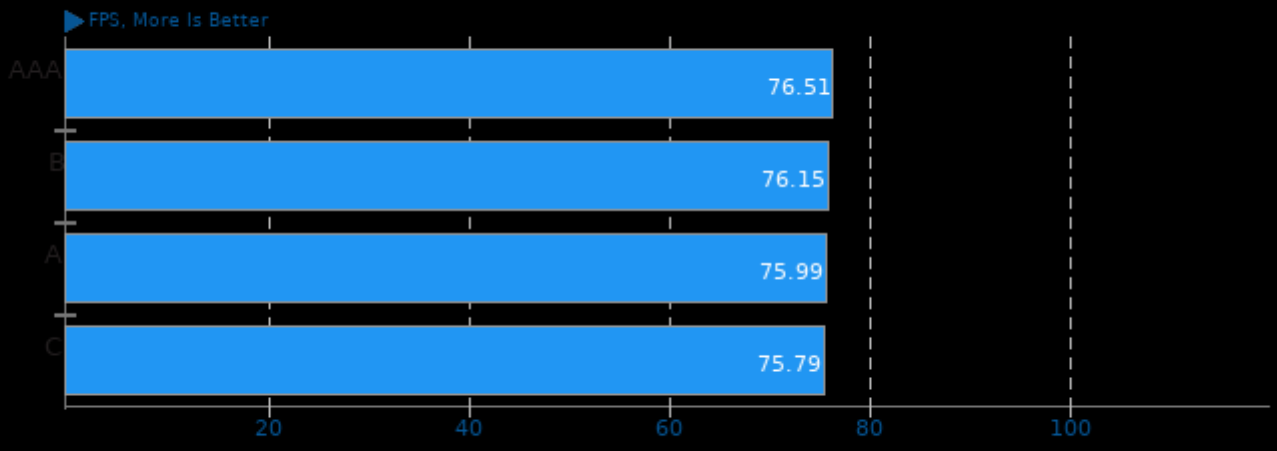
Encoder Speed: 6



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

libgav1 0.17

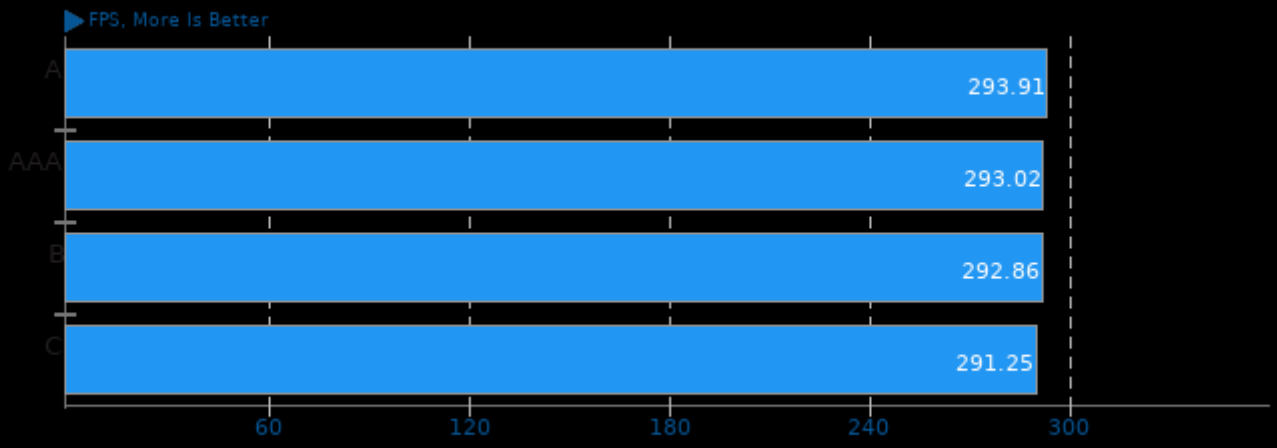
Video Input: Summer Nature 4K



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

libgav1 0.17

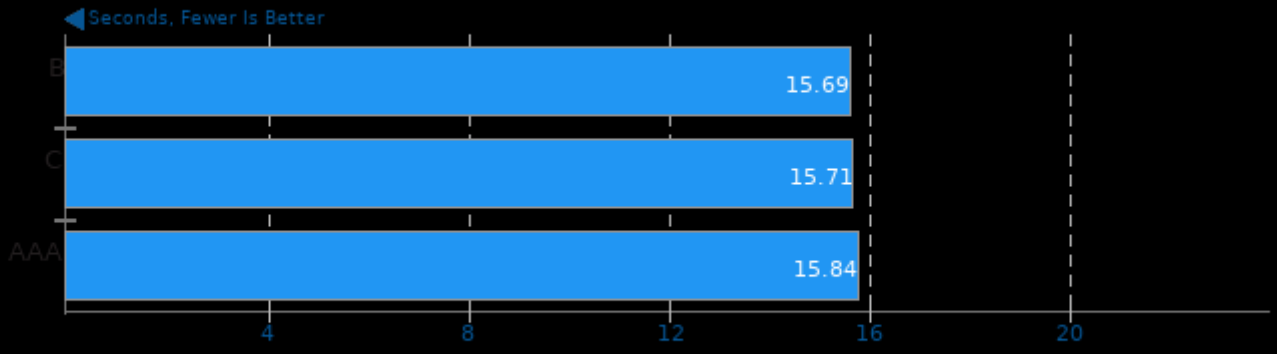
Video Input: Summer Nature 1080p



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

libavif avifenc 0.10

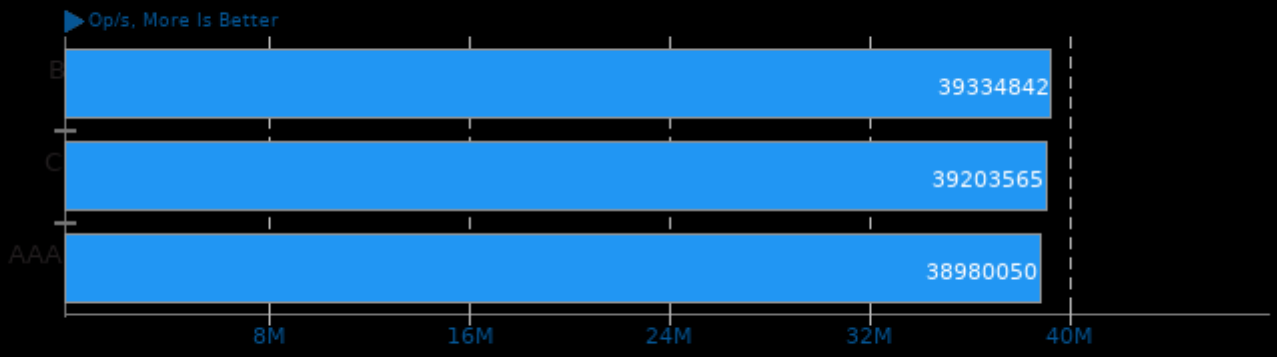
Encoder Speed: 6, Lossless



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

Facebook RocksDB 7.0.1

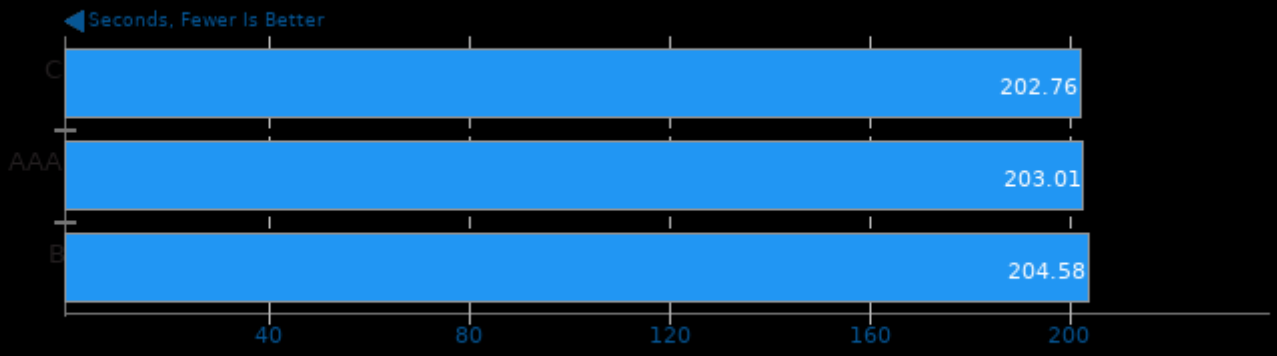
Test: Random Read



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

libavif avifenc 0.10

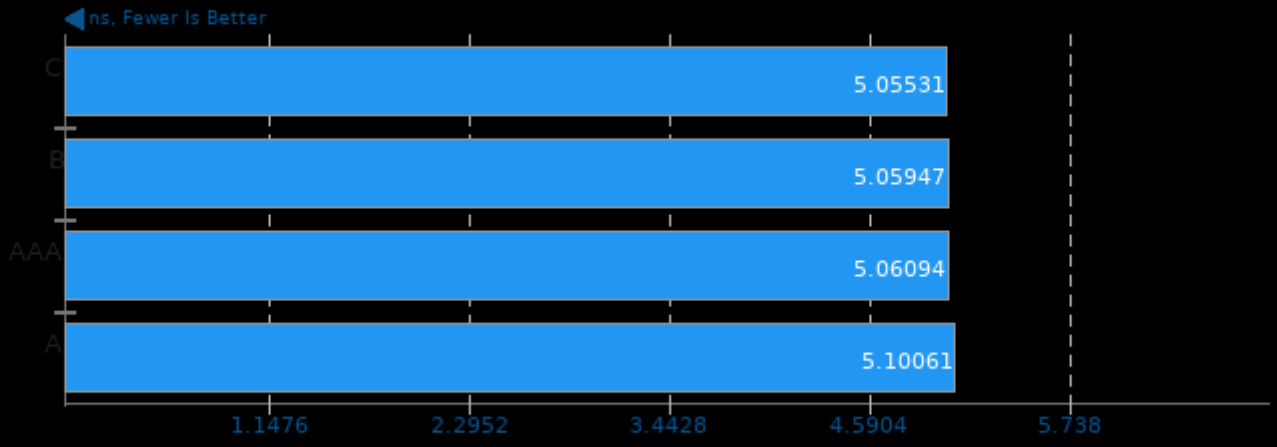
Encoder Speed: 0



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

Glibc Benchmarks

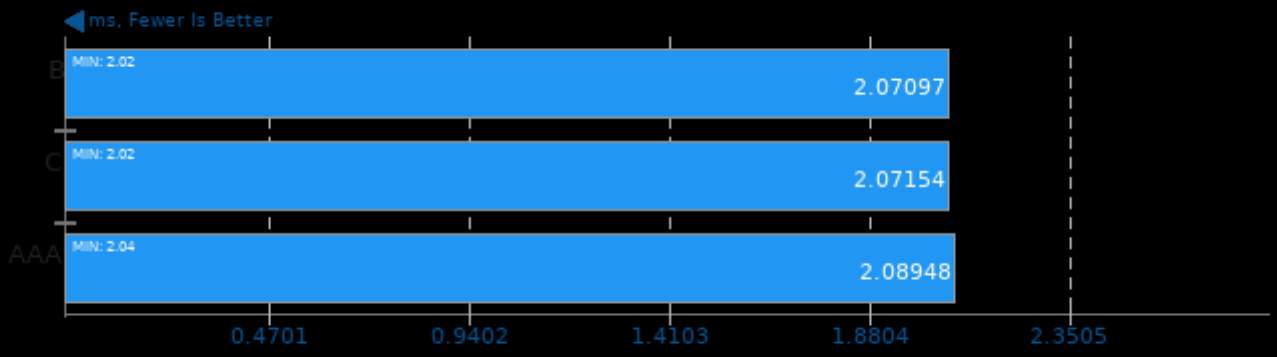
Benchmark: pthread_once



1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

oneDNN 2.6

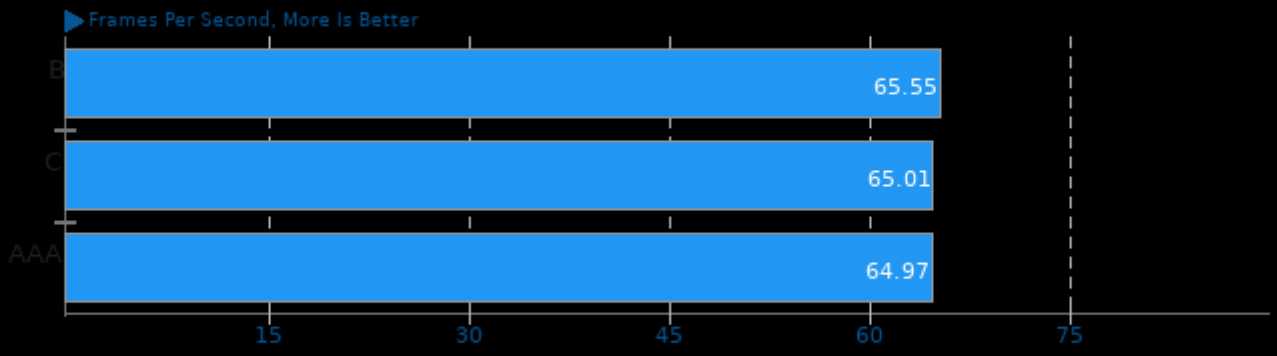
Harness: IP Shapes 3D - Data Type: u8s8f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -fopenmp -msse4.1 -fPIC -std=c++11 -pie -lpthread -ldl

SVT-AV1 1.0

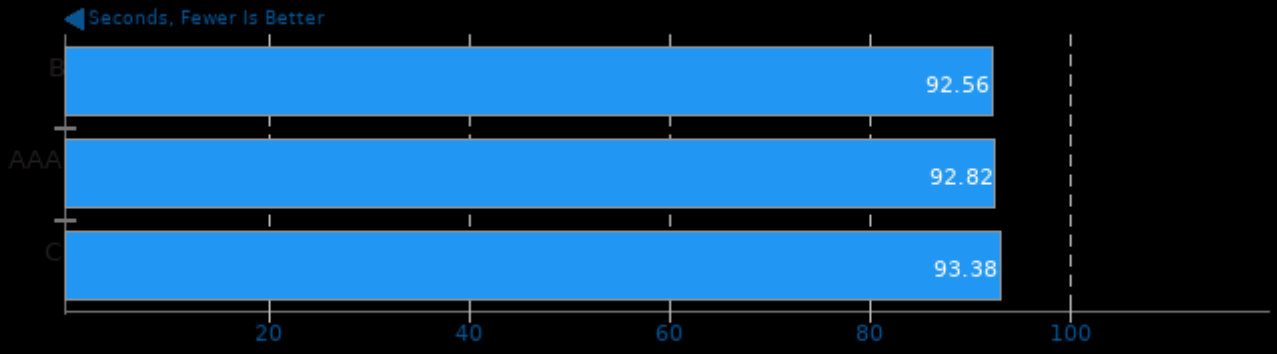
Encoder Mode: Preset 10 - Input: Bosphorus 4K



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

libavif avifenc 0.10

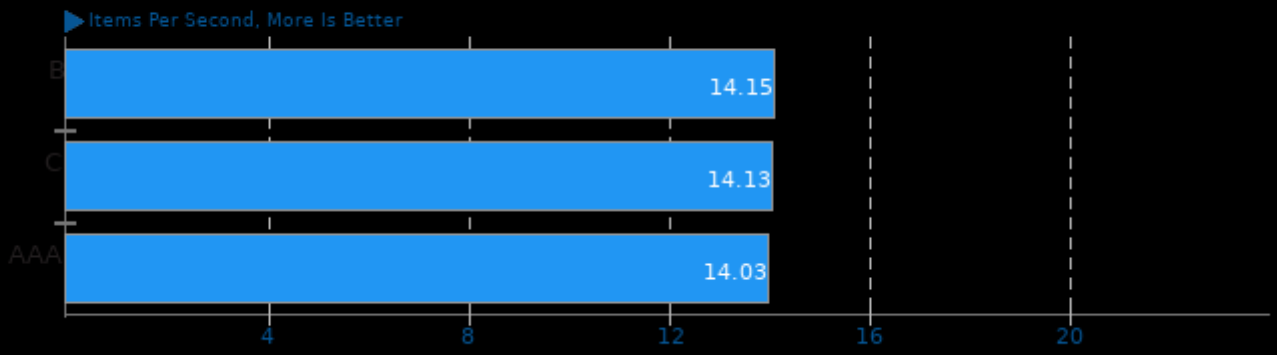
Encoder Speed: 2



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

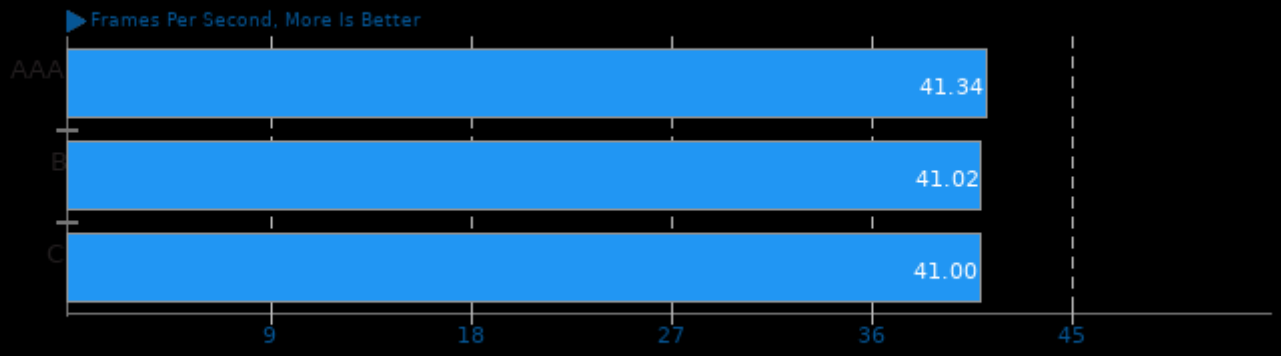
OSPray 2.9

Benchmark: particle_volume/ao/real_time



SVT-VP9 0.3

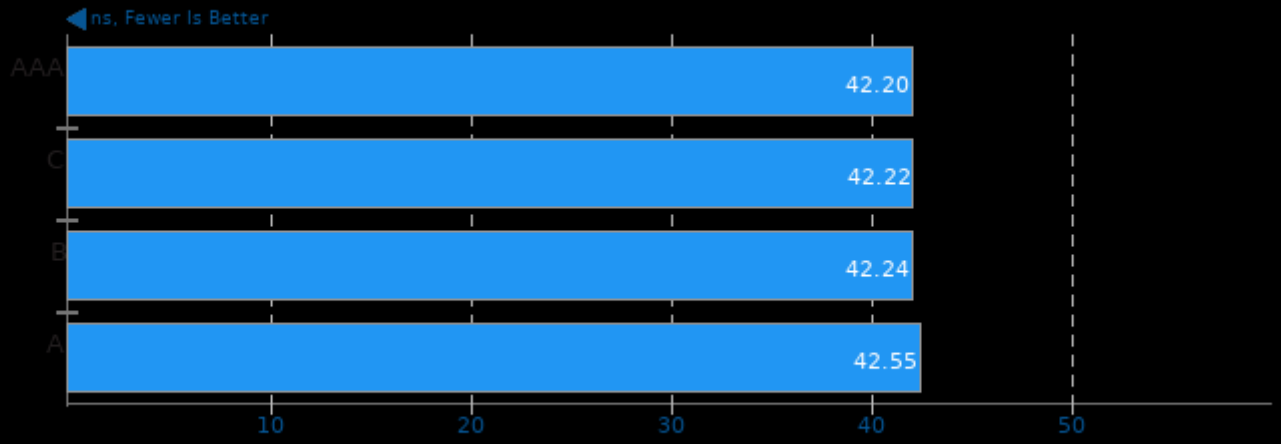
Tuning: Visual Quality Optimized - Input: Bosphorus 4K



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

Glibc Benchmarks

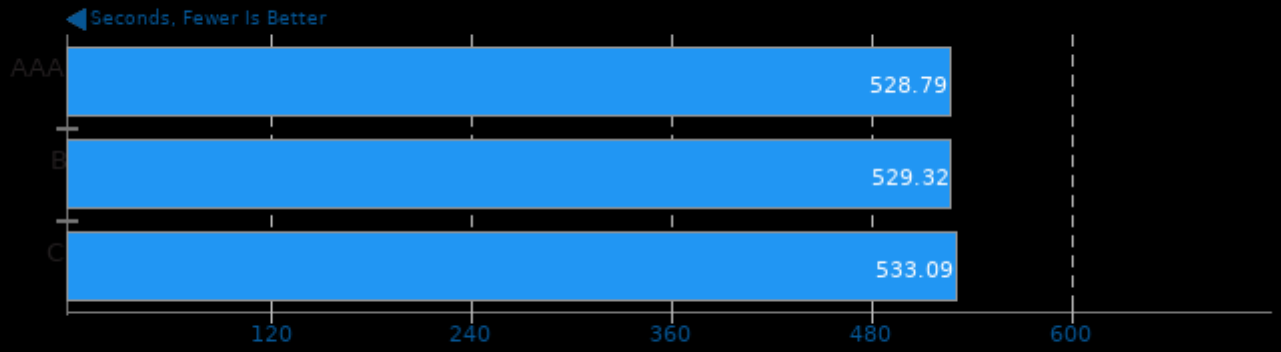
Benchmark: sincos



1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

WebP2 Image Encode 20220422

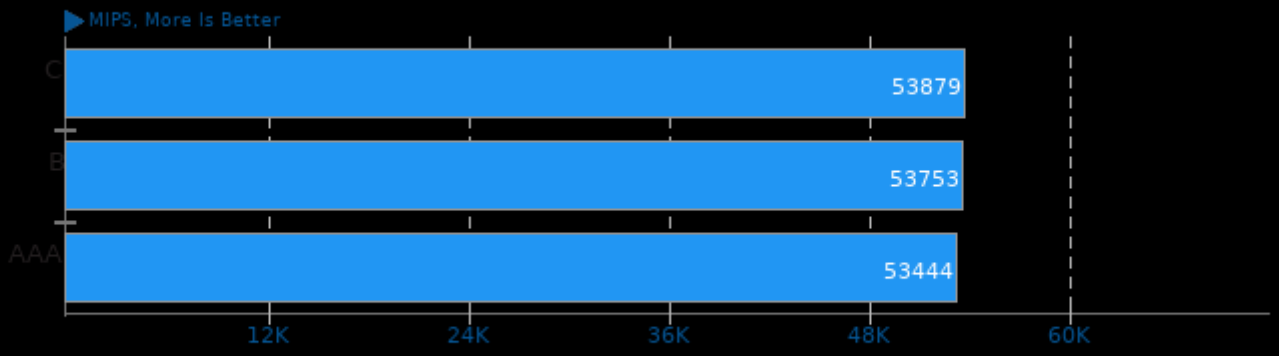
Encode Settings: Quality 95, Compression Effort 7



1. (CXX) g++ options: -msse4.2 -fno-rtti -O3 -ldl -lpthread

7-Zip Compression 22.00

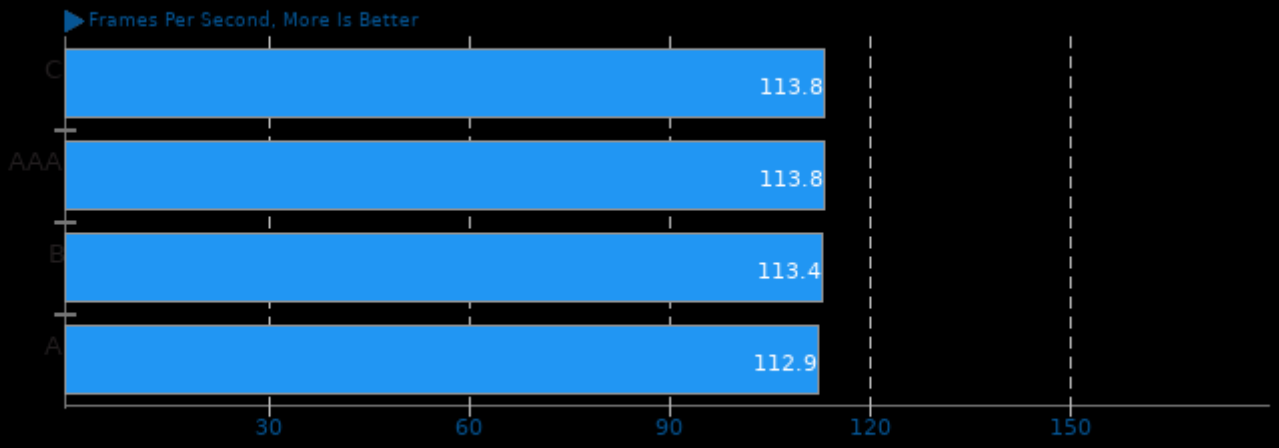
Test: Decompression Rating



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

yquake2 8.10

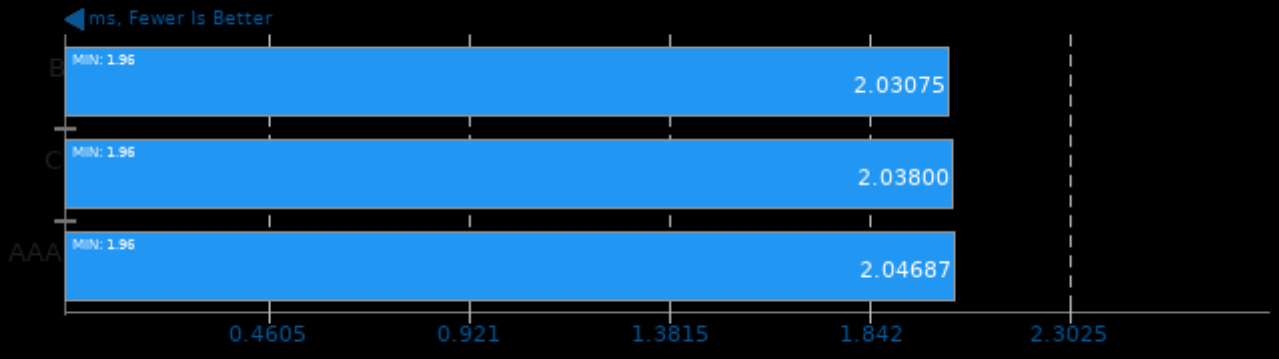
Renderer: Software CPU - AF: Off - MSAA: On - Resolution: 1920 x 1080



1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mfp

oneDNN 2.6

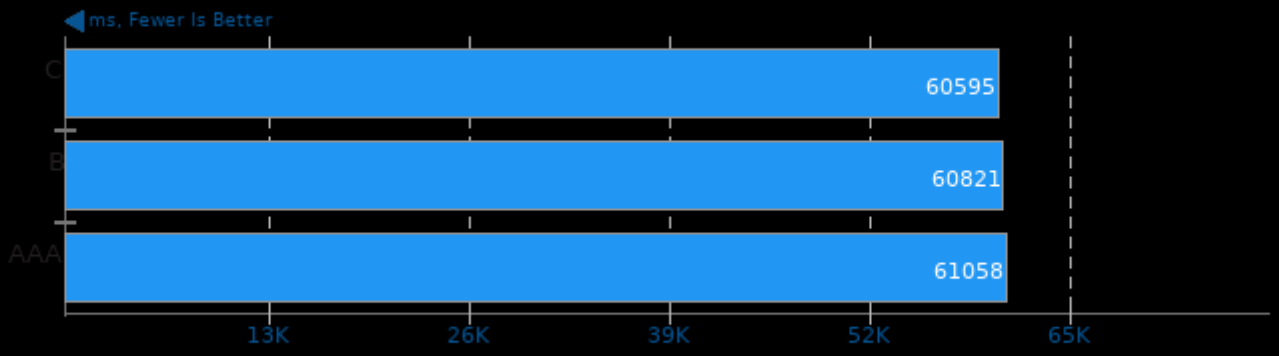
Harness: Deconvolution Batch shapes_1d - Data Type: u8s8f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -fopenmp -msse4.1 -fPIC -std=c++11 -pie -lpthread -ldl

OSPray Studio 0.10

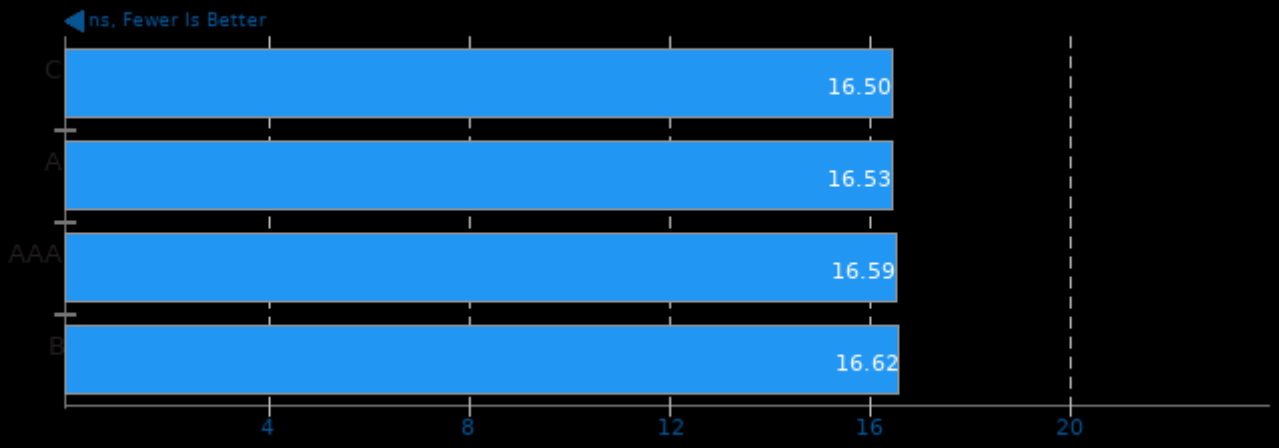
Camera: 2 - Resolution: 1080p - Samples Per Pixel: 16 - Renderer: Path Tracer



1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread

Glibc Benchmarks

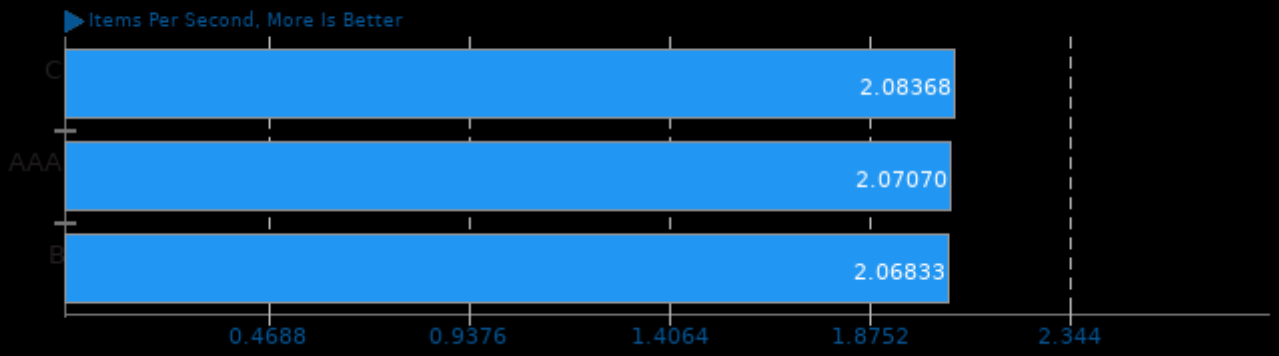
Benchmark: exp



1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

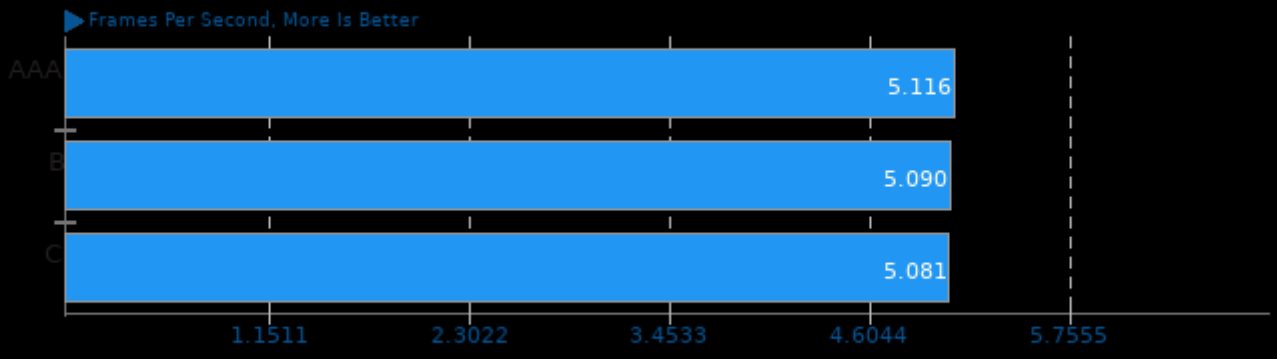
OSPray 2.9

Benchmark: gravity_spheres_volume/dim_512/ao/real_time



SVT-AV1 1.0

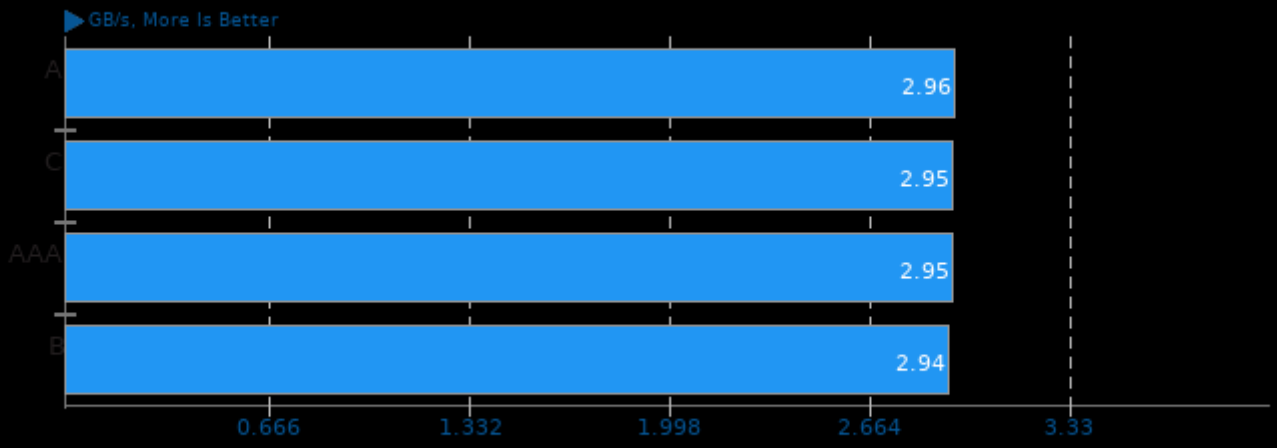
Encoder Mode: Preset 4 - Input: Bosphorus 1080p



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

simdjson 2.0

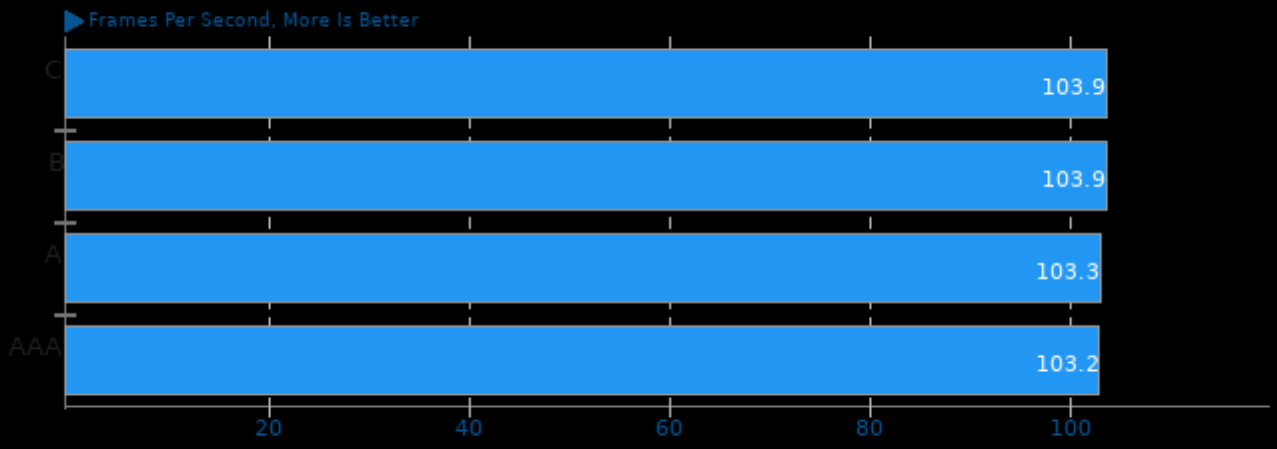
Throughput Test: Kostya



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

yquake2 8.10

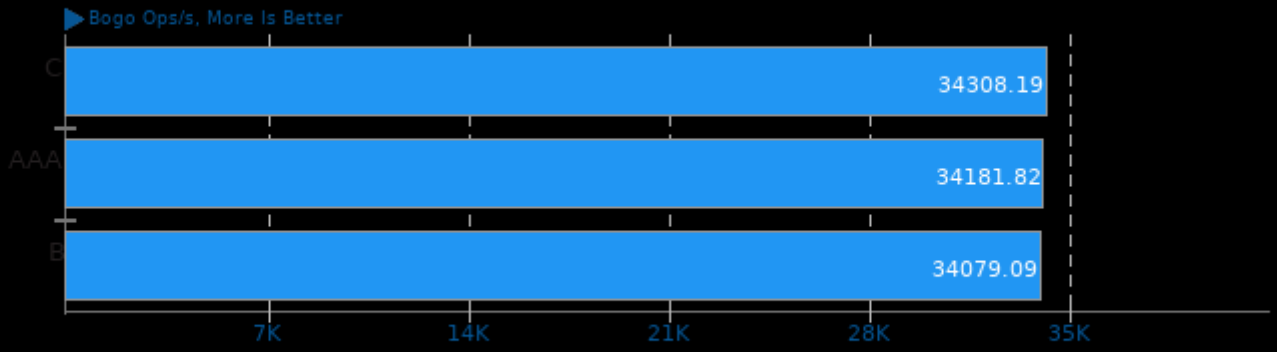
Renderer: Software CPU Color Light - AF: On - MSAA: On - Resolution: 1920 x 1080



1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mfp

Stress-NG 0.14

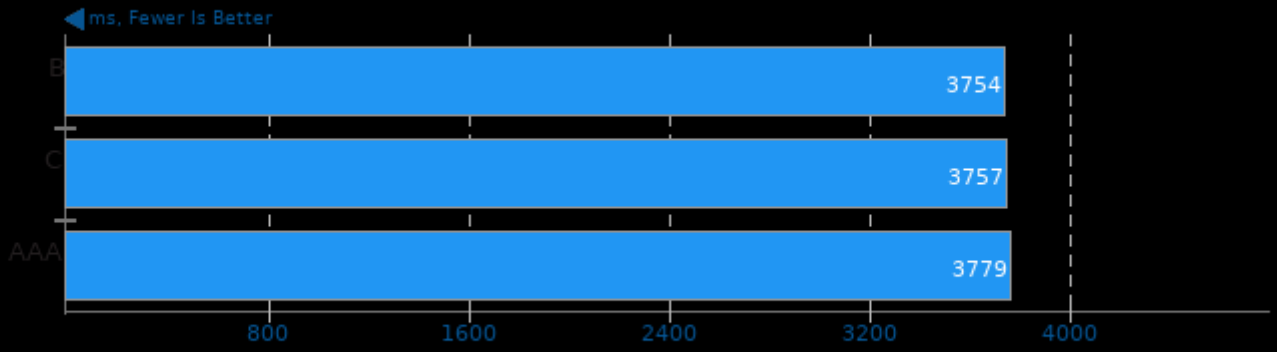
Test: Vector Math



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

OSPray Studio 0.10

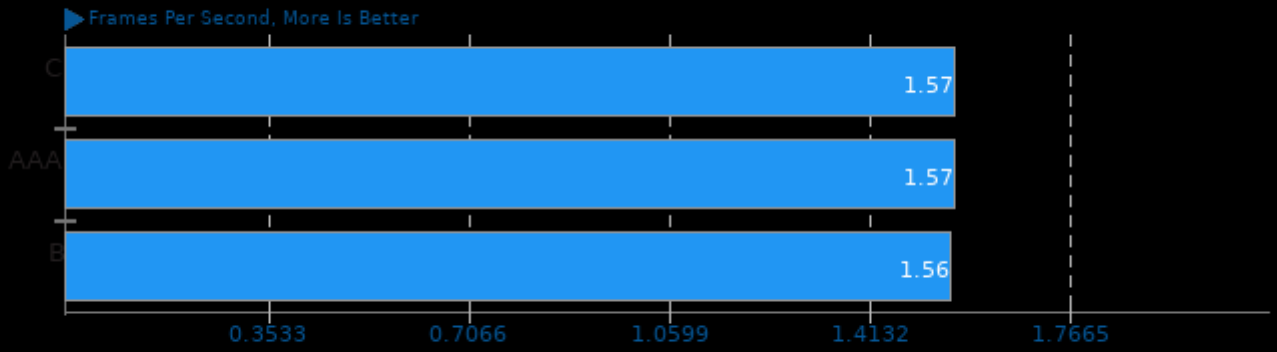
Camera: 3 - Resolution: 1080p - Samples Per Pixel: 1 - Renderer: Path Tracer



1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread

SVT-HEVC 1.5.0

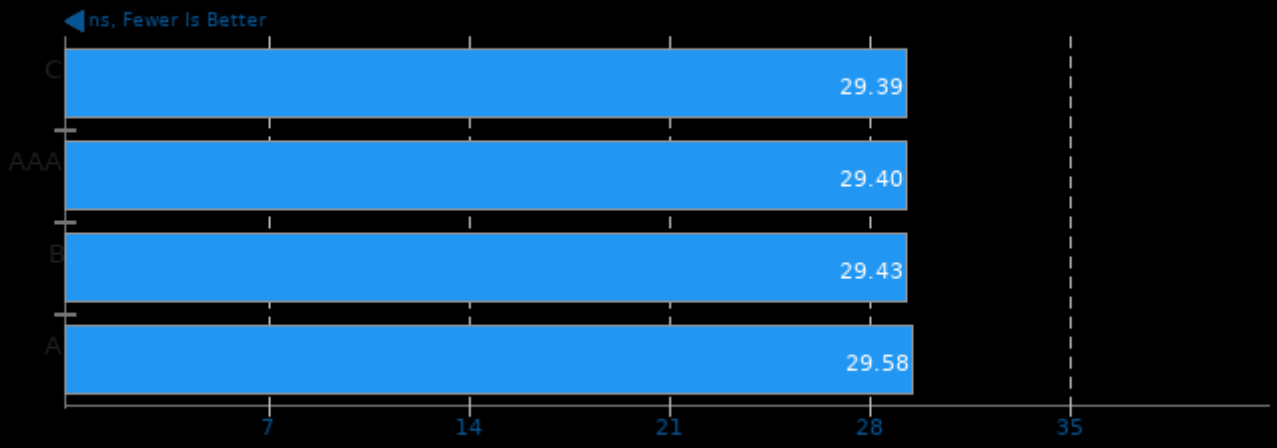
Tuning: 1 - Input: Bosphorus 4K



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

Glibc Benchmarks

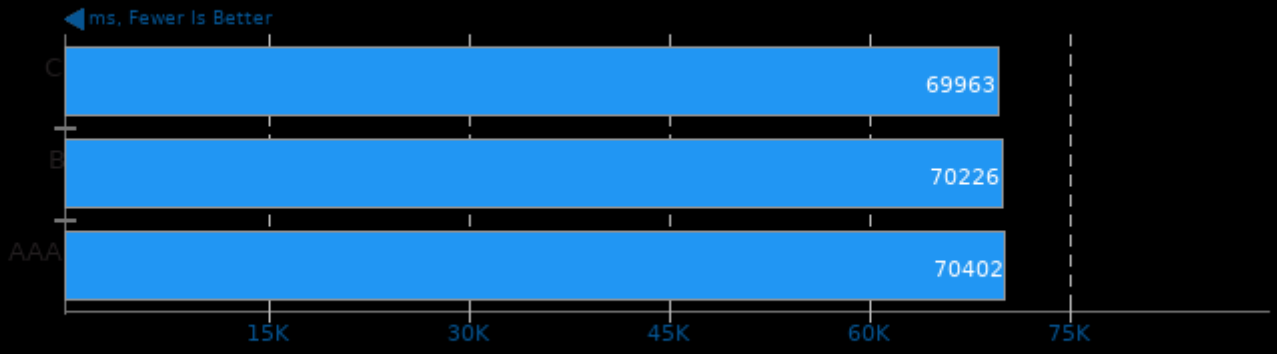
Benchmark: asinh



1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

OSPray Studio 0.10

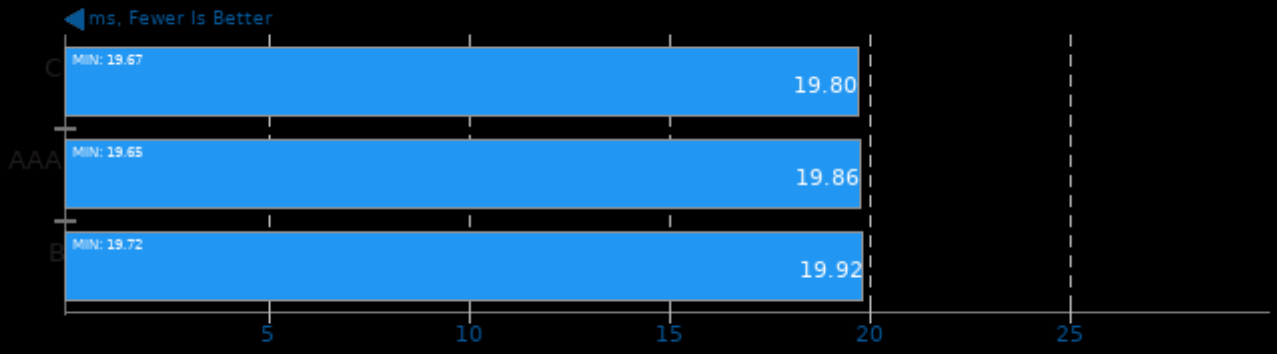
Camera: 3 - Resolution: 1080p - Samples Per Pixel: 16 - Renderer: Path Tracer



1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread

oneDNN 2.6

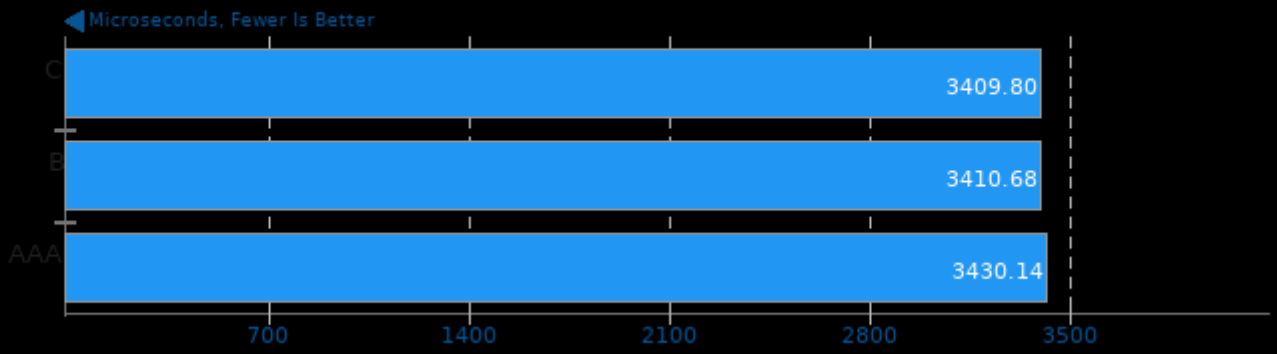
Harness: Convolution Batch Shapes Auto - Data Type: f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -fopenmp -msse4.1 -fPIC -std=c++11 -pie -lpthread -ldl

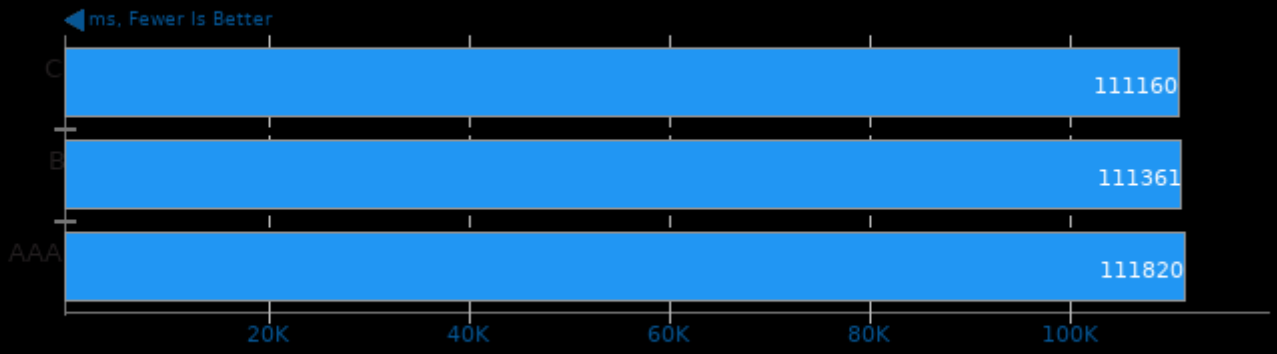
TensorFlow Lite 2022-05-18

Model: SqueezeNet



OSPray Studio 0.10

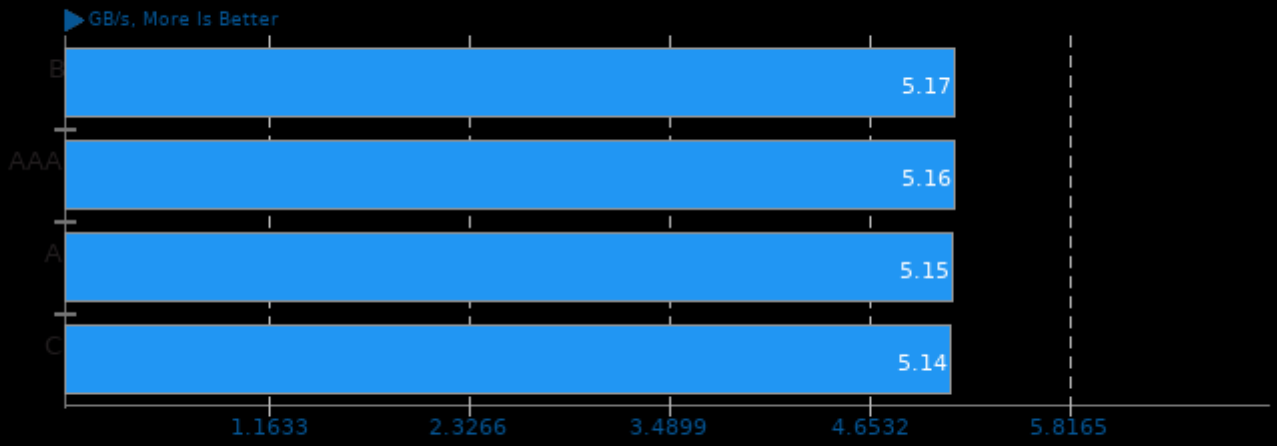
Camera: 2 - Resolution: 1080p - Samples Per Pixel: 32 - Renderer: Path Tracer



1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread

simdjson 2.0

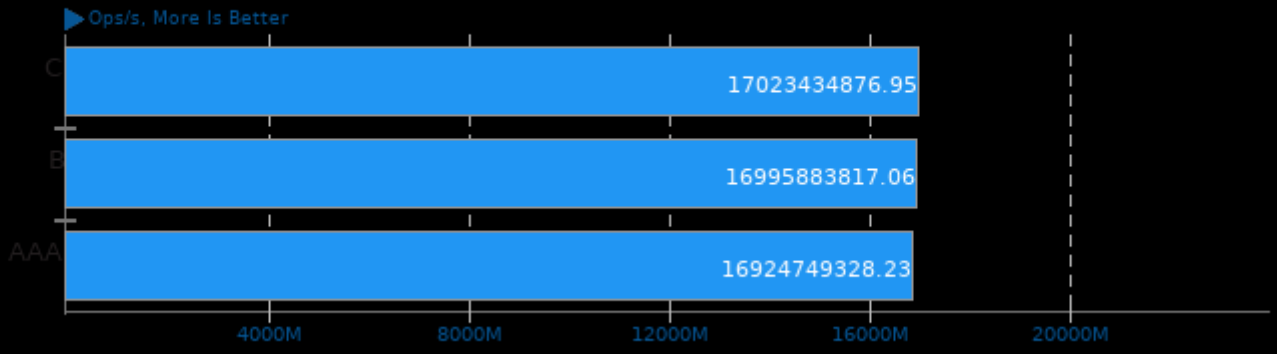
Throughput Test: TopTweet



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

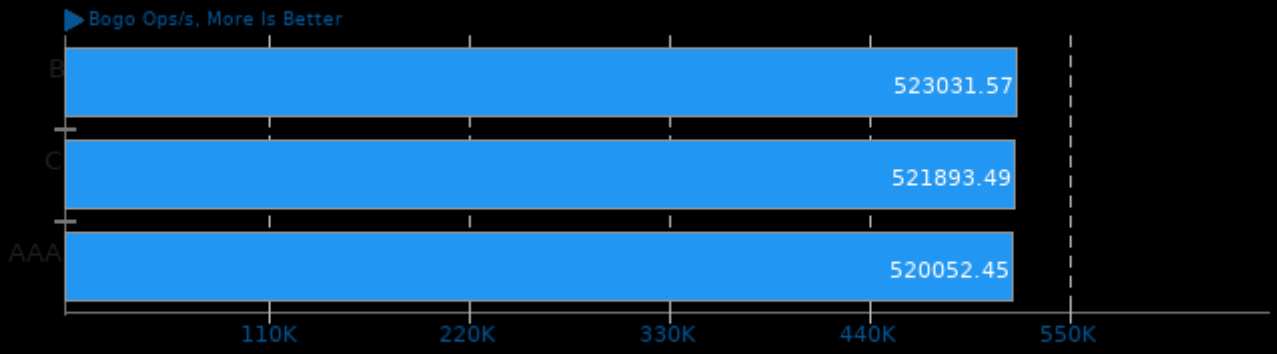
Java JMH

Throughput



Stress-NG 0.14

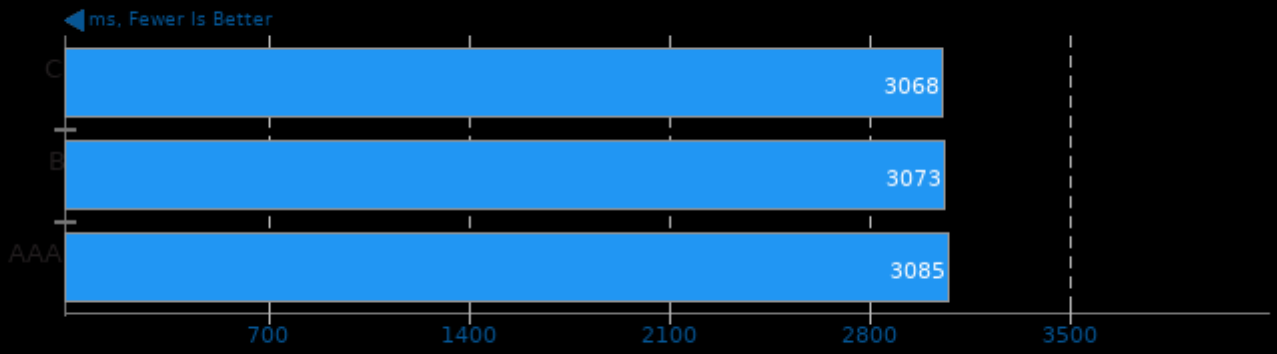
Test: Glibc C String Functions



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

OSPray Studio 0.10

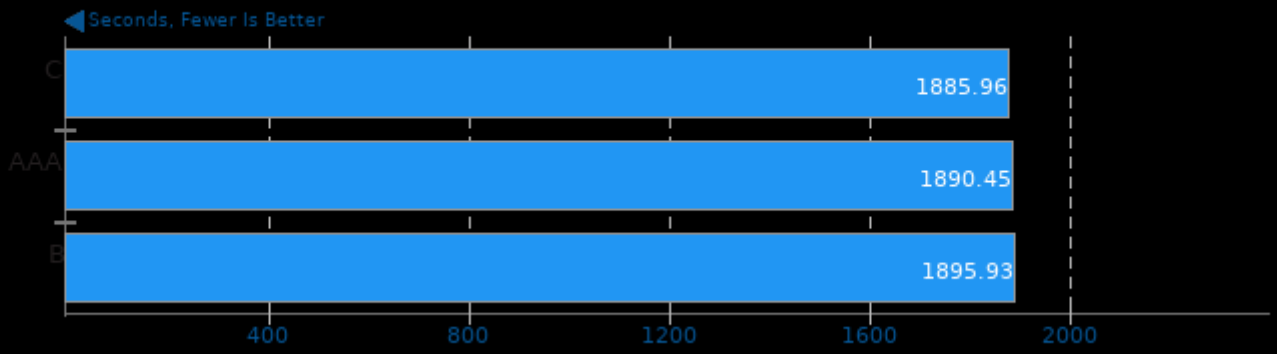
Camera: 1 - Resolution: 1080p - Samples Per Pixel: 1 - Renderer: Path Tracer



1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread

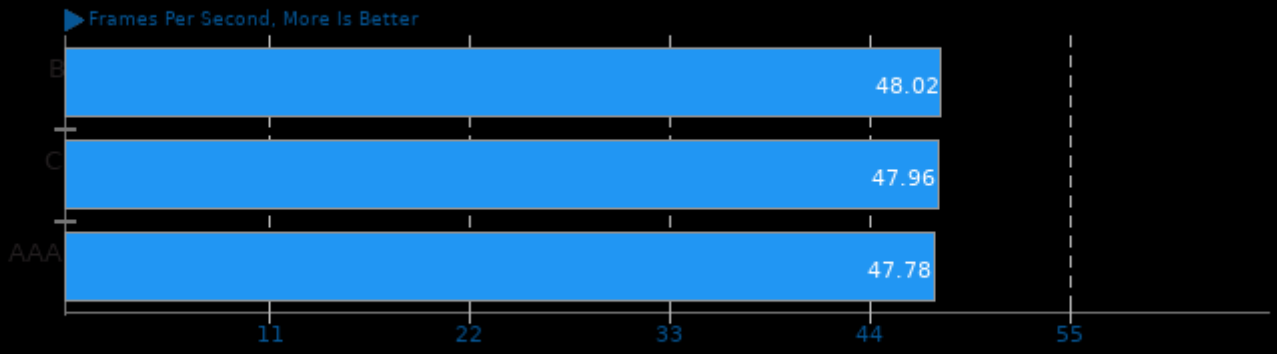
Blender 3.2

Blend File: Barbershop - Compute: CPU-Only



SVT-VP9 0.3

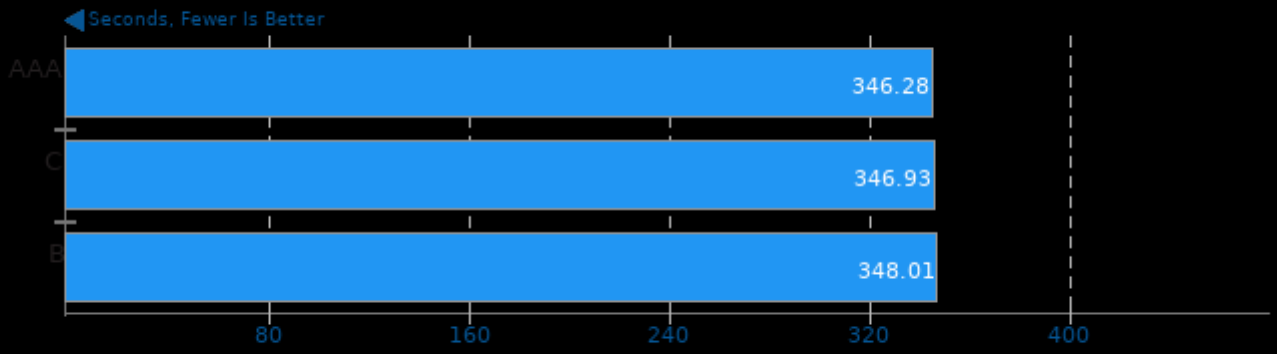
Tuning: PSNR/SSIM Optimized - Input: Bosphorus 4K



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

GPAW 22.1

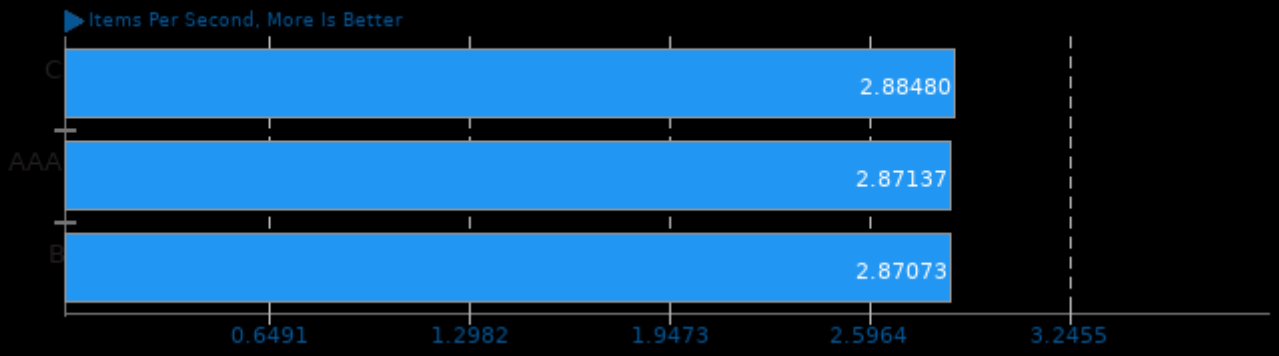
Input: Carbon Nanotube



1. (CC) gcc options: -pthread -shared -fwrapv -O2 -lxc -lblas -lmpi

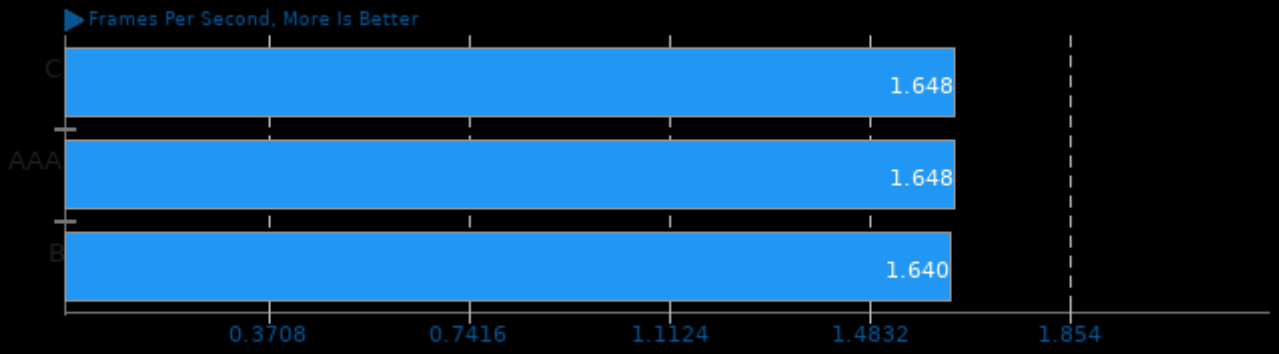
OSPray 2.9

Benchmark: gravity_spheres_volume/dim_512/pathtracer/real_time



SVT-AV1 1.0

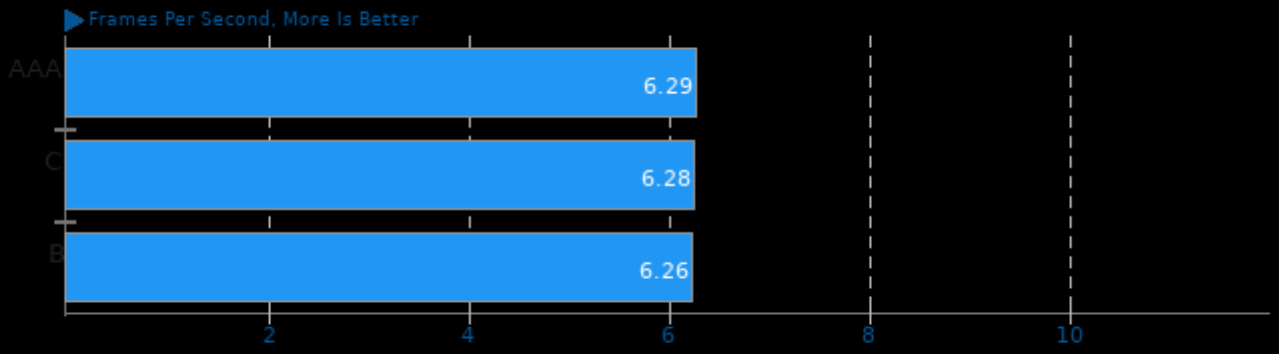
Encoder Mode: Preset 4 - Input: Bosphorus 4K



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

SVT-HEVC 1.5.0

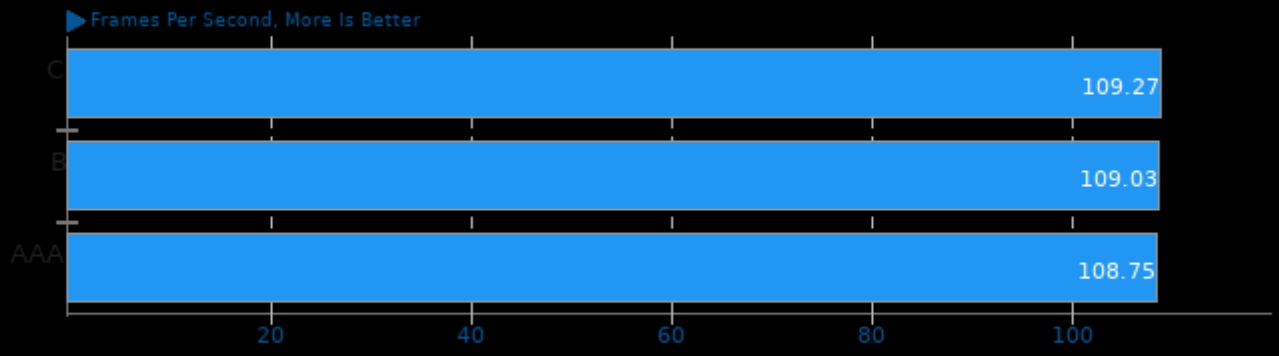
Tuning: 1 - Input: Bosphorus 1080p



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

SVT-HEVC 1.5.0

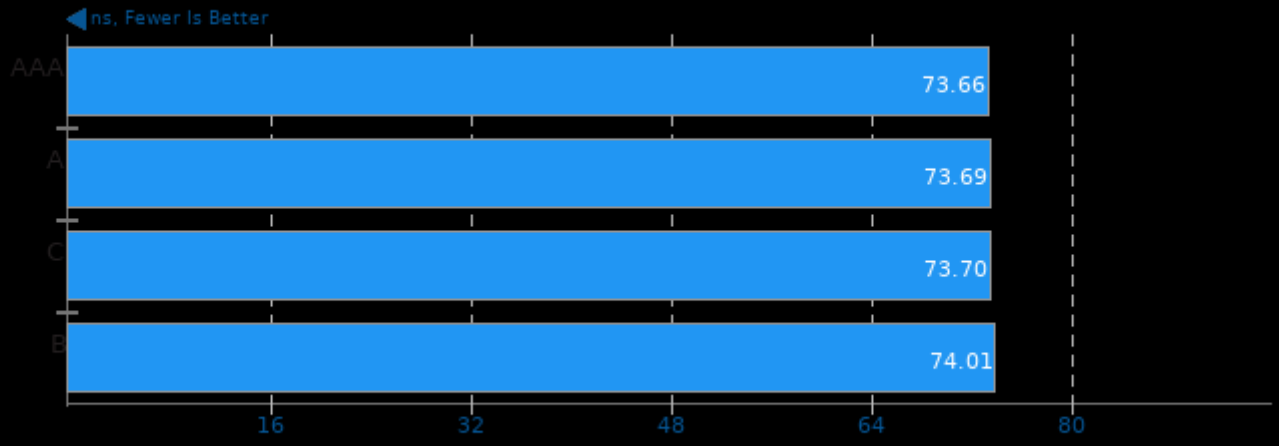
Tuning: 7 - Input: Bosphorus 1080p



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

Glibc Benchmarks

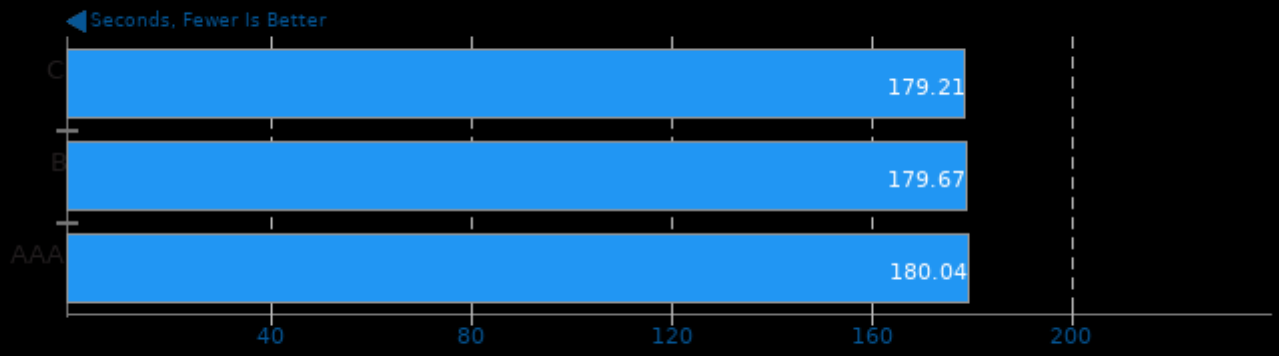
Benchmark: cos



1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

Tachyon 0.99.2

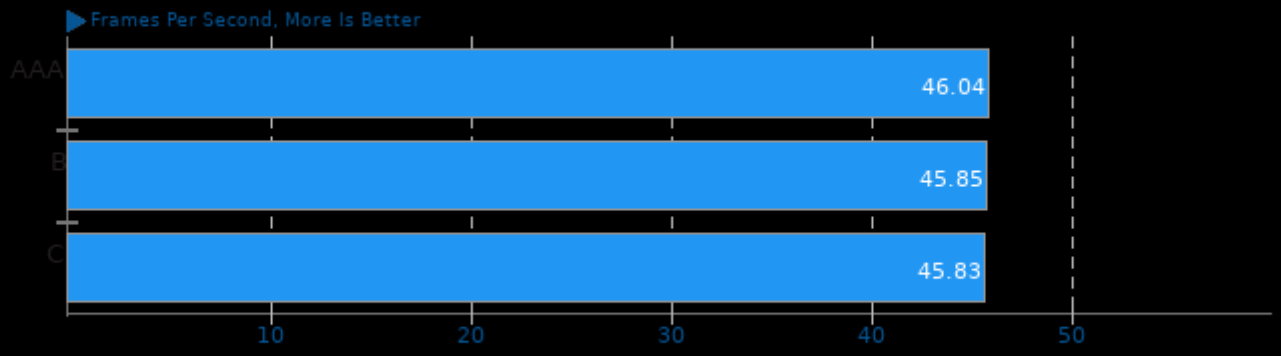
Total Time



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

SVT-VP9 0.3

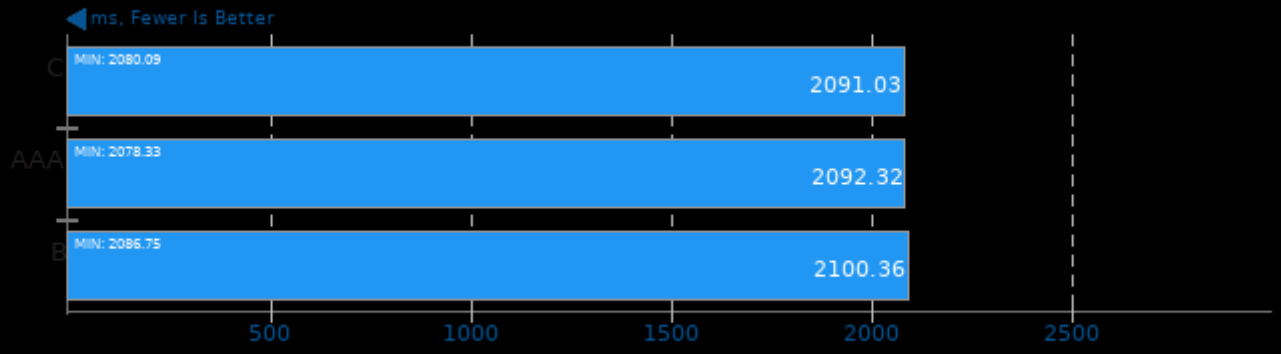
Tuning: VMAF Optimized - Input: Bosphorus 4K



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

oneDNN 2.6

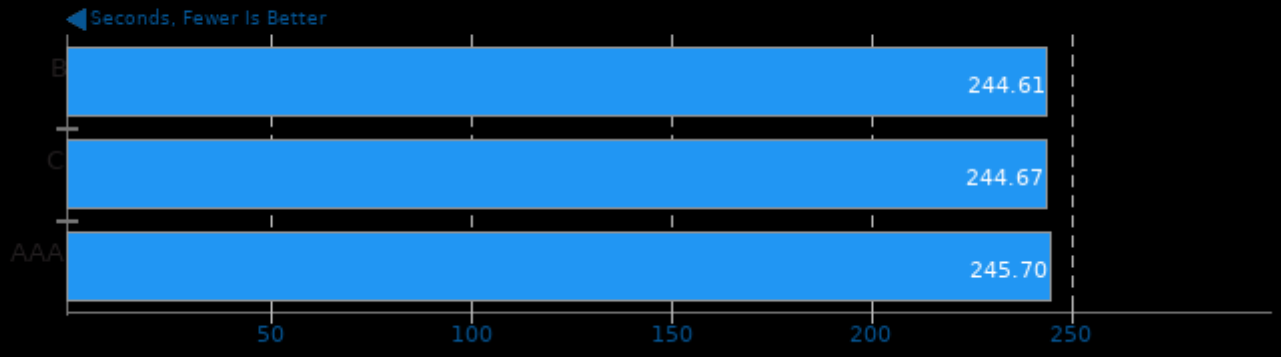
Harness: Recurrent Neural Network Inference - Data Type: bf16bf16bf16 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -fopenmp -msse4.1 -fPIC -std=c++11 -pie -lpthread -ldl

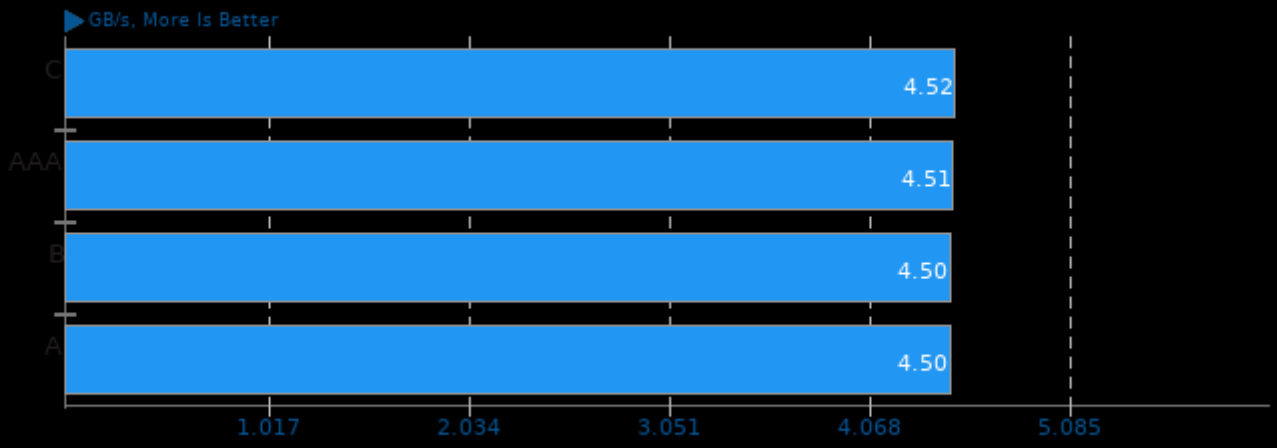
Blender 3.2

Blend File: Fishy Cat - Compute: CPU-Only



simdjson 2.0

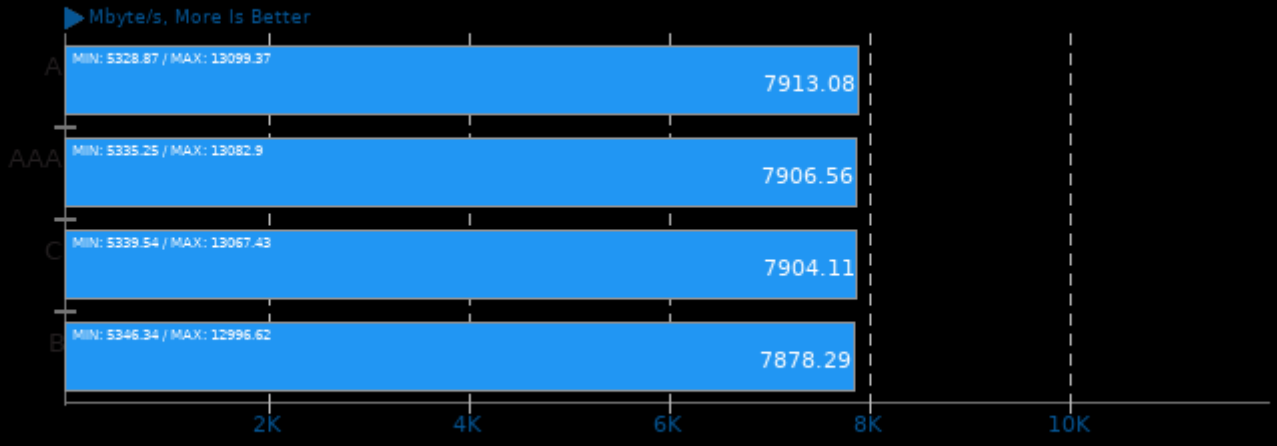
Throughput Test: PartialTweets



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

Nettle 3.8

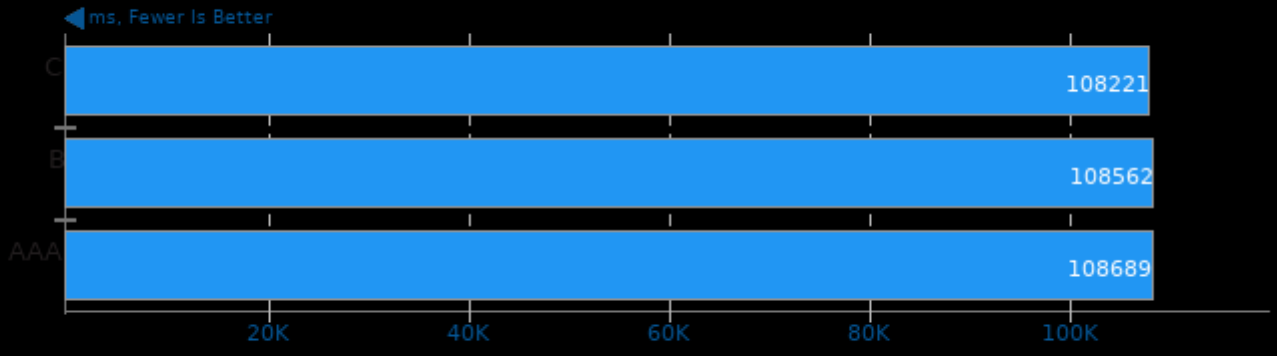
Test: aes256



1. (CC) gcc options: -O2 -ggdb3 -lnettle -lgmp -lm -lcrypto

OSPray Studio 0.10

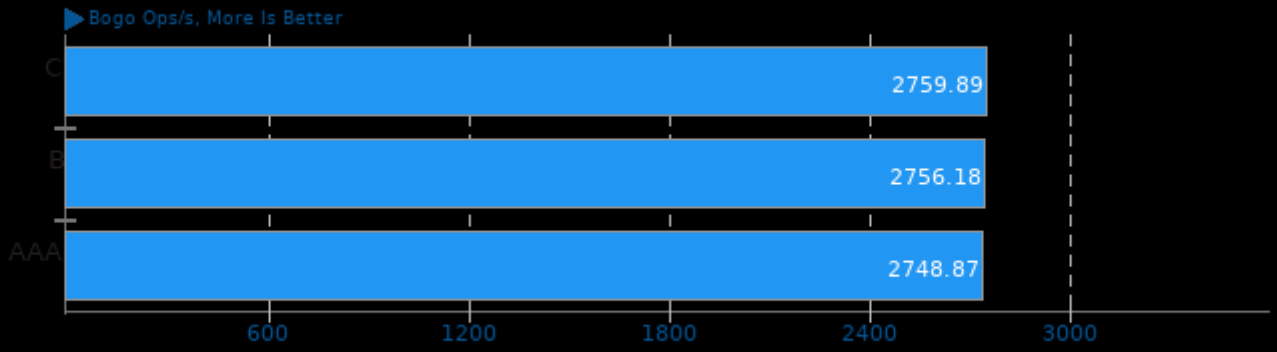
Camera: 1 - Resolution: 1080p - Samples Per Pixel: 32 - Renderer: Path Tracer



1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread

Stress-NG 0.14

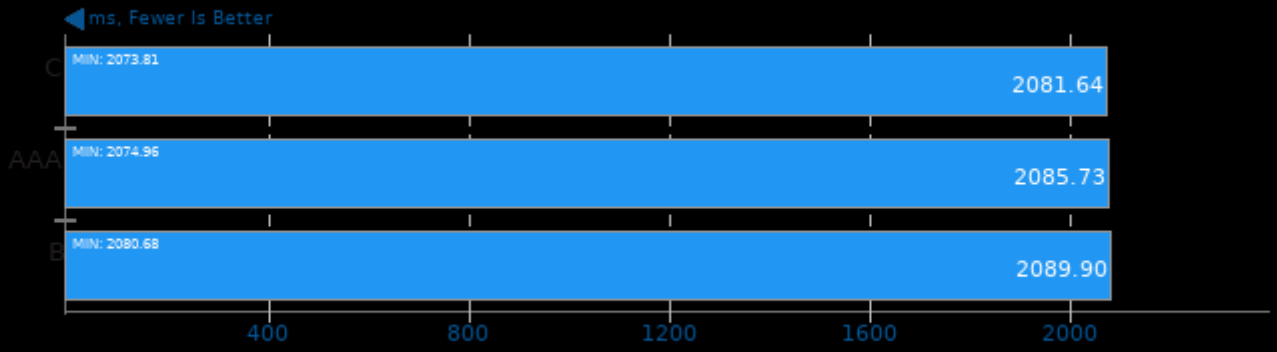
Test: Memory Copying



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

oneDNN 2.6

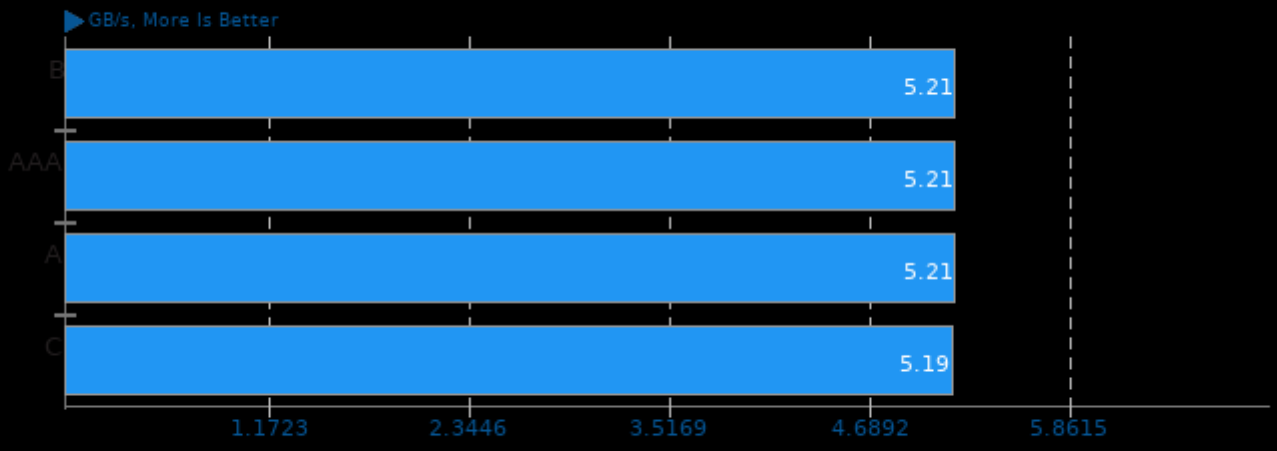
Harness: Recurrent Neural Network Inference - Data Type: f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -fopenmp -msse4.1 -fPIC -std=c++11 -pie -lpthread -ldl

simdjson 2.0

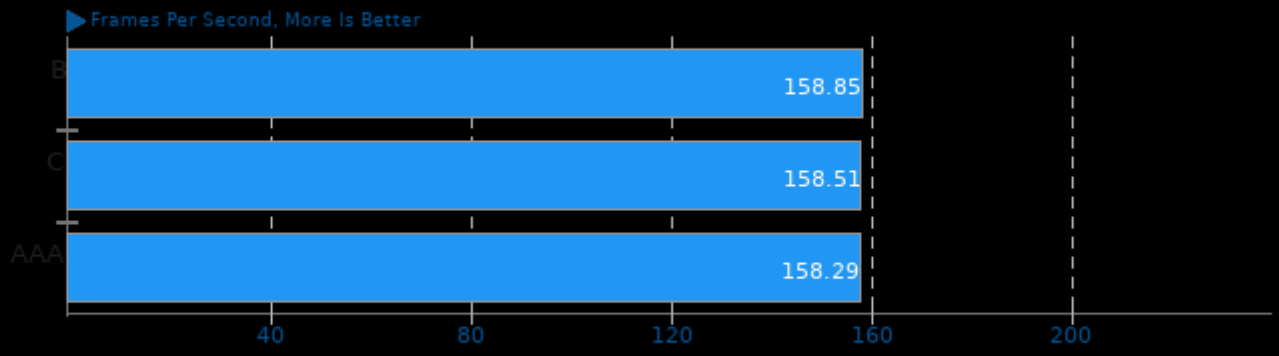
Throughput Test: DistinctUserID



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

SVT-VP9 0.3

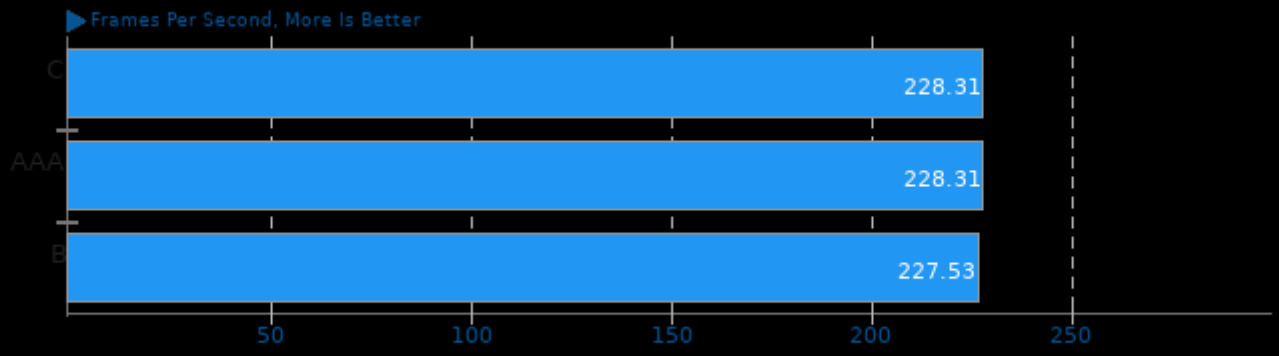
Tuning: VMAF Optimized - Input: Bosphorus 1080p



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

SVT-HEVC 1.5.0

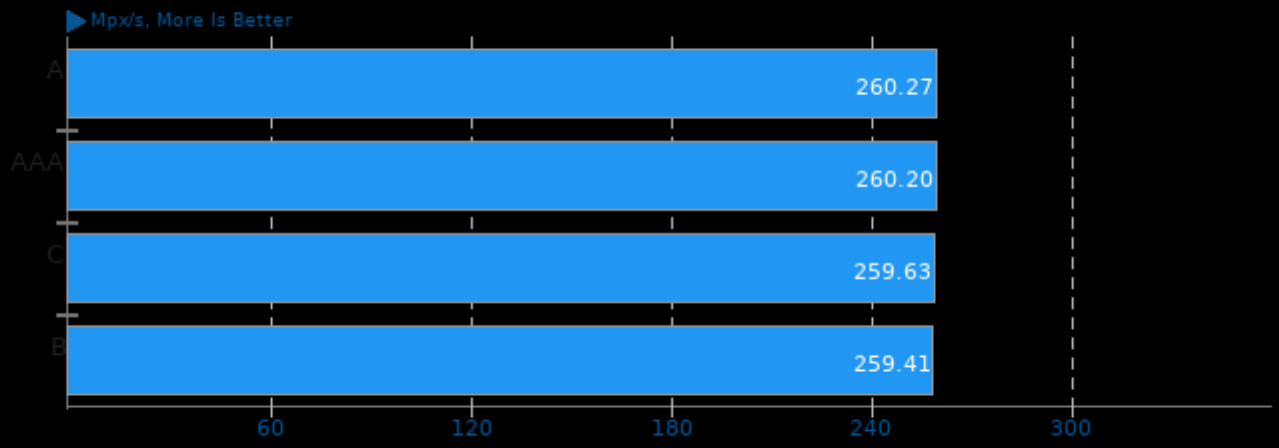
Tuning: 10 - Input: Bosphorus 1080p



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

Etcpak 1.0

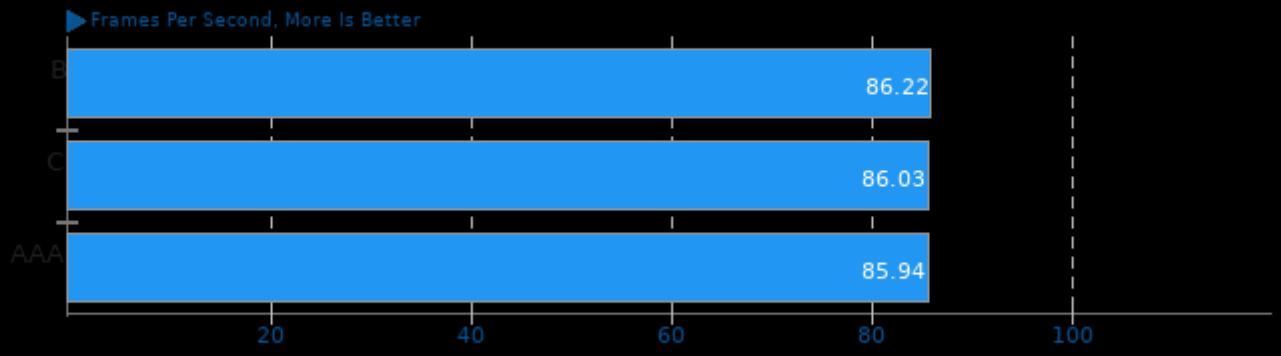
Benchmark: Single-Threaded - Configuration: ETC2



1. (CXX) g++ options: -O3 -march=native -std=c++11 -lpthread

SVT-AV1 1.0

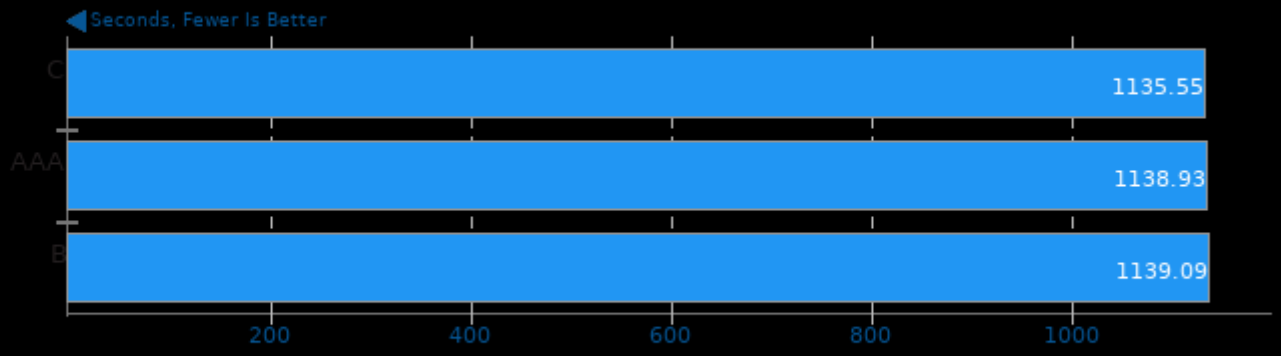
Encoder Mode: Preset 8 - Input: Bosphorus 1080p



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

WebP2 Image Encode 20220422

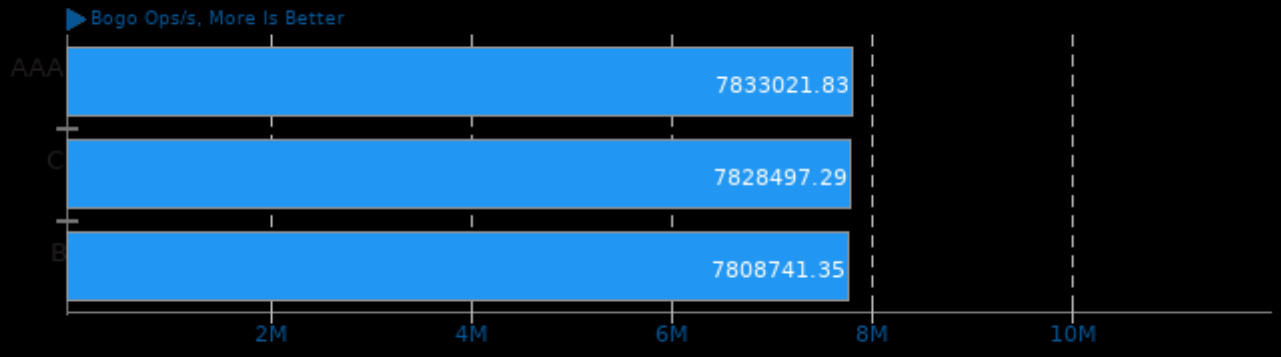
Encode Settings: Quality 100, Lossless Compression



1. (CXX) g++ options: -msse4.2 -fno-rtti -O3 -ldl -lpthread

Stress-NG 0.14

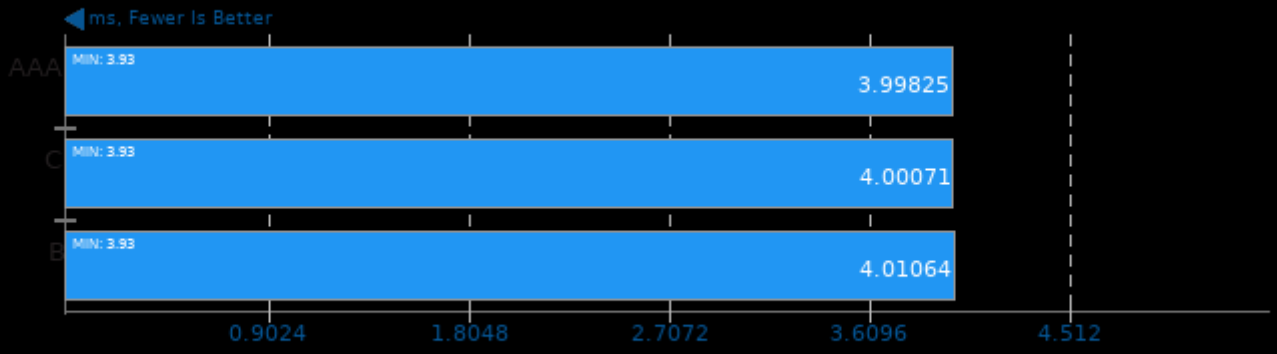
Test: System V Message Passing



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

oneDNN 2.6

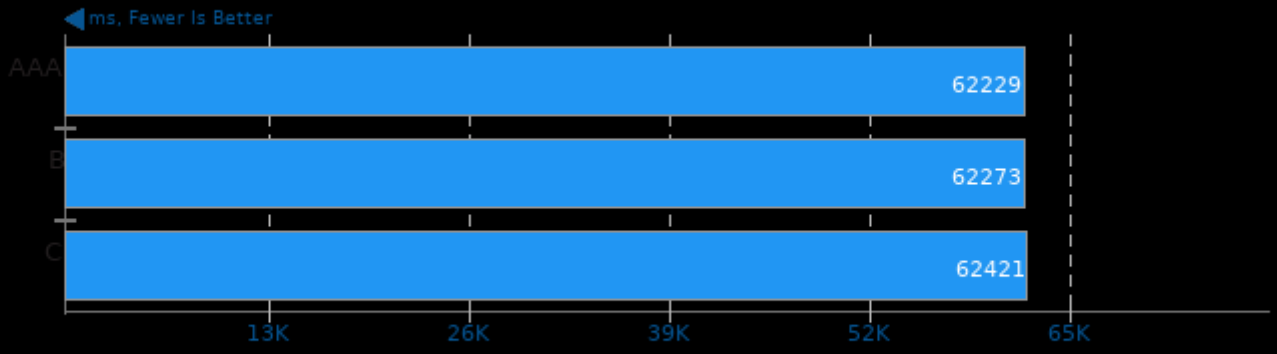
Harness: Matrix Multiply Batch Shapes Transformer - Data Type: f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -fopenmp -msse4.1 -fPIC -std=c++11 -pie -lpthread -ldl

OpenJPEG 2.4

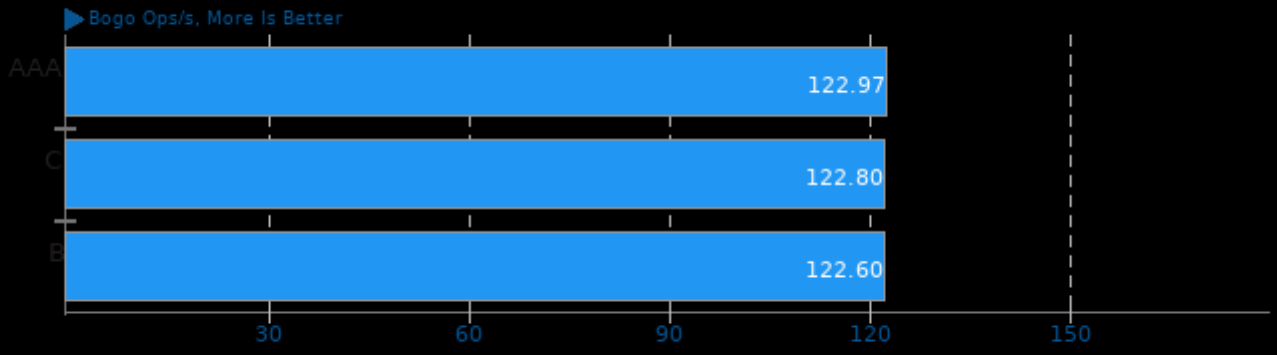
Encode: NASA Curiosity Panorama M34



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

Stress-NG 0.14

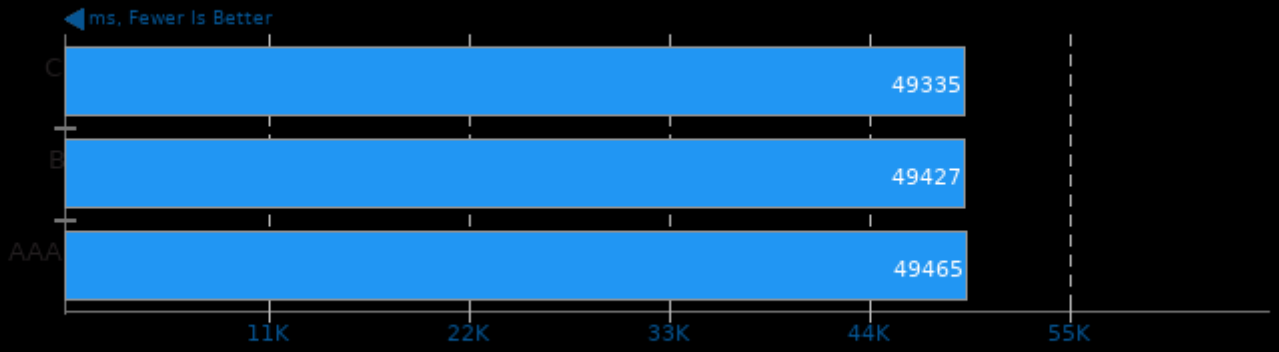
Test: Glibc Qsort Data Sorting



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

OSPray Studio 0.10

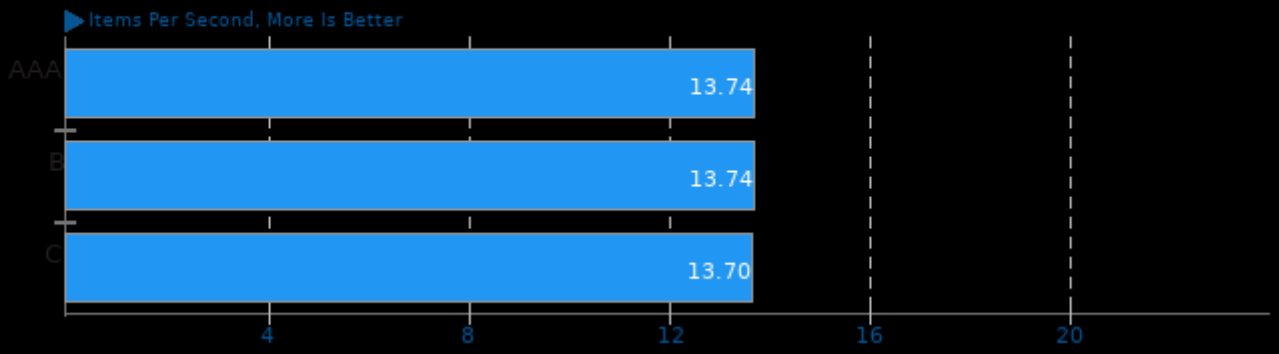
Camera: 1 - Resolution: 1080p - Samples Per Pixel: 16 - Renderer: Path Tracer



1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread

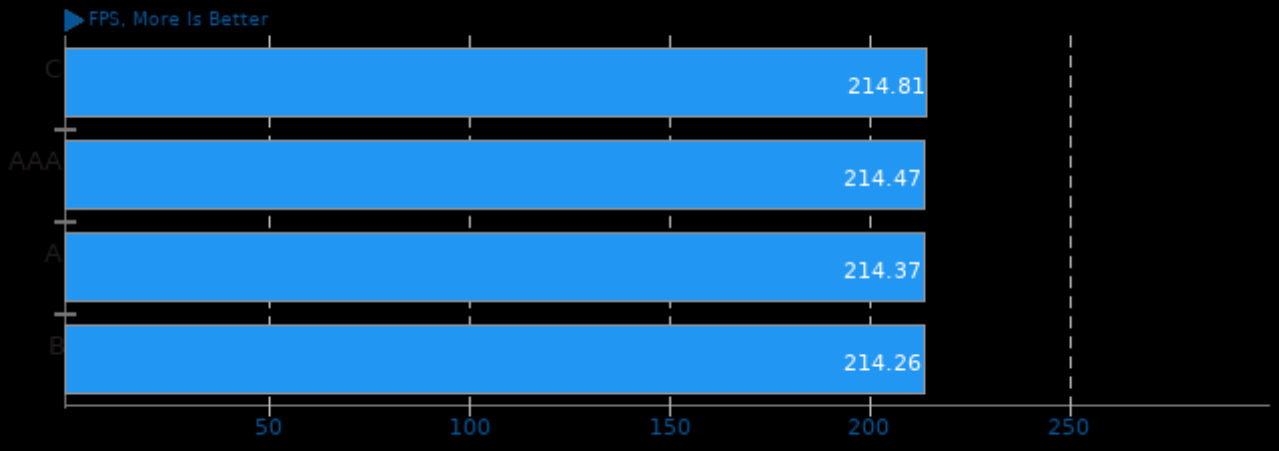
OSPray 2.9

Benchmark: particle_volume/scivis/real_time



libgav1 0.17

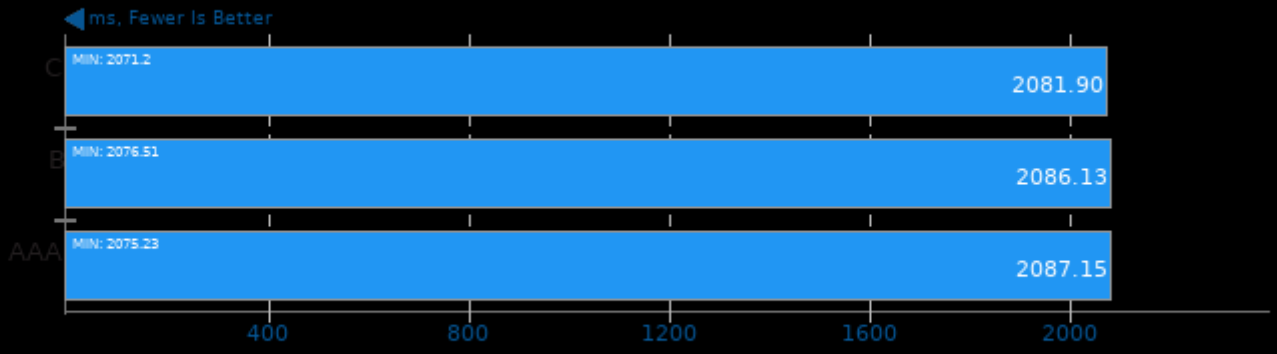
Video Input: Chimera 1080p



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

oneDNN 2.6

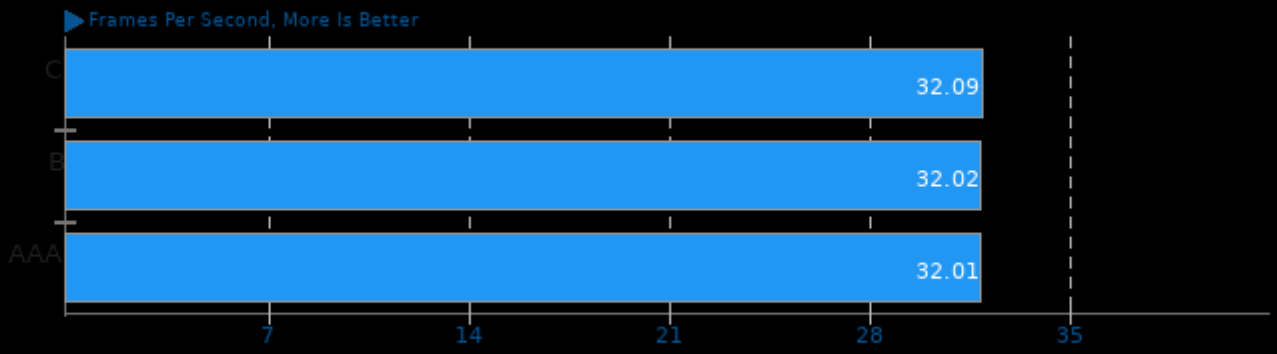
Harness: Recurrent Neural Network Inference - Data Type: u8s8f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -fopenmp -msse4.1 -fPIC -std=c++11 -pie -lpthread -ldl

SVT-HEVC 1.5.0

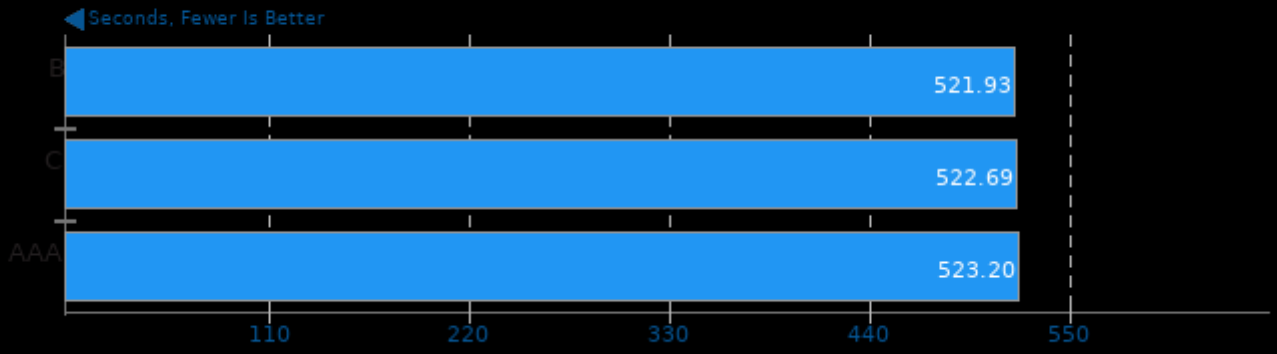
Tuning: 7 - Input: Bosphorus 4K



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

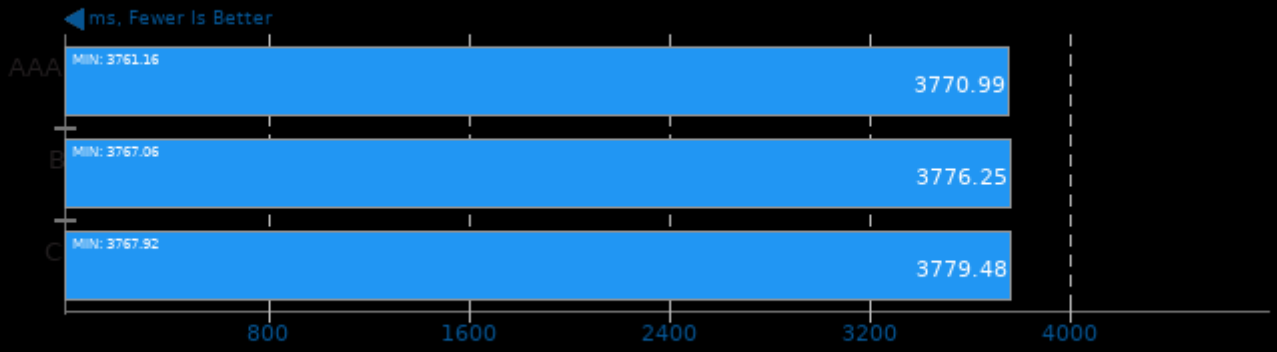
Timed Gem5 Compilation 21.2

Time To Compile



oneDNN 2.6

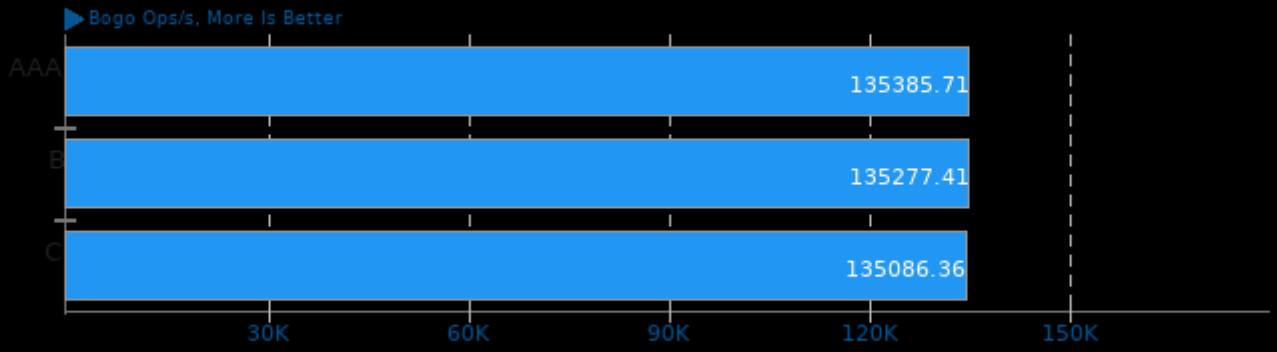
Harness: Recurrent Neural Network Training - Data Type: u8s8f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -fopenmp -msse4.1 -fPIC -std=c++11 -pie -lpthread -ldl

Stress-NG 0.14

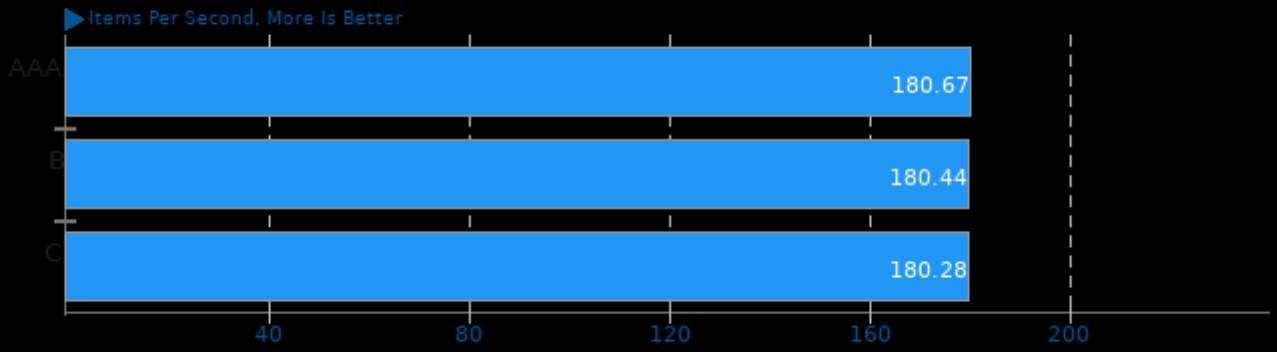
Test: SENDFILE



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

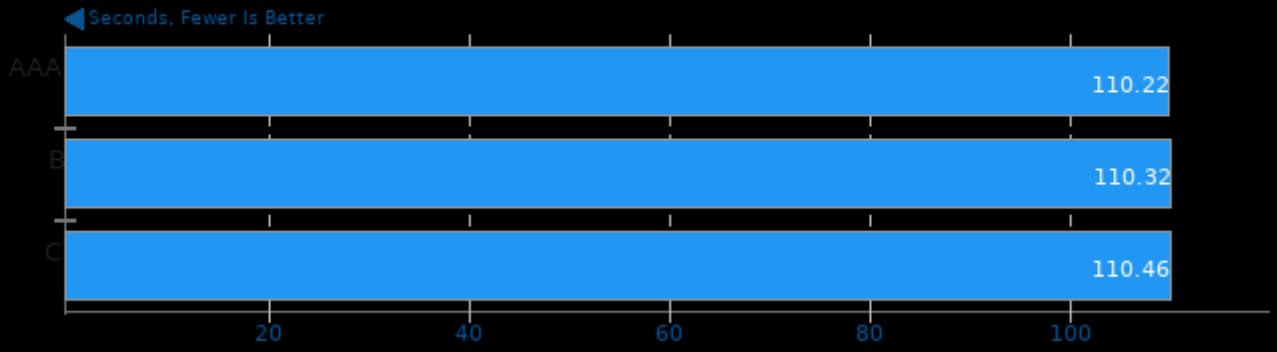
OSPray 2.9

Benchmark: particle_volume/pathtracer/real_time



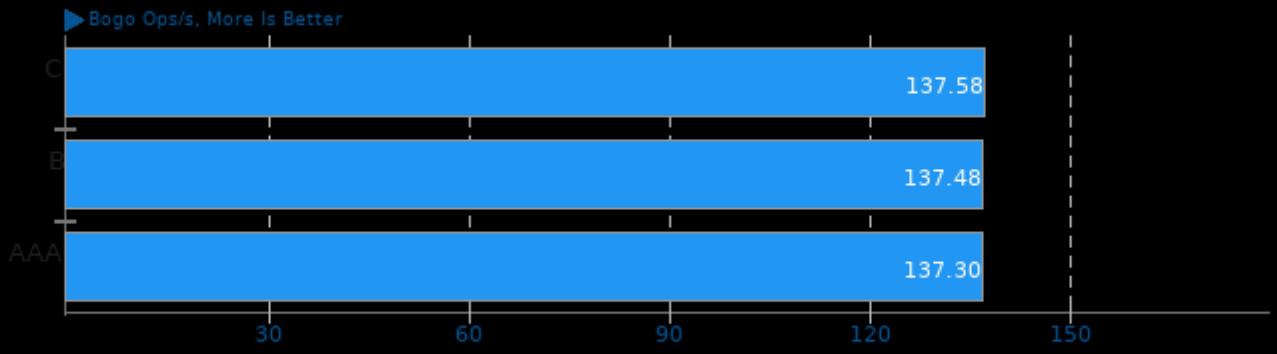
Timed Linux Kernel Compilation 5.18

Build: defconfig



Stress-NG 0.14

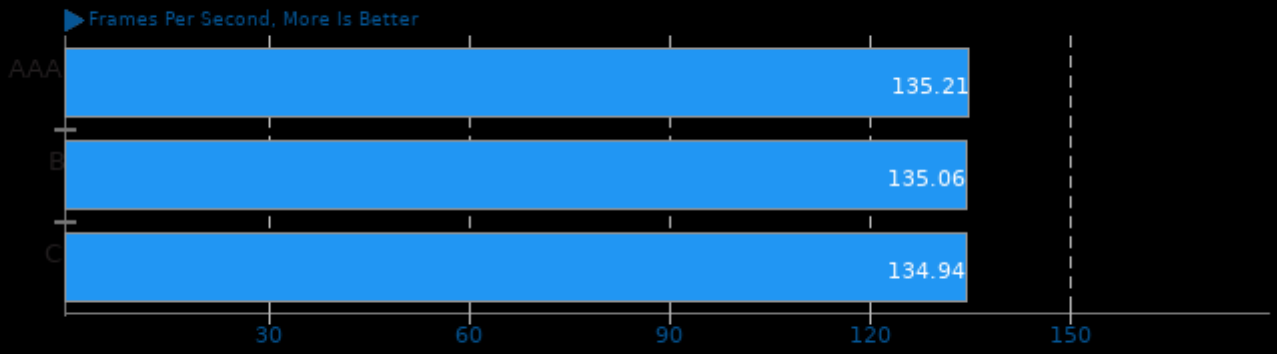
Test: MMAP



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

SVT-VP9 0.3

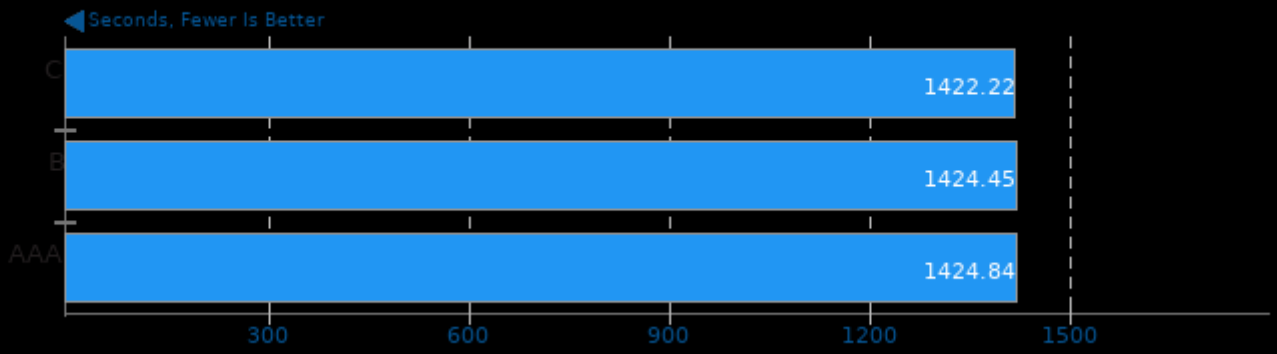
Tuning: Visual Quality Optimized - Input: Bosphorus 1080p



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

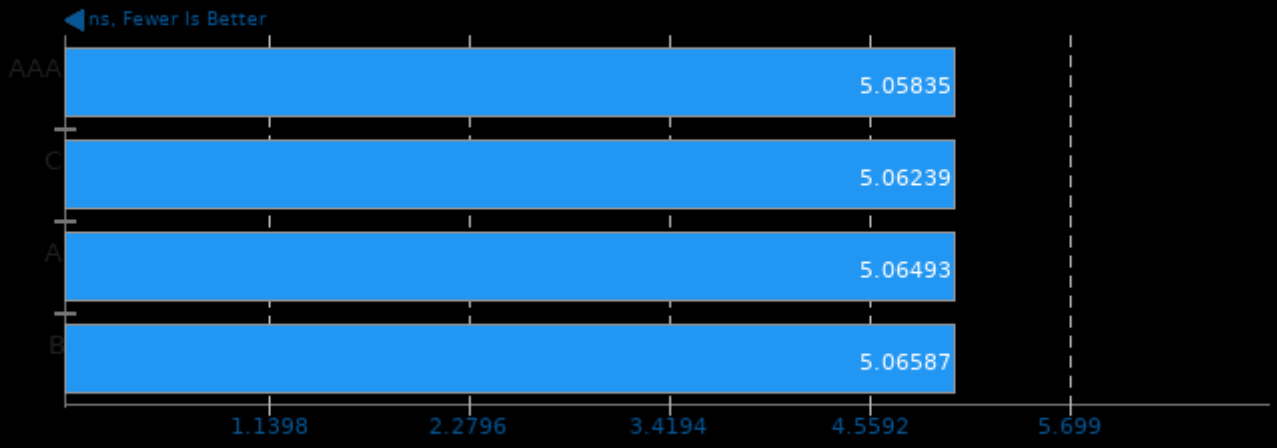
Timed Linux Kernel Compilation 5.18

Build: allmodconfig



Glibc Benchmarks

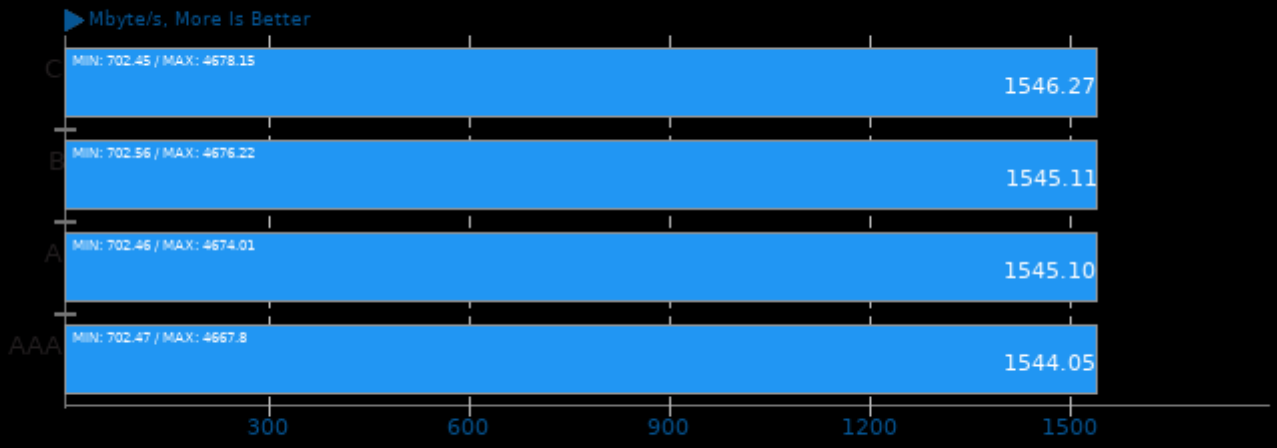
Benchmark: ffs



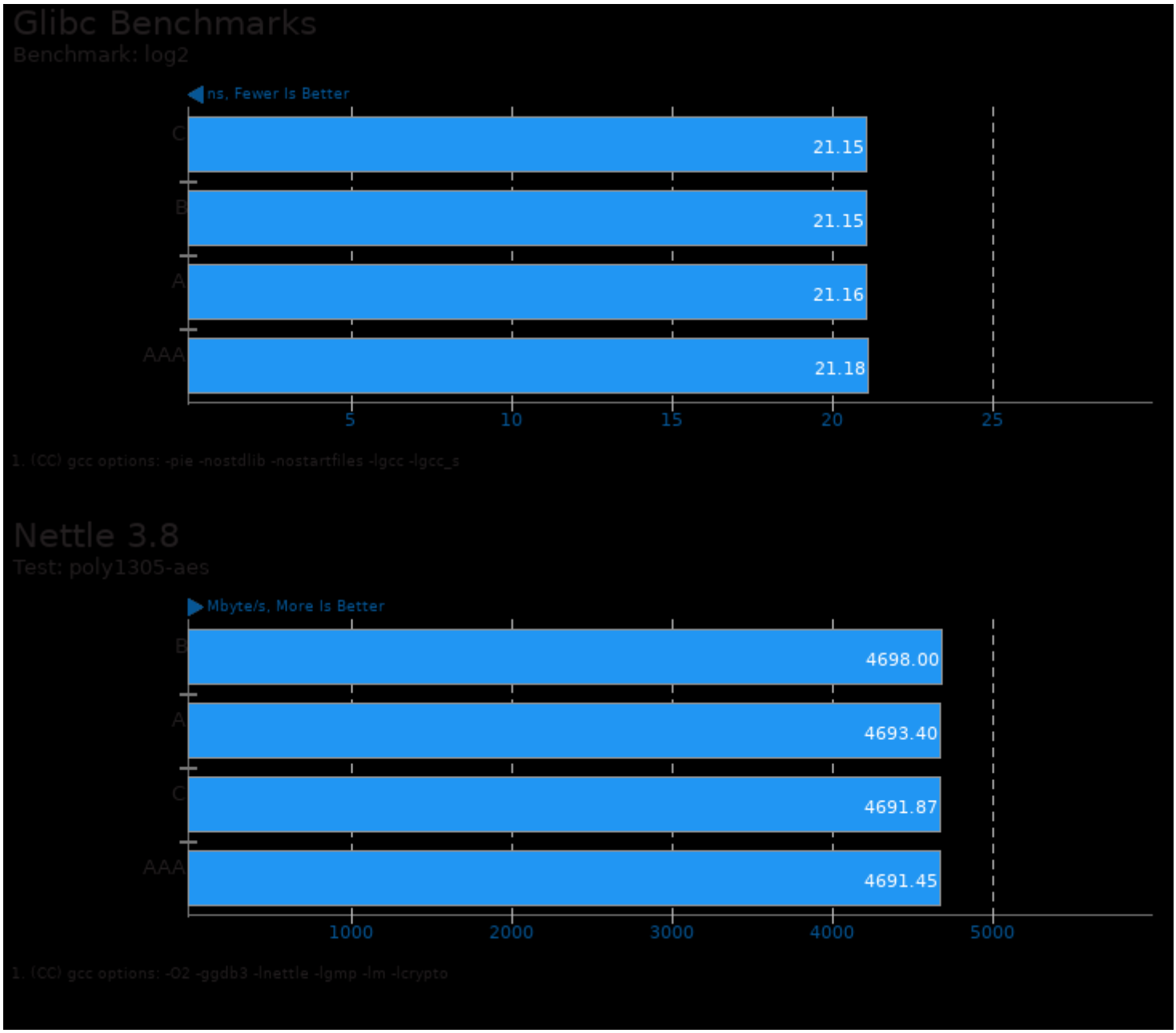
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

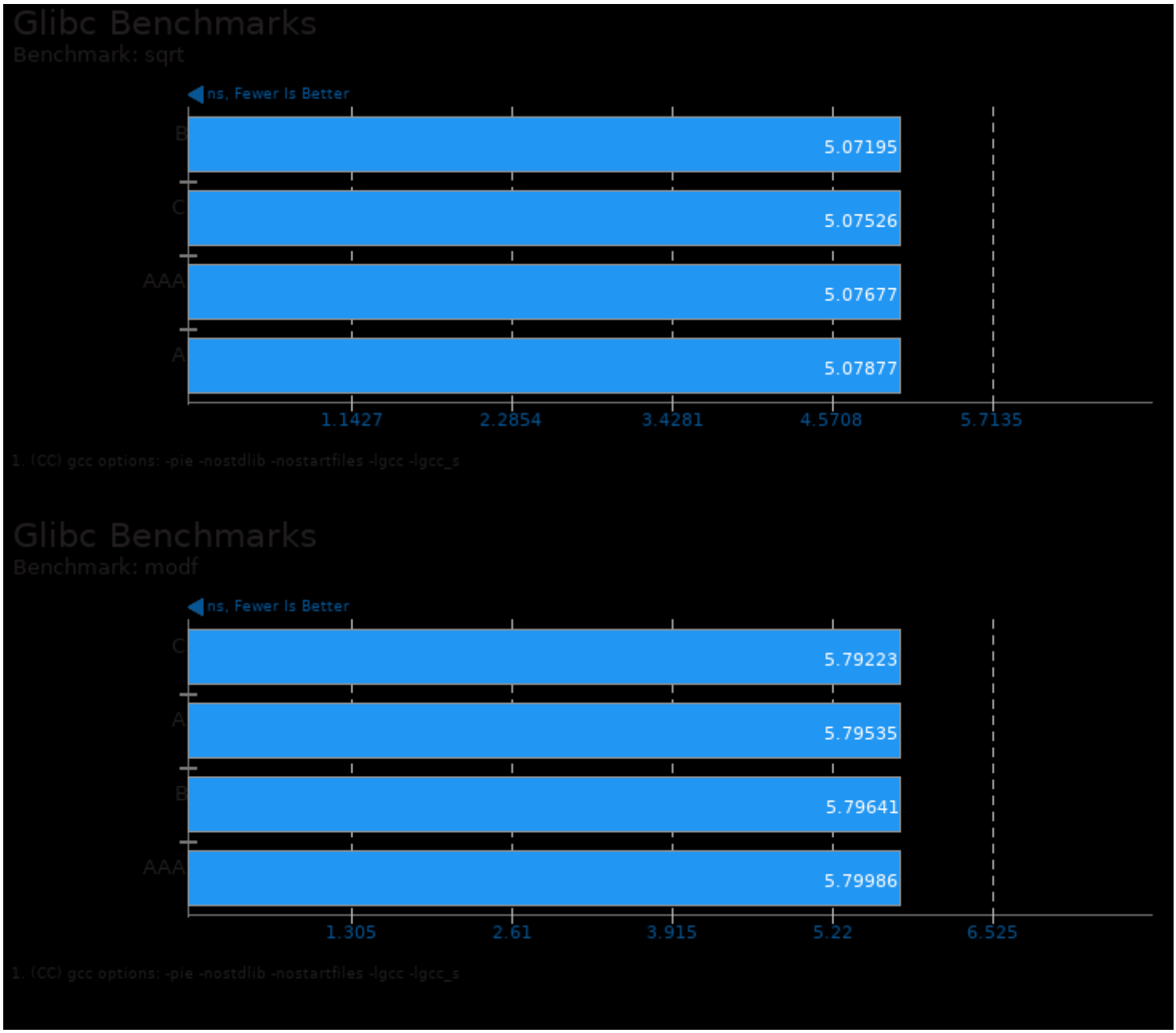
Nettle 3.8

Test: chacha



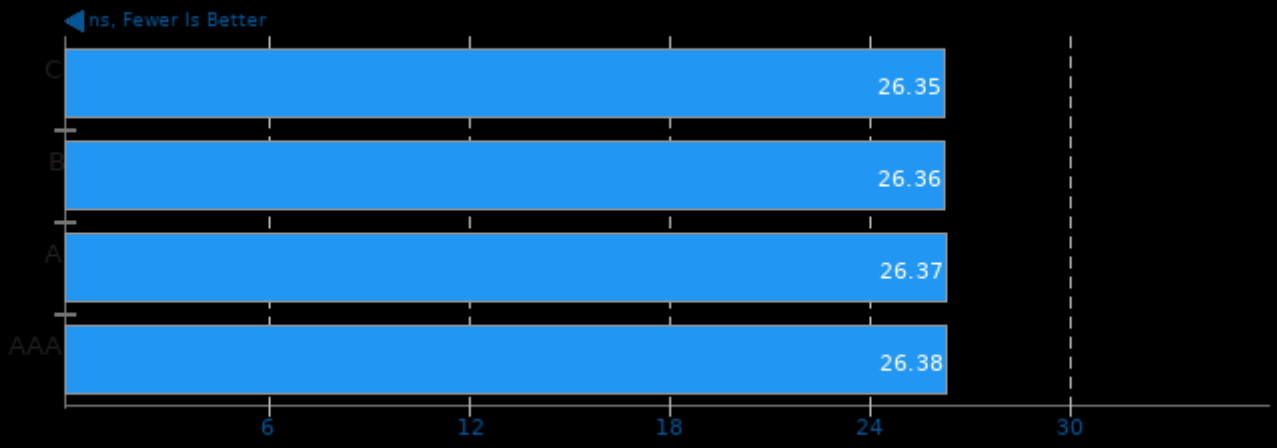
1. (CC) gcc options: -O2 -ggdb3 -lnettle -lgmp -lm -lcrypto


Glibc Benchmarks
Benchmark: log2
ns, Fewer Is Better
C
B
A
AAA
21.15
21.15
21.16
21.18
5
10
15
20
25
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s
Nettle 3.8
Test: poly1305-aes
Mbyte/s, More Is Better
B
A
C
AAA
4698.00
4693.40
4691.87
4691.45
1000
2000
3000
4000
5000
1. (CC) gcc options: -O2 -ggdb3 -lnettle -lgmp -lm -lcrypto


Glibc Benchmarks
Benchmark: sqrt
ns, Fewer Is Better
B
C
AAA
A
5.07195
5.07526
5.07677
5.07877
1.1427
2.2854
3.4281
4.5708
5.7135
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s
Glibc Benchmarks
Benchmark: modf
ns, Fewer Is Better
C
A
B
AAA
5.79223
5.79535
5.79641
5.79986
1.305
2.61
3.915
5.22
6.525
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

Glibc Benchmarks

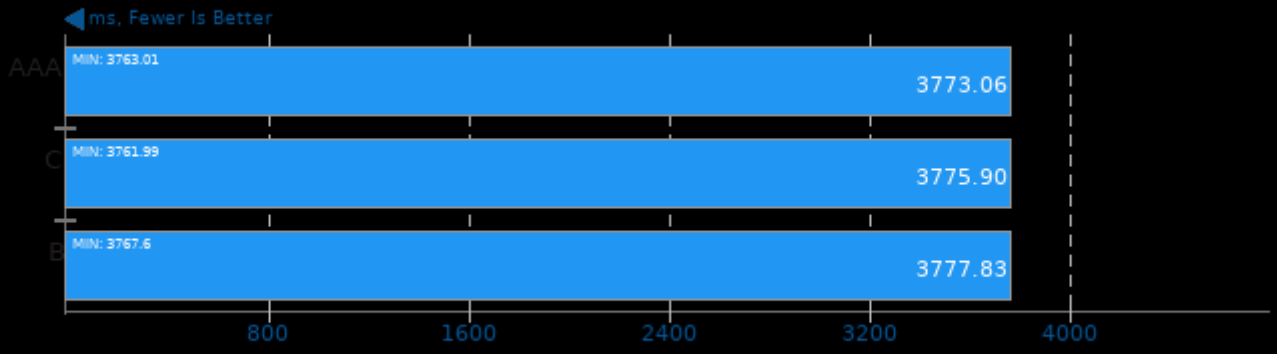
Benchmark: sinh



1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

oneDNN 2.6

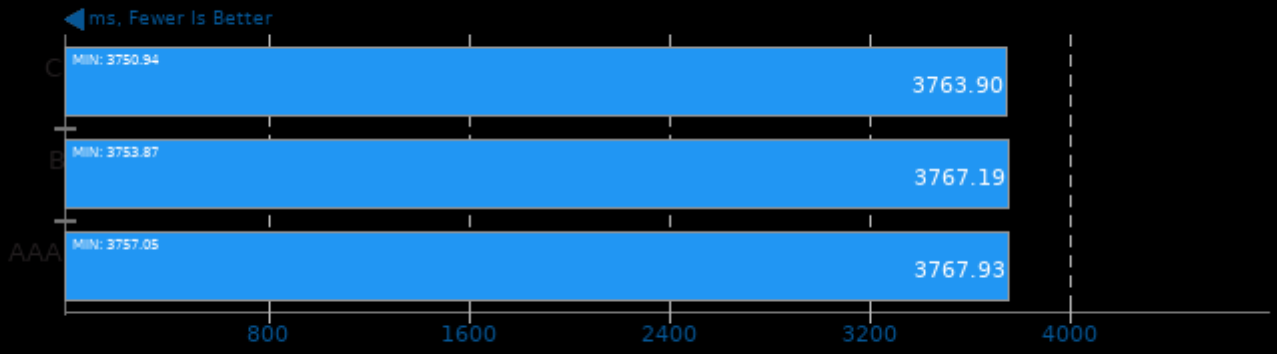
Harness: Recurrent Neural Network Training - Data Type: bf16bf16bf16 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -fopenmp -msse4.1 -fPIC -std=c++11 -pie -lpthread -ldl

oneDNN 2.6

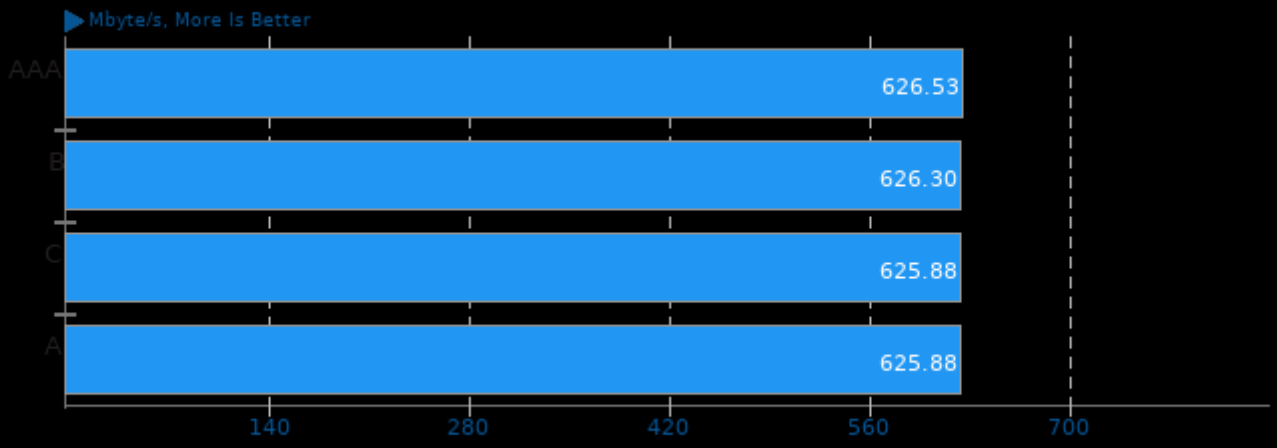
Harness: Recurrent Neural Network Training - Data Type: f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -fopenmp -msse4.1 -fPIC -std=c++11 -pie -lpthread -ldl

Nettle 3.8

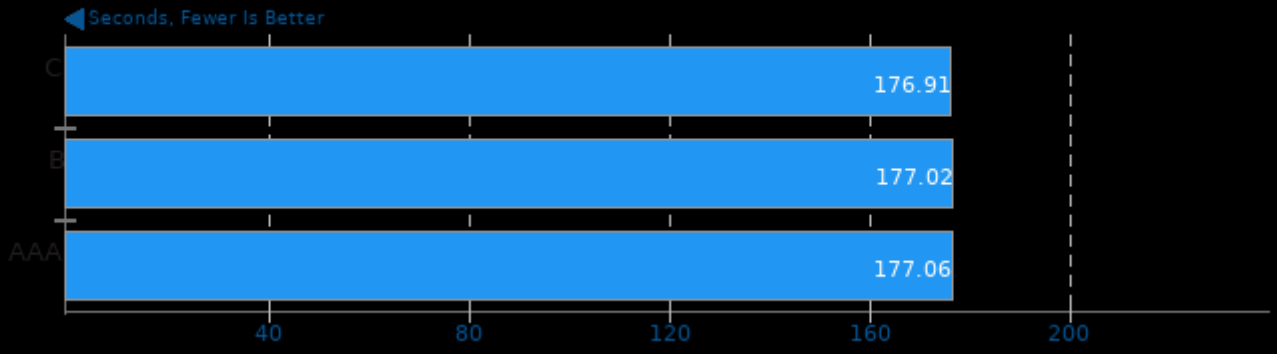
Test: sha512



1. (CC) gcc options: -O2 -ggdb3 -lnettle -lgmp -lm -lcrypto

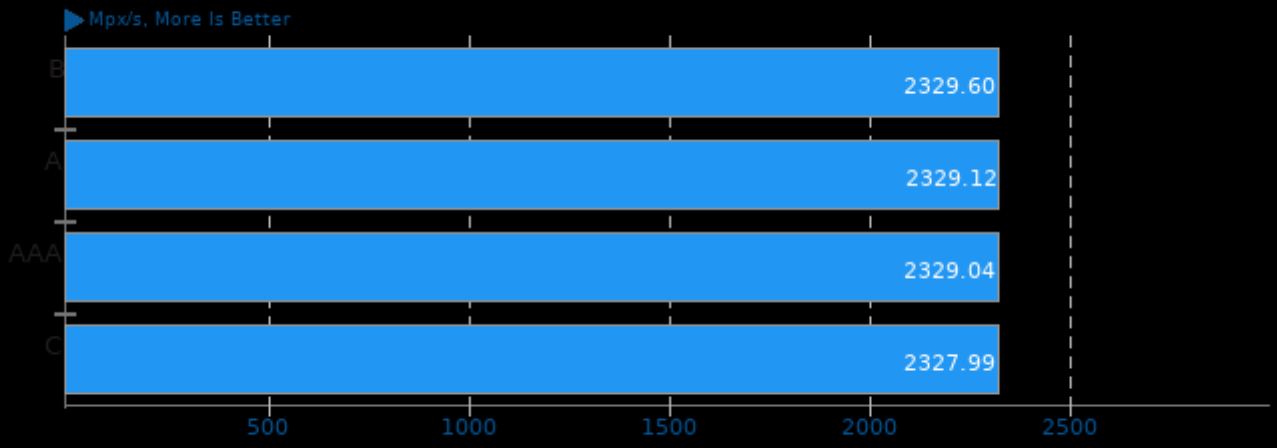
Blender 3.2

Blend File: BMW27 - Compute: CPU-Only



Etcpak 1.0

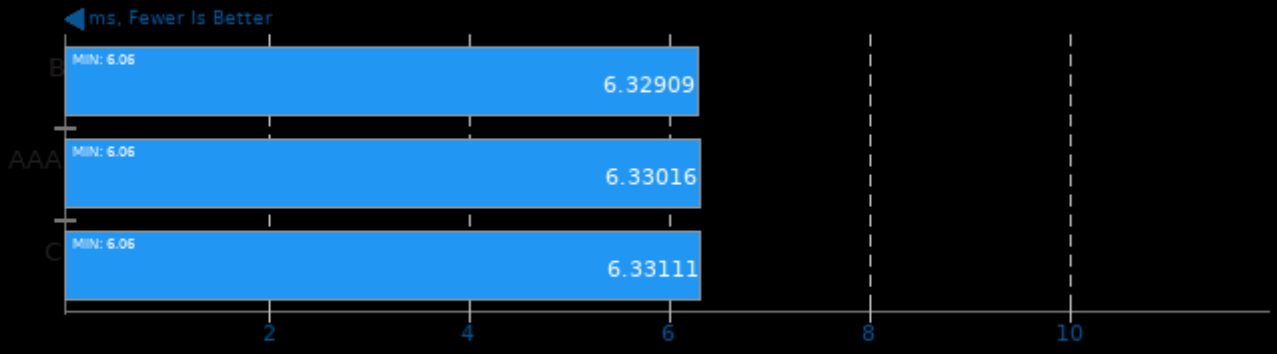
Benchmark: Multi-Threaded - Configuration: ETC2



1. (CXX) g++ options: -O3 -march=native -std=c++11 -lpthread

oneDNN 2.6

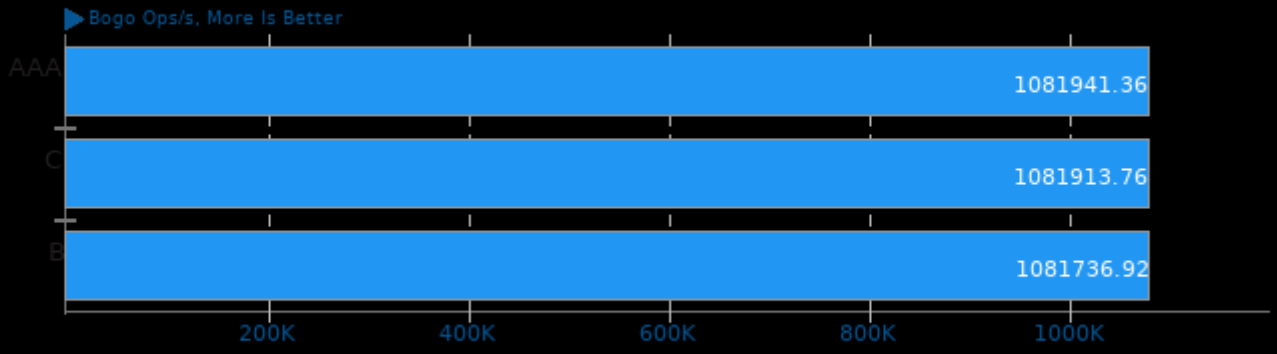
Harness: Deconvolution Batch shapes_3d - Data Type: f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -fopenmp -msse4.1 -fPIC -std=c++11 -pie -lpthread -ldl

Stress-NG 0.14

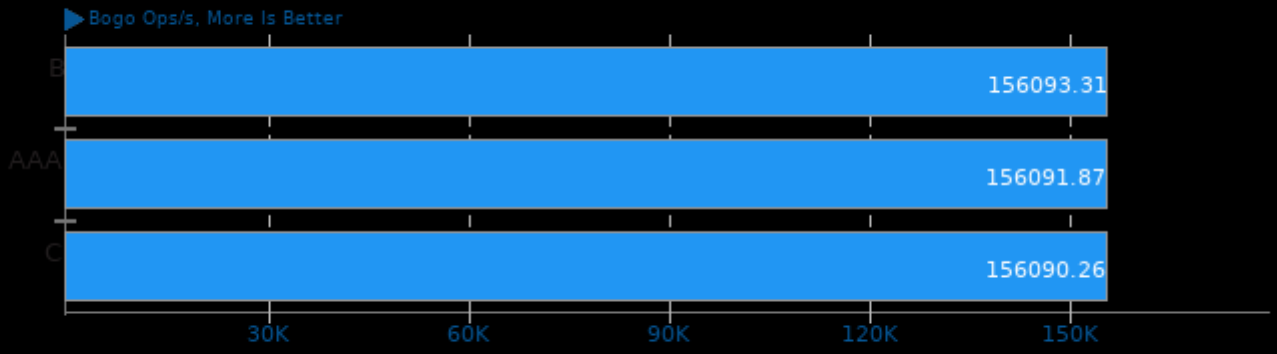
Test: Semaphores



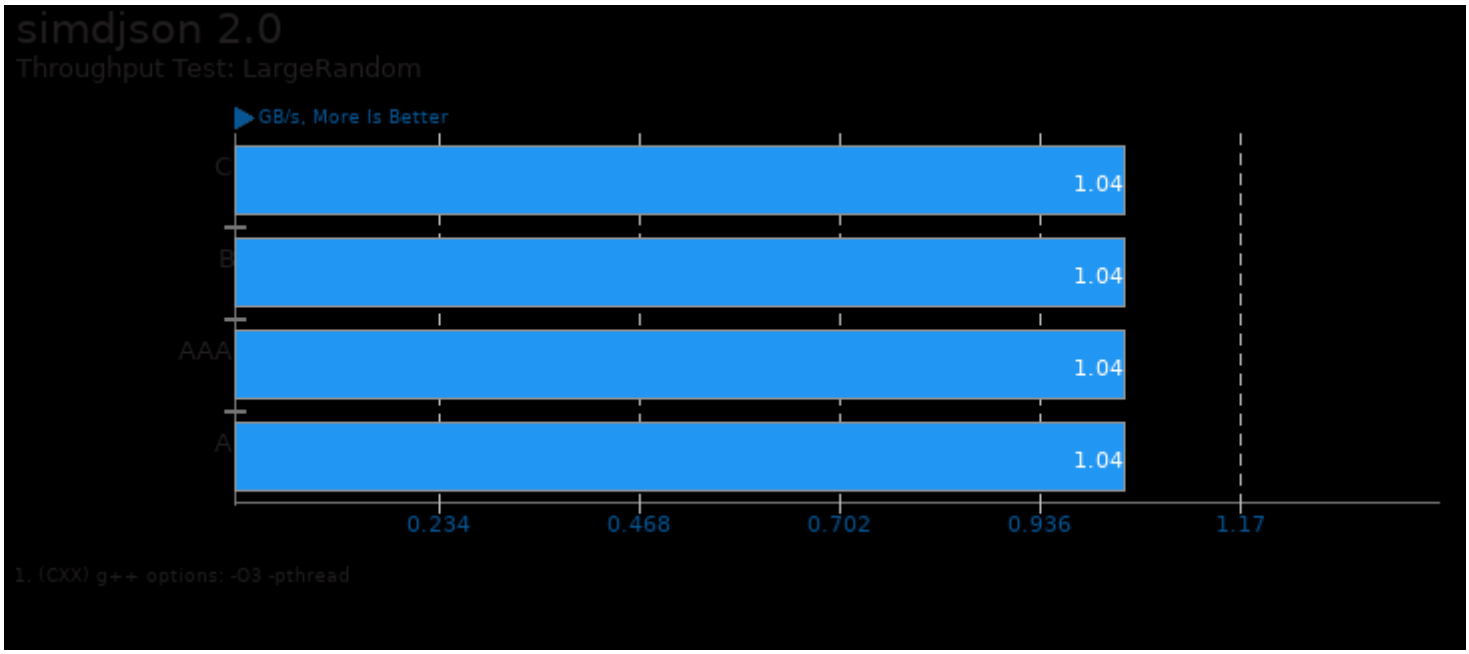
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lbsd -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread

Stress-NG 0.14

Test: x86_64 RdRand



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



This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 00:40.