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990KS March

Intel Core i9-9900KS testing with a ASUS PRIME Z390-A (1502 BIOS) and ASUS Intel UHD 630 CFL GT2 3GB on Ubuntu 20.04 via the Phoronix Test Suite.

Automated Executive Summary

1 had the most wins, coming in first place for 49% of the tests.

Based on the geometric mean of all complete results, the fastest (1) was 1.001x the speed of the slowest (2). 3 was 0.999x the speed of 1 and 2 was 1x the speed of 3.

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

*Zstd Compression (Compression Level: 8, Long Mode - Compression Speed) at 1.044x
AOM AV1 (Encoder Mode: Speed 8 Realtime - Input: Bosphorus 4K) at 1.042x
AOM AV1 (Encoder Mode: Speed 6 Two-Pass - Input: Bosphorus 1080p) at 1.03x
AOM AV1 (Encoder Mode: Speed 0 Two-Pass - Input: Bosphorus 1080p) at 1.027x
SHOC Scalable Heterogeneous Computing (Target: OpenCL - Benchmark: Triad) at 1.024x
OpenSCAD (Render: Projector Mount Swivel) at 1.022x
dav1d (Video Input: Chimera 1080p 10-bit) at 1.022x
AOM AV1 (Encoder Mode: Speed 9 Realtime - Input: Bosphorus 4K) at 1.021x
AOM AV1 (Encoder Mode: Speed 8 Realtime - Input: Bosphorus 1080p) at 1.02x*

Zstd Compression (Compression Level: 3, Long Mode - Compression Speed) at 1.017x.

Test Systems:

1

2

3

Processor: Intel Core i9-9900KS @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASUS PRIME Z390-A (1502 BIOS), Chipset: Intel Cannon Lake PCH, Memory: 32GB, Disk: 240GB Corsair Force MP510, Graphics: ASUS Intel UHD 630 CFL GT2 3GB (1200MHz), Audio: Realtek ALC1220, Monitor: G237HL, Network: Intel I219-V

OS: Ubuntu 20.04, Kernel: 5.9.0-050900rc8daily20201005-generic (x86_64) 20201004, Desktop: GNOME Shell 3.36.2, Display Server: X Server 1.20.8, OpenGL: 4.6 Mesa 20.2.6, 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 - CPU Microcode: 0xcc - ThermalD 1.9.1
 Python Notes: Python 2.7.18rc1 + Python 3.8.2

Security Notes: itlb_multihit: KVM: Mitigation of VMX unsupported + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Enhanced IBRS IBPB: conditional RSB filling + srbs: Mitigation of TSX disabled + tsx_async_abort: Mitigation of TSX disabled

	1	2	3
Zstd Compression - 8, Long Mode - Compression Speed (MB/s)	395.1	378.4	387.2
Normalized	100%	95.77%	98%
Standard Deviation	2.1%	0.9%	1.3%
AOM AV1 - Speed 8 Realtime - Bosphorus 4K (FPS)	38.68	37.94	37.12
Normalized	100%	98.09%	95.97%
Standard Deviation	0.2%	0.3%	2.8%
AOM AV1 - Speed 6 Two-Pass - Bosphorus 1080p (FPS)	19.68	19.11	19.21
Normalized	100%	97.1%	97.61%
Standard Deviation	1.5%	0.7%	0.1%
AOM AV1 - Speed 0 Two-Pass - Bosphorus 1080p (FPS)	0.38	0.37	0.38
Normalized	100%	97.37%	100%

	Standard Deviation	1.5%	1.5%	0%
SHOC Scalable Heterogeneous Computing - OpenCL - Triad (GB/s)	15.6053	15.2336		15.2518
	Normalized	100%	97.62%	97.73%
	Standard Deviation	0.3%	0.1%	0.4%
OpenSCAD - P.M.S (sec)	92.931	93.908		94.966
	Normalized	100%	98.96%	97.86%
	Standard Deviation	0.4%	0.8%	0.1%
dav1d - C.1.1.b (FPS)	160.91	164.40		163.76
	Normalized	97.88%	100%	99.61%
	Standard Deviation	0.1%	1.8%	1.5%
AOM AV1 - Speed 9 Realtime - Bosphorus 4K (FPS)	47.78	48.72		48.78
	Normalized	97.95%	99.88%	100%
	Standard Deviation	4.3%	0.4%	0.2%
AOM AV1 - Speed 8 Realtime - Bosphorus 1080p (FPS)	124.39	122.64		121.96
	Normalized	100%	98.59%	98.05%
	Standard Deviation	0.6%	2.7%	3.7%
Zstd Compression - 3, Long Mode - Compression Speed (MB/s)	1164	1157		1177
	Normalized	98.89%	98.28%	100%
	Standard Deviation	0.8%	1.6%	1%
Zstd Compression - 8 - Compression Speed (MB/s)	332.6	327.6		327.5
	Normalized	100%	98.5%	98.47%
	Standard Deviation	0.9%	1.2%	0.5%
srsLTE - OFDM_Test (Samples / Second)	126700000	1284666667		128500000
	Normalized	98.6%	99.97%	100%
	Standard Deviation	0.6%	1.1%	0.9%
Stockfish - Total Time (Nodes/s)	23777878	23501591		23832208
	Normalized	99.77%	98.61%	100%
	Standard Deviation	2.5%	2.2%	2.7%
oneDNN - IP Shapes 3D - f32 - CPU (ms)	8.26103	8.14695		8.16788
	Normalized	98.62%	100%	99.74%
	Standard Deviation	0.1%	0.1%	0.3%
Zstd Compression - 19, Long Mode - Compression Speed (MB/s)	31.9	31.8		31.5
	Normalized	100%	99.69%	98.75%
	Standard Deviation	0.7%	0.3%	0.4%
Mobile Neural Network - SqueezeNetV1.0	4.899	4.882		4.943
	Normalized	99.65%	100%	98.77%
	Standard Deviation	1%	1.1%	1%
ViennaCL - OpenCL BLAS - sCOPY (GB/s)	32.9	33.3		33.3
	Normalized	98.8%	100%	100%
	Standard Deviation	0.3%	0.5%	0.3%
AOM AV1 - Speed 9 Realtime - Bosphorus 1080p (FPS)	141.48	140.39		139.82
	Normalized	100%	99.23%	98.83%
	Standard Deviation	2.8%	0.6%	2.9%
Mobile Neural Network - inception-v3 (ms)	29.447	29.670		29.795
	Normalized	100%	99.25%	98.83%
	Standard Deviation	0.4%	0.2%	1%
Basis Universal - UASTC Level 0 (sec)	7.172	7.091		7.089

	Normalized	98.84%	99.97%	100%
	Standard Deviation	0%	0.1%	0.1%
oneDNN - D.B.s - u8s8f32 - CPU (ms)	3.97706	3.93198		3.93216
	Normalized	98.87%	100%	100%
	Standard Deviation	0.9%	0.5%	0.8%
srsLTE - PHY_DL_Test (eNb Mb/s)	293.2	291.8	295.0	
	Normalized	99.39%	98.92%	100%
	Standard Deviation	0.1%	0.4%	0.5%
srsLTE - PHY_DL_Test (UE Mb/s)	112.7	112.2	113.4	
	Normalized	99.38%	98.94%	100%
	Standard Deviation	0.1%	0.2%	0.2%
Mobile Neural Network - MobileNetV2_224	2.672	2.655	2.683	
	Normalized	99.36%	100%	98.96%
	Standard Deviation	4.1%	3.3%	4.1%
oneDNN - R.N.N.T - bf16bf16bf16 - CPU (ms)	3414	3445		3415
	Normalized	100%	99.09%	99.96%
	Standard Deviation	0.1%	1.3%	0%
AOM AV1 - Speed 4 Two-Pass - Bosphorus	3.42	3.41	3.39	
	4K (FPS)			
	Normalized	100%	99.71%	99.12%
	Standard Deviation	0.9%	1.2%	0.5%
LuaRadio - Complex Phase (MiB/s)	704.2	700.2	698.1	
	Normalized	100%	99.43%	99.13%
	Standard Deviation	1.5%	1.7%	2.8%
Zstd Compression - 8, Long Mode - D.S	4610	4601	4575	
	Normalized	100%	99.82%	99.24%
	Standard Deviation	0.1%	0.1%	0.8%
Mobile Neural Network - mobilenet-v1-1.0	2.329	2.333	2.346	
	Normalized	100%	99.83%	99.28%
	Standard Deviation	0.5%	0.5%	0.7%
SVT-VP9 - VMAF Optimized - Bosphorus	173.31	172.24	172.10	
	1080p (FPS)			
	Normalized	100%	99.38%	99.3%
	Standard Deviation	0.2%	0.4%	0.3%
SVT-VP9 - P.S.O - Bosphorus 1080p (FPS)	176.29	175.27	175.06	
	Normalized	100%	99.42%	99.3%
	Standard Deviation	0.3%	0.5%	0.1%
SHOC Scalable Heterogeneous Computing - OpenCL - S3D (GFLOPS)	20.9931	20.8518	20.8479	
	Normalized	100%	99.33%	99.31%
	Standard Deviation	0.3%	0.3%	0.2%
OpenSCAD - L.P.C.S (sec)	16.975	16.941	17.054	
	Normalized	99.8%	100%	99.34%
	Standard Deviation	0.1%	0.2%	0.1%
libavif avifenc - 0 (sec)	72.074	72.258	71.799	
	Normalized	99.62%	99.36%	100%
	Standard Deviation	0.4%	0.6%	0.6%
AOM AV1 - Speed 6 Two-Pass - Bosphorus	6.34	6.32	6.30	
	4K (FPS)			
	Normalized	100%	99.68%	99.37%
	Standard Deviation	0.2%	0.5%	0.4%
Mobile Neural Network - resnet-v2-50 (ms)	25.308	25.254	25.414	
	Normalized	99.79%	100%	99.37%
	Standard Deviation	0.3%	0.2%	0.3%

OpenSCAD - Retro Car (sec)	17.259	17.346	17.367
Normalized	100%	99.5%	99.38%
Standard Deviation	0.2%	1%	0.2%
Zstd Compression - 19, Long Mode - D.S	3958	3964	3939
(MB/s)			
Normalized	99.84%	100%	99.38%
Standard Deviation	0.4%	0%	0.3%
ViennaCL - OpenCL BLAS - dGEMM-NT	16.5	16.5	16.4
(GFLOPs/s)			
Normalized	100%	100%	99.39%
Standard Deviation	0%	0.4%	0.4%
ViennaCL - OpenCL BLAS - dCOPY (GB/s)	34.0	34.1	34.2
Normalized	99.42%	99.71%	100%
Standard Deviation	0.2%	0.2%	0.2%
Zstd Compression - 3 - Compression Speed	2379	2375	2388
(MB/s)			
Normalized	99.62%	99.42%	100%
Standard Deviation	0.9%	1.2%	0.9%
GNU Radio - F.B.t.B.F.F (MiB/s)	1190	1196	1189
Normalized	99.56%	100%	99.43%
Standard Deviation	1.8%	1.4%	2.2%
LuaRadio - F.D.F (MiB/s)	486.8	487.7	489.5
Normalized	99.45%	99.63%	100%
Standard Deviation	0.7%	0.7%	0.1%
Sysbench - RAM / Memory (MiB/sec)	28391	28492	28339
Normalized	99.65%	100%	99.46%
Standard Deviation	0.6%	0.8%	0.3%
Zstd Compression - 3 - D.S (MB/s)	4187	4165	4180
Normalized	100%	99.47%	99.85%
Standard Deviation	0.2%	0.8%	0.1%
ViennaCL - OpenCL BLAS - dGEMV-N (GB/s)	37.9	38.1	37.9
Normalized	99.48%	100%	99.48%
Standard Deviation	0%		
dav1d - Summer Nature 4K (FPS)	185.13	184.25	184.16
Normalized	100%	99.52%	99.48%
Standard Deviation	0.1%	0.1%	0.2%
GNU GMP GMPbench - Total Time	6250	6222	6218
(GMPbench Score)			
Normalized	100%	99.54%	99.48%
SVT-VP9 - V.Q.O - Bosphorus 1080p (FPS)	136.76	136.22	136.05
Normalized	100%	99.61%	99.48%
Standard Deviation	0.3%	0.2%	0.4%
libavif avifenc - 10 (sec)	3.154	3.160	3.170
Normalized	100%	99.81%	99.5%
Standard Deviation	0.2%	0.5%	0.6%
GNU Radio - FIR Filter (MiB/s)	822.3	820.0	818.3
Normalized	100%	99.72%	99.51%
Standard Deviation	0.3%	0.8%	0.6%
AOM AV1 - Speed 6 Realtime - Bosphorus	25.06	24.95	25.07
1080p (FPS)			
Normalized	99.96%	99.52%	100%
Standard Deviation	1.6%	2.6%	1.5%
oneDNN - IP Shapes 3D - u8s8f32 - CPU (ms)	1.83215	1.82910	1.82340
Normalized	99.52%	99.69%	100%

	Standard Deviation	0.3%	0.5%	0.2%
Liquid-DSP - 2 - 256 - 57 (samples/s)	130183333	130046667	130663333	
	Normalized	99.63%	99.53%	100%
	Standard Deviation	0.1%	0.5%	0%
LuaRadio - F.B.t.B.F.F (MiB/s)	1298	1292	1292	
	Normalized	100%	99.58%	99.53%
	Standard Deviation	0.4%	0.4%	0.7%
oneDNN - D.B.s - f32 - CPU (ms)	6.63993	6.64659	6.61557	
	Normalized	99.63%	99.53%	100%
	Standard Deviation	0.3%	0.4%	0.1%
LuaRadio - Hilbert Transform (MiB/s)	87.2	87.1	87.5	
	Normalized	99.66%	99.54%	100%
	Standard Deviation	0.1%	0.1%	0.6%
Timed Erlang/OTP Compilation - Time To Compile (sec)	113.000	112.558	112.484	
	Normalized	99.54%	99.93%	100%
	Standard Deviation	0.2%	0.6%	0.5%
libavif avifenc - 6, Lossless (sec)	62.674	62.389	62.396	
	Normalized	99.55%	100%	99.99%
	Standard Deviation	0.4%	0.3%	0.4%
AOM AV1 - Speed 4 Two-Pass - Bosphorus 1080p (FPS)	6.76	6.73	6.75	
	Normalized	100%	99.56%	99.85%
	Standard Deviation	0.2%	0.6%	0.4%
simdjson - DistinctUserID (GB/s)	4.53	4.55	4.54	
	Normalized	99.56%	100%	99.78%
	Standard Deviation	0.1%	0.3%	0.3%
oneDNN - D.B.s - f32 - CPU (ms)	8.83898	8.86501	8.87618	
	Normalized	100%	99.71%	99.58%
	Standard Deviation	0.1%	0.3%	0.1%
OpenSCAD - Mini-ITX Case (sec)	41.908	42.053	42.084	
	Normalized	100%	99.66%	99.58%
	Standard Deviation	0.3%	0.5%	0.1%
libavif avifenc - 6 (sec)	12.952	13.005	12.964	
	Normalized	100%	99.59%	99.91%
	Standard Deviation	0.5%	0.6%	0.2%
SVT-HEVC - 10 - Bosphorus 1080p (FPS)	230.27	229.42	229.36	
	Normalized	100%	99.63%	99.6%
	Standard Deviation	0.1%	0.1%	0.3%
SVT-HEVC - 7 - Bosphorus 1080p (FPS)	106.19	105.90	105.78	
	Normalized	100%	99.73%	99.61%
	Standard Deviation	0.2%	0.1%	0.2%
Basis Universal - ETC1S (sec)	23.455	23.390	23.367	
	Normalized	99.62%	99.9%	100%
	Standard Deviation	0.2%	0.6%	0.3%
ASTC Encoder - Medium (sec)	5.7949	5.7757	5.7737	
	Normalized	99.63%	99.97%	100%
	Standard Deviation	0.7%	0.2%	0.2%
SHOC Scalable Heterogeneous Computing - OpenCL - Bus Speed Readback (GB/s)	29.0495	29.0520	29.1531	
	Normalized	99.64%	99.65%	100%
	Standard Deviation	1.3%	0.6%	1.2%
GNU Radio - Hilbert Transform (MiB/s)	618.0	618.3	620.2	
	Normalized	99.65%	99.69%	100%
	Standard Deviation	0.3%	0.7%	0.3%

Zstd Compression - 19 - D.S (MB/s)	3969	3983	3982
Normalized	99.65%	100%	99.97%
Standard Deviation	0.5%	0.1%	0.2%
ViennaCL - CPU BLAS - sCOPY (GB/s)	28.2	28.2	28.3
Normalized	99.65%	99.65%	100%
Standard Deviation	0.2%	0.2%	0.2%
Botan - Twofish (MiB/s)	436.078	436.124	434.656
Normalized	99.99%	100%	99.66%
Standard Deviation	0.1%	0%	0.7%
Botan - ChaCha20Poly1305 (MiB/s)	916.108	913.025	914.454
Normalized	100%	99.66%	99.82%
Standard Deviation	0%	0.6%	0.3%
oneDNN - IP Shapes 1D - f32 - CPU (ms)	3.57740	3.57455	3.56577
Normalized	99.67%	99.75%	100%
Standard Deviation	0.6%	0.4%	0.1%
simdjson - Kostya (GB/s)	3.1	3.10	3.09
Normalized	100%	100%	99.68%
Standard Deviation	0%	0.2%	0.6%
dav1d - S.N.1 (FPS)	648.26	649.67	647.63
Normalized	99.78%	100%	99.69%
Standard Deviation	0.4%	0.2%	0.1%
AOM AV1 - Speed 6 Realtime - Bosphorus	13.16	13.12	13.14
4K (FPS)			
Normalized	100%	99.7%	99.85%
Standard Deviation	0.3%	0.2%	0.1%
Xcompact3d Incompact3d - i.i.1.C.P.D (sec)	34.3375969	34.4397227	34.3846003
Normalized	100%	99.7%	99.86%
Standard Deviation	1.8%	1.7%	1.6%
ViennaCL - CPU BLAS - dGEMM-NT (GFLOPs/s)	34.1	34.2	34.1
Normalized	99.71%	100%	99.71%
Standard Deviation	0.2%	0.3%	0.2%
Zstd Compression - 19 - Compression Speed (MB/s)	34.5	34.6	34.6
Normalized	99.71%	100%	100%
Standard Deviation	0.6%	0.3%	0.3%
ViennaCL - OpenCL BLAS - dGEMV-T (GB/s)	34.8	34.7	34.8
Normalized	100%	99.71%	100%
Standard Deviation	0%	0.2%	0.2%
Liquid-DSP - 4 - 256 - 57 (samples/s)	250856667	251576667	251473333
Normalized	99.71%	100%	99.96%
Standard Deviation	0.2%	0.3%	0.2%
ViennaCL - OpenCL BLAS - dAXPY (GB/s)	35.3	35.3	35.4
Normalized	99.72%	99.72%	100%
Standard Deviation	0.2%	0%	0.2%
libavif avifenc - 10, Lossless (sec)	5.778	5.771	5.787
Normalized	99.88%	100%	99.72%
Standard Deviation	0.4%	0.4%	0.4%
ViennaCL - CPU BLAS - dGEMM-TN (GFLOPs/s)	36.5	36.4	36.5
Normalized	100%	99.73%	100%
Standard Deviation	0.2%	0.3%	0%
GNU Radio - S.S.C (MiB/s)	3003	3011	3011
Normalized	99.73%	100%	99.99%
Standard Deviation	0.2%	0.1%	0.2%

ViennaCL - OpenCL BLAS - sDOT (GB/s)	37.7	37.6	37.6
Normalized	100%	99.73%	99.73%
Standard Deviation	0%	0.2%	0.2%
Basis Universal - UASTC Level 2 (sec)	33.461	33.374	33.387
Normalized	99.74%	100%	99.96%
Standard Deviation	0.1%	0.5%	0.6%
dav1d - Chimera 1080p (FPS)	733.64	731.76	732.83
Normalized	100%	99.74%	99.89%
Standard Deviation	0.2%	0.5%	0.2%
toyBrot Fractal Generator - C++ Tasks (ms)	44756	44842	44729
Normalized	99.94%	99.75%	100%
Standard Deviation	0.1%	0.5%	0.1%
oneDNN - C.B.S.A - u8s8f32 - CPU (ms)	14.0335	13.9988	14.0106
Normalized	99.75%	100%	99.92%
Standard Deviation	0.3%	0.2%	0.3%
ViennaCL - CPU BLAS - sAXPY (GB/s)	42.8	42.9	42.8
Normalized	99.77%	100%	99.77%
Standard Deviation	0.1%	0.3%	0.4%
simdjson - PartialTweets (GB/s)	4.38	4.38	4.37
Normalized	100%	100%	99.77%
Standard Deviation	0.1%	0.1%	0.1%
Liquid-DSP - 8 - 256 - 57 (samples/s)	452713333	452073333	453086667
Normalized	99.92%	99.78%	100%
Standard Deviation	0.6%	0.2%	0.8%
ViennaCL - CPU BLAS - dGEMV-N (GB/s)	45.5	45.6	45.5
Normalized	99.78%	100%	99.78%
Standard Deviation	0%	0.1%	0.1%
Timed Linux Kernel Compilation - Time To	94.714	94.569	94.768
Compile (sec)			
Normalized	99.85%	100%	99.79%
Standard Deviation	1.4%	1.1%	0.9%
Zstd Compression - 3, Long Mode - D.S	4433	4438	4443
Normalized	99.79%	99.89%	100%
Standard Deviation	0.3%	0.2%	0.1%
OpenSCAD - Pistol (sec)	100.767	100.978	100.813
Normalized	100%	99.79%	99.95%
Standard Deviation	0.1%	0.4%	0.1%
oneDNN - R.N.N.I - bf16bf16bf16 - CPU (ms)	1855	1851	1854
Normalized	99.8%	100%	99.83%
Standard Deviation	0.3%	0.1%	0.1%
libavif avifenc - 2 (sec)	37.253	37.304	37.326
Normalized	100%	99.86%	99.8%
Standard Deviation	0.3%	0.5%	0.4%
oneDNN - M.M.B.S.T - u8s8f32 - CPU (ms)	3.44003	3.43359	3.43914
Normalized	99.81%	100%	99.84%
Standard Deviation	0.2%	0.1%	0.1%
SHOC Scalable Heterogeneous Computing -	36.7934	36.7270	36.7633
OpenCL - Reduction (GB/s)			
Normalized	100%	99.82%	99.92%
Standard Deviation	0.2%	0.3%	0.1%
GNU Radio - IIR Filter (MiB/s)	666.1	664.9	665.0
Normalized	100%	99.82%	99.83%
Standard Deviation	0.3%	0.3%	0.2%
toyBrot Fractal Generator - C++ Threads	44854	44774	44805
Normalized	99.82%	100%	99.93%

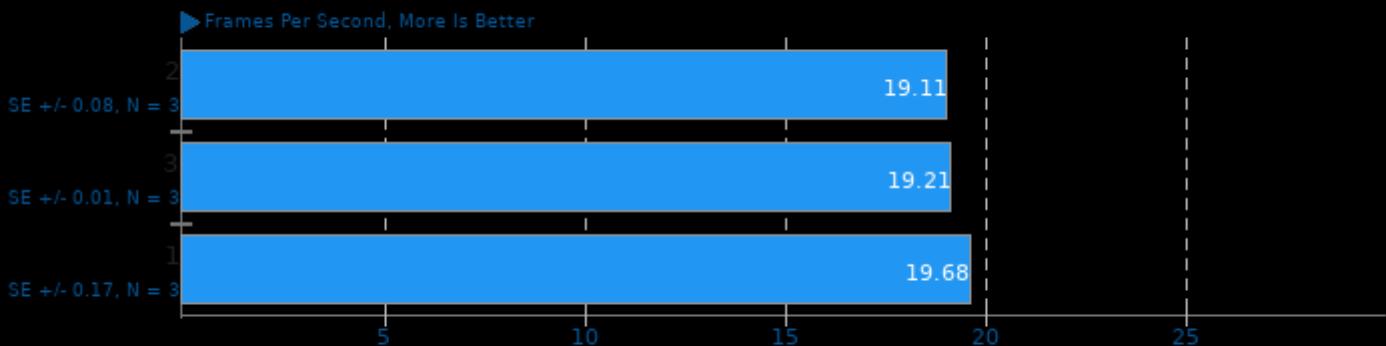
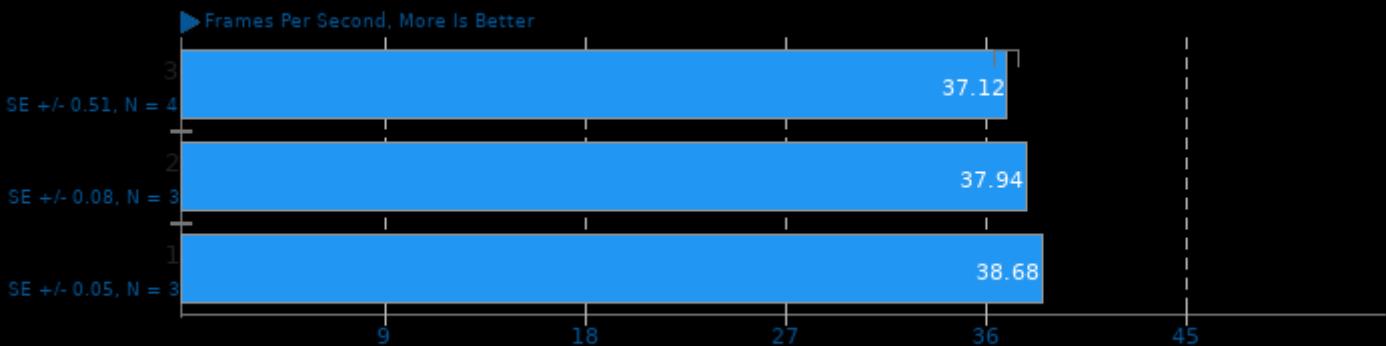
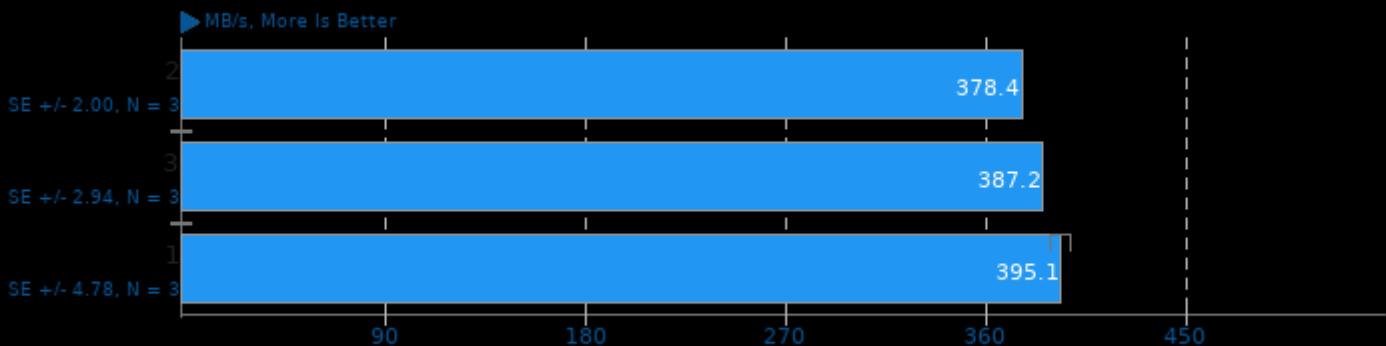
	Standard Deviation	0.1%	0.1%	0.1%
toyBro Fractal Generator - TBB (ms)	44058	44135	44085	
Normalized	100%	99.83%	99.94%	
Standard Deviation	0.2%	0.3%	0.3%	
SHOC Scalable Heterogeneous Computing - OpenCL - Bus Speed Download (GB/s)	29.2119	29.1641	29.1766	
Normalized	100%	99.84%	99.88%	
Standard Deviation	0.6%	0.3%	0.9%	
oneDNN - M.M.B.S.T - f32 - CPU (ms)	3.15433	3.15157	3.14943	
Normalized	99.84%	99.93%	100%	
Standard Deviation	0.4%	0.2%	0.5%	
SVT-HEVC - 1 - Bosphorus 1080p (FPS)	6.85	6.84	6.84	
Normalized	100%	99.85%	99.85%	
Standard Deviation	0.3%	0.1%	0.1%	
oneDNN - C.B.S.A - f32 - CPU (ms)	14.2830	14.3031	14.2936	
Normalized	100%	99.86%	99.93%	
Standard Deviation	0.2%	0.4%	0.2%	
Botan - AES-256 - Decrypt (MiB/s)	4806	4811	4812	
Normalized	99.87%	99.97%	100%	
Standard Deviation	0.2%	0%	0%	
Botan - Twofish - Decrypt (MiB/s)	437.297	437.288	436.744	
Normalized	100%	100%	99.87%	
Standard Deviation	0.1%	0.1%	0.4%	
SHOC Scalable Heterogeneous Computing - OpenCL - FFT SP (GFLOPS)	15.3682	15.3757	15.3573	
Normalized	99.95%	100%	99.88%	
Standard Deviation	0.1%	0.1%	0.2%	
GNU Radio - F.D.F (MiB/s)	836.7	837.7	837.3	
Normalized	99.88%	100%	99.95%	
Standard Deviation	0.5%	0.4%	0.3%	
oneDNN - IP Shapes 1D - u8s8f32 - CPU (ms)	1.66747	1.66579	1.6655	
Normalized	99.88%	99.98%	100%	
Standard Deviation	0.2%	0.3%	0.1%	
Xcompact3d Incompact3d - i.i.1.C.P.D (sec)	121.691170	121.826073	121.742472	
Normalized	100%	99.89%	99.96%	
Standard Deviation	0%	0%	0.1%	
Zstd Compression - 8 - D.S (MB/s)	4312	4309	4308	
Normalized	100%	99.92%	99.89%	
Standard Deviation	0.5%	0.2%	0.2%	
Timed Mesa Compilation - Time To Compile (sec)	56.415	56.468	56.475	
Normalized	100%	99.91%	99.89%	
Standard Deviation	0.1%	0.1%	0.1%	
Botan - KASUMI - Decrypt (MiB/s)	107.861	107.764	107.878	
Normalized	99.98%	99.89%	100%	
Standard Deviation	0.1%	0.1%	0.1%	
ASTC Encoder - Exhaustive (sec)	113.8873	113.7734	113.8933	
Normalized	99.9%	100%	99.89%	
Standard Deviation	0.2%	0.2%	0.2%	
Botan - Blowfish (MiB/s)	543.597	543.385	543.951	
Normalized	99.93%	99.9%	100%	
Standard Deviation	0%	0.1%	0%	

Timed Node.js Compilation - Time To Compile (sec)	477.097	476.801	477.284
Normalized	99.94%	100%	99.9%
Standard Deviation	0.1%	0.1%	0.1%
ASTC Encoder - Thorough (sec)	14.9207	14.9059	14.9103
Normalized	99.9%	100%	99.97%
Standard Deviation	0.2%	0.3%	0.2%
oneDNN - R.N.N.T - f32 - CPU (ms)	3408	3405	3406
Normalized	99.92%	100%	99.98%
Standard Deviation	0.3%	0.2%	0.2%
Sysbench - CPU (Events/sec)	19380	19383	19367
Normalized	99.99%	100%	99.92%
Standard Deviation	0.1%	0.2%	0.1%
Basis Universal - UASTC Level 3 (sec)	63.543	63.560	63.593
Normalized	100%	99.97%	99.92%
Standard Deviation	0.1%	0.1%	0.1%
oneDNN - R.N.N.I - u8s8f32 - CPU (ms)	1852	1851	1851
Normalized	99.92%	100%	99.97%
Standard Deviation	0.1%	0%	0.1%
toyBrot Fractal Generator - OpenMP (ms)	43866	43854	43838
Normalized	99.94%	99.96%	100%
Standard Deviation	0.1%	0.1%	0.1%
Liquid-DSP - 16 - 256 - 57 (samples/s)	500333333	500263333	500016667
Normalized	100%	99.99%	99.94%
Standard Deviation	0.1%	0.1%	0.1%
Botan - Blowfish - Decrypt (MiB/s)	539.238	539.017	539.337
Normalized	99.98%	99.94%	100%
Standard Deviation	0%	0.1%	0%
Botan - ChaCha20Poly1305 - Decrypt (MiB/s)	908.311	907.952	908.474
Normalized	99.98%	99.94%	100%
Standard Deviation	0.1%	0.2%	0.1%
SHOC Scalable Heterogeneous Computing - OpenCL - GEMM SGEMM_N (GFLOPS)	245.920	245.885	245.783
Normalized	100%	99.99%	99.94%
Standard Deviation	0%	0%	0%
oneDNN - R.N.N.I - f32 - CPU (ms)	1852	1851	1852
Normalized	99.95%	100%	99.95%
Standard Deviation	0.1%	0.2%	0%
oneDNN - D.B.s - u8s8f32 - CPU (ms)	2.14490	2.14385	2.14452
Normalized	99.95%	100%	99.97%
Standard Deviation	0.3%	0.2%	0.1%
Liquid-DSP - 1 - 256 - 57 (samples/s)	67629667	67632333	67599667
Normalized	100%	100%	99.95%
Standard Deviation	0%	0%	0.1%
oneDNN - R.N.N.T - u8s8f32 - CPU (ms)	3415	3413	3414
Normalized	99.96%	100%	99.97%
Standard Deviation	0.2%	0%	0%
Botan - CAST-256 - Decrypt (MiB/s)	172.091	172.076	172.150
Normalized	99.97%	99.96%	100%
Standard Deviation	0%	0%	0%
SHOC Scalable Heterogeneous Computing - OpenCL - T.R.B (GB/s)	56.9099	56.8932	56.9175
Normalized	99.99%	99.96%	100%
Standard Deviation	0%	0%	0%

Botan - KASUMI (MiB/s)	112.980	112.943	112.985
Normalized	100%	99.96%	100%
Standard Deviation	0.1%	0.1%	0.1%
SHOC Scalable Heterogeneous Computing -	1761	1761	1761
OpenCL - Max SP Flops (GFLOPS)			
Normalized	99.98%	100%	99.97%
Standard Deviation	0.1%	0.1%	0.1%
SHOC Scalable Heterogeneous Computing -	0.3861	0.3861	0.386
OpenCL - MD5 Hash (GHash/s)			
Normalized	100%	100%	99.97%
Standard Deviation	0%	0%	0%
Botan - AES-256 (MiB/s)	4816	4815	4816
Normalized	100%	99.98%	99.99%
Standard Deviation	0%	0%	0%
Botan - CAST-256 (MiB/s)	171.954	171.951	171.958
Normalized	100%	100%	100%
Standard Deviation	0%	0%	0%
Systemd Total Boot Time - Userspace (ms)	22109	22109	22109
Systemd Total Boot Time - Firmware (ms)	15679	15679	15679
Systemd Total Boot Time - Loader (ms)	3555	3555	3555
Systemd Total Boot Time - Kernel (ms)	1941	1941	1941
Systemd Total Boot Time - Total (ms)	24050	24050	24050
ViennaCL - OpenCL BLAS - dGEMM-TT (GFLOPs/s)	15.7	15.7	15.7
Standard Deviation	0%	0%	0%
ViennaCL - OpenCL BLAS - dGEMM-TN (GFLOPs/s)	15.8	15.8	15.8
Standard Deviation	0.4%	0.4%	0.4%
ViennaCL - OpenCL BLAS - dGEMM-NN (GFLOPs/s)	18.9	18.9	18.9
Standard Deviation	0%	0%	0%
ViennaCL - OpenCL BLAS - dDOT (GB/s)	38	38	38
ViennaCL - OpenCL BLAS - sAXPY (GB/s)	34.6	34.6	34.6
Standard Deviation	0%	0%	0%
ViennaCL - CPU BLAS - dGEMM-TT (GFLOPs/s)	35.5	35.5	35.5
Standard Deviation	0.2%	0.2%	0.2%
ViennaCL - CPU BLAS - dGEMM-NN (GFLOPs/s)	34.8	34.8	34.8
Standard Deviation	0%	0.2%	0.2%
ViennaCL - CPU BLAS - dGEMV-T (GB/s)	46.5	46.5	46.5
Standard Deviation	0.1%	0%	0%
ViennaCL - CPU BLAS - dDOT (GB/s)	44.1	44.1	44.1
Standard Deviation	0.1%	0%	0%
ViennaCL - CPU BLAS - dAXPY (GB/s)	39.3	39.3	39.3
Standard Deviation	0%	0%	0%
ViennaCL - CPU BLAS - dCOPY (GB/s)	26.2	26.2	26.2
Standard Deviation	0.2%	0%	0%
ViennaCL - CPU BLAS - sDOT (GB/s)	47.9	47.9	47.9
Standard Deviation	0.2%	0.1%	0.1%

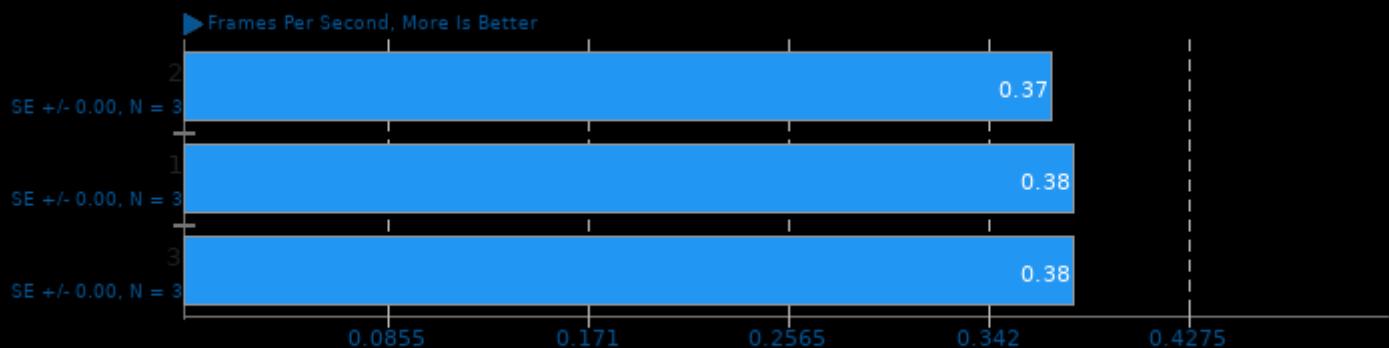
AOM AV1 - Speed 0 Two-Pass - Bosphorus	0.12	0.12	0.12
4K (FPS)			
Standard Deviation	0%	0%	0%
simdjson - LargeRand (GB/s)			
1.07	1.07	1.07	1.07
Standard Deviation	0%	0%	0%

Zstd Compression 1.4.9



AOM AV1 3.0

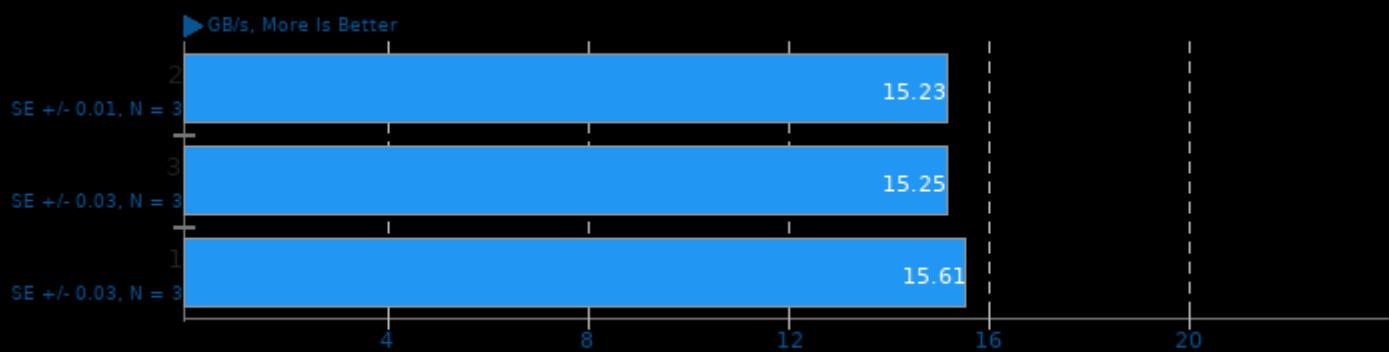
Encoder Mode: Speed 0 Two-Pass - Input: Bosphorus 1080p



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

SHOC Scalable Heterogeneous Computing 2020-04-17

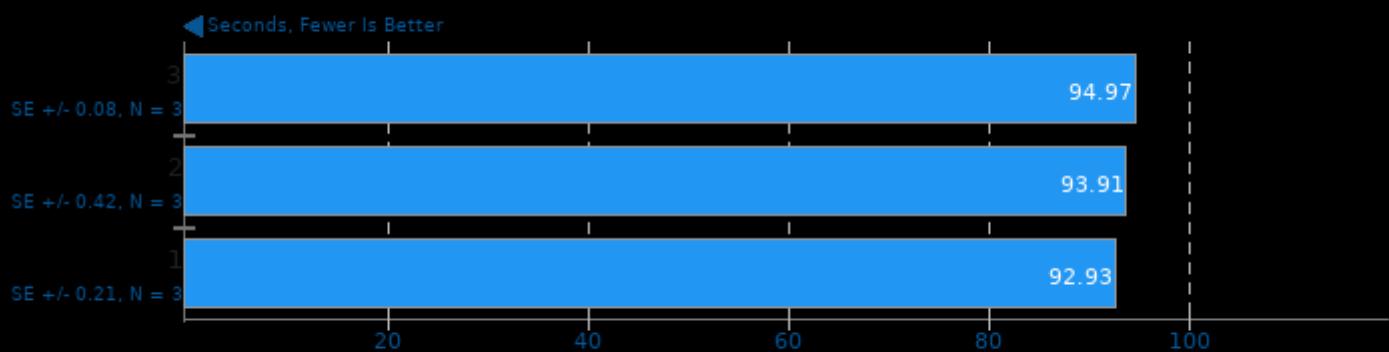
Target: OpenCL - Benchmark: Triad



1. (CXX) g++ options: -O2 -I SHOCCommonMPI -I SHOCCommonOpenCL -I SHOCCommon -I OpenCL -lrt -pthread -lmpi_cxx -lmpi

OpenSCAD

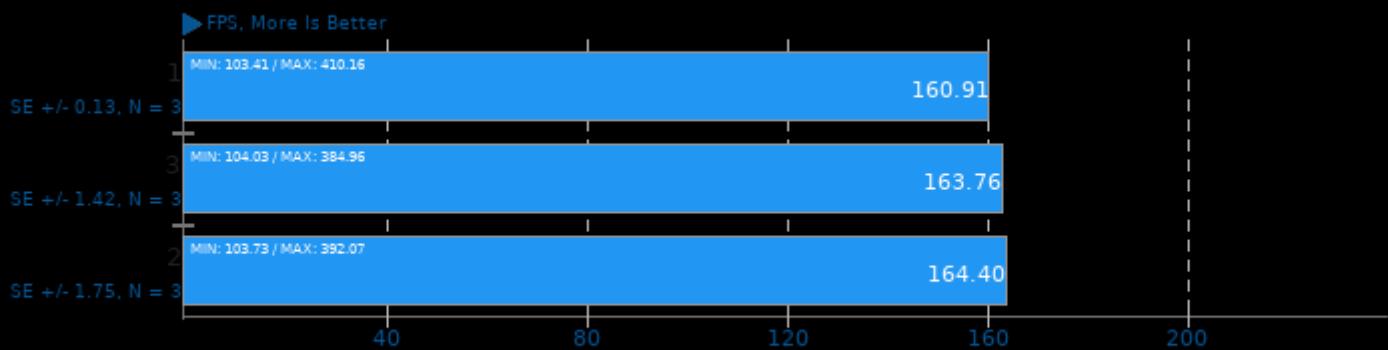
Render: Projector Mount Swivel



1. OpenSCAD version 2019.05

dav1d 0.8.2

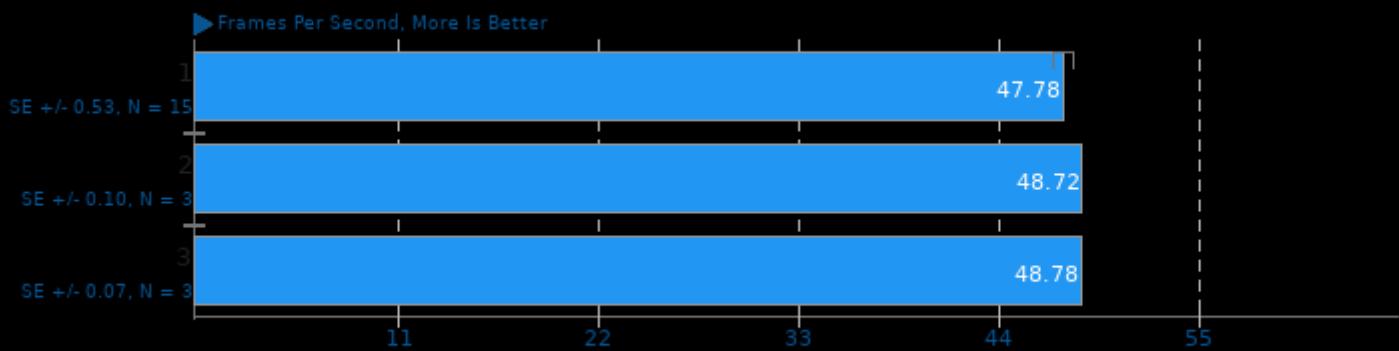
Video Input: Chimera 1080p 10-bit



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

AOM AV1 3.0

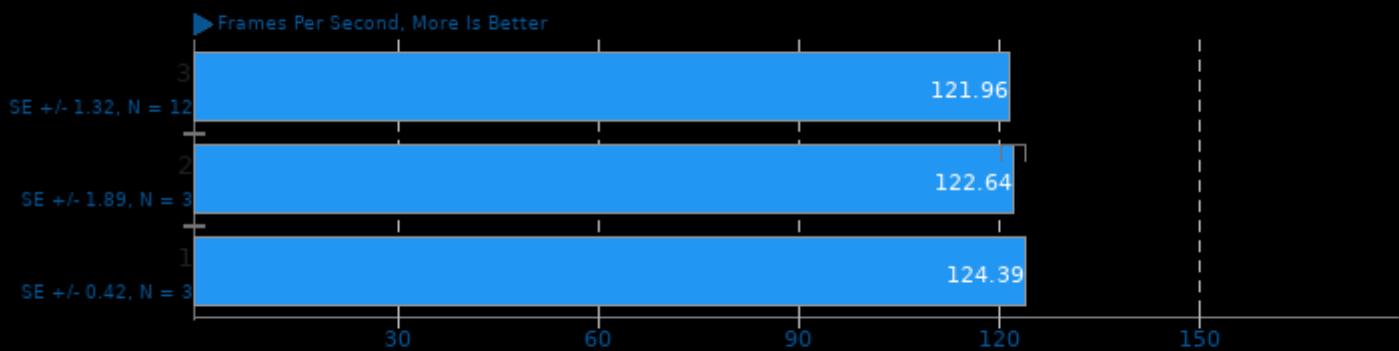
Encoder Mode: Speed 9 Realtime - Input: Bosphorus 4K



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

AOM AV1 3.0

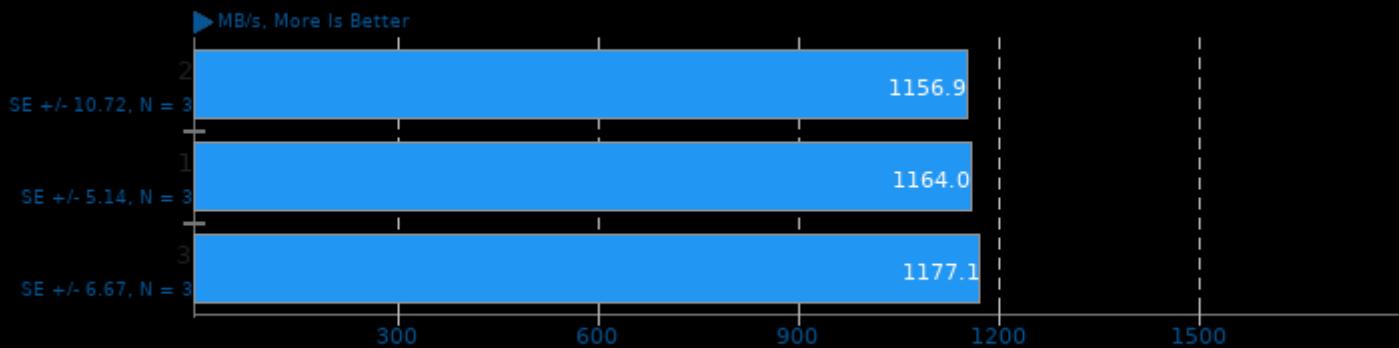
Encoder Mode: Speed 8 Realtime - Input: Bosphorus 1080p



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

Zstd Compression 1.4.9

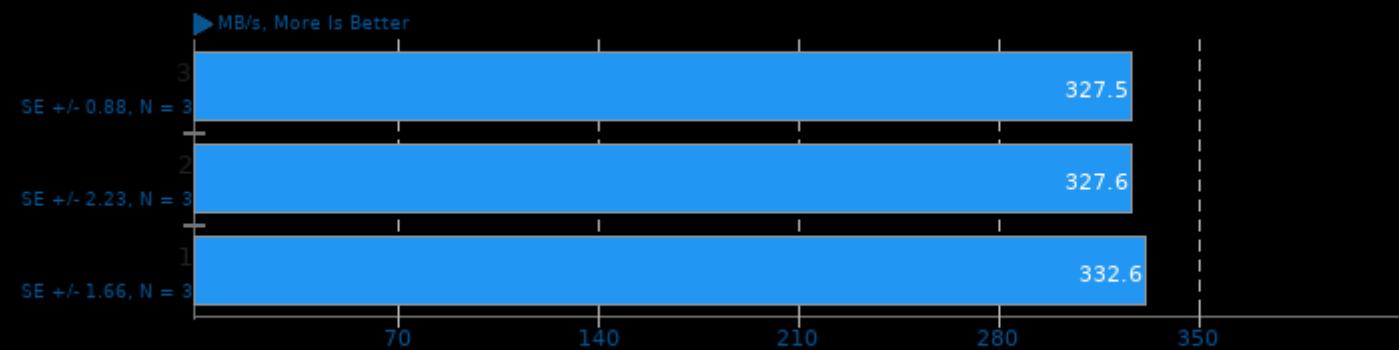
Compression Level: 3, Long Mode - Compression Speed



1. (CC) gcc options: -O3 -pthread -lz -lzma

Zstd Compression 1.4.9

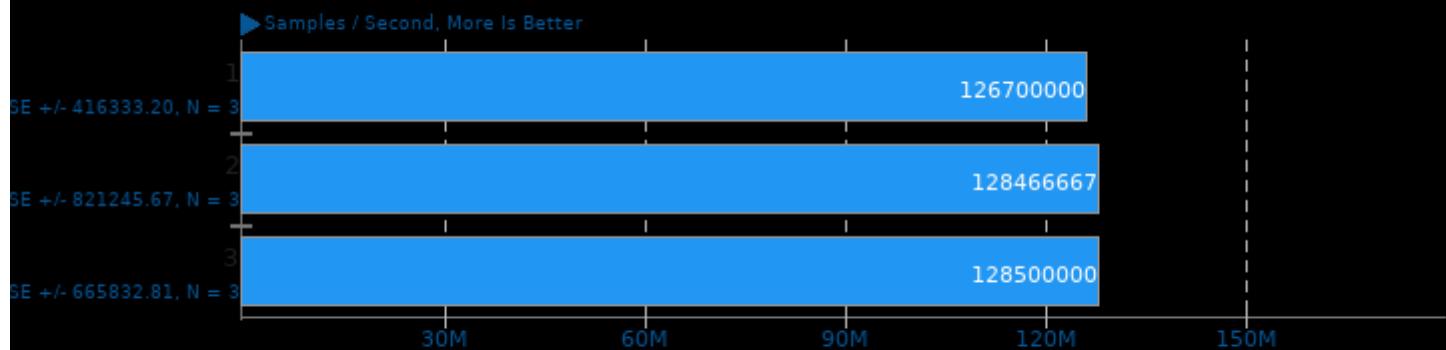
Compression Level: 8 - Compression Speed



1. (CC) gcc options: -O3 -pthread -lz -lzma

srsLTE 20.10.1

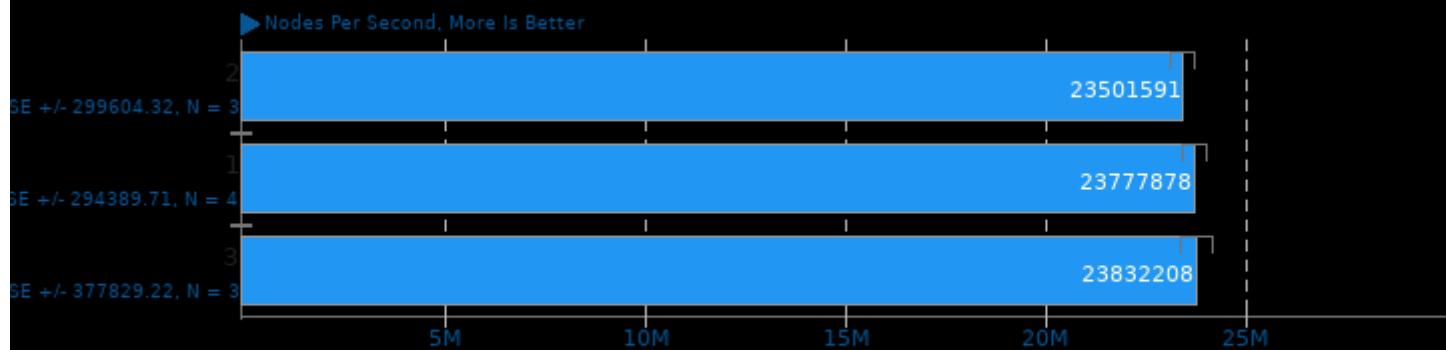
Test: OFDM_Test



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

Stockfish 13

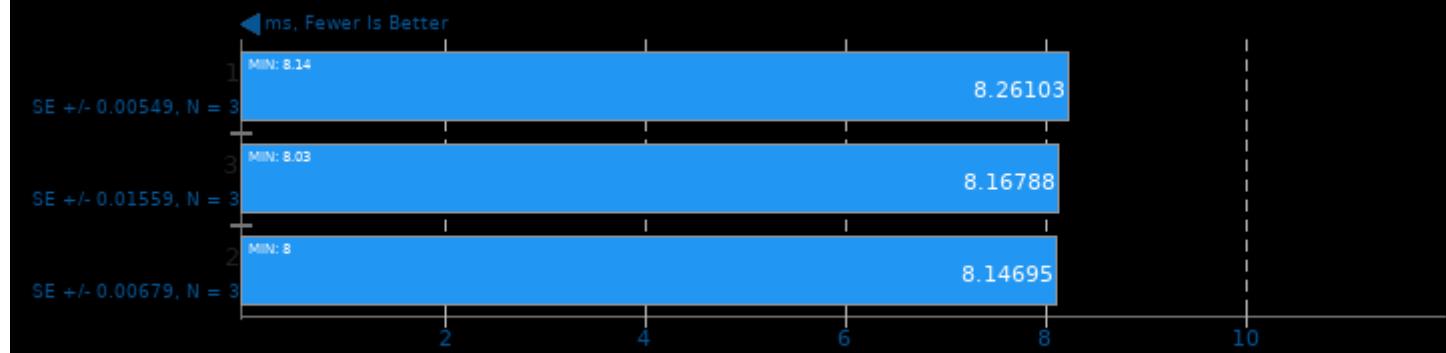
Total Time



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

oneDNN 2.1.2

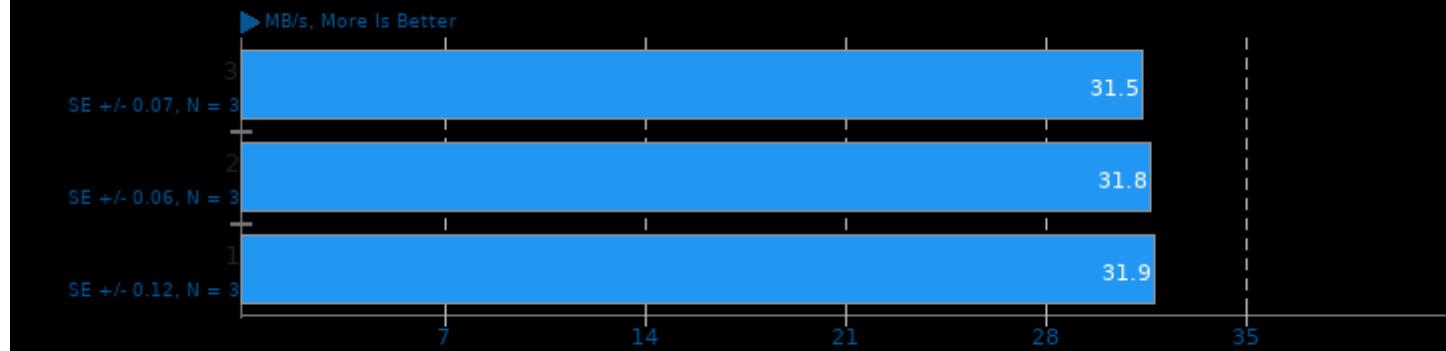
Harness: IP Shapes 3D - Data Type: f32 - Engine: CPU



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

Zstd Compression 1.4.9

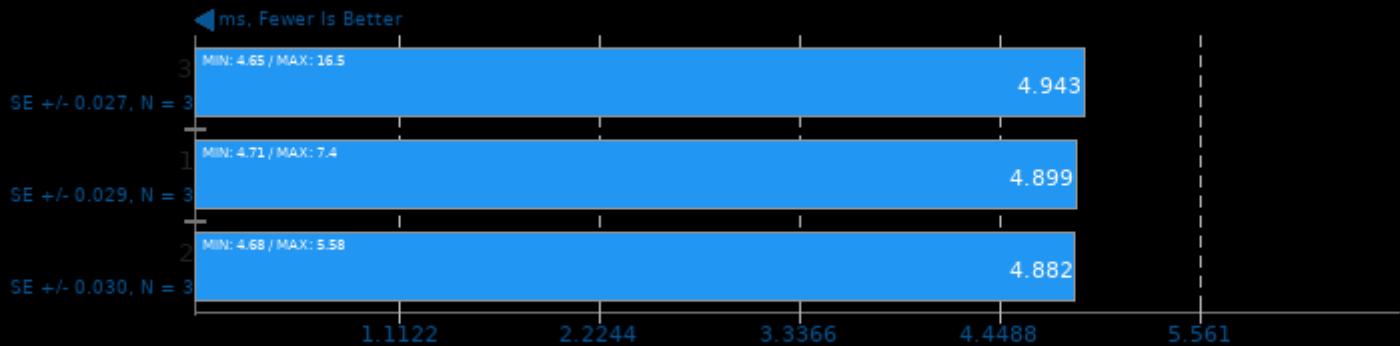
Compression Level: 19, Long Mode - Compression Speed



1. (CC) gcc options: -O3 -pthread -lz -llzma

Mobile Neural Network 1.1.3

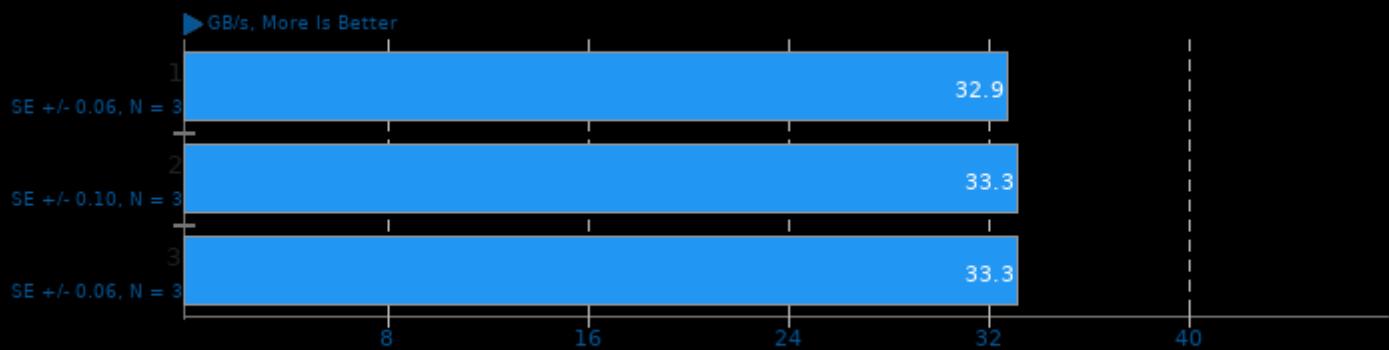
Model: SqueezeNetV1.0



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

ViennaCL 1.7.1

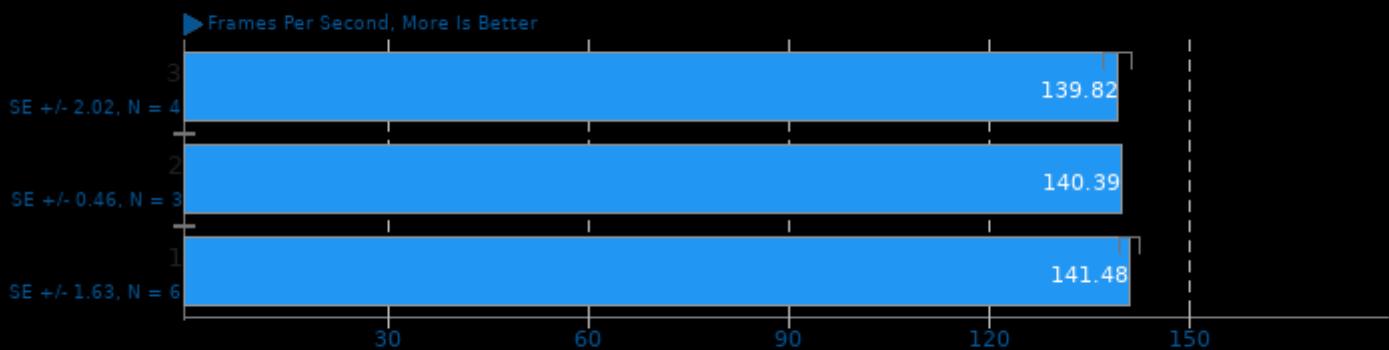
Test: OpenCL BLAS - sCOPY



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

AOM AV1 3.0

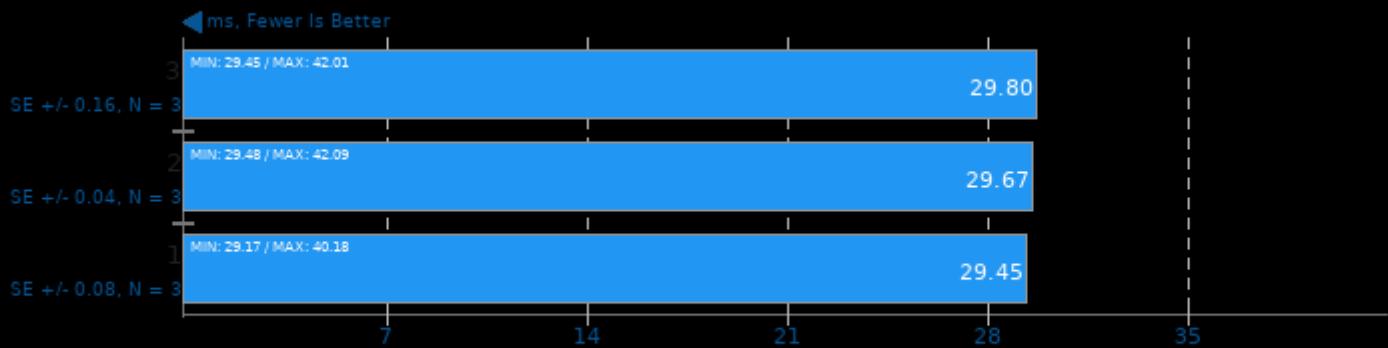
Encoder Mode: Speed 9 Realtime - Input: Bosphorus 1080p



1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -fno-rtti -fno-threadsafe-statics

Mobile Neural Network 1.1.3

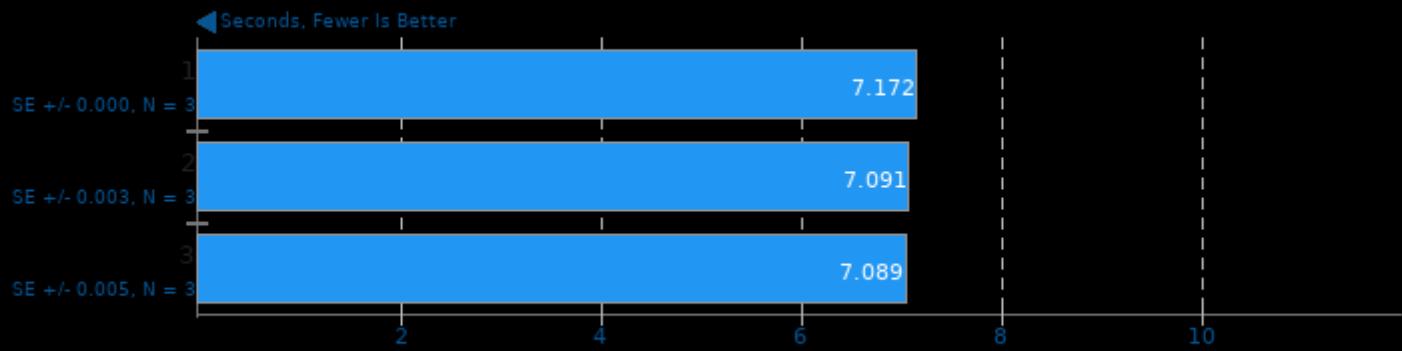
Model: inception-v3



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

Basis Universal 1.13

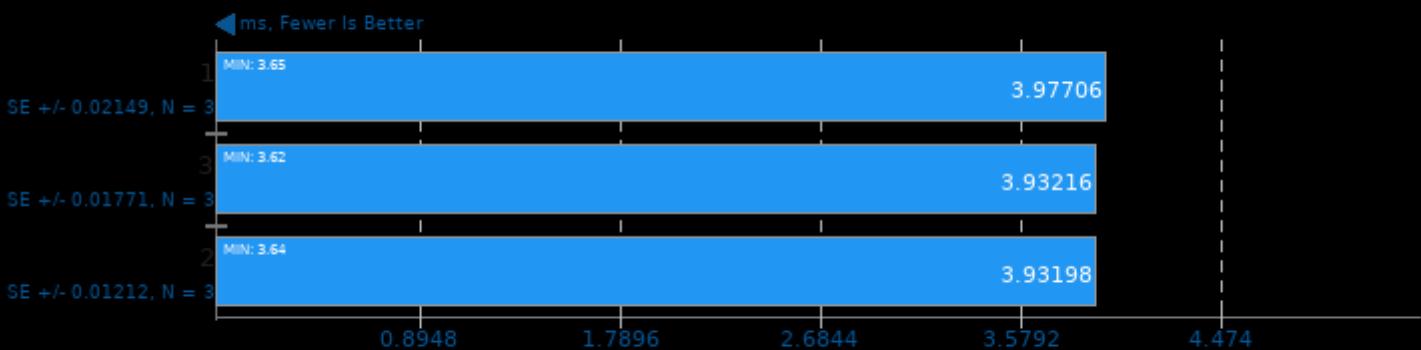
Settings: UASTC Level 0



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

oneDNN 2.1.2

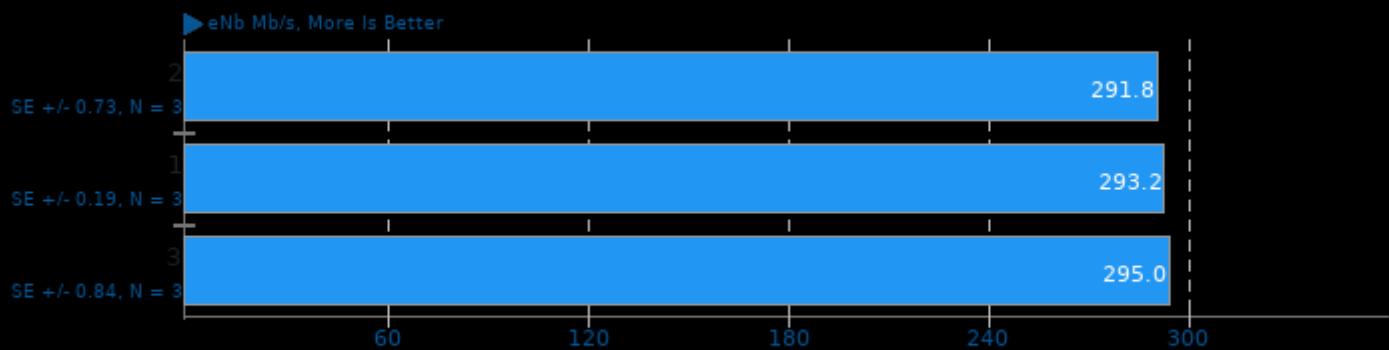
Harness: Deconvolution Batch shapes_3d - Data Type: u8s8f32 - Engine: CPU



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

srsLTE 20.10.1

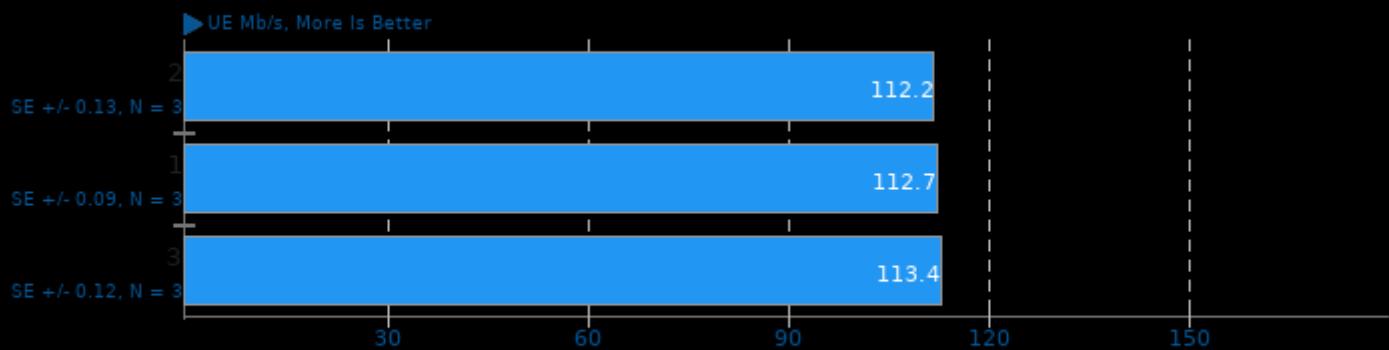
Test: PHY_DL_Test



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

srsLTE 20.10.1

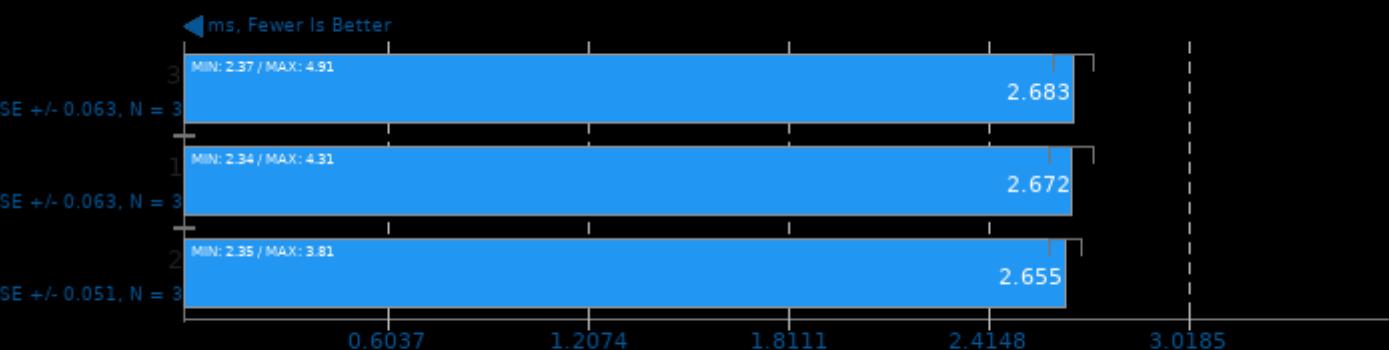
Test: PHY_DL_Test



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

Mobile Neural Network 1.1.3

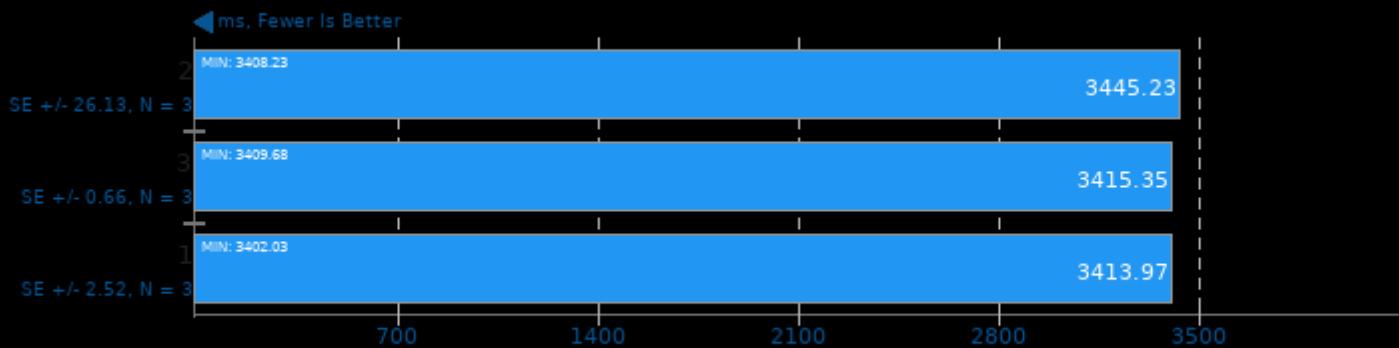
Model: MobileNetV2_224



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

oneDNN 2.1.2

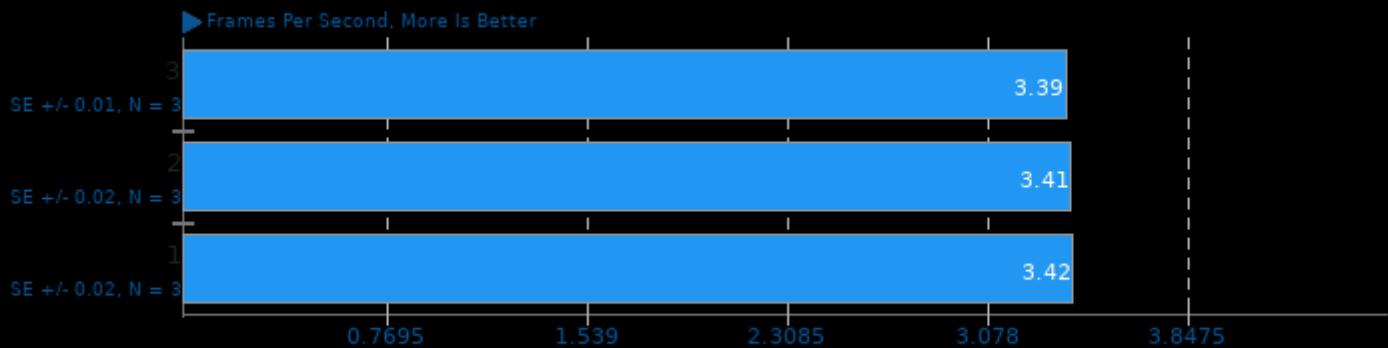
Harness: Recurrent Neural Network Training - Data Type: bf16bf16bf16 - Engine: CPU



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

AOM AV1 3.0

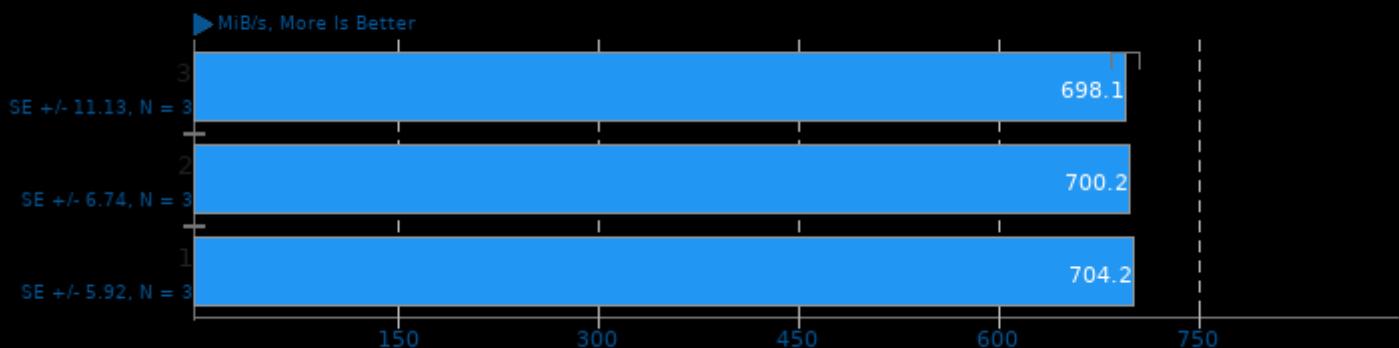
Encoder Mode: Speed 4 Two-Pass - Input: Bosphorus 4K



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

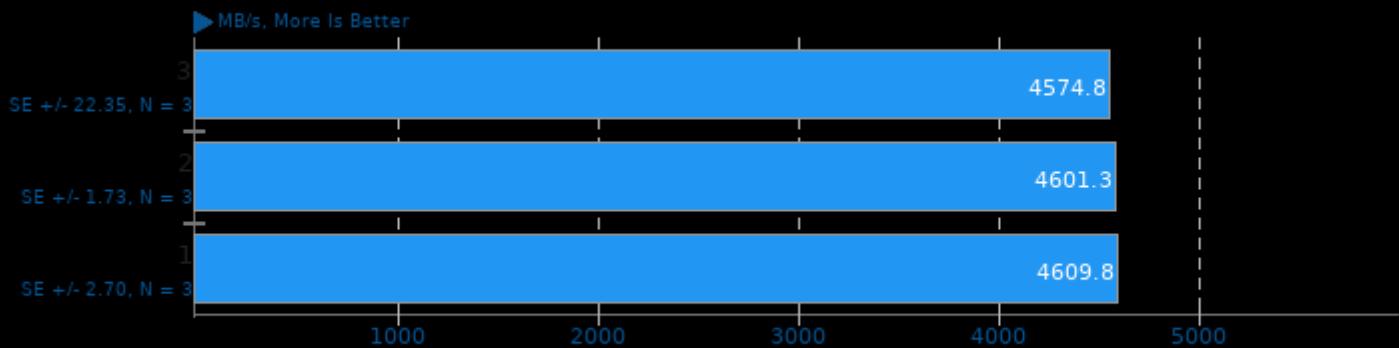
LuaRadio 0.9.1

Test: Complex Phase



Zstd Compression 1.4.9

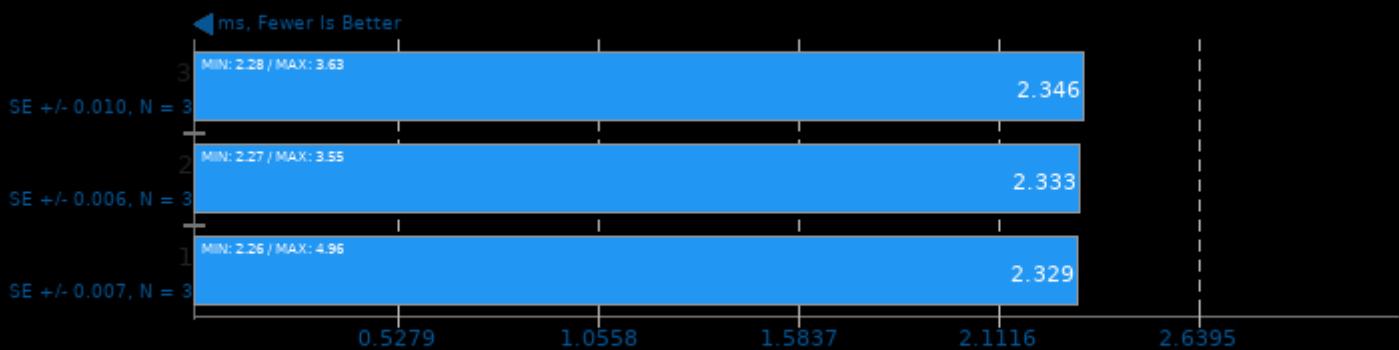
Compression Level: 8, Long Mode - Decompression Speed



1. (CC) gcc options: -O3 -pthread -lz -lzma

Mobile Neural Network 1.1.3

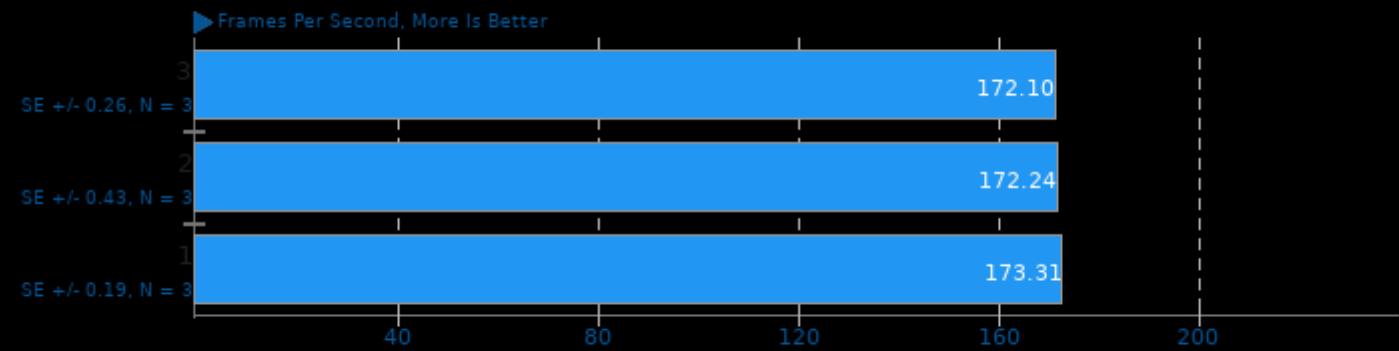
Model: mobilenet-v1-1.0



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

SVT-VP9 0.3

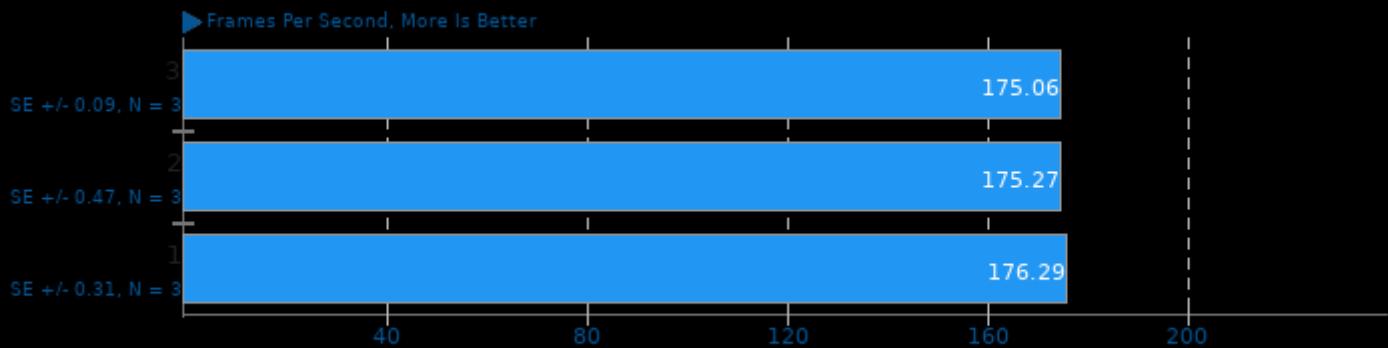
Tuning: VMAF Optimized - Input: Bosphorus 1080p



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

SVT-VP9 0.3

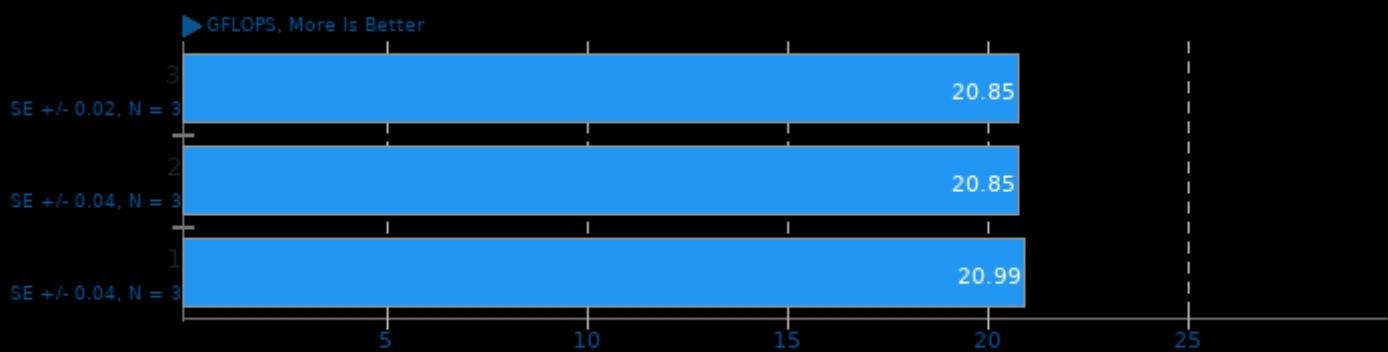
Tuning: PSNR/SSIM Optimized - Input: Bosphorus 1080p



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

SHOC Scalable Heterogeneous Computing 2020-04-17

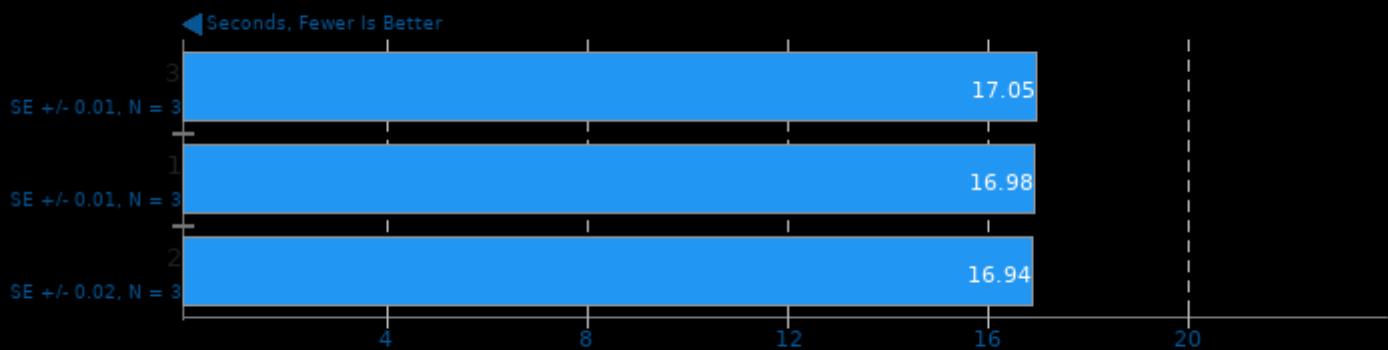
Target: OpenCL - Benchmark: S3D



1. (CXX) g++ options: -O2 -I SHOCCommonMPI -I SHOCCommonOpenCL -I SHOCCommon -I OpenCL -lrt -pthread -lmpi_cxx -lmpi

OpenSCAD

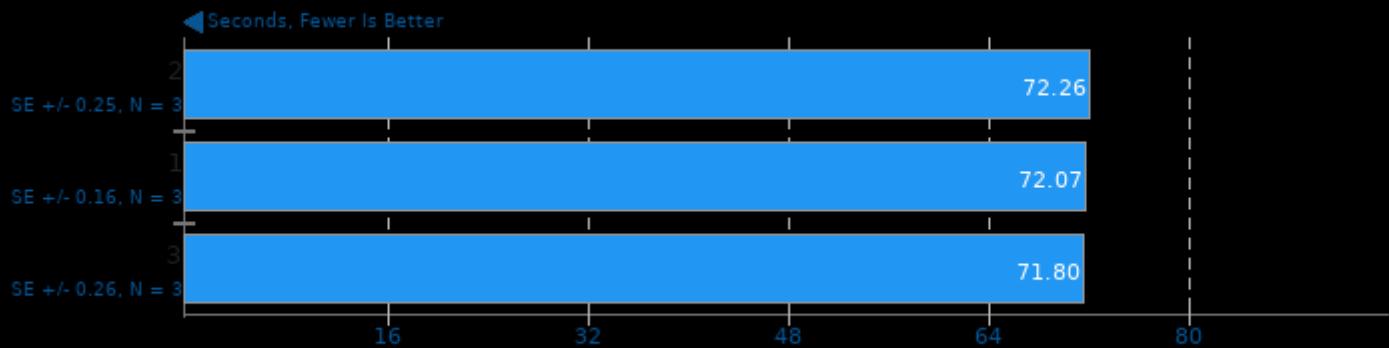
Render: Leonardo Phone Case Slim



1. OpenSCAD version 2019.05

libavif avifenc 0.9.0

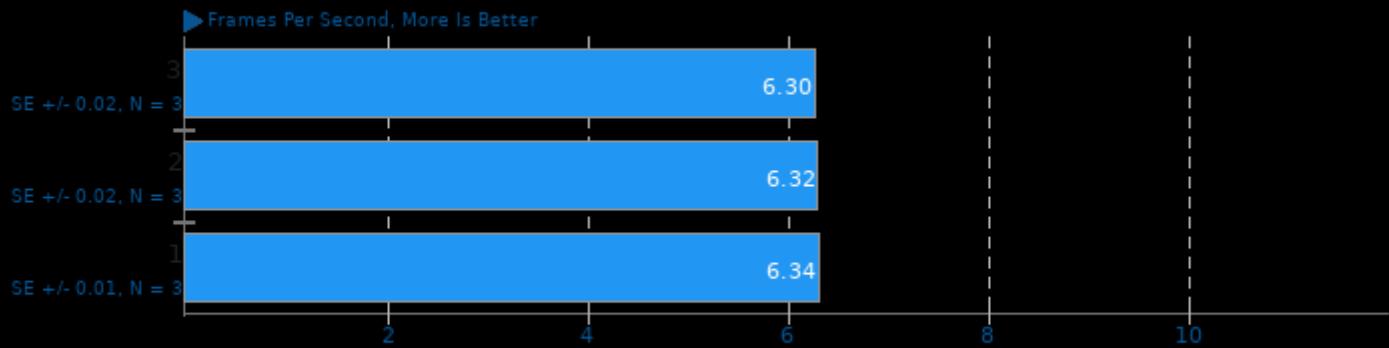
Encoder Speed: 0



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

AOM AV1 3.0

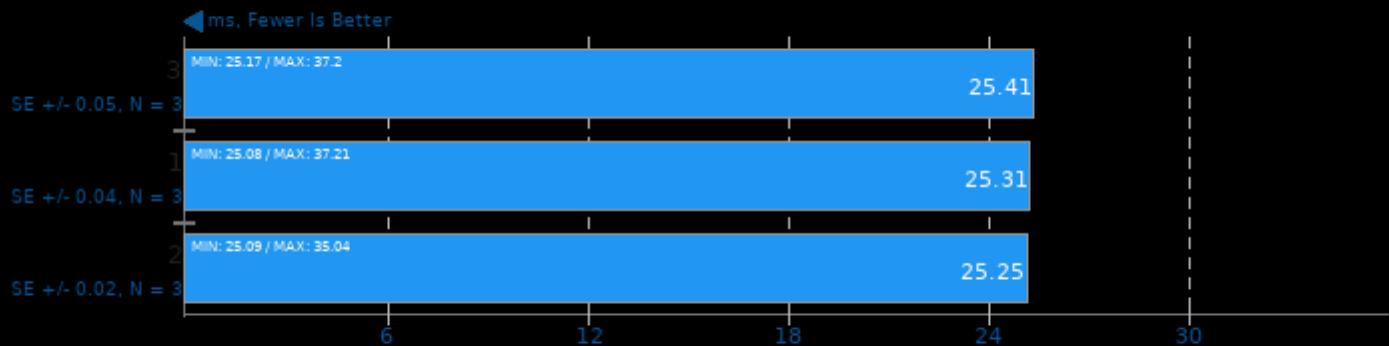
Encoder Mode: Speed 6 Two-Pass - Input: Bosphorus 4K



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

Mobile Neural Network 1.1.3

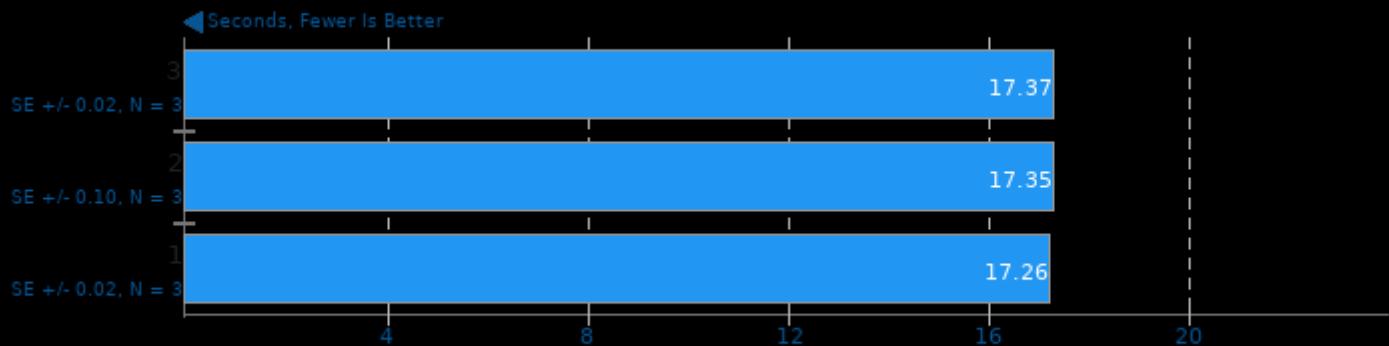
Model: resnet-v2-50



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

OpenSCAD

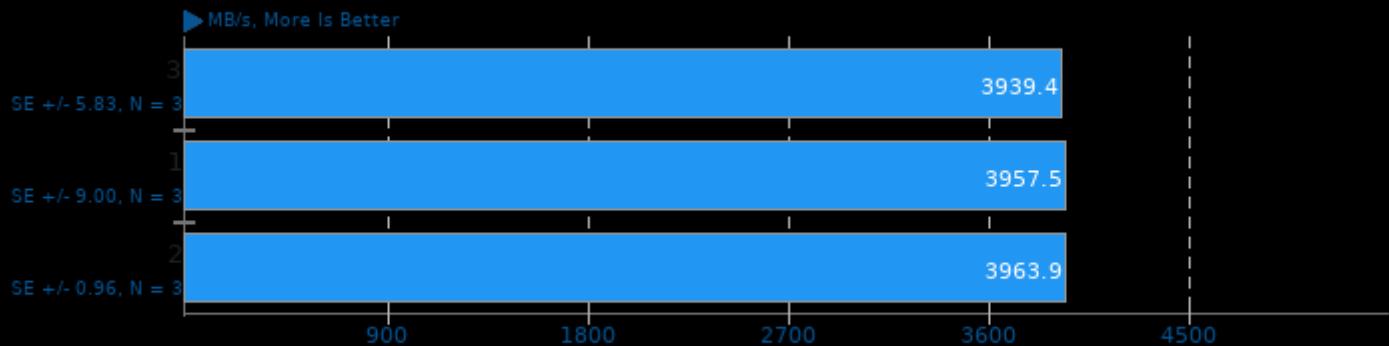
Render: Retro Car



1. OpenSCAD version 2019.05

Zstd Compression 1.4.9

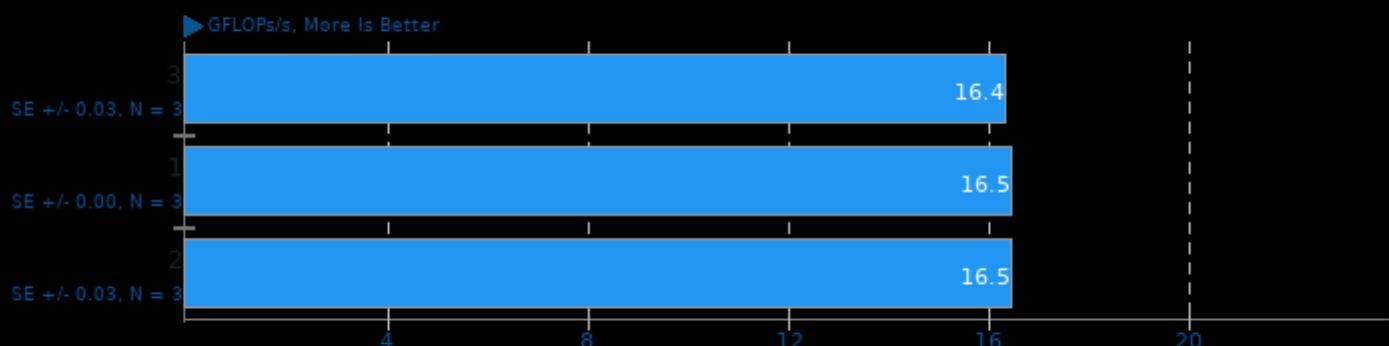
Compression Level: 19, Long Mode - Decompression Speed



1. (CC) gcc options: -O3 -pthread -lz -lzma

ViennaCL 1.7.1

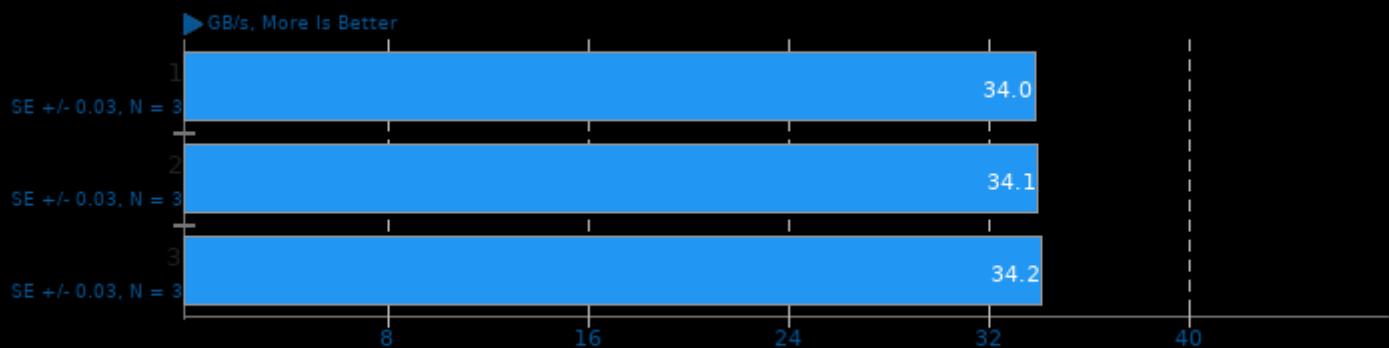
Test: OpenCL BLAS - dGEMM-NT



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

ViennaCL 1.7.1

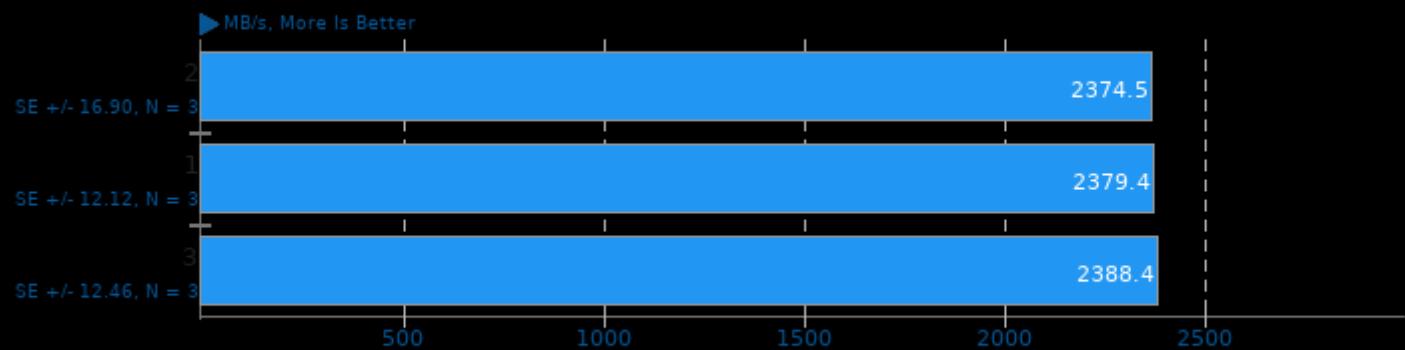
Test: OpenCL BLAS - dCOPY



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

Zstd Compression 1.4.9

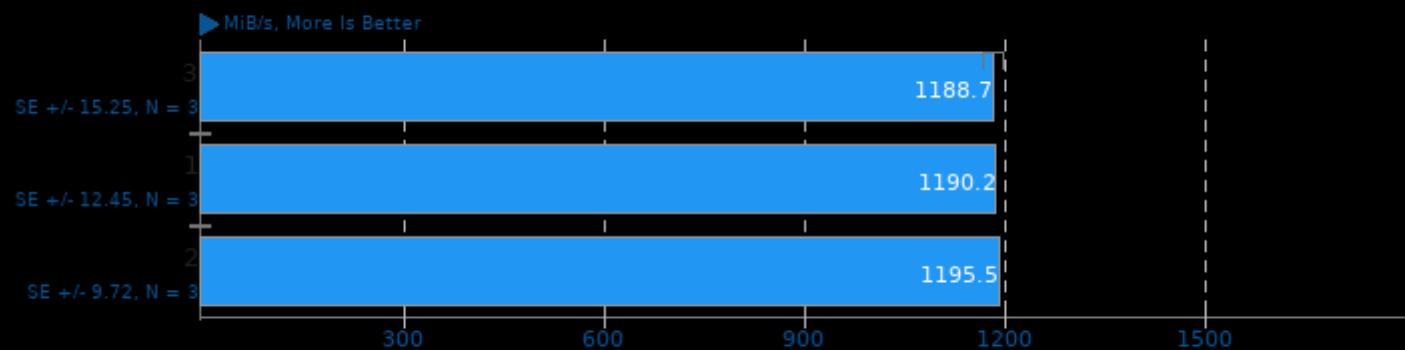
Compression Level: 3 - Compression Speed



1. (CC) gcc options: -O3 -pthread -lz -llzma

GNU Radio

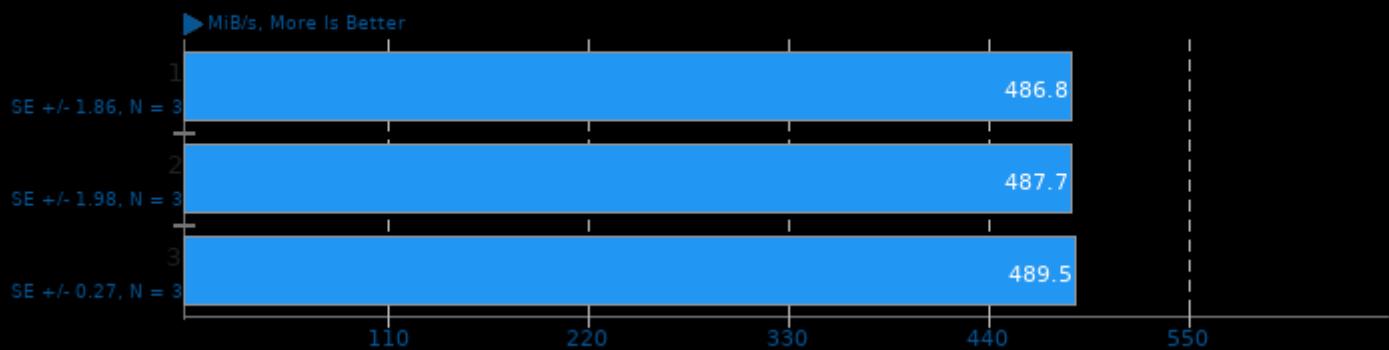
Test: Five Back to Back FIR Filters



1. 3.8.1.0

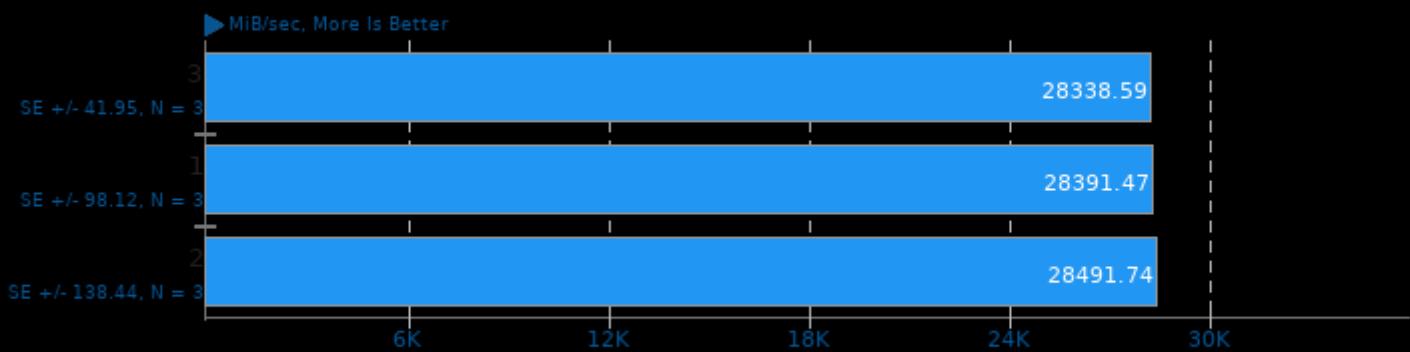
LuaRadio 0.9.1

Test: FM Deemphasis Filter



Sysbench 1.0.20

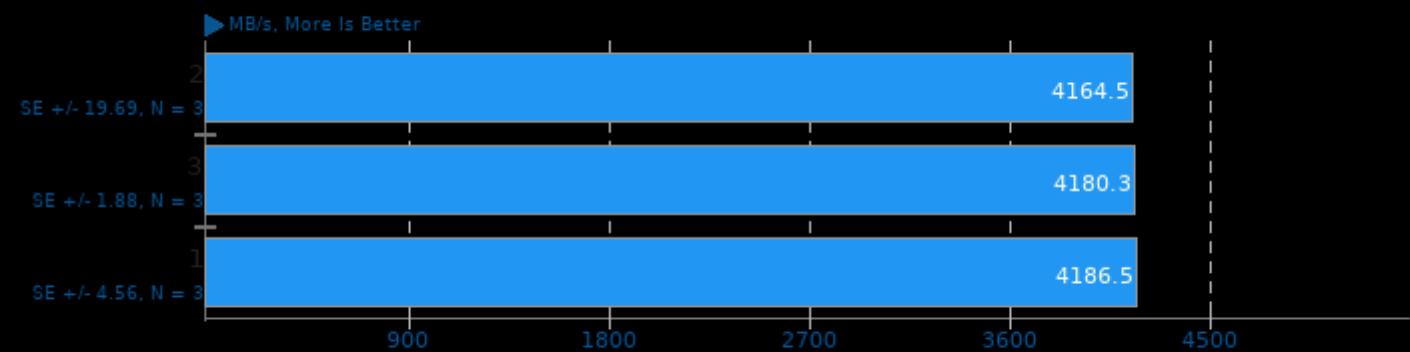
Test: RAM / Memory



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

Zstd Compression 1.4.9

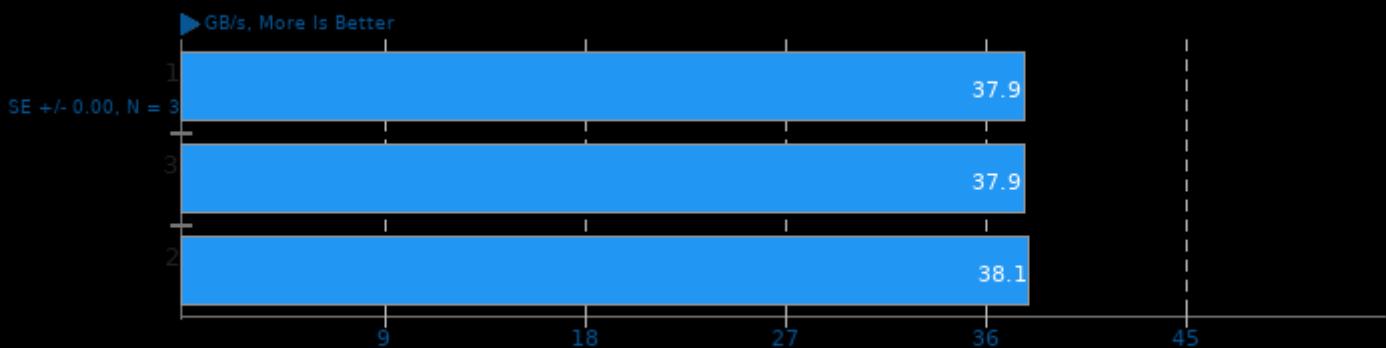
Compression Level: 3 - Decompression Speed



1. (CC) gcc options: -O3 -pthread -lz -lzma

ViennaCL 1.7.1

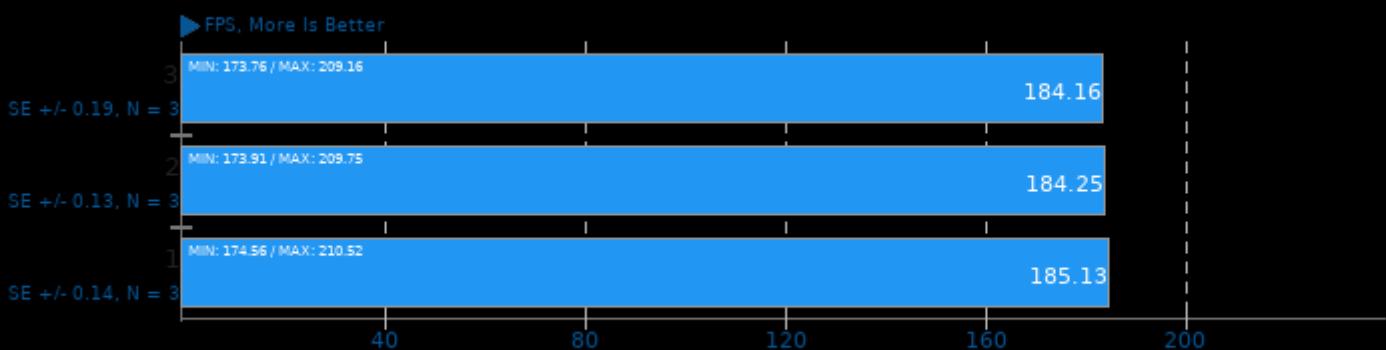
Test: OpenCL BLAS - dGEMV-N



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

dav1d 0.8.2

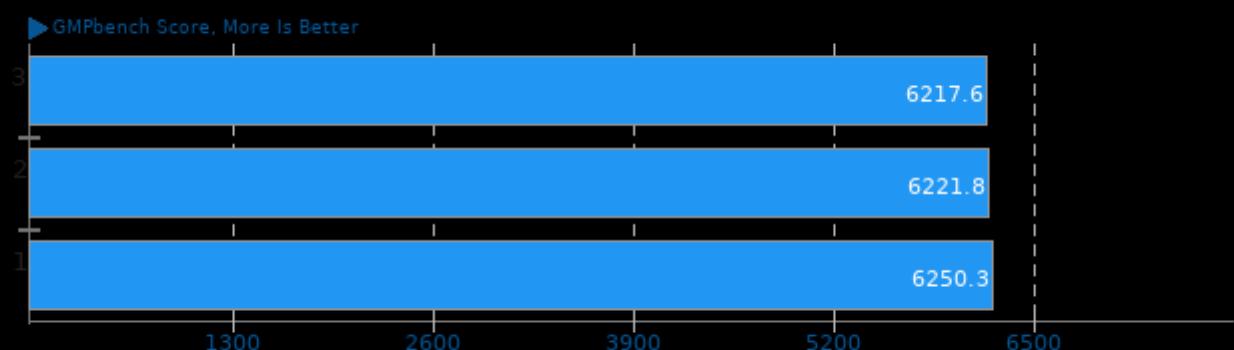
Video Input: Summer Nature 4K



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

GNU GMP GMPbench 6.2.1

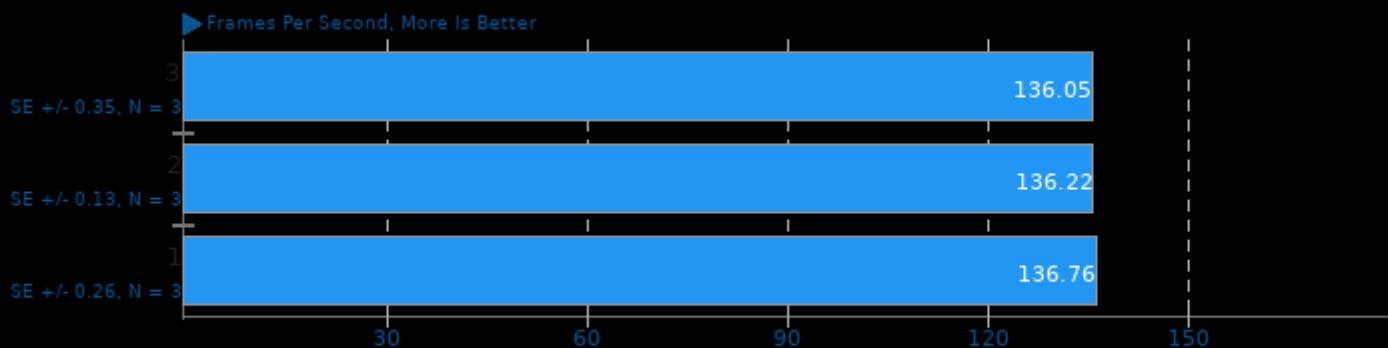
Total Time



1. (CC) gcc options: -O3 -fomit-frame-pointer -lm

SVT-VP9 0.3

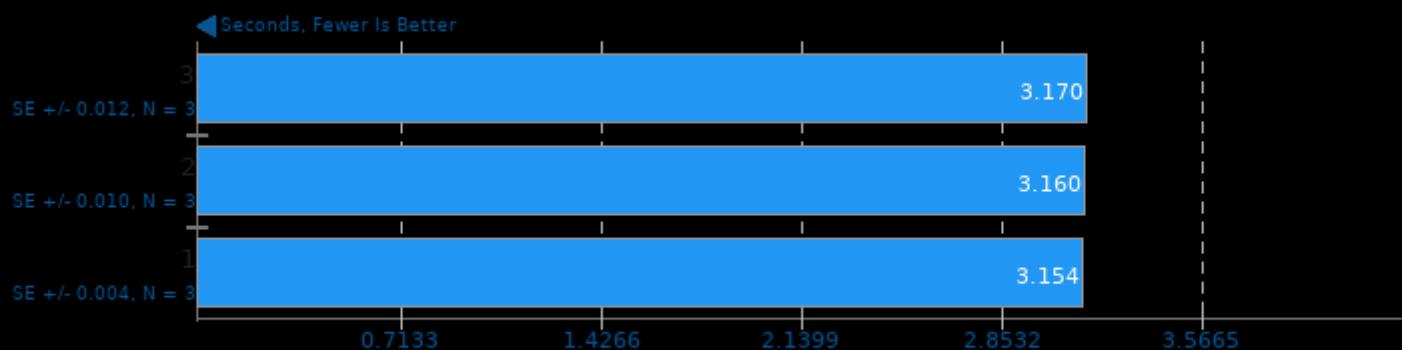
Tuning: Visual Quality Optimized - Input: Bosphorus 1080p



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

libavif avifenc 0.9.0

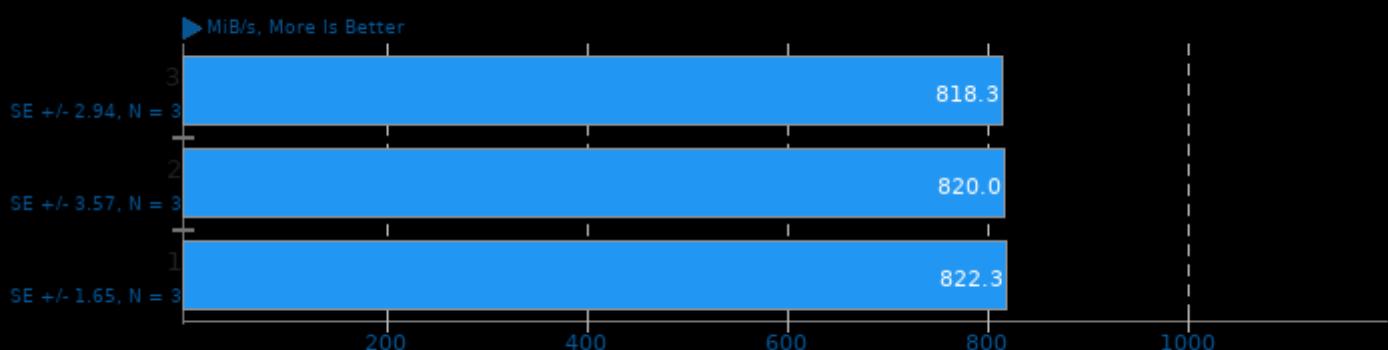
Encoder Speed: 10



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

GNU Radio

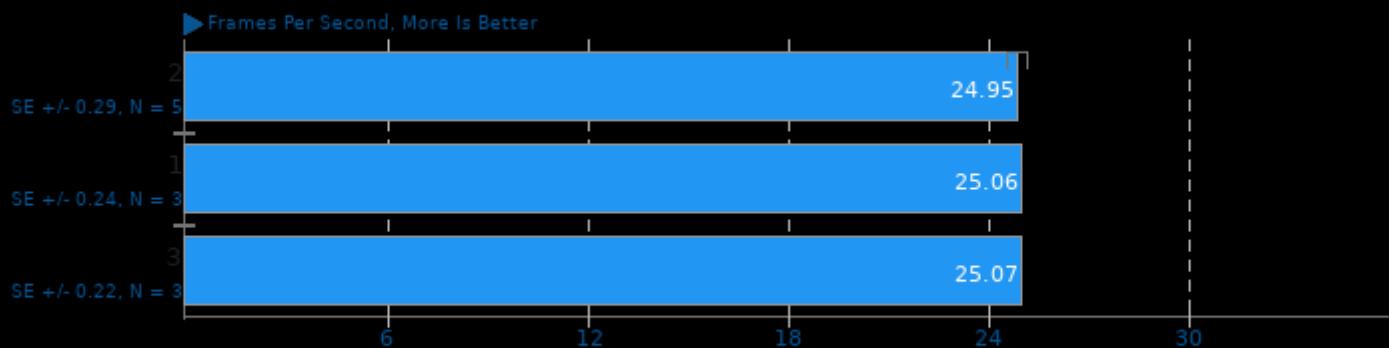
Test: FIR Filter



1. 3.8.1.0

AOM AV1 3.0

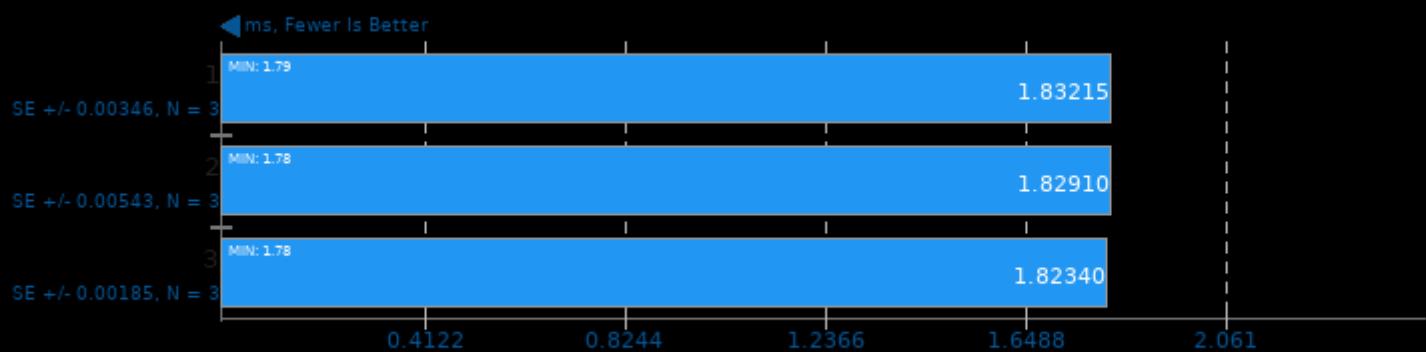
Encoder Mode: Speed 6 Realtime - Input: Bosphorus 1080p



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

oneDNN 2.1.2

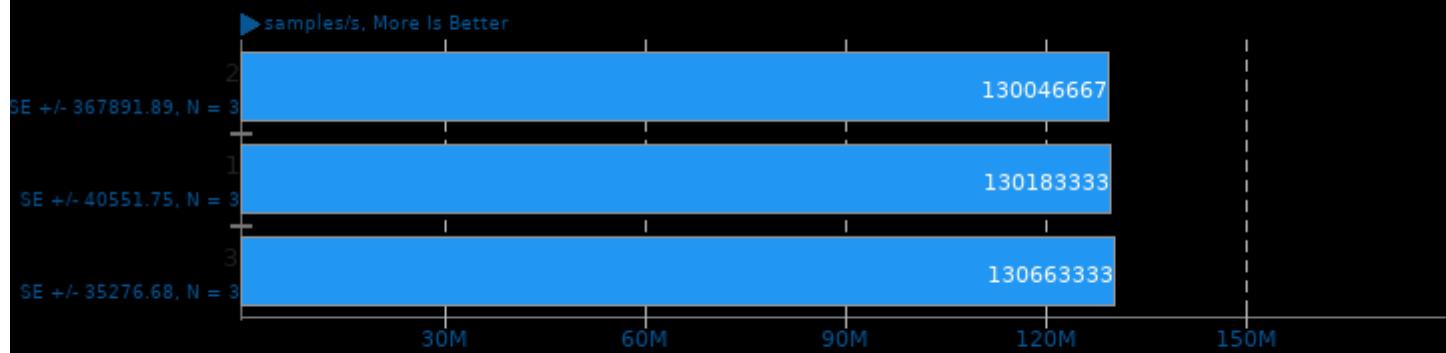
Harness: IP Shapes 3D - Data Type: u8s8f32 - Engine: CPU



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

Liquid-DSP 2021.01.31

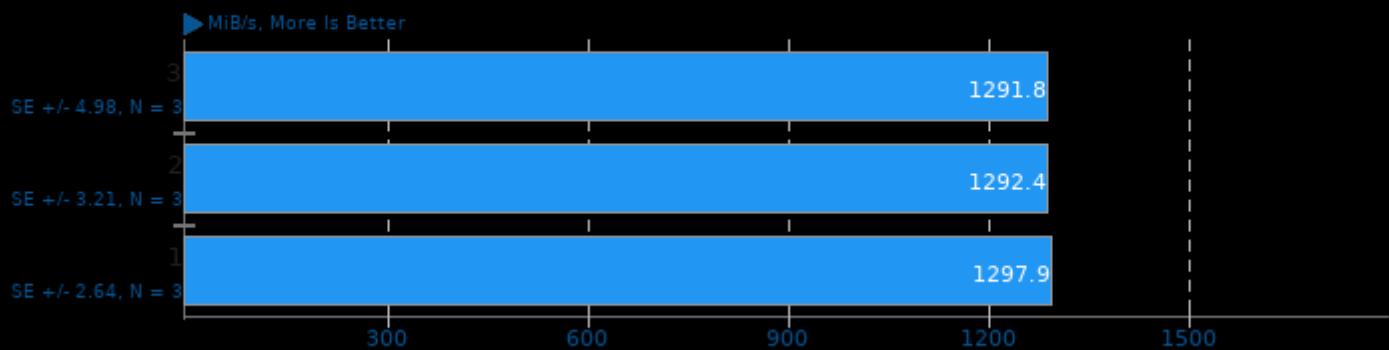
Threads: 2 - Buffer Length: 256 - Filter Length: 57



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

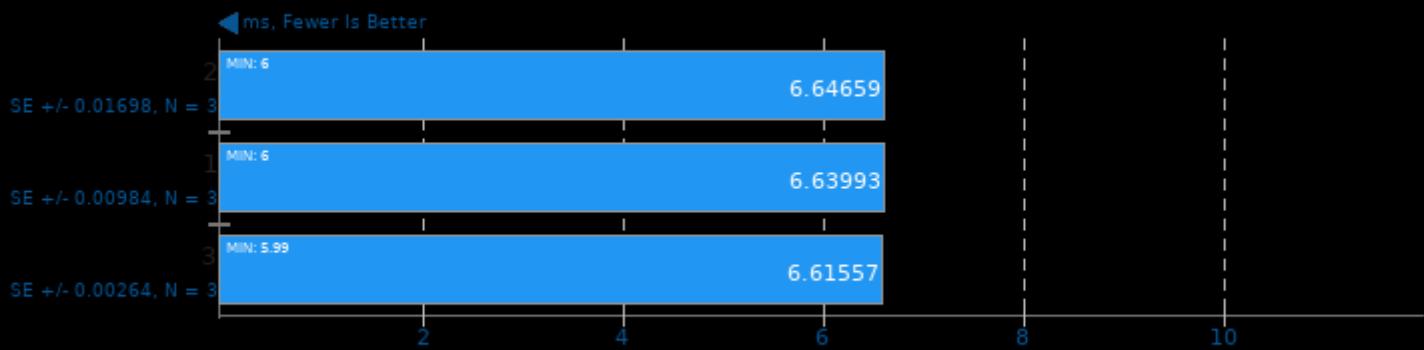
LuaRadio 0.9.1

Test: Five Back to Back FIR Filters



oneDNN 2.1.2

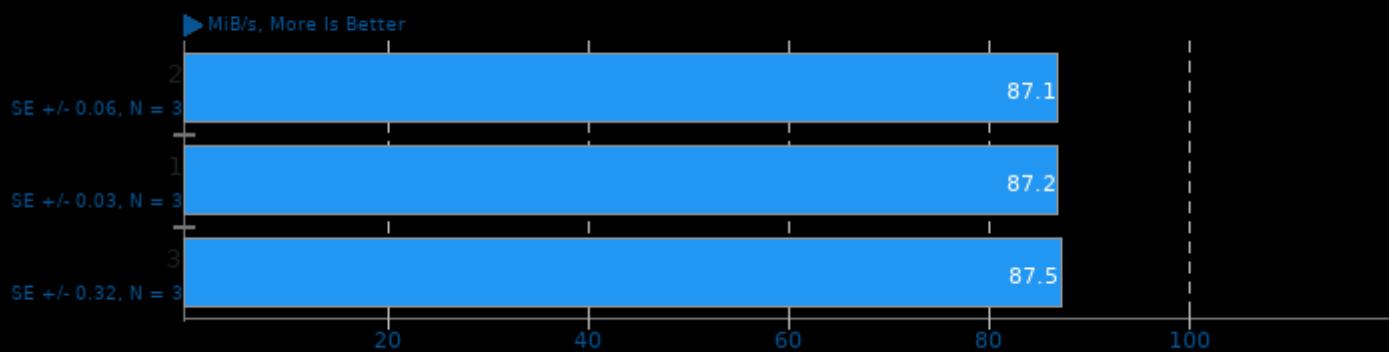
Harness: Deconvolution Batch shapes_3d - Data Type: f32 - Engine: CPU



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

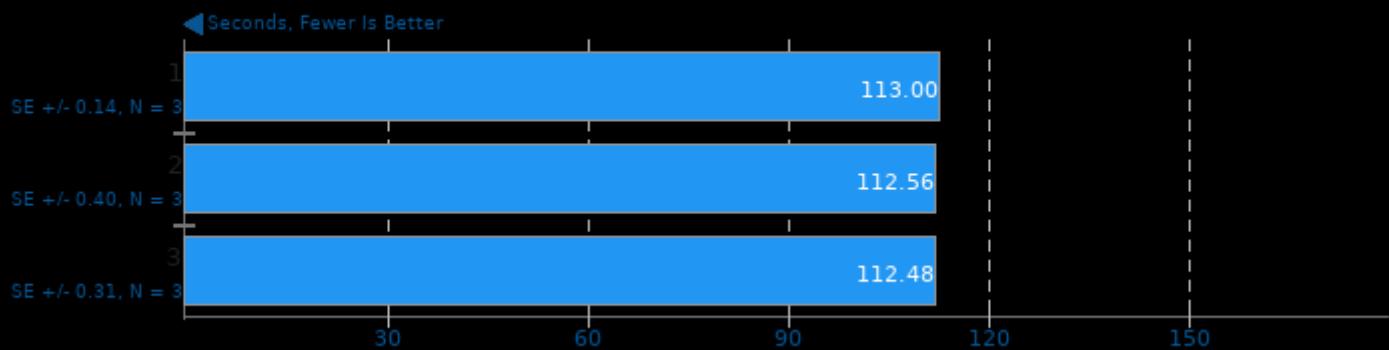
LuaRadio 0.9.1

Test: Hilbert Transform



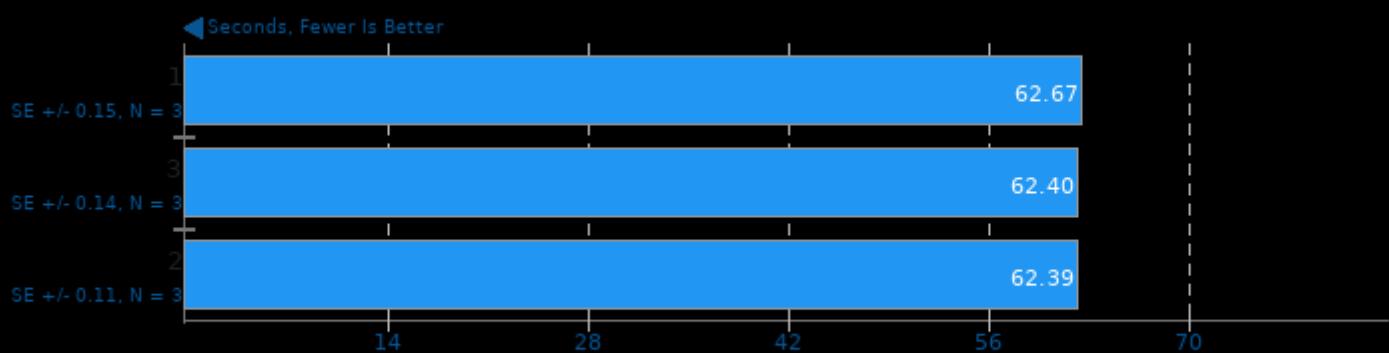
Timed Erlang/OTP Compilation 23.2

Time To Compile



libavif avifenc 0.9.0

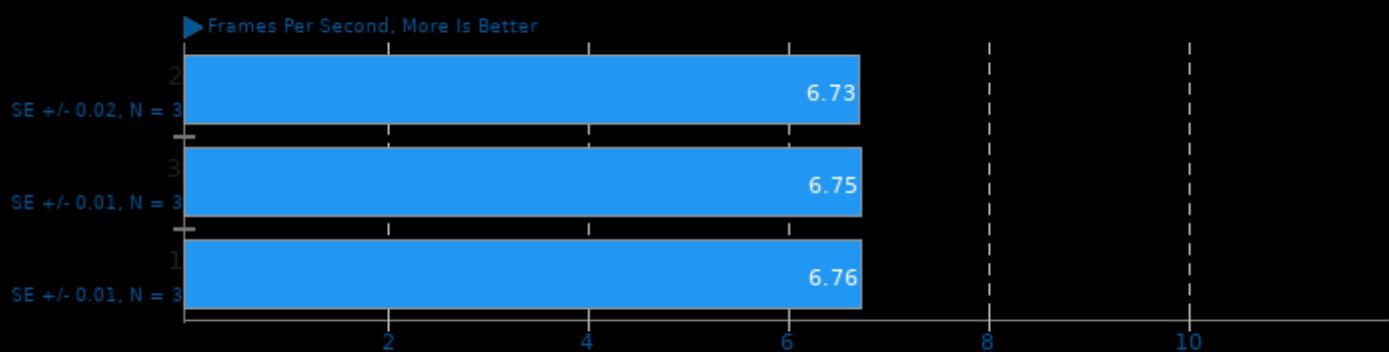
Encoder Speed: 6, Lossless



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

AOM AV1 3.0

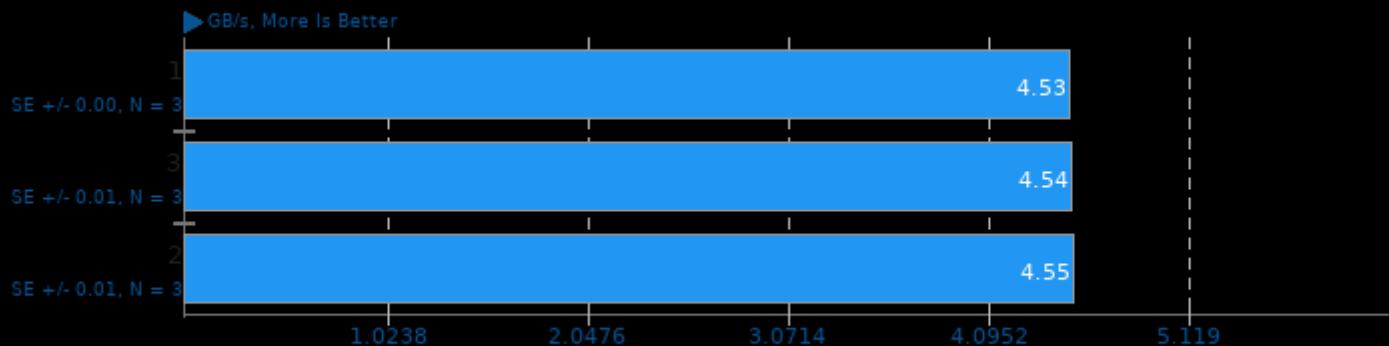
Encoder Mode: Speed 4 Two-Pass - Input: Bosphorus 1080p



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

simdjson 0.8.2

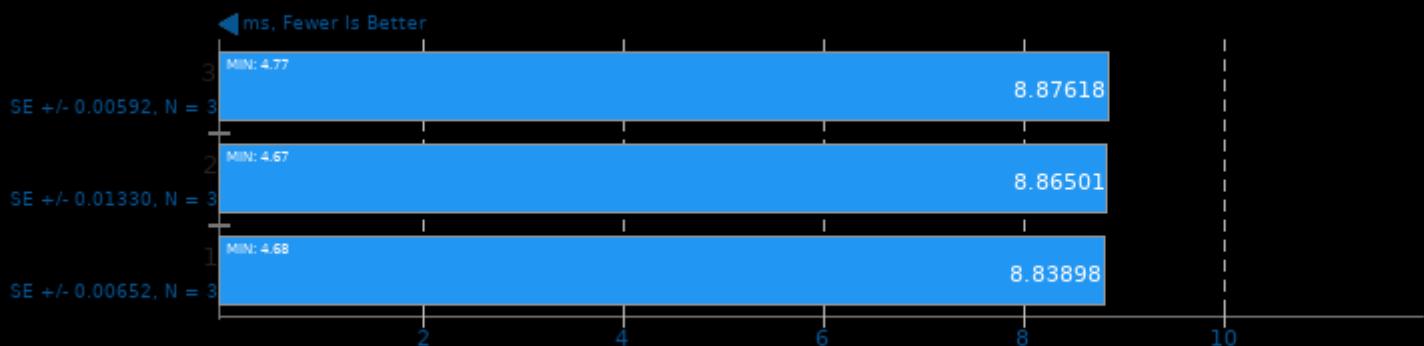
Throughput Test: DistinctUserID



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

oneDNN 2.1.2

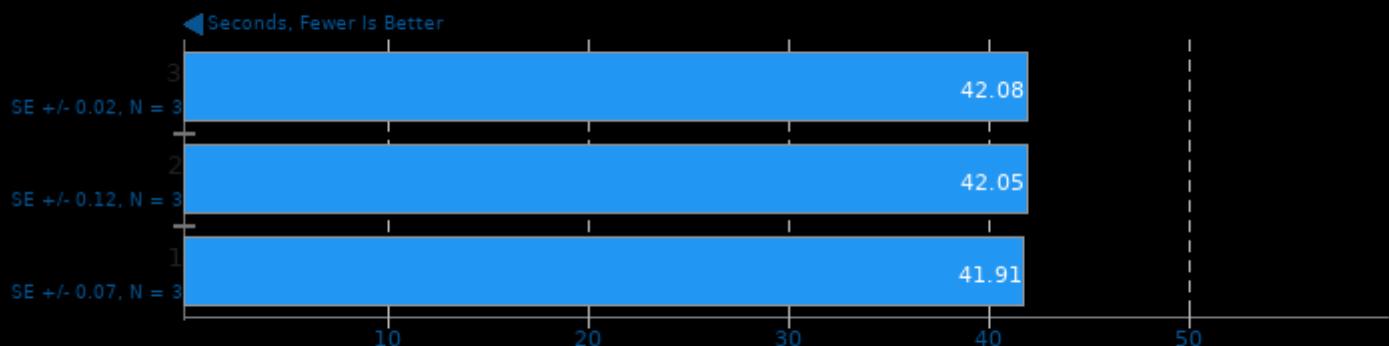
Harness: Deconvolution Batch shapes_1d - Data Type: f32 - Engine: CPU



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

OpenSCAD

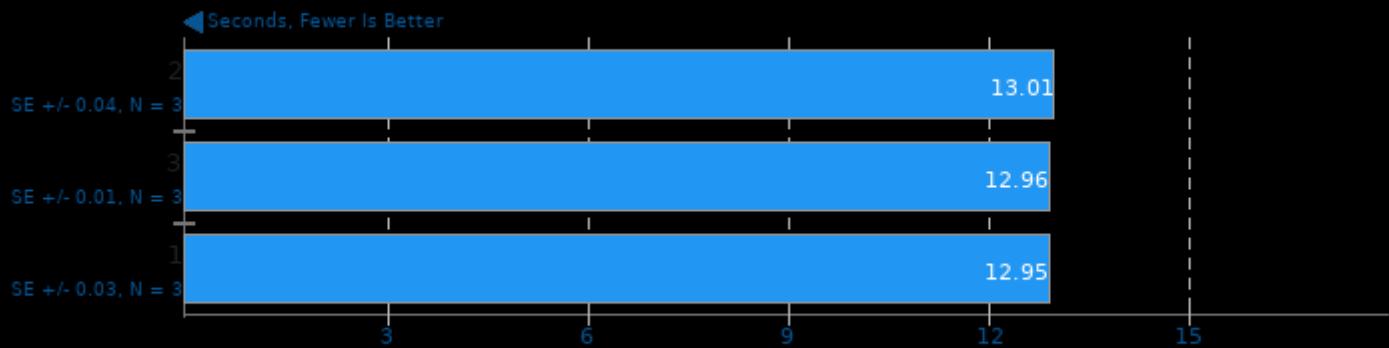
Render: Mini-ITX Case



1. OpenSCAD version 2019.05

libavif avifenc 0.9.0

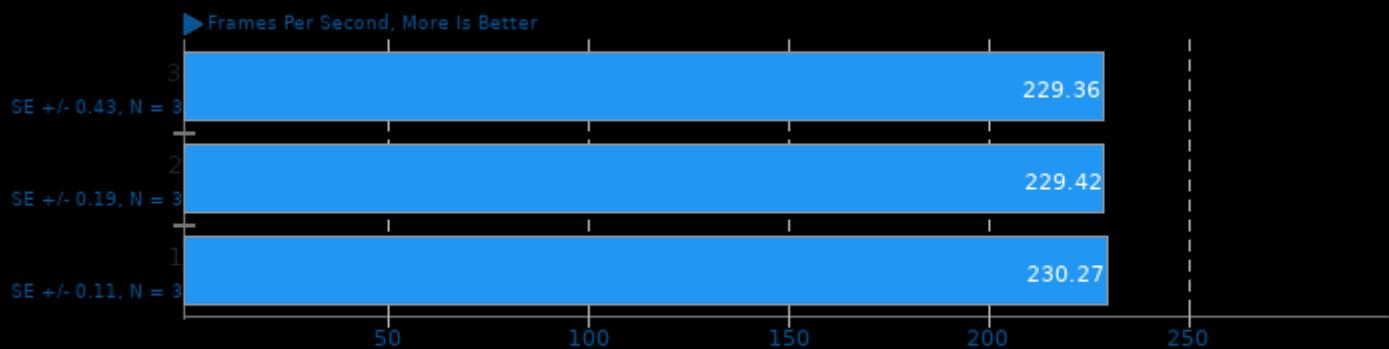
Encoder Speed: 6



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

SVT-HEVC 1.5.0

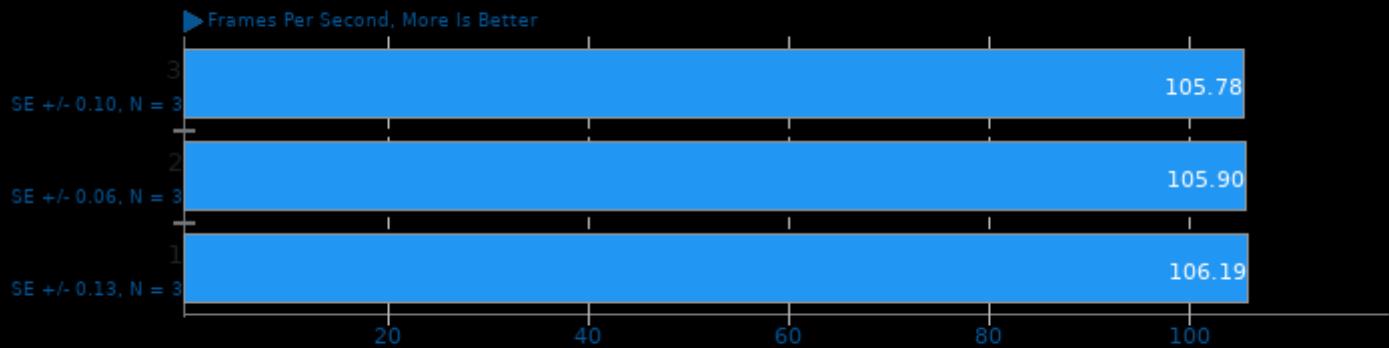
Tuning: 10 - Input: Bosphorus 1080p



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

SVT-HEVC 1.5.0

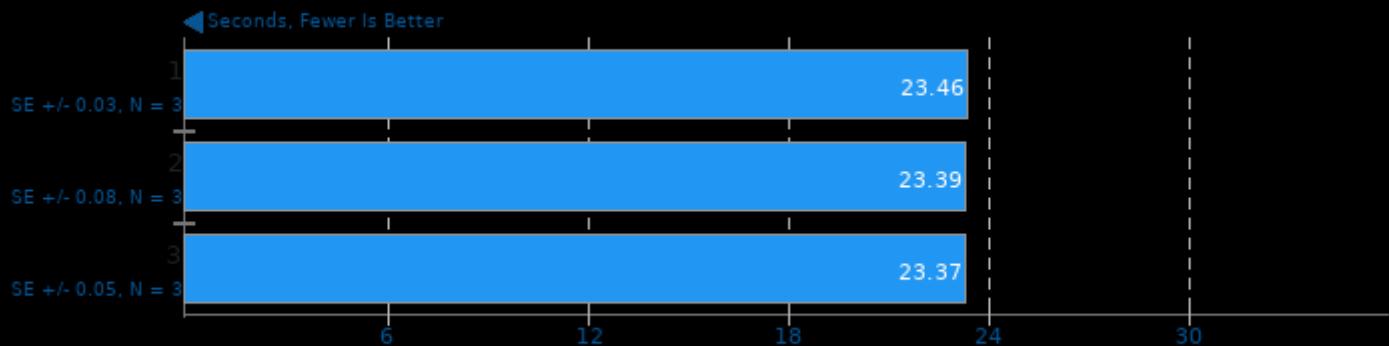
Tuning: 7 - Input: Bosphorus 1080p



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

Basis Universal 1.13

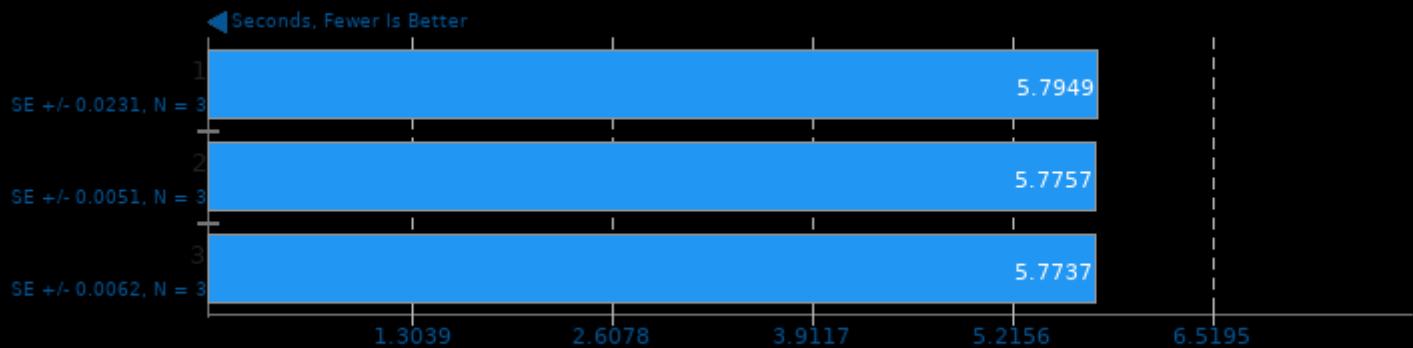
Settings: ETC1S



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

ASTC Encoder 2.4

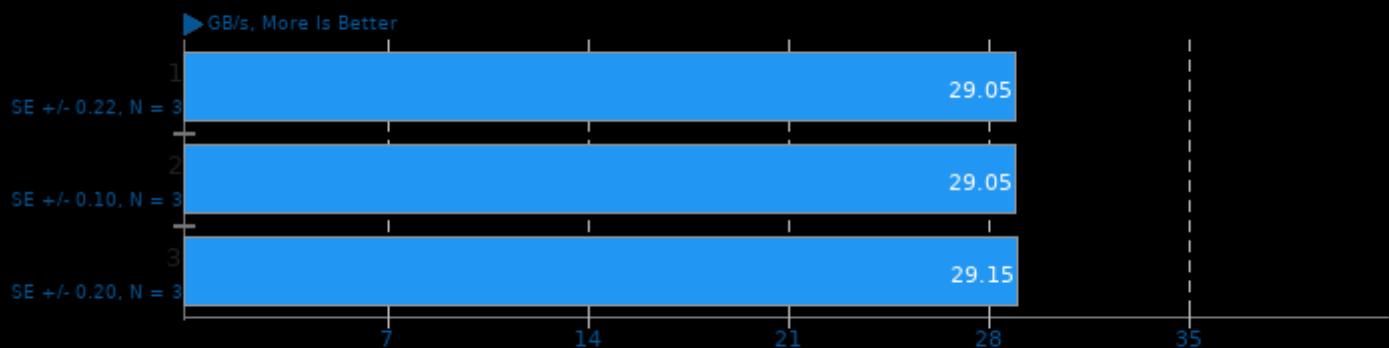
Preset: Medium



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

SHOC Scalable Heterogeneous Computing 2020-04-17

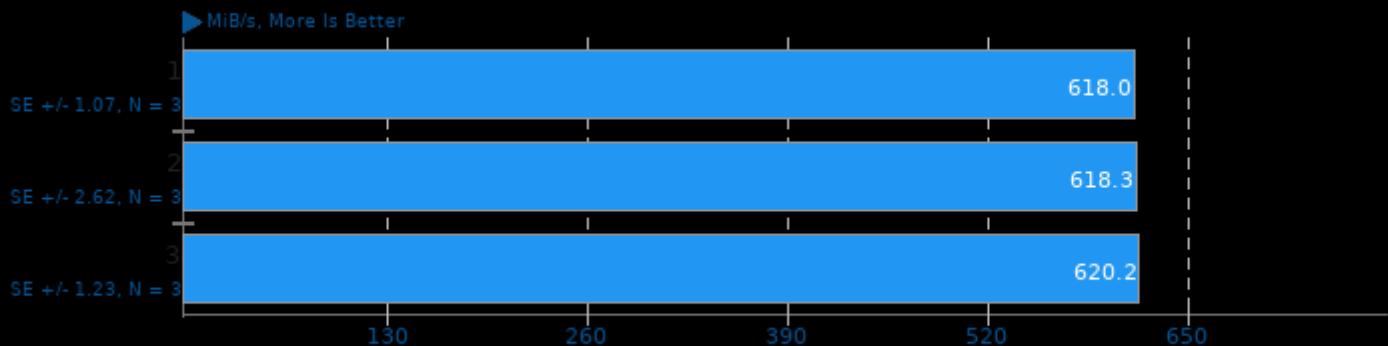
Target: OpenCL - Benchmark: Bus Speed Readback



1. (CXX) g++ options: -O2 -I SHOCCommonMPI -I SHOCCommonOpenCL -I SHOCCommon -I OpenCL -I rt -pthread -I mpi_cxx -I mpi

GNU Radio

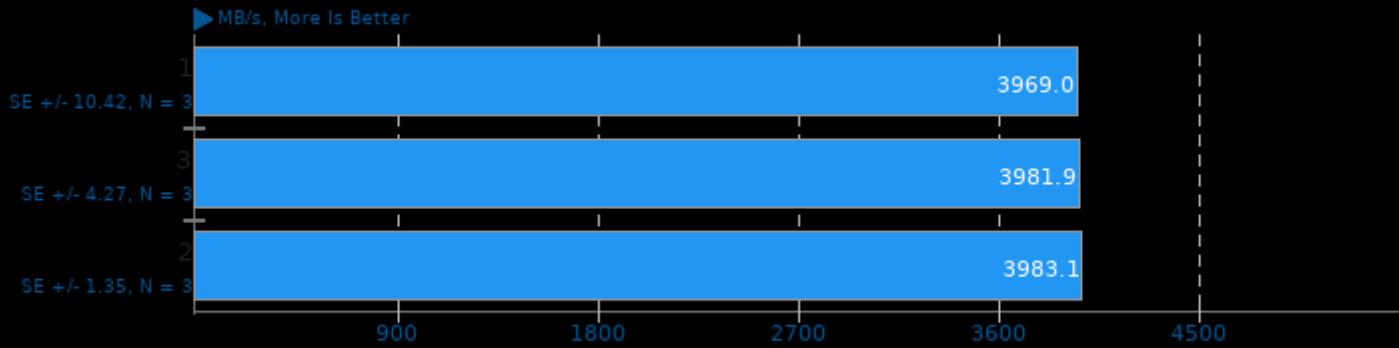
Test: Hilbert Transform



1. 3.8.1.0

Zstd Compression 1.4.9

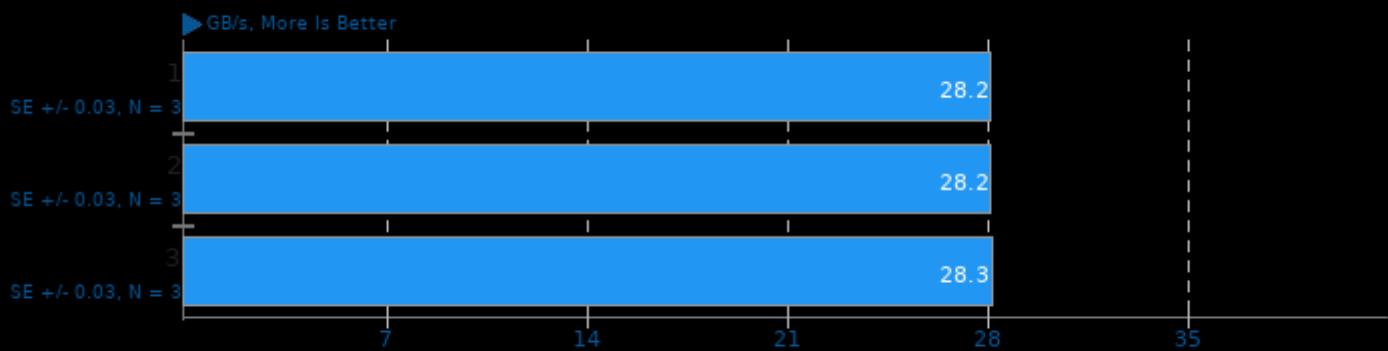
Compression Level: 19 - Decompression Speed



1. (CC) gcc options: -O3 -pthread -lz -lzma

ViennaCL 1.7.1

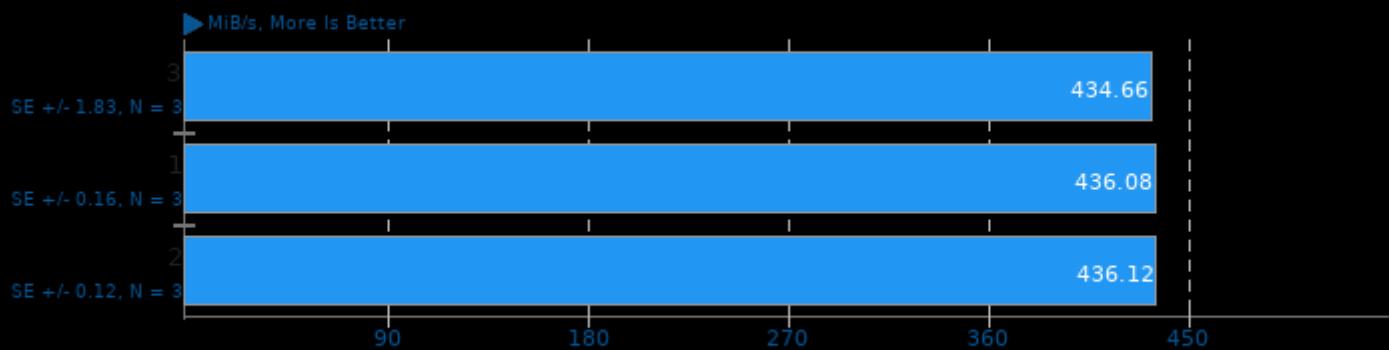
Test: CPU BLAS - sCOPY



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

Botan 2.17.3

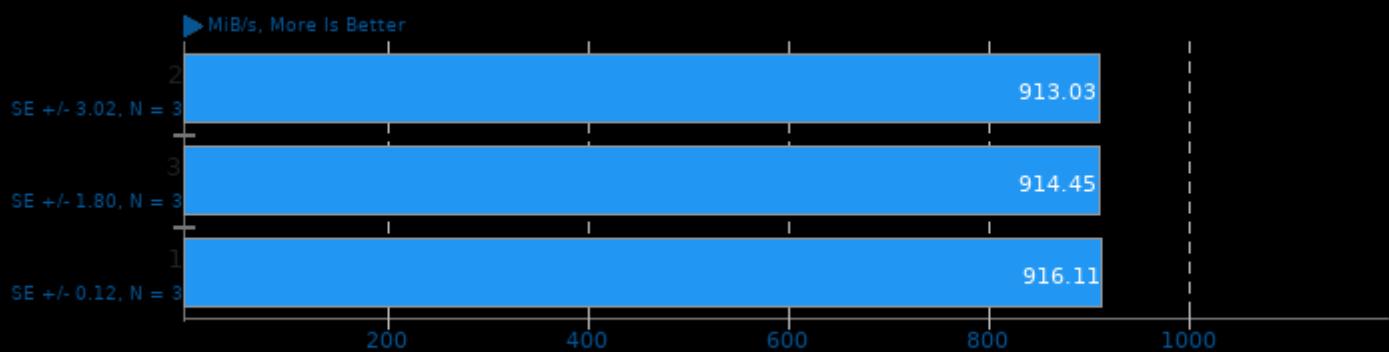
Test: Twofish



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

Botan 2.17.3

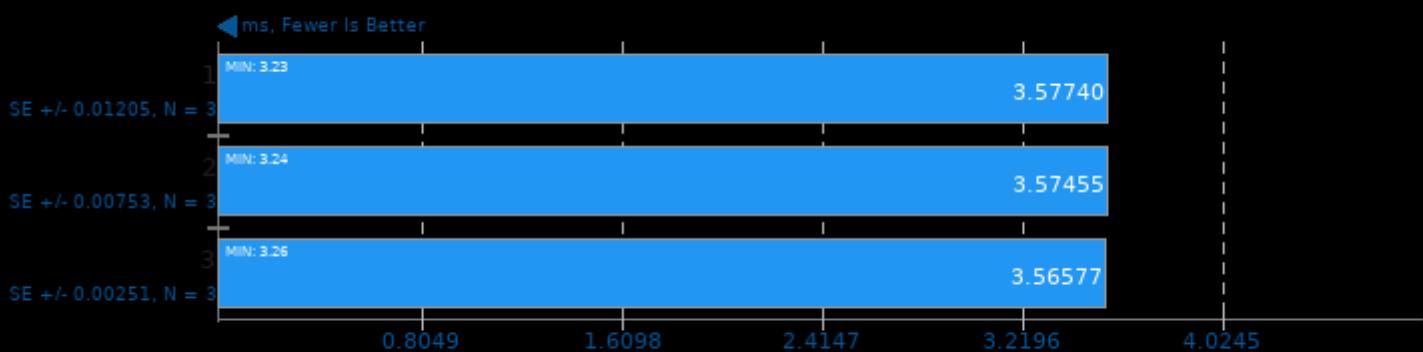
Test: ChaCha20Poly1305



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

oneDNN 2.1.2

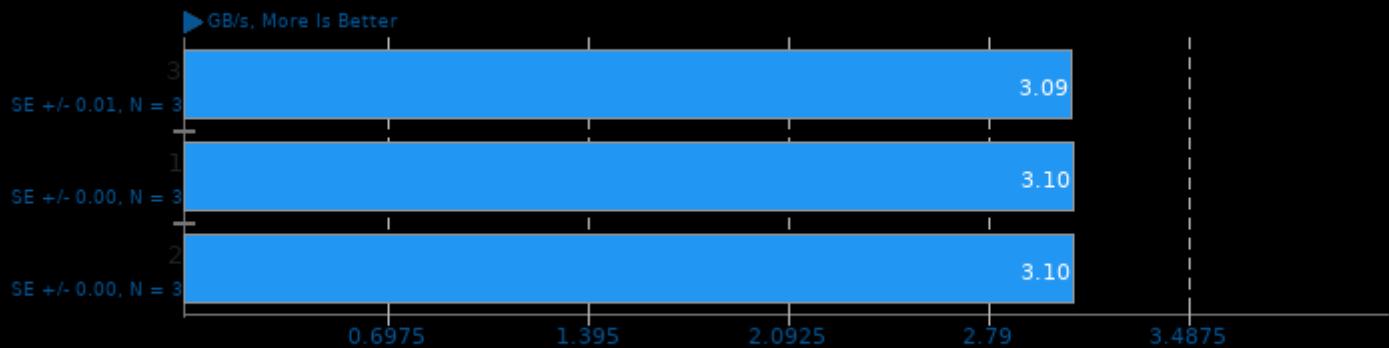
Harness: IP Shapes 1D - Data Type: f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -std=c++11 -fopenmp -mssse4.1 -fPIC -pie -pthread -ldl

simdjson 0.8.2

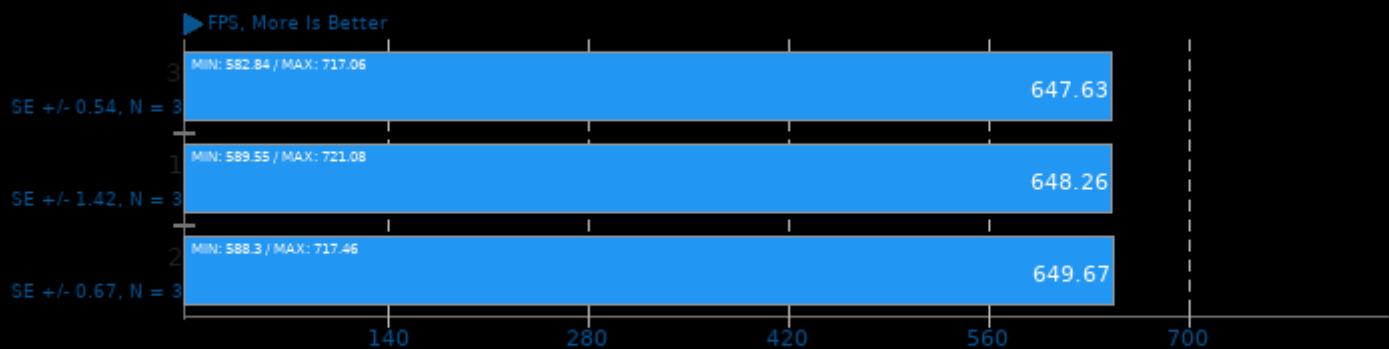
Throughput Test: Kostya



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

dav1d 0.8.2

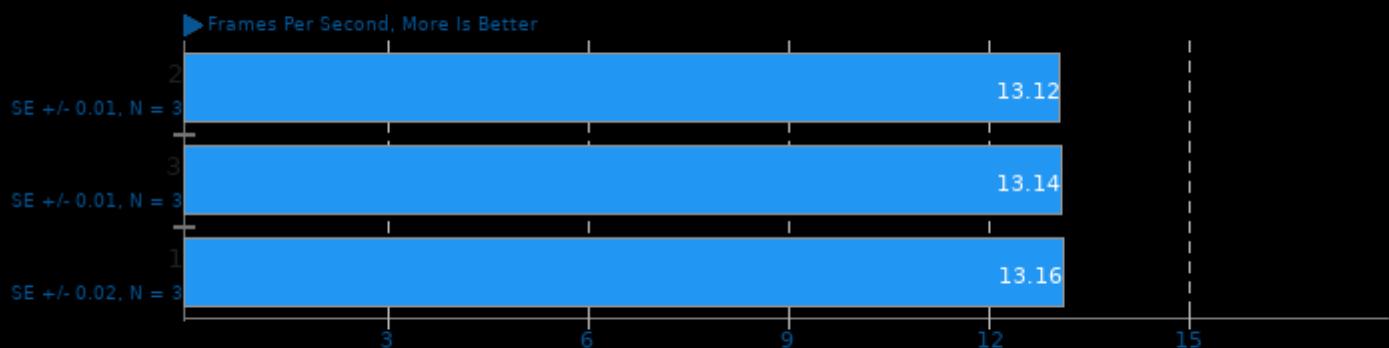
Video Input: Summer Nature 1080p



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

AOM AV1 3.0

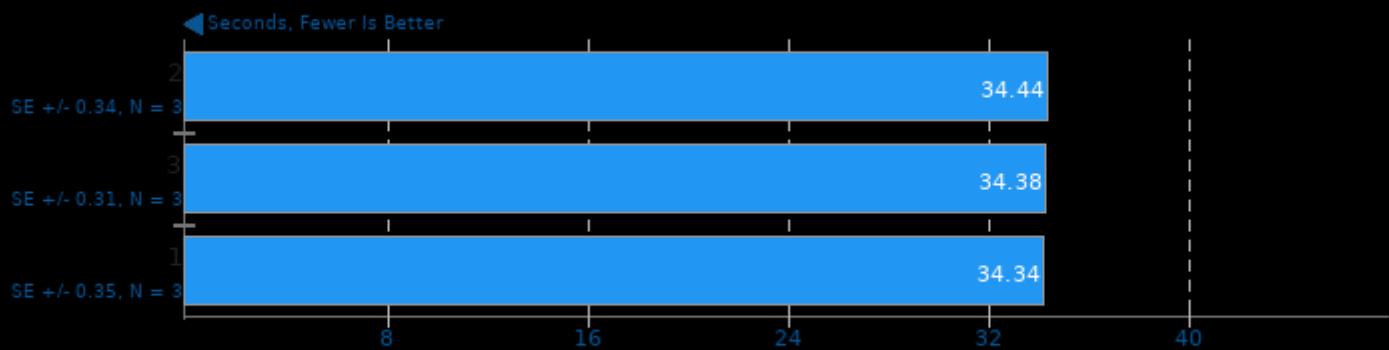
Encoder Mode: Speed 6 Realtime - Input: Bosphorus 4K



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

Xcompact3d Incompact3d 2021-03-11

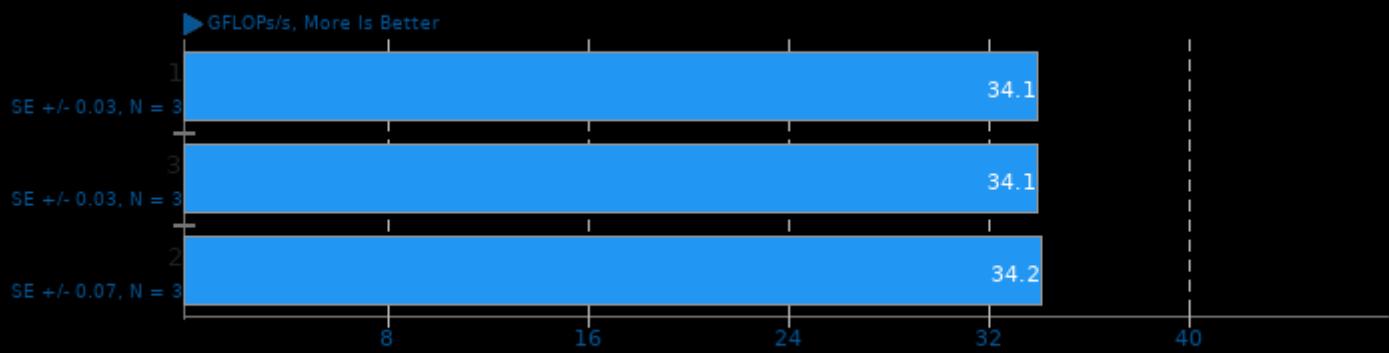
Input: input.i3d 129 Cells Per Direction



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

ViennaCL 1.7.1

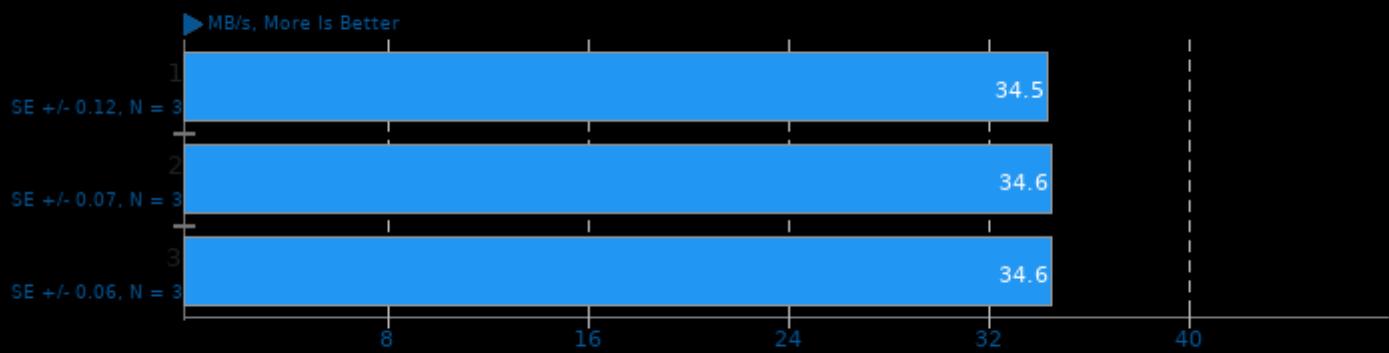
Test: CPU BLAS - dGEMM-NT



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

Zstd Compression 1.4.9

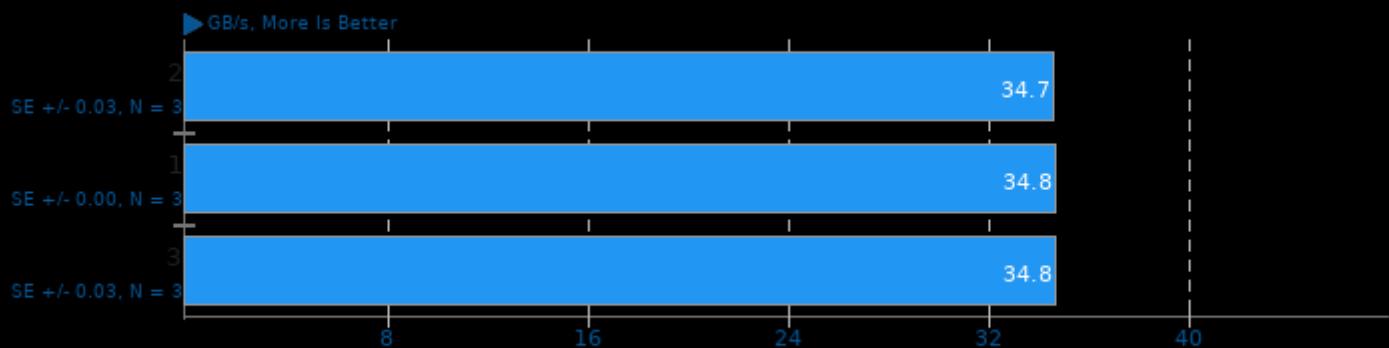
Compression Level: 19 - Compression Speed



1. (CC) gcc options: -O3 -pthread -lz -llzma

ViennaCL 1.7.1

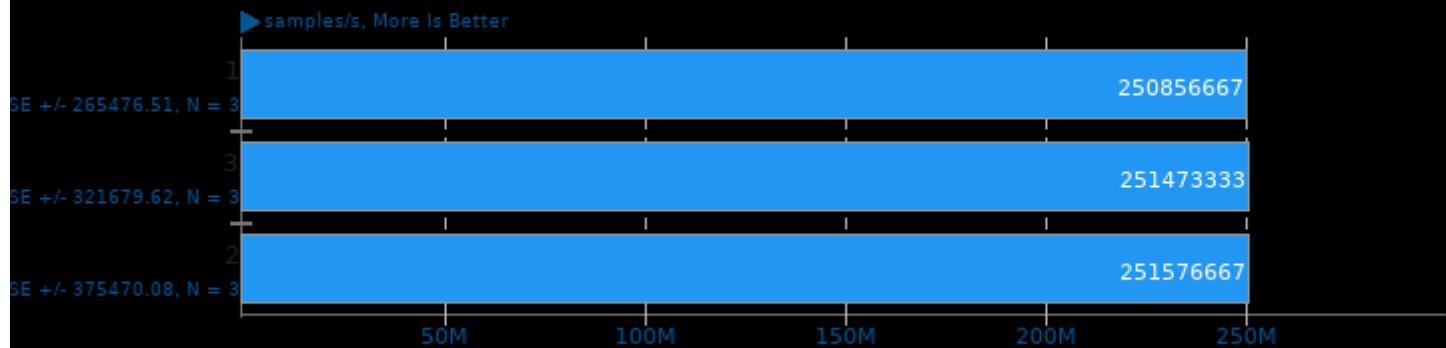
Test: OpenCL BLAS - dGEMV-T



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

Liquid-DSP 2021.01.31

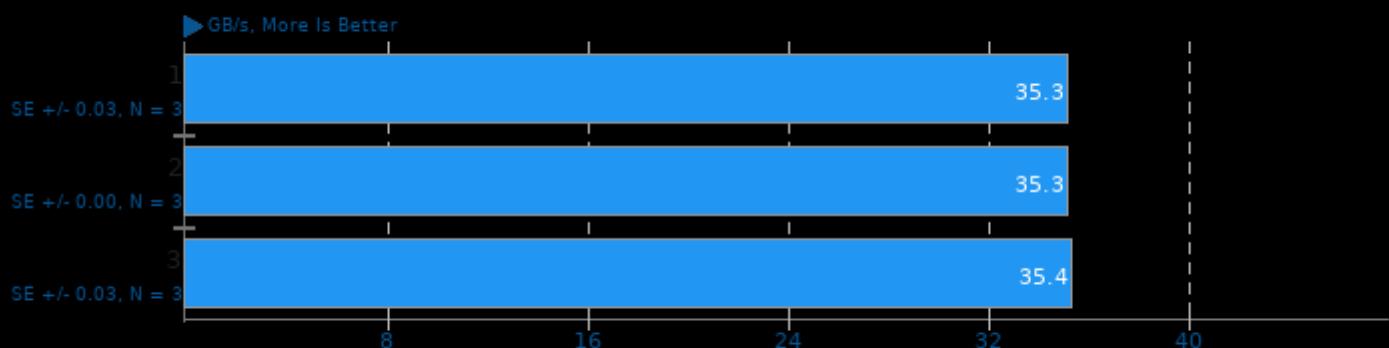
Threads: 4 - Buffer Length: 256 - Filter Length: 57



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

ViennaCL 1.7.1

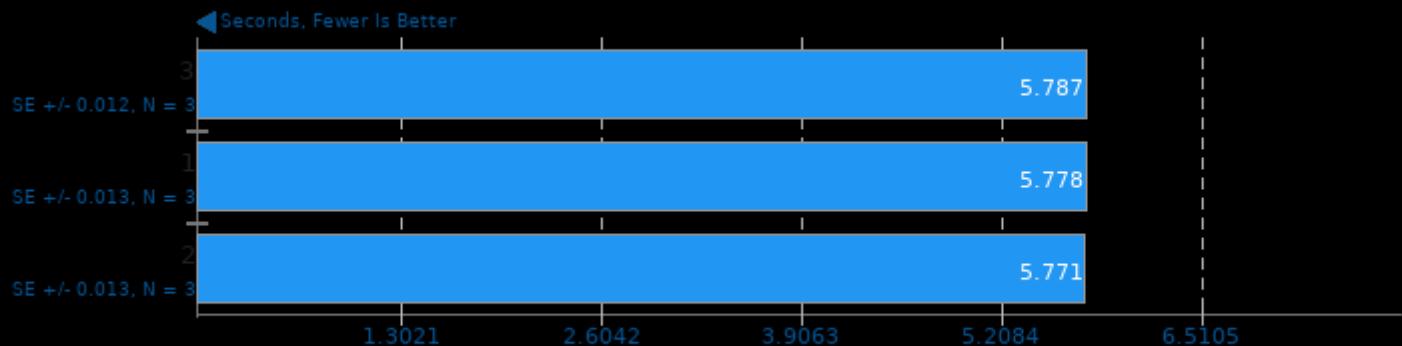
Test: OpenCL BLAS - dAXPY



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

libavif avifenc 0.9.0

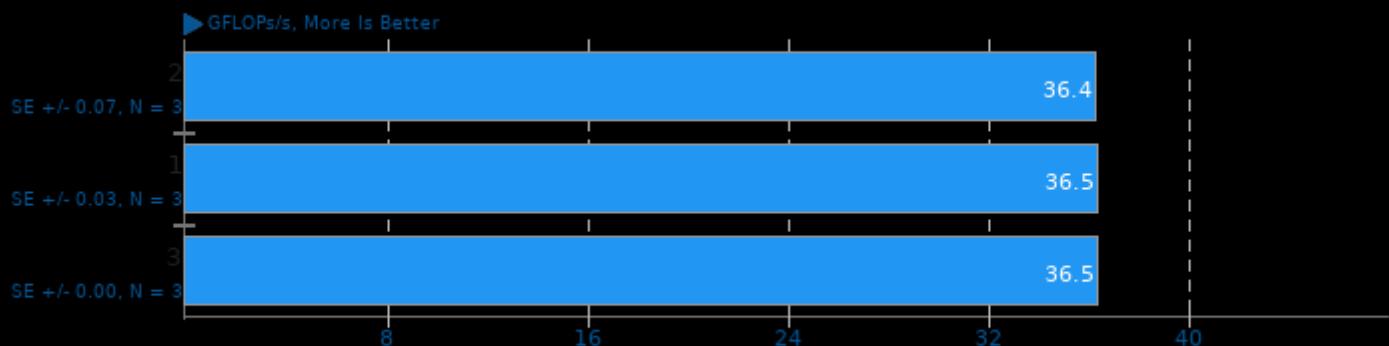
Encoder Speed: 10, Lossless



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

ViennaCL 1.7.1

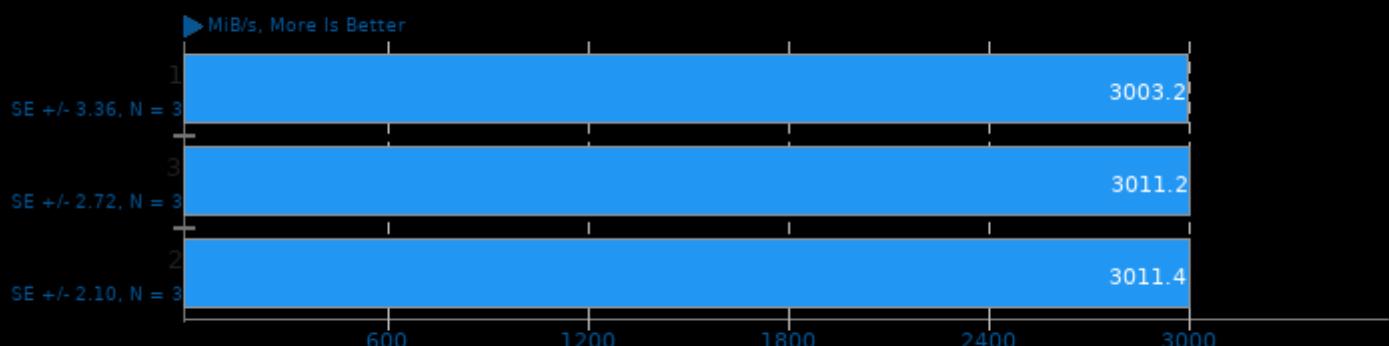
Test: CPU BLAS - dGEMM-TN



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

GNU Radio

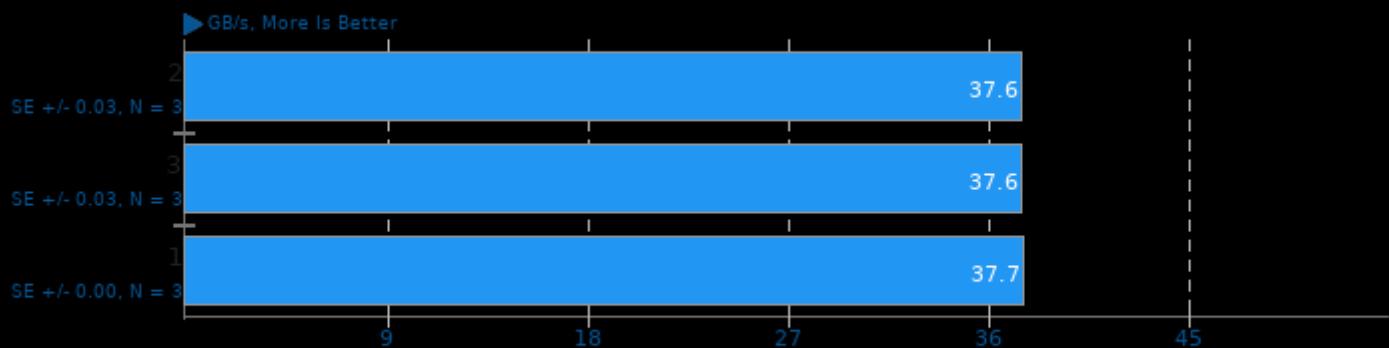
Test: Signal Source (Cosine)



1. 3.8.1.0

ViennaCL 1.7.1

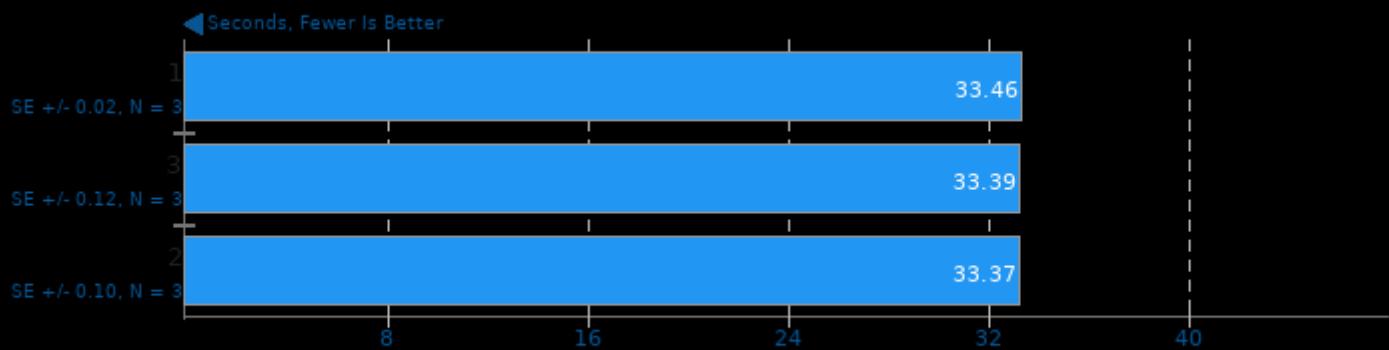
Test: OpenCL BLAS - sDOT



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

Basis Universal 1.13

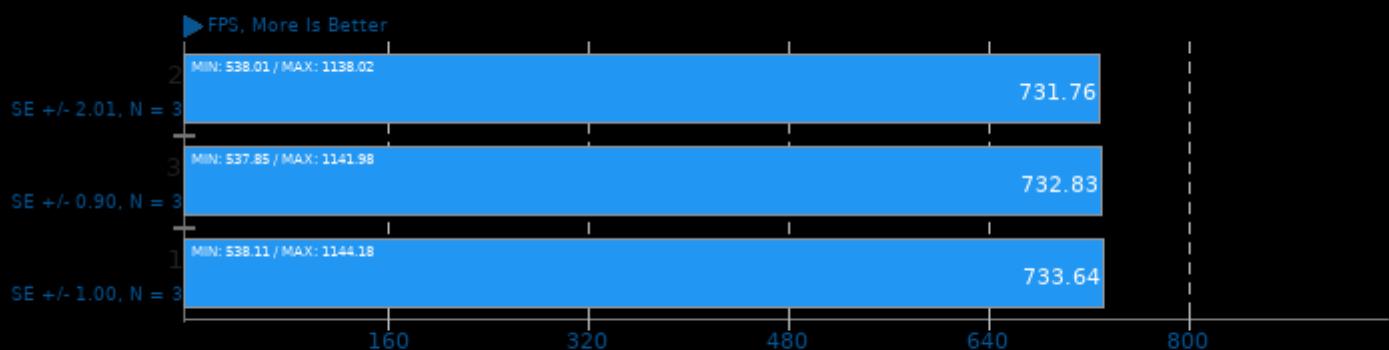
Settings: UASTC Level 2



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

dav1d 0.8.2

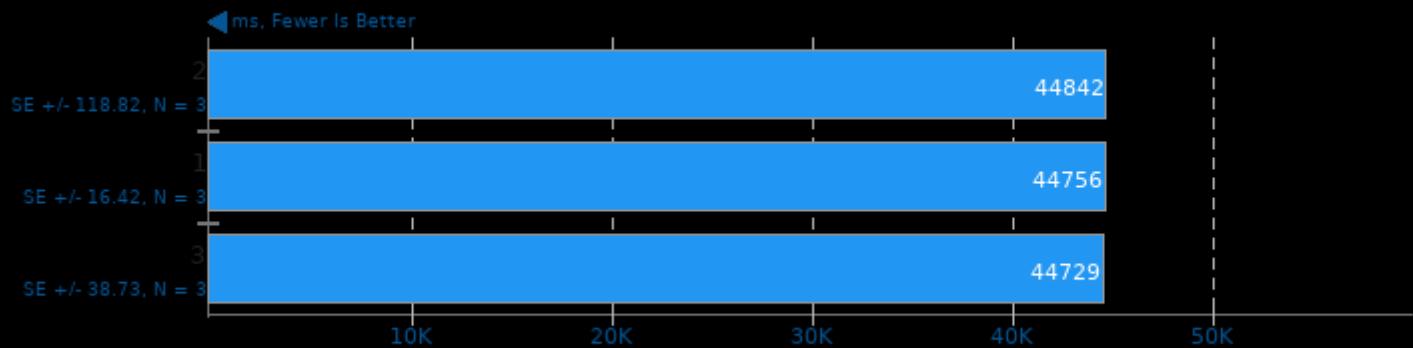
Video Input: Chimera 1080p



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

toyBrot Fractal Generator 2020-11-18

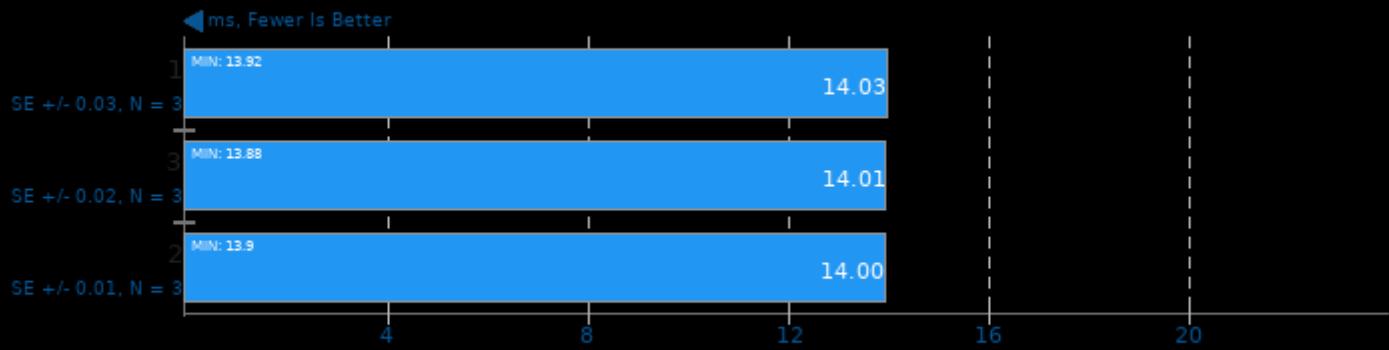
Implementation: C++ Tasks



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

oneDNN 2.1.2

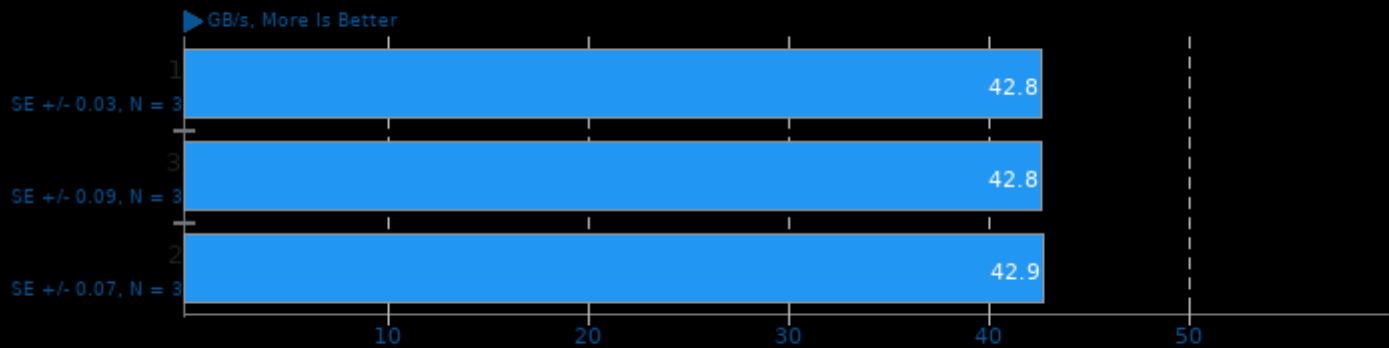
Harness: Convolution Batch Shapes Auto - Data Type: u8s8f32 - Engine: CPU



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

ViennaCL 1.7.1

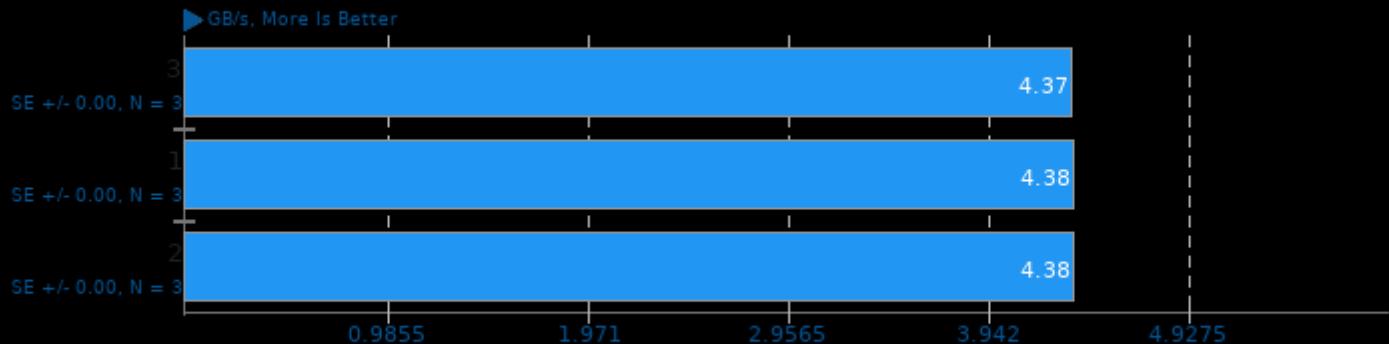
Test: CPU BLAS - sAXPY



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

simdjson 0.8.2

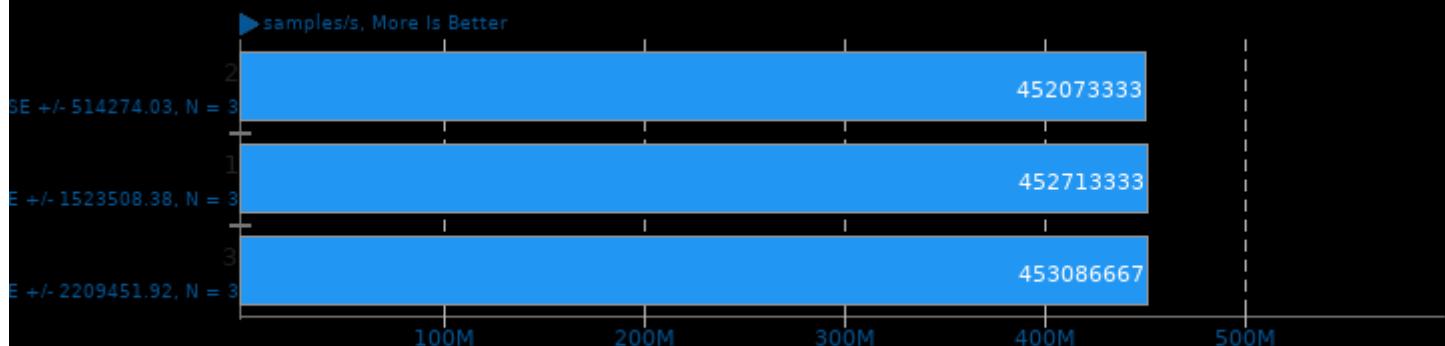
Throughput Test: Partial Tweets



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

Liquid-DSP 2021.01.31

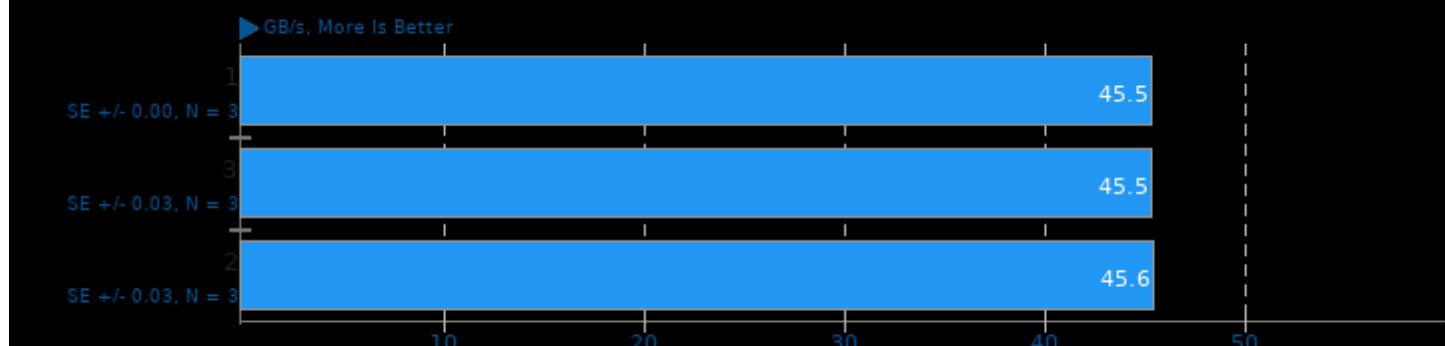
Threads: 8 - Buffer Length: 256 - Filter Length: 57



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

ViennaCL 1.7.1

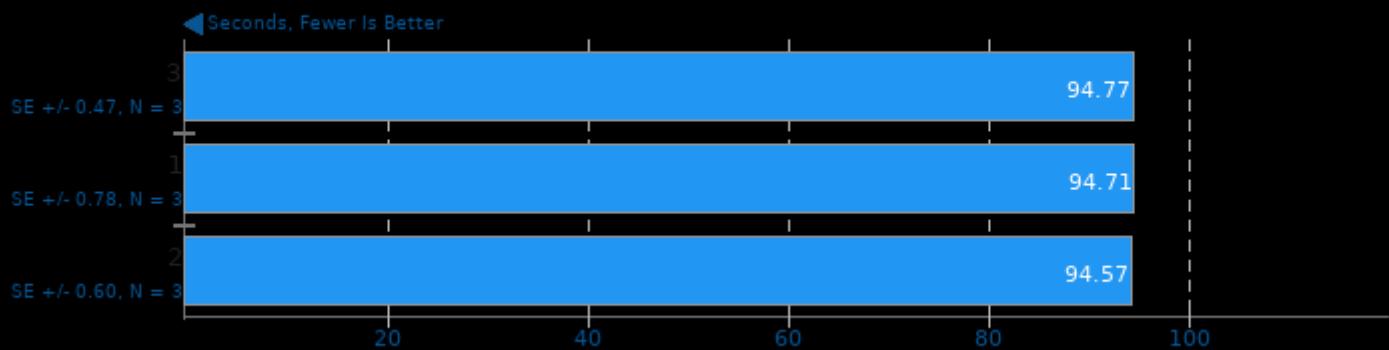
Test: CPU BLAS - dGEMV-N



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

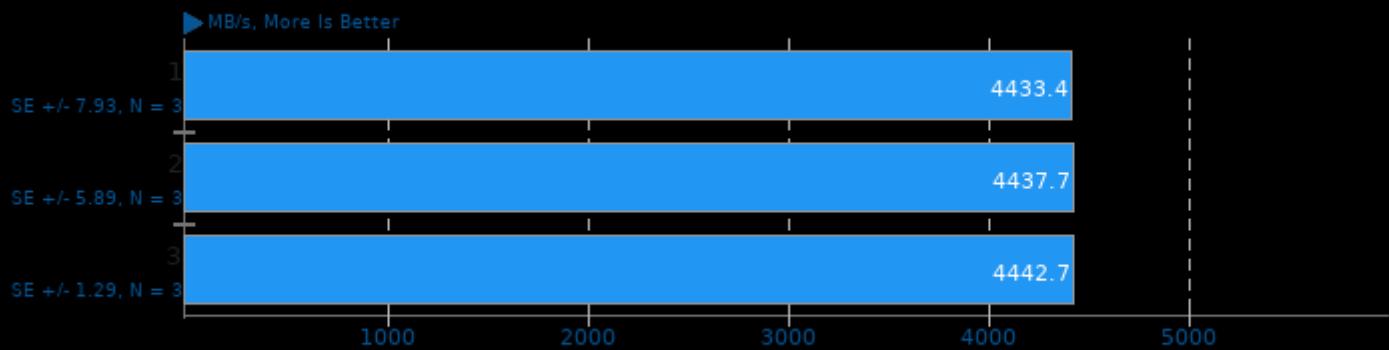
Timed Linux Kernel Compilation 5.10.20

Time To Compile



Zstd Compression 1.4.9

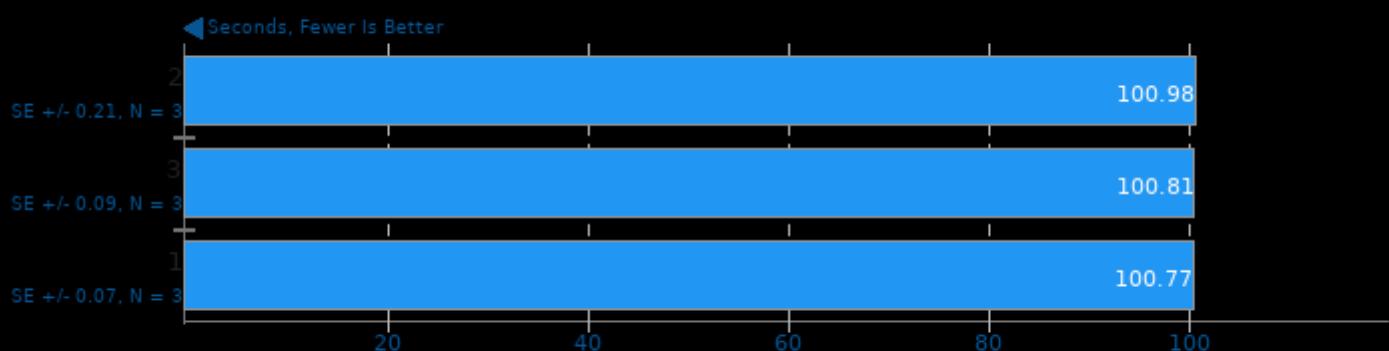
Compression Level: 3, Long Mode - Decompression Speed



1. (CC) gcc options: -O3 -pthread -lz -lzma

OpenSCAD

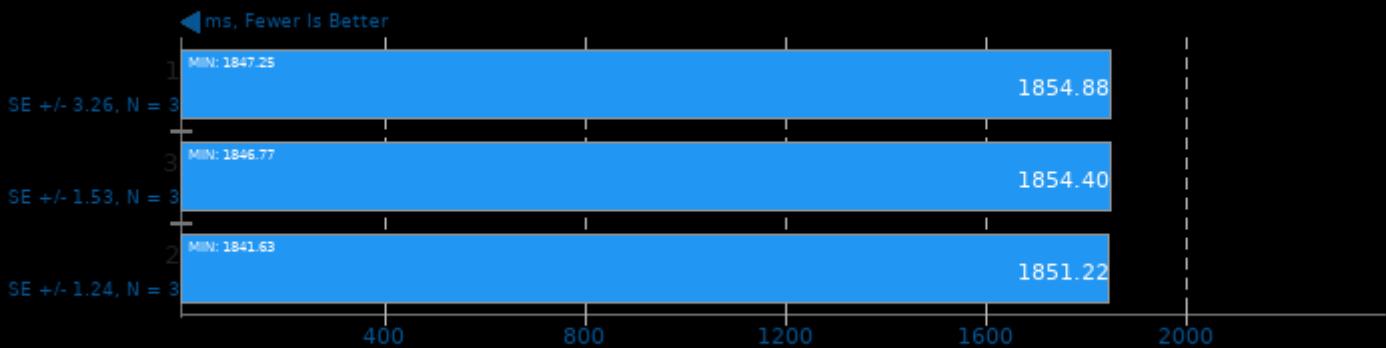
Render: Pistol



1. OpenSCAD version 2019.05

oneDNN 2.1.2

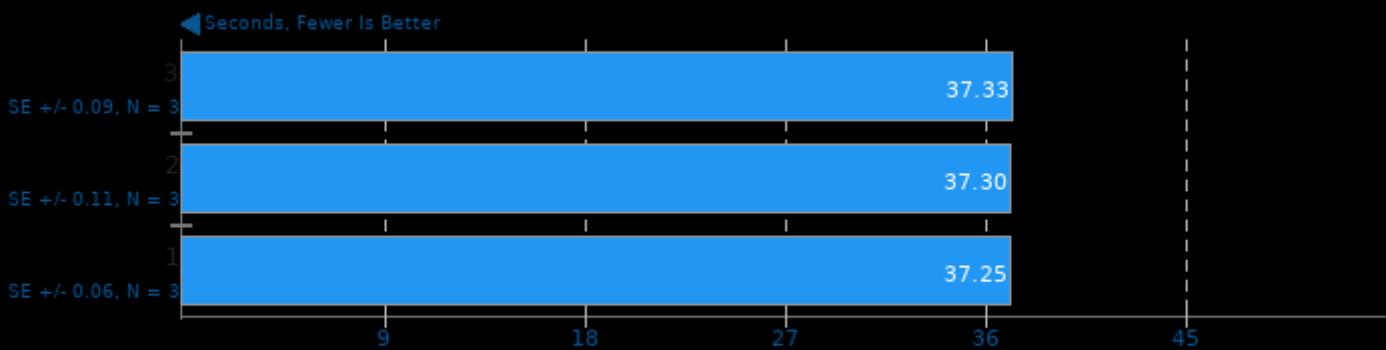
Harness: Recurrent Neural Network Inference - Data Type: bf16bf16bf16 - Engine: CPU



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

libavif avifenc 0.9.0

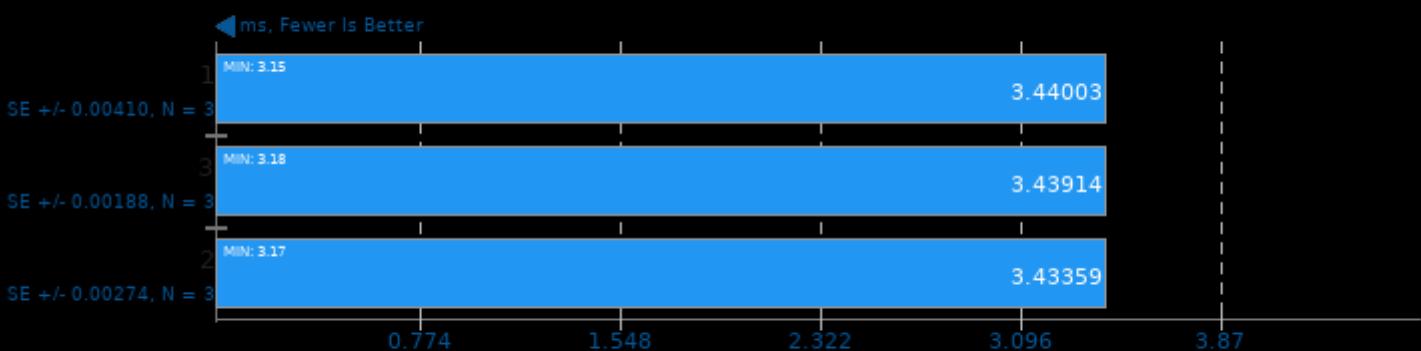
Encoder Speed: 2



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

oneDNN 2.1.2

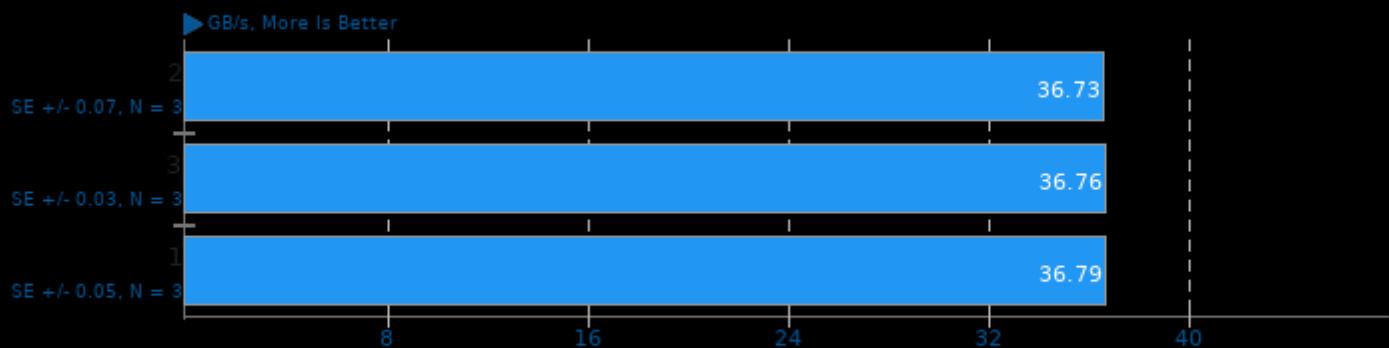
Harness: Matrix Multiply Batch Shapes Transformer - Data Type: u8s8f32 - Engine: CPU



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

SHOC Scalable Heterogeneous Computing 2020-04-17

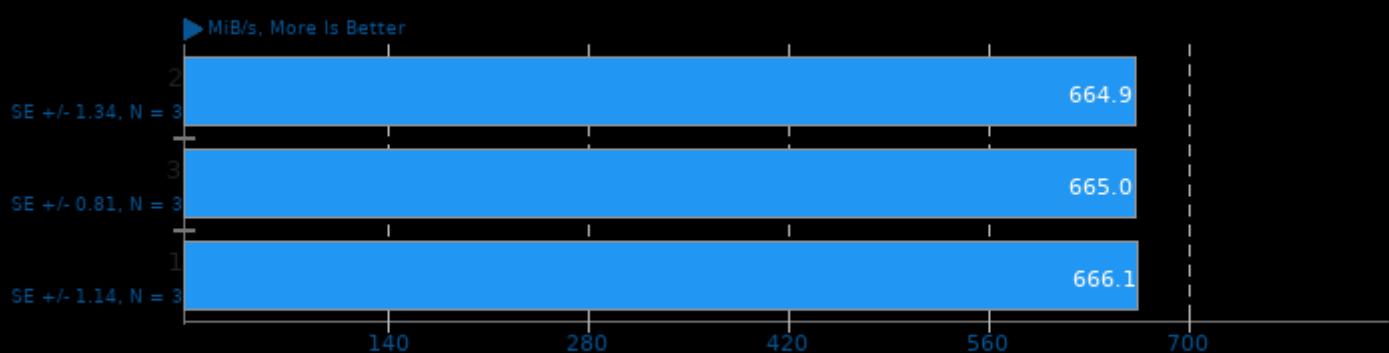
Target: OpenCL - Benchmark: Reduction



1. (CXX) g++ options: -O2 -fSHOCCommonMPI -fSHOCCommonOpenCL -fSHOCCommon -fOpenCL -frt -fthread -fmpi_cxx -fmpi

GNU Radio

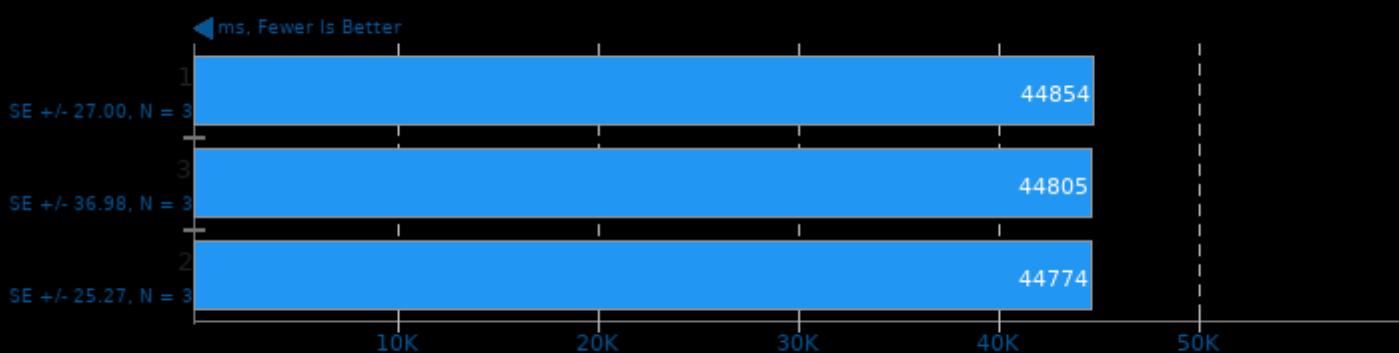
Test: IIR Filter



1. 3.8.1.0

toyBrot Fractal Generator 2020-11-18

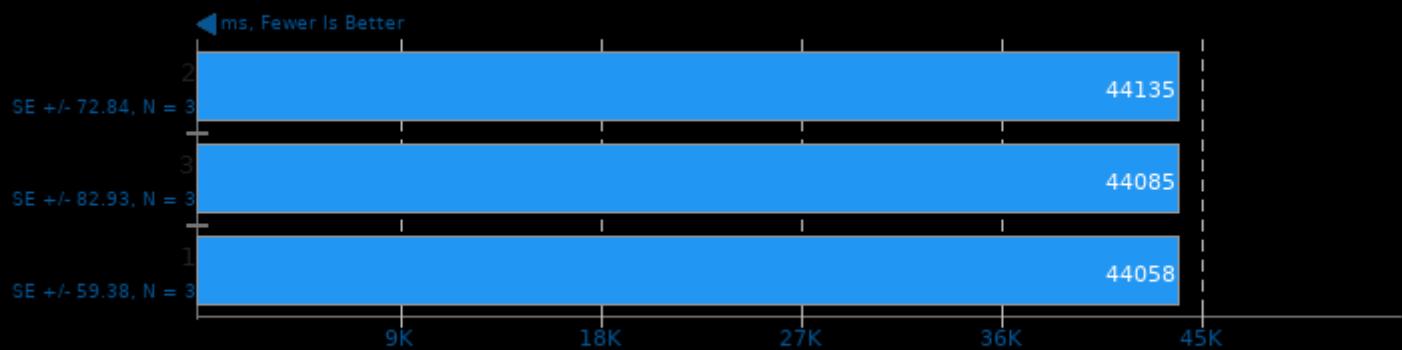
Implementation: C++ Threads



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

toyBrot Fractal Generator 2020-11-18

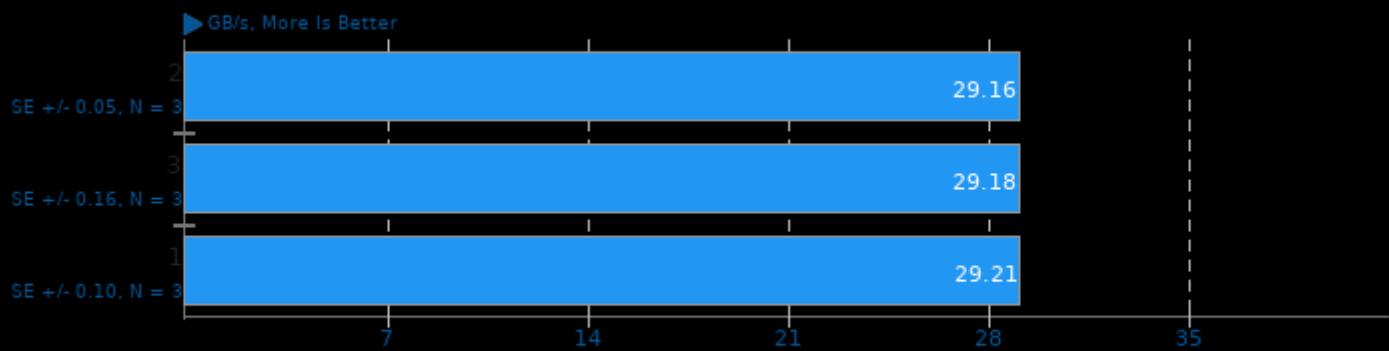
Implementation: TBB



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

SHOC Scalable Heterogeneous Computing 2020-04-17

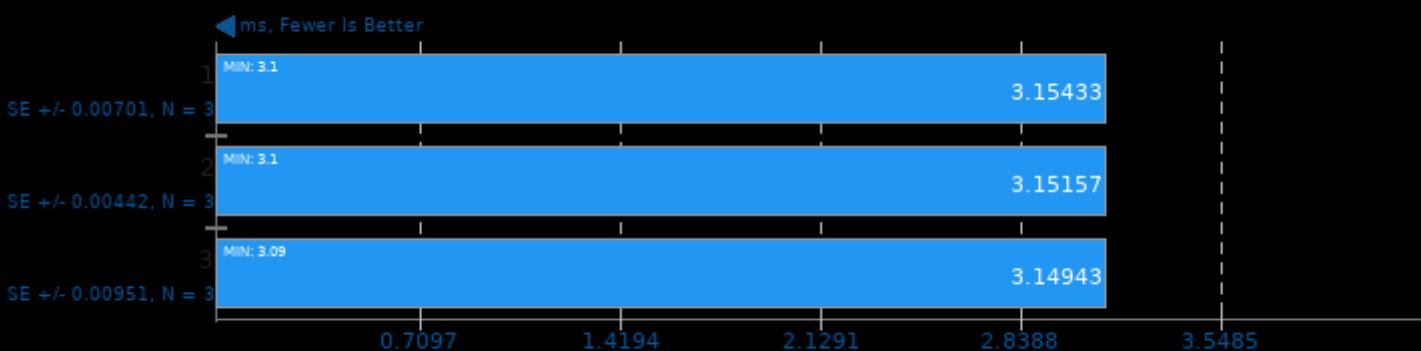
Target: OpenCL - Benchmark: Bus Speed Download



1. (CXX) g++ options: -O2 -I SHOCCommonMPI -I SHOCCommonOpenCL -I SHOCCommon -I OpenCL -I rt -lpthread -lmpi_cxx -lmpi

oneDNN 2.1.2

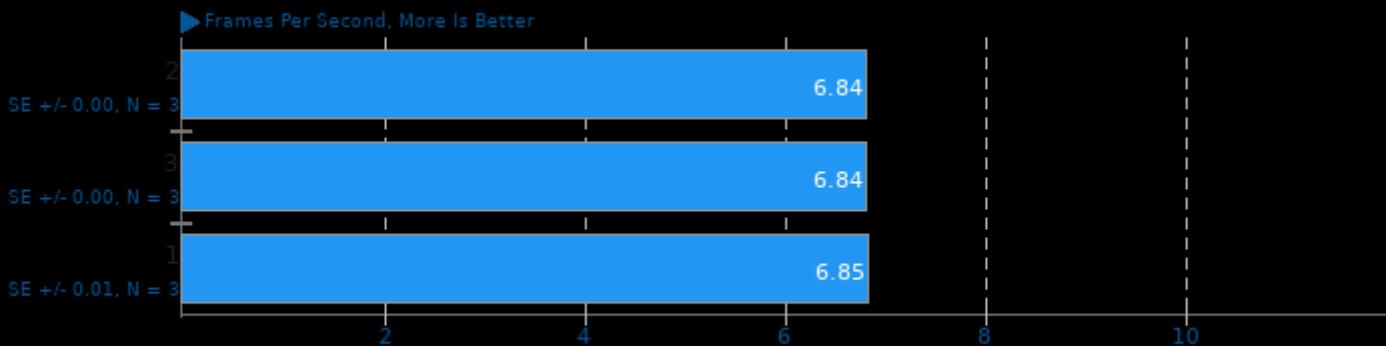
Harness: Matrix Multiply Batch Shapes Transformer - Data Type: f32 - Engine: CPU



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

SVT-HEVC 1.5.0

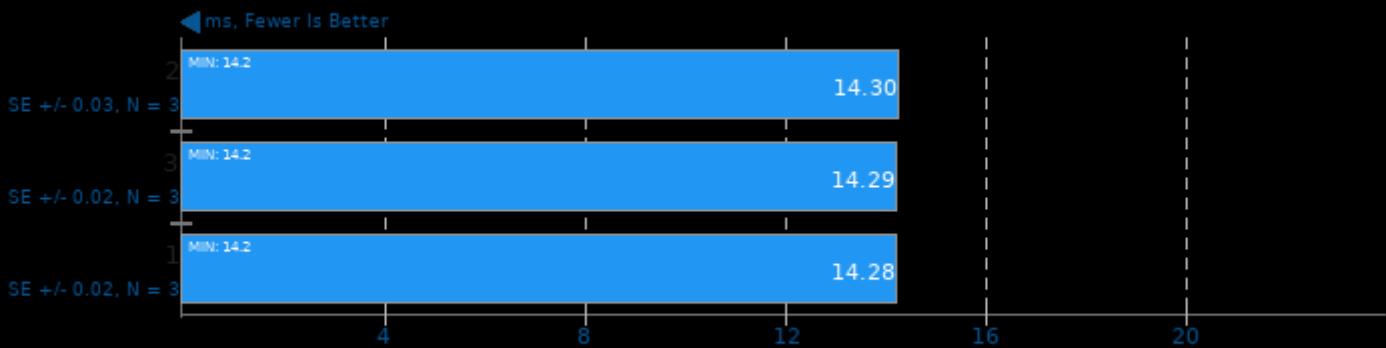
Tuning: 1 - Input: Bosphorus 1080p



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

oneDNN 2.1.2

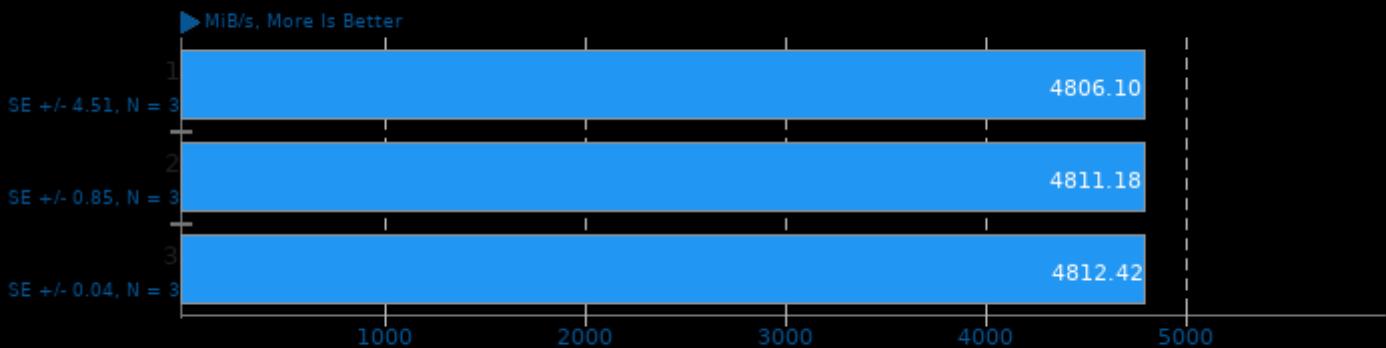
Harness: Convolution Batch Shapes Auto - Data Type: f32 - Engine: CPU



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

Botan 2.17.3

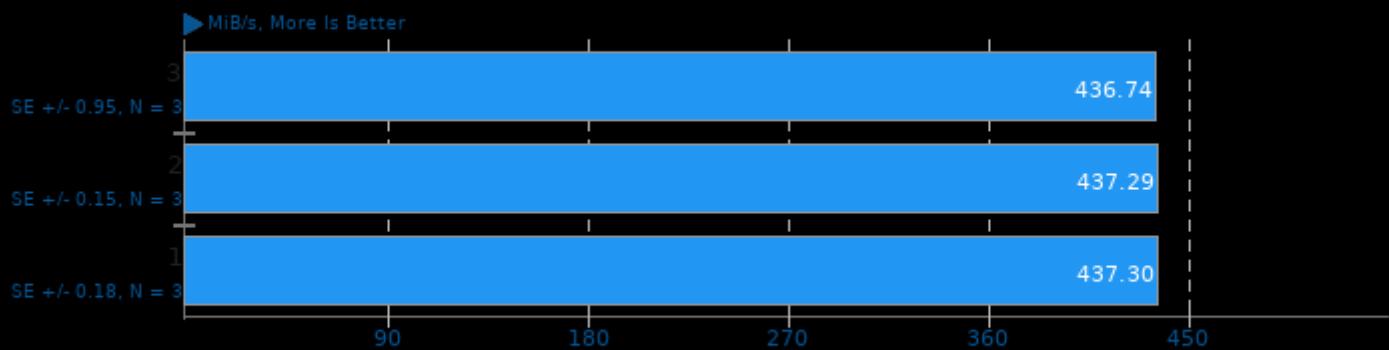
Test: AES-256 - Decrypt



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

Botan 2.17.3

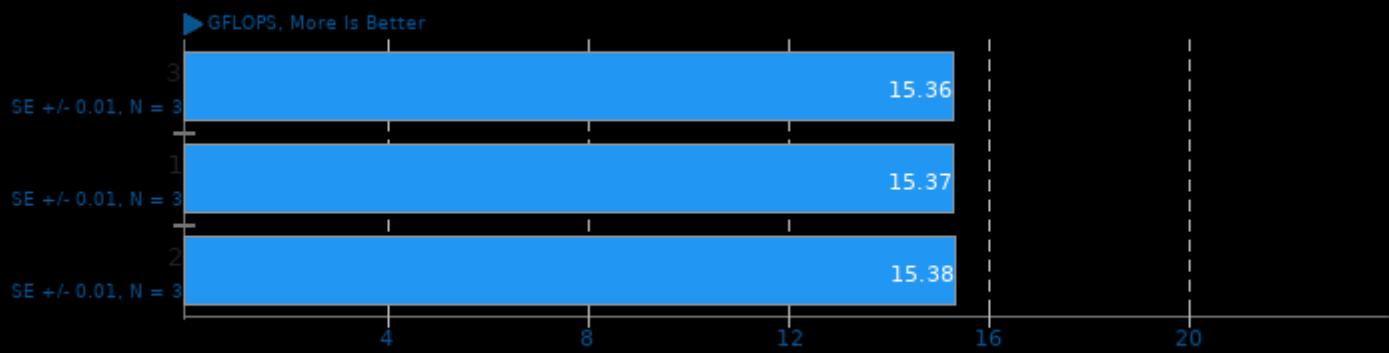
Test: Twofish - Decrypt



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

SHOC Scalable Heterogeneous Computing 2020-04-17

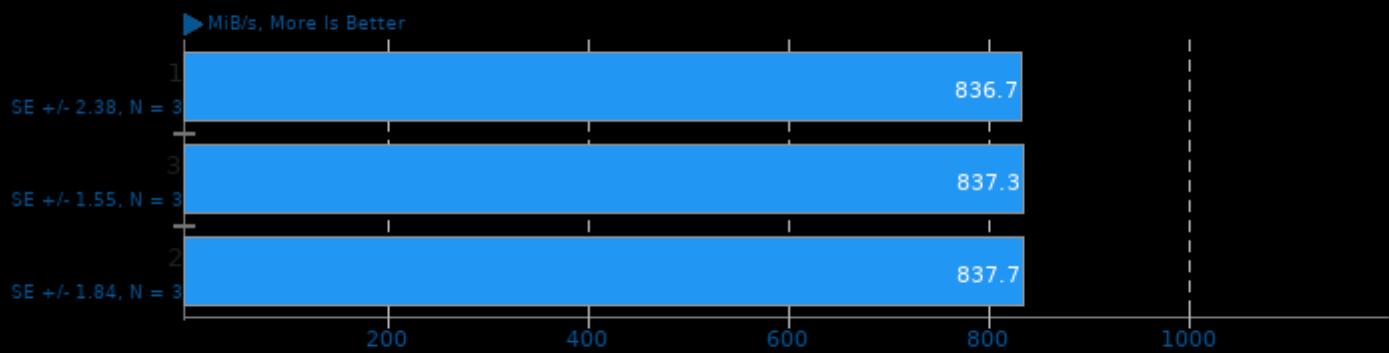
Target: OpenCL - Benchmark: FFT SP



1. (CXX) g++ options: -O2 -I SHOCCommonMPI -I SHOCCommonOpenCL -I SHOCCommon -I OpenCL -lrt -pthread -lmpi_cxx -lmpi

GNU Radio

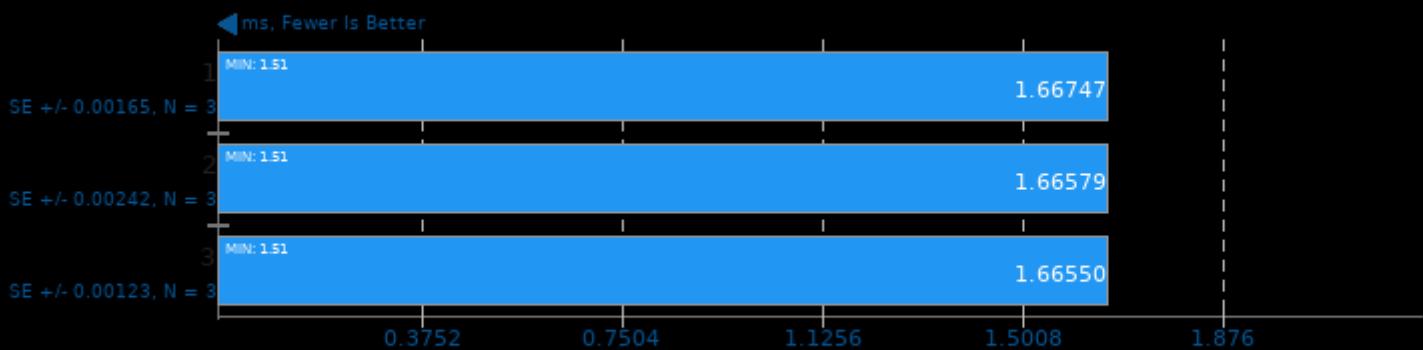
Test: FM Deemphasis Filter



1. 3.8.1.0

oneDNN 2.1.2

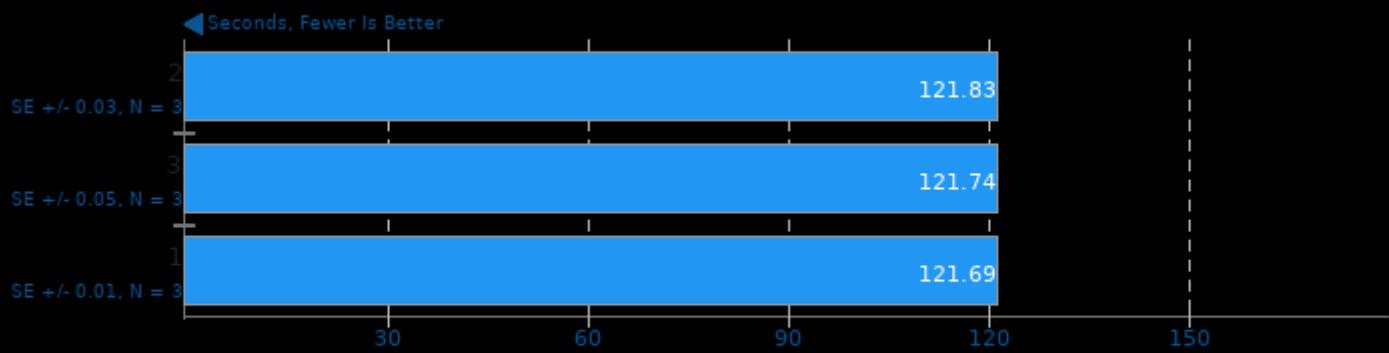
Harness: IP Shapes 1D - Data Type: u8s8f32 - Engine: CPU



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

Xcompact3d Incompact3d 2021-03-11

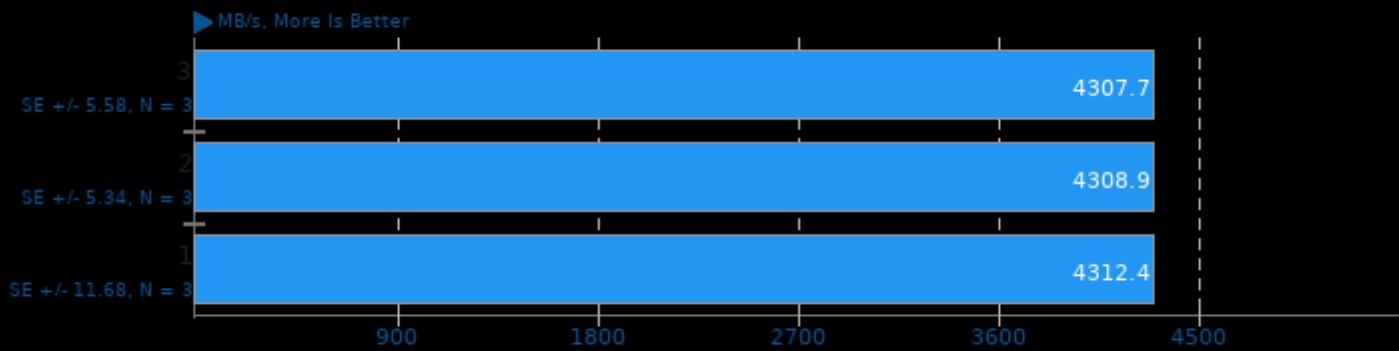
Input: input.i3d 193 Cells Per Direction



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

Zstd Compression 1.4.9

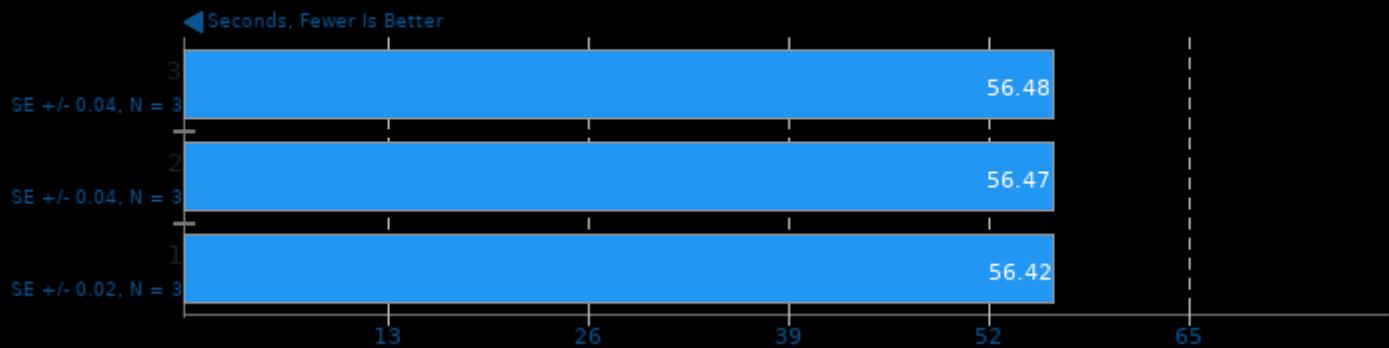
Compression Level: 8 - Decompression Speed



1. (CC) gcc options: -O3 -pthread -lz -llzma

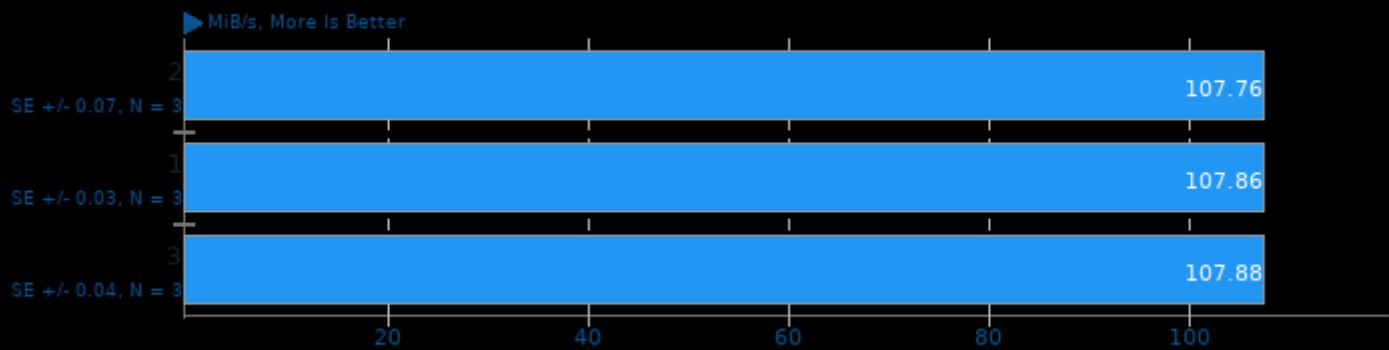
Timed Mesa Compilation 21.0

Time To Compile



Botan 2.17.3

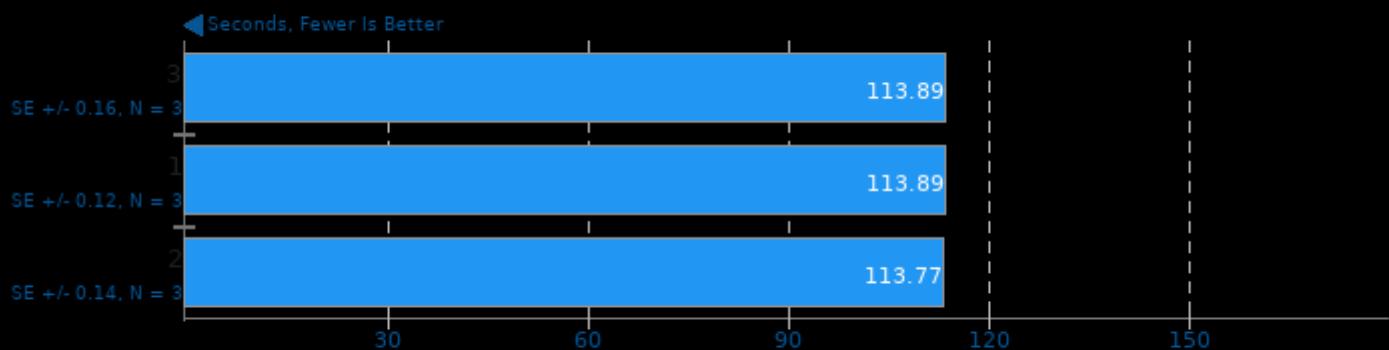
Test: KASUMI - Decrypt



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

ASTC Encoder 2.4

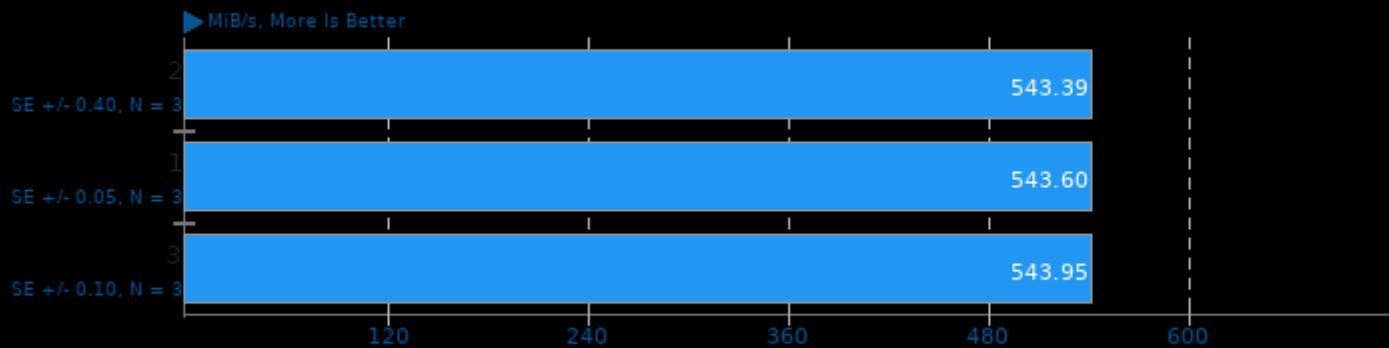
Preset: Exhaustive



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

Botan 2.17.3

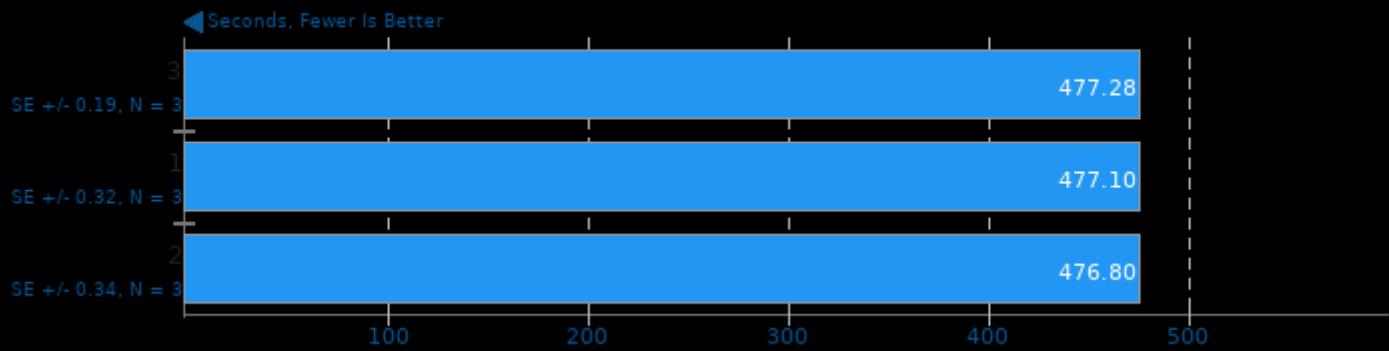
Test: Blowfish



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

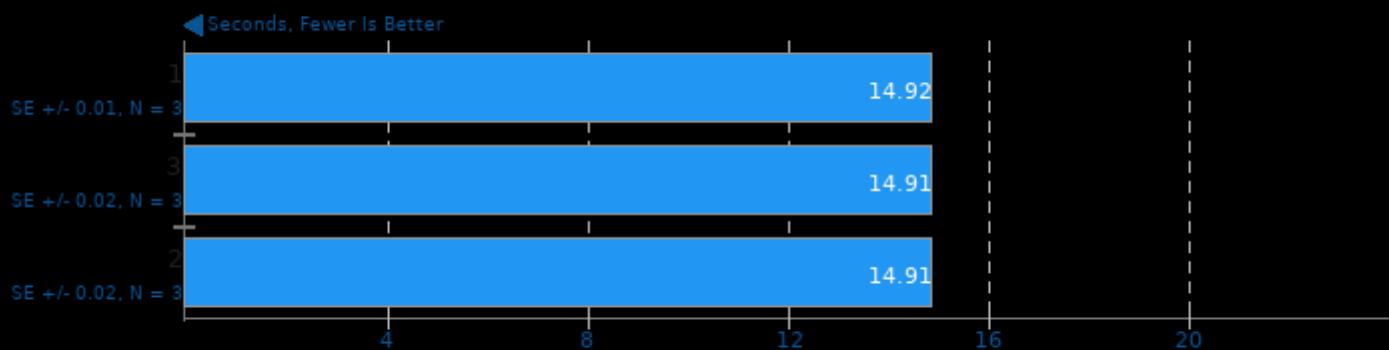
Timed Node.js Compilation 15.11

Time To Compile



ASTC Encoder 2.4

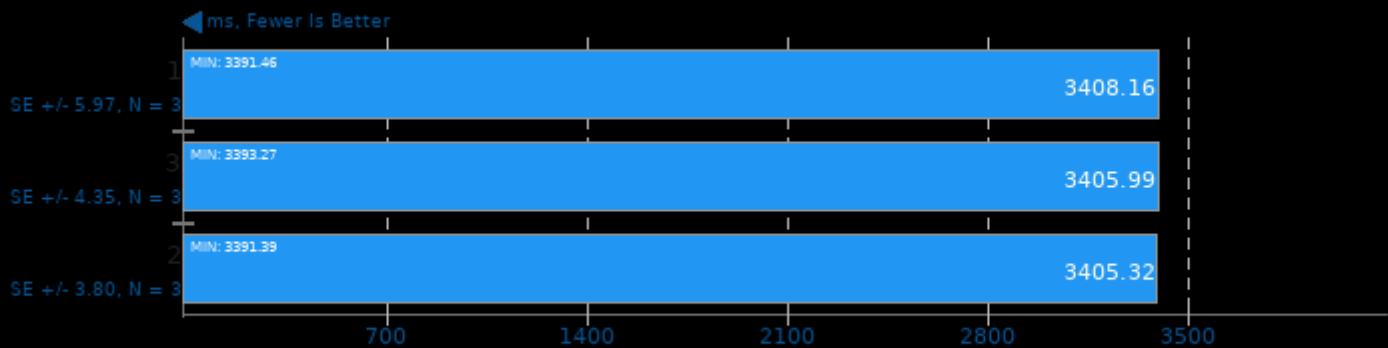
Preset: Thorough



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

oneDNN 2.1.2

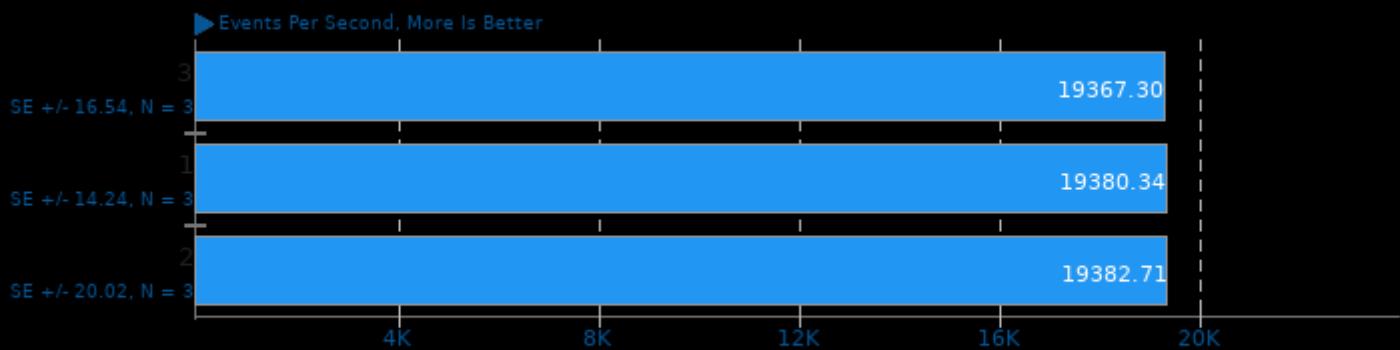
Harness: Recurrent Neural Network Training - Data Type: f32 - Engine: CPU



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

Sysbench 1.0.20

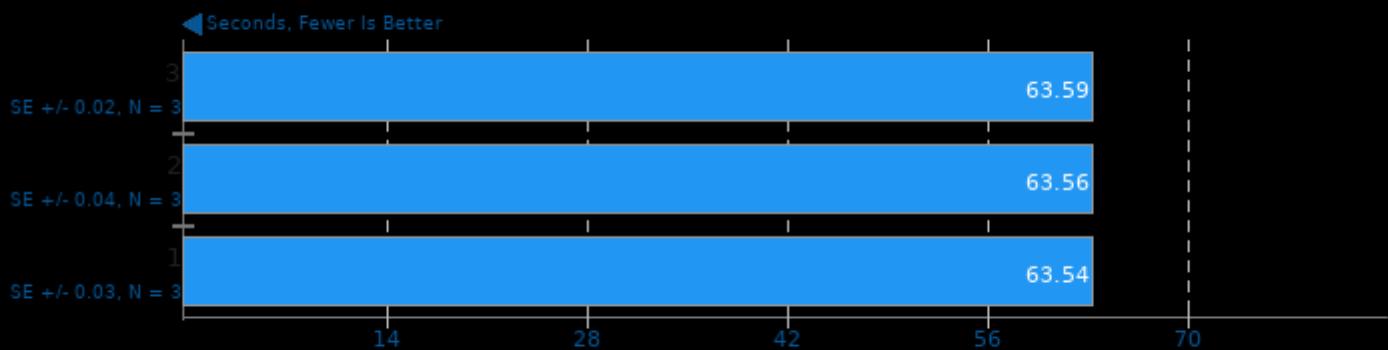
Test: CPU



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

Basis Universal 1.13

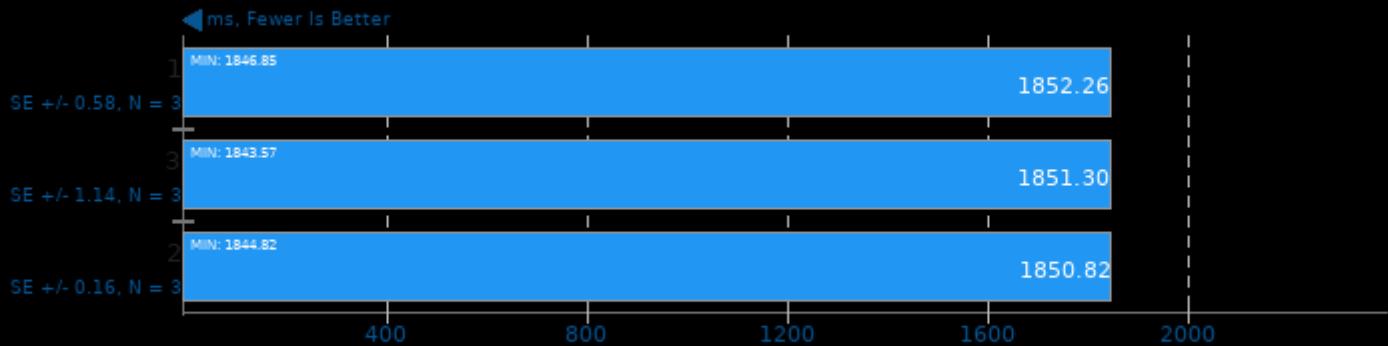
Settings: UASTC Level 3



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

oneDNN 2.1.2

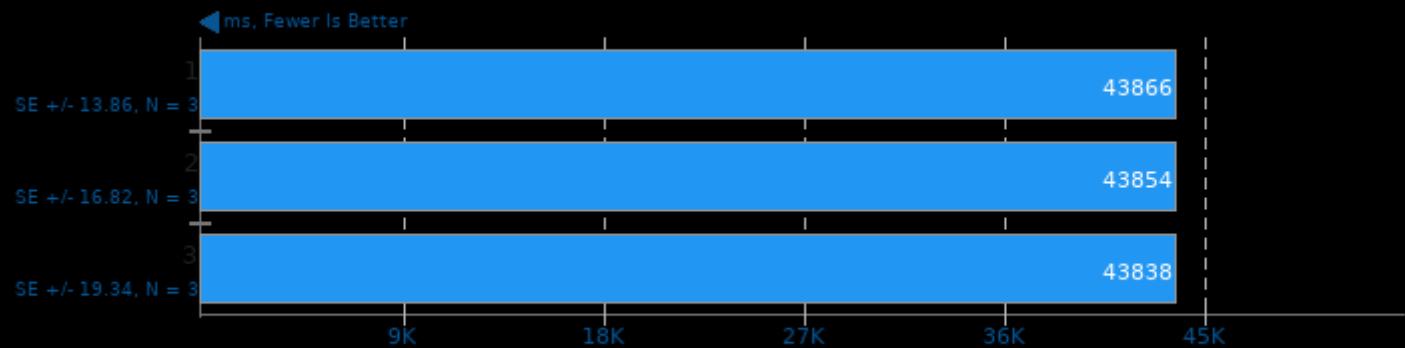
Harness: Recurrent Neural Network Inference - Data Type: u8s8f32 - Engine: CPU



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

toyBrot Fractal Generator 2020-11-18

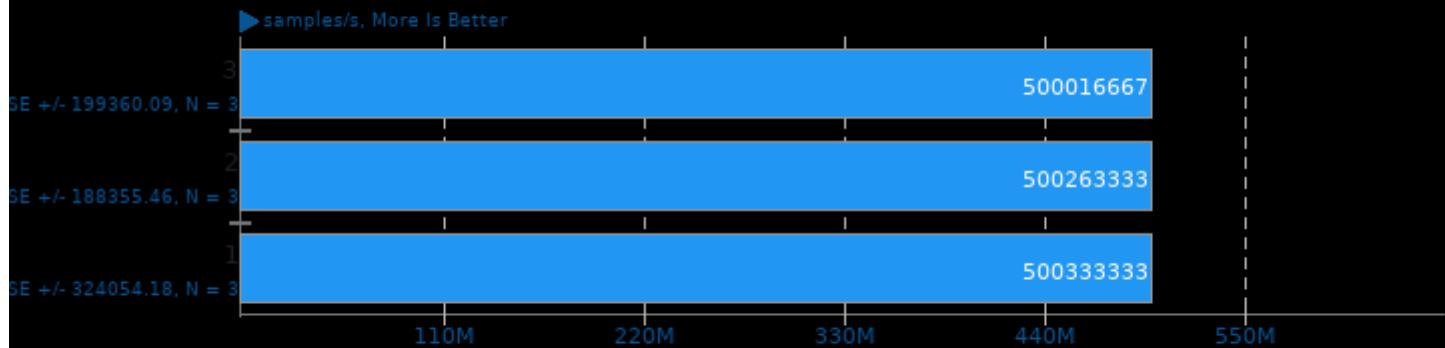
Implementation: OpenMP



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

Liquid-DSP 2021.01.31

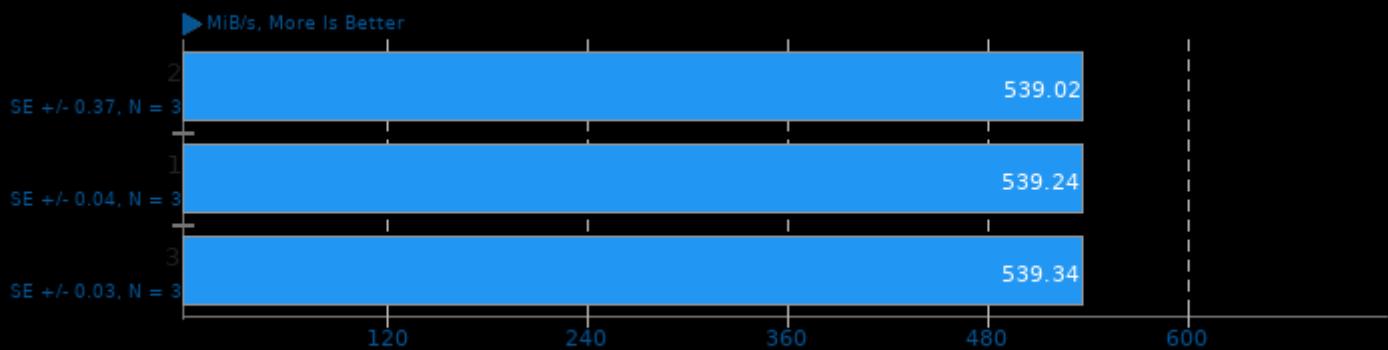
Threads: 16 - Buffer Length: 256 - Filter Length: 57



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

Botan 2.17.3

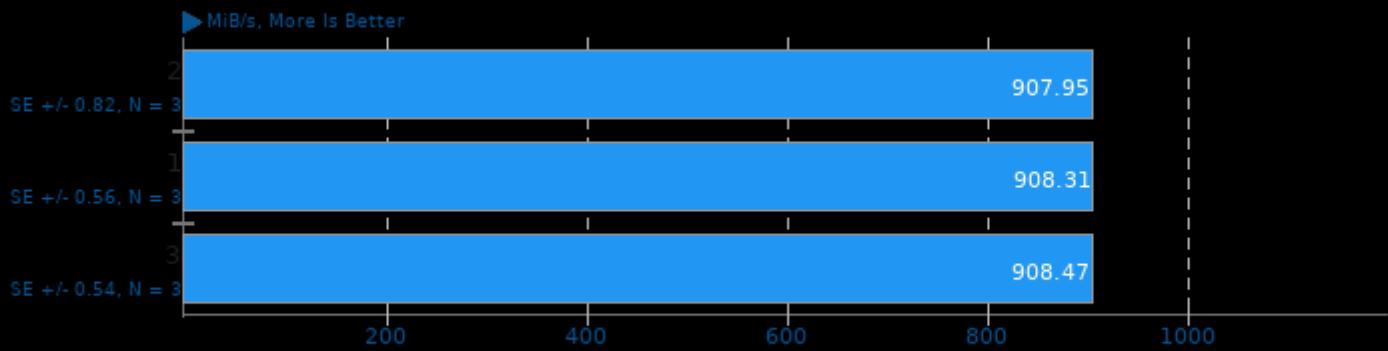
Test: Blowfish - Decrypt



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

Botan 2.17.3

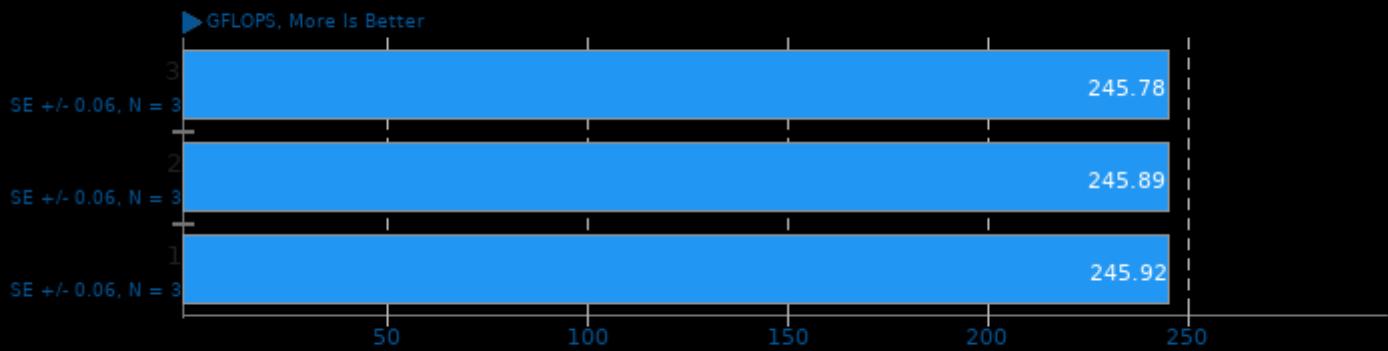
Test: ChaCha20Poly1305 - Decrypt



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

SHOC Scalable Heterogeneous Computing 2020-04-17

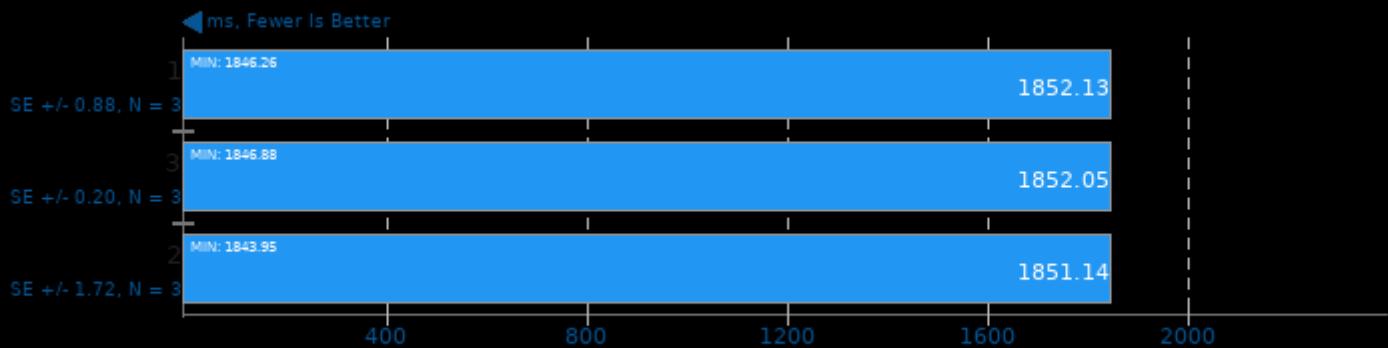
Target: OpenCL - Benchmark: GEMM SGEMM_N



1. (CXX) g++ options: -O2 -I SHOCCommonMPI -I SHOCCommonOpenCL -I SHOCCommon -I OpenCL -lrt -pthread -I mpi_cxx -I mpi

oneDNN 2.1.2

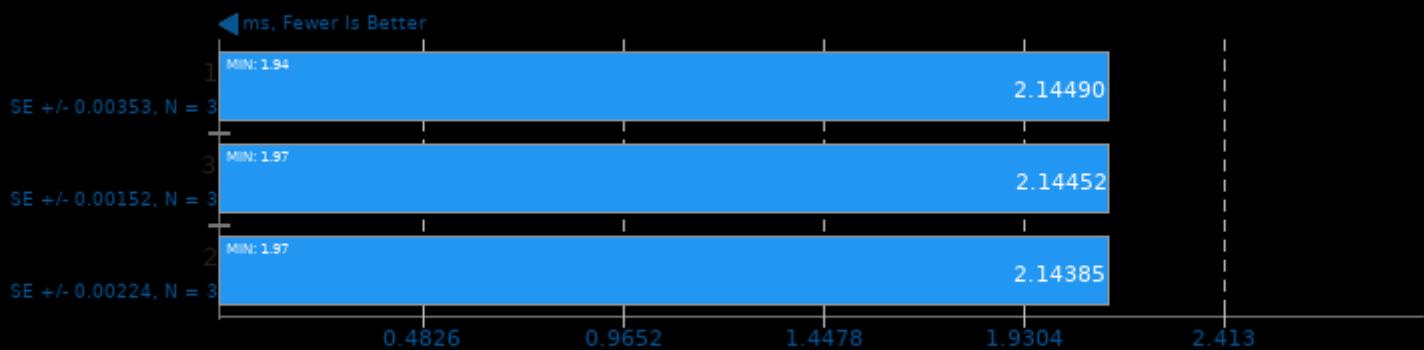
Harness: Recurrent Neural Network Inference - Data Type: f32 - Engine: CPU



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

oneDNN 2.1.2

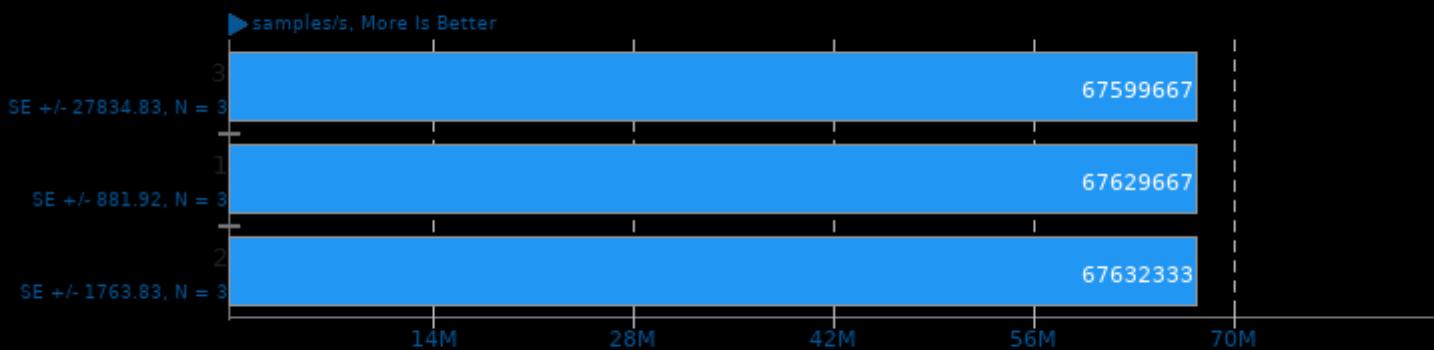
Harness: Deconvolution Batch shapes_1d - Data Type: u8s8f32 - Engine: CPU



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

Liquid-DSP 2021.01.31

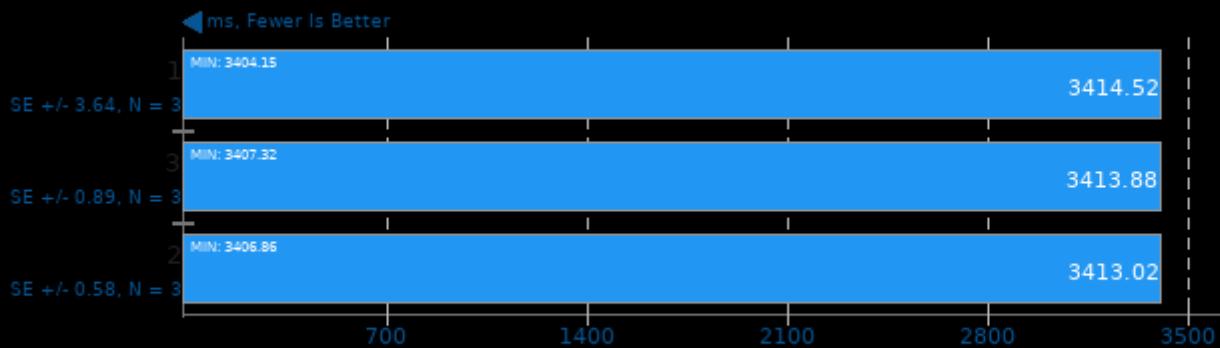
Threads: 1 - Buffer Length: 256 - Filter Length: 57



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

oneDNN 2.1.2

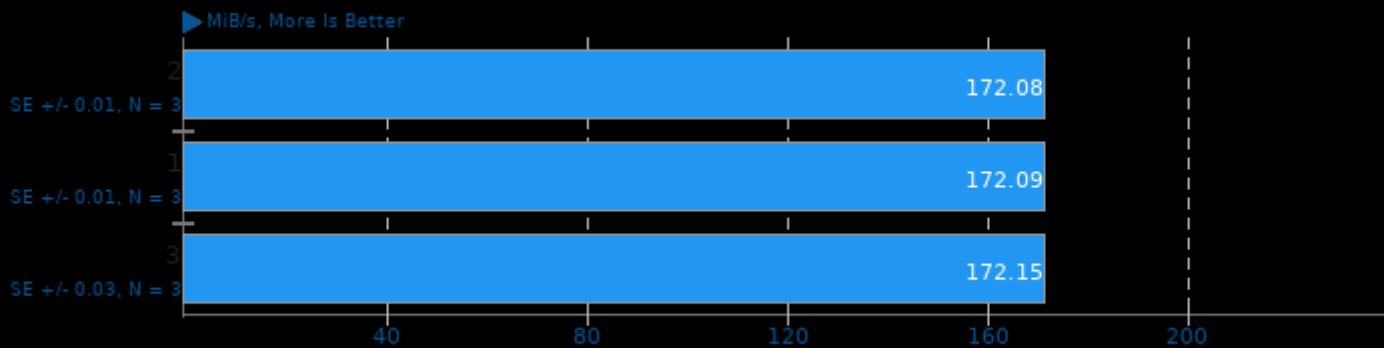
Harness: Recurrent Neural Network Training - Data Type: u8s8f32 - Engine: CPU



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

Botan 2.17.3

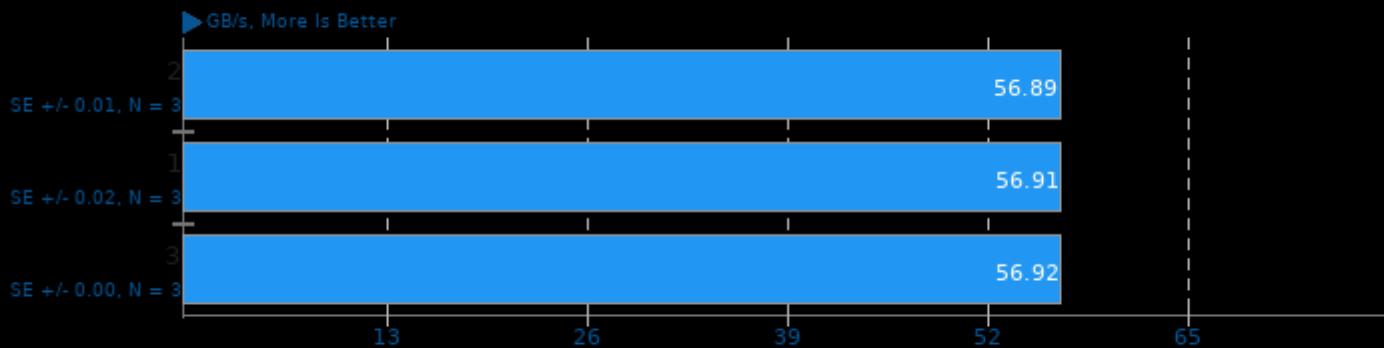
Test: CAST-256 - Decrypt



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

SHOC Scalable Heterogeneous Computing 2020-04-17

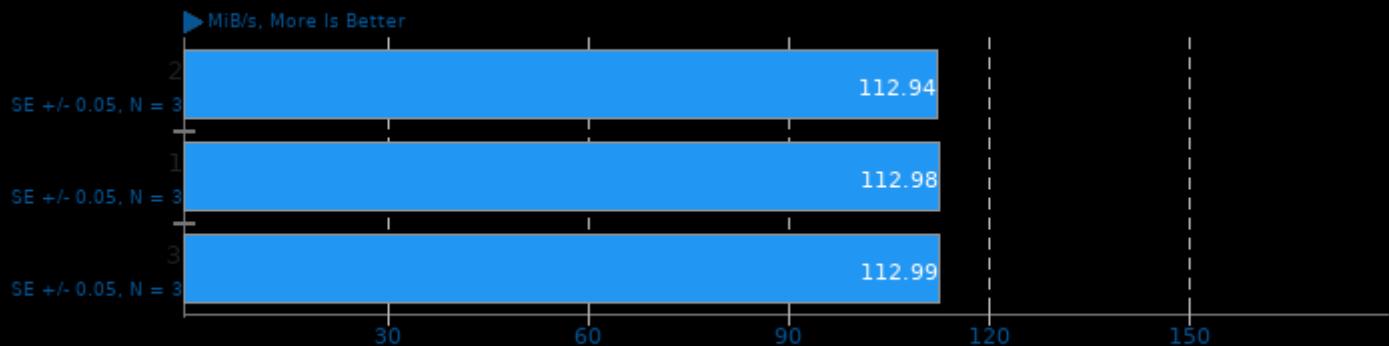
Target: OpenCL - Benchmark: Texture Read Bandwidth



1. (CXX) g++ options: -O2 -lSHOCCommonMPI -lSHOCCommonOpenCL -lSHOCCommon -lOpenCL -lrt -pthread -lmpi_cxx -lmpi

Botan 2.17.3

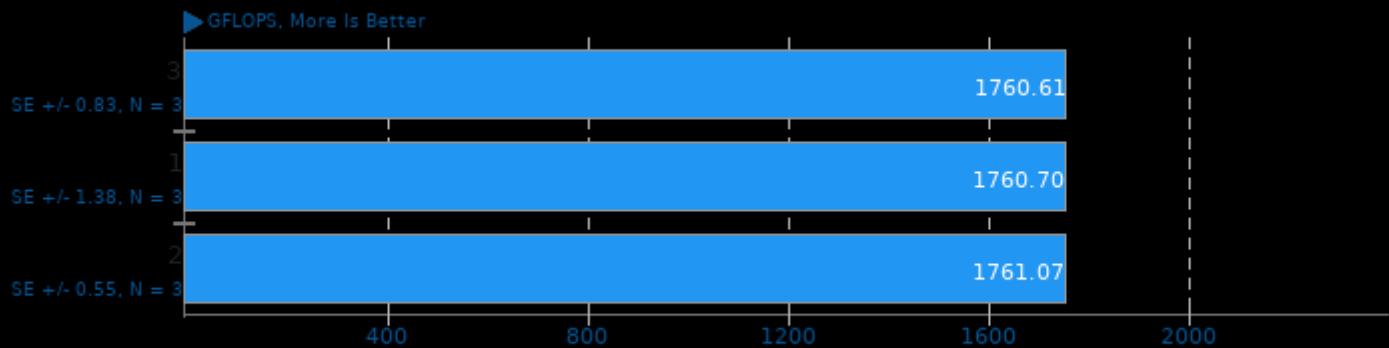
Test: KASUMI



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

SHOC Scalable Heterogeneous Computing 2020-04-17

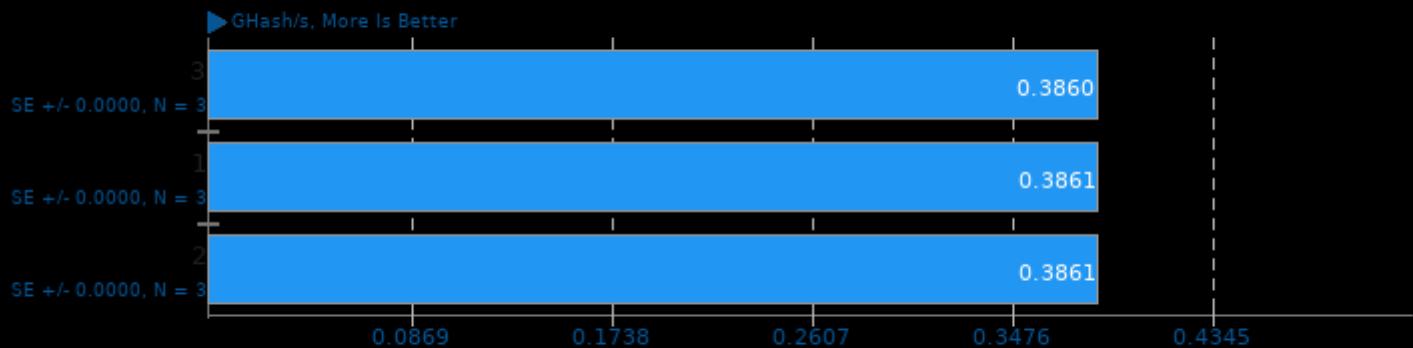
Target: OpenCL - Benchmark: Max SP Flops



1. (CXX) g++ options: -O2 -lSHOCCommonMPI -lSHOCCommonOpenCL -lSHOCCommon -lOpenCL -lrt -pthread -lmpi_cxx -lmpi

SHOC Scalable Heterogeneous Computing 2020-04-17

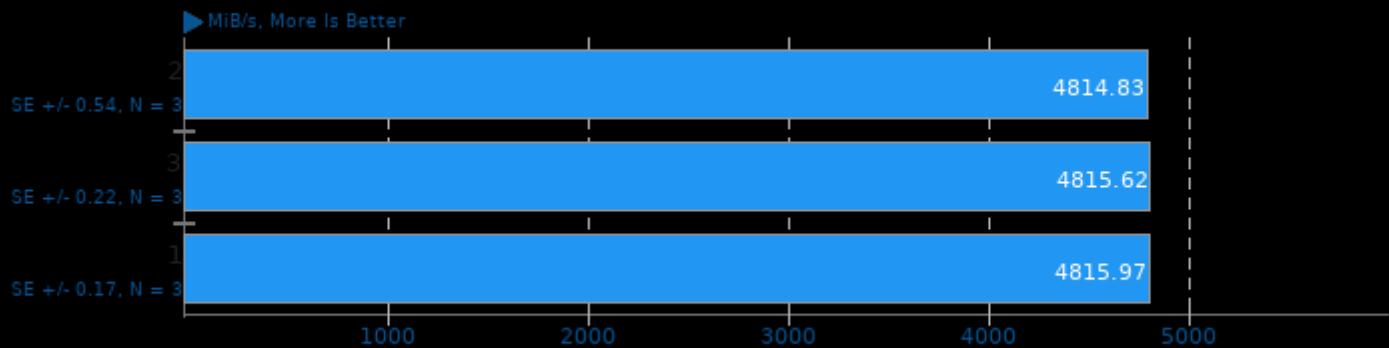
Target: OpenCL - Benchmark: MD5 Hash



1. (CXX) g++ options: -O2 -lSHOCCommonMPI -lSHOCCommonOpenCL -lSHOCCommon -lOpenCL -lrt -pthread -lmpi_cxx -lmpi

Botan 2.17.3

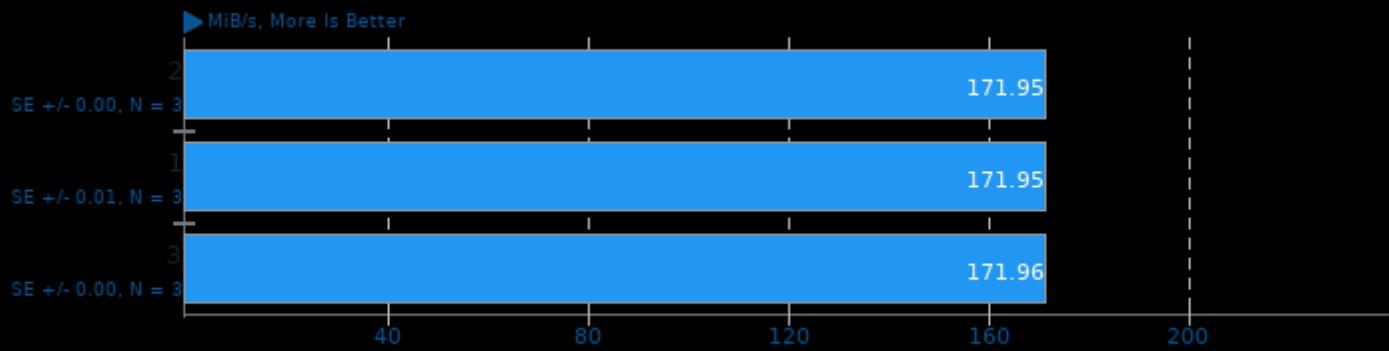
Test: AES-256



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

Botan 2.17.3

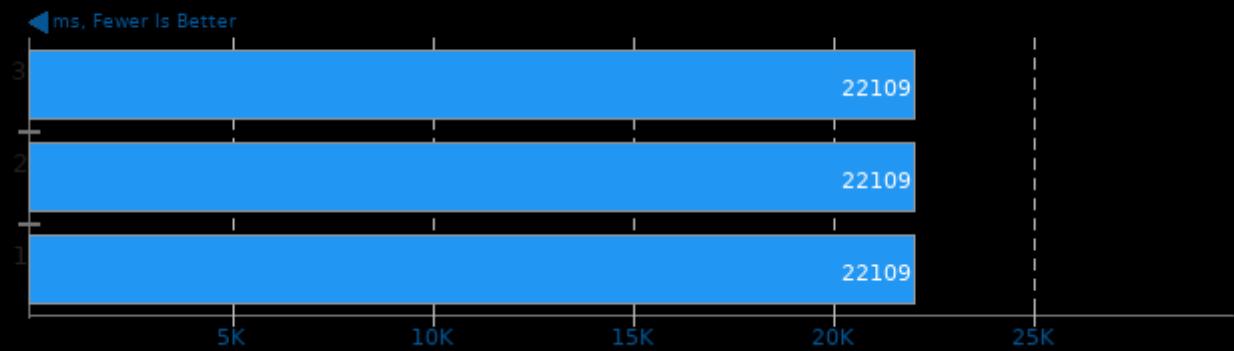
Test: CAST-256



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

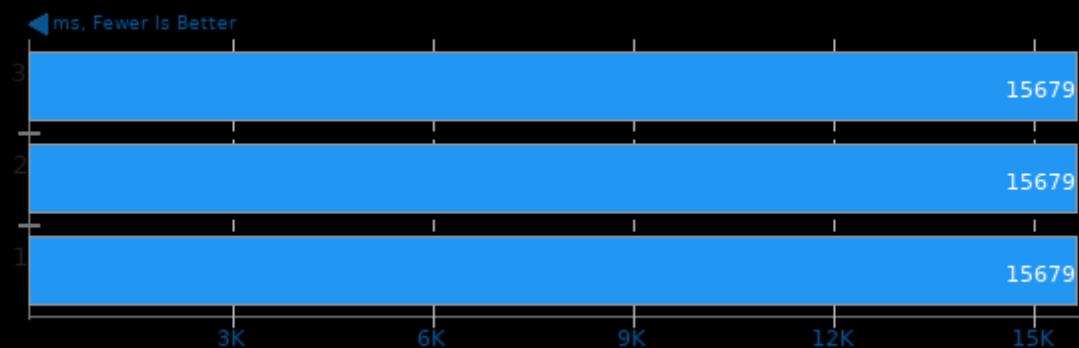
Systemd Total Boot Time

Test: Userspace



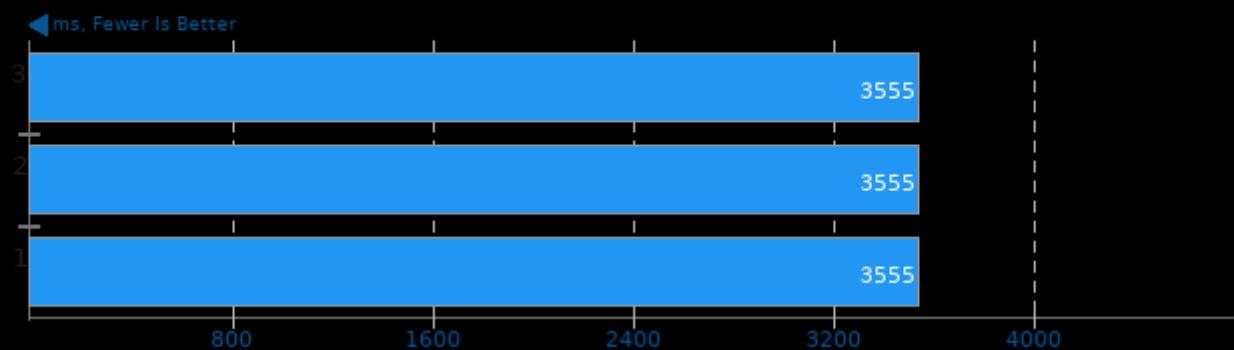
Systemd Total Boot Time

Test: Firmware



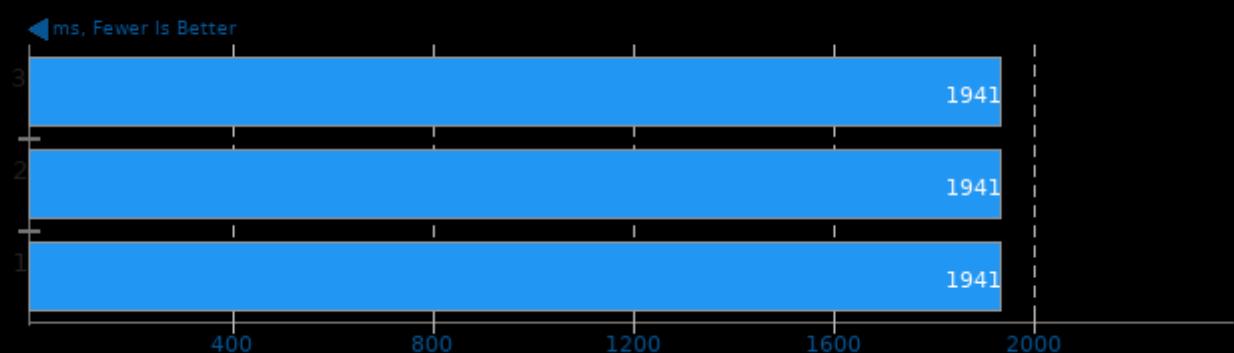
Systemd Total Boot Time

Test: Loader



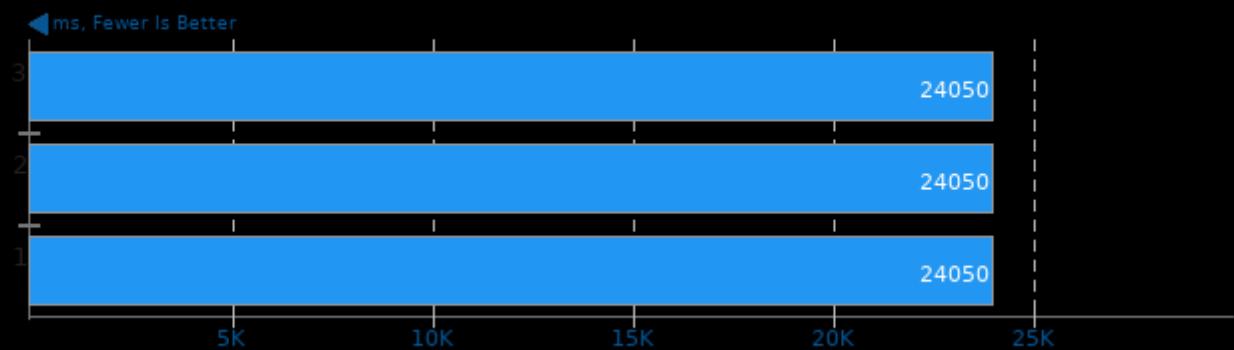
Systemd Total Boot Time

Test: Kernel



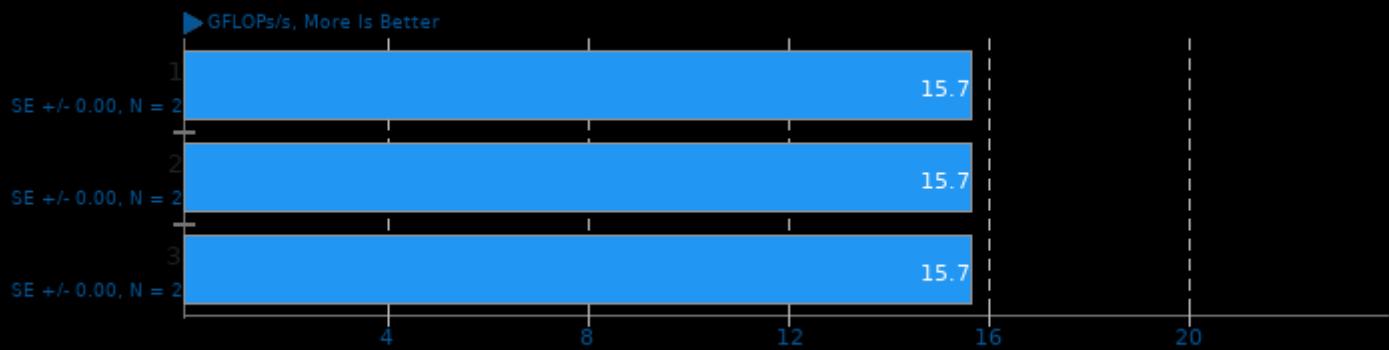
Systemd Total Boot Time

Test: Total



ViennaCL 1.7.1

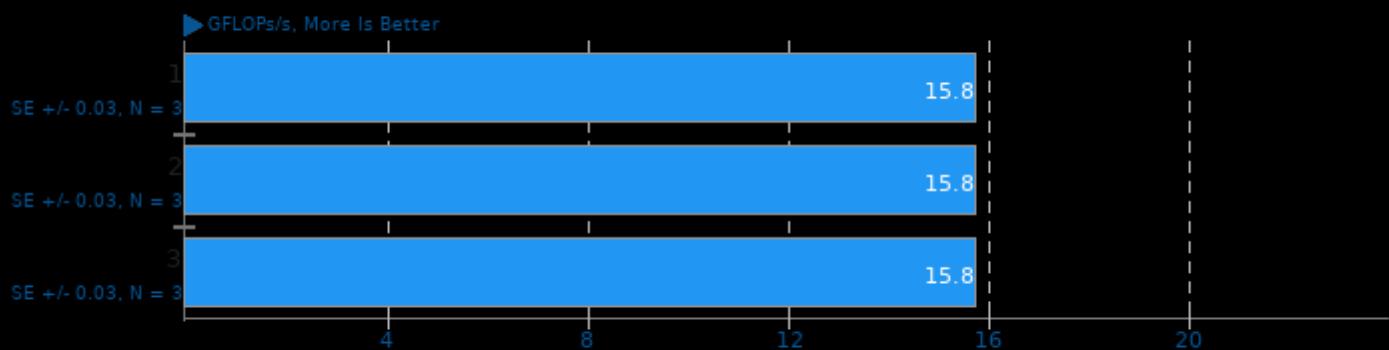
Test: OpenCL BLAS - dGEMM-TT



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

ViennaCL 1.7.1

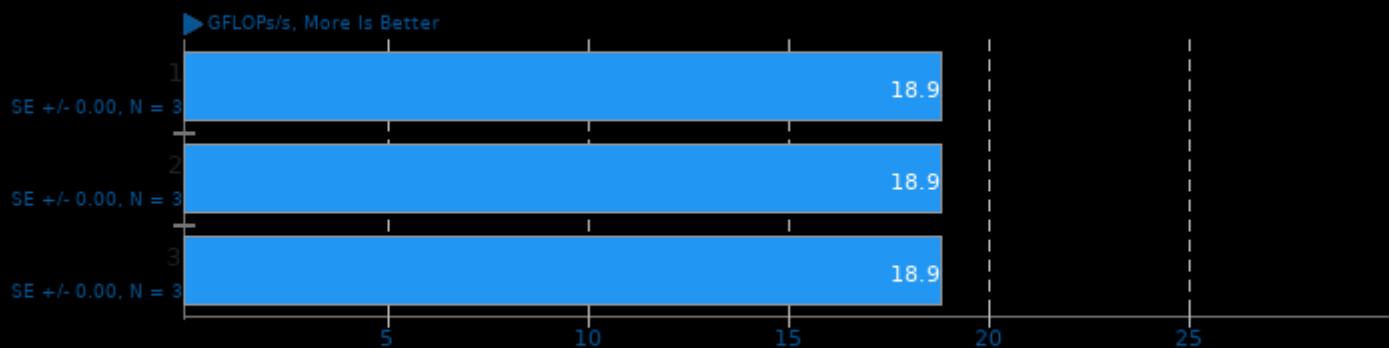
Test: OpenCL BLAS - dGEMM-TN



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

ViennaCL 1.7.1

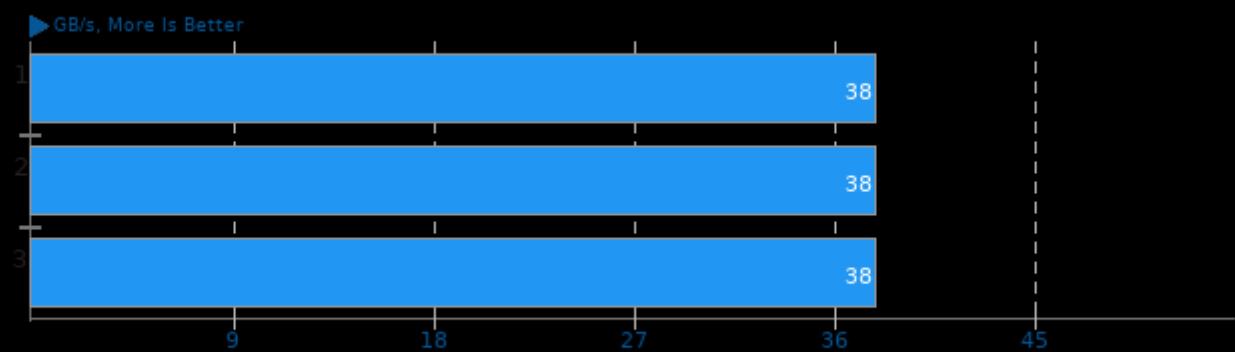
Test: OpenCL BLAS - dGEMM-NN



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

ViennaCL 1.7.1

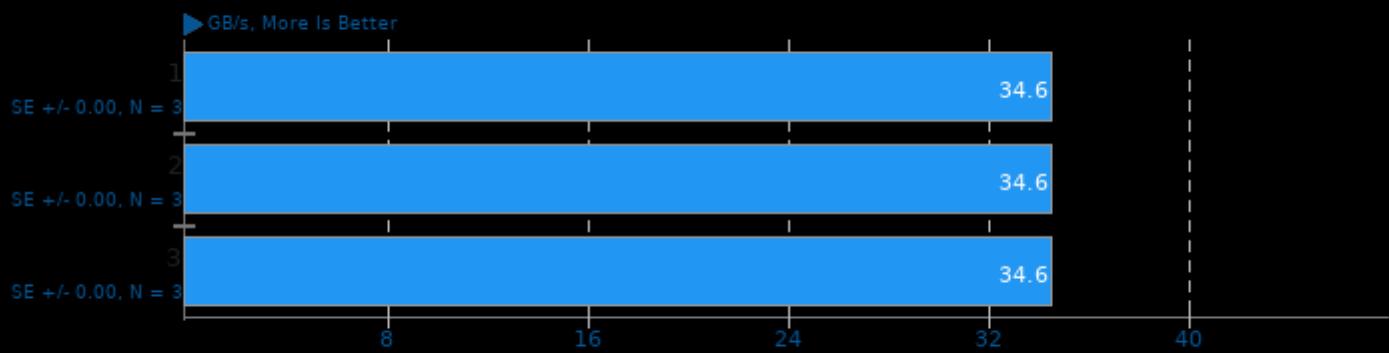
Test: OpenCL BLAS - dDOT



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

ViennaCL 1.7.1

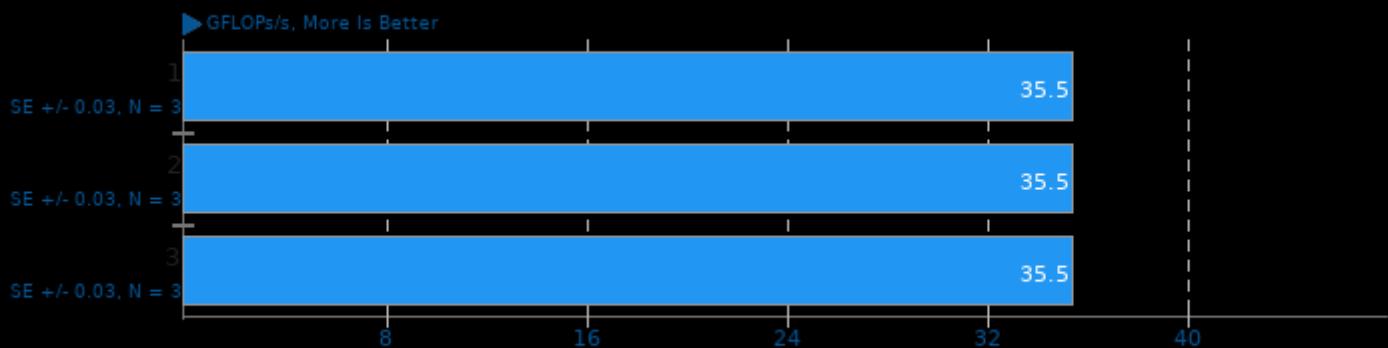
Test: OpenCL BLAS - sAXPY



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

ViennaCL 1.7.1

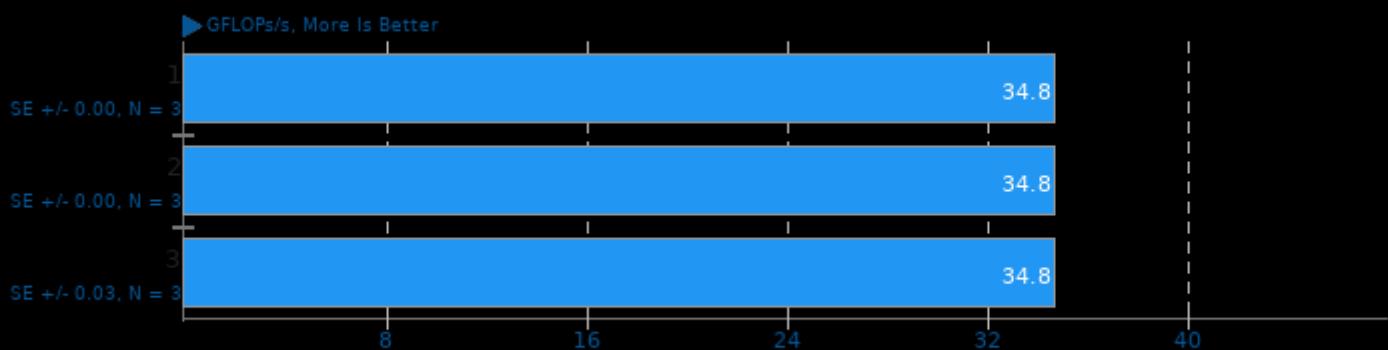
Test: CPU BLAS - dGEMM-TT



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

ViennaCL 1.7.1

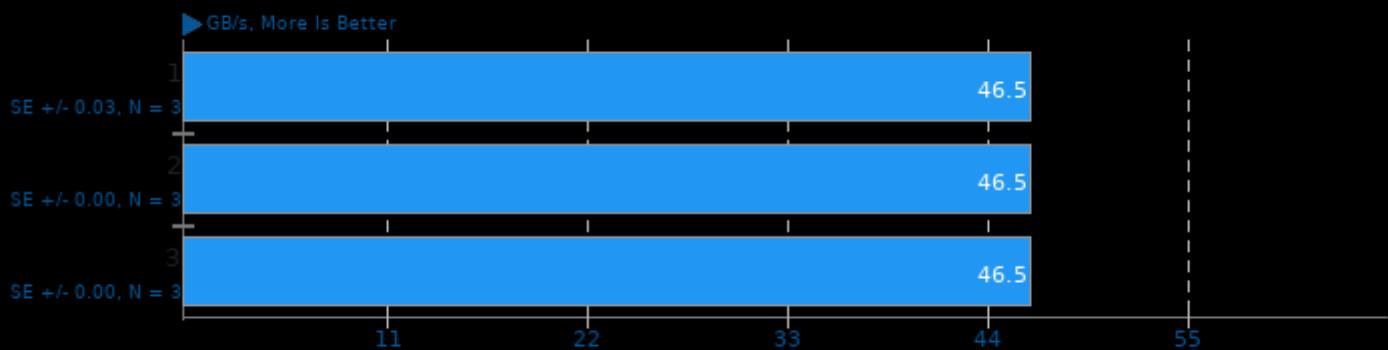
Test: CPU BLAS - dGEMM-NN



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

ViennaCL 1.7.1

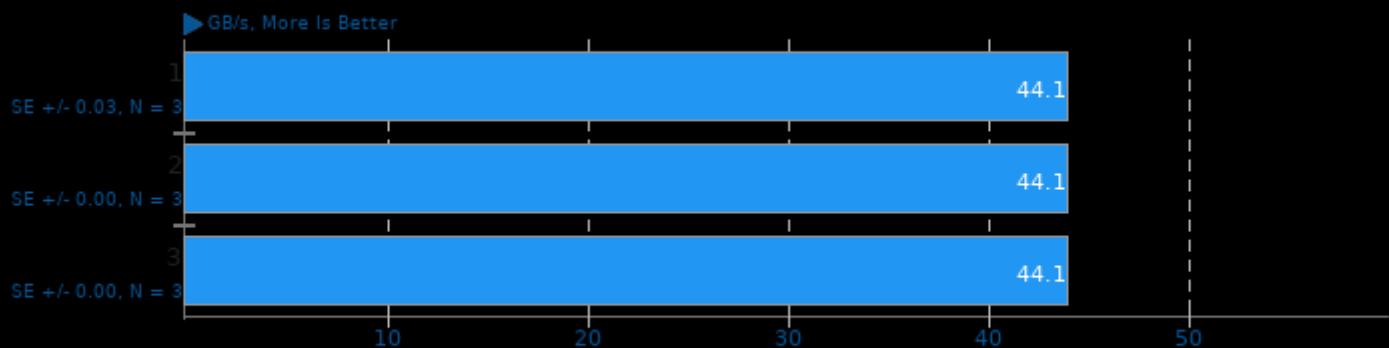
Test: CPU BLAS - dGEMV-T



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

ViennaCL 1.7.1

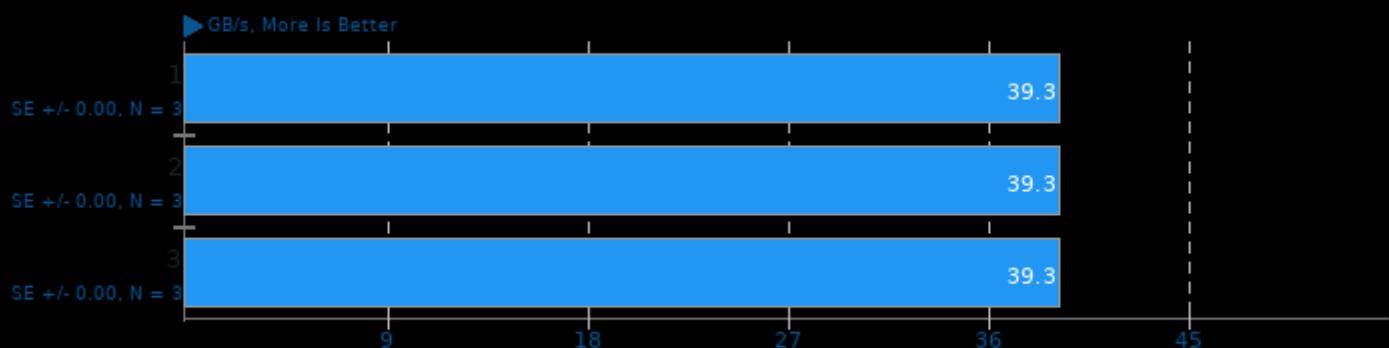
Test: CPU BLAS - dDOT



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

ViennaCL 1.7.1

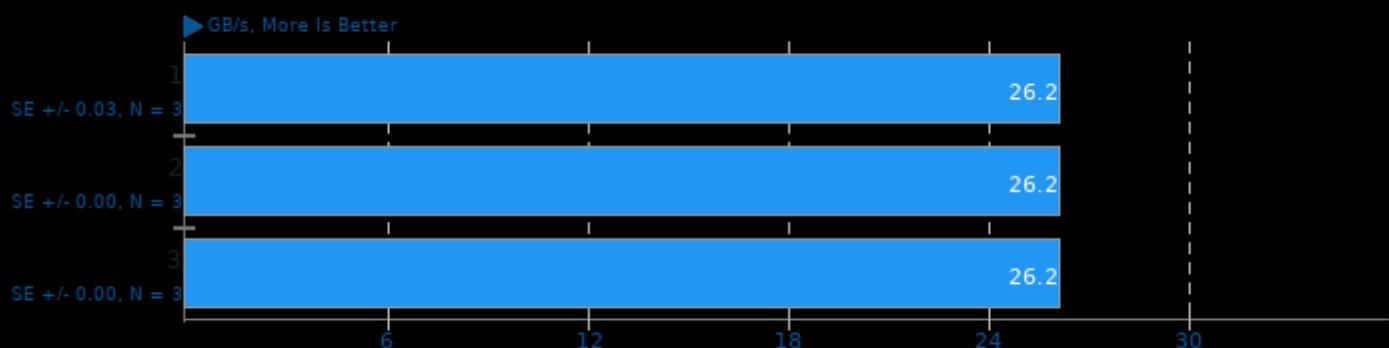
Test: CPU BLAS - dAXPY



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

ViennaCL 1.7.1

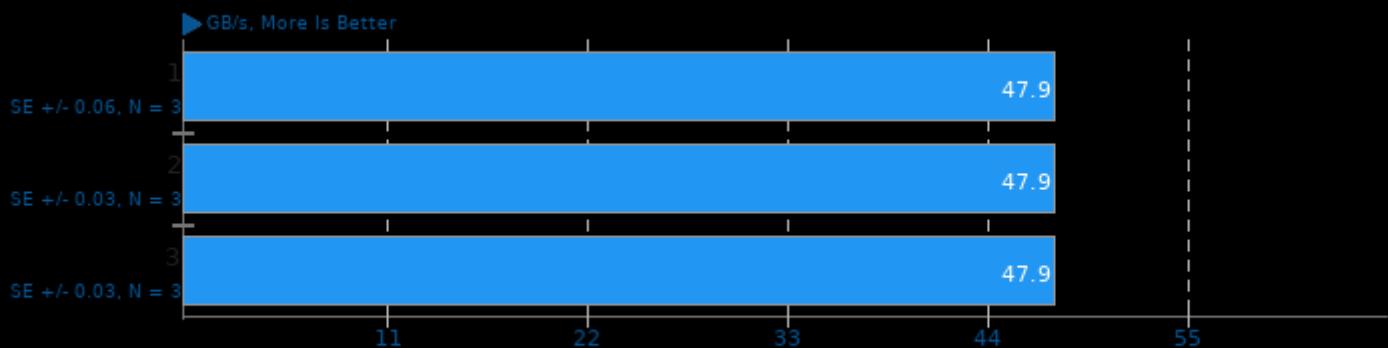
Test: CPU BLAS - dCOPY



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

ViennaCL 1.7.1

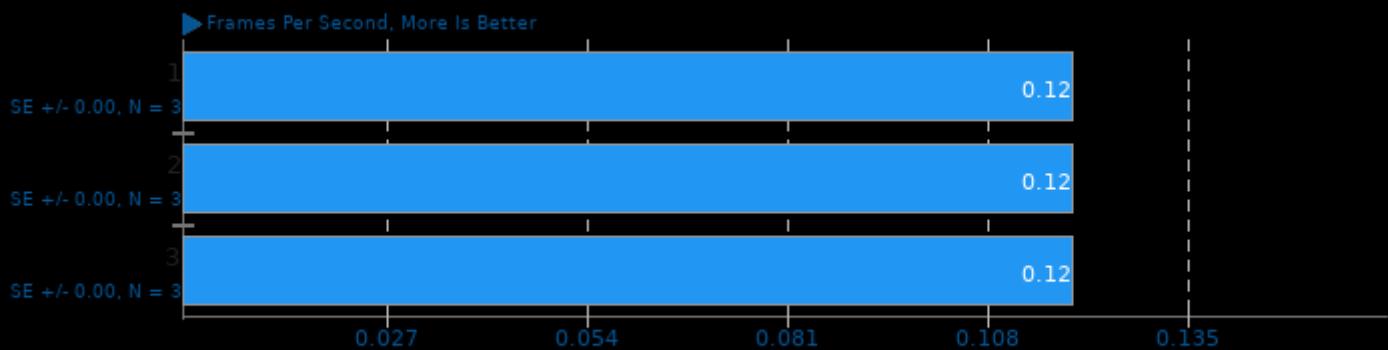
Test: CPU BLAS - sDOT



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

AOM AV1 3.0

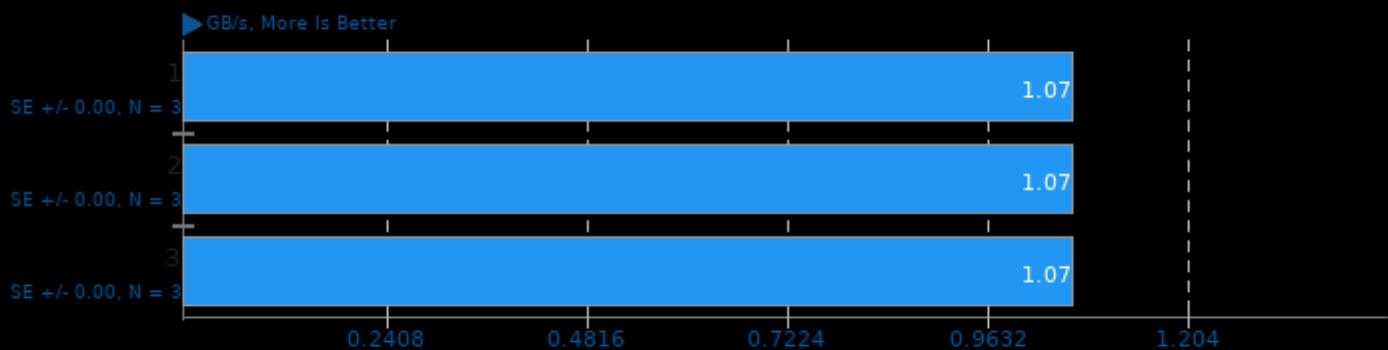
Encoder Mode: Speed 0 Two-Pass - Input: Bosphorus 4K



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

simdjson 0.8.2

Throughput Test: LargeRandom

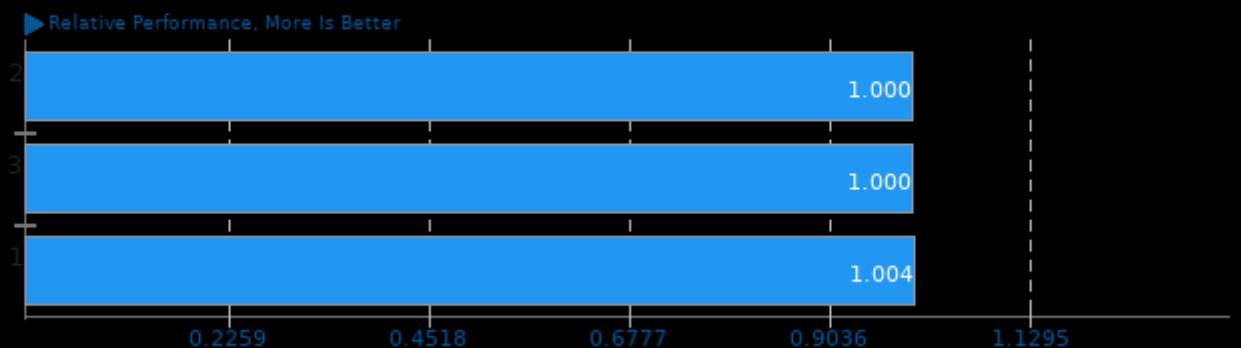


1. (CXX) g++ options: -O3 -pthread

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

Geometric Mean Of AV1 Tests

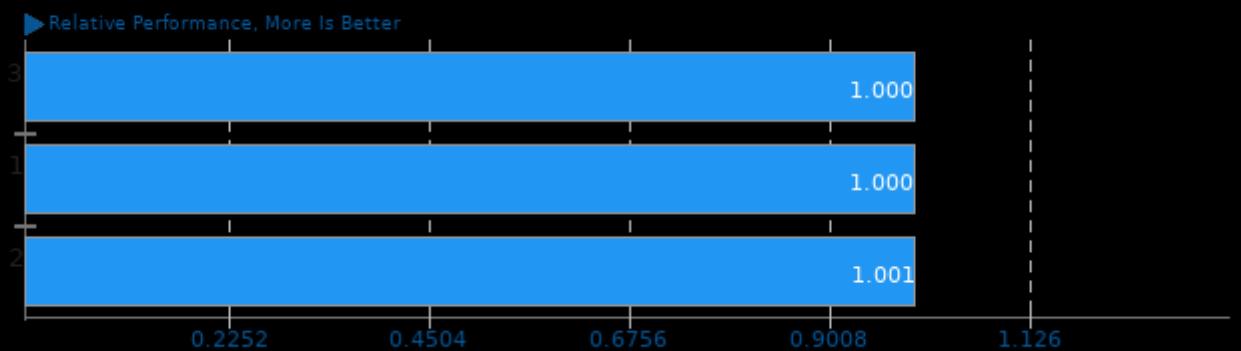
Result Composite - 990KS March



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

Geometric Mean Of Timed Code Compilation Tests

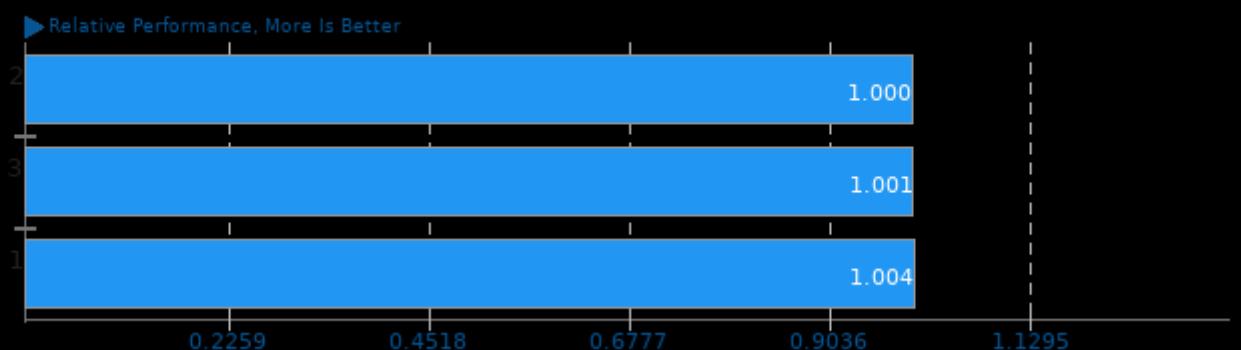
Result Composite - 990KS March



Geometric mean based upon tests: pts/build-linux-kernel, pts/build-erlang, pts/build-nodejs and pts/build-mesa

Geometric Mean Of C/C++ Compiler Tests

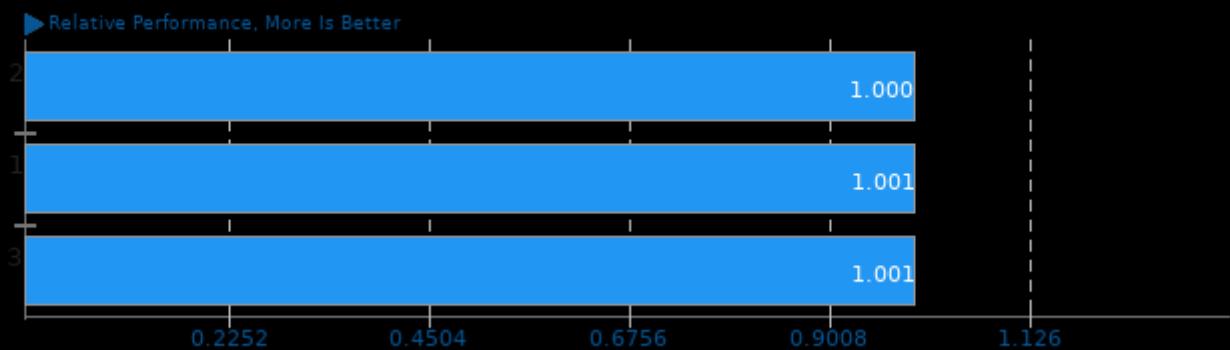
Result Composite - 990KS March



Geometric mean based upon tests: pts/stockfish, pts/dav1d, pts/compress-zstd, pts/aom-av1, pts/svt-vp9, pts/toybrot and pts/basis

Geometric Mean Of CPU Massive Tests

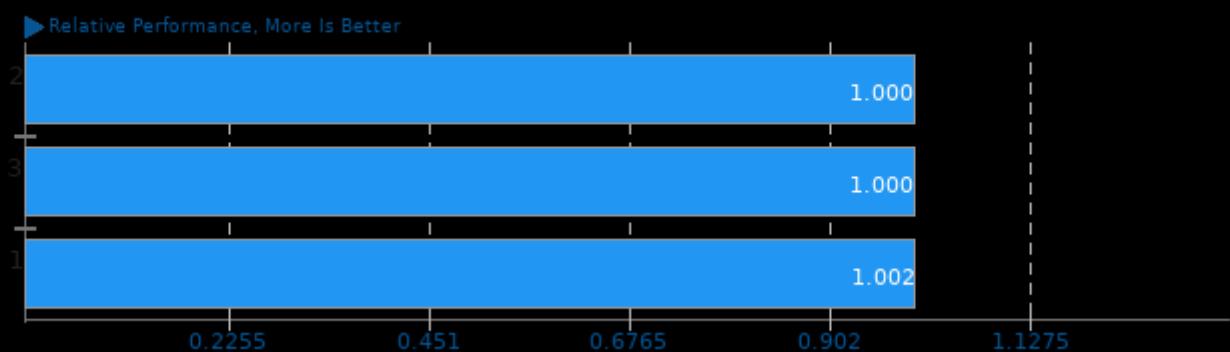
Result Composite - 990KS March



Geometric mean based upon tests: pts/build-linux-kernel, pts/compress-zstd, pts/dav1d, pts/svt-hevc, pts/svt-vp9, pts/onnednn, pts/stockfish, pts/sysbench and pts/botan

Geometric Mean Of Creator Workloads Tests

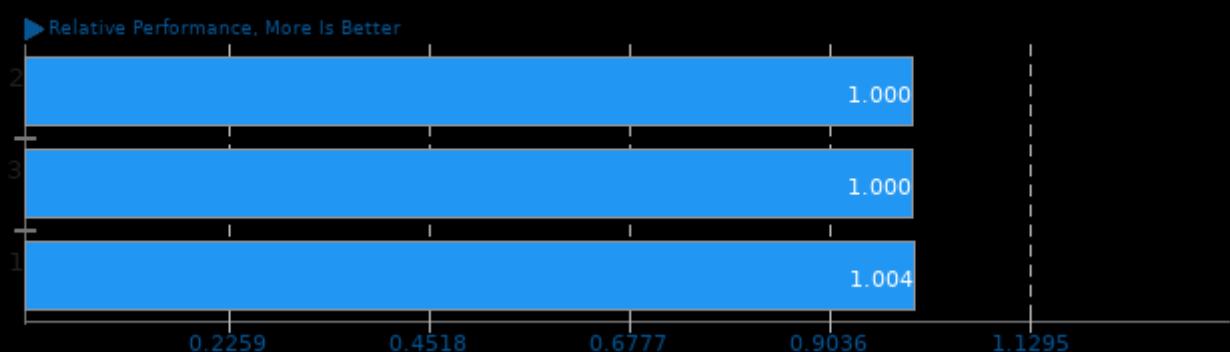
Result Composite - 990KS March



Geometric mean based upon tests: pts/svt-vp9, pts/svt-hevc, pts/dav1d, pts/aom-av1, pts/avifenc, pts/onnednn, pts/basis, pts/astcenc and system/openscad

Geometric Mean Of Encoding Tests

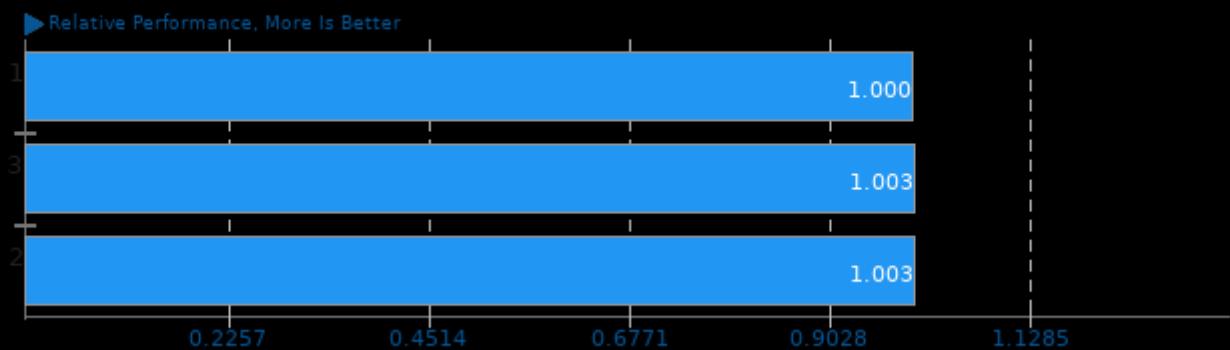
Result Composite - 990KS March



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

Geometric Mean Of Game Development Tests

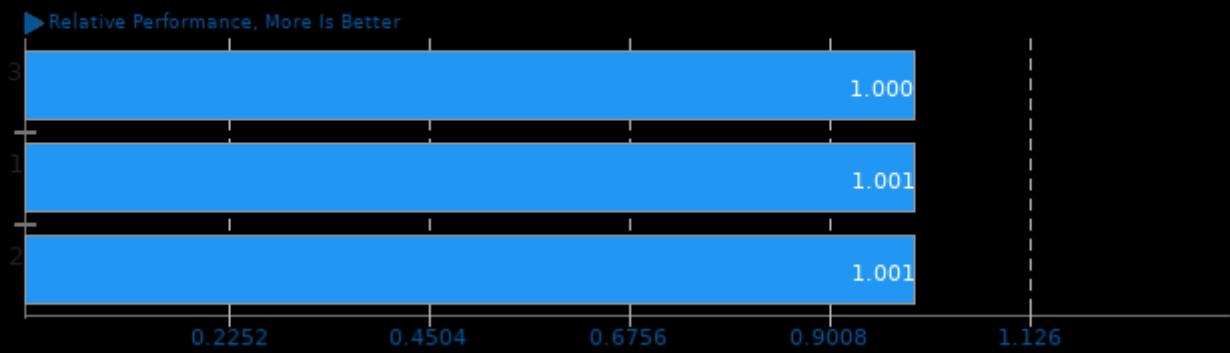
Result Composite - 990KS March



Geometric mean based upon tests: pts/basis and pts/astcenc

Geometric Mean Of HPC - High Performance Computing Tests

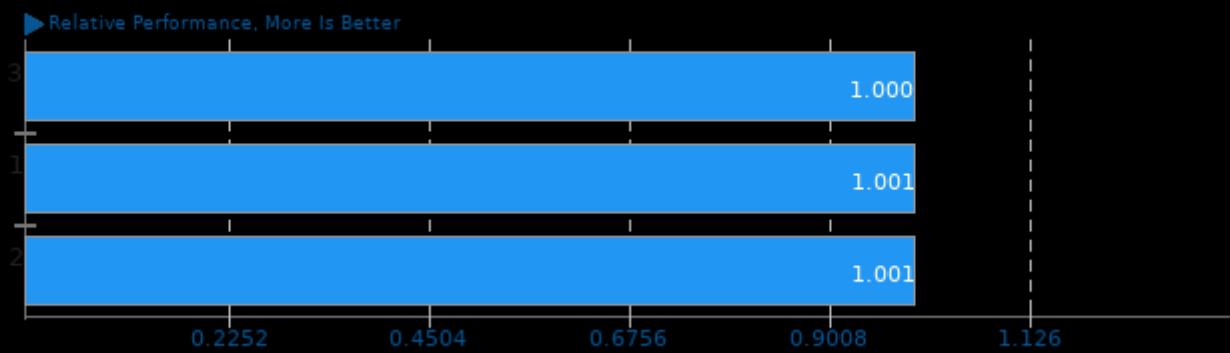
Result Composite - 990KS March



Geometric mean based upon tests: pts/incompact3d, pts/mnn, pts/shoc and pts/onnednn

Geometric Mean Of Machine Learning Tests

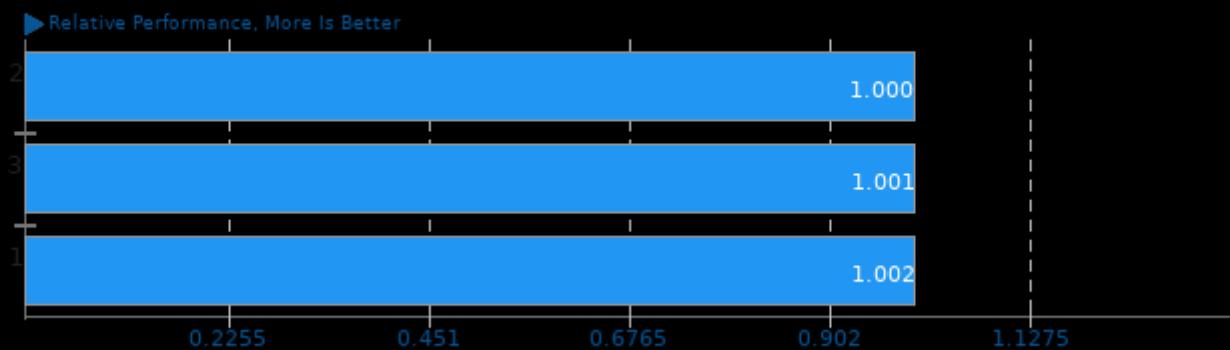
Result Composite - 990KS March



Geometric mean based upon tests: pts/mnn, pts/shoc and pts/onnednn

Geometric Mean Of Multi-Core Tests

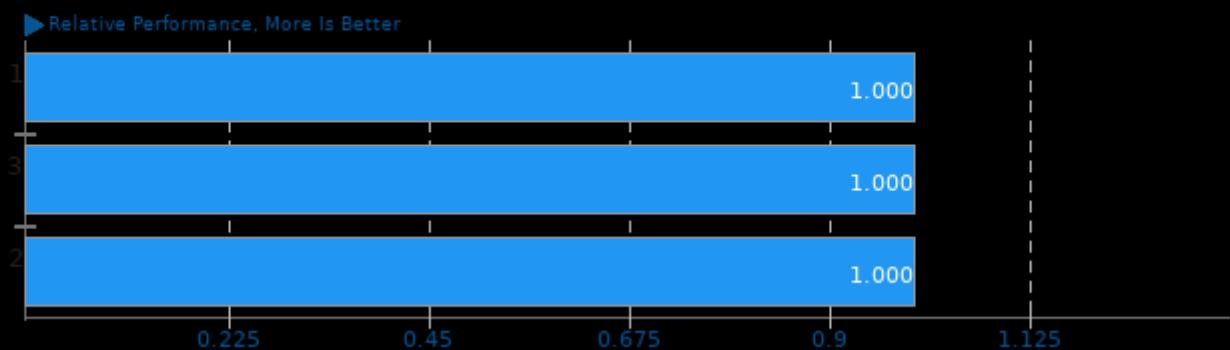
Result Composite - 990KS March



Geometric mean based upon tests: pts/sysbench, pts/stockfish, pts/svt-vp9, pts/svt-hevc, pts/dav1d, pts/aom-av1, pts/avifenc, pts/oneden, pts/compress-zstd, pts/build-linux-kernel, pts/build-erlang, pts/build-nodejs and pts/build-mesa

Geometric Mean Of NVIDIA GPU Compute Tests

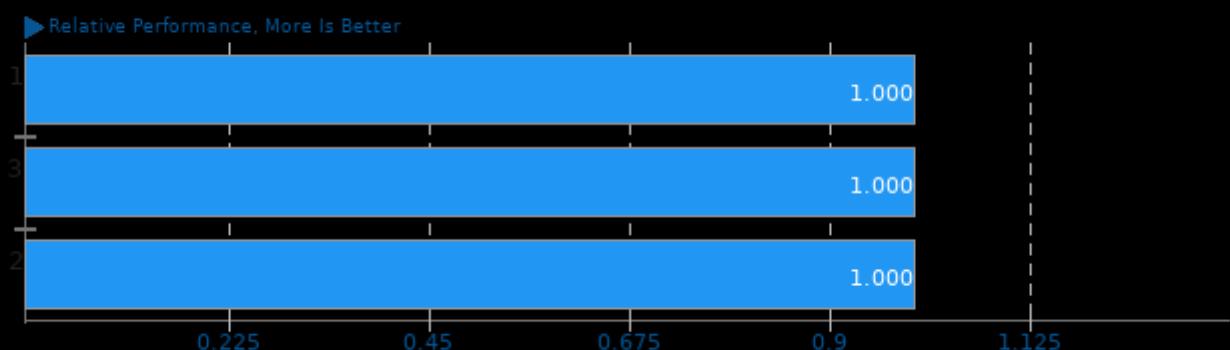
Result Composite - 990KS March



Geometric mean based upon tests: pts/viennacl and pts/shoc

Geometric Mean Of OpenCL Tests

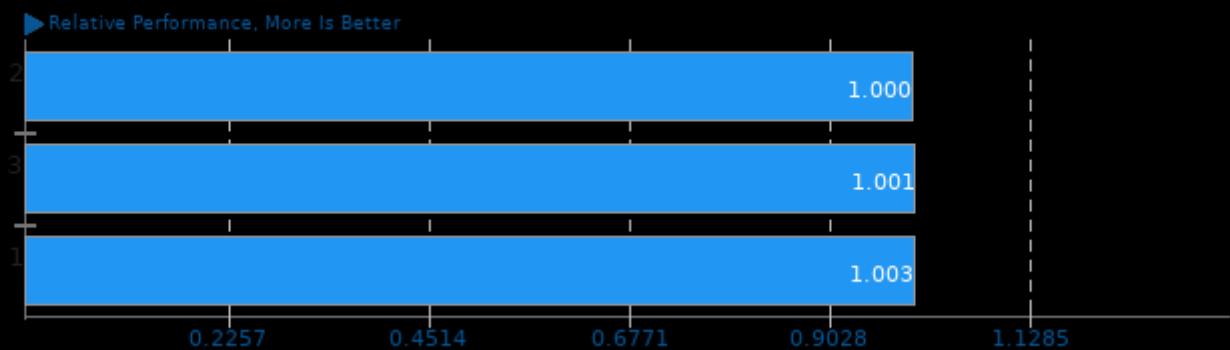
Result Composite - 990KS March



Geometric mean based upon tests: pts/shoc and pts/viennacl

Geometric Mean Of Programmer / Developer System Benchmarks Tests

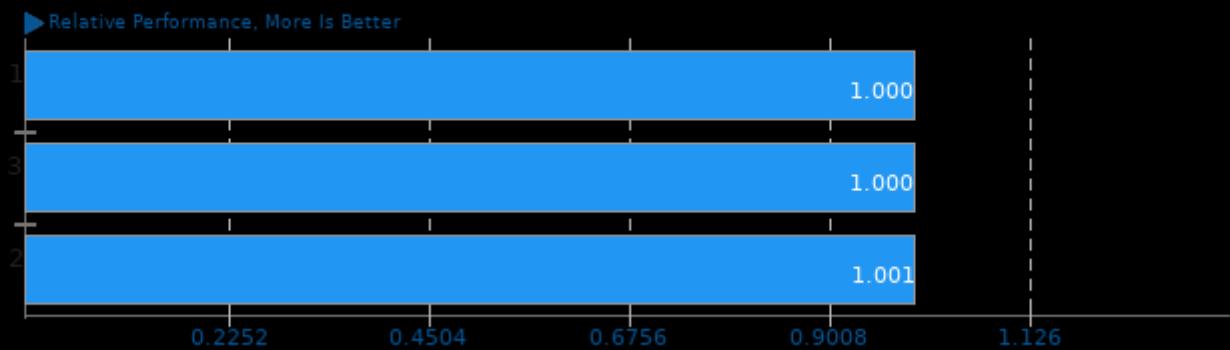
Result Composite - 990KS March



Geometric mean based upon tests: pts/simdjson, pts/compress-zstd, pts/build-linux-kernel, pts/build-erlang, pts/build-nodejs and pts/build-mesa

Geometric Mean Of Python Tests

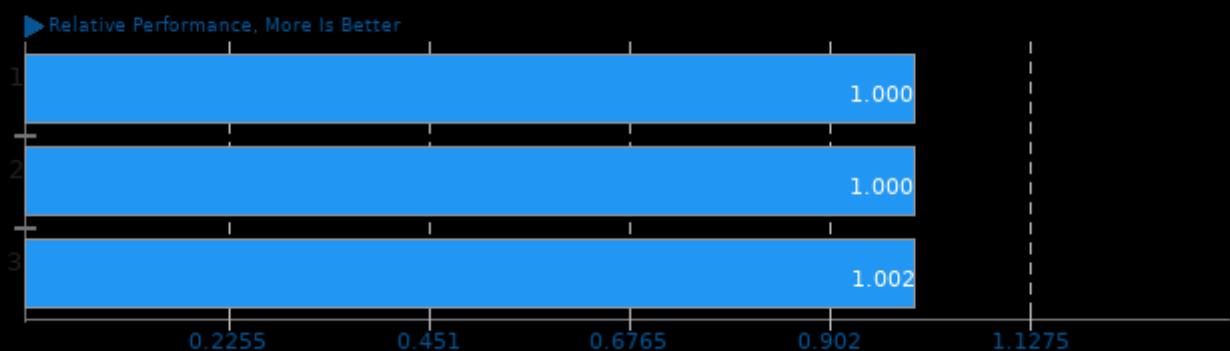
Result Composite - 990KS March



Geometric mean based upon tests: system/gnuradio, pts/build-mesa, pts/build-nodejs and pts/systemd-boot-total

Geometric Mean Of Software Defined Radio Tests

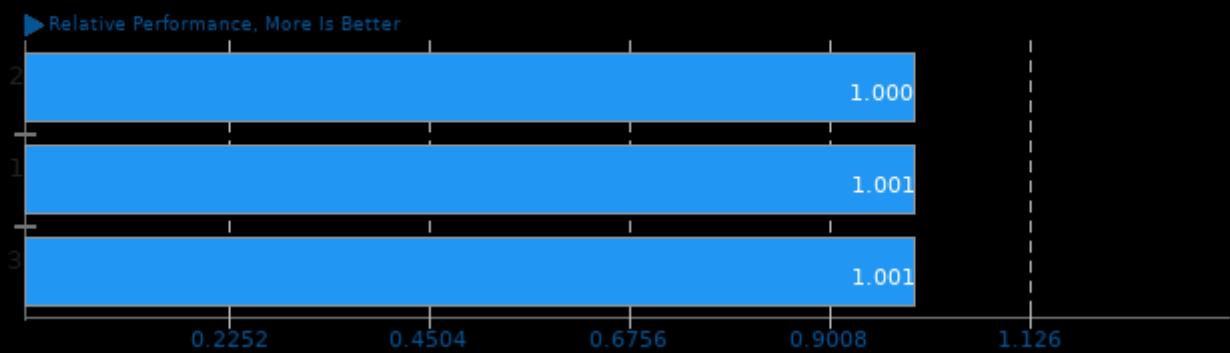
Result Composite - 990KS March



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

Geometric Mean Of Server CPU Tests

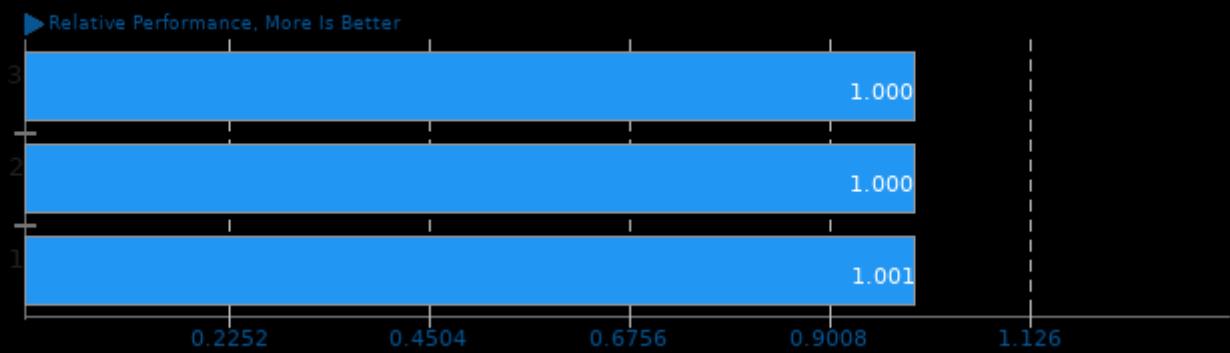
Result Composite - 990KS March



Geometric mean based upon tests: pts/onnednn, pts/svt-hevc, pts/svt-vp9, pts/dav1d, pts/stockfish, pts/build-linux-kernel, pts/compress-zstd and pts/sysbench

Geometric Mean Of Single-Threaded Tests

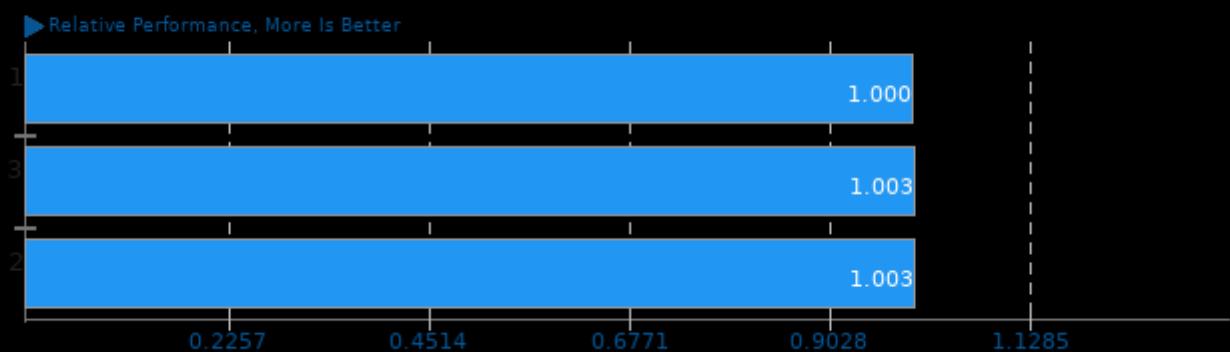
Result Composite - 990KS March



Geometric mean based upon tests: pts/gmpbench and pts/botan

Geometric Mean Of Texture Compression Tests

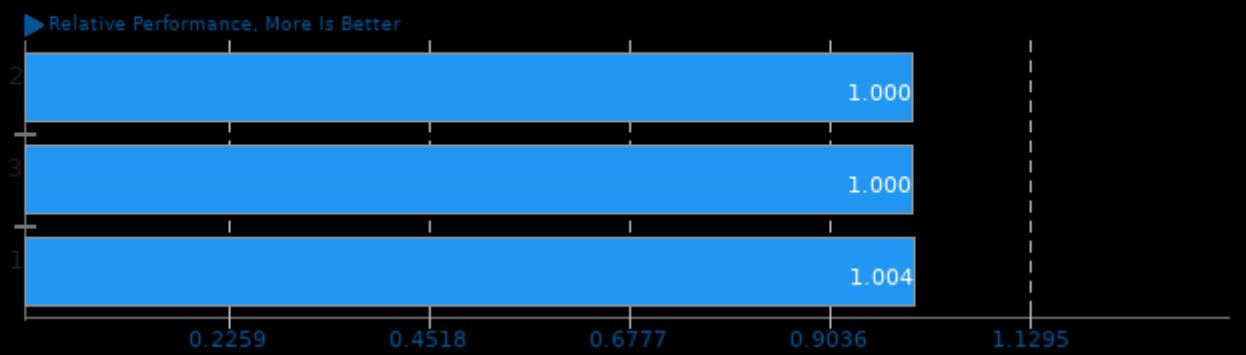
Result Composite - 990KS March



Geometric mean based upon tests: pts/basis and pts/astcenc

Geometric Mean Of Video Encoding Tests

Result Composite - 990KS March



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

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 10:32.