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rtx3090

AMD Ryzen 9 7950X 16-Core testing with a ASUS ROG CROSSHAIR X670E HERO (0805 BIOS) and MSI NVIDIA GeForce RTX 4090 24GB on Linuxmint 21.1 via the Phoronix Test Suite.

Automated Executive Summary

rtx4090 had the most wins, coming in first place for 85% of the tests.

Based on the geometric mean of all complete results, the fastest (rtx4090) was 1.544x the speed of the slowest (rtx3090-gpu).

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

MandelGPU (OpenCL Device: GPU) at 256.852x
NCNN (Target: Vulkan GPU - Model: googlenet) at 4.53x
SHOC Scalable HeterOgeneous Computing (Target: OpenCL - Benchmark: GEMM SGEMM_N) at 3.311x
SHOC Scalable HeterOgeneous Computing (Target: OpenCL - Benchmark: Reduction) at 2.639x
Hashcat (Benchmark: 7-Zip) at 2.54x
vkpeak (int16-vec4) at 2.445x
Hashcat (Benchmark: TrueCrypt RIPEMD160 + XTS) at 2.417x
clpeak (OpenCL Test: Single-Precision Float) at 2.394x
Hashcat (Benchmark: SHA-512) at 2.383x

clpeak (OpenCL Test: Integer Compute INT) at 2.374x.

Test Systems:

rtx3090-gpu

Processor: AMD Ryzen 9 7950X 16-Core @ 5.88GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR X670E HERO (0805 BIOS), Chipset: AMD Device 14d8, Memory: 62GB, Disk: 2000GB Sabrent Rocket 4.0 Plus + 2000GB CT2000P5PSSD8 + 2000GB Samsung SSD 980 PRO 2TB, Graphics: eVGA NVIDIA GeForce RTX 3090 24GB, Audio: NVIDIA GA102 HD Audio, Monitor: PHL 328E1 + LG ULTRAWIDE, Network: Intel I225-V + Intel Wi-Fi 6 AX210/AX211/AX411

OS: Linuxmint 21.1, Kernel: 5.15.0-58-generic (x86_64), Desktop: Cinnamon 5.6.7, Display Server: X Server 1.21.1.3, Display Driver: NVIDIA 525.60.11, OpenGL: 4.6.0, OpenCL: OpenCL 3.0 CUDA 12.0.89, Vulkan: 1.3.224, Compiler: GCC 11.3.0, File-System: ext4, Screen Resolution: 8960x2160

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-cet --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-serialization=2 --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-11-xKiWfi/gcc-11-11.3.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-11-xKiWfi/gcc-11-11.3.0/debian/tmp-gcn/usr --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-build-config=bootstrap-lto-lean --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: amd-pstate performance (Boost: Enabled) - CPU Microcode: 0xa601203
Graphics Notes: BAR1 / Visible vRAM Size: 256 MiB - vBIOS Version: 94.02.42.c0.15
OpenCL Notes: GPU Compute Cores: 10496
Python Notes: Python 3.10.8
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + retbleed: 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 Retpolines IBPB: conditional IBRS_FW STIBP: always-on RSB filling PBRSB-eIBRS: Not affected + srbds: Not affected + tsx_async_abort: Not affected

rtx4090

Processor: AMD Ryzen 9 7950X 16-Core @ 5.88GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR X670E HERO (0805 BIOS), Chipset: AMD Device 14d8, Memory: 62GB, Disk: 2000GB Sabrent Rocket 4.0 Plus + 2000GB CT2000P5PSSD8 + 2000GB Samsung SSD 980 PRO 2TB, Graphics: MSI NVIDIA GeForce RTX 4090 24GB, Audio: NVIDIA Device 22ba, Monitor: PHL 328E1 + LG ULTRAWIDE, Network: Intel I225-V + Intel Wi-Fi 6 AX210/AX211/AX411

OS: Linuxmint 21.1, Kernel: 5.15.0-58-generic (x86_64), Desktop: Cinnamon 5.6.7, Display Server: X Server 1.21.1.3, Display Driver: NVIDIA 525.78.01, OpenGL: 4.6.0, OpenCL: OpenCL 3.0 CUDA 12.0.133, Vulkan: 1.3.224, Compiler: GCC 11.3.0, File-System: ext4, Screen Resolution: 8960x2160

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-cet --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-serialization=2 --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-11-xKiWfi/gcc-11-11.3.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-11-xKiWfi/gcc-11-11.3.0/debian/tmp-gcn/usr --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-build-config=bootstrap-lto-lean --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: amd-pstate performance (Boost: Enabled) - CPU Microcode: 0xa601203
Graphics Notes: BAR1 / Visible vRAM Size: 256 MiB - vBIOS Version: 95.02.18.80.74
OpenCL Notes: GPU Compute Cores: 16384
Python Notes: Python 3.10.8

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Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + retbleed: 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 Retpolines IBPB: conditional IBRS_FW STIBP: always-on RSB filling PBRSB-eIBRS: Not affected + srbds: Not affected + tsx_async_abort: Not affected

	rtx3090-gpu	rtx4090
ArrayFire - C.G.O (ms)	**1.598**	**0.8427**
Normalized	52.73%	100%
Standard Deviation	0.6%	0.2%
Blender - BMW27 - NVIDIA OptiX (sec)	**5.78**	**13.06**
Normalized	100%	44.26%
Standard Deviation	0.3%	257.3%
Blender - Classroom - NVIDIA OptiX (sec)	**14.00**	**7.03**
Normalized	50.21%	100%
Standard Deviation	0.3%	0.5%
Blender - Fishy Cat - NVIDIA OptiX (sec)	**10.15**	**5.28**
Normalized	52.02%	100%
Standard Deviation	0.2%	3.8%
Blender - Barbershop - NVIDIA OptiX (sec)	**51.61**	**29.68**
Normalized	57.51%	100%
Standard Deviation	0.4%	0.3%
Blender - Pabellon Barcelona - NVIDIA OptiX (sec)	**15.43**	**7.74**
Normalized	50.16%	100%
Standard Deviation	0.1%	0.1%
cl-mem - Copy (GB/s)	**362.3**	**416.7**
Normalized	86.95%	100%
Standard Deviation	0.2%	0.2%
cl-mem - Read (GB/s)	**827.1**	**887.5**
Normalized	93.19%	100%
Standard Deviation	0.1%	0%
cl-mem - Write (GB/s)	**751.5**	**813.7**
Normalized	92.36%	100%
Standard Deviation	0.1%	0.3%
clpeak - I.C.I (GIOPS)	**18146**	**43084**
Normalized	42.12%	100%
Standard Deviation	1.5%	1.6%
clpeak - S.P.F (GFLOPS)	**35530**	**85069**
Normalized	41.77%	100%
Standard Deviation	1%	0.1%
clpeak - D.P.D (GFLOPS)	**653.69**	**1450**
Normalized	45.09%	100%
Standard Deviation	0.2%	0.1%
clpeak - G.M.B (GBPS)	**814.22**	**869.72**
Normalized	93.62%	100%
Standard Deviation	0%	0.1%
FAHBench (Ns/Day)	**328.4820**	**442.4502**
Normalized	74.24%	100%
Standard Deviation	0.2%	0.2%
FinanceBench - B.S.O (ms)	**5.853**	**2.874**
Normalized	49.1%	100%
Standard Deviation	0.1%	2.5%
Hashcat - MD5 (H/s)	**68180633333**	**157233333333**
Normalized	43.36%	100%

Standard Deviation	0.1%	0.1%
Hashcat - SHA1 (H/s)	**21815700000**	**51093900000**
Normalized	42.7%	100%
Standard Deviation	0.4%	0.3%
Hashcat - 7-Zip (H/s)	**1092733**	**2775433**
Normalized	39.37%	100%
Standard Deviation	2.3%	0.5%
Hashcat - SHA-512 (H/s)	**2735933333**	**6520400000**
Normalized	41.96%	100%
Standard Deviation	0.2%	0.1%
Hashcat - T.R.X (H/s)	**790800**	**1911500**
Normalized	41.37%	100%
Standard Deviation	2%	2.4%
IndigoBench - OpenCL GPU - Bedroom (M samples/s)	**18.643**	**33.701**
Normalized	55.32%	100%
Standard Deviation	0.4%	0.3%
IndigoBench - OpenCL GPU - Supercar (M samples/s)	**49.238**	**77.657**
Normalized	63.4%	100%
Standard Deviation	0.5%	0%
LeelaChessZero - OpenCL (Nodes/s)	**40156**	**74185**
Normalized	54.13%	100%
Standard Deviation	2%	1.3%
LuxCoreRender - DLSC - GPU (M samples/sec)	**11.28**	**21.90**
Normalized	51.51%	100%
Standard Deviation	0.1%	0.2%
LuxCoreRender - Danish Mood - GPU (M samples/sec)	**9.17**	**18.16**
Normalized	50.5%	100%
Standard Deviation	0.3%	0.2%
LuxCoreRender - Orange Juice - GPU (M samples/sec)	**10.18**	**17.42**
Normalized	58.44%	100%
Standard Deviation	0.4%	1.3%
LuxCoreRender - LuxCore Benchmark - GPU (M samples/sec)	**11.14**	**19.05**
Normalized	58.48%	100%
Standard Deviation	0.4%	0.3%
LuxCoreRender - R.C.a.P - GPU (M samples/sec)	**31.03**	**40.30**
Normalized	77%	100%
Standard Deviation	0.8%	1.1%
MandelGPU - GPU (Samples/sec)	**3132110**	**804490080**
Normalized	0.39%	100%
Standard Deviation	0%	1.1%
NAMD CUDA - ATPase Simulation - 327,506 Atoms (days/ns)	**0.09694**	**0.08095**
Normalized	83.51%	100%
Standard Deviation	5.5%	4.4%
NCNN - Vulkan GPU - mobilenet (ms)	**3.22**	**6.98**
Normalized	100%	46.13%
Standard Deviation	2.3%	174.5%
NCNN - Vulkan GPU-v2-v2 - mobilenet-v2 (ms)	**1.79**	**2.66**
Normalized	100%	67.29%
Standard Deviation	4.6%	147.9%
NCNN - Vulkan GPU-v3-v3 - mobilenet-v3 (ms)	**1.53**	**2.93**
Normalized	100%	52.22%
Standard Deviation	4.6%	121.3%
NCNN - Vulkan GPU - shufflenet-v2 (ms)	**1.53**	**2.89**

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Normalized	100%	52.94%
Standard Deviation	8.2%	156.4%
NCNN - Vulkan GPU - mnasnet (ms)	**1.23**	**2.50**
Normalized	100%	49.2%
Standard Deviation	2.7%	168.7%
NCNN - Vulkan GPU - efficientnet-b0 (ms)	**5.35**	**3.78**
Normalized	70.65%	100%
Standard Deviation	43.8%	113.4%
NCNN - Vulkan GPU - blazeface (ms)	**0.91**	**0.85**
Normalized	93.41%	100%
Standard Deviation	3.1%	1.7%
NCNN - Vulkan GPU - googlenet (ms)	**10.51**	**2.32**
Normalized	22.07%	100%
Standard Deviation	2.3%	4.8%
NCNN - Vulkan GPU - vgg16 (ms)	**3.10**	**3.37**
Normalized	100%	91.99%
Standard Deviation	16.1%	115.9%
NCNN - Vulkan GPU - resnet18 (ms)	**1.88**	**1.62**
Normalized	86.17%	100%
Standard Deviation	13.8%	7.3%
NCNN - Vulkan GPU - alexnet (ms)	**1.17**	**2.14**
Normalized	100%	54.67%
Standard Deviation	1.8%	23.7%
NCNN - Vulkan GPU - resnet50 (ms)	**2.56**	**3.75**
Normalized	100%	68.27%
Standard Deviation	8.5%	128.3%
NCNN - Vulkan GPU - yolov4-tiny (ms)	**12.78**	**9.46**
Normalized	74.02%	100%
Standard Deviation	67.7%	124.7%
NCNN - Vulkan GPU - squeezenet_ssd (ms)	**34.29**	**8.16**
Normalized	23.8%	100%
Standard Deviation	8.3%	157.1%
NCNN - Vulkan GPU - regnety_400m (ms)	**2.11**	**1.48**
Normalized	70.14%	100%
Standard Deviation	20.1%	4.7%
NCNN - Vulkan GPU - vision_transformer (ms)	**158.72**	**270.65**
Normalized	100%	58.64%
Standard Deviation	23.5%	141.5%
NCNN - Vulkan GPU - FastestDet (ms)	**2.22**	**3.72**
Normalized	100%	59.68%
Standard Deviation	6.8%	116.8%
NeatBench - GPU (FPS)	**3090**	**4090**
Normalized	75.55%	100%
Standard Deviation	0%	0%
OctaneBench - Total Score (Score)	**686.766135**	**1366**
Normalized	50.26%	100%
RealSR-NCNN - 4x - No (sec)	**5.613**	**4.289**
Normalized	76.41%	100%
Standard Deviation	0.3%	1.1%
RealSR-NCNN - 4x - Yes (sec)	**29.671**	**18.886**
Normalized	63.65%	100%
Standard Deviation	0.3%	0.1%
Rodinia - O.P.F (sec)	**3.767**	**2.091**
Normalized	55.51%	100%
Standard Deviation	2.4%	

SHOC Scalable HeterOgeneous Computing - OpenCL - S3D (GFLOPS)	**427.911**	**653.058**
Normalized	65.52%	100%
Standard Deviation	0.2%	0.1%
SHOC Scalable HeterOgeneous Computing - OpenCL - Triad (GB/s)	**13.1025**	**26.2868**
Normalized	49.84%	100%
Standard Deviation	0.1%	0.1%
SHOC Scalable HeterOgeneous Computing - OpenCL - FFT SP (GFLOPS)	**2141**	**2813**
Normalized	76.12%	100%
Standard Deviation	0%	0.1%
SHOC Scalable HeterOgeneous Computing - OpenCL - MD5 Hash (GHash/s)	**43.1315**	**95.7989**
Normalized	45.02%	100%
Standard Deviation	0.2%	2.2%
SHOC Scalable HeterOgeneous Computing - OpenCL - Reduction (GB/s)	**395.854**	**1045**
Normalized	37.89%	100%
Standard Deviation	0.2%	0%
SHOC Scalable HeterOgeneous Computing - OpenCL - GEMM SGEMM_N (GFLOPS)	**8429**	**27908**
Normalized	30.2%	100%
Standard Deviation	1.2%	2.2%
SHOC Scalable HeterOgeneous Computing - OpenCL - Max SP Flops (GFLOPS)	**39392**	**92405**
Normalized	42.63%	100%
Standard Deviation	0.9%	0.2%
SHOC Scalable HeterOgeneous Computing - OpenCL - Bus Speed Download (GB/s)	**13.3594**	**26.8302**
Normalized	49.79%	100%
Standard Deviation	0%	0%
SHOC Scalable HeterOgeneous Computing - OpenCL - Bus Speed Readback (GB/s)	**13.1913**	**26.3504**
Normalized	50.06%	100%
Standard Deviation	0%	0%
SHOC Scalable HeterOgeneous Computing - OpenCL - T.R.B (GB/s)	**2199**	**3099**
Normalized	70.97%	100%
Standard Deviation	0.2%	0.1%
ViennaCL - CPU BLAS - sCOPY (GB/s)	**152**	**162**
Normalized	93.83%	100%
Standard Deviation	2.6%	2%
ViennaCL - CPU BLAS - sAXPY (GB/s)	**223**	**245**
Normalized	91.02%	100%
Standard Deviation	3.9%	3.6%
ViennaCL - CPU BLAS - sDOT (GB/s)	**190**	**218**
Normalized	87.16%	100%
Standard Deviation	4.5%	5.3%
ViennaCL - CPU BLAS - dCOPY (GB/s)	**47.6**	**48.5**
Normalized	98.14%	100%
Standard Deviation	3%	0.8%
ViennaCL - CPU BLAS - dAXPY (GB/s)	**71.5**	**72.4**
Normalized	98.76%	100%

Standard Deviation	3%	3.7%
ViennaCL - CPU BLAS - dDOT (GB/s)	**71.5**	**73.0**
Normalized	97.95%	100%
Standard Deviation	4.4%	1.7%
ViennaCL - CPU BLAS - dGEMV-N (GB/s)	**77.7**	**81.5**
Normalized	95.34%	100%
Standard Deviation	24.5%	16%
ViennaCL - CPU BLAS - dGEMV-T (GB/s)	**90.6**	**98.8**
Normalized	91.7%	100%
Standard Deviation	10.9%	1.7%
ViennaCL - CPU BLAS - dGEMM-NN (GFLOPs/s)	111	111
Standard Deviation	1.7%	1.4%
ViennaCL - CPU BLAS - dGEMM-NT (GFLOPs/s)	108	108
Standard Deviation	1.2%	0.5%
ViennaCL - CPU BLAS - dGEMM-TN (GFLOPs/s)	**117**	**116**
Normalized	100%	99.15%
Standard Deviation	2%	0.9%
ViennaCL - CPU BLAS - dGEMM-TT (GFLOPs/s)	110	110
Standard Deviation	1.8%	0.9%
ViennaCL - OpenCL BLAS - sCOPY (GB/s)	**368**	**482**
Normalized	76.35%	100%
Standard Deviation	0.3%	0.2%
ViennaCL - OpenCL BLAS - sAXPY (GB/s)	**501**	**610**
Normalized	82.13%	100%
Standard Deviation	0.6%	0.2%
ViennaCL - OpenCL BLAS - sDOT (GB/s)	**379**	**460**
Normalized	82.39%	100%
Standard Deviation	0.3%	0.1%
ViennaCL - OpenCL BLAS - dCOPY (GB/s)	**606**	**664**
Normalized	91.27%	100%
Standard Deviation	0.2%	0%
ViennaCL - OpenCL BLAS - dAXPY (GB/s)	**724**	**776**
Normalized	93.3%	100%
Standard Deviation	0.1%	0.1%
ViennaCL - OpenCL BLAS - dDOT (GB/s)	**654**	**732**
Normalized	89.34%	100%
Standard Deviation	0.2%	0.1%
ViennaCL - OpenCL BLAS - dGEMV-N (GB/s)	**189**	**225**
Normalized	84%	100%
Standard Deviation	0.3%	0.3%
ViennaCL - OpenCL BLAS - dGEMV-T (GB/s)	**375**	**450**
Normalized	83.33%	100%
Standard Deviation	0%	0.1%
ViennaCL - OpenCL BLAS - dGEMM-NN (GFLOPs/s)	**601**	**1197**
Normalized	50.21%	100%
Standard Deviation	0.5%	0.5%
ViennaCL - OpenCL BLAS - dGEMM-NT (GFLOPs/s)	**602**	**1320**
Normalized	45.61%	100%
Standard Deviation	1.3%	0%
ViennaCL - OpenCL BLAS - dGEMM-TN (GFLOPs/s)	**603**	**1340**
Normalized	45%	100%
Standard Deviation	0.4%	0%
ViennaCL - OpenCL BLAS - dGEMM-TT (GFLOPs/s)	**601**	**1390**
Normalized	43.24%	100%
Standard Deviation		0%

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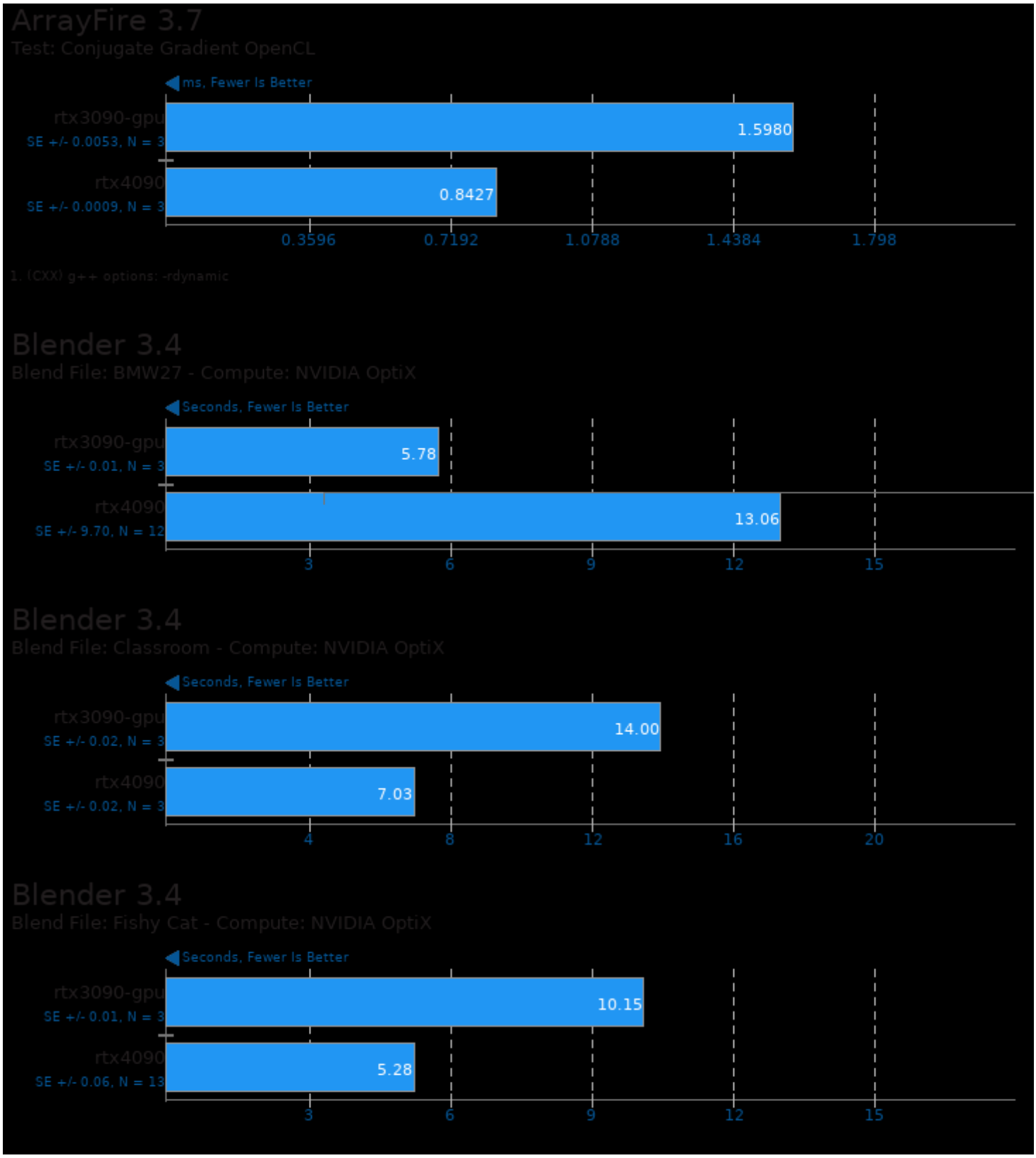
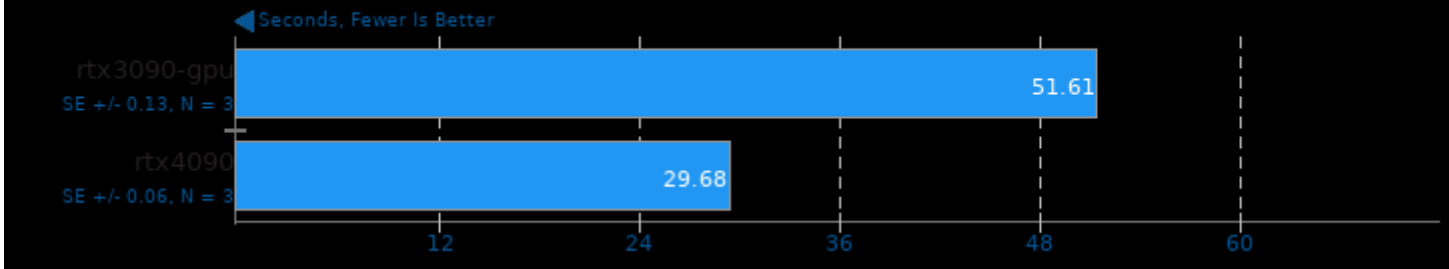
VkFFT (Benchmark Score)	**42747**	**63465**
Normalized	67.36%	100%
Standard Deviation	1.6%	5.3%
vkpeak - fp32-scalar (GFLOPS)	**20868**	**46188**
Normalized	45.18%	100%
Standard Deviation	0.5%	0.3%
vkpeak - fp32-vec4 (GFLOPS)	**27458**	**61075**
Normalized	44.96%	100%
Standard Deviation	0.4%	0.1%
vkpeak - fp16-scalar (GFLOPS)	**20781**	**46167**
Normalized	45.01%	100%
Standard Deviation	0.1%	0.2%
vkpeak - fp16-vec4 (GFLOPS)	**41153**	**91396**
Normalized	45.03%	100%
Standard Deviation	0.1%	0.2%
vkpeak - fp64-scalar (GFLOPS)	**652.97**	**1455**
Normalized	44.88%	100%
Standard Deviation	0.1%	0%
vkpeak - fp64-vec4 (GFLOPS)	**652.88**	**1455**
Normalized	44.87%	100%
Standard Deviation	0.1%	0%
vkpeak - int32-scalar (GIOPS)	**20755**	**46168**
Normalized	44.96%	100%
Standard Deviation	0.1%	0%
vkpeak - int32-vec4 (GIOPS)	**20661**	**45917**
Normalized	45%	100%
Standard Deviation	0.1%	0.2%
vkpeak - int16-scalar (GIOPS)	**13692**	**30756**
Normalized	44.52%	100%
Standard Deviation	0.1%	0.1%
vkpeak - int16-vec4 (GIOPS)	**16741**	**40926**
Normalized	40.9%	100%
Standard Deviation	0%	0.1%
VkResample - 2x - Double (ms)	**118.989**	**53.815**
Normalized	45.23%	100%
Standard Deviation	0.2%	0.1%
VkResample - 2x - Single (ms)	**9.350**	**7.746**
Normalized	82.84%	100%
Standard Deviation	1.2%	0.4%
Waifu2x-NCNN Vulkan - 2x - 3 - Yes (sec)	**3.263**	**2.492**
Normalized	76.37%	100%
Standard Deviation	0.2%	0.6%


ArrayFire 3.7
Test: Conjugate Gradient OpenCL
ms, Fewer Is Better
rtx3090-gpu
SE +/- 0.0053, N = 3
1.5980
rtx4090
SE +/- 0.0009, N = 3
0.8427
0.3596
0.7192
1.0788
1.4384
1.798
1. (CXX) g++ options: -rdynamic
Blender 3.4
Blend File: BMW27 - Compute: NVIDIA OptiX
Seconds, Fewer Is Better
rtx3090-gpu
SE +/- 0.01, N = 3
5.78
rtx4090
SE +/- 9.70, N = 12
13.06
3
6
9
12
15
Blender 3.4
Blend File: Classroom - Compute: NVIDIA OptiX
Seconds, Fewer Is Better
rtx3090-gpu
SE +/- 0.02, N = 3
14.00
rtx4090
SE +/- 0.02, N = 3
7.03
4
8
12
16
20
Blender 3.4
Blend File: Fishy Cat - Compute: NVIDIA OptiX
Seconds, Fewer Is Better
rtx3090-gpu
SE +/- 0.01, N = 3
10.15
rtx4090
SE +/- 0.06, N = 13
5.28
3
6
9
12
15

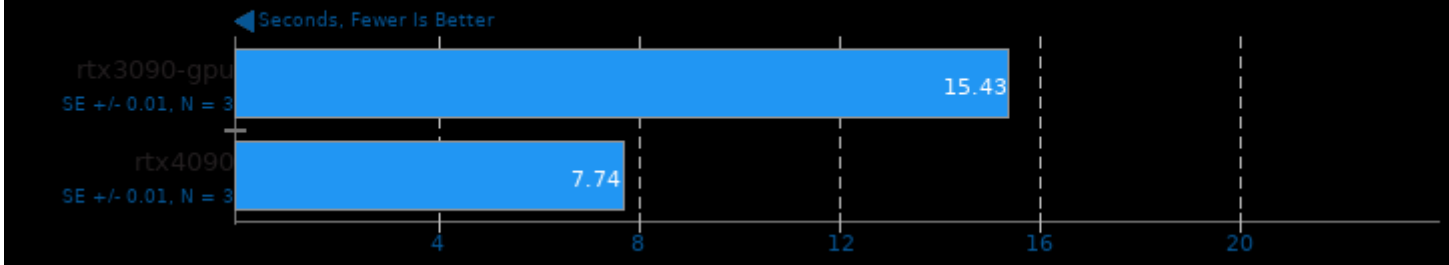
Blender 3.4

Blend File: Barbershop - Compute: NVIDIA OptiX



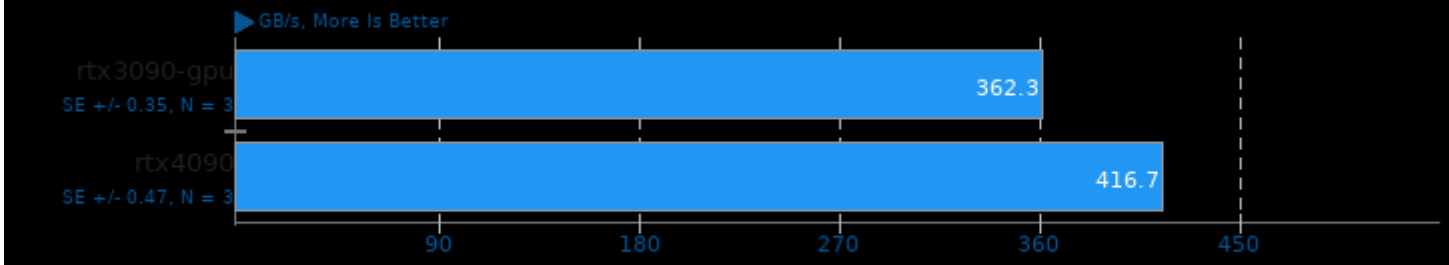
Blender 3.4

Blend File: Pabellon Barcelona - Compute: NVIDIA OptiX



cl-mem 2017-01-13

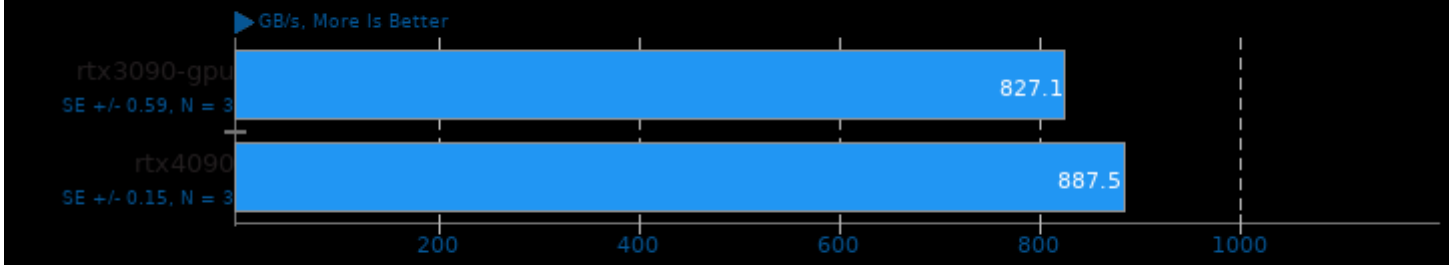
Benchmark: Copy



1. (CC) gcc options: -O2 -flto -lOpenCL

cl-mem 2017-01-13

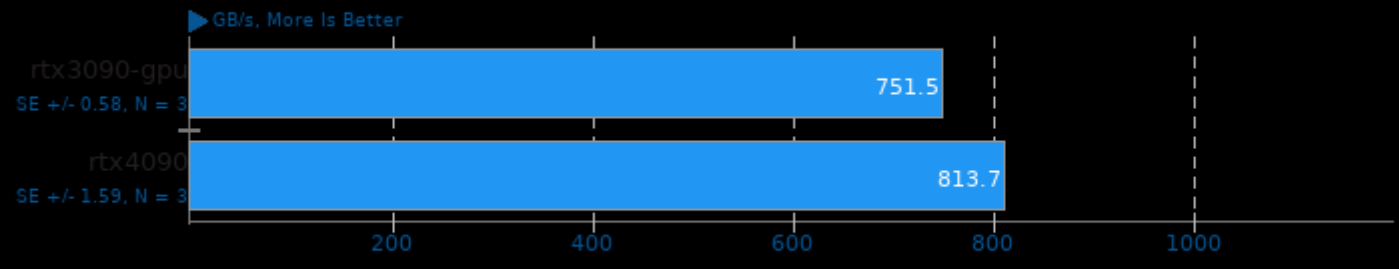
Benchmark: Read



1. (CC) gcc options: -O2 -flto -lOpenCL

cl-mem 2017-01-13

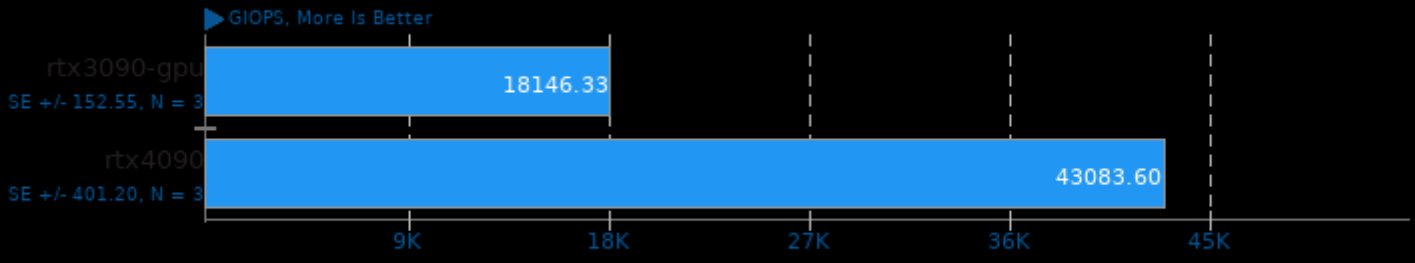
Benchmark: Write



1. (CC) gcc options: -O2 -flto -lOpenCL

clpeak

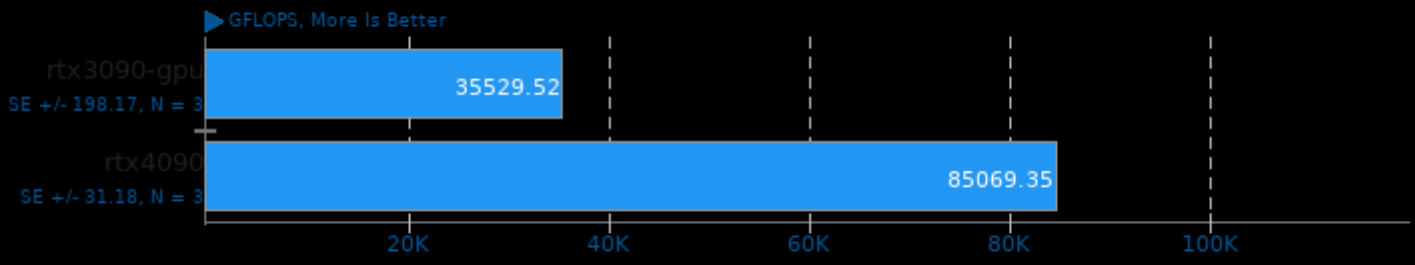
OpenCL Test: Integer Compute INT



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

clpeak

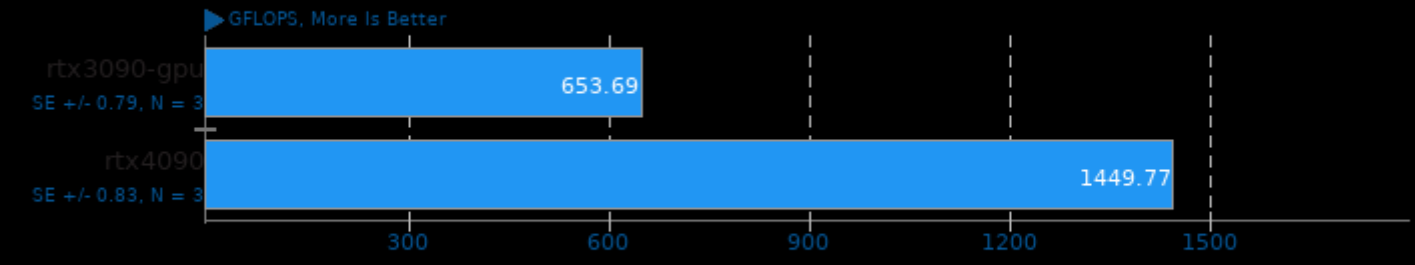
OpenCL Test: Single-Precision Float



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

clpeak

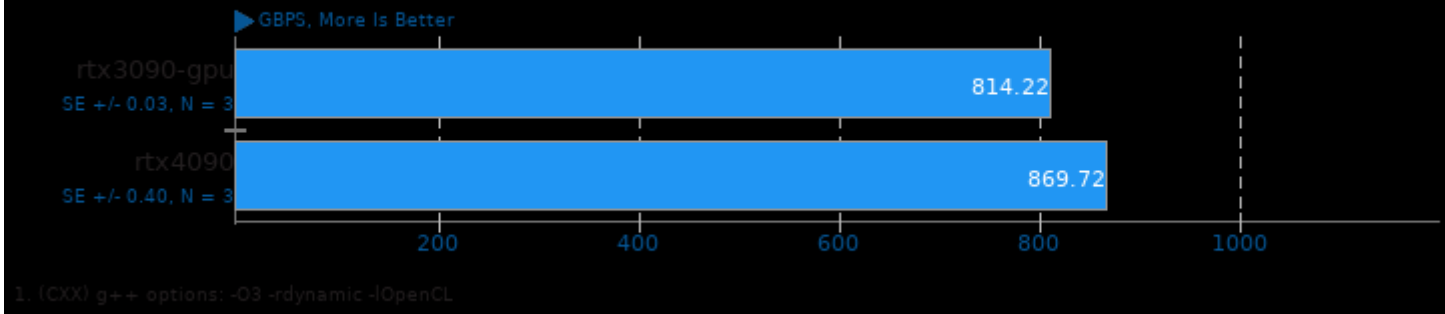
OpenCL Test: Double-Precision Double



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

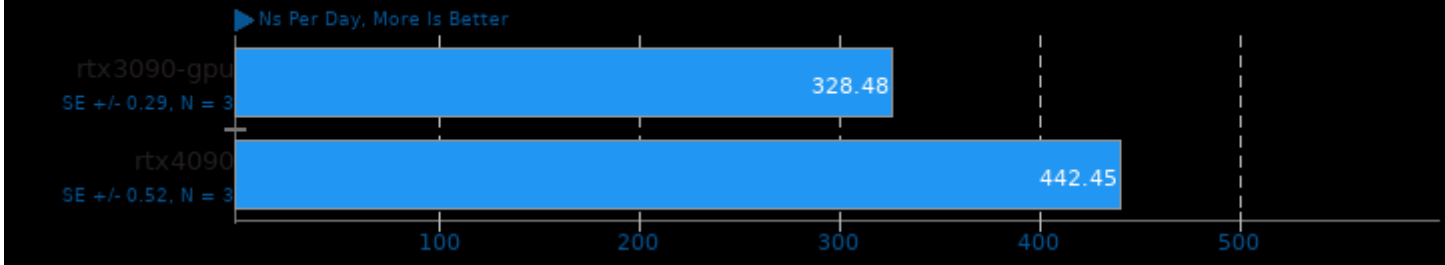
clpeak

OpenCL Test: Global Memory Bandwidth



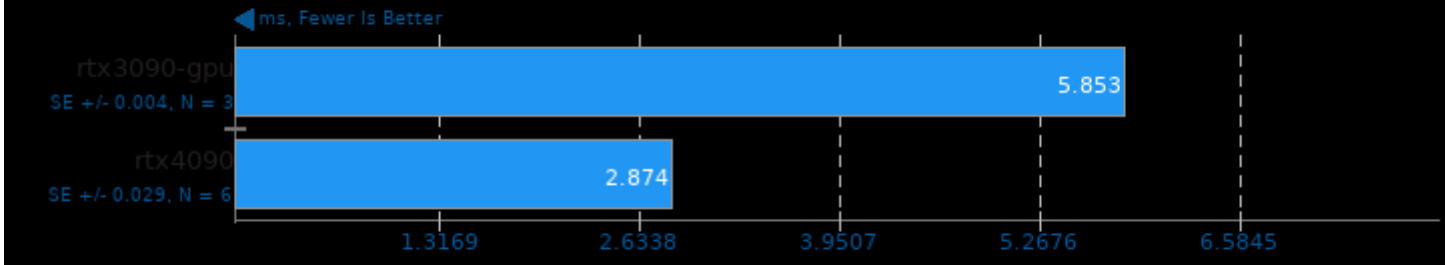
1. (CXX) g++ options: -O3 -rdynamic -lOpenCL

FAHBench 2.3.2



FinanceBench 2016-07-25

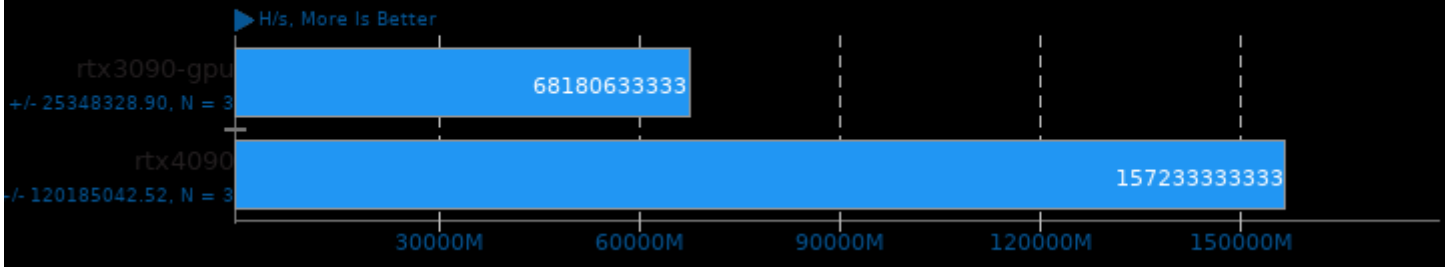
Benchmark: Black-Scholes OpenCL

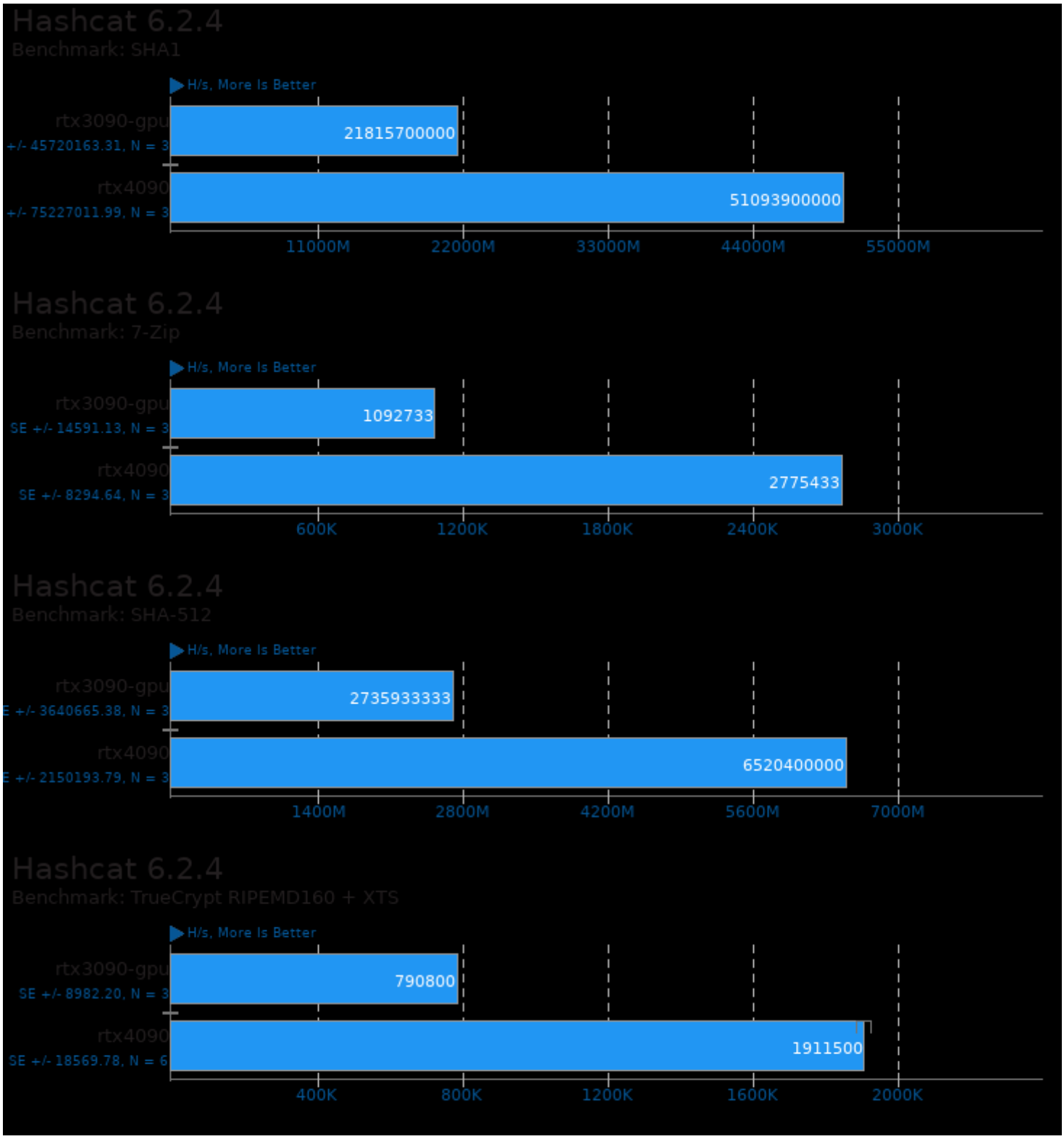


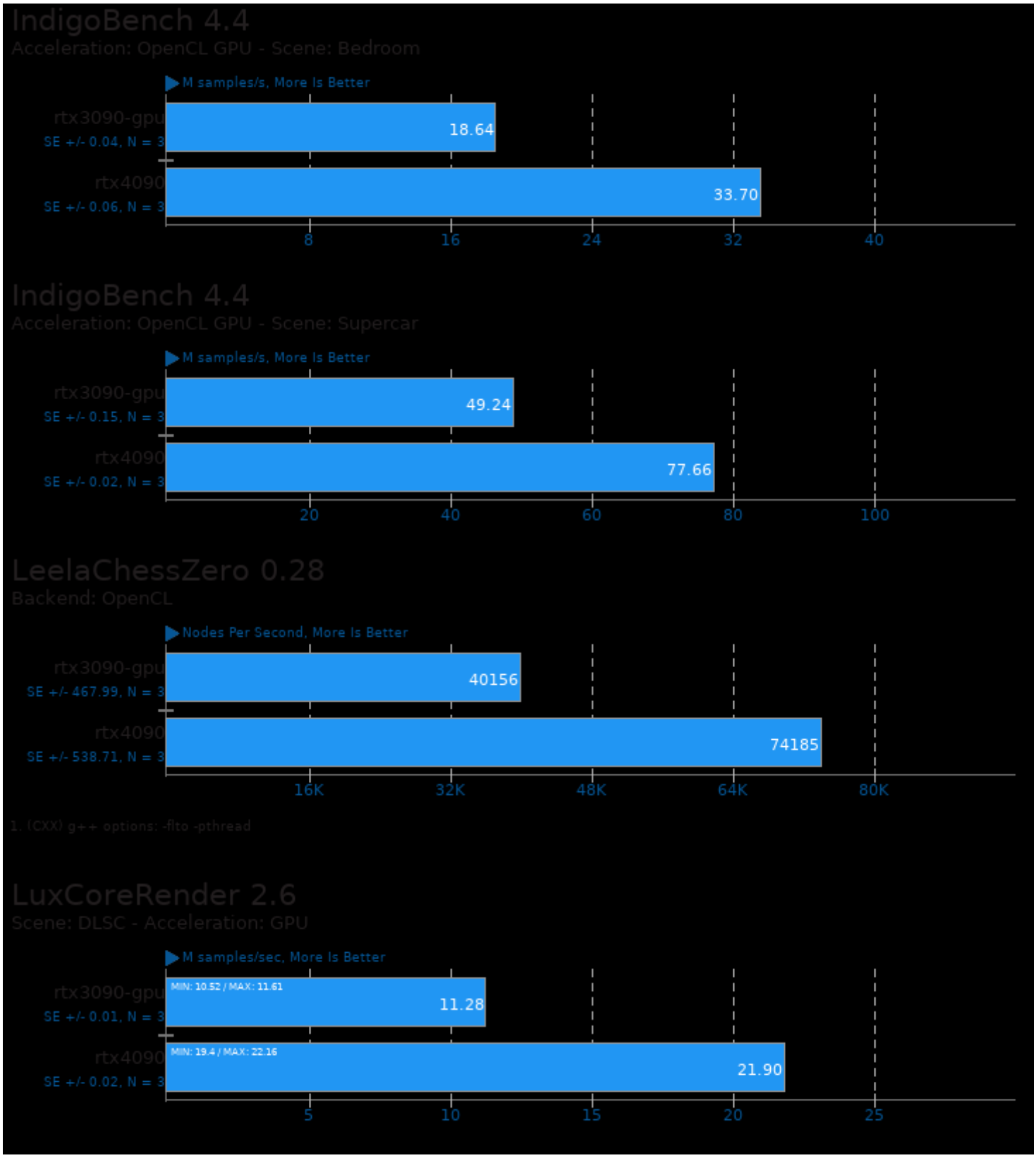
1. (CXX) g++ options: -O3 -march=native -fopenmp

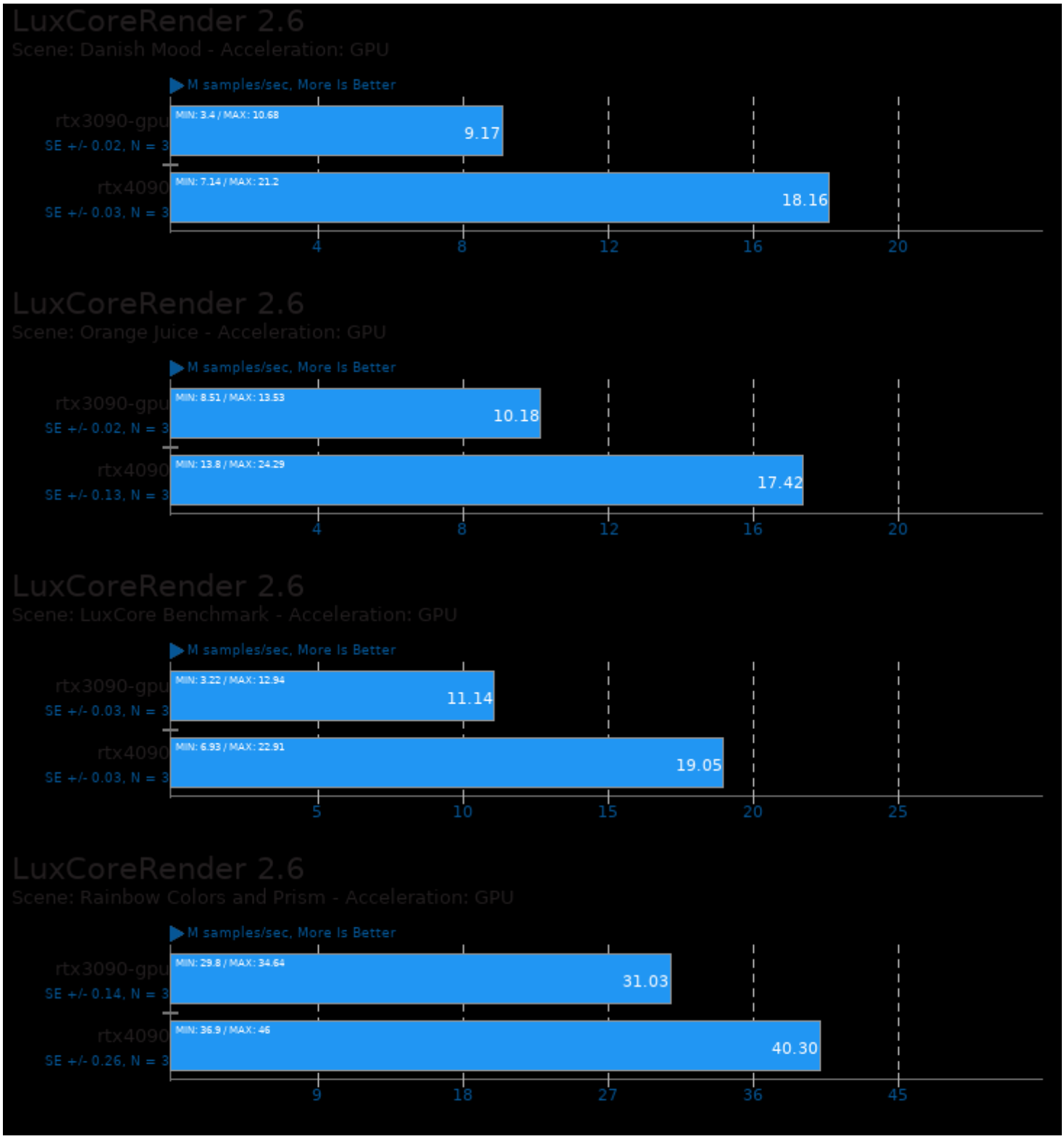
Hashcat 6.2.4

Benchmark: MD5




Hashcat 6.2.4
Benchmark: SHA1
H/s, More Is Better
rtx3090-gpu
+/- 45720163.31, N = 3
21815700000
rtx4090
+/- 75227011.99, N = 3
51093900000
11000M
22000M
33000M
44000M
55000M
Hashcat 6.2.4
Benchmark: 7-Zip
H/s, More Is Better
rtx3090-gpu
SE +/- 14591.13, N = 3
1092733
rtx4090
SE +/- 8294.64, N = 3
2775433
600K
1200K
1800K
2400K
3000K
Hashcat 6.2.4
Benchmark: SHA-512
H/s, More Is Better
rtx3090-gpu
E +/- 3640665.38, N = 3
2735933333
rtx4090
E +/- 2150193.79, N = 3
6520400000
1400M
2800M
4200M
5600M
7000M
Hashcat 6.2.4
Benchmark: TrueCrypt RIPEMD160 + XTS
H/s, More Is Better
rtx3090-gpu
SE +/- 8982.20, N = 3
790800
rtx4090
SE +/- 18569.78, N = 6
1911500
400K
800K
1200K
1600K
2000K

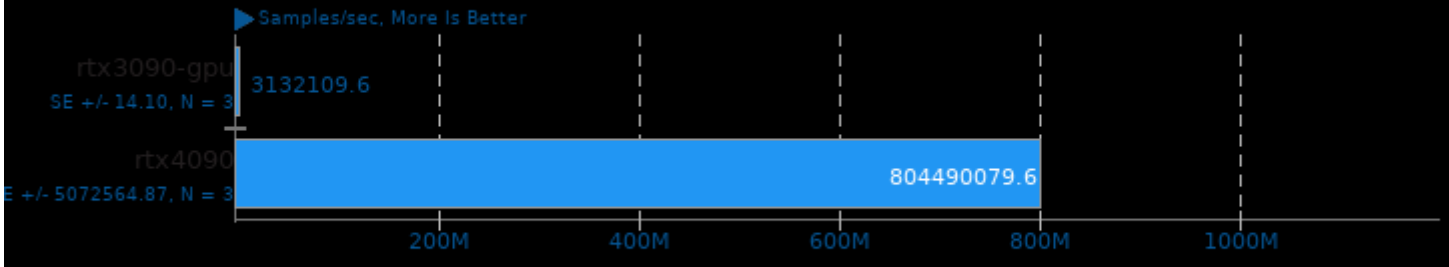

IndigoBench 4.4
Acceleration: OpenCL GPU - Scene: Bedroom
M samples/s, More Is Better
rtx3090-gpu
SE +/- 0.04, N = 3
18.64
rtx4090
SE +/- 0.06, N = 3
33.70
8
16
24
32
40
IndigoBench 4.4
Acceleration: OpenCL GPU - Scene: Supercar
M samples/s, More Is Better
rtx3090-gpu
SE +/- 0.15, N = 3
49.24
rtx4090
SE +/- 0.02, N = 3
77.66
20
40
60
80
100
LeelaChessZero 0.28
Backend: OpenCL
Nodes Per Second, More Is Better
rtx3090-gpu
SE +/- 467.99, N = 3
40156
rtx4090
SE +/- 538.71, N = 3
74185
16K
32K
48K
64K
80K
1. (CXX) g++ options: -flto -pthread
LuxCoreRender 2.6
Scene: DLSC - Acceleration: GPU
M samples/sec, More Is Better
rtx3090-gpu
SE +/- 0.01, N = 3
MIN: 10.52 / MAX: 11.61
11.28
rtx4090
SE +/- 0.02, N = 3
MIN: 19.4 / MAX: 22.16
21.90
5
10
15
20
25


LuxCoreRender 2.6
Scene: Danish Mood - Acceleration: GPU
M samples/sec, More Is Better
rtx3090-gpu
SE +/- 0.02, N = 3
MIN: 3.4 / MAX: 10.68
9.17
rtx4090
SE +/- 0.03, N = 3
MIN: 7.14 / MAX: 21.2
18.16
4
8
12
16
20
LuxCoreRender 2.6
Scene: Orange Juice - Acceleration: GPU
M samples/sec, More Is Better
rtx3090-gpu
SE +/- 0.02, N = 3
MIN: 8.51 / MAX: 13.53
10.18
rtx4090
SE +/- 0.13, N = 3
MIN: 13.8 / MAX: 24.29
17.42
4
8
12
16
20
LuxCoreRender 2.6
Scene: LuxCore Benchmark - Acceleration: GPU
M samples/sec, More Is Better
rtx3090-gpu
SE +/- 0.03, N = 3
MIN: 3.22 / MAX: 12.94
11.14
rtx4090
SE +/- 0.03, N = 3
MIN: 6.93 / MAX: 22.91
19.05
5
10
15
20
25
LuxCoreRender 2.6
Scene: Rainbow Colors and Prism - Acceleration: GPU
M samples/sec, More Is Better
rtx3090-gpu
SE +/- 0.14, N = 3
MIN: 29.8 / MAX: 34.64
31.03
rtx4090
SE +/- 0.26, N = 3
MIN: 36.9 / MAX: 46
40.30
9
18
27
36
45

rtx3090

MandelGPU 1.3pts1

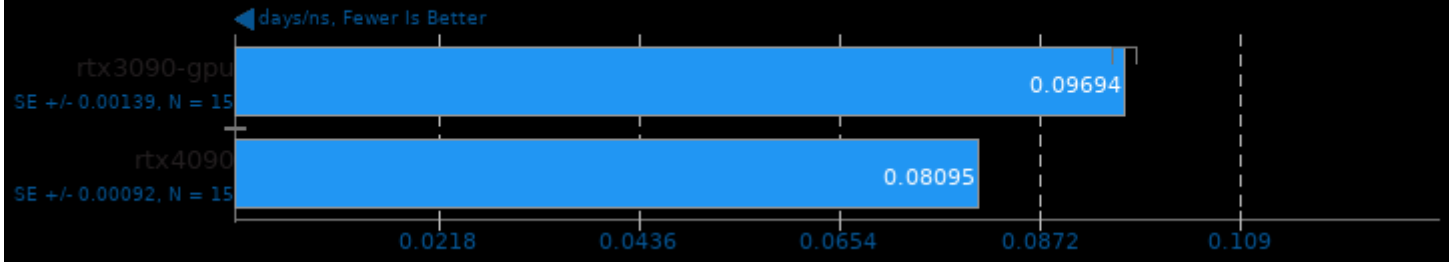
OpenCL Device: GPU



1. (CC) gcc options: -O3 -lm -ftree-vectorize -funroll-loops -lglut -lOpenCL -lGL

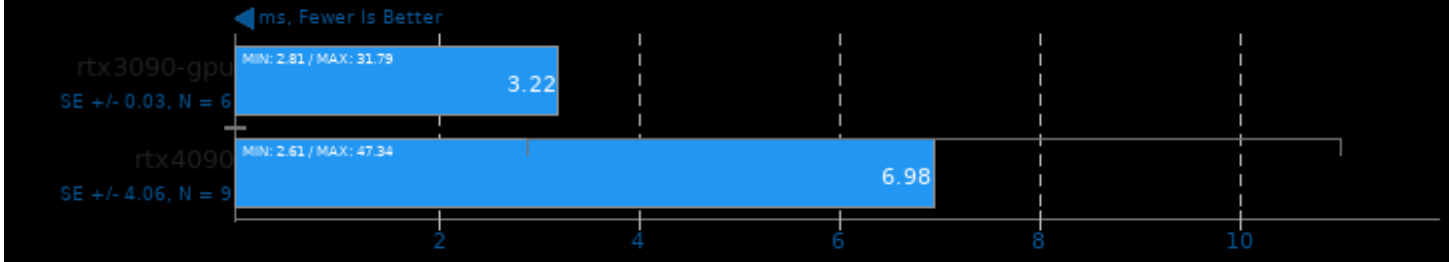
NAMD CUDA 2.14

ATPase Simulation - 327,506 Atoms



NCNN 20220729

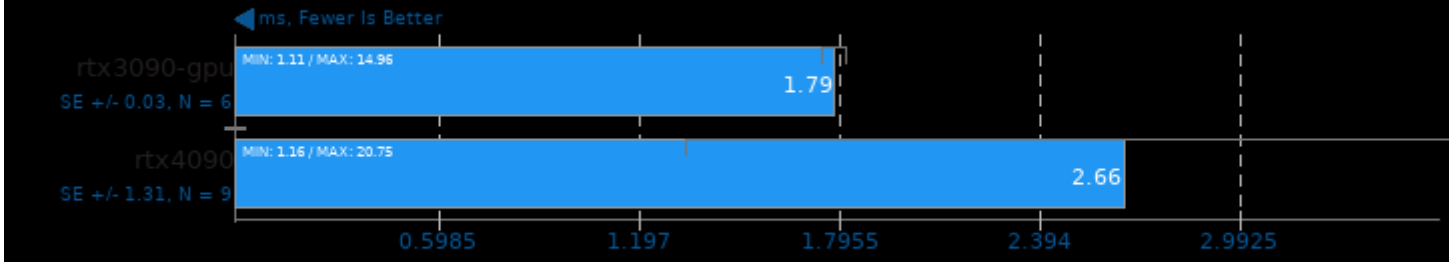
Target: Vulkan GPU - Model: mobilenet



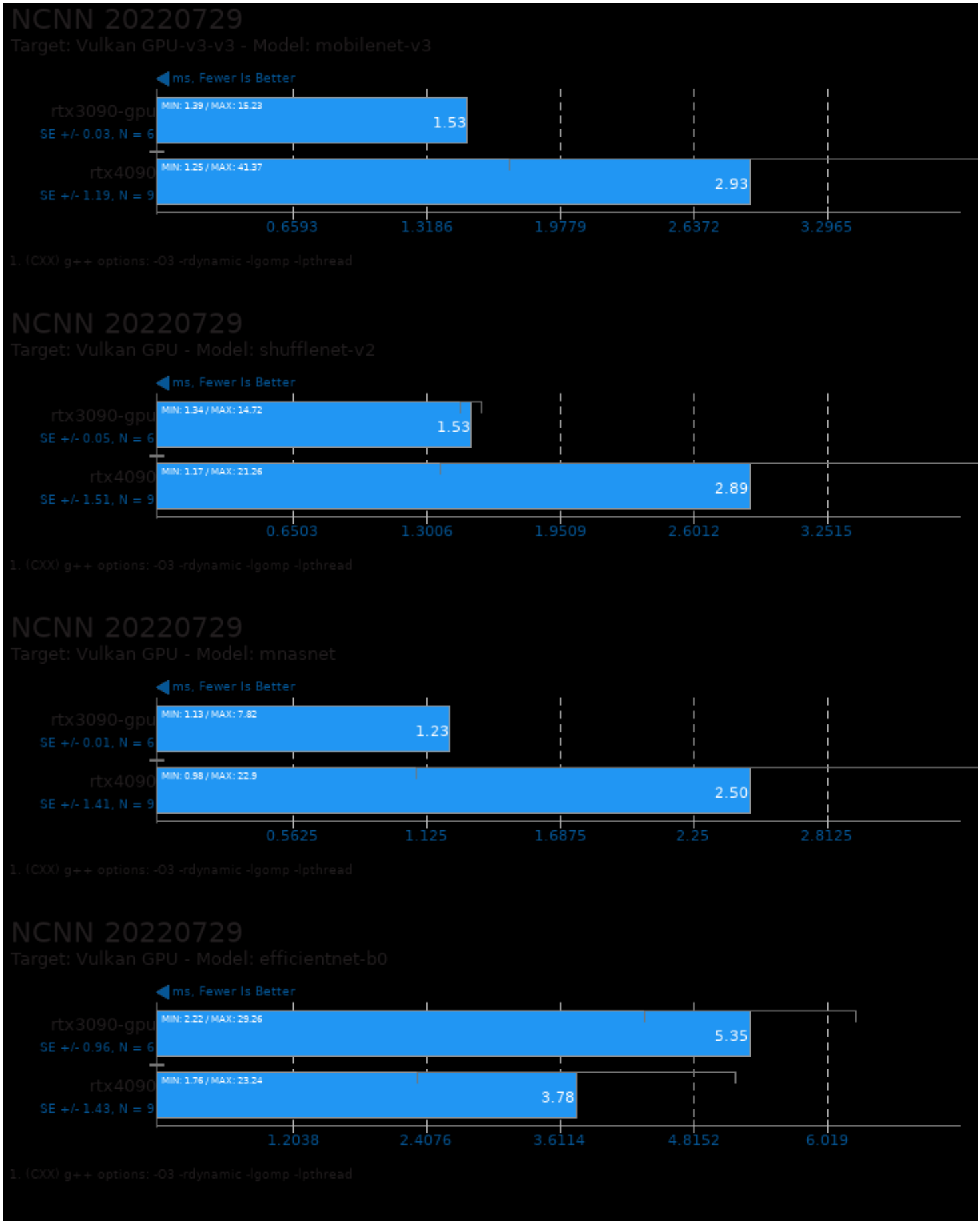
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

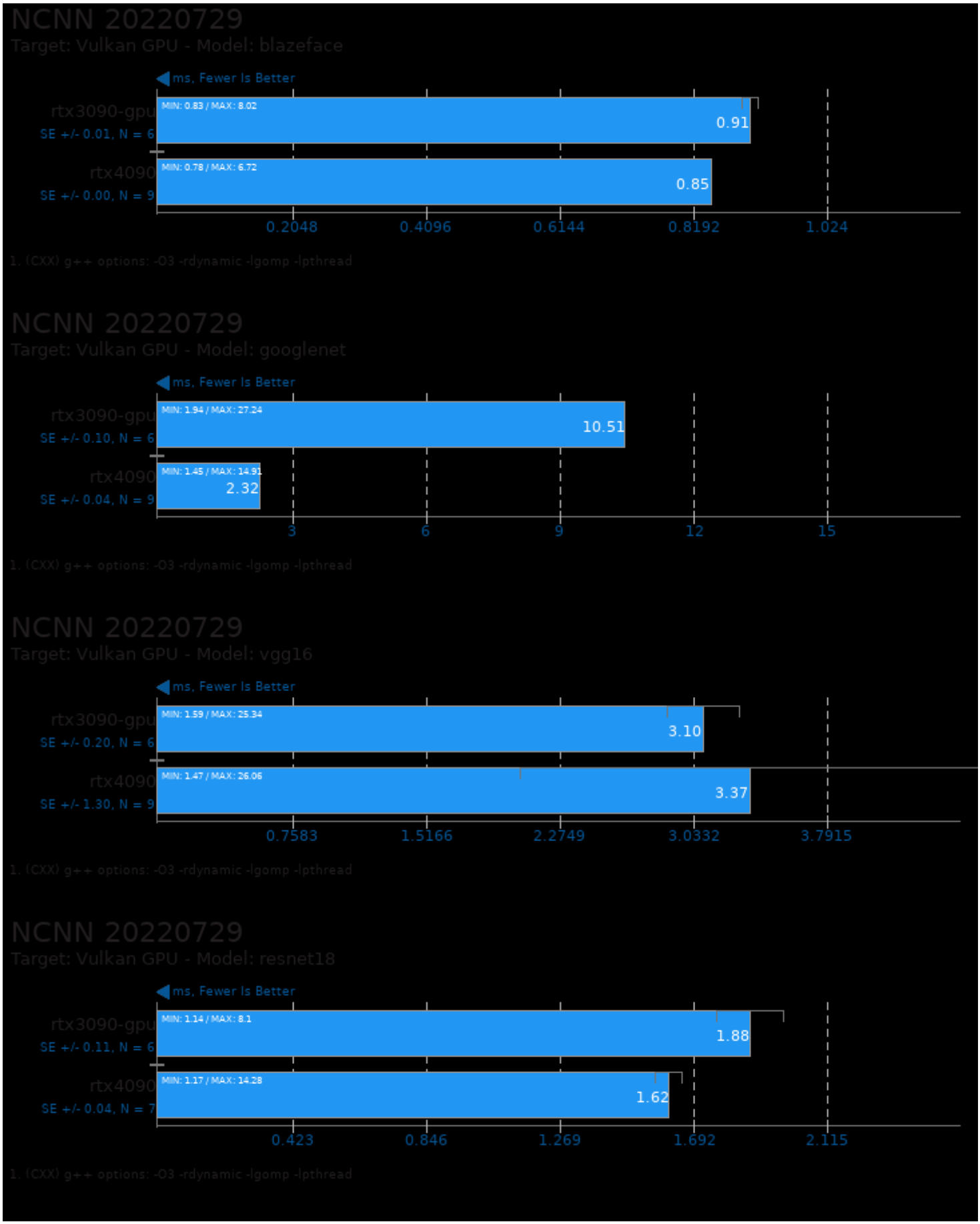
NCNN 20220729

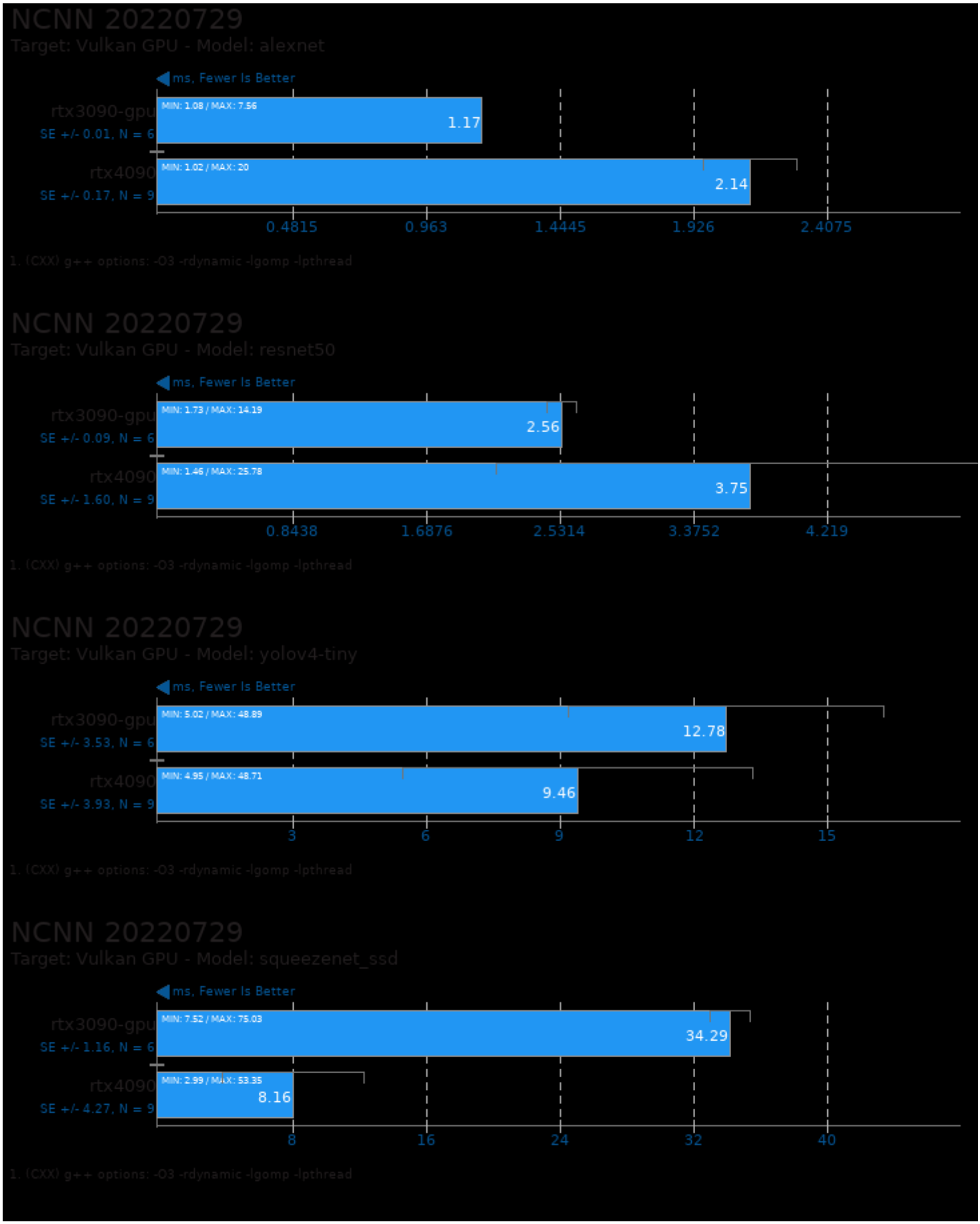
Target: Vulkan GPU-v2-v2 - Model: mobilenet-v2



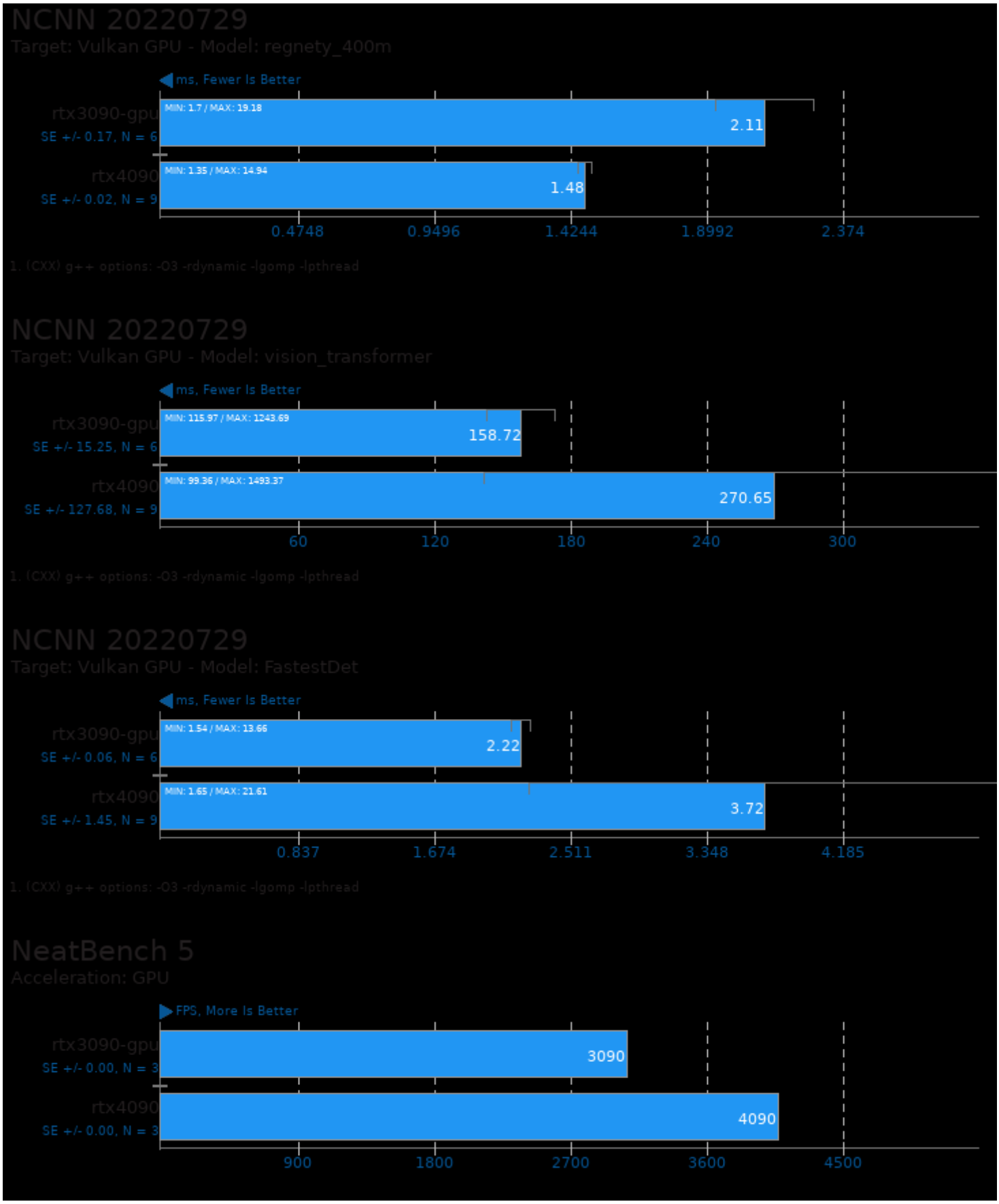
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

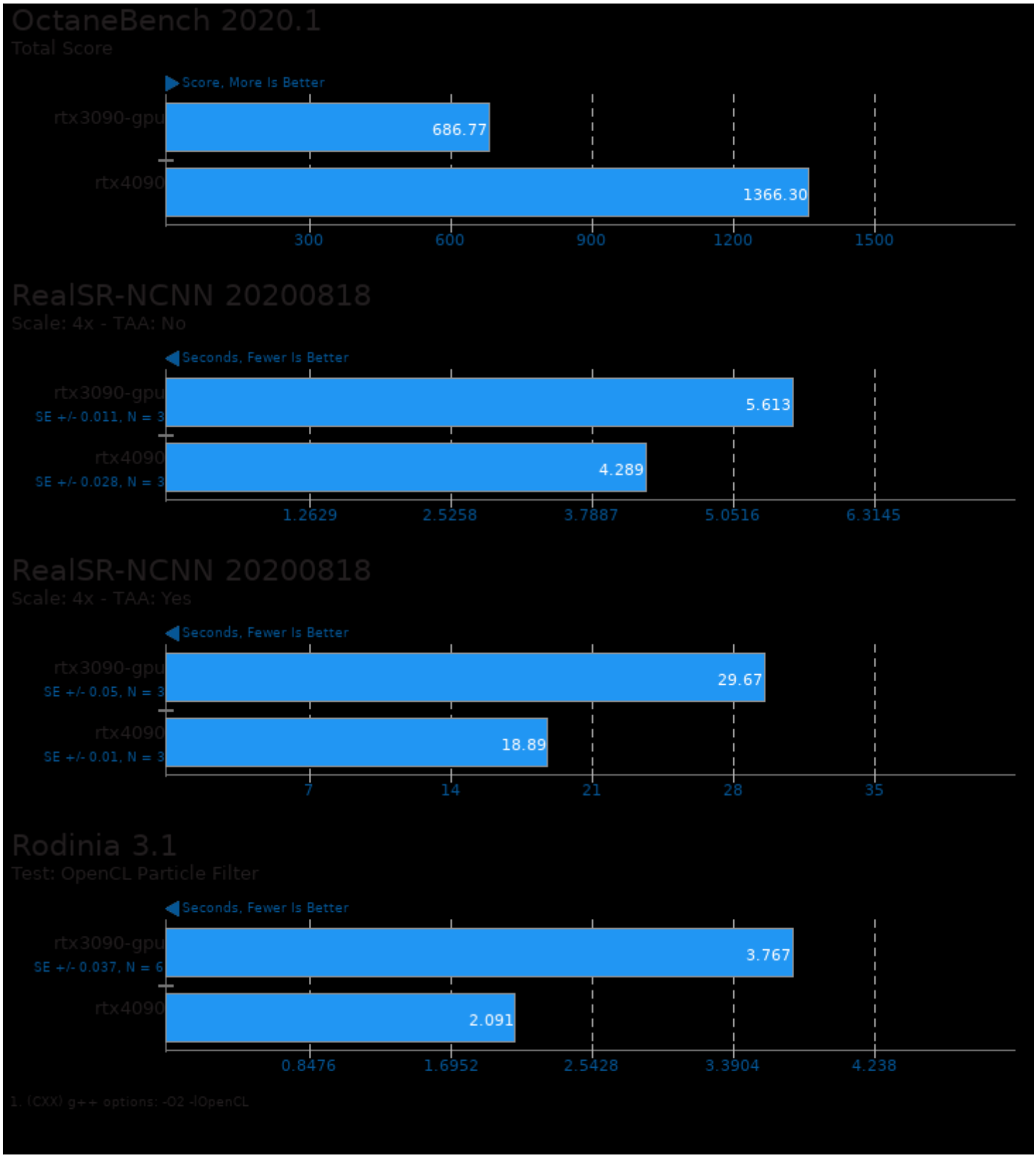

NCNN 20220729
Target: Vulkan GPU-v3-v3 - Model: mobilenet-v3
ms, Fewer Is Better
rtx3090-gpu
SE +/- 0.03, N = 6
MIN: 1.39 / MAX: 15.23
1.53
rtx4090
SE +/- 1.19, N = 9
MIN: 1.25 / MAX: 41.37
2.93
0.6593
1.3186
1.9779
2.6372
3.2965
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: Vulkan GPU - Model: shufflenet-v2
ms, Fewer Is Better
rtx3090-gpu
SE +/- 0.05, N = 6
MIN: 1.34 / MAX: 14.72
1.53
rtx4090
SE +/- 1.51, N = 9
MIN: 1.17 / MAX: 21.26
2.89
0.6503
1.3006
1.9509
2.6012
3.2515
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: Vulkan GPU - Model: mnasnet
ms, Fewer Is Better
rtx3090-gpu
SE +/- 0.01, N = 6
MIN: 1.13 / MAX: 7.82
1.23
rtx4090
SE +/- 1.41, N = 9
MIN: 0.98 / MAX: 22.9
2.50
0.5625
1.125
1.6875
2.25
2.8125
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: Vulkan GPU - Model: efficientnet-b0
ms, Fewer Is Better
rtx3090-gpu
SE +/- 0.96, N = 6
MIN: 2.22 / MAX: 29.26
5.35
rtx4090
SE +/- 1.43, N = 9
MIN: 1.76 / MAX: 23.24
3.78
1.2038
2.4076
3.6114
4.8152
6.019
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

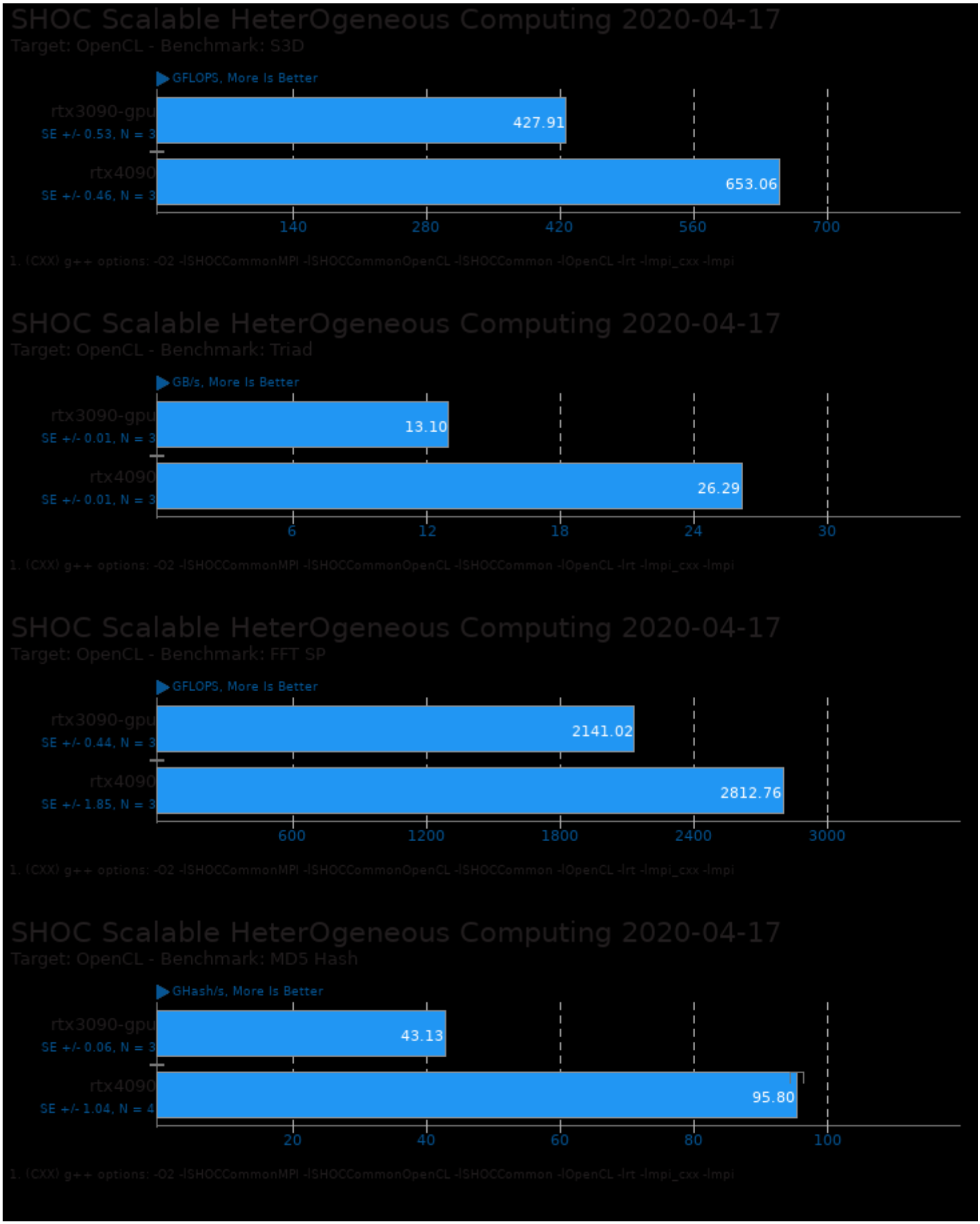

NCNN 20220729
Target: Vulkan GPU - Model: blazeface
ms, Fewer Is Better
rtx3090-gpu
SE +/- 0.01, N = 6
MIN: 0.83 / MAX: 8.02
0.91
rtx4090
SE +/- 0.00, N = 9
MIN: 0.78 / MAX: 6.72
0.85
0.2048
0.4096
0.6144
0.8192
1.024
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: Vulkan GPU - Model: googlenet
ms, Fewer Is Better
rtx3090-gpu
SE +/- 0.10, N = 6
MIN: 1.94 / MAX: 27.24
10.51
rtx4090
SE +/- 0.04, N = 9
MIN: 1.45 / MAX: 14.91
2.32
3
6
9
12
15
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: Vulkan GPU - Model: vgg16
ms, Fewer Is Better
rtx3090-gpu
SE +/- 0.20, N = 6
MIN: 1.59 / MAX: 25.34
3.10
rtx4090
SE +/- 1.30, N = 9
MIN: 1.47 / MAX: 26.06
3.37
0.7583
1.5166
2.2749
3.0332
3.7915
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: Vulkan GPU - Model: resnet18
ms, Fewer Is Better
rtx3090-gpu
SE +/- 0.11, N = 6
MIN: 1.14 / MAX: 8.1
1.88
rtx4090
SE +/- 0.04, N = 7
MIN: 1.17 / MAX: 14.28
1.62
0.423
0.846
1.269
1.692
2.115
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

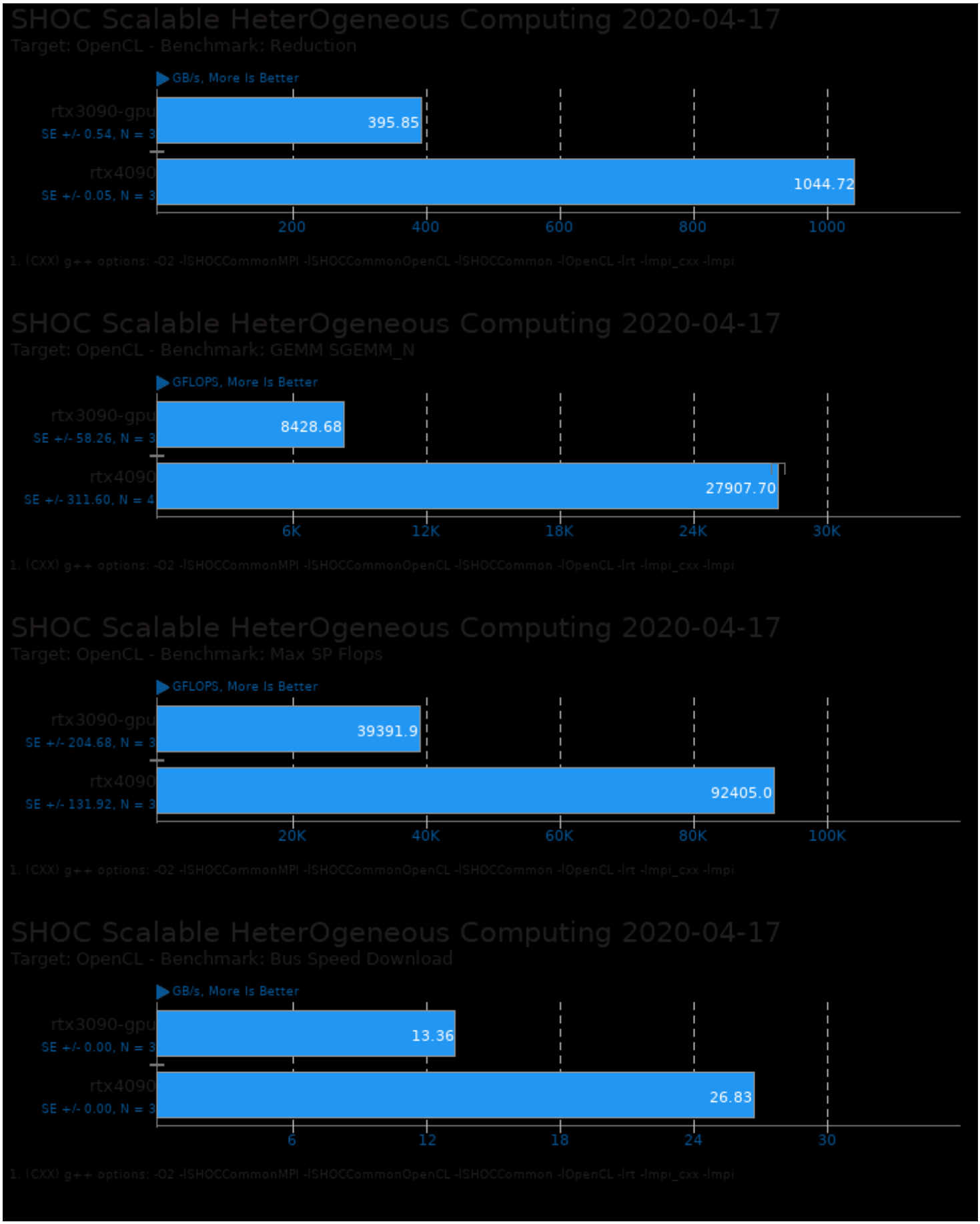

NCNN 20220729
Target: Vulkan GPU - Model: alexnet
ms, Fewer Is Better
rtx3090-gpu
SE +/- 0.01, N = 6
MIN: 1.08 / MAX: 7.56
1.17
rtx4090
SE +/- 0.17, N = 9
MIN: 1.02 / MAX: 20
2.14
0.4815
0.963
1.4445
1.926
2.4075
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: Vulkan GPU - Model: resnet50
ms, Fewer Is Better
rtx3090-gpu
SE +/- 0.09, N = 6
MIN: 1.73 / MAX: 14.19
2.56
rtx4090
SE +/- 1.60, N = 9
MIN: 1.46 / MAX: 25.78
3.75
0.8438
1.6876
2.5314
3.3752
4.219
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: Vulkan GPU - Model: yolov4-tiny
ms, Fewer Is Better
rtx3090-gpu
SE +/- 3.53, N = 6
MIN: 5.02 / MAX: 48.89
12.78
rtx4090
SE +/- 3.93, N = 9
MIN: 4.95 / MAX: 48.71
9.46
3
6
9
12
15
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: Vulkan GPU - Model: squeezenet_ssd
ms, Fewer Is Better
rtx3090-gpu
SE +/- 1.16, N = 6
MIN: 7.52 / MAX: 75.03
34.29
rtx4090
SE +/- 4.27, N = 9
MIN: 2.99 / MAX: 53.35
8.16
8
16
24
32
40
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

rtx3090


NCNN 20220729
Target: Vulkan GPU - Model: regnety_400m
ms, Fewer Is Better
rtx3090-gpu
SE +/- 0.17, N = 6
MIN: 1.7 / MAX: 19.18
2.11
rtx4090
SE +/- 0.02, N = 9
MIN: 1.35 / MAX: 14.94
1.48
0.4748
0.9496
1.4244
1.8992
2.374
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: Vulkan GPU - Model: vision_transformer
ms, Fewer Is Better
rtx3090-gpu
SE +/- 15.25, N = 6
MIN: 115.97 / MAX: 1243.69
158.72
rtx4090
SE +/- 127.68, N = 9
MIN: 99.36 / MAX: 1493.37
270.65
60
120
180
240
300
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: Vulkan GPU - Model: FastestDet
ms, Fewer Is Better
rtx3090-gpu
SE +/- 0.06, N = 6
MIN: 1.54 / MAX: 13.66
2.22
rtx4090
SE +/- 1.45, N = 9
MIN: 1.65 / MAX: 21.61
3.72
0.837
1.674
2.511
3.348
4.185
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NeatBench 5
Acceleration: GPU
FPS, More Is Better
rtx3090-gpu
SE +/- 0.00, N = 3
3090
rtx4090
SE +/- 0.00, N = 3
4090
900
1800
2700
3600
4500

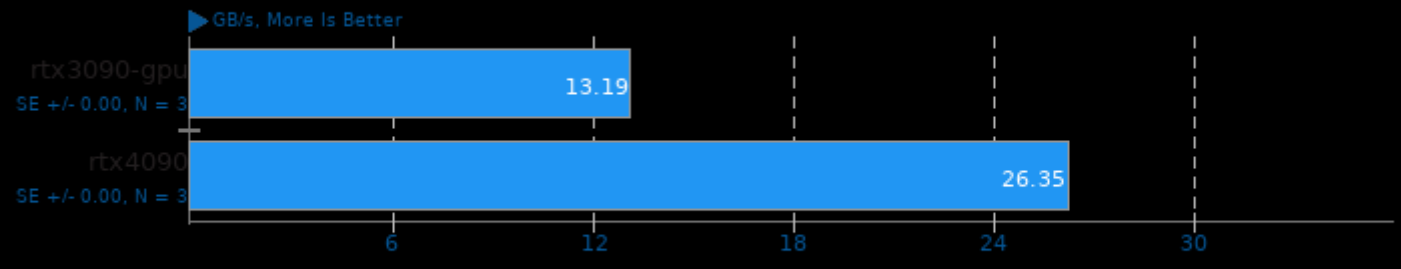

OctaneBench 2020.1
Total Score
Score, More Is Better
rtx3090-gpu
686.77
rtx4090
1366.30
300
600
900
1200
1500
RealSR-NCNN 20200818
Scale: 4x - TAA: No
Seconds, Fewer Is Better
rtx3090-gpu
SE +/- 0.011, N = 3
5.613
rtx4090
SE +/- 0.028, N = 3
4.289
1.2629
2.5258
3.7887
5.0516
6.3145
RealSR-NCNN 20200818
Scale: 4x - TAA: Yes
Seconds, Fewer Is Better
rtx3090-gpu
SE +/- 0.05, N = 3
29.67
rtx4090
SE +/- 0.01, N = 3
18.89
7
14
21
28
35
Rodinia 3.1
Test: OpenCL Particle Filter
Seconds, Fewer Is Better
rtx3090-gpu
SE +/- 0.037, N = 6
3.767
rtx4090
2.091
0.8476
1.6952
2.5428
3.3904
4.238
1. (CXX) g++ options: -O2 -lOpenCL


SHOC Scalable HeterOgeneous Computing 2020-04-17
Target: OpenCL - Benchmark: S3D
GFLOPS, More Is Better
rtx3090-gpu
SE +/- 0.53, N = 3
427.91
rtx4090
SE +/- 0.46, N = 3
653.06
140
280
420
560
700
1. (CXX) g++ options: -O2 -lSHOCCommonMPI -lSHOCCommonOpenCL -lSHOCCommon -lOpenCL -lrt -lmpi_cxx -lmpi
SHOC Scalable HeterOgeneous Computing 2020-04-17
Target: OpenCL - Benchmark: Triad
GB/s, More Is Better
rtx3090-gpu
SE +/- 0.01, N = 3
13.10
rtx4090
SE +/- 0.01, N = 3
26.29
6
12
18
24
30
1. (CXX) g++ options: -O2 -lSHOCCommonMPI -lSHOCCommonOpenCL -lSHOCCommon -lOpenCL -lrt -lmpi_cxx -lmpi
SHOC Scalable HeterOgeneous Computing 2020-04-17
Target: OpenCL - Benchmark: FFT SP
GFLOPS, More Is Better
rtx3090-gpu
SE +/- 0.44, N = 3
2141.02
rtx4090
SE +/- 1.85, N = 3
2812.76
600
1200
1800
2400
3000
1. (CXX) g++ options: -O2 -lSHOCCommonMPI -lSHOCCommonOpenCL -lSHOCCommon -lOpenCL -lrt -lmpi_cxx -lmpi
SHOC Scalable HeterOgeneous Computing 2020-04-17
Target: OpenCL - Benchmark: MD5 Hash
GHash/s, More Is Better
rtx3090-gpu
SE +/- 0.06, N = 3
43.13
rtx4090
SE +/- 1.04, N = 4
95.80
20
40
60
80
100
1. (CXX) g++ options: -O2 -lSHOCCommonMPI -lSHOCCommonOpenCL -lSHOCCommon -lOpenCL -lrt -lmpi_cxx -lmpi


SHOC Scalable HeterOgeneous Computing 2020-04-17
Target: OpenCL - Benchmark: Reduction
GB/s, More Is Better
rtx3090-gpu
SE +/- 0.54, N = 3
395.85
rtx4090
SE +/- 0.05, N = 3
1044.72
200
400
600
800
1000
1. (CXX) g++ options: -O2 -lSHOCCommonMPI -lSHOCCommonOpenCL -lSHOCCommon -lOpenCL -lrt -lmpi_cxx -lmpi
SHOC Scalable HeterOgeneous Computing 2020-04-17
Target: OpenCL - Benchmark: GEMM SGEMM_N
GFLOPS, More Is Better
rtx3090-gpu
SE +/- 58.26, N = 3
8428.68
rtx4090
SE +/- 311.60, N = 4
27907.70
6K
12K
18K
24K
30K
1. (CXX) g++ options: -O2 -lSHOCCommonMPI -lSHOCCommonOpenCL -lSHOCCommon -lOpenCL -lrt -lmpi_cxx -lmpi
SHOC Scalable HeterOgeneous Computing 2020-04-17
Target: OpenCL - Benchmark: Max SP Flops
GFLOPS, More Is Better
rtx3090-gpu
SE +/- 204.68, N = 3
39391.9
rtx4090
SE +/- 131.92, N = 3
92405.0
20K
40K
60K
80K
100K
1. (CXX) g++ options: -O2 -lSHOCCommonMPI -lSHOCCommonOpenCL -lSHOCCommon -lOpenCL -lrt -lmpi_cxx -lmpi
SHOC Scalable HeterOgeneous Computing 2020-04-17
Target: OpenCL - Benchmark: Bus Speed Download
GB/s, More Is Better
rtx3090-gpu
SE +/- 0.00, N = 3
13.36
rtx4090
SE +/- 0.00, N = 3
26.83
6
12
18
24
30
1. (CXX) g++ options: -O2 -lSHOCCommonMPI -lSHOCCommonOpenCL -lSHOCCommon -lOpenCL -lrt -lmpi_cxx -lmpi

SHOC Scalable HeterOgeneous Computing 2020-04-17

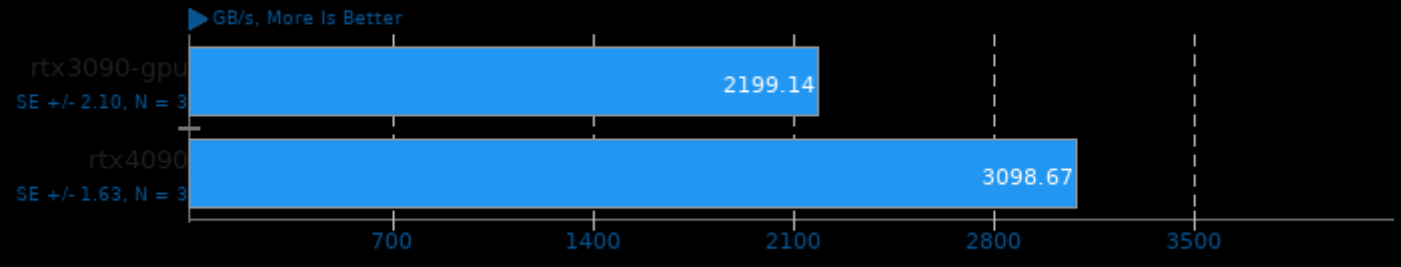
Target: OpenCL - Benchmark: Bus Speed Readback



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

SHOC Scalable HeterOgeneous Computing 2020-04-17

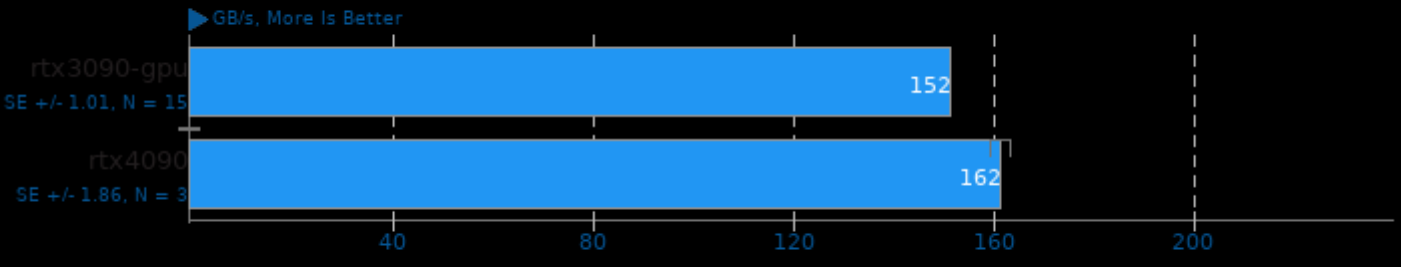
Target: OpenCL - Benchmark: Texture Read Bandwidth



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

ViennaCL 1.7.1

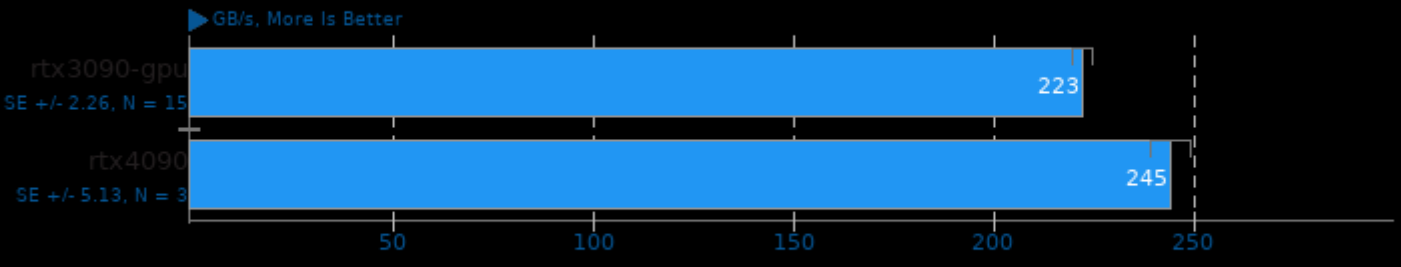
Test: CPU BLAS - sCOPY



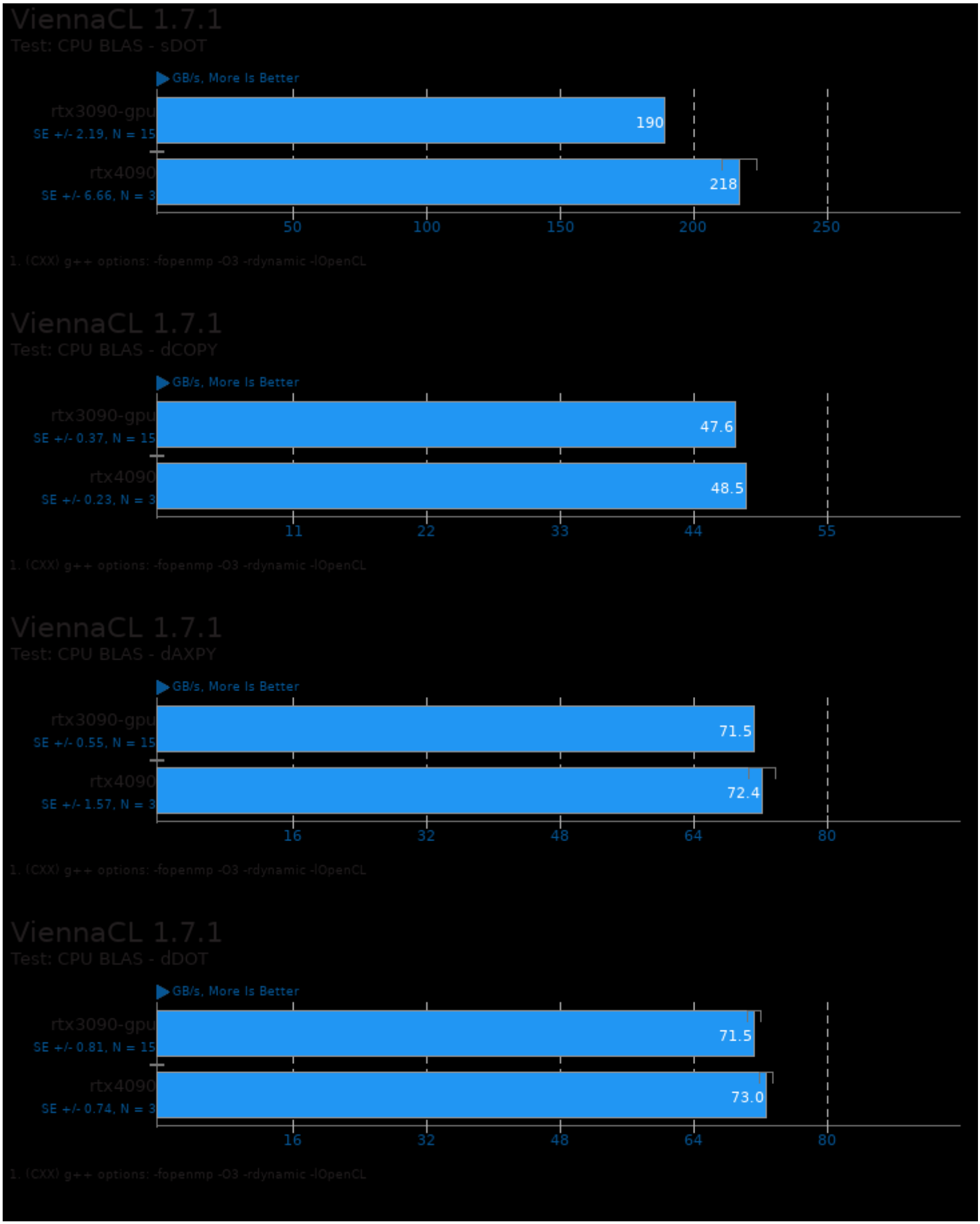
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL

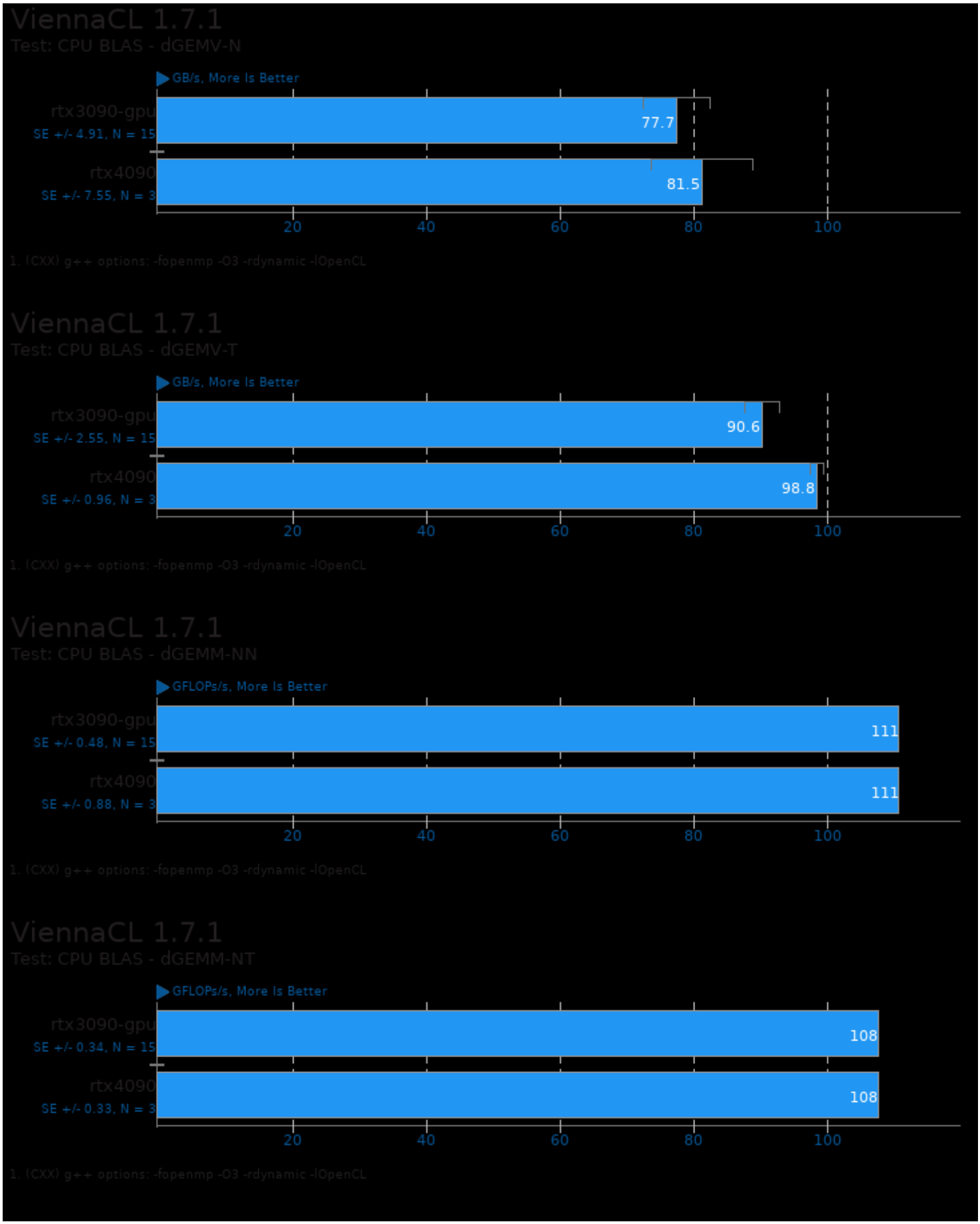
ViennaCL 1.7.1

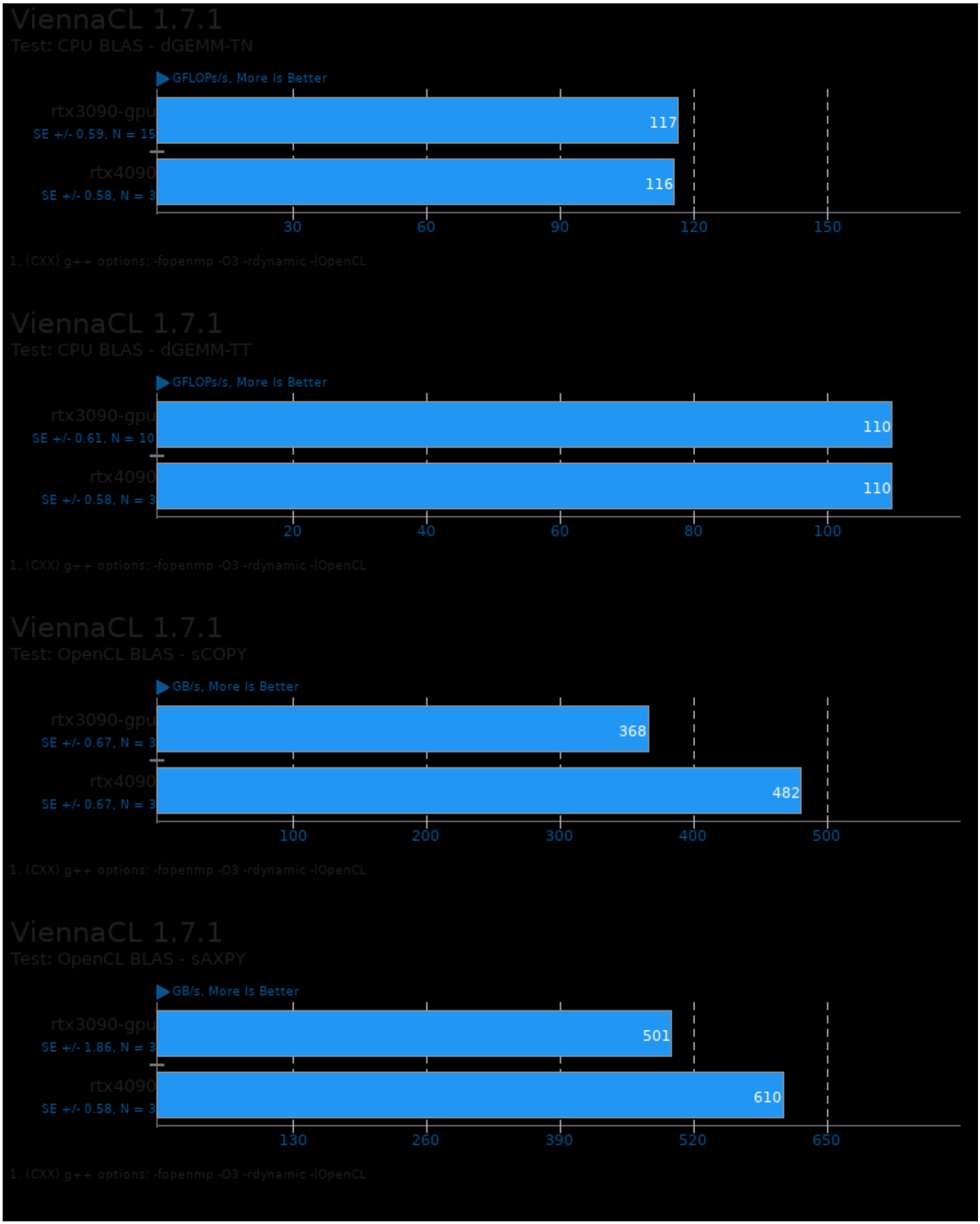
Test: CPU BLAS - sAXPY

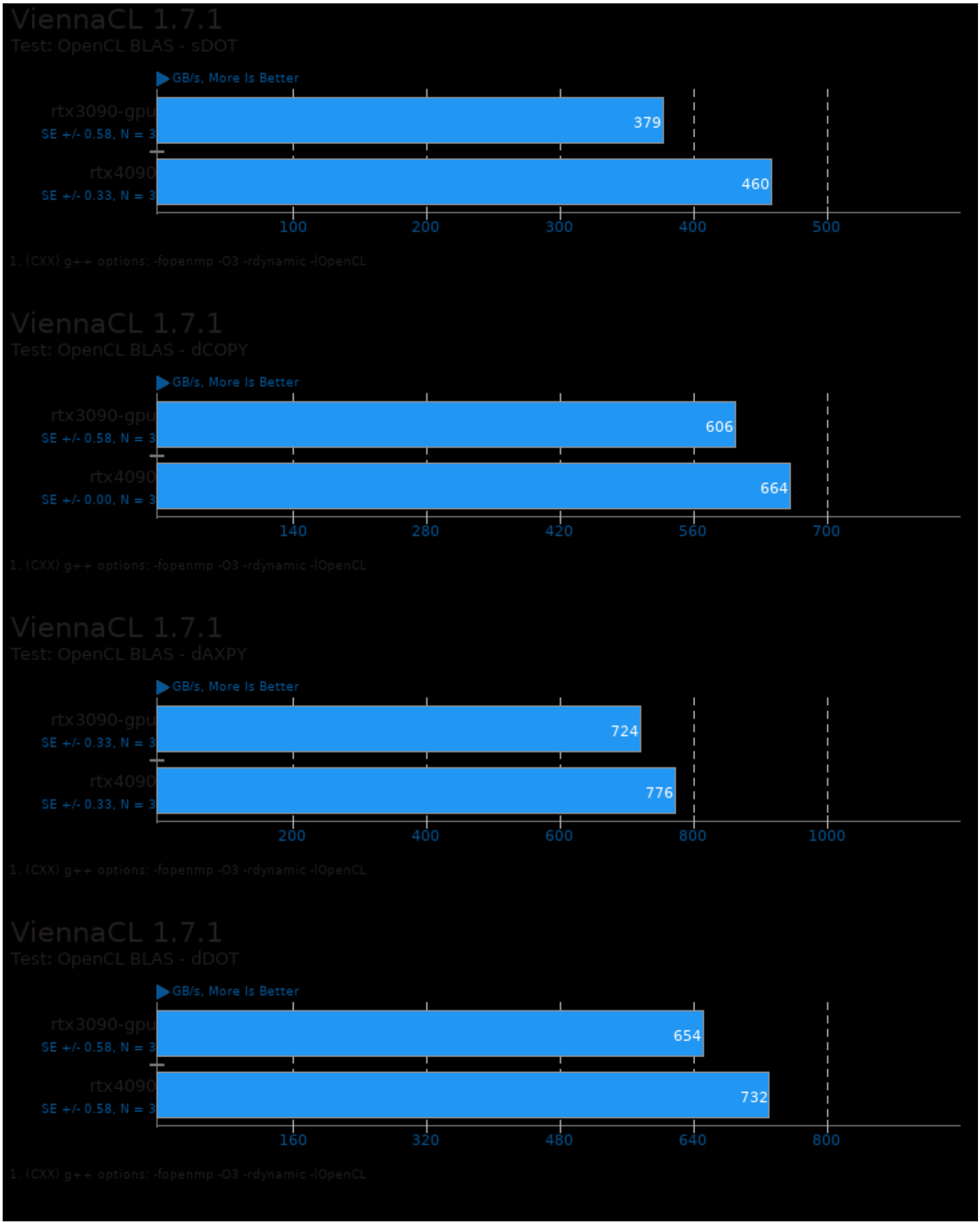


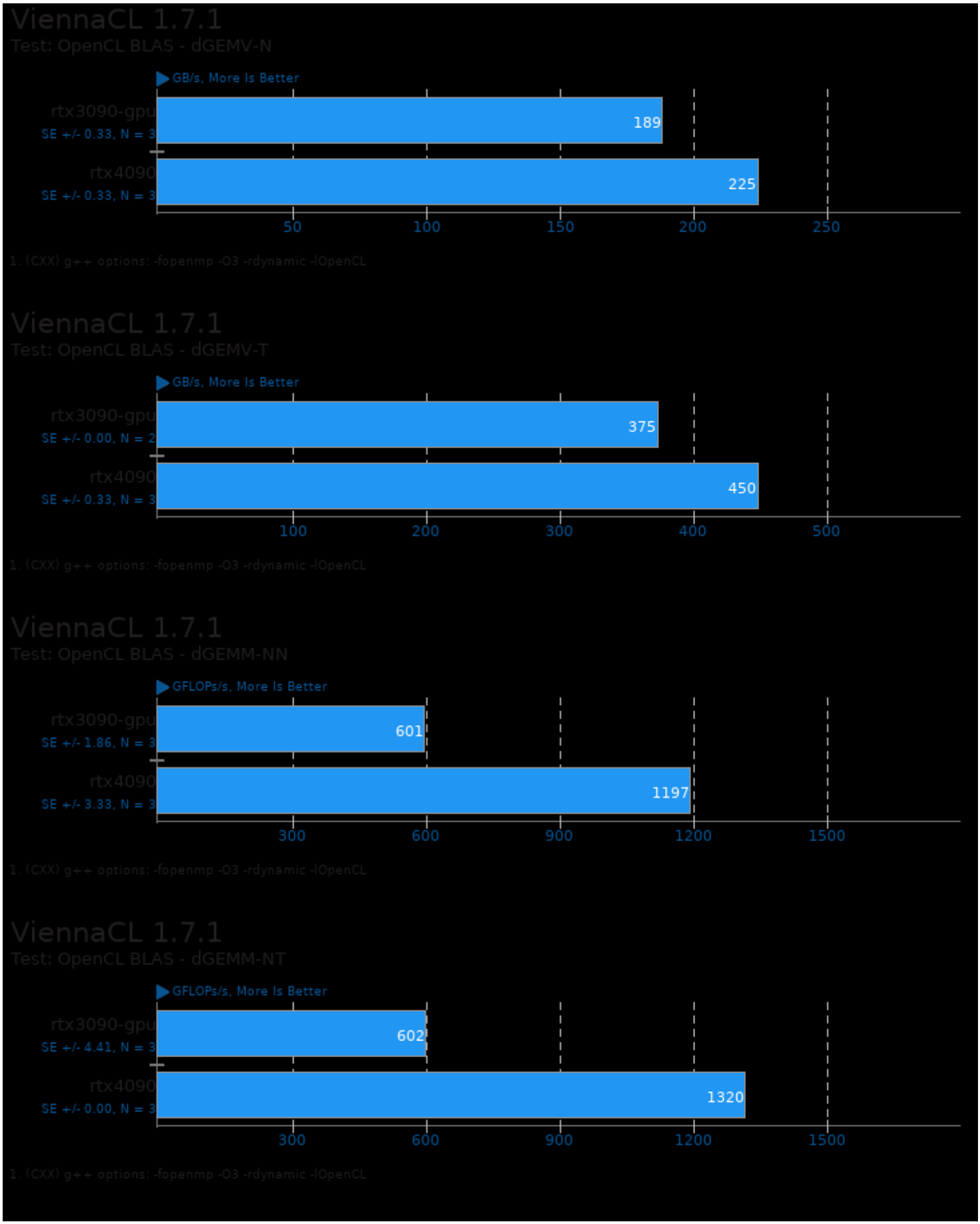
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL

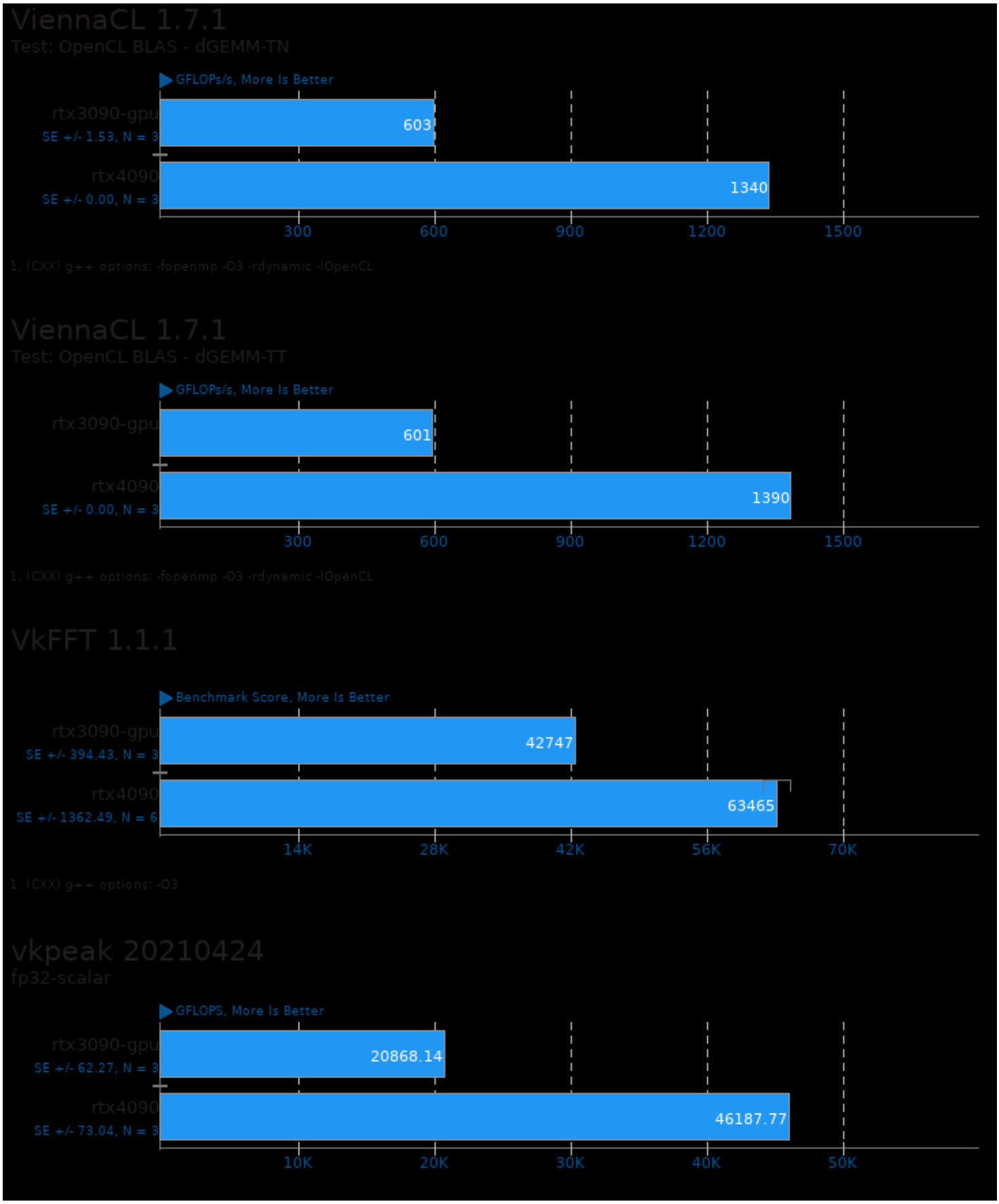

ViennaCL 1.7.1
Test: CPU BLAS - sDOT
GB/s, More Is Better
rtx3090-gpu
SE +/- 2.19, N = 15
190
rtx4090
SE +/- 6.66, N = 3
218
50
100
150
200
250
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dCOPY
GB/s, More Is Better
rtx3090-gpu
SE +/- 0.37, N = 15
47.6
rtx4090
SE +/- 0.23, N = 3
48.5
11
22
33
44
55
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dAXPY
GB/s, More Is Better
rtx3090-gpu
SE +/- 0.55, N = 15
71.5
rtx4090
SE +/- 1.57, N = 3
72.4
16
32
48
64
80
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dDOT
GB/s, More Is Better
rtx3090-gpu
SE +/- 0.81, N = 15
71.5
rtx4090
SE +/- 0.74, N = 3
73.0
16
32
48
64
80
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL


ViennaCL 1.7.1
Test: CPU BLAS - dGEMV-N
GB/s, More Is Better
rtx3090-gpu
SE +/- 4.91, N = 15
77.7
rtx4090
SE +/- 7.55, N = 3
81.5
20
40
60
80
100
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dGEMV-T
GB/s, More Is Better
rtx3090-gpu
SE +/- 2.55, N = 15
90.6
rtx4090
SE +/- 0.96, N = 3
98.8
20
40
60
80
100
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dGEMM-NN
GFLOPs/s, More Is Better
rtx3090-gpu
SE +/- 0.48, N = 15
111
rtx4090
SE +/- 0.88, N = 3
111
20
40
60
80
100
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dGEMM-NT
GFLOPs/s, More Is Better
rtx3090-gpu
SE +/- 0.34, N = 15
108
rtx4090
SE +/- 0.33, N = 3
108
20
40
60
80
100
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL

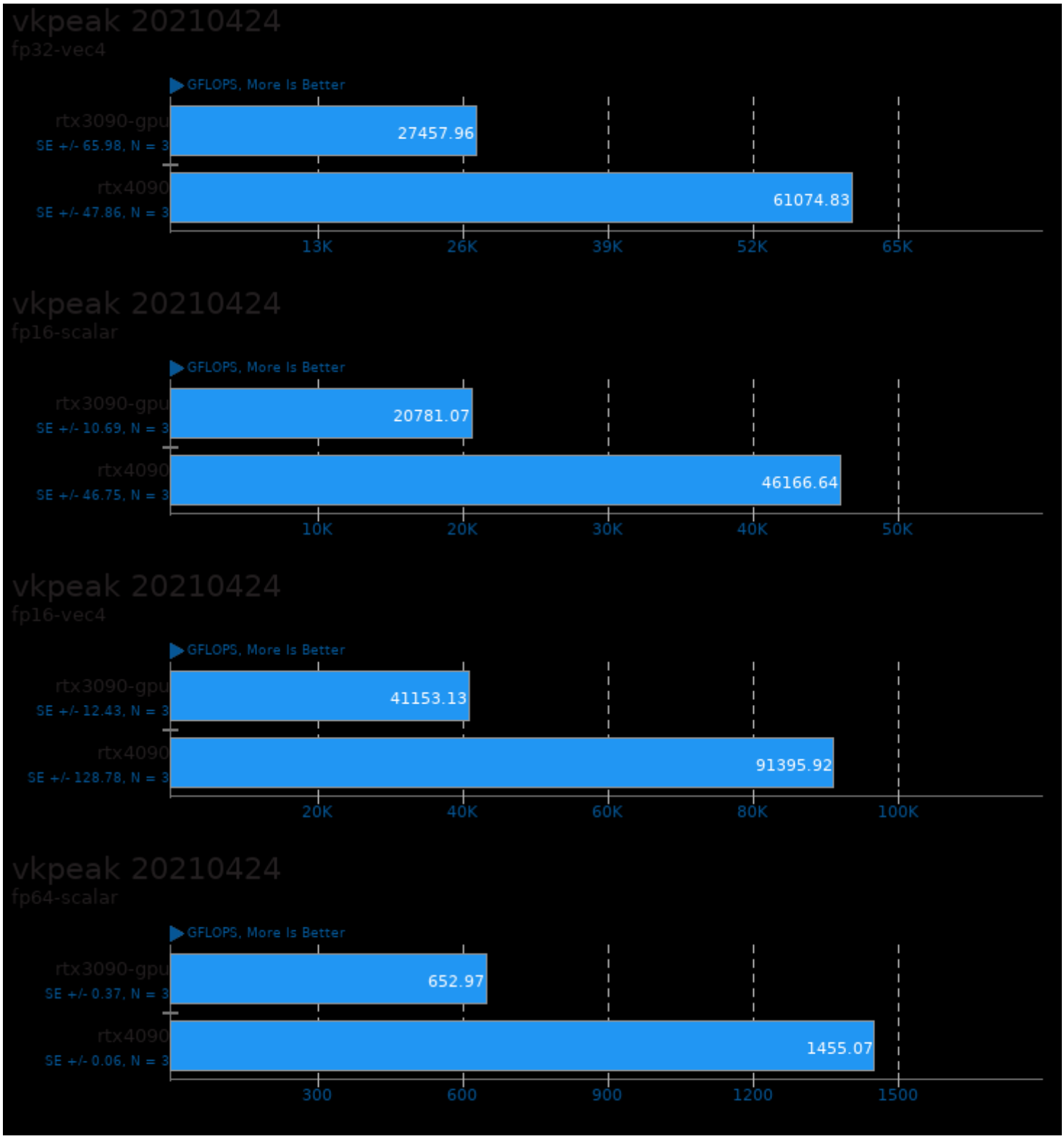

ViennaCL 1.7.1
Test: CPU BLAS - dGEMM-TN
GFLOPs/s, More Is Better
rtx3090-gpu
SE +/- 0.59, N = 15
117
rtx4090
SE +/- 0.58, N = 3
116
30
60
90
120
150
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dGEMM-TT
GFLOPs/s, More Is Better
rtx3090-gpu
SE +/- 0.61, N = 10
110
rtx4090
SE +/- 0.58, N = 3
110
20
40
60
80
100
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: OpenCL BLAS - sCOPY
GB/s, More Is Better
rtx3090-gpu
SE +/- 0.67, N = 3
368
rtx4090
SE +/- 0.67, N = 3
482
100
200
300
400
500
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: OpenCL BLAS - sAXPY
GB/s, More Is Better
rtx3090-gpu
SE +/- 1.86, N = 3
501
rtx4090
SE +/- 0.58, N = 3
610
130
260
390
520
650
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL


ViennaCL 1.7.1
Test: OpenCL BLAS - sDOT
GB/s, More Is Better
rtx3090-gpu
SE +/- 0.58, N = 3
379
rtx4090
SE +/- 0.33, N = 3
460
100
200
300
400
500
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: OpenCL BLAS - dCOPY
GB/s, More Is Better
rtx3090-gpu
SE +/- 0.58, N = 3
606
rtx4090
SE +/- 0.00, N = 3
664
140
280
420
560
700
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: OpenCL BLAS - dAXPY
GB/s, More Is Better
rtx3090-gpu
SE +/- 0.33, N = 3
724
rtx4090
SE +/- 0.33, N = 3
776
200
400
600
800
1000
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: OpenCL BLAS - dDOT
GB/s, More Is Better
rtx3090-gpu
SE +/- 0.58, N = 3
654
rtx4090
SE +/- 0.58, N = 3
732
160
320
480
640
800
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL

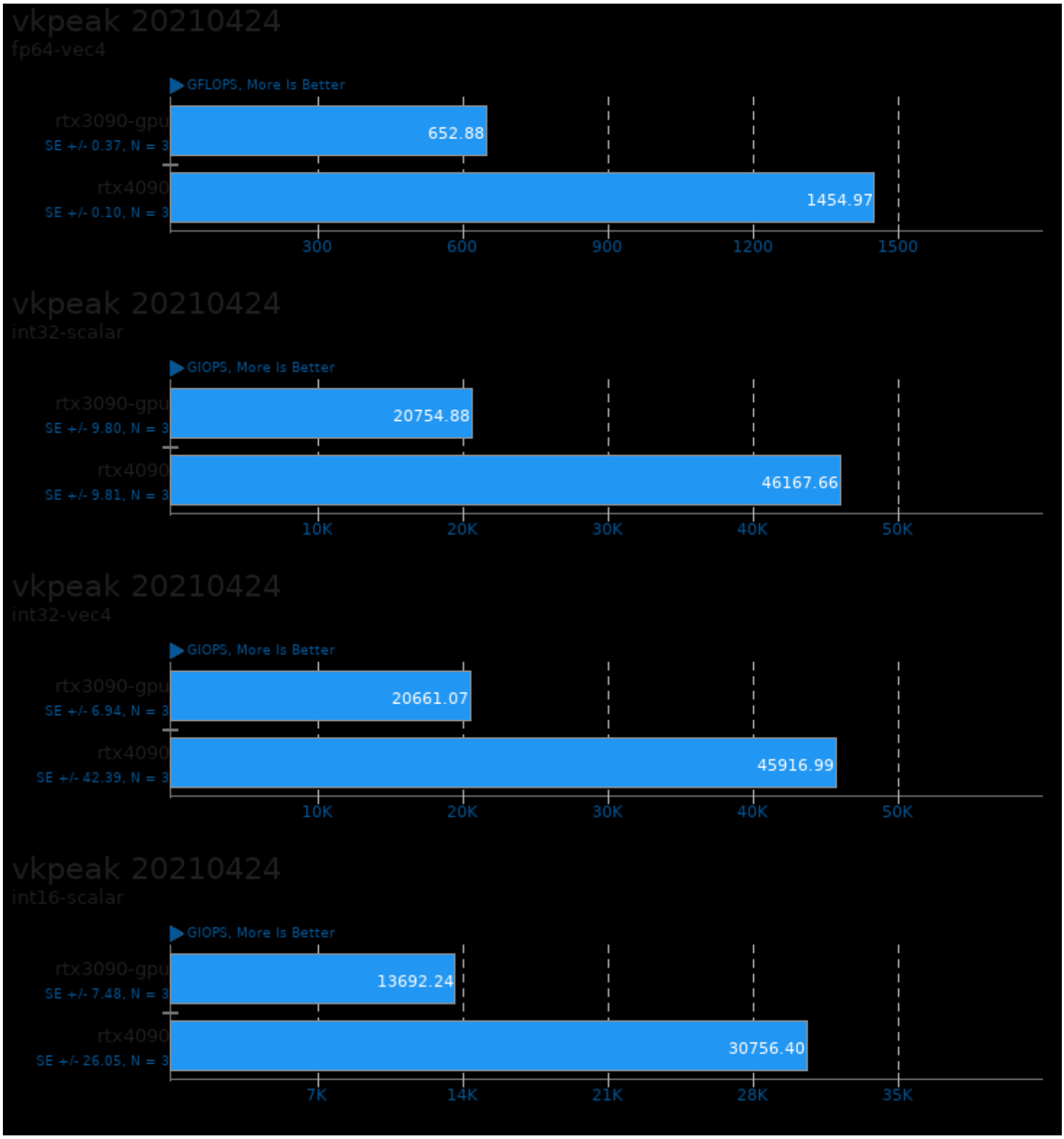

ViennaCL 1.7.1
Test: OpenCL BLAS - dGEMV-N
GB/s, More Is Better
rtx3090-gpu
SE +/- 0.33, N = 3
189
rtx4090
SE +/- 0.33, N = 3
225
50
100
150
200
250
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: OpenCL BLAS - dGEMV-T
GB/s, More Is Better
rtx3090-gpu
SE +/- 0.00, N = 2
375
rtx4090
SE +/- 0.33, N = 3
450
100
200
300
400
500
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: OpenCL BLAS - dGEMM-NN
GFLOPs/s, More Is Better
rtx3090-gpu
SE +/- 1.86, N = 3
601
rtx4090
SE +/- 3.33, N = 3
1197
300
600
900
1200
1500
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: OpenCL BLAS - dGEMM-NT
GFLOPs/s, More Is Better
rtx3090-gpu
SE +/- 4.41, N = 3
602
rtx4090
SE +/- 0.00, N = 3
1320
300
600
900
1200
1500
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL


ViennaCL 1.7.1
Test: OpenCL BLAS - dGEMM-TN
GFLOPs/s, More Is Better
rtx3090-gpu
SE +/- 1.53, N = 3
603
rtx4090
SE +/- 0.00, N = 3
1340
300
600
900
1200
1500
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: OpenCL BLAS - dGEMM-TT
GFLOPs/s, More Is Better
rtx3090-gpu
601
rtx4090
SE +/- 0.00, N = 3
1390
300
600
900
1200
1500
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
VkFFT 1.1.1
Benchmark Score, More Is Better
rtx3090-gpu
SE +/- 394.43, N = 3
42747
rtx4090
SE +/- 1362.49, N = 6
63465
14K
28K
42K
56K
70K
1. (CXX) g++ options: -O3
vkpeak 20210424
fp32-scalar
GFLOPS, More Is Better
rtx3090-gpu
SE +/- 62.27, N = 3
20868.14
rtx4090
SE +/- 73.04, N = 3
46187.77
10K
20K
30K
40K
50K

rtx3090

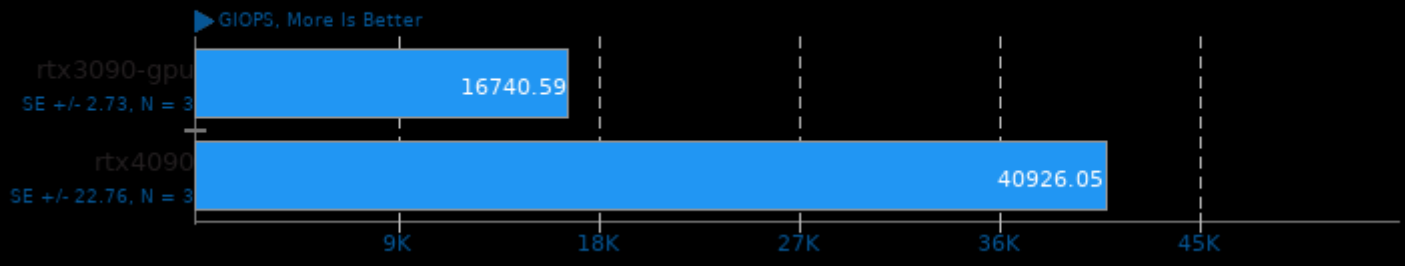

vkpeak 20210424
fp32-vec4
GFLOPS, More Is Better
rtx3090-gpu
SE +/- 65.98, N = 3
27457.96
rtx4090
SE +/- 47.86, N = 3
61074.83
13K
26K
39K
52K
65K
vkpeak 20210424
fp16-scalar
GFLOPS, More Is Better
rtx3090-gpu
SE +/- 10.69, N = 3
20781.07
rtx4090
SE +/- 46.75, N = 3
46166.64
10K
20K
30K
40K
50K
vkpeak 20210424
fp16-vec4
GFLOPS, More Is Better
rtx3090-gpu
SE +/- 12.43, N = 3
41153.13
rtx4090
SE +/- 128.78, N = 3
91395.92
20K
40K
60K
80K
100K
vkpeak 20210424
fp64-scalar
GFLOPS, More Is Better
rtx3090-gpu
SE +/- 0.37, N = 3
652.97
rtx4090
SE +/- 0.06, N = 3
1455.07
300
600
900
1200
1500

rtx3090


vkpeak 20210424
fp64-vec4
GFLOPS, More Is Better
rtx3090-gpu
SE +/- 0.37, N = 3
652.88
rtx4090
SE +/- 0.10, N = 3
1454.97
300
600
900
1200
1500
vkpeak 20210424
int32-scalar
GIOPS, More Is Better
rtx3090-gpu
SE +/- 9.80, N = 3
20754.88
rtx4090
SE +/- 9.81, N = 3
46167.66
10K
20K
30K
40K
50K
vkpeak 20210424
int32-vec4
GIOPS, More Is Better
rtx3090-gpu
SE +/- 6.94, N = 3
20661.07
rtx4090
SE +/- 42.39, N = 3
45916.99
10K
20K
30K
40K
50K
vkpeak 20210424
int16-scalar
GIOPS, More Is Better
rtx3090-gpu
SE +/- 7.48, N = 3
13692.24
rtx4090
SE +/- 26.05, N = 3
30756.40
7K
14K
21K
28K
35K

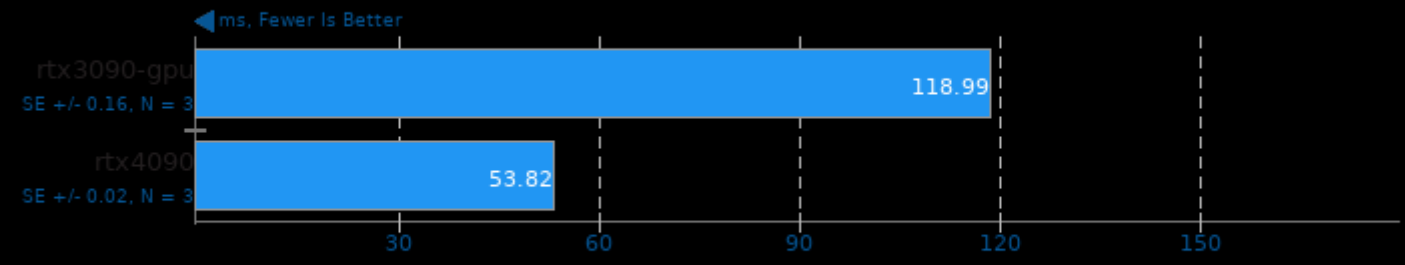
vkpeak 20210424

int16-vec4



VkResample 1.0

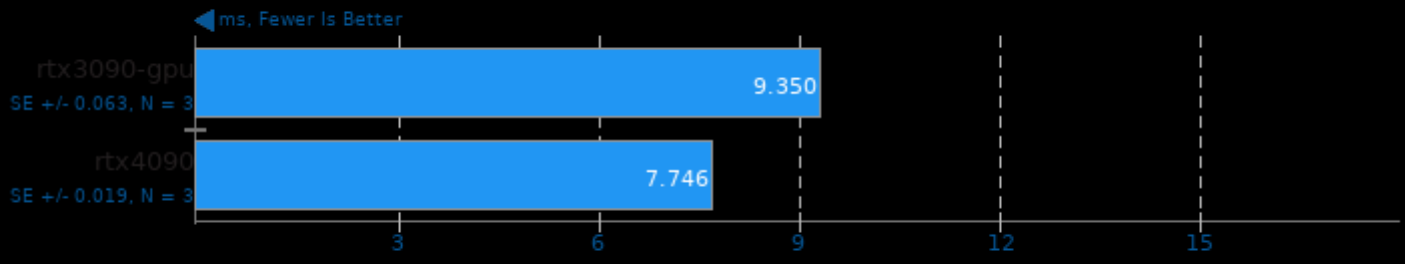
Upscale: 2x - Precision: Double



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

VkResample 1.0

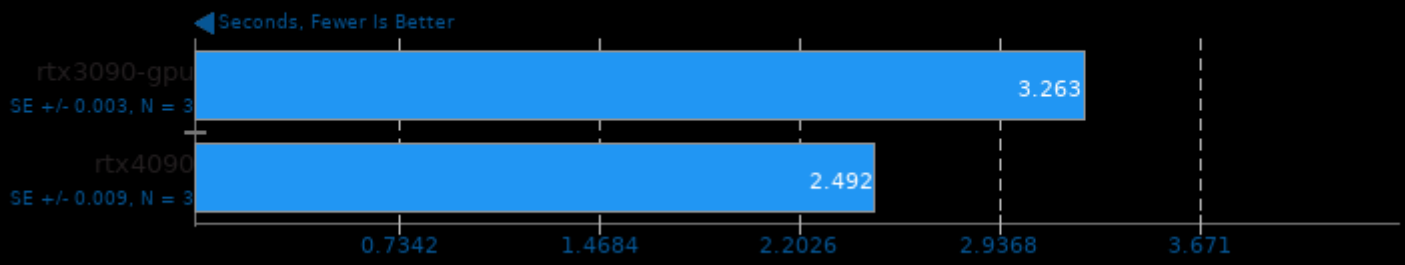
Upscale: 2x - Precision: Single



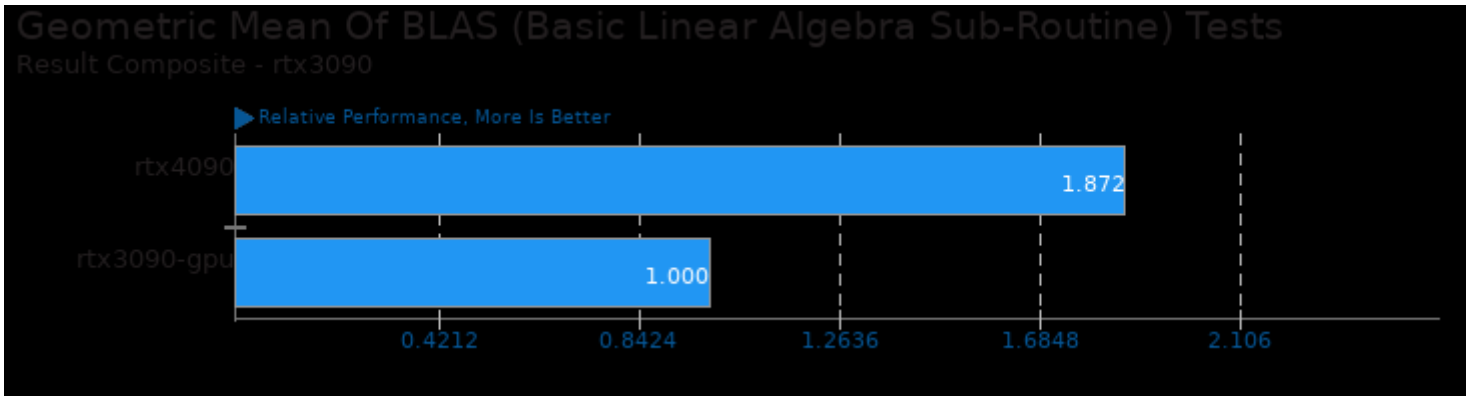
1. (CXX) g++ options: -O3

Waifu2x-NCNN Vulkan 20200818

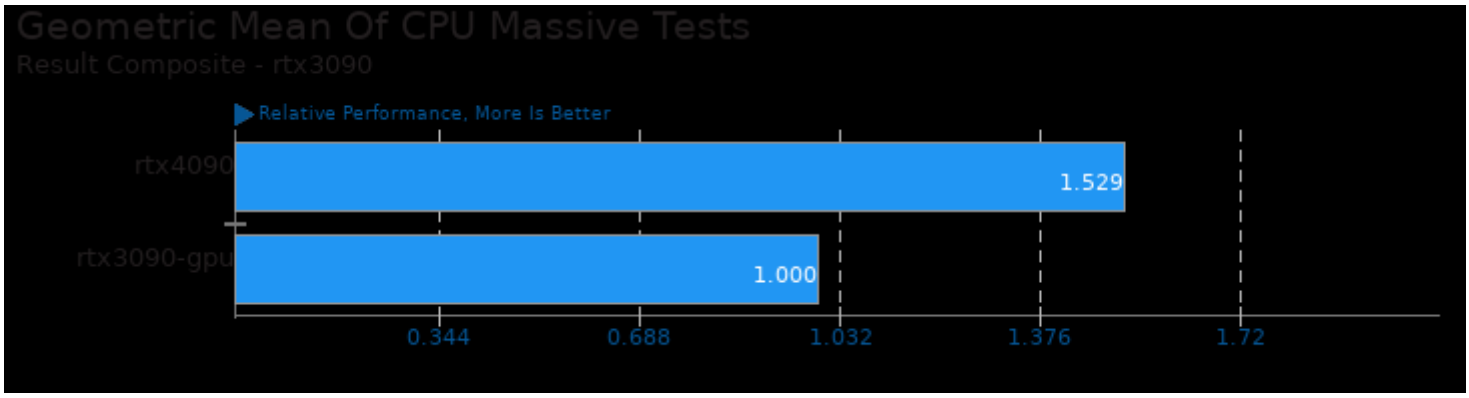
Scale: 2x - Denoise: 3 - TAA: Yes



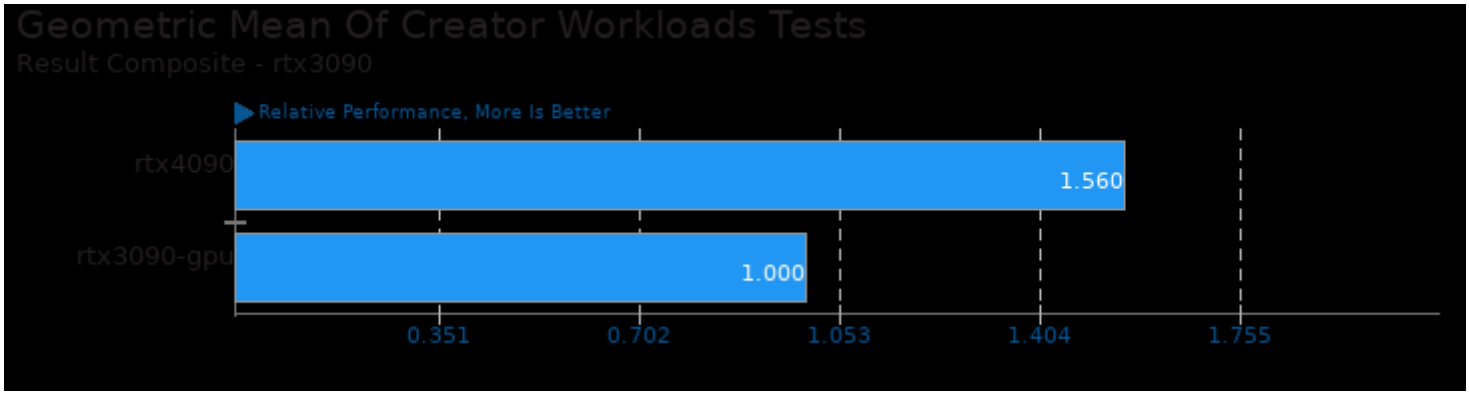
These geometric means are based upon test groupings / test suites for this result file.



Geometric mean based upon tests: pts/arrayfire, pts/caffe and pts/lczero

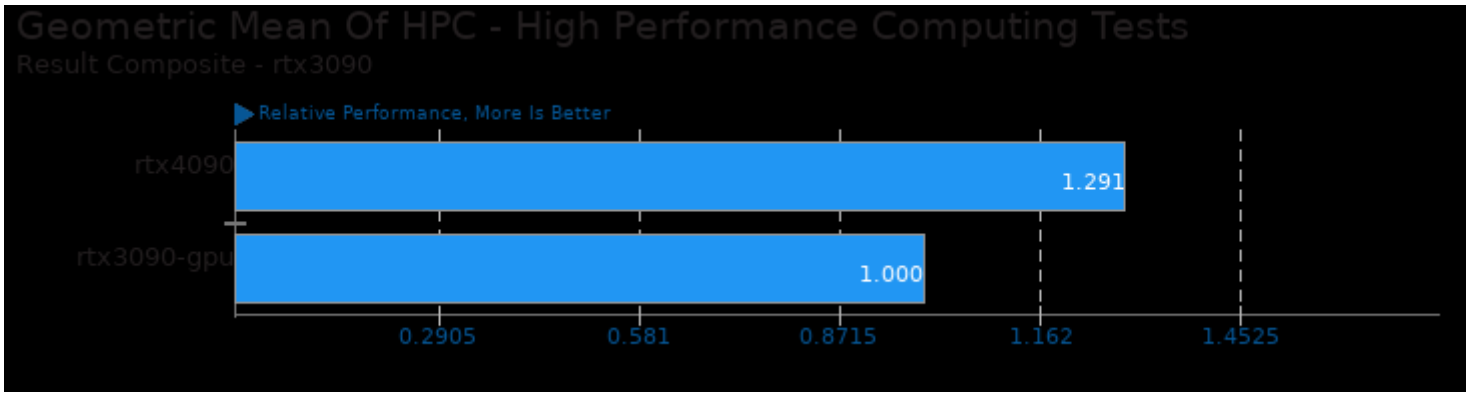


Geometric mean based upon tests: pts/lczero, pts/plaidml, pts/rodinia and pts/blender

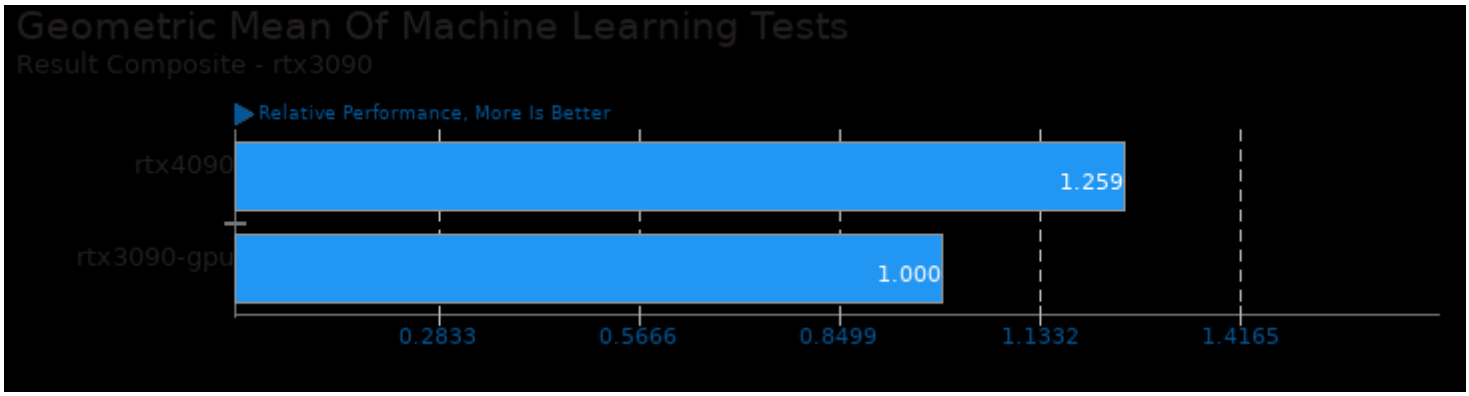


Geometric mean based upon tests: pts/blender, pts/luxcorerender, pts/indigobench, pts/neatbench and pts/betsy

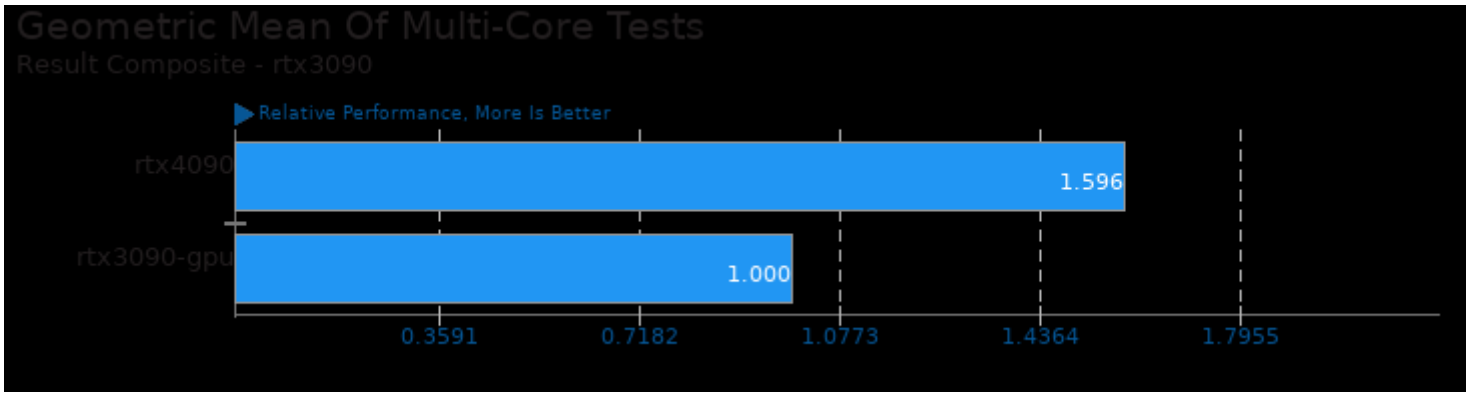
Geometric mean based upon tests: pts/betsy and pts/blender



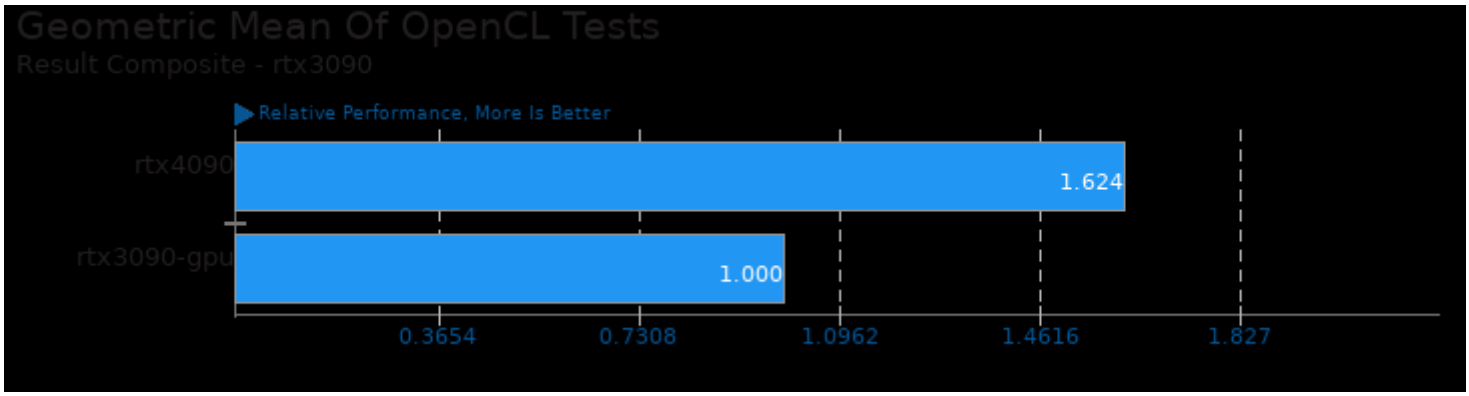
Geometric mean based upon tests: pts/rodinia, pts/arrayfire, pts/gromacs, pts/ncnn, pts/caffe, pts/shoc, pts/plaidml and pts/lczero



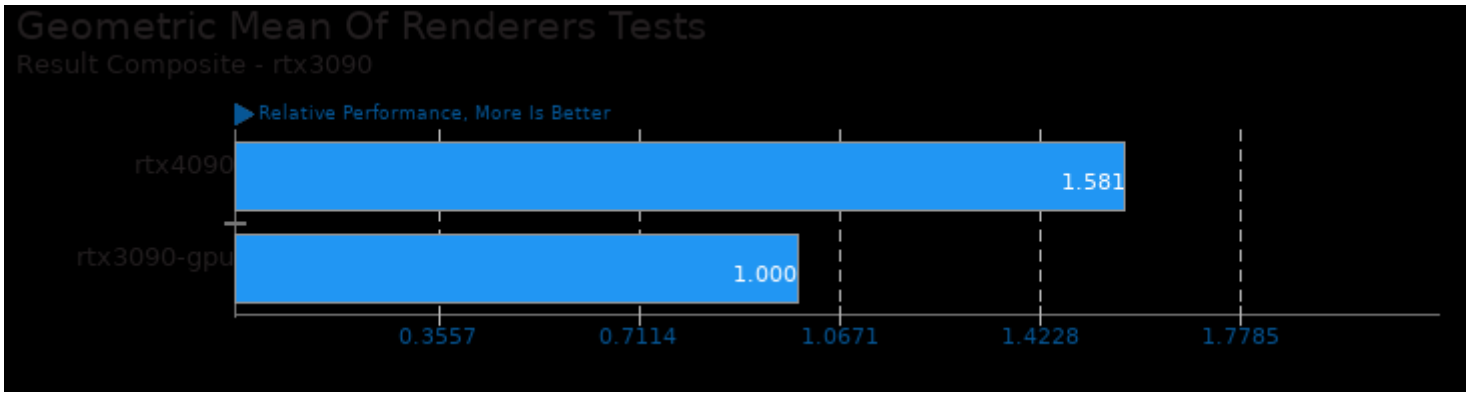
Geometric mean based upon tests: pts/ncnn, pts/caffe, pts/shoc, pts/plaidml and pts/lczero



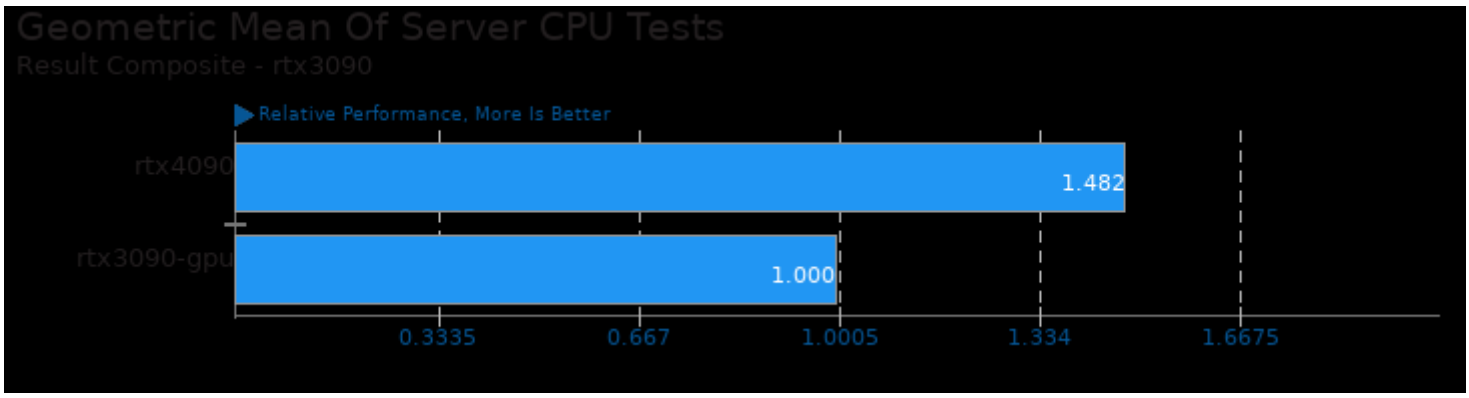
Geometric mean based upon tests: pts/blender, pts/arrayfire, pts/rodinia, pts/gromacs, pts/luxcorerender, pts/indigobench and pts/neatbench



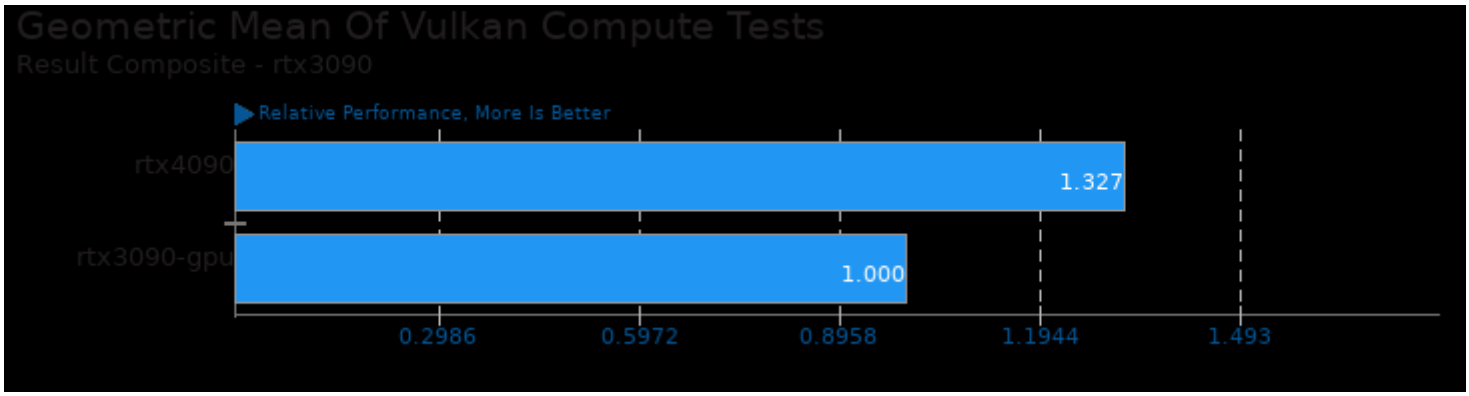
Geometric mean based upon tests: pts/mandelgpu, pts/shoc, pts/cl-mem, pts/clpeak, pts/rodinia and pts/viennacl



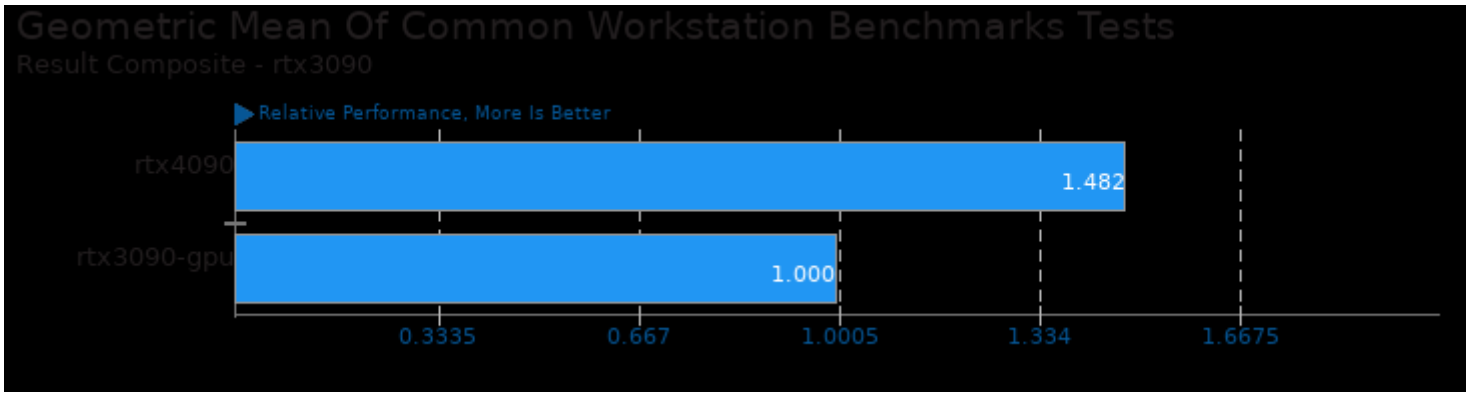
Geometric mean based upon tests: pts/blender, pts/luxcorerender and pts/indigobench



Geometric mean based upon tests: pts/rodinia and pts/blender



Geometric mean based upon tests: pts/vkfft, pts/vkresample, pts/vkpeak, pts/ncnn, pts/realsr-ncnn, pts/waifu2x-ncnn, pts/betsy and pts/libplacebo



Geometric mean based upon tests: pts/blender and pts/rodinia

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 07:27.