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TR 3970X April

AMD Ryzen Threadripper 3970X 32-Core testing with a ASUS ROG ZENITH II EXTREME (1201 BIOS) and AMD Radeon RX 5600 OEM/5600 XT / 5700/5700 8GB on Ubuntu 20.10 via the Phoronix Test Suite.

Automated Executive Summary

2 had the most wins, coming in first place for 76% of the tests.

Based on the geometric mean of all complete results, the fastest (2) was 1.013x the speed of the slowest (1).

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

ViennaCL (Test: CPU BLAS - dGEMV-N) at 1.067x
ViennaCL (Test: CPU BLAS - dAXPY) at 1.041x
ViennaCL (Test: CPU BLAS - dGEMM-TT) at 1.033x
ViennaCL (Test: CPU BLAS - dGEMV-T) at 1.028x
ViennaCL (Test: CPU BLAS - dGEMM-NT) at 1.027x
ViennaCL (Test: CPU BLAS - dGEMM-NN) at 1.026x
ViennaCL (Test: CPU BLAS - dCOPY) at 1.025x
ViennaCL (Test: CPU BLAS - dGEMM-TN) at 1.024x
Timed LLVM Compilation (Build System: Unix Makefiles) at 1.016x
SecureMark (Benchmark: SecureMark-TLS) at 1.013x.

Test Systems:

1

2

Processor: AMD Ryzen Threadripper 3970X 32-Core @ 4.55GHz (32 Cores / 64 Threads), Motherboard: ASUS ROG ZENITH II EXTREME (1201 BIOS), Chipset: AMD Starship/Matisse, Memory: 64GB, Disk: Samsung SSD 980 PRO 500GB, Graphics: AMD Radeon RX 5600 OEM/5600 XT / 5700/5700 8GB (1750/875MHz), Audio: AMD Navi 10 HDMI Audio, Monitor: ASUS VP28U, Network: Aquantia AQC107 NBase-T/IEEE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.10, Kernel: 5.11.0-rc6-phx (x86_64) 20210203, Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.9, OpenGL: 4.6 Mesa 20.2.1 (LLVM 11.0.0), Vulkan: 1.2.131, Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 3840x2160

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++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq schedutil (Boost: Enabled) - CPU Microcode: 0x8301039
Python Notes: Python 3.8.6
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional STIBP: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

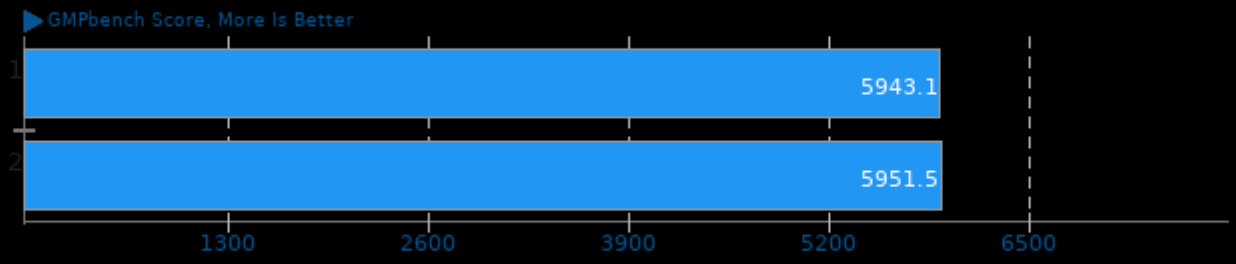
	1	2
GNU GMP GMPbench - Total Time (GMPbench Score)	**5943**	**5952**
Normalized	99.86%	100%
Botan - KASUMI (MiB/s)	**98.615**	**98.718**
Normalized	99.9%	100%
Standard Deviation	0.3%	0%
Botan - KASUMI - Decrypt (MiB/s)	**96.558**	**96.631**
Normalized	99.92%	100%
Standard Deviation	0.3%	0%
Botan - AES-256 (MiB/s)	**5890**	**5887**
Normalized	100%	99.95%
Standard Deviation	0%	0%
Botan - AES-256 - Decrypt (MiB/s)	**5876**	**5873**
Normalized	100%	99.96%
Standard Deviation	0%	0%
Botan - Twofish (MiB/s)	**394.950**	**394.683**
Normalized	100%	99.93%
Standard Deviation	0%	0.1%
Botan - Twofish - Decrypt (MiB/s)	**395.532**	**395.339**
Normalized	100%	99.95%
Standard Deviation	0%	0.1%
Botan - Blowfish (MiB/s)	**476.583**	**476.660**
Normalized	99.98%	100%

Standard Deviation	0%	0.1%
Botan - Blowfish - Decrypt (MiB/s)	**475.596**	**475.900**
Normalized	99.94%	100%
Standard Deviation	0.1%	0.1%
Botan - CAST-256 (MiB/s)	**155.241**	**155.002**
Normalized	100%	99.85%
Standard Deviation	0%	0%
Botan - CAST-256 - Decrypt (MiB/s)	**155.211**	**155.013**
Normalized	100%	99.87%
Standard Deviation	0.1%	0%
Botan - ChaCha20Poly1305 (MiB/s)	**797.243**	**799.026**
Normalized	99.78%	100%
Standard Deviation	0.3%	0%
Botan - ChaCha20Poly1305 - Decrypt (MiB/s)	**792.533**	**793.998**
Normalized	99.82%	100%
Standard Deviation	0.2%	0.1%
LuxCoreRender - DLSC - CPU (M samples/sec)	**6.05**	**6.09**
Normalized	99.34%	100%
Standard Deviation	1%	1.9%
LuxCoreRender - Danish Mood - CPU (M samples/sec)	**4.72**	**4.76**
Normalized	99.16%	100%
Standard Deviation	0.9%	2.5%
LuxCoreRender - Orange Juice - CPU (M samples/sec)	**9.20**	**9.28**
Normalized	99.14%	100%
Standard Deviation	0.8%	1.5%
LuxCoreRender - LuxCore Benchmark - CPU (M samples/sec)	**5.23**	**5.25**
Normalized	99.62%	100%
Standard Deviation	0.3%	1.6%
LuxCoreRender - R.C.a.P - CPU (M samples/sec)	**21.44**	**21.35**
Normalized	100%	99.58%
Standard Deviation	6.2%	6.5%
Timed LLVM Compilation - Ninja (sec)	**213.907**	**213.026**
Normalized	99.59%	100%
Standard Deviation	1%	0.6%
Timed LLVM Compilation - Unix Makefiles (sec)	**259.257**	**255.066**
Normalized	98.38%	100%
Standard Deviation	2.1%	0.9%
Helsing - 14 digit (sec)	**156.643**	**156.511**
Normalized	99.92%	100%
SecureMark - SecureMark-TLS (marks)	**229647**	**232658**
Normalized	98.71%	100%
Standard Deviation	1%	0.4%
ViennaCL - CPU BLAS - sCOPY (GB/s)	**1557**	**1567**
Normalized	99.36%	100%
Standard Deviation	1%	0.4%
ViennaCL - CPU BLAS - sAXPY (GB/s)	2177	2177
Standard Deviation	0.5%	1%
ViennaCL - CPU BLAS - sDOT (GB/s)	**574**	**577**
Normalized	99.48%	100%
Standard Deviation	0.5%	0.5%
ViennaCL - CPU BLAS - dCOPY (GB/s)	**99.5**	**102**
Normalized	97.55%	100%
Standard Deviation	3.2%	0.6%
ViennaCL - CPU BLAS - dAXPY (GB/s)	**148**	**154**

Normalized	96.1%	100%
Standard Deviation	2.7%	0.6%
ViennaCL - CPU BLAS - dDOT (GB/s)	**154**	**169**
Normalized	91.12%	100%
Standard Deviation	8.5%	1.2%
ViennaCL - CPU BLAS - dGEMV-N (GB/s)	**225**	**240**
Normalized	93.75%	100%
Standard Deviation	4.5%	2.8%
ViennaCL - CPU BLAS - dGEMV-T (GB/s)	**567**	**583**
Normalized	97.26%	100%
Standard Deviation	3.3%	0.5%
ViennaCL - CPU BLAS - dGEMM-NN (GFLOPs/s)	**116**	**119**
Normalized	97.48%	100%
Standard Deviation	4.1%	
ViennaCL - CPU BLAS - dGEMM-NT (GFLOPs/s)	**113**	**116**
Normalized	97.41%	100%
Standard Deviation	4.1%	
ViennaCL - CPU BLAS - dGEMM-TN (GFLOPs/s)	**124**	**127**
Normalized	97.64%	100%
Standard Deviation	5.4%	
ViennaCL - CPU BLAS - dGEMM-TT (GFLOPs/s)	**120**	**124**
Normalized	96.77%	100%
Standard Deviation	5.3%	

GNU GMP GMPbench 6.2.1

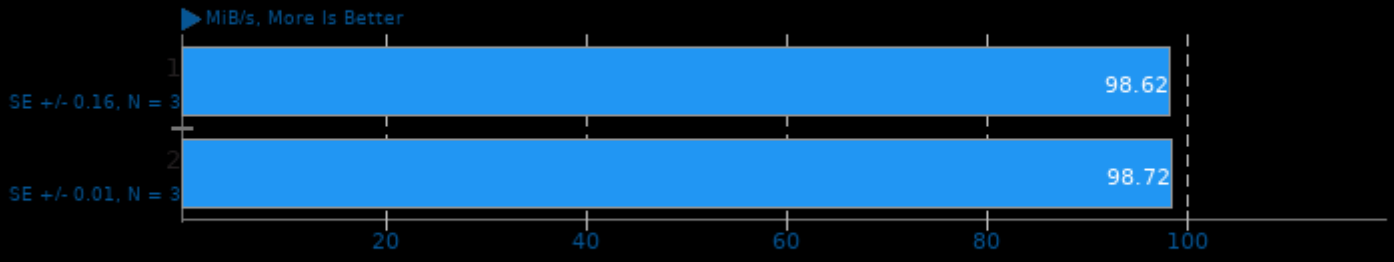
Total Time



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

Botan 2.17.3

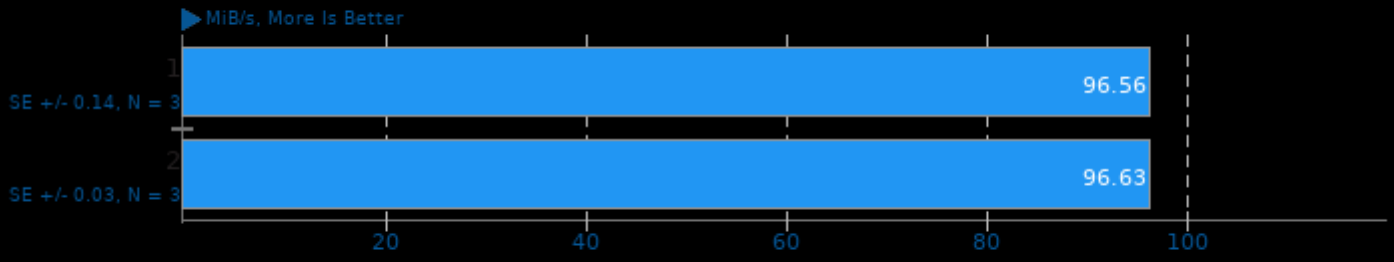
Test: KASUMI



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

Botan 2.17.3

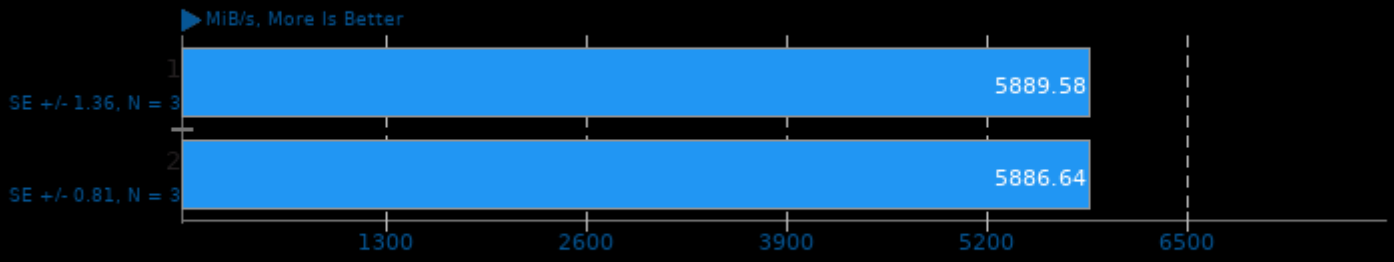
Test: KASUMI - Decrypt



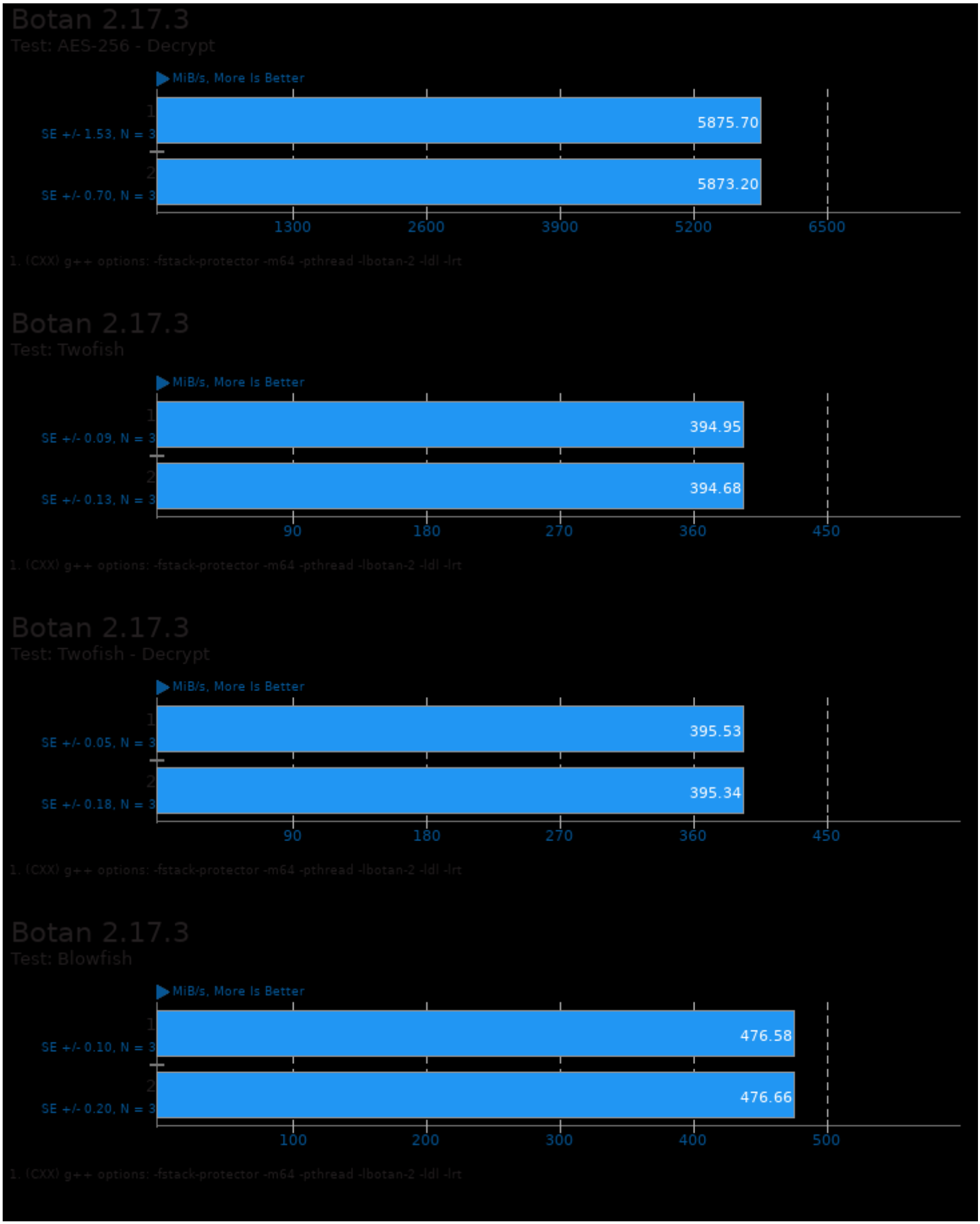
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

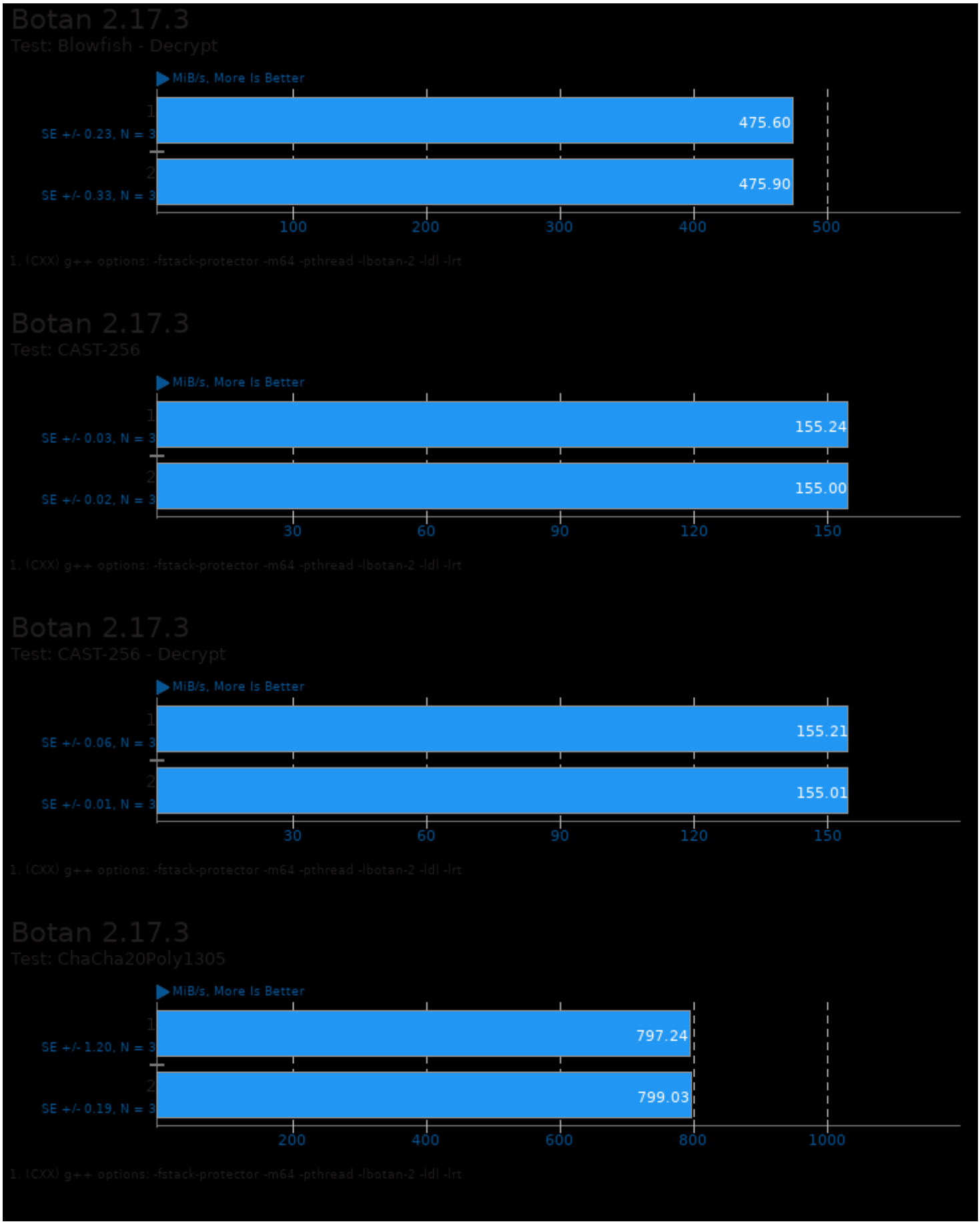
Botan 2.17.3

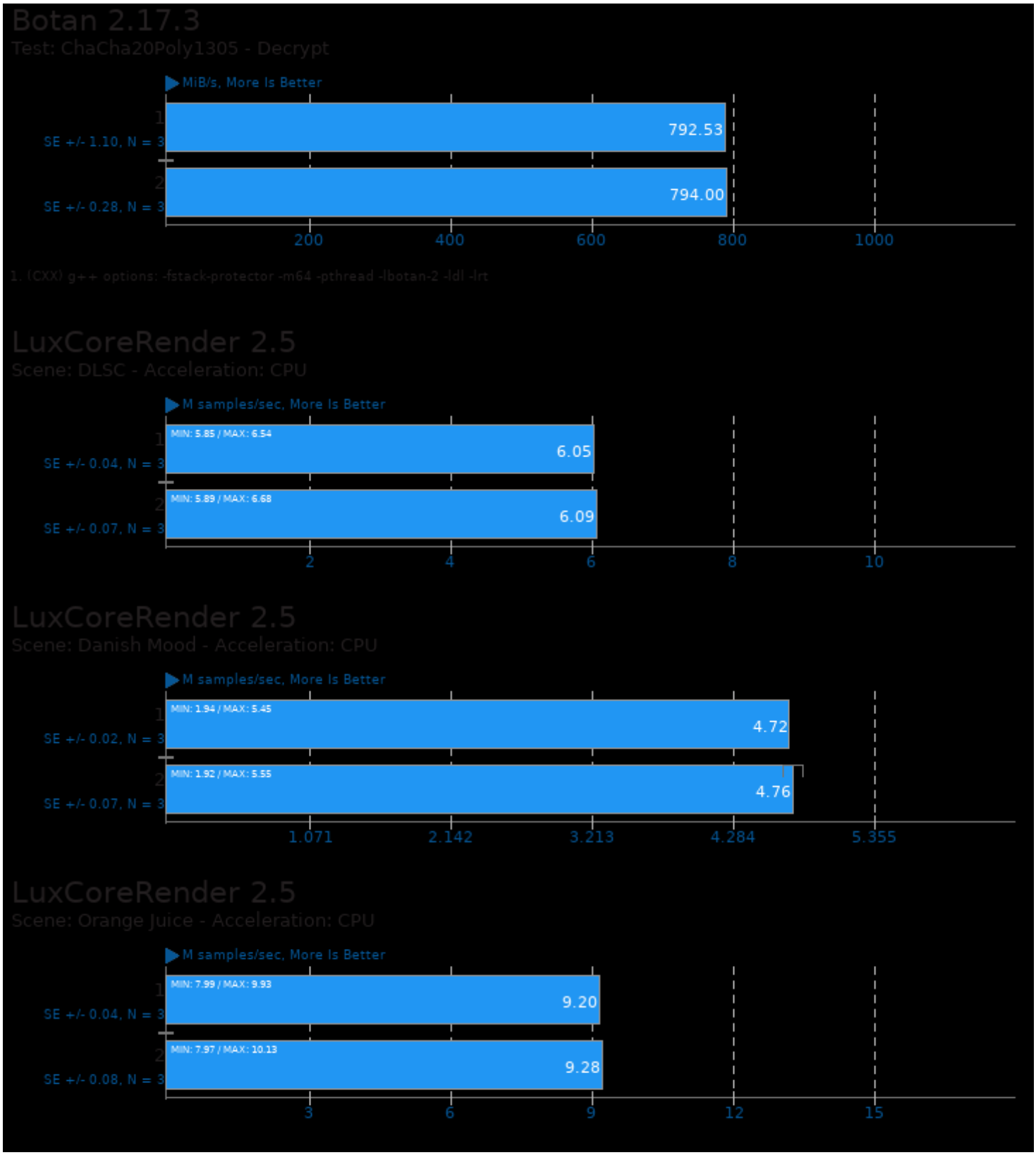
Test: AES-256

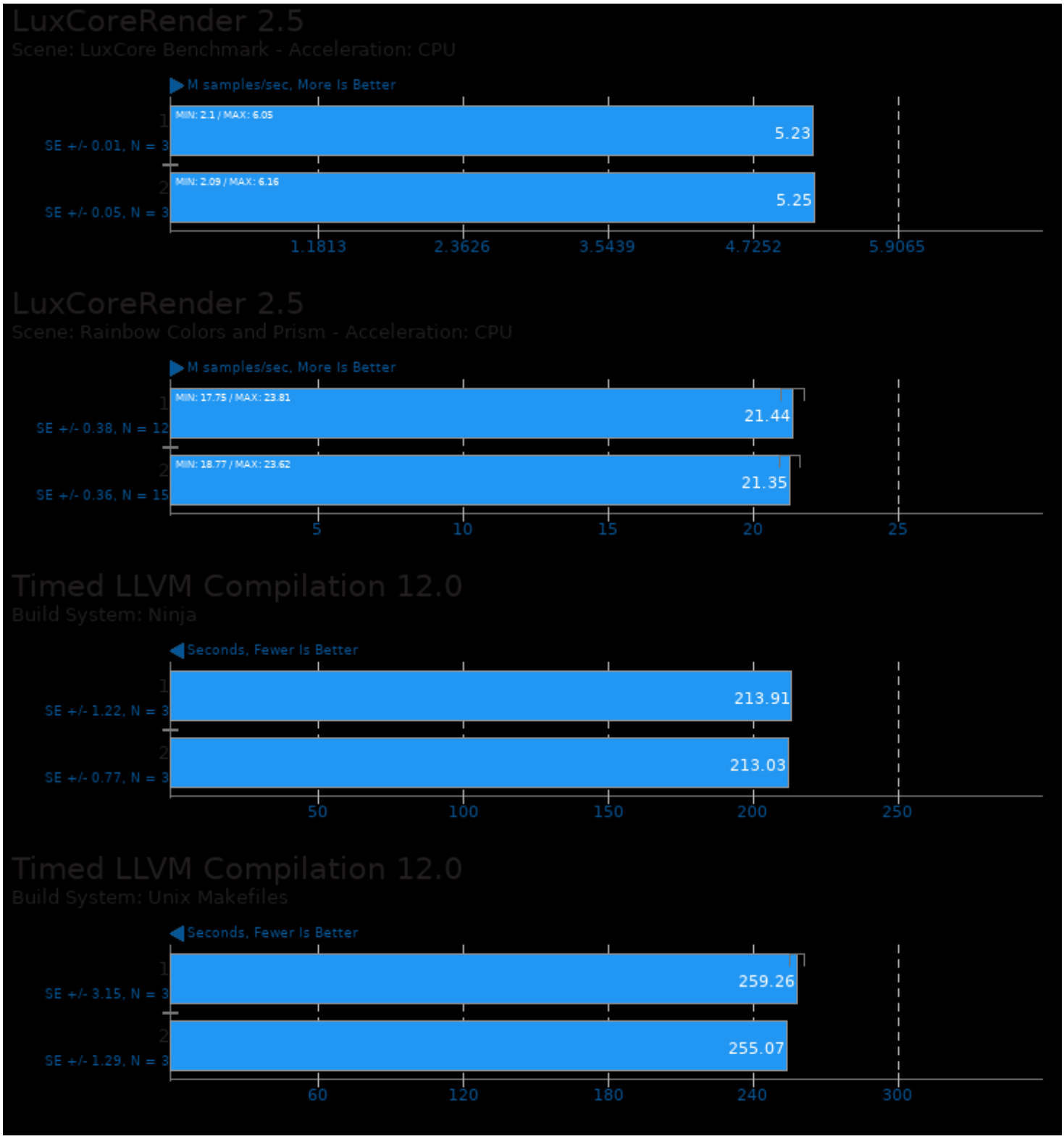


1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt


Botan 2.17.3
Test: AES-256 - Decrypt
MiB/s, More Is Better
1
SE +/- 1.53, N = 3
5875.70
2
SE +/- 0.70, N = 3
5873.20
1300
2600
3900
5200
6500
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Botan 2.17.3
Test: Twofish
MiB/s, More Is Better
1
SE +/- 0.09, N = 3
394.95
2
SE +/- 0.13, N = 3
394.68
90
180
270
360
450
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Botan 2.17.3
Test: Twofish - Decrypt
MiB/s, More Is Better
1
SE +/- 0.05, N = 3
395.53
2
SE +/- 0.18, N = 3
395.34
90
180
270
360
450
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Botan 2.17.3
Test: Blowfish
MiB/s, More Is Better
1
SE +/- 0.10, N = 3
476.58
2
SE +/- 0.20, N = 3
476.66
100
200
300
400
500
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

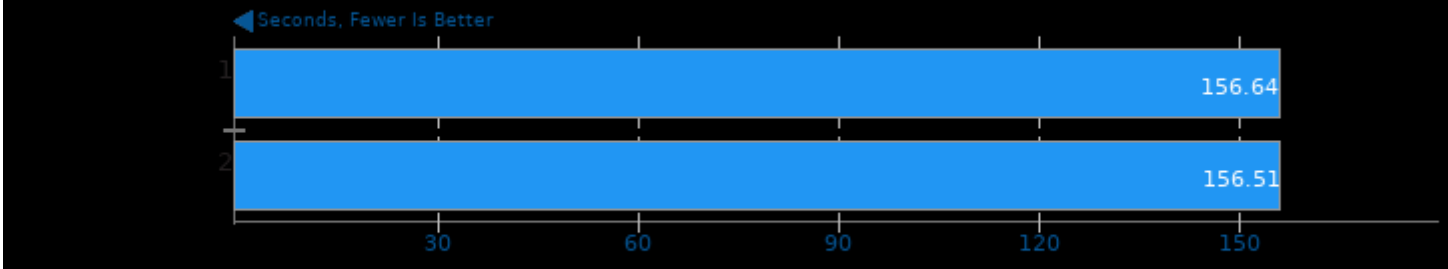

Botan 2.17.3
Test: Blowfish - Decrypt
MiB/s, More Is Better
1
SE +/- 0.23, N = 3
475.60
2
SE +/- 0.33, N = 3
475.90
100
200
300
400
500
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Botan 2.17.3
Test: CAST-256
MiB/s, More Is Better
1
SE +/- 0.03, N = 3
155.24
2
SE +/- 0.02, N = 3
155.00
30
60
90
120
150
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Botan 2.17.3
Test: CAST-256 - Decrypt
MiB/s, More Is Better
1
SE +/- 0.06, N = 3
155.21
2
SE +/- 0.01, N = 3
155.01
30
60
90
120
150
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Botan 2.17.3
Test: ChaCha20Poly1305
MiB/s, More Is Better
1
SE +/- 1.20, N = 3
797.24
2
SE +/- 0.19, N = 3
799.03
200
400
600
800
1000
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt


Botan 2.17.3
Test: ChaCha20Poly1305 - Decrypt
MiB/s, More Is Better
1
SE +/- 1.10, N = 3
792.53
2
SE +/- 0.28, N = 3
794.00
200
400
600
800
1000
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
LuxCoreRender 2.5
Scene: DLSC - Acceleration: CPU
M samples/sec, More Is Better
1
MIN: 5.85 / MAX: 6.54
SE +/- 0.04, N = 3
6.05
2
MIN: 5.89 / MAX: 6.68
SE +/- 0.07, N = 3
6.09
2
4
6
8
10
LuxCoreRender 2.5
Scene: Danish Mood - Acceleration: CPU
M samples/sec, More Is Better
1
MIN: 1.94 / MAX: 5.45
SE +/- 0.02, N = 3
4.72
2
MIN: 1.92 / MAX: 5.55
SE +/- 0.07, N = 3
4.76
1.071
2.142
3.213
4.284
5.355
LuxCoreRender 2.5
Scene: Orange Juice - Acceleration: CPU
M samples/sec, More Is Better
1
MIN: 7.99 / MAX: 9.93
SE +/- 0.04, N = 3
9.20
2
MIN: 7.97 / MAX: 10.13
SE +/- 0.08, N = 3
9.28
3
6
9
12
15


LuxCoreRender 2.5
Scene: LuxCore Benchmark - Acceleration: CPU
M samples/sec, More Is Better
1
MIN: 2.1 / MAX: 6.05
5.23
SE +/- 0.01, N = 3
2
MIN: 2.09 / MAX: 6.16
5.25
SE +/- 0.05, N = 3
1.1813
2.3626
3.5439
4.7252
5.9065
LuxCoreRender 2.5
Scene: Rainbow Colors and Prism - Acceleration: CPU
M samples/sec, More Is Better
1
MIN: 17.75 / MAX: 23.81
21.44
SE +/- 0.38, N = 12
2
MIN: 18.77 / MAX: 23.62
21.35
SE +/- 0.36, N = 15
5
10
15
20
25
Timed LLVM Compilation 12.0
Build System: Ninja
Seconds, Fewer Is Better
1
213.91
SE +/- 1.22, N = 3
2
213.03
SE +/- 0.77, N = 3
50
100
150
200
250
Timed LLVM Compilation 12.0
Build System: Unix Makefiles
Seconds, Fewer Is Better
1
259.26
SE +/- 3.15, N = 3
2
255.07
SE +/- 1.29, N = 3
60
120
180
240
300

Helsing 1.0-beta

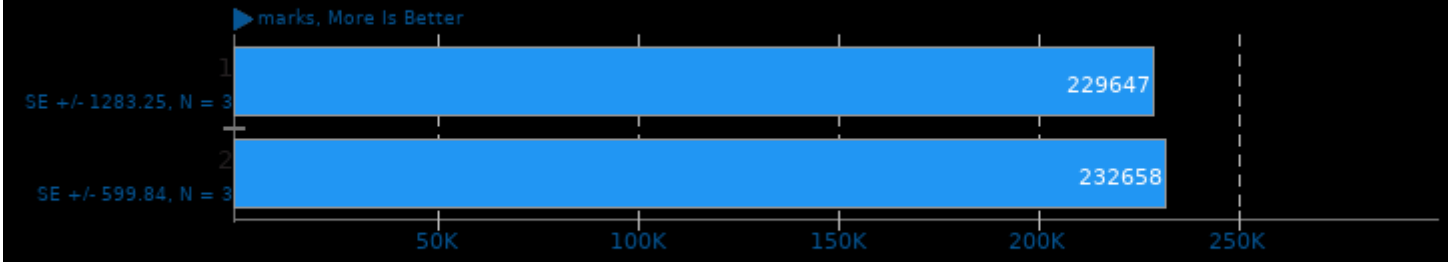
Digit Range: 14 digit



1. (CC) gcc options: -O2 -pthread -lcrypto

SecureMark 1.0.4

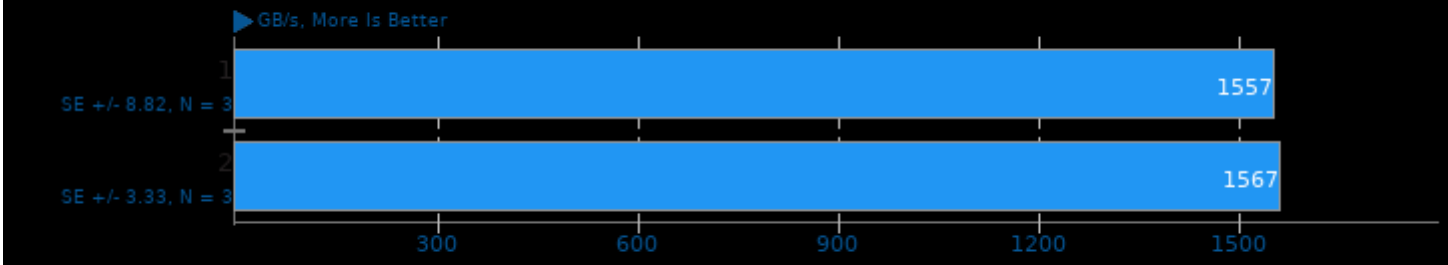
Benchmark: SecureMark-TLS



1. (CC) gcc options: -pedantic -O3

ViennaCL 1.7.1

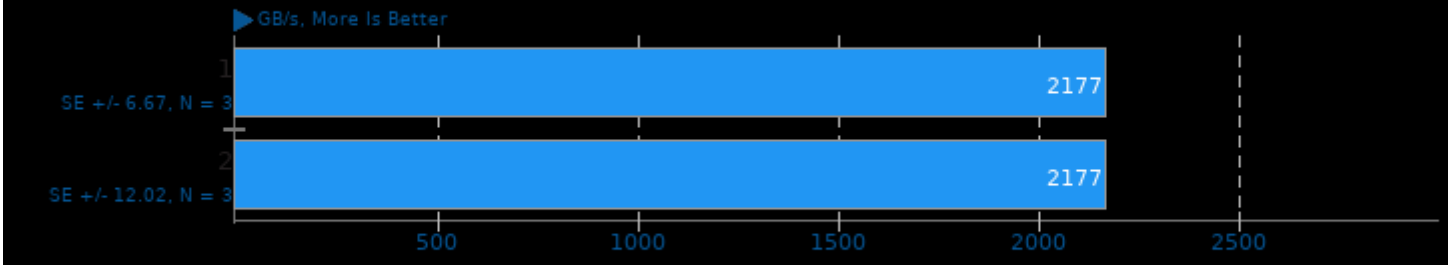
Test: CPU BLAS - sCOPY



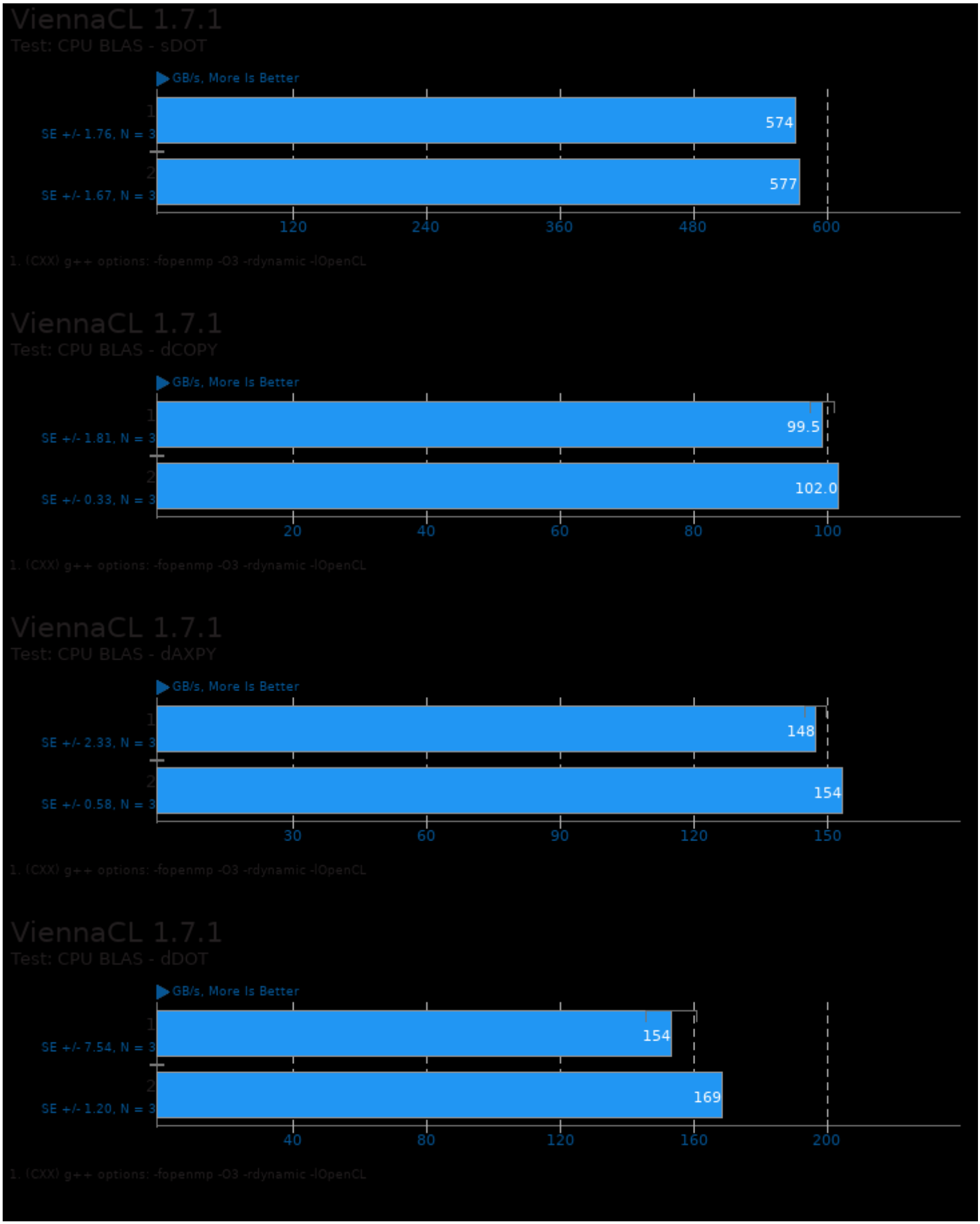
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL

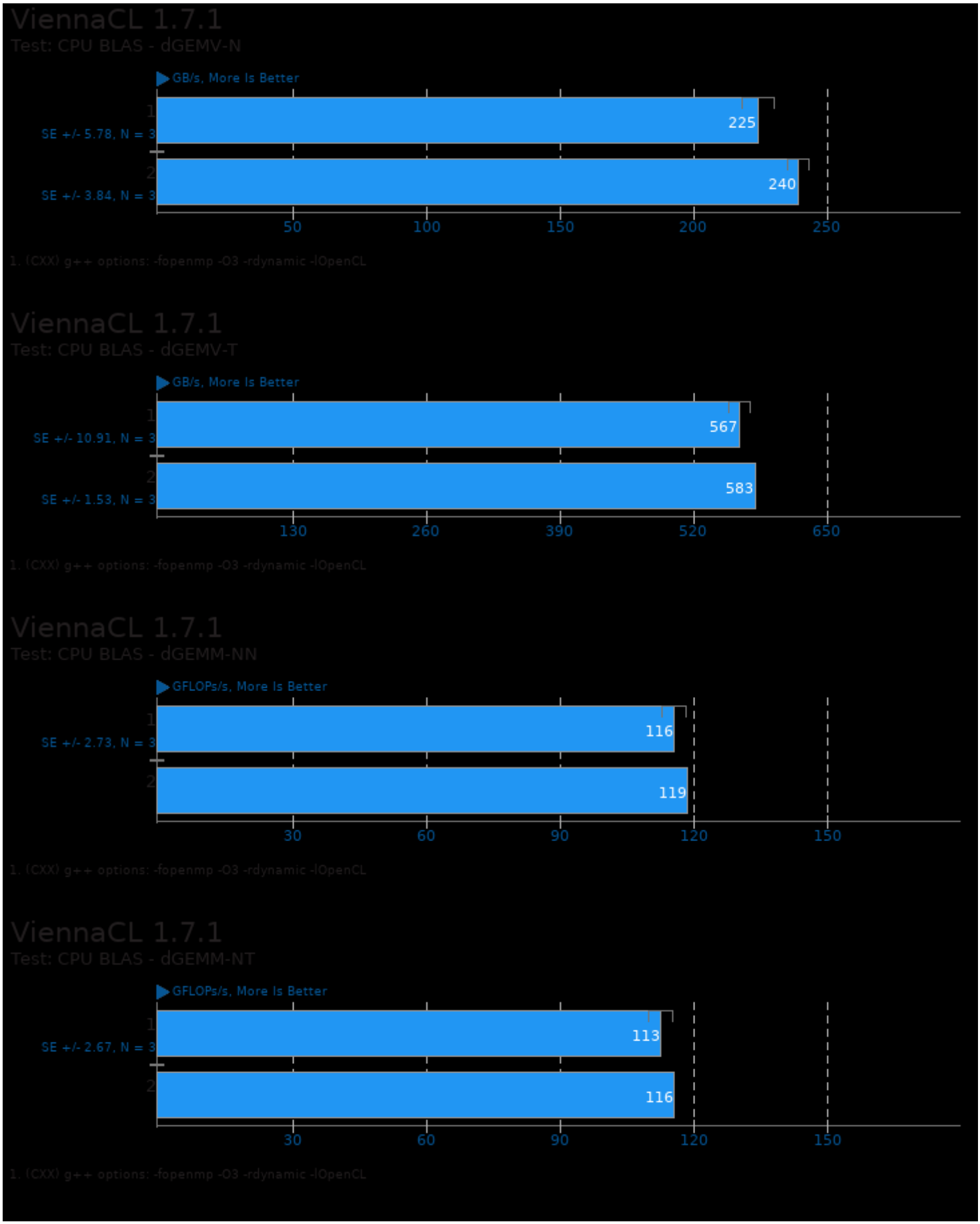
ViennaCL 1.7.1

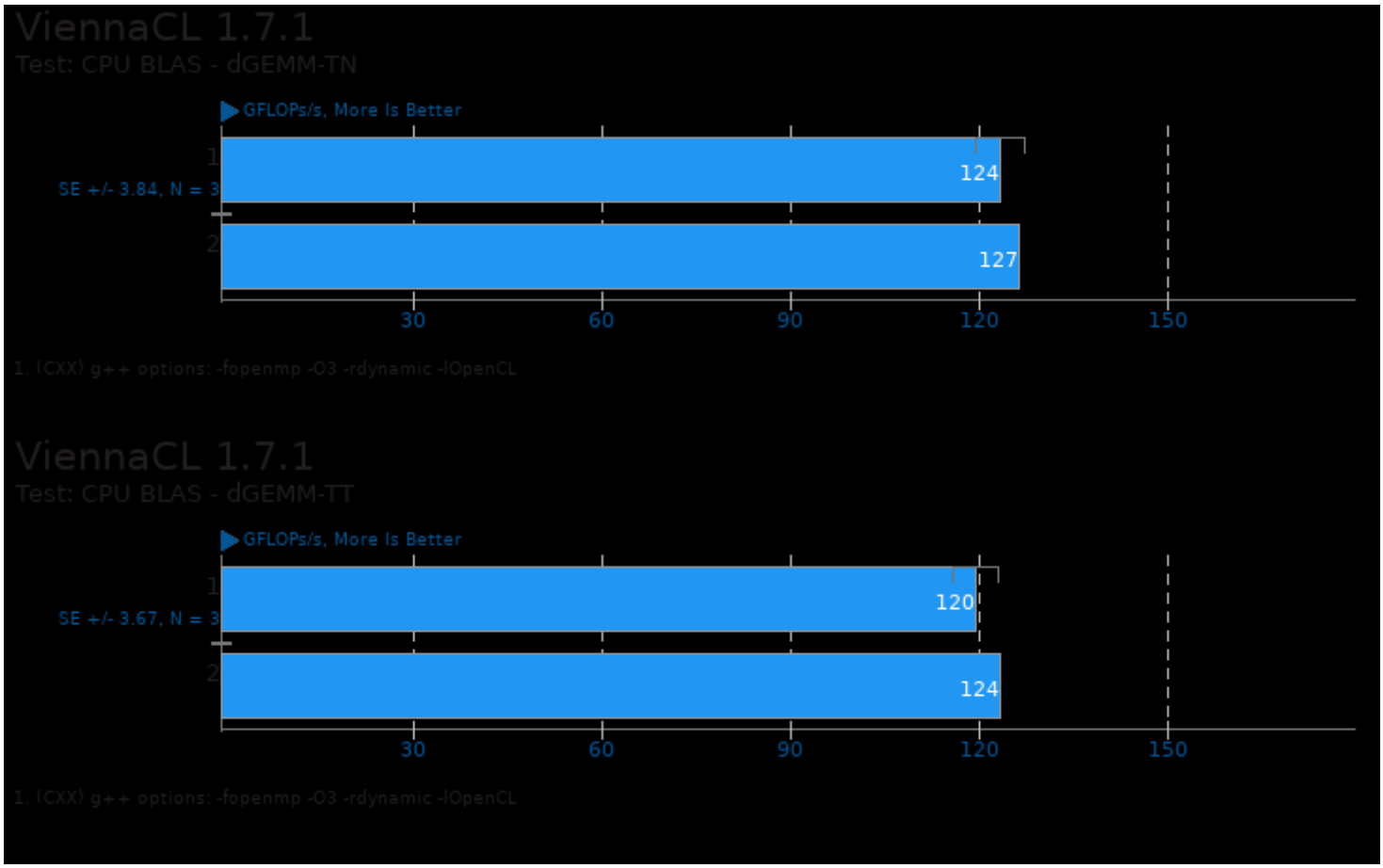
Test: CPU BLAS - sAXPY



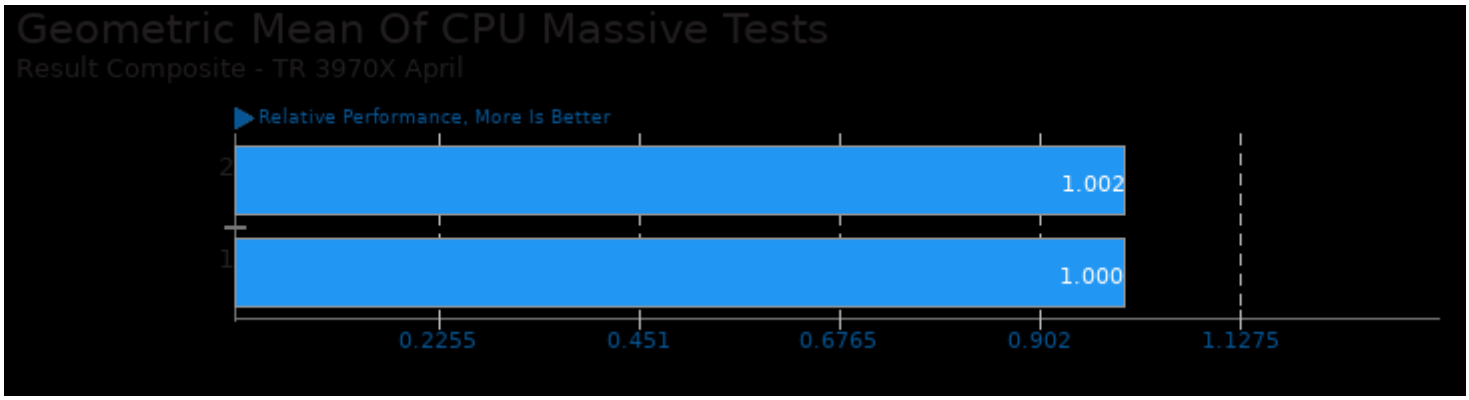
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL


ViennaCL 1.7.1
Test: CPU BLAS - sDOT
GB/s, More Is Better
1
SE +/- 1.76, N = 3
574
2
SE +/- 1.67, N = 3
577
120
240
360
480
600
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dCOPY
GB/s, More Is Better
1
SE +/- 1.81, N = 3
99.5
2
SE +/- 0.33, N = 3
102.0
20
40
60
80
100
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dAXPY
GB/s, More Is Better
1
SE +/- 2.33, N = 3
148
2
SE +/- 0.58, N = 3
154
30
60
90
120
150
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dDOT
GB/s, More Is Better
1
SE +/- 7.54, N = 3
154
2
SE +/- 1.20, N = 3
169
40
80
120
160
200
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL

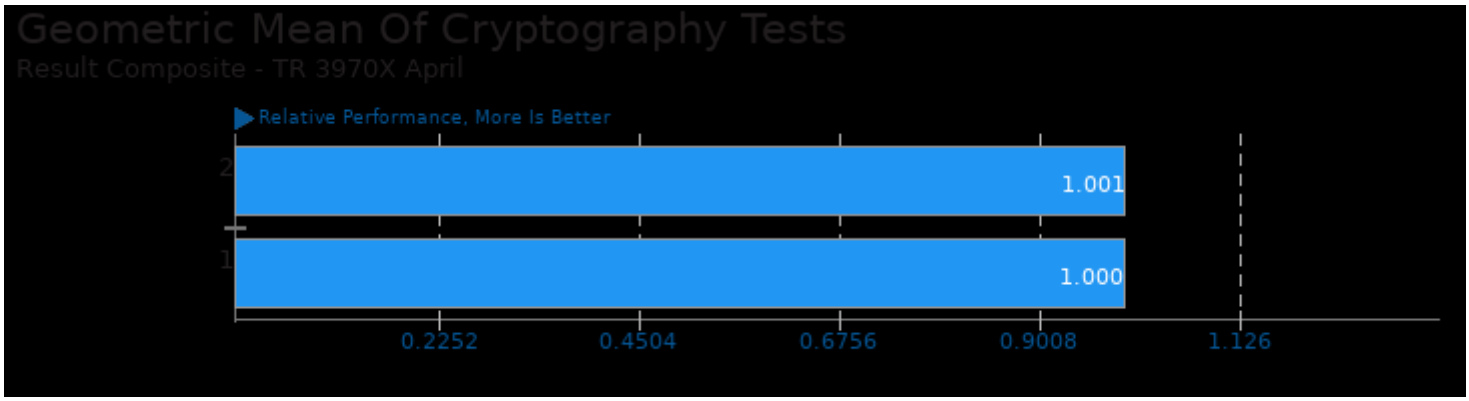

ViennaCL 1.7.1
Test: CPU BLAS - dGEMV-N
GB/s, More Is Better
1
SE +/- 5.78, N = 3
225
2
SE +/- 3.84, N = 3
240
50
100
150
200
250
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dGEMV-T
GB/s, More Is Better
1
SE +/- 10.91, N = 3
567
2
SE +/- 1.53, N = 3
583
130
260
390
520
650
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dGEMM-NN
GFLOPs/s, More Is Better
1
SE +/- 2.73, N = 3
116
2
119
30
60
90
120
150
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dGEMM-NT
GFLOPs/s, More Is Better
1
SE +/- 2.67, N = 3
113
2
116
30
60
90
120
150
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL


ViennaCL 1.7.1
Test: CPU BLAS - dGEMM-TN
GFLOPs/s, More Is Better
SE +/- 3.84, N = 3
1
124
2
127
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
SE +/- 3.67, N = 3
1
120
2
124
30
60
90
120
150
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL

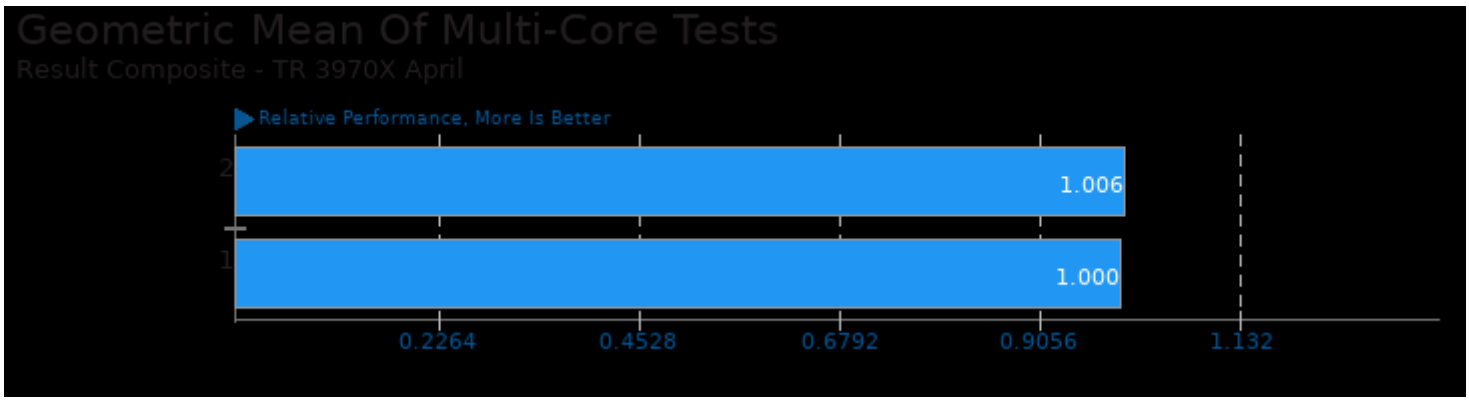
These geometric means are based upon test groupings / test suites for this result file.



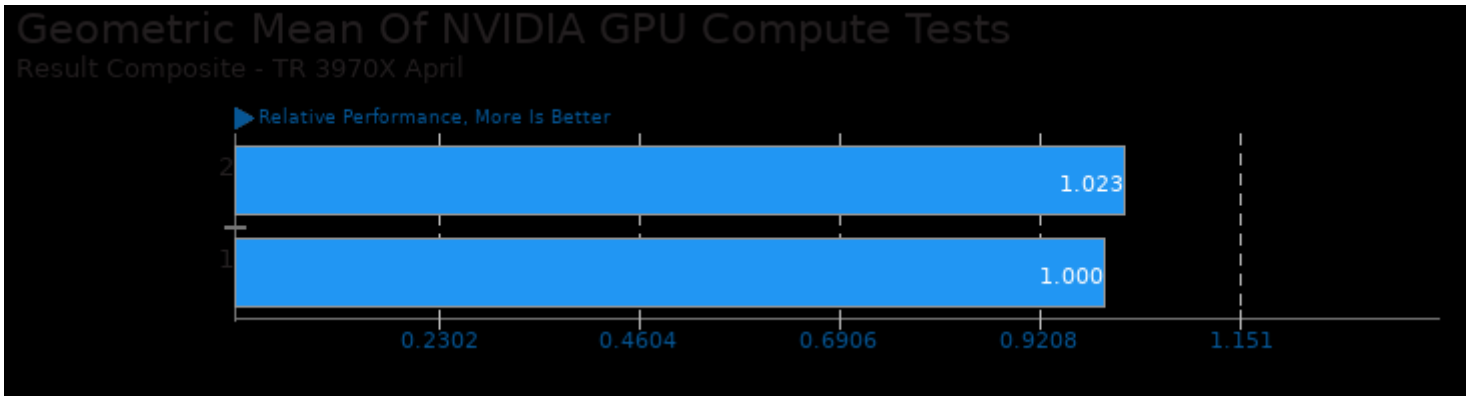
Geometric mean based upon tests: pts/build-llvm and pts/botan



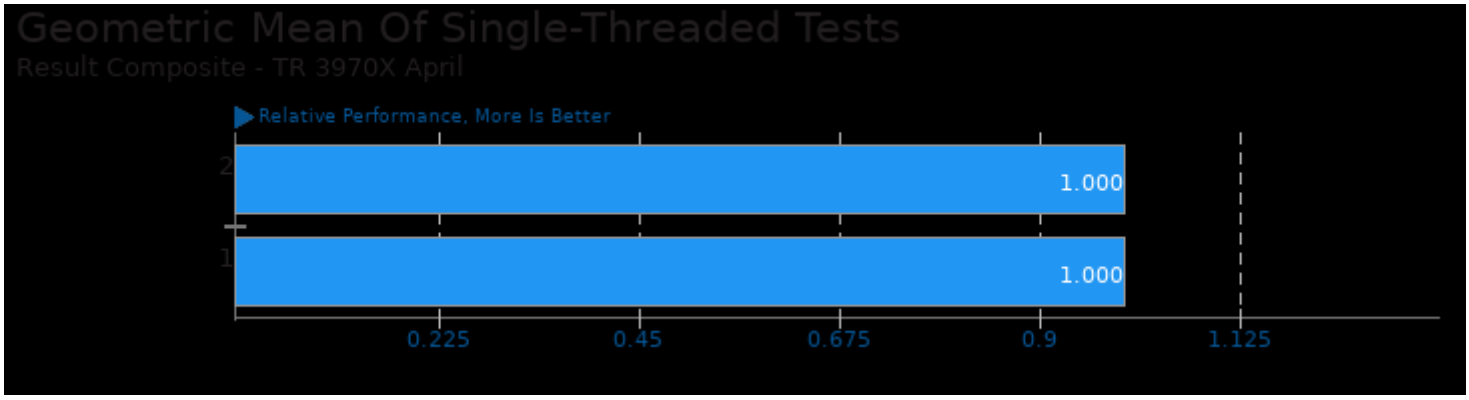
Geometric mean based upon tests: pts/botan and pts/securemark



Geometric mean based upon tests: pts/build-llvm and pts/luxcorerender



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



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

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 21:24.