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8700K Jan

Intel Core i7-8700K testing with a ASUS TUF Z370-PLUS GAMING (2001 BIOS) and ASUS Intel UHD 630 CFL GT2 3GB on Ubuntu 20.04 via the Phoronix Test Suite.

Automated Executive Summary

B had the most wins, coming in first place for 30% of the tests.

Based on the geometric mean of all complete results, the fastest (B) was 1.092x the speed of the slowest (A). C was 0.999x the speed of B, D was 0.999x the speed of C, A was 0.917x the speed of D.

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

CLOMP (Static OMP Speedup) at 8.333x
Quantum ESPRESSO (Input: AUSURF112) at 1.214x
srsRAN (Test: 4G PHY_DL_Test 100 PRB SISO 64-QAM) at 1.018x
Kvazaar (Video Input: Bosphorus 4K - Video Preset: Very Fast) at 1.016x
srsRAN (Test: OFDM_Test) at 1.016x
Etcpak (Configuration: DXT1) at 1.014x
Etcpak (Configuration: ETC1) at 1.012x
Etcpak (Configuration: ETC1 + Dithering) at 1.011x
Etcpak (Configuration: ETC2) at 1.01x

Kvazaar (Video Input: Bosphorus 4K - Video Preset: Ultra Fast) at 1.01x.

Test Systems:

A

B

C

D

Processor: Intel Core i7-8700K @ 4.70GHz (6 Cores / 12 Threads), Motherboard: ASUS TUF Z370-PLUS GAMING (2001 BIOS), Chipset: Intel 8th Gen Core, Memory: 16GB, Disk: 128GB Toshiba THNSN5128GPU7, Graphics: ASUS Intel UHD 630 CFL GT2 3GB (1200MHz), Audio: Realtek ALC887-VD, Monitor: VA2431, Network: Intel I219-V

OS: Ubuntu 20.04, Kernel: 5.9.0-050900rc6daily20200923-generic (x86_64) 20200922, Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.9, OpenGL: 4.6 Mesa 20.0.8, 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=/build/gcc-9-HskZEa/gcc-9-9.3.0/debian/tmp-nvptx/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: intel_pstate powersave (EPP: balance_performance) - CPU Microcode: 0xea - Thermald 1.9.1
Python Notes: Python 2.7.18 + Python 3.8.10
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT vulnerable + mds: Mitigation of Clear buffers; SMT vulnerable + meltdown: Mitigation of PTI + 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 generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + srbds: Mitigation of Microcode + tsx_async_abort: Mitigation of Clear buffers; SMT vulnerable

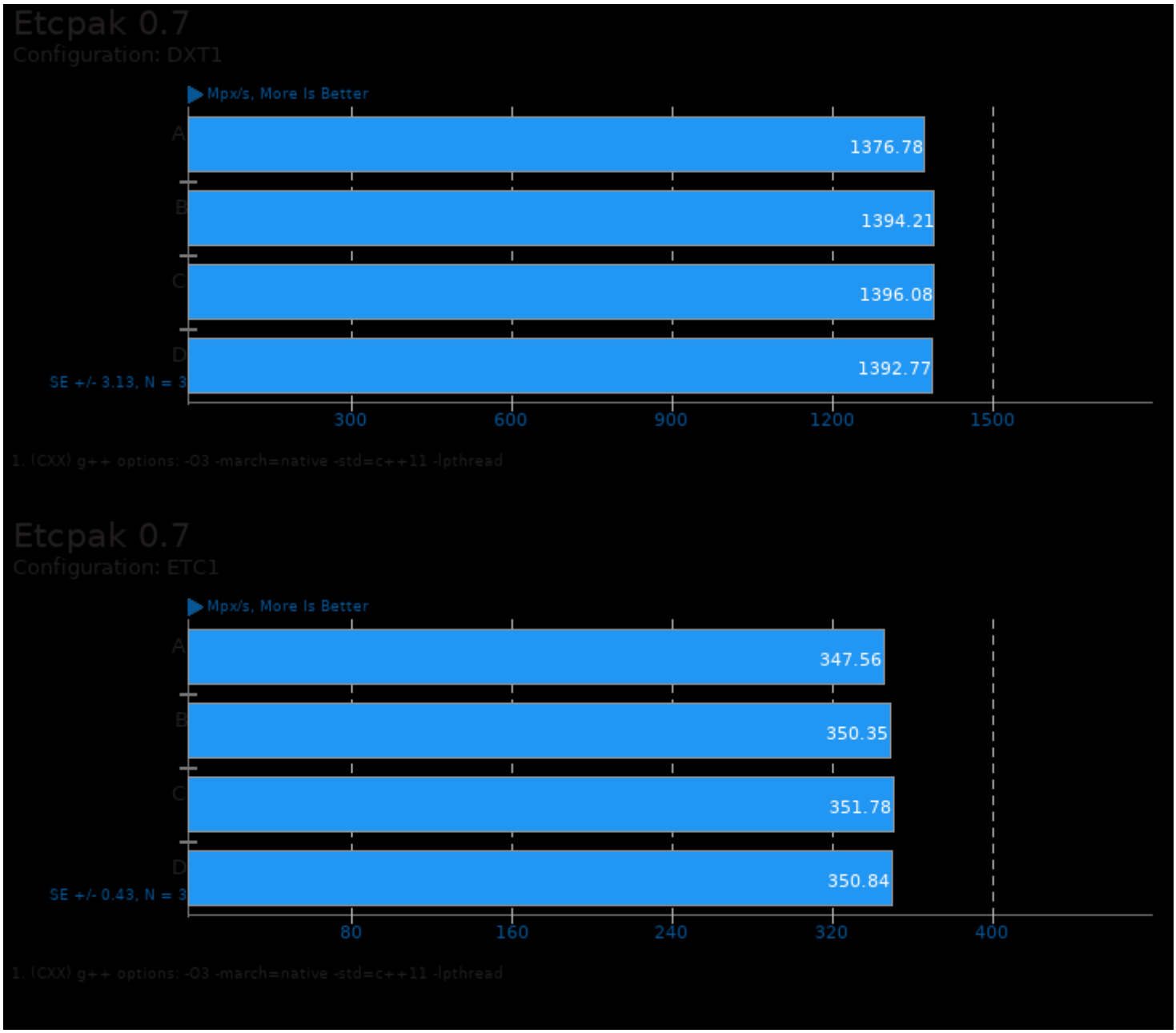
	A	B	C	D
Etcpak - DXT1 (Mpx/s)	**1377**	1394	**1396**	1393
Normalized	98.62%	99.87%	100%	99.76%
Standard Deviation				0.4%
Etcpak - ETC1 (Mpx/s)	**347.559**	350.35	**351.777**	350.844
Normalized	98.8%	99.59%	100%	99.73%
Standard Deviation				0.2%
Etcpak - ETC2 (Mpx/s)	**197.884**	199.888	199.867	**199.933**
Normalized	98.98%	99.98%	99.97%	100%
Standard Deviation				0%
Etcpak - ETC1 + Dithering (Mpx/s)	**331.071**	334.691	**334.77**	334.509
Normalized	98.9%	99.98%	100%	99.92%
Standard Deviation				0.2%

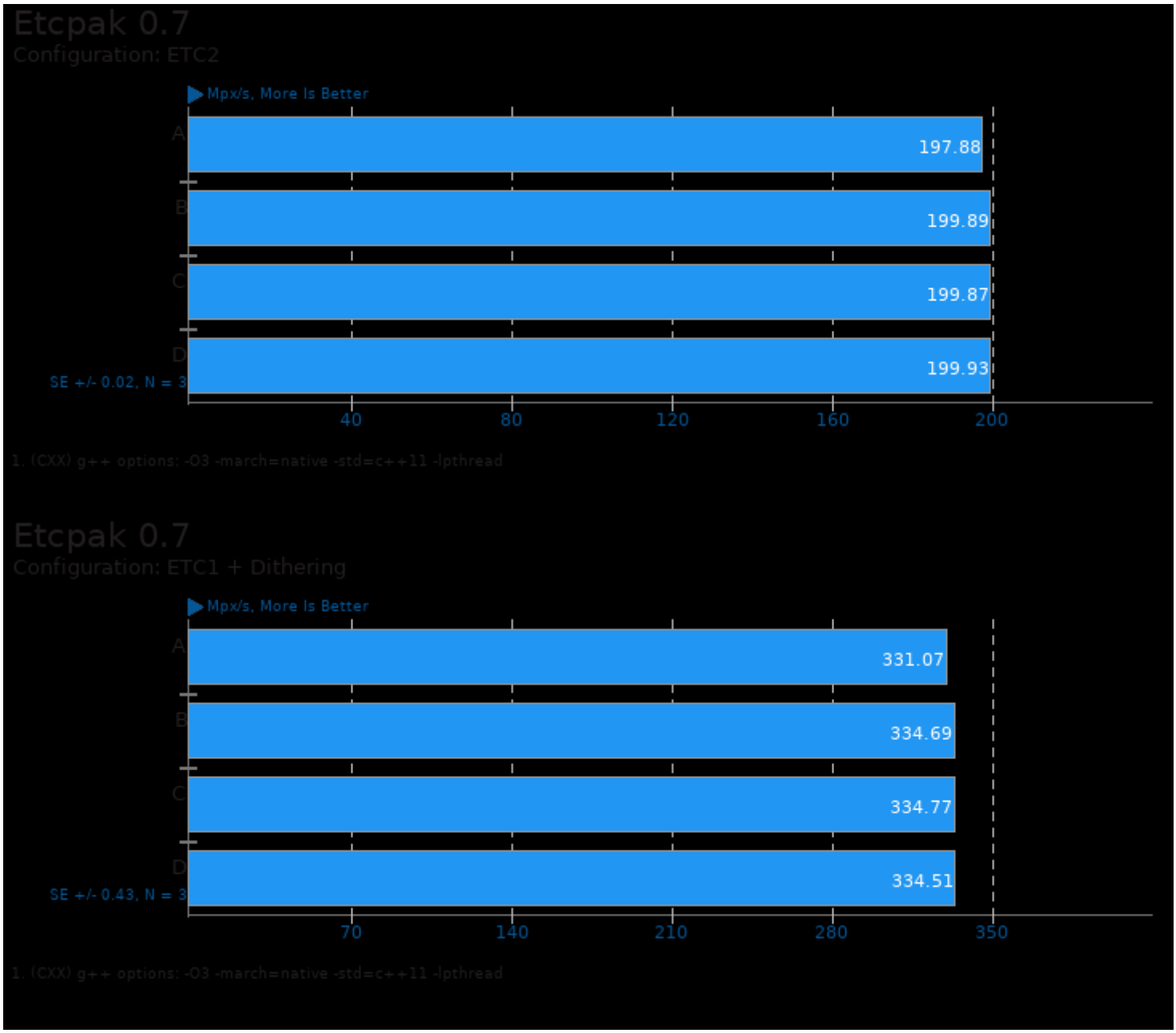
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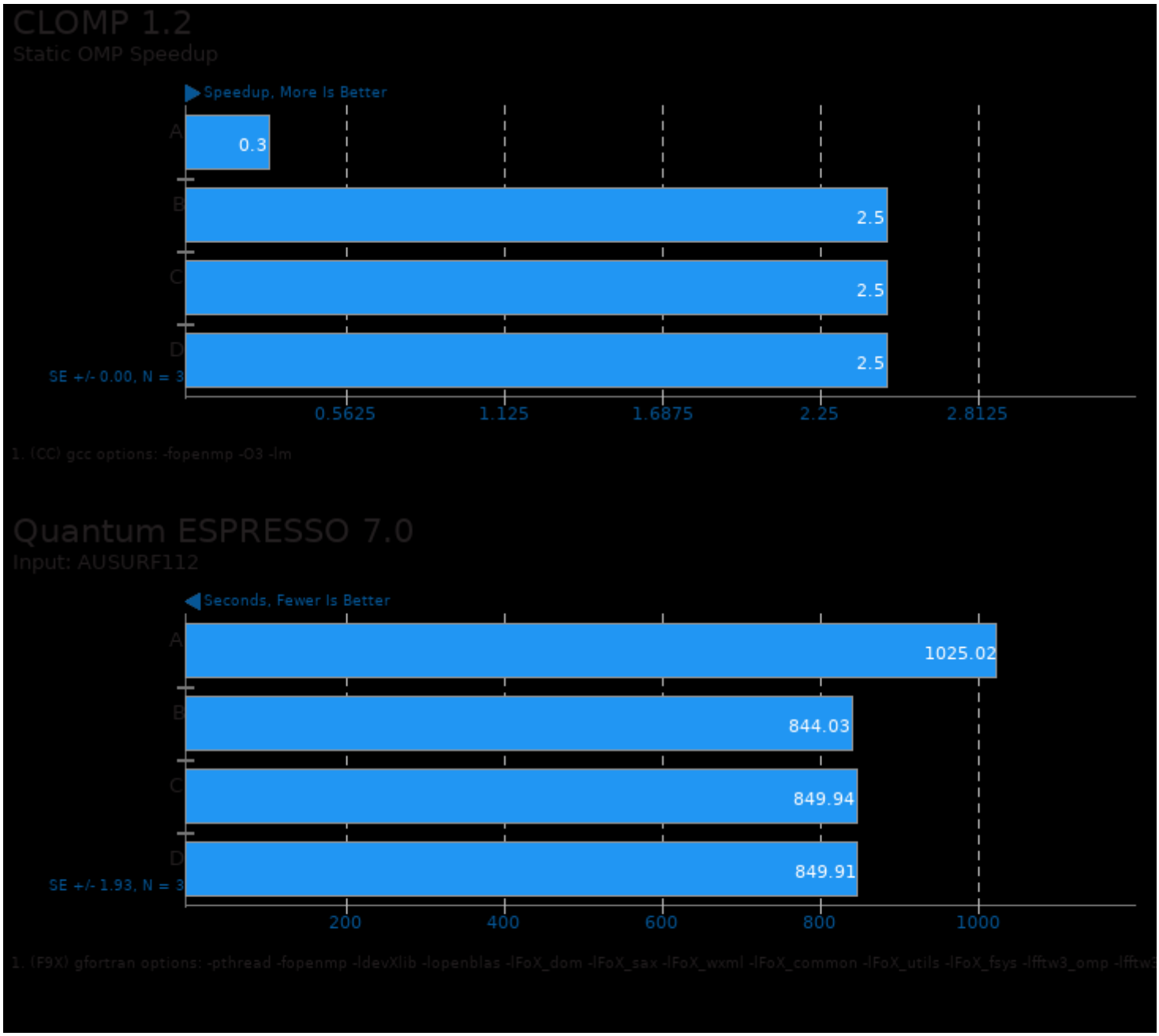
CLOMP - Static OMP Speedup (Speedup)	**0.3**	**2.5**	**2.5**	**2.5**
Normalized	12%	100%	100%	100%
Standard Deviation				0%
Quantum ESPRESSO - AUSURF112 (sec)	**1025**	**844.03**	849.94	849.91
Normalized	82.34%	100%	99.3%	99.31%
Standard Deviation				0.4%
srsRAN - OFDM_Test (Samples / Second)	122300000	121700000	**121100000**	**123000000**
Normalized	99.43%	98.94%	98.46%	100%
Standard Deviation				0.2%
srsRAN - 4.P.1.P.M.6.Q (eNb Mb/s)	387.6	**386.7**	387.4	**389.1**
Normalized	99.61%	99.38%	99.56%	100%
Standard Deviation				0.1%
srsRAN - 4.P.1.P.M.6.Q (UE Mb/s)	**127.2**	**127.2**	**127.3**	**127.2**
Normalized	99.92%	99.92%	100%	99.92%
Standard Deviation				0.5%
srsRAN - 4.P.1.P.S.6.Q (eNb Mb/s)	**377.7**	**384.6**	381.7	381.6
Normalized	98.21%	100%	99.25%	99.22%
Standard Deviation				0.4%
srsRAN - 4.P.1.P.S.6.Q (UE Mb/s)	**157.1**	157.2	**157.1**	**157.6**
Normalized	99.68%	99.75%	99.68%	100%
Standard Deviation				0.2%
srsRAN - 4.P.1.P.M.2.Q (eNb Mb/s)	**427**	426.7	424.9	**424.3**
Normalized	100%	99.93%	99.51%	99.37%
Standard Deviation				0.3%
srsRAN - 4.P.1.P.M.2.Q (UE Mb/s)	**139.4**	**138.9**	139.1	139.1
Normalized	100%	99.64%	99.78%	99.78%
Standard Deviation				0.5%
srsRAN - 4.P.1.P.S.2.Q (eNb Mb/s)	425.8	**426.7**	**424.3**	425.8
Normalized	99.79%	100%	99.44%	99.79%
Standard Deviation				0.1%
srsRAN - 4.P.1.P.S.2.Q (UE Mb/s)	**164.7**	165.7	**165.8**	**164.7**
Normalized	99.34%	99.94%	100%	99.34%
Standard Deviation				0.4%
srsRAN - 5.P.T.5.P.S.6.Q (eNb Mb/s)	125.9	**125.2**	**126.1**	**126.1**
Normalized	99.84%	99.29%	100%	100%
Standard Deviation				0.1%
srsRAN - 5.P.T.5.P.S.6.Q (UE Mb/s)	**60.7**	**60.7**	**60.5**	**60.5**
Normalized	100%	100%	99.67%	99.67%
Standard Deviation				0.3%
Kvazaar - Bosphorus 4K - Slow (FPS)	4.88	**4.89**	4.88	**4.85**
Normalized	99.8%	100%	99.8%	99.18%
Standard Deviation				0.7%
Kvazaar - Bosphorus 4K - Medium	**4.97**	4.96	4.95	**4.93**
Normalized	100%	99.8%	99.6%	99.2%
Standard Deviation				0.2%
Kvazaar - Bosphorus 1080p - Slow (FPS)	**23.73**	**23.57**	23.69	23.71
Normalized	100%	99.33%	99.83%	99.92%
Standard Deviation				0.2%

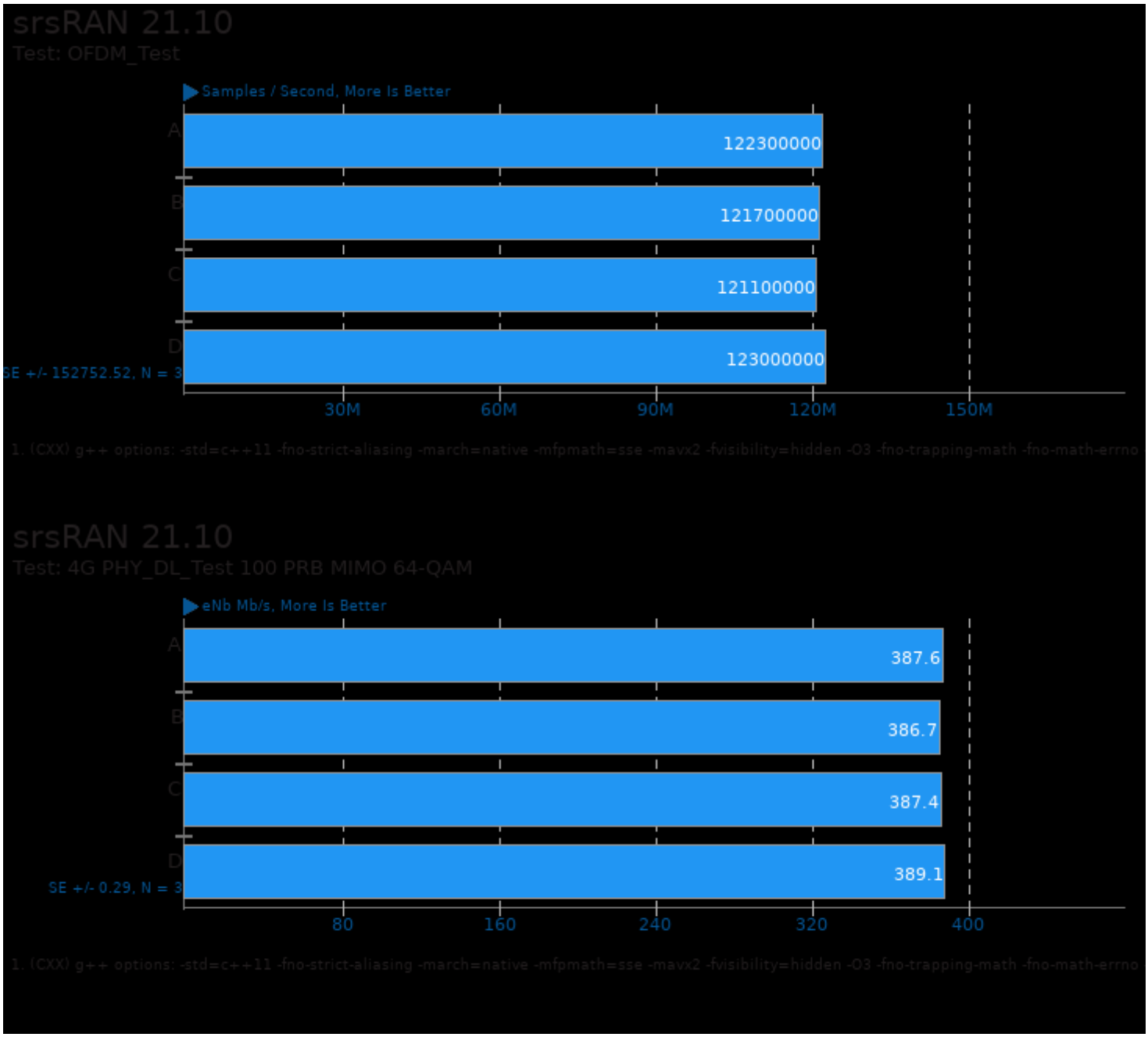
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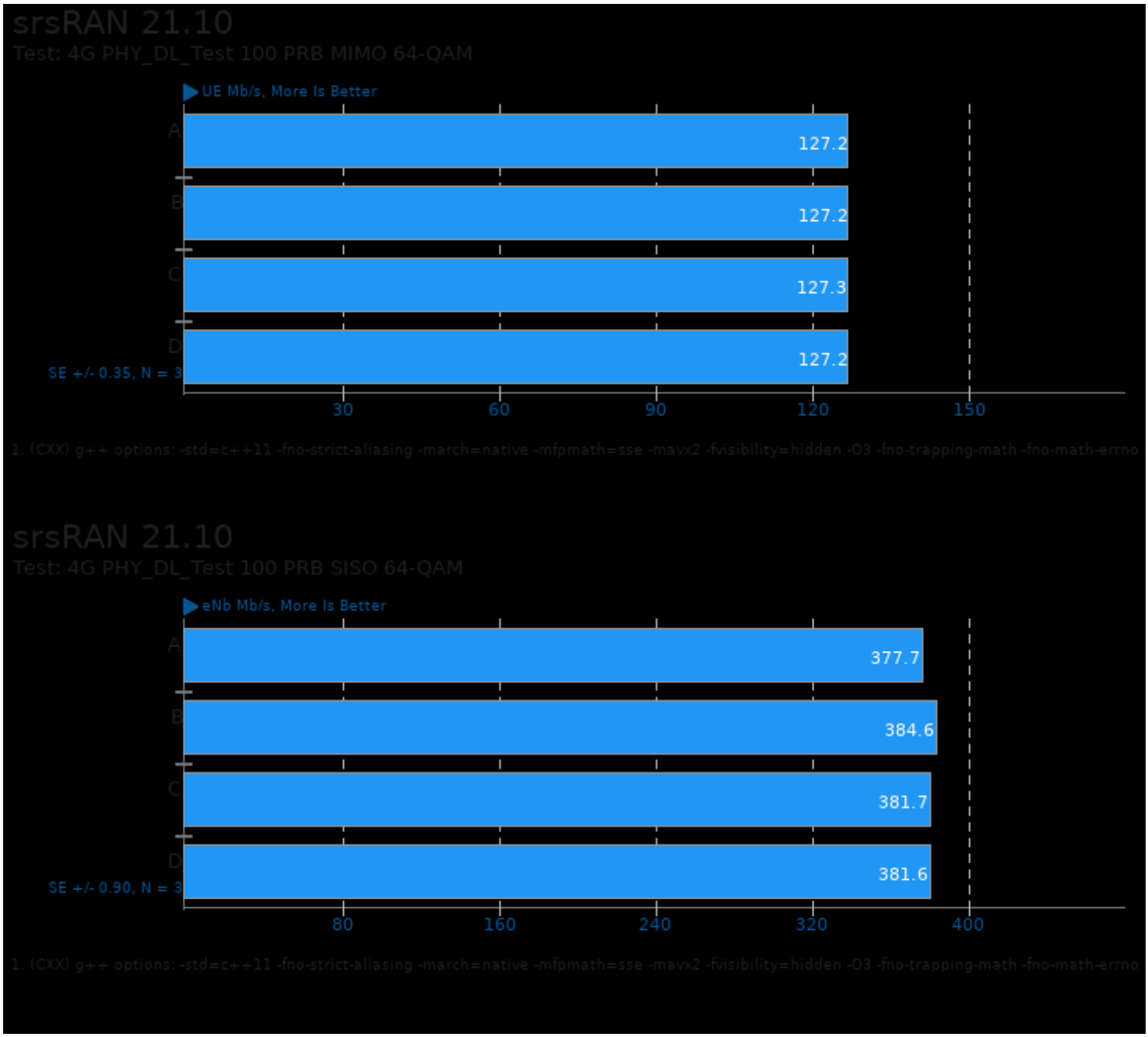
Kvazaar - Bosphorus 1080p - Medium (FPS)	24.45	**24.34**	**24.46**	24.40
Normalized	99.96%	99.51%	100%	99.75%
Standard Deviation				0.2%
Kvazaar - Bosphorus 4K - Very Fast (FPS)	11.91	**11.96**	11.9	**11.77**
Normalized	99.58%	100%	99.5%	98.41%
Standard Deviation				0.5%
Kvazaar - Bosphorus 4K - Ultra Fast (FPS)	20.94	**21.01**	20.96	**20.81**
Normalized	99.67%	100%	99.76%	99.05%
Standard Deviation				0.3%
Kvazaar - Bosphorus 1080p - Very Fast (FPS)	50.91	**51.02**	**50.85**	50.94
Normalized	99.78%	100%	99.67%	99.84%
Standard Deviation				0.1%
Kvazaar - Bosphorus 1080p - Ultra Fast (FPS)	**87.47**	**87.97**	87.61	87.68
Normalized	99.43%	100%	99.59%	99.67%
Standard Deviation				0.1%
Timed Linux Kernel Compilation - defconfig (sec)	134.046	134.057	**134.023**	**134.167**
Normalized	99.98%	99.97%	100%	99.89%
Standard Deviation				0.1%
Timed Linux Kernel Compilation - allmodconfig (sec)	1772	**1773**	1771	**1769**
Normalized	99.85%	99.79%	99.87%	100%
Standard Deviation				0.2%
Timed Node.js Compilation - Time To Compile (sec)	870.472	**869.481**		**870.520**
Normalized	99.89%	100%		99.88%
Standard Deviation				0.1%
Tachyon - Total Time (sec)	**223.4464**	223.4521		**223.8458**
Normalized	100%	100%		99.82%
Standard Deviation				0.2%
OpenJPEG - N.C.P.M (ms)	**68662**	68613		**68454**
Normalized	99.7%	99.77%		100%
Standard Deviation				0.2%
ASTC Encoder - Medium (sec)	**5.1074**	**5.1486**		5.1382
Normalized	100%	99.2%		99.4%
Standard Deviation				0.3%
ASTC Encoder - Thorough (sec)	**9.0538**	**9.0733**		9.0633
Normalized	100%	99.79%		99.9%
Standard Deviation				0%
ASTC Encoder - Exhaustive (sec)	**83.5415**	83.7266		**84.0349**
Normalized	100%	99.78%		99.41%
Standard Deviation				0.5%

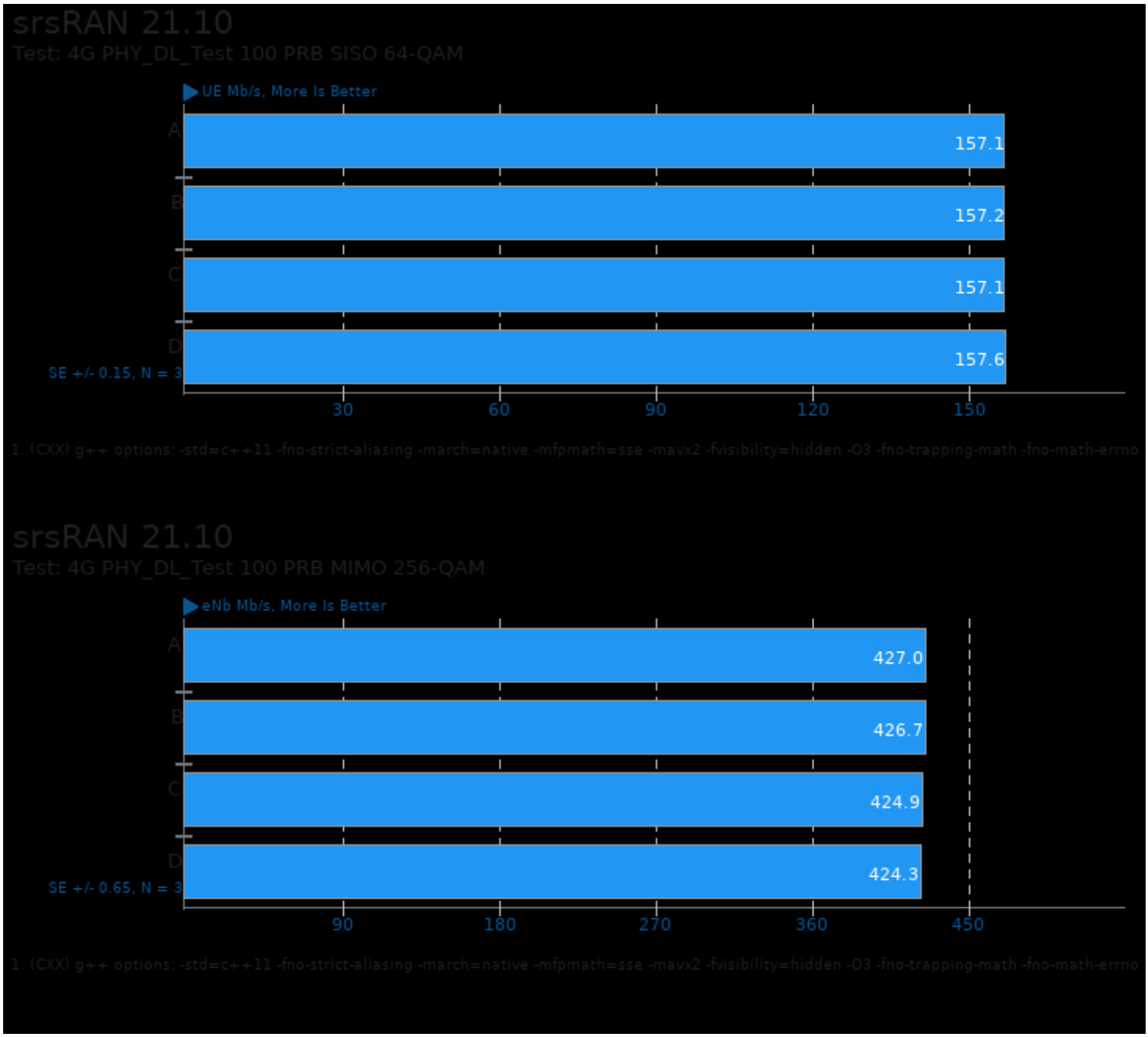

Etcpak 0.7
Configuration: DXT1
Mpx/s, More Is Better
A
1376.78
B
1394.21
C
1396.08
D
1392.77
SE +/- 3.13, N = 3
300
600
900
1200
1500
1. (CXX) g++ options: -O3 -march=native -std=c++11 -lpthread
Etcpak 0.7
Configuration: ETC1
Mpx/s, More Is Better
A
347.56
B
350.35
C
351.78
D
350.84
SE +/- 0.43, N = 3
80
160
240
320
400
1. (CXX) g++ options: -O3 -march=native -std=c++11 -lpthread

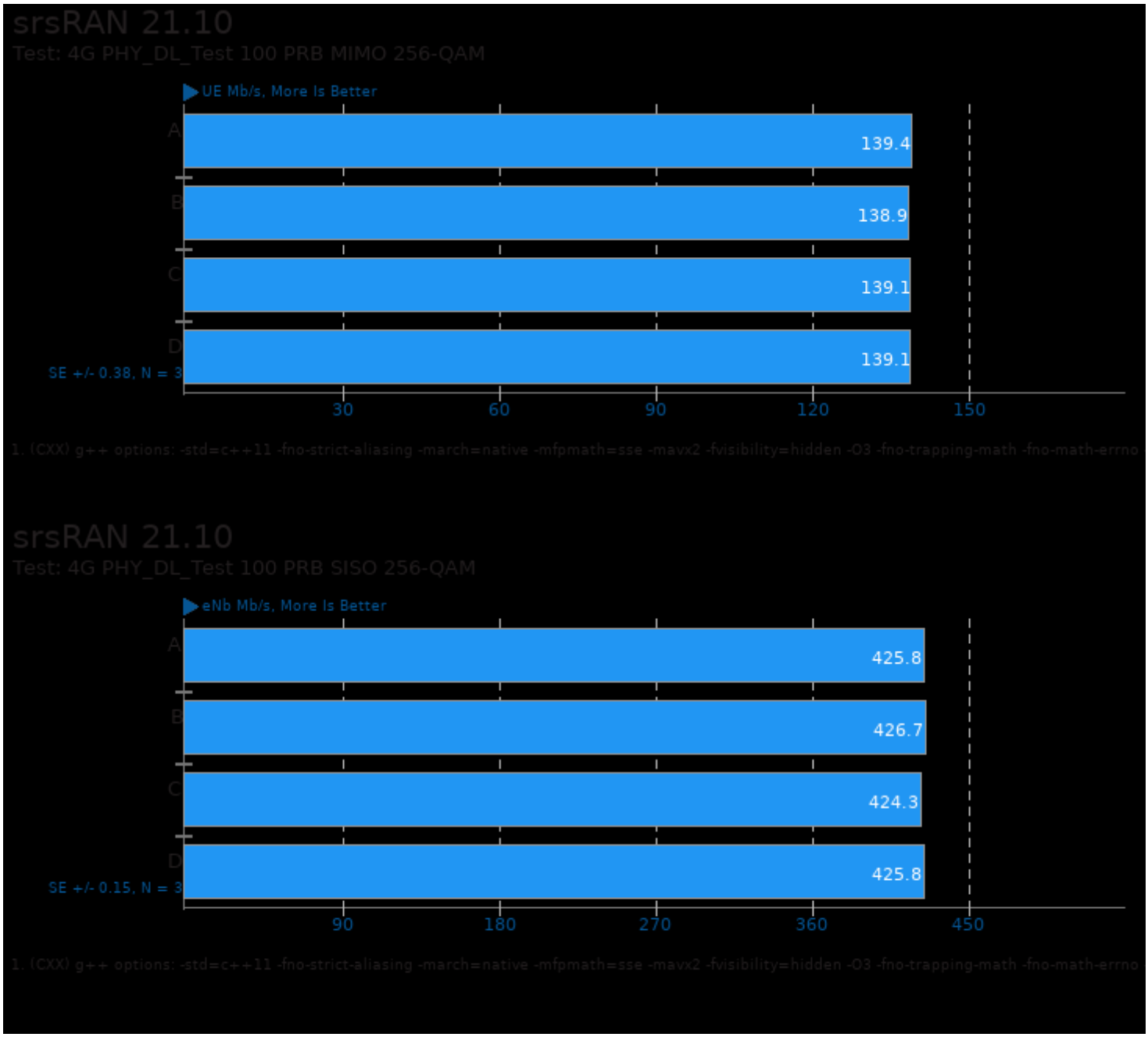

Etcpak 0.7
Configuration: ETC2
Mpx/s, More Is Better
A
B
C
D
197.88
199.89
199.87
199.93
SE +/- 0.02, N = 3
40
80
120
160
200
1. (CXX) g++ options: -O3 -march=native -std=c++11 -lpthread
Etcpak 0.7
Configuration: ETC1 + Dithering
Mpx/s, More Is Better
A
B
C
D
331.07
334.69
334.77
334.51
SE +/- 0.43, N = 3
70
140
210
280
350
1. (CXX) g++ options: -O3 -march=native -std=c++11 -lpthread

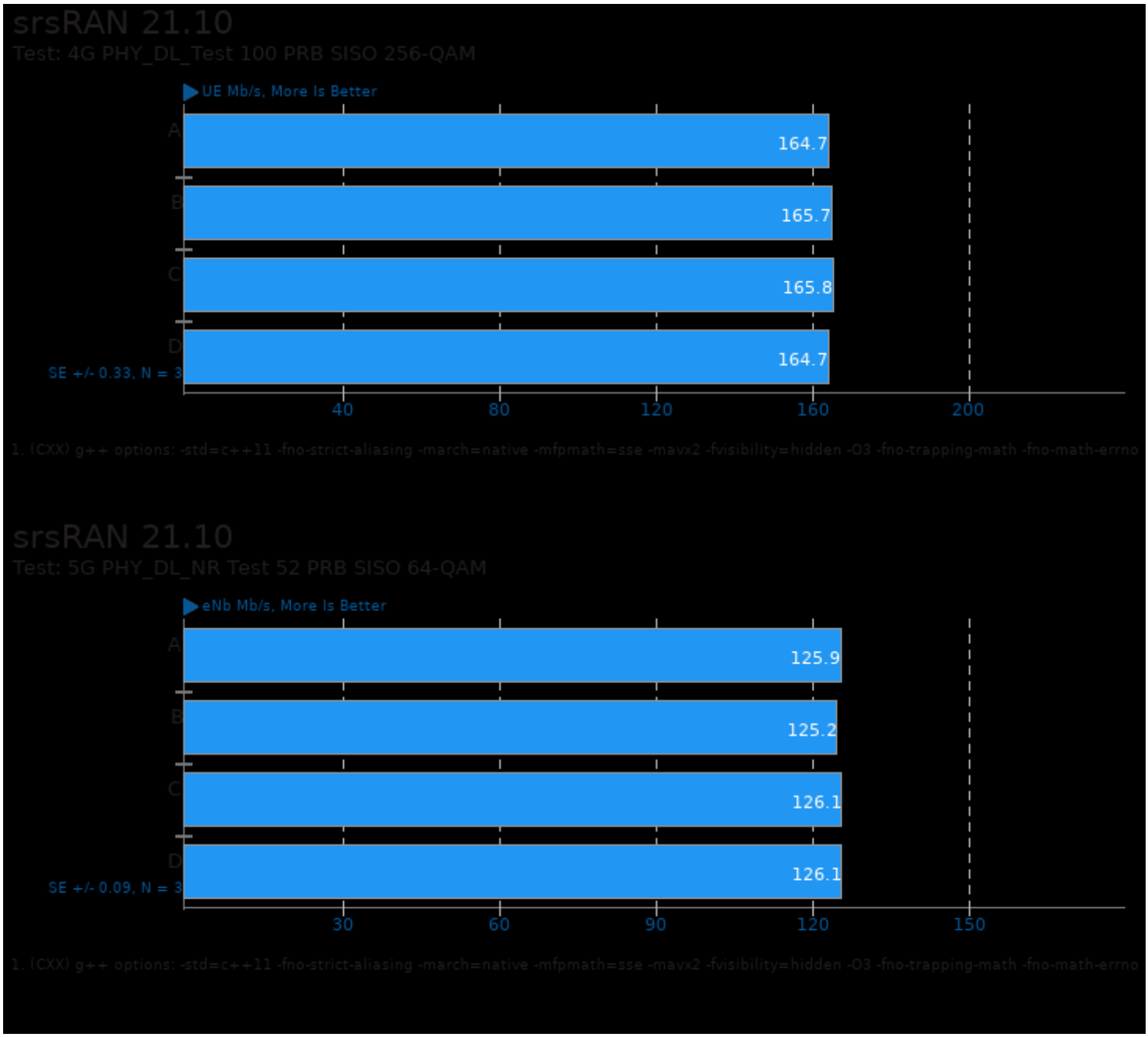

CLOMP 1.2
Static OMP Speedup
Speedup, More Is Better
A
0.3
B
2.5
C
2.5
D
2.5
SE +/- 0.00, N = 3
0.5625
1.125
1.6875
2.25
2.8125
1. (CC) gcc options: -fopenmp -O3 -lm
Quantum ESPRESSO 7.0
Input: AUSURF112
Seconds, Fewer Is Better
A
1025.02
B
844.03
C
849.94
D
849.91
SE +/- 1.93, N = 3
200
400
600
800
1000
1. (F9X) gfortran options: -pthread -fopenmp -ldevXlib -lopenblas -lFoX_dom -lFoX_sax -lFoX_wxml -lFoX_common -lFoX_utils -lFoX_fsys -lfftw3_omp -lfftw

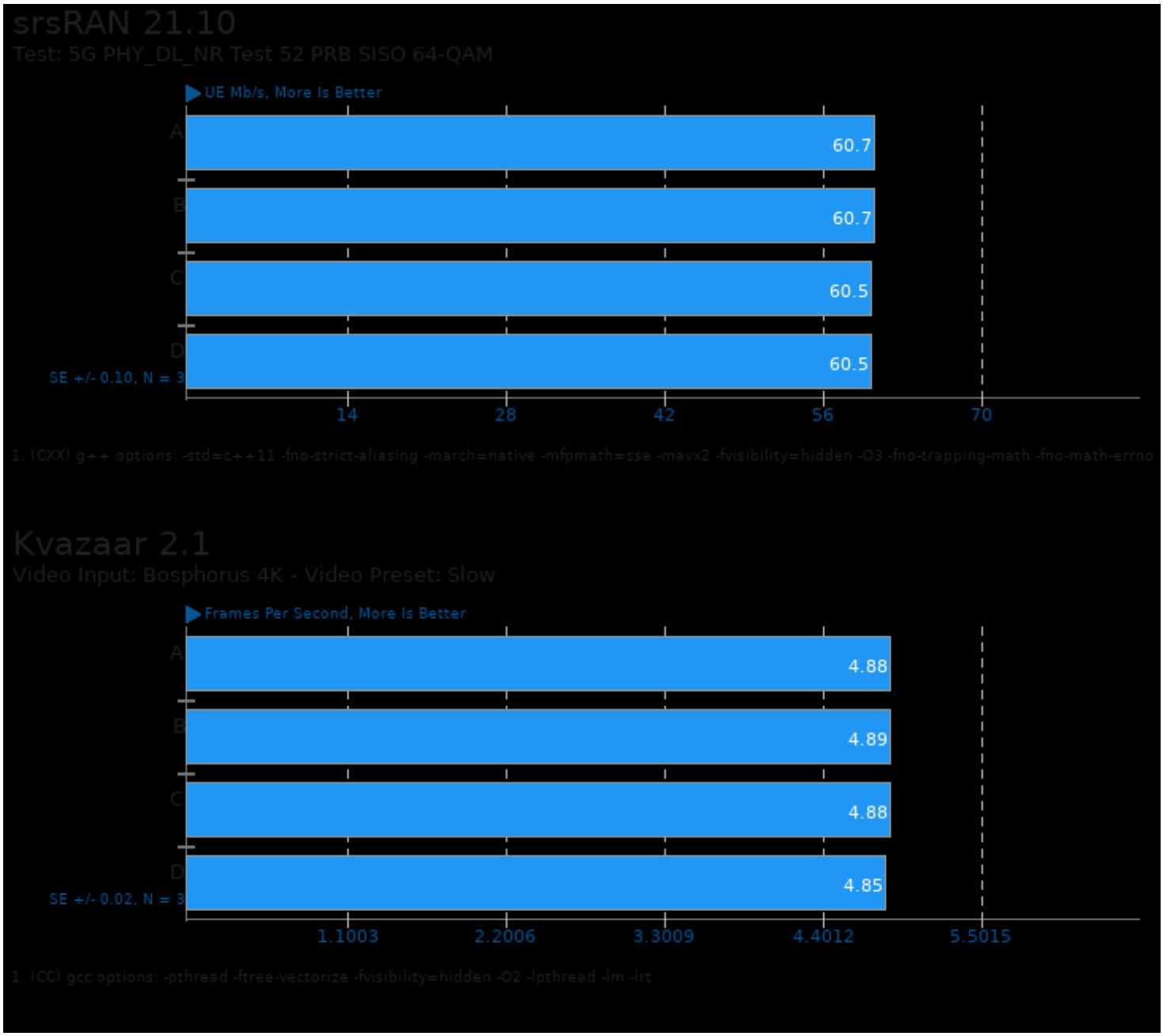

srsRAN 21.10
Test: OFDM_Test
Samples / Second, More Is Better
A
B
C
D
122300000
121700000
121100000
123000000
SE +/- 152752.52, N = 3
30M
60M
90M
120M
150M
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno
srsRAN 21.10
Test: 4G PHY_DL_Test 100 PRB MIMO 64-QAM
eNb Mb/s, More Is Better
A
B
C
D
387.6
386.7
387.4
389.1
SE +/- 0.29, N = 3
80
160
240
320
400
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno

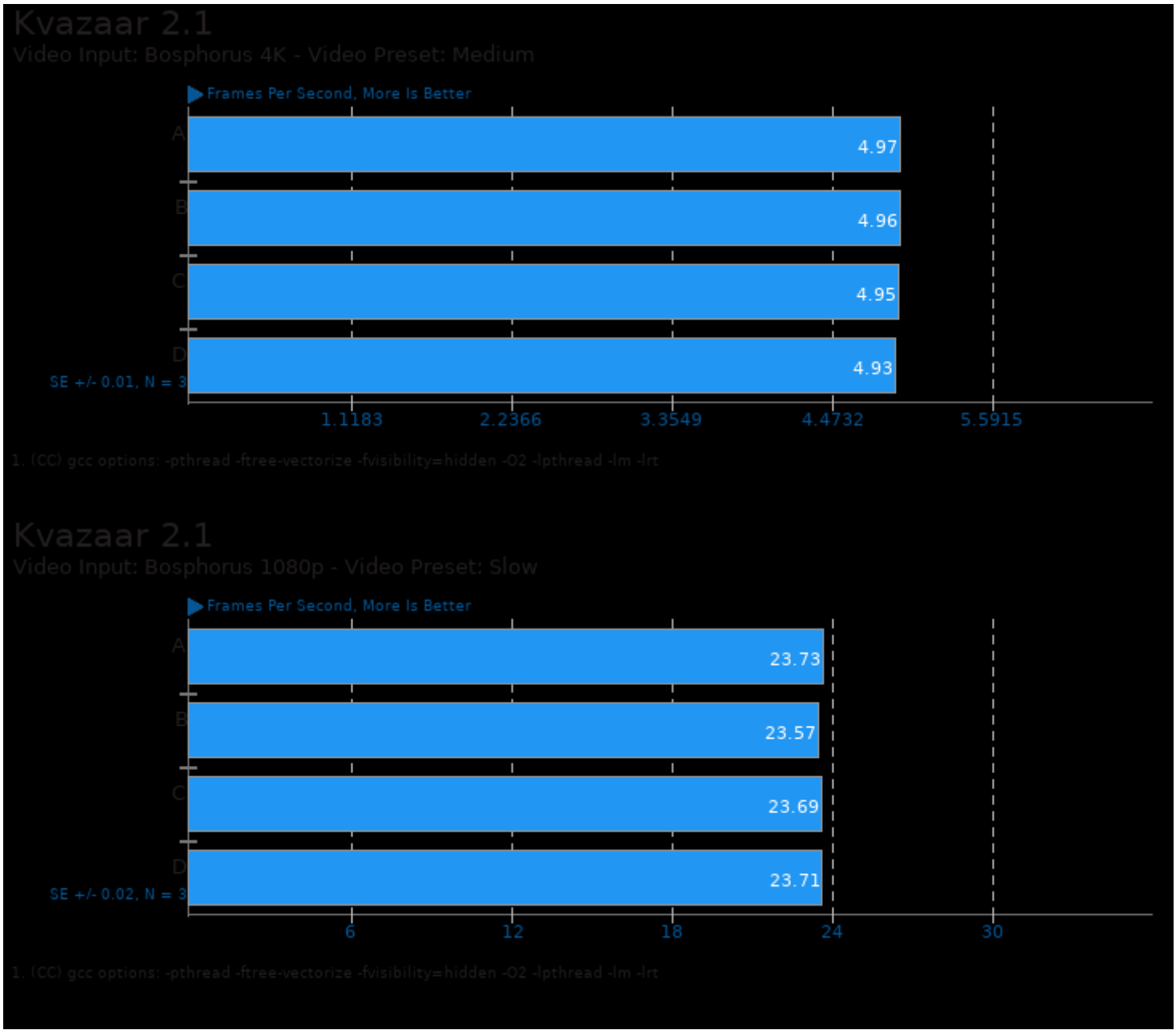

srsRAN 21.10
Test: 4G PHY_DL_Test 100 PRB MIMO 64-QAM
UE Mb/s, More Is Better
A
B
C
D
127.2
127.2
127.3
127.2
SE +/- 0.35, N = 3
30
60
90
120
150
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno
srsRAN 21.10
Test: 4G PHY_DL_Test 100 PRB SISO 64-QAM
eNb Mb/s, More Is Better
A
B
C
D
377.7
384.6
381.7
381.6
SE +/- 0.90, N = 3
80
160
240
320
400
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno

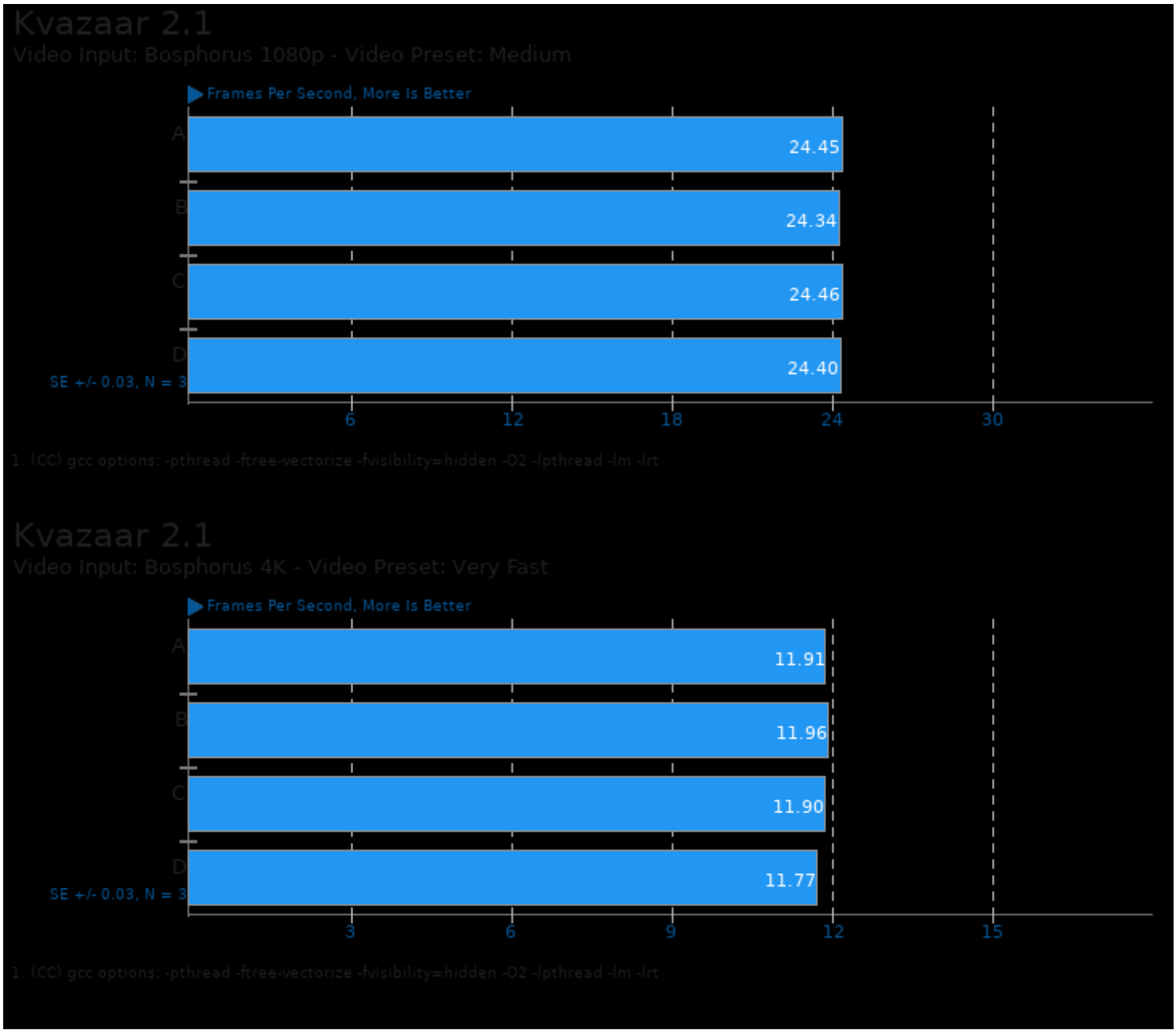

srsRAN 21.10
Test: 4G PHY_DL_Test 100 PRB SISO 64-QAM
UE Mb/s, More Is Better
A
157.1
B
157.2
C
157.1
D
157.6
SE +/- 0.15, N = 3
30
60
90
120
150
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno
srsRAN 21.10
Test: 4G PHY_DL_Test 100 PRB MIMO 256-QAM
eNb Mb/s, More Is Better
A
427.0
B
426.7
C
424.9
D
424.3
SE +/- 0.65, N = 3
90
180
270
360
450
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno

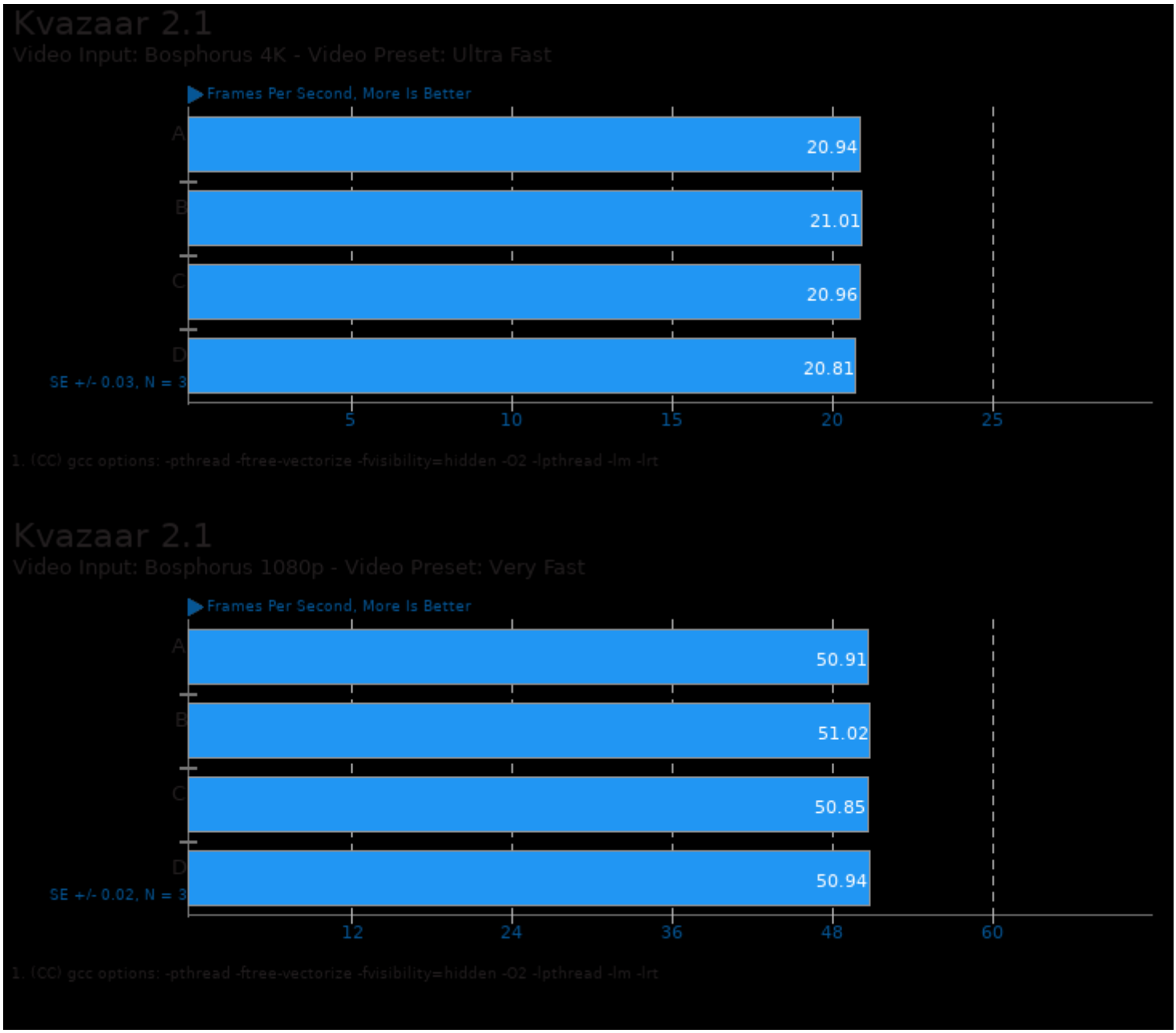

srsRAN 21.10
Test: 4G PHY_DL_Test 100 PRB MIMO 256-QAM
UE Mb/s, More Is Better
A
B
C
D
139.4
138.9
139.1
139.1
SE +/- 0.38, N = 3
30
60
90
120
150
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno
srsRAN 21.10
Test: 4G PHY_DL_Test 100 PRB SISO 256-QAM
eNb Mb/s, More Is Better
A
B
C
D
425.8
426.7
424.3
425.8
SE +/- 0.15, N = 3
90
180
270
360
450
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno


srsRAN 21.10
Test: 4G PHY_DL_Test 100 PRB SISO 256-QAM
UE Mb/s, More Is Better
A
164.7
B
165.7
C
165.8
D
164.7
SE +/- 0.33, N = 3
40
80
120
160
200
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno
srsRAN 21.10
Test: 5G PHY_DL_NR Test 52 PRB SISO 64-QAM
eNb Mb/s, More Is Better
A
125.9
B
125.2
C
126.1
D
126.1
SE +/- 0.09, N = 3
30
60
90
120
150
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno


srsRAN 21.10
Test: 5G PHY_DL_NR Test 52 PRB SISO 64-QAM
UE Mb/s, More Is Better
A
B
C
D
60.7
60.7
60.5
60.5
SE +/- 0.10, N = 3
14
28
42
56
70
1. (CXX) g++ options: -std=c++11 -fno-strict-aliasing -march=native -mfpmath=sse -mavx2 -fvisibility=hidden -O3 -fno-trapping-math -fno-math-errno
Kvazaar 2.1
Video Input: Bosphorus 4K - Video Preset: Slow
Frames Per Second, More Is Better
A
B
C
D
4.88
4.89
4.88
4.85
SE +/- 0.02, N = 3
1.1003
2.2006
3.3009
4.4012
5.5015
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt

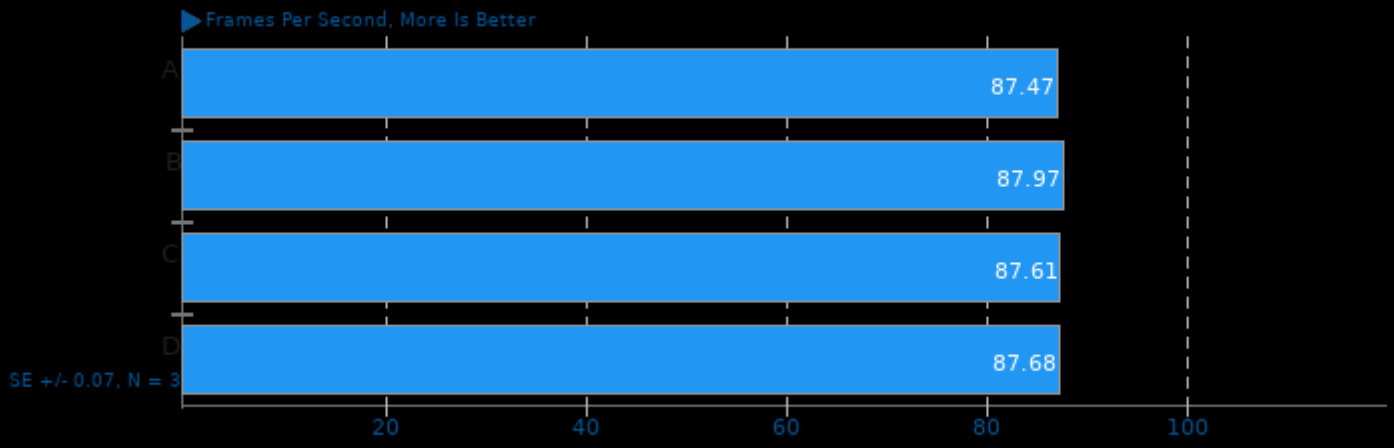

Kvazaar 2.1
Video Input: Bosphorus 4K - Video Preset: Medium
Frames Per Second, More Is Better
A
B
C
D
4.97
4.96
4.95
4.93
SE +/- 0.01, N = 3
1.1183
2.2366
3.3549
4.4732
5.5915
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt
Kvazaar 2.1
Video Input: Bosphorus 1080p - Video Preset: Slow
Frames Per Second, More Is Better
A
B
C
D
23.73
23.57
23.69
23.71
SE +/- 0.02, N = 3
6
12
18
24
30
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt


Kvazaar 2.1
Video Input: Bosphorus 1080p - Video Preset: Medium
Frames Per Second, More Is Better
A
24.45
B
24.34
C
24.46
D
24.40
SE +/- 0.03, N = 3
6
12
18
24
30
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt
Kvazaar 2.1
Video Input: Bosphorus 4K - Video Preset: Very Fast
Frames Per Second, More Is Better
A
11.91
B
11.96
C
11.90
D
11.77
SE +/- 0.03, N = 3
3
6
9
12
15
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt


Kvazaar 2.1
Video Input: Bosphorus 4K - Video Preset: Ultra Fast
Frames Per Second, More Is Better
A
20.94
B
21.01
C
20.96
D
20.81
SE +/- 0.03, N = 3
5
10
15
20
25
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt
Kvazaar 2.1
Video Input: Bosphorus 1080p - Video Preset: Very Fast
Frames Per Second, More Is Better
A
50.91
B
51.02
C
50.85
D
50.94
SE +/- 0.02, N = 3
12
24
36
48
60
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt

Kvazaar 2.1

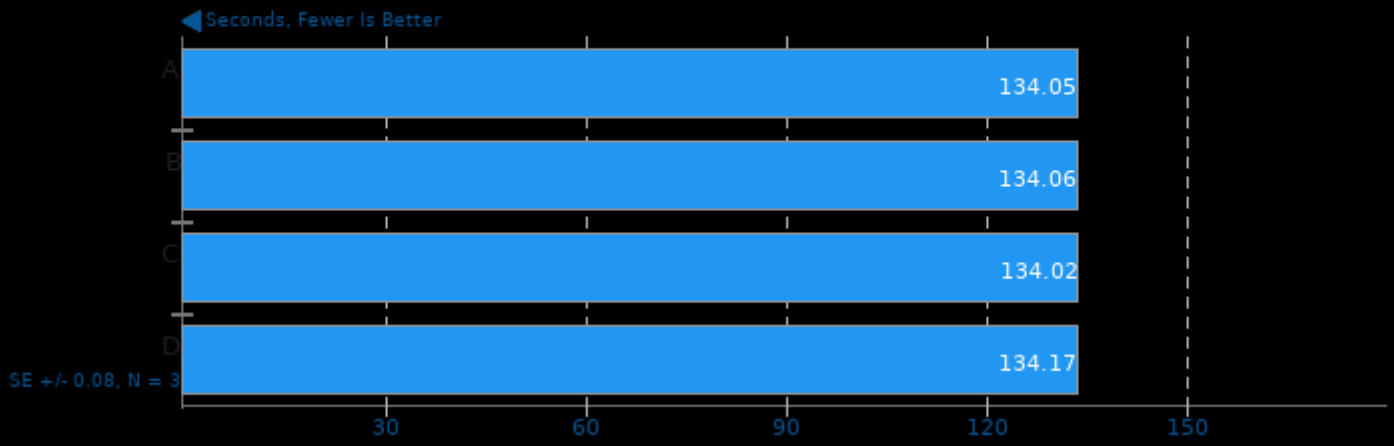
Video Input: Bosphorus 1080p - Video Preset: Ultra Fast



1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt

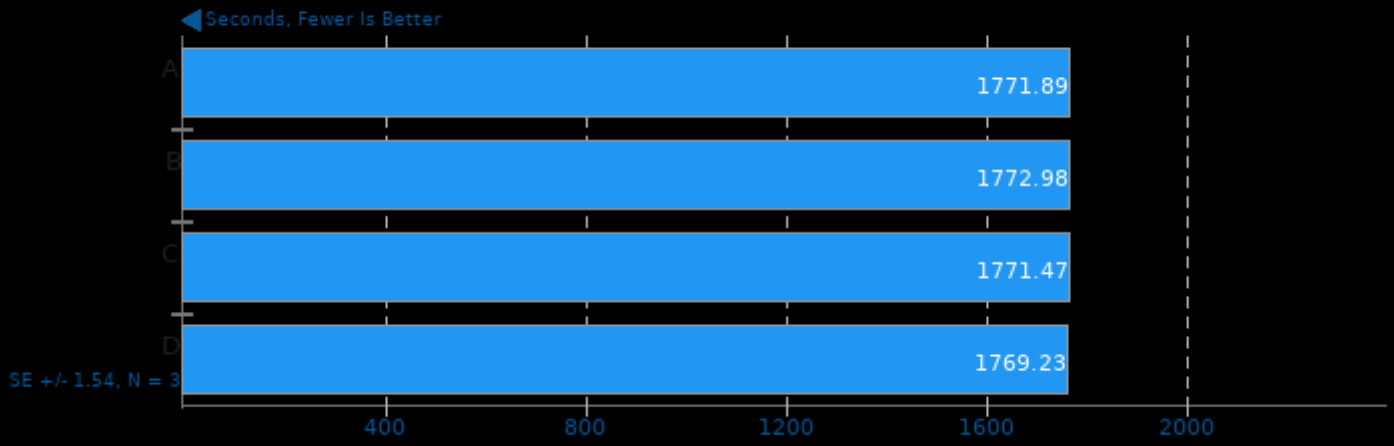
Timed Linux Kernel Compilation 5.16

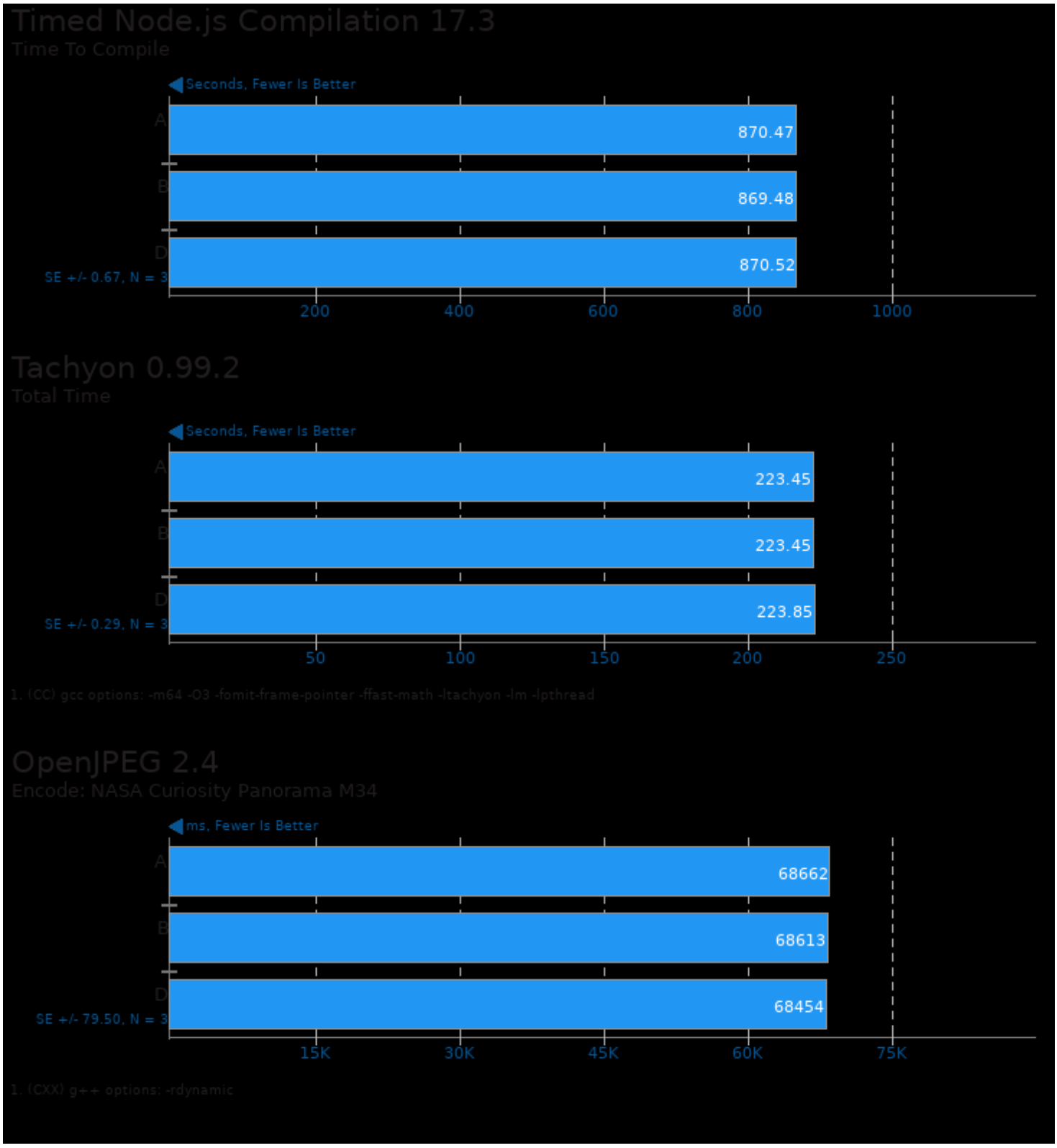
Build: defconfig

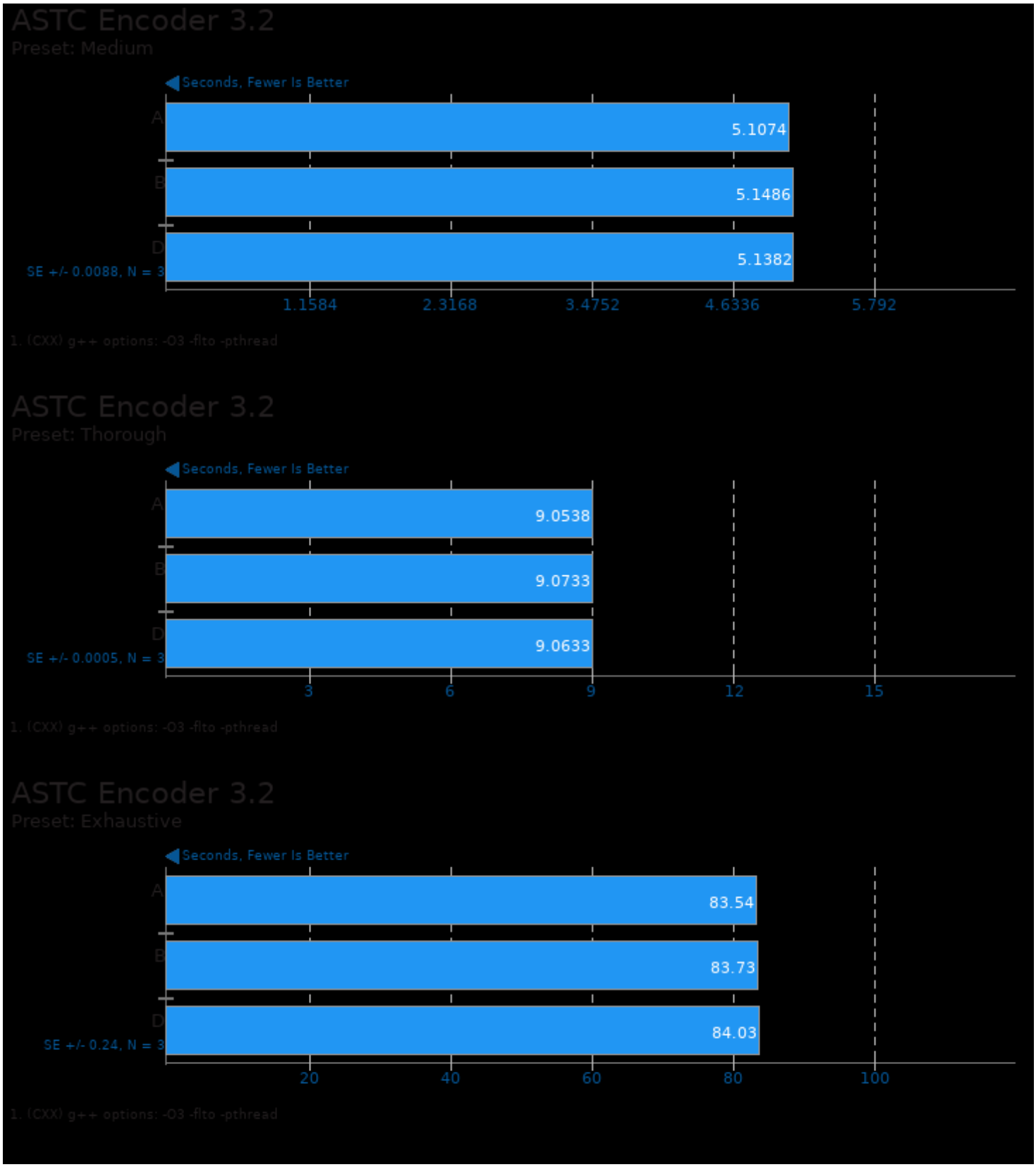


Timed Linux Kernel Compilation 5.16

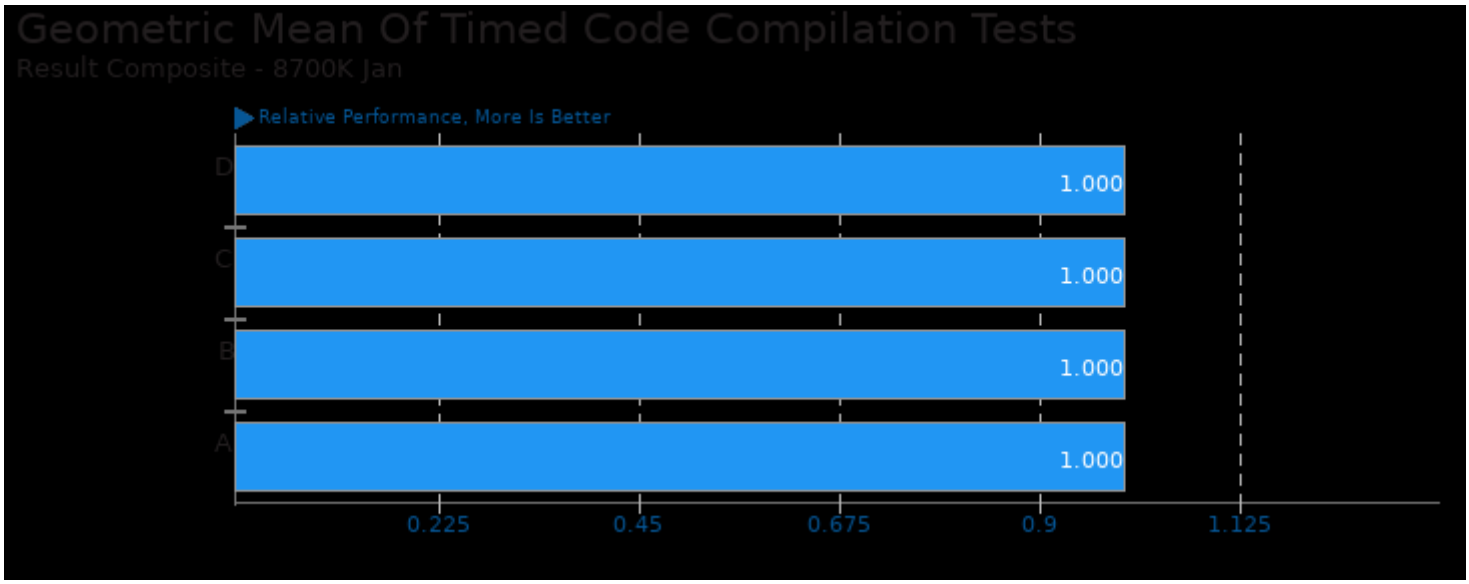
Build: allmodconfig



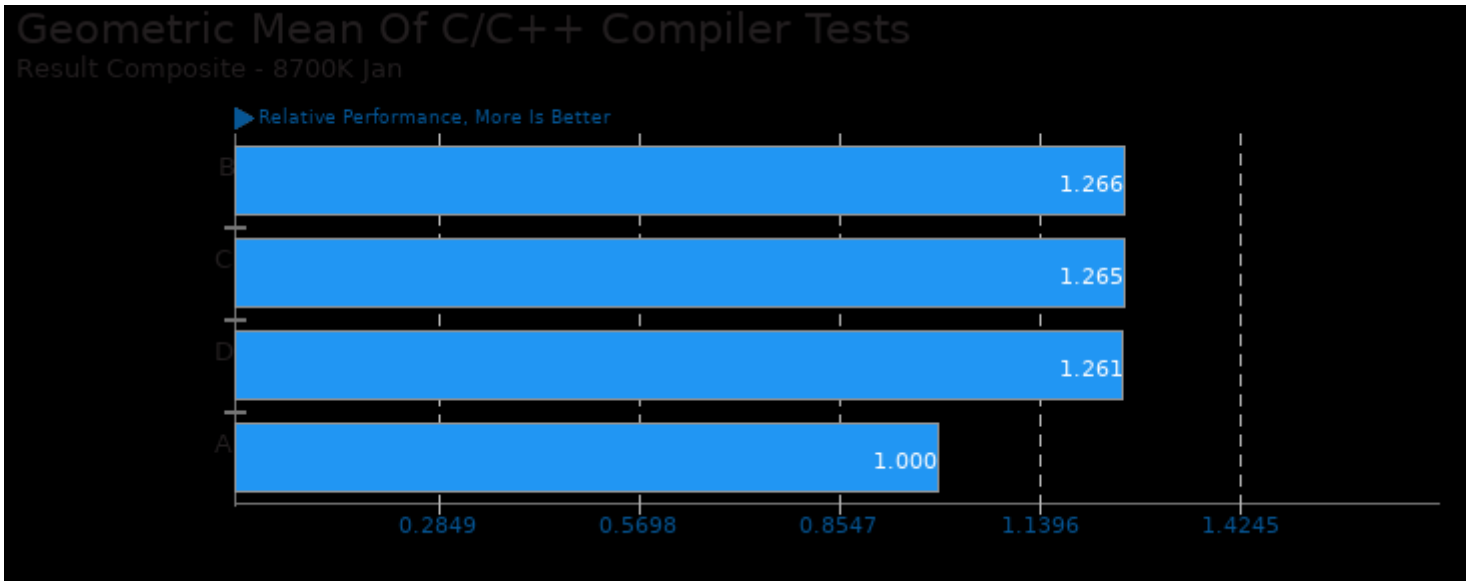

Timed Node.js Compilation 17.3
Time To Compile
Seconds, Fewer Is Better
A
B
D
870.47
869.48
870.52
SE +/- 0.67, N = 3
200
400
600
800
1000
Tachyon 0.99.2
Total Time
Seconds, Fewer Is Better
A
B
D
223.45
223.45
223.85
SE +/- 0.29, N = 3
50
100
150
200
250
1. (CC) gcc options: -m64 -O3 -fomit-frame-pointer -ffast-math -ltachyon -lm -lpthread
OpenJPEG 2.4
Encode: NASA Curiosity Panorama M34
ms, Fewer Is Better
A
B
D
68662
68613
68454
SE +/- 79.50, N = 3
15K
30K
45K
60K
75K
1. (CXX) g++ options: -rdynamic


ASTC Encoder 3.2
Preset: Medium
Seconds, Fewer Is Better
A
5.1074
B
5.1486
D
5.1382
SE +/- 0.0088, N = 3
1.1584
2.3168
3.4752
4.6336
5.792
1. (CXX) g++ options: -O3 -flto -pthread
ASTC Encoder 3.2
Preset: Thorough
Seconds, Fewer Is Better
A
9.0538
B
9.0733
D
9.0633
SE +/- 0.0005, N = 3
3
6
9
12
15
1. (CXX) g++ options: -O3 -flto -pthread
ASTC Encoder 3.2
Preset: Exhaustive
Seconds, Fewer Is Better
A
83.54
B
83.73
D
84.03
SE +/- 0.24, N = 3
20
40
60
80
100
1. (CXX) g++ options: -O3 -flto -pthread

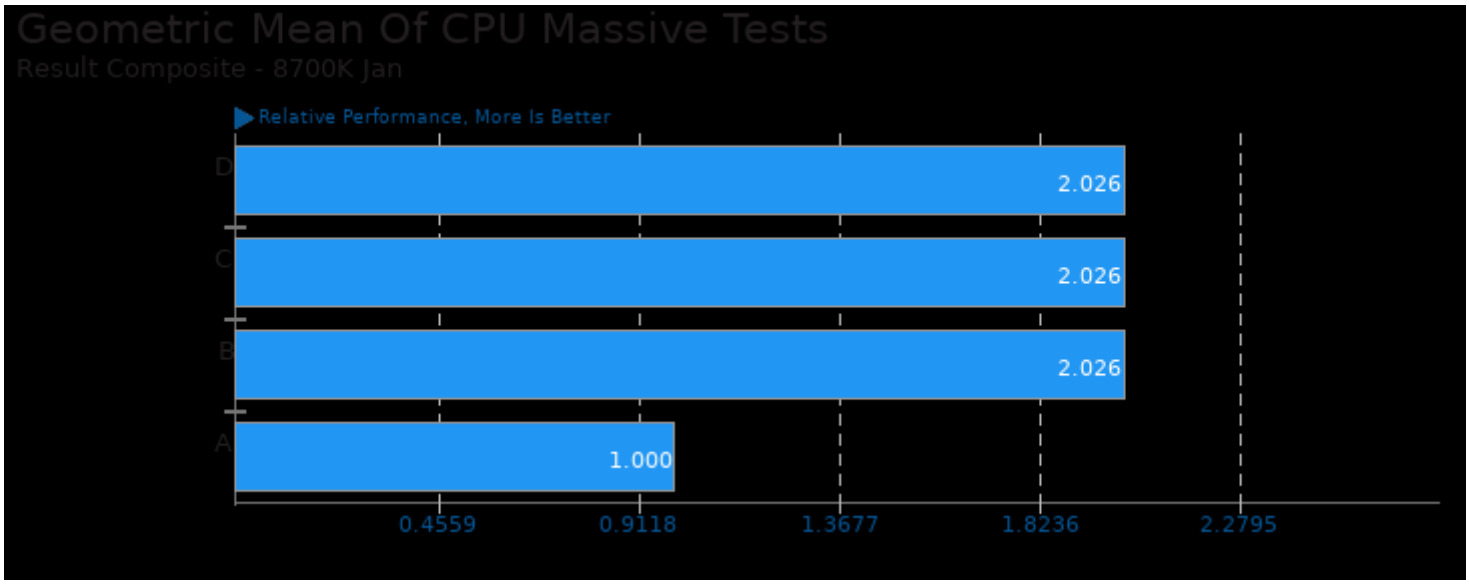
These geometric means are based upon test groupings / test suites for this result file.



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



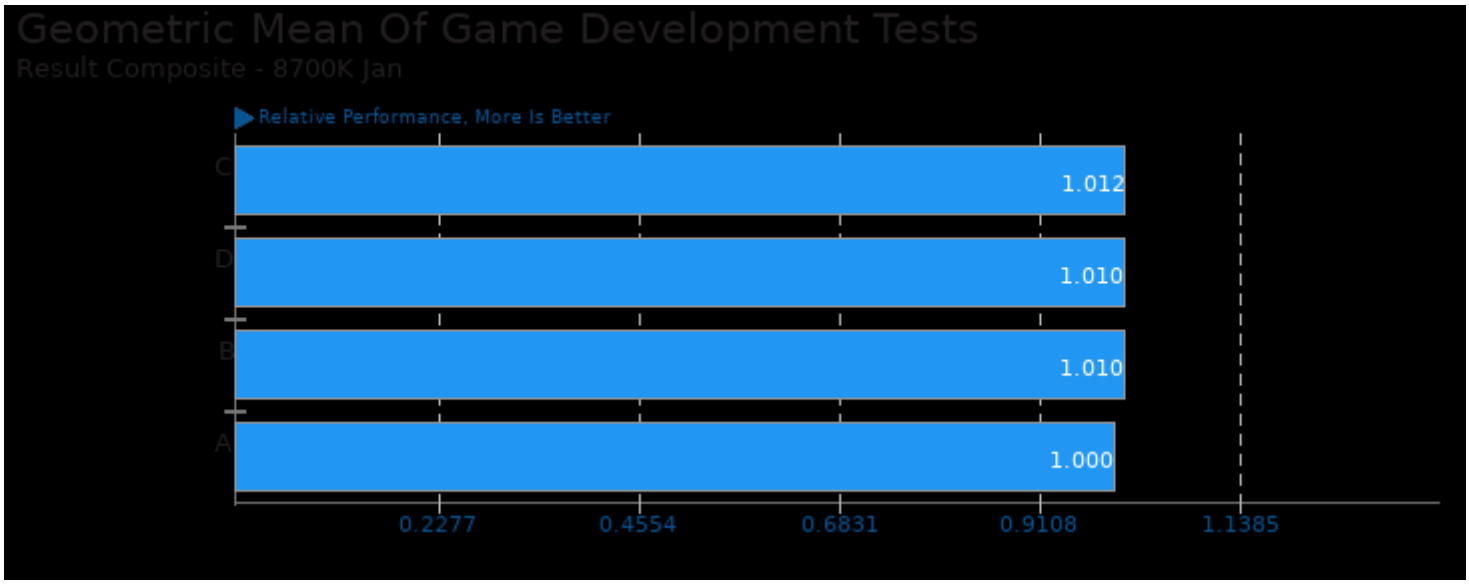
Geometric mean based upon tests: pts/kvazaar, pts/clomp and pts/tachyon



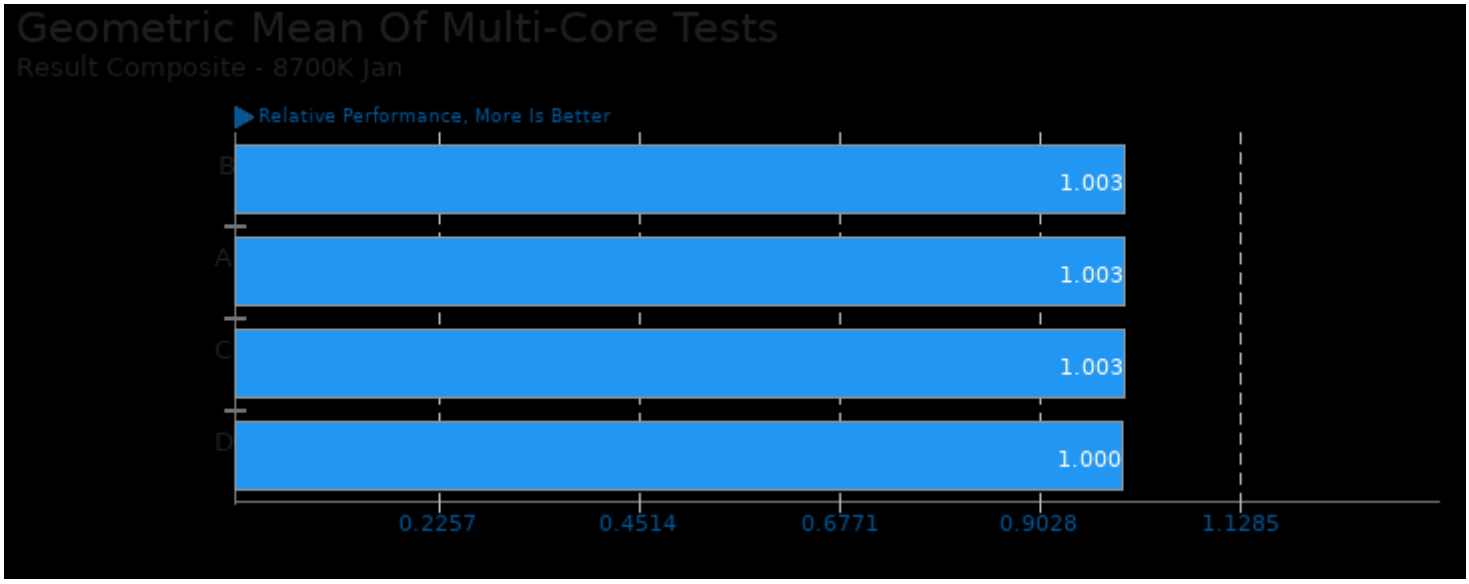
Geometric mean based upon tests: pts/build-linux-kernel, pts/tachyon and pts/clomp



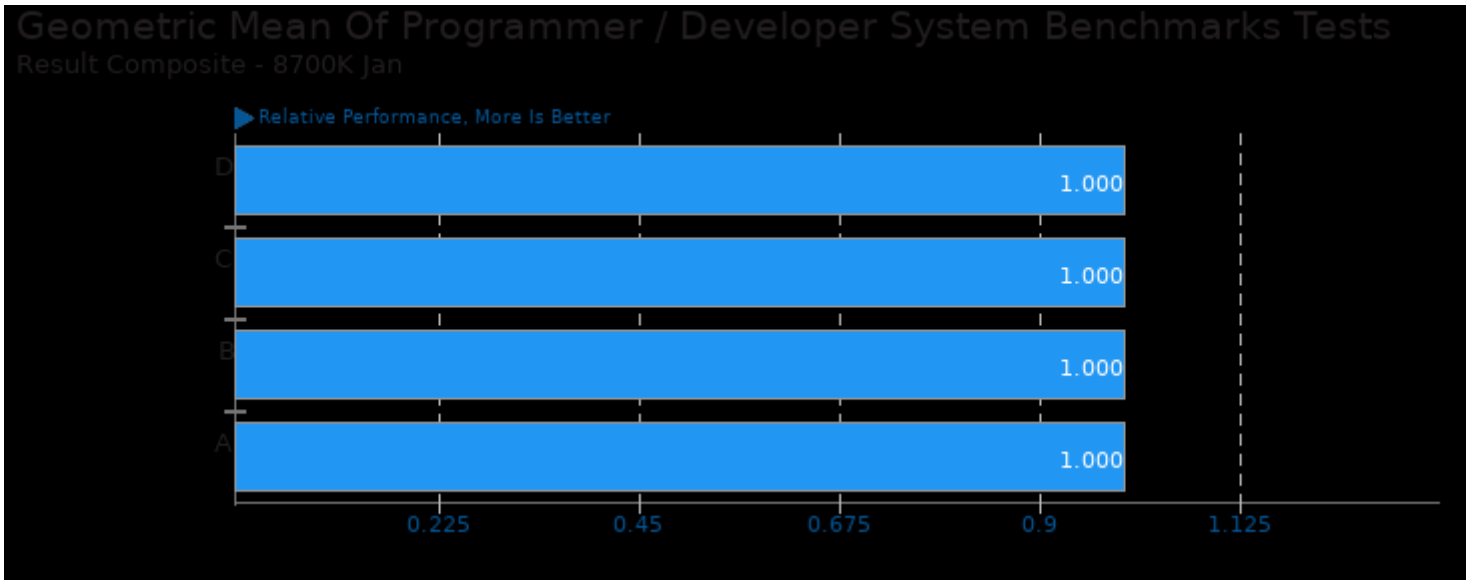
Geometric mean based upon tests: pts/tachyon, pts/kvazaar, pts/openjpeg, pts/astcenc and pts/etcpak



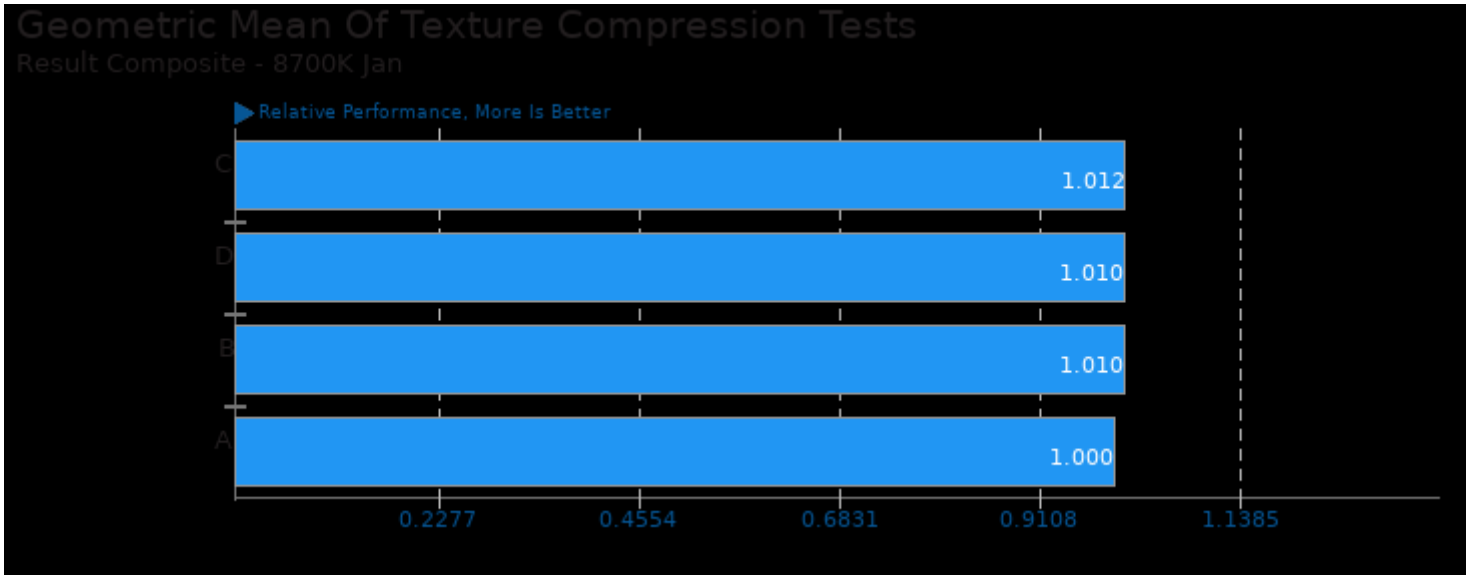
Geometric mean based upon tests: pts/astcenc and pts/etcpak



Geometric mean based upon tests: pts/tachyon, pts/kvazaar, pts/build-linux-kernel and pts/build-nodejs



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



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

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 14:51.