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# Ryzen 7 4700U / Ryzen 5 4500U vs. Intel Linux Performance

Dell Inspiron G5 15SE w/ Ryzen 7 4800H + Radeon 5600M 512MB, 16GB RAM, NVMe SSD, Windows 10 Pro x64

**Automated Executive Summary**

*Core i7 9750H had the most wins, coming in first place for 36% of the tests.*

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

*OpenArena (Resolution: 1920 x 1080 - Total Frame Time) at 19.5x*
*GpuTest (Test: Triangle - Resolution: 1920 x 1080 - Mode: Fullscreen) at 6.661x*
*C-Ray (Total Time - 4K, 16 Rays Per Pixel) at 5.172x*
*Embree (Binary: Pathtracer - Model: Crown) at 5.052x*
*Embree (Binary: Pathtracer - Model: Asian Dragon) at 4.981x*
*Embree (Binary: Pathtracer - Model: Asian Dragon Obj) at 4.847x*
*Embree (Binary: Pathtracer ISPC - Model: Crown) at 4.612x*
*Basis Universal (Settings: UASTC Level 3) at 4.548x*
*LuxCoreRender (Scene: DLSC) at 4.433x*
*Embree (Binary: Pathtracer ISPC - Model: Asian Dragon) at 4.431x.*

# Test Systems:

## Core i7 1065G7

Processor: Intel Core i7-1065G7 @ 3.90GHz (4 Cores / 8 Threads), Motherboard: Dell 06CDVY (1.0.9 BIOS), Chipset: Intel Device 34ef, Memory: 16GB, Disk: KBG40ZPZ512G NVMe TOSHIBA 512GB, Graphics: Intel Iris Plus G7 3GB (1100MHz), Audio: Realtek ALC289, Network: Intel Killer Wi-Fi 6 AX1650i 160MHz

OS: Ubuntu 20.04, Kernel: 5.7.0-999-generic (x86_64), Desktop: GNOME Shell 3.36.1, Display Server: X Server 1.20.8, Display Driver: modesetting 1.20.8, OpenGL: 4.6 Mesa 20.0.4, Vulkan: 1.2.131, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

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: 0x78
Java Notes: OpenJDK Runtime Environment (build 11.0.7+10-post-Ubuntu-3ubuntu1)
Python Notes: Python 3.8.2
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + 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 + tsx_async_abort: Not affected

## Core i7 8565U

Processor: Intel Core i7-8565U @ 4.60GHz (4 Cores / 8 Threads), Motherboard: Dell 0KTW76 (1.0.0 BIOS), Chipset: Intel Cannon Point-LP, Memory: 16GB, Disk: PC401 NVMe SK hynix 256GB, Graphics: Intel UHD 620 3GB (1150MHz), Audio: Realtek ALC3271, Network: Qualcomm Atheros QCA6174 802.11ac

OS: Ubuntu 20.04, Kernel: 5.7.0-999-generic (x86_64), Desktop: GNOME Shell 3.36.1, Display Server: X Server 1.20.8, Display Driver: modesetting 1.20.8, OpenGL: 4.6 Mesa 20.0.4, OpenCL: OpenCL 2.1, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

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: 0xca
Java Notes: OpenJDK Runtime Environment (build 11.0.7+10-post-Ubuntu-3ubuntu1)
Python Notes: Python 3.8.2
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + l1tf: Not affected + mds: Mitigation of Clear buffers; SMT vulnerable + 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 generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + tsx_async_abort: Not affected

## Core i7 9750H

Processor: Intel Core i7-9750H @ 4.50GHz (6 Cores / 12 Threads), Motherboard: Notebook P95_96_97Ex Rx (1.07.13MIN29 BIOS), Chipset: Intel Cannon Lake PCH, Memory: 32GB, Disk: 1000GB Samsung SSD 970 EVO Plus 1TB, Graphics: Intel UHD 630 3GB (1150MHz), Audio: Realtek ALC1220, Network: Realtek RTL8111/8168/8411 + Intel-AC 9560

OS: Ubuntu 20.04, Kernel: 5.7.0-999-generic (x86_64), Desktop: GNOME Shell 3.36.1, Display Server: X Server 1.20.8, Display Driver: modesetting 1.20.8, OpenGL: 4.6 Mesa 20.0.4, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

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: 0xca
Java Notes: OpenJDK Runtime Environment (build 11.0.7+10-post-Ubuntu-3ubuntu1)
Python Notes: Python 3.8.2
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + 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 + tsx_async_abort: Not affected

## Ryzen 5 4500U

Processor: AMD Ryzen 5 4500U @ 2.38GHz (6 Cores), Motherboard: LENOVO LNVNB161216 (EECN20WW BIOS), Chipset: AMD Renoir Root Complex, Memory: 16GB, Disk: 256GB SKHynix_HFM256GDHTNI-87A0B, Graphics: AMD Renoir 512MB (1500/400MHz), Audio: AMD Device 1637, Network: Realtek RTL8822CE 802.11ac PCIe

OS: Ubuntu 20.04, Kernel: 5.7.0-999-generic (x86_64), Desktop: GNOME Shell 3.36.2, Display Server: X Server 1.20.8, Display Driver: modesetting 1.20.8, OpenGL: 4.6 Mesa 20.0.4 (LLVM 9.0.1), Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

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: acpi-cpufreq ondemand - CPU Microcode: 0x8600102
Java Notes: OpenJDK Runtime Environment (build 11.0.7+10-post-Ubuntu-3ubuntu1)
Python Notes: Python 3.8.2
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 IBRS_FW STIBP: disabled RSB filling + tsx_async_abort: Not affected

## Ryzen 7 4700U

Processor: AMD Ryzen 7 4700U @ 2.00GHz (8 Cores), Motherboard: LENOVO LNVNB161216 (DTCN18WWV1.04 BIOS), Chipset: AMD Renoir Root Complex, Memory: 16GB, Disk: 512GB SAMSUNG MZALQ512HALU-000L2, Graphics: AMD Renoir 512MB (1600/400MHz), Audio: AMD Device 1637, Network: Intel Wi-Fi 6 AX200

OS: Ubuntu 20.04, Kernel: 5.7.0-999-generic (x86_64), Desktop: GNOME Shell 3.36.1, Display Server: X Server 1.20.8, Display Driver: modesetting 1.20.8, OpenGL: 4.6 Mesa 20.0.4 (LLVM 9.0.1), Vulkan: 1.2.128, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

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: acpi-cpufreq ondemand - CPU Microcode: 0x8600102
Python Notes: Python 3.8.2
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 IBRS_FW STIBP: disabled RSB filling + tsx_async_abort: Not affected

## Ryzen 7 4800H

Processor: AMD Ryzen 7 4800H @ 2.90GHz (8 Cores / 16 Threads), Motherboard: Dell 06WDJ9 (1.2.0 BIOS), Memory: 2 x 8192 MB 3200MHz HMA81GS6DJR8N-XN, Disk: 477GB BC511 NVMe SK hynix 512GB, Graphics: AMD Radeon + AMD Radeon RX 5600M 512MB, Network: Realtek PCIe GbE + Killer Wi-Fi 6 AX1650x 160MHz Wireless (200NGW) + Bluetooth Device (Personal Area )

OS: Microsoft Windows 10 Pro Build 19041, Kernel: 10.0 (x86_64), Display Driver: 27.20.1010.1, OpenCL: OpenCL 2.1

AMD-APP (3075.12), File-System: NTFS, Screen Resolution: 1920x1080

Java Notes: operable program or batch file.
Python Notes: Python 3.7.1
Security Notes: __user pointer sanitization: Disabled + Retpoline: Full + IBPB: Always + IBRS: Enabled + STIBP: Enabled

## Ryzen 7 4800H-v1

Processor: AMD Ryzen 7 4800H @ 2.90GHz (8 Cores / 16 Threads), Motherboard: Dell 06WDJ9 (1.2.0 BIOS), Memory: 2 x 8192 MB 3200MHz HMA81GS6DJR8N-XN, Disk: 477GB BC511 NVMe SK hynix 512GB, Graphics: AMD Radeon 512MB, Network: Realtek PCIe GbE + Killer Wi-Fi 6 AX1650x 160MHz Wireless (200NGW) + Bluetooth Device (Personal Area )

OS: Microsoft Windows 10 Pro Build 19041, Kernel: 10.0 (x86_64), Display Driver: 27.20.1010.1, OpenCL: OpenCL 2.1 AMD-APP (3075.12), File-System: NTFS, Screen Resolution: 1920x1080

Java Notes: operable program or batch file.
Python Notes: Python 3.7.1
Security Notes: __user pointer sanitization: Disabled + Retpoline: Full + IBPB: Always + IBRS: Enabled + STIBP: Enabled

| | Core i7 1065G7 | Core i7 8565U | Core i7 9750H | Ryzen 5 4500U | Ryzen 7 4700U | Ryzen 7 4800H | Ryzen 7 4800H-v1 |
|---|---|---|---|---|---|---|---|
| **C-Blosc - blosclz (MB/s)** | 6402 | 6826 | **9444** | **4981** | 4997 | | |
| **Normalized** | 67.8% | 72.28% | 100% | 52.74% | 52.91% | | |
| **Standard Deviation** | 0.3% | 0.6% | 1.3% | 0.1% | 0.4% | | |
| **NAS Parallel Benchmarks - BT.C (Mop/s)** | **7412** | 11950 | **15244** | 13867 | 12814 | | |
| **Normalized** | 48.62% | 78.39% | 100% | 90.97% | 84.06% | | |
| **Standard Deviation** | 0.1% | 0.3% | 0.1% | 1.9% | 2.8% | | |
| **NAS Parallel Benchmarks - CG.C (Mop/s)** | **1803** | 2723 | | | **4657** | | |
| **Normalized** | 38.7% | 58.48% | | | 100% | | |
| **Standard Deviation** | 0.3% | 0.9% | | | 1.4% | | |
| **NAS Parallel Benchmarks - EP.C (Mop/s)** | **262.68** | 399.59 | **718.15** | 501.94 | 572.38 | | |
| **Normalized** | 36.58% | 55.64% | 100% | 69.89% | 79.7% | | |
| **Standard Deviation** | 0.3% | 3% | 3% | 1.5% | 0.3% | | |
| **NAS Parallel Benchmarks - EP.D (Mop/s)** | **258.86** | 375.94 | **735.14** | 459.47 | 565.92 | | |
| **Normalized** | 35.21% | 51.14% | 100% | 62.5% | 76.98% | | |
| **Standard Deviation** | 0.2% | 1.2% | 0.4% | 1.2% | 0.1% | | |
| **NAS Parallel Benchmarks - FT.C (Mop/s)** | **4462** | 6442 | 7554 | 5808 | **8150** | | |
| **Normalized** | 54.75% | 79.04% | 92.69% | 71.25% | 100% | | |
| **Standard Deviation** | 0.1% | 0.9% | 0.5% | 0.4% | 0.2% | | |
| **NAS Parallel Benchmarks - LU.C (Mop/s)** | **8502** | 12689 | **20291** | 16706 | 17812 | | |
| **Normalized** | 41.9% | 62.54% | 100% | 82.33% | 87.78% | | |
| **Standard Deviation** | 0.2% | 0.2% | 0.3% | 0.6% | 0.1% | | |

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|---|---|---|---|---|---|---|
| **NAS Parallel Benchmarks - MG.C (Mop/s)** | **5534** | 6965 | **9564** | 6160 | 6308 | |
| **Normalized** | 57.86% | 72.83% | 100% | 64.4% | 65.96% | |
| **Standard Deviation** | 0.2% | 0.2% | 0.1% | 0.1% | 0.1% | |
| **NAS Parallel Benchmarks - SP.B (Mop/s)** | 3814 | 4253 | **5798** | **3455** | 3577 | |
| **Normalized** | 65.79% | 73.34% | 100% | 59.58% | 61.69% | |
| **Standard Deviation** | 0.7% | 0.2% | 0.2% | 0.6% | 0.1% | |
| **NAMD - ATPase Simulation - 327,506** | **10.30543** | 6.48024 | **3.18094** | 4.48099 | 3.66325 | |
| **Normalized** | 30.87% | 49.09% | 100% | 70.99% | 86.83% | |
| **Standard Deviation** | 0.1% | 0.4% | 0.2% | 0.5% | 0.2% | |
| **toyBrot Fractal Generator - TBB (ms)** | **510668** | 409961 | 206785 | 182353 | **147456** | |
| **Normalized** | 28.88% | 35.97% | 71.31% | 80.86% | 100% | |
| **Standard Deviation** | 0.3% | 0.2% | 0.5% | 0.1% | 0.2% | |
| **toyBrot Fractal Generator - OpenMP (ms)** | **497214** | 410239 | 206256 | 194356 | **159542** | |
| **Normalized** | 32.09% | 38.89% | 77.35% | 82.09% | 100% | |
| **Standard Deviation** | 0.1% | 0.3% | 0.2% | 0.3% | 0% | |
| **toyBrot Fractal Generator - C++ Tasks (ms)** | **507997** | 411439 | 206873 | 181776 | **147210** | |
| **Normalized** | 28.98% | 35.78% | 71.16% | 80.98% | 100% | |
| **Standard Deviation** | 0.3% | 0.2% | 0.1% | 0.2% | 0% | |
| **toyBrot Fractal Generator - C++ Threads (ms)** | **550754** | 411899 | 206428 | 182471 | **147637** | |
| **Normalized** | 26.81% | 35.84% | 71.52% | 80.91% | 100% | |
| **Standard Deviation** | 0.4% | 0.2% | 0.4% | 0.4% | 0% | |
| **lzbench - XZ 0 - Compression (MB/s)** | **35** | 41 | **43** | 39 | 41 | 38 |
| **Normalized** | 81.4% | 95.35% | 100% | 90.7% | 95.35% | 88.37% |
| **Standard Deviation** | | | | | | 10.7% |
| **lzbench - XZ 0 - Decompression (MB/s)** | **98** | 110 | 118 | 120 | 125 | **127** |
| **Normalized** | 77.17% | 86.61% | 92.91% | 94.49% | 98.43% | 100% |
| **lzbench - Zstd 1 - Compression (MB/s)** | **413** | 479 | 515 | 504 | **529** | 519 |
| **Normalized** | 78.07% | 90.55% | 97.35% | 95.27% | 100% | 98.11% |
| **Standard Deviation** | 0.4% | 0.5% | 0.5% | | | 0.7% |
| **lzbench - Zstd 1 - Decompression (MB/s)** | 1089 | 1300 | 1382 | 1372 | **1434** | **862** |
| **Normalized** | 75.94% | 90.66% | 96.37% | 95.68% | 100% | 60.11% |
| **Standard Deviation** | 0.6% | 0.4% | 0.2% | 0.1% | 0.1% | 0.2% |
| **lzbench - Zstd 8 - Compression (MB/s)** | 81 | 89 | **95** | **70** | 75 | **70** |
| **Normalized** | 85.26% | 93.68% | 100% | 73.68% | 78.95% | 73.68% |
| **Standard Deviation** | | | 0.6% | | 1.3% | |
| **lzbench - Zstd 8 - Decompression (MB/s)** | 1177 | 1403 | 1491 | 1507 | **1571** | **892** |
| **Normalized** | 74.92% | 89.31% | 94.91% | 95.93% | 100% | 56.78% |
| **Standard Deviation** | 0.1% | 0.6% | 0.1% | | 0.3% | |

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|---|---|---|---|---|---|---|
| **lzbench - Crush 0 - Compression (MB/s)** | 83 | 88 | 110 | 75 | 75 | 77 |
| Normalized | 75.45% | 80% | 100% | 68.18% | 68.18% | 70% |
| Standard Deviation | 0.7% | 0.7% | 1% | | | 2.2% |
| **lzbench - Crush 0 - Decompression (MB/s)** | 386 | 468 | 503 | 462 | 485 | 473 |
| Normalized | 76.74% | 93.04% | 100% | 91.85% | 96.42% | 94.04% |
| Standard Deviation | 1.1% | 0.1% | | | | 0.2% |
| **lzbench - Brotli 0 - Compression (MB/s)** | 409 | 434 | 473 | 488 | 514 | 420 |
| Normalized | 79.57% | 84.44% | 92.02% | 94.94% | 100% | 81.71% |
| Standard Deviation | 0.3% | 0.5% | 0.2% | 0.2% | 0.3% | 0.5% |
| **lzbench - Brotli 0 - Decompression (MB/s)** | 478 | 608 | 645 | 565 | 583 | 608 |
| Normalized | 74.11% | 94.26% | 100% | 87.6% | 90.39% | 94.26% |
| Standard Deviation | | 0.2% | 0.4% | | 0.6% | 0.3% |
| **lzbench - Brotli 2 - Compression (MB/s)** | 160 | 186 | 203 | 192 | 202 | 191 |
| Normalized | 78.82% | 91.63% | 100% | 94.58% | 99.51% | 94.09% |
| Standard Deviation | | 0.3% | | 0.6% | 0.6% | 0.5% |
| **lzbench - Brotli 2 - Decompression (MB/s)** | 569 | 709 | 773 | 644 | 664 | 702 |
| Normalized | 73.61% | 91.72% | 100% | 83.31% | 85.9% | 90.82% |
| Standard Deviation | 0.4% | 0.2% | 0.3% | 0.2% | 0.6% | |
| **lzbench - Libdeflate 1 - Compression (MB/s)** | 205 | 211 | 225 | 242 | 253 | 260 |
| Normalized | 78.85% | 81.15% | 86.54% | 93.08% | 97.31% | 100% |
| Standard Deviation | | | 0.5% | | 0.4% | 0.2% |
| **lzbench - Libdeflate 1 - Decompression (MB/s)** | 874 | 1158 | 1244 | 1144 | 1198 | 1254 |
| Normalized | 69.7% | 92.34% | 99.2% | 91.23% | 95.53% | 100% |
| Standard Deviation | 0.3% | 0% | | | 0.2% | |
| **Java Gradle Build - Reactor (sec)** | 407.353 | 287.692 | 226.316 | 217.654 | 223.950 | |
| Normalized | 53.43% | 75.66% | 96.17% | 100% | 97.19% | |
| Standard Deviation | 6.4% | 3.4% | 2.9% | 5.3% | 3.1% | |
| **Botan - KASUMI (MiB/s)** | 83.929 | 94.386 | 100.870 | 82.365 | 85.948 | |
| Normalized | 83.21% | 93.57% | 100% | 81.65% | 85.21% | |
| Standard Deviation | 1.2% | 0.1% | 0.2% | 0% | 0.1% | |
| **Botan - Twofish (MiB/s)** | 296.022 | 364.151 | 389.505 | 251.528 | 259.569 | |
| Normalized | 76% | 93.49% | 100% | 64.58% | 66.64% | |
| Standard Deviation | 2% | 0.1% | 0% | 0% | 0.1% | |
| **Botan - Blowfish (MiB/s)** | 369.437 | 453.490 | 485.233 | 288.416 | 296.296 | |
| Normalized | 76.14% | 93.46% | 100% | 59.44% | 61.06% | |
| Standard Deviation | 1.4% | 0.2% | 0.1% | 0% | 0% | |
| **Botan - CAST-256 (MiB/s)** | 125.876 | 143.685 | 153.433 | 120.275 | 125.248 | |
| Normalized | 82.04% | 93.65% | 100% | 78.39% | 81.63% | |
| Standard Deviation | 1.6% | 0.1% | 0.4% | 0% | 0% | |
| **dav1d - Chimera 1080p (FPS)** | 127.84 | 219.53 | 388.60 | 218.07 | 234.46 | 403.307500 |
| Normalized | 31.7% | 54.43% | 96.35% | 54.07% | 58.13% | 100% |
| Standard Deviation | 1.6% | 3.1% | 1.6% | 0.2% | 2.1% | 1.2% |

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|---|---|---|---|---|---|---|
| **dav1d - Summer Nature 4K (FPS)** | **30.45** | 54.50 | 100.60 | 71.59 | 81.11 | **121.592292** |
| **Normalized** | 25.04% | 44.82% | 82.74% | 58.88% | 66.71% | 100% |
| **Standard Deviation** | 0.5% | 1.7% | 1.5% | 0.1% | 0.2% | 0.8% |
| **dav1d - S.N.1 (FPS)** | **118.70** | 209.57 | 365.83 | 223.13 | 233.89 | **438.874375** |
| **Normalized** | 27.05% | 47.75% | 83.36% | 50.84% | 53.29% | 100% |
| **Standard Deviation** | 1.5% | 2.9% | 2.1% | 0.4% | 0.6% | 0.4% |
| **dav1d - C.1.1.b (FPS)** | **33.22** | 48.61 | **83.09** | 75.87 | 78.10 | 75.320625 |
| **Normalized** | 39.98% | 58.5% | 100% | 91.31% | 93.99% | 90.65% |
| **Standard Deviation** | 0.4% | 1.8% | 1.7% | 0.2% | 0.2% | 0.9% |
| **Embree - Pathtracer - Crown (FPS)** | **1.6033** | 2.9114 | 5.8454 | 3.8882 | 4.8146 | **8.1003** |
| **Normalized** | 19.79% | 35.94% | 72.16% | 48% | 59.44% | 100% |
| **Standard Deviation** | 0.3% | 0.6% | 1% | 1.2% | 0.4% | 1.4% |
| **Embree - Pathtracer ISPC - Crown (FPS)** | **1.7872** | 3.3784 | 6.7157 | 3.7057 | 4.6517 | **8.2424** |
| **Normalized** | 21.68% | 40.99% | 81.48% | 44.96% | 56.44% | 100% |
| **Standard Deviation** | 0.1% | 0.6% | 0.4% | 0.6% | 0.1% | 0.4% |
| **Embree - Pathtracer - Asian Dragon (FPS)** | **1.9709** | 3.6461 | 7.0998 | 4.5314 | 5.6838 | **9.8163** |
| **Normalized** | 20.08% | 37.14% | 72.33% | 46.16% | 57.9% | 100% |
| **Standard Deviation** | 0.3% | 0.4% | 0.4% | 0.3% | 0.9% | 0.2% |
| **Embree - Pathtracer - Asian Dragon Obj (FPS)** | **1.7984** | 3.3479 | 6.5820 | 4.1839 | 5.2000 | **8.7161** |
| **Normalized** | 20.63% | 38.41% | 75.52% | 48% | 59.66% | 100% |
| **Standard Deviation** | 0.5% | 0.2% | 2.4% | 0.7% | 0.1% | 0.8% |
| **Embree - Pathtracer ISPC - Asian Dragon (FPS)** | **2.2369** | 4.4557 | 8.5577 | 4.5322 | 5.7313 | **9.9126** |
| **Normalized** | 22.57% | 44.95% | 86.33% | 45.72% | 57.82% | 100% |
| **Standard Deviation** | 0.2% | 0.4% | 1% | 0.2% | 0.5% | 2.6% |
| **Embree - Pathtracer ISPC - Asian Dragon Obj (FPS)** | **2.6588** | 3.9328 | 7.7235 | 4.0785 | 5.1089 | **8.7514** |
| **Normalized** | 30.38% | 44.94% | 88.25% | 46.6% | 58.38% | 100% |
| **Standard Deviation** | 13.7% | 0.7% | 1% | 0.4% | 0.1% | 0.2% |
| **SVT-VP9 - VMAF Optimized - Bosphorus 1080p (FPS)** | **45.02** | 63.51 | 109.70 | 80.55 | 87.61 | **131.11** |
| **Normalized** | 34.34% | 48.44% | 83.67% | 61.44% | 66.82% | 100% |
| **Standard Deviation** | 3.4% | 2.6% | 0.3% | 2% | 1.2% | 1.8% |
| **SVT-VP9 - P.S.O - Bosphorus 1080p (FPS)** | **45.27** | 63.81 | 111.20 | 83.03 | 90.76 | **136.79** |
| **Normalized** | 33.09% | 46.65% | 81.29% | 60.7% | 66.35% | 100% |
| **Standard Deviation** | 5.5% | 4.3% | 0.2% | 0.1% | 0.3% | 0.4% |
| **SVT-VP9 - V.Q.O - Bosphorus 1080p (FPS)** | **33.42** | 47.72 | 85.03 | 65.67 | 75.36 | **110.87** |
| **Normalized** | 30.14% | 43.04% | 76.69% | 59.23% | 67.97% | 100% |
| **Standard Deviation** | 4.2% | 3.1% | 0.2% | 0.4% | 0.8% | 0.5% |
| **Intel Open Image Denoise - Memorial (Images / Sec)** | 3.48 | **2.33** | 4.62 | 4.43 | 5.23 | **6.93** |
| **Normalized** | 50.22% | 33.62% | 66.67% | 63.92% | 75.47% | 100% |
| **Standard Deviation** | 2.2% | 0.9% | 0.7% | 0.5% | 1.7% | 1.7% |

| | | | | | | |
|---|---|---|---|---|---|---|
| **OpenVKL - vklBenchmark (Items / Sec)** | 57.00 | 50.69 | 93.06 | 58.89 | 72.17 | |
| Normalized | 61.25% | 54.47% | 100% | 63.28% | 77.55% | |
| Standard Deviation | 0.8% | 0.7% | 1.4% | 0.3% | 0.6% | |
| **LuxCoreRender - DLSC (M samples/sec)** | 0.30 | 0.46 | 0.85 | 0.72 | 0.89 | 1.33 |
| Normalized | 22.56% | 34.59% | 63.91% | 54.14% | 66.92% | 100% |
| Standard Deviation | 2.9% | 2.9% | 1.1% | 1.5% | 0.3% | 0.4% |
| **LuxCoreRender - R.C.a.P (M samples/sec)** | 0.33 | 0.50 | 0.91 | 0.81 | 0.99 | 1.27 |
| Normalized | 25.98% | 39.37% | 71.65% | 63.78% | 77.95% | 100% |
| Standard Deviation | 2.9% | 2.9% | 0.9% | 0.9% | 0.3% | 0.4% |
| **7-Zip Compression - C.S.T (MIPS)** | 13369 | 18023 | 31674 | 23661 | 27659 | 43796 |
| Normalized | 30.53% | 41.15% | 72.32% | 54.03% | 63.15% | 100% |
| Standard Deviation | 3.2% | 1.6% | 2% | 1.8% | 0.5% | 0.6% |
| **Timed Linux Kernel Compilation - Time To Compile (sec)** | 443.144 | 305.114 | 153.933 | 189.249 | 156.474 | |
| Normalized | 34.74% | 50.45% | 100% | 81.34% | 98.38% | |
| Standard Deviation | 0.5% | 0.4% | 0.9% | 0.3% | 0.9% | |
| **Timed LLVM Compilation - Time To Compile (sec)** | 3375 | 2281 | 1150 | 1504 | 1224 | |
| Normalized | 34.07% | 50.41% | 100% | 76.41% | 93.94% | |
| Standard Deviation | 0.2% | 0% | 0.7% | 0.2% | 0.1% | |
| **YafaRay - T.T.F.S.S (sec)** | 858.778 | 575.669 | 289.258 | | 268.563 | |
| Normalized | 31.27% | 46.65% | 92.85% | | 100% | |
| Standard Deviation | 1% | 0.9% | 0.4% | | 0.4% | |
| **GROMACS - Water Benchmark (Ns/Day)** | 0.266 | 0.352 | 0.629 | 0.472 | 0.525 | |
| Normalized | 42.29% | 55.96% | 100% | 75.04% | 83.47% | |
| Standard Deviation | 0.2% | 0.2% | 1.7% | 0.4% | 0.3% | |
| **Basis Universal - ETC1S (sec)** | 118.931 | 92.308 | 63.267 | 64.627 | 59.010 | 67.966 |
| Normalized | 49.62% | 63.93% | 93.27% | 91.31% | 100% | 86.82% |
| Standard Deviation | 2.2% | 0.8% | 0.8% | 0.7% | 0.2% | 5.3% |
| **Basis Universal - UASTC Level 0 (sec)** | 15.524 | 11.682 | 9.316 | 9.102 | 8.280 | 8.373 |
| Normalized | 53.34% | 70.88% | 88.88% | 90.97% | 100% | 98.89% |
| Standard Deviation | 0.3% | 2.9% | 1.5% | 0% | 0.3% | 0.3% |
| **Basis Universal - UASTC Level 2 (sec)** | 162.241 | 111.404 | 58.822 | 57.895 | 47.137 | 37.433 |
| Normalized | 23.07% | 33.6% | 63.64% | 64.66% | 79.41% | 100% |
| Standard Deviation | 0.1% | 1.9% | 0.3% | 0.8% | 3.9% | 0.2% |
| **Basis Universal - UASTC Level 3 (sec)** | 327.532 | 222.783 | 115.458 | 117.647 | 94.679 | 72.019 |
| Normalized | 21.99% | 32.33% | 62.38% | 61.22% | 76.07% | 100% |
| Standard Deviation | 0.2% | 0.1% | 0.3% | 1.4% | 0% | 0.3% |
| **Basis Universal - U.L.2.R.P.P (sec)** | 1591 | 1206 | 808.933 | 772.205 | 700.908 | 1357 |
| Normalized | 44.05% | 58.1% | 86.65% | 90.77% | 100% | 51.67% |
| Standard Deviation | 0% | 0.1% | 0.3% | 0.6% | 0.5% | 75.3% |

| | | | | | |
|---|---|---|---|---|---|
| **G'MIC - P.I.O.A.3.V.1.T (sec)** | **21.908** | 20.389 | **19.014** | 20.776 | 19.710 |
| **Normalized** | 86.79% | 93.26% | 100% | 91.52% | 96.47% |
| **Standard Deviation** | 0.9% | 0.9% | 0.5% | 0.6% | 0.1% |
| **Stress-NG - MMAP (Bogo Ops/s)** | **20.17** | 29.34 | **77.96** | 36.79 | 58.82 |
| **Normalized** | 25.87% | 37.63% | 100% | 47.19% | 75.45% |
| **Standard Deviation** | 0.7% | 2.7% | 1.1% | 0.9% | 0.7% |
| **Stress-NG - NUMA (Bogo Ops/s)** | **47.92** | 62.08 | **120.19** | 92.14 | 117.25 |
| **Normalized** | 39.87% | 51.65% | 100% | 76.66% | 97.55% |
| **Standard Deviation** | 0.1% | 1.8% | 0.7% | 2.8% | 2.5% |
| **Stress-NG - MEMFD (Bogo Ops/s)** | **121.04** | 205.09 | **482.49** | 166.00 | 232.75 |
| **Normalized** | 25.09% | 42.51% | 100% | 34.4% | 48.24% |
| **Standard Deviation** | 1% | 1.7% | 0.3% | 0.4% | 0.4% |
| **Stress-NG - Atomic (Bogo Ops/s)** | **167882** | 190154 | 228374 | 464738 | **492689** |
| **Normalized** | 34.07% | 38.6% | 46.35% | 94.33% | 100% |
| **Standard Deviation** | 2.9% | 2.9% | 6% | 0.1% | 0.1% |
| **Stress-NG - Crypto (Bogo Ops/s)** | **357.32** | 545.55 | 1027 | 1277 | **1572** |
| **Normalized** | 22.74% | 34.71% | 65.35% | 81.27% | 100% |
| **Standard Deviation** | 0.2% | 2.4% | 0.4% | 0.9% | 0.3% |
| **Stress-NG - Malloc (Bogo Ops/s)** | **12853770** | 16757117 | **38934995** | 22653943 | 28091580 |
| **Normalized** | 33.01% | 43.04% | 100% | 58.18% | 72.15% |
| **Standard Deviation** | 1.7% | 0.1% | 0.2% | 0.3% | 0.1% |
| **Stress-NG - Forking (Bogo Ops/s)** | **17317** | 26433 | **45750** | 31151 | 36147 |
| **Normalized** | 37.85% | 57.78% | 100% | 68.09% | 79.01% |
| **Standard Deviation** | 0.9% | 3% | 0.8% | 0.9% | 1.3% |
| **Stress-NG - SENDFILE (Bogo Ops/s)** | **29575** | 32979 | 62522 | 69854 | **86886** |
| **Normalized** | 34.04% | 37.96% | 71.96% | 80.4% | 100% |
| **Standard Deviation** | 0.3% | 2.4% | 0.1% | 0.8% | 0.7% |
| **Stress-NG - CPU Cache (Bogo Ops/s)** | 21.43 | **12.01** | 20.32 | **37.14** | 36.95 |
| **Normalized** | 57.7% | 32.34% | 54.71% | 100% | 99.49% |
| **Standard Deviation** | 1.1% | 0.8% | 2.5% | 2.8% | 0.6% |
| **Stress-NG - CPU Stress (Bogo Ops/s)** | **820.29** | 1355 | **2557** | 1807 | 2276 |
| **Normalized** | 32.08% | 52.99% | 100% | 70.69% | 89.02% |
| **Standard Deviation** | 0.5% | 2.9% | 0.4% | 1.3% | 0.2% |
| **Stress-NG - Semaphores (Bogo Ops/s)** | 570155 | 550160 | **844313** | **363424** | 484137 |
| **Normalized** | 67.53% | 65.16% | 100% | 43.04% | 57.34% |
| **Standard Deviation** | 1.8% | 2.6% | 1.7% | 0.1% | 0.1% |
| **Stress-NG - Matrix Math (Bogo Ops/s)** | **8585** | 12790 | 21573 | 15878 | **23434** |
| **Normalized** | 36.64% | 54.58% | 92.06% | 67.76% | 100% |
| **Standard Deviation** | 0.2% | 2.9% | 0.8% | 1.1% | 1.8% |

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|---|---|---|---|---|---|
| **Stress-NG - Vector Math (Bogo Ops/s)** | **11891** | 20735 | 39241 | 33911 | **42212** |
| **Normalized** | 28.17% | 49.12% | 92.96% | 80.33% | 100% |
| **Standard Deviation** | 0.2% | 2.6% | 0.1% | 0.7% | 0.6% |
| **Stress-NG - Memory Copying (Bogo Ops/s)** | 1041 | 1141 | **1599** | 1048 | **868.00** |
| **Normalized** | 65.12% | 71.34% | 100% | 65.54% | 54.29% |
| **Standard Deviation** | 0.1% | 0.5% | 0.3% | 0.3% | 0.2% |
| **Stress-NG - Socket Activity (Bogo Ops/s)** | **1757** | 2684 | **5403** | 1868 | 2318 |
| **Normalized** | 32.51% | 49.67% | 100% | 34.58% | 42.9% |
| **Standard Deviation** | 0.6% | 11.8% | 1% | 0.2% | 1.7% |
| **Stress-NG - Context Switching (Bogo Ops/s)** | **754892** | 983865 | 1683648 | 1823579 | **2201519** |
| **Normalized** | 34.29% | 44.69% | 76.48% | 82.83% | 100% |
| **Standard Deviation** | 0.3% | 2.8% | 0.3% | 1.2% | 1.7% |
| **Stress-NG - G.C.S.F (Bogo Ops/s)** | **217768** | 307974 | 597960 | 546193 | **675941** |
| **Normalized** | 32.22% | 45.56% | 88.46% | 80.8% | 100% |
| **Standard Deviation** | 1% | 5.9% | 1% | 2.6% | 1% |
| **Stress-NG - G.Q.D.S (Bogo Ops/s)** | **26.29** | 35.94 | 69.14 | 58.66 | **72.27** |
| **Normalized** | 36.38% | 49.73% | 95.67% | 81.17% | 100% |
| **Standard Deviation** | 0.6% | 2.8% | 0.7% | 1% | 0.9% |
| **Stress-NG - S.V.M.P (Bogo Ops/s)** | 3627742 | **3593116** | 5362322 | 4494248 | **6856635** |
| **Normalized** | 52.91% | 52.4% | 78.21% | 65.55% | 100% |
| **Standard Deviation** | 1.7% | 2.2% | 0.3% | 2.4% | 8.7% |
| **Git - T.T.C.C.G.C (sec)** | **65.564** | 55.518 | **51.086** | 55.335 | 53.079 |
| **Normalized** | 77.92% | 92.02% | 100% | 92.32% | 96.25% |
| **Standard Deviation** | 1.2% | 0% | 2.3% | 0.3% | 0.2% |
| **Mlpack Benchmark - scikit_ica (sec)** | **119.94** | 104.12 | **69.56** | 75.77 | 77.12 |
| **Normalized** | 58% | 66.81% | 100% | 91.8% | 90.2% |
| **Standard Deviation** | 1.6% | 1.7% | 4.3% | 0.4% | 4.7% |
| **Mlpack Benchmark - scikit_qda (sec)** | **185.44** | 127.95 | **75.16** | 100.37 | 95.90 |
| **Normalized** | 40.53% | 58.74% | 100% | 74.88% | 78.37% |
| **Standard Deviation** | 0.3% | 0.7% | 0.5% | 0.2% | 1.5% |
| **Mlpack Benchmark - scikit_svm (sec)** | **30.38** | 26.83 | 24.14 | 22.50 | **21.73** |
| **Normalized** | 71.53% | 80.99% | 90.02% | 96.58% | 100% |
| **Standard Deviation** | 0.1% | 0.3% | 0.1% | 0.7% | 0.4% |
| **Mlpack Benchmark - scikit_linearridgeregression (sec)** | **9.69** | 4.72 | **3.21** | 7.40 | 5.12 |
| **Normalized** | 33.13% | 68.01% | 100% | 43.38% | 62.7% |
| **Standard Deviation** | 1.5% | 1.3% | 2.8% | 7.2% | 4% |
| **ET: Legacy - Renderer2 - 1920 x 1080 (FPS)** | **70.2** | 79.6 | 102.7 | 138.6 | **139.5** |
| **Normalized** | 50.32% | 57.06% | 73.62% | 99.35% | 100% |
| **Standard Deviation** | 0.2% | 1.6% | 3.4% | 0.2% | 0.6% |

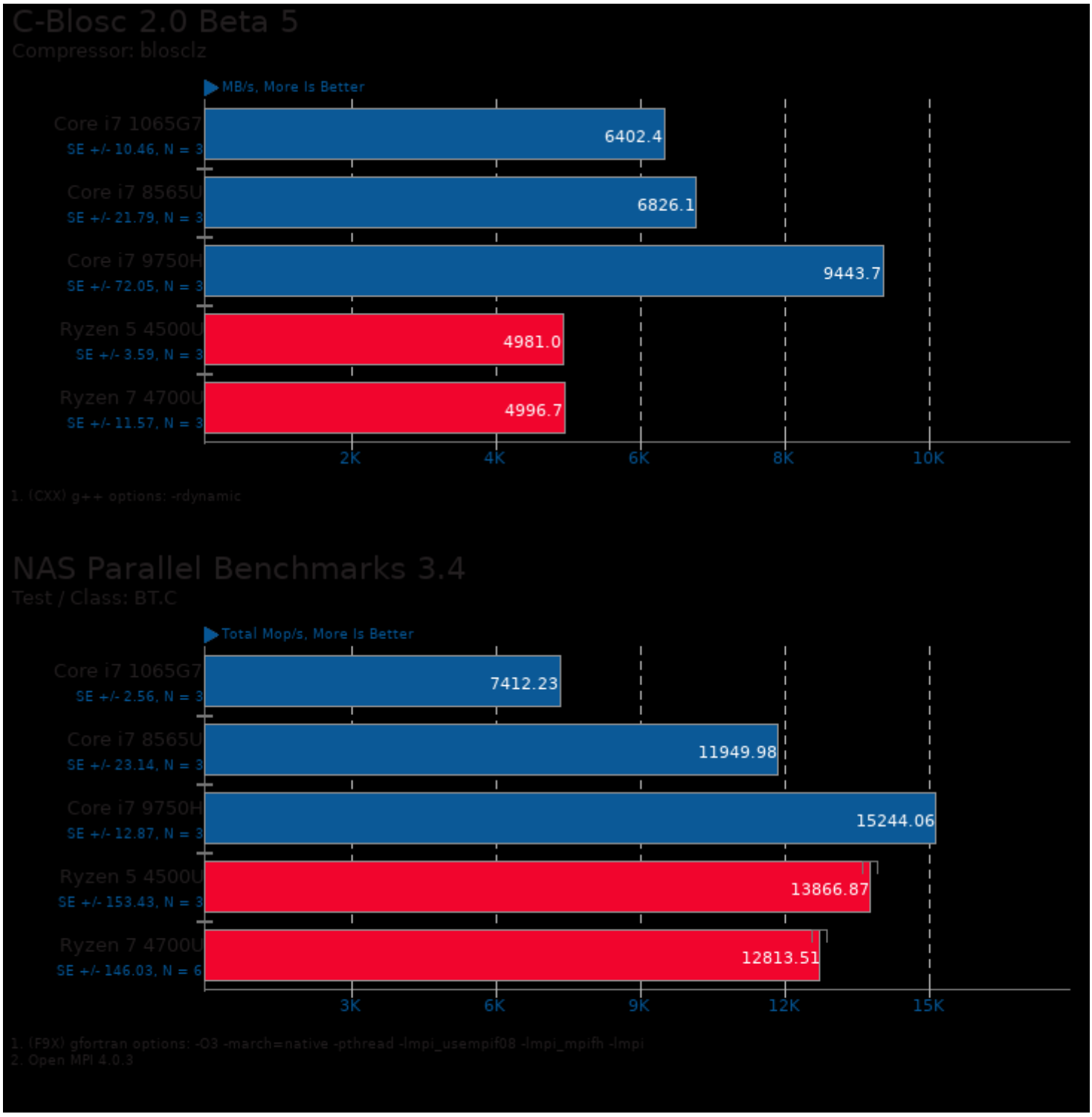
| | | | | | | |
|---|---|---|---|---|---|---|
| **OpenArena - 1920 x 1080 (FPS)** | 78.3 | 73.8 | **70.3** | **137.2** | 120.7 | 121.4 |
| **Normalized** | 57.07% | 53.79% | 51.24% | 100% | 87.97% | 88.48% |
| **Standard Deviation** | 0.3% | 2.8% | 0.2% | 0.4% | 0.6% | 9.2% |
| **Tesseract - 1920 x 1080 (FPS)** | 97.35154 | 63.72866 | **61.98837** | 120.1884 | **125.5715** | |
| **Normalized** | 77.53% | 50.75% | 49.36% | 95.71% | 100% | |
| **Standard Deviation** | 2.9% | 1.6% | 0.2% | 0.2% | 1.4% | |
| **Xonotic - 1920 x 1080 - Low (FPS)** | 269.1211033 | **183.3177943** | 263.4726535 | **293.1961996** | 284.9692587 | 263.3360435 |
| **Normalized** | 91.79% | 62.52% | 89.86% | 100% | 97.19% | 89.82% |
| **Standard Deviation** | 0.7% | 1% | 0% | 0.8% | 0.4% | 0.1% |
| **Xonotic - 1920 x 1080 - High (FPS)** | 165.7609328 | **111.0110312** | 128.9529351 | 198.6632810 | 198.3815553 | **201.0838589** |
| **Normalized** | 82.43% | 55.21% | 64.13% | 98.8% | 98.66% | 100% |
| **Standard Deviation** | 0.6% | 0.2% | 0.1% | 0.3% | 2% | 0.4% |
| **Xonotic - 1920 x 1080 - Ultra (FPS)** | **83.5365743** | 91.2788769 | 99.6489364 | 171.5145028 | 165.4308479 | **174.7042760** |
| **Normalized** | 47.82% | 52.25% | 57.04% | 98.17% | 94.69% | 100% |
| **Standard Deviation** | 0.9% | 0.5% | 0.1% | 0.2% | 0.4% | 4.8% |
| **Xonotic - 1920 x 1080 - Ultimate (FPS)** | **64.6409086** | 69.2544370 | 71.3703740 | 131.7891661 | 130.4112096 | **146.2533510** |
| **Normalized** | 44.2% | 47.35% | 48.8% | 90.11% | 89.17% | 100% |
| **Standard Deviation** | 0.5% | 0.3% | 0.1% | 0.1% | 0.3% | 0.5% |
| **GpuTest - GiMark - 1920 x 1080 - Fullscreen (Points)** | 1201 | 1230 | **1120** | 1351 | 1422 | **3003** |
| **Normalized** | 39.99% | 40.96% | 37.3% | 44.99% | 47.35% | 100% |
| **Standard Deviation** | | 0.5% | | 0% | 0% | 0% |
| **GpuTest - Plot3D - 1920 x 1080 - Fullscreen (Points)** | 8818 | 8490 | **7372** | 23737 | 24127 | **27294** |
| **Normalized** | 32.31% | 31.11% | 27.01% | 86.97% | 88.4% | 100% |
| **Standard Deviation** | 0.2% | 0.1% | 0% | 0.1% | 0.2% | 0.2% |
| **GpuTest - Furmark - 1920 x 1080 - Fullscreen** | 740 | **667** | 709 | 1104 | 1128 | **1157** |
| **Normalized** | 63.96% | 57.65% | 61.28% | 95.42% | 97.49% | 100% |
| **Standard Deviation** | 0.3% | 3.2% | | 0.2% | 0.2% | 0.2% |
| **GpuTest - TessMark - 1920 x 1080 - Fullscreen** | **2523** | 2642 | 2574 | 3691 | 3908 | **6453** |
| **Normalized** | 39.1% | 40.94% | 39.89% | 57.2% | 60.56% | 100% |
| **Standard Deviation** | 0.1% | 0.1% | | 0% | 0.1% | 2.9% |
| **GpuTest - Triangle - 1920 x 1080 - Fullscreen** | 53314 | **44624** | 55411 | **297260** | 248605 | 135399 |
| **Normalized** | 17.94% | 15.01% | 18.64% | 100% | 83.63% | 45.55% |
| **Standard Deviation** | 0.2% | 0.8% | 0.6% | 0.3% | 3% | 0.4% |
| **GpuTest - Pixmark Piano - 1920 x 1080 - Fullscreen (Points)** | 224 | 143 | **123** | 343 | **427** | 419 |
| **Normalized** | 52.46% | 33.49% | 28.81% | 80.33% | 100% | 98.13% |
| **Standard Deviation** | | 0.8% | | | | |

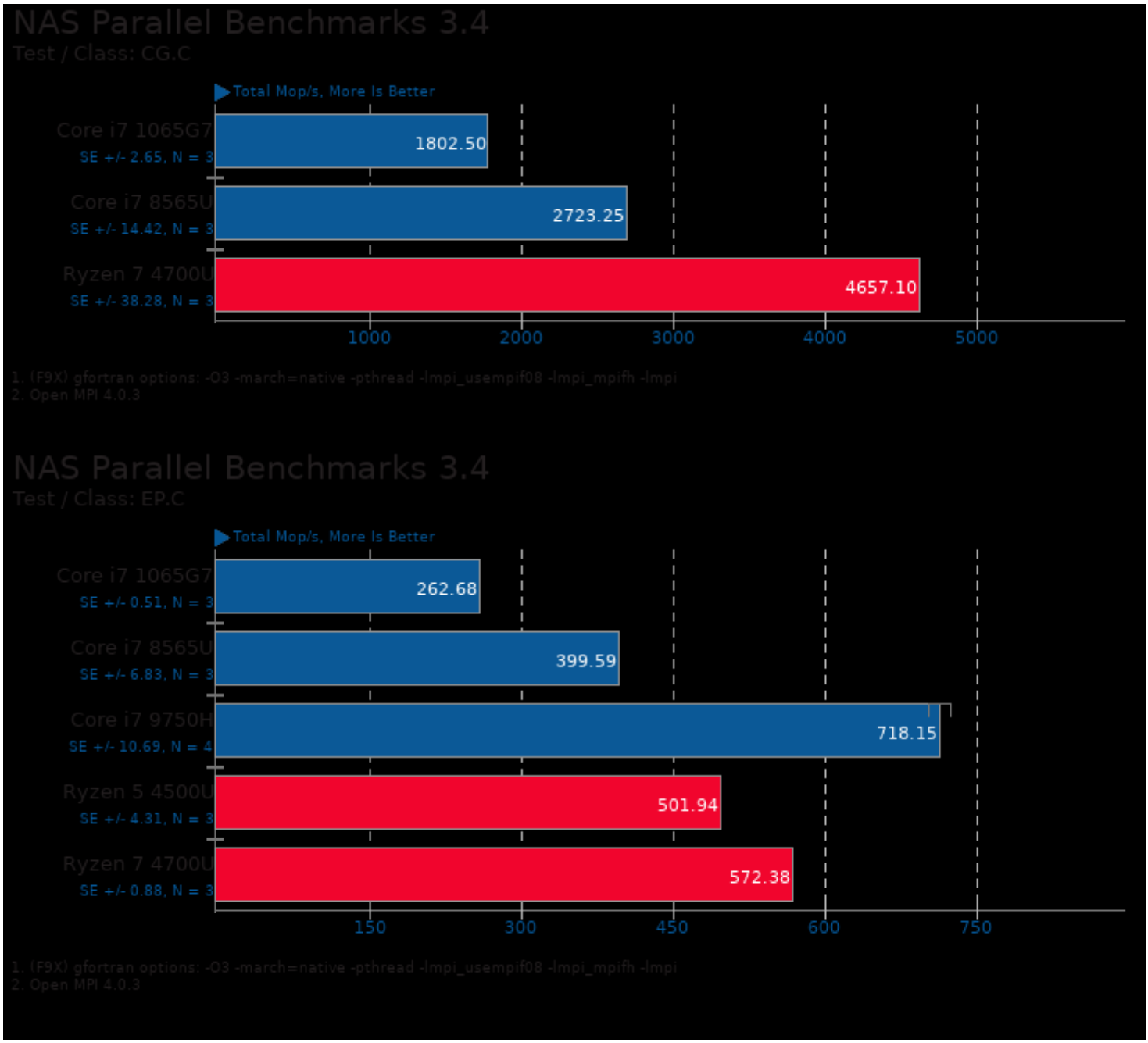
| | | | | | | |
|---|---|---|---|---|---|---|
| **GpuTest - Pixmark Volplosion - 1920 x 1080 - Fullscreen (Points)** | 579 | 379 | **326** | 892 | 1110 | **1138** |
| **Normalized** | 50.88% | 33.3% | 28.65% | 78.38% | 97.54% | 100% |
| **Standard Deviation** | | 0.3% | | | | |
| **Timed MrBayes Analysis - P.P.A (sec)** | 200.633 | 143.982 | 107.994 | **92.193** | 101.989 | **396.471** |
| **Normalized** | 45.95% | 64.03% | 85.37% | 100% | 90.4% | 23.25% |
| **Standard Deviation** | 0.2% | 0.6% | 0.2% | 0.7% | 0.9% | 1.8% |
| **Timed MAFFT Alignment - M.S.A (sec)** | **7.580** | 5.029 | **3.332** | 4.043 | 3.712 | |
| **Normalized** | 43.96% | 66.26% | 100% | 82.41% | 89.76% | |
| **Standard Deviation** | 0.1% | 9.4% | 1.4% | 3.9% | 0.8% | |
| **TTSIOD 3D Renderer - P.R.W.S.S.M (FPS)** | **103.268** | 152.180 | **300.311** | 249.626 | 298.378 | |
| **Normalized** | 34.39% | 50.67% | 100% | 83.12% | 99.36% | |
| **Standard Deviation** | 0.6% | 0.9% | 0.5% | 1.2% | 0.4% | |
| **Himeno Benchmark - P.P.S (MFLOPS)** | 3354 | **3349** | 3804 | 4188 | **4387** | |
| **Normalized** | 76.45% | 76.33% | 86.71% | 95.45% | 100% | |
| **Standard Deviation** | 0.1% | 0.5% | 0.4% | 1.5% | 2.9% | |
| **Timed Apache Compilation - Time To** | **59.656** | 43.204 | **26.736** | 32.372 | 29.035 | |
| **Normalized** | 44.82% | 61.88% | 100% | 82.59% | 92.08% | |
| **Standard Deviation** | 0.1% | 0.3% | 1.4% | 0.3% | 0.1% | |
| **Timed FFmpeg Compilation - Time To** | **301.599** | 201.128 | 102.141 | 117.164 | **99.130** | |
| **Normalized** | 32.87% | 49.29% | 97.05% | 84.61% | 100% | |
| **Standard Deviation** | 0.3% | 0.1% | 1% | 0.9% | 3.1% | |
| **Timed GDB GNU Debugger Compilation - Time To Compile (sec)** | **297.124** | 209.125 | **127.426** | 168.194 | 157.910 | |
| **Normalized** | 42.89% | 60.93% | 100% | 75.76% | 80.7% | |
| **Standard Deviation** | 0.3% | 0.3% | 0.6% | 0.2% | 0.5% | |
| **Timed MPlayer Compilation - Time To** | **218.216** | 139.373 | 70.255 | 83.838 | **69.550** | |
| **Normalized** | 31.87% | 49.9% | 99% | 82.96% | 100% | |
| **Standard Deviation** | 0.1% | 0.1% | 0.9% | 1% | 1.7% | |
| **Timed PHP Compilation - Time To Compile (sec)** | **224.809** | 151.659 | **88.327** | 111.082 | 99.847 | |
| **Normalized** | 39.29% | 58.24% | 100% | 79.52% | 88.46% | |
| **Standard Deviation** | 0.2% | 0.2% | 1% | 0.3% | 0.5% | |
| **Build2 - Time To Compile (sec)** | **582.627** | 371.829 | **190.898** | 235.648 | 199.077 | |
| **Normalized** | 32.77% | 51.34% | 100% | 81.01% | 95.89% | |
| **Standard Deviation** | 0.4% | 0.7% | 0.4% | 0.8% | 0.4% | |
| **C-Ray - Total Time - 4.1.R.P.P (sec)** | **375.368** | 258.121 | 131.504 | 117.206 | 93.195 | **72.582** |
| **Normalized** | 19.34% | 28.12% | 55.19% | 61.93% | 77.88% | 100% |
| **Standard Deviation** | 0.1% | 0.4% | 0.3% | 0.2% | 0.1% | 1.2% |

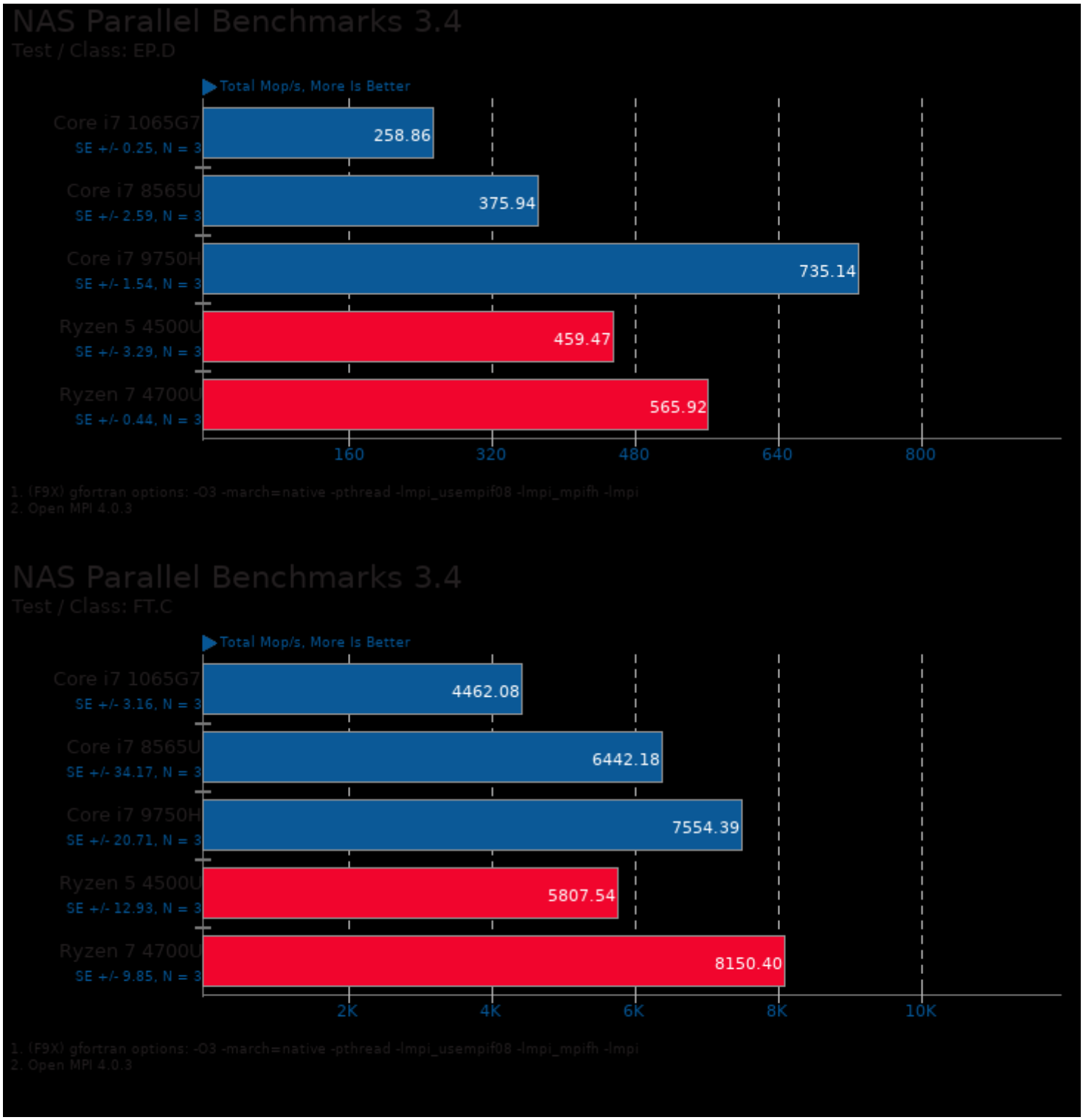
| | | | | | | |
|---|---|---|---|---|---|---|
| **POV-Ray - Trace Time (sec)** | 283.479 | 186.797 | 91.325 | 108.146 | 86.865 | |
| **Normalized** | 30.64% | 46.5% | 95.12% | 80.32% | 100% | |
| **Standard Deviation** | 0.1% | 0.4% | 0.6% | 0.5% | 0.1% | |
| **Smallpt - G.I.R.1.S (sec)** | 55.776 | 38.082 | 19.743 | 24.634 | 19.876 | 16.608 |
| **Normalized** | 29.78% | 43.61% | 84.12% | 67.42% | 83.56% | 100% |
| **Standard Deviation** | 0.3% | 2.2% | 0.3% | 0.4% | 0.4% | 0.1% |
| **GEGL - Crop (sec)** | 11.282 | 9.768 | 8.819 | 8.288 | 8.084 | |
| **Normalized** | 71.65% | 82.76% | 91.67% | 97.54% | 100% | |
| **Standard Deviation** | 0.9% | 2.9% | 0.8% | 1.5% | 0.5% | |
| **GEGL - Scale (sec)** | 9.355 | 7.875 | 6.323 | 5.640 | 5.656 | |
| **Normalized** | 60.29% | 71.62% | 89.2% | 100% | 99.72% | |
| **Standard Deviation** | 0.2% | 2.9% | 1.7% | 0.7% | 0.9% | |
| **GEGL - Cartoon (sec)** | 117.368 | 106.447 | 94.502 | 95.633 | 91.659 | |
| **Normalized** | 78.1% | 86.11% | 96.99% | 95.84% | 100% | |
| **Standard Deviation** | 0.5% | 0.3% | 0.2% | 0.1% | 0.2% | |
| **GEGL - Reflect (sec)** | 38.282 | 34.607 | 31.273 | 32.098 | 31.008 | |
| **Normalized** | 81% | 89.6% | 99.15% | 96.6% | 100% | |
| **Standard Deviation** | 0.4% | 2% | 1.2% | 0.1% | 0.2% | |
| **GEGL - Antialias (sec)** | 52.430 | 47.334 | 39.761 | 41.093 | 39.194 | |
| **Normalized** | 74.75% | 82.8% | 98.57% | 95.38% | 100% | |
| **Standard Deviation** | 0.5% | 1.3% | 0.4% | 0.2% | 0.1% | |
| **GEGL - Tile Glass (sec)** | 40.015 | 35.802 | 29.961 | 32.773 | 31.627 | |
| **Normalized** | 74.87% | 83.69% | 100% | 91.42% | 94.73% | |
| **Standard Deviation** | 0.4% | 2.4% | 0.3% | 0.2% | 0.2% | |
| **GEGL - Wavelet Blur (sec)** | 79.832 | 71.912 | 63.469 | 65.162 | 62.656 | |
| **Normalized** | 78.48% | 87.13% | 98.72% | 96.15% | 100% | |
| **Standard Deviation** | 0.3% | 0.5% | 0.1% | 0.1% | 0.1% | |
| **GEGL - Color Enhance (sec)** | 72.737 | 66.084 | 60.227 | 60.620 | 58.099 | |
| **Normalized** | 79.88% | 87.92% | 96.47% | 95.84% | 100% | |
| **Standard Deviation** | 0.1% | 0.4% | 0.6% | 0.1% | 0.1% | |
| **GEGL - Rotate 90 Degrees (sec)** | 56.431 | 49.293 | 41.100 | 43.034 | 41.057 | |
| **Normalized** | 72.76% | 83.29% | 99.9% | 95.41% | 100% | |
| **Standard Deviation** | 0.1% | 0.7% | 0.3% | 0.1% | 0.2% | |
| **GIMP - resize (sec)** | 15.247 | 11.549 | 8.485 | 10.095 | 9.983 | |
| **Normalized** | 55.65% | 73.47% | 100% | 84.05% | 84.99% | |
| **Standard Deviation** | 0.4% | 2.9% | 0.6% | 1.3% | 0.7% | |
| **GIMP - rotate (sec)** | 13.427 | 12.795 | 11.994 | 13.250 | 13.562 | |
| **Normalized** | 89.33% | 93.74% | 100% | 90.52% | 88.44% | |
| **Standard Deviation** | 0.6% | 0.6% | 0.5% | 0.4% | 0.1% | |
| **GIMP - auto-levels (sec)** | 16.772 | 13.736 | 12.411 | 13.650 | 13.797 | |
| **Normalized** | 74% | 90.35% | 100% | 90.92% | 89.95% | |
| **Standard Deviation** | 0.8% | 2.8% | 0.1% | 0.1% | 0.4% | |
| **GIMP - unsharp-mask** | 21.009 | 17.514 | 14.993 | 15.727 | 16.157 | |
| **Normalized** | 71.36% | 85.61% | 100% | 95.33% | 92.8% | |
| **Standard Deviation** | 0.4% | 2.8% | 0.3% | 0.1% | 0.1% | |
| **Inkscape - SVG Files To PNG (sec)** | 27.483 | 24.922 | 24.545 | 27.553 | 27.264 | |
| **Normalized** | 89.31% | 98.49% | 100% | 89.08% | 90.03% | |
| **Standard Deviation** | 0.3% | 0.2% | 1.2% | 0.5% | 0.1% | |
| **LibreOffice - 2.D.T.P (sec)** | 7.706 | 7.959 | 7.364 | 7.707 | 7.499 | |
| **Normalized** | 95.56% | 92.52% | 100% | 95.55% | 98.2% | |
| **Standard Deviation** | 2.8% | 9.9% | 2.9% | 2.2% | 3.2% | |

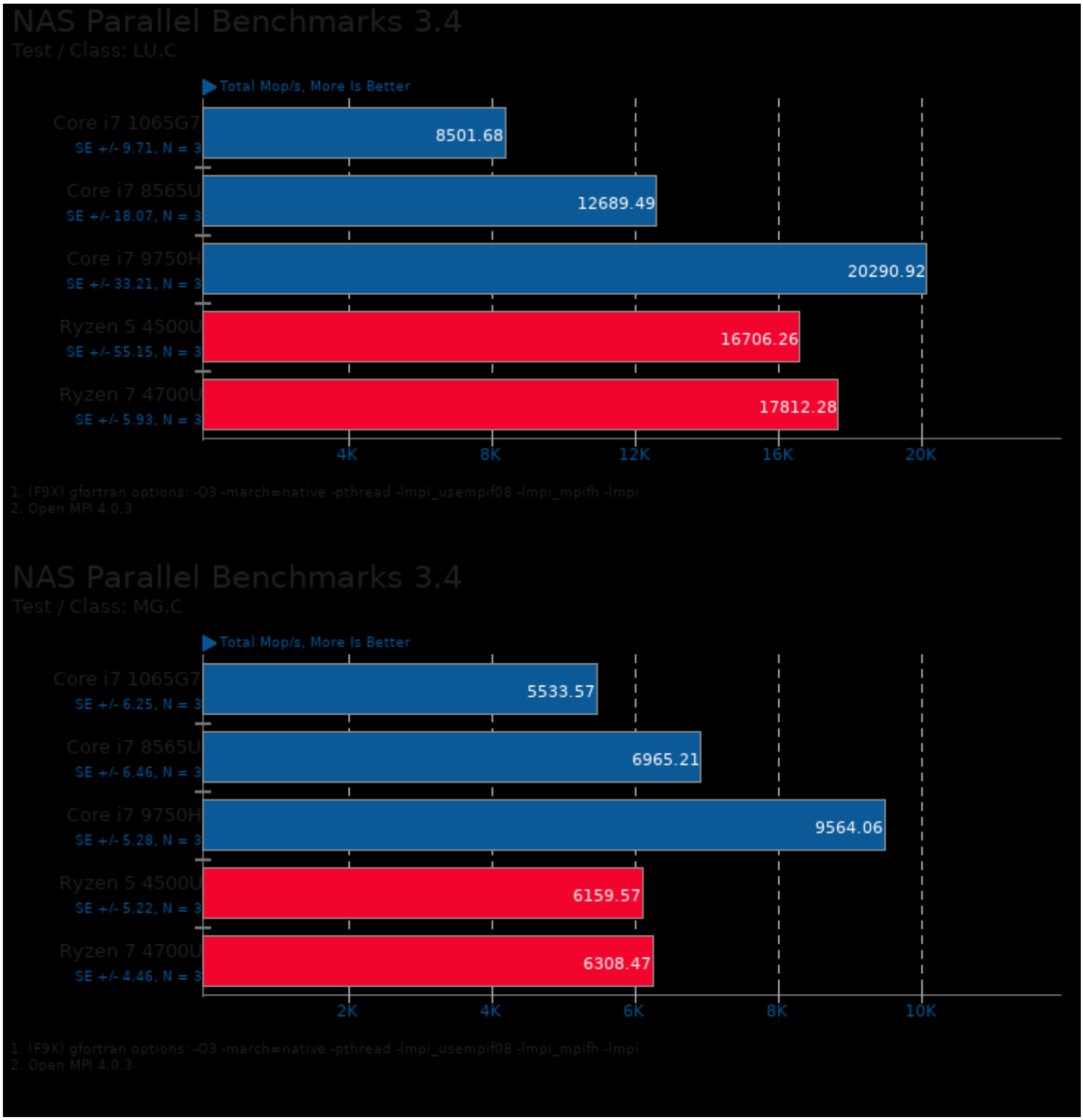
| | | | | | | |
|---|---|---|---|---|---|---|
| **Selenium - ARES-6 - Firefox (ms)** | 53.39 | 57.54 | 53.91 | 55.89 | 54.97 | 37.86 |
| **Normalized** | 70.91% | 65.8% | 70.23% | 67.74% | 68.87% | 100% |
| **Standard Deviation** | 0.9% | 2.3% | 1.3% | 1.6% | 0.9% | 1.3% |
| **Selenium - Kraken - Firefox (ms)** | 1099 | 968.4 | 929.6 | 929.0 | 921.1 | 742.2 |
| **Normalized** | 67.55% | 76.64% | 79.84% | 79.89% | 80.58% | 100% |
| **Standard Deviation** | 0.4% | 0.6% | 0.2% | 1.1% | 0.3% | 1.6% |
| **Selenium - Octane - Firefox (Geometric Mean)** | 26304 | 28979 | 30688 | 26889 | 27799 | 40488 |
| **Normalized** | 64.97% | 71.57% | 75.8% | 66.41% | 68.66% | 100% |
| **Standard Deviation** | 1.4% | 0.7% | 1% | 0.1% | 1% | 0.3% |
| **Selenium - WebXPRT - Firefox (Score)** | 225 | 194 | 209 | 203 | 208 | 217 |
| **Normalized** | 100% | 86.22% | 92.89% | 90.22% | 92.44% | 96.44% |
| **Standard Deviation** | 1% | 0.5% | 0.6% | | | 2.2% |
| **Selenium - Basemark - Firefox (Overall Score)** | 492.10 | 454.01 | 455.14 | 476.41 | 475.73 | 606.67 |
| **Normalized** | 81.11% | 74.84% | 75.02% | 78.53% | 78.42% | 100% |
| **Standard Deviation** | 2% | 1.5% | 7.2% | 2.9% | 1.5% | 4.9% |
| **Selenium - Jetstream - Firefox (Score)** | 166.43 | 174.30 | 184.19 | 167.86 | 172.67 | 235.01 |
| **Normalized** | 70.82% | 74.17% | 78.38% | 71.43% | 73.47% | 100% |
| **Standard Deviation** | 0.4% | 0.5% | 0.5% | 0.3% | 0.4% | 1.7% |
| **Selenium - CanvasMark - Firefox (Score)** | 11304 | 10014 | 10790 | 9800 | 10606 | 8948 |
| **Normalized** | 100% | 88.59% | 95.45% | 86.69% | 93.83% | 79.16% |
| **Standard Deviation** | 16.4% | 1.6% | 0.5% | 4.6% | 22.4% | 6.7% |
| **Selenium - StyleBench - Firefox (Runs / Minute)** | 65.3 | 73.7 | 91.1 | 59.0 | 63.0 | 74.7 |
| **Normalized** | 71.68% | 80.9% | 100% | 64.76% | 69.15% | 82% |
| **Standard Deviation** | 0.4% | 0.1% | 0.3% | 1.1% | 0.6% | 0.6% |
| **Selenium - Jetstream 2 - Firefox (Score)** | 77.879 | 70.860 | 80.683 | 75.541 | 75.298 | 106.473 |
| **Normalized** | 73.14% | 66.55% | 75.78% | 70.95% | 70.72% | 100% |
| **Standard Deviation** | 2.4% | 2.4% | 1.2% | 0.3% | 2.8% | 2.6% |
| **Selenium - Maze Solver - Firefox (sec)** | 5.4 | 5.6 | 5.5 | 6.2 | 6.2 | 15 |
| **Normalized** | 100% | 96.43% | 98.18% | 87.1% | 87.1% | 36% |
| **Standard Deviation** | 1.1% | 1% | 1.1% | 0.9% | 0.9% | |
| **Selenium - Speedometer - Firefox (Runs/min)** | 69.4 | 77.1 | 81.6 | 63.23 | 63.7 | 94.6 |
| **Normalized** | 73.36% | 81.5% | 86.26% | 66.84% | 67.34% | 100% |
| **Standard Deviation** | 0.5% | 0.3% | 0.2% | 0.5% | 0.2% | 2.4% |
| **Selenium - PSPDFKit WASM - Firefox (Score)** | 2321 | 1767 | 1490 | 1755 | 1719 | 1283 |
| **Normalized** | 55.28% | 72.61% | 86.11% | 73.11% | 74.64% | 100% |
| **Standard Deviation** | 1.2% | 5% | 0.5% | 1.2% | 1.6% | 1.1% |
| **Selenium - W.i - Firefox (ms)** | 30.4 | 32.7 | 31.4 | 28.8 | 27.8 | 26.5 |
| **Normalized** | 87.17% | 81.04% | 84.39% | 92.01% | 95.32% | 100% |
| **Standard Deviation** | 2.2% | 0.5% | 0.2% | 0.4% | 0.2% | 0.6% |

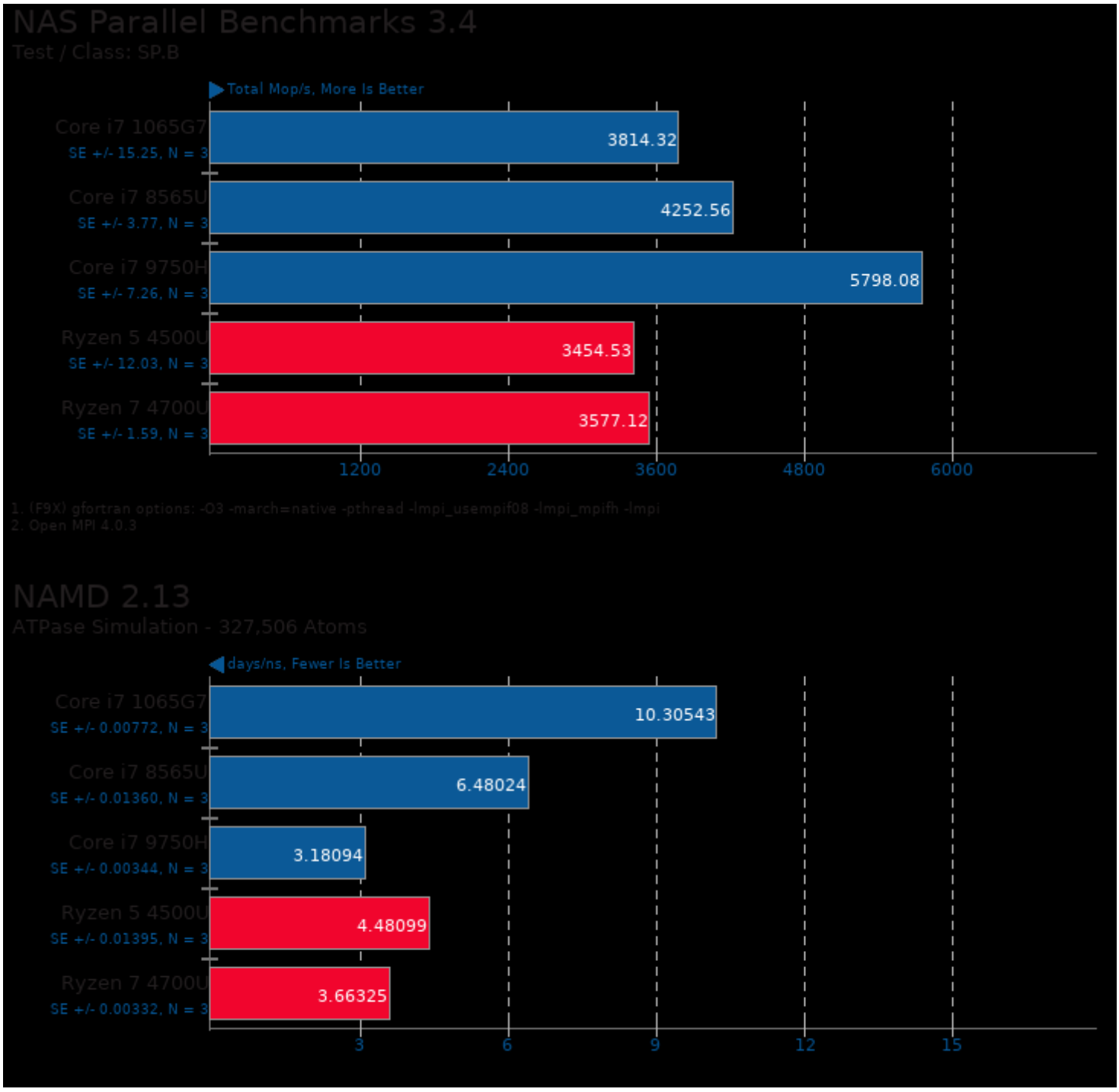
| | | | | | | |
|---|---|---|---|---|---|---|
| **Selenium - W.c - Firefox (ms)** | 492.8 | **524.6** | 504.6 | 392.8 | 376.1 | **365.2** |
| **Normalized** | 74.11% | 69.61% | 72.37% | 92.97% | 97.1% | 100% |
| **Standard Deviation** | 0.7% | 0.2% | 1.6% | 0.2% | 0% | 0.1% |
| **GIMP - resize (sec)** | | | | | | 18.616 |
| **Standard Deviation** | | | | | | 2.1% |
| **GIMP - rotate (sec)** | | | | | | 27.631 |
| **Standard Deviation** | | | | | | 0.3% |
| **GIMP - auto-levels (sec)** | | | | | | 43.828 |
| **Standard Deviation** | | | | | | 1.2% |
| **GIMP - unsharp-mask** | | | | | | 59.536 |
| **Standard Deviation** | | | | | | 2.9% |

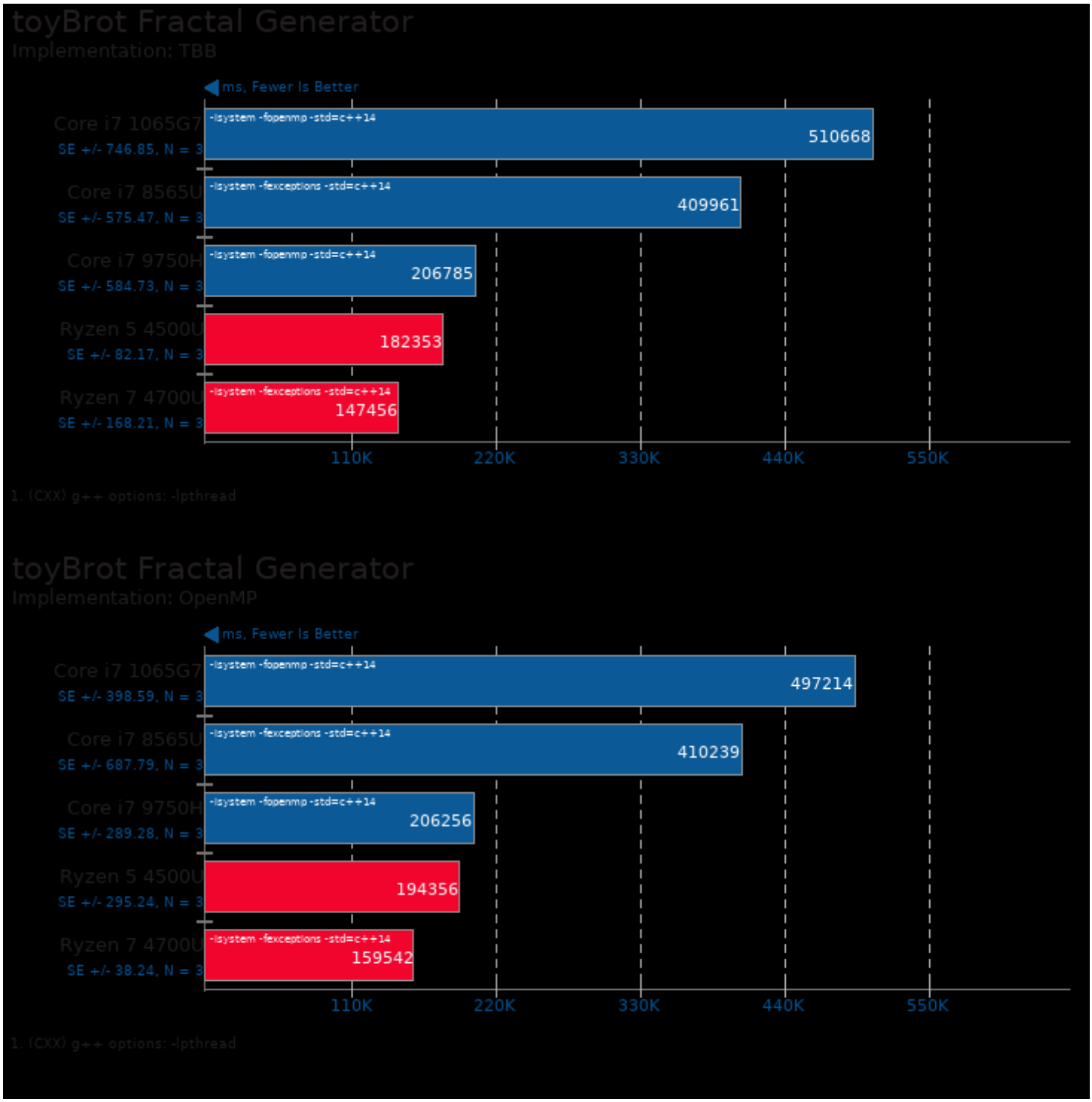

C-Blosc 2.0 Beta 5
Compressor: blosclz
MB/s, More Is Better
Core i7 1065G7
SE +/- 10.46, N = 3
6402.4
Core i7 8565U
SE +/- 21.79, N = 3
6826.1
Core i7 9750H
SE +/- 72.05, N = 3
9443.7
Ryzen 5 4500U
SE +/- 3.59, N = 3
4981.0
Ryzen 7 4700U
SE +/- 11.57, N = 3
4996.7
2K
4K
6K
8K
10K
1. (CXX) g++ options: -rdynamic
NAS Parallel Benchmarks 3.4
Test / Class: BT.C
Total Mop/s, More Is Better
Core i7 1065G7
SE +/- 2.56, N = 3
7412.23
Core i7 8565U
SE +/- 23.14, N = 3
11949.98
Core i7 9750H
SE +/- 12.87, N = 3
15244.06
Ryzen 5 4500U
SE +/- 153.43, N = 3
13866.87
Ryzen 7 4700U
SE +/- 146.03, N = 6
12813.51
3K
6K
9K
12K
15K
1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. Open MPI 4.0.3

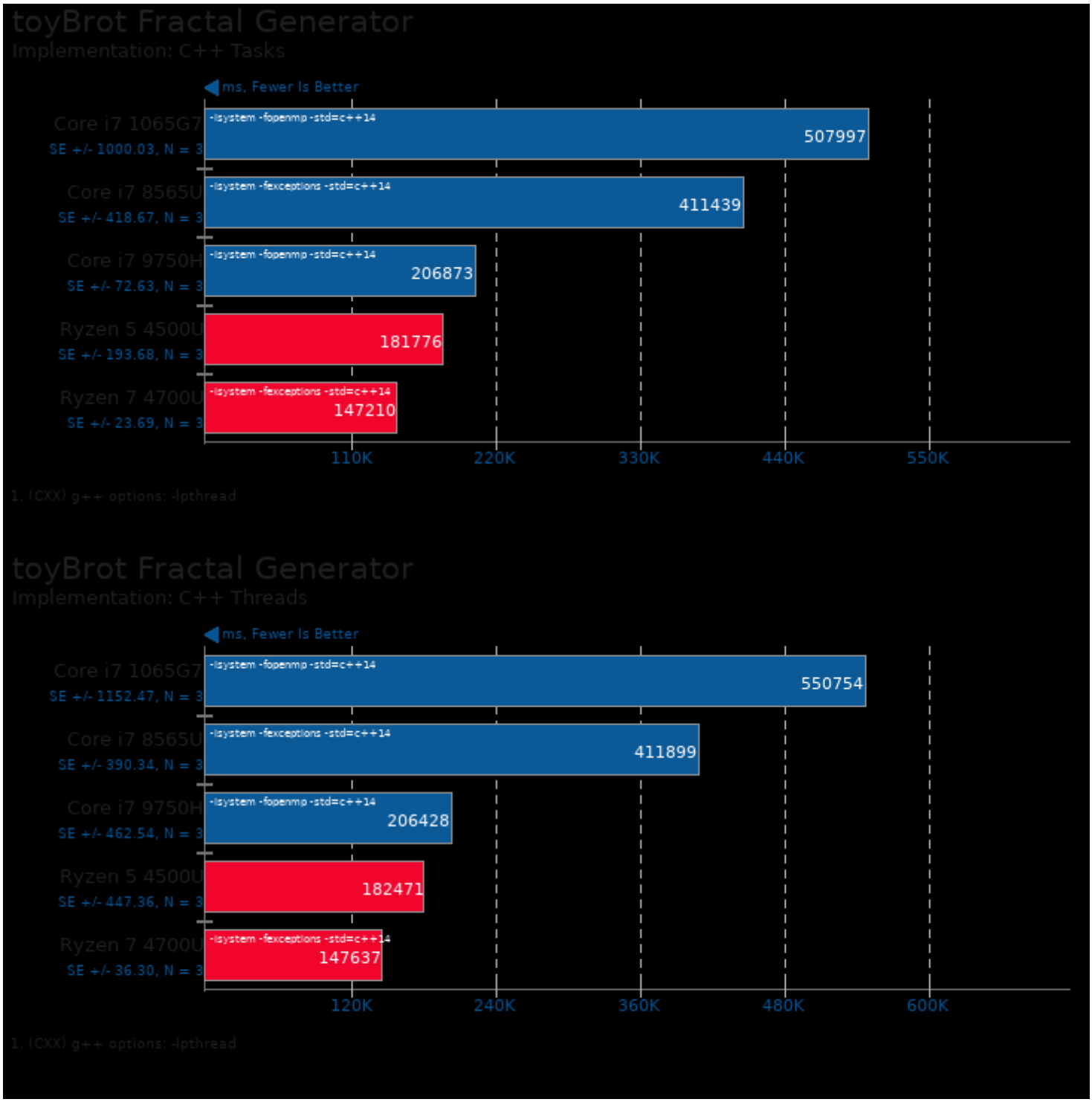

NAS Parallel Benchmarks 3.4
Test / Class: CG.C
Total Mop/s, More Is Better
Core i7 1065G7
SE +/- 2.65, N = 3
1802.50
Core i7 8565U
SE +/- 14.42, N = 3
2723.25
Ryzen 7 4700U
SE +/- 38.28, N = 3
4657.10
1000
2000
3000
4000
5000
1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. Open MPI 4.0.3
NAS Parallel Benchmarks 3.4
Test / Class: EP.C
Total Mop/s, More Is Better
Core i7 1065G7
SE +/- 0.51, N = 3
262.68
Core i7 8565U
SE +/- 6.83, N = 3
399.59
Core i7 9750H
SE +/- 10.69, N = 4
718.15
Ryzen 5 4500U
SE +/- 4.31, N = 3
501.94
Ryzen 7 4700U
SE +/- 0.88, N = 3
572.38
150
300
450
600
750
1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. Open MPI 4.0.3

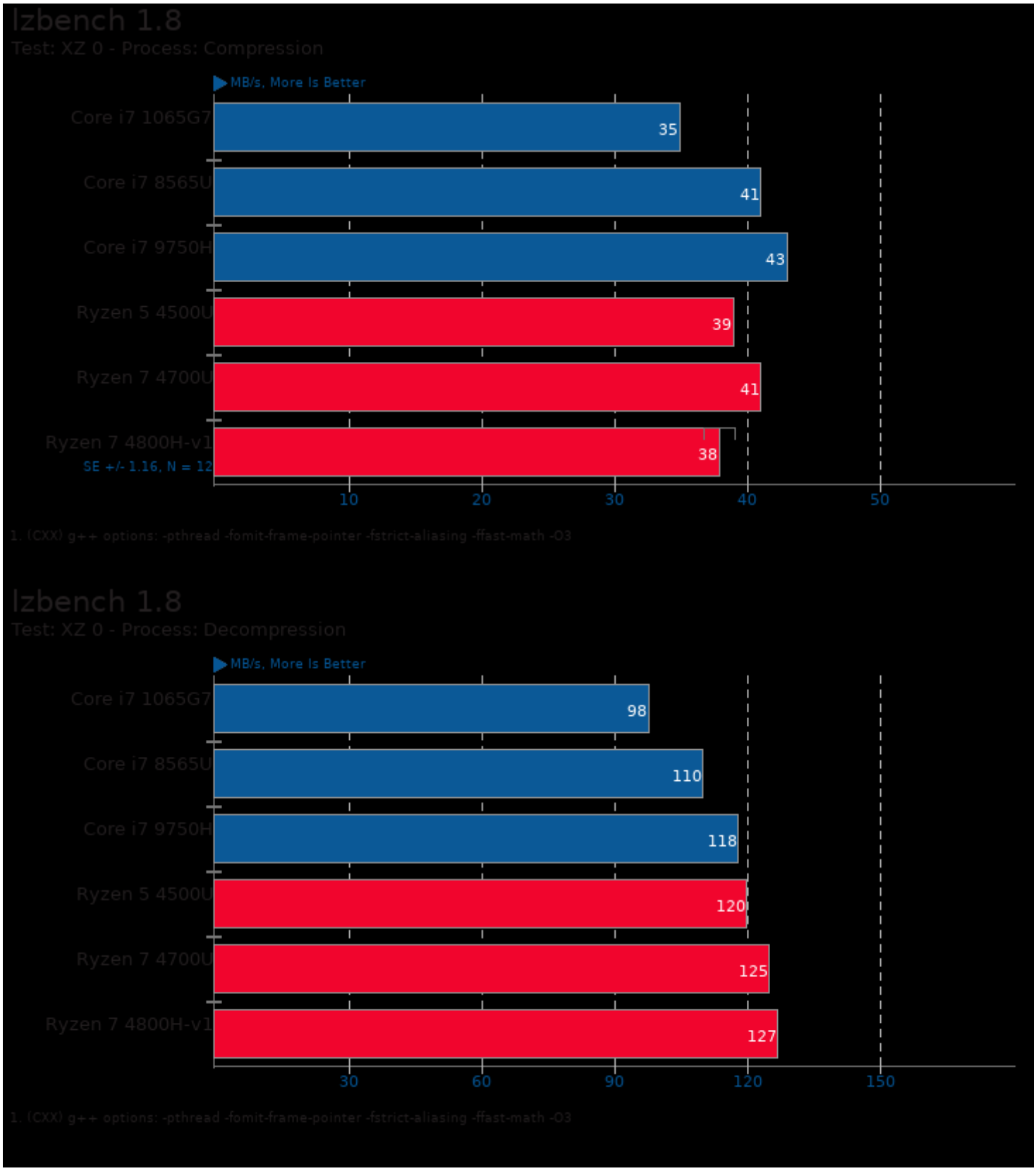

NAS Parallel Benchmarks 3.4
Test / Class: EP.D
Total Mop/s, More Is Better
Core i7 1065G7
SE +/- 0.25, N = 3
258.86
Core i7 8565U
SE +/- 2.59, N = 3
375.94
Core i7 9750H
SE +/- 1.54, N = 3
735.14
Ryzen 5 4500U
SE +/- 3.29, N = 3
459.47
Ryzen 7 4700U
SE +/- 0.44, N = 3
565.92
160
320
480
640
800
1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. Open MPI 4.0.3
NAS Parallel Benchmarks 3.4
Test / Class: FT.C
Total Mop/s, More Is Better
Core i7 1065G7
SE +/- 3.16, N = 3
4462.08
Core i7 8565U
SE +/- 34.17, N = 3
6442.18
Core i7 9750H
SE +/- 20.71, N = 3
7554.39
Ryzen 5 4500U
SE +/- 12.93, N = 3
5807.54
Ryzen 7 4700U
SE +/- 9.85, N = 3
8150.40
2K
4K
6K
8K
10K
1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. Open MPI 4.0.3

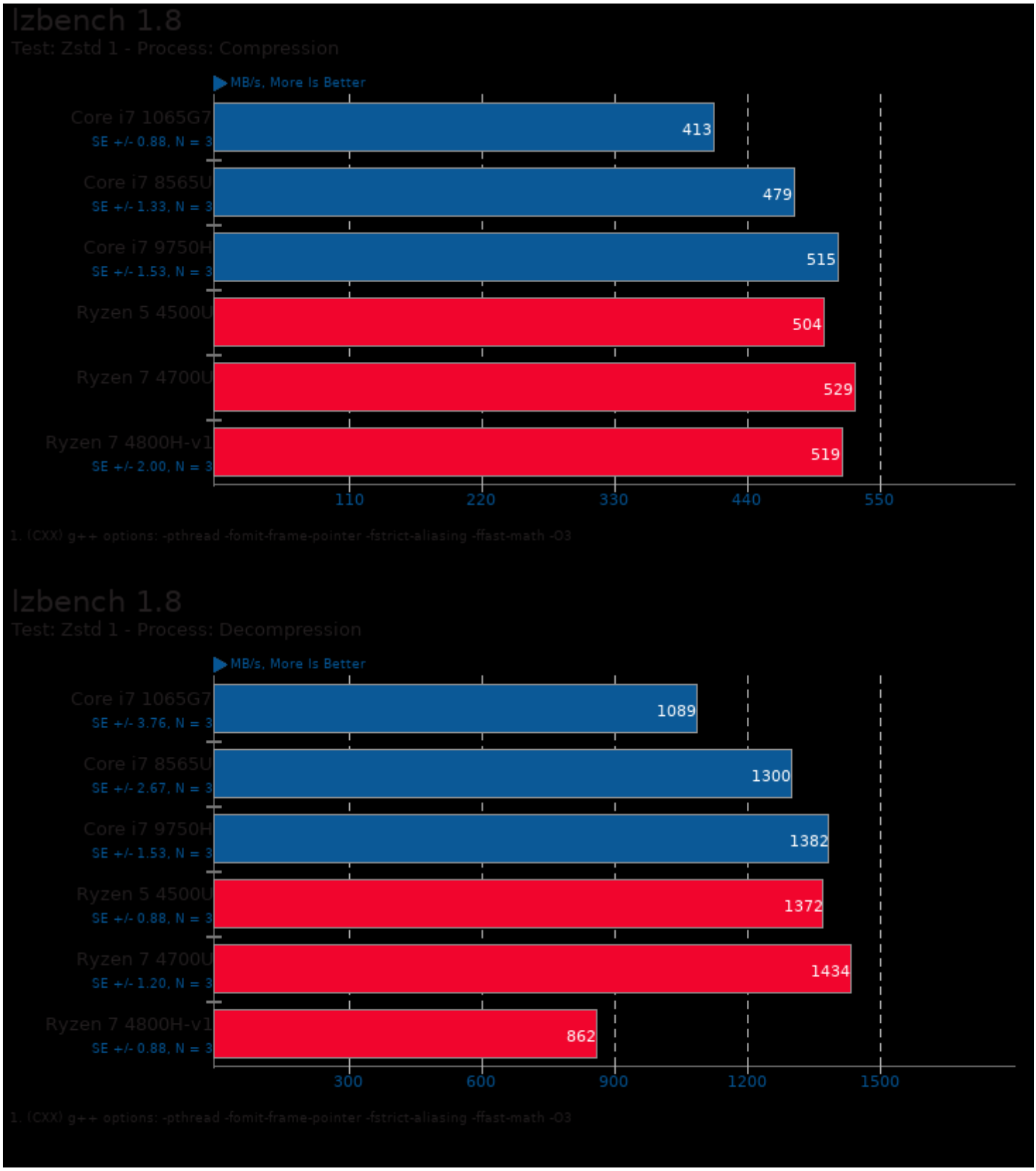

NAS Parallel Benchmarks 3.4
Test / Class: LU.C
Total Mop/s, More Is Better
Core i7 1065G7
SE +/- 9.71, N = 3
8501.68
Core i7 8565U
SE +/- 18.07, N = 3
12689.49
Core i7 9750H
SE +/- 33.21, N = 3
20290.92
Ryzen 5 4500U
SE +/- 55.15, N = 3
16706.26
Ryzen 7 4700U
SE +/- 5.93, N = 3
17812.28
4K
8K
12K
16K
20K
1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. Open MPI 4.0.3
NAS Parallel Benchmarks 3.4
Test / Class: MG.C
Total Mop/s, More Is Better
Core i7 1065G7
SE +/- 6.25, N = 3
5533.57
Core i7 8565U
SE +/- 6.46, N = 3
6965.21
Core i7 9750H
SE +/- 5.28, N = 3
9564.06
Ryzen 5 4500U
SE +/- 5.22, N = 3
6159.57
Ryzen 7 4700U
SE +/- 4.46, N = 3
6308.47
2K
4K
6K
8K
10K
1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. Open MPI 4.0.3

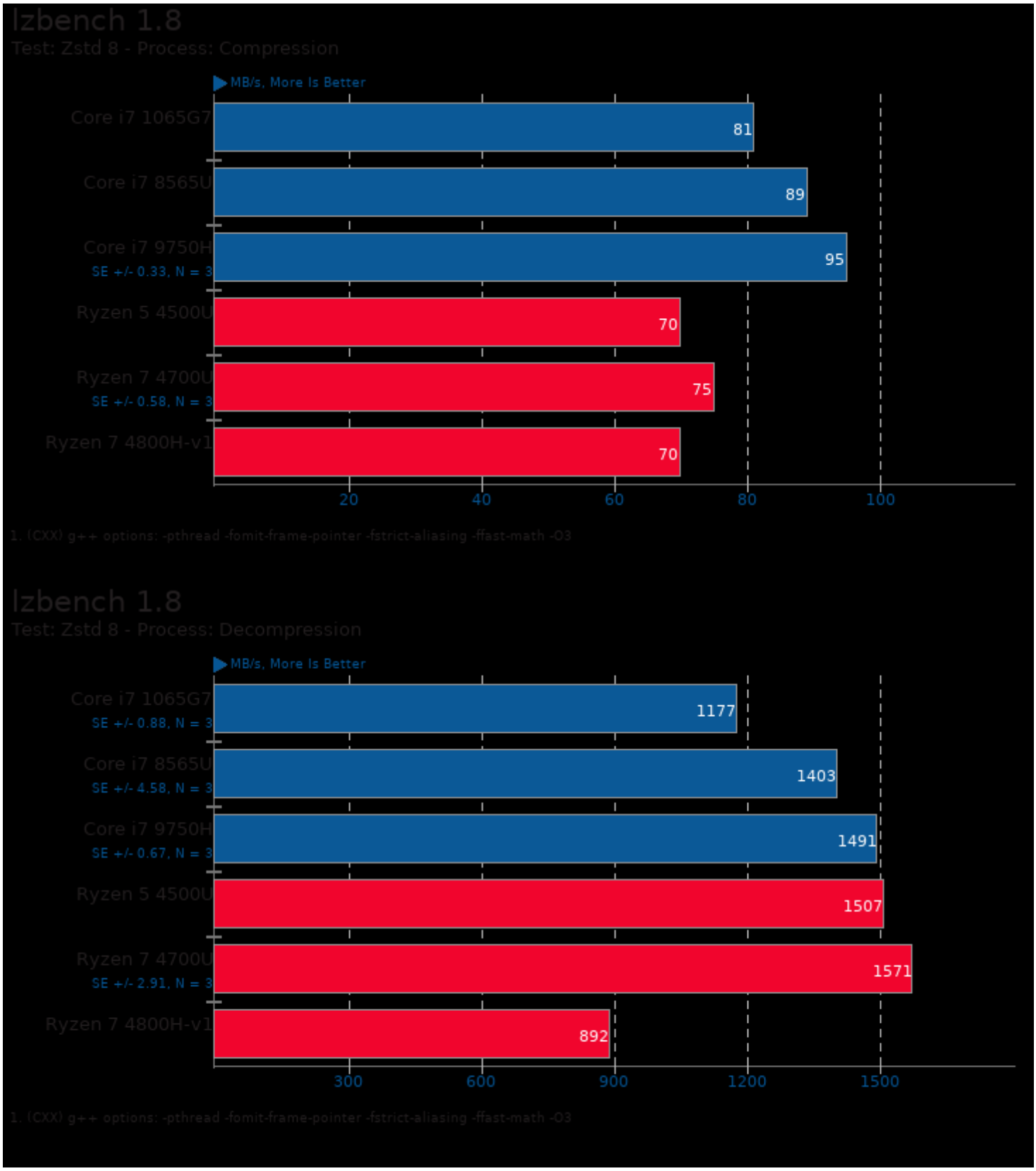

NAS Parallel Benchmarks 3.4
Test / Class: SP.B
Total Mop/s, More Is Better
Core i7 1065G7
SE +/- 15.25, N = 3
3814.32
Core i7 8565U
SE +/- 3.77, N = 3
4252.56
Core i7 9750H
SE +/- 7.26, N = 3
5798.08
Ryzen 5 4500U
SE +/- 12.03, N = 3
3454.53
Ryzen 7 4700U
SE +/- 1.59, N = 3
3577.12
1200
2400
3600
4800
6000
1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. Open MPI 4.0.3
NAMD 2.13
ATPase Simulation - 327,506 Atoms
days/ns, Fewer Is Better
Core i7 1065G7
SE +/- 0.00772, N = 3
10.30543
Core i7 8565U
SE +/- 0.01360, N = 3
6.48024
Core i7 9750H
SE +/- 0.00344, N = 3
3.18094
Ryzen 5 4500U
SE +/- 0.01395, N = 3
4.48099
Ryzen 7 4700U
SE +/- 0.00332, N = 3
3.66325
3
6
9
12
15

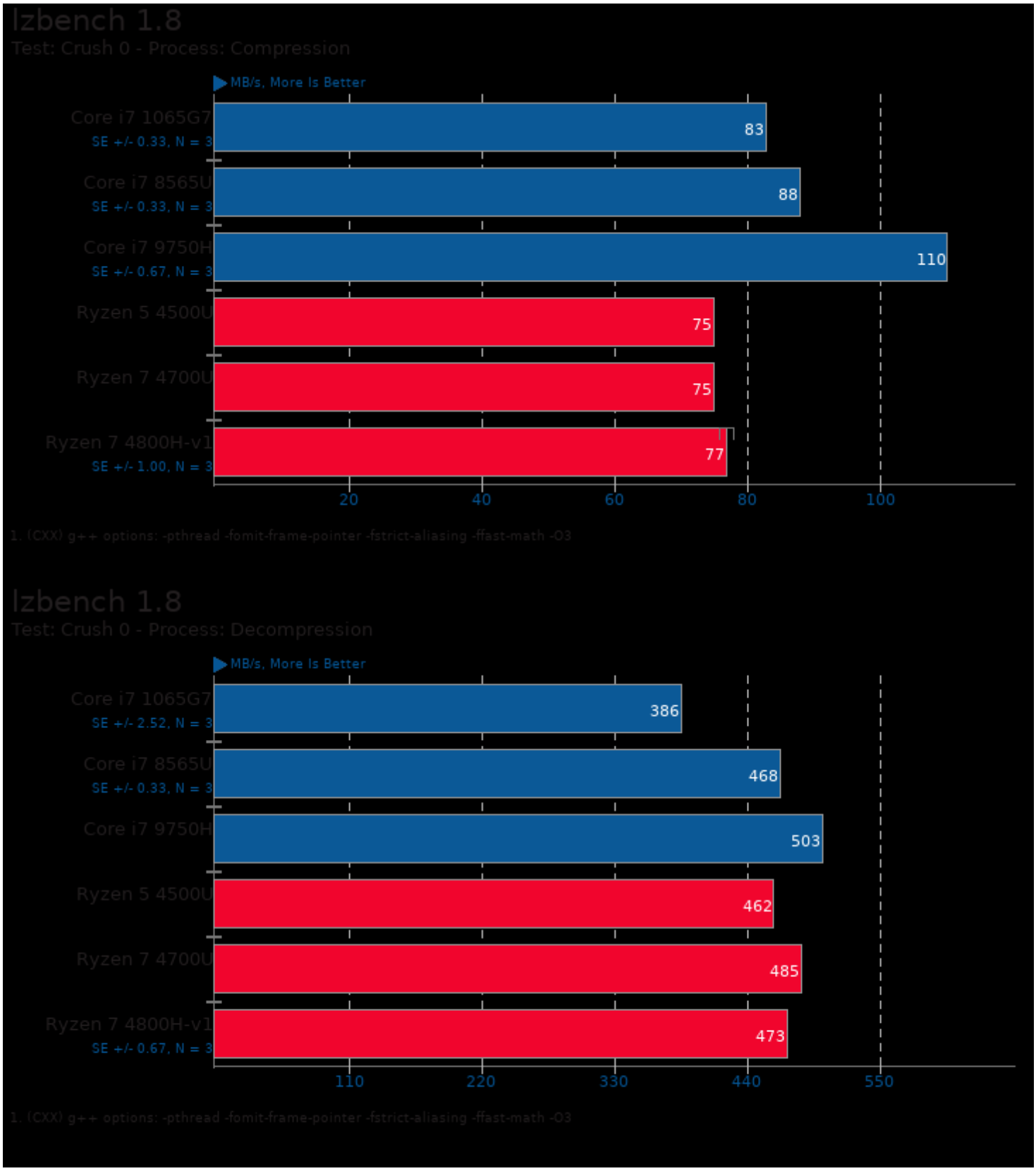

toyBrot Fractal Generator
Implementation: TBB
ms, Fewer Is Better
Core i7 1065G7
SE +/- 746.85, N = 3
-lsystem -fopenmp -std=c++14
510668
Core i7 8565U
SE +/- 575.47, N = 3
-lsystem -fexceptions -std=c++14
409961
Core i7 9750H
SE +/- 584.73, N = 3
-lsystem -fopenmp -std=c++14
206785
Ryzen 5 4500U
SE +/- 82.17, N = 3
182353
Ryzen 7 4700U
SE +/- 168.21, N = 3
-lsystem -fexceptions -std=c++14
147456
110K
220K
330K
440K
550K
1. (CXX) g++ options: -lpthread
toyBrot Fractal Generator
Implementation: OpenMP
ms, Fewer Is Better
Core i7 1065G7
SE +/- 398.59, N = 3
-lsystem -fopenmp -std=c++14
497214
Core i7 8565U
SE +/- 687.79, N = 3
-lsystem -fexceptions -std=c++14
410239
Core i7 9750H
SE +/- 289.28, N = 3
-lsystem -fopenmp -std=c++14
206256
Ryzen 5 4500U
SE +/- 295.24, N = 3
194356
Ryzen 7 4700U
SE +/- 38.24, N = 3
-lsystem -fexceptions -std=c++14
159542
110K
220K
330K
440K
550K
1. (CXX) g++ options: -lpthread

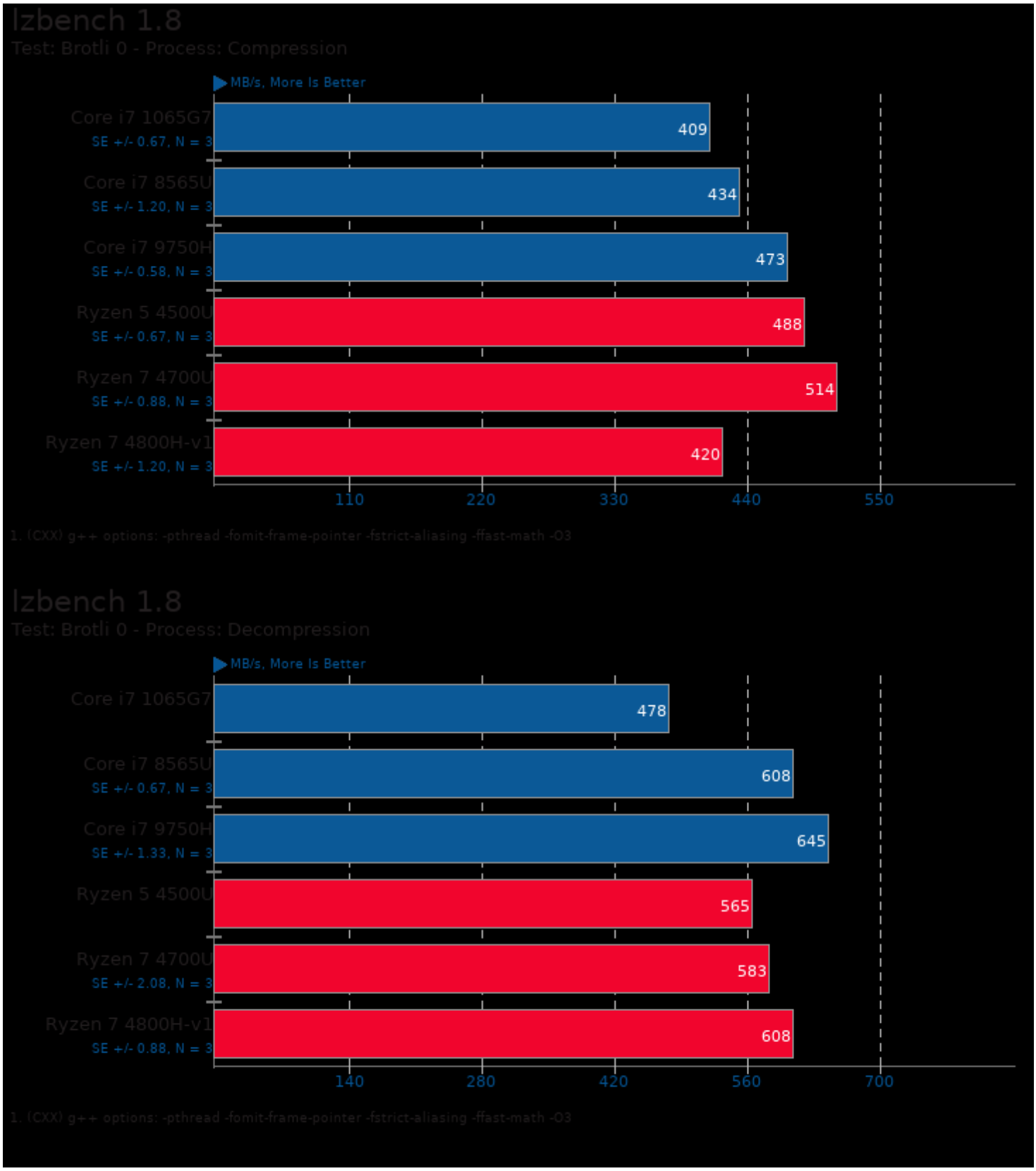

toyBrot Fractal Generator
Implementation: C++ Tasks
ms, Fewer Is Better
Core i7 1065G7
SE +/- 1000.03, N = 3
-lsystem -fopenmp -std=c++14
507997
Core i7 8565U
SE +/- 418.67, N = 3
-lsystem -fexceptions -std=c++14
411439
Core i7 9750H
SE +/- 72.63, N = 3
-lsystem -fopenmp -std=c++14
206873
Ryzen 5 4500U
SE +/- 193.68, N = 3
181776
Ryzen 7 4700U
SE +/- 23.69, N = 3
-lsystem -fexceptions -std=c++14
147210
110K
220K
330K
440K
550K
1. (CXX) g++ options: -lpthread
toyBrot Fractal Generator
Implementation: C++ Threads
ms, Fewer Is Better
Core i7 1065G7
SE +/- 1152.47, N = 3
-lsystem -fopenmp -std=c++14
550754
Core i7 8565U
SE +/- 390.34, N = 3
-lsystem -fexceptions -std=c++14
411899
Core i7 9750H
SE +/- 462.54, N = 3
-lsystem -fopenmp -std=c++14
206428
Ryzen 5 4500U
SE +/- 447.36, N = 3
182471
Ryzen 7 4700U
SE +/- 36.30, N = 3
-lsystem -fexceptions -std=c++14
147637
120K
240K
360K
480K
600K
1. (CXX) g++ options: -lpthread

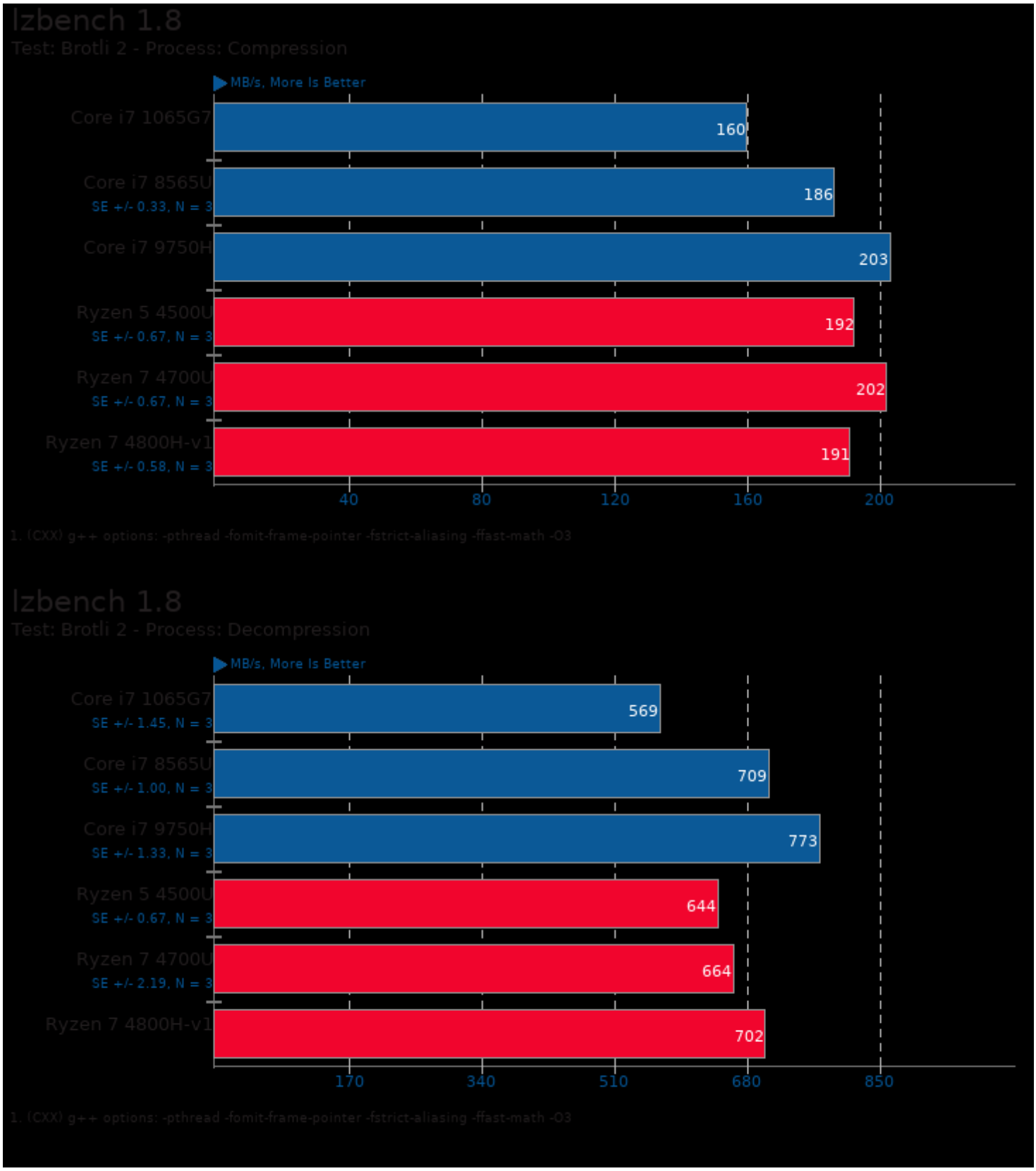

lzbench 1.8
Test: XZ 0 - Process: Compression
MB/s, More Is Better
Core i7 1065G7
35
Core i7 8565U
41
Core i7 9750H
43
Ryzen 5 4500U
39
Ryzen 7 4700U
41
Ryzen 7 4800H-v1
38
SE +/- 1.16, N = 12
10
20
30
40
50
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3
lzbench 1.8
Test: XZ 0 - Process: Decompression
MB/s, More Is Better
Core i7 1065G7
98
Core i7 8565U
110
Core i7 9750H
118
Ryzen 5 4500U
120
Ryzen 7 4700U
125
Ryzen 7 4800H-v1
127
30
60
90
120
150
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

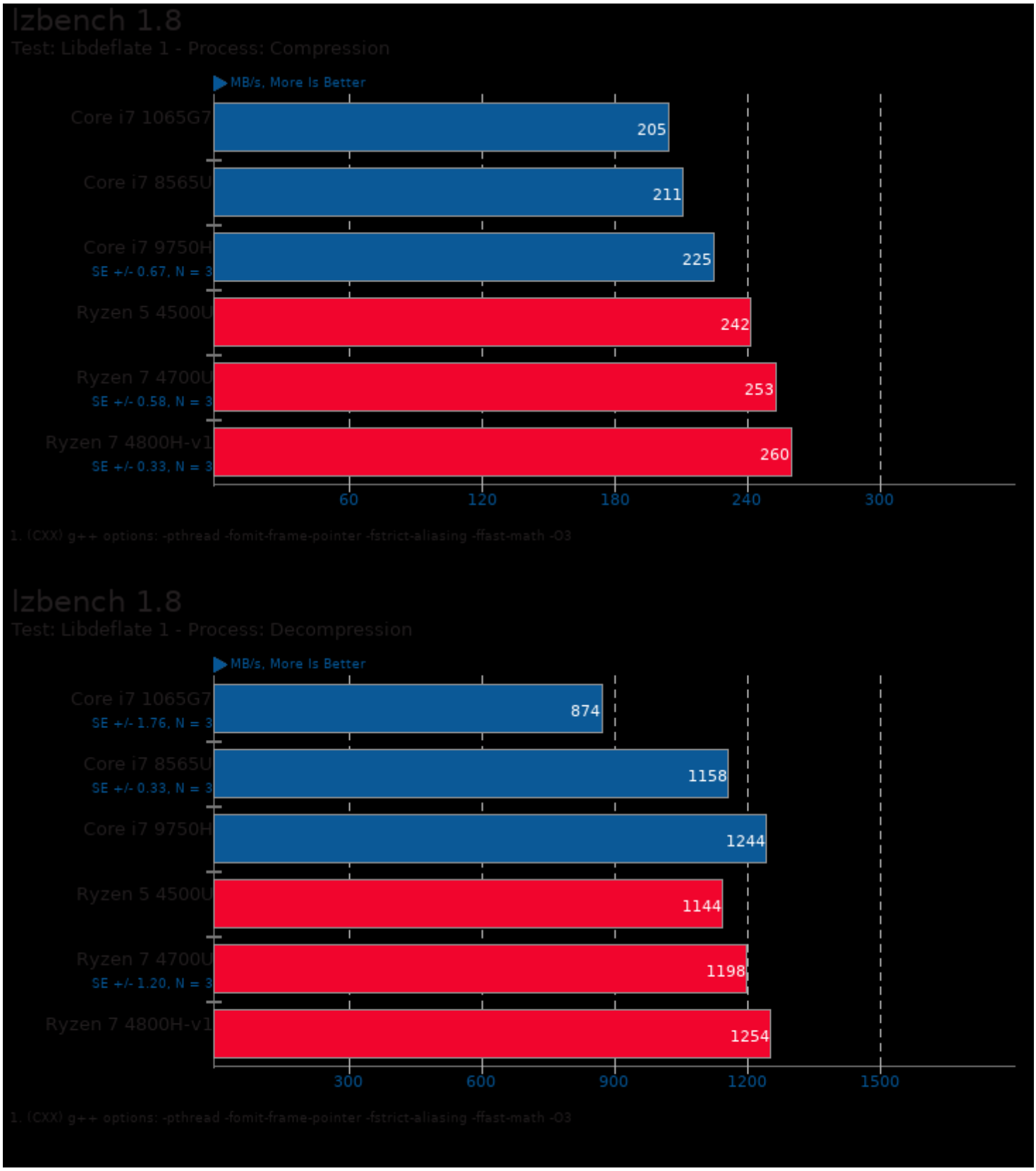

lzbench 1.8
Test: Zstd 1 - Process: Compression
MB/s, More Is Better
Core i7 1065G7
SE +/- 0.88, N = 3
413
Core i7 8565U
SE +/- 1.33, N = 3
479
Core i7 9750H
SE +/- 1.53, N = 3
515
Ryzen 5 4500U
504
Ryzen 7 4700U
529
Ryzen 7 4800H-v1
SE +/- 2.00, N = 3
519
110
220
330
440
550
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3
lzbench 1.8
Test: Zstd 1 - Process: Decompression
MB/s, More Is Better
Core i7 1065G7
SE +/- 3.76, N = 3
1089
Core i7 8565U
SE +/- 2.67, N = 3
1300
Core i7 9750H
SE +/- 1.53, N = 3
1382
Ryzen 5 4500U
SE +/- 0.88, N = 3
1372
Ryzen 7 4700U
SE +/- 1.20, N = 3
1434
Ryzen 7 4800H-v1
SE +/- 0.88, N = 3
862
300
600
900
1200
1500
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

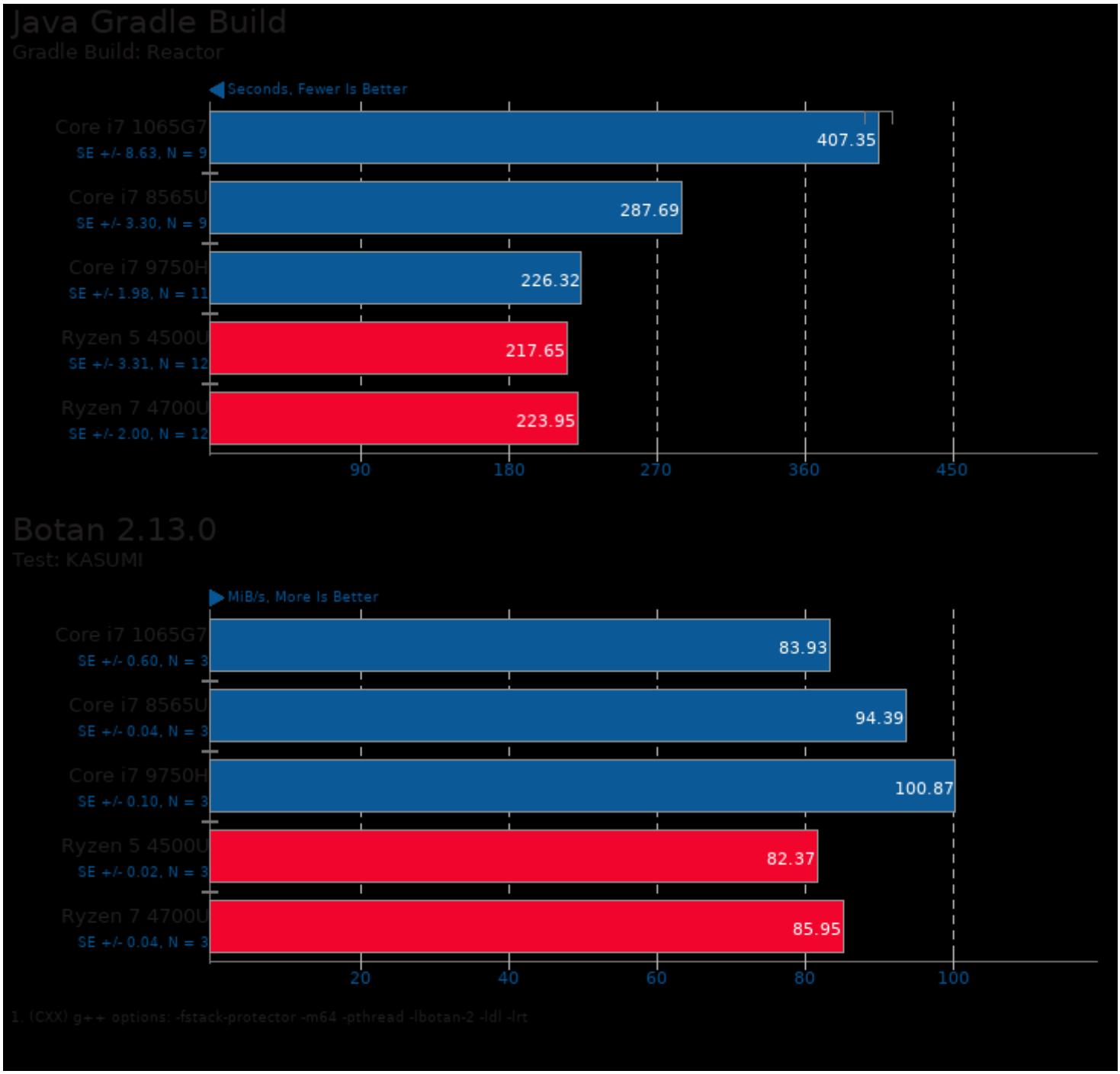

lzbench 1.8
Test: Zstd 8 - Process: Compression
MB/s, More Is Better
Core i7 1065G7
81
Core i7 8565U
89
Core i7 9750H
SE +/- 0.33, N = 3
95
Ryzen 5 4500U
70
Ryzen 7 4700U
SE +/- 0.58, N = 3
75
Ryzen 7 4800H-v1
70
20
40
60
80
100
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3
lzbench 1.8
Test: Zstd 8 - Process: Decompression
MB/s, More Is Better
Core i7 1065G7
SE +/- 0.88, N = 3
1177
Core i7 8565U
SE +/- 4.58, N = 3
1403
Core i7 9750H
SE +/- 0.67, N = 3
1491
Ryzen 5 4500U
1507
Ryzen 7 4700U
SE +/- 2.91, N = 3
1571
Ryzen 7 4800H-v1
892
300
600
900
1200
1500
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

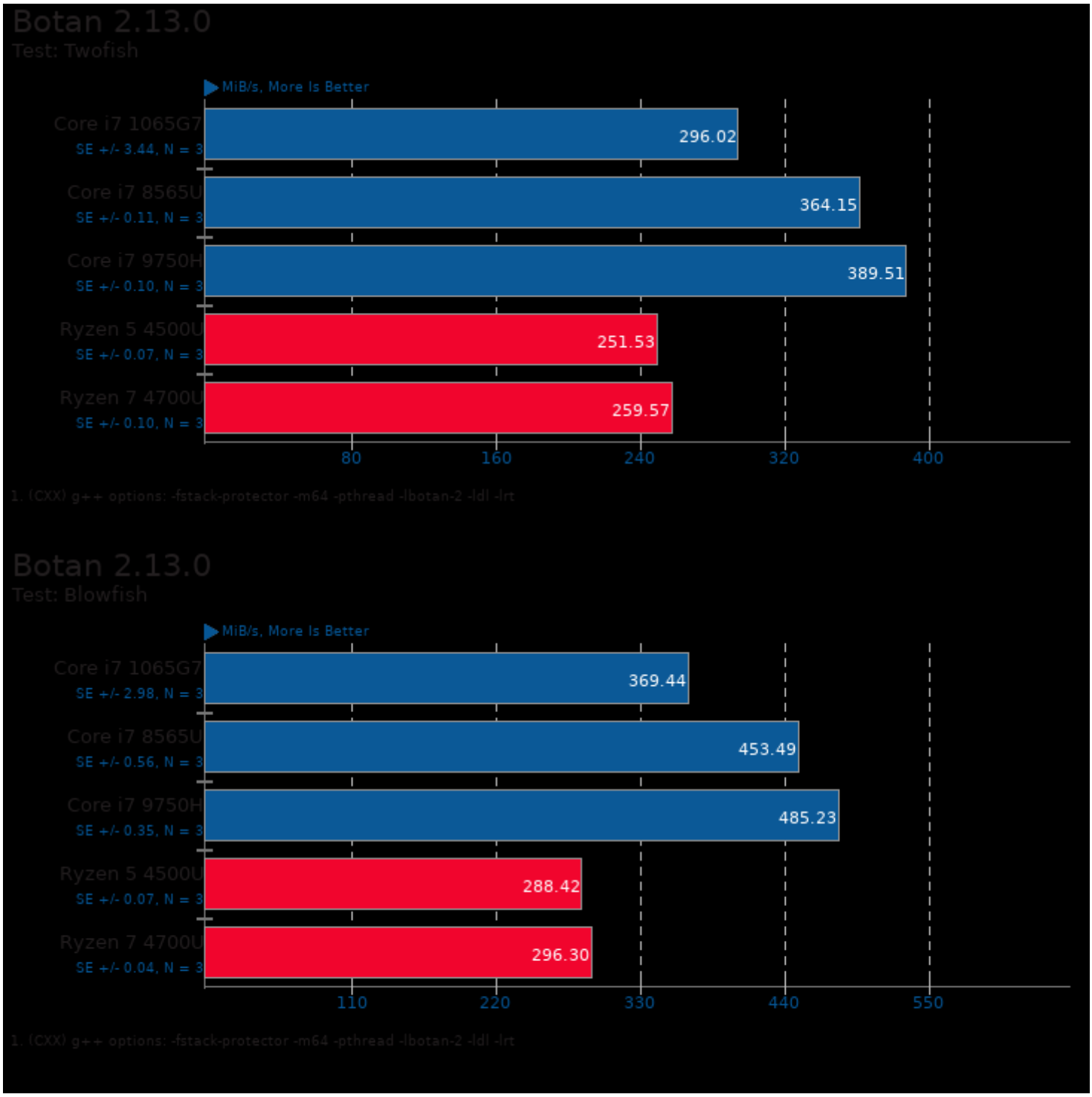

lzbench 1.8
Test: Crush 0 - Process: Compression
MB/s, More Is Better
Core i7 1065G7
SE +/- 0.33, N = 3
83
Core i7 8565U
SE +/- 0.33, N = 3
88
Core i7 9750H
SE +/- 0.67, N = 3
110
Ryzen 5 4500U
75
Ryzen 7 4700U
75
Ryzen 7 4800H-v1
SE +/- 1.00, N = 3
77
20
40
60
80
100
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3
lzbench 1.8
Test: Crush 0 - Process: Decompression
MB/s, More Is Better
Core i7 1065G7
SE +/- 2.52, N = 3
386
Core i7 8565U
SE +/- 0.33, N = 3
468
Core i7 9750H
503
Ryzen 5 4500U
462
Ryzen 7 4700U
485
Ryzen 7 4800H-v1
SE +/- 0.67, N = 3
473
110
220
330
440
550
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

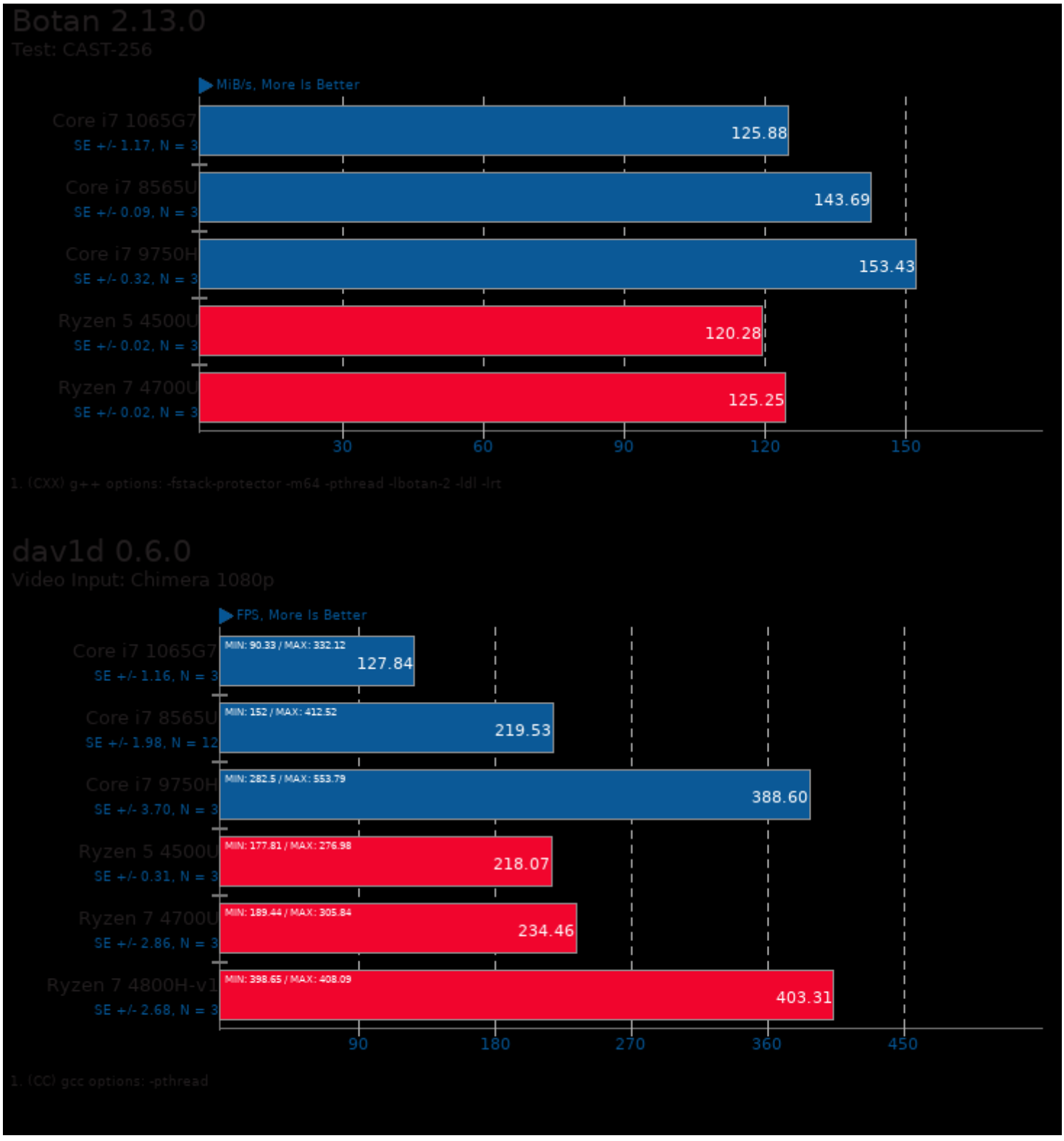

lzbench 1.8
Test: Brotli 0 - Process: Compression
MB/s, More Is Better
Core i7 1065G7
SE +/- 0.67, N = 3
409
Core i7 8565U
SE +/- 1.20, N = 3
434
Core i7 9750H
SE +/- 0.58, N = 3
473
Ryzen 5 4500U
SE +/- 0.67, N = 3
488
Ryzen 7 4700U
SE +/- 0.88, N = 3
514
Ryzen 7 4800H-v1
SE +/- 1.20, N = 3
420
110
220
330
440
550
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3
lzbench 1.8
Test: Brotli 0 - Process: Decompression
MB/s, More Is Better
Core i7 1065G7
478
Core i7 8565U
SE +/- 0.67, N = 3
608
Core i7 9750H
SE +/- 1.33, N = 3
645
Ryzen 5 4500U
565
Ryzen 7 4700U
SE +/- 2.08, N = 3
583
Ryzen 7 4800H-v1
SE +/- 0.88, N = 3
608
140
280
420
560
700
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3


lzbench 1.8
Test: Brotli 2 - Process: Compression
MB/s, More Is Better
Core i7 1065G7
160
Core i7 8565U
SE +/- 0.33, N = 3
186
Core i7 9750H
203
Ryzen 5 4500U
SE +/- 0.67, N = 3
192
Ryzen 7 4700U
SE +/- 0.67, N = 3
202
Ryzen 7 4800H-v1
SE +/- 0.58, N = 3
191
40
80
120
160
200
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3
lzbench 1.8
Test: Brotli 2 - Process: Decompression
MB/s, More Is Better
Core i7 1065G7
SE +/- 1.45, N = 3
569
Core i7 8565U
SE +/- 1.00, N = 3
709
Core i7 9750H
SE +/- 1.33, N = 3
773
Ryzen 5 4500U
SE +/- 0.67, N = 3
644
Ryzen 7 4700U
SE +/- 2.19, N = 3
664
Ryzen 7 4800H-v1
702
170
340
510
680
850
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

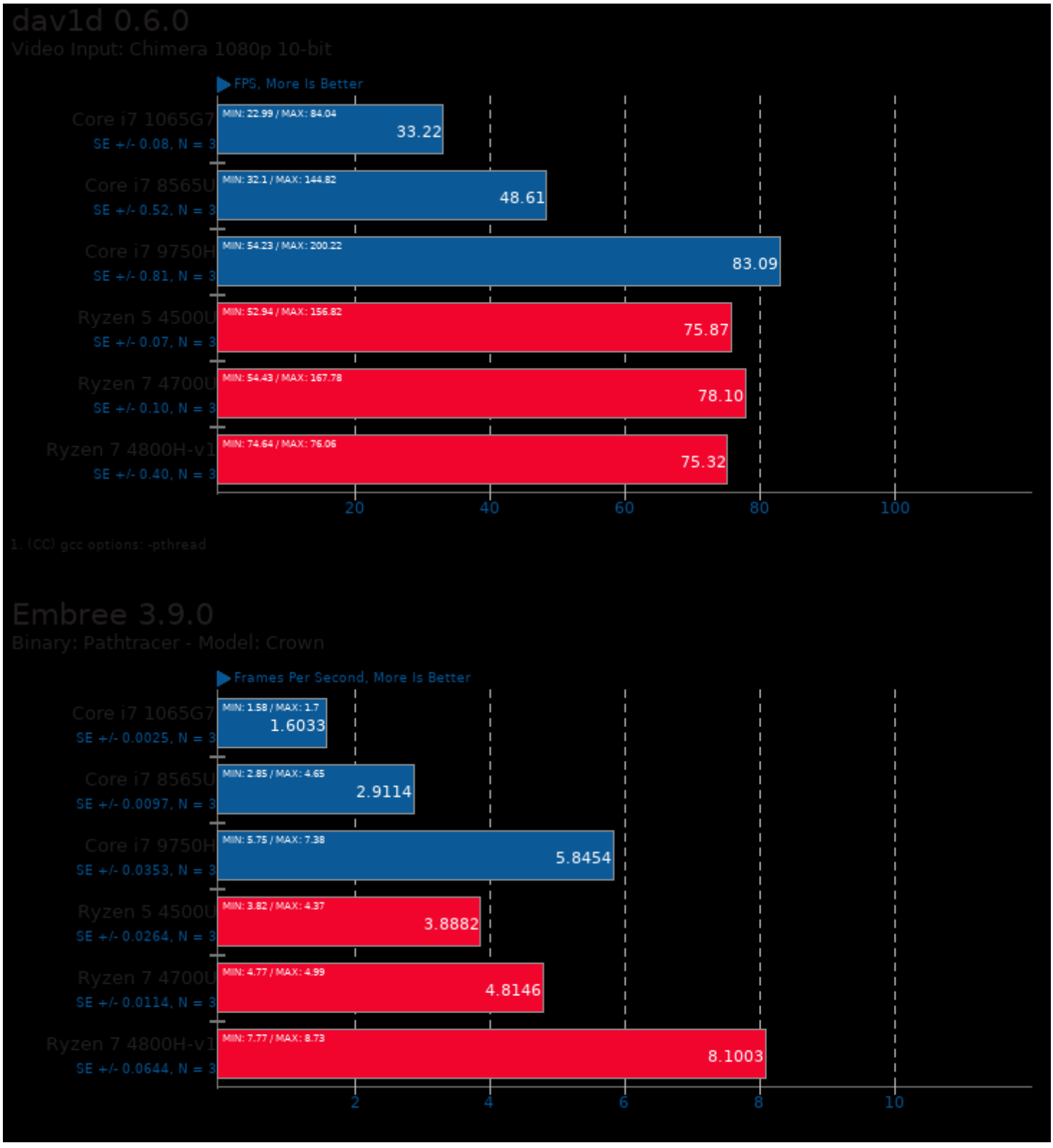

lzbench 1.8
Test: Libdeflate 1 - Process: Compression
MB/s, More Is Better
Core i7 1065G7
205
Core i7 8565U
211
Core i7 9750H
SE +/- 0.67, N = 3
225
Ryzen 5 4500U
242
Ryzen 7 4700U
SE +/- 0.58, N = 3
253
Ryzen 7 4800H-v1
SE +/- 0.33, N = 3
260
60
120
180
240
300
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3
lzbench 1.8
Test: Libdeflate 1 - Process: Decompression
MB/s, More Is Better
Core i7 1065G7
SE +/- 1.76, N = 3
874
Core i7 8565U
SE +/- 0.33, N = 3
1158
Core i7 9750H
1244
Ryzen 5 4500U
1144
Ryzen 7 4700U
SE +/- 1.20, N = 3
1198
Ryzen 7 4800H-v1
1254
300
600
900
1200
1500
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

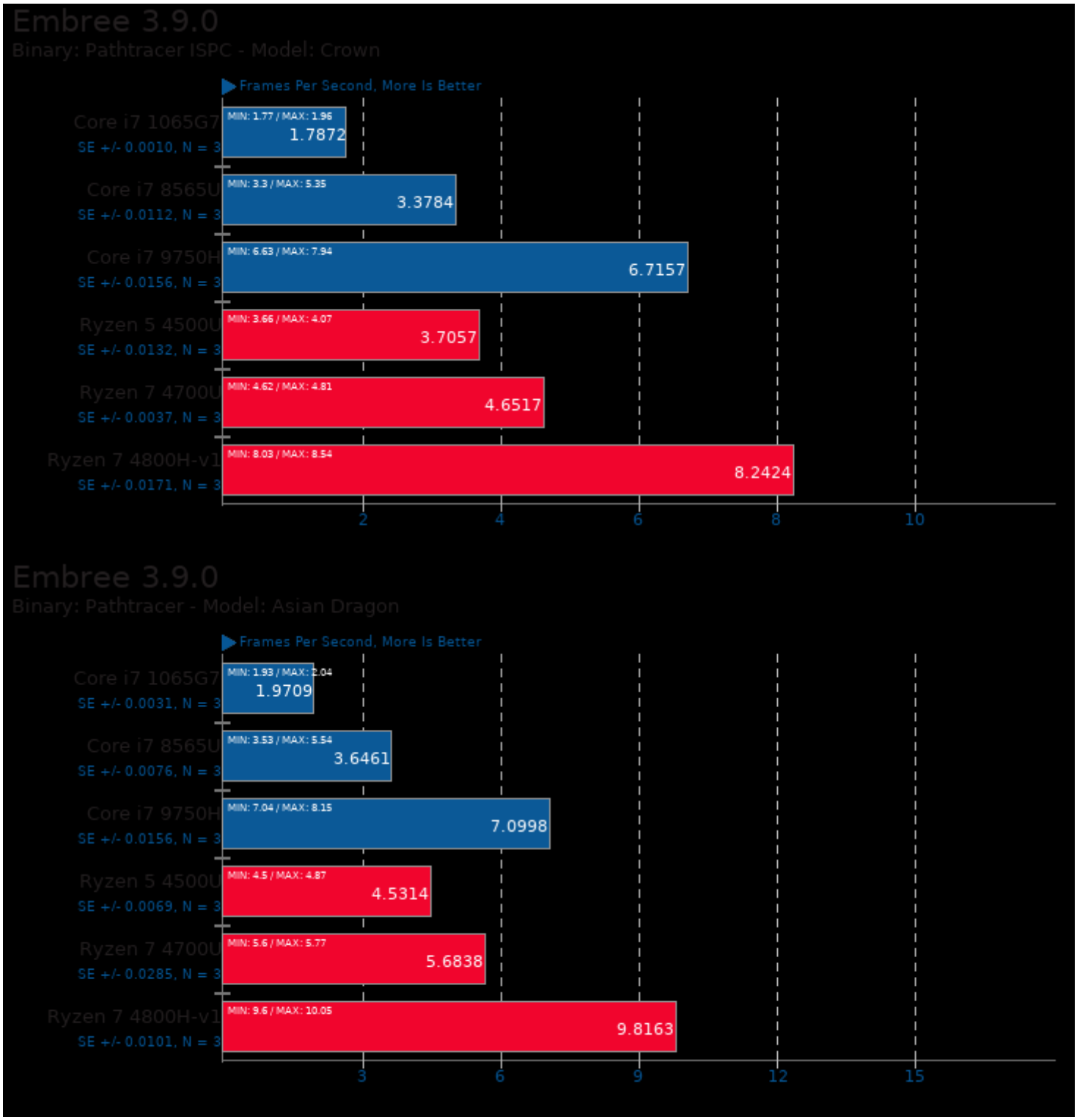

Java Gradle Build
Gradle Build: Reactor
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 8.63, N = 9
407.35
Core i7 8565U
SE +/- 3.30, N = 9
287.69
Core i7 9750H
SE +/- 1.98, N = 11
226.32
Ryzen 5 4500U
SE +/- 3.31, N = 12
217.65
Ryzen 7 4700U
SE +/- 2.00, N = 12
223.95
90
180
270
360
450
Botan 2.13.0
Test: KASUMI
MiB/s, More Is Better
Core i7 1065G7
SE +/- 0.60, N = 3
83.93
Core i7 8565U
SE +/- 0.04, N = 3
94.39
Core i7 9750H
SE +/- 0.10, N = 3
100.87
Ryzen 5 4500U
SE +/- 0.02, N = 3
82.37
Ryzen 7 4700U
SE +/- 0.04, N = 3
85.95
20
40
60
80
100
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

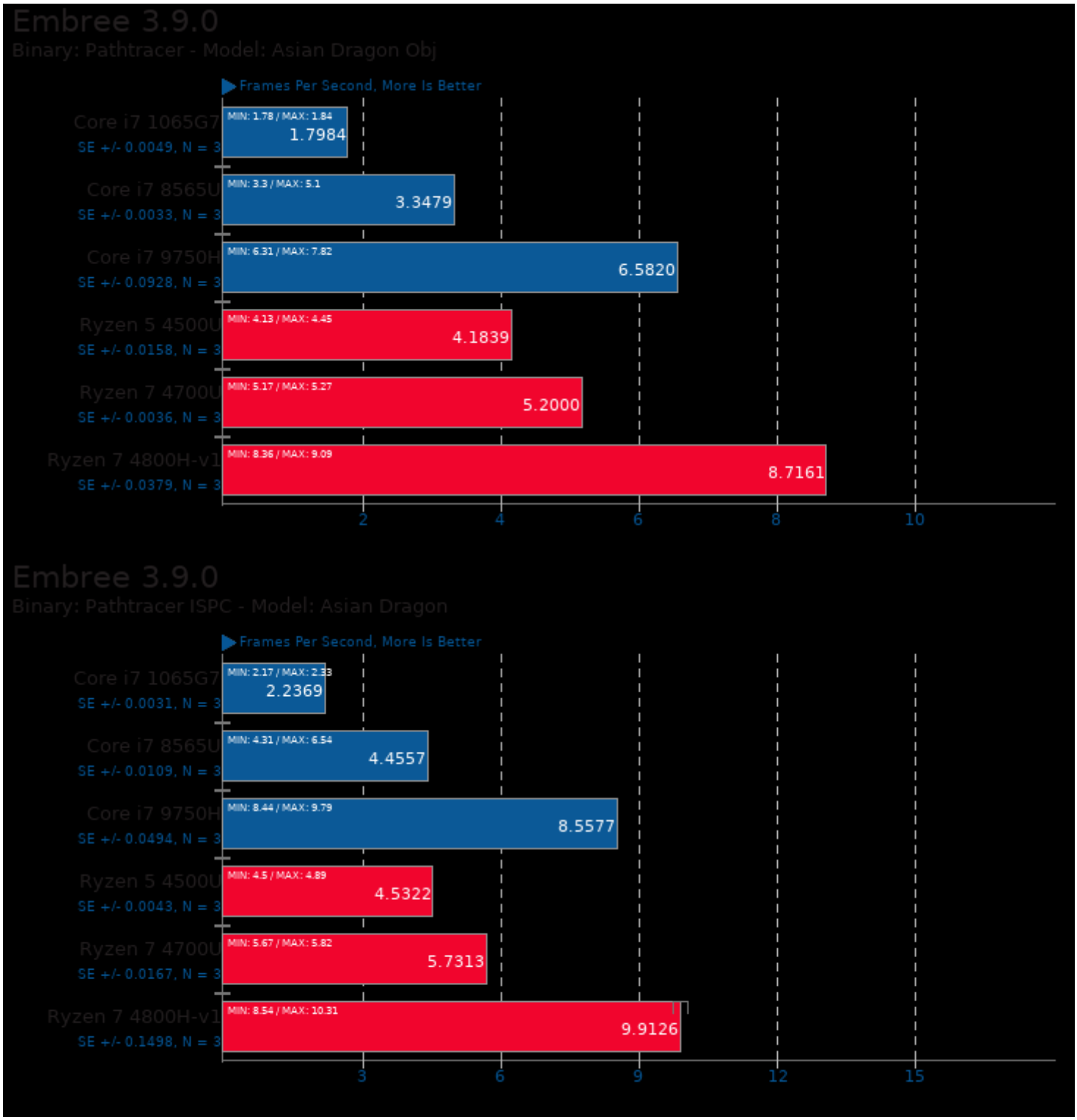

Botan 2.13.0
Test: Twofish
MiB/s, More Is Better
Core i7 1065G7
SE +/- 3.44, N = 3
296.02
Core i7 8565U
SE +/- 0.11, N = 3
364.15
Core i7 9750H
SE +/- 0.10, N = 3
389.51
Ryzen 5 4500U
SE +/- 0.07, N = 3
251.53
Ryzen 7 4700U
SE +/- 0.10, N = 3
259.57
80
160
240
320
400
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Botan 2.13.0
Test: Blowfish
MiB/s, More Is Better
Core i7 1065G7
SE +/- 2.98, N = 3
369.44
Core i7 8565U
SE +/- 0.56, N = 3
453.49
Core i7 9750H
SE +/- 0.35, N = 3
485.23
Ryzen 5 4500U
SE +/- 0.07, N = 3
288.42
Ryzen 7 4700U
SE +/- 0.04, N = 3
296.30
110
220
330
440
550
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

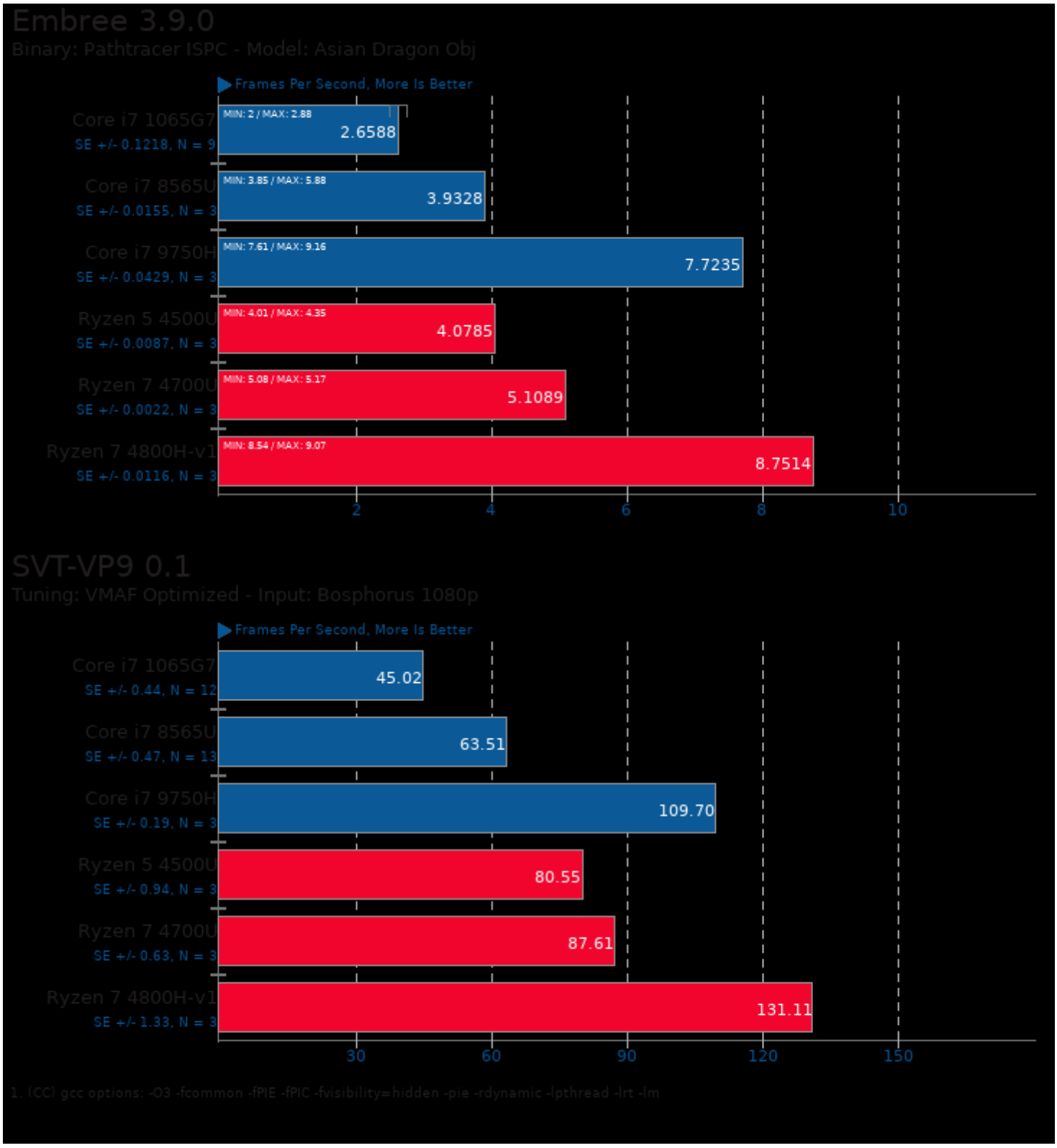

Botan 2.13.0
Test: CAST-256
MiB/s, More Is Better
Core i7 1065G7
SE +/- 1.17, N = 3
125.88
Core i7 8565U
SE +/- 0.09, N = 3
143.69
Core i7 9750H
SE +/- 0.32, N = 3
153.43
Ryzen 5 4500U
SE +/- 0.02, N = 3
120.28
Ryzen 7 4700U
SE +/- 0.02, N = 3
125.25
30
60
90
120
150
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
dav1d 0.6.0
Video Input: Chimera 1080p
FPS, More Is Better
Core i7 1065G7
SE +/- 1.16, N = 3
MIN: 90.33 / MAX: 332.12
127.84
Core i7 8565U
SE +/- 1.98, N = 12
MIN: 152 / MAX: 412.52
219.53
Core i7 9750H
SE +/- 3.70, N = 3
MIN: 282.5 / MAX: 553.79
388.60
Ryzen 5 4500U
SE +/- 0.31, N = 3
MIN: 177.81 / MAX: 276.98
218.07
Ryzen 7 4700U
SE +/- 2.86, N = 3
MIN: 189.44 / MAX: 305.84
234.46
Ryzen 7 4800H-v1
SE +/- 2.68, N = 3
MIN: 398.65 / MAX: 408.09
403.31
90
180
270
360
450
1. (CC) gcc options: -pthread

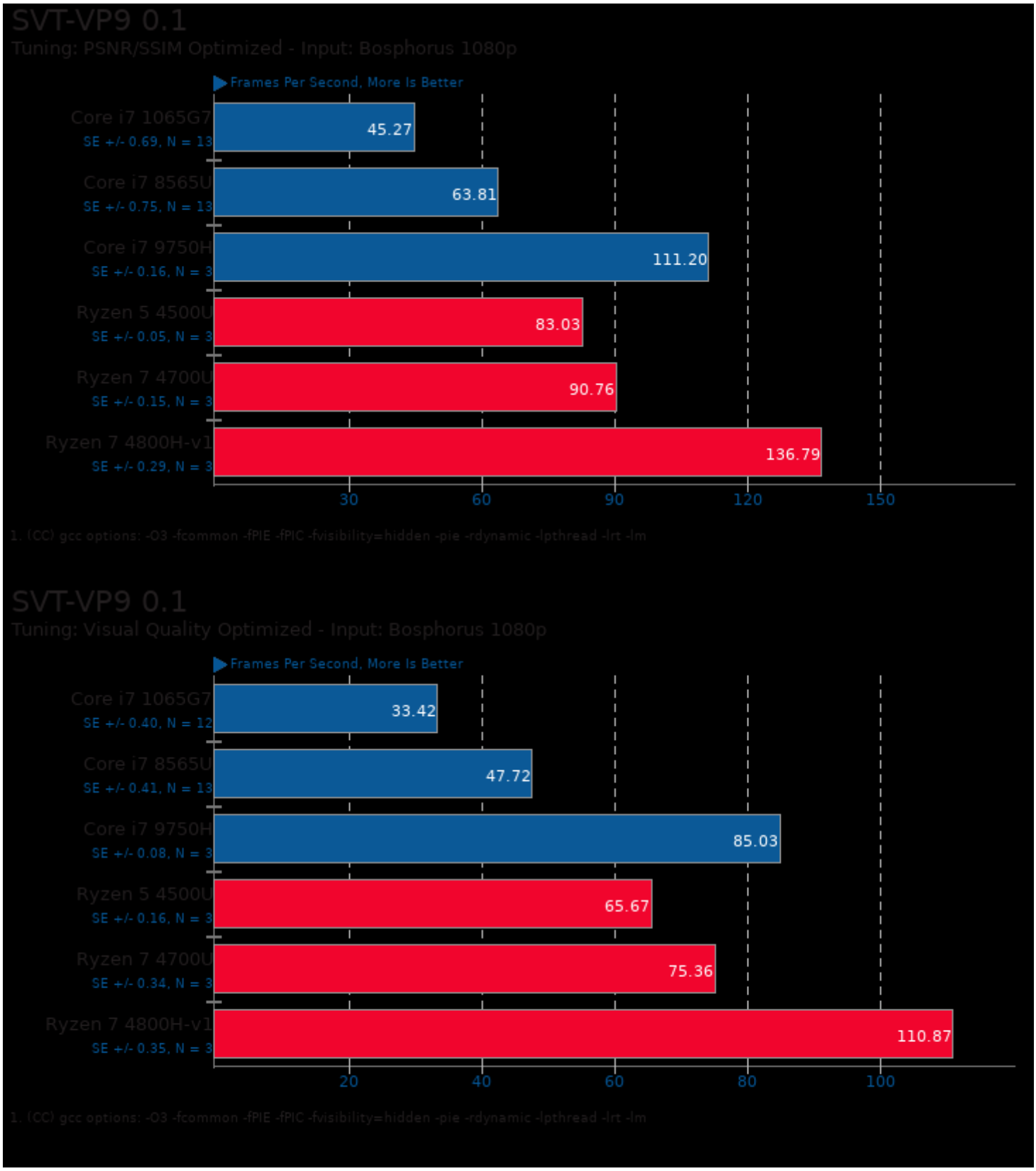

dav1d 0.6.0
Video Input: Summer Nature 4K
FPS, More Is Better
Core i7 1065G7
SE +/- 0.08, N = 3
MIN: 27.51 / MAX: 44.31
30.45
Core i7 8565U
SE +/- 0.53, N = 3
MIN: 47.3 / MAX: 88.26
54.50
Core i7 9750H
SE +/- 0.89, N = 3
MIN: 91.39 / MAX: 129.45
100.60
Ryzen 5 4500U
SE +/- 0.03, N = 3
MIN: 67.4 / MAX: 80.9
71.59
Ryzen 7 4700U
SE +/- 0.07, N = 3
MIN: 77.02 / MAX: 89.41
81.11
Ryzen 7 4800H-v1
SE +/- 0.56, N = 3
MIN: 120.79 / MAX: 122.84
121.59
30
60
90
120
150
1. (CC) gcc options: -pthread
dav1d 0.6.0
Video Input: Summer Nature 1080p
FPS, More Is Better
Core i7 1065G7
SE +/- 1.00, N = 3
MIN: 102.09 / MAX: 265.33
118.70
Core i7 8565U
SE +/- 1.90, N = 10
MIN: 174.06 / MAX: 291.66
209.57
Core i7 9750H
SE +/- 4.53, N = 3
MIN: 320.07 / MAX: 422.57
365.83
Ryzen 5 4500U
SE +/- 0.54, N = 3
MIN: 209.18 / MAX: 238.95
223.13
Ryzen 7 4700U
SE +/- 0.79, N = 3
MIN: 213.56 / MAX: 251.5
233.89
Ryzen 7 4800H-v1
SE +/- 1.09, N = 3
MIN: 436.29 / MAX: 440.49
438.87
100
200
300
400
500
1. (CC) gcc options: -pthread

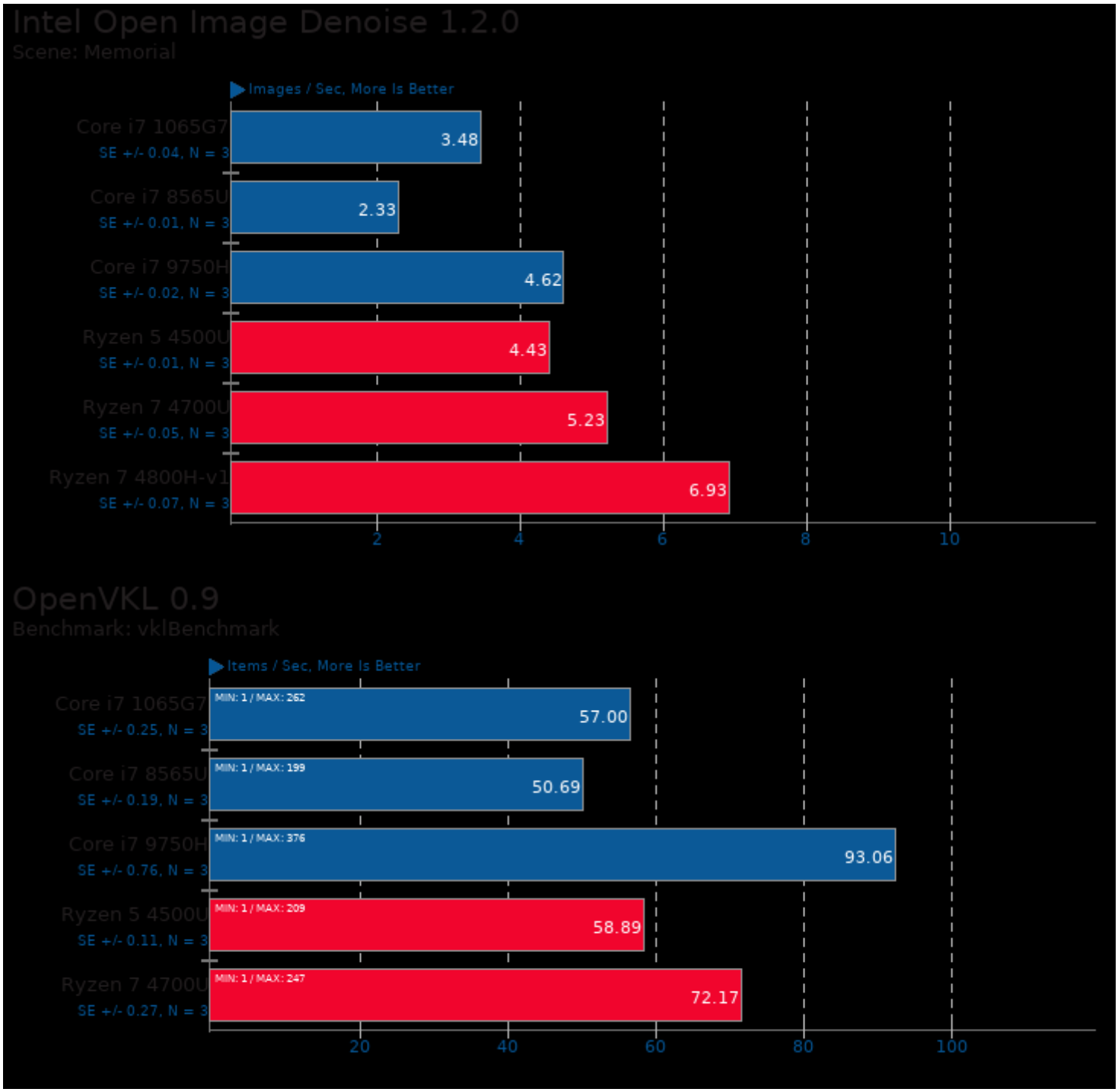

dav1d 0.6.0
Video Input: Chimera 1080p 10-bit
FPS, More Is Better
Core i7 1065G7
SE +/- 0.08, N = 3
MIN: 22.99 / MAX: 84.04
33.22
Core i7 8565U
SE +/- 0.52, N = 3
MIN: 32.1 / MAX: 144.82
48.61
Core i7 9750H
SE +/- 0.81, N = 3
MIN: 54.23 / MAX: 200.22
83.09
Ryzen 5 4500U
SE +/- 0.07, N = 3
MIN: 52.94 / MAX: 156.82
75.87
Ryzen 7 4700U
SE +/- 0.10, N = 3
MIN: 54.43 / MAX: 167.78
78.10
Ryzen 7 4800H-v1
SE +/- 0.40, N = 3
MIN: 74.64 / MAX: 76.06
75.32
20
40
60
80
100
1. (CC) gcc options: -pthread
Embree 3.9.0
Binary: Pathtracer - Model: Crown
Frames Per Second, More Is Better
Core i7 1065G7
SE +/- 0.0025, N = 3
MIN: 1.58 / MAX: 1.7
1.6033
Core i7 8565U
SE +/- 0.0097, N = 3
MIN: 2.85 / MAX: 4.65
2.9114
Core i7 9750H
SE +/- 0.0353, N = 3
MIN: 5.75 / MAX: 7.38
5.8454
Ryzen 5 4500U
SE +/- 0.0264, N = 3
MIN: 3.82 / MAX: 4.37
3.8882
Ryzen 7 4700U
SE +/- 0.0114, N = 3
MIN: 4.77 / MAX: 4.99
4.8146
Ryzen 7 4800H-v1
SE +/- 0.0644, N = 3
MIN: 7.77 / MAX: 8.73
8.1003
2
4
6
8
10

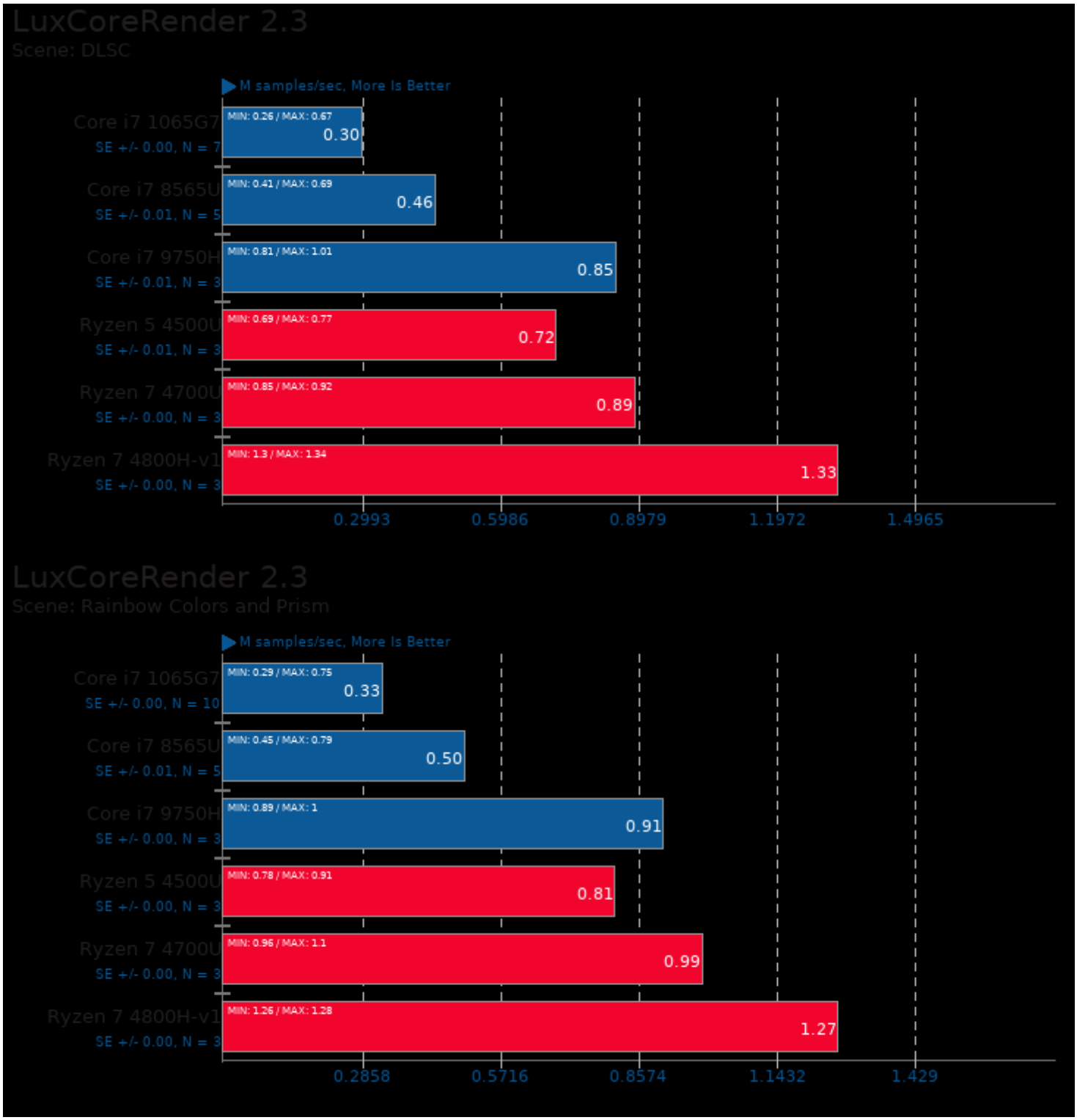

Embree 3.9.0
Binary: Pathtracer ISPC - Model: Crown
Frames Per Second, More Is Better
Core i7 1065G7
SE +/- 0.0010, N = 3
MIN: 1.77 / MAX: 1.96
1.7872
Core i7 8565U
SE +/- 0.0112, N = 3
MIN: 3.3 / MAX: 5.35
3.3784
Core i7 9750H
SE +/- 0.0156, N = 3
MIN: 6.63 / MAX: 7.94
6.7157
Ryzen 5 4500U
SE +/- 0.0132, N = 3
MIN: 3.66 / MAX: 4.07
3.7057
Ryzen 7 4700U
SE +/- 0.0037, N = 3
MIN: 4.62 / MAX: 4.81
4.6517
Ryzen 7 4800H-v1
SE +/- 0.0171, N = 3
MIN: 8.03 / MAX: 8.54
8.2424
2
4
6
8
10
Embree 3.9.0
Binary: Pathtracer - Model: Asian Dragon
Frames Per Second, More Is Better
Core i7 1065G7
SE +/- 0.0031, N = 3
MIN: 1.93 / MAX: 2.04
1.9709
Core i7 8565U
SE +/- 0.0076, N = 3
MIN: 3.53 / MAX: 5.54
3.6461
Core i7 9750H
SE +/- 0.0156, N = 3
MIN: 7.04 / MAX: 8.15
7.0998
Ryzen 5 4500U
SE +/- 0.0069, N = 3
MIN: 4.5 / MAX: 4.87
4.5314
Ryzen 7 4700U
SE +/- 0.0285, N = 3
MIN: 5.6 / MAX: 5.77
5.6838
Ryzen 7 4800H-v1
SE +/- 0.0101, N = 3
MIN: 9.6 / MAX: 10.05
9.8163
3
6
9
12
15

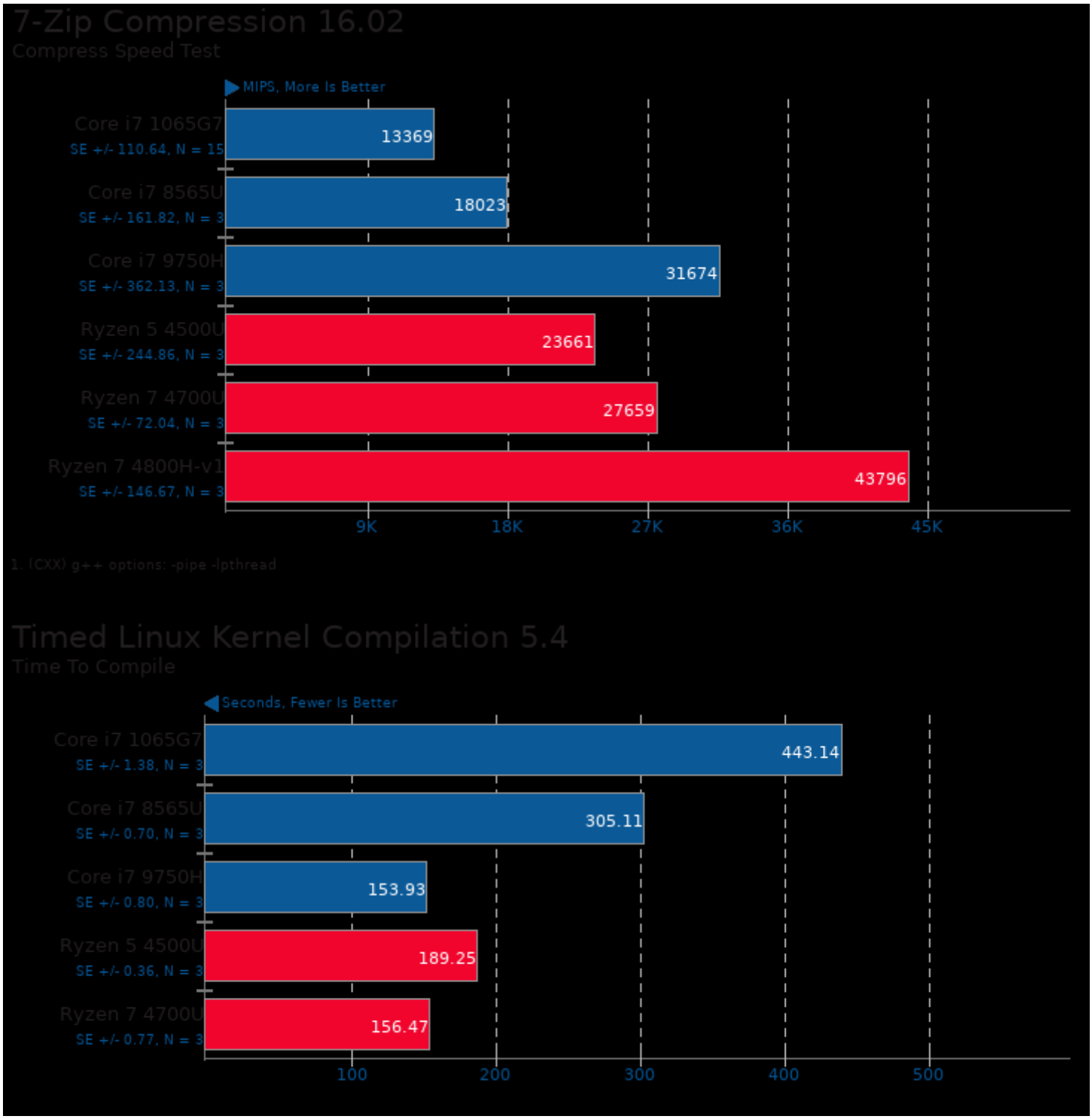

Embree 3.9.0
Binary: Pathtracer - Model: Asian Dragon Obj
Frames Per Second, More Is Better
Core i7 1065G7
SE +/- 0.0049, N = 3
MIN: 1.78 / MAX: 1.84
1.7984
Core i7 8565U
SE +/- 0.0033, N = 3
MIN: 3.3 / MAX: 5.1
3.3479
Core i7 9750H
SE +/- 0.0928, N = 3
MIN: 6.31 / MAX: 7.82
6.5820
Ryzen 5 4500U
SE +/- 0.0158, N = 3
MIN: 4.13 / MAX: 4.45
4.1839
Ryzen 7 4700U
SE +/- 0.0036, N = 3
MIN: 5.17 / MAX: 5.27
5.2000
Ryzen 7 4800H-v1
SE +/- 0.0379, N = 3
MIN: 8.36 / MAX: 9.09
8.7161
2
4
6
8
10
Embree 3.9.0
Binary: Pathtracer ISPC - Model: Asian Dragon
Frames Per Second, More Is Better
Core i7 1065G7
SE +/- 0.0031, N = 3
MIN: 2.17 / MAX: 2.33
2.2369
Core i7 8565U
SE +/- 0.0109, N = 3
MIN: 4.31 / MAX: 6.54
4.4557
Core i7 9750H
SE +/- 0.0494, N = 3
MIN: 8.44 / MAX: 9.79
8.5577
Ryzen 5 4500U
SE +/- 0.0043, N = 3
MIN: 4.5 / MAX: 4.89
4.5322
Ryzen 7 4700U
SE +/- 0.0167, N = 3
MIN: 5.67 / MAX: 5.82
5.7313
Ryzen 7 4800H-v1
SE +/- 0.1498, N = 3
MIN: 8.54 / MAX: 10.31
9.9126
3
6
9
12
15

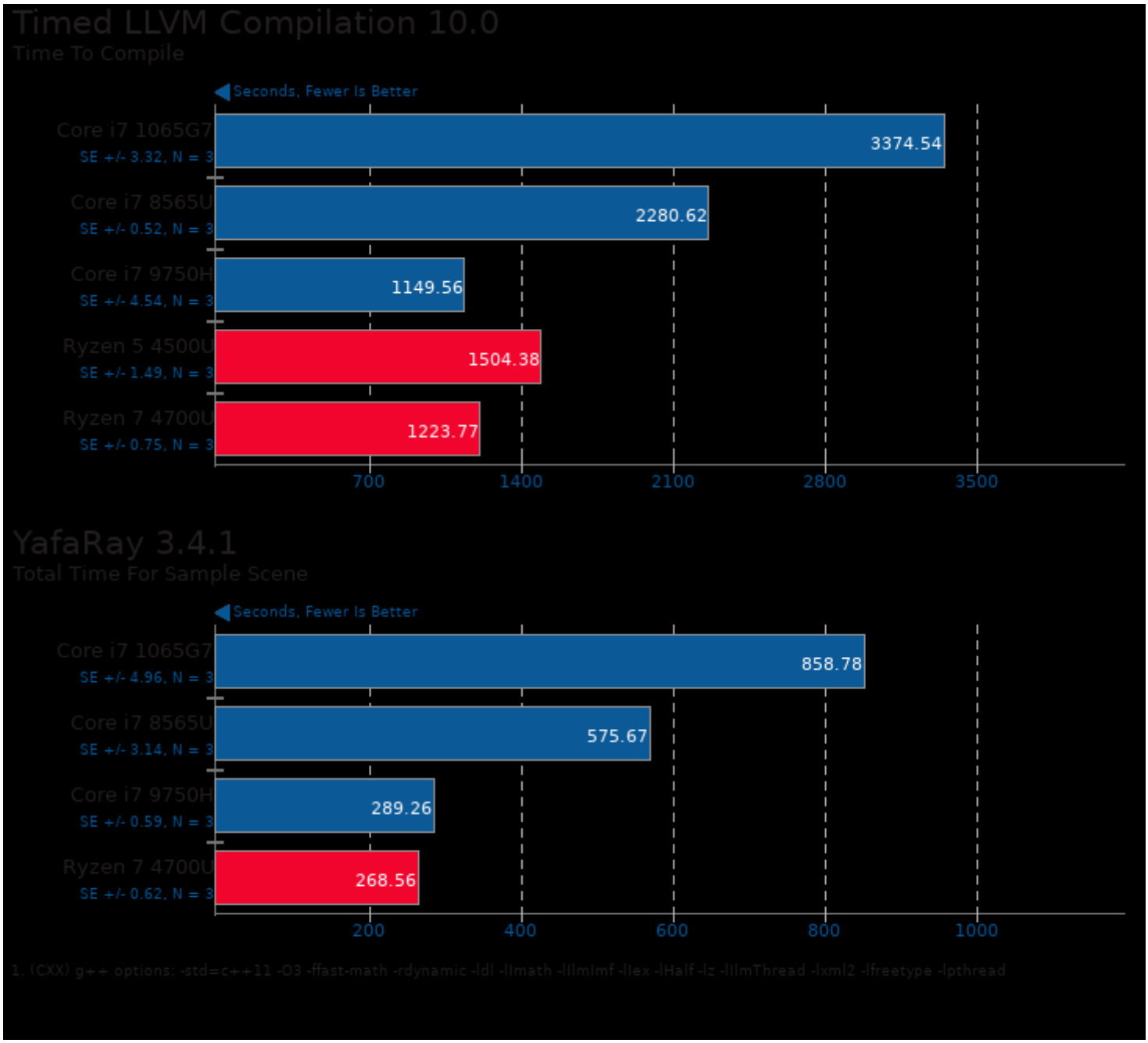

Embree 3.9.0
Binary: Pathtracer ISPC - Model: Asian Dragon Obj
Frames Per Second, More Is Better
Core i7 1065G7
SE +/- 0.1218, N = 9
MIN: 2 / MAX: 2.88
2.6588
Core i7 8565U
SE +/- 0.0155, N = 3
MIN: 3.85 / MAX: 5.88
3.9328
Core i7 9750H
SE +/- 0.0429, N = 3
MIN: 7.61 / MAX: 9.16
7.7235
Ryzen 5 4500U
SE +/- 0.0087, N = 3
MIN: 4.01 / MAX: 4.35
4.0785
Ryzen 7 4700U
SE +/- 0.0022, N = 3
MIN: 5.08 / MAX: 5.17
5.1089
Ryzen 7 4800H-v1
SE +/- 0.0116, N = 3
MIN: 8.54 / MAX: 9.07
8.7514
2
4
6
8
10
SVT-VP9 0.1
Tuning: VMAF Optimized - Input: Bosphorus 1080p
Frames Per Second, More Is Better
Core i7 1065G7
SE +/- 0.44, N = 12
45.02
Core i7 8565U
SE +/- 0.47, N = 13
63.51
Core i7 9750H
SE +/- 0.19, N = 3
109.70
Ryzen 5 4500U
SE +/- 0.94, N = 3
80.55
Ryzen 7 4700U
SE +/- 0.63, N = 3
87.61
Ryzen 7 4800H-v1
SE +/- 1.33, N = 3
131.11
30
60
90
120
150
1. (CC) gcc options: -O3 -fcommon -fPIE -fPIC -fvisibility=hidden -pie -rdynamic -lpthread -lrt -lm

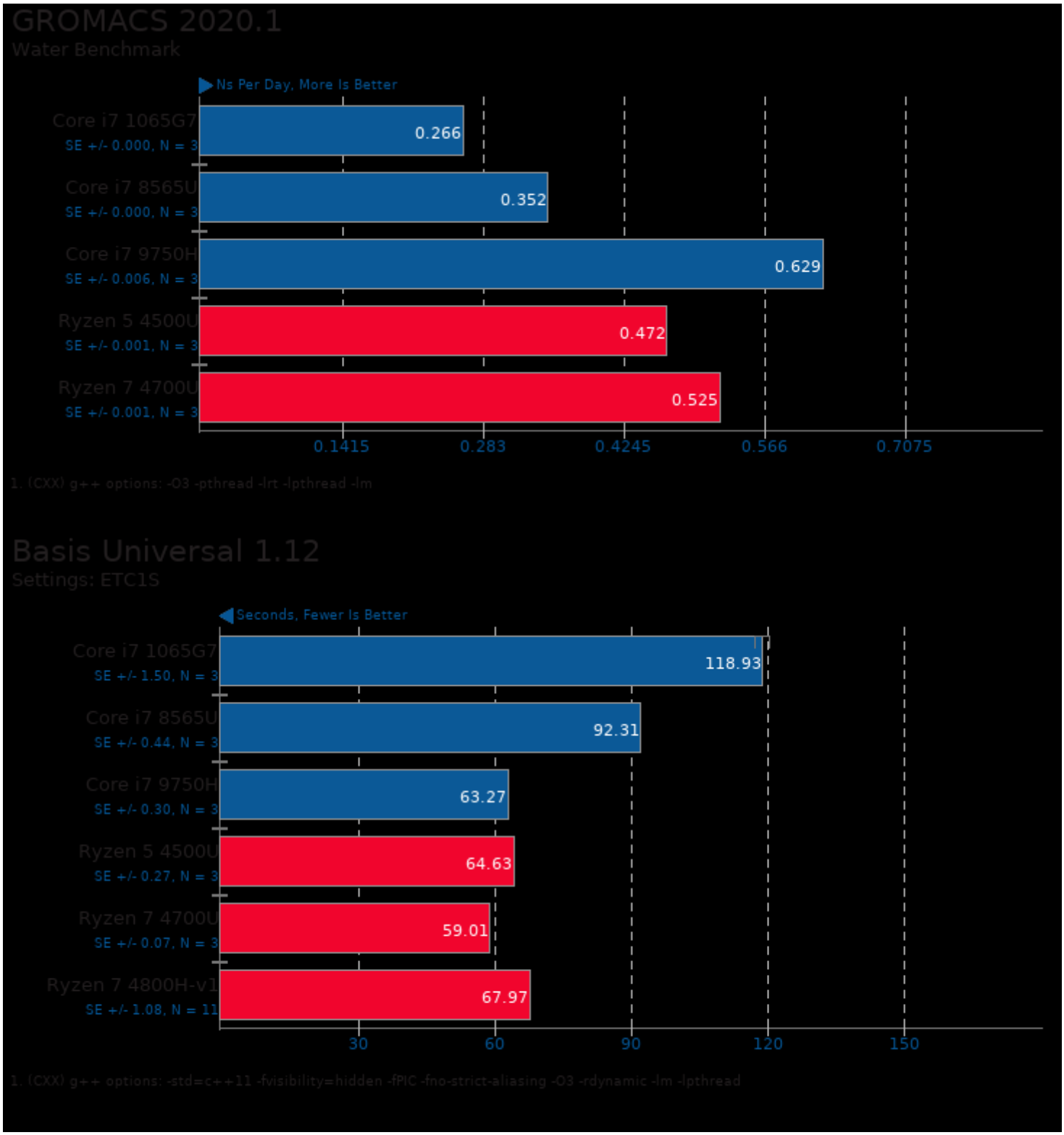

SVT-VP9 0.1
Tuning: PSNR/SSIM Optimized - Input: Bosphorus 1080p
Frames Per Second, More Is Better
Core i7 1065G7
SE +/- 0.69, N = 13
45.27
Core i7 8565U
SE +/- 0.75, N = 13
63.81
Core i7 9750H
SE +/- 0.16, N = 3
111.20
Ryzen 5 4500U
SE +/- 0.05, N = 3
83.03
Ryzen 7 4700U
SE +/- 0.15, N = 3
90.76
Ryzen 7 4800H-v1
SE +/- 0.29, N = 3
136.79
30
60
90
120
150
1. (CC) gcc options: -O3 -fcommon -fPIE -fPIC -fvisibility=hidden -pie -rdynamic -lpthread -lrt -lm
SVT-VP9 0.1
Tuning: Visual Quality Optimized - Input: Bosphorus 1080p
Frames Per Second, More Is Better
Core i7 1065G7
SE +/- 0.40, N = 12
33.42
Core i7 8565U
SE +/- 0.41, N = 13
47.72
Core i7 9750H
SE +/- 0.08, N = 3
85.03
Ryzen 5 4500U
SE +/- 0.16, N = 3
65.67
Ryzen 7 4700U
SE +/- 0.34, N = 3
75.36
Ryzen 7 4800H-v1
SE +/- 0.35, N = 3
110.87
20
40
60
80
100
1. (CC) gcc options: -O3 -fcommon -fPIE -fPIC -fvisibility=hidden -pie -rdynamic -lpthread -lrt -lm

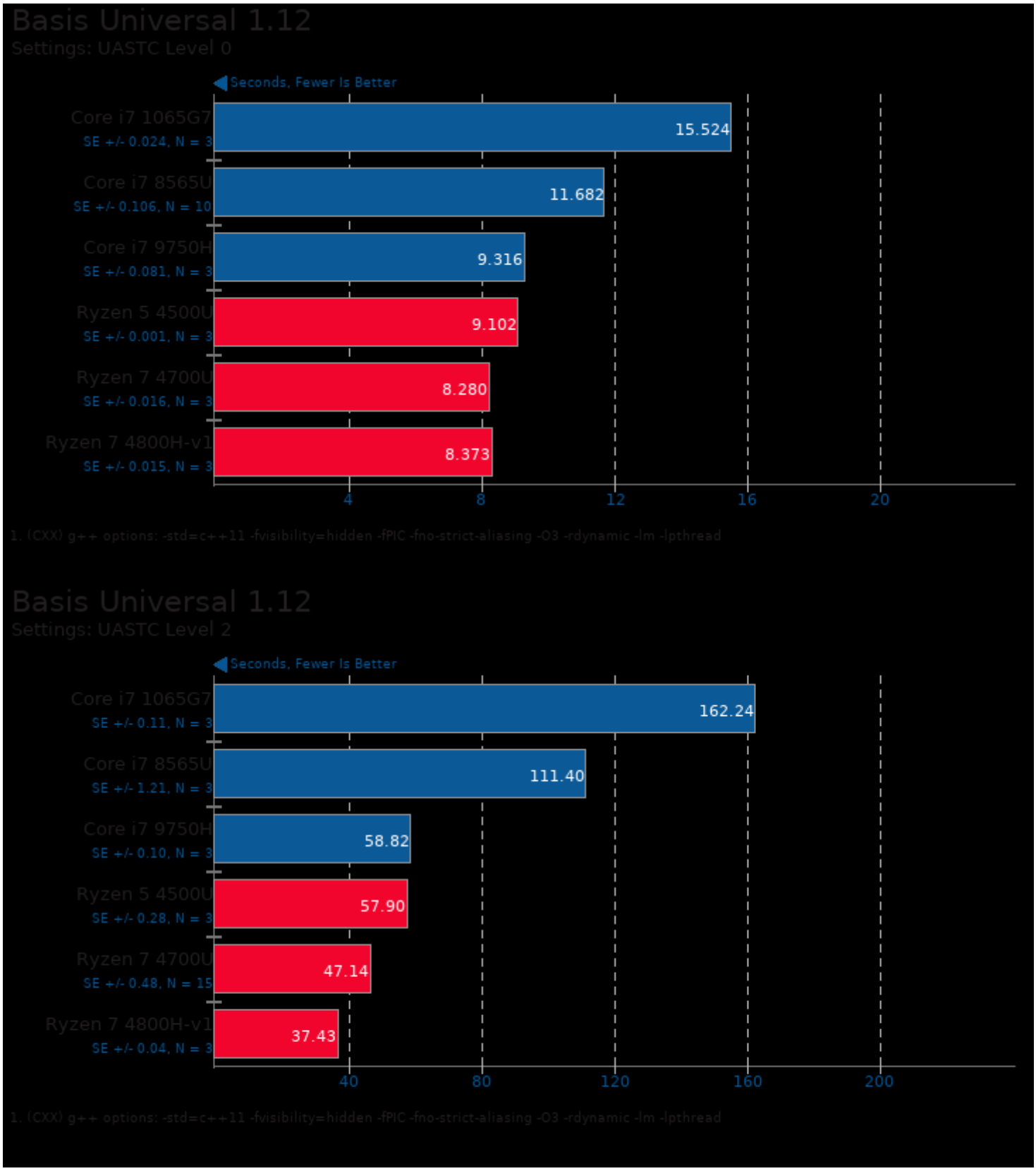

Intel Open Image Denoise 1.2.0
Scene: Memorial
Images / Sec, More Is Better
Core i7 1065G7
SE +/- 0.04, N = 3
3.48
Core i7 8565U
SE +/- 0.01, N = 3
2.33
Core i7 9750H
SE +/- 0.02, N = 3
4.62
Ryzen 5 4500U
SE +/- 0.01, N = 3
4.43
Ryzen 7 4700U
SE +/- 0.05, N = 3
5.23
Ryzen 7 4800H-v1
SE +/- 0.07, N = 3
6.93
2
4
6
8
10
OpenVKL 0.9
Benchmark: vklBenchmark
Items / Sec, More Is Better
Core i7 1065G7
SE +/- 0.25, N = 3
MIN: 1 / MAX: 262
57.00
Core i7 8565U
SE +/- 0.19, N = 3
MIN: 1 / MAX: 199
50.69
Core i7 9750H
SE +/- 0.76, N = 3
MIN: 1 / MAX: 376
93.06
Ryzen 5 4500U
SE +/- 0.11, N = 3
MIN: 1 / MAX: 209
58.89
Ryzen 7 4700U
SE +/- 0.27, N = 3
MIN: 1 / MAX: 247
72.17
20
40
60
80
100

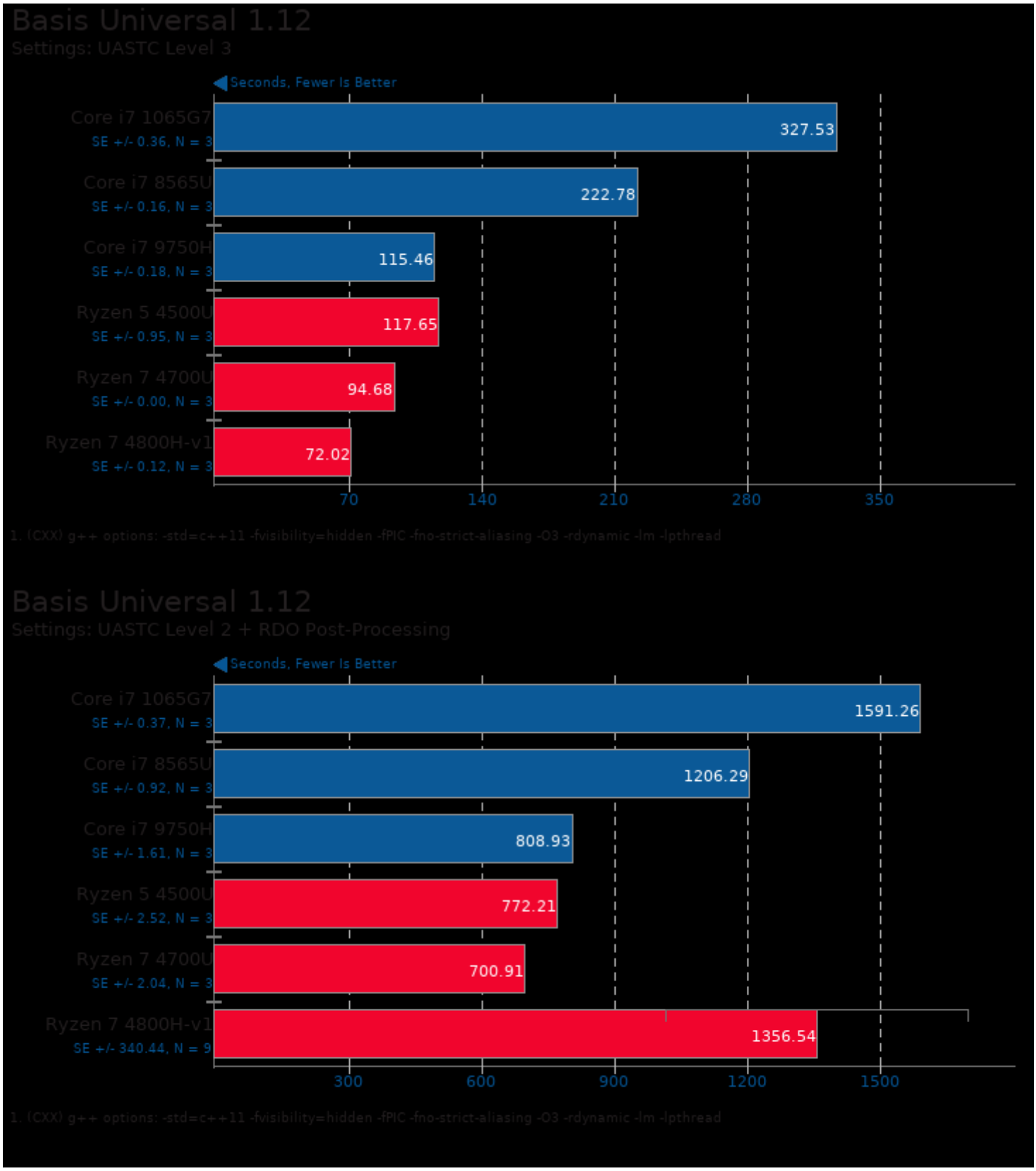

LuxCoreRender 2.3
Scene: DLSC
M samples/sec, More Is Better
Core i7 1065G7
SE +/- 0.00, N = 7
MIN: 0.26 / MAX: 0.67
0.30
Core i7 8565U
SE +/- 0.01, N = 5
MIN: 0.41 / MAX: 0.69
0.46
Core i7 9750H
SE +/- 0.01, N = 3
MIN: 0.81 / MAX: 1.01
0.85
Ryzen 5 4500U
SE +/- 0.01, N = 3
MIN: 0.69 / MAX: 0.77
0.72
Ryzen 7 4700U
SE +/- 0.00, N = 3
MIN: 0.85 / MAX: 0.92
0.89
Ryzen 7 4800H-v1
SE +/- 0.00, N = 3
MIN: 1.3 / MAX: 1.34
1.33
0.2993
0.5986
0.8979
1.1972
1.4965
LuxCoreRender 2.3
Scene: Rainbow Colors and Prism
M samples/sec, More Is Better
Core i7 1065G7
SE +/- 0.00, N = 10
MIN: 0.29 / MAX: 0.75
0.33
Core i7 8565U
SE +/- 0.01, N = 5
MIN: 0.45 / MAX: 0.79
0.50
Core i7 9750H
SE +/- 0.00, N = 3
MIN: 0.89 / MAX: 1
0.91
Ryzen 5 4500U
SE +/- 0.00, N = 3
MIN: 0.78 / MAX: 0.91
0.81
Ryzen 7 4700U
SE +/- 0.00, N = 3
MIN: 0.96 / MAX: 1.1
0.99
Ryzen 7 4800H-v1
SE +/- 0.00, N = 3
MIN: 1.26 / MAX: 1.28
1.27
0.2858
0.5716
0.8574
1.1432
1.429

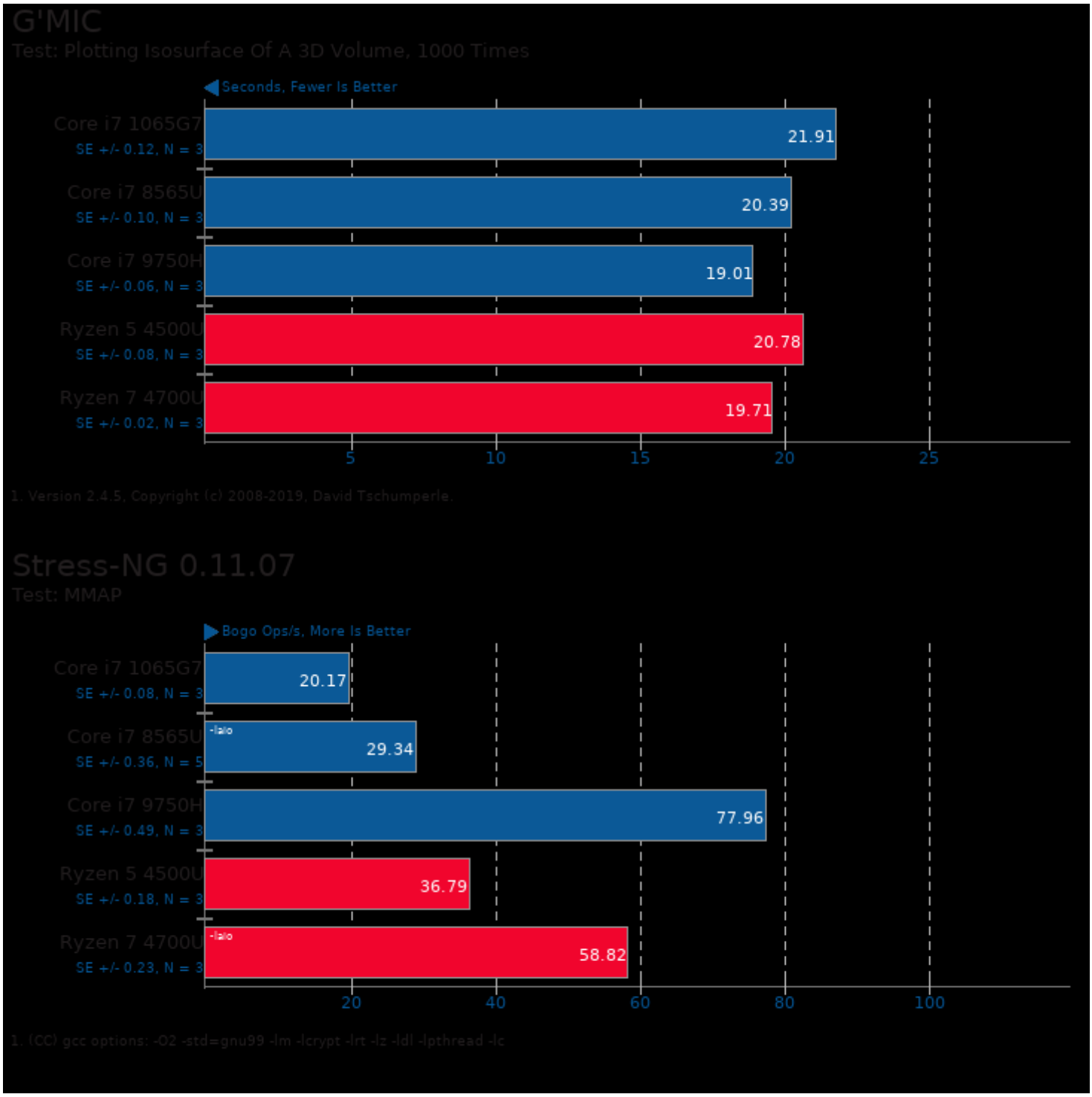

7-Zip Compression 16.02
Compress Speed Test
MIPS, More Is Better
Core i7 1065G7
SE +/- 110.64, N = 15
13369
Core i7 8565U
SE +/- 161.82, N = 3
18023
Core i7 9750H
SE +/- 362.13, N = 3
31674
Ryzen 5 4500U
SE +/- 244.86, N = 3
23661
Ryzen 7 4700U
SE +/- 72.04, N = 3
27659
Ryzen 7 4800H-v1
SE +/- 146.67, N = 3
43796
9K
18K
27K
36K
45K
1. (CXX) g++ options: -pipe -lpthread
Timed Linux Kernel Compilation 5.4
Time To Compile
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 1.38, N = 3
443.14
Core i7 8565U
SE +/- 0.70, N = 3
305.11
Core i7 9750H
SE +/- 0.80, N = 3
153.93
Ryzen 5 4500U
SE +/- 0.36, N = 3
189.25
Ryzen 7 4700U
SE +/- 0.77, N = 3
156.47
100
200
300
400
500

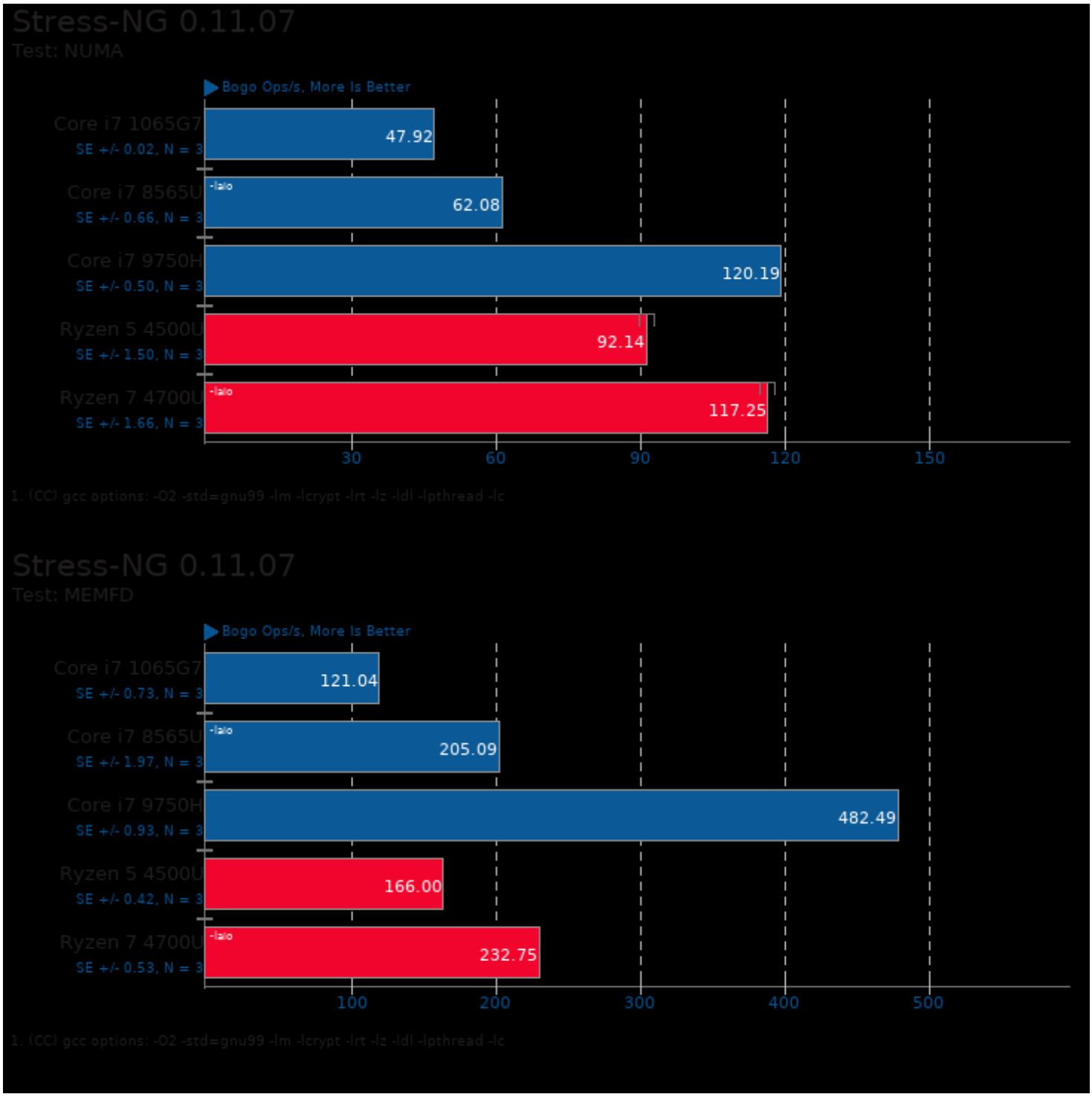

Timed LLVM Compilation 10.0
Time To Compile
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 3.32, N = 3
3374.54
Core i7 8565U
SE +/- 0.52, N = 3
2280.62
Core i7 9750H
SE +/- 4.54, N = 3
1149.56
Ryzen 5 4500U
SE +/- 1.49, N = 3
1504.38
Ryzen 7 4700U
SE +/- 0.75, N = 3
1223.77
700
1400
2100
2800
3500
YafaRay 3.4.1
Total Time For Sample Scene
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 4.96, N = 3
858.78
Core i7 8565U
SE +/- 3.14, N = 3
575.67
Core i7 9750H
SE +/- 0.59, N = 3
289.26
Ryzen 7 4700U
SE +/- 0.62, N = 3
268.56
200
400
600
800
1000
1. (CXX) g++ options: -std=c++11 -O3 -ffast-math -rdynamic -ldl -limath -lIlmImf -lIex -lHalf -lz -lIlmThread -lxml2 -lfreetype -lpthread

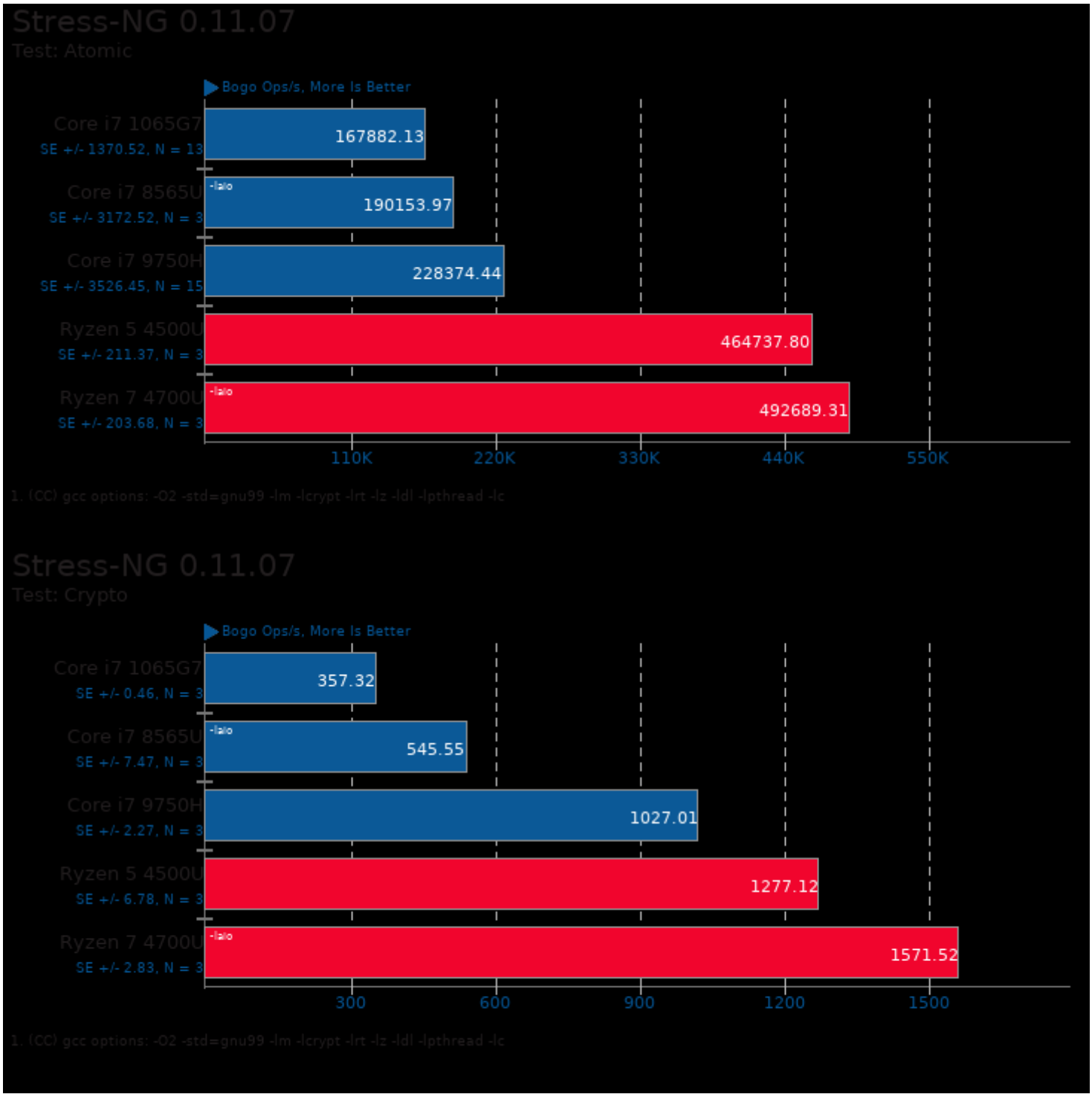

GROMACS 2020.1
Water Benchmark
Ns Per Day, More Is Better
Core i7 1065G7
SE +/- 0.000, N = 3
0.266
Core i7 8565U
SE +/- 0.000, N = 3
0.352
Core i7 9750H
SE +/- 0.006, N = 3
0.629
Ryzen 5 4500U
SE +/- 0.001, N = 3
0.472
Ryzen 7 4700U
SE +/- 0.001, N = 3
0.525
0.1415
0.283
0.4245
0.566
0.7075
1. (CXX) g++ options: -O3 -pthread -lrt -lpthread -lm
Basis Universal 1.12
Settings: ETC1S
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 1.50, N = 3
118.93
Core i7 8565U
SE +/- 0.44, N = 3
92.31
Core i7 9750H
SE +/- 0.30, N = 3
63.27
Ryzen 5 4500U
SE +/- 0.27, N = 3
64.63
Ryzen 7 4700U
SE +/- 0.07, N = 3
59.01
Ryzen 7 4800H-v1
SE +/- 1.08, N = 11
67.97
30
60
90
120
150
1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -O3 -rdynamic -lm -lpthread

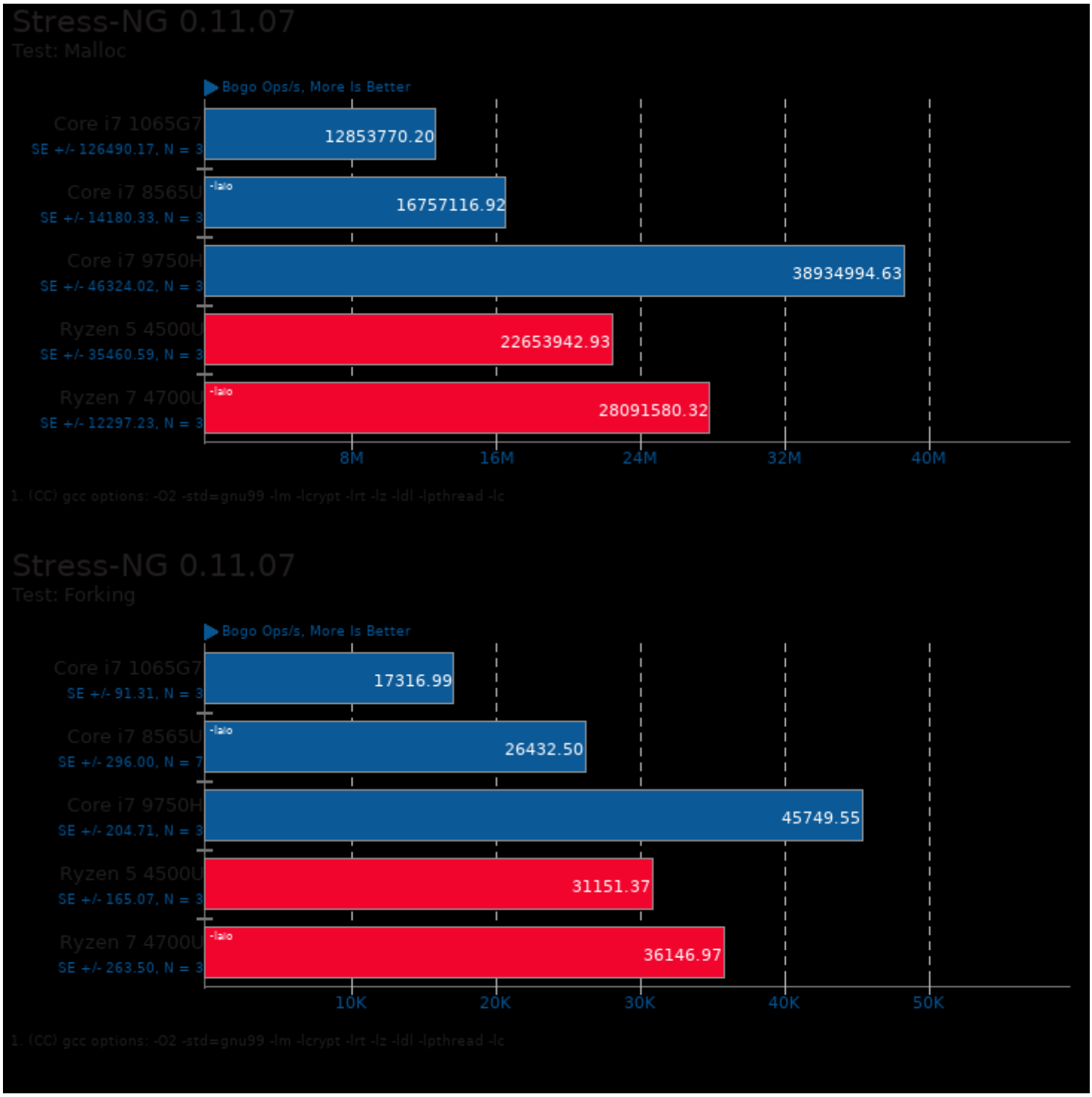

Basis Universal 1.12
Settings: UASTC Level 0
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.024, N = 3
15.524
Core i7 8565U
SE +/- 0.106, N = 10
11.682
Core i7 9750H
SE +/- 0.081, N = 3
9.316
Ryzen 5 4500U
SE +/- 0.001, N = 3
9.102
Ryzen 7 4700U
SE +/- 0.016, N = 3
8.280
Ryzen 7 4800H-v1
SE +/- 0.015, N = 3
8.373
4
8
12
16
20
1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -O3 -rdynamic -lm -lpthread
Basis Universal 1.12
Settings: UASTC Level 2
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.11, N = 3
162.24
Core i7 8565U
SE +/- 1.21, N = 3
111.40
Core i7 9750H
SE +/- 0.10, N = 3
58.82
Ryzen 5 4500U
SE +/- 0.28, N = 3
57.90
Ryzen 7 4700U
SE +/- 0.48, N = 15
47.14
Ryzen 7 4800H-v1
SE +/- 0.04, N = 3
37.43
40
80
120
160
200
1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -O3 -rdynamic -lm -lpthread

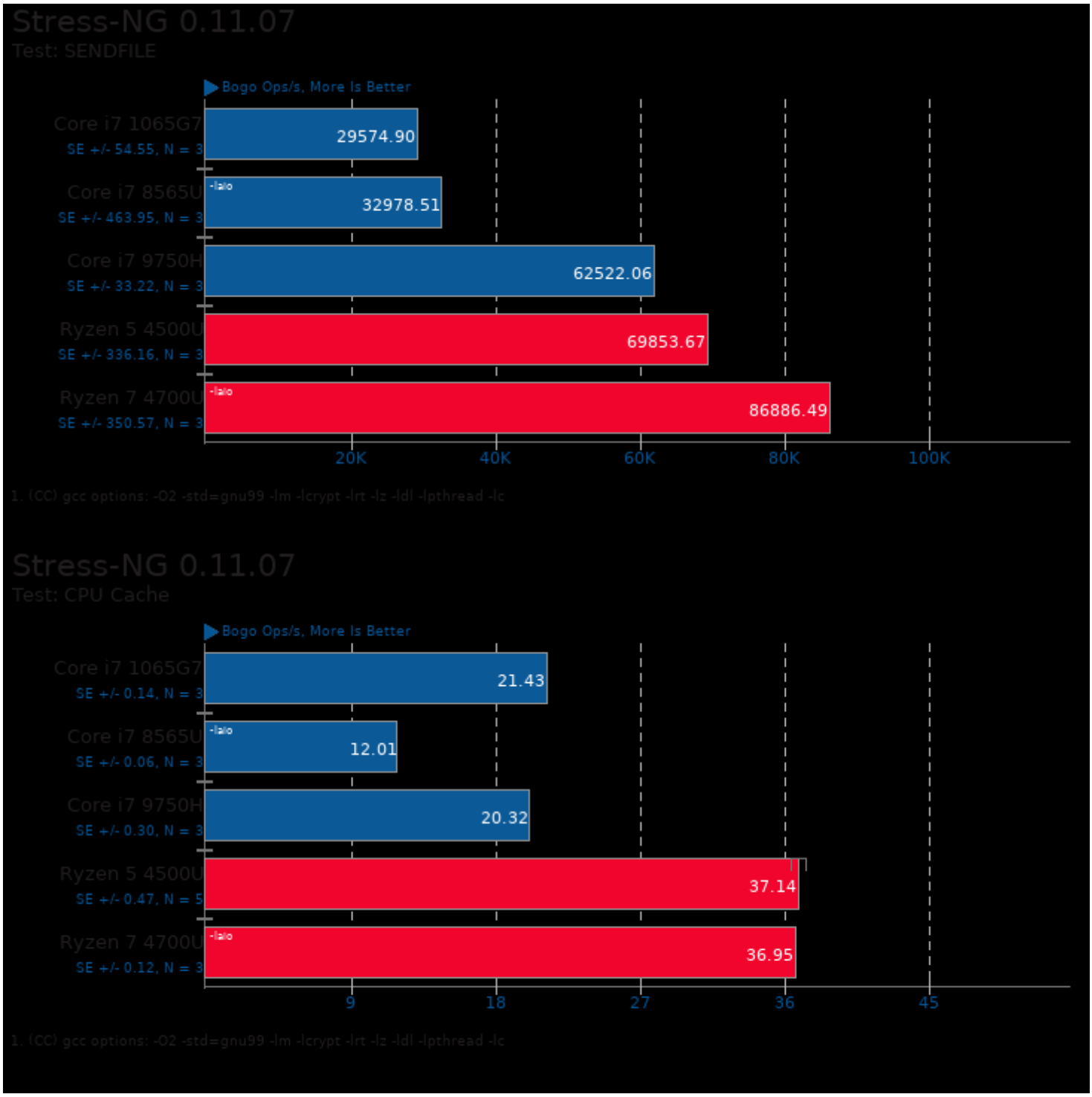

Basis Universal 1.12
Settings: UASTC Level 3
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.36, N = 3
327.53
Core i7 8565U
SE +/- 0.16, N = 3
222.78
Core i7 9750H
SE +/- 0.18, N = 3
115.46
Ryzen 5 4500U
SE +/- 0.95, N = 3
117.65
Ryzen 7 4700U
SE +/- 0.00, N = 3
94.68
Ryzen 7 4800H-v1
SE +/- 0.12, N = 3
72.02
70
140
210
280
350
1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -O3 -rdynamic -lm -lpthread
Basis Universal 1.12
Settings: UASTC Level 2 + RDO Post-Processing
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.37, N = 3
1591.26
Core i7 8565U
SE +/- 0.92, N = 3
1206.29
Core i7 9750H
SE +/- 1.61, N = 3
808.93
Ryzen 5 4500U
SE +/- 2.52, N = 3
772.21
Ryzen 7 4700U
SE +/- 2.04, N = 3
700.91
Ryzen 7 4800H-v1
SE +/- 340.44, N = 9
1356.54
300
600
900
1200
1500
1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -O3 -rdynamic -lm -lpthread

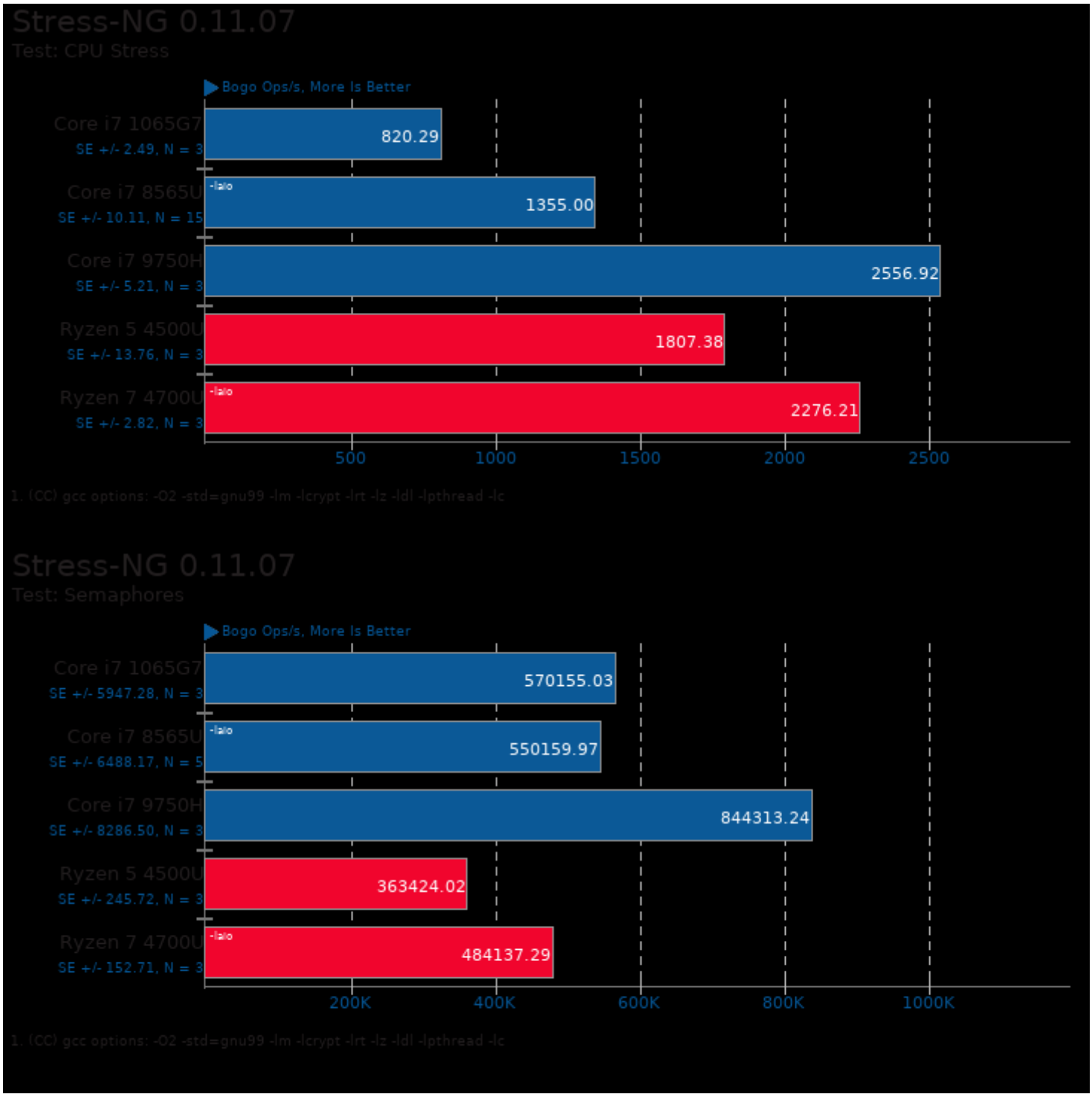

G'MIC
Test: Plotting Isosurface Of A 3D Volume, 1000 Times
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.12, N = 3
21.91
Core i7 8565U
SE +/- 0.10, N = 3
20.39
Core i7 9750H
SE +/- 0.06, N = 3
19.01
Ryzen 5 4500U
SE +/- 0.08, N = 3
20.78
Ryzen 7 4700U
SE +/- 0.02, N = 3
19.71
5
10
15
20
25
1. Version 2.4.5, Copyright (c) 2008-2019, David Tschumperle.
Stress-NG 0.11.07
Test: MMAP
Bogo Ops/s, More Is Better
Core i7 1065G7
SE +/- 0.08, N = 3
20.17
Core i7 8565U
SE +/- 0.36, N = 5
-lalo
29.34
Core i7 9750H
SE +/- 0.49, N = 3
77.96
Ryzen 5 4500U
SE +/- 0.18, N = 3
36.79
Ryzen 7 4700U
SE +/- 0.23, N = 3
-lalo
58.82
20
40
60
80
100
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc

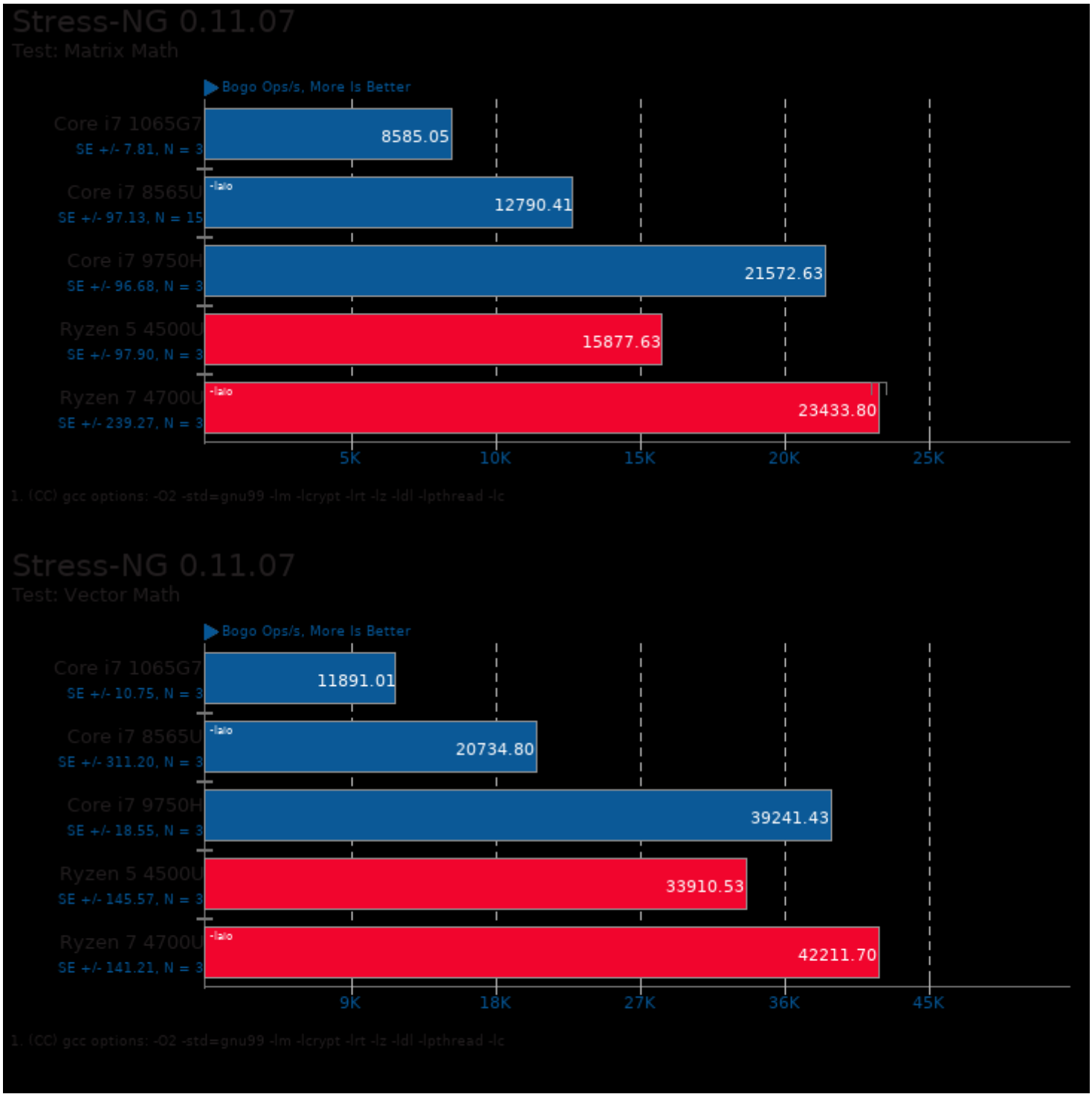

Stress-NG 0.11.07
Test: NUMA
Bogo Ops/s, More Is Better
Core i7 1065G7
SE +/- 0.02, N = 3
47.92
Core i7 8565U
SE +/- 0.66, N = 3
-lalo
62.08
Core i7 9750H
SE +/- 0.50, N = 3
120.19
Ryzen 5 4500U
SE +/- 1.50, N = 3
92.14
Ryzen 7 4700U
SE +/- 1.66, N = 3
-lalo
117.25
30
60
90
120
150
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc
Stress-NG 0.11.07
Test: MEMFD
Bogo Ops/s, More Is Better
Core i7 1065G7
SE +/- 0.73, N = 3
121.04
Core i7 8565U
SE +/- 1.97, N = 3
-lalo
205.09
Core i7 9750H
SE +/- 0.93, N = 3
482.49
Ryzen 5 4500U
SE +/- 0.42, N = 3
166.00
Ryzen 7 4700U
SE +/- 0.53, N = 3
-lalo
232.75
100
200
300
400
500
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc

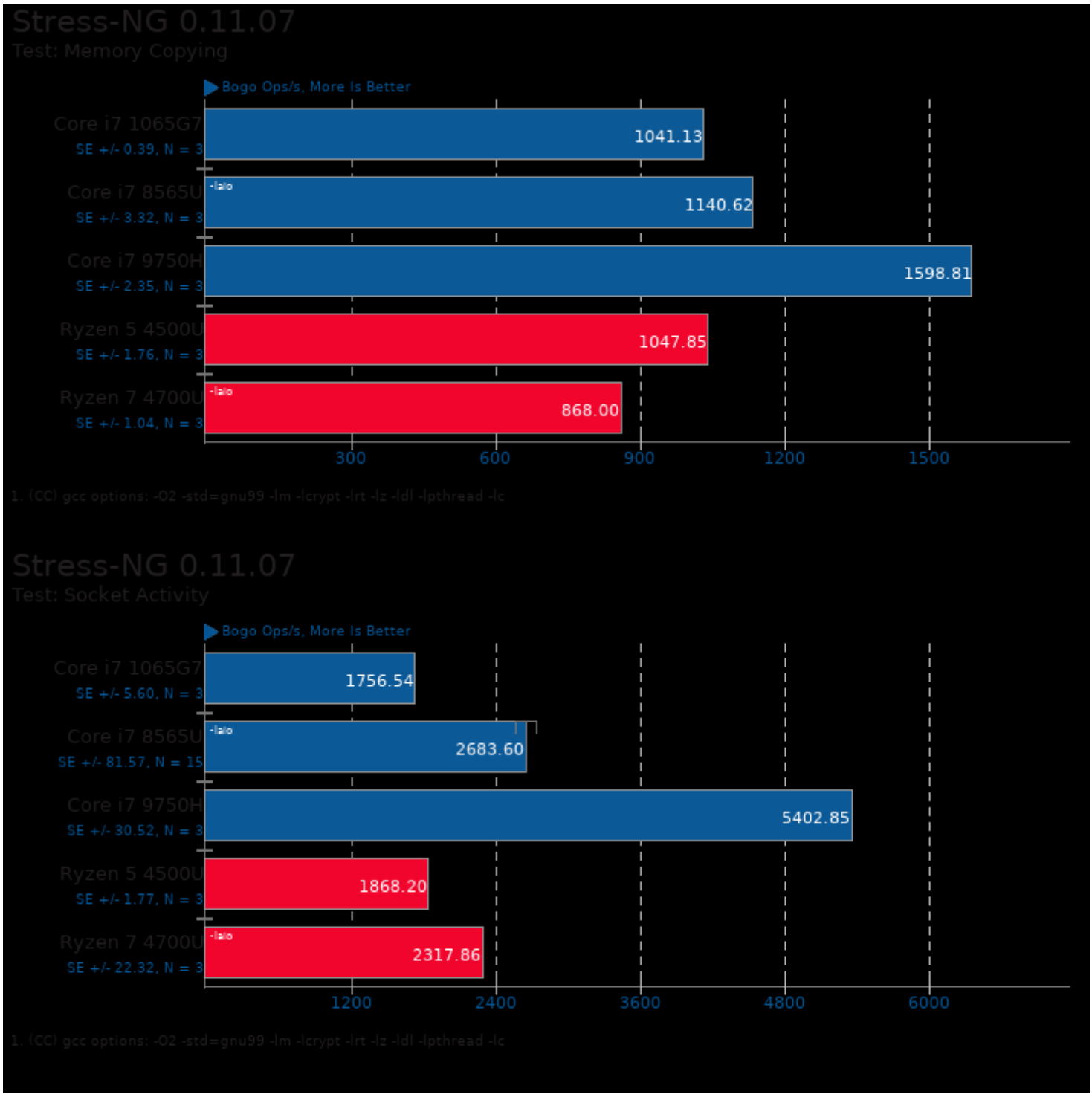

Stress-NG 0.11.07
Test: Atomic
Bogo Ops/s, More Is Better
Core i7 1065G7
SE +/- 1370.52, N = 13
167882.13
Core i7 8565U
SE +/- 3172.52, N = 3
-lalo
190153.97
Core i7 9750H
SE +/- 3526.45, N = 15
228374.44
Ryzen 5 4500U
SE +/- 211.37, N = 3
464737.80
Ryzen 7 4700U
SE +/- 203.68, N = 3
-lalo
492689.31
110K
220K
330K
440K
550K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc
Stress-NG 0.11.07
Test: Crypto
Bogo Ops/s, More Is Better
Core i7 1065G7
SE +/- 0.46, N = 3
357.32
Core i7 8565U
SE +/- 7.47, N = 3
-lalo
545.55
Core i7 9750H
SE +/- 2.27, N = 3
1027.01
Ryzen 5 4500U
SE +/- 6.78, N = 3
1277.12
Ryzen 7 4700U
SE +/- 2.83, N = 3
-lalo
1571.52
300
600
900
1200
1500
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc

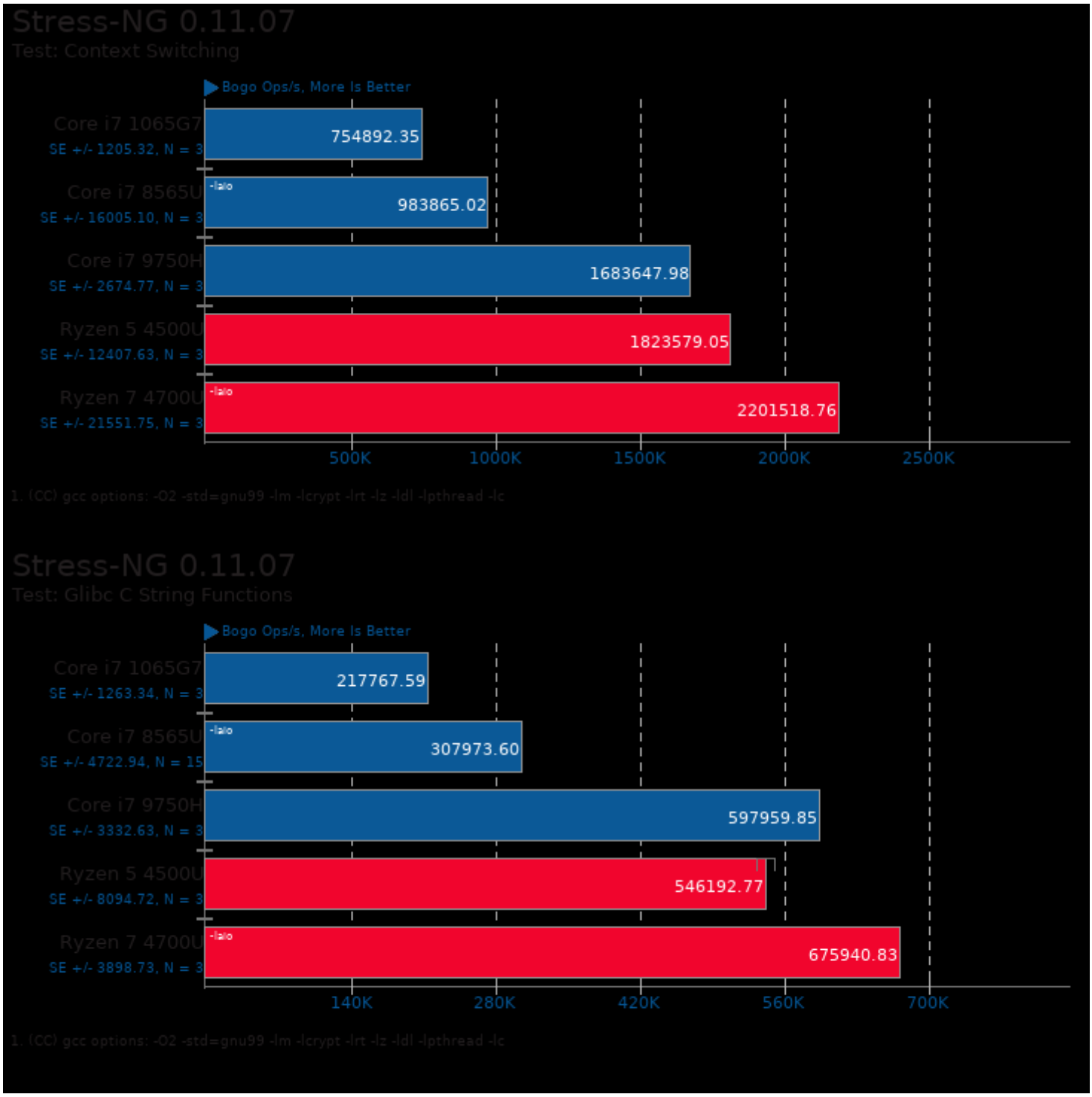

Stress-NG 0.11.07
Test: Malloc
Bogo Ops/s, More Is Better
Core i7 1065G7
SE +/- 126490.17, N = 3
12853770.20
Core i7 8565U
SE +/- 14180.33, N = 3
-lalo
16757116.92
Core i7 9750H
SE +/- 46324.02, N = 3
38934994.63
Ryzen 5 4500U
SE +/- 35460.59, N = 3
22653942.93
Ryzen 7 4700U
SE +/- 12297.23, N = 3
-lalo
28091580.32
8M
16M
24M
32M
40M
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc
Stress-NG 0.11.07
Test: Forking
Bogo Ops/s, More Is Better
Core i7 1065G7
SE +/- 91.31, N = 3
17316.99
Core i7 8565U
SE +/- 296.00, N = 7
-lalo
26432.50
Core i7 9750H
SE +/- 204.71, N = 3
45749.55
Ryzen 5 4500U
SE +/- 165.07, N = 3
31151.37
Ryzen 7 4700U
SE +/- 263.50, N = 3
-lalo
36146.97
10K
20K
30K
40K
50K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc

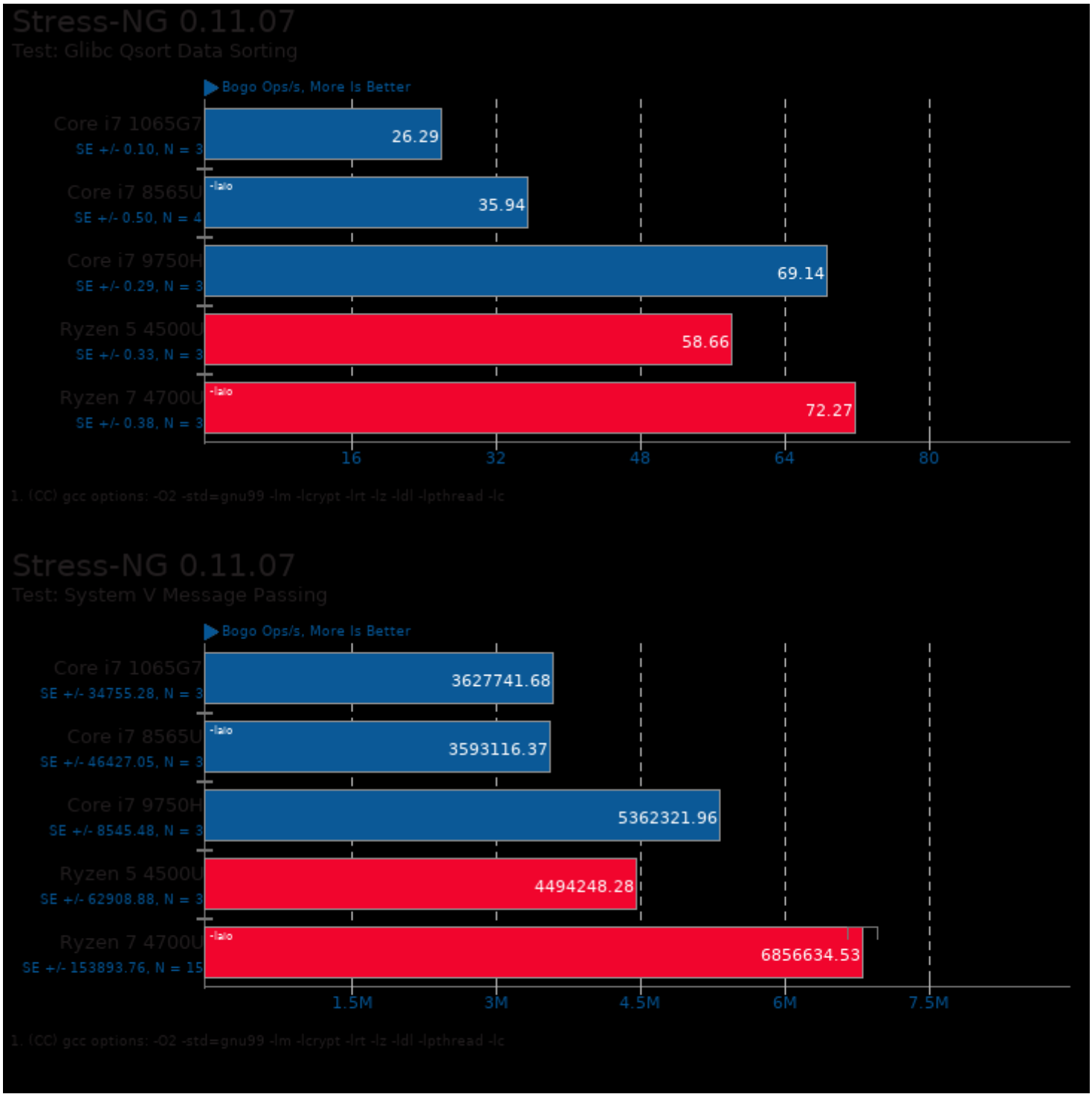

Stress-NG 0.11.07
Test: SENDFILE
Bogo Ops/s, More Is Better
Core i7 1065G7
SE +/- 54.55, N = 3
29574.90
Core i7 8565U
SE +/- 463.95, N = 3
-lalo
32978.51
Core i7 9750H
SE +/- 33.22, N = 3
62522.06
Ryzen 5 4500U
SE +/- 336.16, N = 3
69853.67
Ryzen 7 4700U
SE +/- 350.57, N = 3
-lalo
86886.49
20K
40K
60K
80K
100K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc
Stress-NG 0.11.07
Test: CPU Cache
Bogo Ops/s, More Is Better
Core i7 1065G7
SE +/- 0.14, N = 3
21.43
Core i7 8565U
SE +/- 0.06, N = 3
-lalo
12.01
Core i7 9750H
SE +/- 0.30, N = 3
20.32
Ryzen 5 4500U
SE +/- 0.47, N = 5
37.14
Ryzen 7 4700U
SE +/- 0.12, N = 3
-lalo
36.95
9
18
27
36
45
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc

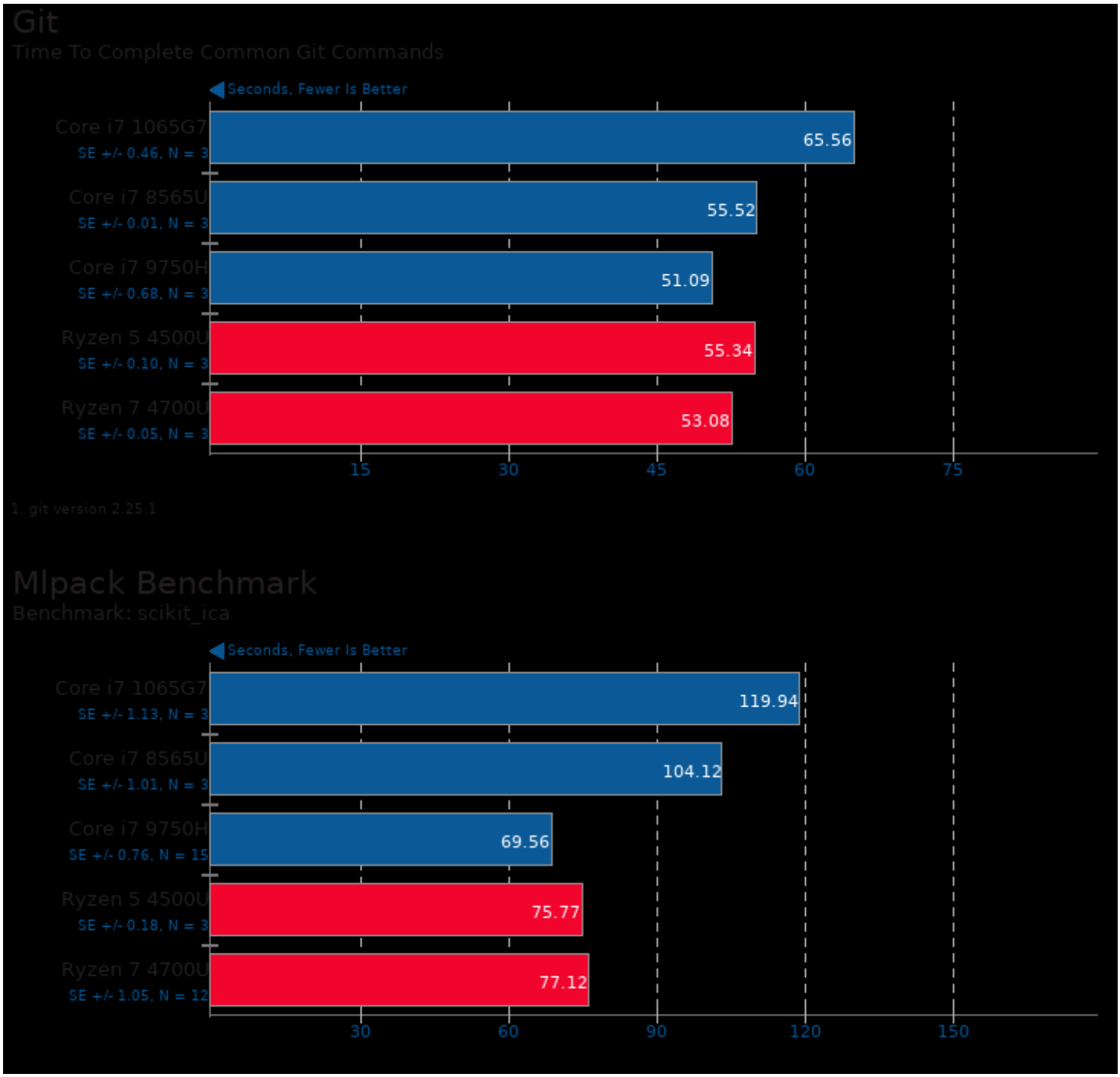

Stress-NG 0.11.07
Test: CPU Stress
Bogo Ops/s, More Is Better
Core i7 1065G7
SE +/- 2.49, N = 3
820.29
Core i7 8565U
SE +/- 10.11, N = 15
-lalo
1355.00
Core i7 9750H
SE +/- 5.21, N = 3
2556.92
Ryzen 5 4500U
SE +/- 13.76, N = 3
1807.38
Ryzen 7 4700U
SE +/- 2.82, N = 3
-lalo
2276.21
500
1000
1500
2000
2500
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc
Stress-NG 0.11.07
Test: Semaphores
Bogo Ops/s, More Is Better
Core i7 1065G7
SE +/- 5947.28, N = 3
570155.03
Core i7 8565U
SE +/- 6488.17, N = 5
-lalo
550159.97
Core i7 9750H
SE +/- 8286.50, N = 3
844313.24
Ryzen 5 4500U
SE +/- 245.72, N = 3
363424.02
Ryzen 7 4700U
SE +/- 152.71, N = 3
-lalo
484137.29
200K
400K
600K
800K
1000K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc

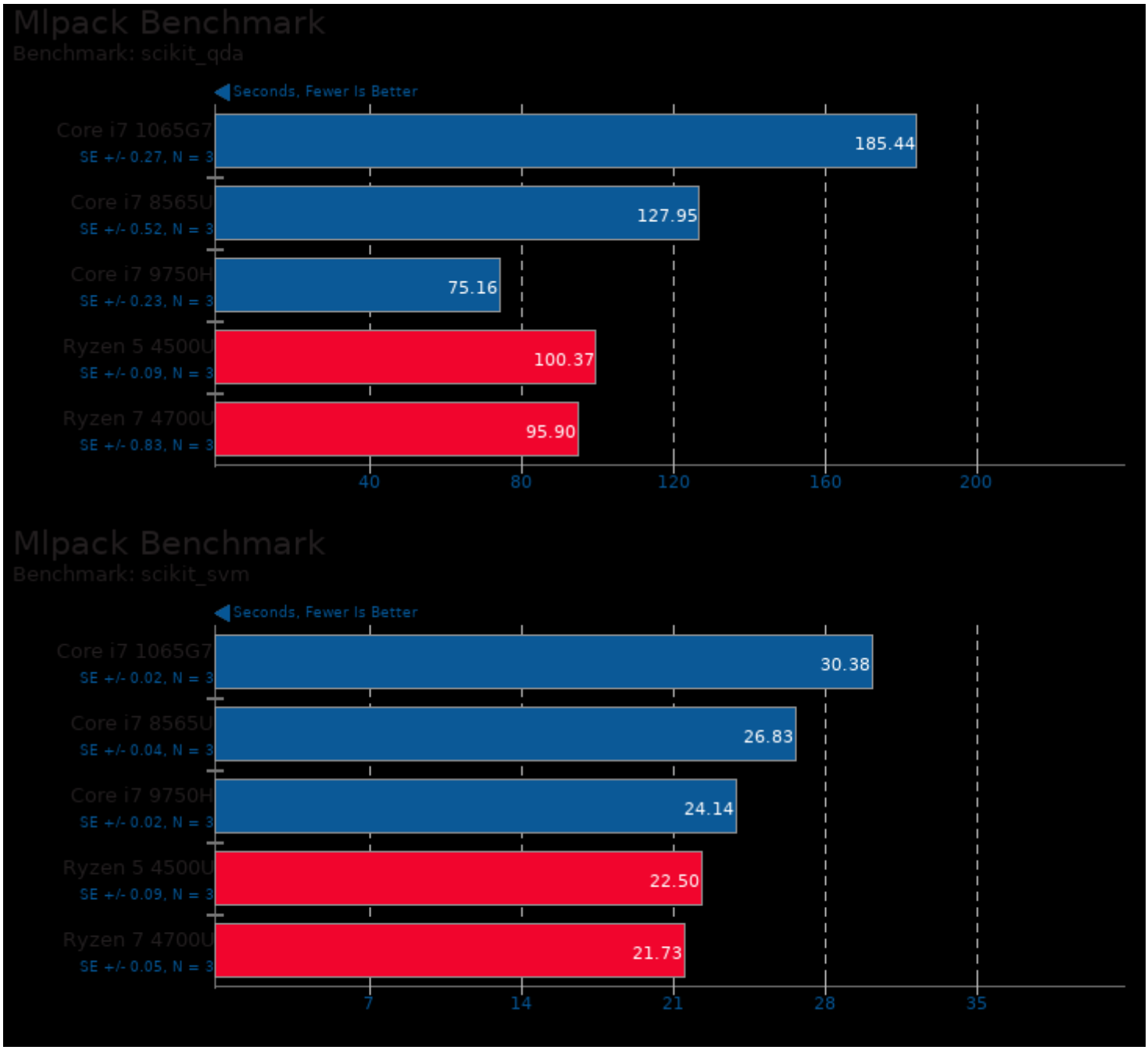

Stress-NG 0.11.07
Test: Matrix Math
Bogo Ops/s, More Is Better
Core i7 1065G7
SE +/- 7.81, N = 3
8585.05
Core i7 8565U
SE +/- 97.13, N = 15
-lalo
12790.41
Core i7 9750H
SE +/- 96.68, N = 3
21572.63
Ryzen 5 4500U
SE +/- 97.90, N = 3
15877.63
Ryzen 7 4700U
SE +/- 239.27, N = 3
-lalo
23433.80
5K
10K
15K
20K
25K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc
Stress-NG 0.11.07
Test: Vector Math
Bogo Ops/s, More Is Better
Core i7 1065G7
SE +/- 10.75, N = 3
11891.01
Core i7 8565U
SE +/- 311.20, N = 3
-lalo
20734.80
Core i7 9750H
SE +/- 18.55, N = 3
39241.43
Ryzen 5 4500U
SE +/- 145.57, N = 3
33910.53
Ryzen 7 4700U
SE +/- 141.21, N = 3
-lalo
42211.70
9K
18K
27K
36K
45K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc

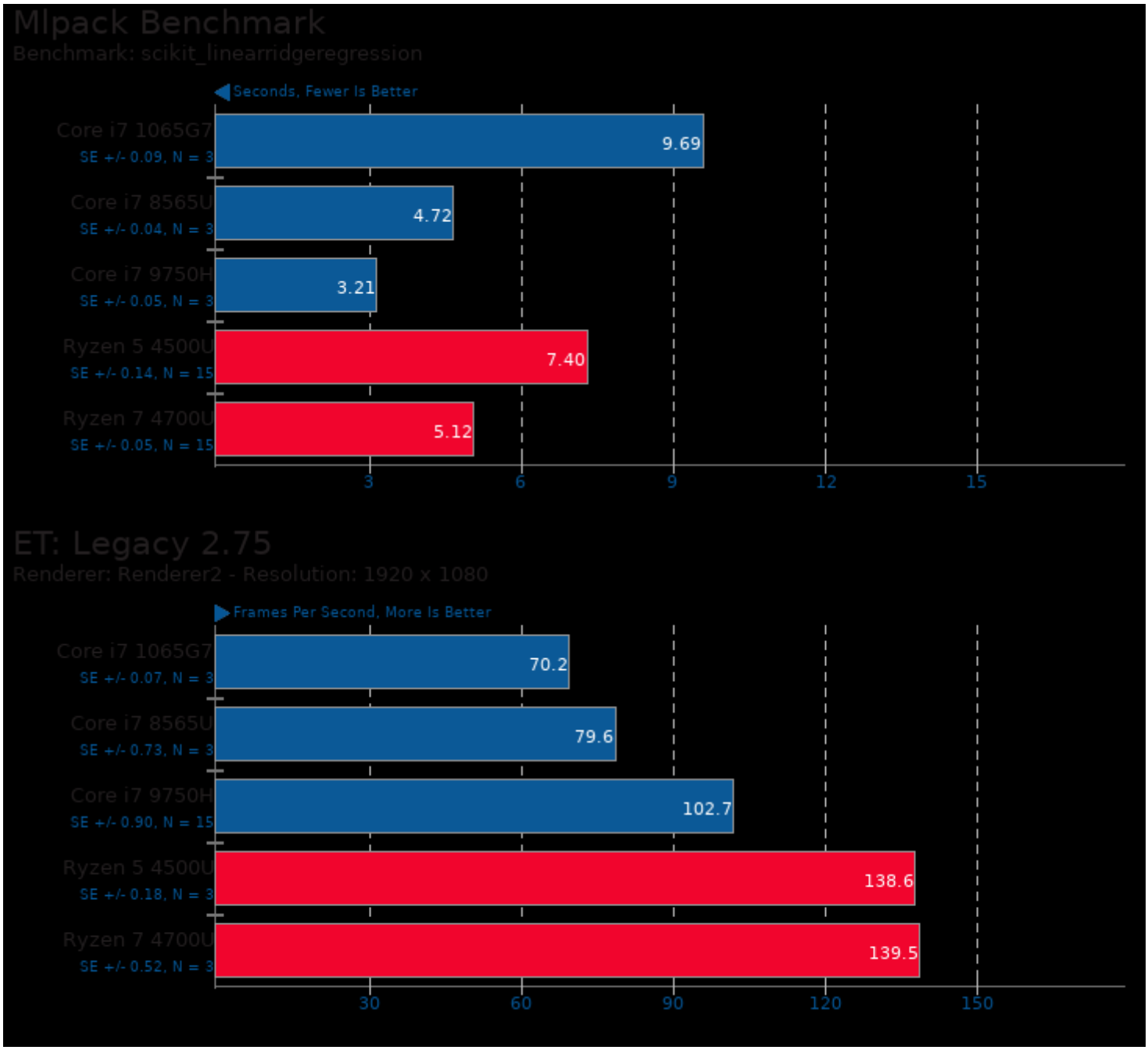

Stress-NG 0.11.07
Test: Memory Copying
Bogo Ops/s, More Is Better
Core i7 1065G7
SE +/- 0.39, N = 3
1041.13
Core i7 8565U
SE +/- 3.32, N = 3
-lalo
1140.62
Core i7 9750H
SE +/- 2.35, N = 3
1598.81
Ryzen 5 4500U
SE +/- 1.76, N = 3
1047.85
Ryzen 7 4700U
SE +/- 1.04, N = 3
-lalo
868.00
300
600
900
1200
1500
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc
Stress-NG 0.11.07
Test: Socket Activity
Bogo Ops/s, More Is Better
Core i7 1065G7
SE +/- 5.60, N = 3
1756.54
Core i7 8565U
SE +/- 81.57, N = 15
-lalo
2683.60
Core i7 9750H
SE +/- 30.52, N = 3
5402.85
Ryzen 5 4500U
SE +/- 1.77, N = 3
1868.20
Ryzen 7 4700U
SE +/- 22.32, N = 3
-lalo
2317.86
1200
2400
3600
4800
6000
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc

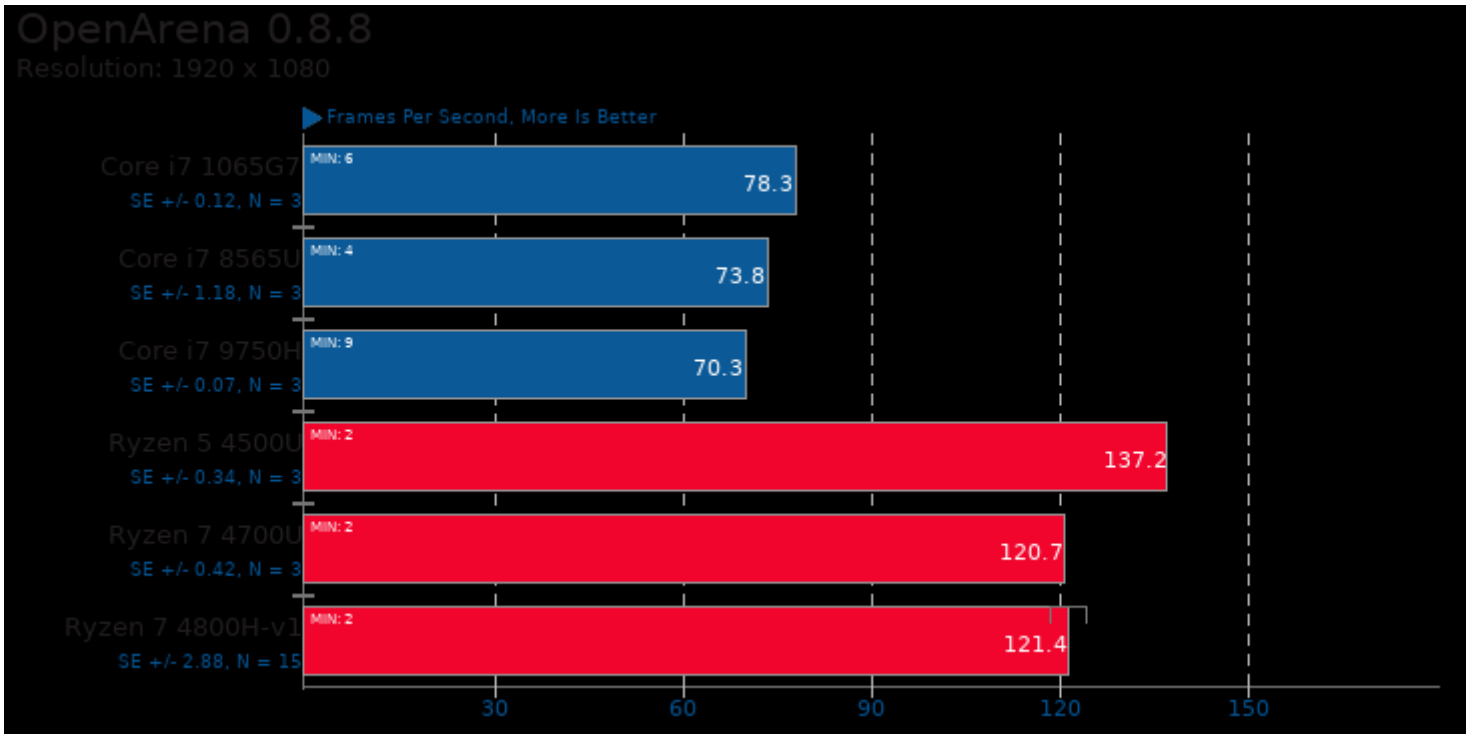

Stress-NG 0.11.07
Test: Context Switching
Bogo Ops/s, More Is Better
Core i7 1065G7
SE +/- 1205.32, N = 3
754892.35
Core i7 8565U
SE +/- 16005.10, N = 3
-lalo
983865.02
Core i7 9750H
SE +/- 2674.77, N = 3
1683647.98
Ryzen 5 4500U
SE +/- 12407.63, N = 3
1823579.05
Ryzen 7 4700U
SE +/- 21551.75, N = 3
-lalo
2201518.76
500K
1000K
1500K
2000K
2500K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc
Stress-NG 0.11.07
Test: Glibc C String Functions
Bogo Ops/s, More Is Better
Core i7 1065G7
SE +/- 1263.34, N = 3
217767.59
Core i7 8565U
SE +/- 4722.94, N = 15
-lalo
307973.60
Core i7 9750H
SE +/- 3332.63, N = 3
597959.85
Ryzen 5 4500U
SE +/- 8094.72, N = 3
546192.77
Ryzen 7 4700U
SE +/- 3898.73, N = 3
-lalo
675940.83
140K
280K
420K
560K
700K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc

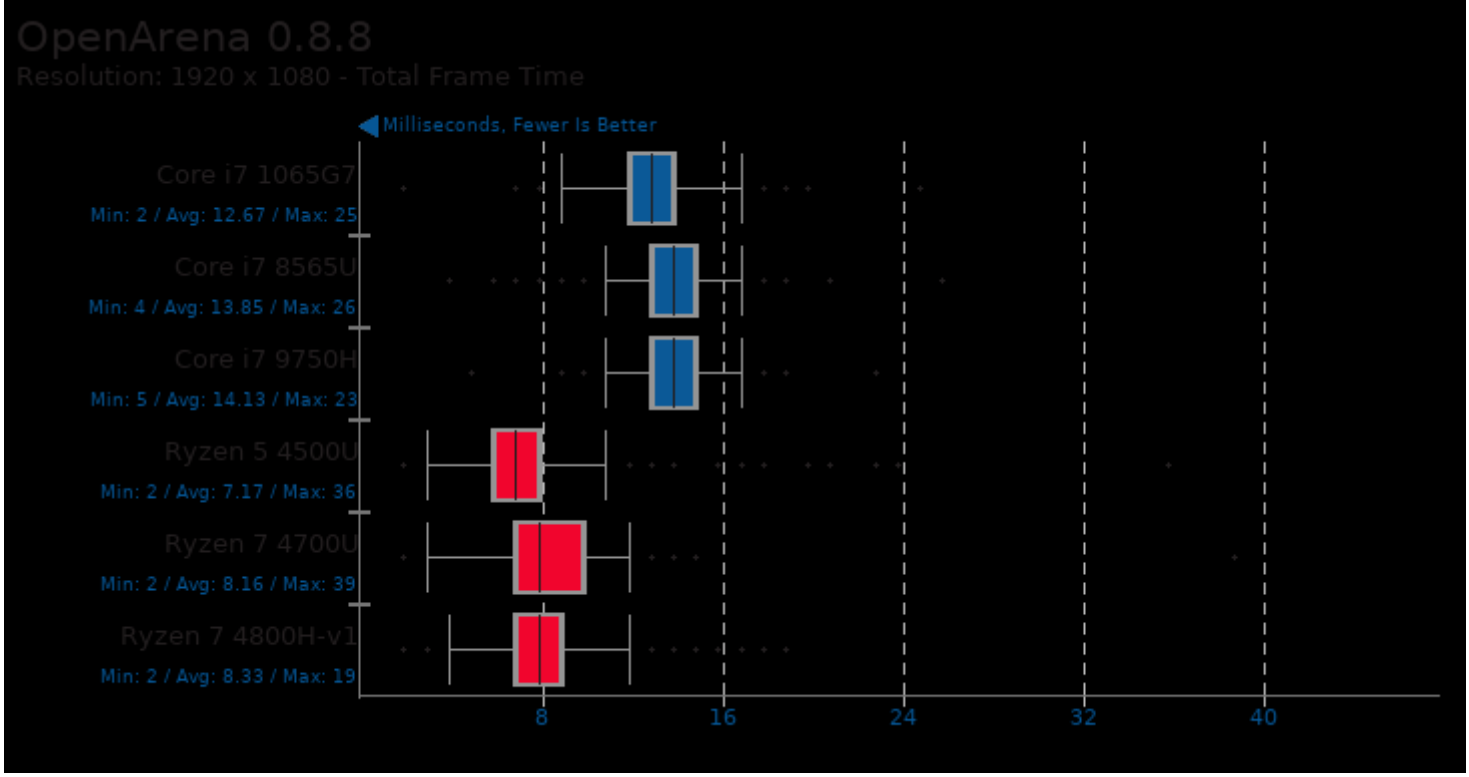

Stress-NG 0.11.07
Test: Glibc Qsort Data Sorting
Bogo Ops/s, More Is Better
Core i7 1065G7
SE +/- 0.10, N = 3
26.29
Core i7 8565U
SE +/- 0.50, N = 4
-lalo
35.94
Core i7 9750H
SE +/- 0.29, N = 3
69.14
Ryzen 5 4500U
SE +/- 0.33, N = 3
58.66
Ryzen 7 4700U
SE +/- 0.38, N = 3
-lalo
72.27
16
32
48
64
80
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc
Stress-NG 0.11.07
Test: System V Message Passing
Bogo Ops/s, More Is Better
Core i7 1065G7
SE +/- 34755.28, N = 3
3627741.68
Core i7 8565U
SE +/- 46427.05, N = 3
-lalo
3593116.37
Core i7 9750H
SE +/- 8545.48, N = 3
5362321.96
Ryzen 5 4500U
SE +/- 62908.88, N = 3
4494248.28
Ryzen 7 4700U
SE +/- 153893.76, N = 15
-lalo
6856634.53
1.5M
3M
4.5M
6M
7.5M
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc

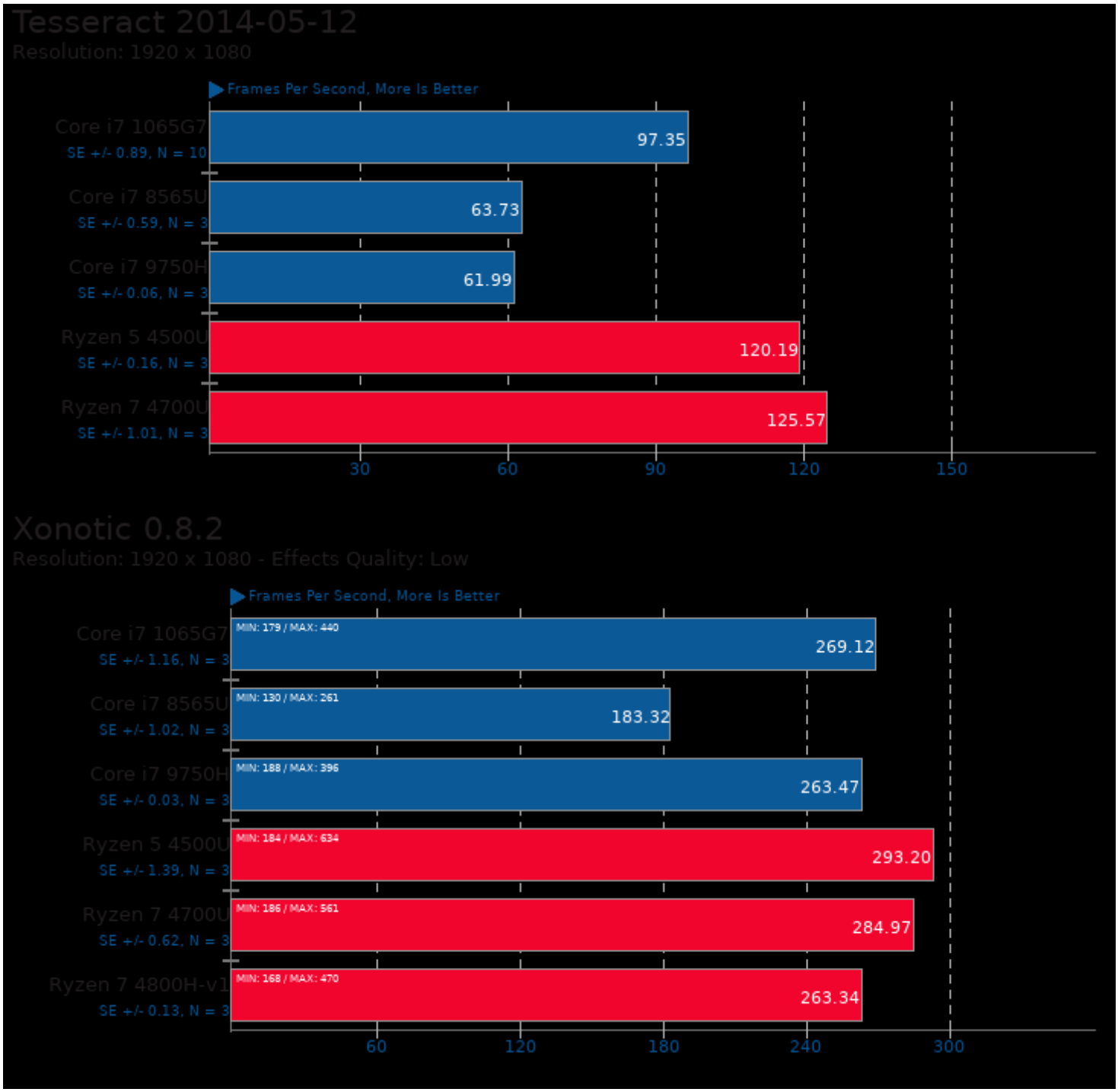

Git
Time To Complete Common Git Commands
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.46, N = 3
65.56
Core i7 8565U
SE +/- 0.01, N = 3
55.52
Core i7 9750H
SE +/- 0.68, N = 3
51.09
Ryzen 5 4500U
SE +/- 0.10, N = 3
55.34
Ryzen 7 4700U
SE +/- 0.05, N = 3
53.08
15
30
45
60
75
1. git version 2.25.1
Mlpack Benchmark
Benchmark: scikit_ica
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 1.13, N = 3
119.94
Core i7 8565U
SE +/- 1.01, N = 3
104.12
Core i7 9750H
SE +/- 0.76, N = 15
69.56
Ryzen 5 4500U
SE +/- 0.18, N = 3
75.77
Ryzen 7 4700U
SE +/- 1.05, N = 12
77.12
30
60
90
120
150


Mlpack Benchmark
Benchmark: scikit_qda
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.27, N = 3
185.44
Core i7 8565U
SE +/- 0.52, N = 3
127.95
Core i7 9750H
SE +/- 0.23, N = 3
75.16
Ryzen 5 4500U
SE +/- 0.09, N = 3
100.37
Ryzen 7 4700U
SE +/- 0.83, N = 3
95.90
40
80
120
160
200
Mlpack Benchmark
Benchmark: scikit_svm
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.02, N = 3
30.38
Core i7 8565U
SE +/- 0.04, N = 3
26.83
Core i7 9750H
SE +/- 0.02, N = 3
24.14
Ryzen 5 4500U
SE +/- 0.09, N = 3
22.50
Ryzen 7 4700U
SE +/- 0.05, N = 3
21.73
7
14
21
28
35


Mlpack Benchmark
Benchmark: scikit_linearridgeregression
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.09, N = 3
9.69
Core i7 8565U
SE +/- 0.04, N = 3
4.72
Core i7 9750H
SE +/- 0.05, N = 3
3.21
Ryzen 5 4500U
SE +/- 0.14, N = 15
7.40
Ryzen 7 4700U
SE +/- 0.05, N = 15
5.12
3
6
9
12
15
ET: Legacy 2.75
Renderer: Renderer2 - Resolution: 1920 x 1080
Frames Per Second, More Is Better
Core i7 1065G7
SE +/- 0.07, N = 3
70.2
Core i7 8565U
SE +/- 0.73, N = 3
79.6
Core i7 9750H
SE +/- 0.90, N = 15
102.7
Ryzen 5 4500U
SE +/- 0.18, N = 3
138.6
Ryzen 7 4700U
SE +/- 0.52, N = 3
139.5
30
60
90
120
150

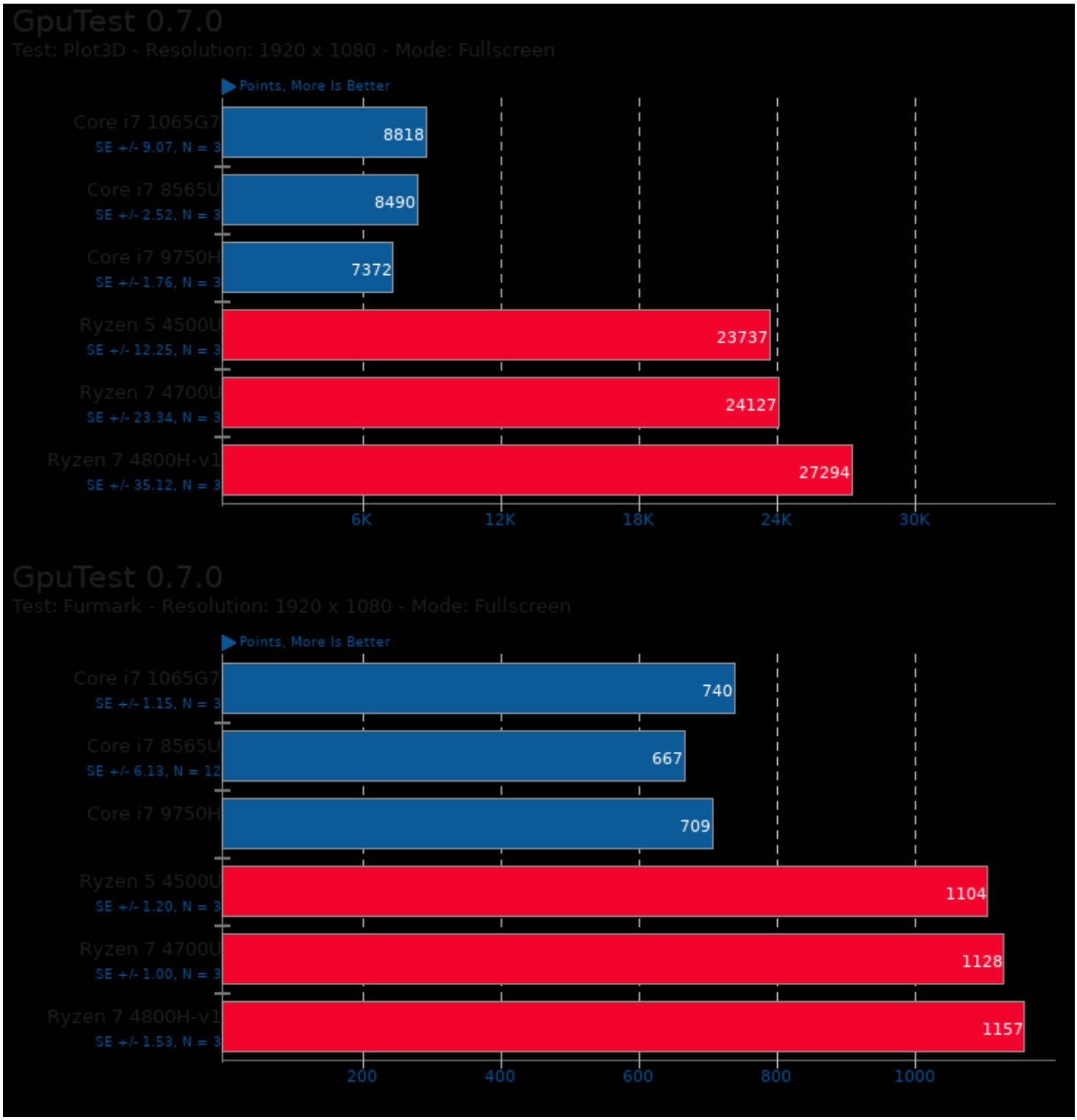

OpenArena 0.8.8
Resolution: 1920 x 1080
Frames Per Second, More Is Better
Core i7 1065G7
SE +/- 0.12, N = 3
MIN: 6
78.3
Core i7 8565U
SE +/- 1.18, N = 3
MIN: 4
73.8
Core i7 9750H
SE +/- 0.07, N = 3
MIN: 9
70.3
Ryzen 5 4500U
SE +/- 0.34, N = 3
MIN: 2
137.2
Ryzen 7 4700U
SE +/- 0.42, N = 3
MIN: 2
120.7
Ryzen 7 4800H-v1
SE +/- 2.88, N = 15
MIN: 2
121.4
30
60
90
120
150

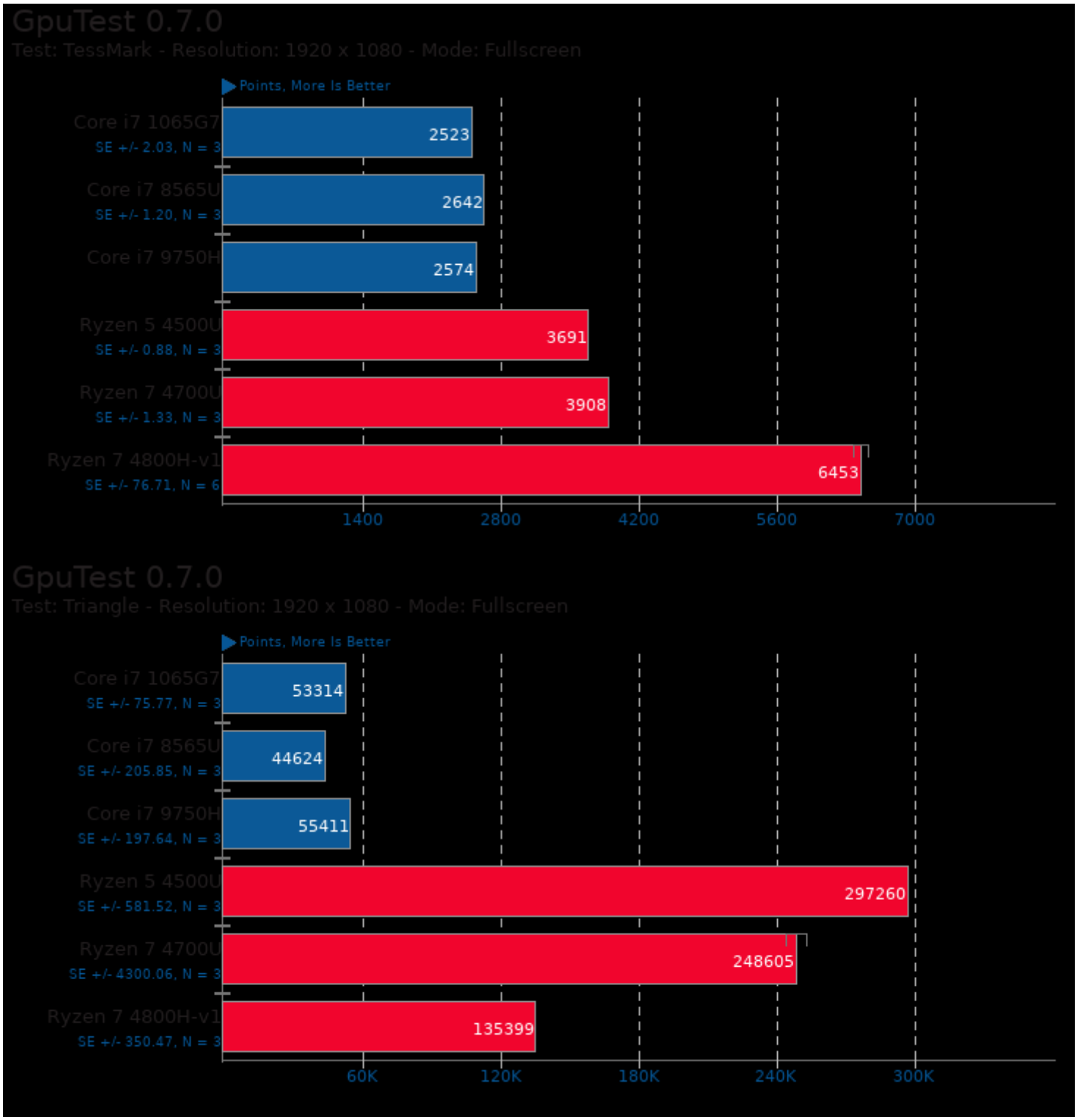

OpenArena 0.8.8
Resolution: 1920 x 1080 - Total Frame Time
Milliseconds, Fewer Is Better
Core i7 1065G7
Min: 2 / Avg: 12.67 / Max: 25
Core i7 8565U
Min: 4 / Avg: 13.85 / Max: 26
Core i7 9750H
Min: 5 / Avg: 14.13 / Max: 23
Ryzen 5 4500U
Min: 2 / Avg: 7.17 / Max: 36
Ryzen 7 4700U
Min: 2 / Avg: 8.16 / Max: 39
Ryzen 7 4800H-v1
Min: 2 / Avg: 8.33 / Max: 19
8
16
24
32
40

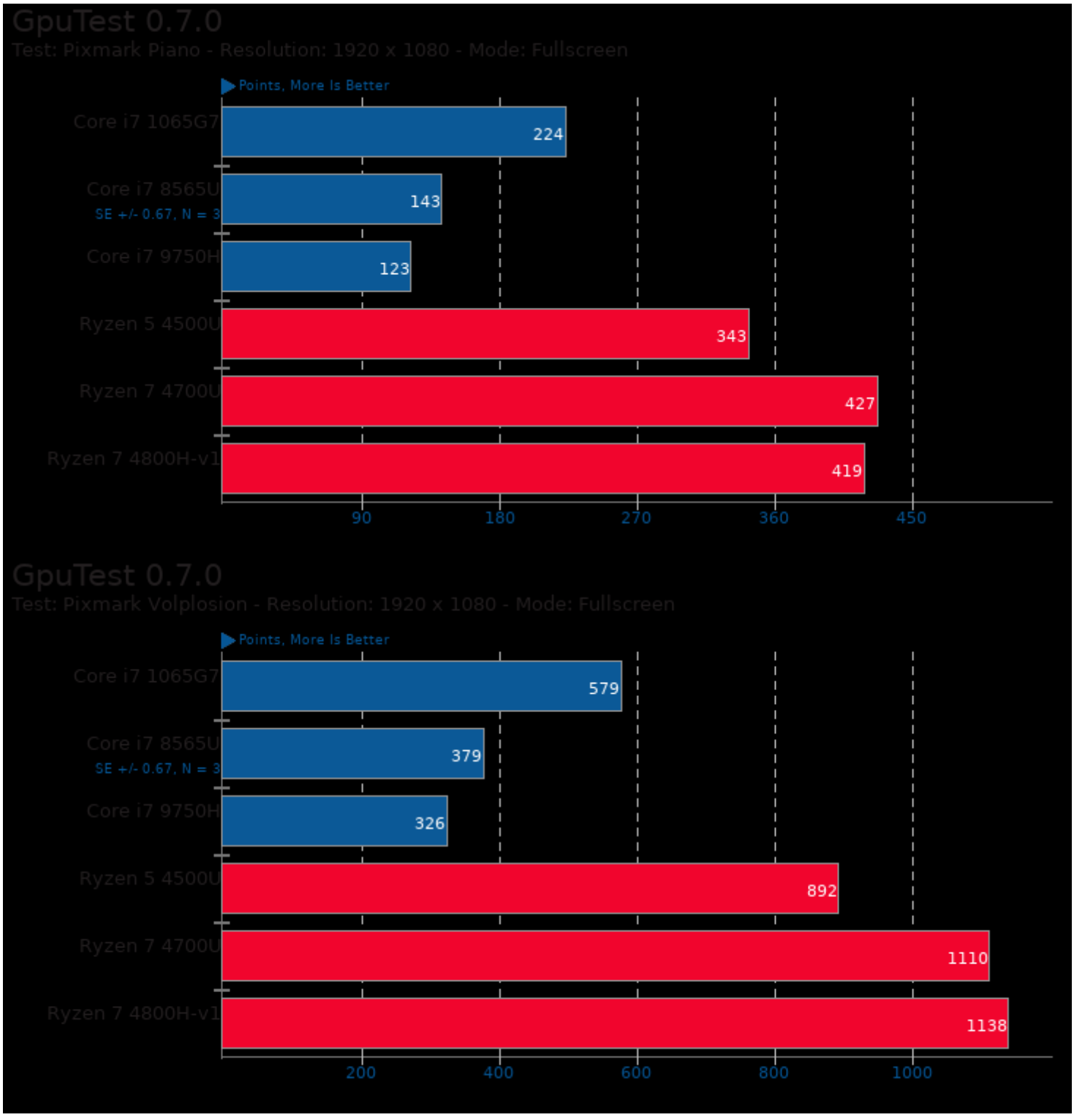

Tesseract 2014-05-12
Resolution: 1920 x 1080
Frames Per Second, More Is Better
Core i7 1065G7
SE +/- 0.89, N = 10
97.35
Core i7 8565U
SE +/- 0.59, N = 3
63.73
Core i7 9750H
SE +/- 0.06, N = 3
61.99
Ryzen 5 4500U
SE +/- 0.16, N = 3
120.19
Ryzen 7 4700U
SE +/- 1.01, N = 3
125.57
30
60
90
120
150
Xonotic 0.8.2
Resolution: 1920 x 1080 - Effects Quality: Low
Frames Per Second, More Is Better
Core i7 1065G7
SE +/- 1.16, N = 3
MIN: 179 / MAX: 440
269.12
Core i7 8565U
SE +/- 1.02, N = 3
MIN: 130 / MAX: 261
183.32
Core i7 9750H
SE +/- 0.03, N = 3
MIN: 188 / MAX: 396
263.47
Ryzen 5 4500U
SE +/- 1.39, N = 3
MIN: 184 / MAX: 634
293.20
Ryzen 7 4700U
SE +/- 0.62, N = 3
MIN: 186 / MAX: 561
284.97
Ryzen 7 4800H-v1
SE +/- 0.13, N = 3
MIN: 168 / MAX: 470
263.34
60
120
180
240
300

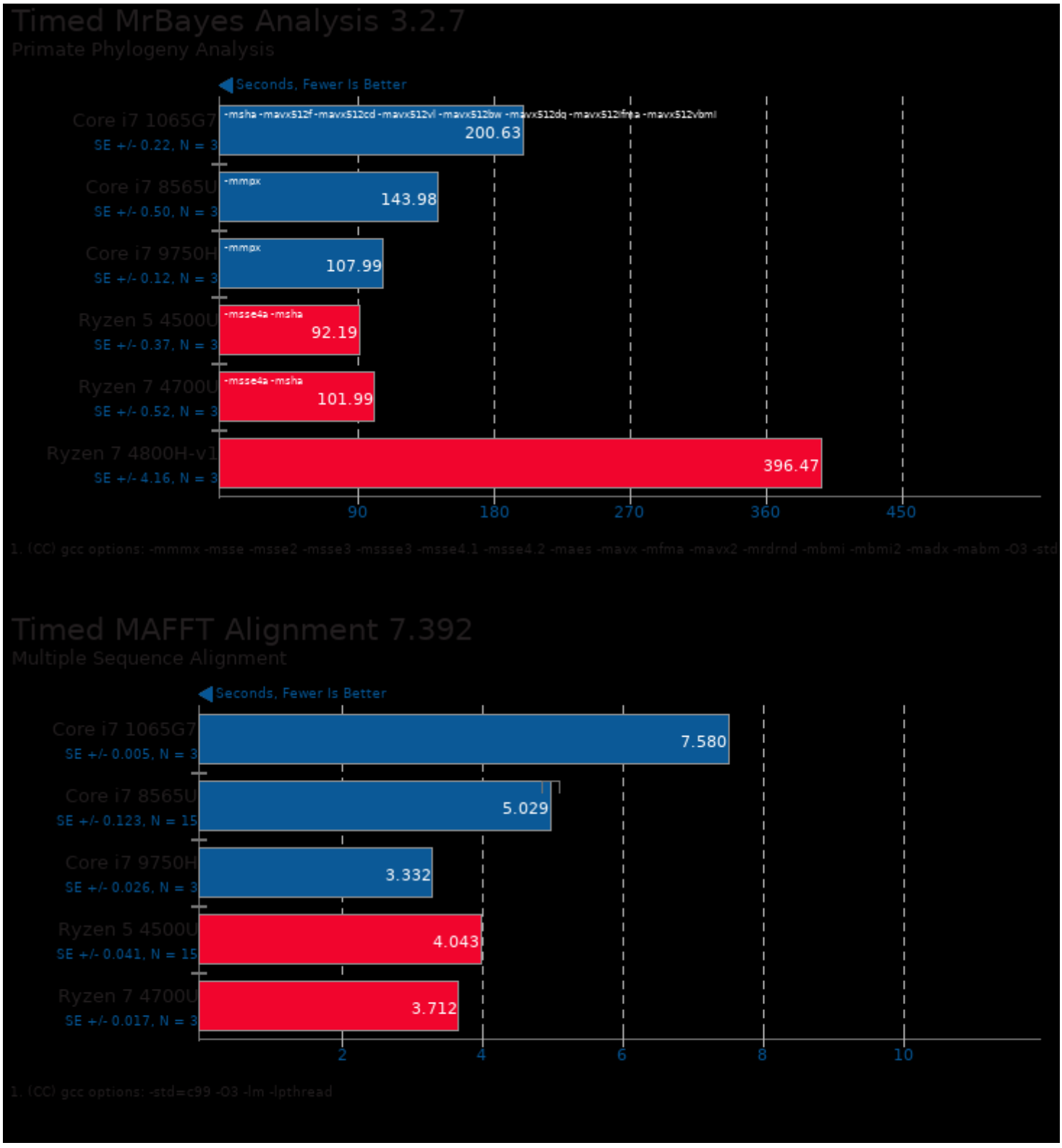

Xonotic 0.8.2
Resolution: 1920 x 1080 - Effects Quality: High
Frames Per Second, More Is Better
Core i7 1065G7
SE +/- 0.62, N = 3
MIN: 103 / MAX: 278
165.76
Core i7 8565U
SE +/- 0.11, N = 3
MIN: 74 / MAX: 152
111.01
Core i7 9750H
SE +/- 0.05, N = 3
MIN: 76 / MAX: 162
128.95
Ryzen 5 4500U
SE +/- 0.31, N = 3
MIN: 139 / MAX: 312
198.66
Ryzen 7 4700U
SE +/- 2.27, N = 3
MIN: 133 / MAX: 305
198.38
Ryzen 7 4800H-v1
SE +/- 0.47, N = 3
MIN: 131 / MAX: 341
201.08
40
80
120
160
200
Xonotic 0.8.2
Resolution: 1920 x 1080 - Effects Quality: Ultra
Frames Per Second, More Is Better
Core i7 1065G7
SE +/- 0.43, N = 3
MIN: 47 / MAX: 240
83.54
Core i7 8565U
SE +/- 0.24, N = 3
MIN: 51 / MAX: 135
91.28
Core i7 9750H
SE +/- 0.05, N = 3
MIN: 52 / MAX: 142
99.65
Ryzen 5 4500U
SE +/- 0.16, N = 3
MIN: 108 / MAX: 264
171.51
Ryzen 7 4700U
SE +/- 0.40, N = 3
MIN: 104 / MAX: 258
165.43
Ryzen 7 4800H-v1
SE +/- 2.44, N = 12
MIN: 3 / MAX: 291
174.70
40
80
120
160
200

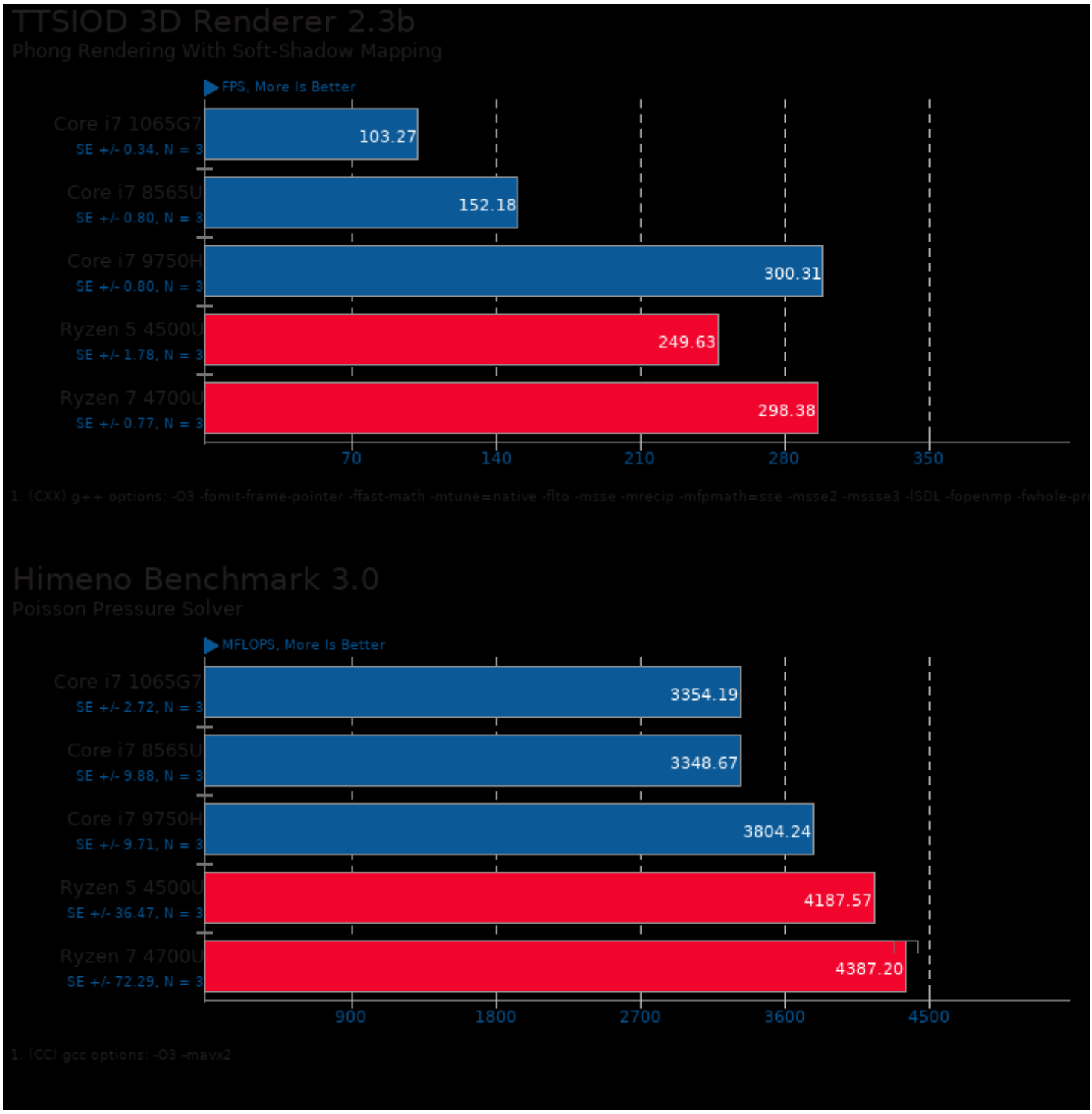

Xonotic 0.8.2
Resolution: 1920 x 1080 - Effects Quality: Ultimate
Frames Per Second, More Is Better
Core i7 1065G7
SE +/- 0.17, N = 3
MIN: 26 / MAX: 103
64.64
Core i7 8565U
SE +/- 0.11, N = 3
MIN: 24 / MAX: 114
69.25
Core i7 9750H
SE +/- 0.06, N = 3
MIN: 35 / MAX: 115
71.37
Ryzen 5 4500U
SE +/- 0.07, N = 3
MIN: 36 / MAX: 219
131.79
Ryzen 7 4700U
SE +/- 0.26, N = 3
MIN: 34 / MAX: 222
130.41
Ryzen 7 4800H-v1
SE +/- 0.40, N = 3
MIN: 31 / MAX: 268
146.25
30
60
90
120
150
GpuTest 0.7.0
Test: GiMark - Resolution: 1920 x 1080 - Mode: Fullscreen
Points, More Is Better
Core i7 1065G7
1201
Core i7 8565U
SE +/- 3.84, N = 3
1230
Core i7 9750H
1120
Ryzen 5 4500U
SE +/- 0.33, N = 3
1351
Ryzen 7 4700U
SE +/- 0.33, N = 3
1422
Ryzen 7 4800H-v1
SE +/- 0.67, N = 3
3003
600
1200
1800
2400
3000

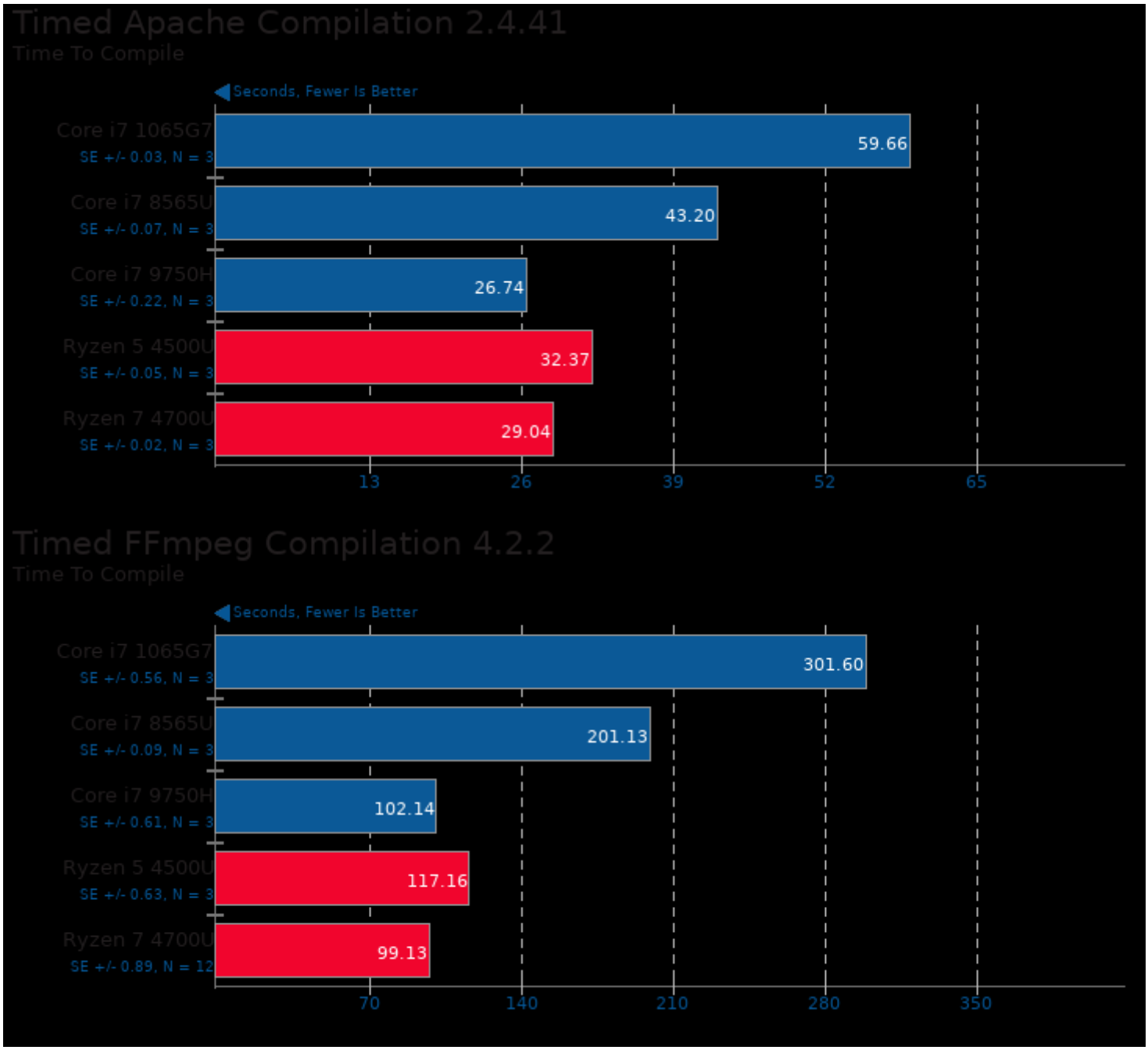

GpuTest 0.7.0
Test: Plot3D - Resolution: 1920 x 1080 - Mode: Fullscreen
Points, More Is Better
Core i7 1065G7
SE +/- 9.07, N = 3
8818
Core i7 8565U
SE +/- 2.52, N = 3
8490
Core i7 9750H
SE +/- 1.76, N = 3
7372
Ryzen 5 4500U
SE +/- 12.25, N = 3
23737
Ryzen 7 4700U
SE +/- 23.34, N = 3
24127
Ryzen 7 4800H-v1
SE +/- 35.12, N = 3
27294
6K
12K
18K
24K
30K
GpuTest 0.7.0
Test: Furmark - Resolution: 1920 x 1080 - Mode: Fullscreen
Points, More Is Better
Core i7 1065G7
SE +/- 1.15, N = 3
740
Core i7 8565U
SE +/- 6.13, N = 12
667
Core i7 9750H
709
Ryzen 5 4500U
SE +/- 1.20, N = 3
1104
Ryzen 7 4700U
SE +/- 1.00, N = 3
1128
Ryzen 7 4800H-v1
SE +/- 1.53, N = 3
1157
200
400
600
800
1000

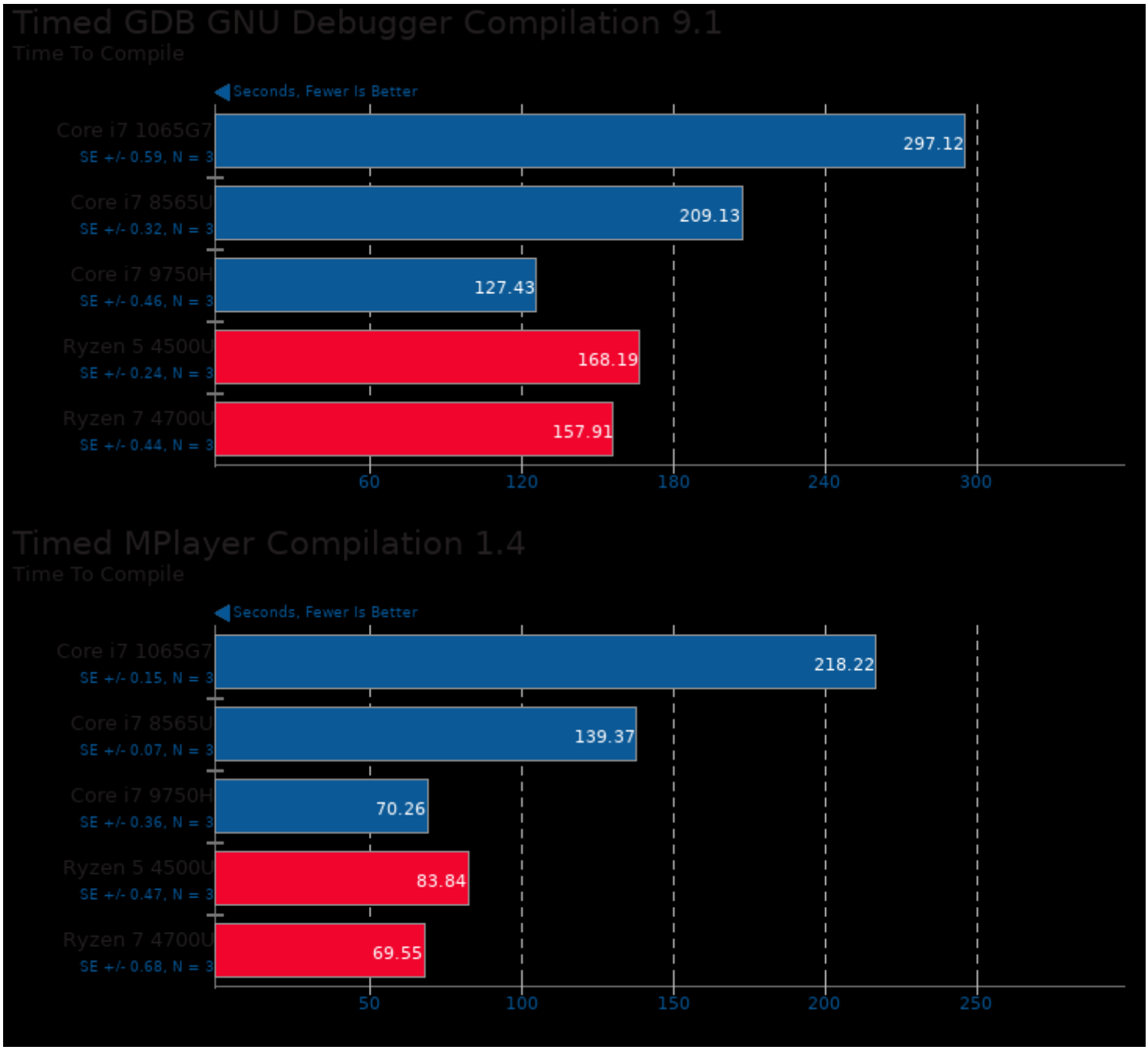

GpuTest 0.7.0
Test: TessMark - Resolution: 1920 x 1080 - Mode: Fullscreen
Points, More Is Better
Core i7 1065G7
SE +/- 2.03, N = 3
2523
Core i7 8565U
SE +/- 1.20, N = 3
2642
Core i7 9750H
2574
Ryzen 5 4500U
SE +/- 0.88, N = 3
3691
Ryzen 7 4700U
SE +/- 1.33, N = 3
3908
Ryzen 7 4800H-v1
SE +/- 76.71, N = 6
6453
1400
2800
4200
5600
7000
GpuTest 0.7.0
Test: Triangle - Resolution: 1920 x 1080 - Mode: Fullscreen
Points, More Is Better
Core i7 1065G7
SE +/- 75.77, N = 3
53314
Core i7 8565U
SE +/- 205.85, N = 3
44624
Core i7 9750H
SE +/- 197.64, N = 3
55411
Ryzen 5 4500U
SE +/- 581.52, N = 3
297260
Ryzen 7 4700U
SE +/- 4300.06, N = 3
248605
Ryzen 7 4800H-v1
SE +/- 350.47, N = 3
135399
60K
120K
180K
240K
300K

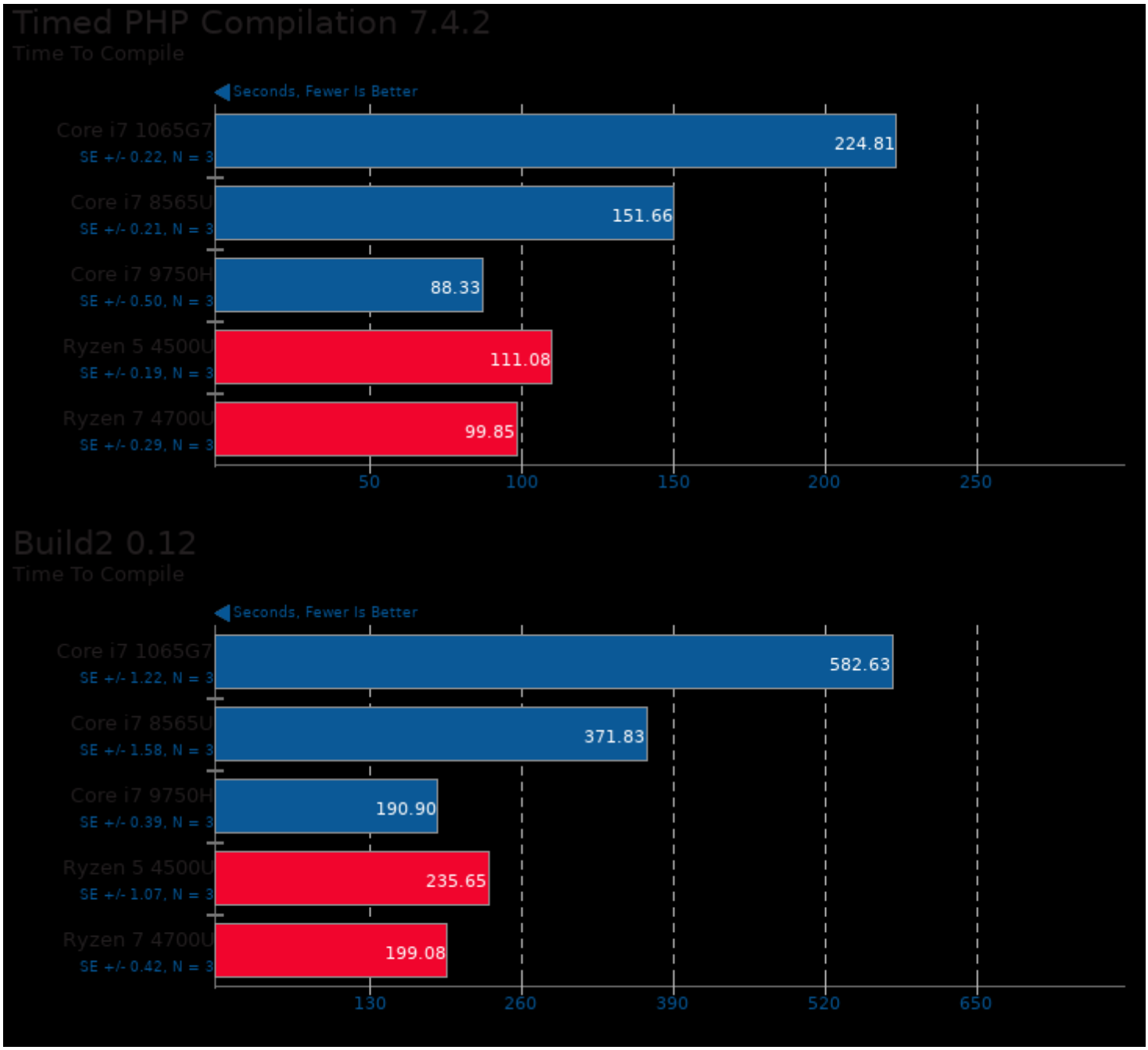

GpuTest 0.7.0
Test: Pixmark Piano - Resolution: 1920 x 1080 - Mode: Fullscreen
Points, More Is Better
Core i7 1065G7
224
Core i7 8565U
SE +/- 0.67, N = 3
143
Core i7 9750H
123
Ryzen 5 4500U
343
Ryzen 7 4700U
427
Ryzen 7 4800H-v1
419
90
180
270
360
450
GpuTest 0.7.0
Test: Pixmark Volplosion - Resolution: 1920 x 1080 - Mode: Fullscreen
Points, More Is Better
Core i7 1065G7
579
Core i7 8565U
SE +/- 0.67, N = 3
379
Core i7 9750H
326
Ryzen 5 4500U
892
Ryzen 7 4700U
1110
Ryzen 7 4800H-v1
1138
200
400
600
800
1000

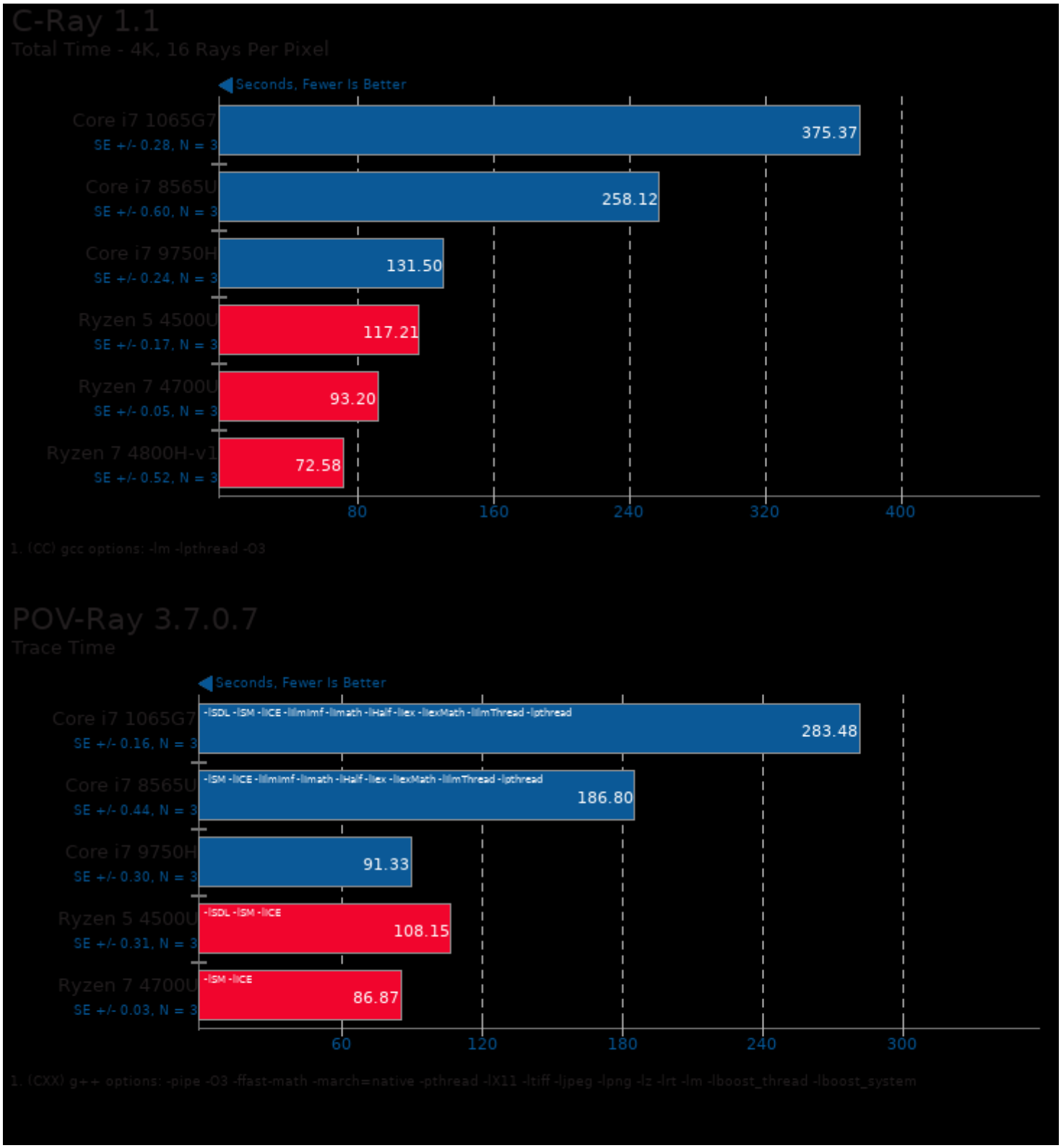

Timed MrBayes Analysis 3.2.7
Primate Phylogeny Analysis
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.22, N = 3
-msha -mavx512f -mavx512cd -mavx512vl -mavx512bw -mavx512dq -mavx512ifma -mavx512vbmi
200.63
Core i7 8565U
SE +/- 0.50, N = 3
-mmpx
143.98
Core i7 9750H
SE +/- 0.12, N = 3
-mmpx
107.99
Ryzen 5 4500U
SE +/- 0.37, N = 3
-msse4a -msha
92.19
Ryzen 7 4700U
SE +/- 0.52, N = 3
-msse4a -msha
101.99
Ryzen 7 4800H-v1
SE +/- 4.16, N = 3
396.47
90
180
270
360
450
1. (CC) gcc options: -mmmx -msse -msse2 -msse3 -mssse3 -msse4.1 -msse4.2 -maes -mavx -mfma -mavx2 -mrdrnd -mbmi -mbmi2 -madx -mabm -O3 -std
Timed MAFFT Alignment 7.392
Multiple Sequence Alignment
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.005, N = 3
7.580
Core i7 8565U
SE +/- 0.123, N = 15
5.029
Core i7 9750H
SE +/- 0.026, N = 3
3.332
Ryzen 5 4500U
SE +/- 0.041, N = 15
4.043
Ryzen 7 4700U
SE +/- 0.017, N = 3
3.712
2
4
6
8
10
1. (CC) gcc options: -std=c99 -O3 -lm -lpthread

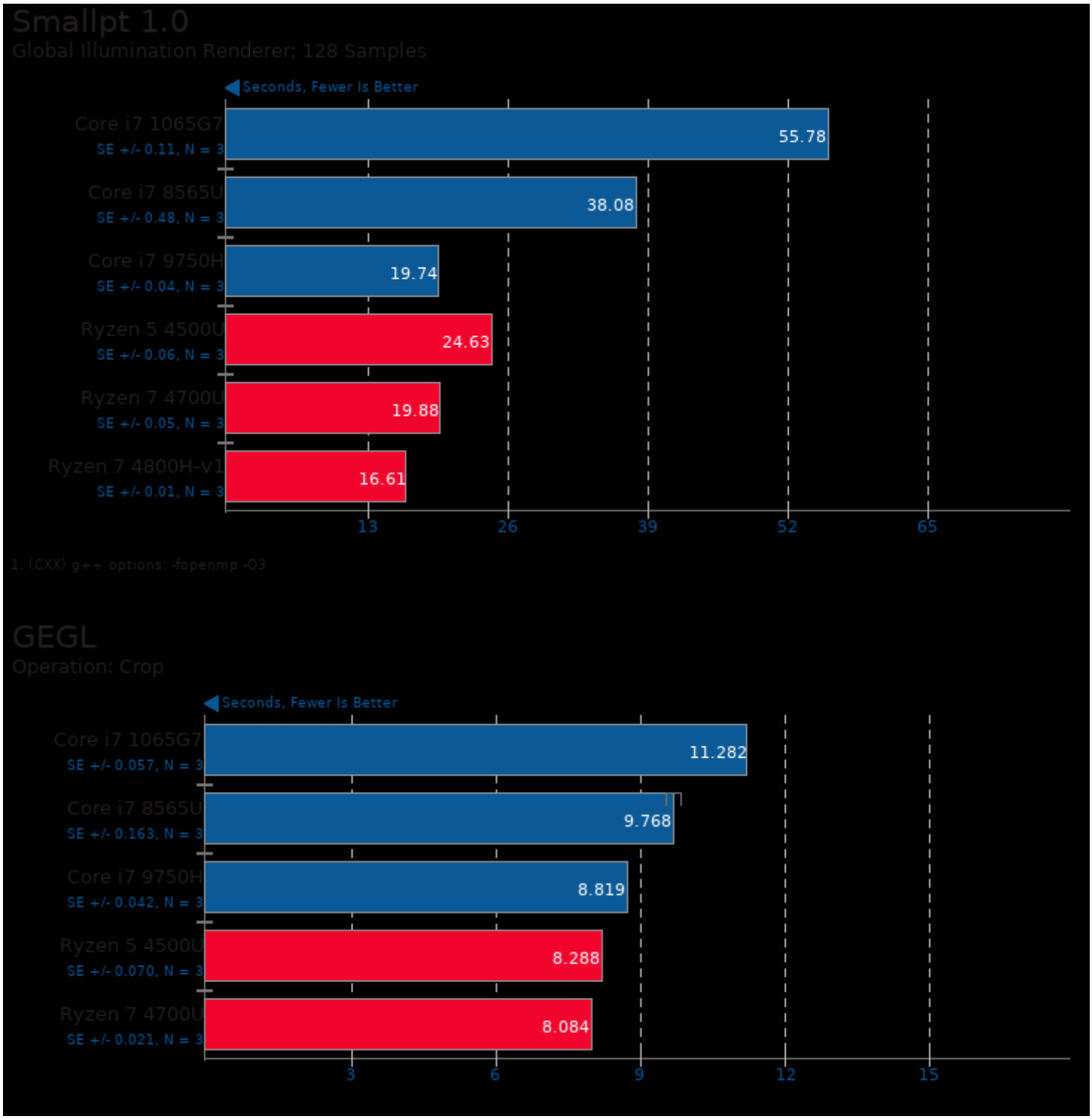

TTSIOD 3D Renderer 2.3b
Phong Rendering With Soft-Shadow Mapping
FPS, More Is Better
Core i7 1065G7
SE +/- 0.34, N = 3
103.27
Core i7 8565U
SE +/- 0.80, N = 3
152.18
Core i7 9750H
SE +/- 0.80, N = 3
300.31
Ryzen 5 4500U
SE +/- 1.78, N = 3
249.63
Ryzen 7 4700U
SE +/- 0.77, N = 3
298.38
70
140
210
280
350
1. (CXX) g++ options: -O3 -fomit-frame-pointer -ffast-math -mtune=native -flto -msse -mrecip -mfpmath=sse -msse2 -mssse3 -lSDL -fopenmp -fwhole-pr
Himeno Benchmark 3.0
Poisson Pressure Solver
MFLOPS, More Is Better
Core i7 1065G7
SE +/- 2.72, N = 3
3354.19
Core i7 8565U
SE +/- 9.88, N = 3
3348.67
Core i7 9750H
SE +/- 9.71, N = 3
3804.24
Ryzen 5 4500U
SE +/- 36.47, N = 3
4187.57
Ryzen 7 4700U
SE +/- 72.29, N = 3
4387.20
900
1800
2700
3600
4500
1. (CC) gcc options: -O3 -mavx2

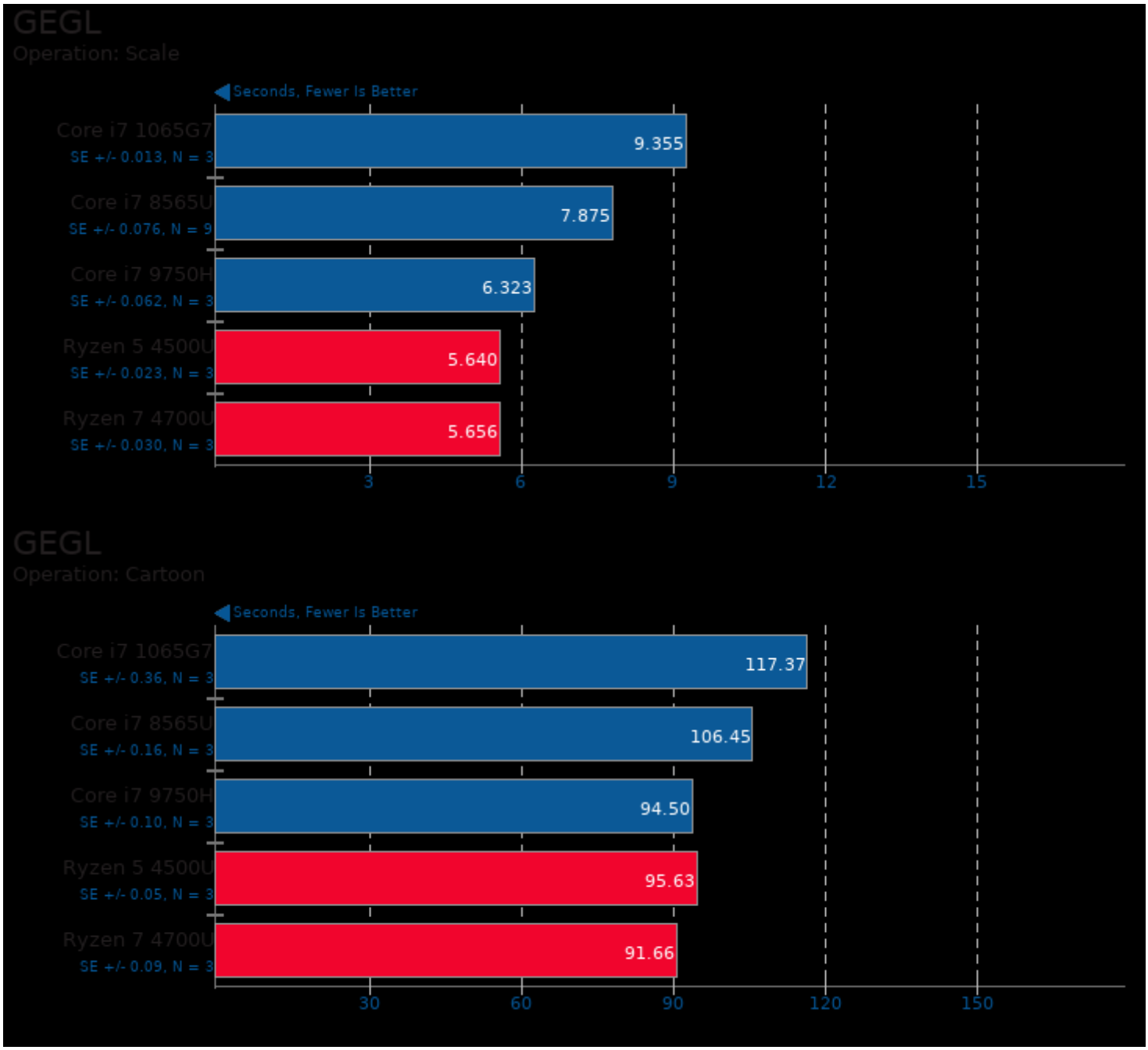

Timed Apache Compilation 2.4.41
Time To Compile
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.03, N = 3
59.66
Core i7 8565U
SE +/- 0.07, N = 3
43.20
Core i7 9750H
SE +/- 0.22, N = 3
26.74
Ryzen 5 4500U
SE +/- 0.05, N = 3
32.37
Ryzen 7 4700U
SE +/- 0.02, N = 3
29.04
13
26
39
52
65
Timed FFmpeg Compilation 4.2.2
Time To Compile
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.56, N = 3
301.60
Core i7 8565U
SE +/- 0.09, N = 3
201.13
Core i7 9750H
SE +/- 0.61, N = 3
102.14
Ryzen 5 4500U
SE +/- 0.63, N = 3
117.16
Ryzen 7 4700U
SE +/- 0.89, N = 12
99.13
70
140
210
280
350

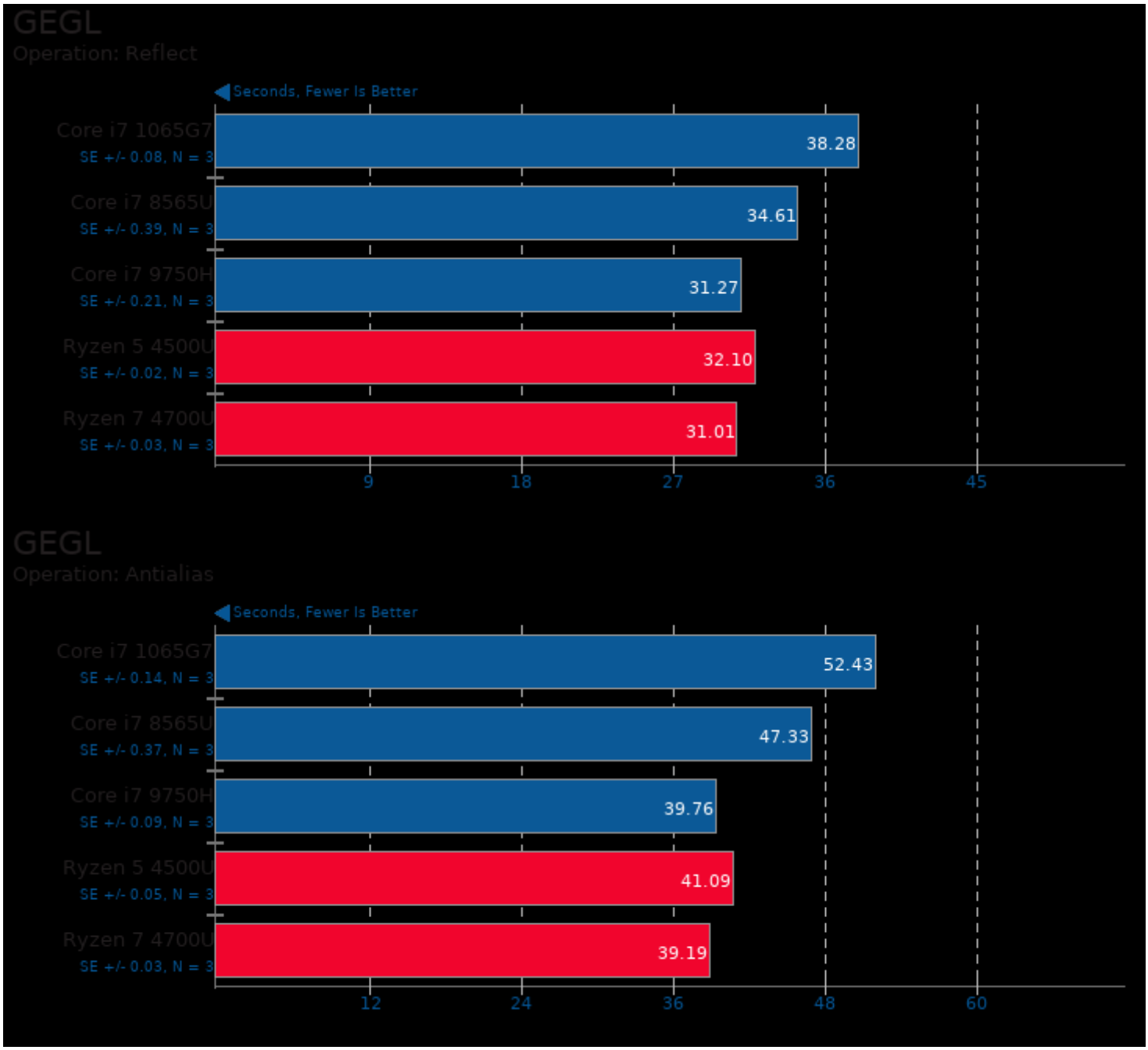

Timed GDB GNU Debugger Compilation 9.1
Time To Compile
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.59, N = 3
297.12
Core i7 8565U
SE +/- 0.32, N = 3
209.13
Core i7 9750H
SE +/- 0.46, N = 3
127.43
Ryzen 5 4500U
SE +/- 0.24, N = 3
168.19
Ryzen 7 4700U
SE +/- 0.44, N = 3
157.91
60
120
180
240
300
Timed MPlayer Compilation 1.4
Time To Compile
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.15, N = 3
218.22
Core i7 8565U
SE +/- 0.07, N = 3
139.37
Core i7 9750H
SE +/- 0.36, N = 3
70.26
Ryzen 5 4500U
SE +/- 0.47, N = 3
83.84
Ryzen 7 4700U
SE +/- 0.68, N = 3
69.55
50
100
150
200
250

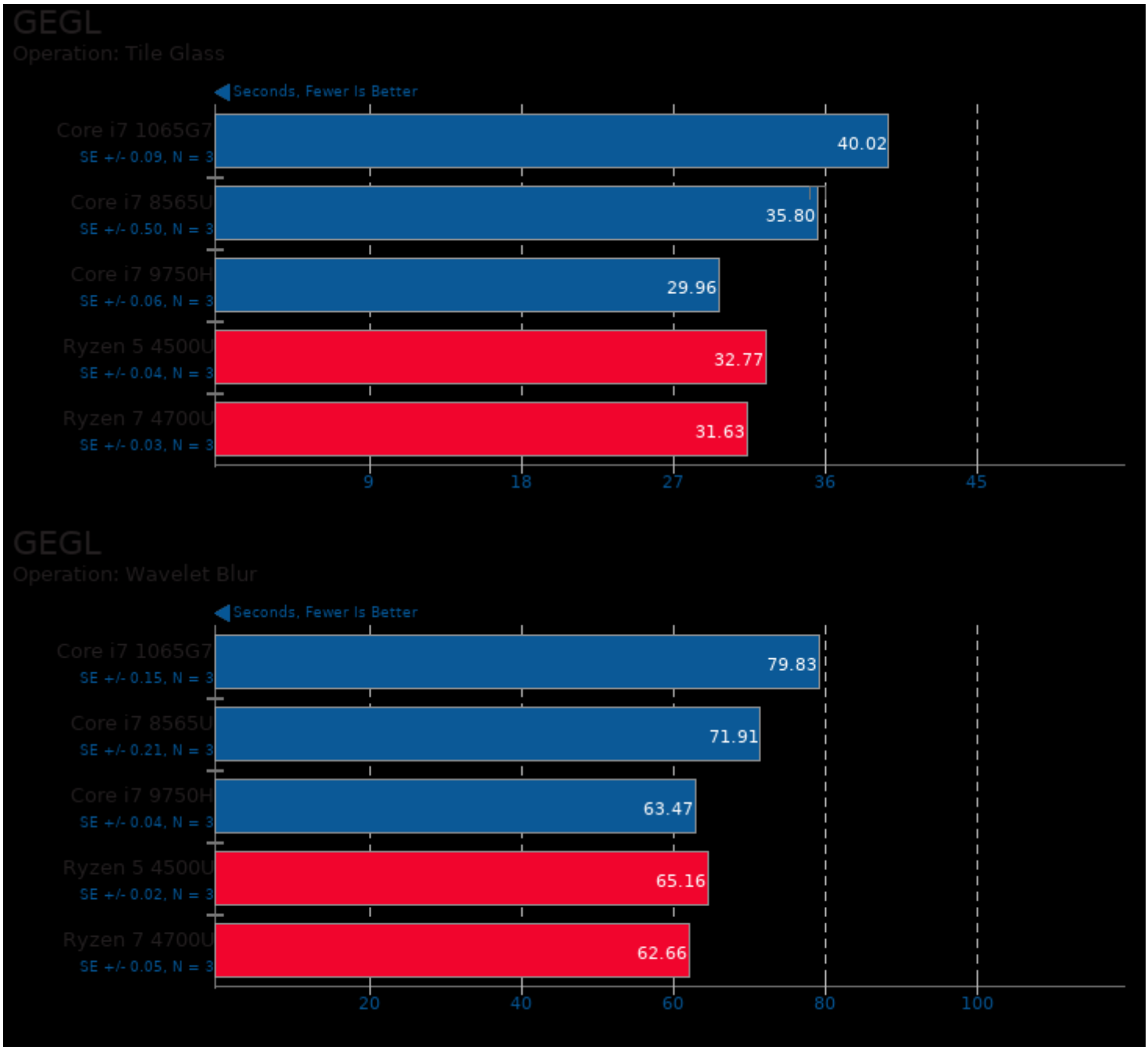

Timed PHP Compilation 7.4.2
Time To Compile
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.22, N = 3
224.81
Core i7 8565U
SE +/- 0.21, N = 3
151.66
Core i7 9750H
SE +/- 0.50, N = 3
88.33
Ryzen 5 4500U
SE +/- 0.19, N = 3
111.08
Ryzen 7 4700U
SE +/- 0.29, N = 3
99.85
50
100
150
200
250
Build2 0.12
Time To Compile
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 1.22, N = 3
582.63
Core i7 8565U
SE +/- 1.58, N = 3
371.83
Core i7 9750H
SE +/- 0.39, N = 3
190.90
Ryzen 5 4500U
SE +/- 1.07, N = 3
235.65
Ryzen 7 4700U
SE +/- 0.42, N = 3
199.08
130
260
390
520
650

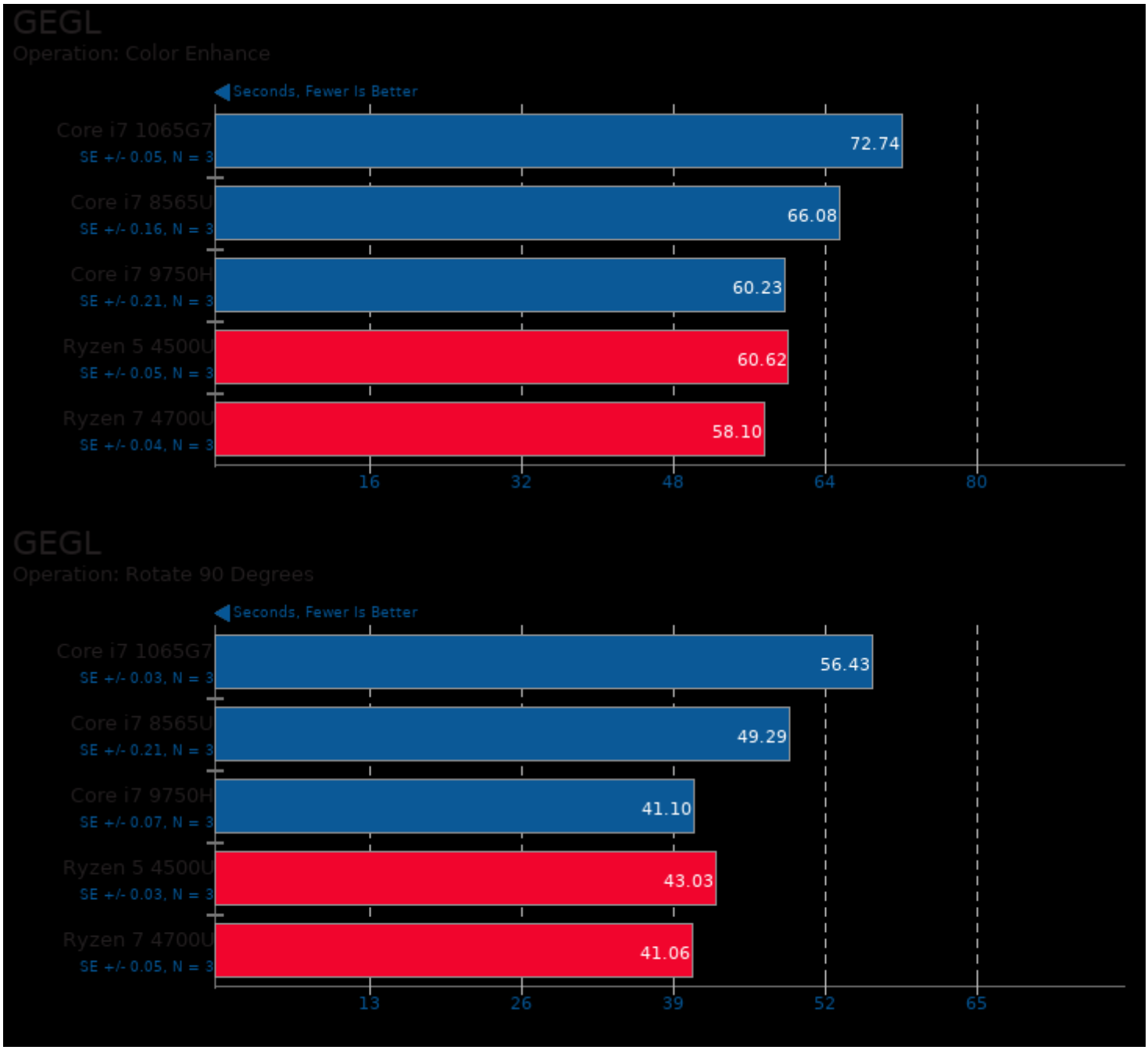

C-Ray 1.1
Total Time - 4K, 16 Rays Per Pixel
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.28, N = 3
375.37
Core i7 8565U
SE +/- 0.60, N = 3
258.12
Core i7 9750H
SE +/- 0.24, N = 3
131.50
Ryzen 5 4500U
SE +/- 0.17, N = 3
117.21
Ryzen 7 4700U
SE +/- 0.05, N = 3
93.20
Ryzen 7 4800H-v1
SE +/- 0.52, N = 3
72.58
80
160
240
320
400
1. (CC) gcc options: -lm -lpthread -O3
POV-Ray 3.7.0.7
Trace Time
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.16, N = 3
-lSDL -lSM -lICE -lIlmImf -lImath -lHalf -lIex -lIexMath -lIlmThread -lpthread
283.48
Core i7 8565U
SE +/- 0.44, N = 3
-lSM -lICE -lIlmImf -lImath -lHalf -lIex -lIexMath -lIlmThread -lpthread
186.80
Core i7 9750H
SE +/- 0.30, N = 3
91.33
Ryzen 5 4500U
SE +/- 0.31, N = 3
-lSDL -lSM -lICE
108.15
Ryzen 7 4700U
SE +/- 0.03, N = 3
-lSM -lICE
86.87
60
120
180
240
300
1. (CXX) g++ options: -pipe -O3 -ffast-math -march=native -pthread -lX11 -ltiff -ljpeg -lpng -lz -lrt -lm -lboost_thread -lboost_system

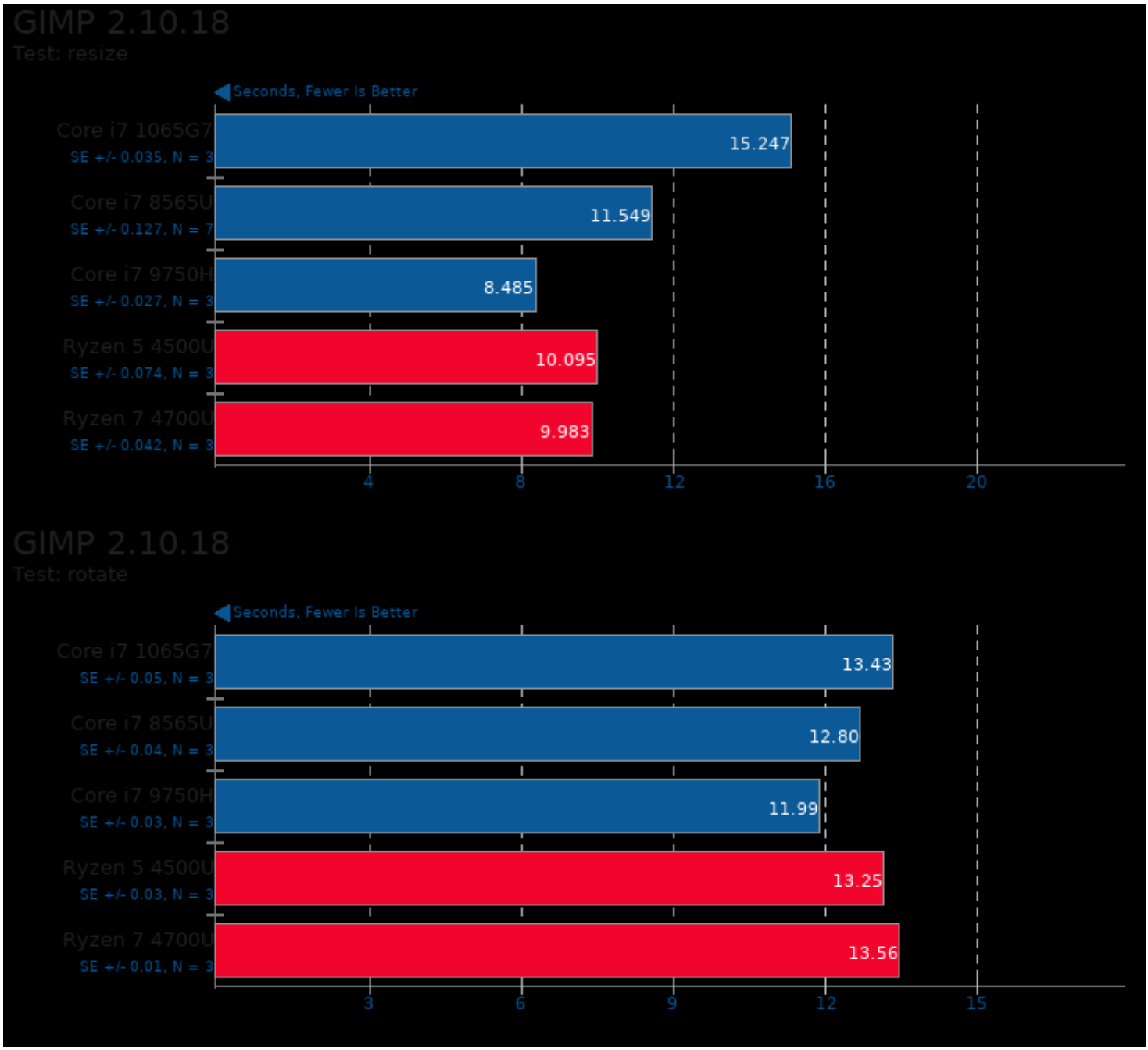

Smallpt 1.0
Global Illumination Renderer; 128 Samples
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.11, N = 3
55.78
Core i7 8565U
SE +/- 0.48, N = 3
38.08
Core i7 9750H
SE +/- 0.04, N = 3
19.74
Ryzen 5 4500U
SE +/- 0.06, N = 3
24.63
Ryzen 7 4700U
SE +/- 0.05, N = 3
19.88
Ryzen 7 4800H-v1
SE +/- 0.01, N = 3
16.61
13
26
39
52
65
1. (CXX) g++ options: -fopenmp -O3
GEGL
Operation: Crop
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.057, N = 3
11.282
Core i7 8565U
SE +/- 0.163, N = 3
9.768
Core i7 9750H
SE +/- 0.042, N = 3
8.819
Ryzen 5 4500U
SE +/- 0.070, N = 3
8.288
Ryzen 7 4700U
SE +/- 0.021, N = 3
8.084
3
6
9
12
15

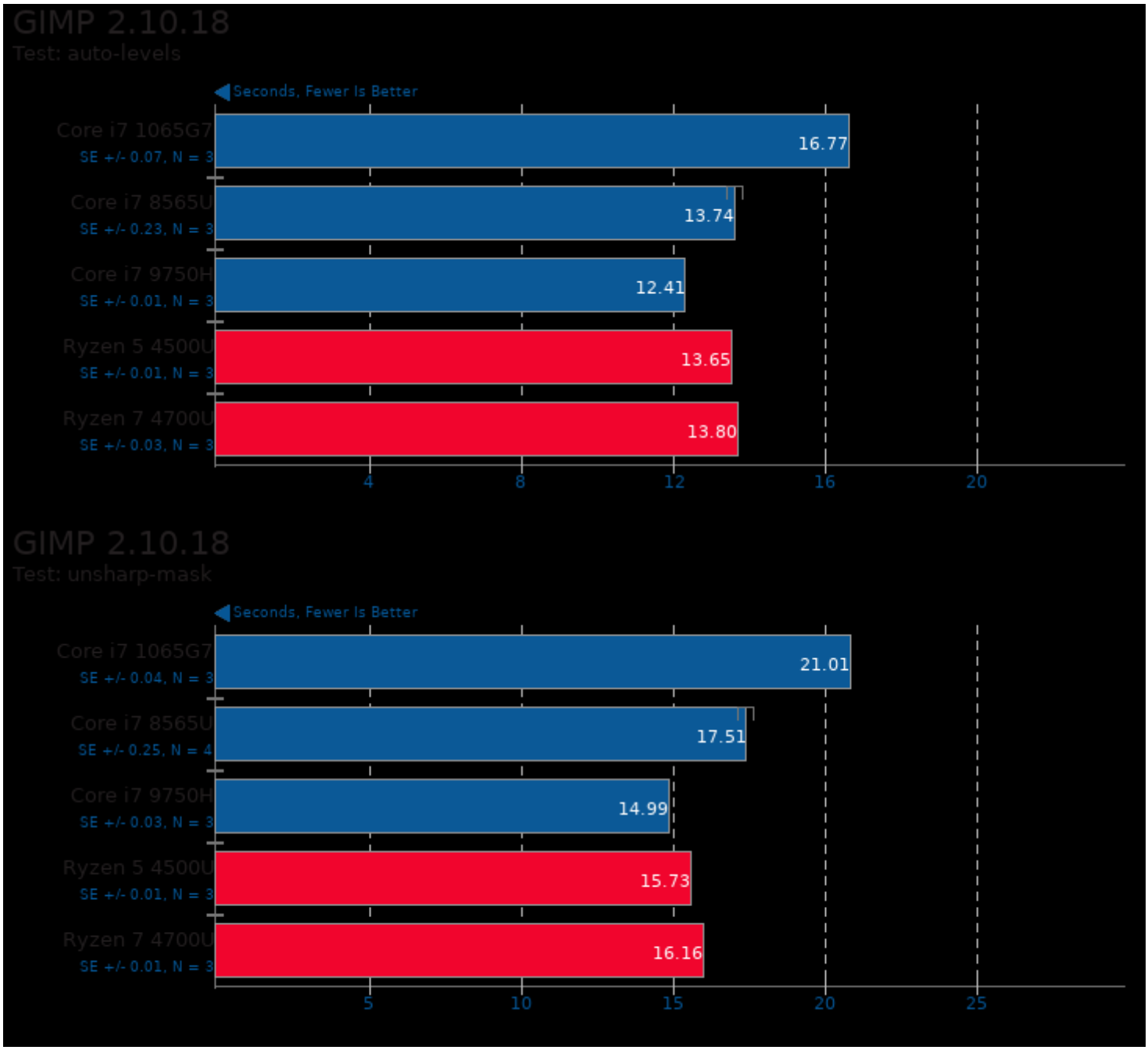

GEGL
Operation: Scale
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.013, N = 3
9.355
Core i7 8565U
SE +/- 0.076, N = 9
7.875
Core i7 9750H
SE +/- 0.062, N = 3
6.323
Ryzen 5 4500U
SE +/- 0.023, N = 3
5.640
Ryzen 7 4700U
SE +/- 0.030, N = 3
5.656
3
6
9
12
15
GEGL
Operation: Cartoon
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.36, N = 3
117.37
Core i7 8565U
SE +/- 0.16, N = 3
106.45
Core i7 9750H
SE +/- 0.10, N = 3
94.50
Ryzen 5 4500U
SE +/- 0.05, N = 3
95.63
Ryzen 7 4700U
SE +/- 0.09, N = 3
91.66
30
60
90
120
150

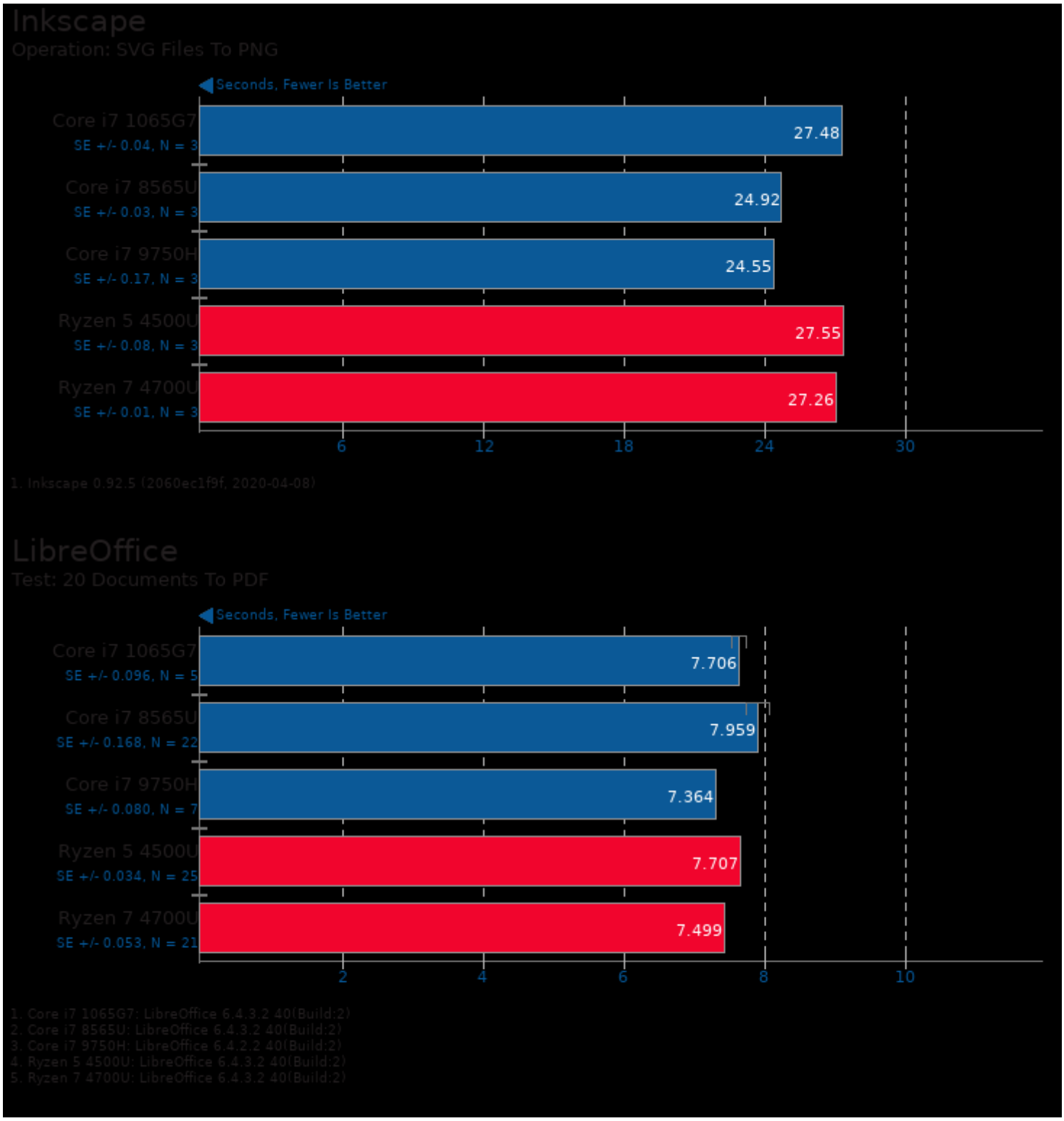

GEGL
Operation: Reflect
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.08, N = 3
38.28
Core i7 8565U
SE +/- 0.39, N = 3
34.61
Core i7 9750H
SE +/- 0.21, N = 3
31.27
Ryzen 5 4500U
SE +/- 0.02, N = 3
32.10
Ryzen 7 4700U
SE +/- 0.03, N = 3
31.01
9
18
27
36
45
GEGL
Operation: Antialias
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.14, N = 3
52.43
Core i7 8565U
SE +/- 0.37, N = 3
47.33
Core i7 9750H
SE +/- 0.09, N = 3
39.76
Ryzen 5 4500U
SE +/- 0.05, N = 3
41.09
Ryzen 7 4700U
SE +/- 0.03, N = 3
39.19
12
24
36
48
60

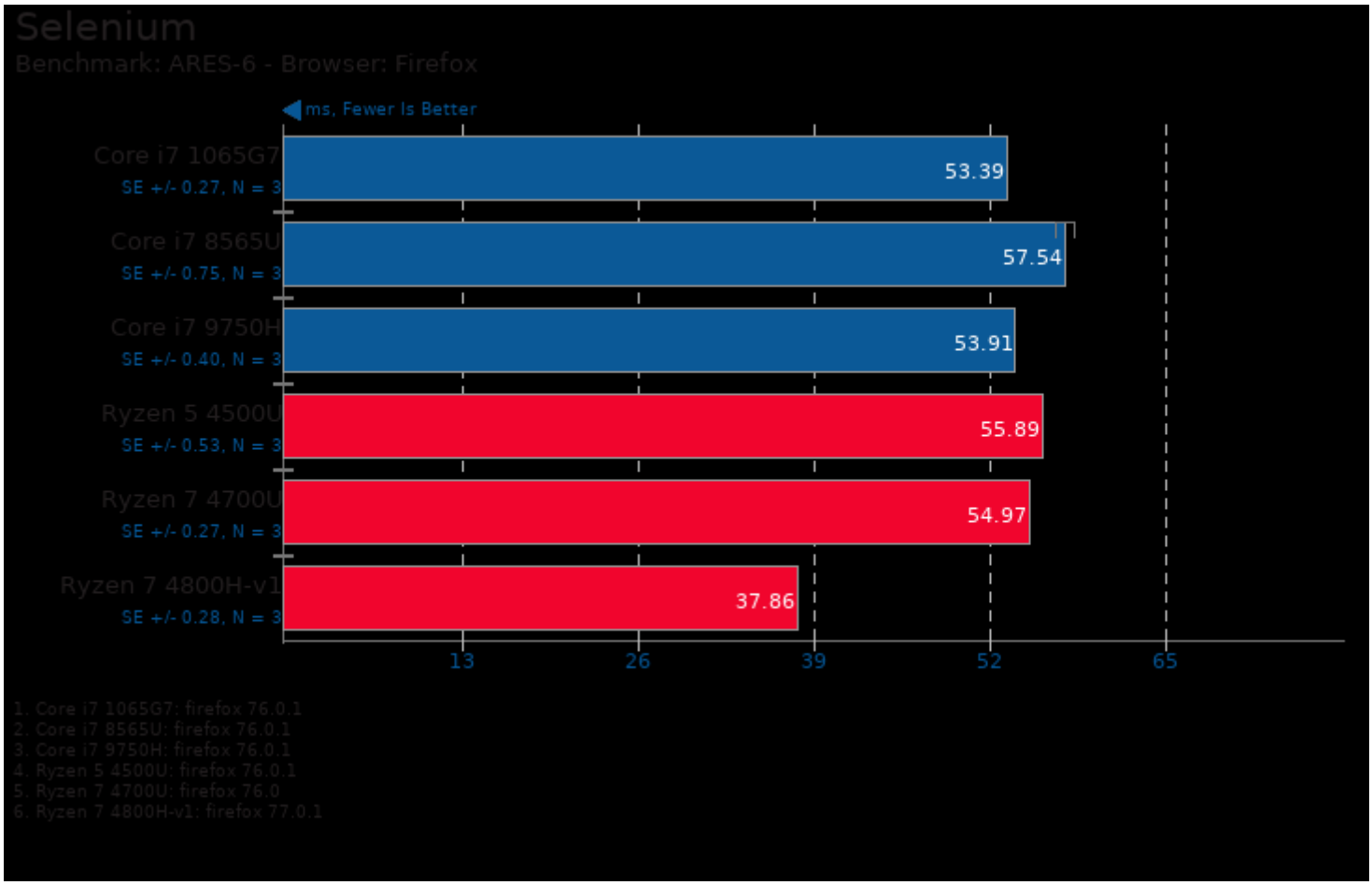

GEGL
Operation: Tile Glass
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.09, N = 3
40.02
Core i7 8565U
SE +/- 0.50, N = 3
35.80
Core i7 9750H
SE +/- 0.06, N = 3
29.96
Ryzen 5 4500U
SE +/- 0.04, N = 3
32.77
Ryzen 7 4700U
SE +/- 0.03, N = 3
31.63
9
18
27
36
45
GEGL
Operation: Wavelet Blur
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.15, N = 3
79.83
Core i7 8565U
SE +/- 0.21, N = 3
71.91
Core i7 9750H
SE +/- 0.04, N = 3
63.47
Ryzen 5 4500U
SE +/- 0.02, N = 3
65.16
Ryzen 7 4700U
SE +/- 0.05, N = 3
62.66
20
40
60
80
100

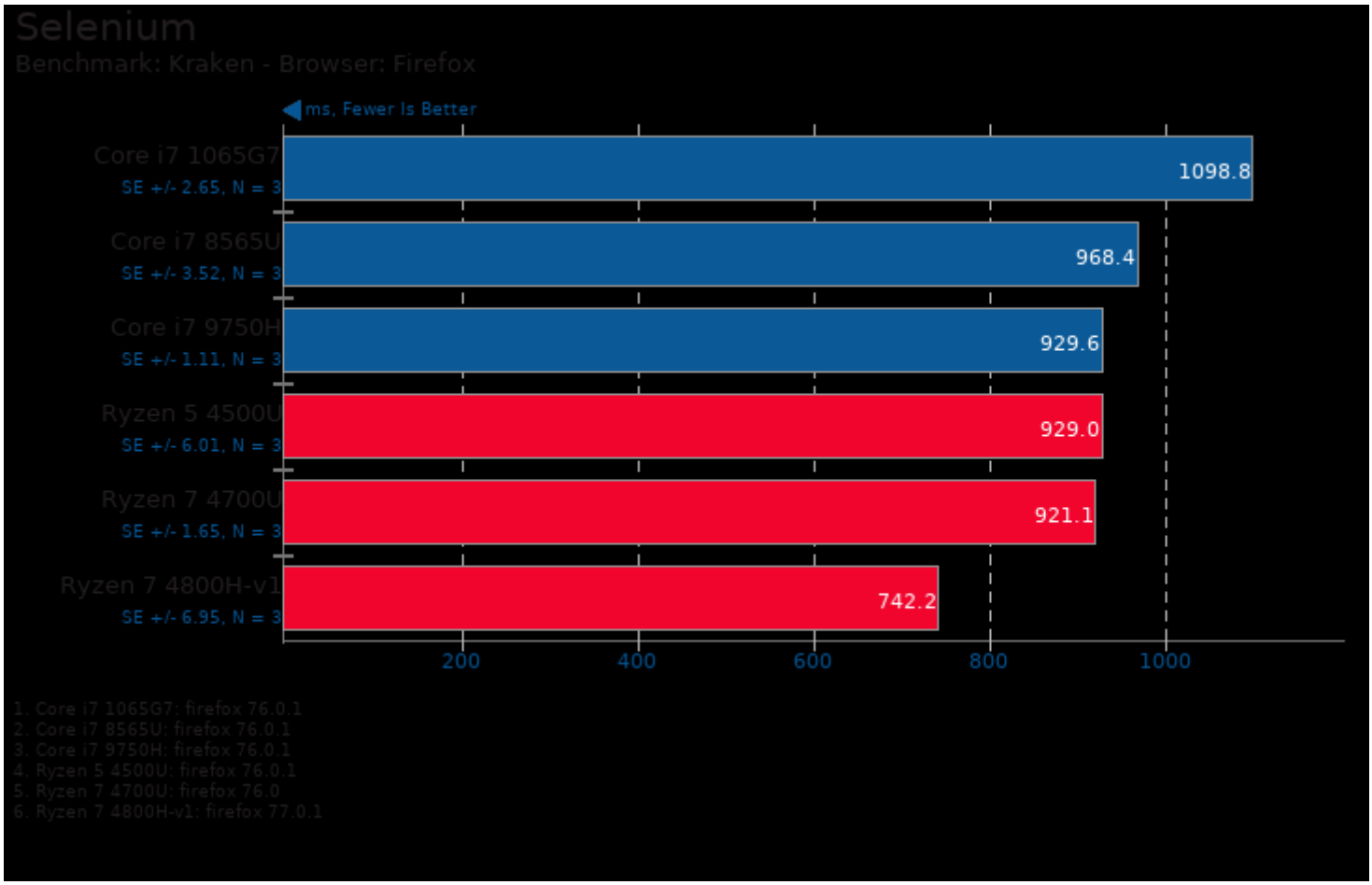

GEGL
Operation: Color Enhance
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.05, N = 3
72.74
Core i7 8565U
SE +/- 0.16, N = 3
66.08
Core i7 9750H
SE +/- 0.21, N = 3
60.23
Ryzen 5 4500U
SE +/- 0.05, N = 3
60.62
Ryzen 7 4700U
SE +/- 0.04, N = 3
58.10
16
32
48
64
80
GEGL
Operation: Rotate 90 Degrees
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.03, N = 3
56.43
Core i7 8565U
SE +/- 0.21, N = 3
49.29
Core i7 9750H
SE +/- 0.07, N = 3
41.10
Ryzen 5 4500U
SE +/- 0.03, N = 3
43.03
Ryzen 7 4700U
SE +/- 0.05, N = 3
41.06
13
26
39
52
65

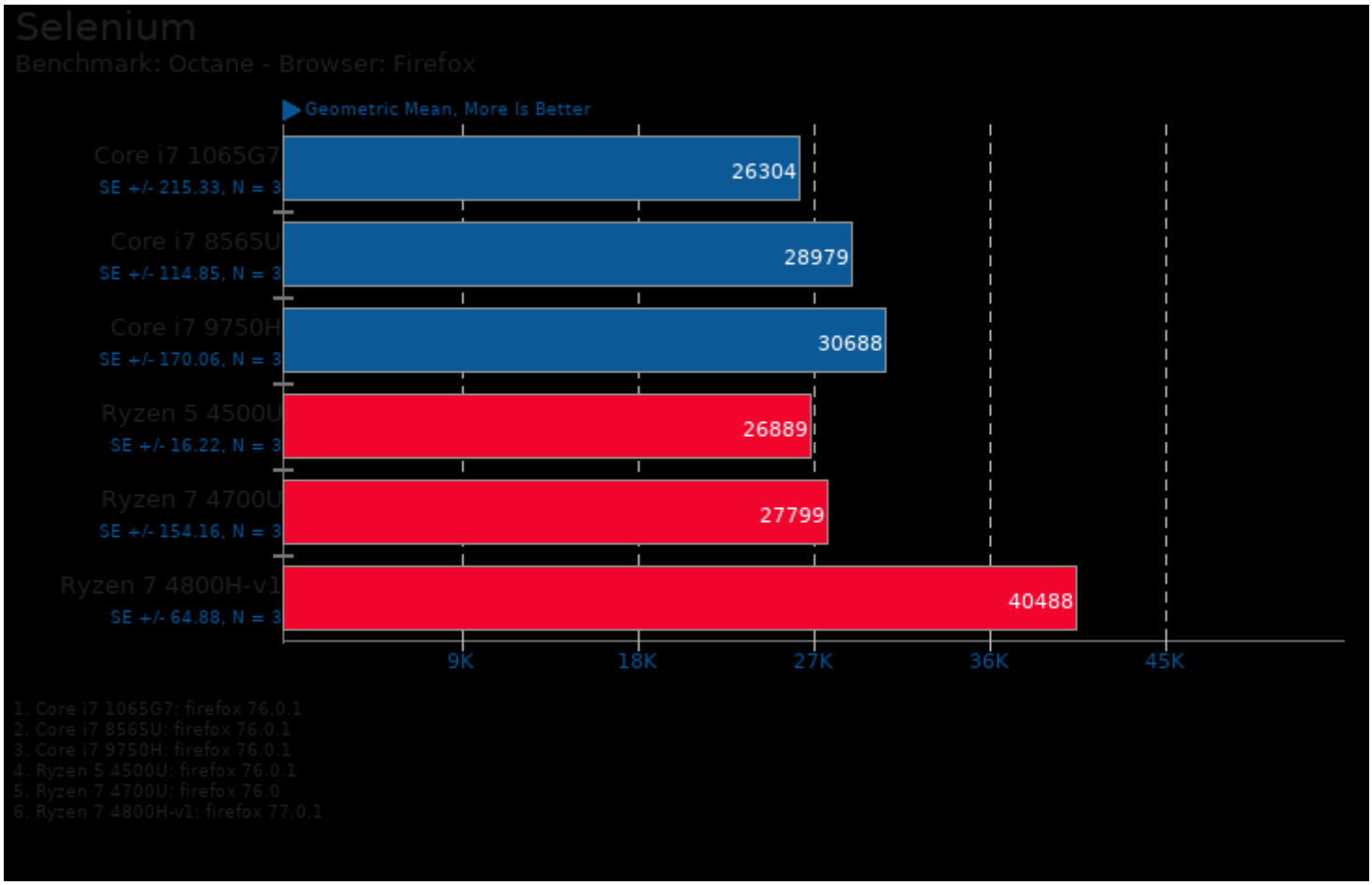

GIMP 2.10.18
Test: resize
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.035, N = 3
15.247
Core i7 8565U
SE +/- 0.127, N = 7
11.549
Core i7 9750H
SE +/- 0.027, N = 3
8.485
Ryzen 5 4500U
SE +/- 0.074, N = 3
10.095
Ryzen 7 4700U
SE +/- 0.042, N = 3
9.983
4
8
12
16
20
GIMP 2.10.18
Test: rotate
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.05, N = 3
13.43
Core i7 8565U
SE +/- 0.04, N = 3
12.80
Core i7 9750H
SE +/- 0.03, N = 3
11.99
Ryzen 5 4500U
SE +/- 0.03, N = 3
13.25
Ryzen 7 4700U
SE +/- 0.01, N = 3
13.56
3
6
9
12
15

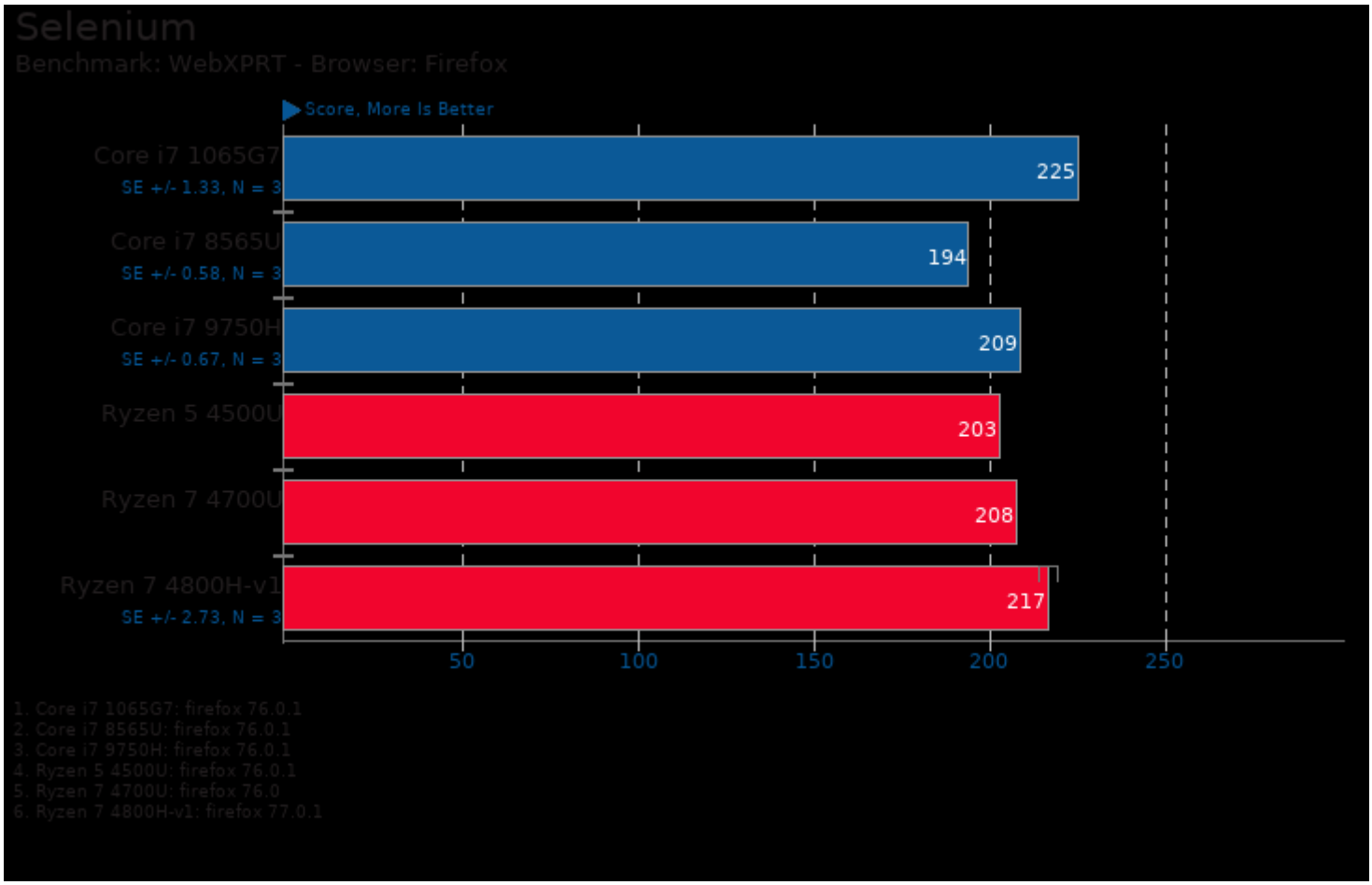

GIMP 2.10.18
Test: auto-levels
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.07, N = 3
16.77
Core i7 8565U
SE +/- 0.23, N = 3
13.74
Core i7 9750H
SE +/- 0.01, N = 3
12.41
Ryzen 5 4500U
SE +/- 0.01, N = 3
13.65
Ryzen 7 4700U
SE +/- 0.03, N = 3
13.80
4
8
12
16
20
GIMP 2.10.18
Test: unsharp-mask
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.04, N = 3
21.01
Core i7 8565U
SE +/- 0.25, N = 4
17.51
Core i7 9750H
SE +/- 0.03, N = 3
14.99
Ryzen 5 4500U
SE +/- 0.01, N = 3
15.73
Ryzen 7 4700U
SE +/- 0.01, N = 3
16.16
5
10
15
20
25

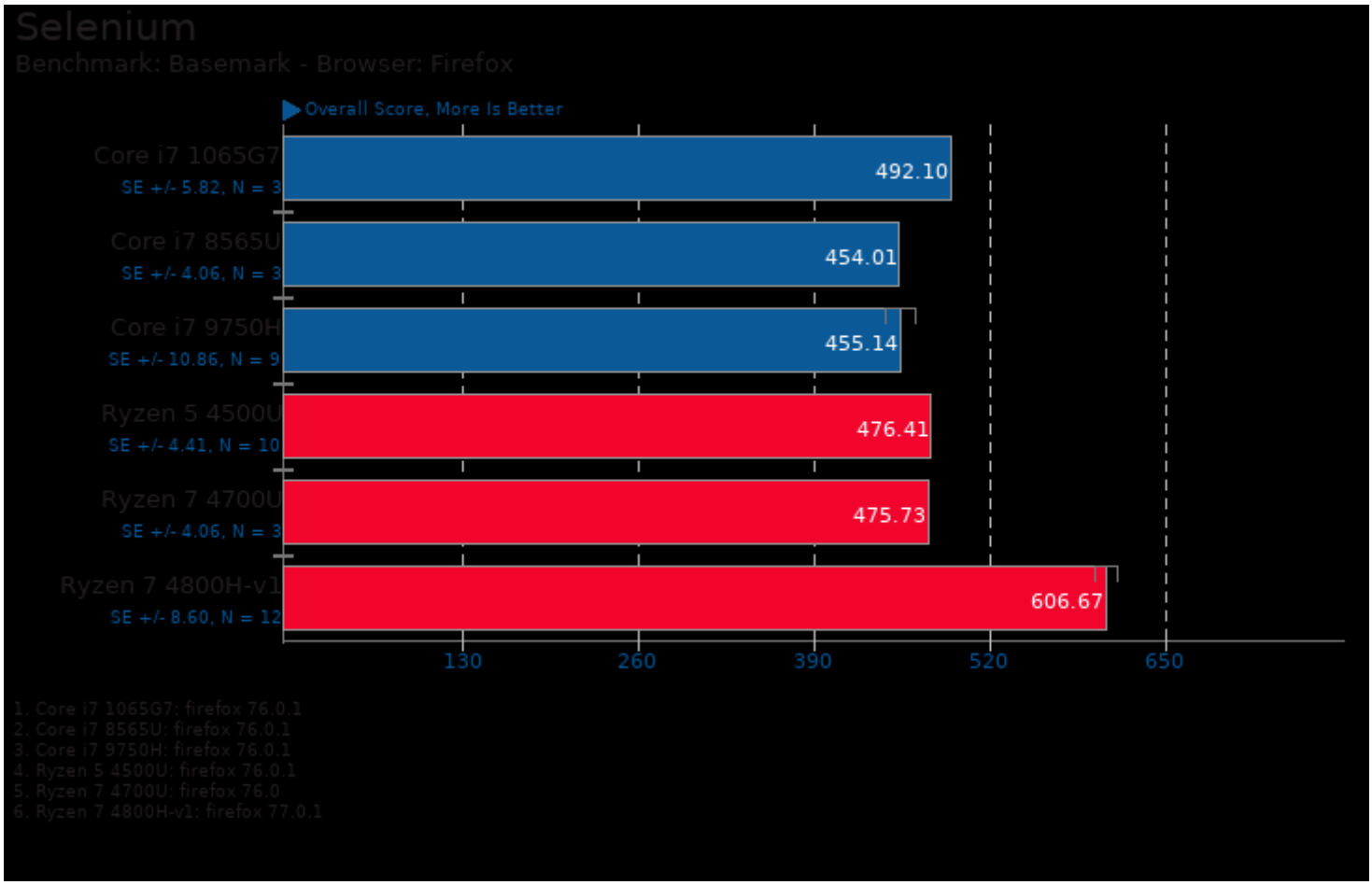

Inkscape
Operation: SVG Files To PNG
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.04, N = 3
27.48
Core i7 8565U
SE +/- 0.03, N = 3
24.92
Core i7 9750H
SE +/- 0.17, N = 3
24.55
Ryzen 5 4500U
SE +/- 0.08, N = 3
27.55
Ryzen 7 4700U
SE +/- 0.01, N = 3
27.26
6
12
18
24
30
1. Inkscape 0.92.5 (2060ec1f9f, 2020-04-08)
LibreOffice
Test: 20 Documents To PDF
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.096, N = 5
7.706
Core i7 8565U
SE +/- 0.168, N = 22
7.959
Core i7 9750H
SE +/- 0.080, N = 7
7.364
Ryzen 5 4500U
SE +/- 0.034, N = 25
7.707
Ryzen 7 4700U
SE +/- 0.053, N = 21
7.499
2
4
6
8
10
1. Core i7 1065G7: LibreOffice 6.4.3.2 40(Build:2)
2. Core i7 8565U: LibreOffice 6.4.3.2 40(Build:2)
3. Core i7 9750H: LibreOffice 6.4.2.2 40(Build:2)
4. Ryzen 5 4500U: LibreOffice 6.4.3.2 40(Build:2)
5. Ryzen 7 4700U: LibreOffice 6.4.3.2 40(Build:2)

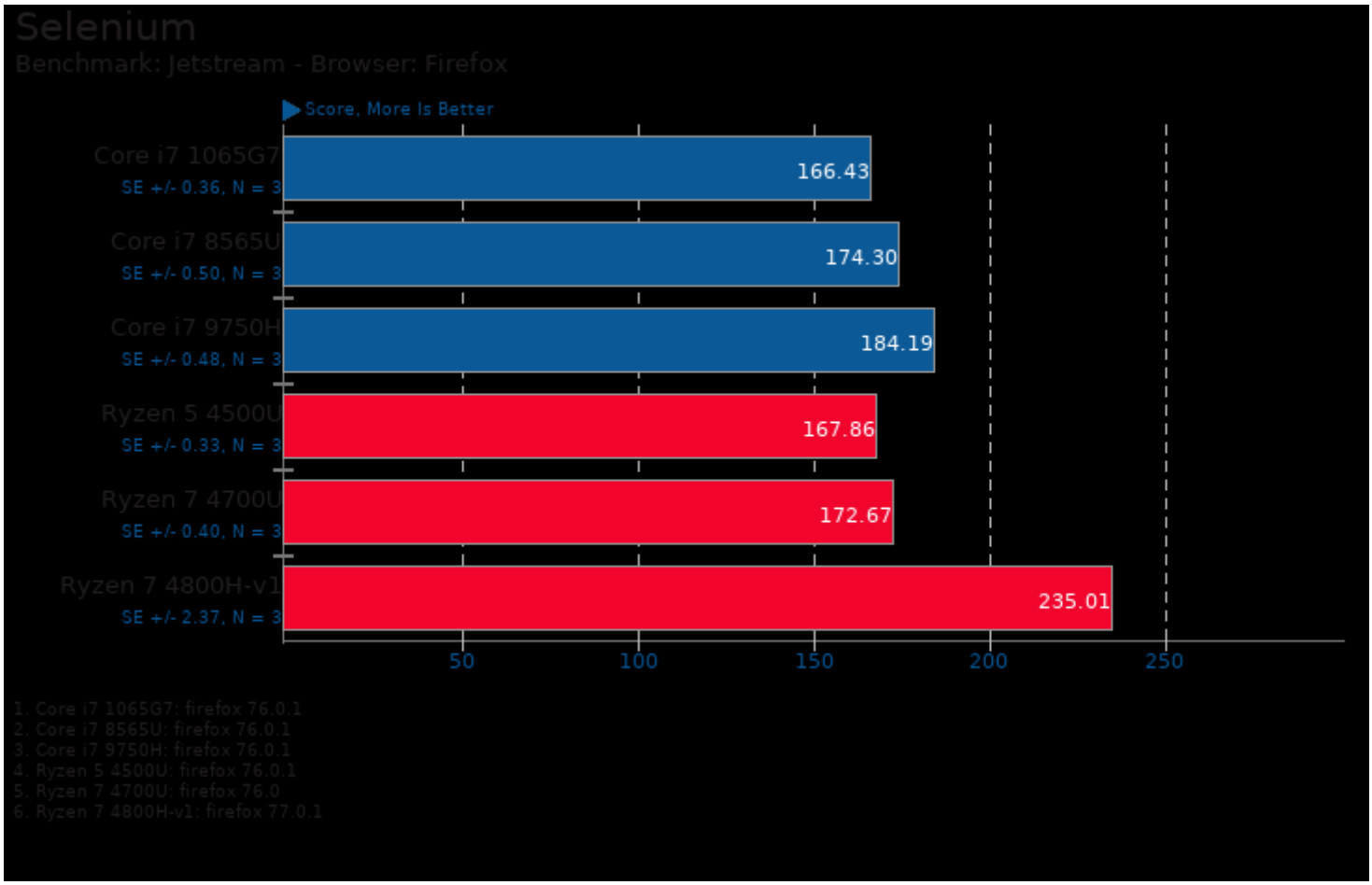

Selenium
Benchmark: ARES-6 - Browser: Firefox
ms, Fewer Is Better
Core i7 1065G7
SE +/- 0.27, N = 3
53.39
Core i7 8565U
SE +/- 0.75, N = 3
57.54
Core i7 9750H
SE +/- 0.40, N = 3
53.91
Ryzen 5 4500U
SE +/- 0.53, N = 3
55.89
Ryzen 7 4700U
SE +/- 0.27, N = 3
54.97
Ryzen 7 4800H-v1
SE +/- 0.28, N = 3
37.86
13
26
39
52
65
1. Core i7 1065G7: firefox 76.0.1
2. Core i7 8565U: firefox 76.0.1
3. Core i7 9750H: firefox 76.0.1
4. Ryzen 5 4500U: firefox 76.0.1
5. Ryzen 7 4700U: firefox 76.0
6. Ryzen 7 4800H-v1: firefox 77.0.1

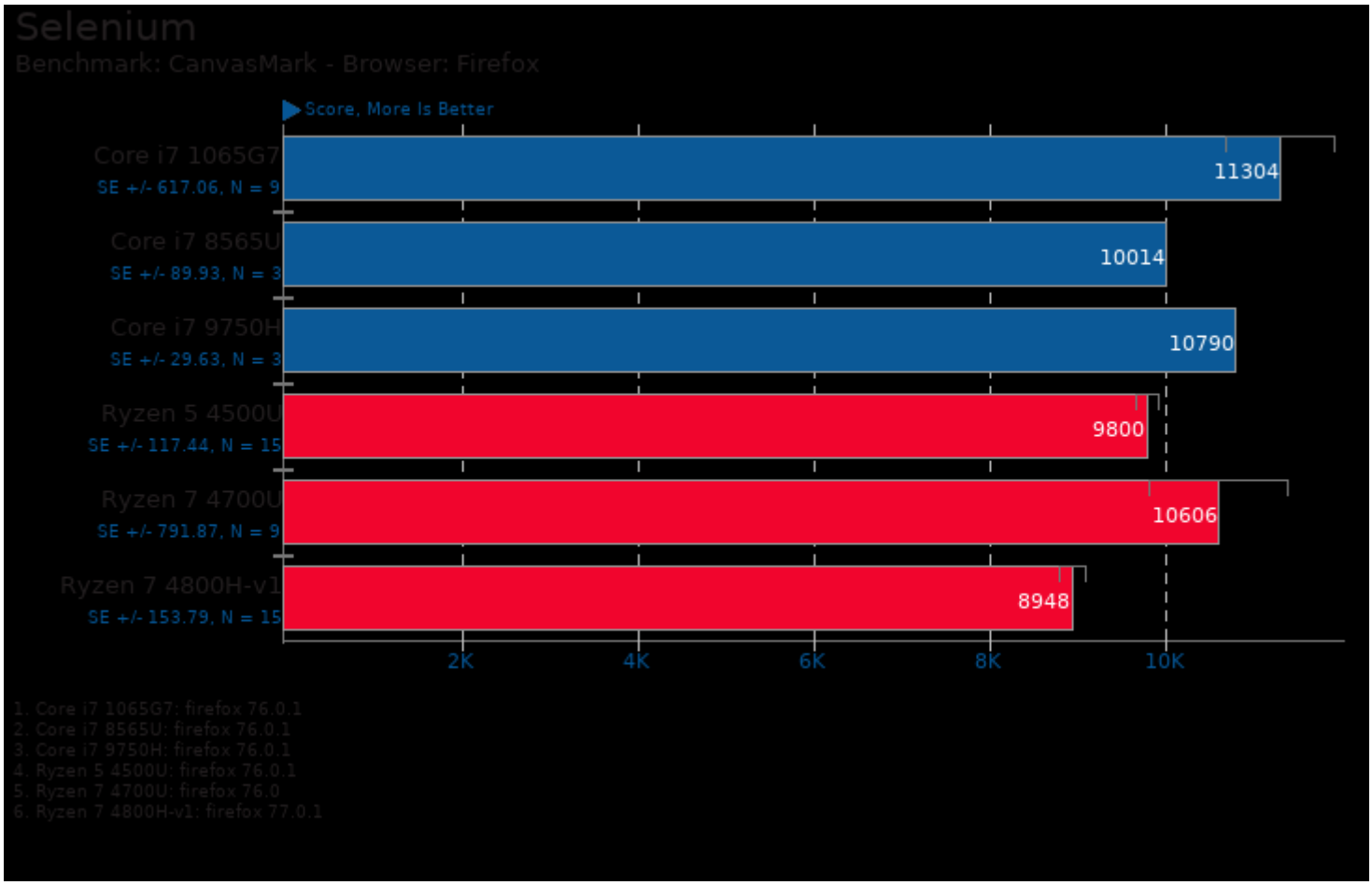

Selenium
Benchmark: Kraken - Browser: Firefox
ms, Fewer Is Better
Core i7 1065G7
SE +/- 2.65, N = 3
1098.8
Core i7 8565U
SE +/- 3.52, N = 3
968.4
Core i7 9750H
SE +/- 1.11, N = 3
929.6
Ryzen 5 4500U
SE +/- 6.01, N = 3
929.0
Ryzen 7 4700U
SE +/- 1.65, N = 3
921.1
Ryzen 7 4800H-v1
SE +/- 6.95, N = 3
742.2
200
400
600
800
1000
1. Core i7 1065G7: firefox 76.0.1
2. Core i7 8565U: firefox 76.0.1
3. Core i7 9750H: firefox 76.0.1
4. Ryzen 5 4500U: firefox 76.0.1
5. Ryzen 7 4700U: firefox 76.0
6. Ryzen 7 4800H-v1: firefox 77.0.1

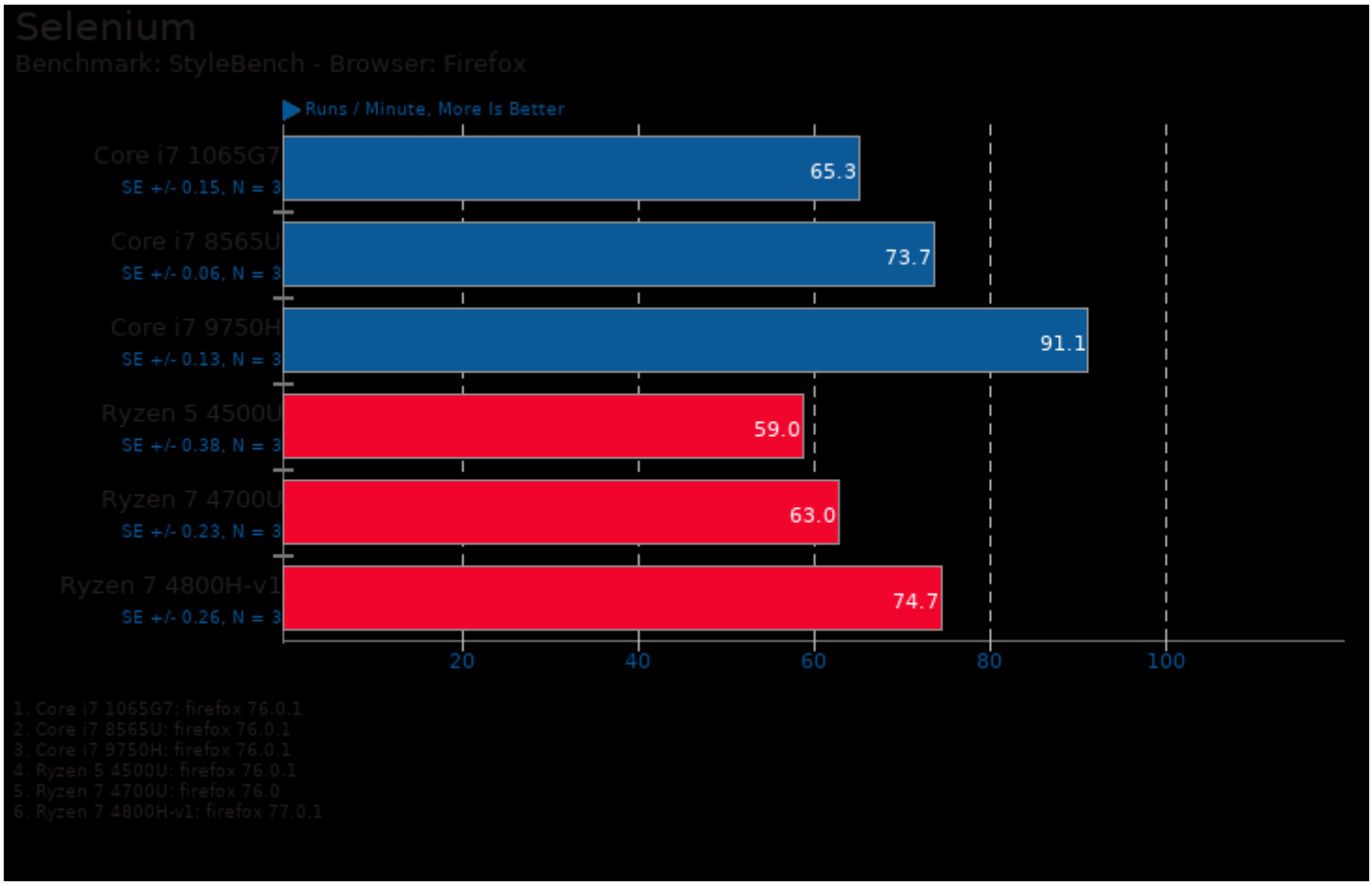

Selenium
Benchmark: Octane - Browser: Firefox
Geometric Mean, More Is Better
Core i7 1065G7
SE +/- 215.33, N = 3
26304
Core i7 8565U
SE +/- 114.85, N = 3
28979
Core i7 9750H
SE +/- 170.06, N = 3
30688
Ryzen 5 4500U
SE +/- 16.22, N = 3
26889
Ryzen 7 4700U
SE +/- 154.16, N = 3
27799
Ryzen 7 4800H-v1
SE +/- 64.88, N = 3
40488
9K
18K
27K
36K
45K
1. Core i7 1065G7: firefox 76.0.1
2. Core i7 8565U: firefox 76.0.1
3. Core i7 9750H: firefox 76.0.1
4. Ryzen 5 4500U: firefox 76.0.1
5. Ryzen 7 4700U: firefox 76.0
6. Ryzen 7 4800H-v1: firefox 77.0.1

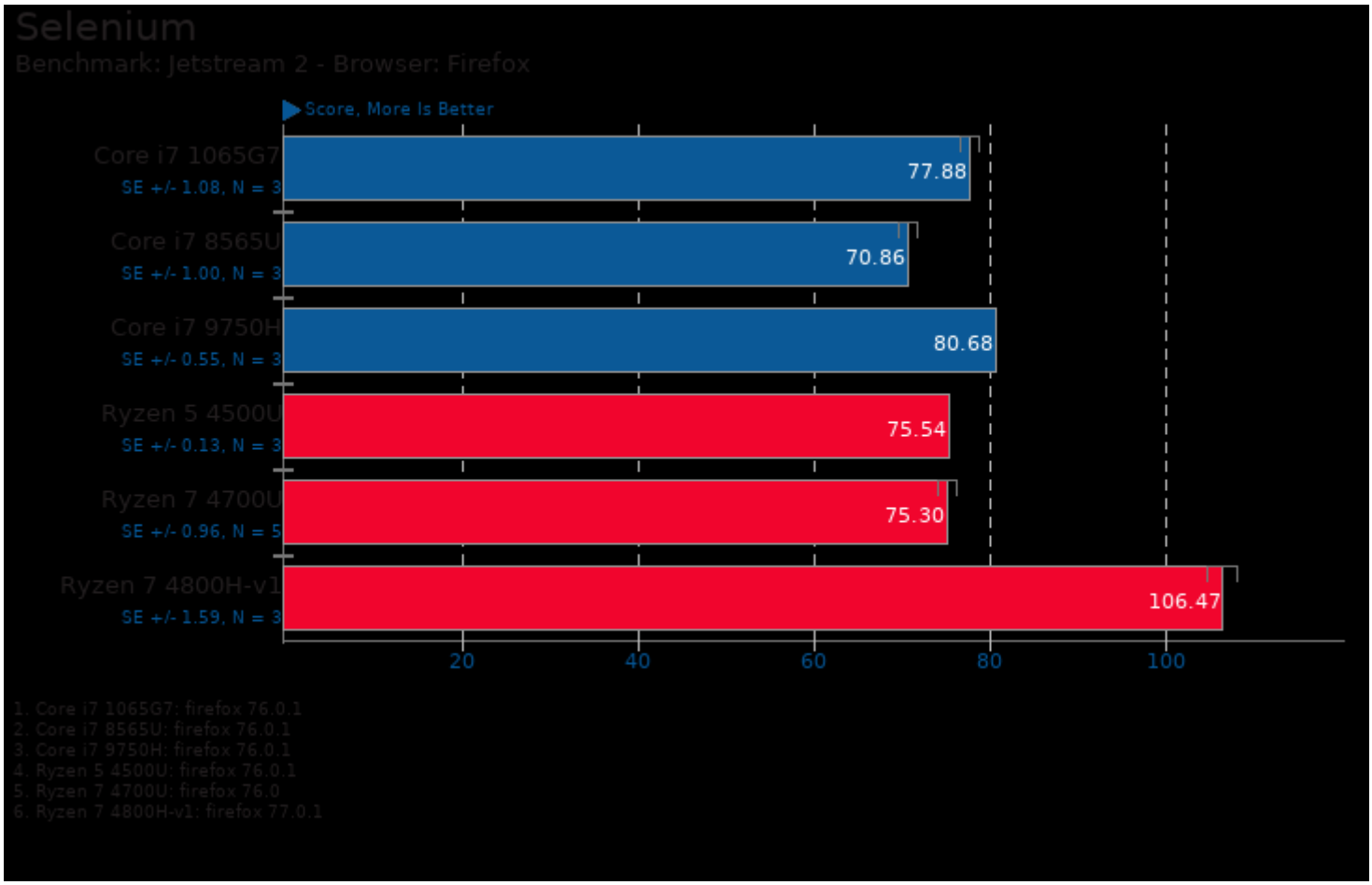

Selenium
Benchmark: WebXPRT - Browser: Firefox
Score, More Is Better
Core i7 1065G7
SE +/- 1.33, N = 3
225
Core i7 8565U
SE +/- 0.58, N = 3
194
Core i7 9750H
SE +/- 0.67, N = 3
209
Ryzen 5 4500U
203
Ryzen 7 4700U
208
Ryzen 7 4800H-v1
SE +/- 2.73, N = 3
217
50
100
150
200
250
1. Core i7 1065G7: firefox 76.0.1
2. Core i7 8565U: firefox 76.0.1
3. Core i7 9750H: firefox 76.0.1
4. Ryzen 5 4500U: firefox 76.0.1
5. Ryzen 7 4700U: firefox 76.0
6. Ryzen 7 4800H-v1: firefox 77.0.1

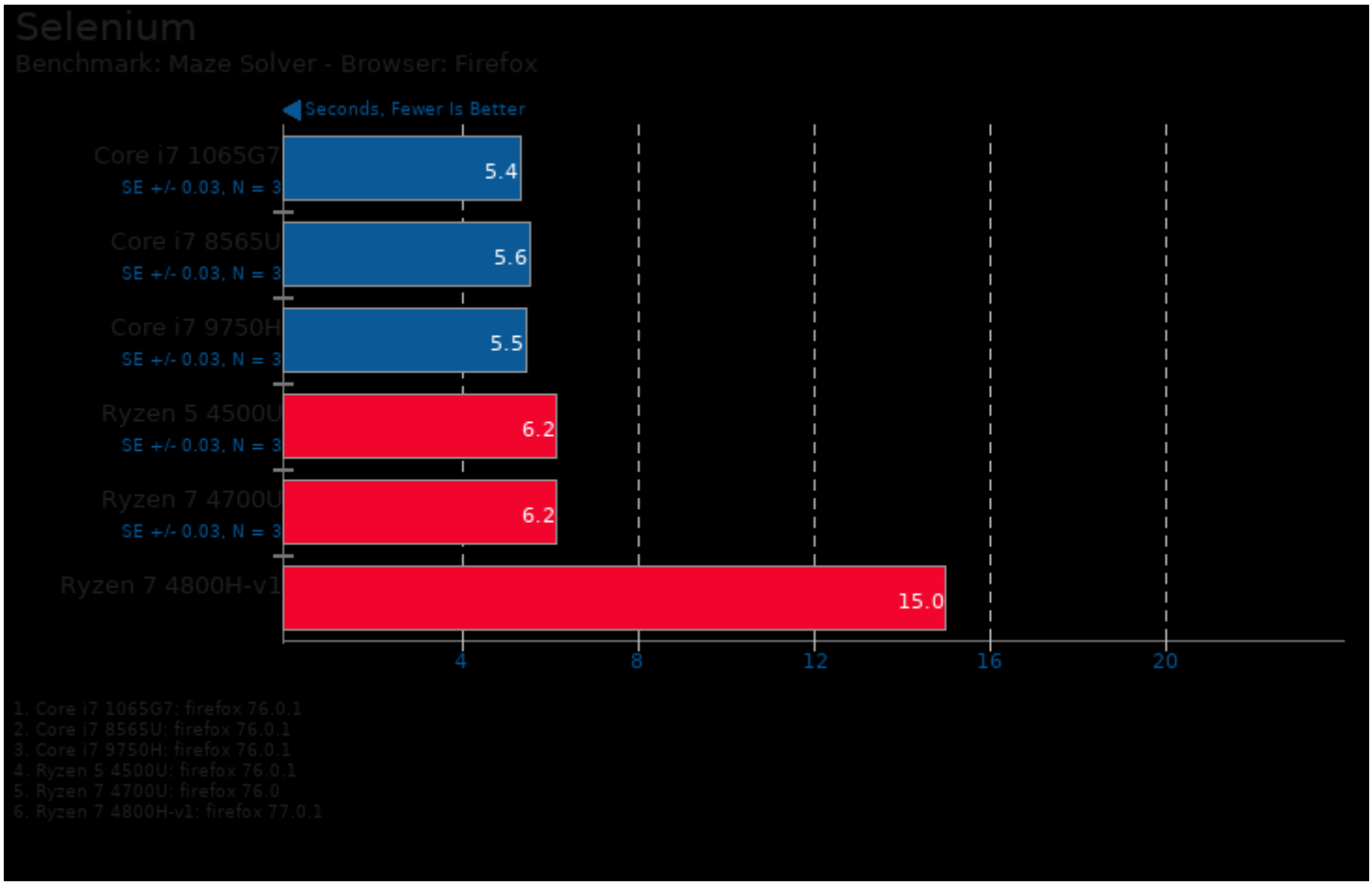

Selenium
Benchmark: Basemark - Browser: Firefox
Overall Score, More Is Better
Core i7 1065G7
SE +/- 5.82, N = 3
492.10
Core i7 8565U
SE +/- 4.06, N = 3
454.01
Core i7 9750H
SE +/- 10.86, N = 9
455.14
Ryzen 5 4500U
SE +/- 4.41, N = 10
476.41
Ryzen 7 4700U
SE +/- 4.06, N = 3
475.73
Ryzen 7 4800H-v1
SE +/- 8.60, N = 12
606.67
130
260
390
520
650
1. Core i7 1065G7: firefox 76.0.1
2. Core i7 8565U: firefox 76.0.1
3. Core i7 9750H: firefox 76.0.1
4. Ryzen 5 4500U: firefox 76.0.1
5. Ryzen 7 4700U: firefox 76.0
6. Ryzen 7 4800H-v1: firefox 77.0.1

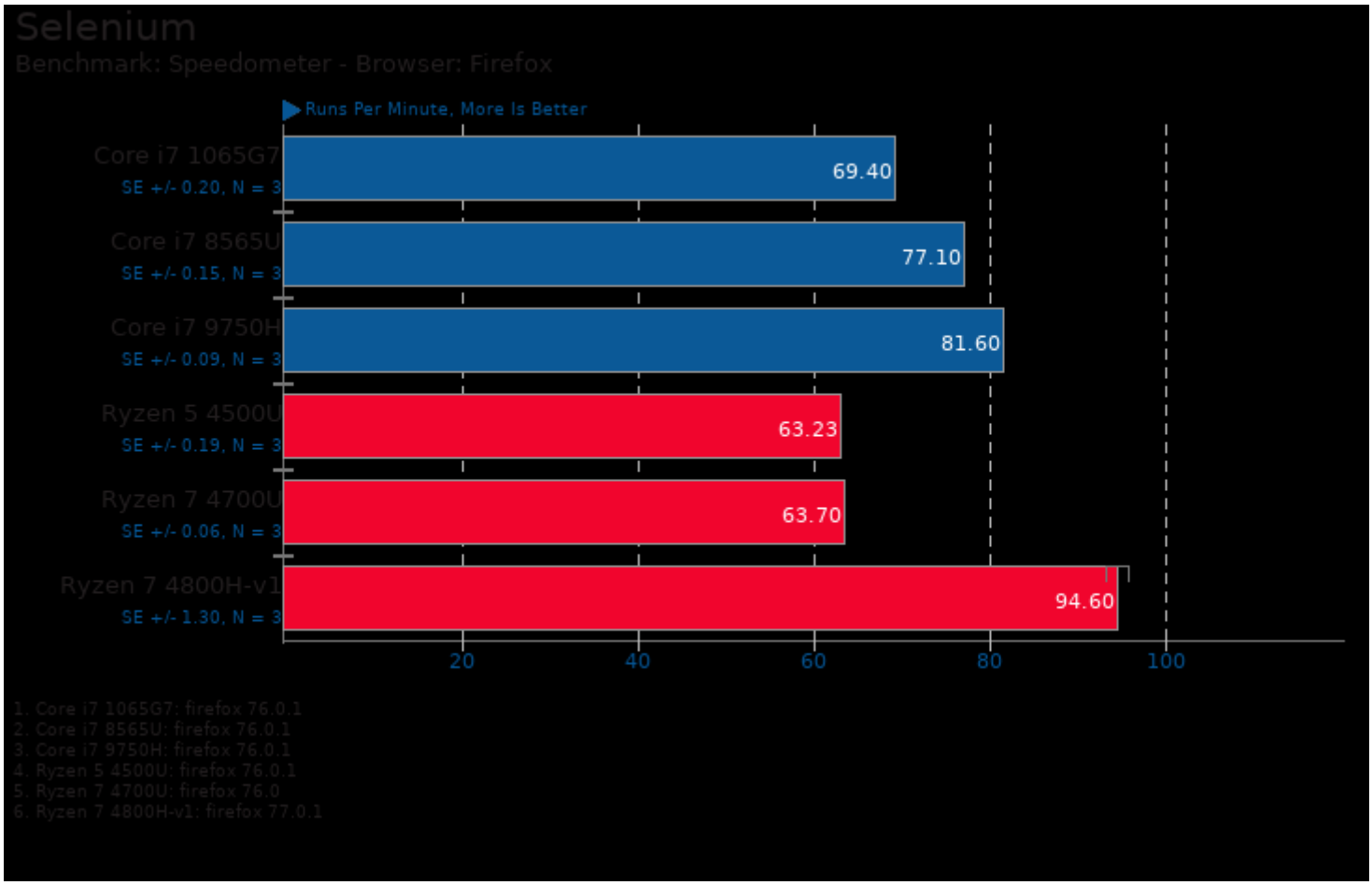

Selenium
Benchmark: Jetstream - Browser: Firefox
Score, More Is Better
Core i7 1065G7
SE +/- 0.36, N = 3
166.43
Core i7 8565U
SE +/- 0.50, N = 3
174.30
Core i7 9750H
SE +/- 0.48, N = 3
184.19
Ryzen 5 4500U
SE +/- 0.33, N = 3
167.86
Ryzen 7 4700U
SE +/- 0.40, N = 3
172.67
Ryzen 7 4800H-v1
SE +/- 2.37, N = 3
235.01
50
100
150
200
250
1. Core i7 1065G7: firefox 76.0.1
2. Core i7 8565U: firefox 76.0.1
3. Core i7 9750H: firefox 76.0.1
4. Ryzen 5 4500U: firefox 76.0.1
5. Ryzen 7 4700U: firefox 76.0
6. Ryzen 7 4800H-v1: firefox 77.0.1

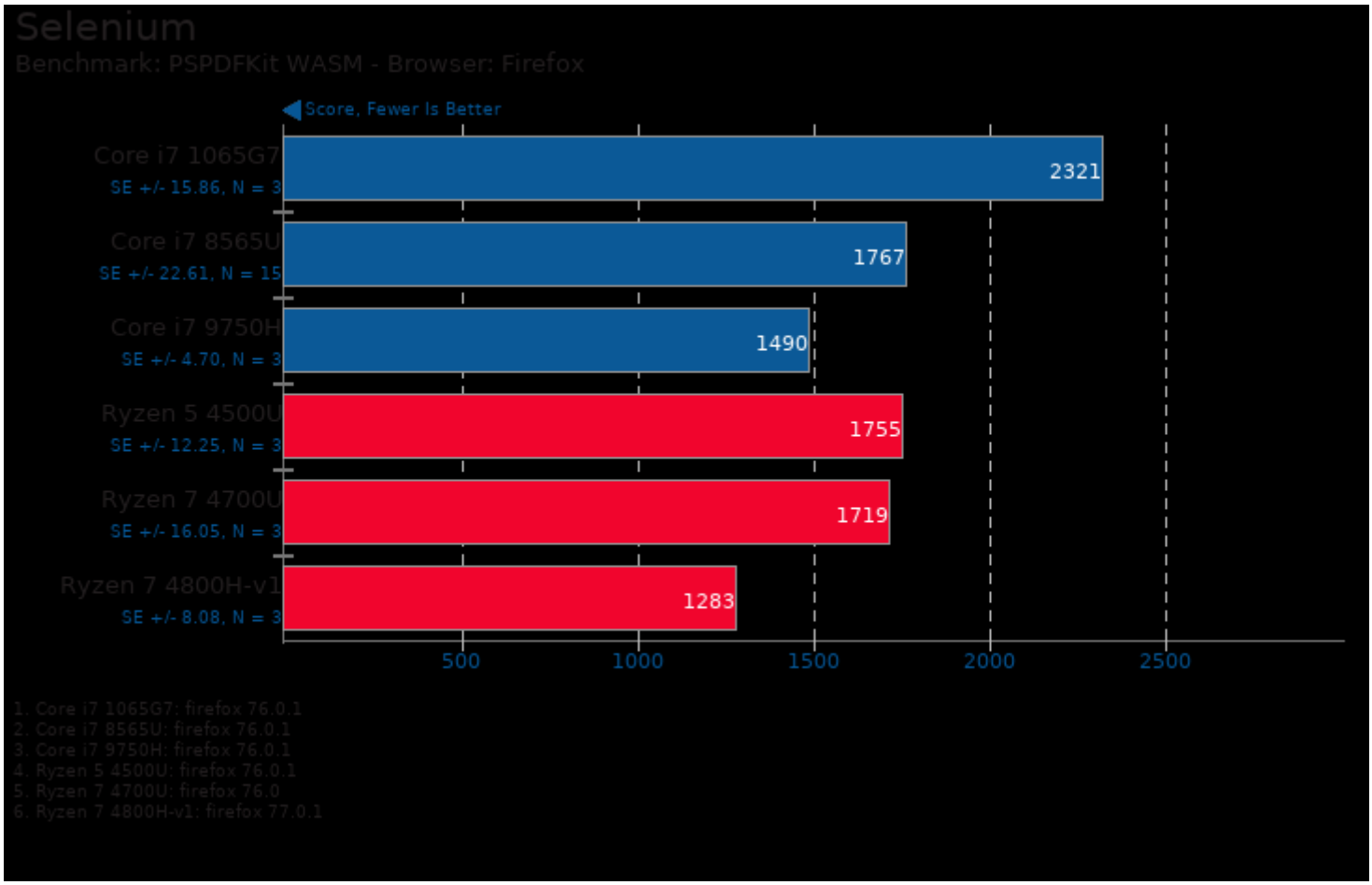

Selenium
Benchmark: CanvasMark - Browser: Firefox
Score, More Is Better
Core i7 1065G7
SE +/- 617.06, N = 9
11304
Core i7 8565U
SE +/- 89.93, N = 3
10014
Core i7 9750H
SE +/- 29.63, N = 3
10790
Ryzen 5 4500U
SE +/- 117.44, N = 15
9800
Ryzen 7 4700U
SE +/- 791.87, N = 9
10606
Ryzen 7 4800H-v1
SE +/- 153.79, N = 15
8948
2K
4K
6K
8K
10K
1. Core i7 1065G7: firefox 76.0.1
2. Core i7 8565U: firefox 76.0.1
3. Core i7 9750H: firefox 76.0.1
4. Ryzen 5 4500U: firefox 76.0.1
5. Ryzen 7 4700U: firefox 76.0
6. Ryzen 7 4800H-v1: firefox 77.0.1

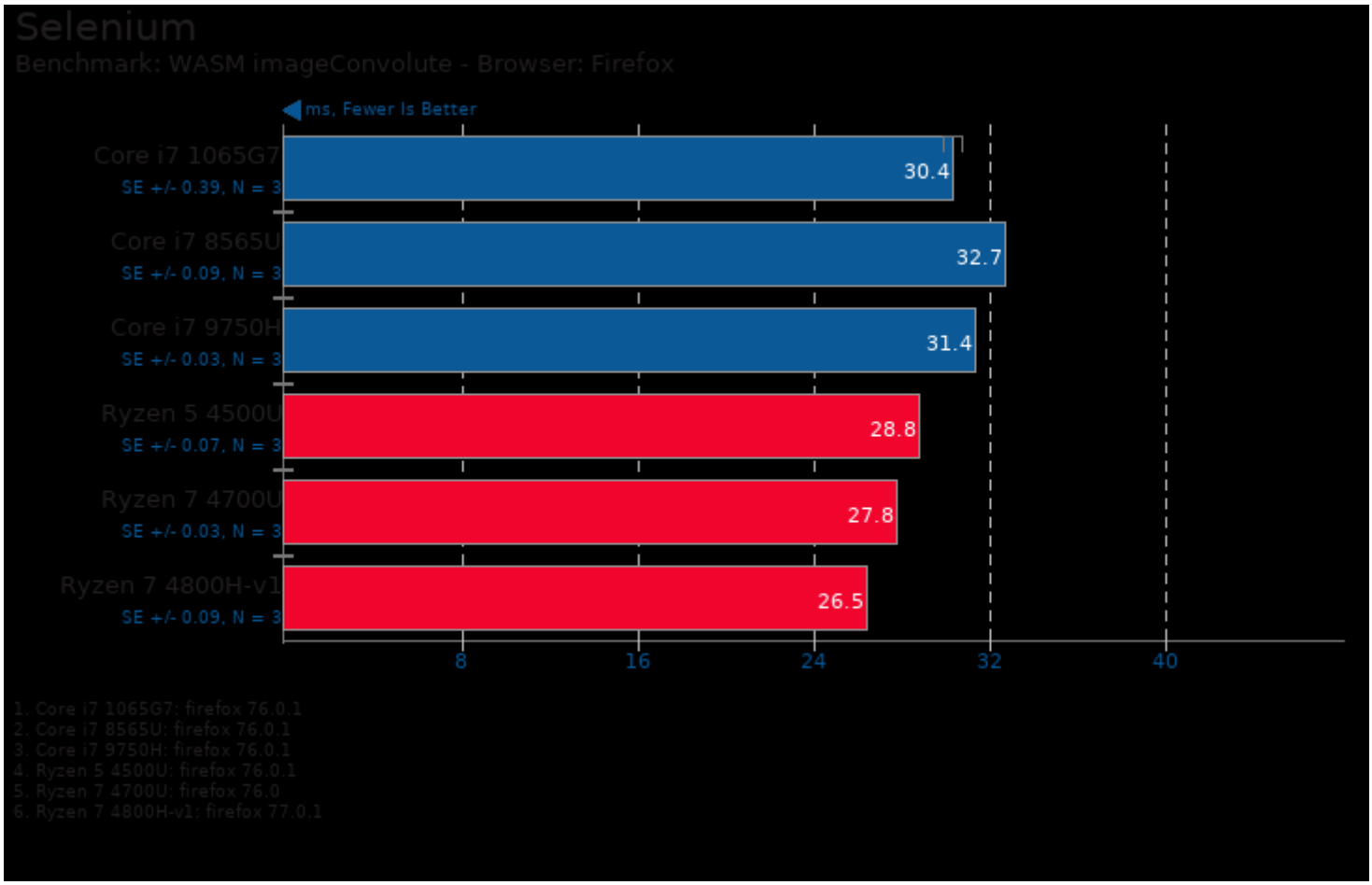

Selenium
Benchmark: StyleBench - Browser: Firefox
Runs / Minute, More Is Better
Core i7 1065G7
SE +/- 0.15, N = 3
65.3
Core i7 8565U
SE +/- 0.06, N = 3
73.7
Core i7 9750H
SE +/- 0.13, N = 3
91.1
Ryzen 5 4500U
SE +/- 0.38, N = 3
59.0
Ryzen 7 4700U
SE +/- 0.23, N = 3
63.0
Ryzen 7 4800H-v1
SE +/- 0.26, N = 3
74.7
20
40
60
80
100
1. Core i7 1065G7: firefox 76.0.1
2. Core i7 8565U: firefox 76.0.1
3. Core i7 9750H: firefox 76.0.1
4. Ryzen 5 4500U: firefox 76.0.1
5. Ryzen 7 4700U: firefox 76.0
6. Ryzen 7 4800H-v1: firefox 77.0.1


Selenium
Benchmark: Jetstream 2 - Browser: Firefox
Score, More Is Better
Core i7 1065G7
SE +/- 1.08, N = 3
77.88
Core i7 8565U
SE +/- 1.00, N = 3
70.86
Core i7 9750H
SE +/- 0.55, N = 3
80.68
Ryzen 5 4500U
SE +/- 0.13, N = 3
75.54
Ryzen 7 4700U
SE +/- 0.96, N = 5
75.30
Ryzen 7 4800H-v1
SE +/- 1.59, N = 3
106.47
20
40
60
80
100
1. Core i7 1065G7: firefox 76.0.1
2. Core i7 8565U: firefox 76.0.1
3. Core i7 9750H: firefox 76.0.1
4. Ryzen 5 4500U: firefox 76.0.1
5. Ryzen 7 4700U: firefox 76.0
6. Ryzen 7 4800H-v1: firefox 77.0.1


Selenium
Benchmark: Maze Solver - Browser: Firefox
Seconds, Fewer Is Better
Core i7 1065G7
SE +/- 0.03, N = 3
5.4
Core i7 8565U
SE +/- 0.03, N = 3
5.6
Core i7 9750H
SE +/- 0.03, N = 3
5.5
Ryzen 5 4500U
SE +/- 0.03, N = 3
6.2
Ryzen 7 4700U
SE +/- 0.03, N = 3
6.2
Ryzen 7 4800H-v1
15.0
4
8
12
16
20
1. Core i7 1065G7: firefox 76.0.1
2. Core i7 8565U: firefox 76.0.1
3. Core i7 9750H: firefox 76.0.1
4. Ryzen 5 4500U: firefox 76.0.1
5. Ryzen 7 4700U: firefox 76.0
6. Ryzen 7 4800H-v1: firefox 77.0.1

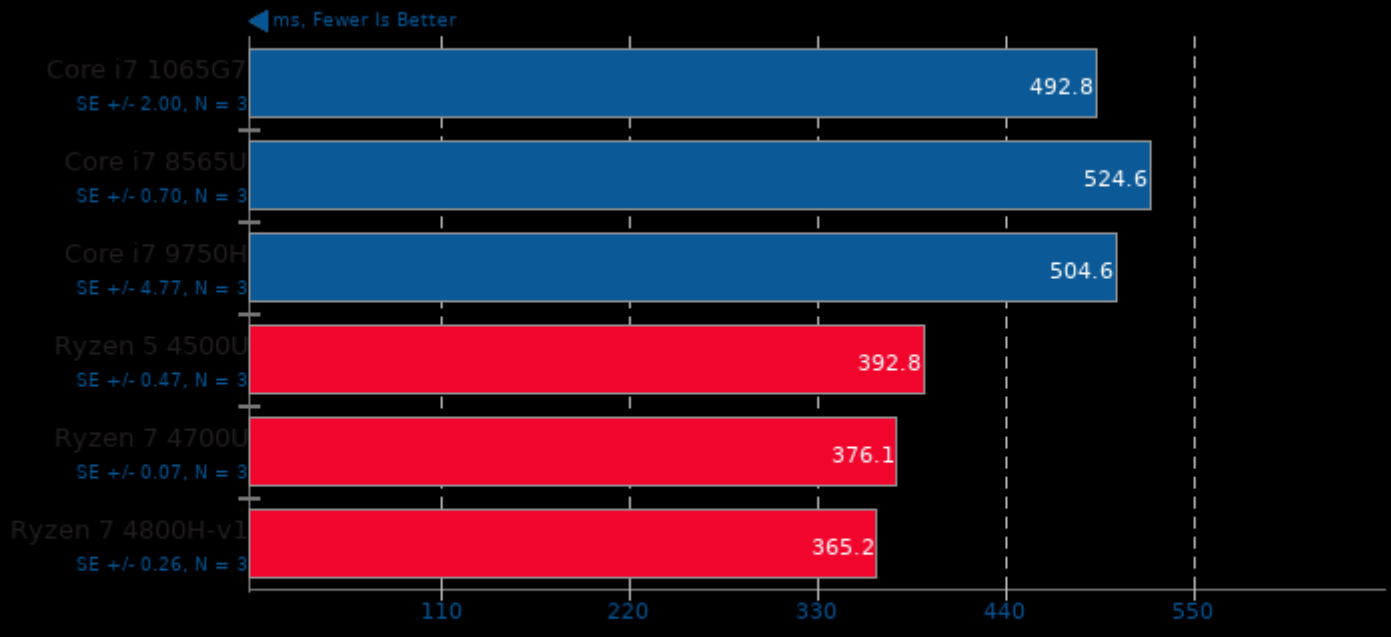

Selenium
Benchmark: Speedometer - Browser: Firefox
Runs Per Minute, More Is Better
Core i7 1065G7
SE +/- 0.20, N = 3
69.40
Core i7 8565U
SE +/- 0.15, N = 3
77.10
Core i7 9750H
SE +/- 0.09, N = 3
81.60
Ryzen 5 4500U
SE +/- 0.19, N = 3
63.23
Ryzen 7 4700U
SE +/- 0.06, N = 3
63.70
Ryzen 7 4800H-v1
SE +/- 1.30, N = 3
94.60
20
40
60
80
100
1. Core i7 1065G7: firefox 76.0.1
2. Core i7 8565U: firefox 76.0.1
3. Core i7 9750H: firefox 76.0.1
4. Ryzen 5 4500U: firefox 76.0.1
5. Ryzen 7 4700U: firefox 76.0
6. Ryzen 7 4800H-v1: firefox 77.0.1


Selenium
Benchmark: PSPDFKit WASM - Browser: Firefox
Score, Fewer Is Better
Core i7 1065G7
SE +/- 15.86, N = 3
2321
Core i7 8565U
SE +/- 22.61, N = 15
1767
Core i7 9750H
SE +/- 4.70, N = 3
1490
Ryzen 5 4500U
SE +/- 12.25, N = 3
1755
Ryzen 7 4700U
SE +/- 16.05, N = 3
1719
Ryzen 7 4800H-v1
SE +/- 8.08, N = 3
1283
500
1000
1500
2000
2500
1. Core i7 1065G7: firefox 76.0.1
2. Core i7 8565U: firefox 76.0.1
3. Core i7 9750H: firefox 76.0.1
4. Ryzen 5 4500U: firefox 76.0.1
5. Ryzen 7 4700U: firefox 76.0
6. Ryzen 7 4800H-v1: firefox 77.0.1


Selenium
Benchmark: WASM imageConvolute - Browser: Firefox
ms, Fewer Is Better
Core i7 1065G7
SE +/- 0.39, N = 3
30.4
Core i7 8565U
SE +/- 0.09, N = 3
32.7
Core i7 9750H
SE +/- 0.03, N = 3
31.4
Ryzen 5 4500U
SE +/- 0.07, N = 3
28.8
Ryzen 7 4700U
SE +/- 0.03, N = 3
27.8
Ryzen 7 4800H-v1
SE +/- 0.09, N = 3
26.5
8
16
24
32
40
1. Core i7 1065G7: firefox 76.0.1
2. Core i7 8565U: firefox 76.0.1
3. Core i7 9750H: firefox 76.0.1
4. Ryzen 5 4500U: firefox 76.0.1
5. Ryzen 7 4700U: firefox 76.0
6. Ryzen 7 4800H-v1: firefox 77.0.1

## Selenium

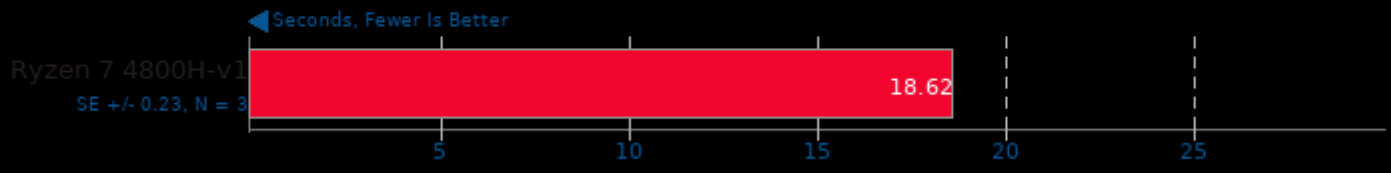
Benchmark: WASM collisionDetection - Browser: Firefox




1. Core i7 1065G7: firefox 76.0.1
2. Core i7 8565U: firefox 76.0.1
3. Core i7 9750H: firefox 76.0.1
4. Ryzen 5 4500U: firefox 76.0.1
5. Ryzen 7 4700U: firefox 76.0
6. Ryzen 7 4800H-v1: firefox 77.0.1

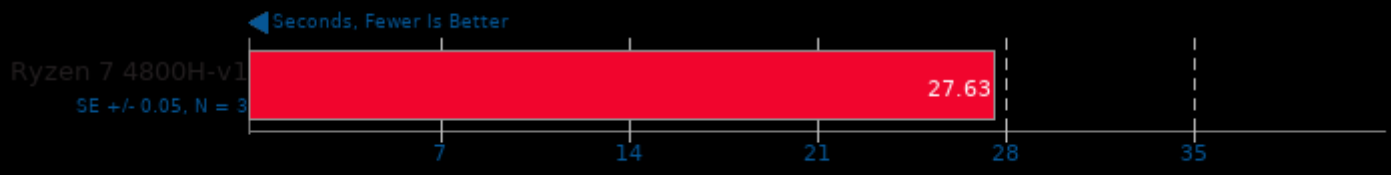
## GIMP 2.10.0

Test: resize



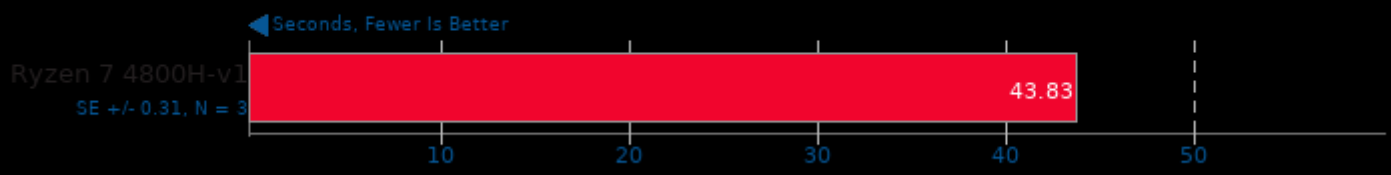

## GIMP 2.10.0

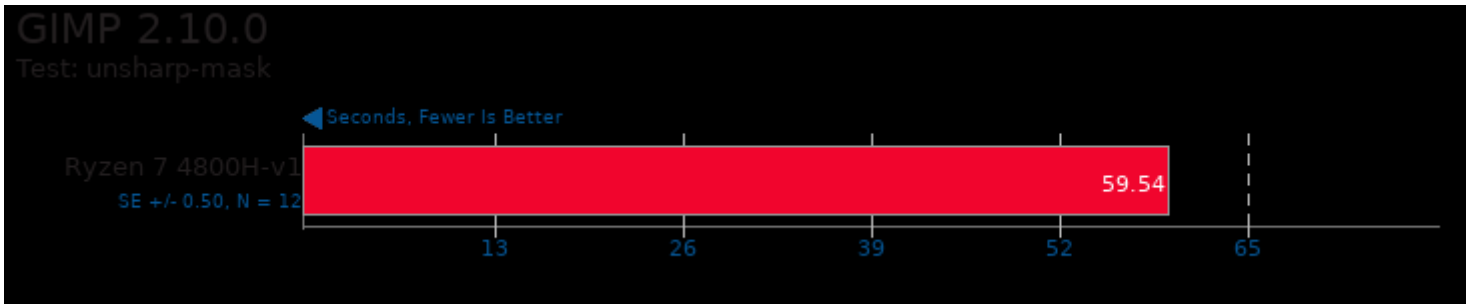
Test: rotate




## GIMP 2.10.0

Test: auto-levels






*This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 12:43.*