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Low-End EOY2019 Ubuntu Linux CPU Comparison

AMD Athlon 3000G Linux benchmarks by Michael Larabel for a future article.

Automated Executive Summary

Core i3 8100 had the most wins, coming in first place for 35% of the tests.

Based on the geometric mean of all complete results, the fastest (Ryzen 5 2400G) was 1.936x the speed of the slowest (A10-7850K).

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

ctx_clock (Context Switch Time) at 7.95x
Intel Open Image Denoise (Scene: Memorial) at 7.911x
OSPray (Demo: Magnetic Reconnection - Renderer: SciVis) at 4.603x
DeepSpeech (Acceleration: CPU) at 4.598x
Core-Latency (Average Latency Between CPU Cores) at 4.113x
NeatBench (Acceleration: CPU) at 3.834x
GraphicsMagick (Operation: Sharpen) at 3.733x
Embree (Binary: Pathtracer - Model: Asian Dragon) at 3.697x
Selenium (Benchmark: PSPDFKit WASM - Browser: Firefox) at 3.68x
Embree (Binary: Pathtracer ISPC - Model: Asian Dragon) at 3.446x.

Test Systems:

Athlon 200GE

Processor: AMD Athlon 200GE @ 3.20GHz (2 Cores / 4 Threads), Motherboard: ASUS PRIME B350M-E (5220 BIOS), Chipset: AMD Raven/Raven2, Memory: 8192MB, Disk: 525GB 2115, Graphics: ASUS AMD Radeon Vega / Mobile 2GB (1000/1067MHz), Audio: AMD Raven/Raven2/Fenghuang, Monitor: DELL S2409W, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 19.10, Kernel: 5.3.0-24-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server 1.20.5, Display Driver: modesetting 1.20.5, OpenGL: 4.5 Mesa 19.2.1 (LLVM 9.0.0), Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --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-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: 0x8101016
Java Notes: OpenJDK Runtime Environment (build 11.0.5+10-post-Ubuntu-0ubuntu1.1)
Python Notes: Python 2.7.17 + Python 3.7.5
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional STIBP: disabled RSB filling + tsx_async_abort: Not affected

Athlon 3000G

Processor: AMD Athlon 3000G @ 3.50GHz (2 Cores / 4 Threads), Motherboard: ASUS PRIME B350M-E (5220 BIOS), Chipset: AMD Raven/Raven2, Memory: 8192MB, Disk: 525GB 2115, Graphics: ASUS AMD Picasso 2GB (1100MHz), Audio: AMD Raven/Raven2/Fenghuang, Monitor: DELL S2409W, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 19.10, Kernel: 5.3.0-24-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server 1.20.5, Display Driver: modesetting 1.20.5, OpenGL: 4.5 Mesa 19.2.1 (LLVM 9.0.0), Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --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-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: 0x8108109
Java Notes: OpenJDK Runtime Environment (build 11.0.5+10-post-Ubuntu-0ubuntu1.1)
Python Notes: Python 2.7.17 + Python 3.7.5
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional STIBP: disabled RSB filling + tsx_async_abort: Not affected

A10-7850K

Processor: AMD A10-7850K APU @ 3.70GHz (2 Cores / 4 Threads), Motherboard: Gigabyte F2A88XM-D3H (F5 BIOS), Chipset: AMD 15h, Memory: 8192MB, Disk: 120GB KINGSTON SV300S3 + 525GB 2115, Graphics: AMD Radeon R7 1GB, Audio: AMD Kaveri HDMI/DP, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 19.10, Kernel: 5.3.0-24-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server 1.20.5, Display Driver: modesetting 1.20.5, OpenGL: 4.5 Mesa 19.2.1 (LLVM 9.0.0), Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --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-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: 0x6003103
Java Notes: OpenJDK Runtime Environment (build 11.0.5+10-post-Ubuntu-0ubuntu1.1)
Python Notes: Python 2.7.17 + Python 3.7.5
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 STIBP: disabled RSB filling + tsx_async_abort: Not affected

Ryzen 3 1200

Processor: AMD Ryzen 3 1200 @ 3.10GHz (4 Cores), Motherboard: MSI B350M GAMING PRO (MS-7A39) v1.0 (2.90 BIOS), Chipset: AMD 17h, Memory: 8192MB, Disk: 525GB 2115 + 120GB ADATA SU700, Graphics: AMD FirePro V3800 512MB, Audio: AMD Redwood HDMI Audio, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 19.10, Kernel: 5.3.0-24-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server 1.20.5, Display Driver: modesetting 1.20.5, OpenGL: 3.3 Mesa 19.2.1 (LLVM 9.0.0), Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --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-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: 0x8001129
Java Notes: OpenJDK Runtime Environment (build 11.0.5+10-post-Ubuntu-0ubuntu1.1)
Python Notes: Python 2.7.17 + Python 3.7.5
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 STIBP: disabled RSB filling + tsx_async_abort: Not affected

Ryzen 3 2200G

Processor: AMD Ryzen 3 2200G @ 3.50GHz (4 Cores), Motherboard: ASUS PRIME B350M-E (5220 BIOS), Chipset: AMD Raven/Raven2, Memory: 8192MB, Disk: 14GB INTEL MEMPEK1W016GA + 525GB 2115, Graphics: ASUS AMD Radeon Vega / Mobile 2GB (1100/1600MHz), Audio: AMD Raven/Raven2/Fenghuang, Monitor: DELL S2409W, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 19.10, Kernel: 5.3.0-24-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server 1.20.5, Display Driver: modesetting 1.20.5, OpenGL: 4.5 Mesa 19.2.1 (LLVM 9.0.0), Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --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-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: 0x8101016
Java Notes: OpenJDK Runtime Environment (build 11.0.5+10-post-Ubuntu-0ubuntu1.1)
Python Notes: Python 2.7.17 + Python 3.7.5
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional STIBP: disabled RSB filling + tsx_async_abort: Not affected

Ryzen 5 2400G

Processor: AMD Ryzen 5 2400G @ 3.60GHz (4 Cores / 8 Threads), Motherboard: MSI B350M GAMING PRO (MS-7A39) v1.0 (2.NM BIOS), Chipset: AMD Raven/Raven2, Memory: 8192MB, Disk: 120GB Force MP500 + 525GB 2115, Graphics: MSI AMD Radeon Vega / Mobile 2GB (1250/1600MHz), Audio: AMD Raven/Raven2/Fenghuang, Monitor: DELL S2409W, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 19.10, Kernel: 5.3.0-24-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server 1.20.5, Display Driver: modesetting 1.20.5, OpenGL: 4.5 Mesa 19.2.1 (LLVM 9.0.0), Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --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-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: 0x8101016
Java Notes: OpenJDK Runtime Environment (build 11.0.5+10-post-Ubuntu-0ubuntu1.1)
Python Notes: Python 2.7.17 + Python 3.7.5
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional STIBP: disabled RSB filling + tsx_async_abort: Not affected

Core i3 4130

Processor: Intel Core i3-4130 @ 3.40GHz (2 Cores / 4 Threads), Motherboard: Intel DH87RL (RLH8710H.86A.0332.2018.1026.1448 BIOS), Chipset: Intel 4th Gen Core DRAM, Memory: 8192MB, Disk: 128GB TOSHIBA THNSNH12 + 525GB 2115, Graphics: Intel Haswell 2GB (1150MHz), Audio: Intel Xeon E3-1200 v3/4th, Monitor: VA2431, Network: Intel I217-V

OS: Ubuntu 19.10, Kernel: 5.3.0-24-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server 1.20.5, Display Driver: modesetting 1.20.5, OpenGL: 4.5 Mesa 19.2.1, Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --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-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: 0x27
Java Notes: OpenJDK Runtime Environment (build 11.0.5+10-post-Ubuntu-0ubuntu1.1)
Python Notes: Python 2.7.17 + Python 3.7.5
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

Core i3 7100

Processor: Intel Core i3-7100 @ 3.90GHz (2 Cores / 4 Threads), Motherboard: Gigabyte B250M-DS3H-CF (F9 BIOS), Chipset: Intel Xeon E3-1200 v6/7th + B250, Memory: 8192MB, Disk: 250GB Western Digital WDS250G1B0A + 525GB 2115, Graphics: Gigabyte Intel HD 630 3GB (1100MHz), Audio: Realtek ALC887-VD, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 19.10, Kernel: 5.3.0-24-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server 1.20.5, Display Driver: modesetting 1.20.5, OpenGL: 4.5 Mesa 19.2.1, Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --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-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 11.0.5+10-post-Ubuntu-0ubuntu1.1)
Python Notes: Python 2.7.17 + Python 3.7.5
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

Core i3 8100

Processor: Intel Core i3-8100 @ 3.60GHz (4 Cores), Motherboard: ASRock Z370M-ITX/ac (P4.10 BIOS), Chipset: Intel 8th Gen Core 4-core Desktop, Memory: 8192MB, Disk: 60GB DREVO X1 SSD + 525GB 2115, Graphics: Intel UHD 630 3GB (1100MHz), Audio: Realtek ALC892, Monitor: VA2431, Network: Intel I219-V + Intel I211 + Intel Dual Band-AC 3168NGW

OS: Ubuntu 19.10, Kernel: 5.3.0-24-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server 1.20.5, Display Driver: modesetting 1.20.5, OpenGL: 4.5 Mesa 19.2.1, Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --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-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 11.0.5+10-post-Ubuntu-0ubuntu1.1)
Python Notes: Python 2.7.17 + Python 3.7.5
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT disabled + mds: Mitigation of Clear buffers; SMT disabled + 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: disabled RSB filling + tsx_async_abort: Not affected

Core i5 4670

Processor: Intel Core i5-4670 @ 3.80GHz (4 Cores), Motherboard: MSI B85M-P33 (MS-7817) v1.0 (V4.9 BIOS), Chipset: Intel 4th Gen Core DRAM, Memory: 8192MB, Disk: 63GB SanDisk SDSSDP06 + 525GB 2115, Graphics: MSI Intel Haswell Desktop 2GB (1200MHz), Audio: Intel Xeon E3-1200 v3/4th, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 19.10, Kernel: 5.3.0-24-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server 1.20.5, Display Driver: modesetting 1.20.5, OpenGL: 4.5 Mesa 19.2.1, Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --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-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: 0x27
Java Notes: OpenJDK Runtime Environment (build 11.0.5+10-post-Ubuntu-0ubuntu1.1)
Python Notes: Python 2.7.17 + Python 3.7.5
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT disabled + mds: Mitigation of Clear buffers; SMT disabled + 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: disabled RSB filling + tsx_async_abort: Not affected

Pentium G4400

Processor: Intel Pentium G4400 @ 3.30GHz (2 Cores), Motherboard: MSI B150M MORTAR (MS-7972) v2.0 (C.40 BIOS), Chipset: Intel Xeon E3-1200 v5/E3-1500, Memory: 8192MB, Disk: 120GB Samsung SSD 850 + 525GB 2115, Graphics: MSI Intel HD 510 3GB (1000MHz), Audio: Realtek ALC892, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 19.10, Kernel: 5.3.0-24-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server 1.20.5, Display Driver: modesetting 1.20.5, OpenGL: 4.5 Mesa 19.2.1, Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --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-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: 0xd6
Java Notes: OpenJDK Runtime Environment (build 11.0.5+10-post-Ubuntu-0ubuntu1.1)
Python Notes: Python 2.7.17 + Python 3.7.5
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT disabled + mds: Mitigation of Clear buffers; SMT disabled + 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: disabled RSB filling + tsx_async_abort: Not affected

Core i5 4690K

Processor: Intel Core i5-4690K @ 3.90GHz (4 Cores), Motherboard: ASUS Z97-E (0803 BIOS), Chipset: Intel 4th Gen Core DRAM, Memory: 20480MB, Disk: 4001GB Western Digital WD40EFRX-68W + 4 x 4001GB Western Digital WD40EFRX-68N + 250GB Crucial_CT250MX2, Graphics: ASUS Intel Haswell Desktop 2GB (1200MHz), Audio: Intel Xeon E3-1200 v3/4th, Monitor: Philips 170S, Network: Intel I218-V

OS: Ubuntu 18.04, Kernel: 4.15.0-76-generic (x86_64), Display Server: X Server 1.19.6, Display Driver: modesetting 1.19.6, OpenGL: 4.5 Mesa 19.2.8, Compiler: GCC 7.4.0, File-System: ext4, Screen Resolution: 3200x1200

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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0x27
Java Notes: OpenJDK Runtime Environment (build 11.0.6+10-post-Ubuntu-1ubuntu118.04.1)
Python Notes: Python 2.7.17 + Python 3.6.9
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT disabled + mds: Mitigation of Clear buffers; SMT disabled + 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: disabled RSB filling + tsx_async_abort: Not affected

	Athlon 200GE	Athlon 3000G	A10-7850K	Ryzen 3 1200	Ryzen 3 2200G	Ryzen 5 2400G	Core i3 4130	Core i3 7100	Core i3 8100	Core i5 4670	Pentium	Core i5 4690K
Java SciMark - Composite (Mflops)	1969	2168	**1323**	2131	**2298**	2288	1925	2165	2007	2155	1893	1887
Normalized	85.68%	94.33%	57.57%	92.7%	100%	99.53%	83.77%	94.2%	87.33%	93.79%	82.38%	82.12%
Standard Deviation	1.6%	0.8%	0.6%	0.3%	0.3%	3.8%	0.4%	0.4%	0.5%	0.4%	0.5%	0.6%
GraphicsMagick - Sharpen (Iterations/min)	26	28	21	48	54	**56**	22	18	32	46	**15**	44
Normalized	46.43%	50%	37.5%	85.71%	96.43%	100%	39.29%	32.14%	57.14%	82.14%	26.79%	78.57%
Standard Deviation			2.9%			1%						1.3%
GraphicsMagick - Resizing (Iterations/min)	201	221	151	364	375	370	**136**	213	**386**	312	178	292
Normalized	52.07%	57.25%	39.12%	94.3%	97.15%	95.85%	35.23%	55.18%	100%	80.83%	46.11%	75.65%
Standard Deviation	0.3%		0.8%		0.8%	0.8%	0.7%		1.1%	0.2%	1.3%	2.4%
dav1d - S.N.1 (FPS)	116.38	125.42	98.72	144.58	162.96	**211.42**	99.39	154.76	203.60	174.80	**90.50**	159.06
Normalized	55.05%	59.32%	46.69%	68.39%	77.08%	100%	47.01%	73.2%	96.3%	82.68%	42.81%	75.23%
Standard Deviation	0.1%	0.1%	0.5%	0.1%	1.7%	0.7%	0.9%	0.1%	0.1%	1.2%	0.2%	1.6%

Low-End EOY2019 Ubuntu Linux CPU Comparison

OSPray - M.R - SciVis (FPS)	1.48	1.61	1.39	2.46	2.72	3.33	2.16	3.83	**5.34**	4.01	**1.16**	3.46
Normalized	27.72%	30.15%	26.03%	46.07%	50.94%	62.36%	40.45%	71.72%	100%	75.09%	21.72%	64.79%
Standard Deviation	0.2%	0.1%	2.2%	0.1%	0.4%	0.8%	0.3%	0.2%	0.3%	0.2%	0.6%	0.2%
Embree - Pathtracer - Asian Dragon	2.0968	2.2503	1.7347	2.9690	3.3545	**4.9405**	1.8928	2.8692	3.6984	3.3897	**1.3363**	3.0766
Normalized	42.44%	45.55%	35.11%	60.1%	67.9%	100%	38.31%	58.08%	74.86%	68.61%	27.05%	62.27%
Standard Deviation	0.2%	0.2%	0.9%	0.2%	0.2%	0.2%	0.3%	0.1%	0.2%	0.2%	0.1%	3%
Embree - Pathtracer ISPC - Asian Dragon (FPS)	2.0049	2.1626	1.6460	2.8838	3.2661	**4.7071**	2.1358	3.4536	4.4093	3.9679	**1.3661**	3.7096
Normalized	42.59%	45.94%	34.97%	61.26%	69.39%	100%	45.37%	73.37%	93.67%	84.3%	29.02%	78.81%
Standard Deviation	0%	0.2%	0.3%	0.2%	0.1%	0%	0.6%	0.1%	0.2%	0.1%	0%	1.1%
SVT-VP9 - VMAF Optimized - Bosphorus 1080p (FPS)	33.96	36.36		56.31	59.85	65.76	**26.41**	52.74	**81.76**	65.18		
Normalized	41.54%	44.47%		68.87%	73.2%	80.43%	32.3%	64.51%	100%	79.72%		
Standard Deviation	1.6%	2.4%		2.8%	2.9%	2.8%	1.1%	2.8%	3.6%	2.9%		
x264 - H.2.V.E (FPS)	17.12	18.75	15.00	23.53	25.84	**34.48**	**14.80**	23.06	30.43	28.35	16.82	27.45
Normalized	49.65%	54.38%	43.5%	68.24%	74.94%	100%	42.92%	66.88%	88.25%	82.22%	48.78%	79.61%
Standard Deviation	2.7%	2.6%	1.8%	2.9%	2.6%	2.9%	1.8%	2.9%	2.9%	3%	2.9%	2.9%
Intel Open Image Denoise - Memorial (Images / Sec)	0.88	0.96	**0.45**	1.58	1.55	1.60	1.50	1.95	**3.56**	3.26	0.46	2.89
Normalized	24.72%	26.97%	12.64%	44.38%	43.54%	44.94%	42.13%	54.78%	100%	91.57%	12.92%	81.18%
Standard Deviation	0.1%	0.2%	0.6%	0.1%	0.5%	0.3%	0.2%	0%	0.1%	0.3%	0%	0.9%
Coremark - CoreMark Size 666 - I.P.S (Iterations/Sec)	63466	69326	64352	86731	103162	**147021**	66640	77272	108962	96602	**50596**	101977
Normalized	43.17%	47.15%	43.77%	58.99%	70.17%	100%	45.33%	52.56%	74.11%	65.71%	34.41%	69.36%
Standard Deviation	0.1%	0.1%	0.3%	0.4%	0.4%	0.1%	0.2%	0.8%	0.1%	0.9%	0.1%	0.9%
Himeno Benchmark - P.P.S (MFLOPS)	3587	3844	**2128**	3834	4177	**4364**	2231	3158	3002	3155	2757	3068
Normalized	82.2%	88.08%	48.78%	87.85%	95.73%	100%	51.12%	72.36%	68.8%	72.3%	63.19%	70.31%
Standard Deviation	1.8%	2.5%	0.1%	1.8%	0.5%	2%	1.3%	0.2%	0.3%	0.2%	0%	2.8%
7-Zip Compression - C.S.T (MIPS)	9394	10127	8800	14379	16670	**19415**	8857	12598	16708	16227	**7661**	15591
Normalized	48.39%	52.16%	45.33%	74.06%	85.86%	100%	45.62%	64.89%	86.06%	83.58%	39.46%	80.3%
Standard Deviation	1.9%	1.1%	1.1%	1.6%	0.4%	0.2%	1.5%	0.4%	0.3%	0.3%	0.5%	0.9%

Low-End EOY2019 Ubuntu Linux CPU Comparison

Timed Linux Kernel Compilation - Time To Compile (sec)	379.208	349.004	406.240	250.323	230.710	179.165	548.808	315.843	211.397	225.887	461.388	246.496
Normalized	47.25%	51.34%	44.1%	71.57%	77.66%	100%	32.65%	56.73%	84.75%	79.32%	38.83%	72.68%
Standard Deviation	0.4%	0.4%	0.3%	0.7%	0.9%	0.2%	0.5%	0.4%	0.8%	0.5%	0.3%	0.7%
Build2 - Time To Compile (sec)	510.768	472.070	506.362	319.812	300.206	255.369	719.310	405.822	266.377	287.610	571.821	305.581
Normalized	50%	54.1%	50.43%	79.85%	85.06%	100%	35.5%	62.93%	95.87%	88.79%	44.66%	83.57%
Standard Deviation	0%	0.3%	0.2%	0.2%	0.2%		0.3%	0.2%	0.4%	0.4%	0.1%	0.4%
Zstd Compression - C.u.1.0.3.s.i.i.C.L .1 (sec)	86.302	82.201	65.160	51.976	50.217	41.525	98.554	58.556	40.689	44.410	81.064	46.356
Normalized	47.15%	49.5%	62.44%	78.28%	81.03%	97.99%	41.29%	69.49%	100%	91.62%	50.19%	87.78%
Standard Deviation	0.4%	0.3%	0.1%	0.2%	0.2%	21.7%	2.8%	0.2%	0.2%	0.4%	0.3%	0.7%
DeepSpeech - CPU (sec)	83.2176 8	79.7162 1	306.286 18	74.3231 1	67.8957 2	74.7942 5	197.119 56	67.3495 9	66.6178 2	97.3815 9		92.8864 4
Normalized	80.05%	83.57%	21.75%	89.63%	98.12%	89.07%	33.8%	98.91%	100%	68.41%		71.72%
Standard Deviation	0.9%	0.7%	0.5%	1.3%	1.1%	0.9%	0.3%	2.5%	1.9%	1%		0.2%
FLAC Audio Encoding - WAV To FLAC (sec)	12.801	11.872	20.867	11.531	10.912	10.772	12.974	9.932	11.162	11.163	12.580	10.413
Normalized	77.59%	83.66%	47.6%	86.13%	91.02%	92.2%	76.55%	100%	88.98%	88.97%	78.95%	95.38%
Standard Deviation	1.4%	1.9%	0.2%	0.4%	0.7%	1.2%	1.8%	0.5%	0.7%	1.2%	1.9%	0.2%
LAME MP3 Encoding - WAV To MP3 (sec)	10.972	9.880	14.156	9.987	9.290	8.863	11.115	9.270	9.971	9.869	10.882	9.749
Normalized	80.78%	89.71%	62.61%	88.75%	95.4%	100%	79.74%	95.61%	88.89%	89.81%	81.45%	90.91%
Standard Deviation	1.4%	0.5%	0.3%	0.1%	0.1%	0.4%	0.2%	0%	0.1%	0.1%	0%	0.2%
Perl Benchmarks - Pod2html (sec)	0.18846 585	0.17386 731	0.22753 557	0.17655 118	0.16336 353	0.15405 877	0.17321 866	0.12531 321	0.13521 119	0.12886 029	0.15250 590	0.12810 977
Normalized	66.49%	72.07%	55.07%	70.98%	76.71%	81.34%	72.34%	100%	92.68%	97.25%	82.17%	97.82%
Standard Deviation	1%	1.5%	0.5%	1.2%	0.8%	0.9%	1.9%	0.2%	0.4%	1%	0.9%	0.8%
Perl Benchmarks - Interpreter	0.00140 873	0.00120 668	0.00216 237	0.00157 415	0.00171 832	0.00170 840	0.00172 385	0.00106 513	0.00109 191	0.00123 535	0.00125 764	0.00162 388
Normalized	75.61%	88.27%	49.26%	67.66%	61.99%	62.35%	61.79%	100%	97.55%	86.22%	84.69%	65.59%
Standard Deviation	0.7%	0.7%	1.7%	2.1%	1.4%	0.8%	1%	0.4%	1.3%	1.5%	0.2%	2.8%
Radiance Benchmark - SMP Parallel	442.114	410.374	645.594	310.224	253.06	256.232	557.984	371.787	256.715	263.343	556.648	292.822
Normalized	57.24%	61.67%	39.2%	81.57%	100%	98.76%	45.35%	68.07%	98.58%	96.1%	45.46%	86.42%
R Benchmark (sec)	0.3270	0.3012	0.4615	0.2293	0.2141	0.2220	0.4073	0.2184	0.1777	0.1997	0.3867	0.2573
Normalized	54.34%	59%	38.5%	77.5%	83%	80.05%	43.63%	81.36%	100%	88.98%	45.95%	69.06%
Standard Deviation	0.5%	0.4%	1%	0.6%	0.7%	0.5%	0.6%	0.2%	0.4%	0.4%	0.2%	0.4%
Sudokut - Total Time (sec)	19.384	17.816	21.348	18.527	17.314	15.950	15.811	11.195	12.101	12.131	13.097	11.625
Normalized	57.75%	62.84%	52.44%	60.43%	64.66%	70.19%	70.81%	100%	92.51%	92.28%	85.48%	96.3%
Standard Deviation	0.3%	0.1%	0.4%	0.3%	0.3%	0.1%	0.3%	0.3%	0.2%	0.1%	0.2%	0.1%

Low-End EOY2019 Ubuntu Linux CPU Comparison

Core-Latency - A.L.B.C.C (ns)	80.892925	79.349475	**303.750375**	302.22175	82.5883	74.02	207.10545	**73.849275**	113.09325	136.229	106.307	122.88475
Normalized	91.29%	93.07%	24.31%	24.44%	89.42%	99.77%	35.66%	100%	65.3%	54.21%	69.47%	60.1%
Cryptsetup - PBKDF2-sha512 (Iterations/sec)	**1138787**	1287130	1153142	1269976	1361787	1444985	1314554	**1597628**	1476175	1472719	1193824	
Normalized	71.28%	80.57%	72.18%	79.49%	85.24%	90.45%	82.28%	100%	92.4%	92.18%	74.72%	
Standard Deviation	4.1%	0.3%	0.5%	0.1%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	
Cryptsetup - PBKDF2-whirlpool	504858	555784	**361748**	546704	587111	620466	512667	680011	631672	575508	571121	**787757**
Normalized	64.09%	70.55%	45.92%	69.4%	74.53%	78.76%	65.08%	86.32%	80.19%	73.06%	72.5%	100%
Standard Deviation	2.1%	0.2%	0.4%	0.2%	0.3%	0.4%	0.1%	0.1%			0.2%	1.7%
libjpeg-turbo tjbench - D.T (Megapixels/sec)	134.370170	146.896674	**119.198110**	145.193665	155.623822	164.693605	150.779073	**175.588930**	162.219342	172.989698	134.126157	168.959408
Normalized	76.53%	83.66%	67.88%	82.69%	88.63%	93.79%	85.87%	100%	92.39%	98.52%	76.39%	96.22%
Standard Deviation	0.6%	0.4%	0.2%	0.2%	0.4%	0%	0.3%	0%	0.1%	0.5%	0.5%	0.7%
SQLite Speedtest - Timed Time -	93.845	86.131	**136.021**	86.187	81.589	77.553	129.917	**76.275**	77.440	79.816	97.630	87.028
Normalized	81.28%	88.56%	56.08%	88.5%	93.49%	98.35%	58.71%	100%	98.5%	95.56%	78.13%	87.64%
Standard Deviation	0.5%	0.6%	0.1%	0.1%	0.9%	2.4%	0.2%	0.3%	0.5%	0.2%	0.4%	0.9%
Darktable - Boat - CPU-only (sec)	36.365	33.986	64.980	23.389	23.879	25.597	**73.628**	35.655	**22.788**	30.025	43.147	
Normalized	62.66%	67.05%	35.07%	97.43%	95.43%	89.03%	30.95%	63.91%	100%	75.9%	52.81%	
Standard Deviation	0.2%	0.1%	0.6%	0.5%	3%	0.1%	0.2%	0%	0%	0.1%	0.1%	
Darktable - Masskrug - CPU-only (sec)	34.342	31.773	**50.970**	22.981	22.716	**19.495**	45.407	30.085	19.884	23.102	40.819	
Normalized	56.77%	61.36%	38.25%	84.83%	85.82%	100%	42.93%	64.8%	98.04%	84.39%	47.76%	
Standard Deviation	0%	0.1%	1%	0.3%	0.6%	0.3%	2.1%	0.1%	0.1%	0.2%	0.1%	
Darktable - Server Room - CPU-only (sec)	29.452	27.114	45.621	18.289	18.907	17.501	**46.023**	25.841	**16.656**	20.420	34.364	
Normalized	56.55%	61.43%	36.51%	91.07%	88.09%	95.17%	36.19%	64.46%	100%	81.57%	48.47%	
Standard Deviation	0.1%	0.2%	0.3%	0.4%	0.6%	0.4%	2%	0.2%	0.2%	0.3%	0.3%	
GIMP - resize (sec)	14.792	13.589	**18.899**	12.990	11.084	**10.094**	17.747	12.716	10.670	10.742	15.637	
Normalized	68.24%	74.28%	53.41%	77.71%	91.07%	100%	56.88%	79.38%	94.6%	93.97%	64.55%	
Standard Deviation	1.6%	2.5%	1.9%	2.2%	2.5%	19.6%	1.5%	3%	2.7%	2.2%	1.9%	
GIMP - rotate (sec)	18.070	16.721	**26.633**	17.712	15.641	15.254	22.434	**14.807**	15.471	15.669	17.956	
Normalized	81.94%	88.55%	55.6%	83.6%	94.67%	97.07%	66%	100%	95.71%	94.5%	82.46%	
Standard Deviation	0.1%	0.3%	0.4%	0.3%	0.2%	0.3%	0.1%	0.4%	0.1%	0.2%	0.2%	
GIMP - auto-levels (sec)	22.028	20.440	**32.403**	20.555	18.081	17.763	27.420	18.238	**16.911**	17.773	22.447	
Normalized	76.77%	82.73%	52.19%	82.27%	93.53%	95.2%	61.67%	92.72%	100%	95.15%	75.34%	
Standard Deviation	0.7%	0.4%	0.6%	0.2%	1.3%	2%	0.2%	1%	0.2%	0.1%	0.2%	

Low-End EOY2019 Ubuntu Linux CPU Comparison

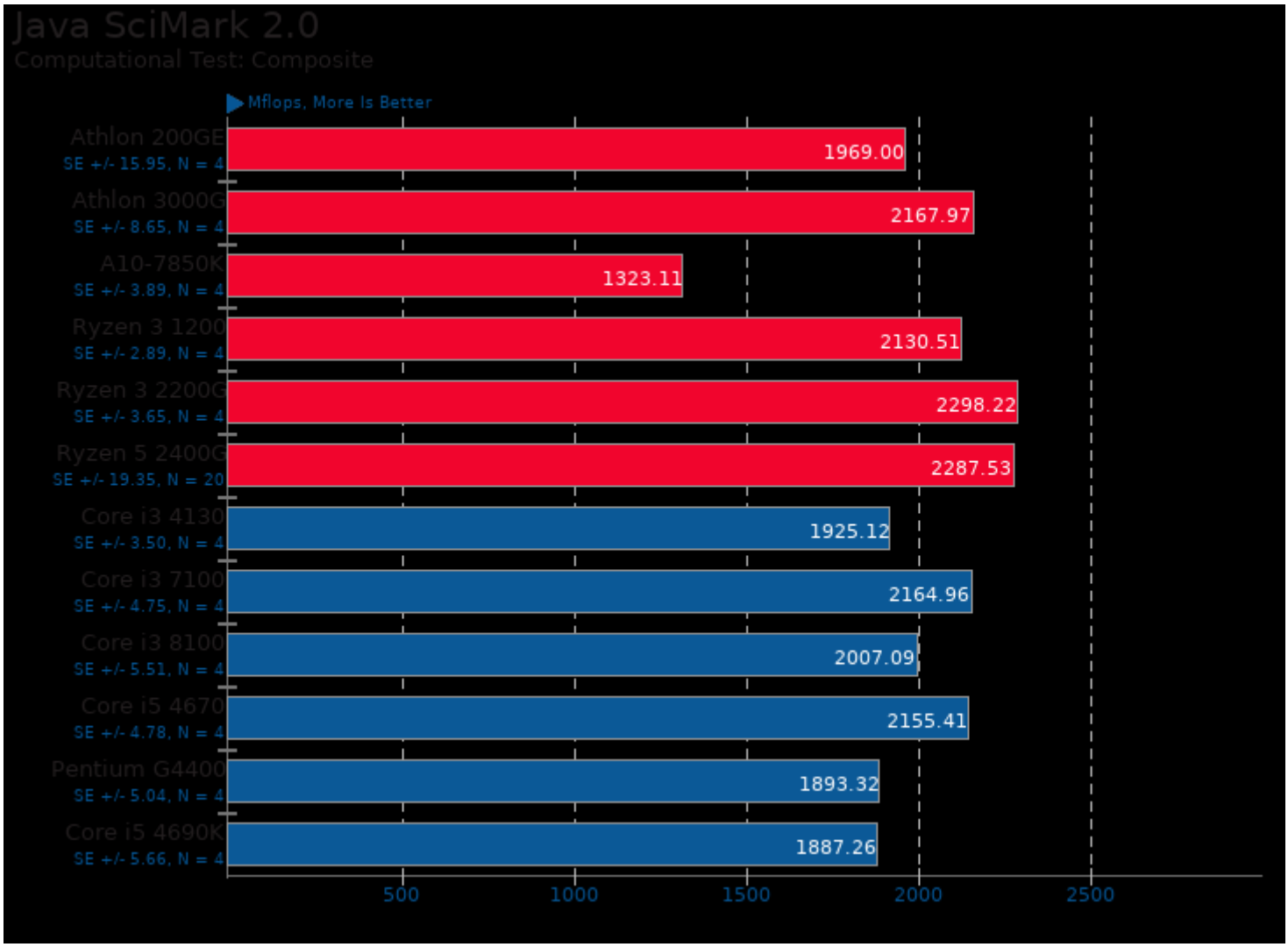
GIMP - unsharp-mask (sec)	24.438	22.627	**34.048**	22.071	19.252	19.844	32.299	21.115	**18.761**	19.787	26.986	
Normalized	76.77%	82.91%	55.1%	85%	97.45%	94.54%	58.09%	88.85%	100%	94.81%	69.52%	
Standard Deviation	0.2%	0.3%	0.6%	1.5%	1.2%	0.8%	1.5%	1.6%	0.4%	1.7%	0.2%	
LibreOffice - 2.D.T.P (sec)	11.158	10.222	**15.229**	10.359	9.513	9.081	12.460	8.800	9.122	**8.744**	10.291	10.680
Normalized	78.37%	85.54%	57.42%	84.41%	91.92%	96.29%	70.18%	99.36%	95.86%	100%	84.97%	81.87%
Standard Deviation	2.9%	3.3%	2.7%	3.1%	3.4%	3.6%	2.9%	5.8%	4.6%	3.7%	4%	3.3%
GNU Octave Benchmark (sec)	18.065	17.017	29.325	14.964	**13.457**	14.512	**37.768**	18.262	14.379	17.577	17.258	
Normalized	74.49%	79.08%	45.89%	89.93%	100%	92.73%	35.63%	73.69%	93.59%	76.56%	77.98%	
Standard Deviation	1.7%	0.6%	0.4%	1.4%	0.6%	0.8%	1%	0.7%	1.2%	0.6%	1%	
ctx_clock - C.S.T (Clocks)	224	210	429	186	210	**180**	1337	1267	1269	1125	**1431**	1145
Normalized	80.36%	85.71%	41.96%	96.77%	85.71%	100%	13.46%	14.21%	14.18%	16%	12.58%	15.72%
Standard Deviation							0.2%	0.1%	0.2%	0.2%	0.1%	0.2%
PyBench - T.F.A.T.T (Milliseconds)	1466	1330	**1870**	1353	1254	1191	1344	**1103**	1192	1202	1323	1230
Normalized	75.24%	82.93%	58.98%	81.52%	87.96%	92.61%	82.07%	100%	92.53%	91.76%	83.37%	89.67%
Standard Deviation	0.9%		0.2%	0.2%	0.2%	0.3%	0.6%	0.4%	0.4%	0.1%	0.4%	0.4%
NeatBench - CPU (FPS)	3.35	3.52	2.56	6.44	6.07	5.55	**2.05**	4.57	**7.86**	5.61	3.05	4.92
Normalized	42.62%	44.78%	32.57%	81.93%	77.23%	70.61%	26.08%	58.14%	100%	71.37%	38.8%	62.6%
Standard Deviation	0.9%	1.8%	0.6%	1.1%	0.6%	1.4%	1.3%	2.7%	1.5%	0.1%	0.2%	2.8%
PHPBench - P.B.S (Score)	415958	454813	**365799**	451544	482356	513232	552233	**635333**	585620	617530	531462	576196
Normalized	65.47%	71.59%	57.58%	71.07%	75.92%	80.78%	86.92%	100%	92.18%	97.2%	83.65%	90.69%
Standard Deviation	2%	2.2%	0.8%	0.4%	0.5%	0.6%	0.1%	0.1%	0.3%	0.3%	0.3%	1.6%
Selenium - ARES-6 - Firefox (ms)	79.74	72.72	**118.21**	76.18	67.57	65.65	98.90	67.31	**58.47**	61.54	65.75	63.97
Normalized	73.33%	80.4%	49.46%	76.75%	86.53%	89.06%	59.12%	86.87%	100%	95.01%	88.93%	91.4%
Standard Deviation	1.3%	1.2%	0.7%	0.9%	1.5%	0.4%	0.6%	0.3%	0.7%	0.5%	1.4%	1.1%
Selenium - Jetstream - Firefox (Score)	136.88	147.17	**89.872**	143.26	160.91	**168.96**	115.17	161.92	168.86	167.60	146.19	164.71
Normalized	81.01%	87.1%	53.19%	84.79%	95.24%	100%	68.16%	95.83%	99.94%	99.2%	86.52%	97.48%
Standard Deviation	0.5%	0.2%	0.3%	0.3%	0.5%	0.6%	0.3%	0.1%	0.1%	0.4%	0.5%	0.2%
Selenium - StyleBench - Firefox (Runs / Minute)	47.3	50.3	**35.5**	49.2	54.5	65.3	40.1	64.9	**74.8**	69.2	42.7	66.4
Normalized	63.24%	67.25%	47.46%	65.78%	72.86%	87.3%	53.61%	86.76%	100%	92.51%	57.09%	88.77%
Standard Deviation	0.9%	0.3%	0.5%	0.8%	0.2%	0.6%	1.2%	0.2%	0.2%	0.7%	0.5%	1.3%

Low-End EOY2019 Ubuntu Linux CPU Comparison

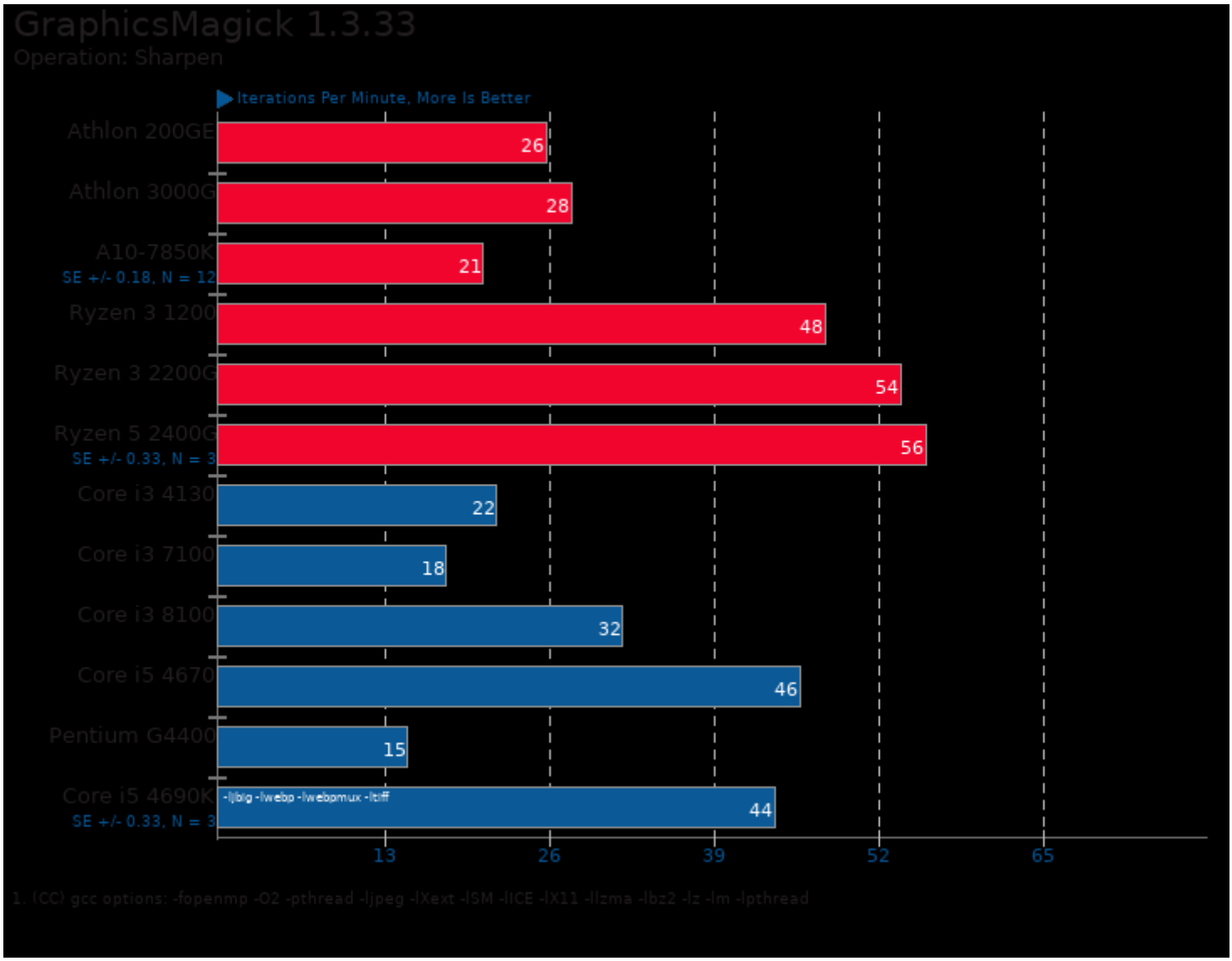
Selenium - Speedometer - Firefox (Runs/min)	49.74	53.9	39.0	53.1	60.8	62.6	**38.0**	64.5	**75.58**	71.8	60.73	71.1
Normalized	65.81%	71.32%	51.6%	70.26%	80.44%	82.83%	50.28%	85.34%	100%	95%	80.35%	94.07%
Standard Deviation	0.7%	0.4%	1.5%	0.7%	0.3%	0.2%	0.8%	0%	0.6%	0.1%	0.3%	0.5%
Selenium - ARES-6 - Google Chrome (ms)	35.23	32.86	**47.91**	30.44	26.57	27.59	42.40	33.05	**23.25**	23.32	31.57	25.20
Normalized	65.99%	70.75%	48.53%	76.38%	87.5%	84.27%	54.83%	70.35%	100%	99.7%	73.65%	92.26%
Standard Deviation	2.2%	1.9%	0.6%	0.5%	0.1%	1%	1.1%	0.4%	0.5%	0.9%	1.1%	1%
Selenium - PSPDFKit WASM - Firefox (Score)	2449	2241	2926	2145	1888	1876	2897	1839	**1660**	1777	**6109**	1831
Normalized	67.78%	74.07%	56.73%	77.39%	87.92%	88.49%	57.3%	90.27%	100%	93.42%	27.17%	90.66%
Standard Deviation	1.5%	0.7%	0.5%	0.2%	0.6%	0.8%	0.6%	0.8%	0.6%	0.6%	1.7%	0.4%
Selenium - Jetstream - Google Chrome (Score)	138.21	151.32	**96.759**	149.76	169.44	170.19	116.97	145.82	179.65	**186.96**	150.36	177.56
Normalized	73.92%	80.94%	51.75%	80.1%	90.63%	91.03%	62.56%	78%	96.09%	100%	80.42%	94.97%
Standard Deviation	0.5%	0.5%	0.2%	0.2%	0.1%	0.7%	0.3%	0.2%	0.5%	0.2%	0.9%	1%
Selenium - StyleBench - Google Chrome (Runs / Minute)	21.62	23.51	**16.26**	23.75	26.16	26.7	19.2	27.51	28.26	**28.75**	25.71	26.83
Normalized	75.2%	81.77%	56.56%	82.61%	90.99%	92.87%	66.78%	95.69%	98.3%	100%	89.43%	93.32%
Standard Deviation	0.5%	0.4%	0.5%	0.4%	0.5%	0.4%	0.5%	0.1%	0.7%	1.1%	0.5%	0.5%
Selenium - Speedometer - Google Chrome (Runs/min)	69.87	75.8	55.0	78.39	87.77	87.88	**53.92**	80.0	**101**	97.93	81.8	98.1
Normalized	69.18%	75.05%	54.46%	77.61%	86.9%	87.01%	53.39%	79.21%	100%	96.96%	80.99%	97.13%
Standard Deviation	0.4%	0.6%	0.2%	0.4%	0.6%	0.5%	0.5%	0.6%		1.6%	0.7%	1.2%
Selenium - PSPDFKit WASM - Google Chrome (Score)	3058	2795	**3443**	2450	2190	2274		3040	**2124**	2186	3176	2379
Normalized	69.46%	75.99%	61.69%	86.69%	96.99%	93.4%		69.87%	100%	97.16%	66.88%	89.28%
Standard Deviation	1%	1.3%	0.5%	0.7%	0.5%	1.3%		0.6%	1%	0.9%	2.9%	2.4%
Tesseract OCR - T.T.O.7.I (sec)	35.333	32.623	46.932	34.801	29.123	28.256	38.126	28.537	28.339	**28.001**	**58.053**	
Normalized	79.25%	85.83%	59.66%	80.46%	96.15%	99.1%	73.44%	98.12%	98.81%	100%	48.23%	
Standard Deviation	0.1%	0.2%	0.2%	0.3%	0.2%	0.2%	0.3%	0.3%	0.4%	0%	0.1%	
Cryptsetup - PBKDF2-whirlpool	507646	553827	**363584**	548037	587552	621931	512667		630407	574669	571534	**784508**
Normalized	64.71%	70.6%	46.35%	69.86%	74.89%	79.28%	65.35%		80.36%	73.25%	72.85%	100%
Standard Deviation	0.4%	0.3%	0.1%	0.2%	0.4%		0.1%		0.1%	0.3%	0.1%	0.9%

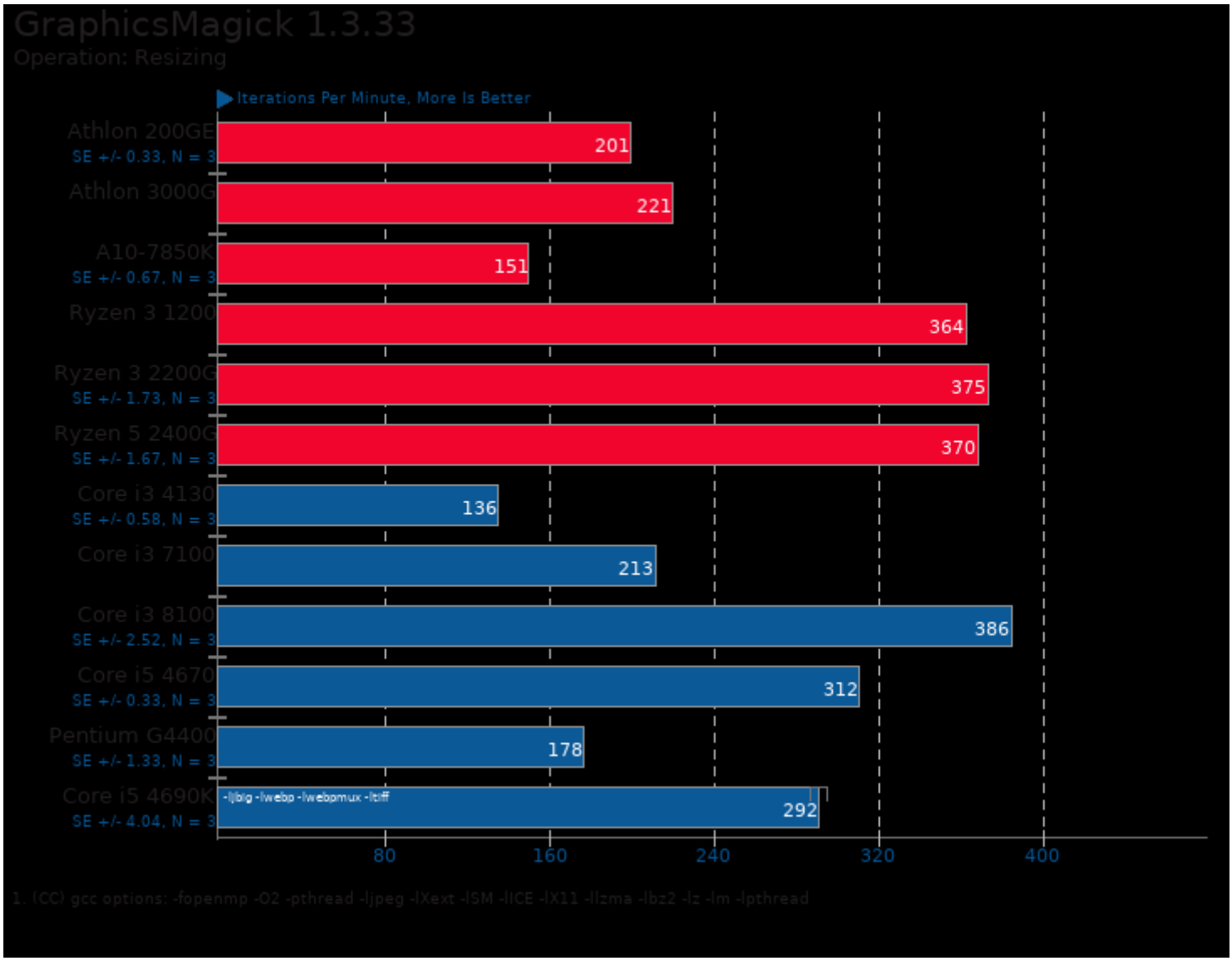
Low-End EOY2019 Ubuntu Linux CPU Comparison

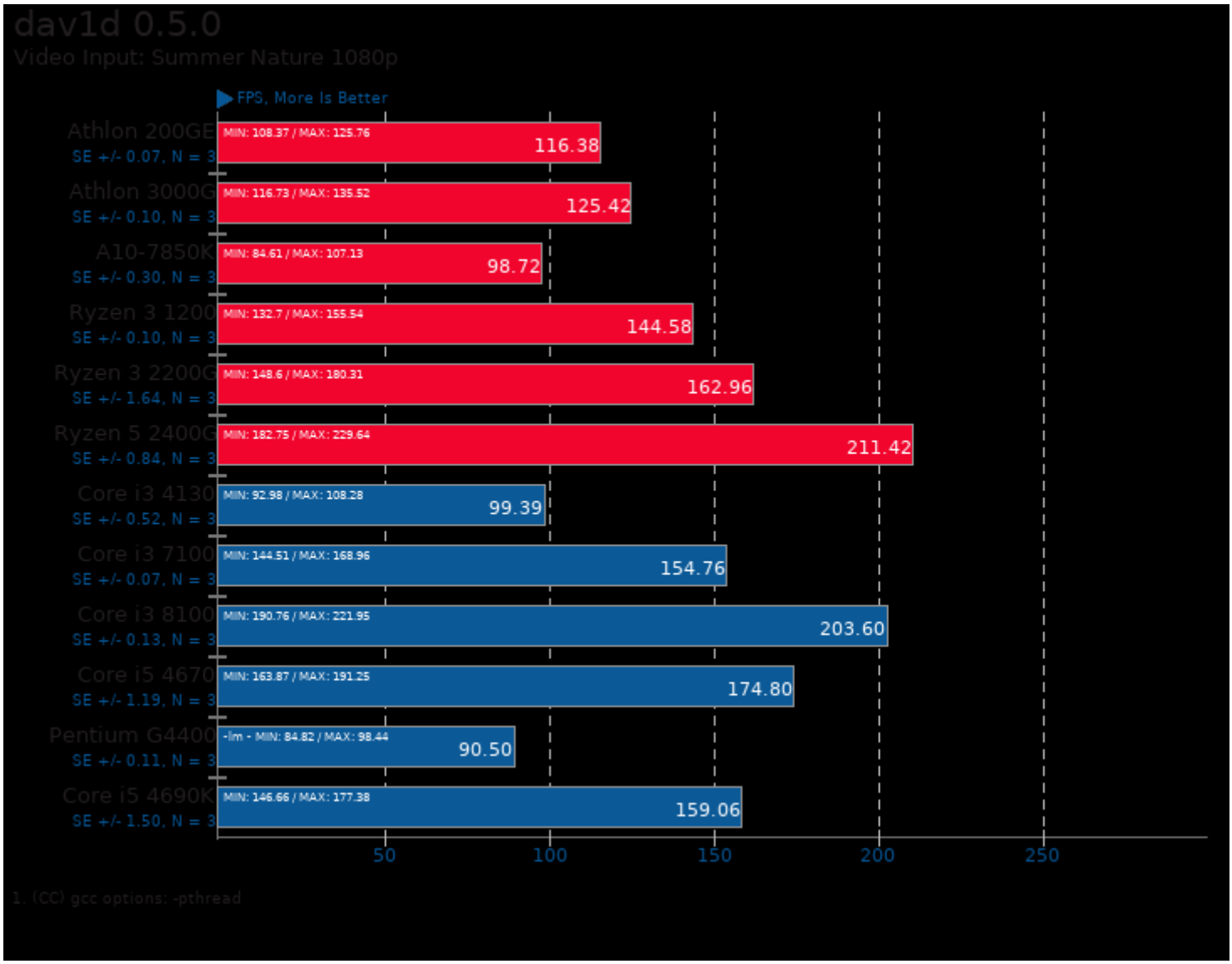
Cryptsetup - PBKDF2-sha512 (Iterations/sec)	**1311278**
Normalized	100%
Standard Deviation	0.4%
Darktable - Boat - CPU-only (sec)	29.936
Standard Deviation	1.9%
Darktable - Masskrug - CPU-only (sec)	16.712
Standard Deviation	1.4%
Darktable - Server Room - CPU-only (sec)	13.349
Standard Deviation	0.7%
GIMP - resize (sec)	9.593
Standard Deviation	2.1%
GIMP - rotate (sec)	21.577
Standard Deviation	0.1%
GIMP - auto-levels (sec)	19.875
Standard Deviation	0.5%
GIMP - unsharp-mask (sec)	43.720
Standard Deviation	0.2%
GNU Octave Benchmark (sec)	11.271
Standard Deviation	1.1%
Tesseract OCR - T.T.O.7.I (sec)	30.239
Standard Deviation	0.5%


Java SciMark 2.0
Computational Test: Composite
Mflops, More Is Better
Athlon 200GE
SE +/- 15.95, N = 4
1969.00
Athlon 3000G
SE +/- 8.65, N = 4
2167.97
A10-7850K
SE +/- 3.89, N = 4
1323.11
Ryzen 3 1200
SE +/- 2.89, N = 4
2130.51
Ryzen 3 2200G
SE +/- 3.65, N = 4
2298.22
Ryzen 5 2400G
SE +/- 19.35, N = 20
2287.53
Core i3 4130
SE +/- 3.50, N = 4
1925.12
Core i3 7100
SE +/- 4.75, N = 4
2164.96
Core i3 8100
SE +/- 5.51, N = 4
2007.09
Core i5 4670
SE +/- 4.78, N = 4
2155.41
Pentium G4400
SE +/- 5.04, N = 4
1893.32
Core i5 4690K
SE +/- 5.66, N = 4
1887.26
500
1000
1500
2000
2500

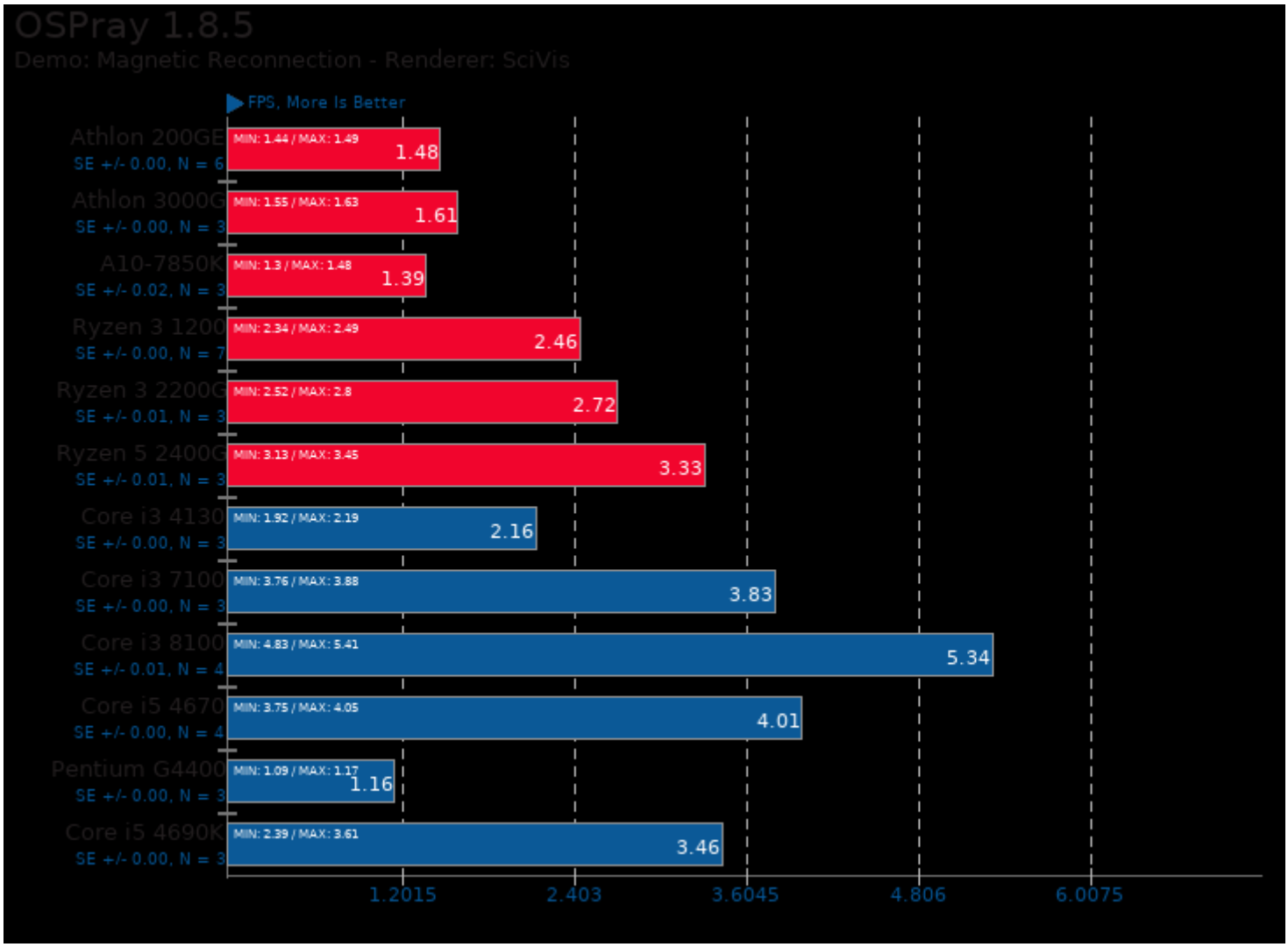
Low-End EOY2019 Ubuntu Linux CPU Comparison

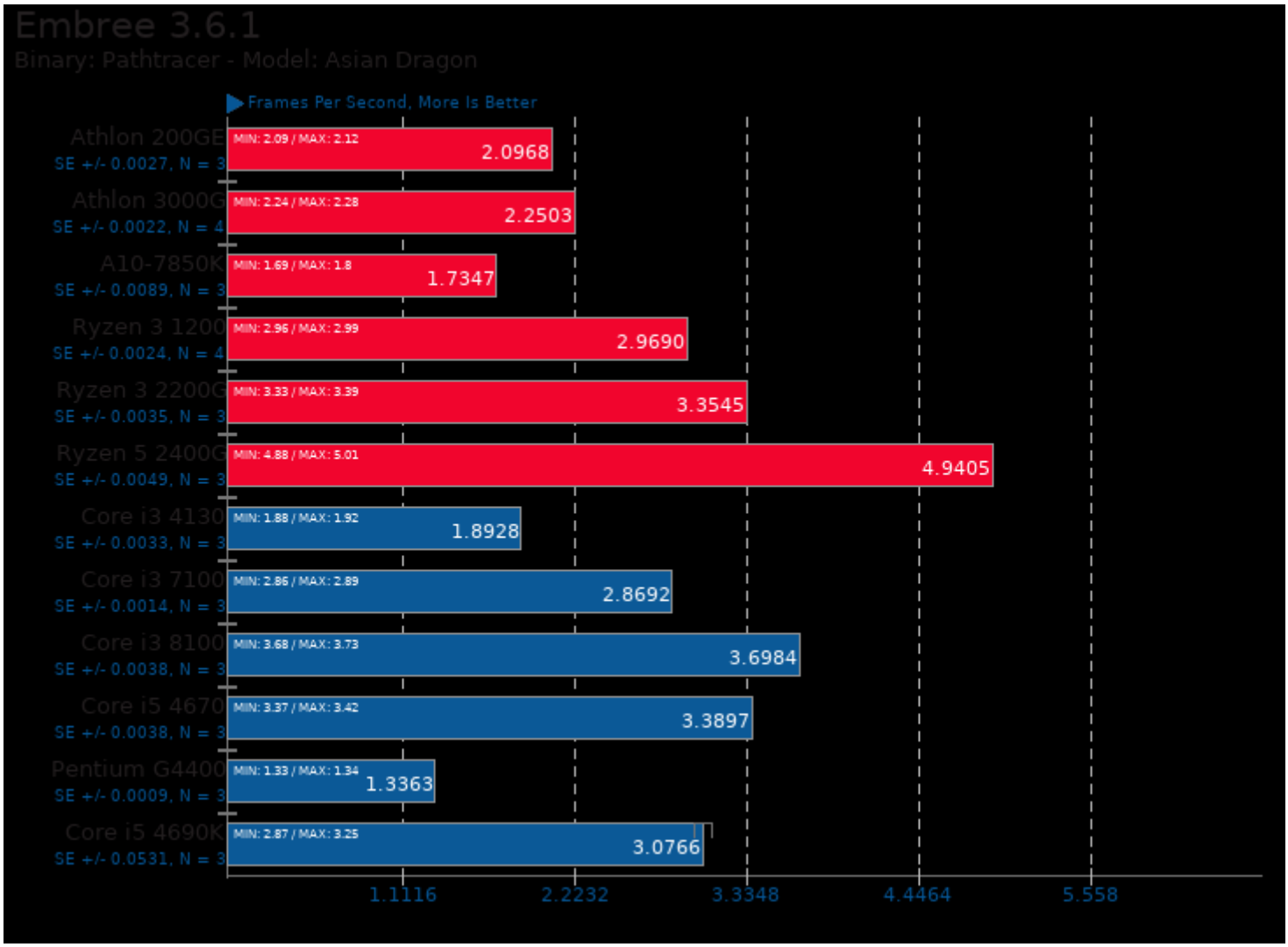



GraphicsMagick 1.3.33
Operation: Resizing
Iterations Per Minute, More Is Better
Athlon 200GE
SE +/- 0.33, N = 3
201
Athlon 3000G
221
A10-7850K
SE +/- 0.67, N = 3
151
Ryzen 3 1200
364
Ryzen 3 2200G
SE +/- 1.73, N = 3
375
Ryzen 5 2400G
SE +/- 1.67, N = 3
370
Core i3 4130
SE +/- 0.58, N = 3
136
Core i3 7100
213
Core i3 8100
SE +/- 2.52, N = 3
386
Core i5 4670
SE +/- 0.33, N = 3
312
Pentium G4400
SE +/- 1.33, N = 3
178
Core i5 4690K
SE +/- 4.04, N = 3
-ljbig -lwebp -lwebpmux -ltiff
292
80
160
240
320
400
1. (CC) gcc options: -fopenmp -O2 -pthread -ljpeg -lXext -lSM -lICE -lX11 -llzma -lbz2 -lz -lm -lpthread

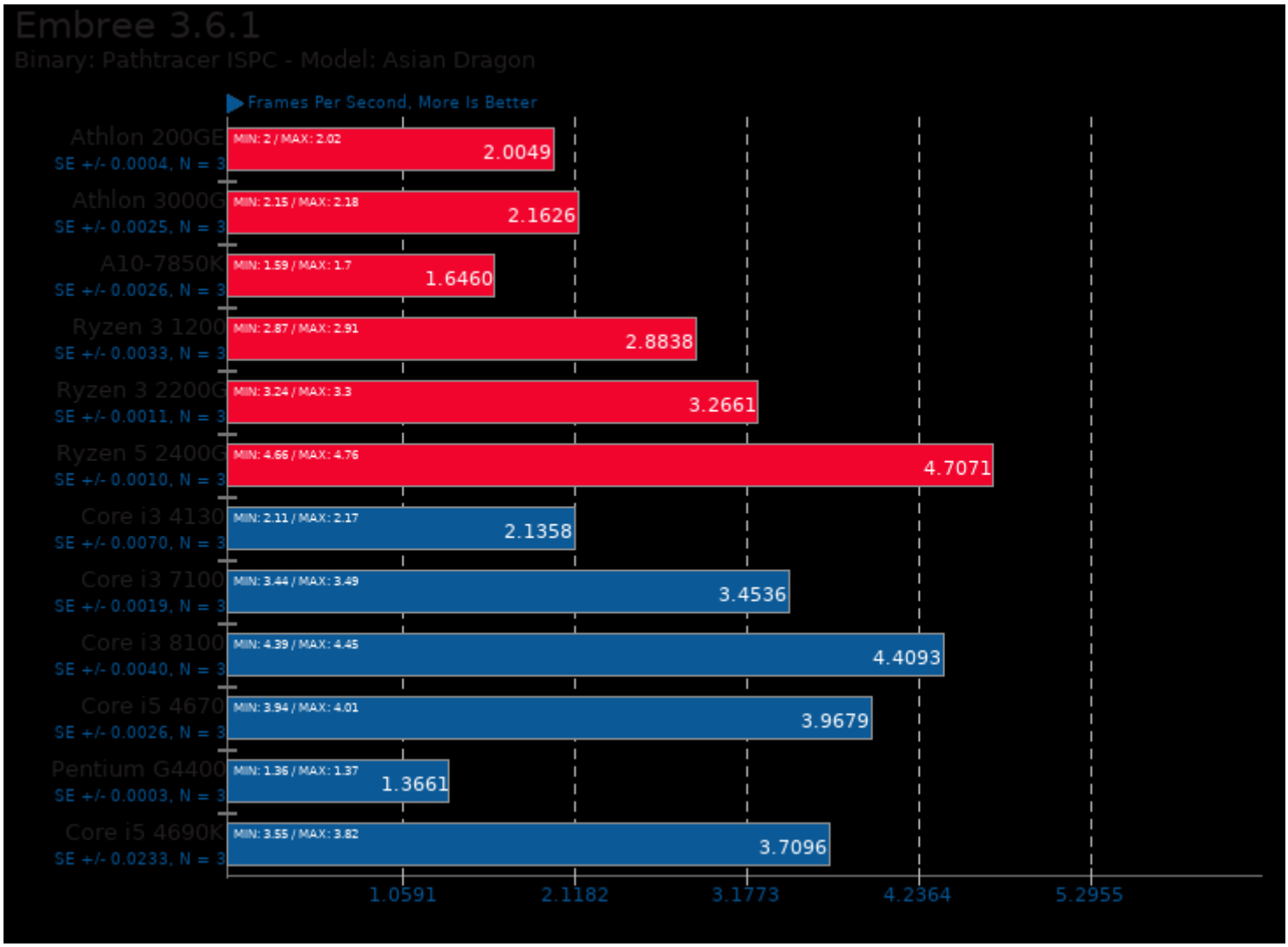

dav1d 0.5.0
Video Input: Summer Nature 1080p
FPS, More Is Better
Athlon 200GE
SE +/- 0.07, N = 3
MIN: 108.37 / MAX: 125.76
116.38
Athlon 3000G
SE +/- 0.10, N = 3
MIN: 116.73 / MAX: 135.52
125.42
A10-7850K
SE +/- 0.30, N = 3
MIN: 84.61 / MAX: 107.13
98.72
Ryzen 3 1200
SE +/- 0.10, N = 3
MIN: 132.7 / MAX: 155.54
144.58
Ryzen 3 2200G
SE +/- 1.64, N = 3
MIN: 148.6 / MAX: 180.31
162.96
Ryzen 5 2400G
SE +/- 0.84, N = 3
MIN: 182.75 / MAX: 229.64
211.42
Core i3 4130
SE +/- 0.52, N = 3
MIN: 92.98 / MAX: 108.28
99.39
Core i3 7100
SE +/- 0.07, N = 3
MIN: 144.51 / MAX: 168.96
154.76
Core i3 8100
SE +/- 0.13, N = 3
MIN: 190.76 / MAX: 221.95
203.60
Core i5 4670
SE +/- 1.19, N = 3
MIN: 163.87 / MAX: 191.25
174.80
Pentium G4400
SE +/- 0.11, N = 3
-lm - MIN: 84.82 / MAX: 98.44
90.50
Core i5 4690K
SE +/- 1.50, N = 3
MIN: 146.66 / MAX: 177.38
159.06
50
100
150
200
250
1. (CC) gcc options: -pthread

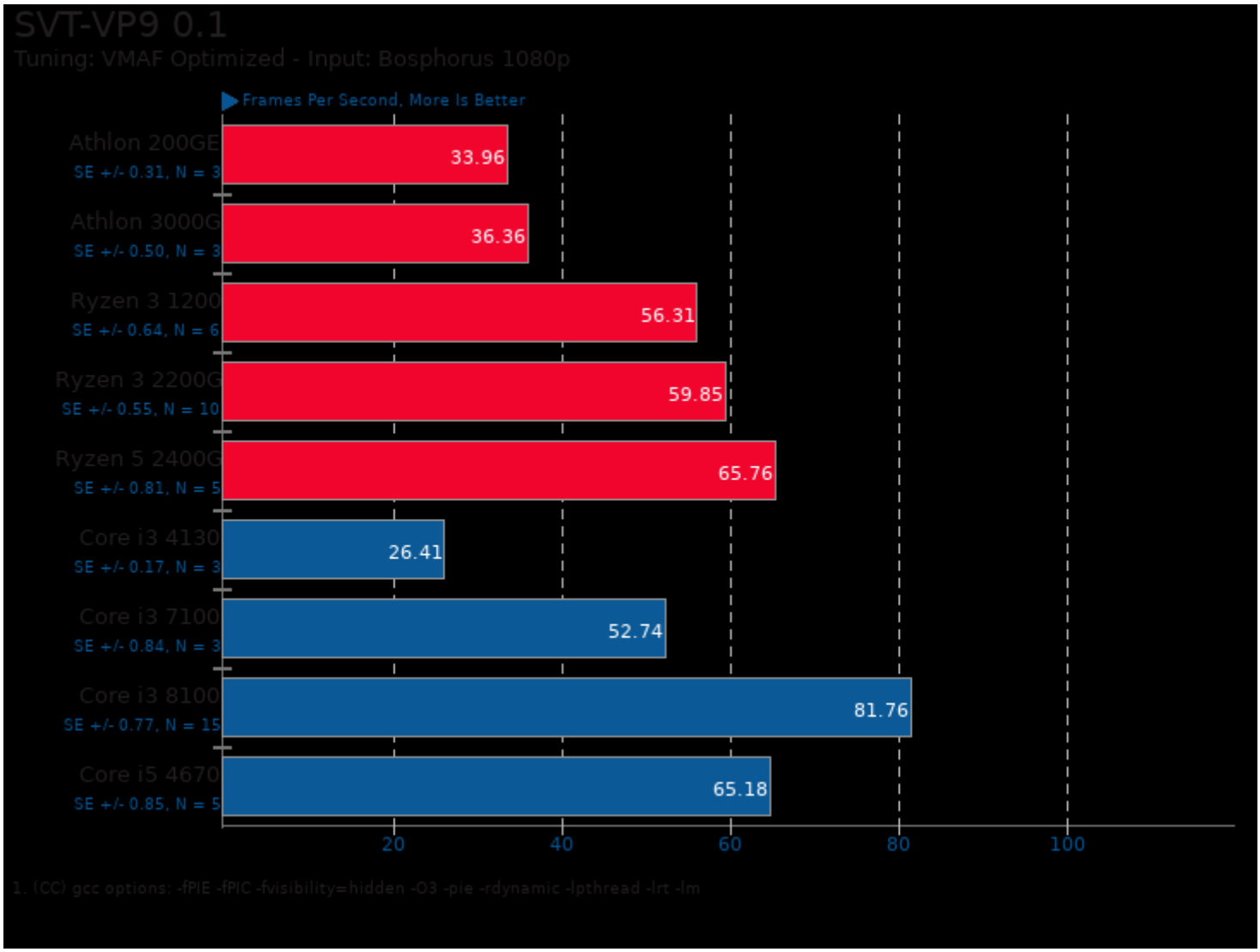
Low-End EOY2019 Ubuntu Linux CPU Comparison

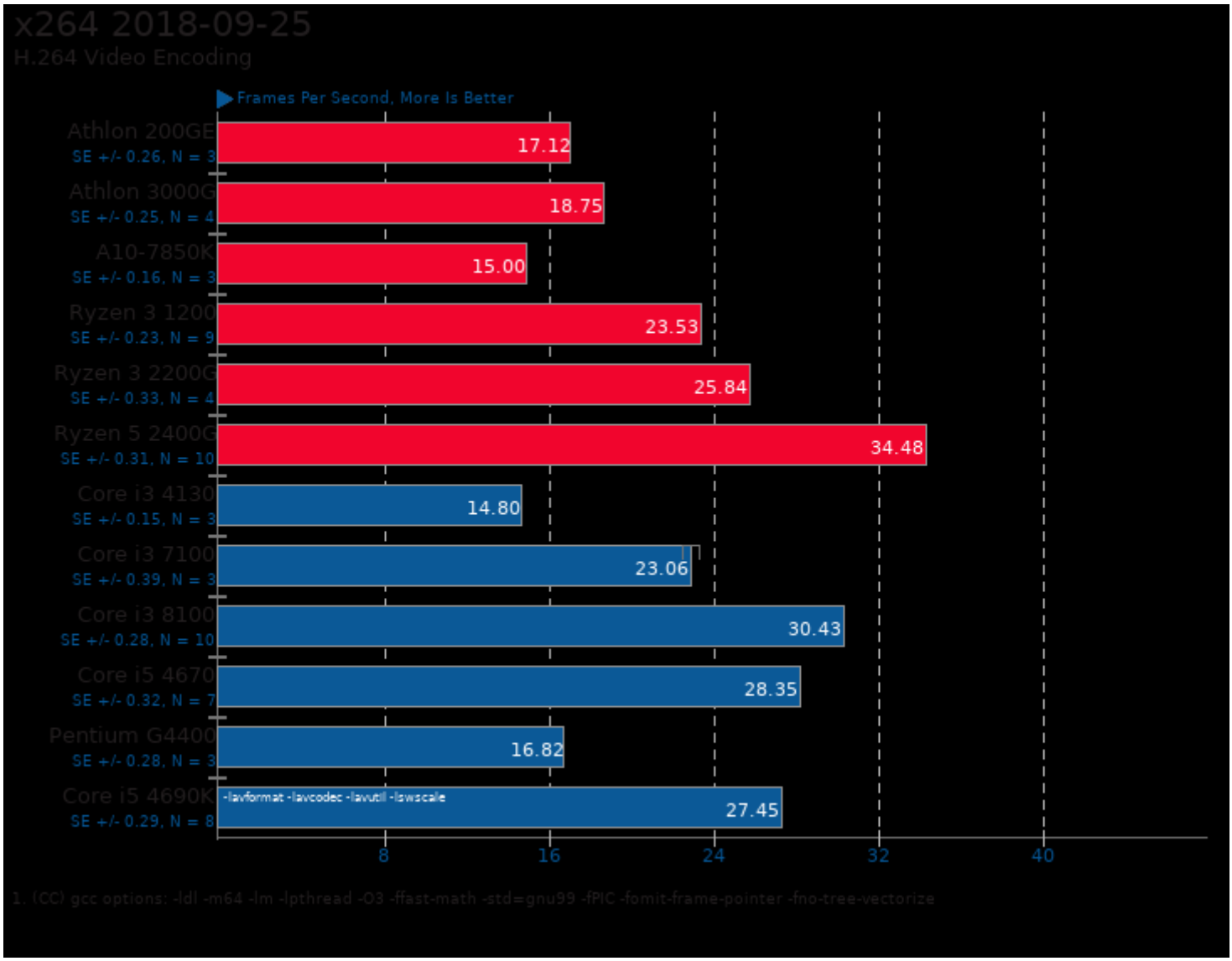


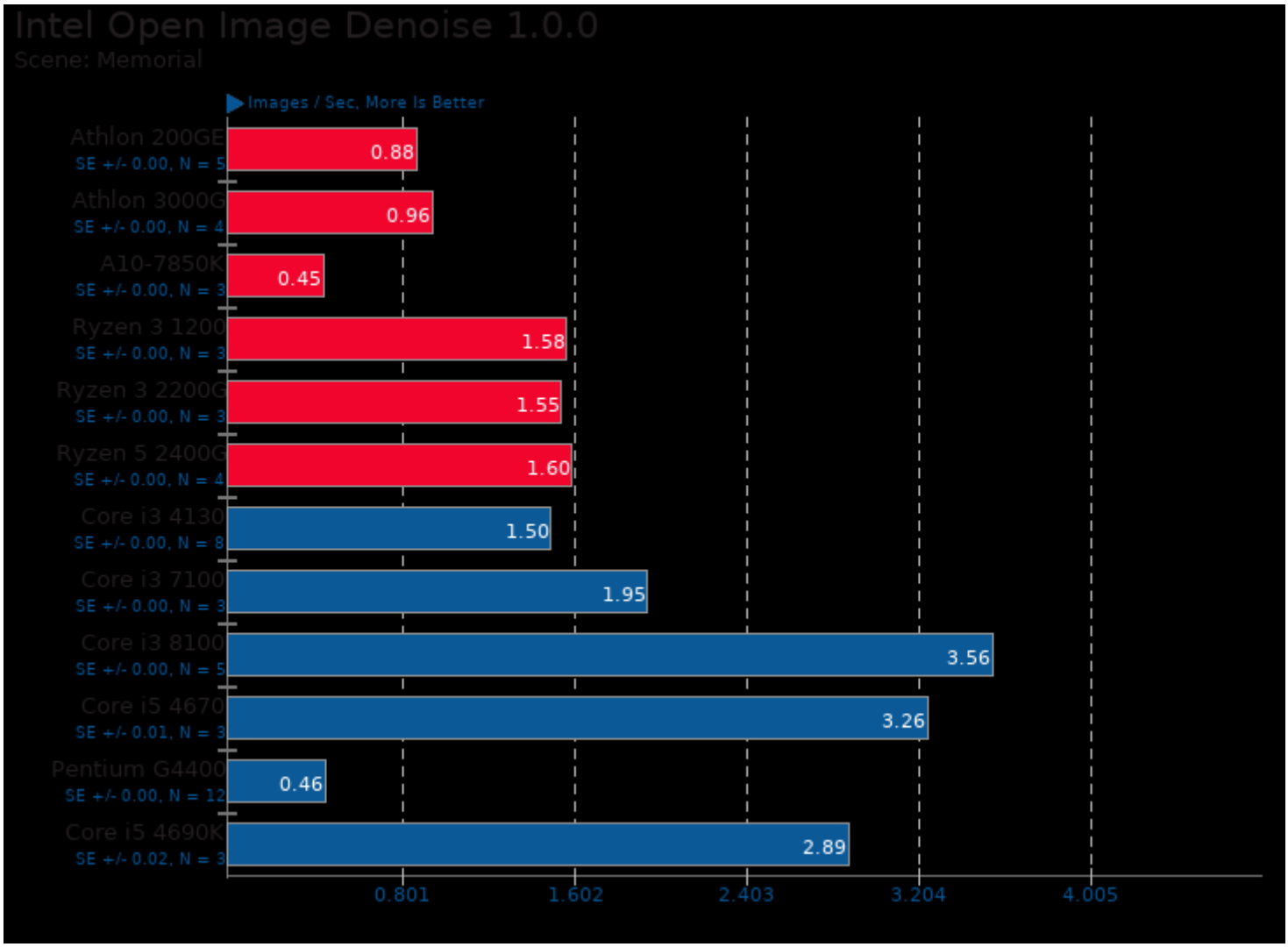

Embree 3.6.1
Binary: Pathtracer - Model: Asian Dragon
Frames Per Second, More Is Better
Athlon 200GE
SE +/- 0.0027, N = 3
MIN: 2.09 / MAX: 2.12
2.0968
Athlon 3000G
SE +/- 0.0022, N = 4
MIN: 2.24 / MAX: 2.28
2.2503
A10-7850K
SE +/- 0.0089, N = 3
MIN: 1.69 / MAX: 1.8
1.7347
Ryzen 3 1200
SE +/- 0.0024, N = 4
MIN: 2.96 / MAX: 2.99
2.9690
Ryzen 3 2200G
SE +/- 0.0035, N = 3
MIN: 3.33 / MAX: 3.39
3.3545
Ryzen 5 2400G
SE +/- 0.0049, N = 3
MIN: 4.88 / MAX: 5.01
4.9405
Core i3 4130
SE +/- 0.0033, N = 3
MIN: 1.88 / MAX: 1.92
1.8928
Core i3 7100
SE +/- 0.0014, N = 3
MIN: 2.86 / MAX: 2.89
2.8692
Core i3 8100
SE +/- 0.0038, N = 3
MIN: 3.68 / MAX: 3.73
3.6984
Core i5 4670
SE +/- 0.0038, N = 3
MIN: 3.37 / MAX: 3.42
3.3897
Pentium G4400
SE +/- 0.0009, N = 3
MIN: 1.33 / MAX: 1.34
1.3363
Core i5 4690K
SE +/- 0.0531, N = 3
MIN: 2.87 / MAX: 3.25
3.0766
1.1116
2.2232
3.3348
4.4464
5.558

Low-End EOY2019 Ubuntu Linux CPU Comparison

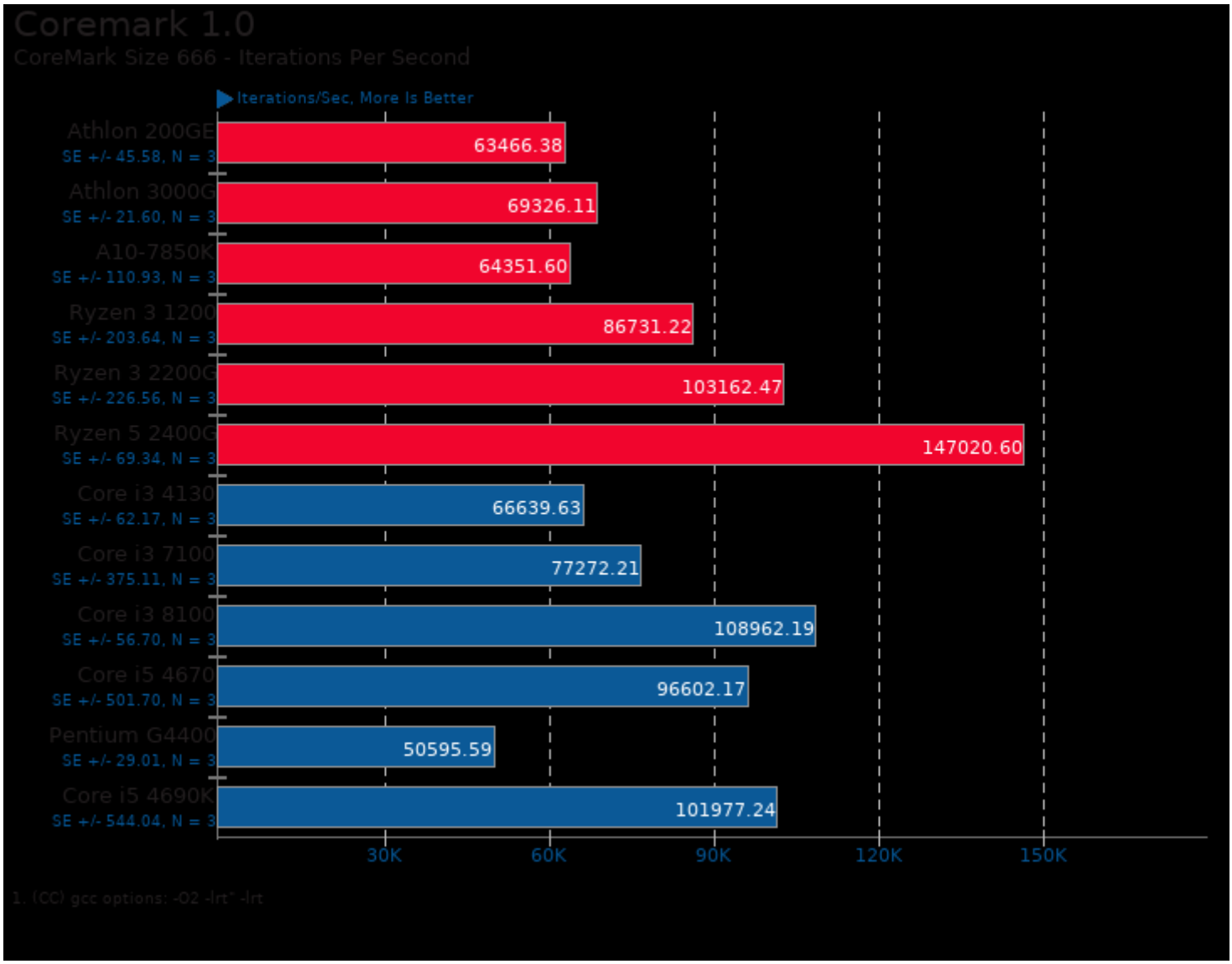



SVT-VP9 0.1
Tuning: VMAF Optimized - Input: Bosphorus 1080p
Frames Per Second, More Is Better
Athlon 200GE
SE +/- 0.31, N = 3
33.96
Athlon 3000G
SE +/- 0.50, N = 3
36.36
Ryzen 3 1200
SE +/- 0.64, N = 6
56.31
Ryzen 3 2200G
SE +/- 0.55, N = 10
59.85
Ryzen 5 2400G
SE +/- 0.81, N = 5
65.76
Core i3 4130
SE +/- 0.17, N = 3
26.41
Core i3 7100
SE +/- 0.84, N = 3
52.74
Core i3 8100
SE +/- 0.77, N = 15
81.76
Core i5 4670
SE +/- 0.85, N = 5
65.18
20
40
60
80
100
1. (CC) gcc options: -fPIE -fPIC -fvisibility=hidden -O3 -pie -rdynamic -lpthread -lrt -lm

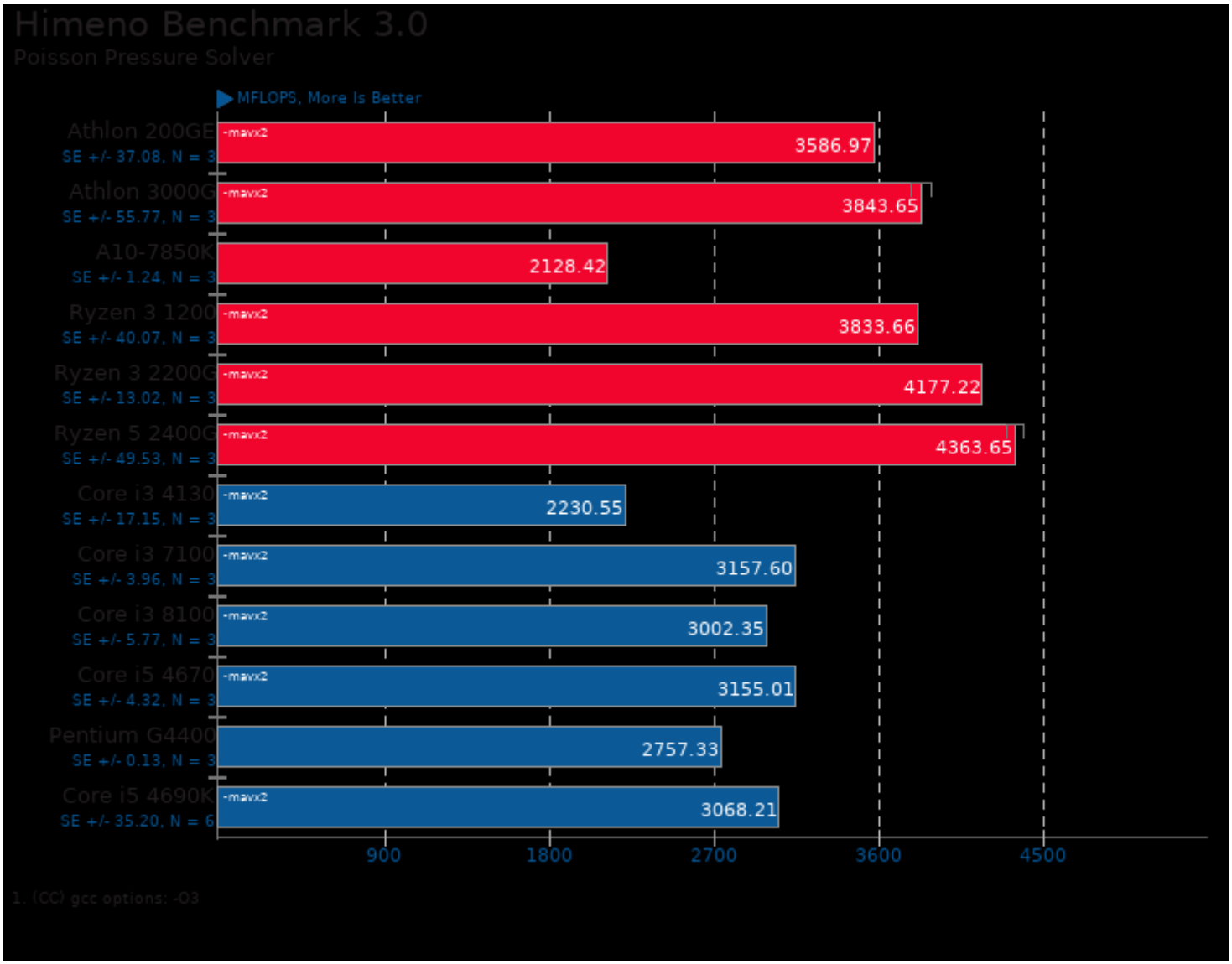

x264 2018-09-25
H.264 Video Encoding
Frames Per Second, More Is Better
Athlon 200GE
SE +/- 0.26, N = 3
17.12
Athlon 3000G
SE +/- 0.25, N = 4
18.75
A10-7850K
SE +/- 0.16, N = 3
15.00
Ryzen 3 1200
SE +/- 0.23, N = 9
23.53
Ryzen 3 2200G
SE +/- 0.33, N = 4
25.84
Ryzen 5 2400G
SE +/- 0.31, N = 10
34.48
Core i3 4130
SE +/- 0.15, N = 3
14.80
Core i3 7100
SE +/- 0.39, N = 3
23.06
Core i3 8100
SE +/- 0.28, N = 10
30.43
Core i5 4670
SE +/- 0.32, N = 7
28.35
Pentium G4400
SE +/- 0.28, N = 3
16.82
Core i5 4690K
SE +/- 0.29, N = 8
-lavformat -lavcodec -lavutil -lswscale
27.45
8
16
24
32
40
1. (CC) gcc options: -ldl -m64 -lm -lpthread -O3 -ffast-math -std=gnu99 -fPIC -fomit-frame-pointer -fno-tree-vectorize

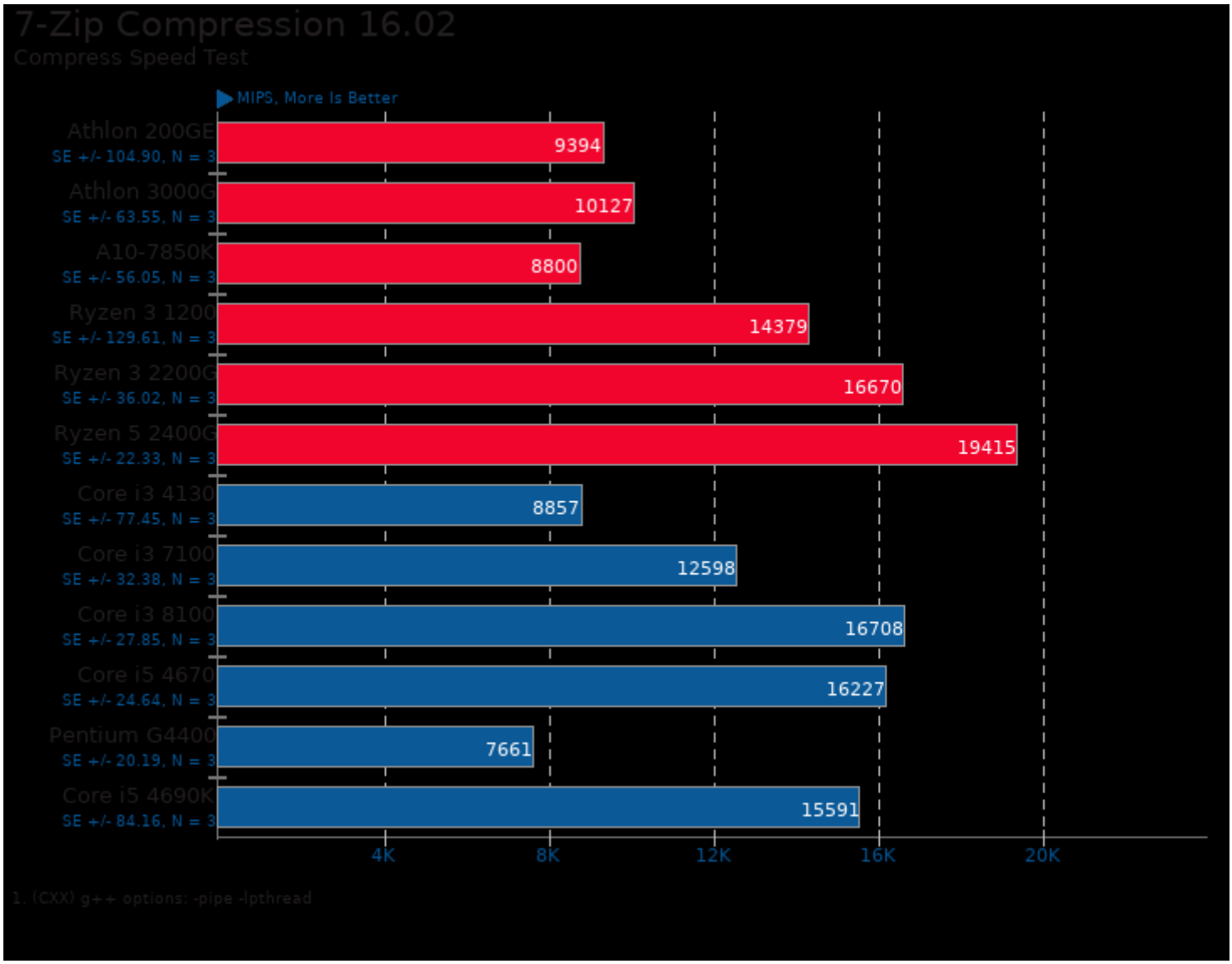

Intel Open Image Denoise 1.0.0
Scene: Memorial
Images / Sec, More Is Better
Athlon 200GE
SE +/- 0.00, N = 5
0.88
Athlon 3000G
SE +/- 0.00, N = 4
0.96
A10-7850K
SE +/- 0.00, N = 3
0.45
Ryzen 3 1200
SE +/- 0.00, N = 3
1.58
Ryzen 3 2200G
SE +/- 0.00, N = 3
1.55
Ryzen 5 2400G
SE +/- 0.00, N = 4
1.60
Core i3 4130
SE +/- 0.00, N = 8
1.50
Core i3 7100
SE +/- 0.00, N = 3
1.95
Core i3 8100
SE +/- 0.00, N = 5
3.56
Core i5 4670
SE +/- 0.01, N = 3
3.26
Pentium G4400
SE +/- 0.00, N = 12
0.46
Core i5 4690K
SE +/- 0.02, N = 3
2.89
0.801
1.602
2.403
3.204
4.005

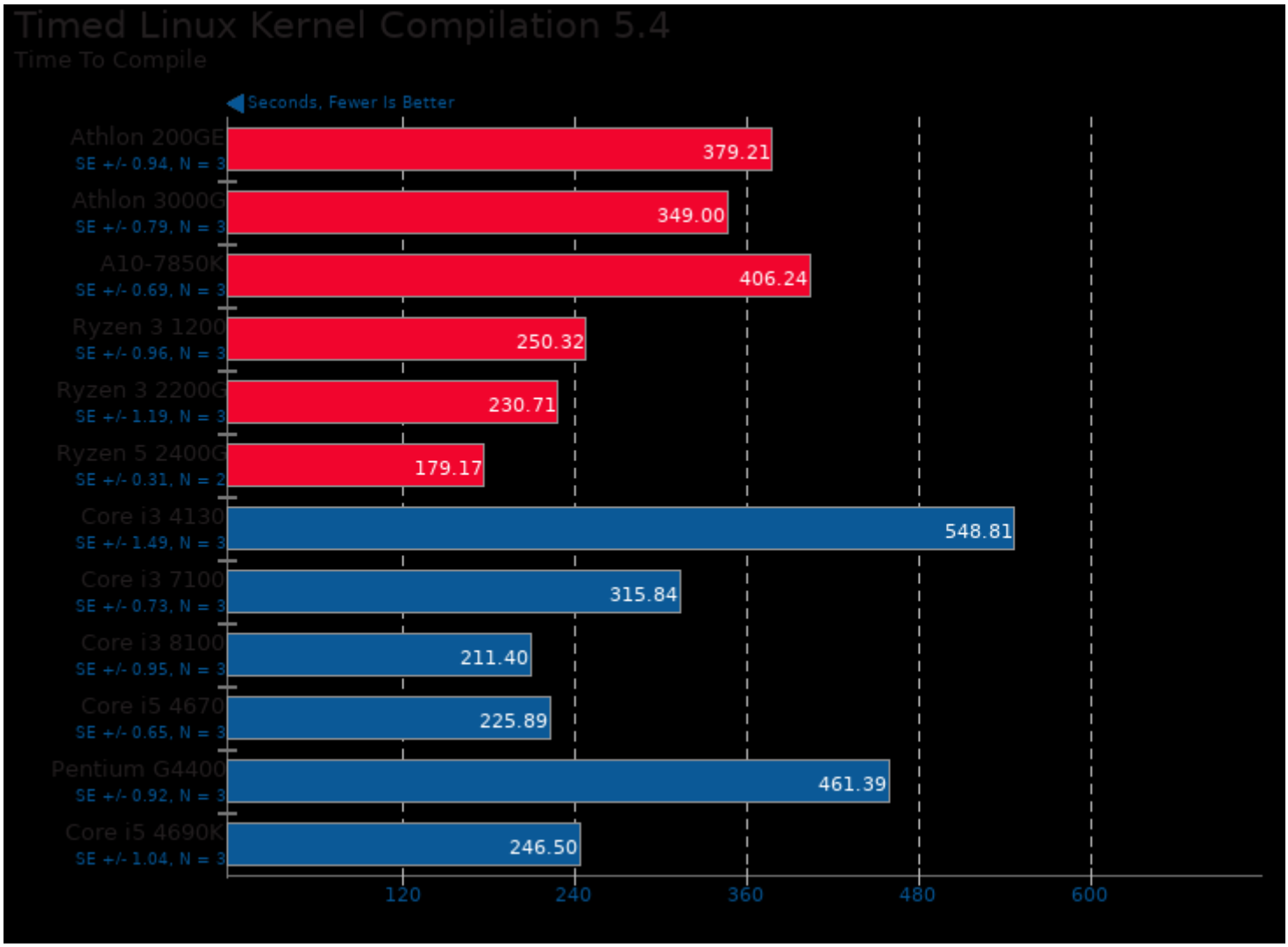
Low-End EOY2019 Ubuntu Linux CPU Comparison



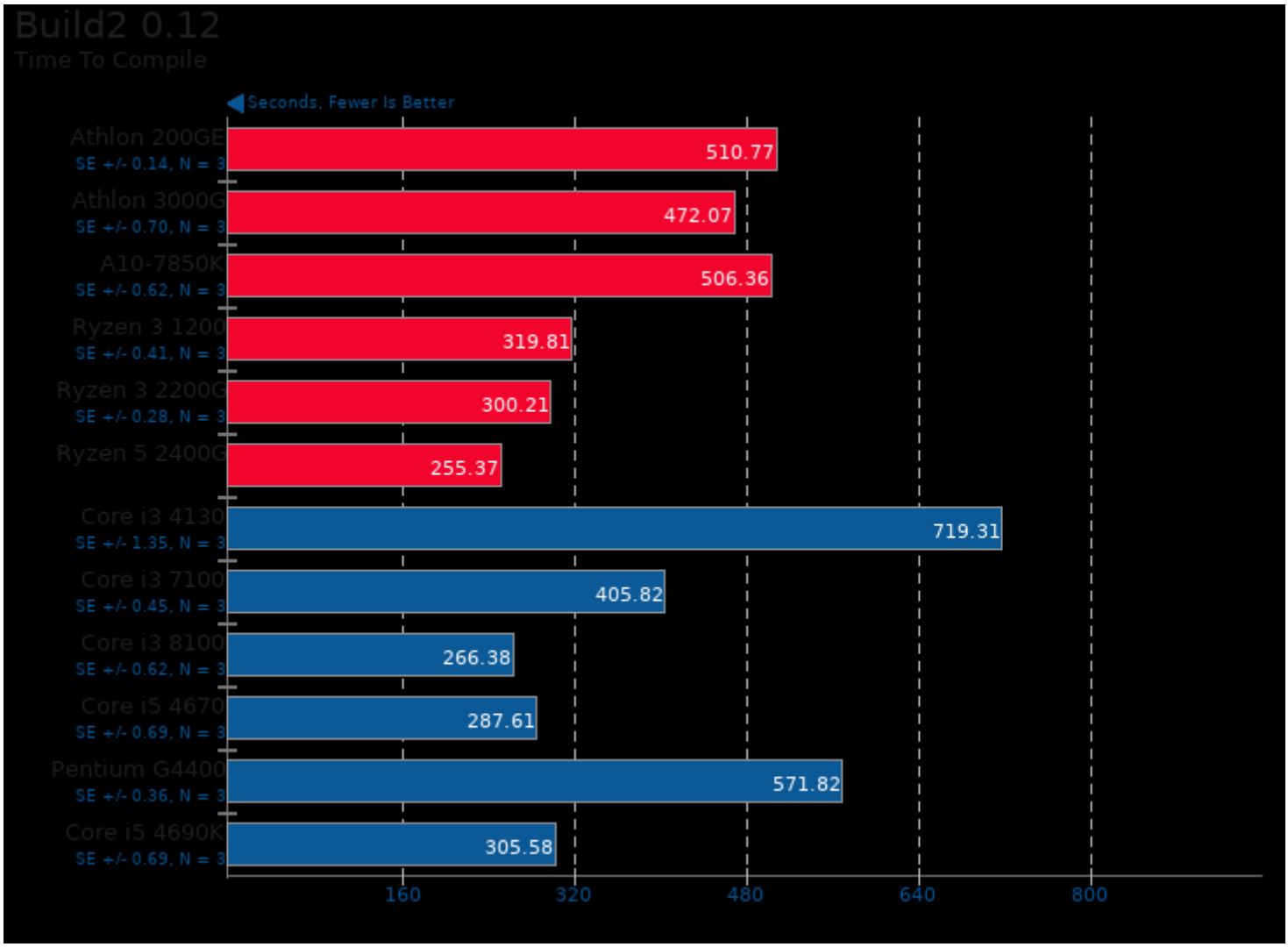
Low-End EOY2019 Ubuntu Linux CPU Comparison

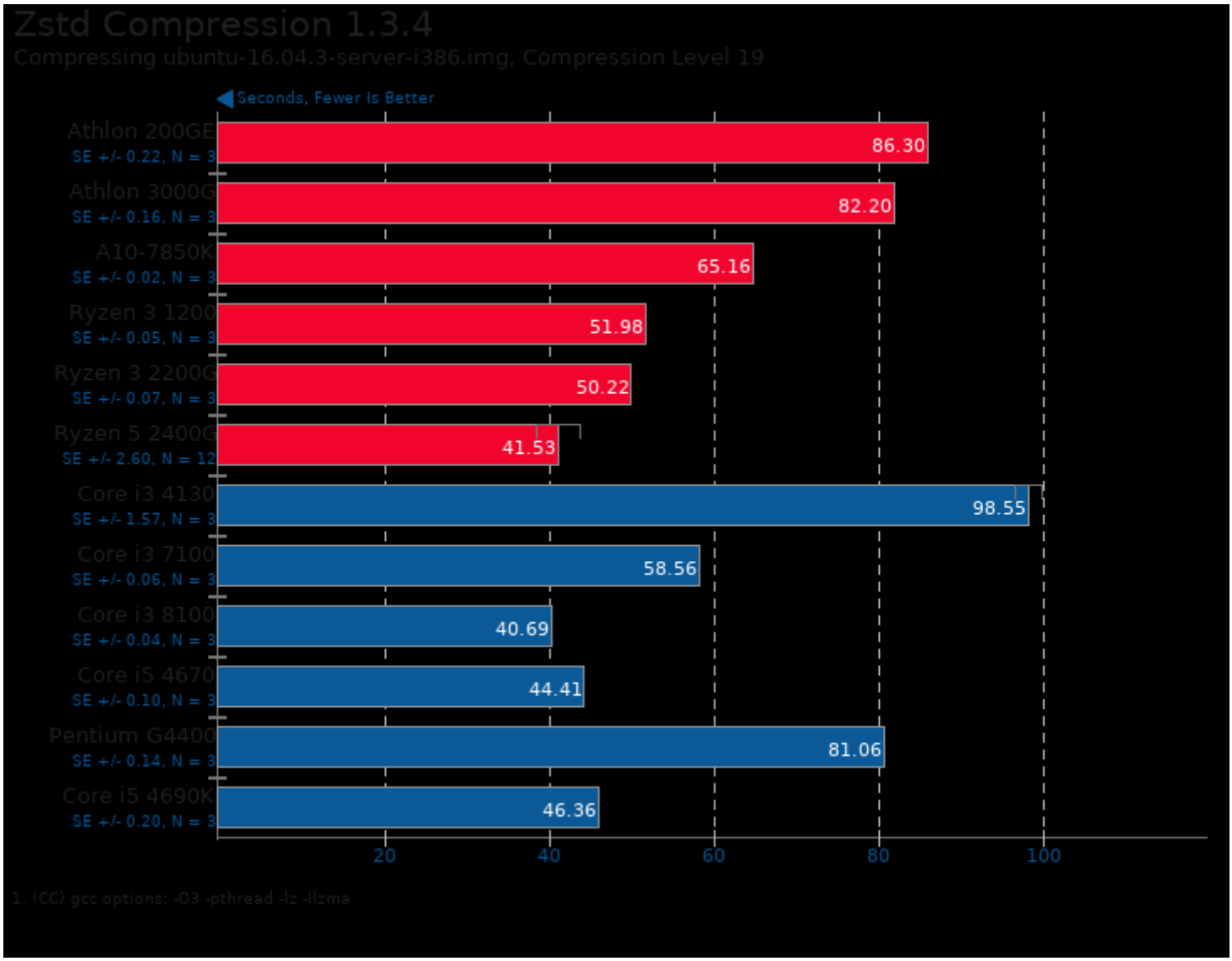


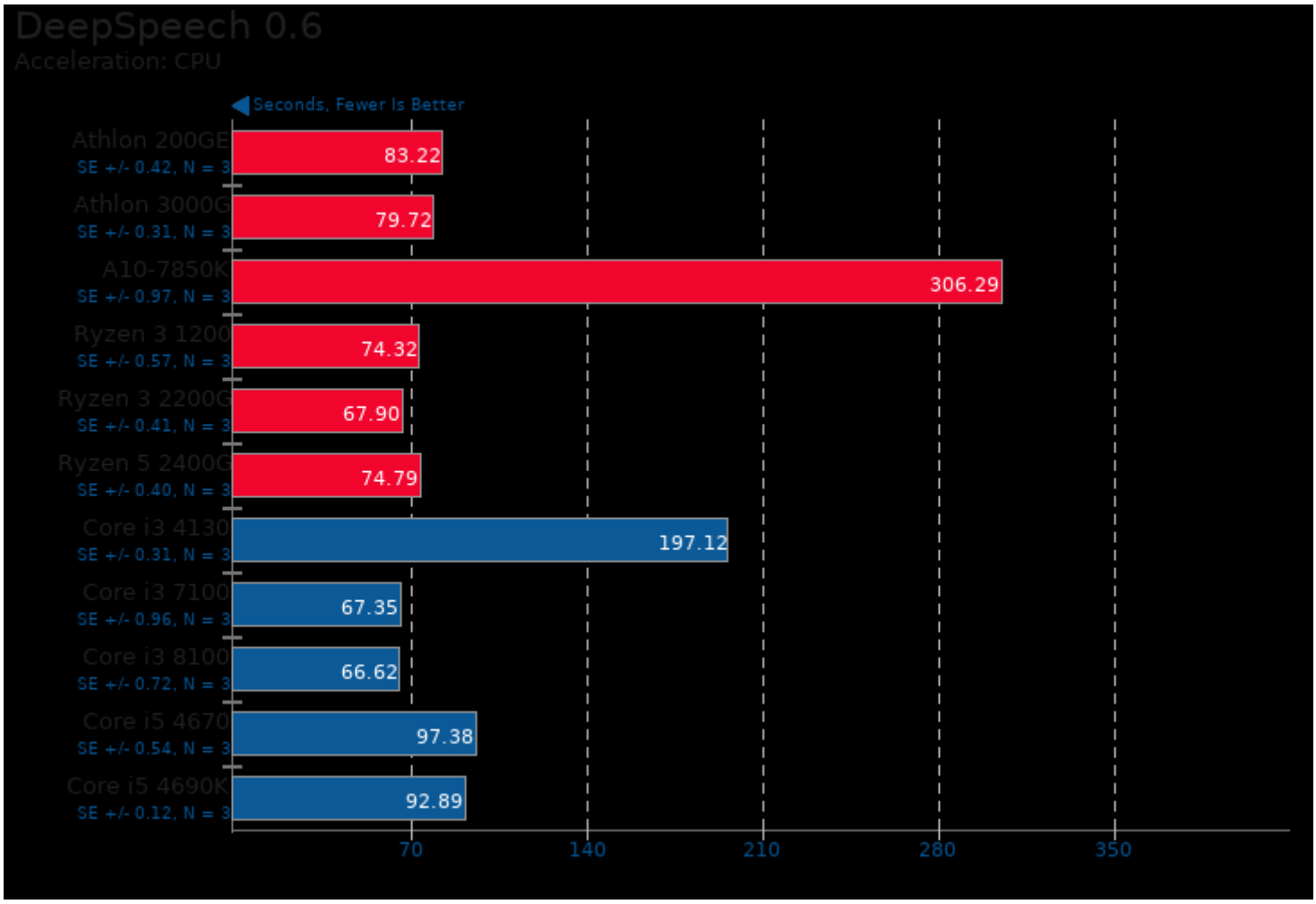

7-Zip Compression 16.02
Compress Speed Test
MIPS, More Is Better
Athlon 200GE
SE +/- 104.90, N = 3
9394
Athlon 3000G
SE +/- 63.55, N = 3
10127
A10-7850K
SE +/- 56.05, N = 3
8800
Ryzen 3 1200
SE +/- 129.61, N = 3
14379
Ryzen 3 2200G
SE +/- 36.02, N = 3
16670
Ryzen 5 2400G
SE +/- 22.33, N = 3
19415
Core i3 4130
SE +/- 77.45, N = 3
8857
Core i3 7100
SE +/- 32.38, N = 3
12598
Core i3 8100
SE +/- 27.85, N = 3
16708
Core i5 4670
SE +/- 24.64, N = 3
16227
Pentium G4400
SE +/- 20.19, N = 3
7661
Core i5 4690K
SE +/- 84.16, N = 3
15591
4K
8K
12K
16K
20K
1. (CXX) g++ options: -pipe -lpthread

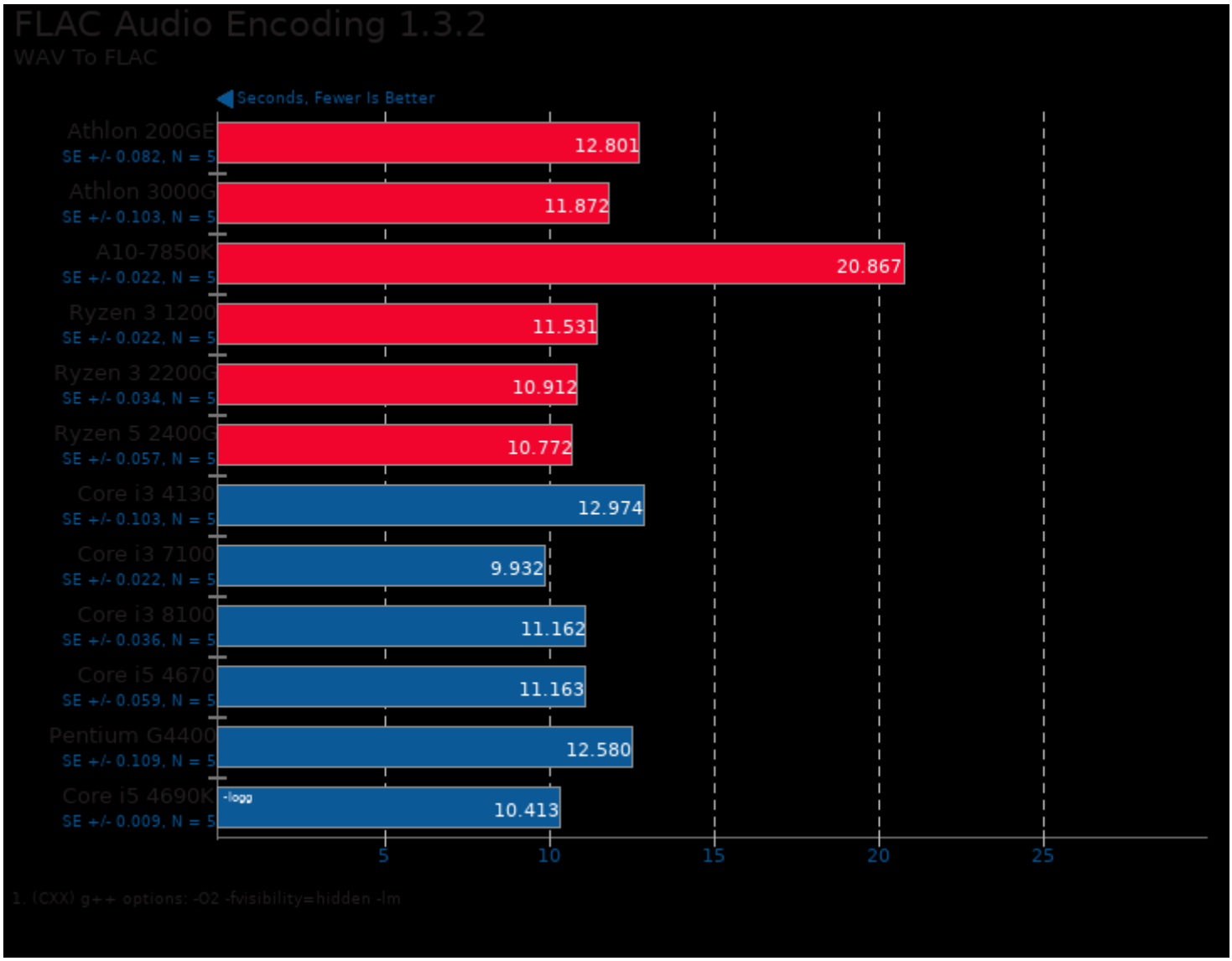

Timed Linux Kernel Compilation 5.4
Time To Compile
Seconds, Fewer Is Better
Athlon 200GE
SE +/- 0.94, N = 3
379.21
Athlon 3000G
SE +/- 0.79, N = 3
349.00
A10-7850K
SE +/- 0.69, N = 3
406.24
Ryzen 3 1200
SE +/- 0.96, N = 3
250.32
Ryzen 3 2200G
SE +/- 1.19, N = 3
230.71
Ryzen 5 2400G
SE +/- 0.31, N = 2
179.17
Core i3 4130
SE +/- 1.49, N = 3
548.81
Core i3 7100
SE +/- 0.73, N = 3
315.84
Core i3 8100
SE +/- 0.95, N = 3
211.40
Core i5 4670
SE +/- 0.65, N = 3
225.89
Pentium G4400
SE +/- 0.92, N = 3
461.39
Core i5 4690K
SE +/- 1.04, N = 3
246.50
120
240
360
480
600

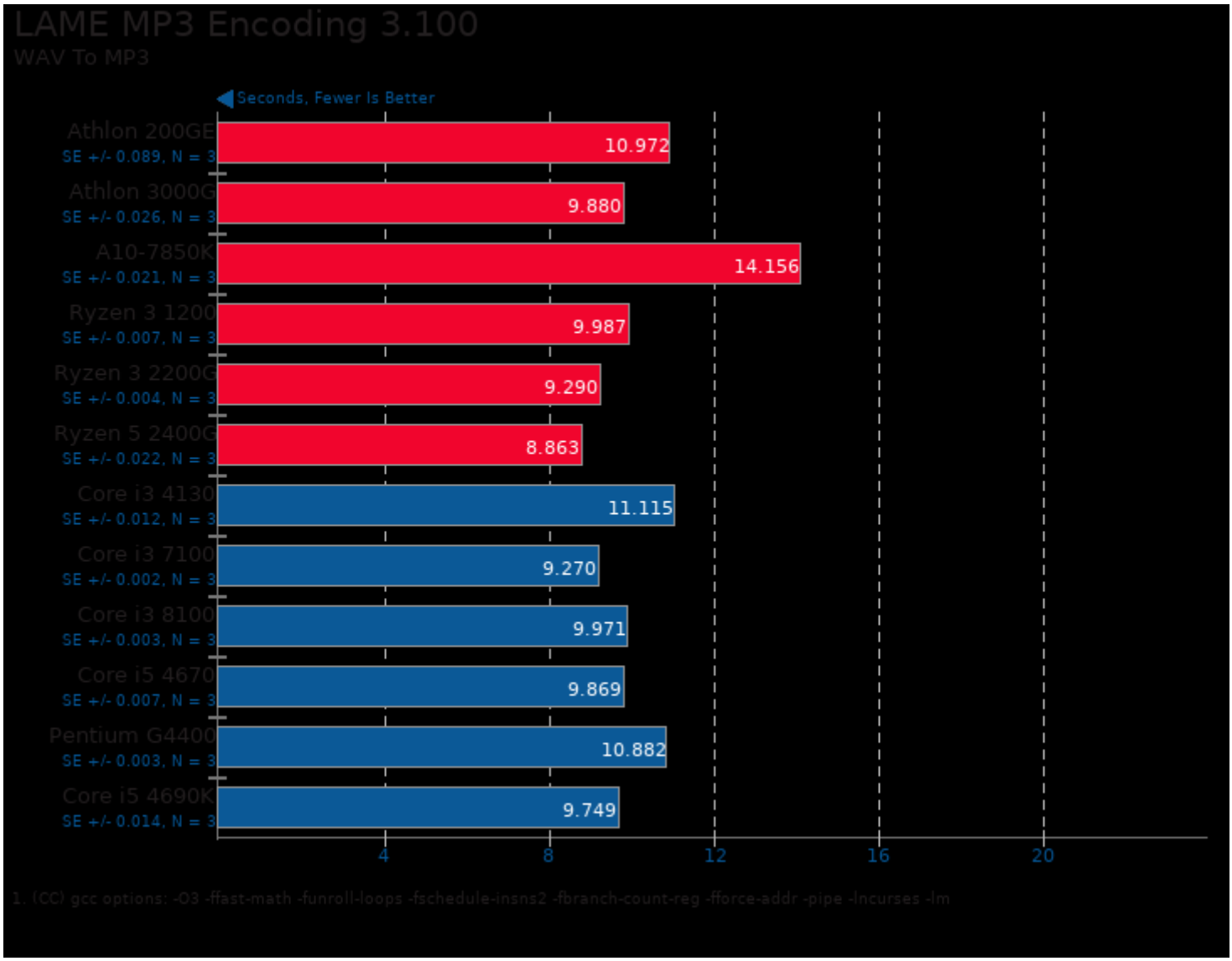
Low-End EOY2019 Ubuntu Linux CPU Comparison



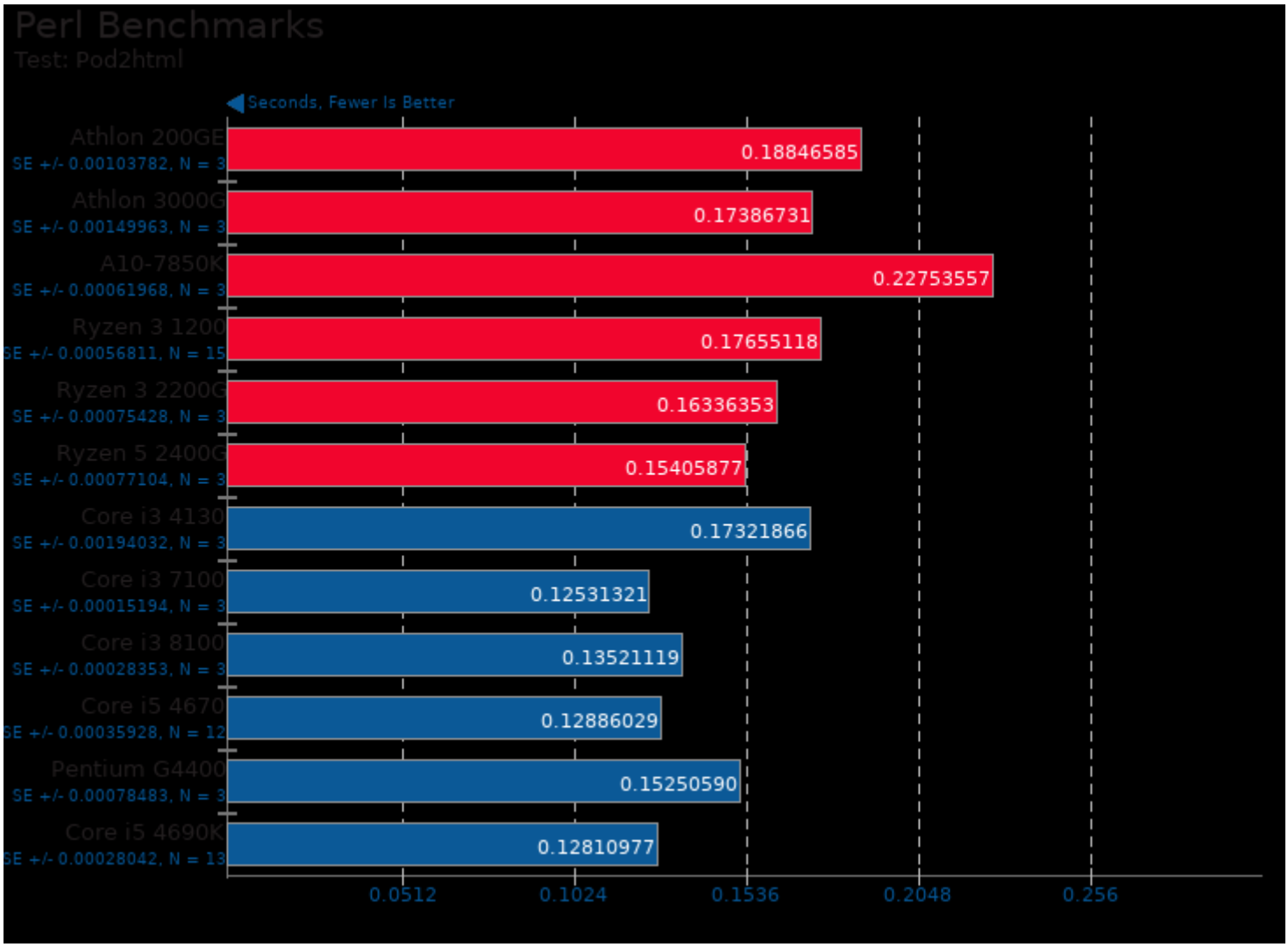

Zstd Compression 1.3.4
Compressing ubuntu-16.04.3-server-i386.img, Compression Level 19
Seconds, Fewer Is Better
Athlon 200GE
SE +/- 0.22, N = 3
86.30
Athlon 3000G
SE +/- 0.16, N = 3
82.20
A10-7850K
SE +/- 0.02, N = 3
65.16
Ryzen 3 1200
SE +/- 0.05, N = 3
51.98
Ryzen 3 2200G
SE +/- 0.07, N = 3
50.22
Ryzen 5 2400G
SE +/- 2.60, N = 12
41.53
Core i3 4130
SE +/- 1.57, N = 3
98.55
Core i3 7100
SE +/- 0.06, N = 3
58.56
Core i3 8100
SE +/- 0.04, N = 3
40.69
Core i5 4670
SE +/- 0.10, N = 3
44.41
Pentium G4400
SE +/- 0.14, N = 3
81.06
Core i5 4690K
SE +/- 0.20, N = 3
46.36
20
40
60
80
100
1. (CC) gcc options: -O3 -pthread -lz -llzma

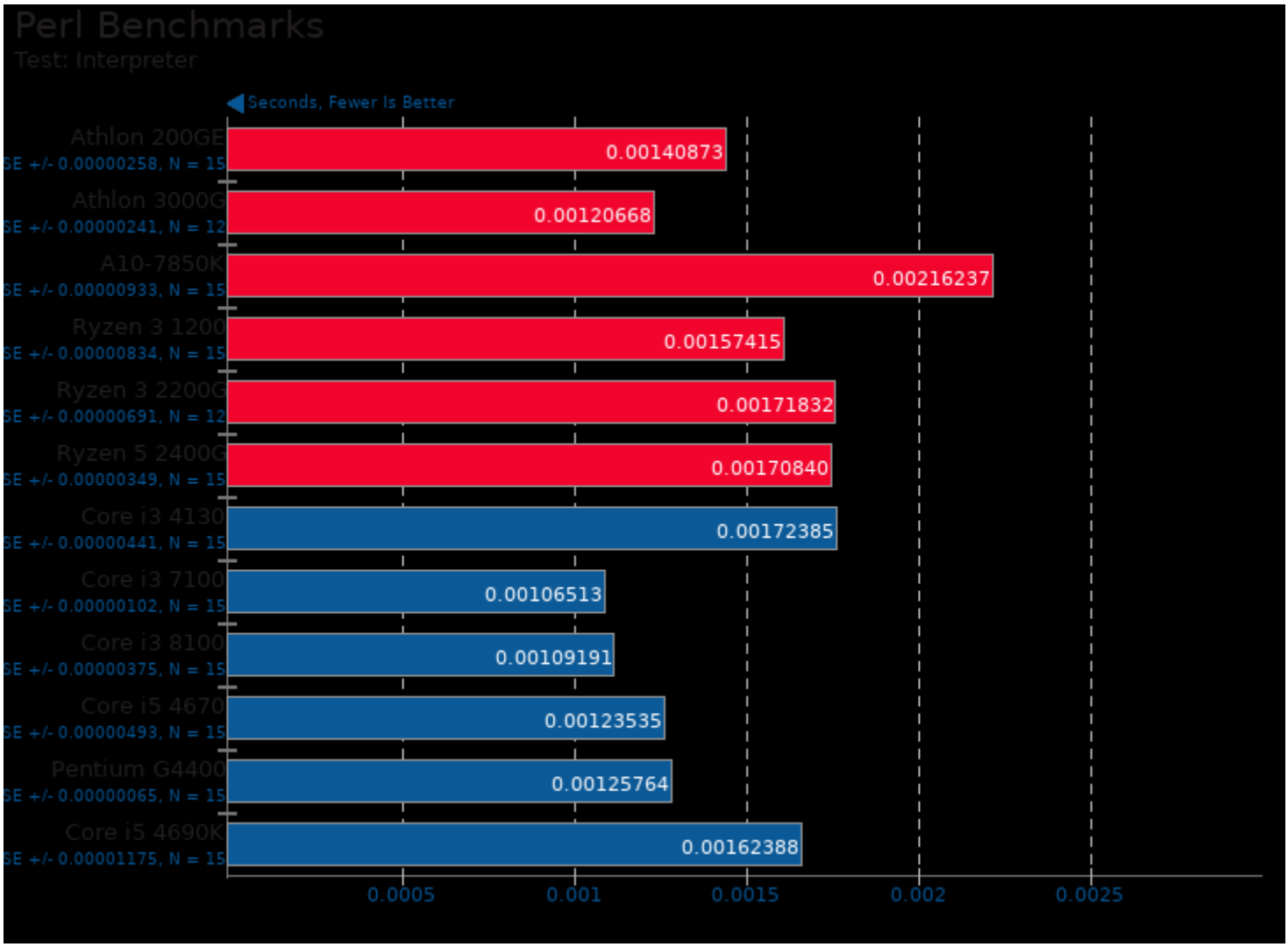

DeepSpeech 0.6
Acceleration: CPU
Seconds, Fewer Is Better
Athlon 200GE
SE +/- 0.42, N = 3
83.22
Athlon 3000G
SE +/- 0.31, N = 3
79.72
A10-7850K
SE +/- 0.97, N = 3
306.29
Ryzen 3 1200
SE +/- 0.57, N = 3
74.32
Ryzen 3 2200G
SE +/- 0.41, N = 3
67.90
Ryzen 5 2400G
SE +/- 0.40, N = 3
74.79
Core i3 4130
SE +/- 0.31, N = 3
197.12
Core i3 7100
SE +/- 0.96, N = 3
67.35
Core i3 8100
SE +/- 0.72, N = 3
66.62
Core i5 4670
SE +/- 0.54, N = 3
97.38
Core i5 4690K
SE +/- 0.12, N = 3
92.89
70
140
210
280
350

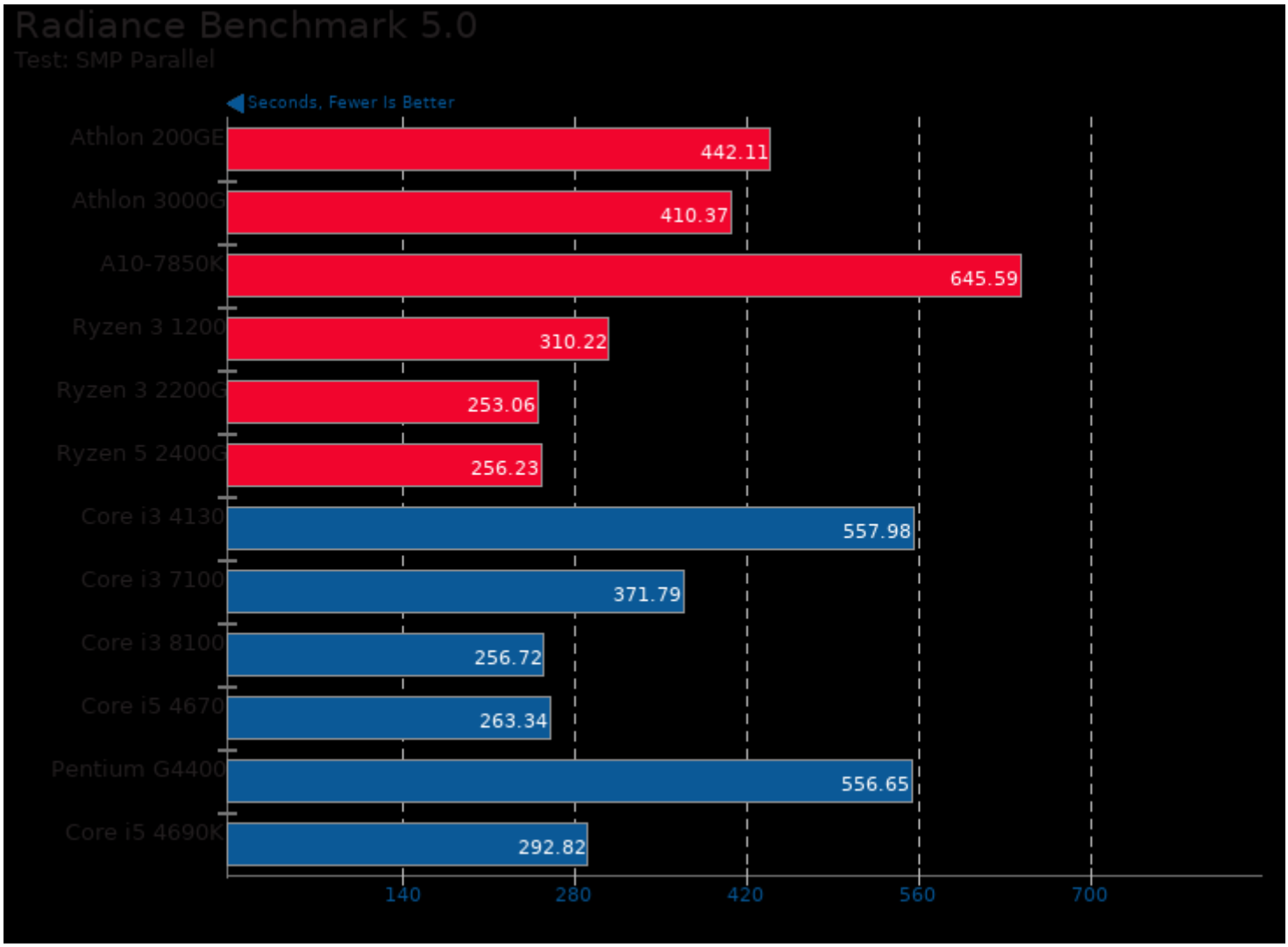

FLAC Audio Encoding 1.3.2
WAV To FLAC
Seconds, Fewer Is Better
Athlon 200GE
SE +/- 0.082, N = 5
12.801
Athlon 3000G
SE +/- 0.103, N = 5
11.872
A10-7850K
SE +/- 0.022, N = 5
20.867
Ryzen 3 1200
SE +/- 0.022, N = 5
11.531
Ryzen 3 2200G
SE +/- 0.034, N = 5
10.912
Ryzen 5 2400G
SE +/- 0.057, N = 5
10.772
Core i3 4130
SE +/- 0.103, N = 5
12.974
Core i3 7100
SE +/- 0.022, N = 5
9.932
Core i3 8100
SE +/- 0.036, N = 5
11.162
Core i5 4670
SE +/- 0.059, N = 5
11.163
Pentium G4400
SE +/- 0.109, N = 5
12.580
Core i5 4690K
SE +/- 0.009, N = 5
-logg
10.413
5
10
15
20
25
1. (CXX) g++ options: -O2 -fvisibility=hidden -lm


LAME MP3 Encoding 3.100
WAV To MP3
Seconds, Fewer Is Better
Athlon 200GE
SE +/- 0.089, N = 3
10.972
Athlon 3000G
SE +/- 0.026, N = 3
9.880
A10-7850K
SE +/- 0.021, N = 3
14.156
Ryzen 3 1200
SE +/- 0.007, N = 3
9.987
Ryzen 3 2200G
SE +/- 0.004, N = 3
9.290
Ryzen 5 2400G
SE +/- 0.022, N = 3
8.863
Core i3 4130
SE +/- 0.012, N = 3
11.115
Core i3 7100
SE +/- 0.002, N = 3
9.270
Core i3 8100
SE +/- 0.003, N = 3
9.971
Core i5 4670
SE +/- 0.007, N = 3
9.869
Pentium G4400
SE +/- 0.003, N = 3
10.882
Core i5 4690K
SE +/- 0.014, N = 3
9.749
4
8
12
16
20
1. (CC) gcc options: -O3 -ffast-math -funroll-loops -fschedule-insns2 -fbranch-count-reg -fforce-addr -pipe -lncurses -lm

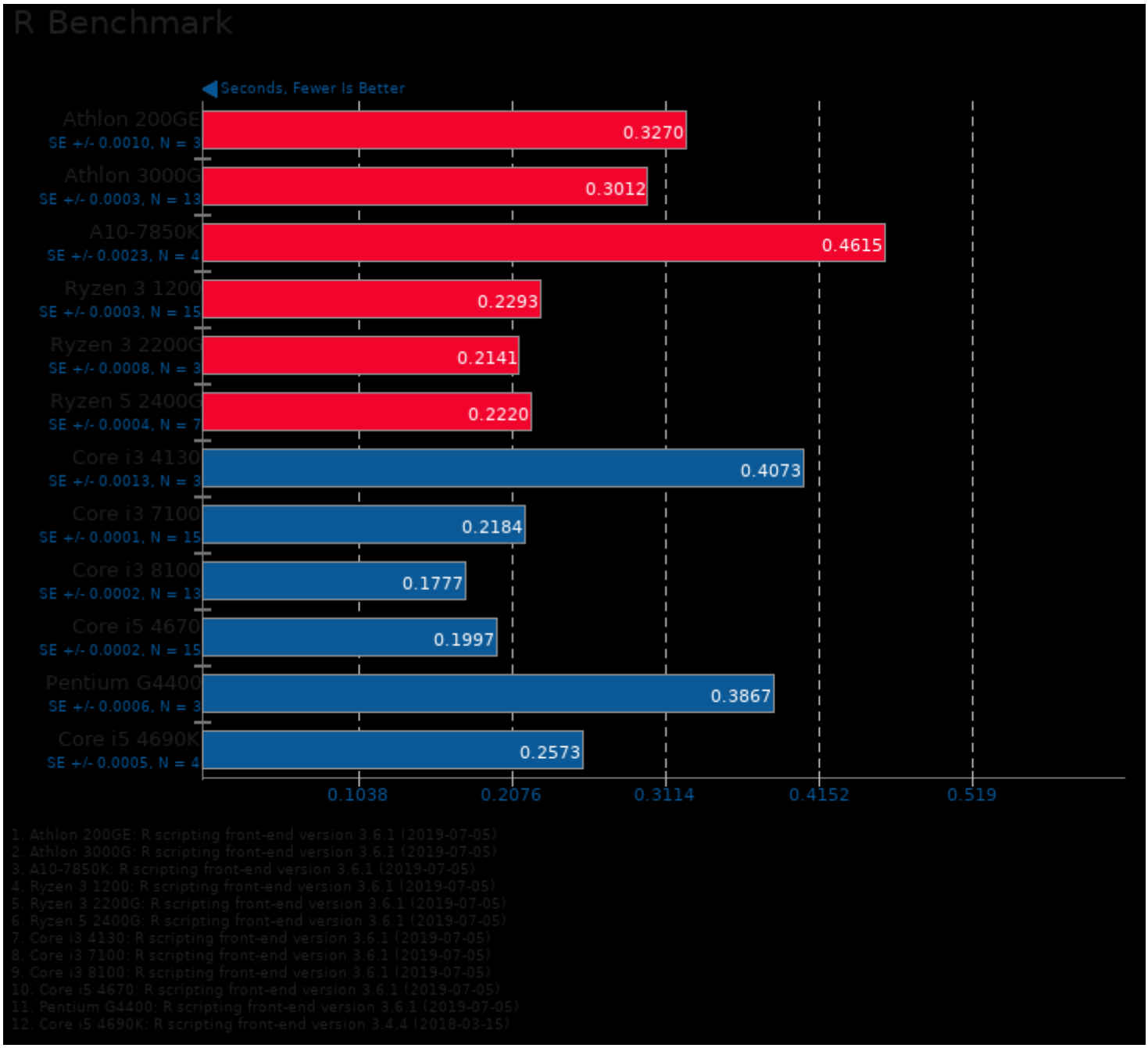
Low-End EOY2019 Ubuntu Linux CPU Comparison



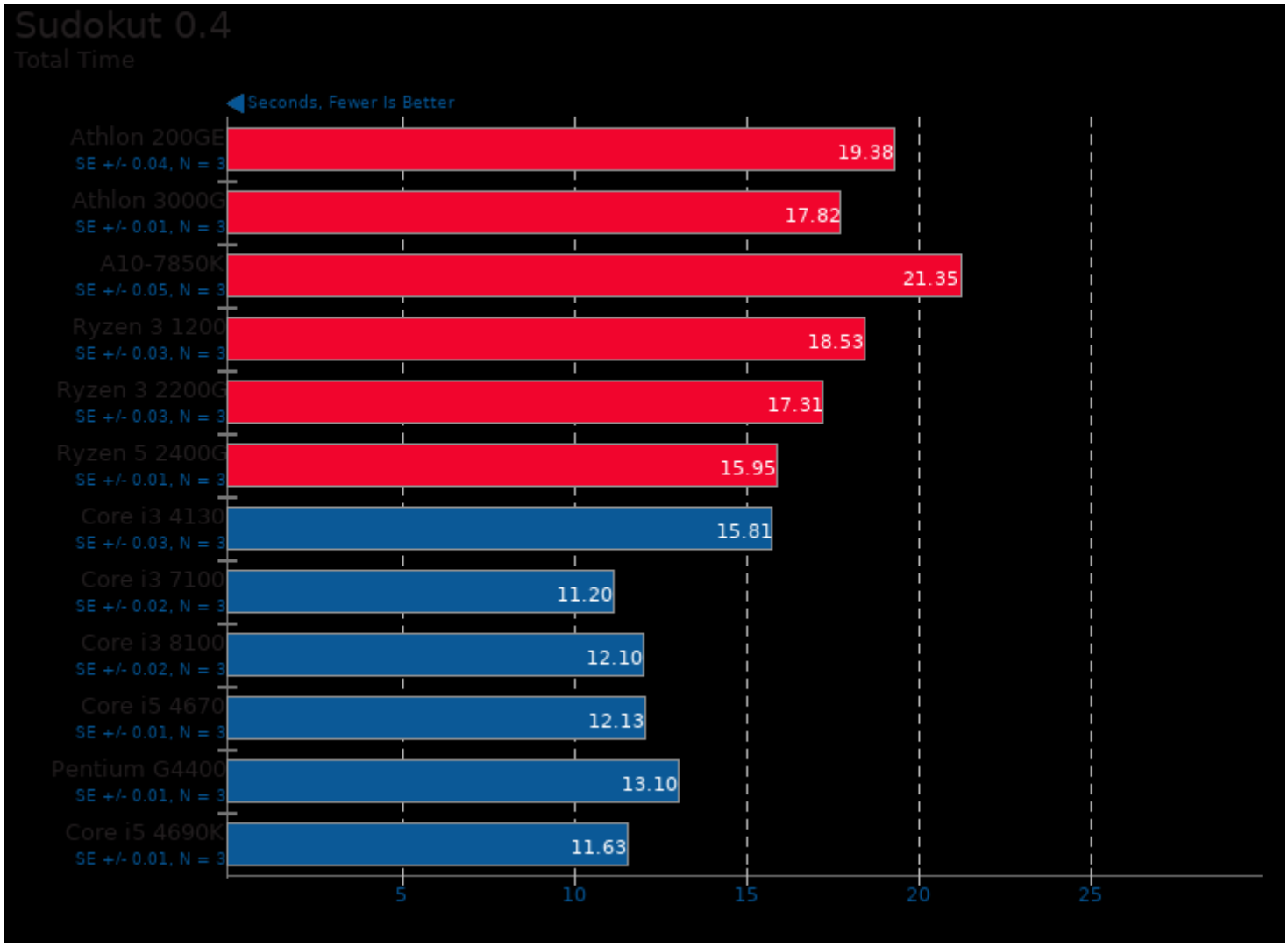

Perl Benchmarks
Test: Interpreter
Seconds, Fewer Is Better
Athlon 200GE
SE +/- 0.00000258, N = 15
0.00140873
Athlon 3000G
SE +/- 0.00000241, N = 12
0.00120668
A10-7850K
SE +/- 0.00000933, N = 15
0.00216237
Ryzen 3 1200
SE +/- 0.00000834, N = 15
0.00157415
Ryzen 3 2200G
SE +/- 0.00000691, N = 12
0.00171832
Ryzen 5 2400G
SE +/- 0.00000349, N = 15
0.00170840
Core i3 4130
SE +/- 0.00000441, N = 15
0.00172385
Core i3 7100
SE +/- 0.00000102, N = 15
0.00106513
Core i3 8100
SE +/- 0.00000375, N = 15
0.00109191
Core i5 4670
SE +/- 0.00000493, N = 15
0.00123535
Pentium G4400
SE +/- 0.00000065, N = 15
0.00125764
Core i5 4690K
SE +/- 0.00001175, N = 15
0.00162388
0.0005
0.001
0.0015
0.002
0.0025

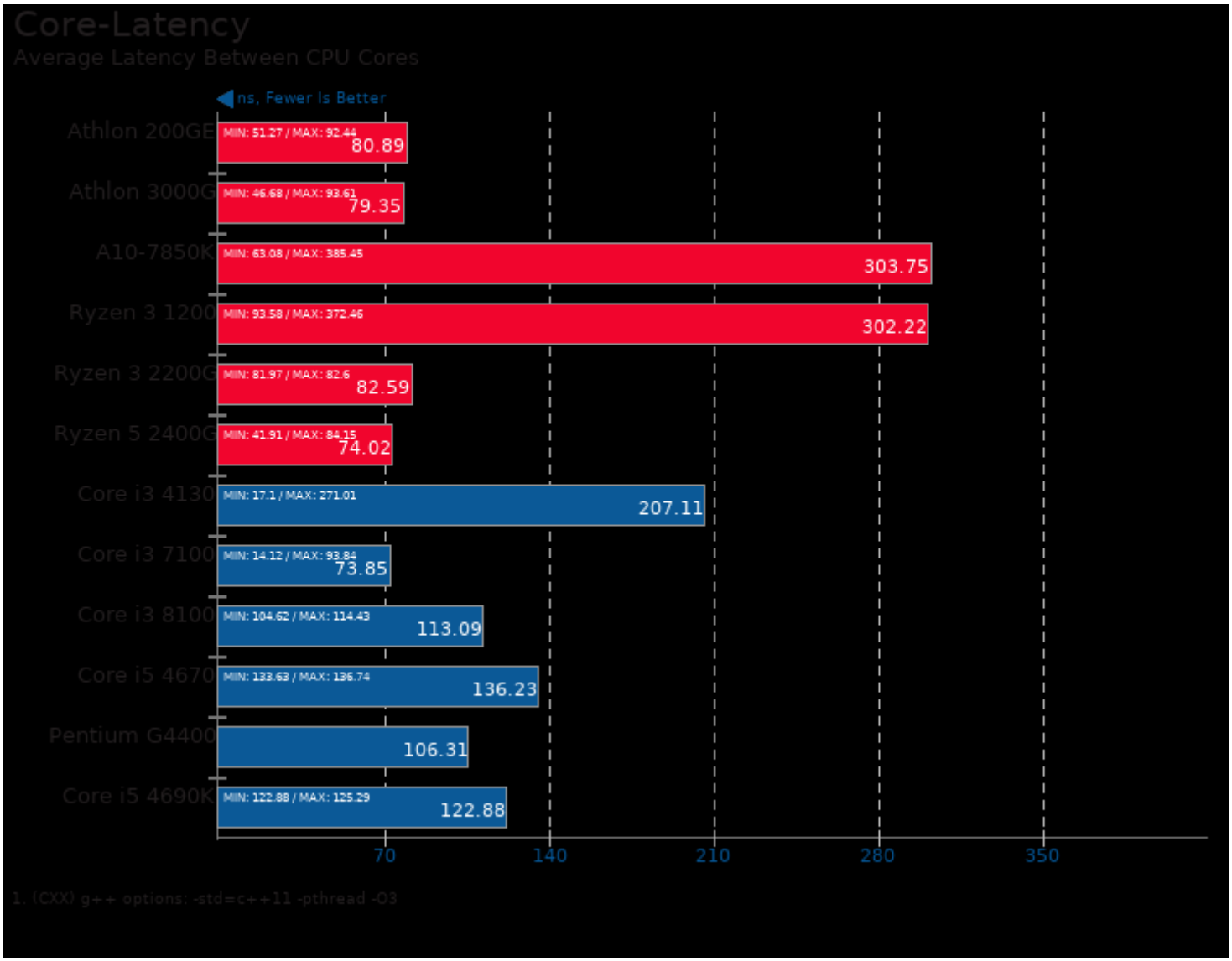

Radiance Benchmark 5.0
Test: SMP Parallel
Seconds, Fewer Is Better
Athlon 200GE
442.11
Athlon 3000G
410.37
A10-7850K
645.59
Ryzen 3 1200
310.22
Ryzen 3 2200G
253.06
Ryzen 5 2400G
256.23
Core i3 4130
557.98
Core i3 7100
371.79
Core i3 8100
256.72
Core i5 4670
263.34
Pentium G4400
556.65
Core i5 4690K
292.82
140
280
420
560
700

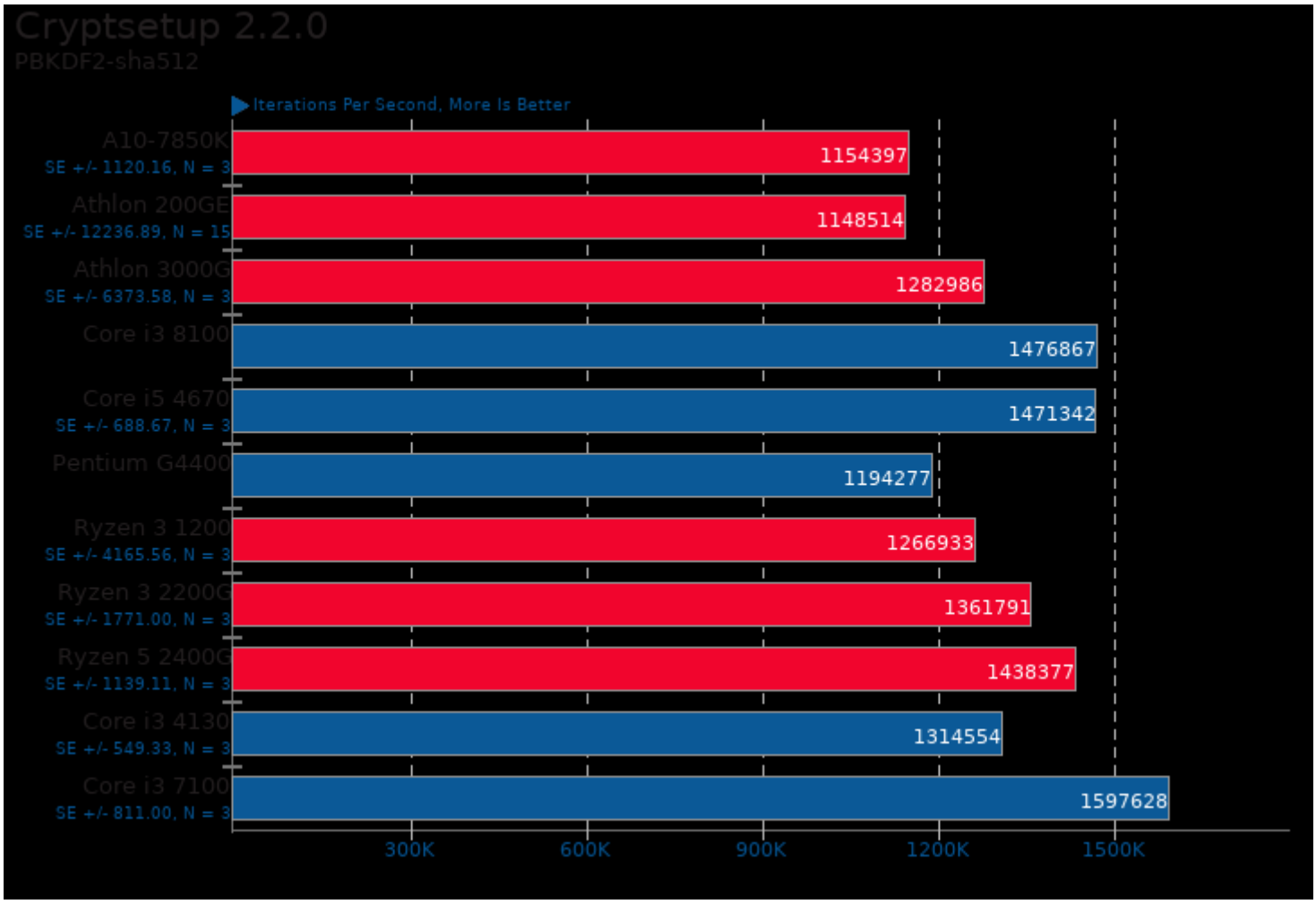
Low-End EOY2019 Ubuntu Linux CPU Comparison



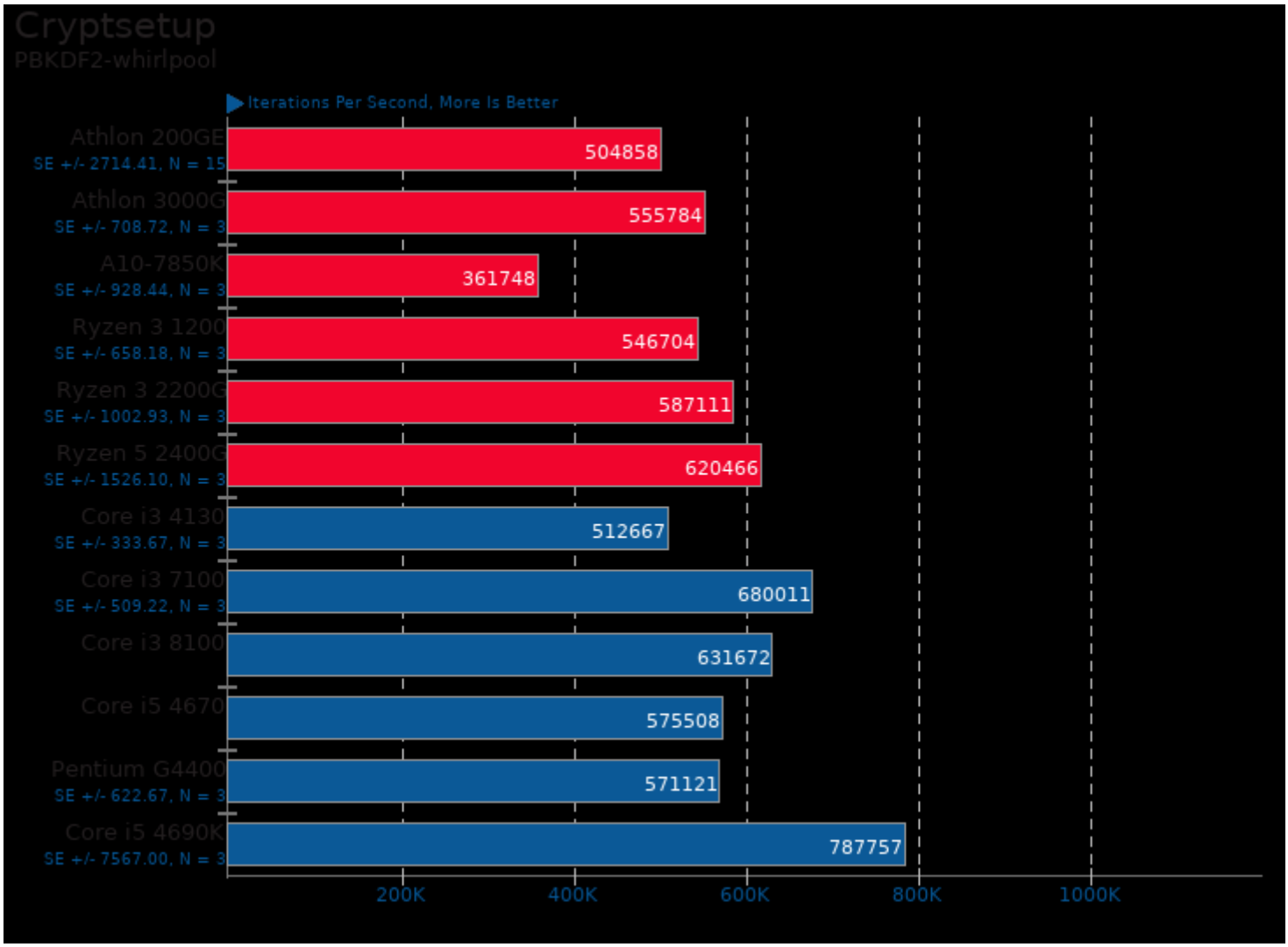
Low-End EOY2019 Ubuntu Linux CPU Comparison

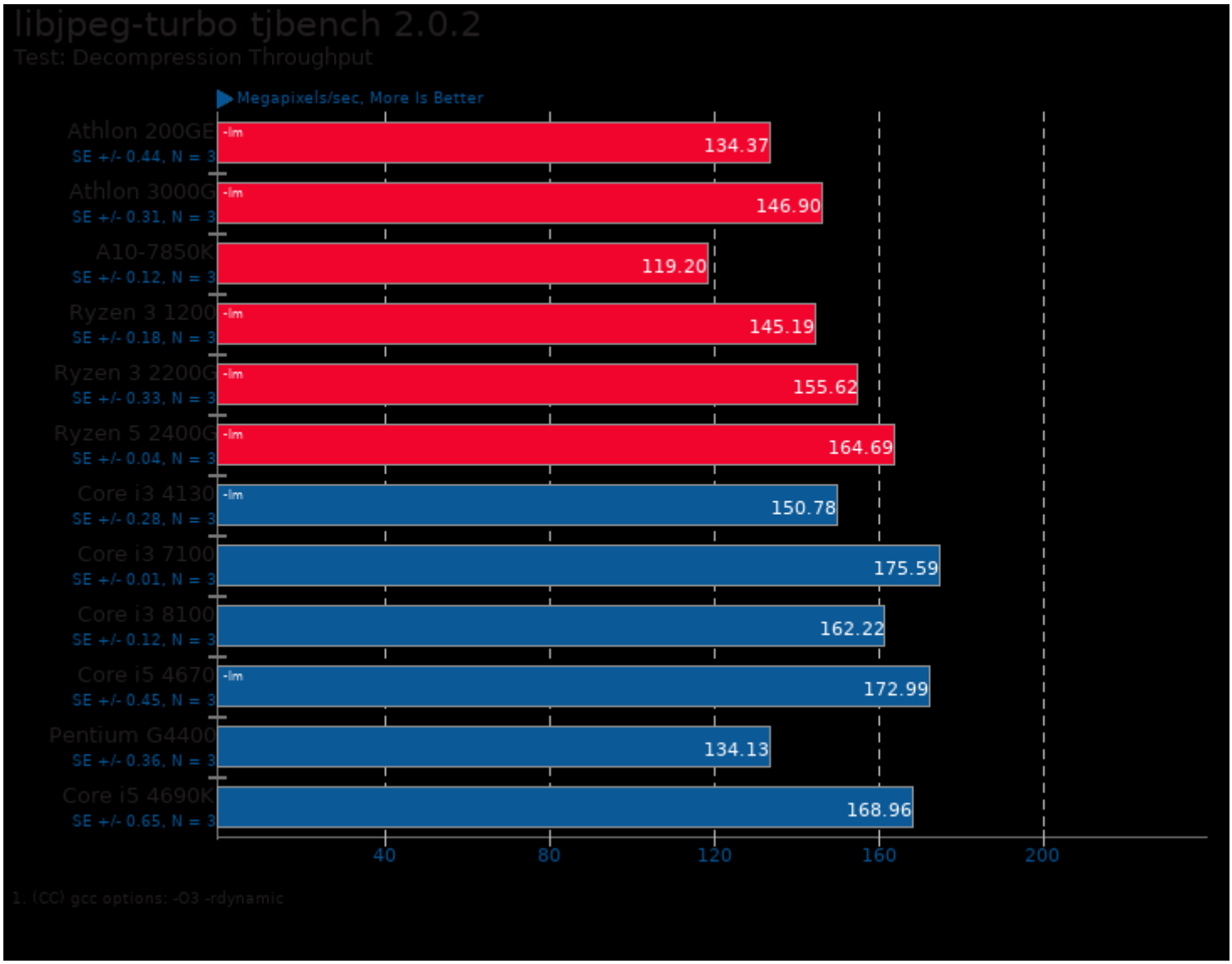


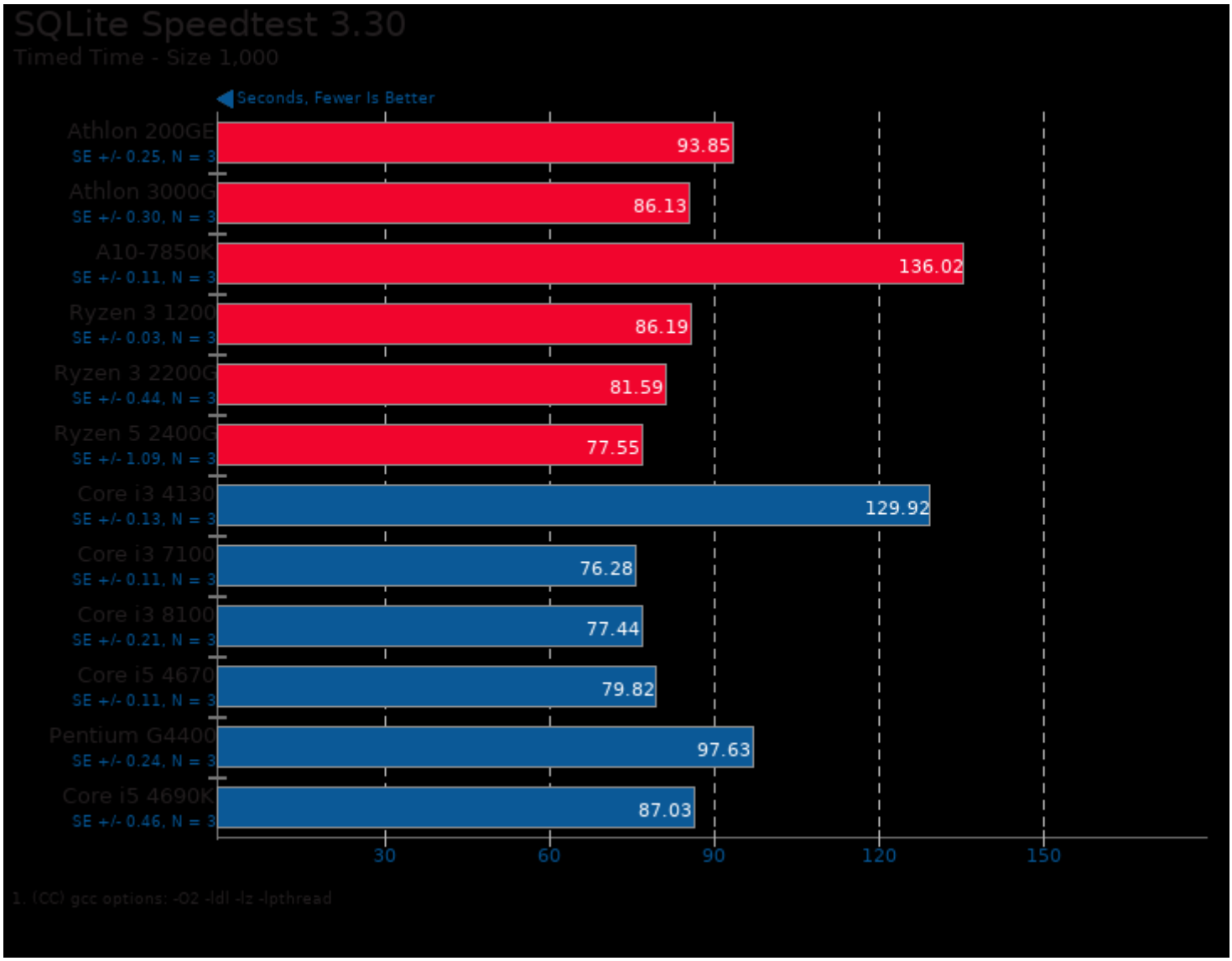

Core-Latency
Average Latency Between CPU Cores
ns, Fewer Is Better
Athlon 200GE
MIN: 51.27 / MAX: 92.44
80.89
Athlon 3000G
MIN: 46.68 / MAX: 93.61
79.35
A10-7850K
MIN: 63.08 / MAX: 385.45
303.75
Ryzen 3 1200
MIN: 93.58 / MAX: 372.46
302.22
Ryzen 3 2200G
MIN: 81.97 / MAX: 82.6
82.59
Ryzen 5 2400G
MIN: 41.91 / MAX: 84.15
74.02
Core i3 4130
MIN: 17.1 / MAX: 271.01
207.11
Core i3 7100
MIN: 14.12 / MAX: 93.84
73.85
Core i3 8100
MIN: 104.62 / MAX: 114.43
113.09
Core i5 4670
MIN: 133.63 / MAX: 136.74
136.23
Pentium G4400
106.31
Core i5 4690K
MIN: 122.88 / MAX: 125.29
122.88
70
140
210
280
350
1. (CXX) g++ options: -std=c++11 -pthread -O3

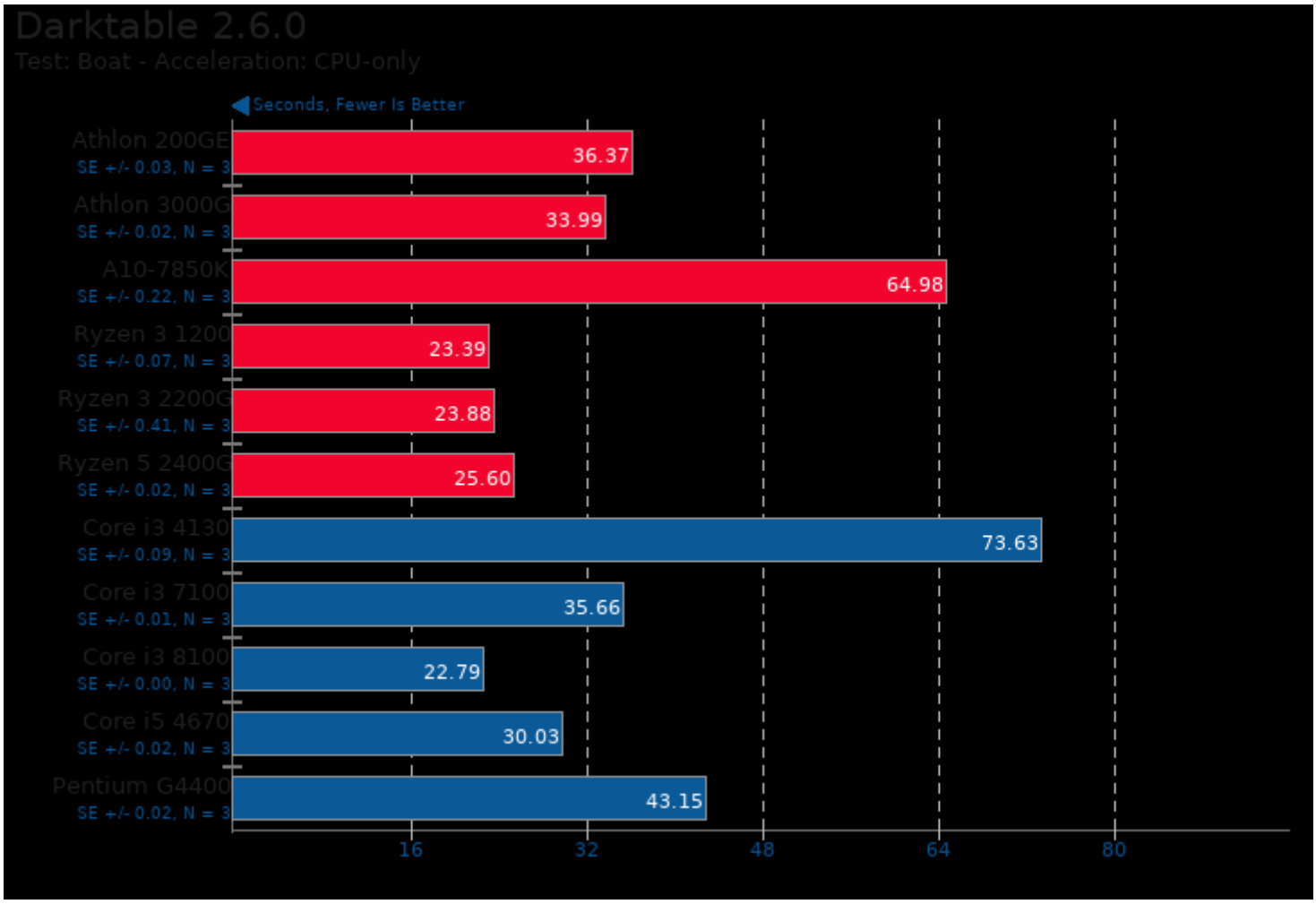

Cryptsetup 2.2.0
PBKDF2-sha512
Iterations Per Second, More Is Better
A10-7850K
SE +/- 1120.16, N = 3
1154397
Athlon 200GE
SE +/- 12236.89, N = 15
1148514
Athlon 3000G
SE +/- 6373.58, N = 3
1282986
Core i3 8100
1476867
Core i5 4670
SE +/- 688.67, N = 3
1471342
Pentium G4400
1194277
Ryzen 3 1200
SE +/- 4165.56, N = 3
1266933
Ryzen 3 2200G
SE +/- 1771.00, N = 3
1361791
Ryzen 5 2400G
SE +/- 1139.11, N = 3
1438377
Core i3 4130
SE +/- 549.33, N = 3
1314554
Core i3 7100
SE +/- 811.00, N = 3
1597628
300K
600K
900K
1200K
1500K

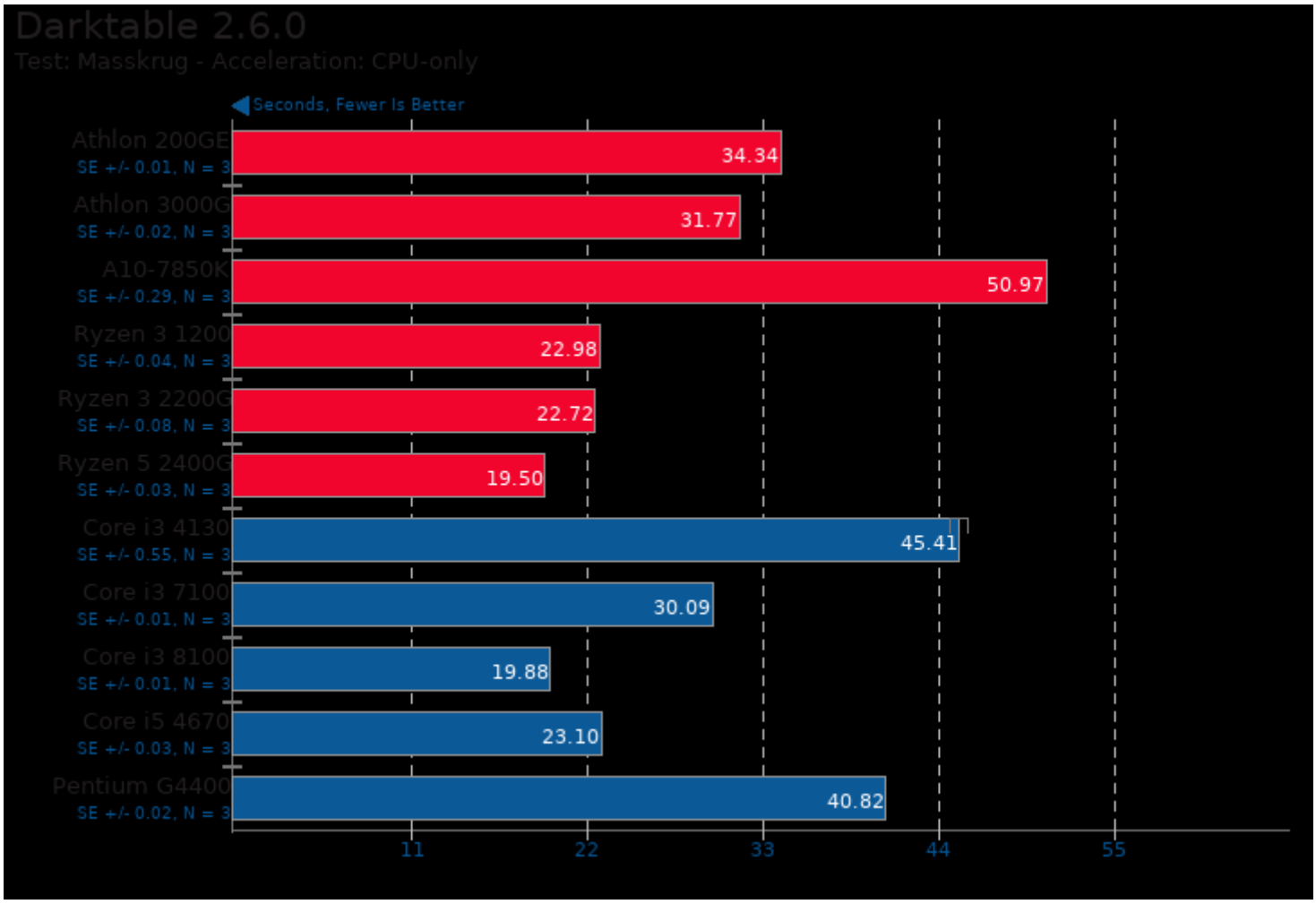
Low-End EOY2019 Ubuntu Linux CPU Comparison



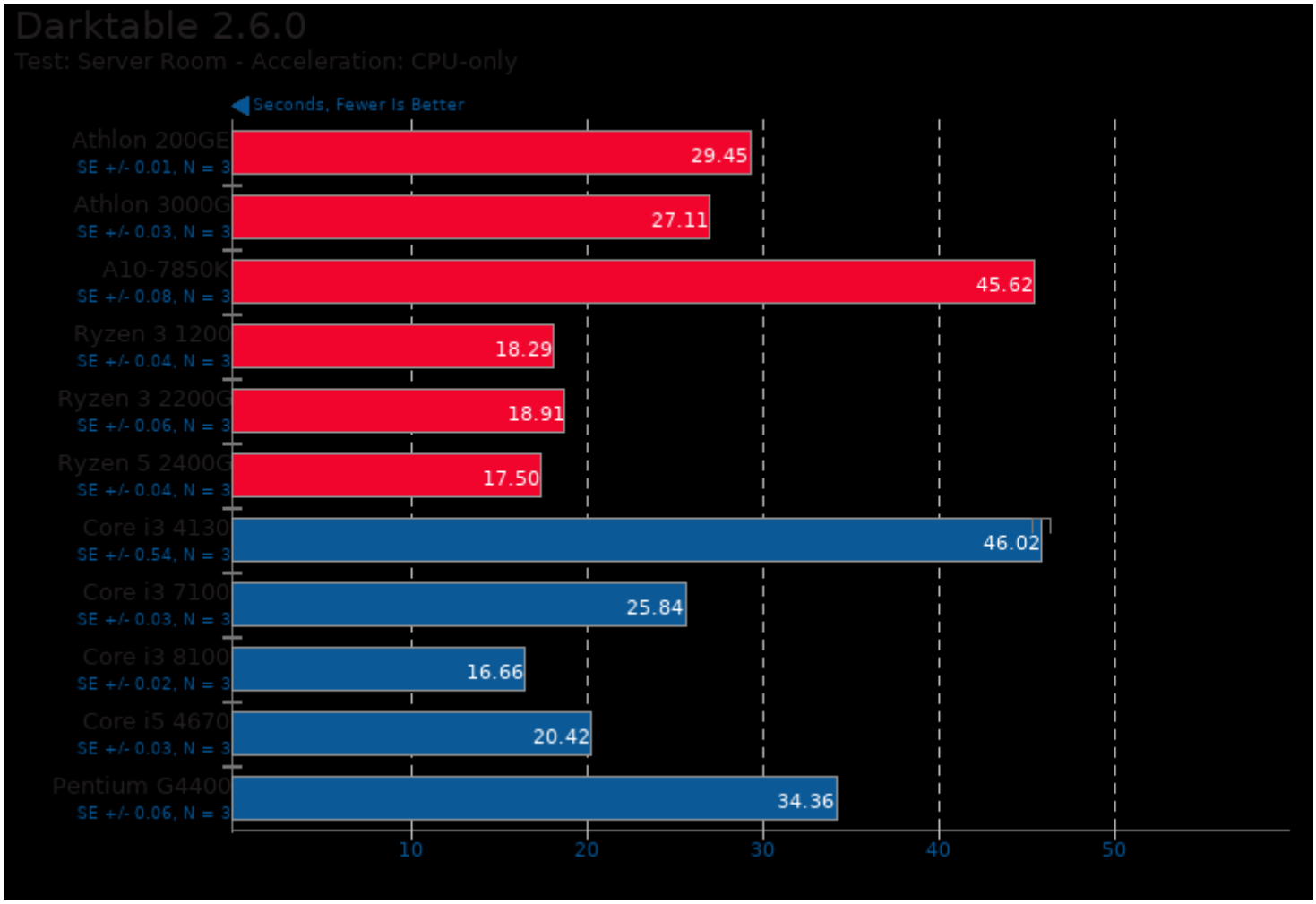

libjpeg-turbo tjbench 2.0.2
Test: Decompression Throughput
Megapixels/sec, More Is Better
Athlon 200GE
SE +/- 0.44, N = 3
-lm
134.37
Athlon 3000G
SE +/- 0.31, N = 3
-lm
146.90
A10-7850K
SE +/- 0.12, N = 3
119.20
Ryzen 3 1200
SE +/- 0.18, N = 3
-lm
145.19
Ryzen 3 2200G
SE +/- 0.33, N = 3
-lm
155.62
Ryzen 5 2400G
SE +/- 0.04, N = 3
-lm
164.69
Core i3 4130
SE +/- 0.28, N = 3
-lm
150.78
Core i3 7100
SE +/- 0.01, N = 3
175.59
Core i3 8100
SE +/- 0.12, N = 3
162.22
Core i5 4670
SE +/- 0.45, N = 3
-lm
172.99
Pentium G4400
SE +/- 0.36, N = 3
134.13
Core i5 4690K
SE +/- 0.65, N = 3
168.96
40
80
120
160
200
1. (CC) gcc options: -O3 -rdynamic


SQLite Speedtest 3.30
Timed Time - Size 1,000
Seconds, Fewer Is Better
Athlon 200GE
SE +/- 0.25, N = 3
93.85
Athlon 3000G
SE +/- 0.30, N = 3
86.13
A10-7850K
SE +/- 0.11, N = 3
136.02
Ryzen 3 1200
SE +/- 0.03, N = 3
86.19
Ryzen 3 2200G
SE +/- 0.44, N = 3
81.59
Ryzen 5 2400G
SE +/- 1.09, N = 3
77.55
Core i3 4130
SE +/- 0.13, N = 3
129.92
Core i3 7100
SE +/- 0.11, N = 3
76.28
Core i3 8100
SE +/- 0.21, N = 3
77.44
Core i5 4670
SE +/- 0.11, N = 3
79.82
Pentium G4400
SE +/- 0.24, N = 3
97.63
Core i5 4690K
SE +/- 0.46, N = 3
87.03
30
60
90
120
150
1. (CC) gcc options: -O2 -ldl -lz -lpthread

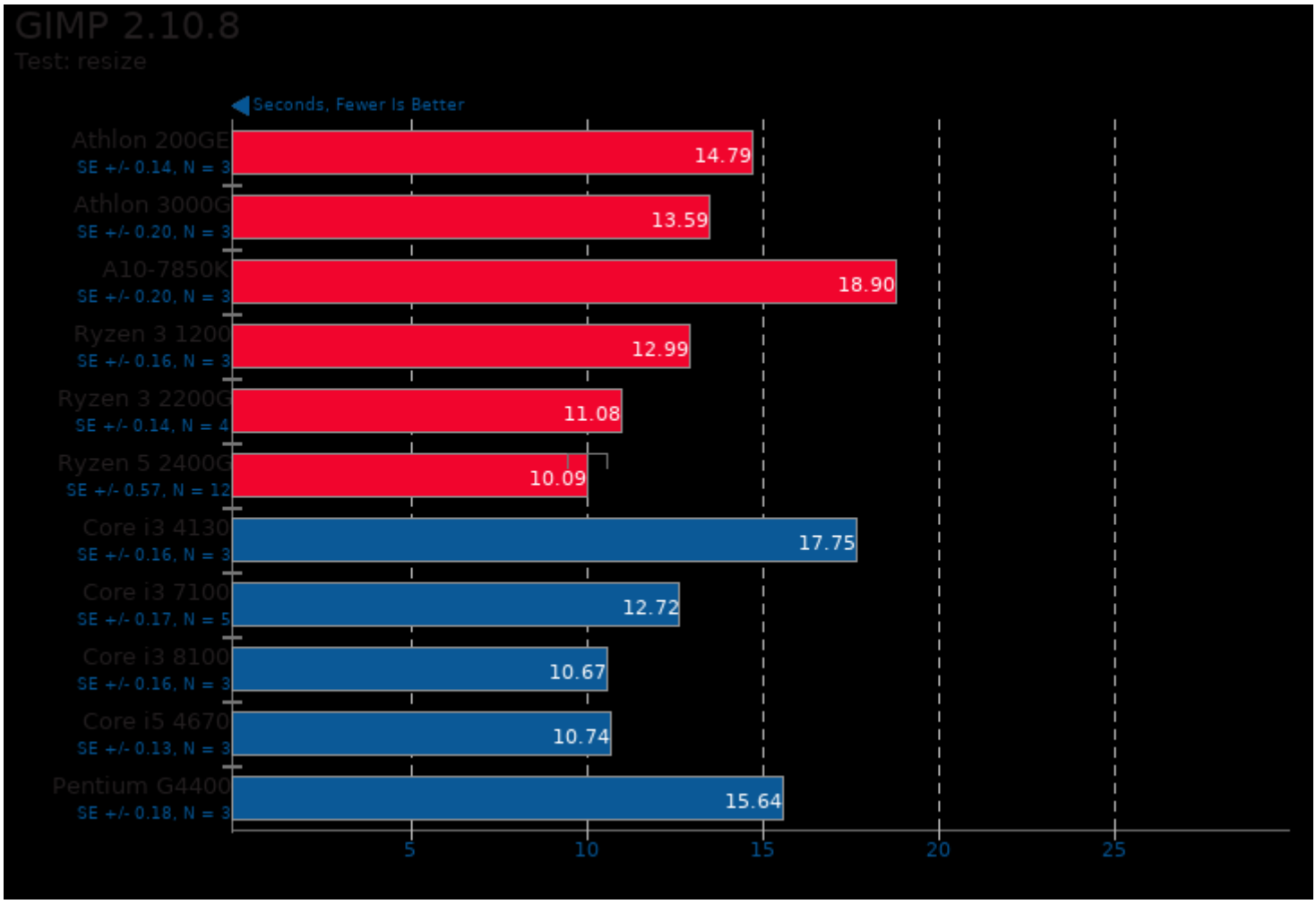

Darktable 2.6.0
Test: Boat - Acceleration: CPU-only
Seconds, Fewer Is Better
Athlon 200GE
SE +/- 0.03, N = 3
36.37
Athlon 3000G
SE +/- 0.02, N = 3
33.99
A10-7850K
SE +/- 0.22, N = 3
64.98
Ryzen 3 1200
SE +/- 0.07, N = 3
23.39
Ryzen 3 2200G
SE +/- 0.41, N = 3
23.88
Ryzen 5 2400G
SE +/- 0.02, N = 3
25.60
Core i3 4130
SE +/- 0.09, N = 3
73.63
Core i3 7100
SE +/- 0.01, N = 3
35.66
Core i3 8100
SE +/- 0.00, N = 3
22.79
Core i5 4670
SE +/- 0.02, N = 3
30.03
Pentium G4400
SE +/- 0.02, N = 3
43.15
16
32
48
64
80

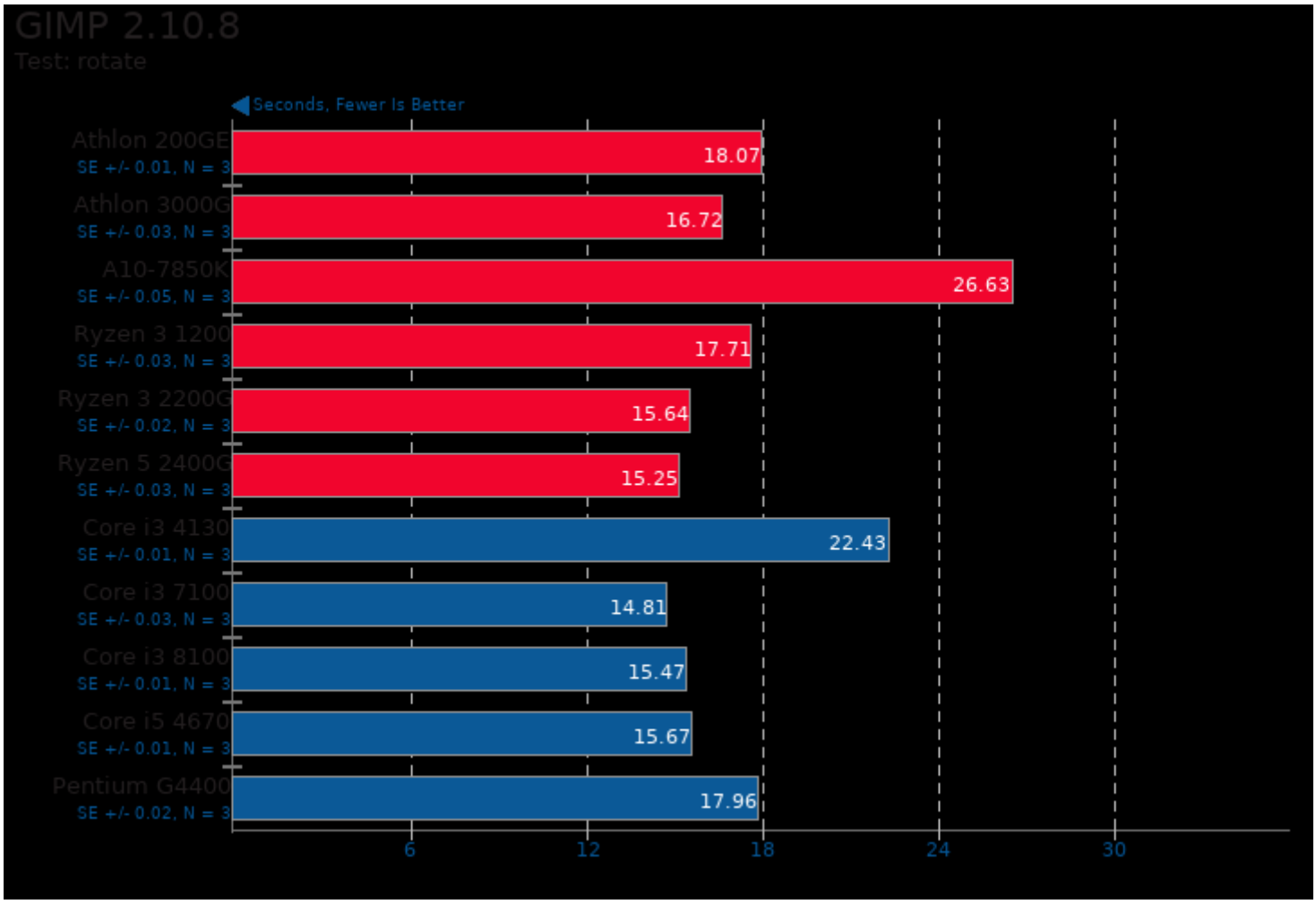

Darktable 2.6.0
Test: Masskrug - Acceleration: CPU-only
Seconds, Fewer Is Better
Athlon 200GE
SE +/- 0.01, N = 3
34.34
Athlon 3000G
SE +/- 0.02, N = 3
31.77
A10-7850K
SE +/- 0.29, N = 3
50.97
Ryzen 3 1200
SE +/- 0.04, N = 3
22.98
Ryzen 3 2200G
SE +/- 0.08, N = 3
22.72
Ryzen 5 2400G
SE +/- 0.03, N = 3
19.50
Core i3 4130
SE +/- 0.55, N = 3
45.41
Core i3 7100
SE +/- 0.01, N = 3
30.09
Core i3 8100
SE +/- 0.01, N = 3
19.88
Core i5 4670
SE +/- 0.03, N = 3
23.10
Pentium G4400
SE +/- 0.02, N = 3
40.82
11
22
33
44
55

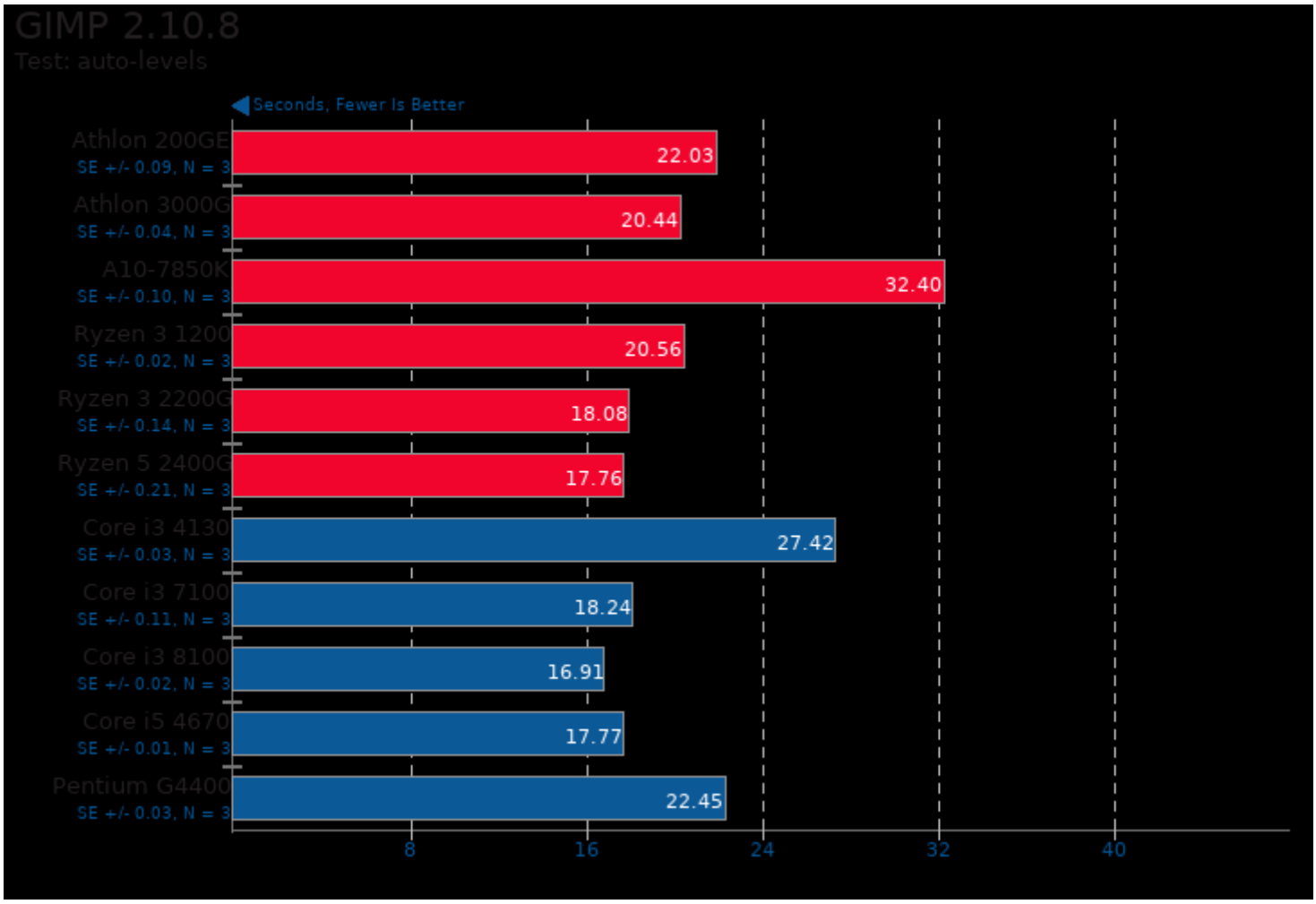
Low-End EOY2019 Ubuntu Linux CPU Comparison

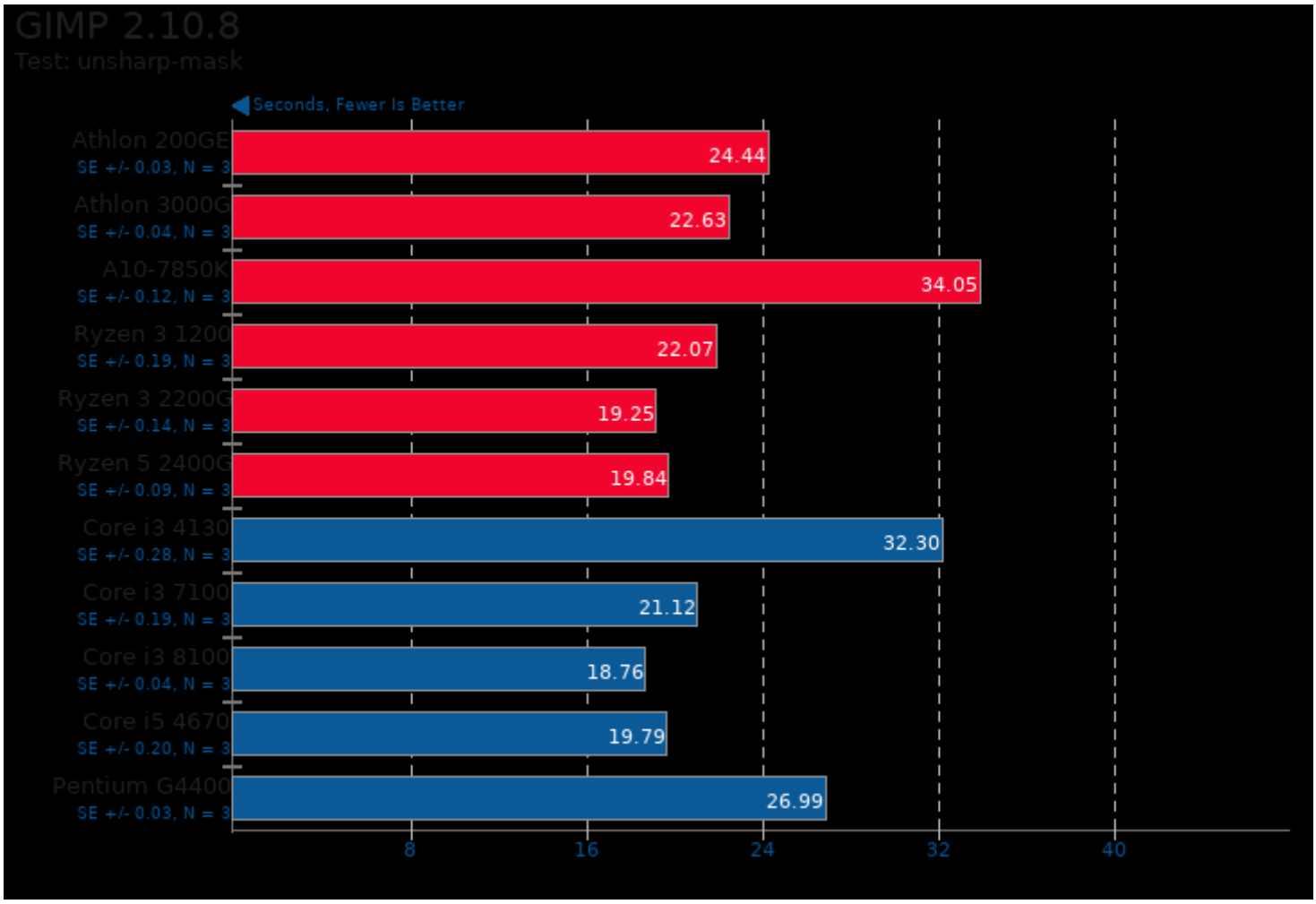


Low-End EOY2019 Ubuntu Linux CPU Comparison

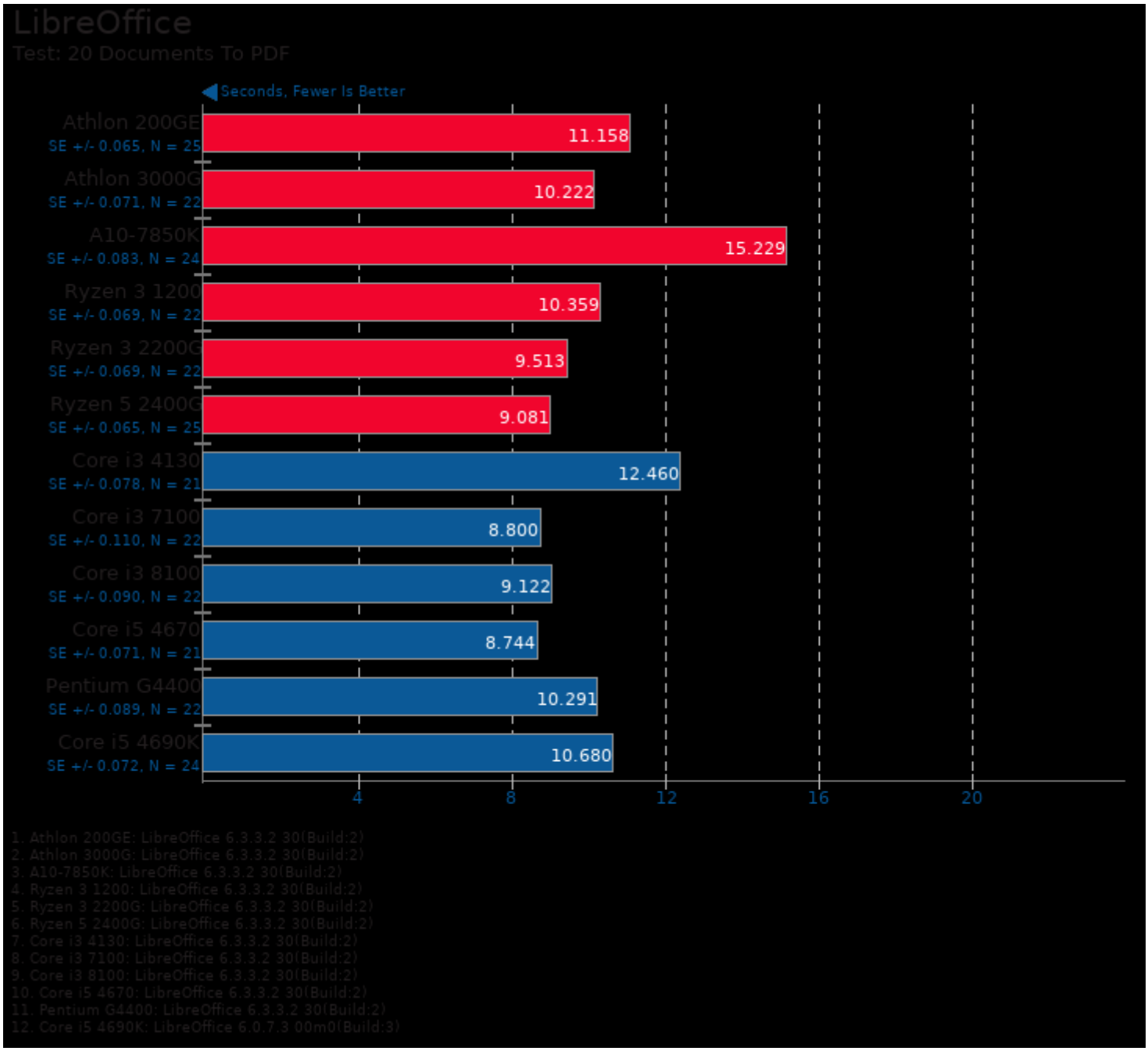


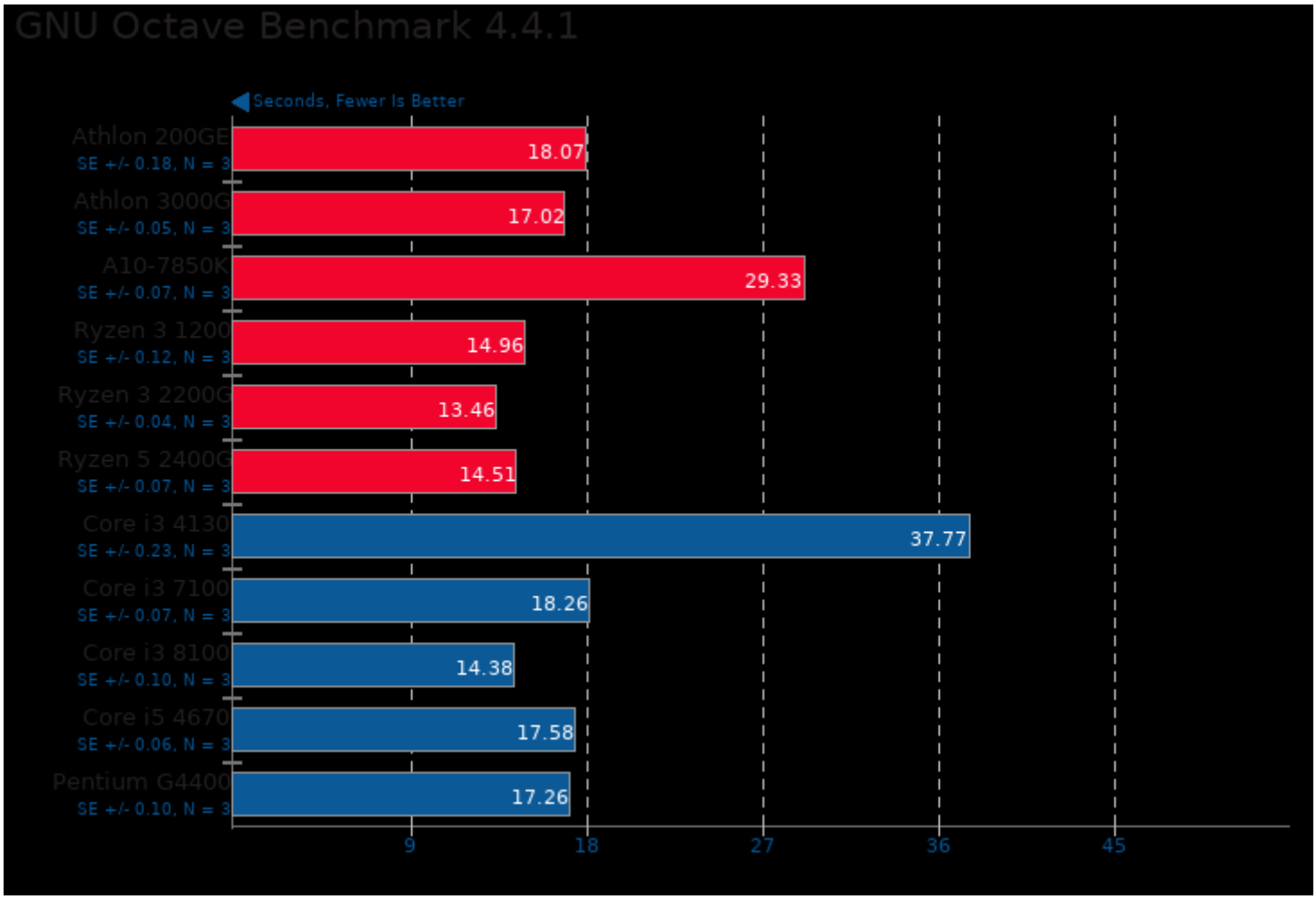

GIMP 2.10.8
Test: rotate
Seconds, Fewer Is Better
Athlon 200GE
SE +/- 0.01, N = 3
18.07
Athlon 3000G
SE +/- 0.03, N = 3
16.72
A10-7850K
SE +/- 0.05, N = 3
26.63
Ryzen 3 1200
SE +/- 0.03, N = 3
17.71
Ryzen 3 2200G
SE +/- 0.02, N = 3
15.64
Ryzen 5 2400G
SE +/- 0.03, N = 3
15.25
Core i3 4130
SE +/- 0.01, N = 3
22.43
Core i3 7100
SE +/- 0.03, N = 3
14.81
Core i3 8100
SE +/- 0.01, N = 3
15.47
Core i5 4670
SE +/- 0.01, N = 3
15.67
Pentium G4400
SE +/- 0.02, N = 3
17.96
6
12
18
24
30


GIMP 2.10.8
Test: auto-levels
Seconds, Fewer Is Better
Athlon 200GE
SE +/- 0.09, N = 3
22.03
Athlon 3000G
SE +/- 0.04, N = 3
20.44
A10-7850K
SE +/- 0.10, N = 3
32.40
Ryzen 3 1200
SE +/- 0.02, N = 3
20.56
Ryzen 3 2200G
SE +/- 0.14, N = 3
18.08
Ryzen 5 2400G
SE +/- 0.21, N = 3
17.76
Core i3 4130
SE +/- 0.03, N = 3
27.42
Core i3 7100
SE +/- 0.11, N = 3
18.24
Core i3 8100
SE +/- 0.02, N = 3
16.91
Core i5 4670
SE +/- 0.01, N = 3
17.77
Pentium G4400
SE +/- 0.03, N = 3
22.45
8
16
24
32
40

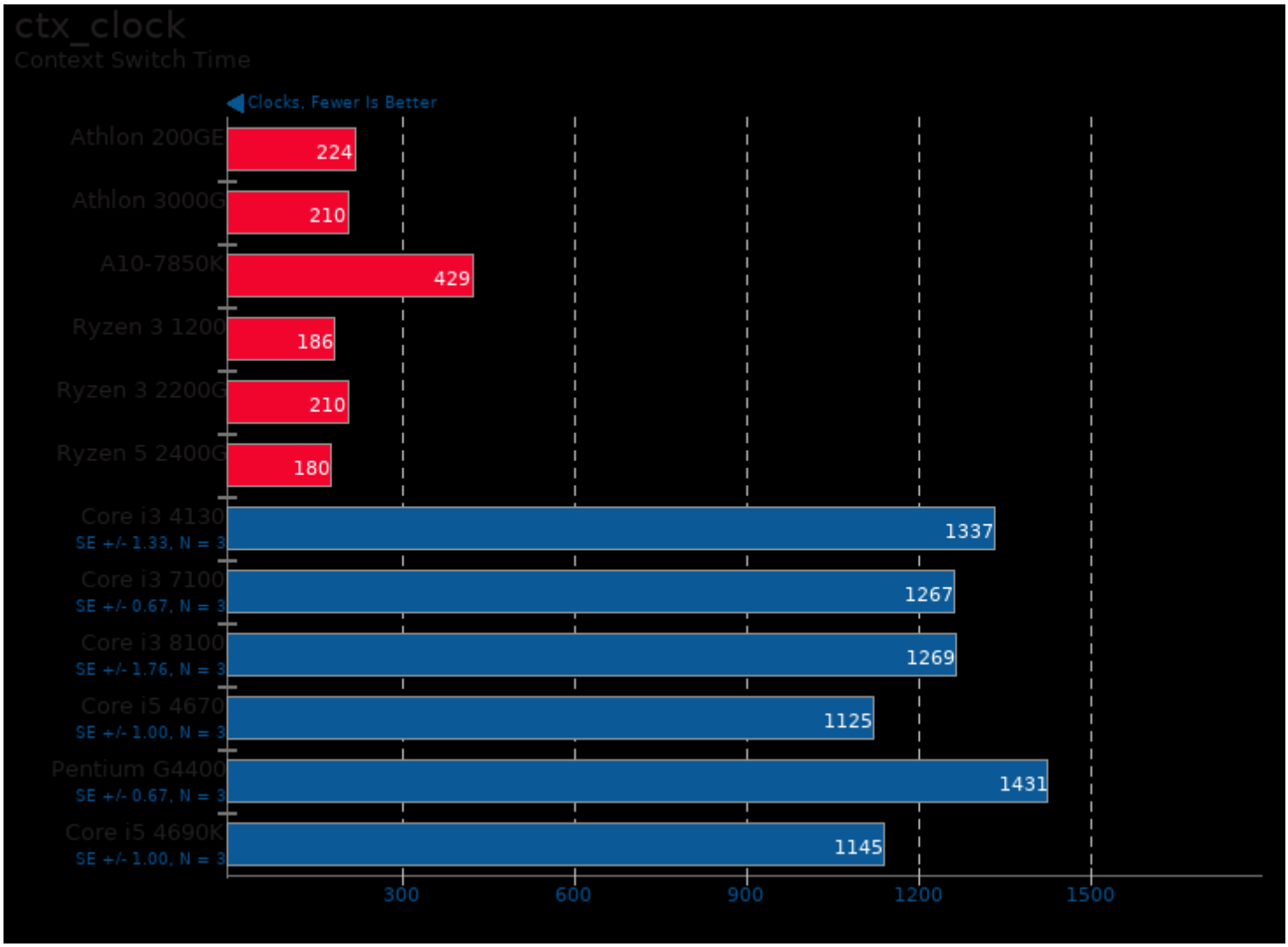

GIMP 2.10.8
Test: unsharp-mask
Seconds, Fewer Is Better
Athlon 200GE
SE +/- 0.03, N = 3
24.44
Athlon 3000G
SE +/- 0.04, N = 3
22.63
A10-7850K
SE +/- 0.12, N = 3
34.05
Ryzen 3 1200
SE +/- 0.19, N = 3
22.07
Ryzen 3 2200G
SE +/- 0.14, N = 3
19.25
Ryzen 5 2400G
SE +/- 0.09, N = 3
19.84
Core i3 4130
SE +/- 0.28, N = 3
32.30
Core i3 7100
SE +/- 0.19, N = 3
21.12
Core i3 8100
SE +/- 0.04, N = 3
18.76
Core i5 4670
SE +/- 0.20, N = 3
19.79
Pentium G4400
SE +/- 0.03, N = 3
26.99
8
16
24
32
40

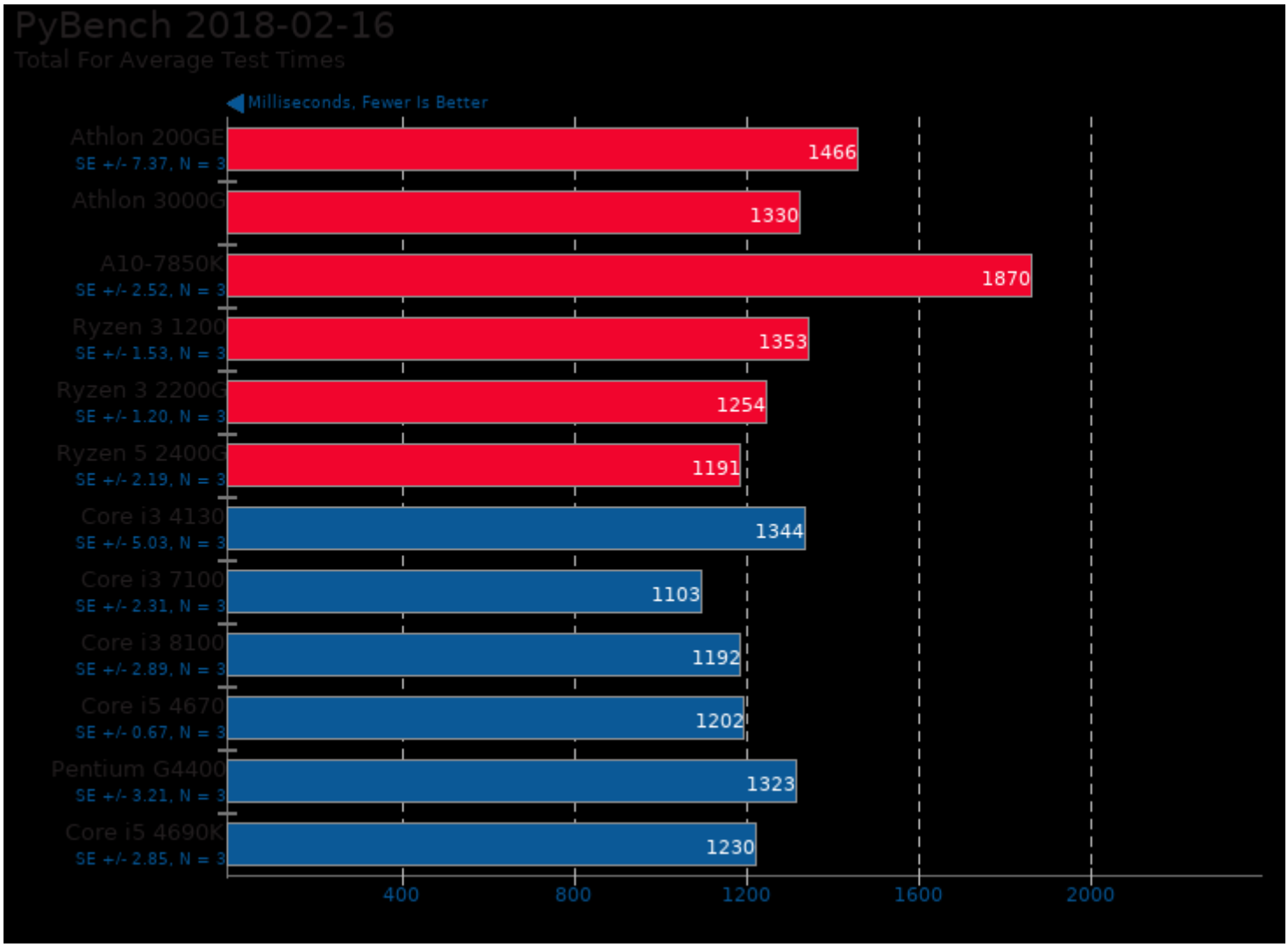
Low-End EOY2019 Ubuntu Linux CPU Comparison



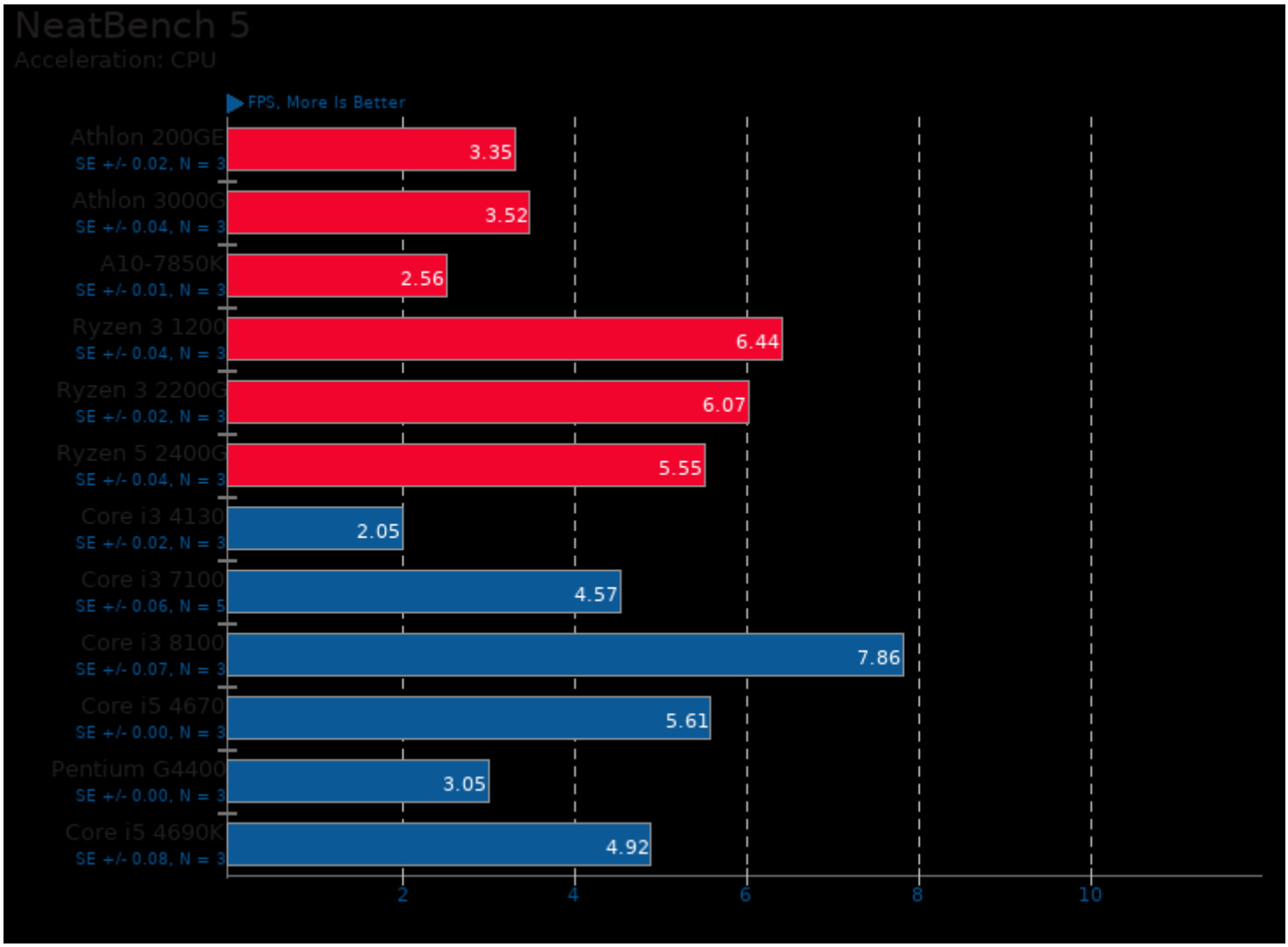

GNU Octave Benchmark 4.4.1
Seconds, Fewer Is Better
Athlon 200GE
SE +/- 0.18, N = 3
18.07
Athlon 3000G
SE +/- 0.05, N = 3
17.02
A10-7850K
SE +/- 0.07, N = 3
29.33
Ryzen 3 1200
SE +/- 0.12, N = 3
14.96
Ryzen 3 2200G
SE +/- 0.04, N = 3
13.46
Ryzen 5 2400G
SE +/- 0.07, N = 3
14.51
Core i3 4130
SE +/- 0.23, N = 3
37.77
Core i3 7100
SE +/- 0.07, N = 3
18.26
Core i3 8100
SE +/- 0.10, N = 3
14.38
Core i5 4670
SE +/- 0.06, N = 3
17.58
Pentium G4400
SE +/- 0.10, N = 3
17.26
9
18
27
36
45

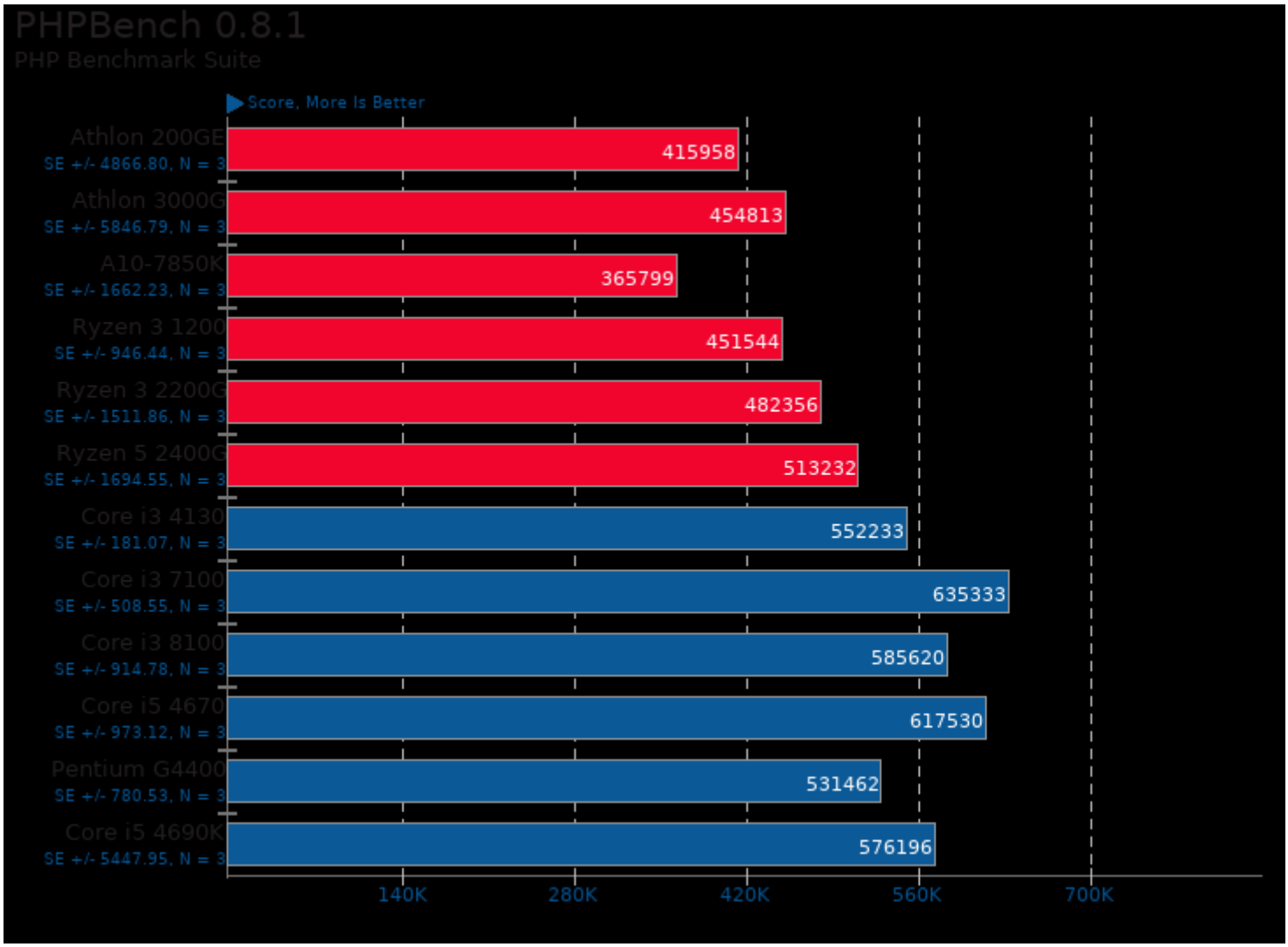
Low-End EOY2019 Ubuntu Linux CPU Comparison

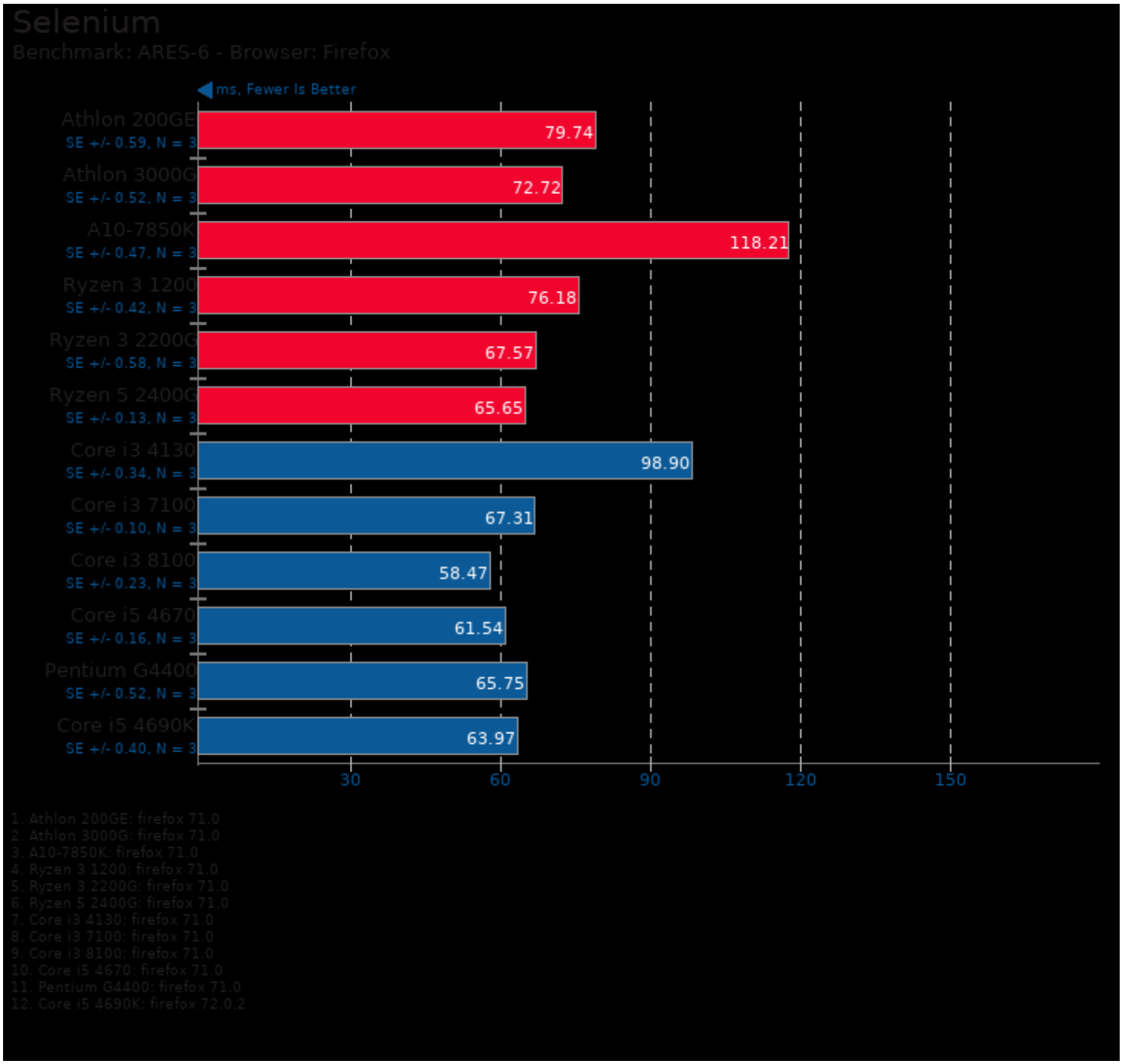


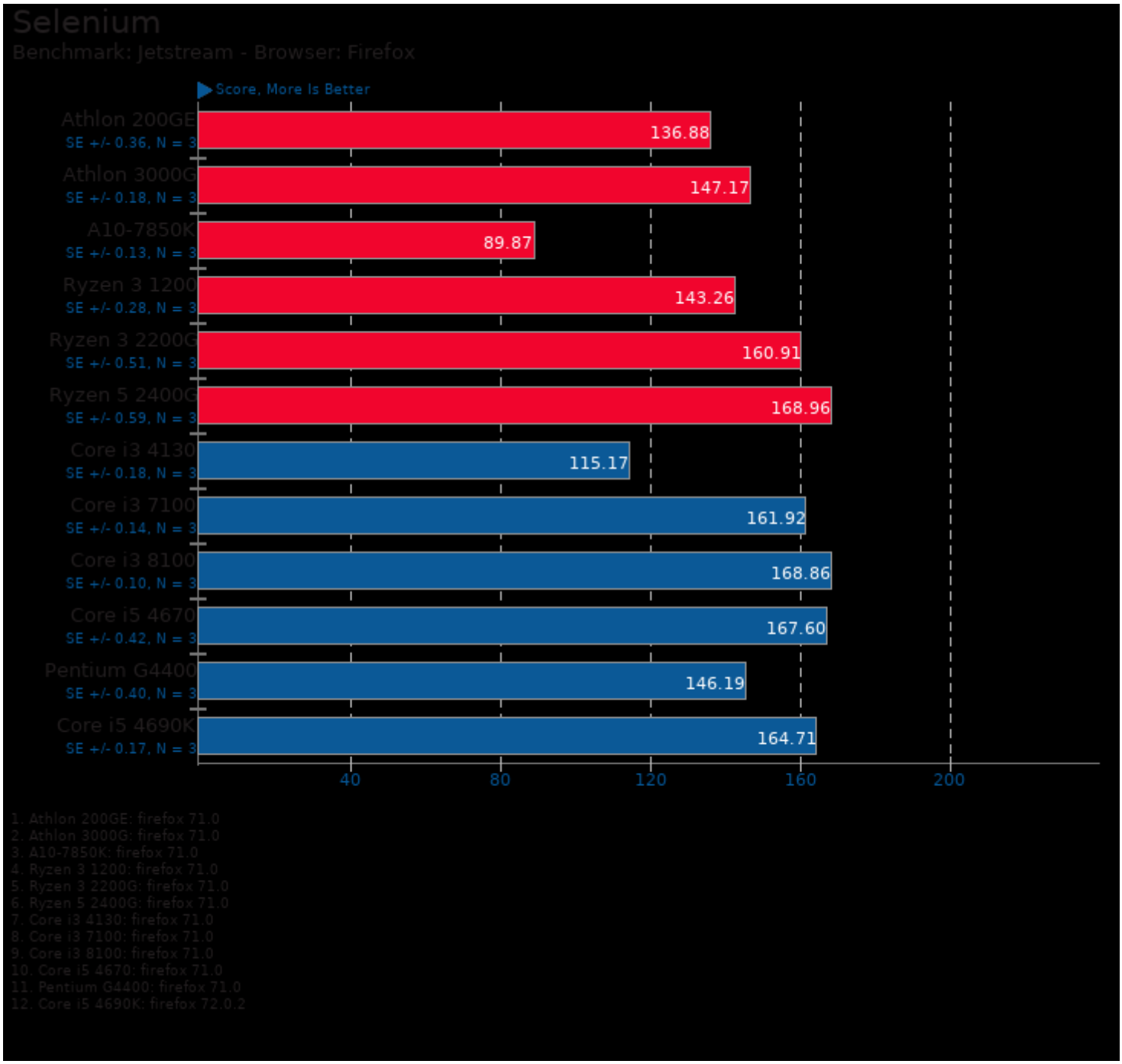

PyBench 2018-02-16
Total For Average Test Times
Milliseconds, Fewer Is Better
Athlon 200GE
SE +/- 7.37, N = 3
1466
Athlon 3000G
1330
A10-7850K
SE +/- 2.52, N = 3
1870
Ryzen 3 1200
SE +/- 1.53, N = 3
1353
Ryzen 3 2200G
SE +/- 1.20, N = 3
1254
Ryzen 5 2400G
SE +/- 2.19, N = 3
1191
Core i3 4130
SE +/- 5.03, N = 3
1344
Core i3 7100
SE +/- 2.31, N = 3
1103
Core i3 8100
SE +/- 2.89, N = 3
1192
Core i5 4670
SE +/- 0.67, N = 3
1202
Pentium G4400
SE +/- 3.21, N = 3
1323
Core i5 4690K
SE +/- 2.85, N = 3
1230
400
800
1200
1600
2000

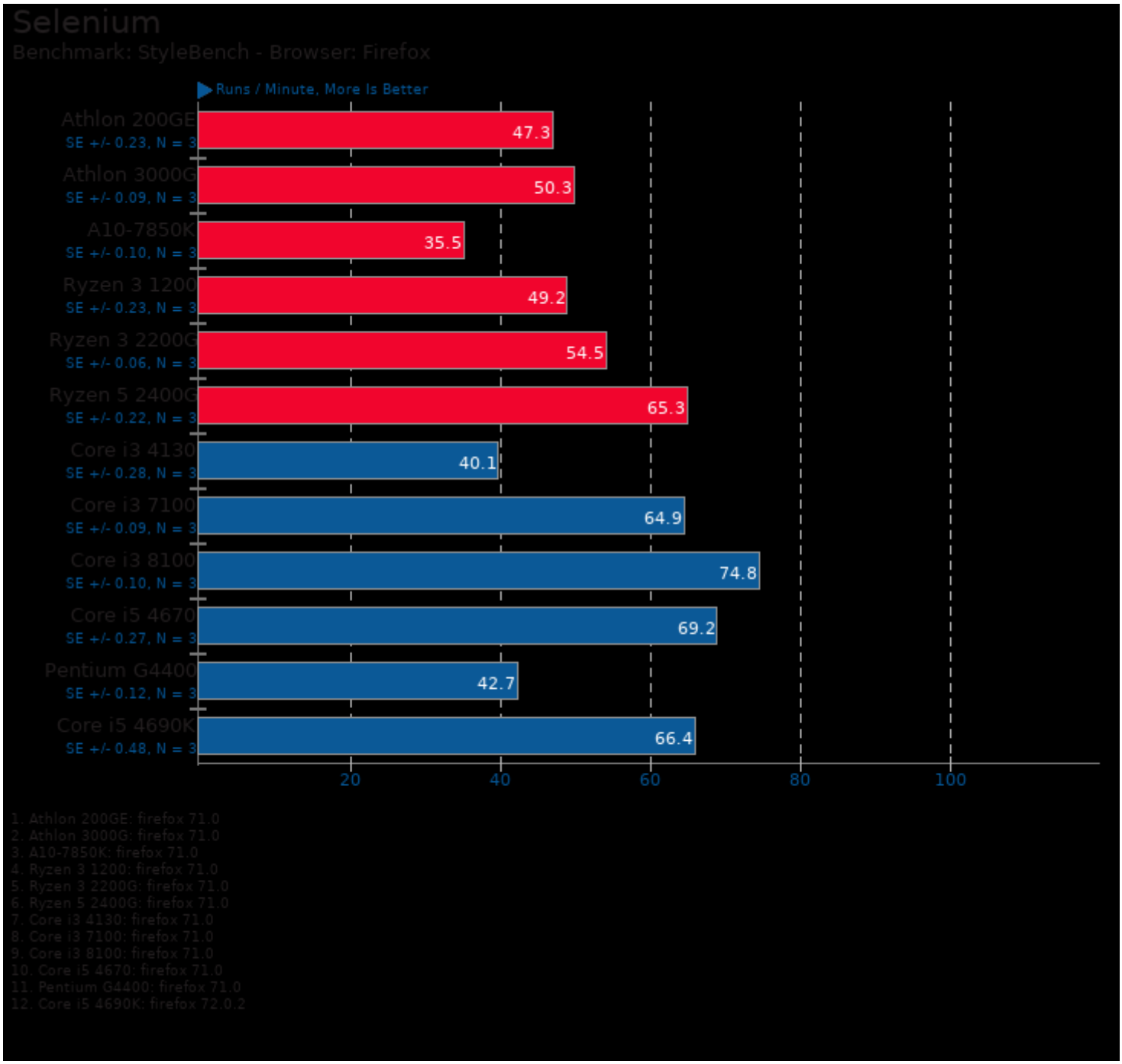
Low-End EOY2019 Ubuntu Linux CPU Comparison

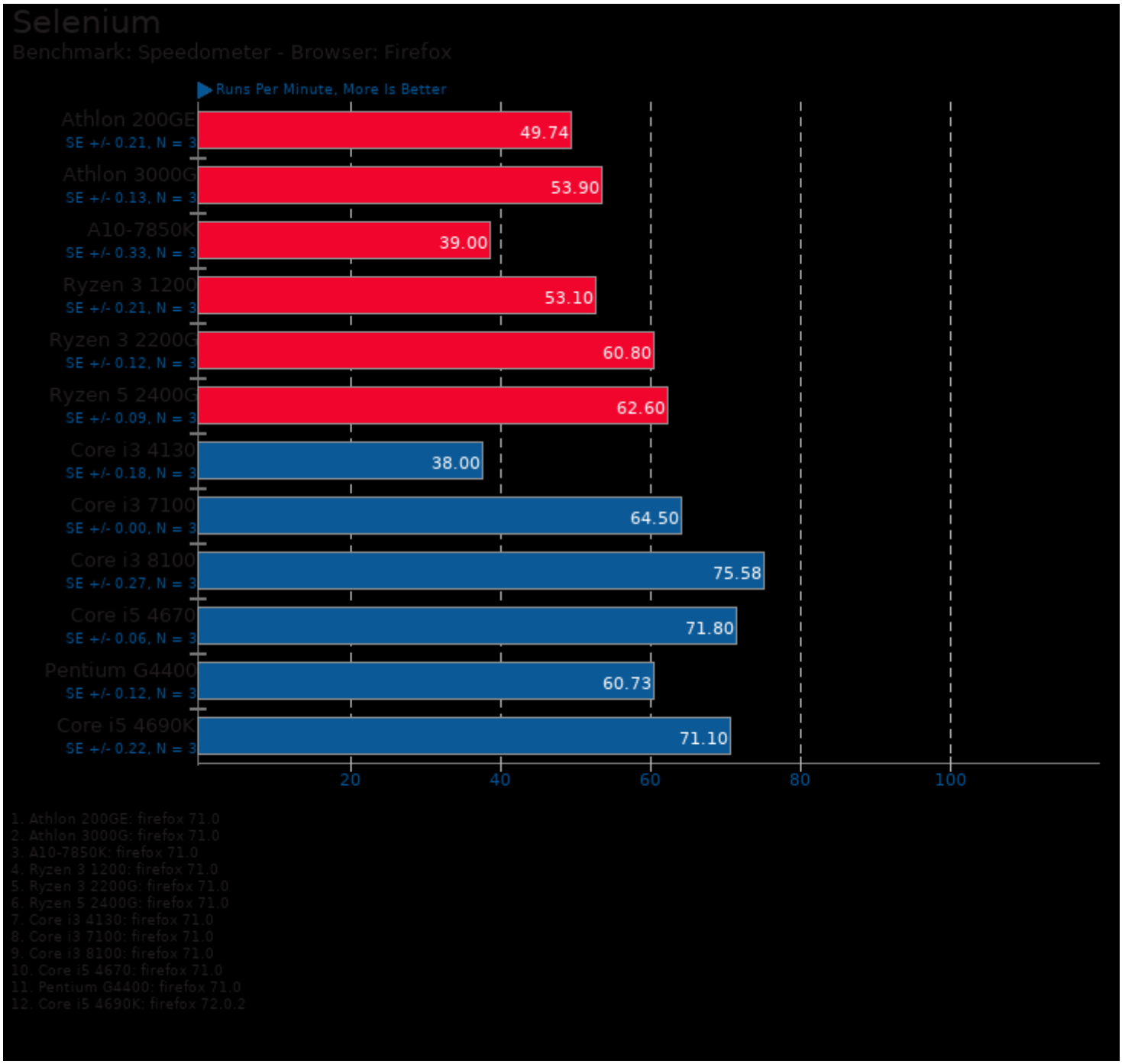


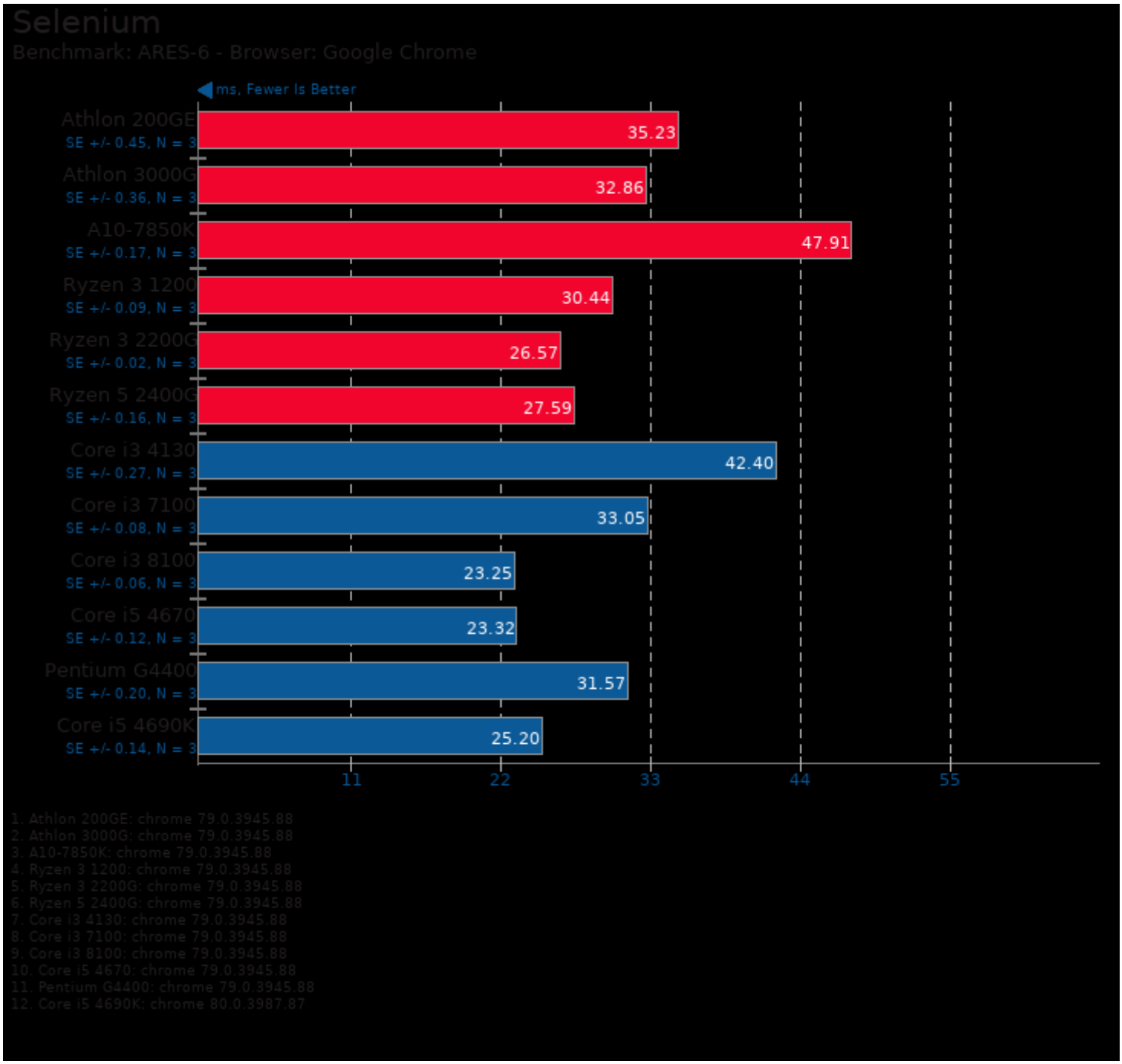

PHPBench 0.8.1
PHP Benchmark Suite
Score, More Is Better
Athlon 200GE
SE +/- 4866.80, N = 3
415958
Athlon 3000G
SE +/- 5846.79, N = 3
454813
A10-7850K
SE +/- 1662.23, N = 3
365799
Ryzen 3 1200
SE +/- 946.44, N = 3
451544
Ryzen 3 2200G
SE +/- 1511.86, N = 3
482356
Ryzen 5 2400G
SE +/- 1694.55, N = 3
513232
Core i3 4130
SE +/- 181.07, N = 3
552233
Core i3 7100
SE +/- 508.55, N = 3
635333
Core i3 8100
SE +/- 914.78, N = 3
585620
Core i5 4670
SE +/- 973.12, N = 3
617530
Pentium G4400
SE +/- 780.53, N = 3
531462
Core i5 4690K
SE +/- 5447.95, N = 3
576196
140K
280K
420K
560K
700K

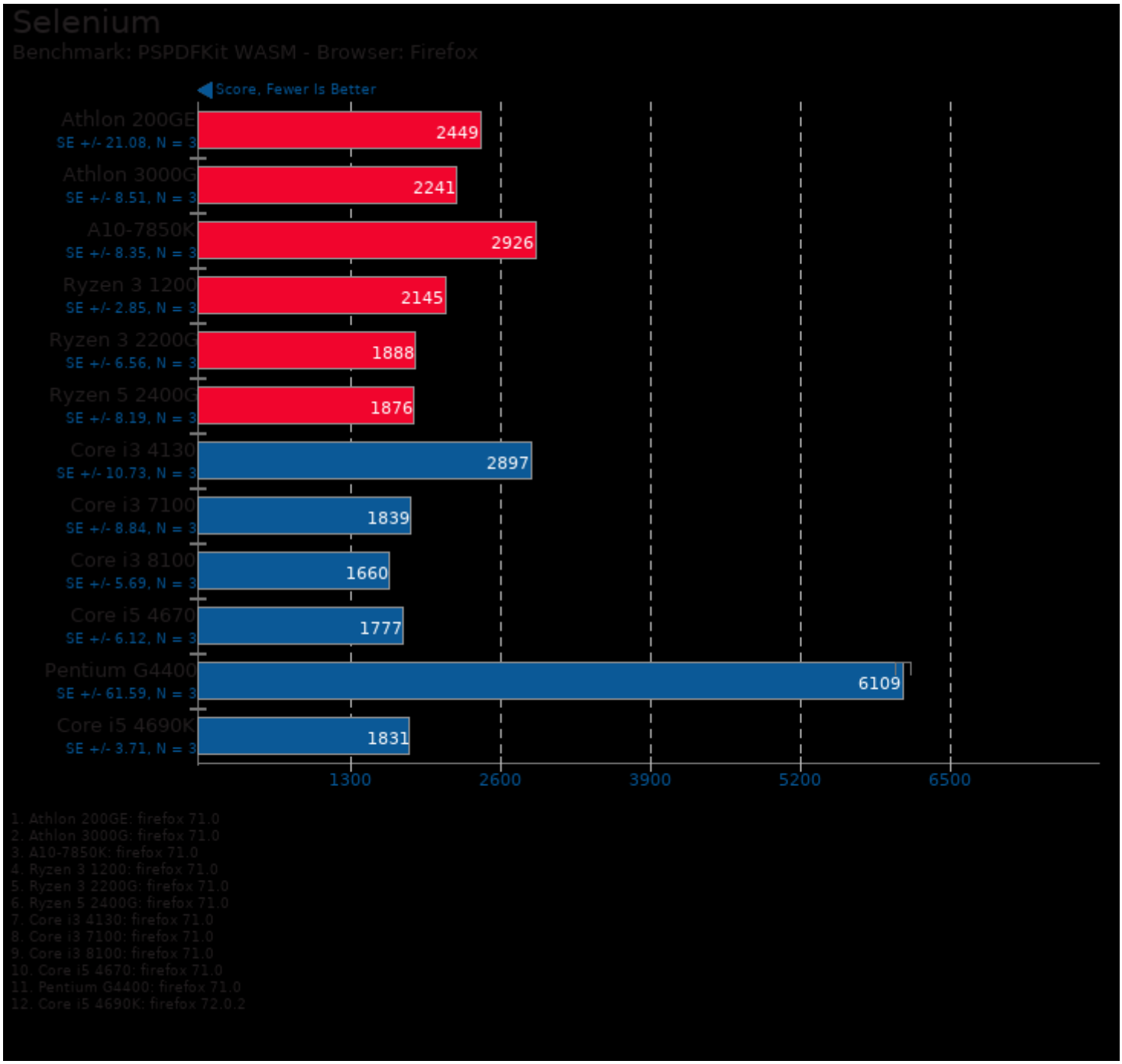

Selenium
Benchmark: ARES-6 - Browser: Firefox
ms, Fewer Is Better
Athlon 200GE
SE +/- 0.59, N = 3
79.74
Athlon 3000G
SE +/- 0.52, N = 3
72.72
A10-7850K
SE +/- 0.47, N = 3
118.21
Ryzen 3 1200
SE +/- 0.42, N = 3
76.18
Ryzen 3 2200G
SE +/- 0.58, N = 3
67.57
Ryzen 5 2400G
SE +/- 0.13, N = 3
65.65
Core i3 4130
SE +/- 0.34, N = 3
98.90
Core i3 7100
SE +/- 0.10, N = 3
67.31
Core i3 8100
SE +/- 0.23, N = 3
58.47
Core i5 4670
SE +/- 0.16, N = 3
61.54
Pentium G4400
SE +/- 0.52, N = 3
65.75
Core i5 4690K
SE +/- 0.40, N = 3
63.97
30
60
90
120
150
1. Athlon 200GE: firefox 71.0
2. Athlon 3000G: firefox 71.0
3. A10-7850K: firefox 71.0
4. Ryzen 3 1200: firefox 71.0
5. Ryzen 3 2200G: firefox 71.0
6. Ryzen 5 2400G: firefox 71.0
7. Core i3 4130: firefox 71.0
8. Core i3 7100: firefox 71.0
9. Core i3 8100: firefox 71.0
10. Core i5 4670: firefox 71.0
11. Pentium G4400: firefox 71.0
12. Core i5 4690K: firefox 72.0.2

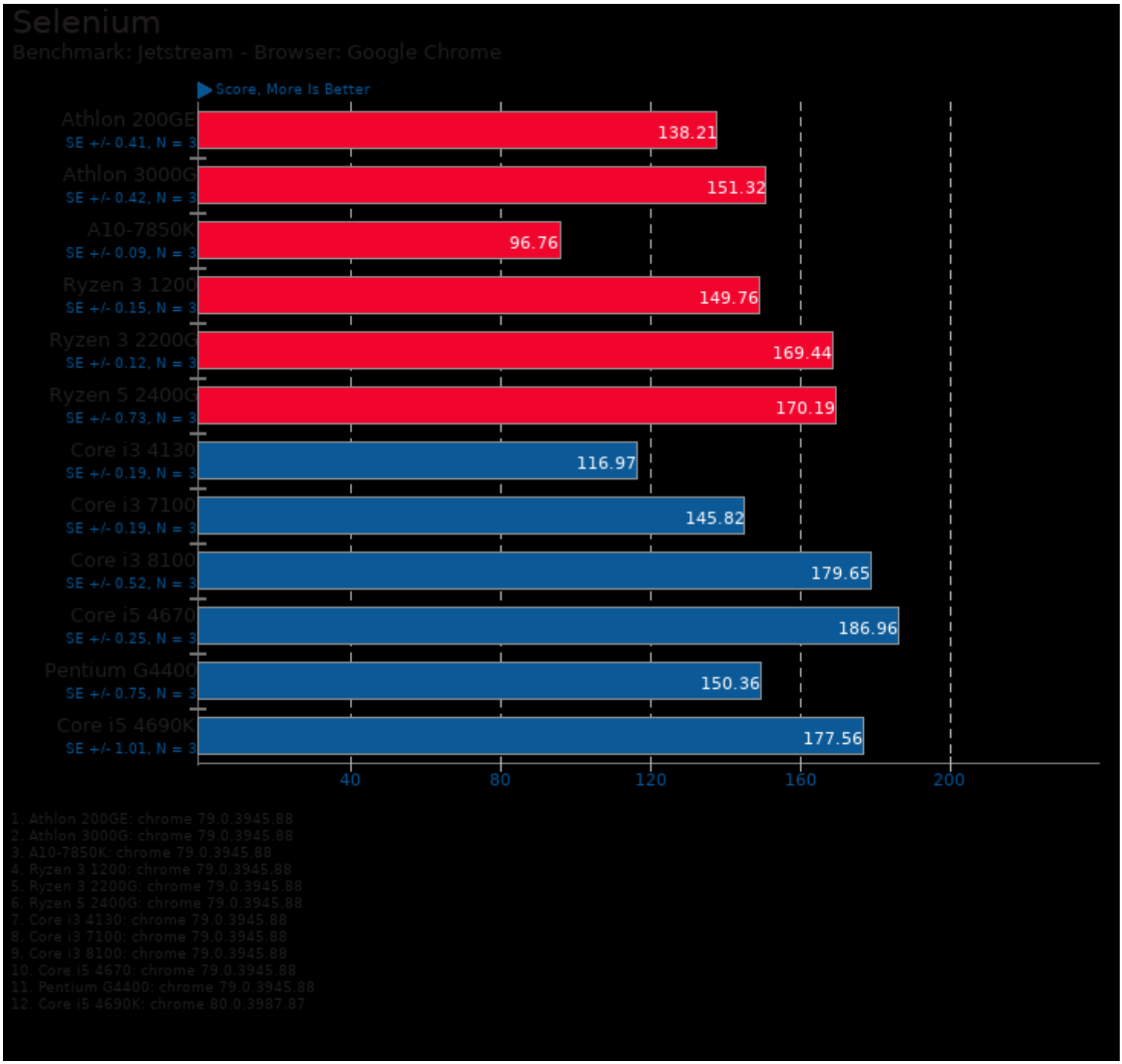

Selenium
Benchmark: Jetstream - Browser: Firefox
Score, More Is Better
Athlon 200GE
SE +/- 0.36, N = 3
136.88
Athlon 3000G
SE +/- 0.18, N = 3
147.17
A10-7850K
SE +/- 0.13, N = 3
89.87
Ryzen 3 1200
SE +/- 0.28, N = 3
143.26
Ryzen 3 2200G
SE +/- 0.51, N = 3
160.91
Ryzen 5 2400G
SE +/- 0.59, N = 3
168.96
Core i3 4130
SE +/- 0.18, N = 3
115.17
Core i3 7100
SE +/- 0.14, N = 3
161.92
Core i3 8100
SE +/- 0.10, N = 3
168.86
Core i5 4670
SE +/- 0.42, N = 3
167.60
Pentium G4400
SE +/- 0.40, N = 3
146.19
Core i5 4690K
SE +/- 0.17, N = 3
164.71
40
80
120
160
200
1. Athlon 200GE: firefox 71.0
2. Athlon 3000G: firefox 71.0
3. A10-7850K: firefox 71.0
4. Ryzen 3 1200: firefox 71.0
5. Ryzen 3 2200G: firefox 71.0
6. Ryzen 5 2400G: firefox 71.0
7. Core i3 4130: firefox 71.0
8. Core i3 7100: firefox 71.0
9. Core i3 8100: firefox 71.0
10. Core i5 4670: firefox 71.0
11. Pentium G4400: firefox 71.0
12. Core i5 4690K: firefox 72.0.2


Selenium
Benchmark: StyleBench - Browser: Firefox
Runs / Minute, More Is Better
Athlon 200GE
SE +/- 0.23, N = 3
47.3
Athlon 3000G
SE +/- 0.09, N = 3
50.3
A10-7850K
SE +/- 0.10, N = 3
35.5
Ryzen 3 1200
SE +/- 0.23, N = 3
49.2
Ryzen 3 2200G
SE +/- 0.06, N = 3
54.5
Ryzen 5 2400G
SE +/- 0.22, N = 3
65.3
Core i3 4130
SE +/- 0.28, N = 3
40.1
Core i3 7100
SE +/- 0.09, N = 3
64.9
Core i3 8100
SE +/- 0.10, N = 3
74.8
Core i5 4670
SE +/- 0.27, N = 3
69.2
Pentium G4400
SE +/- 0.12, N = 3
42.7
Core i5 4690K
SE +/- 0.48, N = 3
66.4
20
40
60
80
100
1. Athlon 200GE: firefox 71.0
2. Athlon 3000G: firefox 71.0
3. A10-7850K: firefox 71.0
4. Ryzen 3 1200: firefox 71.0
5. Ryzen 3 2200G: firefox 71.0
6. Ryzen 5 2400G: firefox 71.0
7. Core i3 4130: firefox 71.0
8. Core i3 7100: firefox 71.0
9. Core i3 8100: firefox 71.0
10. Core i5 4670: firefox 71.0
11. Pentium G4400: firefox 71.0
12. Core i5 4690K: firefox 72.0.2

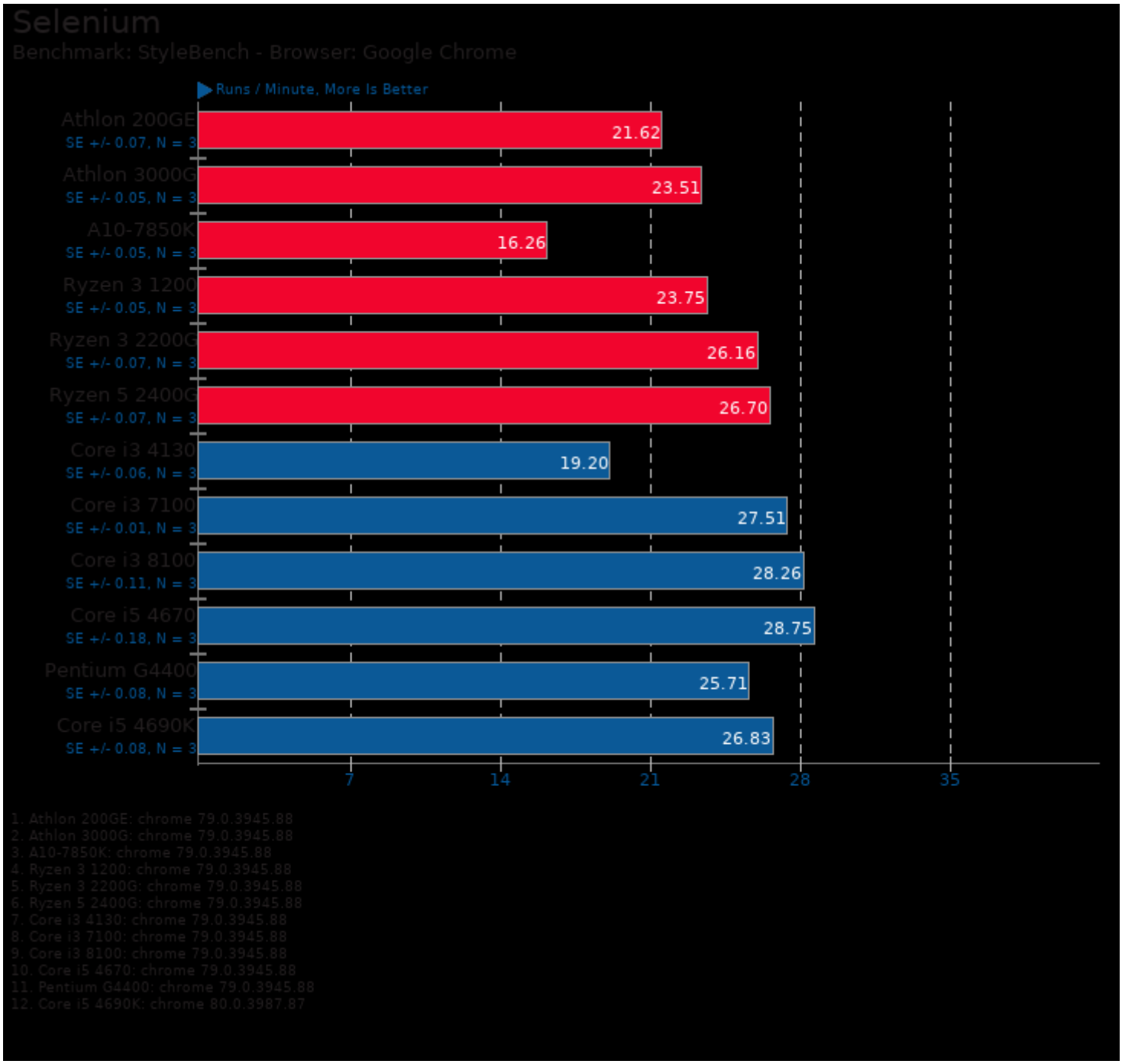

Selenium
Benchmark: Speedometer - Browser: Firefox
Runs Per Minute, More Is Better
Athlon 200GE
SE +/- 0.21, N = 3
49.74
Athlon 3000G
SE +/- 0.13, N = 3
53.90
A10-7850K
SE +/- 0.33, N = 3
39.00
Ryzen 3 1200
SE +/- 0.21, N = 3
53.10
Ryzen 3 2200G
SE +/- 0.12, N = 3
60.80
Ryzen 5 2400G
SE +/- 0.09, N = 3
62.60
Core i3 4130
SE +/- 0.18, N = 3
38.00
Core i3 7100
SE +/- 0.00, N = 3
64.50
Core i3 8100
SE +/- 0.27, N = 3
75.58
Core i5 4670
SE +/- 0.06, N = 3
71.80
Pentium G4400
SE +/- 0.12, N = 3
60.73
Core i5 4690K
SE +/- 0.22, N = 3
71.10
20
40
60
80
100
1. Athlon 200GE: firefox 71.0
2. Athlon 3000G: firefox 71.0
3. A10-7850K: firefox 71.0
4. Ryzen 3 1200: firefox 71.0
5. Ryzen 3 2200G: firefox 71.0
6. Ryzen 5 2400G: firefox 71.0
7. Core i3 4130: firefox 71.0
8. Core i3 7100: firefox 71.0
9. Core i3 8100: firefox 71.0
10. Core i5 4670: firefox 71.0
11. Pentium G4400: firefox 71.0
12. Core i5 4690K: firefox 72.0.2


Selenium
Benchmark: ARES-6 - Browser: Google Chrome
ms, Fewer Is Better
Athlon 200GE
SE +/- 0.45, N = 3
35.23
Athlon 3000G
SE +/- 0.36, N = 3
32.86
A10-7850K
SE +/- 0.17, N = 3
47.91
Ryzen 3 1200
SE +/- 0.09, N = 3
30.44
Ryzen 3 2200G
SE +/- 0.02, N = 3
26.57
Ryzen 5 2400G
SE +/- 0.16, N = 3
27.59
Core i3 4130
SE +/- 0.27, N = 3
42.40
Core i3 7100
SE +/- 0.08, N = 3
33.05
Core i3 8100
SE +/- 0.06, N = 3
23.25
Core i5 4670
SE +/- 0.12, N = 3
23.32
Pentium G4400
SE +/- 0.20, N = 3
31.57
Core i5 4690K
SE +/- 0.14, N = 3
25.20
11
22
33
44
55
1. Athlon 200GE: chrome 79.0.3945.88
2. Athlon 3000G: chrome 79.0.3945.88
3. A10-7850K: chrome 79.0.3945.88
4. Ryzen 3 1200: chrome 79.0.3945.88
5. Ryzen 3 2200G: chrome 79.0.3945.88
6. Ryzen 5 2400G: chrome 79.0.3945.88
7. Core i3 4130: chrome 79.0.3945.88
8. Core i3 7100: chrome 79.0.3945.88
9. Core i3 8100: chrome 79.0.3945.88
10. Core i5 4670: chrome 79.0.3945.88
11. Pentium G4400: chrome 79.0.3945.88
12. Core i5 4690K: chrome 80.0.3987.87

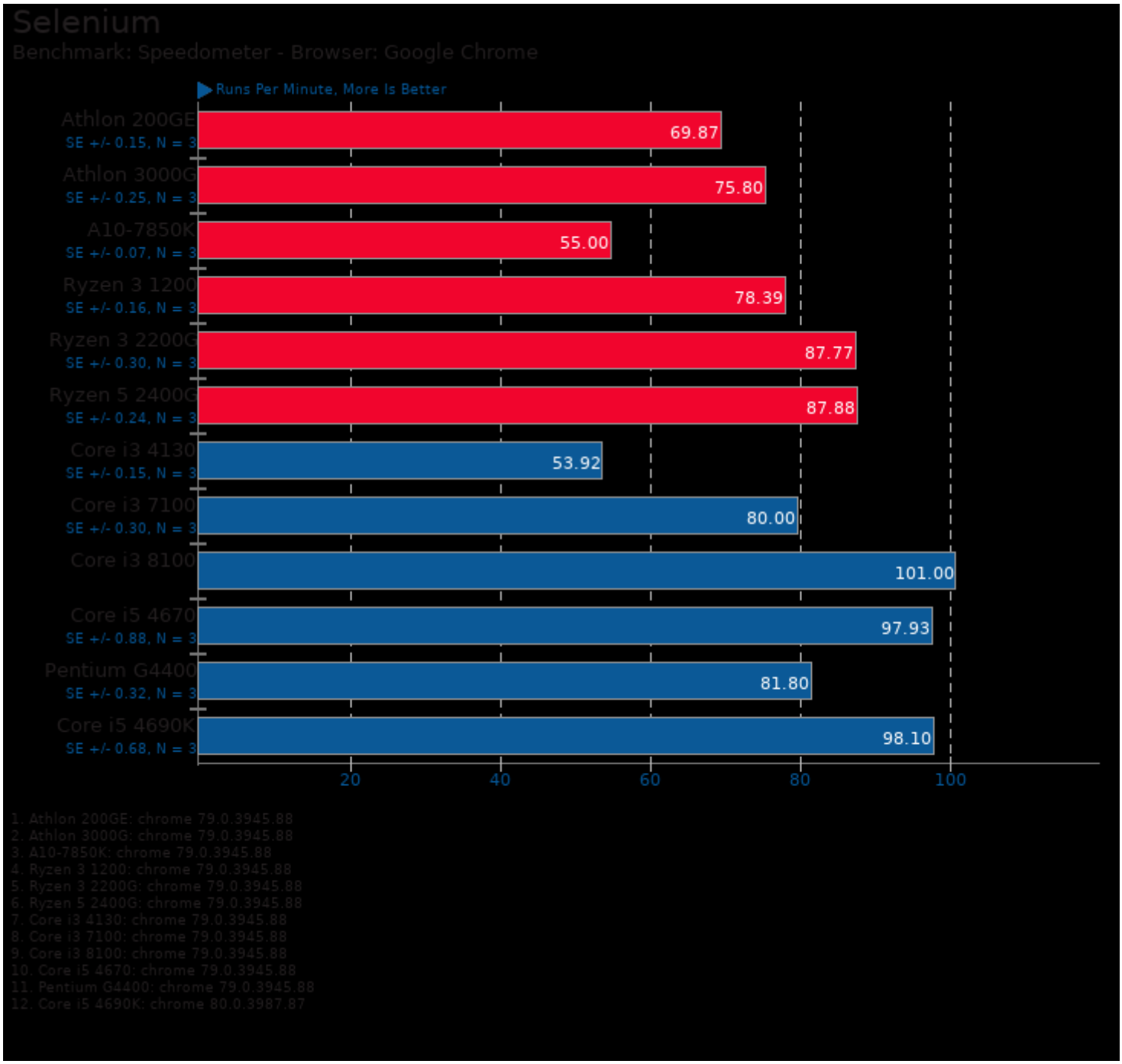

Selenium
Benchmark: PSPDFKit WASM - Browser: Firefox
Score, Fewer Is Better
Athlon 200GE
SE +/- 21.08, N = 3
2449
Athlon 3000G
SE +/- 8.51, N = 3
2241
A10-7850K
SE +/- 8.35, N = 3
2926
Ryzen 3 1200
SE +/- 2.85, N = 3
2145
Ryzen 3 2200G
SE +/- 6.56, N = 3
1888
Ryzen 5 2400G
SE +/- 8.19, N = 3
1876
Core i3 4130
SE +/- 10.73, N = 3
2897
Core i3 7100
SE +/- 8.84, N = 3
1839
Core i3 8100
SE +/- 5.69, N = 3
1660
Core i5 4670
SE +/- 6.12, N = 3
1777
Pentium G4400
SE +/- 61.59, N = 3
6109
Core i5 4690K
SE +/- 3.71, N = 3
1831
1300
2600
3900
5200
6500
1. Athlon 200GE: firefox 71.0
2. Athlon 3000G: firefox 71.0
3. A10-7850K: firefox 71.0
4. Ryzen 3 1200: firefox 71.0
5. Ryzen 3 2200G: firefox 71.0
6. Ryzen 5 2400G: firefox 71.0
7. Core i3 4130: firefox 71.0
8. Core i3 7100: firefox 71.0
9. Core i3 8100: firefox 71.0
10. Core i5 4670: firefox 71.0
11. Pentium G4400: firefox 71.0
12. Core i5 4690K: firefox 72.0.2

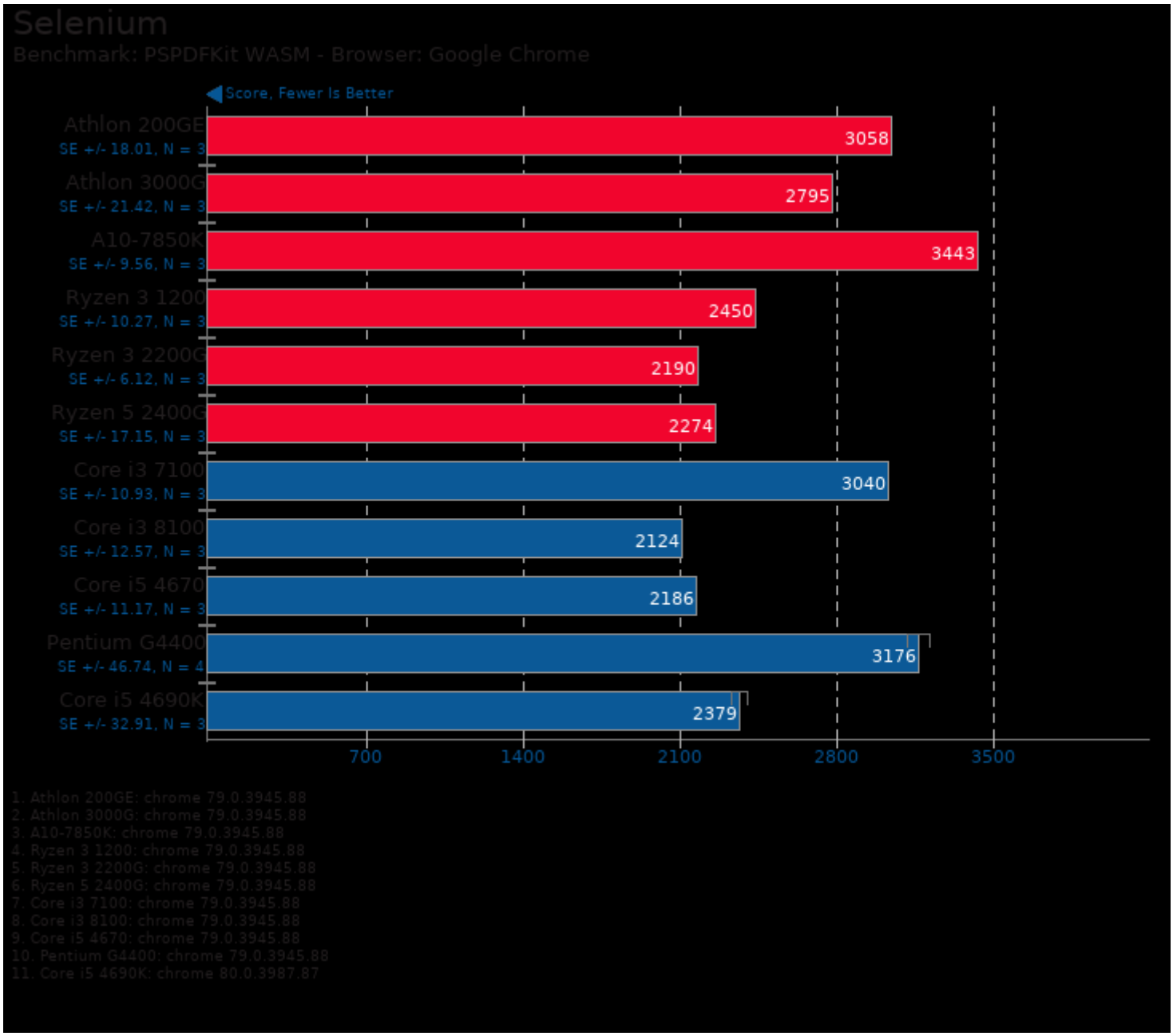

Selenium
Benchmark: Jetstream - Browser: Google Chrome
Score, More Is Better
Athlon 200GE
SE +/- 0.41, N = 3
138.21
Athlon 3000G
SE +/- 0.42, N = 3
151.32
A10-7850K
SE +/- 0.09, N = 3
96.76
Ryzen 3 1200
SE +/- 0.15, N = 3
149.76
Ryzen 3 2200G
SE +/- 0.12, N = 3
169.44
Ryzen 5 2400G
SE +/- 0.73, N = 3
170.19
Core i3 4130
SE +/- 0.19, N = 3
116.97
Core i3 7100
SE +/- 0.19, N = 3
145.82
Core i3 8100
SE +/- 0.52, N = 3
179.65
Core i5 4670
SE +/- 0.25, N = 3
186.96
Pentium G4400
SE +/- 0.75, N = 3
150.36
Core i5 4690K
SE +/- 1.01, N = 3
177.56
40
80
120
160
200
1. Athlon 200GE: chrome 79.0.3945.88
2. Athlon 3000G: chrome 79.0.3945.88
3. A10-7850K: chrome 79.0.3945.88
4. Ryzen 3 1200: chrome 79.0.3945.88
5. Ryzen 3 2200G: chrome 79.0.3945.88
6. Ryzen 5 2400G: chrome 79.0.3945.88
7. Core i3 4130: chrome 79.0.3945.88
8. Core i3 7100: chrome 79.0.3945.88
9. Core i3 8100: chrome 79.0.3945.88
10. Core i5 4670: chrome 79.0.3945.88
11. Pentium G4400: chrome 79.0.3945.88
12. Core i5 4690K: chrome 80.0.3987.87

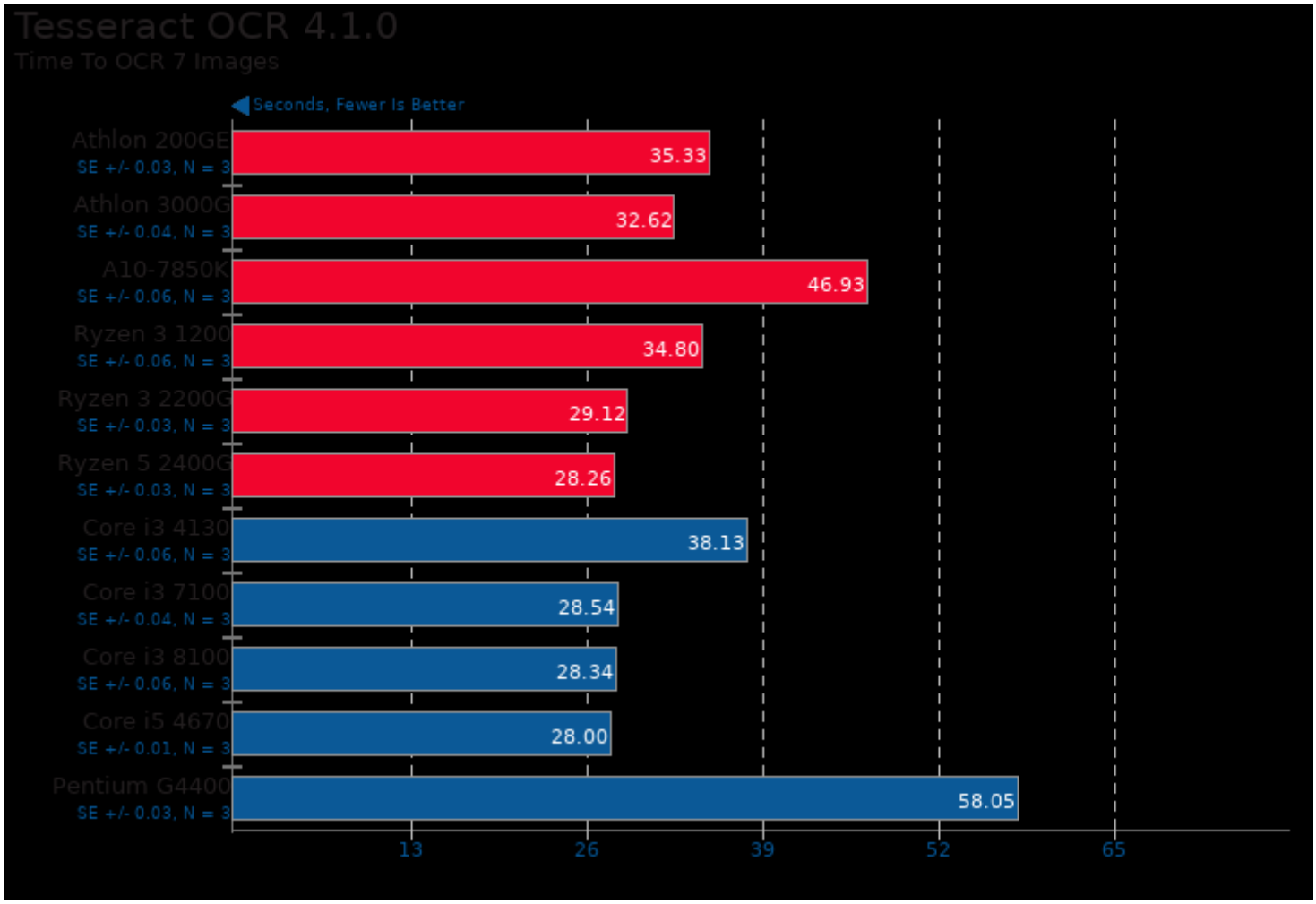
Low-End EOY2019 Ubuntu Linux CPU Comparison



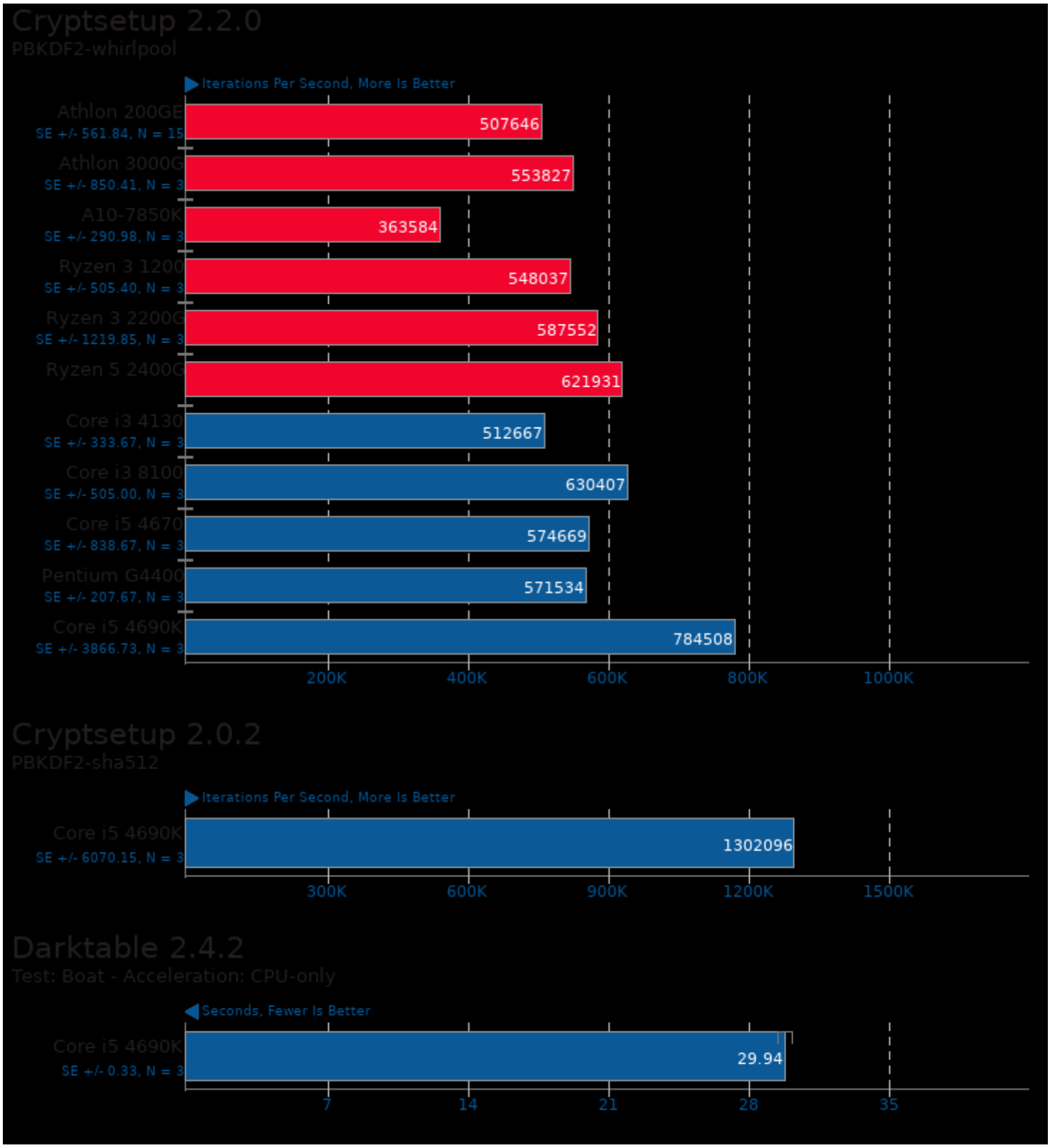
Low-End EOY2019 Ubuntu Linux CPU Comparison



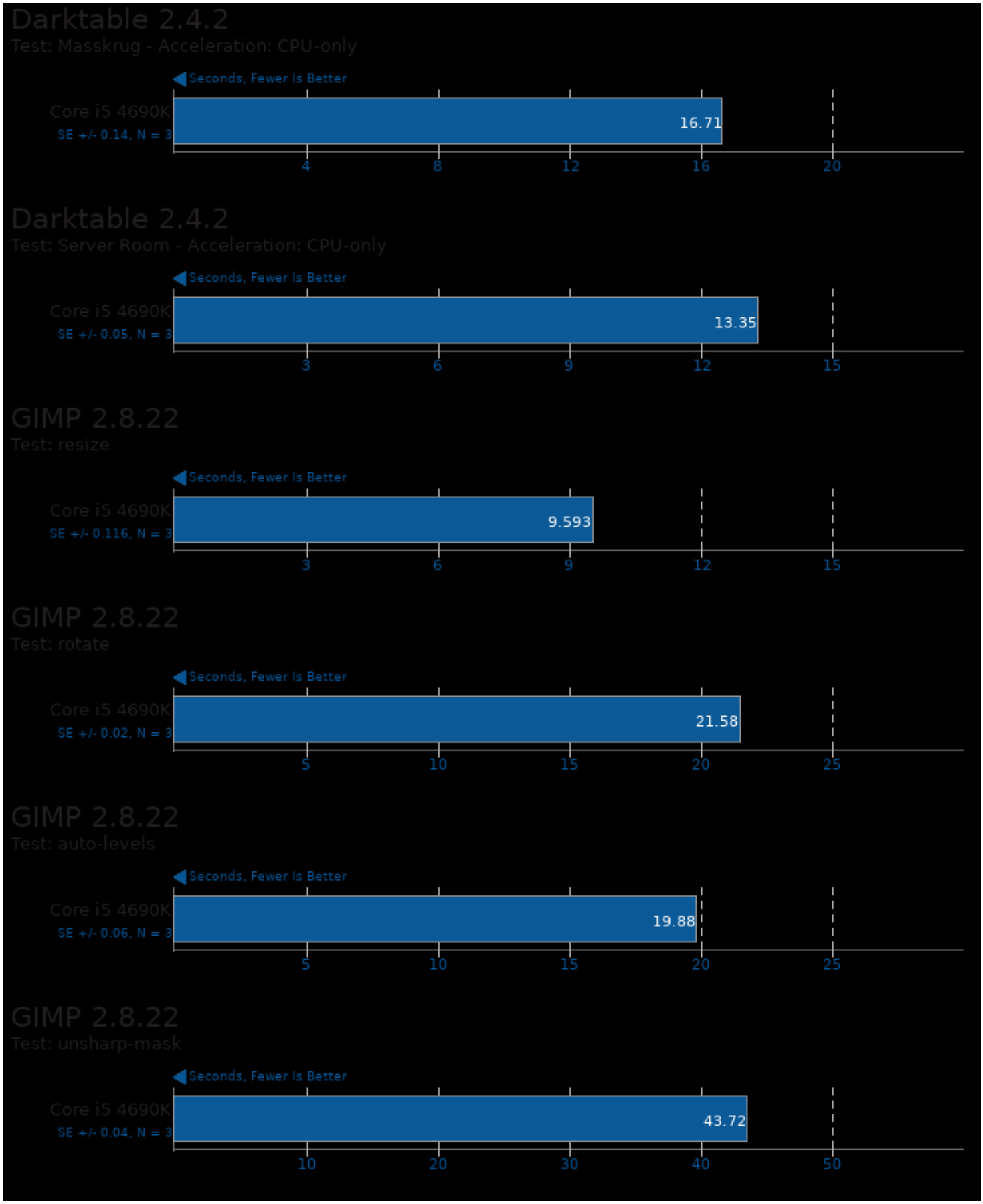

Selenium
Benchmark: PSPDFKit WASM - Browser: Google Chrome
Score, Fewer Is Better
Athlon 200GE
SE +/- 18.01, N = 3
3058
Athlon 3000G
SE +/- 21.42, N = 3
2795
A10-7850K
SE +/- 9.56, N = 3
3443
Ryzen 3 1200
SE +/- 10.27, N = 3
2450
Ryzen 3 2200G
SE +/- 6.12, N = 3
2190
Ryzen 5 2400G
SE +/- 17.15, N = 3
2274
Core i3 7100
SE +/- 10.93, N = 3
3040
Core i3 8100
SE +/- 12.57, N = 3
2124
Core i5 4670
SE +/- 11.17, N = 3
2186
Pentium G4400
SE +/- 46.74, N = 4
3176
Core i5 4690K
SE +/- 32.91, N = 3
2379
700
1400
2100
2800
3500
1. Athlon 200GE: chrome 79.0.3945.88
2. Athlon 3000G: chrome 79.0.3945.88
3. A10-7850K: chrome 79.0.3945.88
4. Ryzen 3 1200: chrome 79.0.3945.88
5. Ryzen 3 2200G: chrome 79.0.3945.88
6. Ryzen 5 2400G: chrome 79.0.3945.88
7. Core i3 7100: chrome 79.0.3945.88
8. Core i3 8100: chrome 79.0.3945.88
9. Core i5 4670: chrome 79.0.3945.88
10. Pentium G4400: chrome 79.0.3945.88
11. Core i5 4690K: chrome 80.0.3987.87


Tesseract OCR 4.1.0
Time To OCR 7 Images
Seconds, Fewer Is Better
Athlon 200GE
SE +/- 0.03, N = 3
35.33
Athlon 3000G
SE +/- 0.04, N = 3
32.62
A10-7850K
SE +/- 0.06, N = 3
46.93
Ryzen 3 1200
SE +/- 0.06, N = 3
34.80
Ryzen 3 2200G
SE +/- 0.03, N = 3
29.12
Ryzen 5 2400G
SE +/- 0.03, N = 3
28.26
Core i3 4130
SE +/- 0.06, N = 3
38.13
Core i3 7100
SE +/- 0.04, N = 3
28.54
Core i3 8100
SE +/- 0.06, N = 3
28.34
Core i5 4670
SE +/- 0.01, N = 3
28.00
Pentium G4400
SE +/- 0.03, N = 3
58.05
13
26
39
52
65

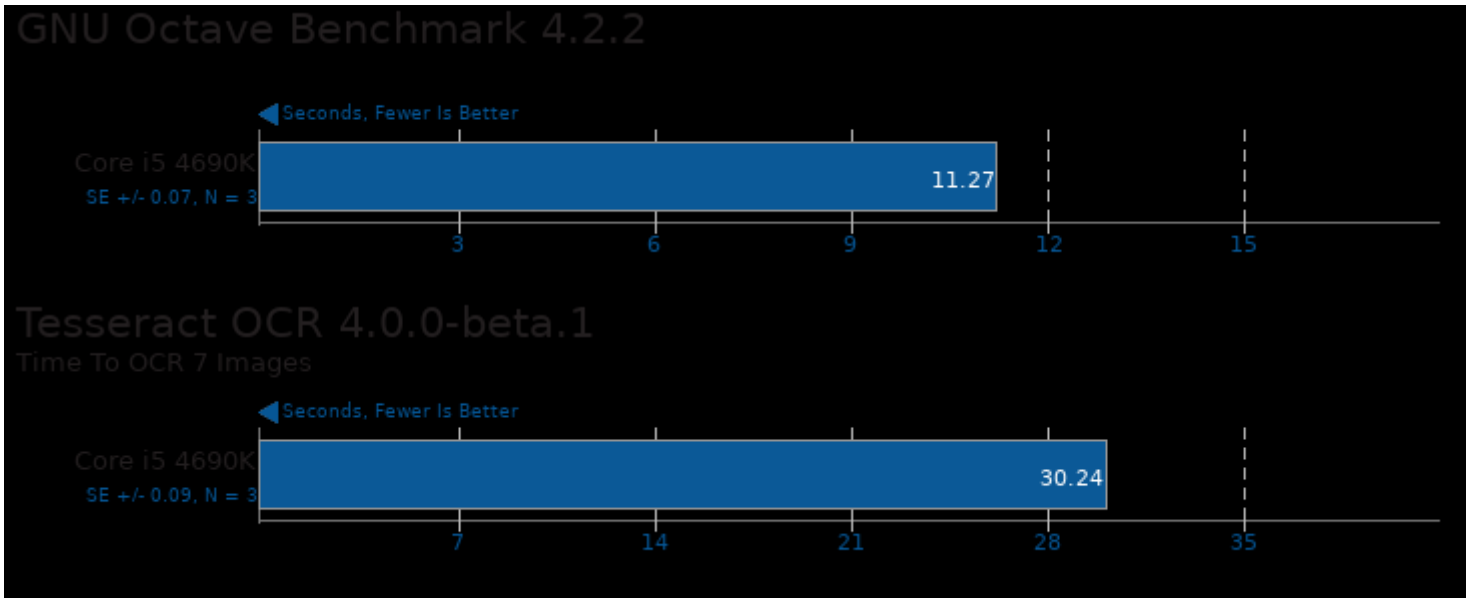
Low-End EOY2019 Ubuntu Linux CPU Comparison



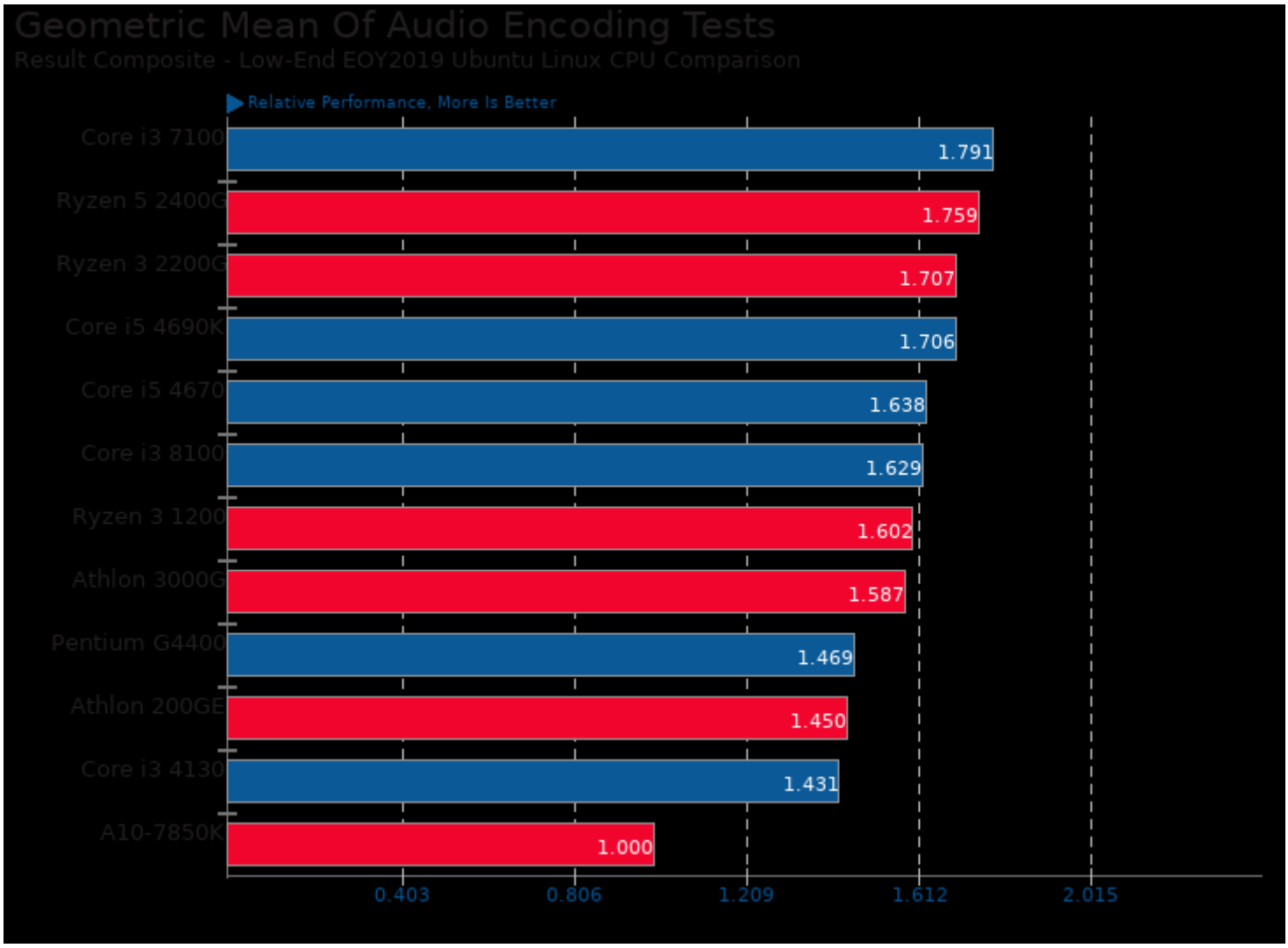
Low-End EOY2019 Ubuntu Linux CPU Comparison



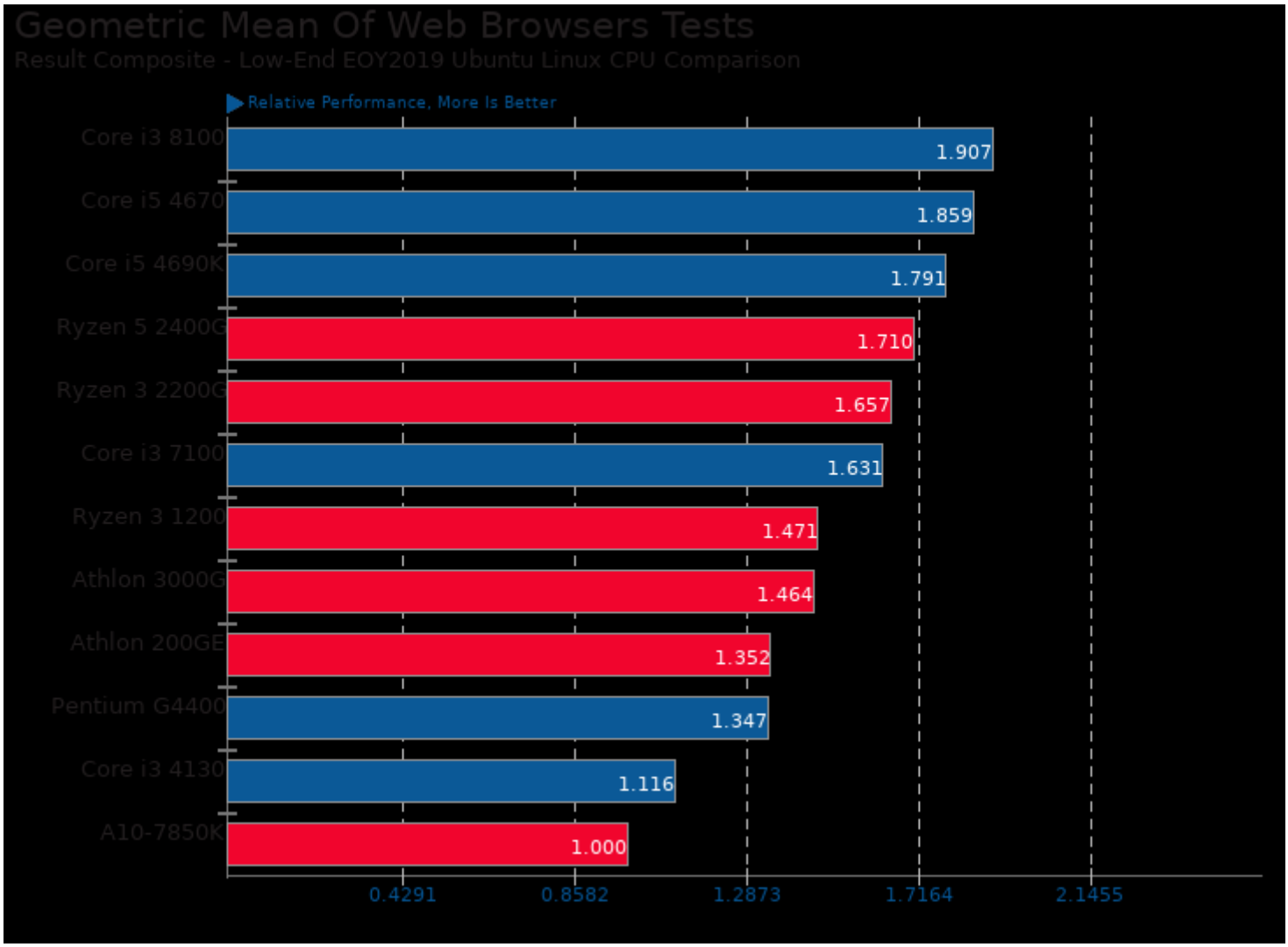
Low-End EOY2019 Ubuntu Linux CPU Comparison



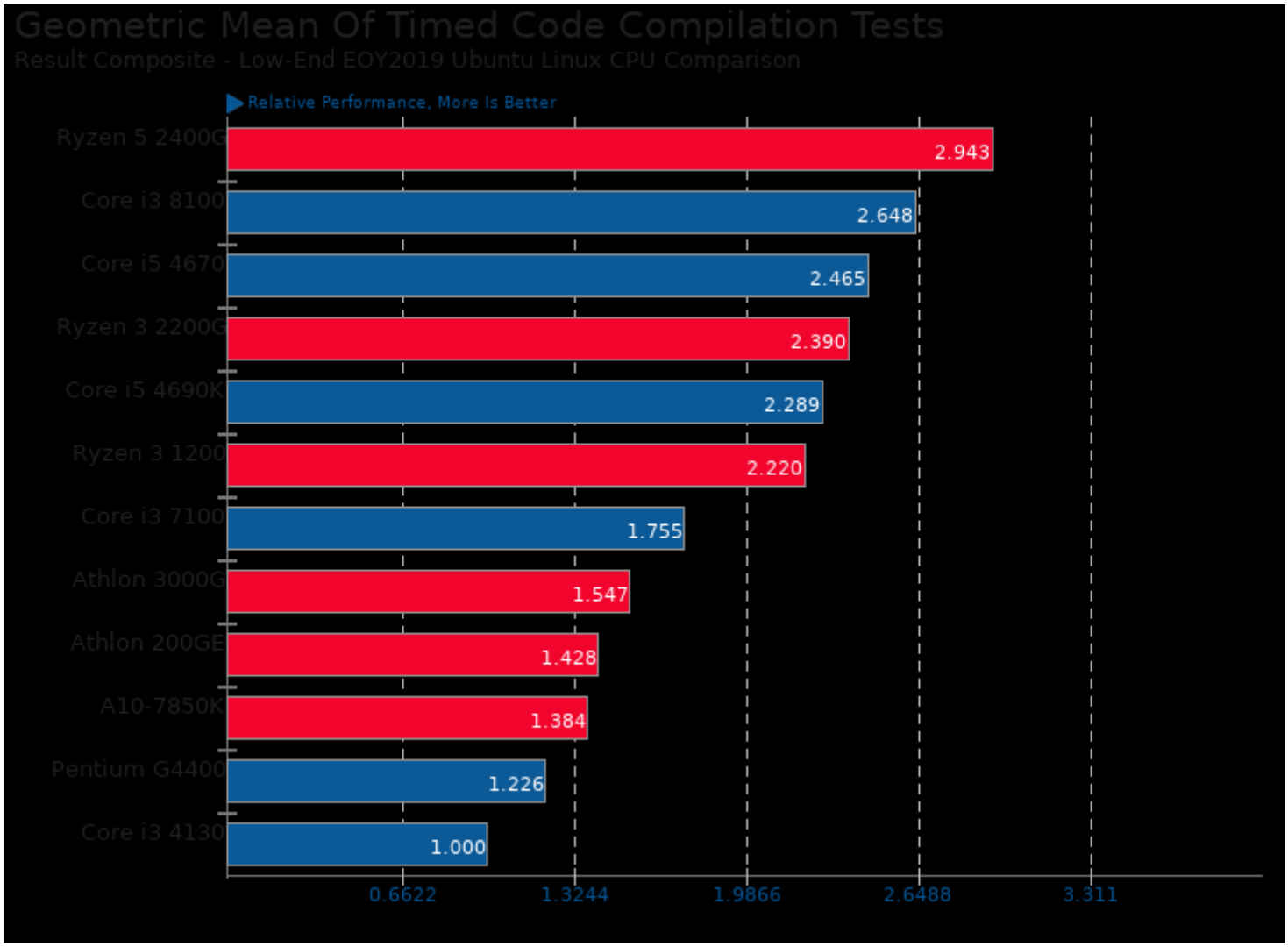
These geometric means are based upon test groupings / test suites for this result file.



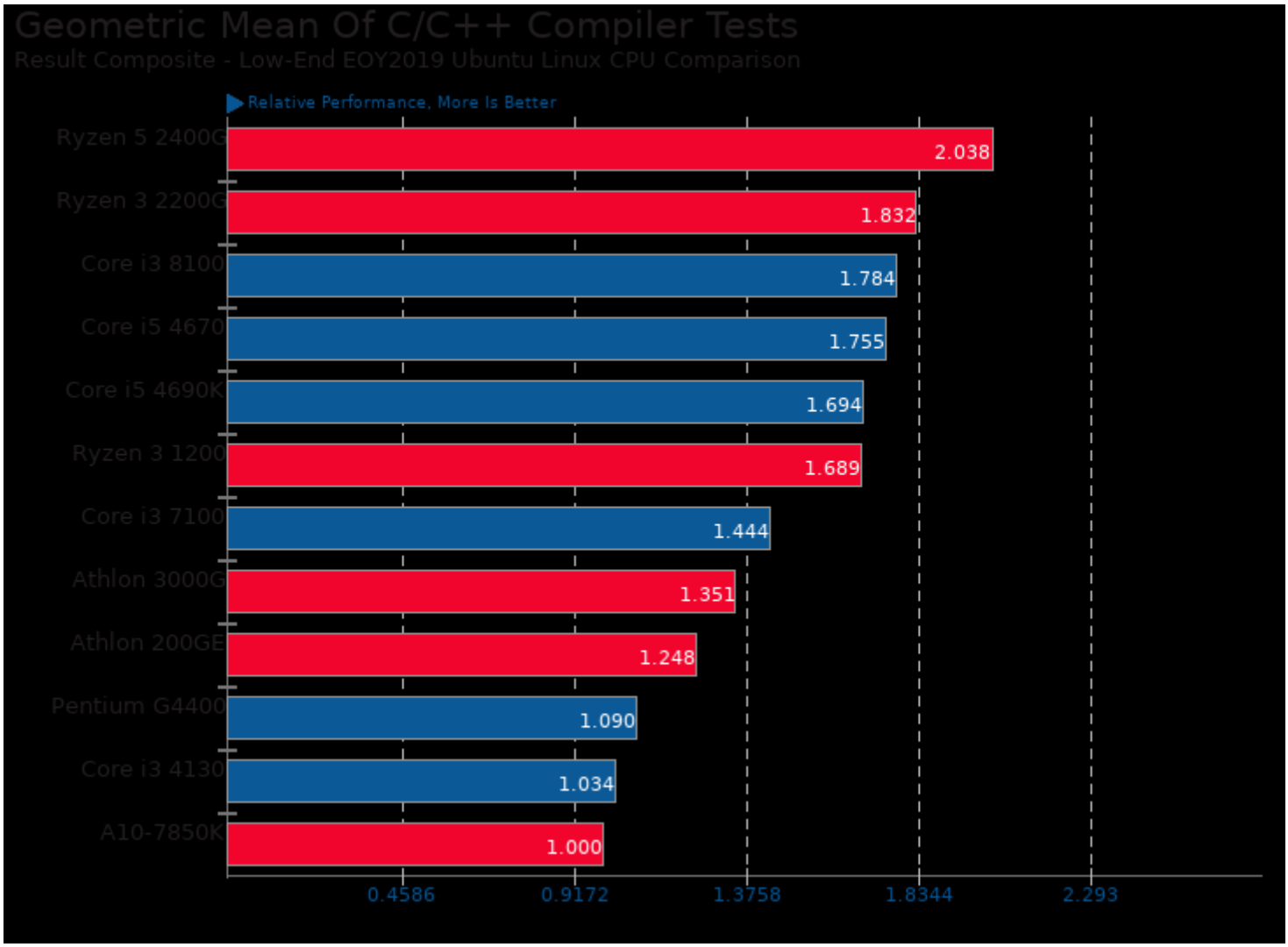
Geometric mean based upon tests: pts/encode-mp3 and pts/encode-flac



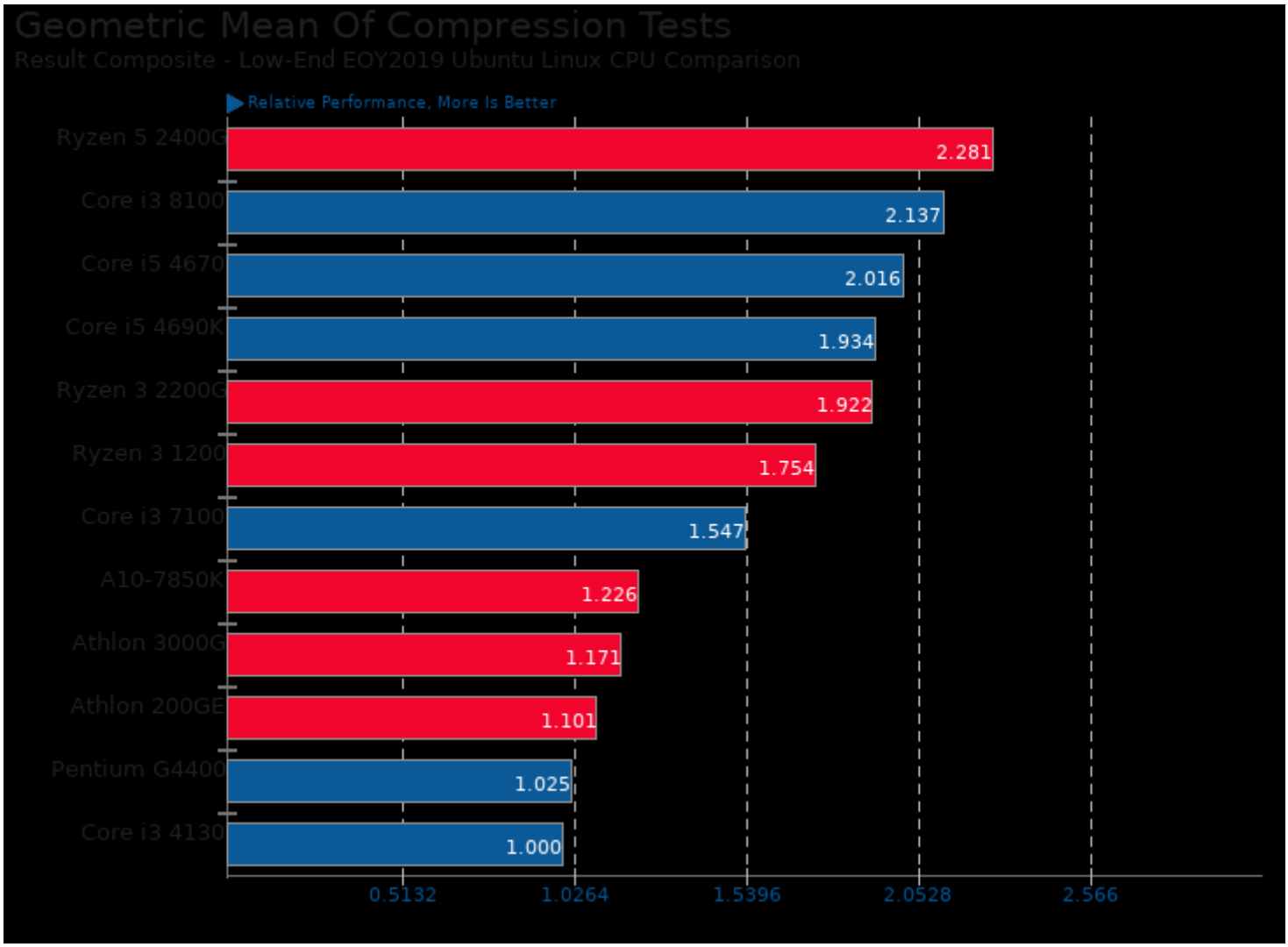
Geometric mean based upon tests: system/selenium



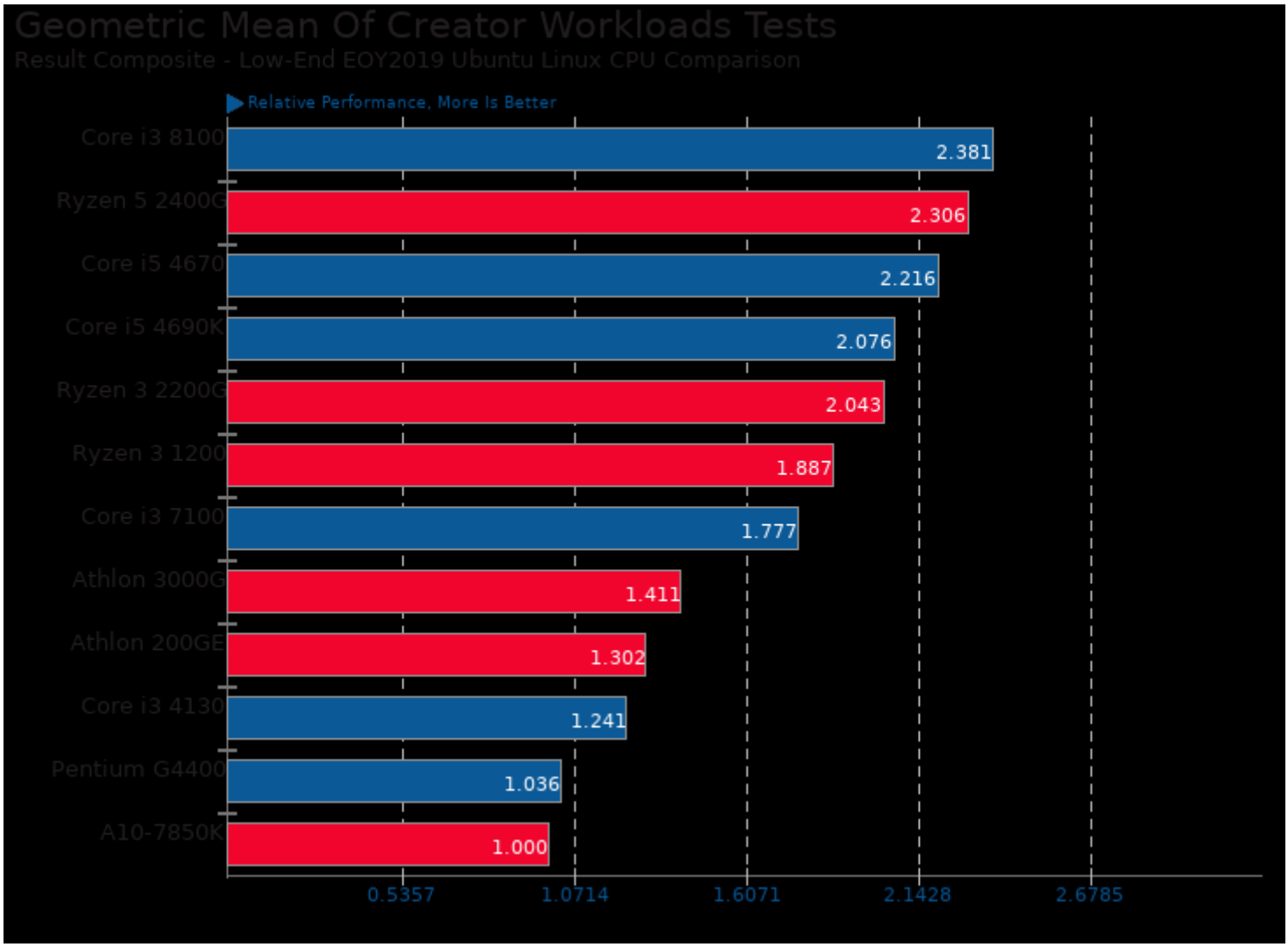
Geometric mean based upon tests: pts/build-linux-kernel and pts/build2



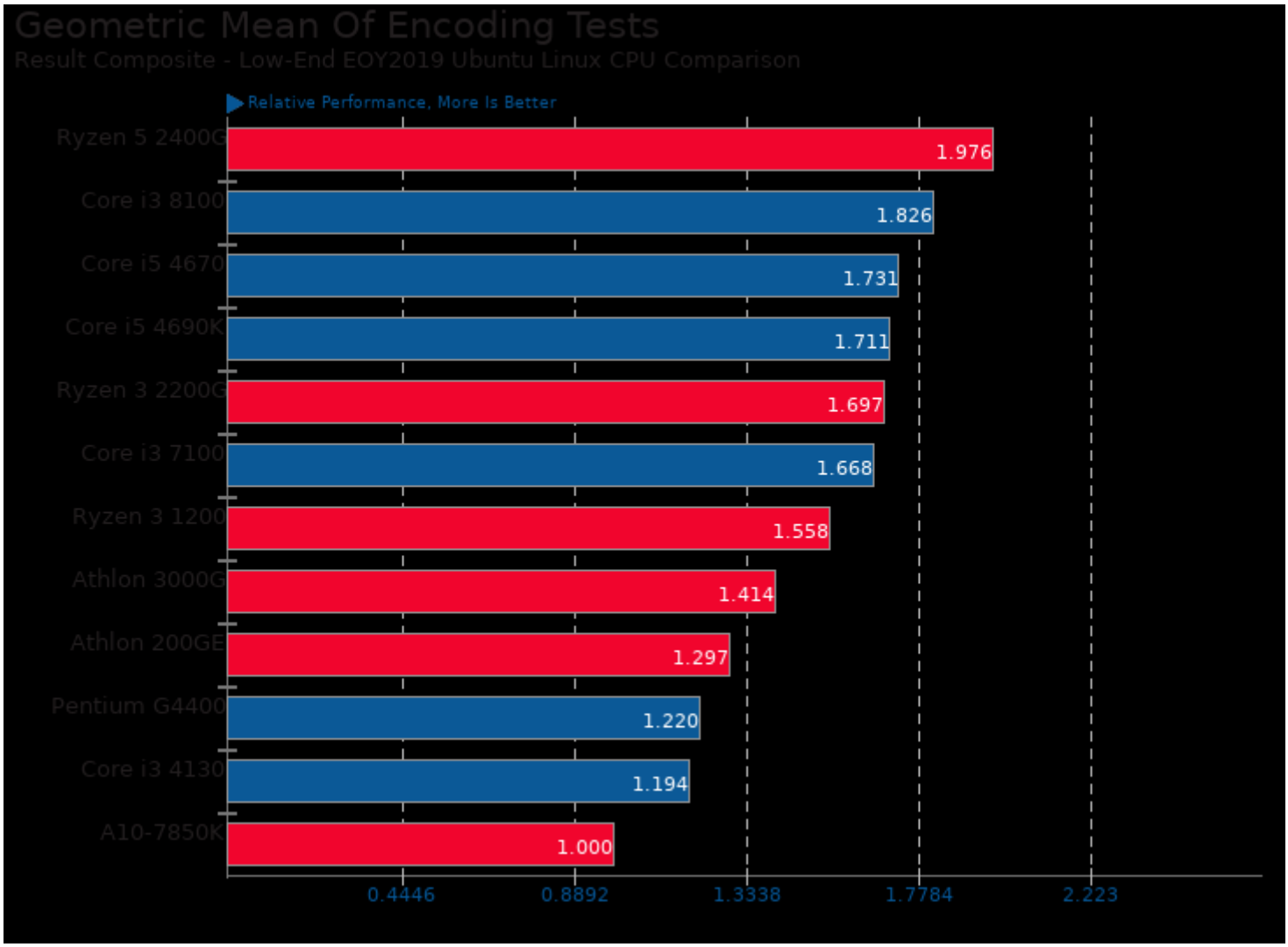
Geometric mean based upon tests: pts/graphics-magick, pts/himeno, pts/compress-7zip, pts/encode-mp3, pts/encode-flac, pts/sqlite-speedtest, pts/dav1d, pts/x264, pts/compress-zstd and pts/svt-vp9



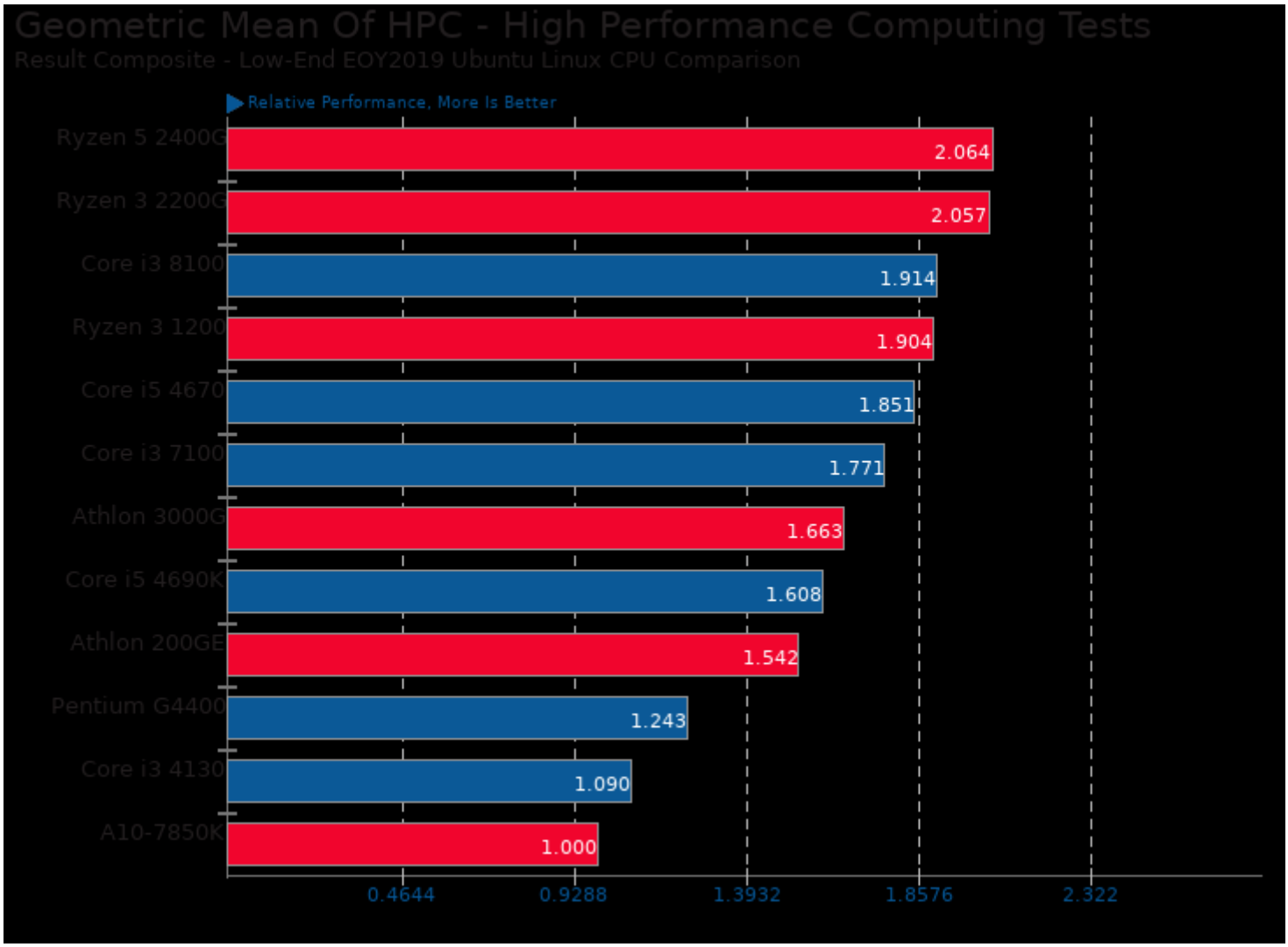
Geometric mean based upon tests: pts/compress-7zip and pts/compress-zstd



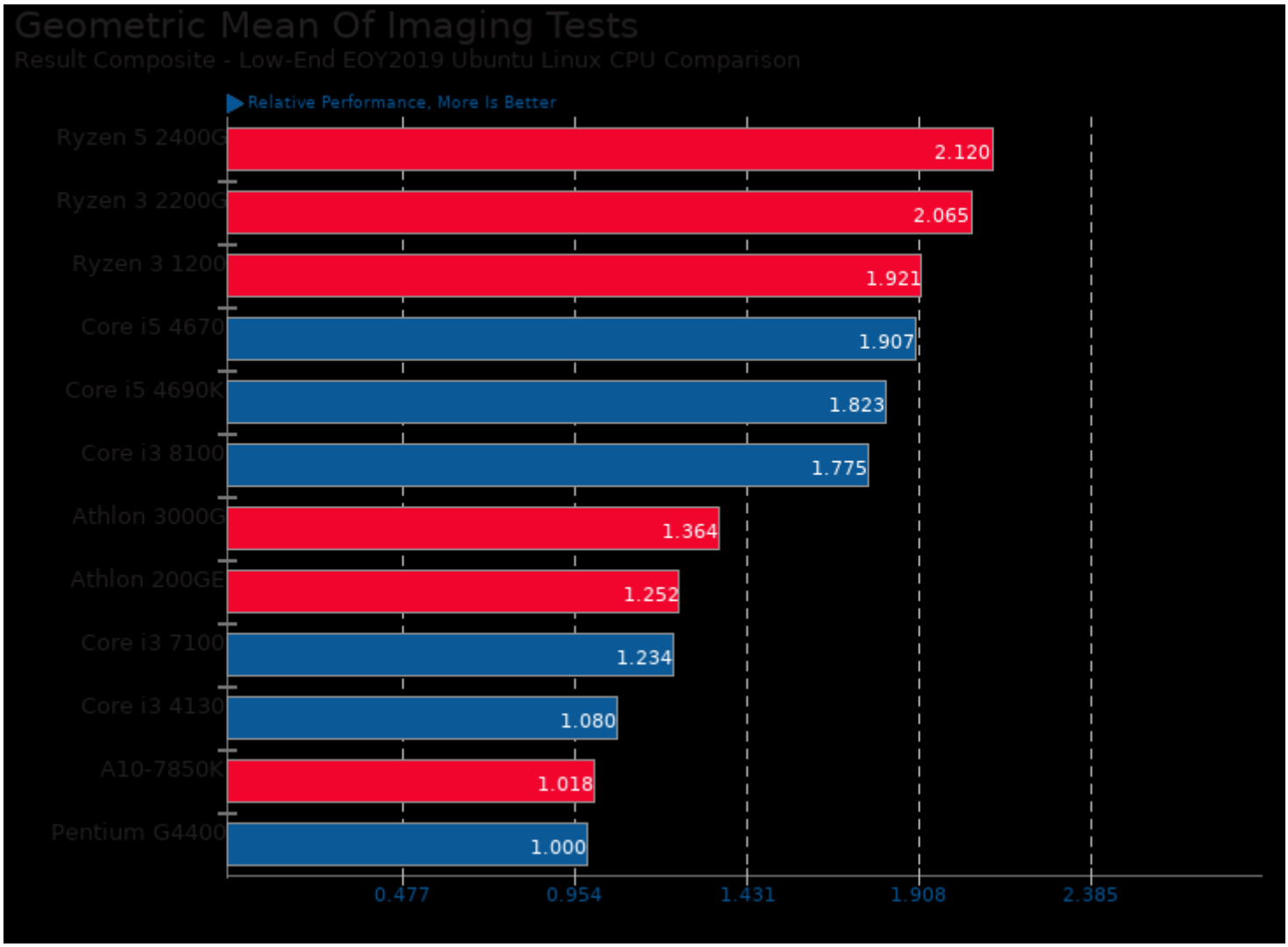
Geometric mean based upon tests: pts/ospray, pts/radiance, system/tesseract-ocr, pts/svt-vp9, pts/x264, pts/dav1d, pts/encode-mp3, pts/encode-flac, pts/graphics-magick, pts/tjbench, system/gimp, system/darktable, pts/embree, pts/oidn, pts/neatbench and pts/deepspeech



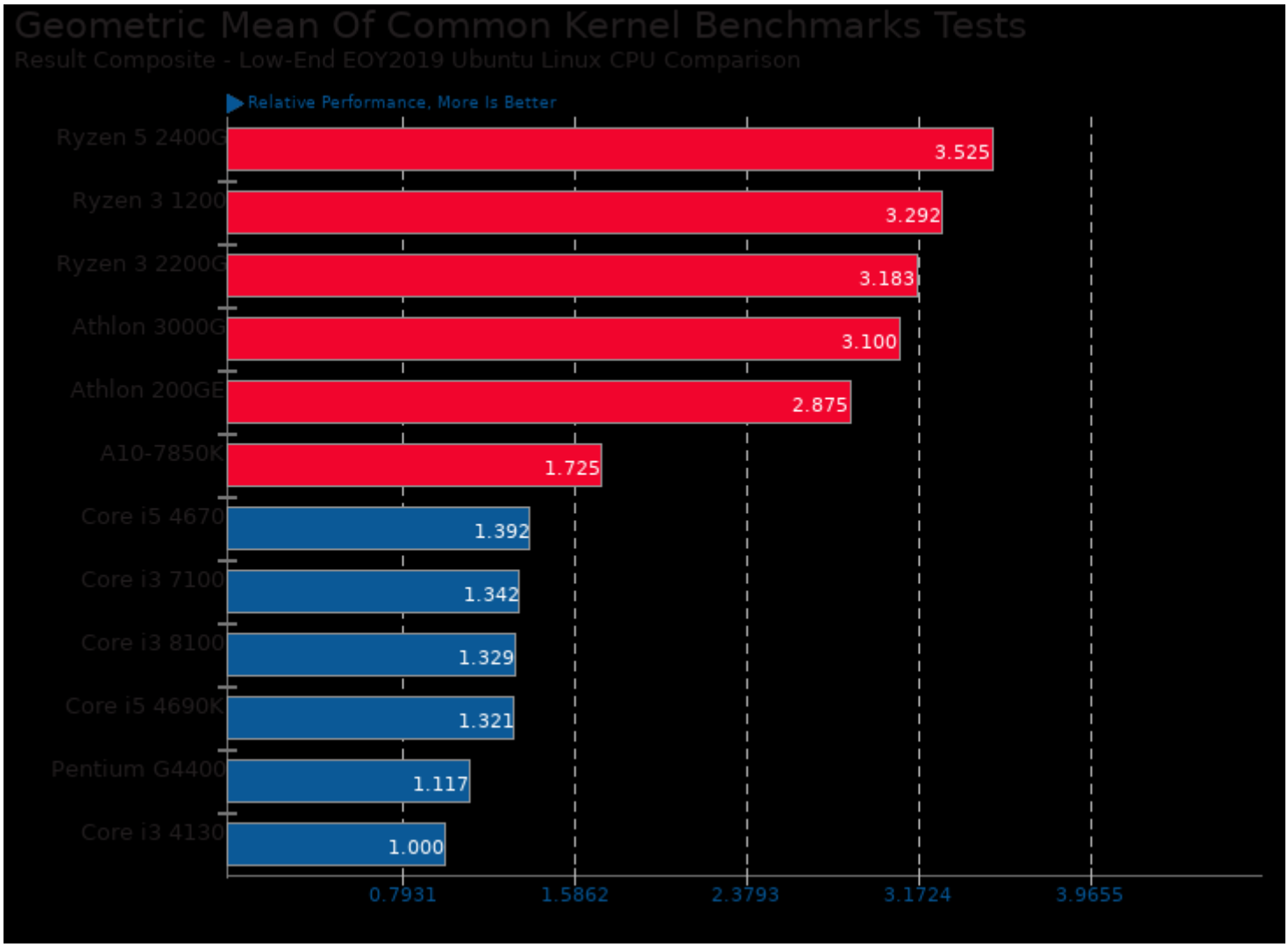
Geometric mean based upon tests: pts/encode-mp3, pts/encode-flac, pts/svt-vp9, pts/x264 and pts/dav1d



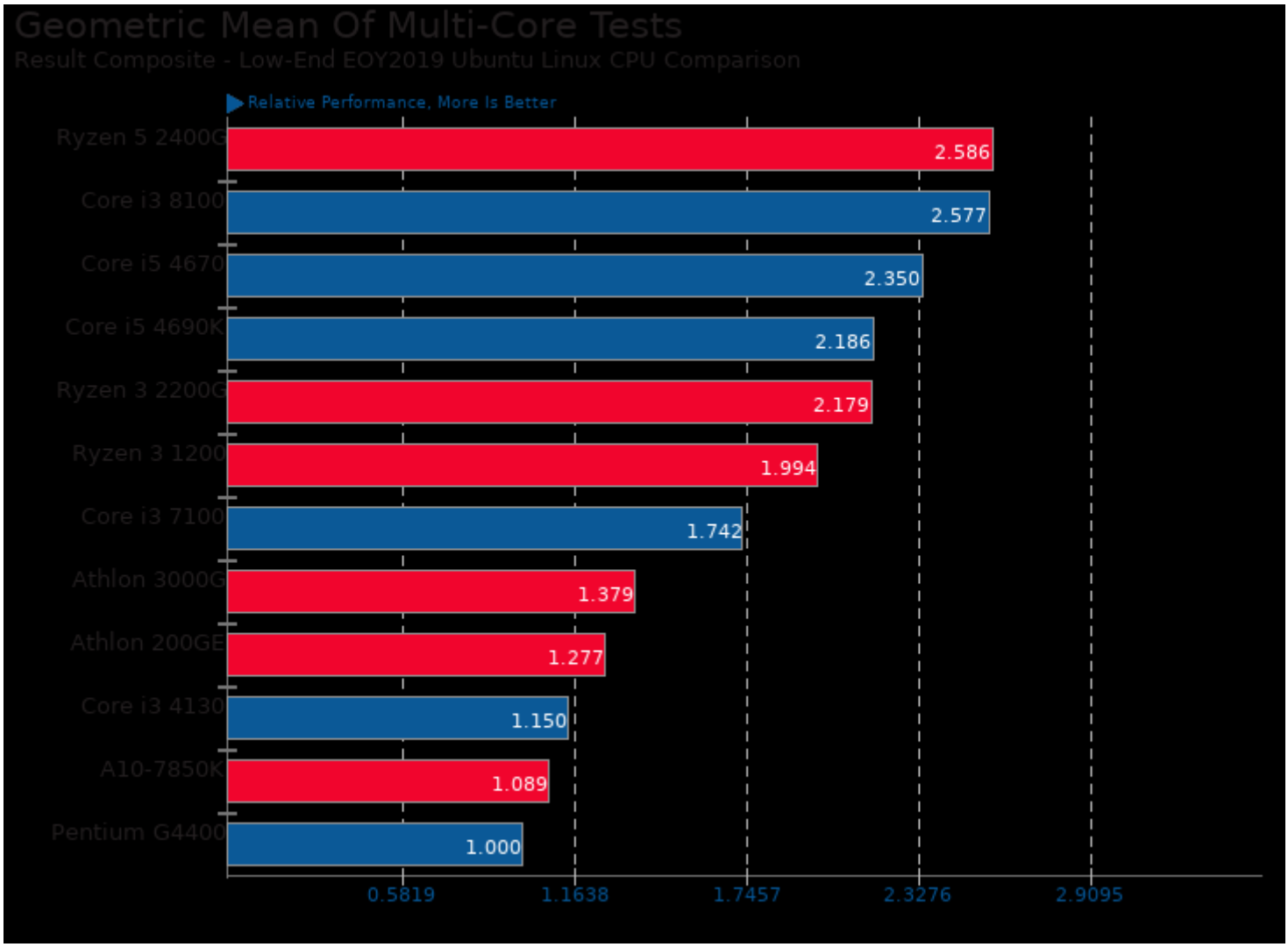
Geometric mean based upon tests: system/octave-benchmark, pts/himeno, pts/rbenchmark and pts/deepspeech



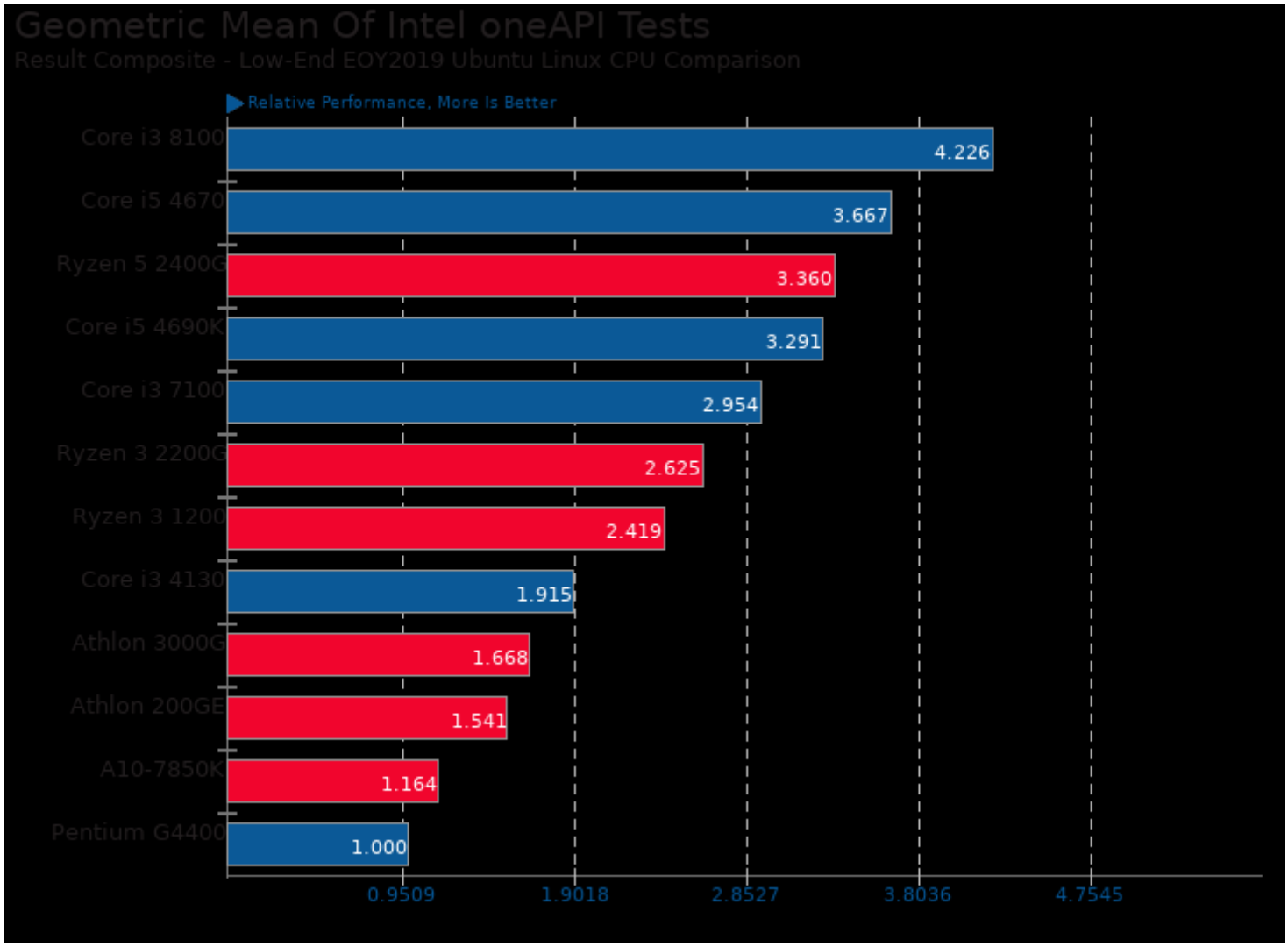
Geometric mean based upon tests: pts/graphics-magick, pts/tjbench, system/gimp and system/darktable



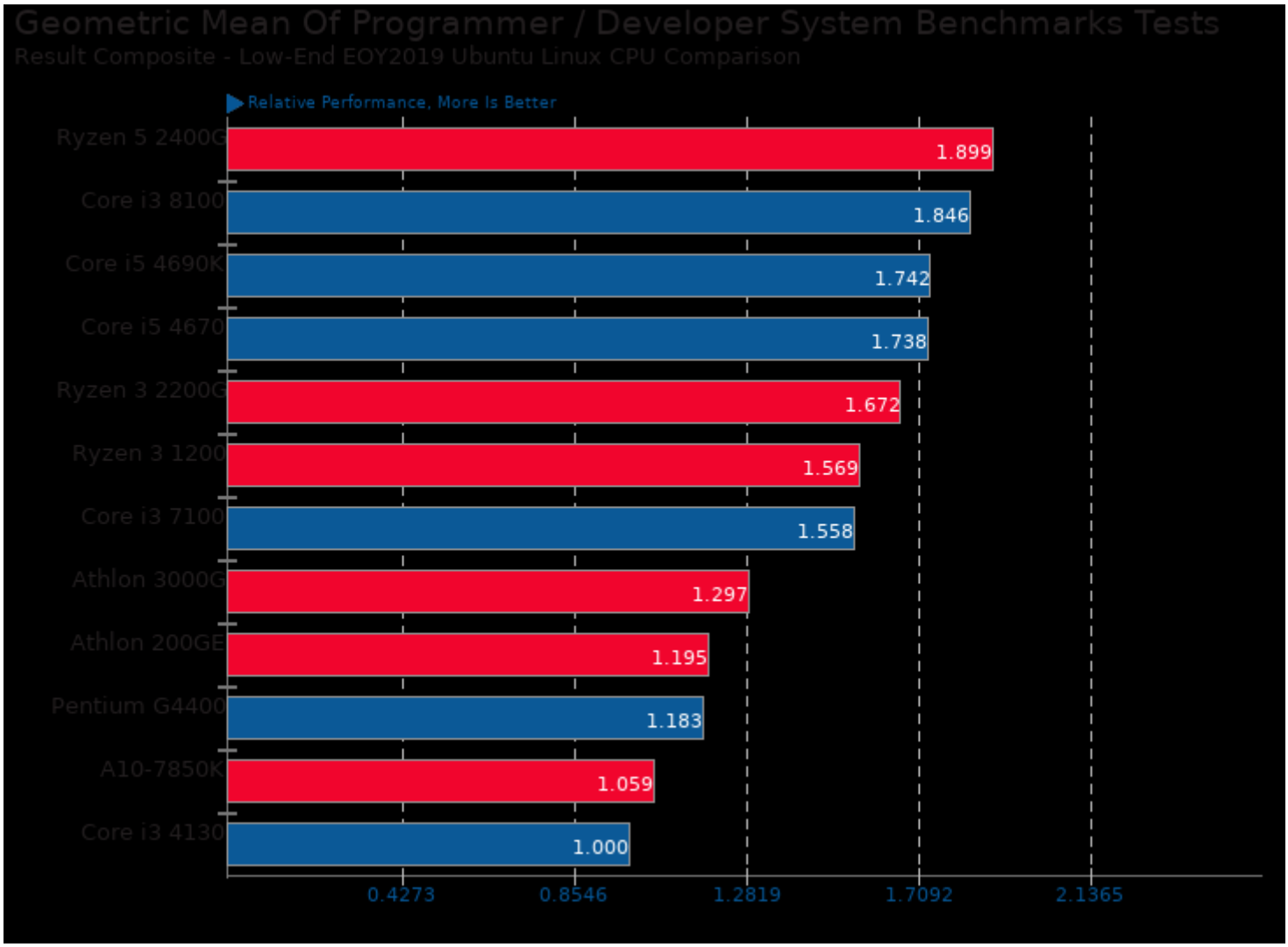
Geometric mean based upon tests: pts/sqlite-speedtest and pts/ctx-clock



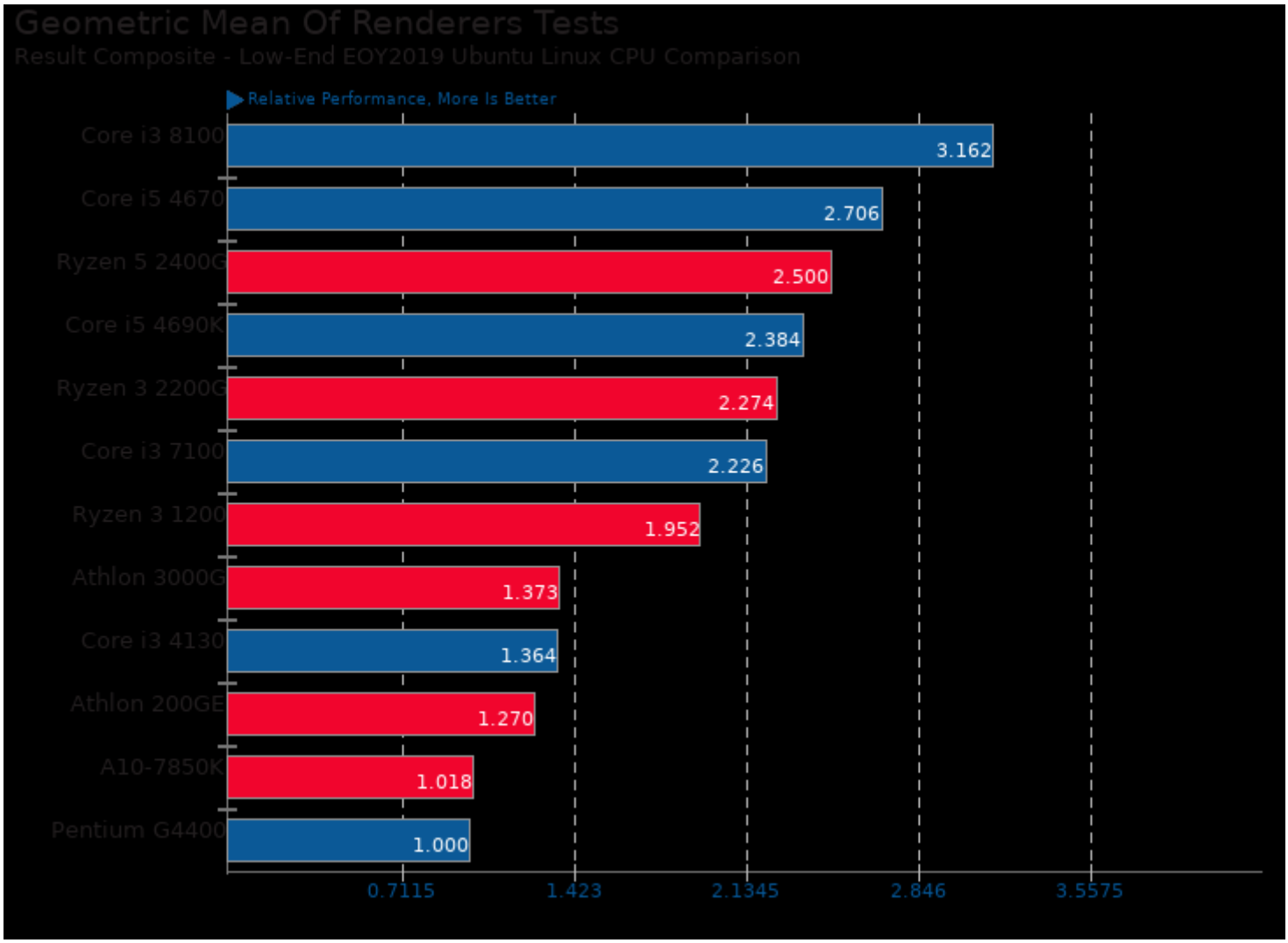
Geometric mean based upon tests: pts/ospray, pts/coremark, pts/svt-vp9, pts/x264, pts/dav1d, pts/graphics-magick, pts/compress-7zip, pts/compress-zstd, pts/build-linux-kernel, pts/build2, pts/radiance, pts/embree, pts/oidn and pts/neatbench



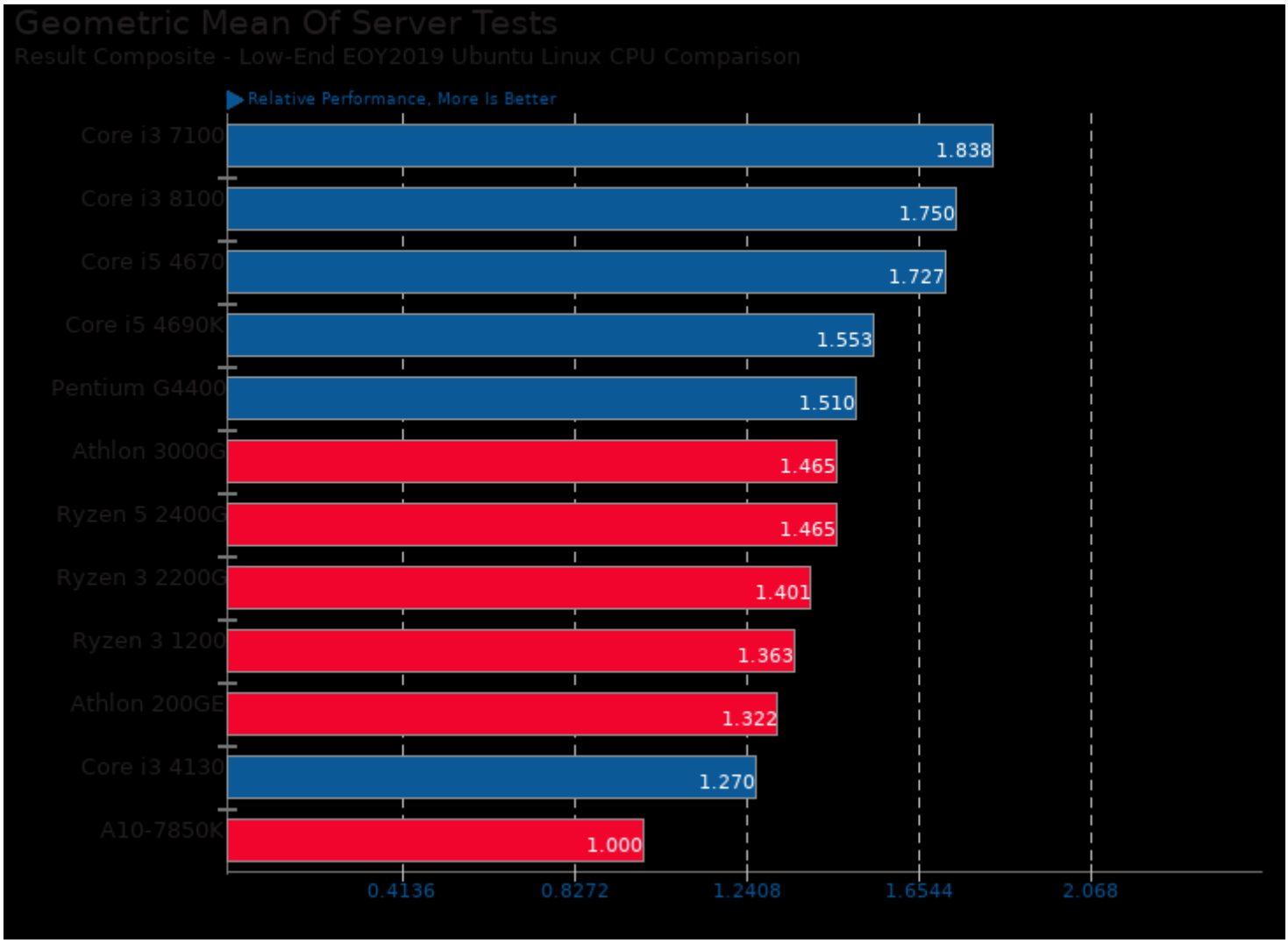
Geometric mean based upon tests: pts/embree, pts/oidn and pts/ospray



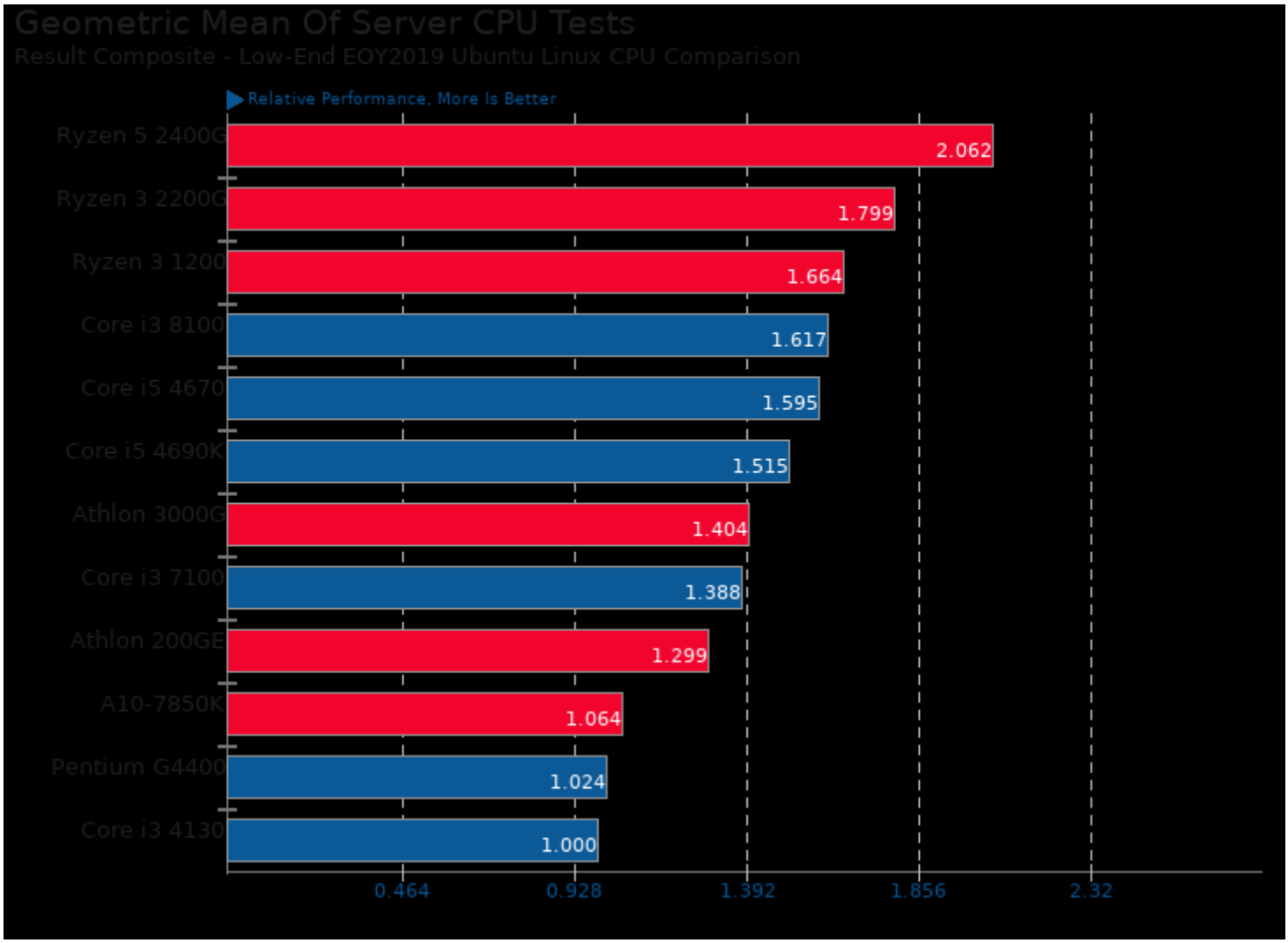
Geometric mean based upon tests: pts/sqlite-speedtest, pts/compress-zstd, pts/pybench, system/cryptsetup, pts/build-linux-kernel and pts/build2



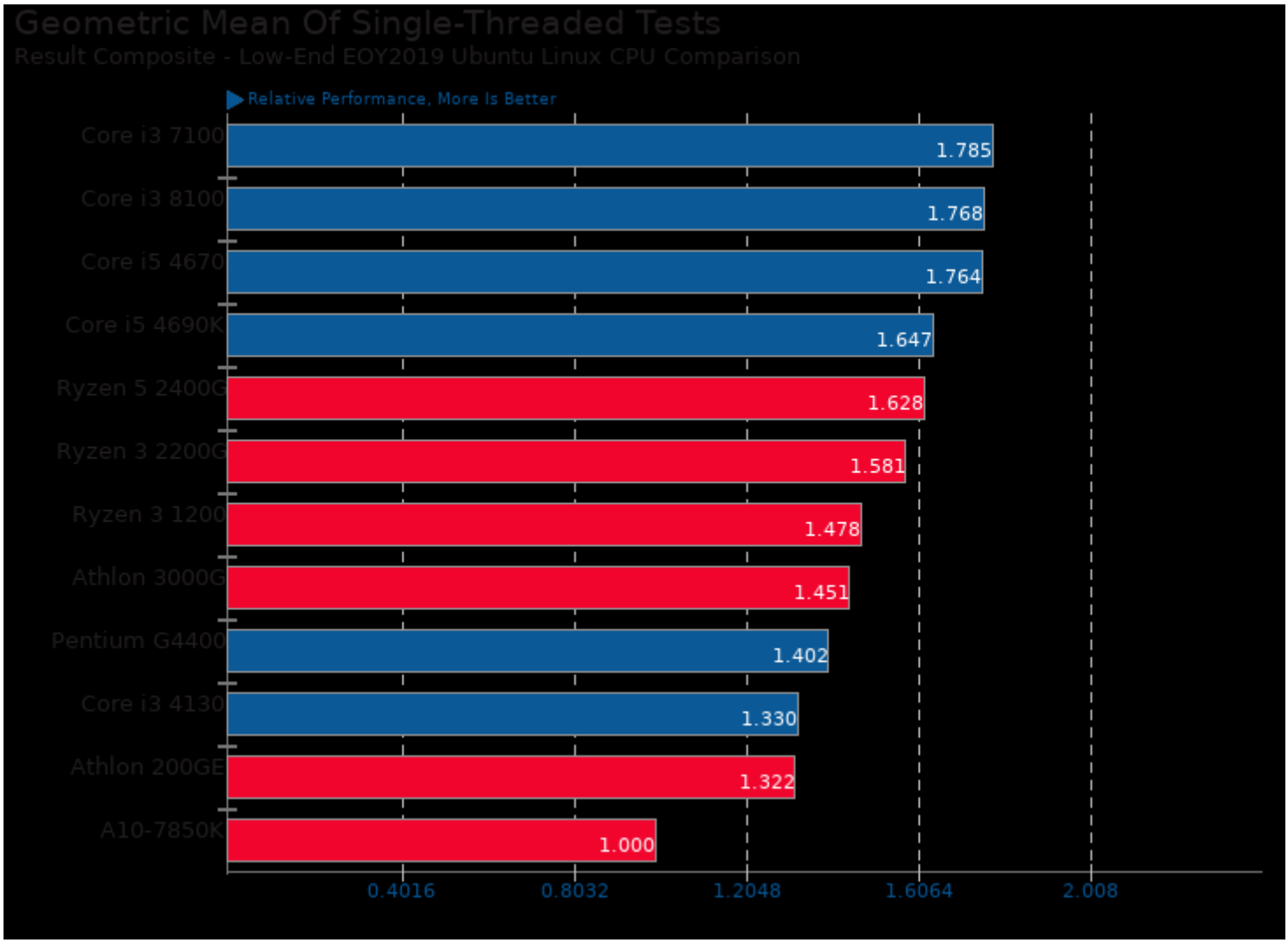
Geometric mean based upon tests: pts/ospray and pts/radiance



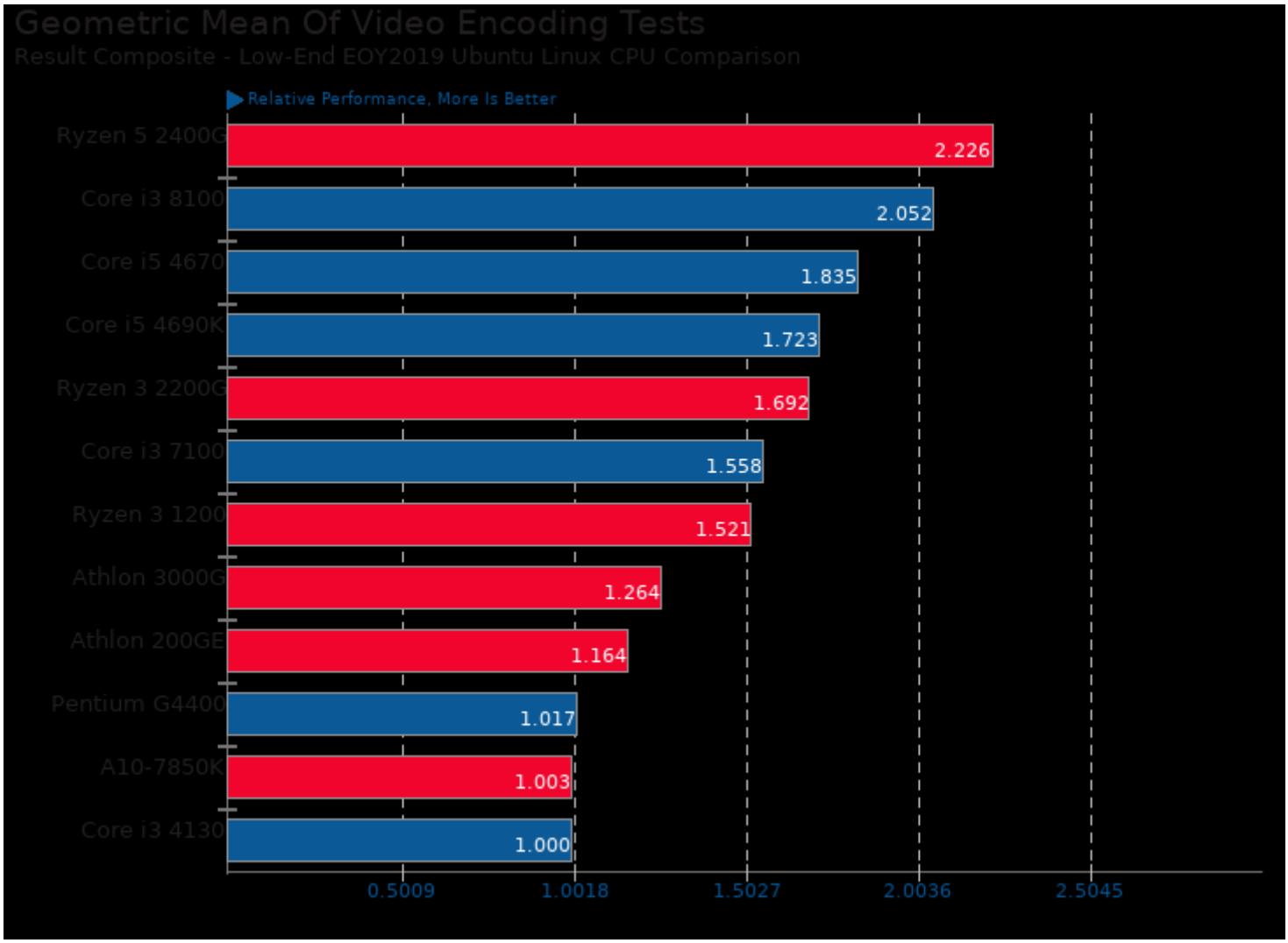
Geometric mean based upon tests: pts/phpbench, pts/perl-benchmark and pts/sqlite-speedtest



Geometric mean based upon tests: pts/svt-vp9, pts/x264, pts/dav1d, pts/himeno, pts/compress-7zip, pts/build-linux-kernel, pts/compress-zstd, pts/radiance, pts/tjbench, system/gimp, pts/ctx-clock, pts/pybench, pts/phpbench and system/tesseract-ocr



Geometric mean based upon tests: pts/java-scimark2, pts/deepspeech, pts/encode-flac, pts/encode-mp3, pts/perl-benchmark, pts/radiance, pts/rbenchmark, pts/sudokut, pts/tjbench, pts/pybench, pts/phpbench and system/tesseract-ocr



Geometric mean based upon tests: pts/svt-vp9, pts/x264 and pts/dav1d

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 12:54.