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CPU Benchmarks

Intel Core i3-8100 testing with a ASRock Z370M-ITX/ac (P4.10 BIOS) and Intel UHD 630 3GB on Ubuntu 19.04 via the Phoronix Test Suite.

Automated Executive Summary

Core i9 9900K had the most wins, coming in first place for 37% of the tests.

Based on the geometric mean of all complete results, the fastest (Core i9 7960X) was 2.283x the speed of the slowest (Ryzen 3 2200G).

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

DaCapo Benchmark (CPU Power Consumption Monitor) at 50.194x
John The Ripper (CPU Power Consumption Monitor) at 34.053x
x265 (CPU Power Consumption Monitor) at 32.364x
VP9 libvpx Encoding (CPU Power Consumption Monitor) at 32.083x
NAMD (CPU Power Consumption Monitor) at 32.053x
Go Benchmarks (CPU Power Consumption Monitor) at 31.818x
GROMACS (CPU Power Consumption Monitor) at 31.769x
SVT-AV1 (CPU Power Consumption Monitor) at 31.303x
C-Ray (CPU Power Consumption Monitor) at 30.626x

Radiance Benchmark (CPU Power Consumption Monitor) at 30x.

Test Systems:

Core i5 8400

Processor: Intel Core i5-8400 @ 4.00GHz (6 Cores), Motherboard: MSI Z370M MORTAR (MS-7B54) v1.0 (1.50 BIOS), Chipset: Intel 8th Gen Core, Memory: 16384MB, Disk: 525GB 2115, Graphics: Intel UHD 630 3GB (1050MHz), Audio: Realtek ALC892, Monitor: Acer B286HK, Network: Intel I219-V

OS: Ubuntu 19.04, Kernel: 5.2.0-999-generic (x86_64) 20190603, Desktop: GNOME Shell 3.32.1, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 4.5 Mesa 19.0.2, Compiler: GCC 9.1.0, File-System: ext4, Screen Resolution: 1920x1080

Environment Notes: CXXFLAGS=-O3-march=native CFLAGS=-O3-march=native
Compiler Notes: --disable-multilib --enable-checking=release
Processor Notes: Scaling Governor: intel_pstate powersave
Java Notes: OpenJDK Runtime Environment (build 11.0.3+7-Ubuntu-1ubuntu219.04.1)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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 __user pointer sanitization + spectre_v2: Mitigation of Full generic retpoline IBPB: conditional IBRS_FW STIBP: disabled RSB filling

Core i5 9400F

Processor: Intel Core i5-9400F @ 4.10GHz (6 Cores), Motherboard: MSI B360M GAMING PLUS (MS-7B19) v1.0 (1.10 BIOS), Chipset: Intel Cannon Lake PCH, Memory: 16384MB, Disk: 256GB SAMSUNG MZVPW256HEGL-000H7 + 525GB 2115, Graphics: MSI NVIDIA NV106 1GB, Audio: Realtek ALC887-VD, Monitor: Acer B286HK, Network: Intel I219-V

OS: Ubuntu 19.04, Kernel: 5.2.0-999-generic (x86_64) 20190603, Desktop: GNOME Shell 3.32.1, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 4.3 Mesa 19.0.2, Compiler: GCC 9.1.0, File-System: ext4, Screen Resolution: 3840x2160

Environment Notes: CXXFLAGS=-O3-march=native CFLAGS=-O3-march=native
Compiler Notes: --disable-multilib --enable-checking=release
Processor Notes: Scaling Governor: intel_pstate powersave
Java Notes: OpenJDK Runtime Environment (build 11.0.3+7-Ubuntu-1ubuntu219.04.1)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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 __user pointer sanitization + spectre_v2: Mitigation of Full generic retpoline IBPB: conditional IBRS_FW STIBP: disabled RSB filling

Core i9 9900K

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASUS PRIME Z390-A (0802 BIOS), Chipset: Intel Cannon Lake PCH, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB + 525GB 2115, Graphics: AMD Vega 20 16GB (1802/1001MHz), Audio: Realtek ALC1220, Monitor: Acer B286HK, Network: Intel I219-V

OS: Ubuntu 19.04, Kernel: 5.2.0-999-generic (x86_64) 20190603, Desktop: GNOME Shell 3.32.1, Display Server: X Server 1.20.4, Display Driver: amdgpu 19.0.1, OpenGL: 4.5 Mesa 19.0.2 (LLVM 8.0.0), Compiler: GCC 9.1.0, File-System: ext4, Screen Resolution: 3840x2160

Environment Notes: CXXFLAGS=-O3-march=native CFLAGS=-O3-march=native
Compiler Notes: --disable-multilib --enable-checking=release
Processor Notes: Scaling Governor: intel_pstate powersave
Java Notes: OpenJDK Runtime Environment (build 11.0.3+7-Ubuntu-1ubuntu219.04.1)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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 __user pointer sanitization + spectre_v2: Mitigation of Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling

Core i7 8700K

Processor: Intel Core i7-8700K @ 4.70GHz (6 Cores / 12 Threads), Motherboard: ASUS TUF Z370-PLUS GAMING (2001 BIOS), Chipset: Intel 8th Gen Core, Memory: 16384MB, Disk: 128GB THNSN5128GPU7 TOSHIBA + 525GB 2115, Graphics: Intel UHD 630 3GB (1200MHz), Audio: Realtek ALC887-VD, Monitor: DELL P2415Q, Network: Intel I219-V

OS: Ubuntu 19.04, Kernel: 5.2.0-999-generic (x86_64) 20190603, Desktop: GNOME Shell 3.32.1, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 4.5 Mesa 19.0.2, Compiler: GCC 9.1.0, File-System: ext4, Screen Resolution: 3840x2160

Environment Notes: CXXFLAGS=-O3-march=native CFLAGS=-O3-march=native
Compiler Notes: --disable-multilib --enable-checking=release
Processor Notes: Scaling Governor: intel_pstate powersave
Java Notes: OpenJDK Runtime Environment (build 11.0.3+7-Ubuntu-1ubuntu219.04.1)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: l1tf: Mitigation of PTE Inversion + 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 __user pointer sanitization + spectre_v2: Mitigation of Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling

Threadripper 2990WX

Processor: AMD Ryzen Threadripper 2990WX 32-Core @ 3.00GHz (32 Cores / 64 Threads), Motherboard: ASUS ROG ZENITH EXTREME (1701 BIOS), Chipset: AMD 17h, Memory: 32768MB, Disk: Samsung SSD 970 EVO 500GB + 525GB 2115, Graphics: AMD Radeon RX 64 8GB (1590/800MHz), Audio: Realtek ALC1220, Monitor: ASUS VP28U, Network: Intel I211 + Qualcomm Atheros QCA6174 802.11ac + Wilocity Wil6200 802.11ad

OS: Ubuntu 19.04, Kernel: 5.2.0-999-generic (x86_64) 20190603, Desktop: GNOME Shell 3.32.1, Display Server: X Server 1.20.4, Display Driver: amdgpu 19.0.1, OpenGL: 4.5 Mesa 19.0.2 (LLVM 8.0.0), Compiler: GCC 9.1.0, File-System: ext4, Screen Resolution: 3840x2160

Environment Notes: CXXFLAGS=-O3-march=native CFLAGS=-O3-march=native
Compiler Notes: --disable-multilib --enable-checking=release
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Java Notes: OpenJDK Runtime Environment (build 11.0.3+7-Ubuntu-1ubuntu219.04.1)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional STIBP: disabled RSB filling

Ryzen 7 2700X

Processor: AMD Ryzen 7 2700X Eight-Core @ 3.70GHz (8 Cores / 16 Threads), Motherboard: ASUS ROG CROSSHAIR VII HERO (WI-FI) (1201 BIOS), Chipset: AMD 17h, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB + 525GB 2115, Graphics: Sapphire AMD Radeon RX 470/480/570/570X/580/580X 4GB (1260/1750MHz), Audio: AMD Ellesmere, Monitor: ASUS PB278, Network: Intel I211 + Realtek RTL8822BE 802.11a/b/g/n/ac

OS: Ubuntu 19.04, Kernel: 5.2.0-999-generic (x86_64) 20190603, Desktop: GNOME Shell 3.32.1, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 4.5 Mesa 19.0.2 (LLVM 8.0.0), Compiler: GCC 9.1.0, File-System: ext4, Screen Resolution: 2560x1440

Environment Notes: CXXFLAGS=-O3-march=native CFLAGS=-O3-march=native

Compiler Notes: --disable-multilib --enable-checking=release
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Java Notes: OpenJDK Runtime Environment (build 11.0.3+7-Ubuntu-1ubuntu219.04.1)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional STIBP: disabled RSB filling

Core i9 7960X

Processor: Intel Core i9-7960X @ 4.40GHz (16 Cores / 32 Threads), Motherboard: MSI X299 SLI PLUS (MS-7A93) v1.0 (1.A0 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 16384MB, Disk: 256GB INTEL SSDPEKKW256G8 + 525GB 2115, Graphics: Gigabyte AMD Radeon RX 550/550X 2GB (1206/1750MHz), Audio: Realtek ALC1220, Monitor: ASUS VP28U, Network: Intel I219-V + Intel I211

OS: Ubuntu 19.04, Kernel: 5.2.0-999-generic (x86_64) 20190603, Desktop: GNOME Shell 3.32.1, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 4.5 Mesa 19.0.2 (LLVM 8.0.0), Compiler: GCC 9.1.0, File-System: ext4, Screen Resolution: 3840x2160

Environment Notes: CXXFLAGS=-O3-march=native CFLAGS=-O3-march=native
Compiler Notes: --disable-multilib --enable-checking=release
Processor Notes: Scaling Governor: intel_pstate powersave
Java Notes: OpenJDK Runtime Environment (build 11.0.3+7-Ubuntu-1ubuntu219.04.1)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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 __user pointer sanitization + spectre_v2: Mitigation of Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling

Threadripper 2950X

Processor: AMD Ryzen Threadripper 2950X 16-Core @ 3.50GHz (16 Cores / 32 Threads), Motherboard: MSI MEG X399 CREATION (MS-7B92) v1.0 (1.10 BIOS), Chipset: AMD 17h, Memory: 32768MB, Disk: Samsung SSD 970 EVO 250GB + 525GB 2115, Graphics: Sapphire AMD Radeon RX 470/480/570/570X/580/580X 8GB (1560/2100MHz), Audio: Realtek ALC1220, Monitor: ASUS PB278, Network: 2 x Intel I211 + Intel-AC 9260

OS: Ubuntu 19.04, Kernel: 5.2.0-999-generic (x86_64) 20190603, Desktop: GNOME Shell 3.32.1, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 4.5 Mesa 19.0.2 (LLVM 8.0.0), Compiler: GCC 9.1.0, File-System: ext4, Screen Resolution: 2560x1440

Environment Notes: CXXFLAGS=-O3-march=native CFLAGS=-O3-march=native
Compiler Notes: --disable-multilib --enable-checking=release
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Java Notes: OpenJDK Runtime Environment (build 11.0.3+7-Ubuntu-1ubuntu219.04.1)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional STIBP: disabled RSB filling

Ryzen 5 2400G

Processor: AMD Ryzen 5 2400G @ 3.60GHz (4 Cores / 8 Threads), Motherboard: ASUS PRIME B350M-E (4801 BIOS), Chipset: AMD Device 15d0, Memory: 6144MB, Disk: 120GB Force MP500 + 525GB 2115, Graphics: ASUS AMD Radeon Vega / Mobile 2GB (1250/1600MHz), Audio: AMD Device 15de, Monitor: DELL P2415Q, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 19.04, Kernel: 5.2.0-999-generic (x86_64) 20190603, Desktop: GNOME Shell 3.32.1, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 4.5 Mesa 19.0.2 (LLVM 8.0.0), Compiler: GCC 9.1.0, File-System: ext4, Screen Resolution: 3840x2160

Environment Notes: CXXFLAGS=-O3-march=native CFLAGS=-O3-march=native
Compiler Notes: --disable-multilib --enable-checking=release

Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Java Notes: OpenJDK Runtime Environment (build 11.0.3+7-Ubuntu-1ubuntu219.04.1)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional STIBP: disabled RSB filling

Ryzen 7 2700

Processor: AMD Ryzen 7 2700 Eight-Core @ 3.20GHz (8 Cores / 16 Threads), Motherboard: Gigabyte AB350N-Gaming WIFI-CF (F20 BIOS), Chipset: AMD 17h, Memory: 16384MB, Disk: 525GB 2115 + 120GB ADATA SU700, Graphics: HIS AMD Radeon HD 6450/7450/8450 / R5 230 OEM 1GB, Audio: AMD Caicos HDMI Audio, Monitor: DELL P2415Q, Network: Realtek RTL8111/8168/8411 + Intel 3165

OS: Ubuntu 19.04, Kernel: 5.2.0-999-generic (x86_64) 20190603, Desktop: GNOME Shell 3.32.1, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.2 (LLVM 8.0.0), Compiler: GCC 9.1.0, File-System: ext4, Screen Resolution: 1920x1080

Environment Notes: CXXFLAGS=-O3-march=native CFLAGS=-O3-march=native
Compiler Notes: --disable-multilib --enable-checking=release
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Java Notes: OpenJDK Runtime Environment (build 11.0.3+7-Ubuntu-1ubuntu219.04.1)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional STIBP: disabled RSB filling

Core i5 7600K

Processor: Intel Core i5-7600K @ 4.20GHz (4 Cores), Motherboard: Gigabyte Z270M-D3H-CF (F8d BIOS), Chipset: Intel Xeon E3-1200 v6/7th + Z270, Memory: 8192MB, Disk: 250GB Samsung SSD 850 + 525GB 2115, Graphics: Intel HD 630 3GB (1150MHz), Audio: Realtek ALC892, Monitor: VA2431, Network: Intel I219-V

OS: Ubuntu 19.04, Kernel: 5.2.0-999-generic (x86_64) 20190603, Desktop: GNOME Shell 3.32.1, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 4.5 Mesa 19.0.2, Compiler: GCC 9.1.0, File-System: ext4, Screen Resolution: 1920x1080

Environment Notes: CXXFLAGS=-O3-march=native CFLAGS=-O3-march=native
Compiler Notes: --disable-multilib --enable-checking=release
Processor Notes: Scaling Governor: intel_pstate powersave
Java Notes: OpenJDK Runtime Environment (build 11.0.3+7-Ubuntu-1ubuntu219.04.1)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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 __user pointer sanitization + spectre_v2: Mitigation of Full generic retpoline IBPB: conditional IBRS_FW STIBP: disabled RSB filling

Ryzen 3 2200G

Processor: AMD Ryzen 3 2200G @ 3.50GHz (4 Cores), Motherboard: MSI B350M GAMING PRO (MS-7A39) v1.0 (2.H0 BIOS), Chipset: AMD Device 15d0, Memory: 7168MB, Disk: 29GB INTEL MEMPEK1W032GA + 525GB 2115, Graphics: MSI AMD Radeon Vega / Mobile 1GB (1100/1600MHz), Audio: AMD Device 15de, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 19.04, Kernel: 5.2.0-999-generic (x86_64) 20190603, Desktop: GNOME Shell 3.32.1, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 4.5 Mesa 19.0.2 (LLVM 8.0.0), Compiler: GCC 9.1.0, File-System: ext4, Screen Resolution: 1920x1080

Environment Notes: CXXFLAGS=-O3-march=native CFLAGS=-O3-march=native
Compiler Notes: --disable-multilib --enable-checking=release
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Java Notes: OpenJDK Runtime Environment (build 11.0.3+7-Ubuntu-1ubuntu219.04.1)
Python Notes: Python 2.7.16 + Python 3.7.3

Security Notes: l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional STIBP: disabled RSB filling

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, 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 19.04, Kernel: 5.2.0-999-generic (x86_64) 20190603, Desktop: GNOME Shell 3.32.1, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 4.5 Mesa 19.0.2, Compiler: GCC 9.1.0, File-System: ext4, Screen Resolution: 1920x1080

Environment Notes: CXXFLAGS=-O3-march=native CFLAGS=-O3-march=native
Compiler Notes: --disable-multilib --enable-checking=release
Processor Notes: Scaling Governor: intel_pstate powersave
Java Notes: OpenJDK Runtime Environment (build 11.0.3+7-Ubuntu-1ubuntu219.04.1)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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 __user pointer sanitization + spectre_v2: Mitigation of Full generic retpoline IBPB: conditional IBRS_FW STIBP: disabled RSB filling

	Core i5 8400	Core i5 9400F	Core i9 9900K	Core i7 8700K	Threadripper 2990WX	Ryzen 7 2700X	Core i9 7960X	Threadripper 2950X	Ryzen 5 2400G	Ryzen 7 2700	Core i5 7600K	Ryzen 3 2200G	Core i3 8100
ctx_clock - C.S.T (Clocks)	827	829	485	918	**150**	185	710	175	180	160	1051	210	**1165**
Normalized	18.14%	18.09%	30.93%	16.34%	100%	81.08%	21.13%	85.71%	83.33%	93.75%	14.27%	71.43%	12.88%
Standard Deviation	0.4%	0.7%	0.2%								0.2%		0.3%
SVT-AV1 - 1.8.b.Y.T.A.V.E (FPS)	21.13	21.41	35.02	25.53	**49.41**	25.98	48.19	39.57	12.15	22.31	14.67	**10.85**	13.98
Normalized	42.76%	43.33%	70.88%	51.67%	100%	52.58%	97.53%	80.09%	24.59%	45.15%	29.69%	21.96%	28.29%
Standard Deviation	1.4%	1.7%	2.8%	2.2%	0.3%	1.5%	3.1%	0.4%	0.7%	1.3%	1.8%	2.6%	0.9%
SVT-HEVC - 1.8.b.Y.T.H.V.E (FPS)	113	112	186	147	187	146	**280**	237	69.58	128.11	70.50	**63.48**	75.04
Normalized	40.36%	40%	66.43%	52.5%	66.79%	52.14%	100%	84.64%	24.85%	45.75%	25.18%	22.67%	26.8%
Standard Deviation	10%	10.1%	17.5%	14.8%	10.1%	13.6%	20.9%	0.5%	2.7%	12%	5.6%	0.9%	3%
SVT-VP9 - 1.8.b.Y.T.V.V.E (FPS)	35.68	36.15	57.44	43.65	108.81	56.34	**295.89**	98.53	27.02	48.14	23.97	23.31	**22.71**
Normalized	12.06%	12.22%	19.41%	14.75%	36.77%	19.04%	100%	33.3%	9.13%	16.27%	8.1%	7.88%	7.68%
Standard Deviation	0.9%	1.1%	1.4%	1.2%	3.6%	1.5%	21.7%	0.7%	0.1%	1.3%	1%	1.1%	0.8%

CPU Benchmarks

VP9 libvpx Encoding - v.V.1.V.E (FPS)	125	125	191	148	153	132	**221**	171	69.40	118.76	85.20	**64.77**	82.15
Normalized	56.56%	56.56%	86.43%	66.97%	69.23%	59.73%	100%	77.38%	31.4%	53.74%	38.55%	29.31%	37.17%
Standard Deviation	0.7%	0.4%	1.1%	1.3%	2.7%	5.1%	1.2%	0.7%	3.8%	12%	6.6%	5.1%	1.2%
dav1d - S.N.1 (sec)	13.33	13.20	7.71	9.62	7.91	11.85	**7.04**	9.24	18.57	13.68	19.70	**24.20**	19.20
Normalized	52.81%	53.33%	91.31%	73.18%	89%	59.41%	100%	76.19%	37.91%	51.46%	35.74%	29.09%	36.67%
Standard Deviation	0.2%	1.6%	2.9%	1.8%	1.1%	1.9%	2.7%	0.4%	1.3%	1.6%	1%	0.3%	1%
dav1d - Summer Nature	44.04	45.08	26.40	32.24	27.34	34.25	**20.21**	24.31	63.49	38.68	70.89	**84.86**	65.73
Normalized	45.89%	44.83%	76.55%	62.69%	73.92%	59.01%	100%	83.13%	31.83%	52.25%	28.51%	23.82%	30.75%
Standard Deviation	0.7%	0.7%	1%	0.9%	2.9%	1%	1.6%	0.2%	0.4%	0.7%	1.3%	0.2%	0.5%
C-Ray - Total Time - 4.1.R.P.P (sec)	89.11	87.16	55.70	73.06	**17.75**	59.29	35.59	31.97	126.70	69.49	126.94	**141.42**	141.05
Normalized	19.92%	20.36%	31.87%	24.3%	100%	29.94%	49.87%	55.52%	14.01%	25.54%	13.98%	12.55%	12.58%
Standard Deviation	0.1%	0.1%	0.1%	0%	0.2%	0.2%	0.1%	0.6%	0.3%	0.2%	0%	0.1%	0.1%
Sysbench - CPU	7818	7980	21827	15190	**56782**	16879	30753	33161	7943	14160	5484	7314	**4936**
Normalized	13.77%	14.05%	38.44%	26.75%	100%	29.73%	54.16%	58.4%	13.99%	24.94%	9.66%	12.88%	8.69%
Standard Deviation	0%	0.1%	0%	0%	0%	0%	0%	0%	0.1%	0.1%	0%	0.2%	0%
Sysbench - Memory (Events/sec)	131785 02	134085 01	**281169 34**	236696 61	**737456 0**	978330 3	184051 47	774248 3	120791 23	827372 5	115239 53	190154 74	104676 10
Normalized	46.87%	47.69%	100%	84.18%	26.23%	34.8%	65.46%	27.54%	42.96%	29.43%	40.99%	67.63%	37.23%
Standard Deviation	1.6%	1.8%	0.1%	0.3%	0.1%	0.1%	1.9%	0%	0.5%	0.1%	2%	2.9%	0.5%
MKL-DNN - C.B.c - f32 (ms)	2846	2795	2238	2381	5153	5085	**1826**	5064	**6354**	5430	2721		3147
Normalized	64.16%	65.33%	81.59%	76.69%	35.44%	35.91%	100%	36.06%	28.74%	33.63%	67.11%		58.03%
Standard Deviation	0.2%	0.1%	0%	0%	0.1%	1.4%	0.1%	1.2%	2.7%	1.3%	0.1%		0.1%
MKL-DNN - C.B.c - f32 (ms)	1182	1160	923	982	2202	2153	**755**	2150	**2511**	2315	1139		1311
Normalized	63.87%	65.09%	81.8%	76.88%	34.29%	35.07%	100%	35.12%	30.06%	32.61%	66.28%		57.59%
Standard Deviation	0%	0%	0.1%	0%	0.2%	0%	0.1%	0%	0.1%	0%	0.1%		0.1%
MKL-DNN - D.B.d - f32 (ms)	48.52	47.62	34.77	36.98	225.93	223.32	**23.73**	225.01	**266.98**	240.90	46.68		54.04
Normalized	48.91%	49.83%	68.25%	64.17%	10.5%	10.63%	100%	10.55%	8.89%	9.85%	50.84%		43.91%
Standard Deviation	1.2%	0.8%	0.4%	0.2%	0.1%	0.6%	0.2%	0.8%	0.5%	0.3%	0.3%		1.3%
XZ Compression - C.u.1.0.3.s.i.i.C. L.9 (sec)	44.97	48.46	27.98	33.72	25.30	37.42	**19.09**	24.18	63.10	41.52	**79.06**	77.36	67.51
Normalized	42.45%	39.39%	68.23%	56.61%	75.45%	51.02%	100%	78.95%	30.25%	45.98%	24.15%	24.68%	28.28%
Standard Deviation	0.9%	0.6%	1.1%	1%	3%	1%	3%	2.7%	0.1%	0.7%	1%	0.2%	1.4%
Zstd Compression - C.u.1.0.3.s.i.i.C. L.1 (sec)	28.84	33.45	24.33	25.74	17.29	29.02	**10.74**	16.86	48.84	31.58	**61.54**	47.01	40.44
Normalized	37.24%	32.11%	44.14%	41.72%	62.12%	37.01%	100%	63.7%	21.99%	34.01%	17.45%	22.85%	26.56%
Standard Deviation	0.3%	0.3%	0.6%	0.1%	9.5%	0.5%	2.9%	2.2%	0.2%	0.6%	0.3%	0.3%	0.8%

CPU Benchmarks

Selenium - ARES-6 - Firefox (ms)	54.80	54.83	**53.28**	56.64	65.34	60.04	62.72	62.20	69.70	67.92	54.05	**71.66**	60.68
Normalized	97.23%	97.17%	100%	94.07%	81.54%	88.74%	84.95%	85.66%	76.44%	78.45%	98.58%	74.35%	87.8%
Standard Deviation	0.5%	1.1%	0.7%	0.2%	0.7%	0.9%	0.5%	0.3%	0.6%	1%	0.1%	1.1%	1.2%
Selenium - ARES-6 - Google Chrome (ms)	21.35	21.15	23.32	25.04	25.54	23.49	27.00	24.66	**28.16**	26.23	**21.06**	26.74	23.09
Normalized	98.64%	99.57%	90.31%	84.11%	82.46%	89.66%	78%	85.4%	74.79%	80.29%	100%	78.76%	91.21%
Standard Deviation	0.3%	2.1%	1%	0.2%	0.1%	0.8%	0.2%	0.1%	1.3%	0.6%	0.2%	0.6%	0.6%
Selenium - Octane - Firefox (Geometric	32060	33097	**39155**	36470	30298	32550	32335	32110	28149	28992	33101	**27566**	29234
Normalized	81.88%	84.53%	100%	93.14%	77.38%	83.13%	82.58%	82.01%	71.89%	74.04%	84.54%	70.4%	74.66%
Standard Deviation	0.7%	0.7%	0.2%	0.5%	1.7%	2.3%	0.7%	1.2%	0.6%	2.8%	0.5%	2.5%	2%
Selenium - Octane - Google Chrome (Geometric Mean)	42991	43972	**45013**	42379	40054	42911	38126	41280	36527	38820	43295	**35917**	38450
Normalized	95.51%	97.69%	100%	94.15%	88.98%	95.33%	84.7%	91.71%	81.15%	86.24%	96.18%	79.79%	85.42%
Standard Deviation	0.3%	0.4%	0.5%	0.5%	1%	0.4%	0.6%	0.5%	0.6%	0.6%	0.5%	0.9%	0.6%
Selenium - Jetstream 2 - Google Chrome (Score)	**121**	120	119	113	109	118	107	115	**100.06**	106.53	116.02	100.45	106.65
Normalized	100%	99.17%	98.35%	93.39%	90.08%	97.52%	88.43%	95.04%	82.69%	88.04%	95.88%	83.02%	88.14%
Standard Deviation	1.1%	1.3%	0.7%	1.1%	0.9%	0.6%	1.1%	0.4%	1%	0.4%	1.6%	0.4%	0.4%
Blender - Barbershop - CPU-Only (sec)	2094	2096	990	1292	**416**	1140	576	677		1330	3169		**3354**
Normalized	19.87%	19.85%	42.02%	32.2%	100%	36.49%	72.22%	61.45%		31.27%	13.13%		12.4%
GIMP - unsharp-mask (sec)	16.72	16.76	**15.03**	15.65	**27.14**	17.71	20.47	22.00	20.34	20.42	18.74	19.31	18.64
Normalized	89.89%	89.68%	100%	96.04%	55.38%	84.87%	73.42%	68.32%	73.89%	73.6%	80.2%	77.84%	80.63%
Standard Deviation	2.9%	1.7%	1.6%	2.5%	0.1%	1.5%	1.3%	0.1%	2.3%	2.4%	2.7%	2.1%	2.4%
GIMP - resize (sec)	8.76	8.55	**6.75**	7.91	10.14	8.62	8.96	9.22	10.61	10.21	9.27	**10.91**	10.25
Normalized	77.05%	78.95%	100%	85.34%	66.57%	78.31%	75.33%	73.21%	63.62%	66.11%	72.82%	61.87%	65.85%
Standard Deviation	0.8%	0.3%	0.2%	0.3%	3.4%	1.8%	0.1%	0.6%	0.1%	0.5%	0.5%	0.5%	0.4%
GIMP - rotate (sec)	13.85	13.67	**11.16**	11.93	15.30	13.38	13.60	13.67	15.22	15.45	13.68	**15.48**	15.06
Normalized	80.58%	81.64%	100%	93.55%	72.94%	83.41%	82.06%	81.64%	73.32%	72.23%	81.58%	72.09%	74.1%
Standard Deviation	0.1%	0.2%	0.1%	0.3%	0.8%	1%	0.3%	0.4%	3%	0.1%	0.4%	0.2%	0.1%
GIMP - auto-levels	14.78	14.66	**12.64**	13.39	**22.26**	15.37	17.28	18.25	18.39	17.56	15.79	17.86	16.60
Normalized	85.52%	86.22%	100%	94.4%	56.78%	82.24%	73.15%	69.26%	68.73%	71.98%	80.05%	70.77%	76.14%
Standard Deviation	0.4%	0.6%	0.3%	0.6%	0.6%	0.1%	0.4%	0.3%	1.4%	0.1%	0.1%	0.8%	0.3%

CPU Benchmarks

Darktable - Boat -	13.30	14.76	13.63	14.05	8.91	12.43	8.16	**7.87**	21.82	13.92	**26.46**	18.13	17.15
Normalized	59.17%	53.32%	57.74%	56.01%	88.33%	63.31%	96.45%	100%	36.07%	56.54%	29.74%	43.41%	45.89%
Standard Deviation	0.2%	0.1%	0.2%	0.3%	2.9%	0.1%	0.2%	0.2%	0%	0.1%	0%	0.7%	0.1%
Darktable - Masskrug - CPU-only (sec)	7.93	8.27	5.35	6.50	4.87	6.20	**4.06**	4.46	11.33	7.01	**12.87**	12.44	11.37
Normalized	51.2%	49.09%	75.89%	62.46%	83.37%	65.48%	100%	91.03%	35.83%	57.92%	31.55%	32.64%	35.71%
Standard Deviation	0.1%	0%	0.1%	0.1%	3.9%	0.9%	0.3%	1.6%	0.2%	0.5%	0.1%	2.1%	0%
Darktable - Server Room - CPU-only (sec)	5.53	5.79	4.17	4.75	2.68	4.12	2.65	**2.61**	9.11	4.72	**9.42**	7.83	7.84
Normalized	47.2%	45.08%	62.59%	54.95%	97.39%	63.35%	98.49%	100%	28.65%	55.3%	27.71%	33.33%	33.29%
Standard Deviation	0.5%	0.1%	0.2%	0.3%	2.9%	0.7%	0.3%	0.1%	0.8%	0.2%	0%	2.8%	0.1%
Darktable - Server Rack - CPU-only (sec)	0.22	0.23	0.17	0.19	0.15	0.19	**0.12**	0.13	0.27	0.21	**0.40**	0.31	0.29
Normalized	54.55%	52.17%	70.59%	63.16%	80%	63.16%	100%	92.31%	44.44%	57.14%	30%	38.71%	41.38%
Standard Deviation	0.5%	0%	0.3%	0.9%	5.9%	0.6%	1.4%	0.9%	0.2%	0.3%	0.1%	1.6%	0.6%
Stockfish - Total Time	136843 70	137902 10	264632 33	197062 68	**674203 32**	246104 86	440181 28	424955 81	114040 98	207104 50	922524 4	**819915 1**	864107 8
Normalized	20.3%	20.45%	39.25%	29.23%	100%	36.5%	65.29%	63.03%	16.91%	30.72%	13.68%	12.16%	12.82%
Standard Deviation	1.4%	1.3%	0.7%	1.8%	1%	0.5%	0.8%	0.9%	0.4%	1.4%	1%	1.6%	0.4%
Timed Linux Kernel Compilation - Time To Compile (sec)	134	133	74.97	95.16	**42.30**	88.16	46.07	54.29	191.35	102.27	197.88	**242.50**	207.01
Normalized	31.57%	31.8%	56.42%	44.45%	100%	47.98%	91.82%	77.91%	22.11%	41.36%	21.38%	17.44%	20.43%
Standard Deviation	1.8%	1.5%	2.3%	1.8%	2.8%	2.2%	2.9%	3%	1.6%	2.1%	1.3%		1.1%
Timed LLVM Compilation - Time To Compile (sec)	759	766	430	554		547	**257**	319	**1205**	612.39	1185		1191
Normalized	33.86%	33.55%	59.77%	46.39%		46.98%	100%	80.56%	21.33%	41.97%	21.69%		21.57%
PyBench - T.F.A.T.T (Milliseconds)	999	977	**799**	850	1115	1099	918	1099	1204	1179	956	**1273**	1111
Normalized	79.98%	81.78%	100%	94%	71.66%	72.7%	87.04%	72.7%	66.36%	67.77%	83.58%	62.77%	71.92%
Standard Deviation	0.2%	0.2%	0.7%	0.7%	0.5%	0.3%	1.8%	0.5%	0.4%	1.5%	0.3%	0.4%	0.3%
DaCapo Benchmark - H2 (msec)	2959	2968	**2718**	2887	**4818**	3542	3185	4247	4302	4335	3114	3710	3116
Normalized	91.86%	91.58%	100%	94.15%	56.41%	76.74%	85.34%	64%	63.18%	62.7%	87.28%	73.26%	87.23%
Standard Deviation	9.3%	6.8%	9.8%	7.2%	4.2%	3.5%	0.6%	1.9%	1%	3.7%	7.3%	5.4%	6.9%
DaCapo Benchmark - Jython (msec)	4035	3980	**3048**	3361	5148	5066	3688	4828	**6420**	5612	4139	6027	4462
Normalized	75.54%	76.58%	100%	90.69%	59.21%	60.17%	82.65%	63.13%	47.48%	54.31%	73.64%	50.57%	68.31%
Standard Deviation	1%	1.5%	2.9%	1.6%	1%	1.6%	0.8%	0.9%	1.8%	1.2%	1.1%	0.7%	1.7%

CPU Benchmarks

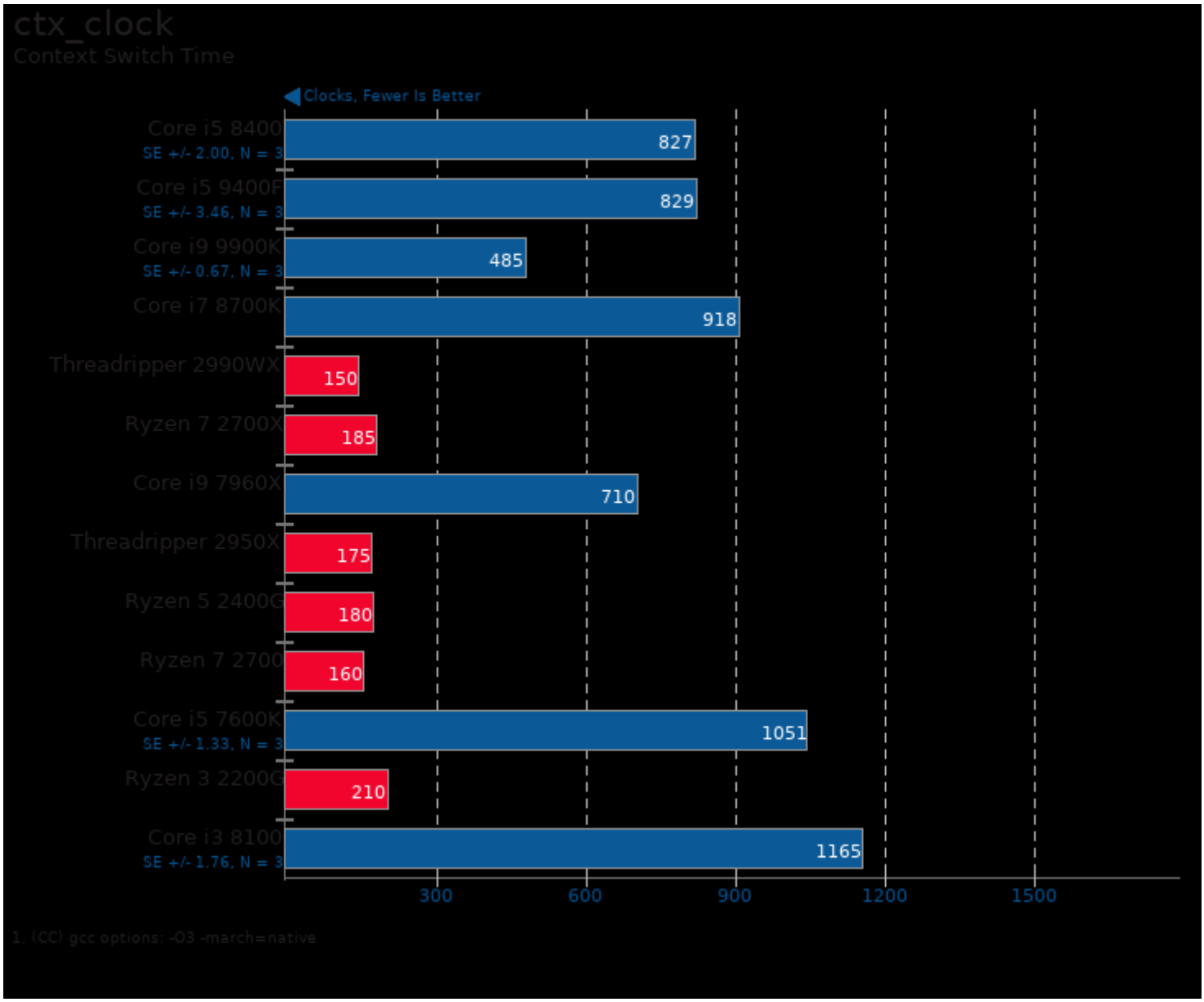
DaCapo Benchmark - Tradebeans (msec)	3036	3025	**2708**	2904	**6753**	4460	3326	5637	5291	5750	3211	3762	3400
Normalized	89.2%	89.52%	100%	93.25%	40.1%	60.72%	81.42%	48.04%	51.18%	47.1%	84.34%	71.98%	79.65%
Standard Deviation	5.1%	5%	9.8%	4.5%	2.7%	2.8%	1.2%	1.5%	1.1%	1.6%	5%	2.8%	6%
DaCapo Benchmark - Tradesoap (msec)	6121	6159	3935	4464	5757	5809	**3443**	4945	11016	6526	11717	**11959**	10096
Normalized	56.25%	55.9%	87.5%	77.13%	59.81%	59.27%	100%	69.63%	31.25%	52.76%	29.38%	28.79%	34.1%
Standard Deviation	1.5%	1.1%	1%	2%	3.7%	0.1%	0.6%	1%	1.5%	2.7%	1.5%	1.9%	0.8%
FLAC Audio Encoding - WAV To FLAC	9.13	8.69	**7.13**	7.57	9.74	9.97	9.59	9.85	10.87	10.29	10.44	**11.53**	9.68
Normalized	78.09%	82.05%	100%	94.19%	73.2%	71.51%	74.35%	72.39%	65.59%	69.29%	68.3%	61.84%	73.66%
Standard Deviation	1.1%	2.3%	0.9%	0.7%	0.9%	0.9%	1.3%	1.7%	1.5%	0.6%	2.5%	1.6%	2.3%
LAME MP3 Encoding - WAV To MP3	8.54	8.35	**6.85**	7.30	7.90	7.74	9.20	7.74	8.52	8.35	8.14	9.02	**9.45**
Normalized	80.21%	82.04%	100%	93.84%	86.71%	88.5%	74.46%	88.5%	80.4%	82.04%	84.15%	75.94%	72.49%
Standard Deviation	0.2%	0.1%	0.1%	0.3%	0.1%	0.2%	0.1%	0.3%	0.1%	0.1%	0%	0.6%	0.1%
Himeno Benchmark - P.P.S (MFLOPS)	2399	2491	2868	2823	1321	1184	**3252**	1372	1199	**510.64**	2290	572.01	1965
Normalized	73.77%	76.6%	88.19%	86.81%	40.62%	36.41%	100%	42.19%	36.86%	15.7%	70.41%	17.59%	60.42%
Standard Deviation	1.4%	0.9%	3.3%	2.6%	0.4%	5.7%	0.1%	0.2%	2.7%	25.7%	4.2%	33.2%	2.1%
Timed HMMer Search - P.D.S (sec)	4.05	4.37	**3.48**	3.76	7.24	6.02	3.59	6.23	7.92	7.22	8.00	**8.05**	5.38
Normalized	85.93%	79.63%	100%	92.55%	48.07%	57.81%	96.94%	55.86%	43.94%	48.2%	43.5%	43.23%	64.68%
Standard Deviation	0.6%	0.4%	0.2%	1.4%	1.1%	1.7%	1.5%	1.8%	1.6%	2.9%	0.8%	1%	0.1%
Go Benchmarks -	134475 50111	133155 58773	**111166 61094**	117947 31191	173181 89852	157764 99386	151621 24833	166600 43173	177350 08681	**180332 29496**	130958 85044	178936 65017	145514 86684
Normalized	82.67%	83.49%	100%	94.25%	64.19%	70.46%	73.32%	66.73%	62.68%	61.65%	84.89%	62.13%	76.4%
Standard Deviation	1.8%	2.2%	2.8%	2.3%	0.8%	1%	1.9%	0.8%	1.3%	1.5%	2.5%	1.3%	1.7%
Go Benchmarks -	850182 2	834115 8	569442 3	731901 3	**227937 4**	643181 7	336414 6	371084 2	134931 12	755450 9	120756 11	**185362 57**	131038 89
Normalized	26.81%	27.33%	40.03%	31.14%	100%	35.44%	67.75%	61.42%	16.89%	30.17%	18.88%	12.3%	17.39%
Standard Deviation	0.2%	0.4%	0.3%	0.5%	1%	0.2%	0.5%	0.4%	0.5%	0.6%	0.1%	0.1%	0.1%
Go Benchmarks - garbage (ns/op)	217568 0	213742 0	114065 1	149445 7	**732564**	136499 4	763006	886605	282852 0	157941 8	312913 0	**394396 2**	333558 3
Normalized	33.67%	34.27%	64.22%	49.02%	100%	53.67%	96.01%	82.63%	25.9%	46.38%	23.41%	18.57%	21.96%
Standard Deviation	0.1%	0.4%	0.2%	0.2%	0.3%	0.5%	0.3%	0.2%	0.7%	0.4%	0.5%	0.3%	0.3%
GraphicsMagick - Resizing (Iterations/min)	233	237	**301**	272	235	260	253	270	217	234	230	213	**200**
Normalized	77.41%	78.74%	100%	90.37%	78.07%	86.38%	84.05%	89.7%	72.09%	77.74%	76.41%	70.76%	66.45%
Standard Deviation							0.2%	0.9%		0.7%	0.3%		

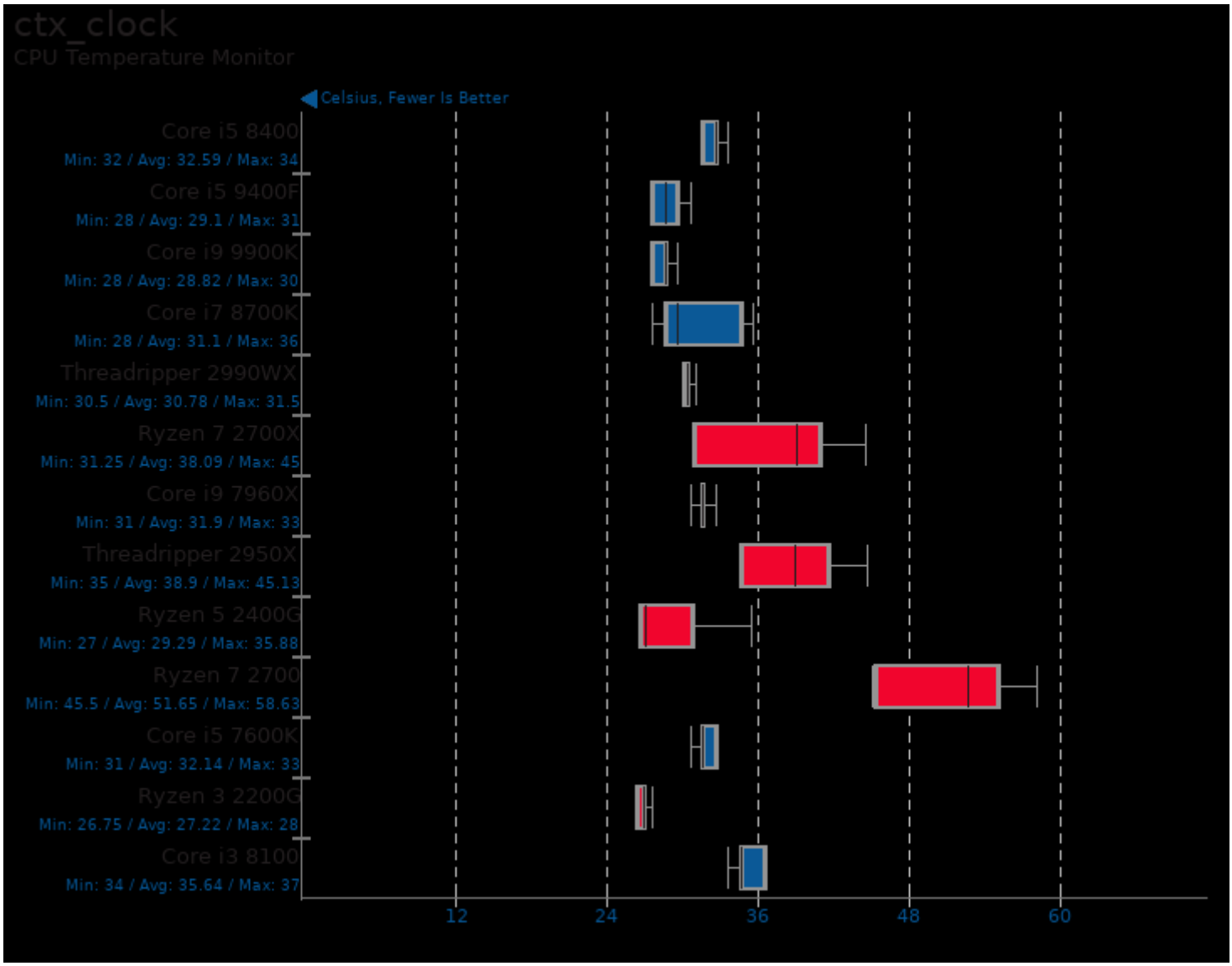
CPU Benchmarks

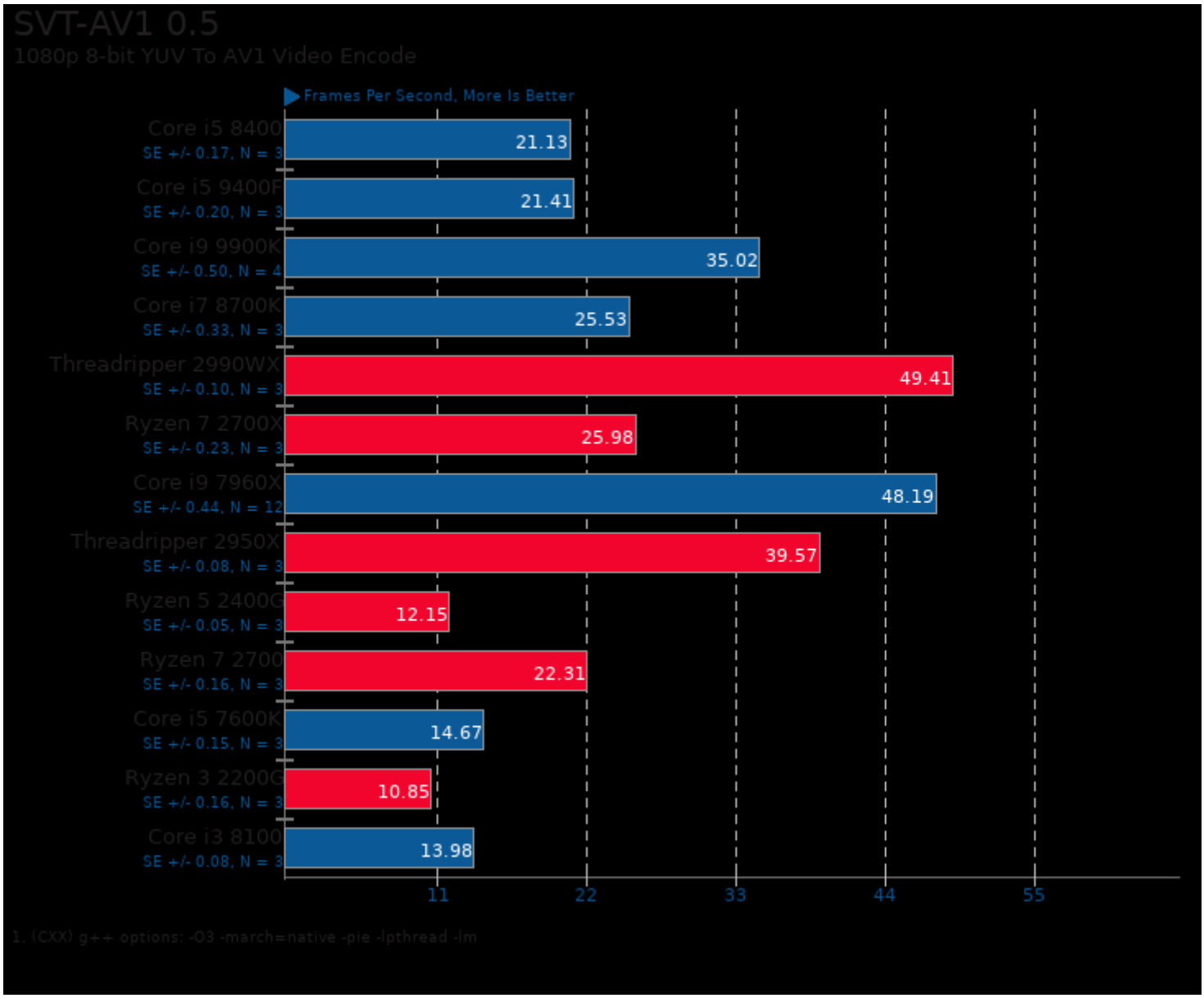
GraphicsMagick - Rotate (Iterations/min)	236	238	**297**	276	249	258	253	256	233	237	243	223	**212**
Normalized	79.46%	80.13%	100%	92.93%	83.84%	86.87%	85.19%	86.2%	78.45%	79.8%	81.82%	75.08%	71.38%
Standard Deviation	0.2%	0.6%				0.7%					0.5%		
GraphicsMagick - Sharpen (Iterations/min)	133	135	190	153	**219**	159	198	201	95	136	111	**85**	99
Normalized	60.73%	61.64%	86.76%	69.86%	100%	72.6%	90.41%	91.78%	43.38%	62.1%	50.68%	38.81%	45.21%
Standard Deviation					1.1%			0.3%	0.6%			2.7%	
m-queens - Time To Solve	161	158	79.40	113.38	**21.12**	71.72	51.15	37.61	152.26	84.79	229.79	251.28	**255.33**
Normalized	13.12%	13.37%	26.6%	18.63%	100%	29.45%	41.29%	56.16%	13.87%	24.91%	9.19%	8.4%	8.27%
Standard Deviation	0%	0%	0.1%	0%	0.2%	0%	0%	0.4%	0.3%	0.4%	0%	0.2%	0%
TTSIOD 3D Renderer - P.R.W.S.S.M (FPS)	300	307	577	428	530	369	**679**	473	244.68	324.80	210.56	**182.54**	195.50
Normalized	44.18%	45.21%	84.98%	63.03%	78.06%	54.34%	100%	69.66%	36.04%	47.84%	31.01%	26.88%	28.79%
Standard Deviation	0.3%	0.1%	0.3%	0.5%	2.5%	0%	0.3%	0.3%	0.1%	0.1%	0.2%	0.5%	0.4%
NAMD - ATPase Simulation - 327,506 Atoms (days/ns)	2.8435 8	2.7922 1	1.7518 1	2.1427 6	**0.7572 6**	2.2909 5	1.0676 3	1.2994 7	4.9332 3	2.6705 3	4.1585 6	**5.9185 6**	4.4720 6
Normalized	26.63%	27.12%	43.23%	35.34%	100%	33.05%	70.93%	58.27%	15.35%	28.36%	18.21%	12.79%	16.93%
Standard Deviation	0.4%	0.2%	0.3%	0.3%	0.1%	0%	0.3%	0.1%	0.1%	0.3%	0.2%	0.3%	0.4%
Radiance Benchmark - Serial (sec)	727	717	**584**	617	732	715	649	713	797.47	768.84	692.20	**844.00**	803.96
Normalized	80.33%	81.45%	100%	94.65%	79.78%	81.68%	89.98%	81.91%	73.23%	75.96%	84.37%	69.19%	72.64%
Radiance Benchmark - SMP Parallel (sec)	231	231	**186**	203	230	230	223	226	257.12	250.79	226.95	**257.51**	252.66
Normalized	80.52%	80.52%	100%	91.63%	80.87%	80.87%	83.41%	82.3%	72.34%	74.17%	81.96%	72.23%	73.62%
R Benchmark (sec)	0.3727	0.3703	**0.3038**	0.3237	0.3492	0.3430	0.3695	0.3519	0.3850	0.3765	0.3746	0.3902	**0.4136**
Normalized	81.51%	82.04%	100%	93.85%	87%	88.57%	82.22%	86.33%	78.91%	80.69%	81.1%	77.86%	73.45%
Standard Deviation	0.3%	0.3%	0.6%	0.3%	0.2%	0.3%	0.2%	0.5%	0.2%	0.5%	0.1%	0.4%	0.3%
Scikit-Learn (sec)	26.59	26.13	**21.33**	22.77	23.07	22.49	24.80	23.05	25.49	24.58	25.79	26.11	**29.52**
Normalized	80.22%	81.63%	100%	93.68%	92.46%	94.84%	86.01%	92.54%	83.68%	86.78%	82.71%	81.69%	72.26%
Standard Deviation	0.8%	0.6%	0.9%	1%	2.3%	0.7%	0.6%	0.6%	3%	1.3%	0.8%	0.7%	0.6%
x264 - H.2.V.E (FPS)	55.78	56.92	94.90	73.20	**146.12**	78.82	134.30	133.40	34.95	68.06	33.46	**26.57**	30.83
Normalized	38.17%	38.95%	64.95%	50.1%	100%	53.94%	91.91%	91.29%	23.92%	46.58%	22.9%	18.18%	21.1%
Standard Deviation	4.2%	4.4%	4.7%	3%	2.4%	2.9%	12.6%	0.8%	2.7%	2.9%	2.9%	2.7%	2.9%
x265 - H.2.1.V.E (FPS)	32.40	32.69	45.70	39.34	36.53	30.73	**54.83**	38.97	16.15	26.53	23.00	**14.06**	21.50
Normalized	59.09%	59.62%	83.35%	71.75%	66.62%	56.05%	100%	71.07%	29.45%	48.39%	41.95%	25.64%	39.21%
Standard Deviation	0.4%	0.2%	0.6%	0.7%	0.3%	0.7%	0.6%	0.3%	0.3%	1.3%	0.2%	0.2%	0.6%

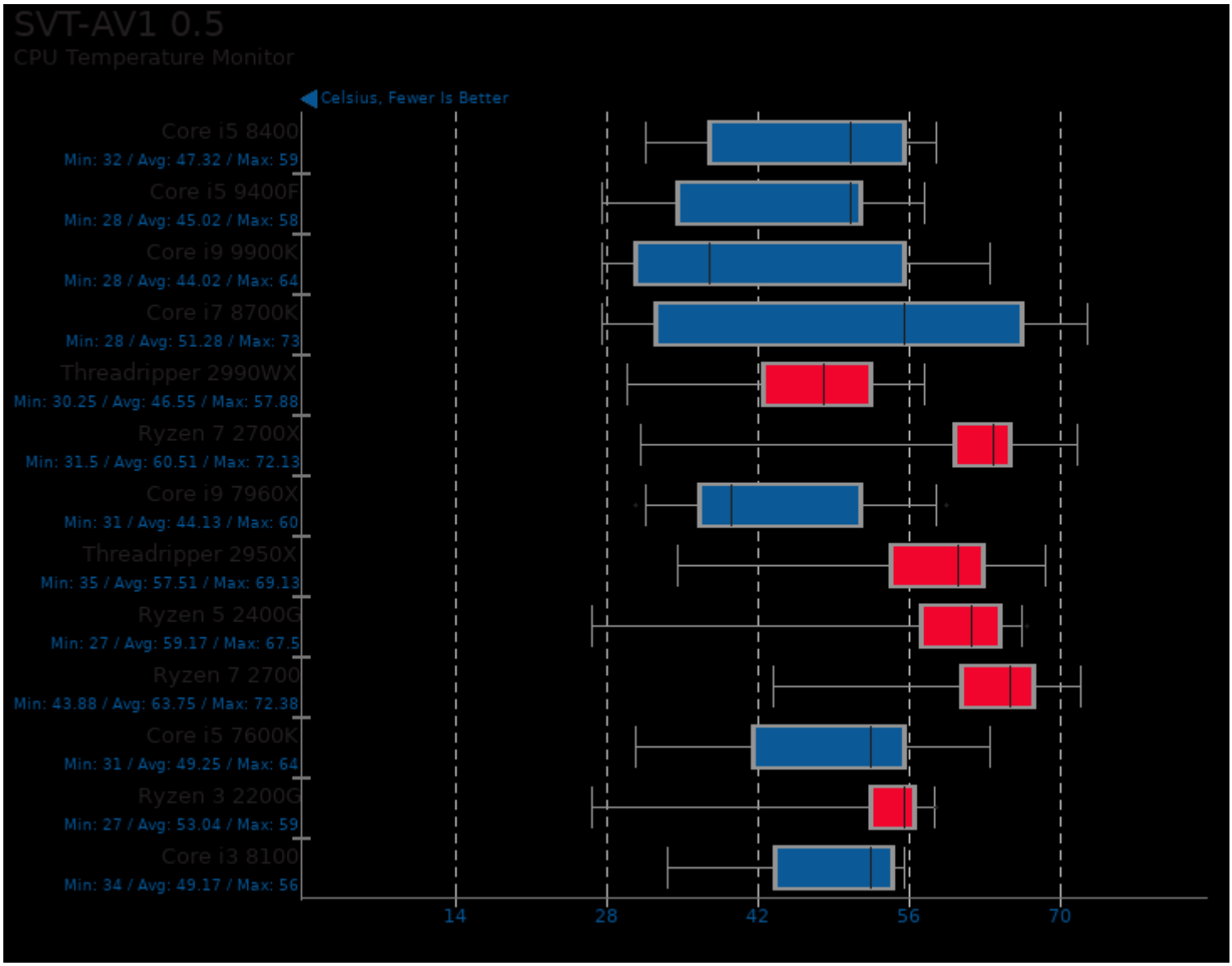
CPU Benchmarks

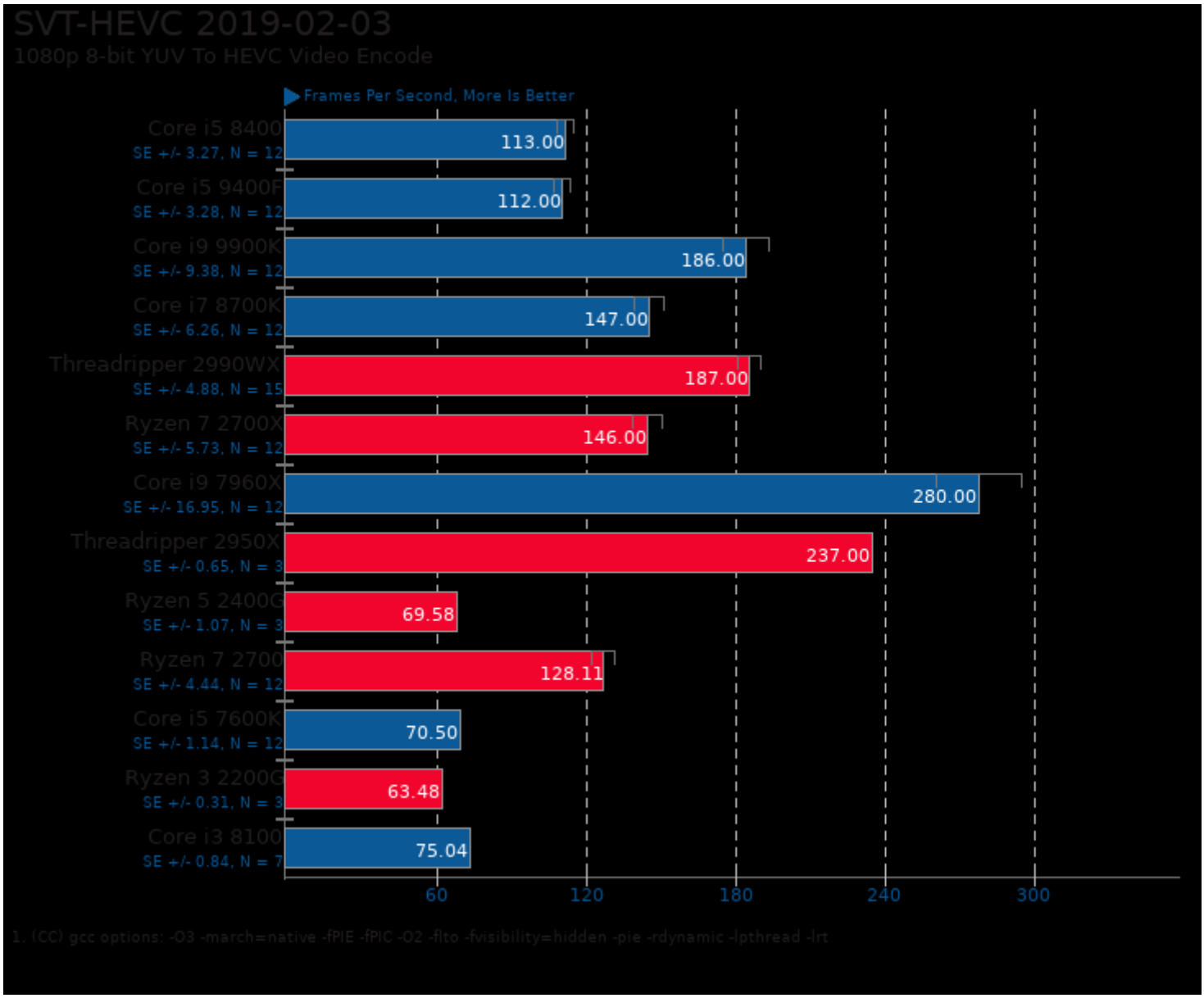
Tensorflow - Cifar10 (sec)	53.16	55.96	38.53	45.16	40.39	49.72	**24.49**	35.44	91.78	57.63	88.86	**108.88**	
Normalized	46.07%	43.76%	63.56%	54.23%	60.63%	49.26%	100%	69.1%	26.68%	42.5%	27.56%	22.49%	
Standard Deviation	0.6%	0.7%	0.1%	0.1%	0.3%	0.2%	0.5%	0.4%	0.2%	0.3%	0.2%	0.6%	
Tesseract OCR - T.T.O.7.I (sec)	26.56	25.81	**21.10**	23.02	**33.14**	28.67	26.41	31.68	31.31	32.06	25.63	31.96	28.91
Normalized	79.44%	81.75%	100%	91.66%	63.67%	73.6%	79.89%	66.6%	67.39%	65.81%	82.33%	66.02%	72.99%
Standard Deviation	1.5%	0.3%	0.3%	0.3%	0.9%	0.2%	0.1%	0.2%	0.1%	0.1%	0.3%	0.2%	0.5%
IndigoBench - Supercar (M samples/s)	1.48	1.42	3.20	2.38	**6.62**	2.66	5.51	4.55	1.21	2.34	0.91	**0.83**	0.92
Normalized	22.36%	21.45%	48.34%	35.95%	100%	40.18%	83.23%	68.73%	18.28%	35.35%	13.75%	12.54%	13.9%
Standard Deviation	0.3%	0.2%	0.4%	0.3%	5.4%	0.3%	0%	0.3%	0.5%	0.5%	0.3%	0.6%	0.3%
IndigoBench - Bedroom (M samples/s)	0.61	0.59	1.37	1.02	**3.20**	1.25	2.33	2.13	0.57	1.09	0.39	**0.38**	**0.38**
Normalized	19.06%	18.44%	42.81%	31.88%	100%	39.06%	72.81%	66.56%	17.81%	34.06%	12.19%	11.88%	11.88%
Standard Deviation	0.3%	0.6%	0.2%	0.1%	7.1%	0.5%	0.1%	0.1%	0.4%	0.4%	0.3%	0.2%	0.2%
Chaos Group V-RAY - CPU (Ksamples)	7351	7235	14536	11345	**30361**	12271	25145	20118	5564	10692	4790	**3996**	4606
Normalized	24.21%	23.83%	47.88%	37.37%	100%	40.42%	82.82%	66.26%	18.33%	35.22%	15.78%	13.16%	15.17%
Standard Deviation	0.5%	1%		0.3%	1.9%	0.3%	0.5%	0.1%	0.4%	0.3%		0.3%	0.3%
Core-Latency - A.L.B.C.C (ns)									**73.57**	**224.34**	98.69	81.76	112.38
Normalized									100%	32.79%	74.55%	89.98%	65.47%
CP2K Molecular Dynamics - Fayalite-FIST									**457.18**	**625.68**	467.05	539.16	538.89
Normalized									100%	73.07%	97.89%	84.79%	84.84%
GROMACS - Water Benchmark (Ns/Day)									**0.32**	**0.61**	0.40	**0.32**	0.53
Normalized									52.46%	100%	65.57%	52.46%	86.89%
Standard Deviation									1.1%	0.8%	0.3%	0.2%	0.3%
John The Ripper - MD5 (Real C/S)											**430182**	**250086**	387775
Normalized											100%	58.13%	90.14%
Standard Deviation											0.4%	0.6%	0.1%
John The Ripper - Blowfish (Real											**6467**	**5695**	5815
Normalized											100%	88.06%	89.92%
Standard Deviation												2.5%	0.1%

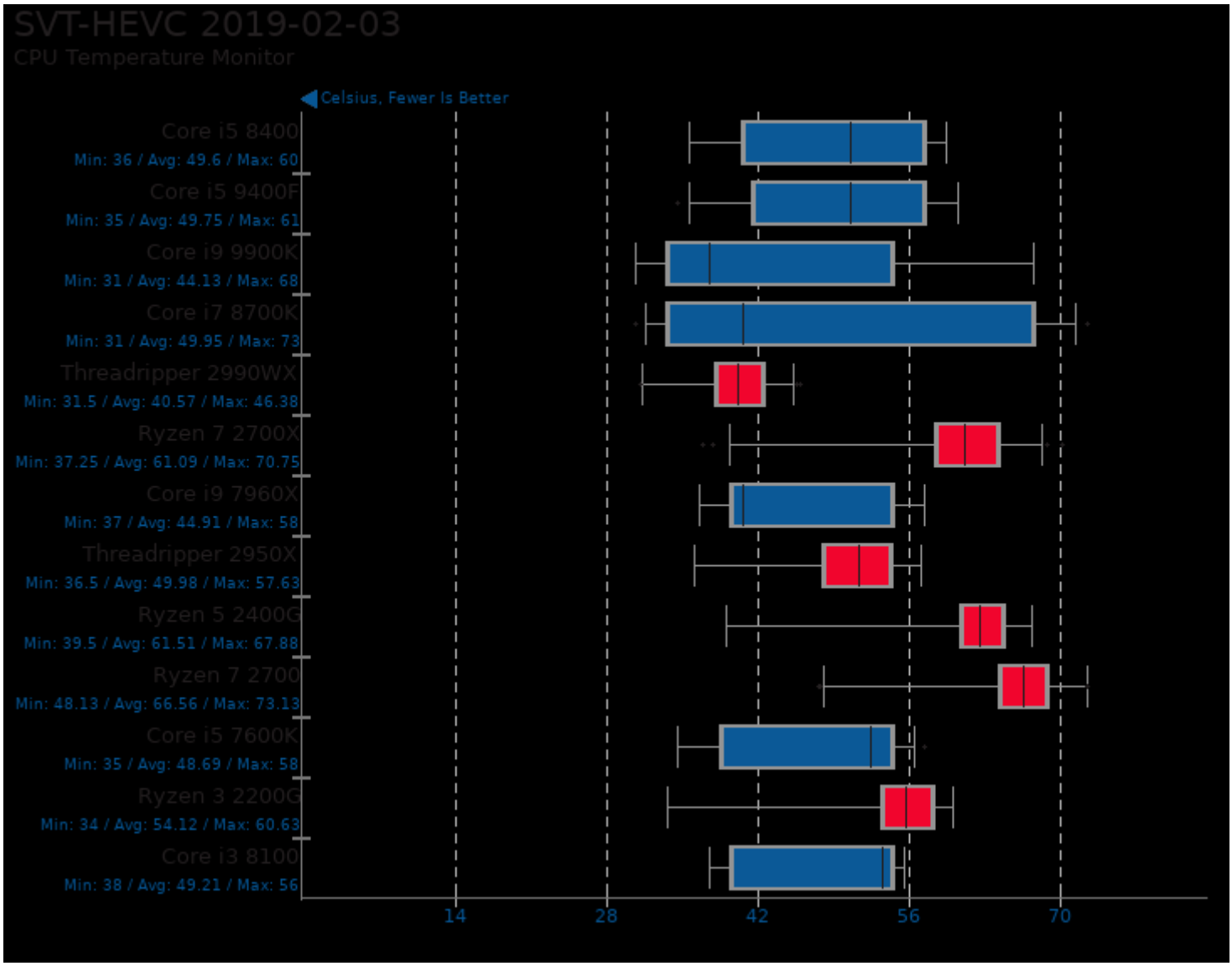

ctx_clock
Context Switch Time
Clocks, Fewer Is Better
Core i5 8400
SE +/- 2.00, N = 3
827
Core i5 9400F
SE +/- 3.46, N = 3
829
Core i9 9900K
SE +/- 0.67, N = 3
485
Core i7 8700K
918
Threadripper 2990WX
150
Ryzen 7 2700X
185
Core i9 7960X
710
Threadripper 2950X
175
Ryzen 5 2400G
180
Ryzen 7 2700
160
Core i5 7600K
SE +/- 1.33, N = 3
1051
Ryzen 3 2200G
210
Core i3 8100
SE +/- 1.76, N = 3
1165
300
600
900
1200
1500
1. (CC) gcc options: -O3 -march=native

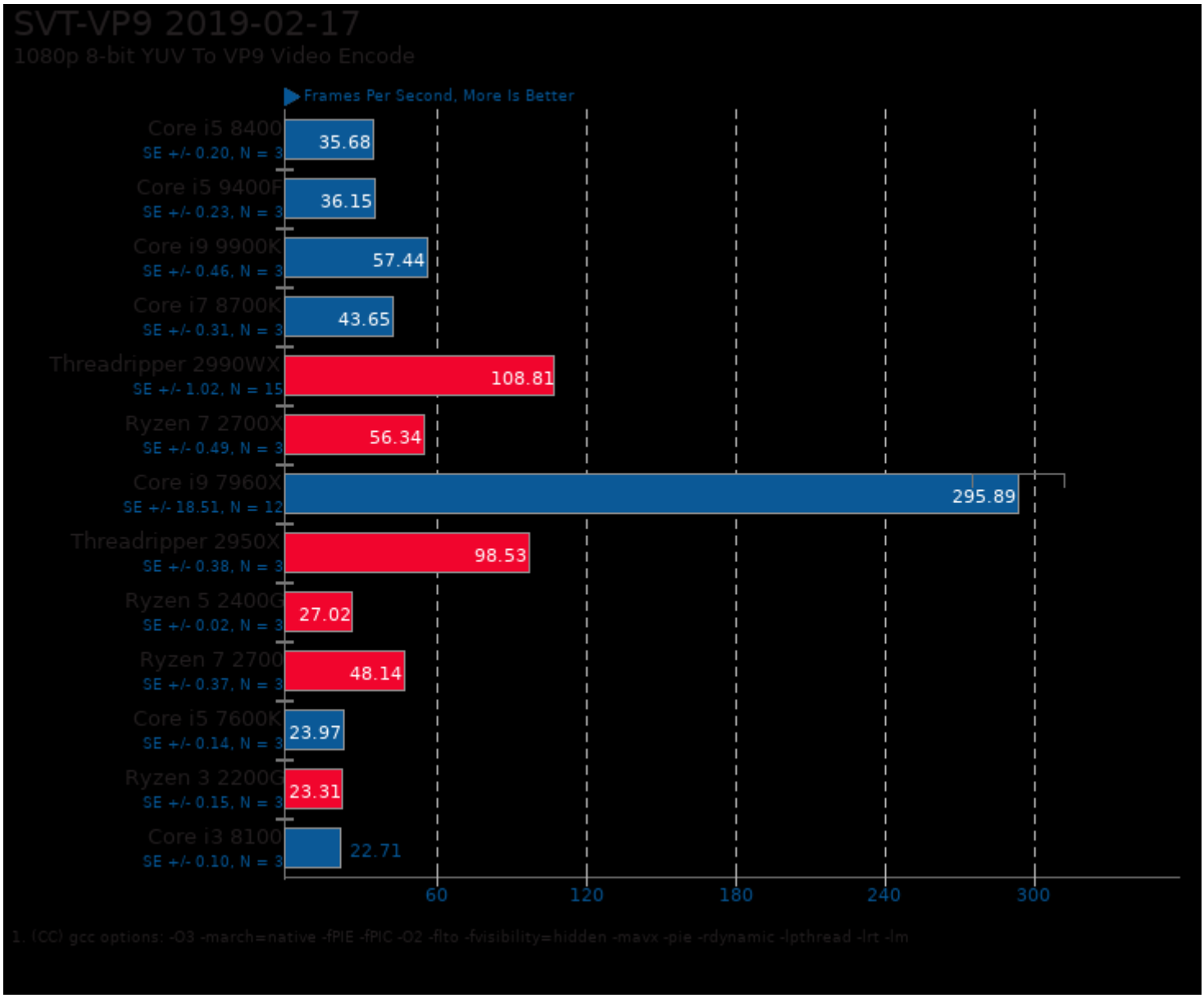

ctx_clock
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 32 / Avg: 32.59 / Max: 34
Core i5 9400F
Min: 28 / Avg: 29.1 / Max: 31
Core i9 9900K
Min: 28 / Avg: 28.82 / Max: 30
Core i7 8700K
Min: 28 / Avg: 31.1 / Max: 36
Threadripper 2990WX
Min: 30.5 / Avg: 30.78 / Max: 31.5
Ryzen 7 2700X
Min: 31.25 / Avg: 38.09 / Max: 45
Core i9 7960X
Min: 31 / Avg: 31.9 / Max: 33
Threadripper 2950X
Min: 35 / Avg: 38.9 / Max: 45.13
Ryzen 5 2400G
Min: 27 / Avg: 29.29 / Max: 35.88
Ryzen 7 2700
Min: 45.5 / Avg: 51.65 / Max: 58.63
Core i5 7600K
Min: 31 / Avg: 32.14 / Max: 33
Ryzen 3 2200G
Min: 26.75 / Avg: 27.22 / Max: 28
Core i3 8100
Min: 34 / Avg: 35.64 / Max: 37
12
24
36
48
60

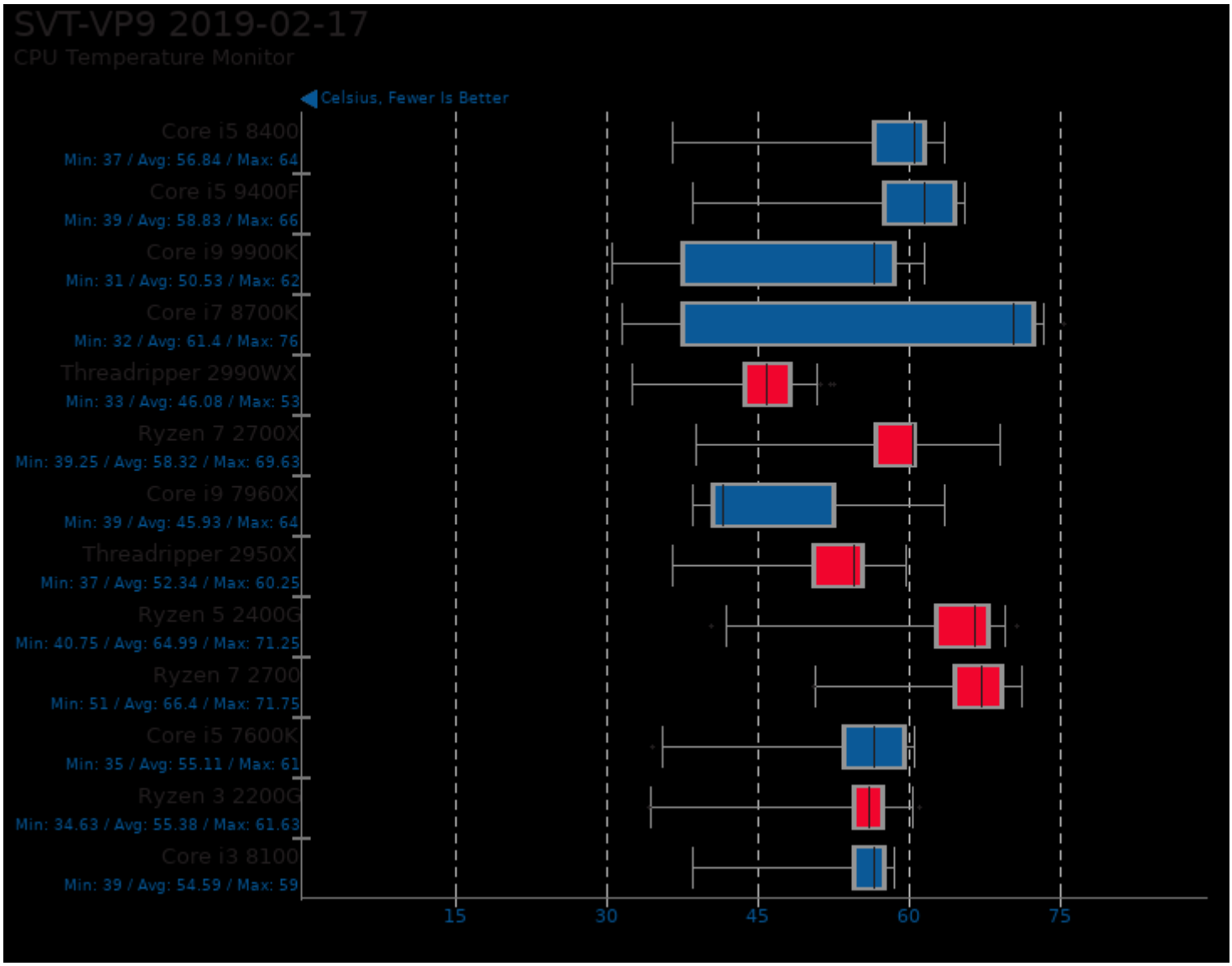

SVT-AV1 0.5
1080p 8-bit YUV To AV1 Video Encode
Frames Per Second, More Is Better
Core i5 8400
SE +/- 0.17, N = 3
21.13
Core i5 9400F
SE +/- 0.20, N = 3
21.41
Core i9 9900K
SE +/- 0.50, N = 4
35.02
Core i7 8700K
SE +/- 0.33, N = 3
25.53
Threadripper 2990WX
SE +/- 0.10, N = 3
49.41
Ryzen 7 2700X
SE +/- 0.23, N = 3
25.98
Core i9 7960X
SE +/- 0.44, N = 12
48.19
Threadripper 2950X
SE +/- 0.08, N = 3
39.57
Ryzen 5 2400G
SE +/- 0.05, N = 3
12.15
Ryzen 7 2700
SE +/- 0.16, N = 3
22.31
Core i5 7600K
SE +/- 0.15, N = 3
14.67
Ryzen 3 2200G
SE +/- 0.16, N = 3
10.85
Core i3 8100
SE +/- 0.08, N = 3
13.98
11
22
33
44
55
1. (CXX) g++ options: -O3 -march=native -pie -lpthread -lm

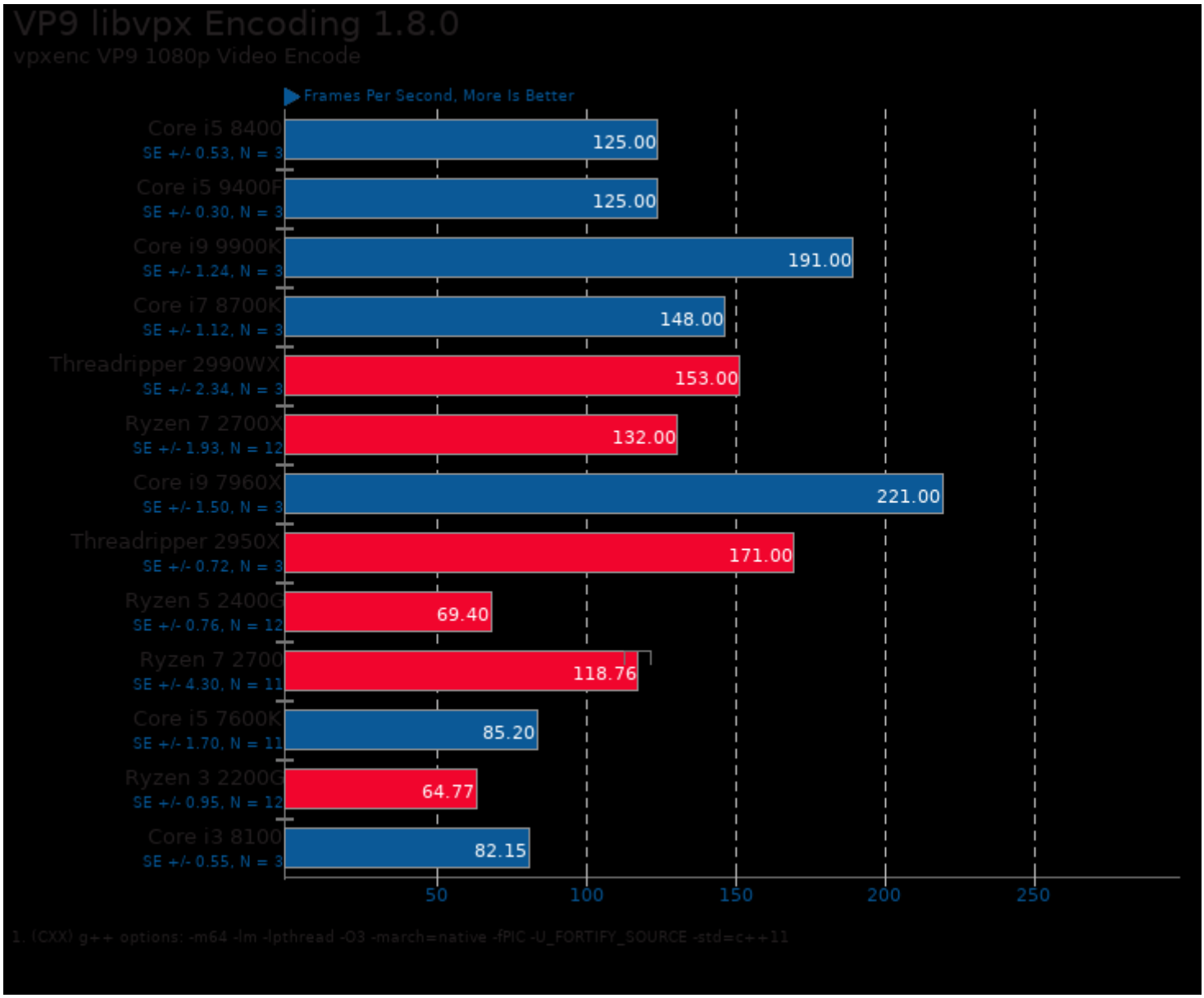

SVT-AV1 0.5
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 32 / Avg: 47.32 / Max: 59
Core i5 9400F
Min: 28 / Avg: 45.02 / Max: 58
Core i9 9900K
Min: 28 / Avg: 44.02 / Max: 64
Core i7 8700K
Min: 28 / Avg: 51.28 / Max: 73
Threadripper 2990WX
Min: 30.25 / Avg: 46.55 / Max: 57.88
Ryzen 7 2700X
Min: 31.5 / Avg: 60.51 / Max: 72.13
Core i9 7960X
Min: 31 / Avg: 44.13 / Max: 60
Threadripper 2950X
Min: 35 / Avg: 57.51 / Max: 69.13
Ryzen 5 2400G
Min: 27 / Avg: 59.17 / Max: 67.5
Ryzen 7 2700
Min: 43.88 / Avg: 63.75 / Max: 72.38
Core i5 7600K
Min: 31 / Avg: 49.25 / Max: 64
Ryzen 3 2200G
Min: 27 / Avg: 53.04 / Max: 59
Core i3 8100
Min: 34 / Avg: 49.17 / Max: 56
14
28
42
56
70

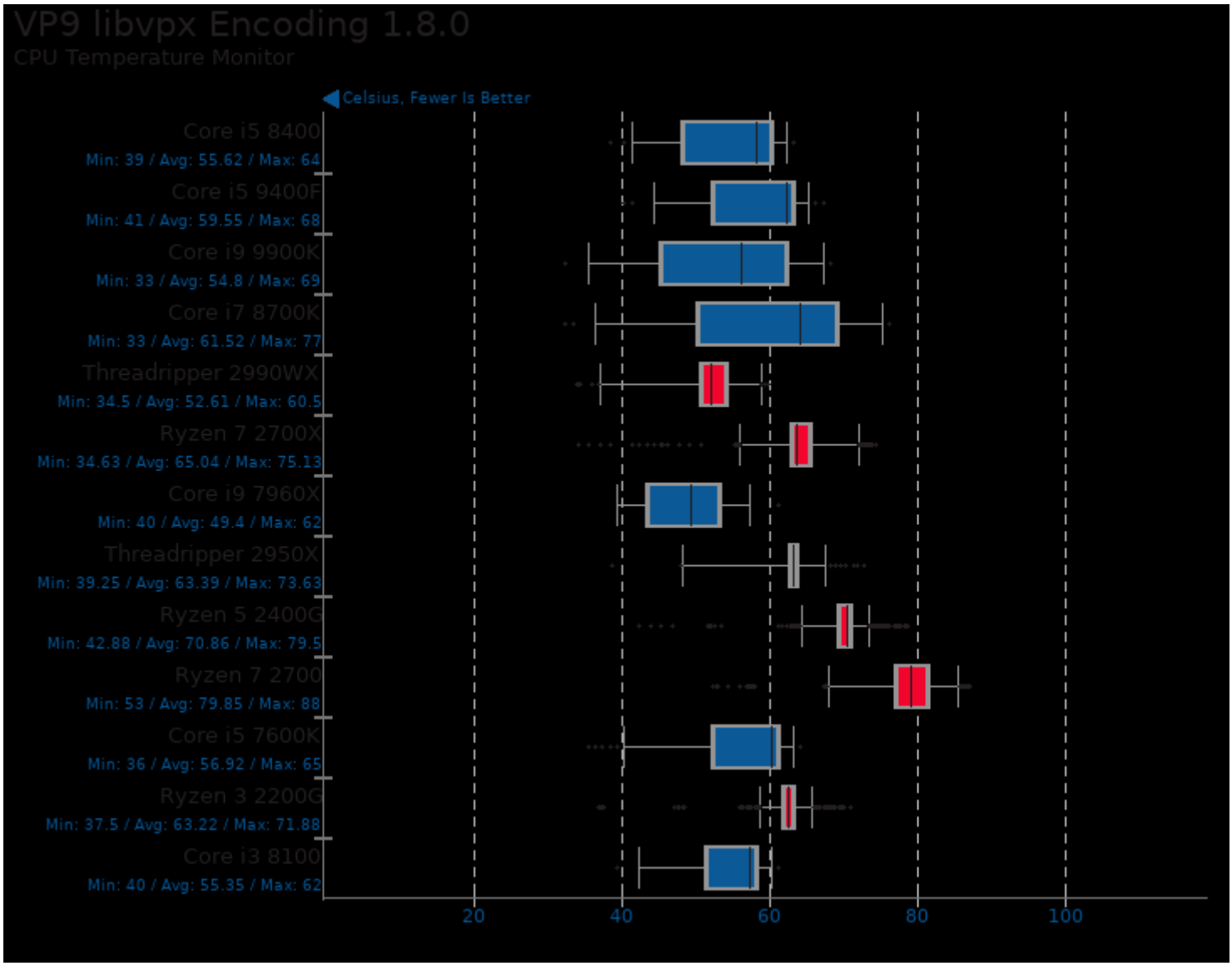

SVT-HEVC 2019-02-03
1080p 8-bit YUV To HEVC Video Encode
Frames Per Second, More Is Better
Core i5 8400
SE +/- 3.27, N = 12
113.00
Core i5 9400F
SE +/- 3.28, N = 12
112.00
Core i9 9900K
SE +/- 9.38, N = 12
186.00
Core i7 8700K
SE +/- 6.26, N = 12
147.00
Threadripper 2990WX
SE +/- 4.88, N = 15
187.00
Ryzen 7 2700X
SE +/- 5.73, N = 12
146.00
Core i9 7960X
SE +/- 16.95, N = 12
280.00
Threadripper 2950X
SE +/- 0.65, N = 3
237.00
Ryzen 5 2400G
SE +/- 1.07, N = 3
69.58
Ryzen 7 2700
SE +/- 4.44, N = 12
128.11
Core i5 7600K
SE +/- 1.14, N = 12
70.50
Ryzen 3 2200G
SE +/- 0.31, N = 3
63.48
Core i3 8100
SE +/- 0.84, N = 7
75.04
60
120
180
240
300
1. (CC) gcc options: -O3 -march=native -fPIE -fPIC -O2 -flto -fvisibility=hidden -pie -rdynamic -lpthread -lrt

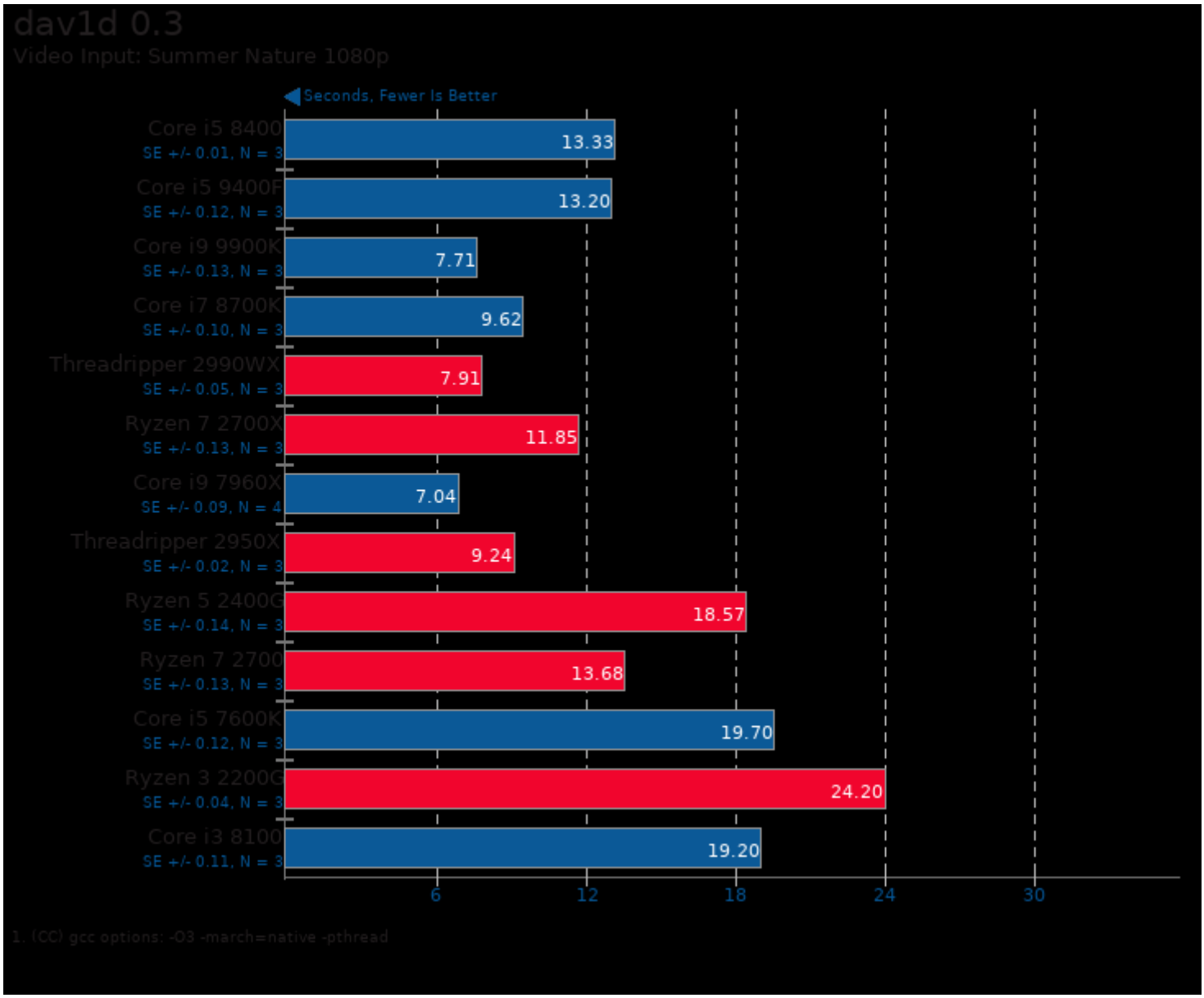

SVT-HEVC 2019-02-03
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 36 / Avg: 49.6 / Max: 60
Core i5 9400F
Min: 35 / Avg: 49.75 / Max: 61
Core i9 9900K
Min: 31 / Avg: 44.13 / Max: 68
Core i7 8700K
Min: 31 / Avg: 49.95 / Max: 73
Threadripper 2990WX
Min: 31.5 / Avg: 40.57 / Max: 46.38
Ryzen 7 2700X
Min: 37.25 / Avg: 61.09 / Max: 70.75
Core i9 7960X
Min: 37 / Avg: 44.91 / Max: 58
Threadripper 2950X
Min: 36.5 / Avg: 49.98 / Max: 57.63
Ryzen 5 2400G
Min: 39.5 / Avg: 61.51 / Max: 67.88
Ryzen 7 2700
Min: 48.13 / Avg: 66.56 / Max: 73.13
Core i5 7600K
Min: 35 / Avg: 48.69 / Max: 58
Ryzen 3 2200G
Min: 34 / Avg: 54.12 / Max: 60.63
Core i3 8100
Min: 38 / Avg: 49.21 / Max: 56
14
28
42
56
70

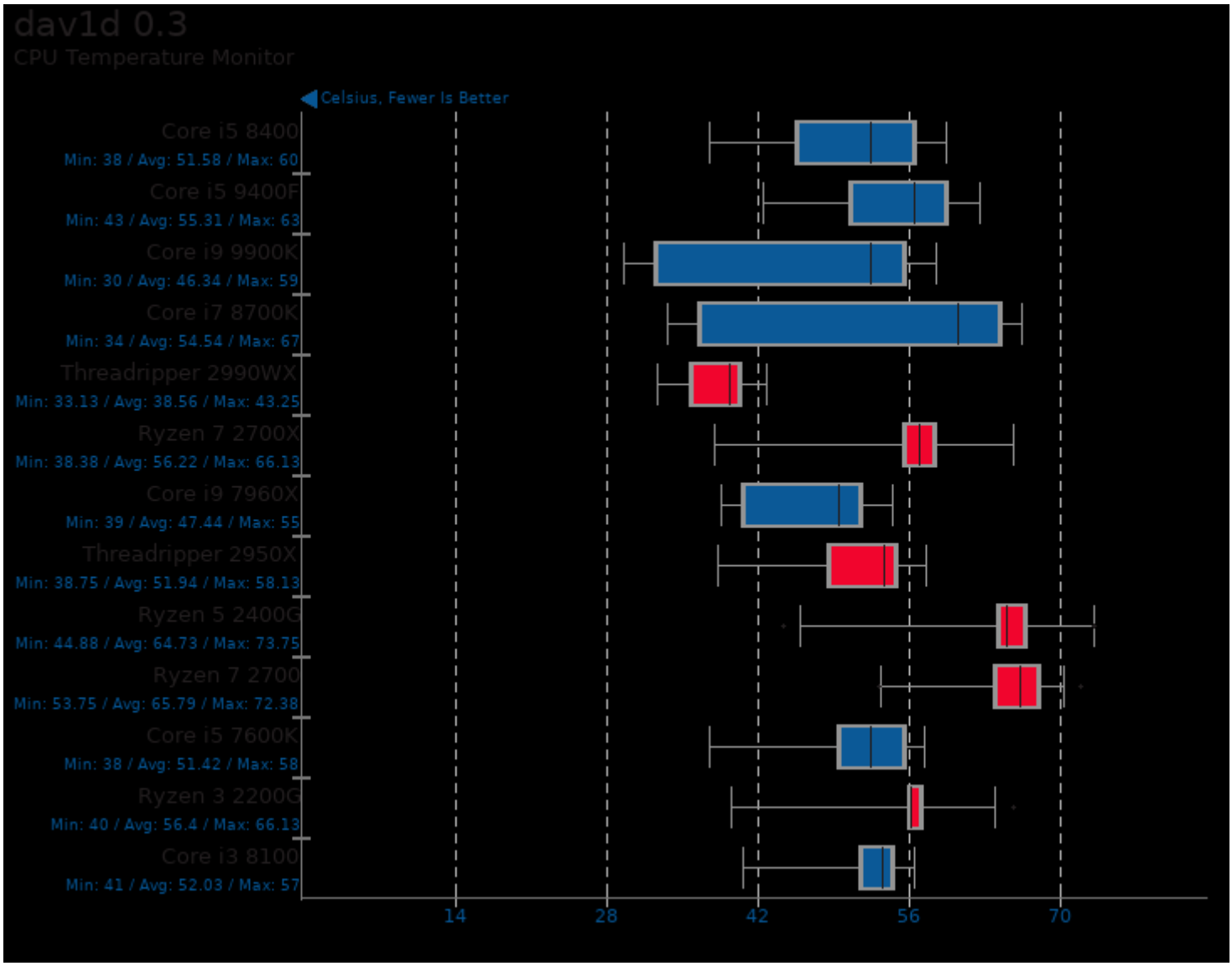

SVT-VP9 2019-02-17
1080p 8-bit YUV To VP9 Video Encode
Frames Per Second, More Is Better
Core i5 8400
SE +/- 0.20, N = 3
35.68
Core i5 9400F
SE +/- 0.23, N = 3
36.15
Core i9 9900K
SE +/- 0.46, N = 3
57.44
Core i7 8700K
SE +/- 0.31, N = 3
43.65
Threadripper 2990WX
SE +/- 1.02, N = 15
108.81
Ryzen 7 2700X
SE +/- 0.49, N = 3
56.34
Core i9 7960X
SE +/- 18.51, N = 12
295.89
Threadripper 2950X
SE +/- 0.38, N = 3
98.53
Ryzen 5 2400G
SE +/- 0.02, N = 3
27.02
Ryzen 7 2700
SE +/- 0.37, N = 3
48.14
Core i5 7600K
SE +/- 0.14, N = 3
23.97
Ryzen 3 2200G
SE +/- 0.15, N = 3
23.31
Core i3 8100
SE +/- 0.10, N = 3
22.71
60
120
180
240
300
1. (CC) gcc options: -O3 -march=native -fPIE -fPIC -O2 -flto -fvisibility=hidden -mavx -pie -rdynamic -lpthread -lrt -lm

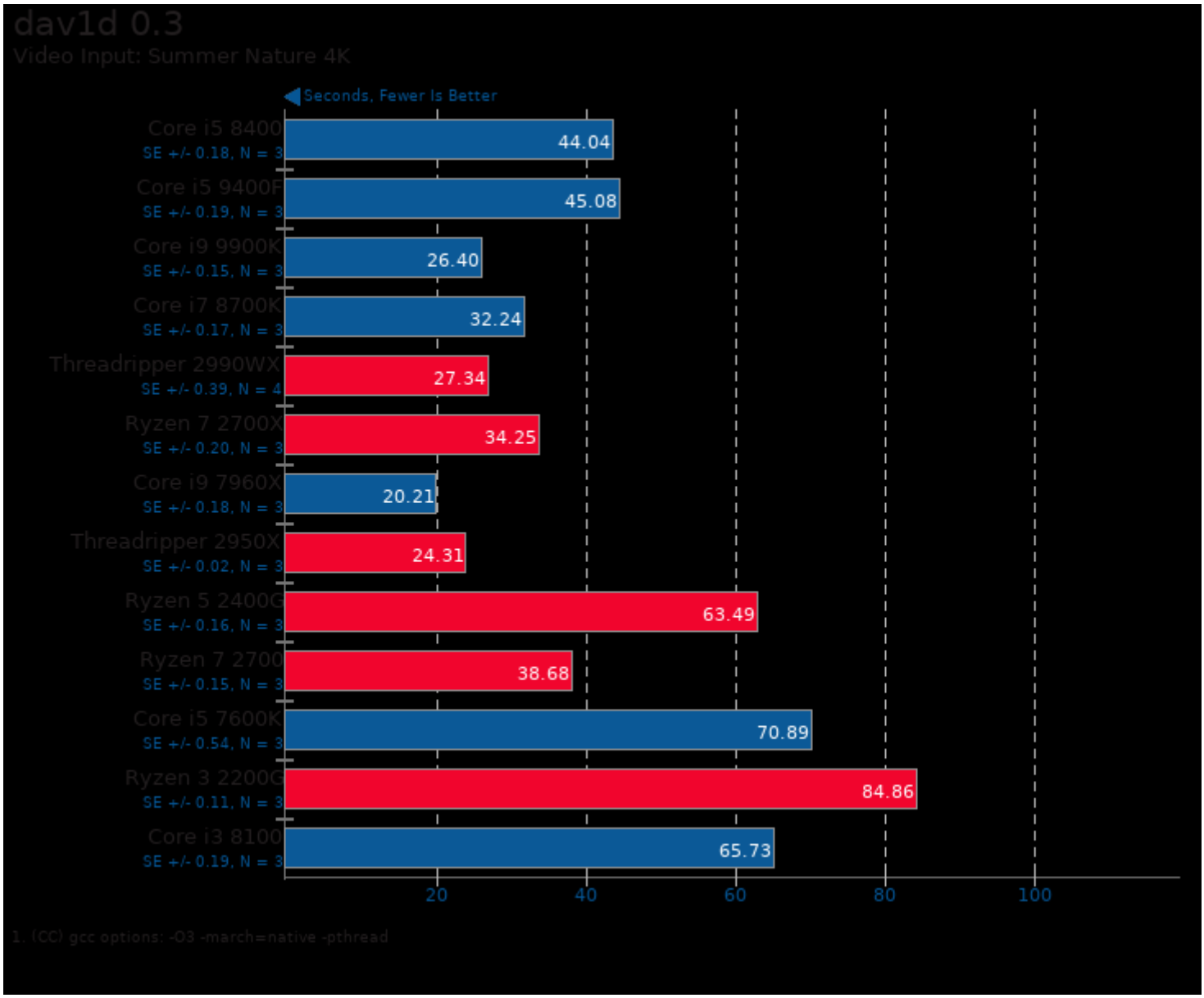

SVT-VP9 2019-02-17
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 37 / Avg: 56.84 / Max: 64
Core i5 9400F
Min: 39 / Avg: 58.83 / Max: 66
Core i9 9900K
Min: 31 / Avg: 50.53 / Max: 62
Core i7 8700K
Min: 32 / Avg: 61.4 / Max: 76
Threadripper 2990WX
Min: 33 / Avg: 46.08 / Max: 53
Ryzen 7 2700X
Min: 39.25 / Avg: 58.32 / Max: 69.63
Core i9 7960X
Min: 39 / Avg: 45.93 / Max: 64
Threadripper 2950X
Min: 37 / Avg: 52.34 / Max: 60.25
Ryzen 5 2400G
Min: 40.75 / Avg: 64.99 / Max: 71.25
Ryzen 7 2700
Min: 51 / Avg: 66.4 / Max: 71.75
Core i5 7600K
Min: 35 / Avg: 55.11 / Max: 61
Ryzen 3 2200G
Min: 34.63 / Avg: 55.38 / Max: 61.63
Core i3 8100
Min: 39 / Avg: 54.59 / Max: 59
15
30
45
60
75

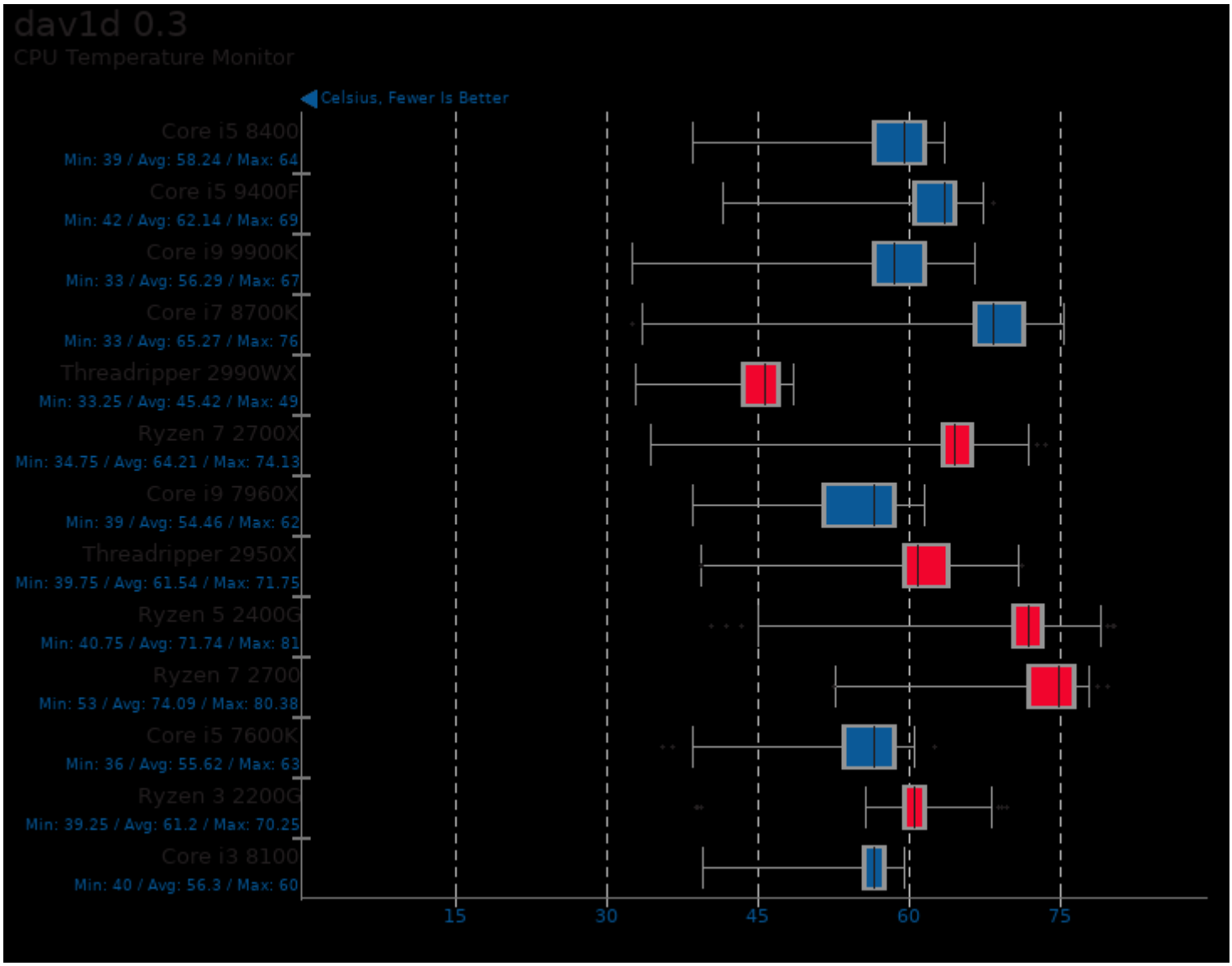

VP9 libvpx Encoding 1.8.0
vpxenc VP9 1080p Video Encode
Frames Per Second, More Is Better
Core i5 8400
SE +/- 0.53, N = 3
125.00
Core i5 9400F
SE +/- 0.30, N = 3
125.00
Core i9 9900K
SE +/- 1.24, N = 3
191.00
Core i7 8700K
SE +/- 1.12, N = 3
148.00
Threadripper 2990WX
SE +/- 2.34, N = 3
153.00
Ryzen 7 2700X
SE +/- 1.93, N = 12
132.00
Core i9 7960X
SE +/- 1.50, N = 3
221.00
Threadripper 2950X
SE +/- 0.72, N = 3
171.00
Ryzen 5 2400G
SE +/- 0.76, N = 12
69.40
Ryzen 7 2700
SE +/- 4.30, N = 11
118.76
Core i5 7600K
SE +/- 1.70, N = 11
85.20
Ryzen 3 2200G
SE +/- 0.95, N = 12
64.77
Core i3 8100
SE +/- 0.55, N = 3
82.15
50
100
150
200
250
1. (CXX) g++ options: -m64 -lm -lpthread -O3 -march=native -fPIC -U_FORTIFY_SOURCE -std=c++11

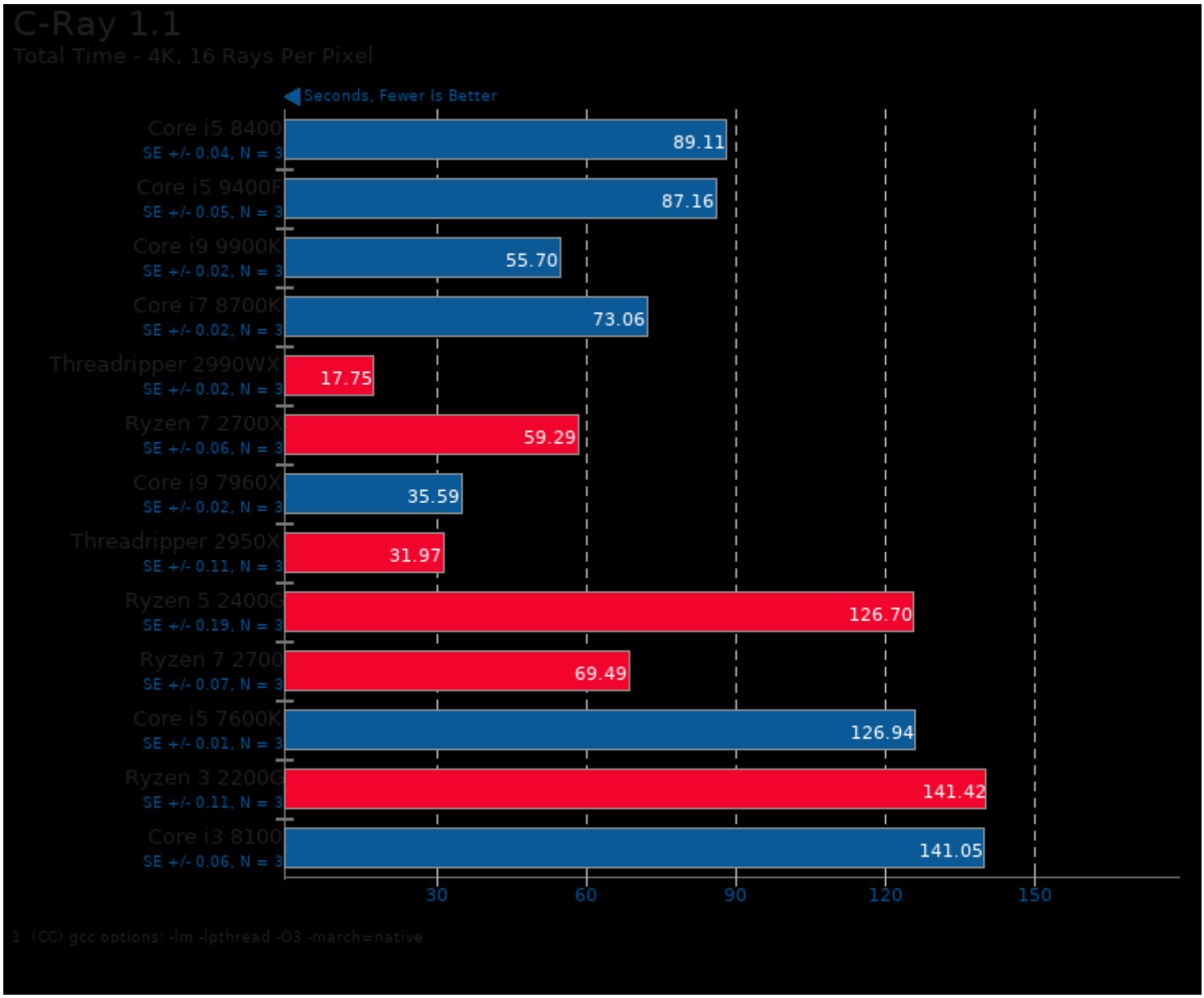

VP9 libvpx Encoding 1.8.0
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 39 / Avg: 55.62 / Max: 64
Core i5 9400F
Min: 41 / Avg: 59.55 / Max: 68
Core i9 9900K
Min: 33 / Avg: 54.8 / Max: 69
Core i7 8700K
Min: 33 / Avg: 61.52 / Max: 77
Threadripper 2990WX
Min: 34.5 / Avg: 52.61 / Max: 60.5
Ryzen 7 2700X
Min: 34.63 / Avg: 65.04 / Max: 75.13
Core i9 7960X
Min: 40 / Avg: 49.4 / Max: 62
Threadripper 2950X
Min: 39.25 / Avg: 63.39 / Max: 73.63
Ryzen 5 2400G
Min: 42.88 / Avg: 70.86 / Max: 79.5
Ryzen 7 2700
Min: 53 / Avg: 79.85 / Max: 88
Core i5 7600K
Min: 36 / Avg: 56.92 / Max: 65
Ryzen 3 2200G
Min: 37.5 / Avg: 63.22 / Max: 71.88
Core i3 8100
Min: 40 / Avg: 55.35 / Max: 62
20
40
60
80
100

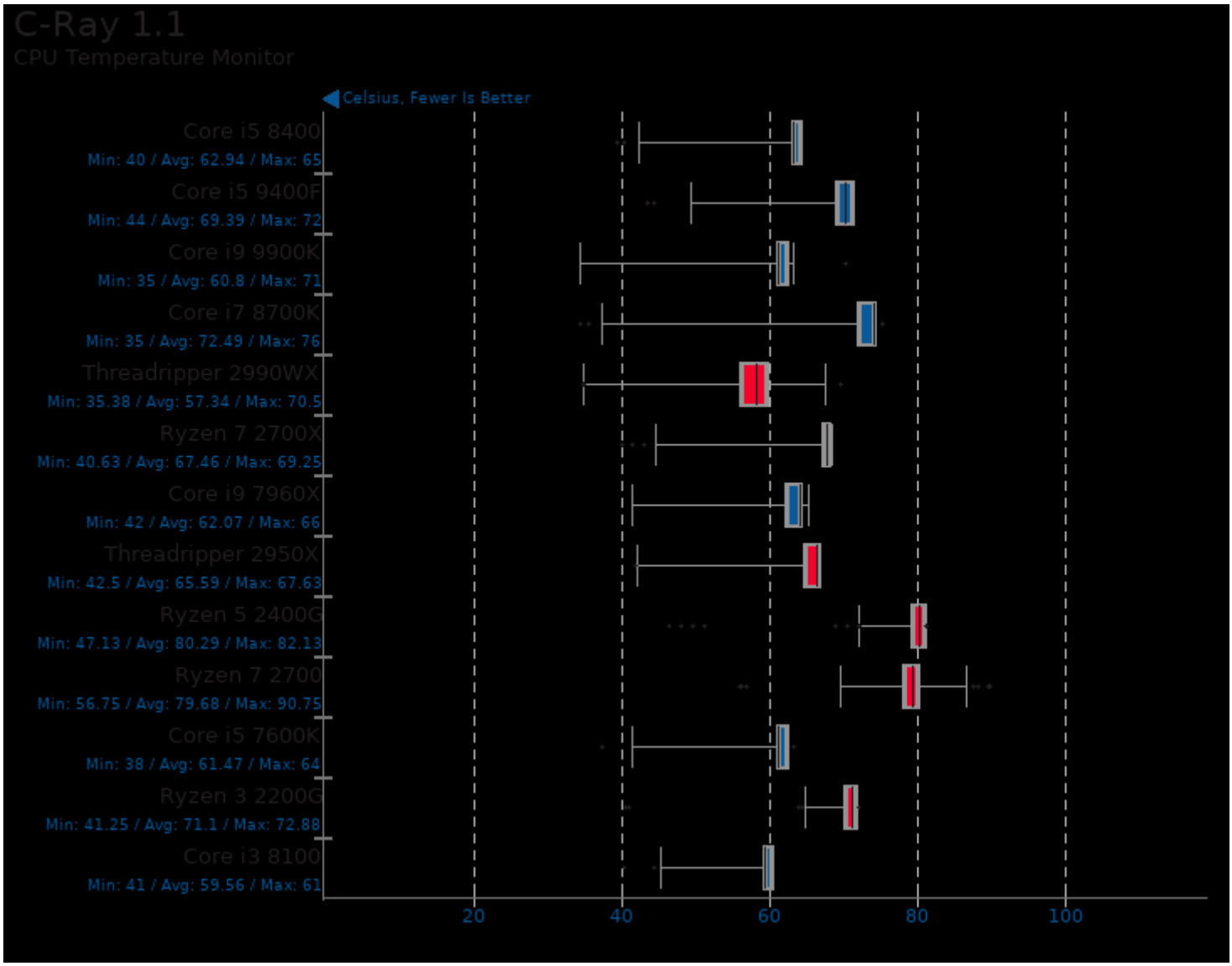

dav1d 0.3
Video Input: Summer Nature 1080p
Seconds, Fewer Is Better
Core i5 8400
SE +/- 0.01, N = 3
13.33
Core i5 9400F
SE +/- 0.12, N = 3
13.20
Core i9 9900K
SE +/- 0.13, N = 3
7.71
Core i7 8700K
SE +/- 0.10, N = 3
9.62
Threadripper 2990WX
SE +/- 0.05, N = 3
7.91
Ryzen 7 2700X
SE +/- 0.13, N = 3
11.85
Core i9 7960X
SE +/- 0.09, N = 4
7.04
Threadripper 2950X
SE +/- 0.02, N = 3
9.24
Ryzen 5 2400G
SE +/- 0.14, N = 3
18.57
Ryzen 7 2700
SE +/- 0.13, N = 3
13.68
Core i5 7600K
SE +/- 0.12, N = 3
19.70
Ryzen 3 2200G
SE +/- 0.04, N = 3
24.20
Core i3 8100
SE +/- 0.11, N = 3
19.20
6
12
18
24
30
1. (CC) gcc options: -O3 -march=native -pthread

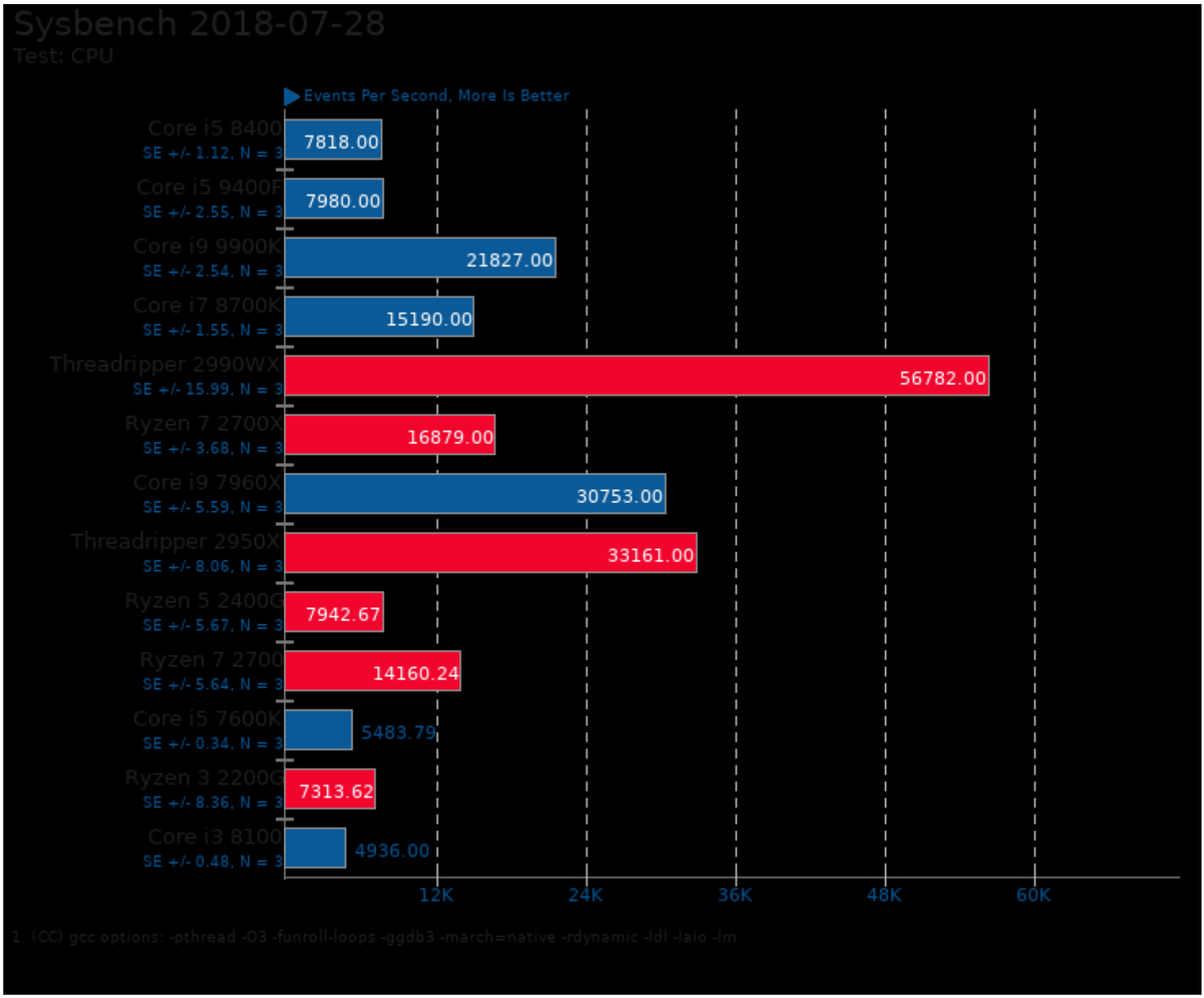

dav1d 0.3
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 38 / Avg: 51.58 / Max: 60
Core i5 9400F
Min: 43 / Avg: 55.31 / Max: 63
Core i9 9900K
Min: 30 / Avg: 46.34 / Max: 59
Core i7 8700K
Min: 34 / Avg: 54.54 / Max: 67
Threadripper 2990WX
Min: 33.13 / Avg: 38.56 / Max: 43.25
Ryzen 7 2700X
Min: 38.38 / Avg: 56.22 / Max: 66.13
Core i9 7960X
Min: 39 / Avg: 47.44 / Max: 55
Threadripper 2950X
Min: 38.75 / Avg: 51.94 / Max: 58.13
Ryzen 5 2400G
Min: 44.88 / Avg: 64.73 / Max: 73.75
Ryzen 7 2700
Min: 53.75 / Avg: 65.79 / Max: 72.38
Core i5 7600K
Min: 38 / Avg: 51.42 / Max: 58
Ryzen 3 2200G
Min: 40 / Avg: 56.4 / Max: 66.13
Core i3 8100
Min: 41 / Avg: 52.03 / Max: 57
14
28
42
56
70

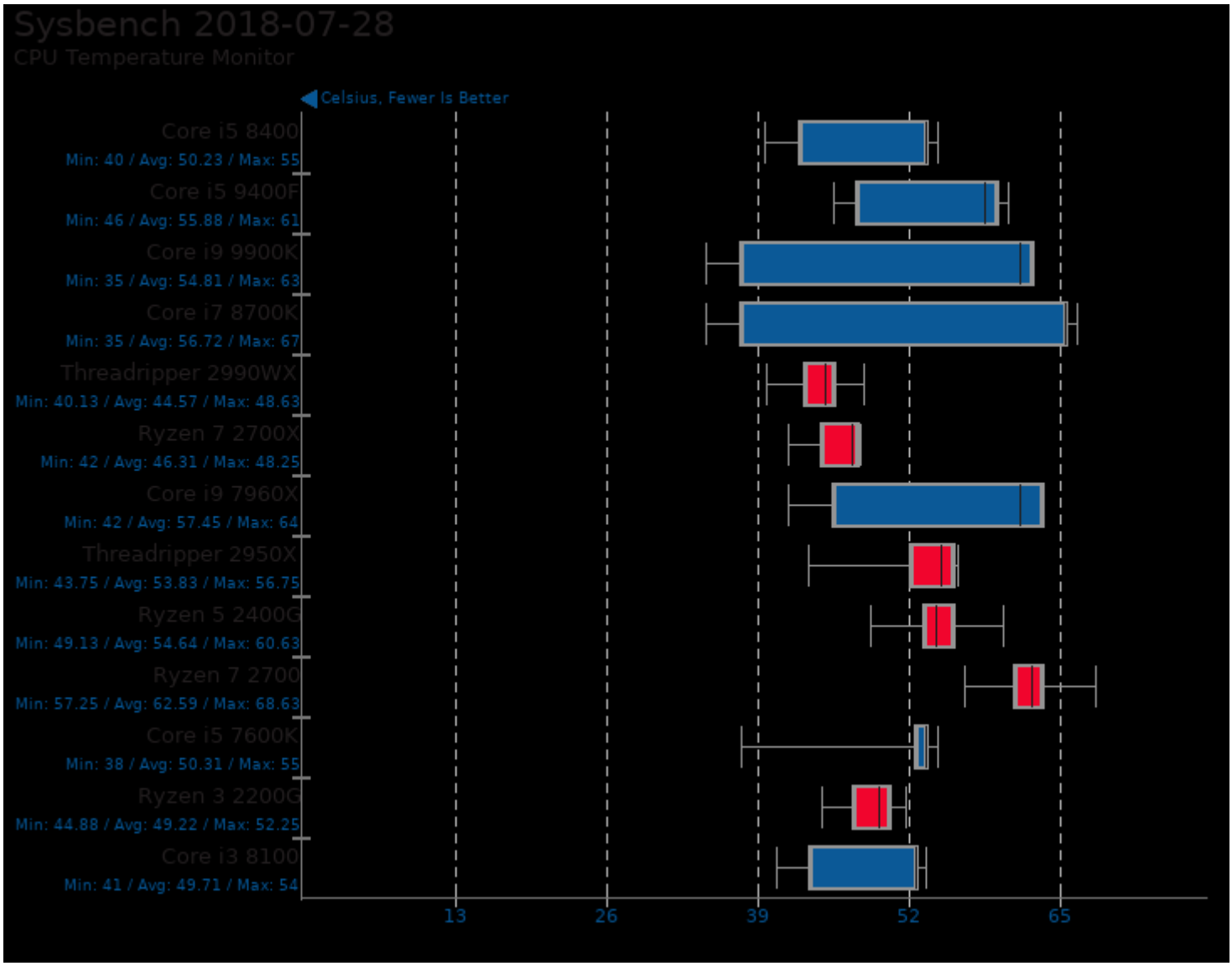

dav1d 0.3
Video Input: Summer Nature 4K
Seconds, Fewer Is Better
Core i5 8400
SE +/- 0.18, N = 3
44.04
Core i5 9400F
SE +/- 0.19, N = 3
45.08
Core i9 9900K
SE +/- 0.15, N = 3
26.40
Core i7 8700K
SE +/- 0.17, N = 3
32.24
Threadripper 2990WX
SE +/- 0.39, N = 4
27.34
Ryzen 7 2700X
SE +/- 0.20, N = 3
34.25
Core i9 7960X
SE +/- 0.18, N = 3
20.21
Threadripper 2950X
SE +/- 0.02, N = 3
24.31
Ryzen 5 2400G
SE +/- 0.16, N = 3
63.49
Ryzen 7 2700
SE +/- 0.15, N = 3
38.68
Core i5 7600K
SE +/- 0.54, N = 3
70.89
Ryzen 3 2200G
SE +/- 0.11, N = 3
84.86
Core i3 8100
SE +/- 0.19, N = 3
65.73
20
40
60
80
100
1. (CC) gcc options: -O3 -march=native -pthread

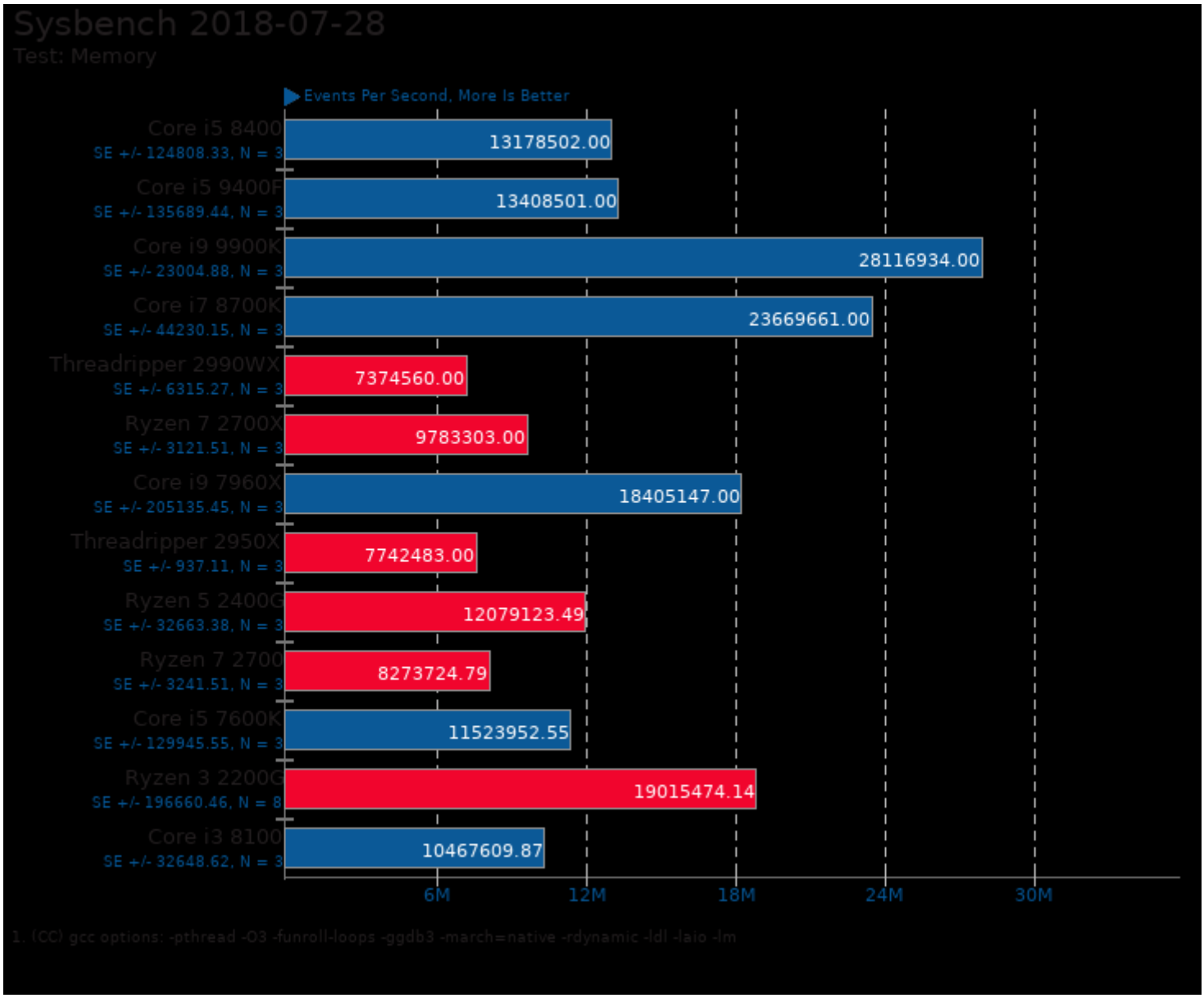

dav1d 0.3
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 39 / Avg: 58.24 / Max: 64
Core i5 9400F
Min: 42 / Avg: 62.14 / Max: 69
Core i9 9900K
Min: 33 / Avg: 56.29 / Max: 67
Core i7 8700K
Min: 33 / Avg: 65.27 / Max: 76
Threadripper 2990WX
Min: 33.25 / Avg: 45.42 / Max: 49
Ryzen 7 2700X
Min: 34.75 / Avg: 64.21 / Max: 74.13
Core i9 7960X
Min: 39 / Avg: 54.46 / Max: 62
Threadripper 2950X
Min: 39.75 / Avg: 61.54 / Max: 71.75
Ryzen 5 2400G
Min: 40.75 / Avg: 71.74 / Max: 81
Ryzen 7 2700
Min: 53 / Avg: 74.09 / Max: 80.38
Core i5 7600K
Min: 36 / Avg: 55.62 / Max: 63
Ryzen 3 2200G
Min: 39.25 / Avg: 61.2 / Max: 70.25
Core i3 8100
Min: 40 / Avg: 56.3 / Max: 60
15
30
45
60
75

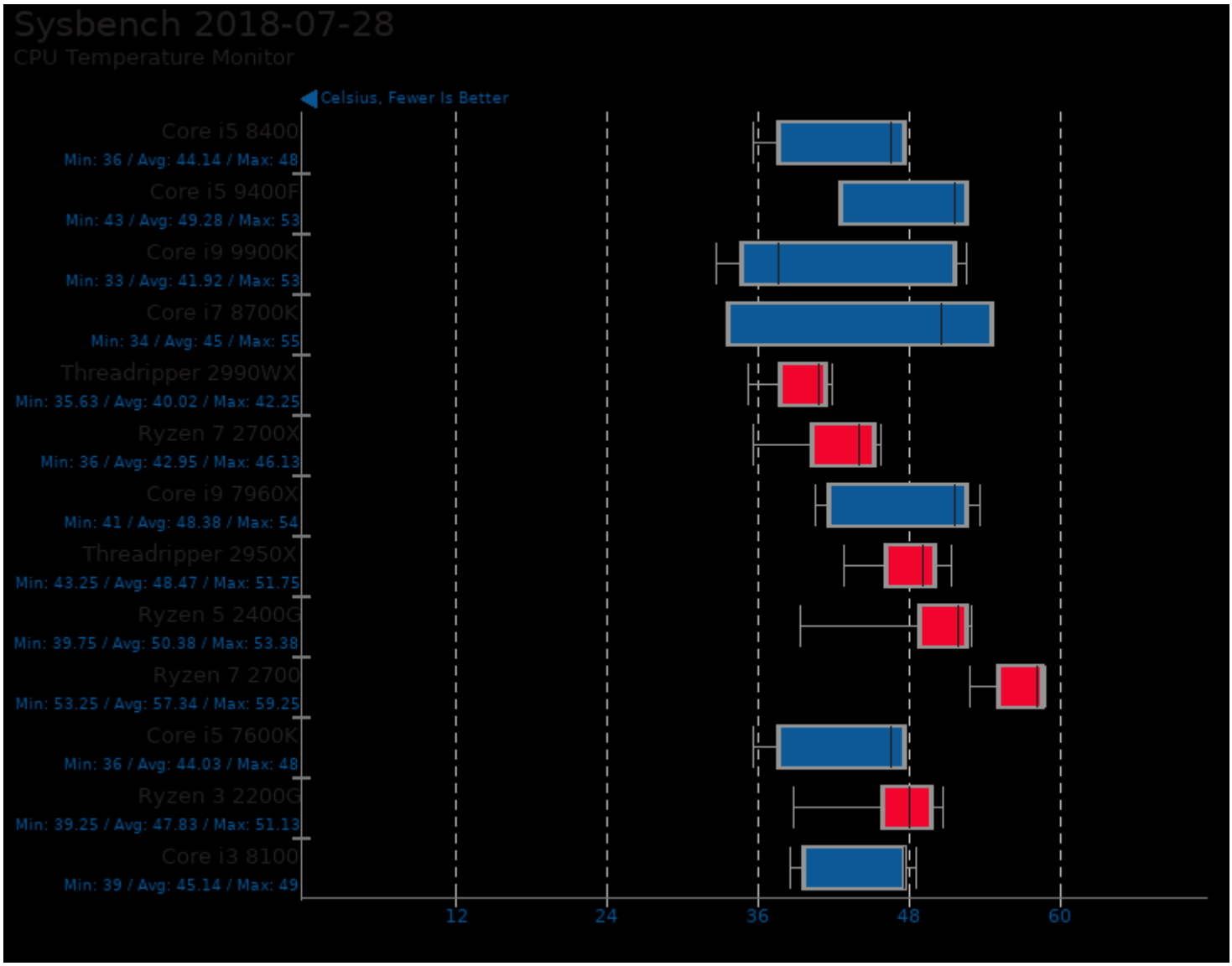

C-Ray 1.1
Total Time - 4K, 16 Rays Per Pixel
Seconds, Fewer Is Better
Core i5 8400
SE +/- 0.04, N = 3
89.11
Core i5 9400F
SE +/- 0.05, N = 3
87.16
Core i9 9900K
SE +/- 0.02, N = 3
55.70
Core i7 8700K
SE +/- 0.02, N = 3
73.06
Threadripper 2990WX
SE +/- 0.02, N = 3
17.75
Ryzen 7 2700X
SE +/- 0.06, N = 3
59.29
Core i9 7960X
SE +/- 0.02, N = 3
35.59
Threadripper 2950X
SE +/- 0.11, N = 3
31.97
Ryzen 5 2400G
SE +/- 0.19, N = 3
126.70
Ryzen 7 2700
SE +/- 0.07, N = 3
69.49
Core i5 7600K
SE +/- 0.01, N = 3
126.94
Ryzen 3 2200G
SE +/- 0.11, N = 3
141.42
Core i3 8100
SE +/- 0.06, N = 3
141.05
30
60
90
120
150
1. (CC) gcc options: -lm -lpthread -O3 -march=native

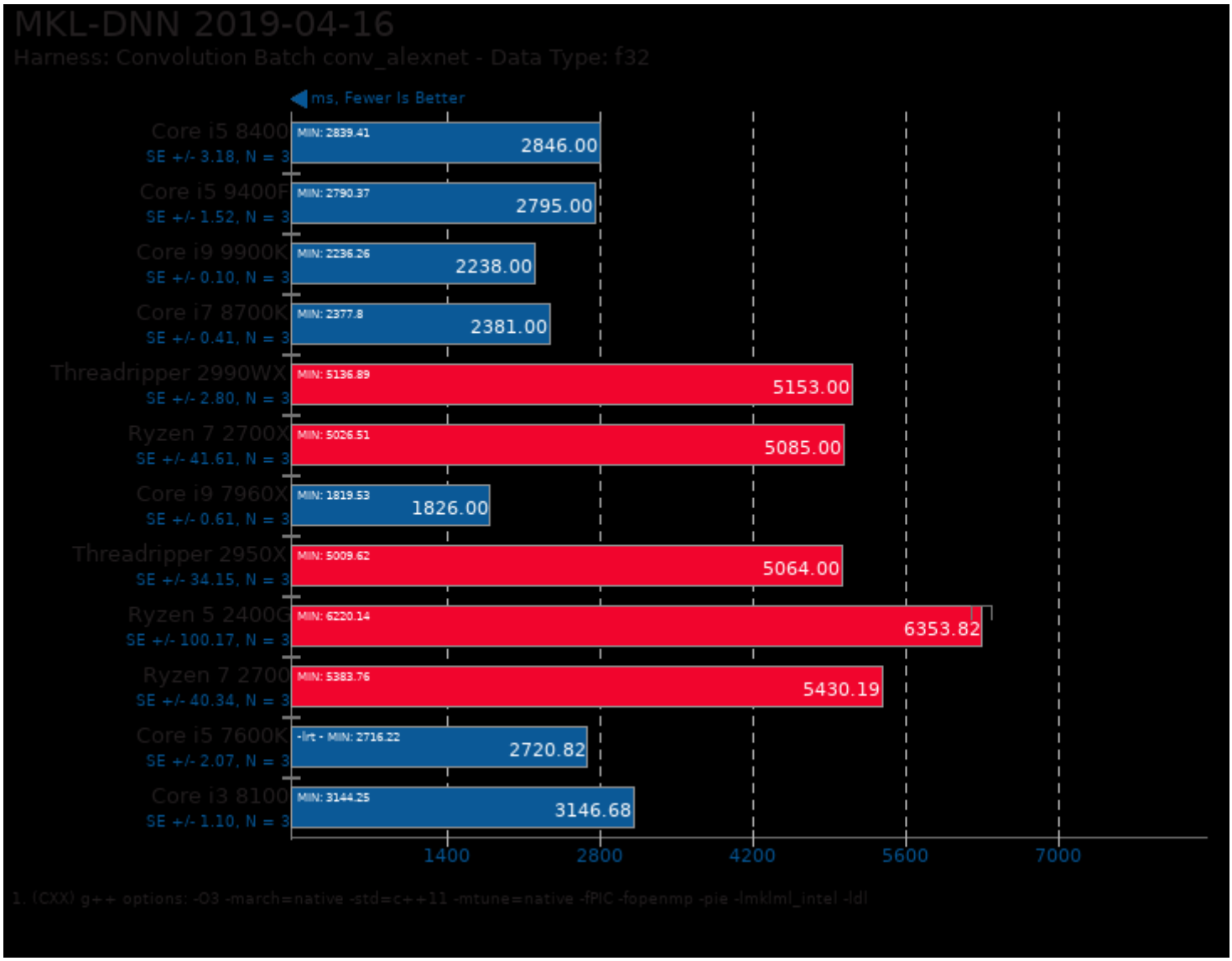

C-Ray 1.1
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 40 / Avg: 62.94 / Max: 65
Core i5 9400F
Min: 44 / Avg: 69.39 / Max: 72
Core i9 9900K
Min: 35 / Avg: 60.8 / Max: 71
Core i7 8700K
Min: 35 / Avg: 72.49 / Max: 76
Threadripper 2990WX
Min: 35.38 / Avg: 57.34 / Max: 70.5
Ryzen 7 2700X
Min: 40.63 / Avg: 67.46 / Max: 69.25
Core i9 7960X
Min: 42 / Avg: 62.07 / Max: 66
Threadripper 2950X
Min: 42.5 / Avg: 65.59 / Max: 67.63
Ryzen 5 2400G
Min: 47.13 / Avg: 80.29 / Max: 82.13
Ryzen 7 2700
Min: 56.75 / Avg: 79.68 / Max: 90.75
Core i5 7600K
Min: 38 / Avg: 61.47 / Max: 64
Ryzen 3 2200G
Min: 41.25 / Avg: 71.1 / Max: 72.88
Core i3 8100
Min: 41 / Avg: 59.56 / Max: 61
20
40
60
80
100

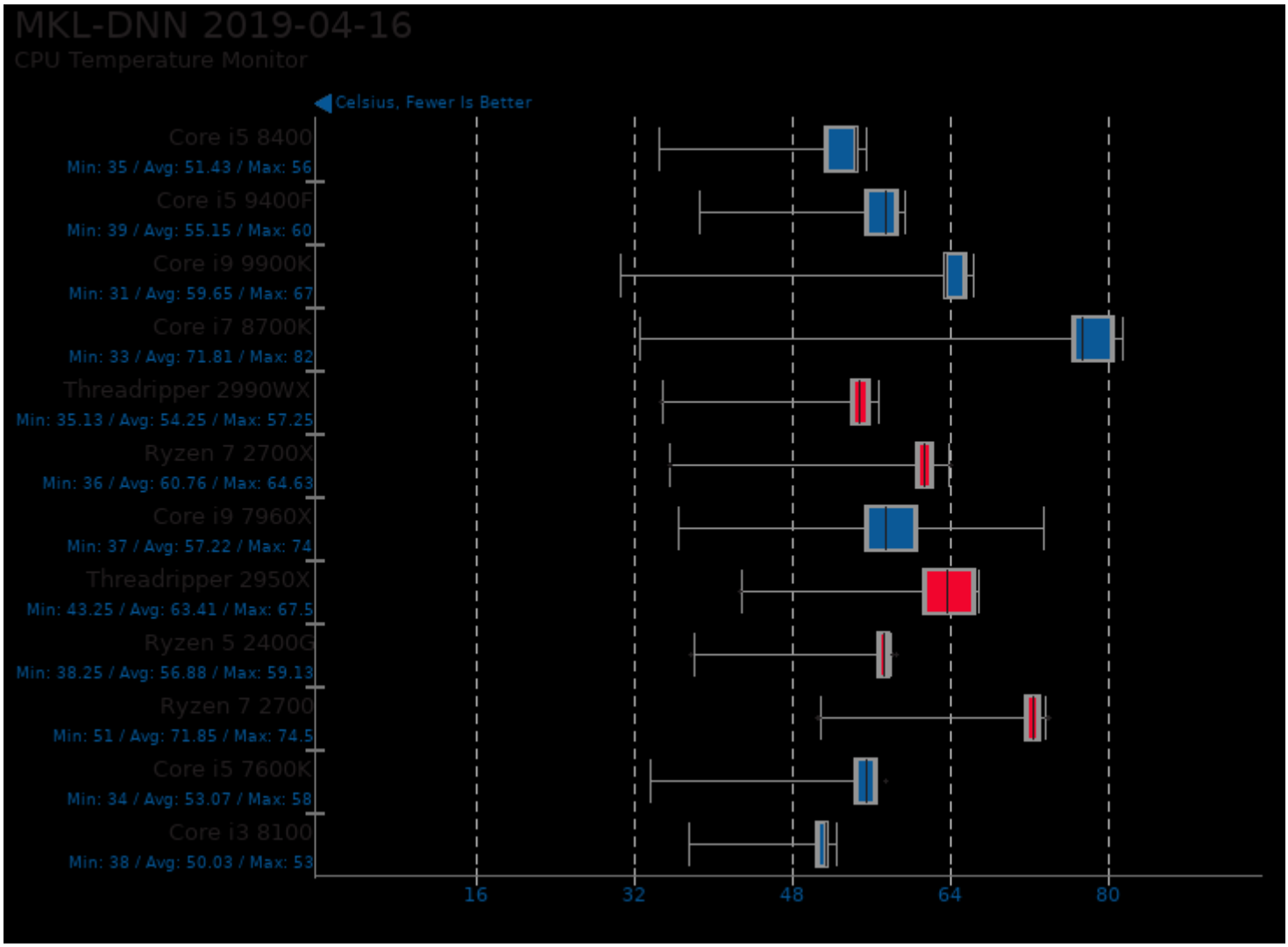

Sysbench 2018-07-28
Test: CPU
Events Per Second, More Is Better
Core i5 8400
SE +/- 1.12, N = 3
7818.00
Core i5 9400F
SE +/- 2.55, N = 3
7980.00
Core i9 9900K
SE +/- 2.54, N = 3
21827.00
Core i7 8700K
SE +/- 1.55, N = 3
15190.00
Threadripper 2990WX
SE +/- 15.99, N = 3
56782.00
Ryzen 7 2700X
SE +/- 3.68, N = 3
16879.00
Core i9 7960X
SE +/- 5.59, N = 3
30753.00
Threadripper 2950X
SE +/- 8.06, N = 3
33161.00
Ryzen 5 2400G
SE +/- 5.67, N = 3
7942.67
Ryzen 7 2700
SE +/- 5.64, N = 3
14160.24
Core i5 7600K
SE +/- 0.34, N = 3
5483.79
Ryzen 3 2200G
SE +/- 8.36, N = 3
7313.62
Core i3 8100
SE +/- 0.48, N = 3
4936.00
12K
24K
36K
48K
60K
1. (CC) gcc options: -pthread -O3 -funroll-loops -ggdb3 -march=native -rdynamic -ldl -laio -lm

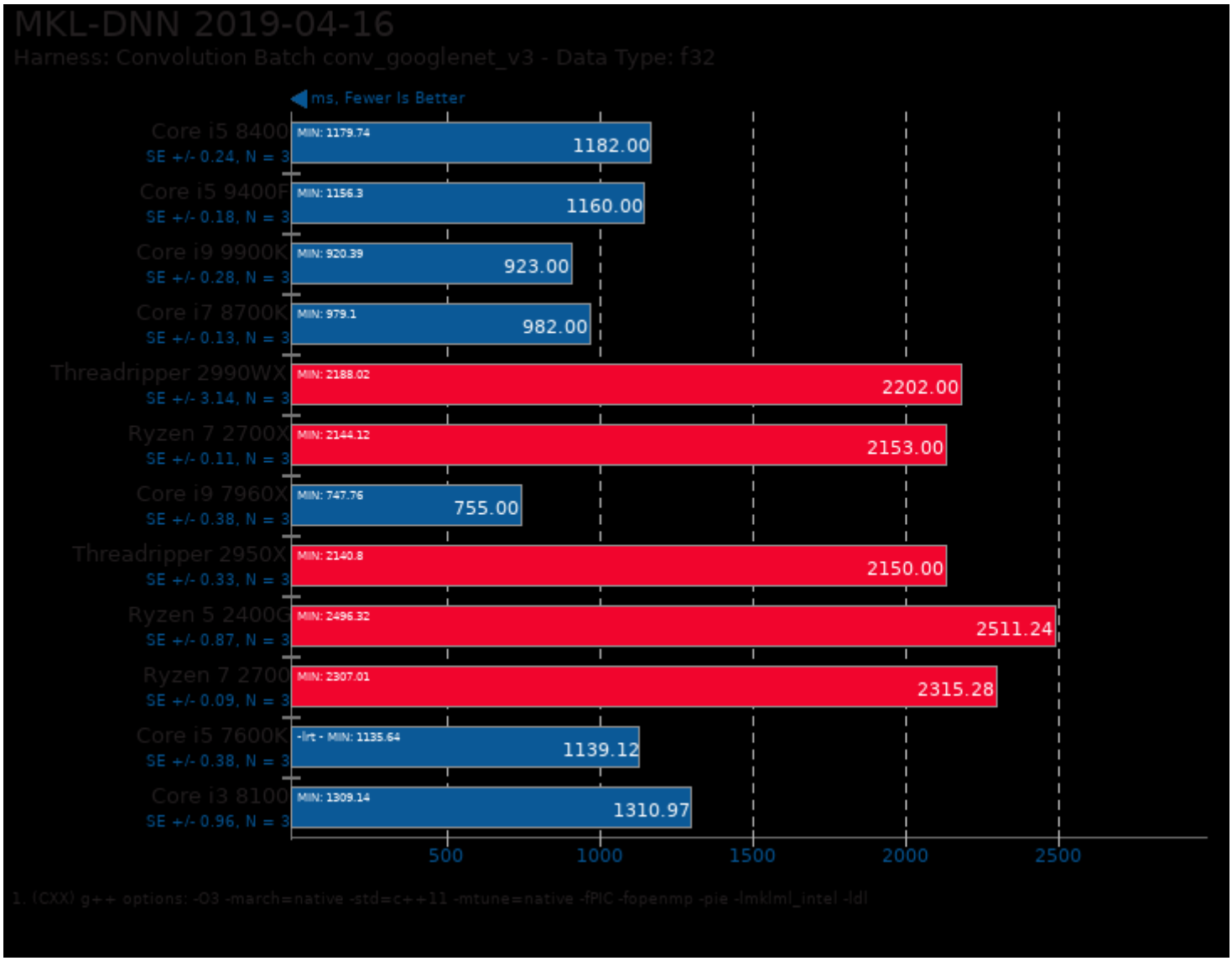

Sysbench 2018-07-28
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 40 / Avg: 50.23 / Max: 55
Core i5 9400F
Min: 46 / Avg: 55.88 / Max: 61
Core i9 9900K
Min: 35 / Avg: 54.81 / Max: 63
Core i7 8700K
Min: 35 / Avg: 56.72 / Max: 67
Threadripper 2990WX
Min: 40.13 / Avg: 44.57 / Max: 48.63
Ryzen 7 2700X
Min: 42 / Avg: 46.31 / Max: 48.25
Core i9 7960X
Min: 42 / Avg: 57.45 / Max: 64
Threadripper 2950X
Min: 43.75 / Avg: 53.83 / Max: 56.75
Ryzen 5 2400G
Min: 49.13 / Avg: 54.64 / Max: 60.63
Ryzen 7 2700
Min: 57.25 / Avg: 62.59 / Max: 68.63
Core i5 7600K
Min: 38 / Avg: 50.31 / Max: 55
Ryzen 3 2200G
Min: 44.88 / Avg: 49.22 / Max: 52.25
Core i3 8100
Min: 41 / Avg: 49.71 / Max: 54
13
26
39
52
65

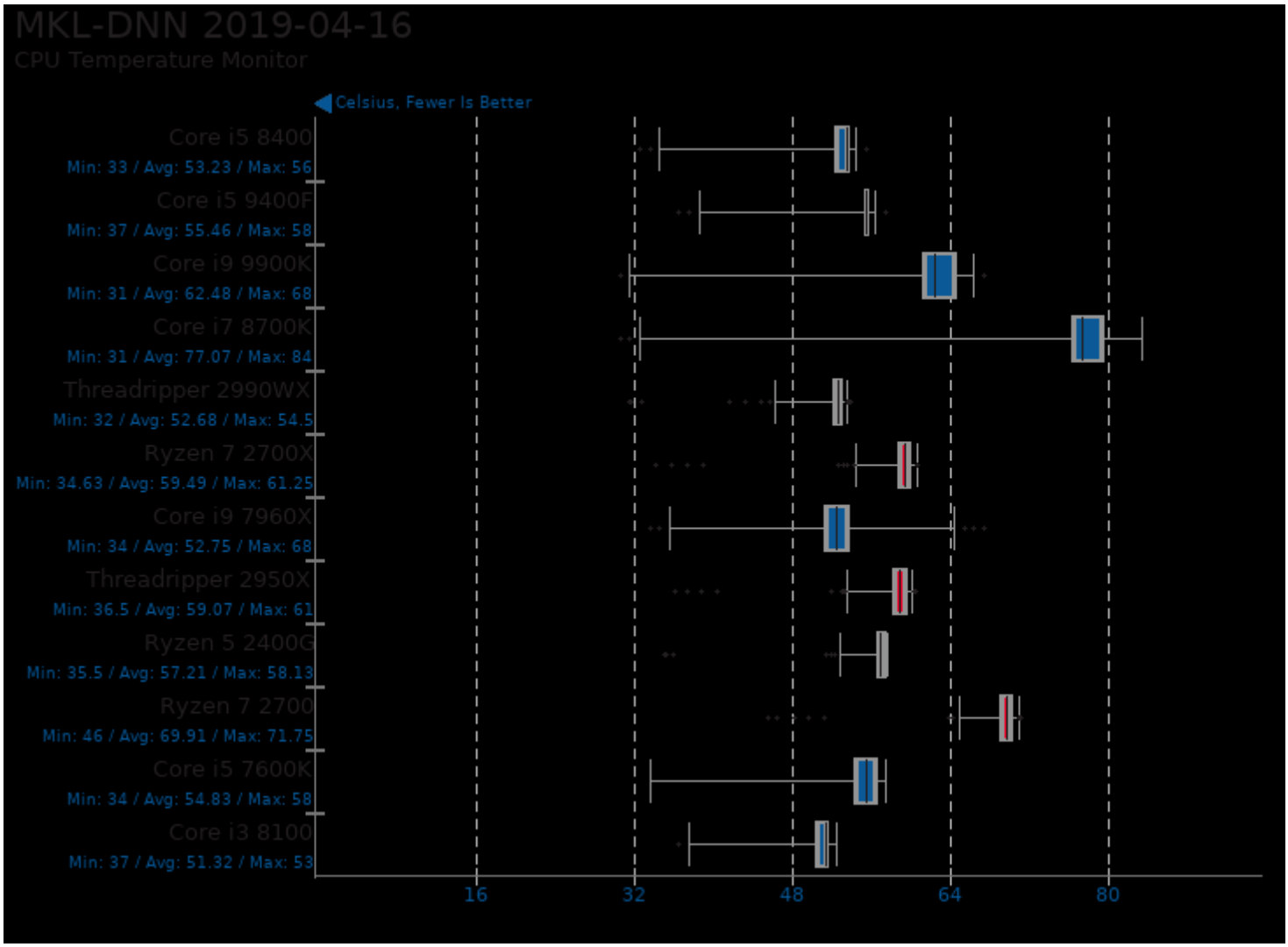

Sysbench 2018-07-28
Test: Memory
Events Per Second, More Is Better
Core i5 8400
SE +/- 124808.33, N = 3
13178502.00
Core i5 9400F
SE +/- 135689.44, N = 3
13408501.00
Core i9 9900K
SE +/- 23004.88, N = 3
28116934.00
Core i7 8700K
SE +/- 44230.15, N = 3
23669661.00
Threadripper 2990WX
SE +/- 6315.27, N = 3
7374560.00
Ryzen 7 2700X
SE +/- 3121.51, N = 3
9783303.00
Core i9 7960X
SE +/- 205135.45, N = 3
18405147.00
Threadripper 2950X
SE +/- 937.11, N = 3
7742483.00
Ryzen 5 2400G
SE +/- 32663.38, N = 3
12079123.49
Ryzen 7 2700
SE +/- 3241.51, N = 3
8273724.79
Core i5 7600K
SE +/- 129945.55, N = 3
11523952.55
Ryzen 3 2200G
SE +/- 196660.46, N = 8
19015474.14
Core i3 8100
SE +/- 32648.62, N = 3
10467609.87
6M
12M
18M
24M
30M
1. (CC) gcc options: -pthread -O3 -funroll-loops -ggdb3 -march=native -rdynamic -ldl -laio -lm

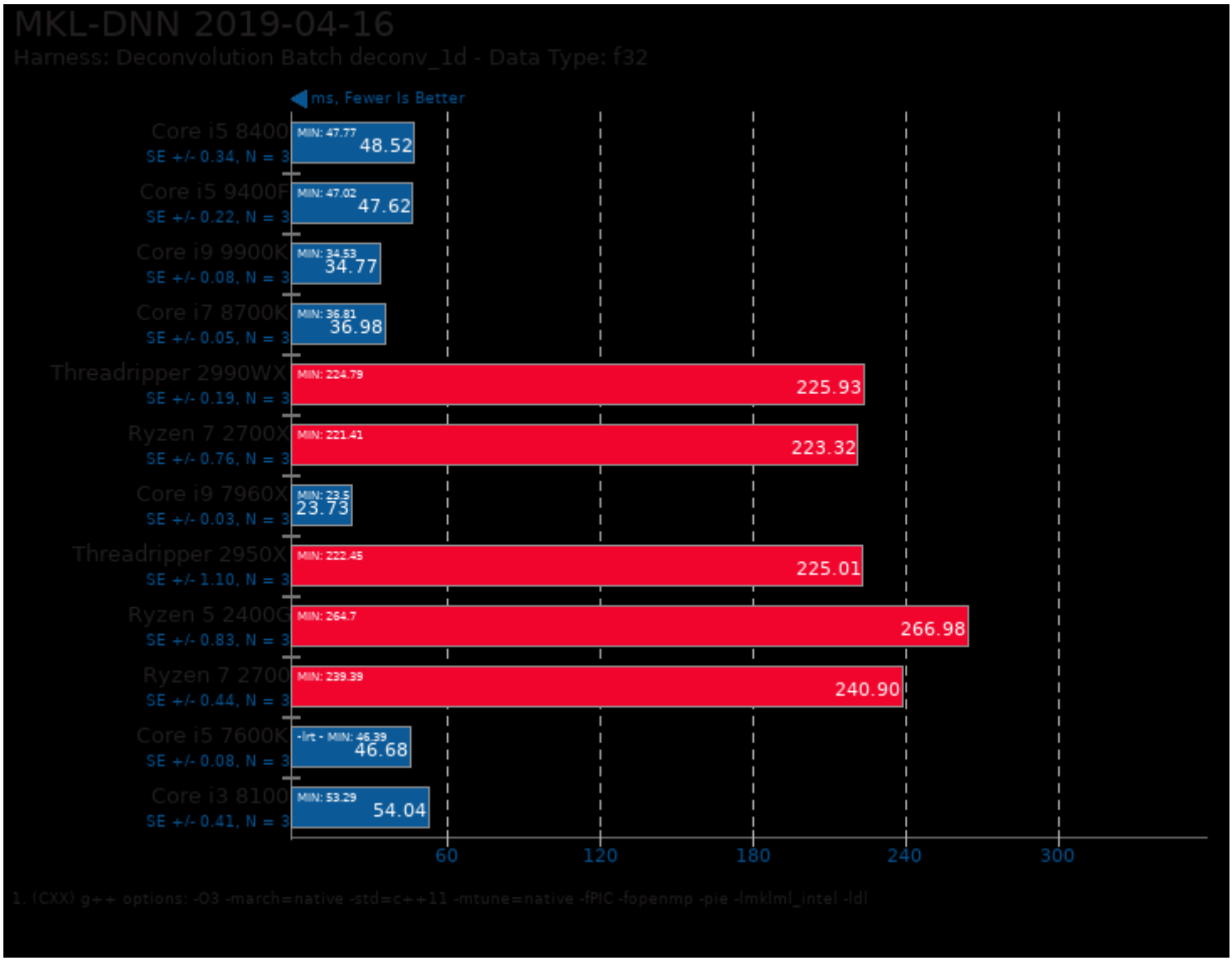

Sysbench 2018-07-28
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 36 / Avg: 44.14 / Max: 48
Core i5 9400F
Min: 43 / Avg: 49.28 / Max: 53
Core i9 9900K
Min: 33 / Avg: 41.92 / Max: 53
Core i7 8700K
Min: 34 / Avg: 45 / Max: 55
Threadripper 2990WX
Min: 35.63 / Avg: 40.02 / Max: 42.25
Ryzen 7 2700X
Min: 36 / Avg: 42.95 / Max: 46.13
Core i9 7960X
Min: 41 / Avg: 48.38 / Max: 54
Threadripper 2950X
Min: 43.25 / Avg: 48.47 / Max: 51.75
Ryzen 5 2400G
Min: 39.75 / Avg: 50.38 / Max: 53.38
Ryzen 7 2700
Min: 53.25 / Avg: 57.34 / Max: 59.25
Core i5 7600K
Min: 36 / Avg: 44.03 / Max: 48
Ryzen 3 2200G
Min: 39.25 / Avg: 47.83 / Max: 51.13
Core i3 8100
Min: 39 / Avg: 45.14 / Max: 49
12
24
36
48
60

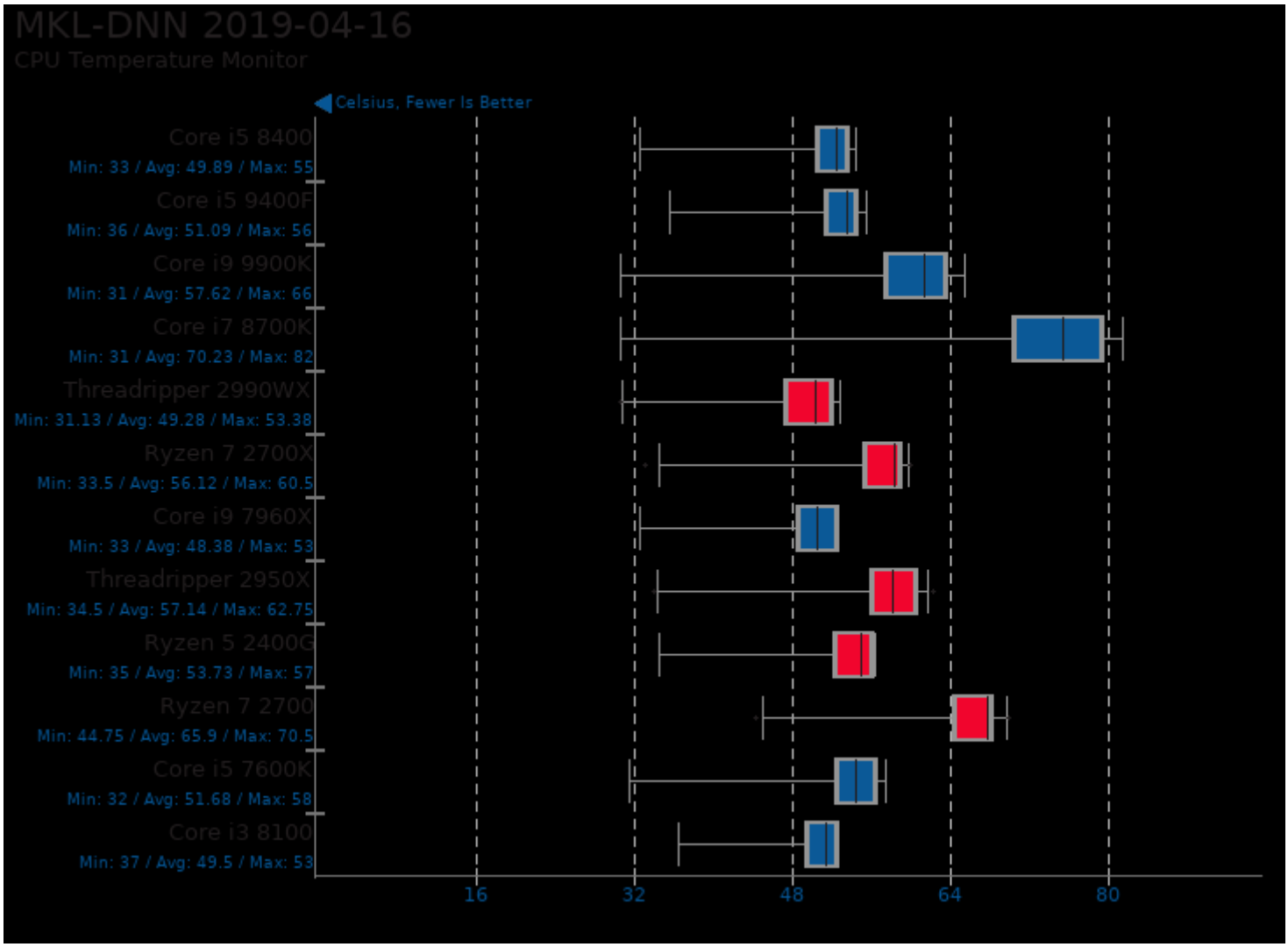

MKL-DNN 2019-04-16
Harness: Convolution Batch conv_alexnet - Data Type: f32
ms, Fewer Is Better
Core i5 8400
SE +/- 3.18, N = 3
MIN: 2839.41
2846.00
Core i5 9400F
SE +/- 1.52, N = 3
MIN: 2790.37
2795.00
Core i9 9900K
SE +/- 0.10, N = 3
MIN: 2236.26
2238.00
Core i7 8700K
SE +/- 0.41, N = 3
MIN: 2377.8
2381.00
Threadripper 2990WX
SE +/- 2.80, N = 3
MIN: 5136.89
5153.00
Ryzen 7 2700X
SE +/- 41.61, N = 3
MIN: 5026.51
5085.00
Core i9 7960X
SE +/- 0.61, N = 3
MIN: 1819.53
1826.00
Threadripper 2950X
SE +/- 34.15, N = 3
MIN: 5009.62
5064.00
Ryzen 5 2400G
SE +/- 100.17, N = 3
MIN: 6220.14
6353.82
Ryzen 7 2700
SE +/- 40.34, N = 3
MIN: 5383.76
5430.19
Core i5 7600K
SE +/- 2.07, N = 3
-lrt - MIN: 2716.22
2720.82
Core i3 8100
SE +/- 1.10, N = 3
MIN: 3144.25
3146.68
1400
2800
4200
5600
7000
1. (CXX) g++ options: -O3 -march=native -std=c++11 -mtune=native -fPIC -fopenmp -pie -lmklml_intel -ldl

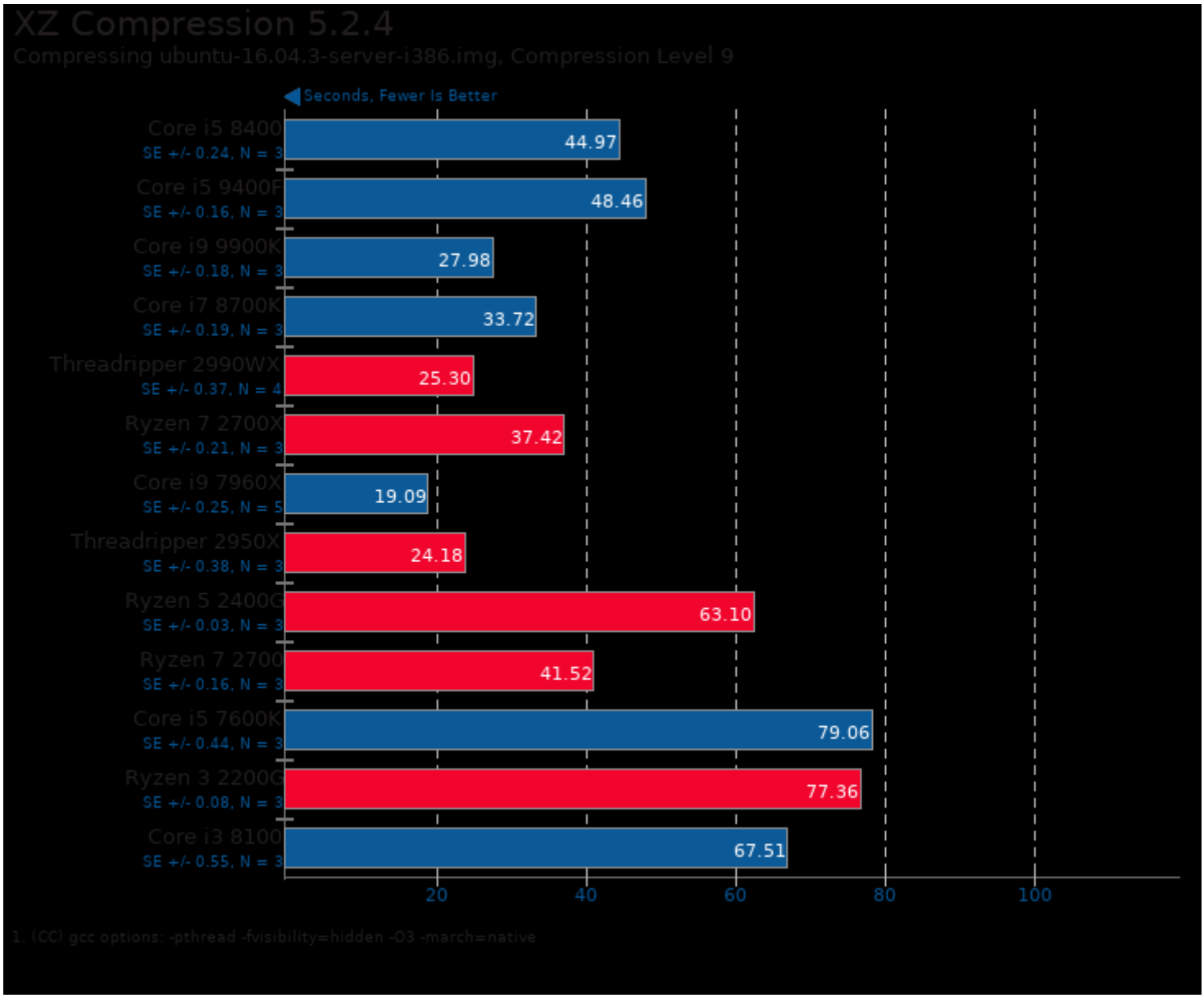

MKL-DNN 2019-04-16
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 35 / Avg: 51.43 / Max: 56
Core i5 9400F
Min: 39 / Avg: 55.15 / Max: 60
Core i9 9900K
Min: 31 / Avg: 59.65 / Max: 67
Core i7 8700K
Min: 33 / Avg: 71.81 / Max: 82
Threadripper 2990WX
Min: 35.13 / Avg: 54.25 / Max: 57.25
Ryzen 7 2700X
Min: 36 / Avg: 60.76 / Max: 64.63
Core i9 7960X
Min: 37 / Avg: 57.22 / Max: 74
Threadripper 2950X
Min: 43.25 / Avg: 63.41 / Max: 67.5
Ryzen 5 2400G
Min: 38.25 / Avg: 56.88 / Max: 59.13
Ryzen 7 2700
Min: 51 / Avg: 71.85 / Max: 74.5
Core i5 7600K
Min: 34 / Avg: 53.07 / Max: 58
Core i3 8100
Min: 38 / Avg: 50.03 / Max: 53
16
32
48
64
80

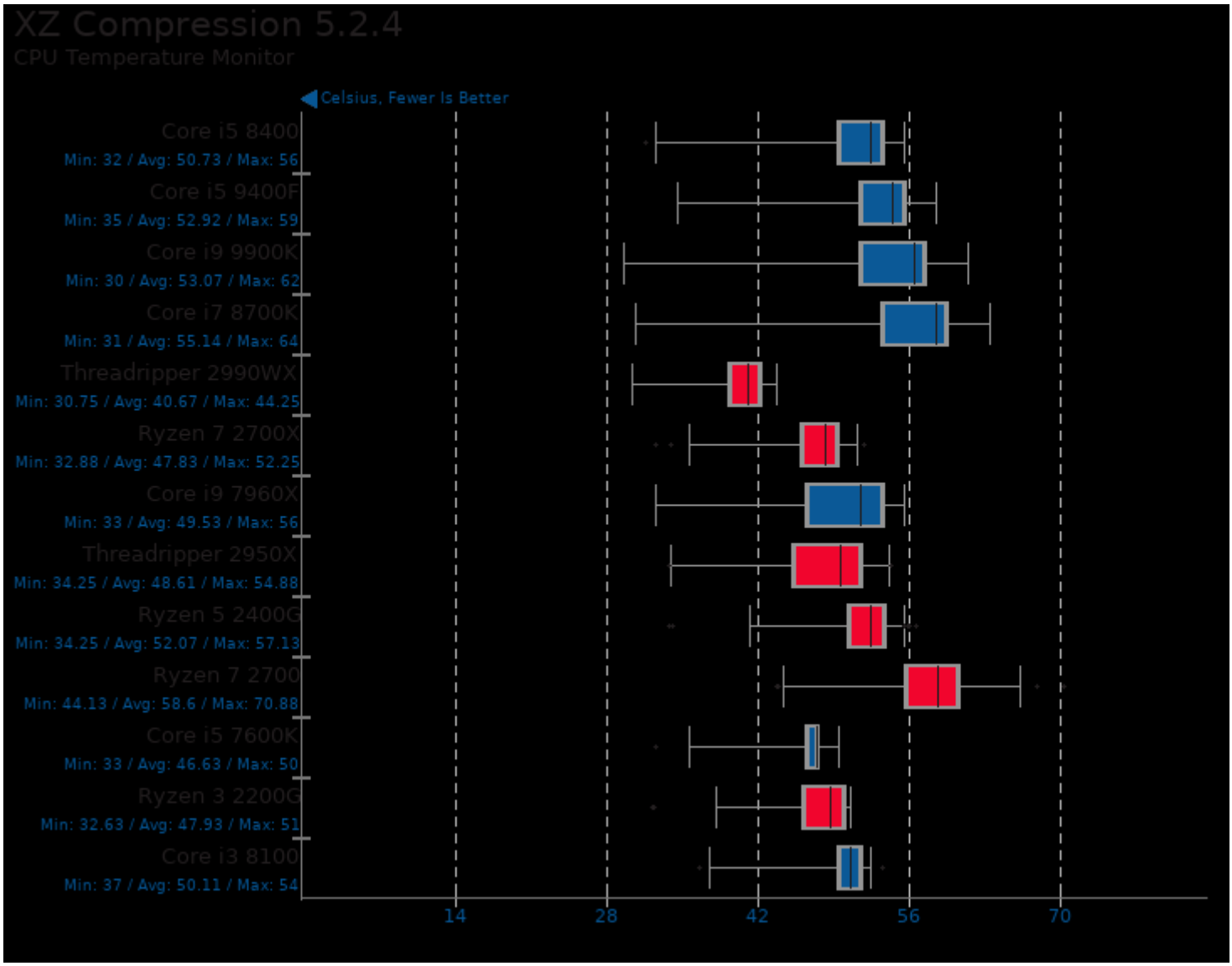

MKL-DNN 2019-04-16
Harness: Convolution Batch conv_googlenet_v3 - Data Type: f32
ms, Fewer Is Better
Core i5 8400
SE +/- 0.24, N = 3
MIN: 1179.74
1182.00
Core i5 9400F
SE +/- 0.18, N = 3
MIN: 1156.3
1160.00
Core i9 9900K
SE +/- 0.28, N = 3
MIN: 920.39
923.00
Core i7 8700K
SE +/- 0.13, N = 3
MIN: 979.1
982.00
Threadripper 2990WX
SE +/- 3.14, N = 3
MIN: 2188.02
2202.00
Ryzen 7 2700X
SE +/- 0.11, N = 3
MIN: 2144.12
2153.00
Core i9 7960X
SE +/- 0.38, N = 3
MIN: 747.76
755.00
Threadripper 2950X
SE +/- 0.33, N = 3
MIN: 2140.8
2150.00
Ryzen 5 2400G
SE +/- 0.87, N = 3
MIN: 2496.32
2511.24
Ryzen 7 2700
SE +/- 0.09, N = 3
MIN: 2307.01
2315.28
Core i5 7600K
SE +/- 0.38, N = 3
-lrt - MIN: 1135.64
1139.12
Core i3 8100
SE +/- 0.96, N = 3
MIN: 1309.14
1310.97
500
1000
1500
2000
2500
1. (CXX) g++ options: -O3 -march=native -std=c++11 -mtune=native -fPIC -fopenmp -pie -lmklml_intel -ldl

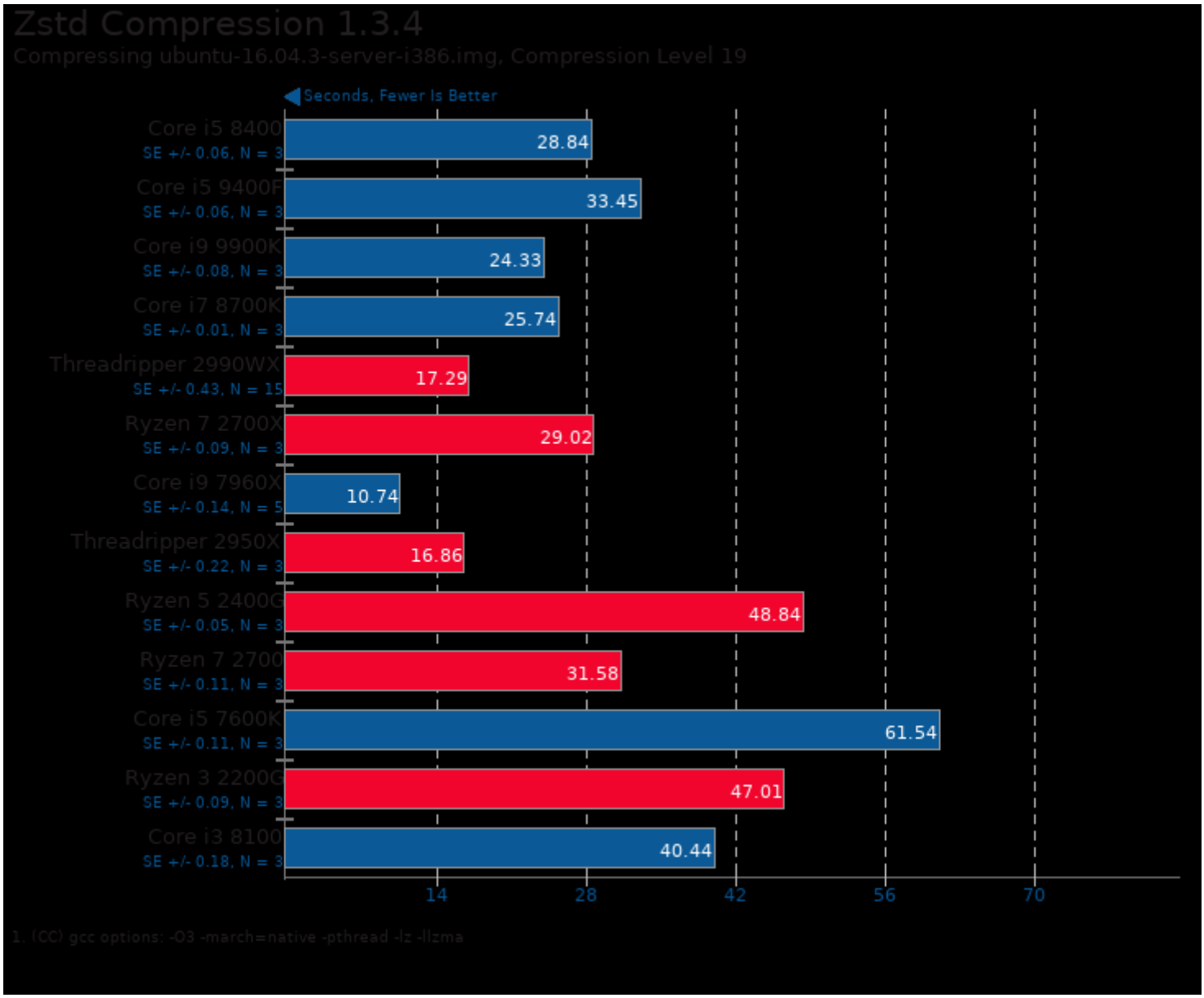

MKL-DNN 2019-04-16
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 33 / Avg: 53.23 / Max: 56
Core i5 9400F
Min: 37 / Avg: 55.46 / Max: 58
Core i9 9900K
Min: 31 / Avg: 62.48 / Max: 68
Core i7 8700K
Min: 31 / Avg: 77.07 / Max: 84
Threadripper 2990WX
Min: 32 / Avg: 52.68 / Max: 54.5
Ryzen 7 2700X
Min: 34.63 / Avg: 59.49 / Max: 61.25
Core i9 7960X
Min: 34 / Avg: 52.75 / Max: 68
Threadripper 2950X
Min: 36.5 / Avg: 59.07 / Max: 61
Ryzen 5 2400G
Min: 35.5 / Avg: 57.21 / Max: 58.13
Ryzen 7 2700
Min: 46 / Avg: 69.91 / Max: 71.75
Core i5 7600K
Min: 34 / Avg: 54.83 / Max: 58
Core i3 8100
Min: 37 / Avg: 51.32 / Max: 53
16
32
48
64
80

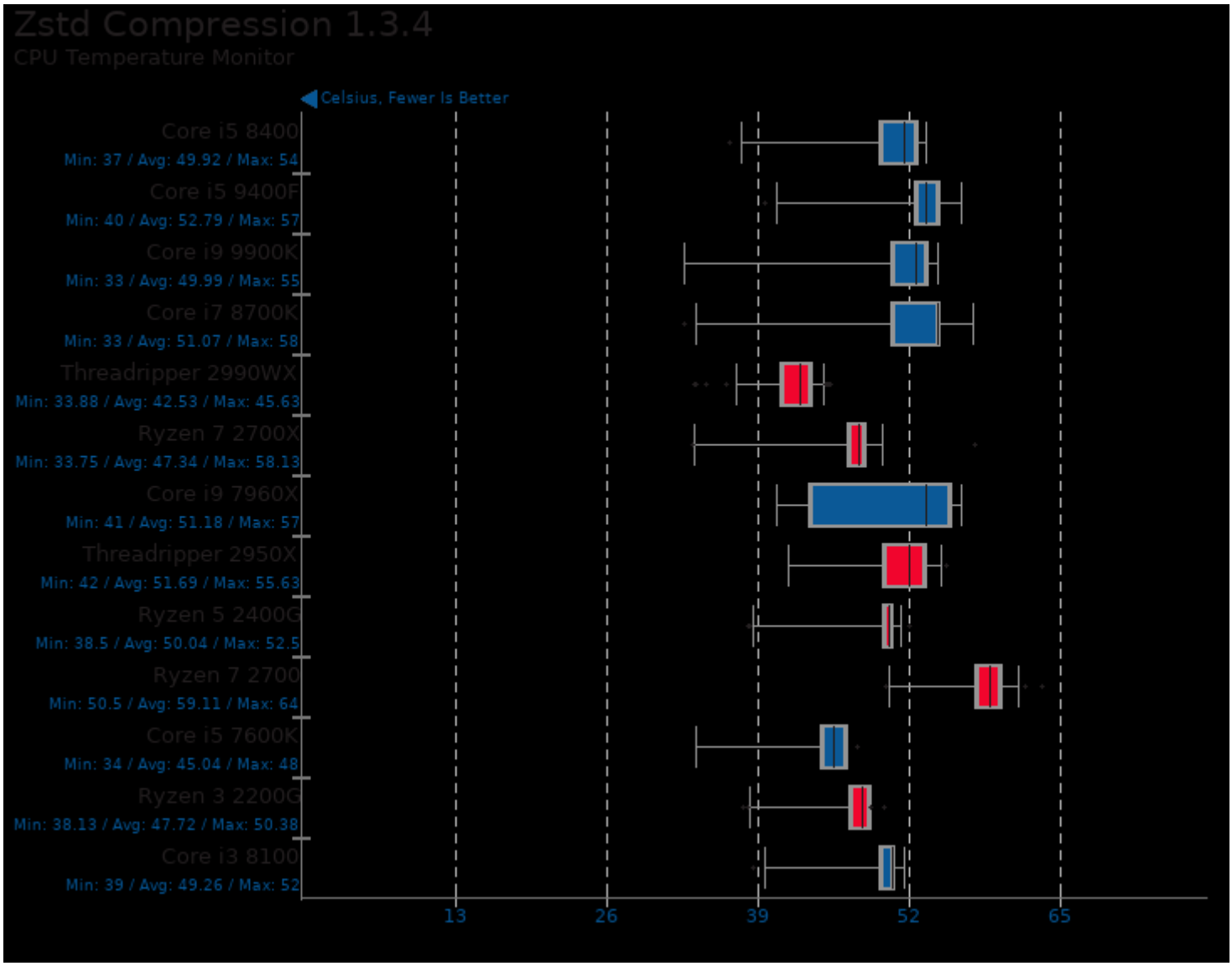

MKL-DNN 2019-04-16
Harness: Deconvolution Batch deconv_1d - Data Type: f32
ms, Fewer Is Better
Core i5 8400
SE +/- 0.34, N = 3
MIN: 47.77
48.52
Core i5 9400F
SE +/- 0.22, N = 3
MIN: 47.02
47.62
Core i9 9900K
SE +/- 0.08, N = 3
MIN: 34.53
34.77
Core i7 8700K
SE +/- 0.05, N = 3
MIN: 36.81
36.98
Threadripper 2990WX
SE +/- 0.19, N = 3
MIN: 224.79
225.93
Ryzen 7 2700X
SE +/- 0.76, N = 3
MIN: 221.41
223.32
Core i9 7960X
SE +/- 0.03, N = 3
MIN: 23.5
23.73
Threadripper 2950X
SE +/- 1.10, N = 3
MIN: 222.45
225.01
Ryzen 5 2400G
SE +/- 0.83, N = 3
MIN: 264.7
266.98
Ryzen 7 2700
SE +/- 0.44, N = 3
MIN: 239.39
240.90
Core i5 7600K
SE +/- 0.08, N = 3
-lrt - MIN: 46.39
46.68
Core i3 8100
SE +/- 0.41, N = 3
MIN: 53.29
54.04
60
120
180
240
300
1. (CXX) g++ options: -O3 -march=native -std=c++11 -mtune=native -fPIC -fopenmp -pie -lmklml_intel -ldl

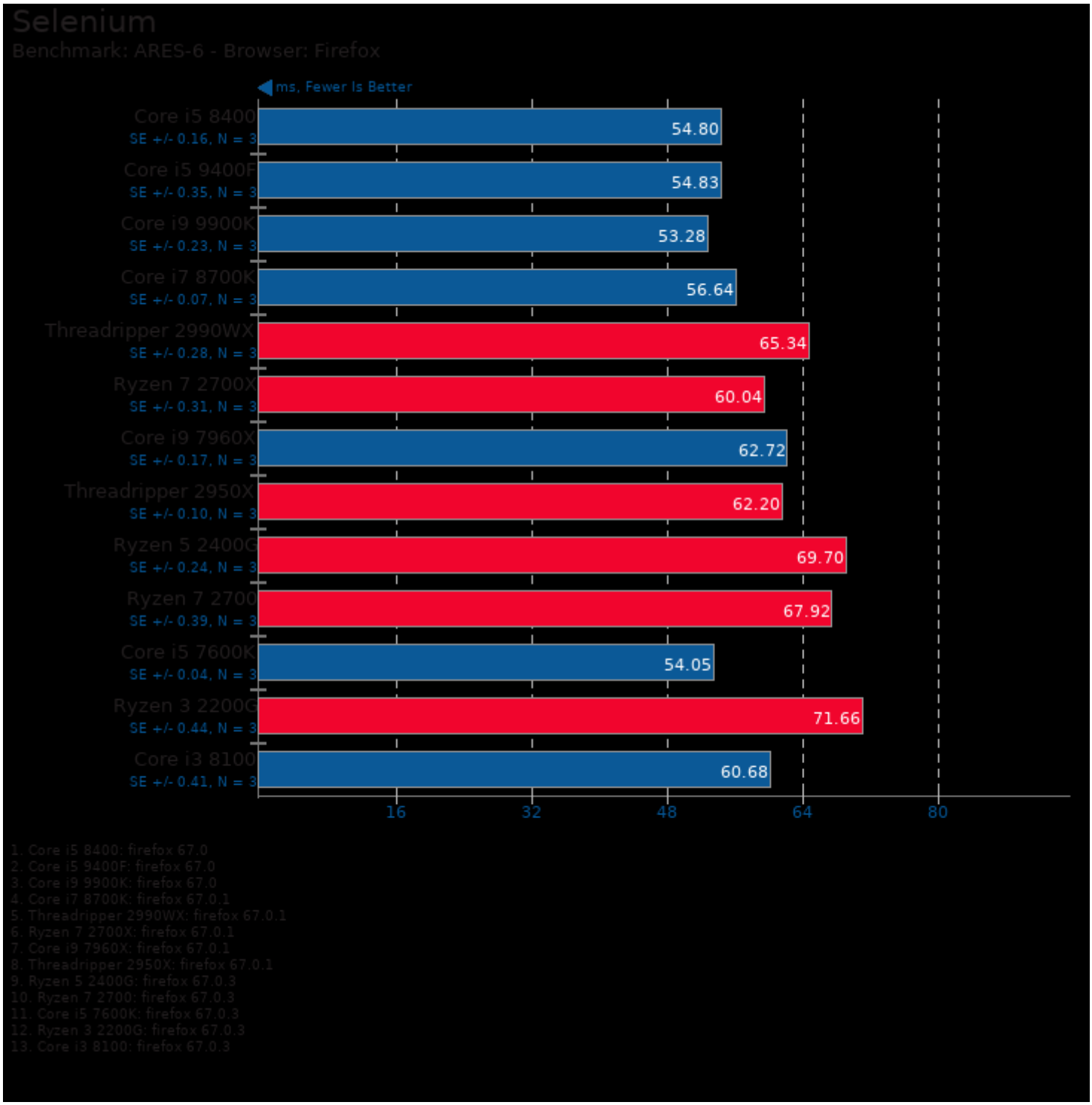

MKL-DNN 2019-04-16
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 33 / Avg: 49.89 / Max: 55
Core i5 9400F
Min: 36 / Avg: 51.09 / Max: 56
Core i9 9900K
Min: 31 / Avg: 57.62 / Max: 66
Core i7 8700K
Min: 31 / Avg: 70.23 / Max: 82
Threadripper 2990WX
Min: 31.13 / Avg: 49.28 / Max: 53.38
Ryzen 7 2700X
Min: 33.5 / Avg: 56.12 / Max: 60.5
Core i9 7960X
Min: 33 / Avg: 48.38 / Max: 53
Threadripper 2950X
Min: 34.5 / Avg: 57.14 / Max: 62.75
Ryzen 5 2400G
Min: 35 / Avg: 53.73 / Max: 57
Ryzen 7 2700
Min: 44.75 / Avg: 65.9 / Max: 70.5
Core i5 7600K
Min: 32 / Avg: 51.68 / Max: 58
Core i3 8100
Min: 37 / Avg: 49.5 / Max: 53
16
32
48
64
80

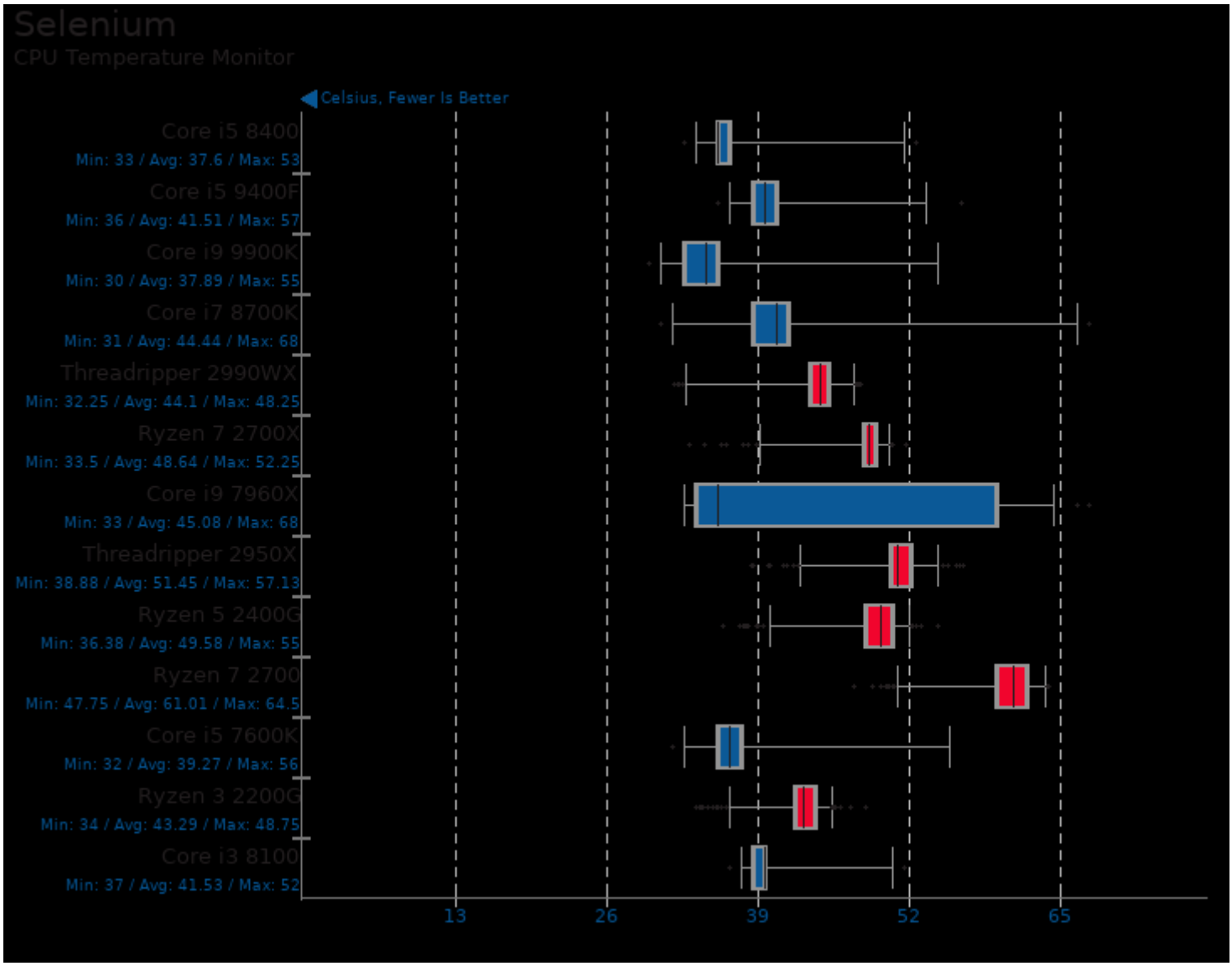

XZ Compression 5.2.4
Compressing ubuntu-16.04.3-server-i386.img, Compression Level 9
Seconds, Fewer Is Better
Core i5 8400
SE +/- 0.24, N = 3
44.97
Core i5 9400F
SE +/- 0.16, N = 3
48.46
Core i9 9900K
SE +/- 0.18, N = 3
27.98
Core i7 8700K
SE +/- 0.19, N = 3
33.72
Threadripper 2990WX
SE +/- 0.37, N = 4
25.30
Ryzen 7 2700X
SE +/- 0.21, N = 3
37.42
Core i9 7960X
SE +/- 0.25, N = 5
19.09
Threadripper 2950X
SE +/- 0.38, N = 3
24.18
Ryzen 5 2400G
SE +/- 0.03, N = 3
63.10
Ryzen 7 2700
SE +/- 0.16, N = 3
41.52
Core i5 7600K
SE +/- 0.44, N = 3
79.06
Ryzen 3 2200G
SE +/- 0.08, N = 3
77.36
Core i3 8100
SE +/- 0.55, N = 3
67.51
20
40
60
80
100
1. (CC) gcc options: -pthread -fvisibility=hidden -O3 -march=native

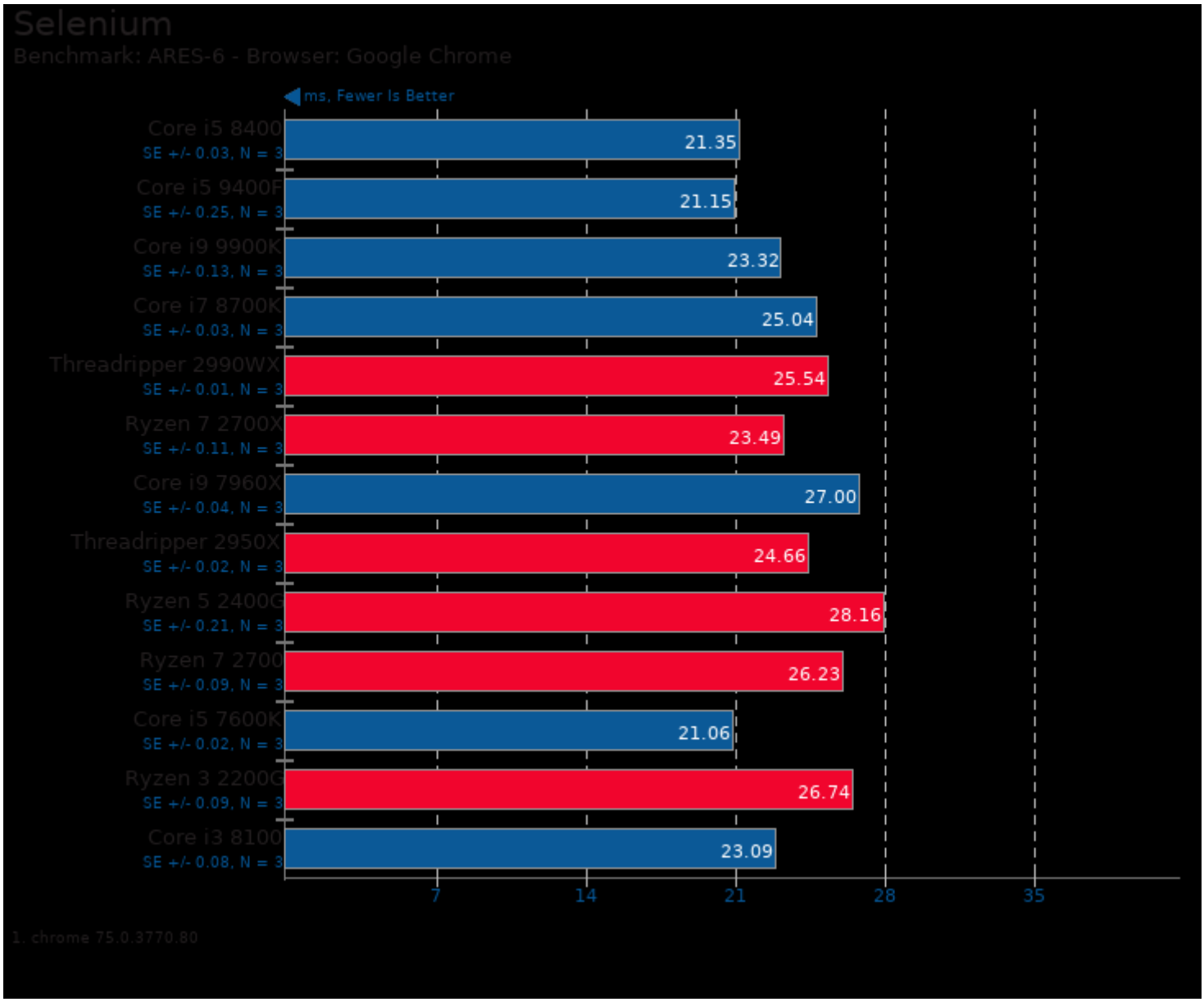

XZ Compression 5.2.4
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 32 / Avg: 50.73 / Max: 56
Core i5 9400F
Min: 35 / Avg: 52.92 / Max: 59
Core i9 9900K
Min: 30 / Avg: 53.07 / Max: 62
Core i7 8700K
Min: 31 / Avg: 55.14 / Max: 64
Threadripper 2990WX
Min: 30.75 / Avg: 40.67 / Max: 44.25
Ryzen 7 2700X
Min: 32.88 / Avg: 47.83 / Max: 52.25
Core i9 7960X
Min: 33 / Avg: 49.53 / Max: 56
Threadripper 2950X
Min: 34.25 / Avg: 48.61 / Max: 54.88
Ryzen 5 2400G
Min: 34.25 / Avg: 52.07 / Max: 57.13
Ryzen 7 2700
Min: 44.13 / Avg: 58.6 / Max: 70.88
Core i5 7600K
Min: 33 / Avg: 46.63 / Max: 50
Ryzen 3 2200G
Min: 32.63 / Avg: 47.93 / Max: 51
Core i3 8100
Min: 37 / Avg: 50.11 / Max: 54
14
28
42
56
70

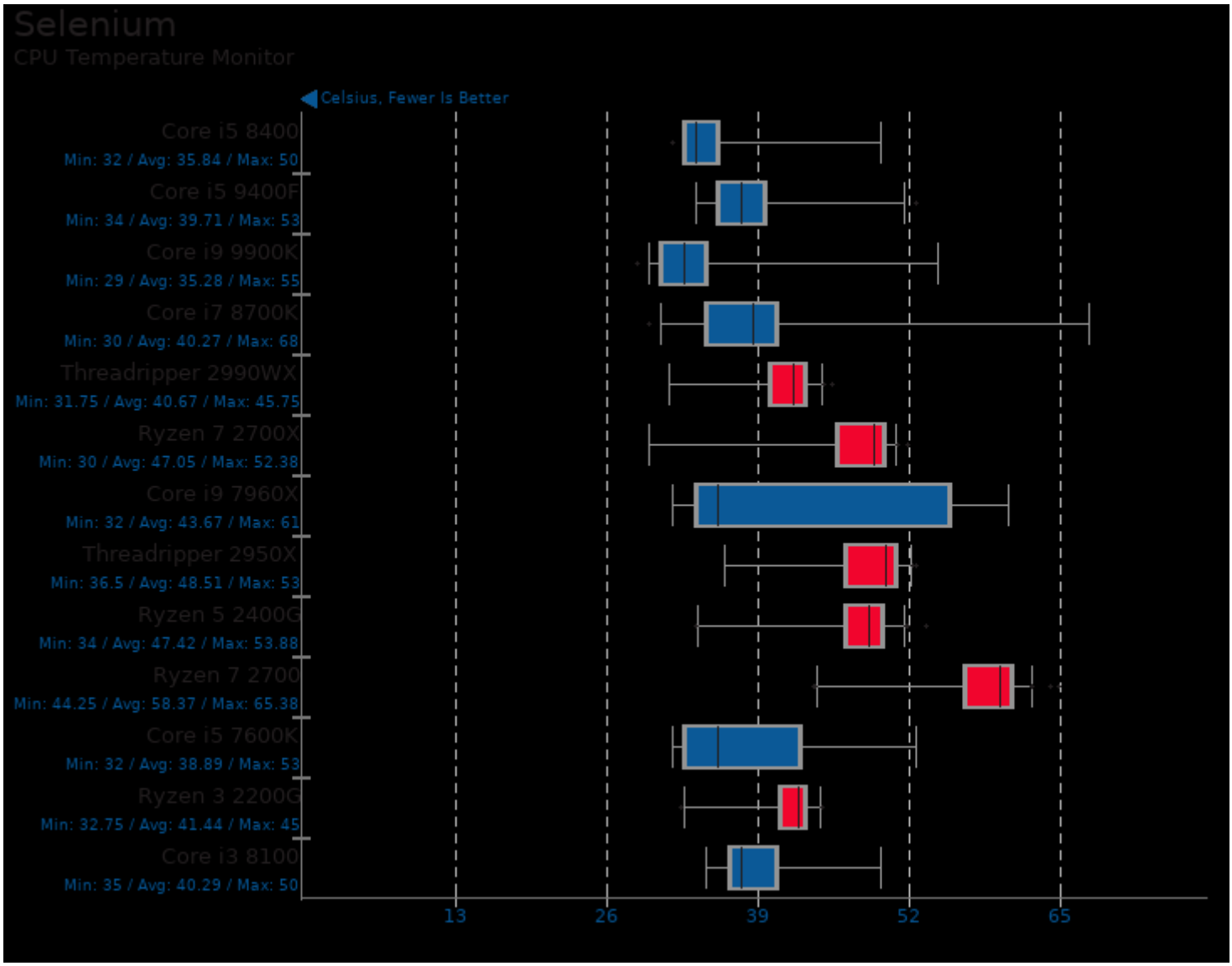

Zstd Compression 1.3.4
Compressing ubuntu-16.04.3-server-i386.img, Compression Level 19
Seconds, Fewer Is Better
Core i5 8400
SE +/- 0.06, N = 3
28.84
Core i5 9400F
SE +/- 0.06, N = 3
33.45
Core i9 9900K
SE +/- 0.08, N = 3
24.33
Core i7 8700K
SE +/- 0.01, N = 3
25.74
Threadripper 2990WX
SE +/- 0.43, N = 15
17.29
Ryzen 7 2700X
SE +/- 0.09, N = 3
29.02
Core i9 7960X
SE +/- 0.14, N = 5
10.74
Threadripper 2950X
SE +/- 0.22, N = 3
16.86
Ryzen 5 2400G
SE +/- 0.05, N = 3
48.84
Ryzen 7 2700
SE +/- 0.11, N = 3
31.58
Core i5 7600K
SE +/- 0.11, N = 3
61.54
Ryzen 3 2200G
SE +/- 0.09, N = 3
47.01
Core i3 8100
SE +/- 0.18, N = 3
40.44
14
28
42
56
70
1. (CC) gcc options: -O3 -march=native -pthread -lz -llzma

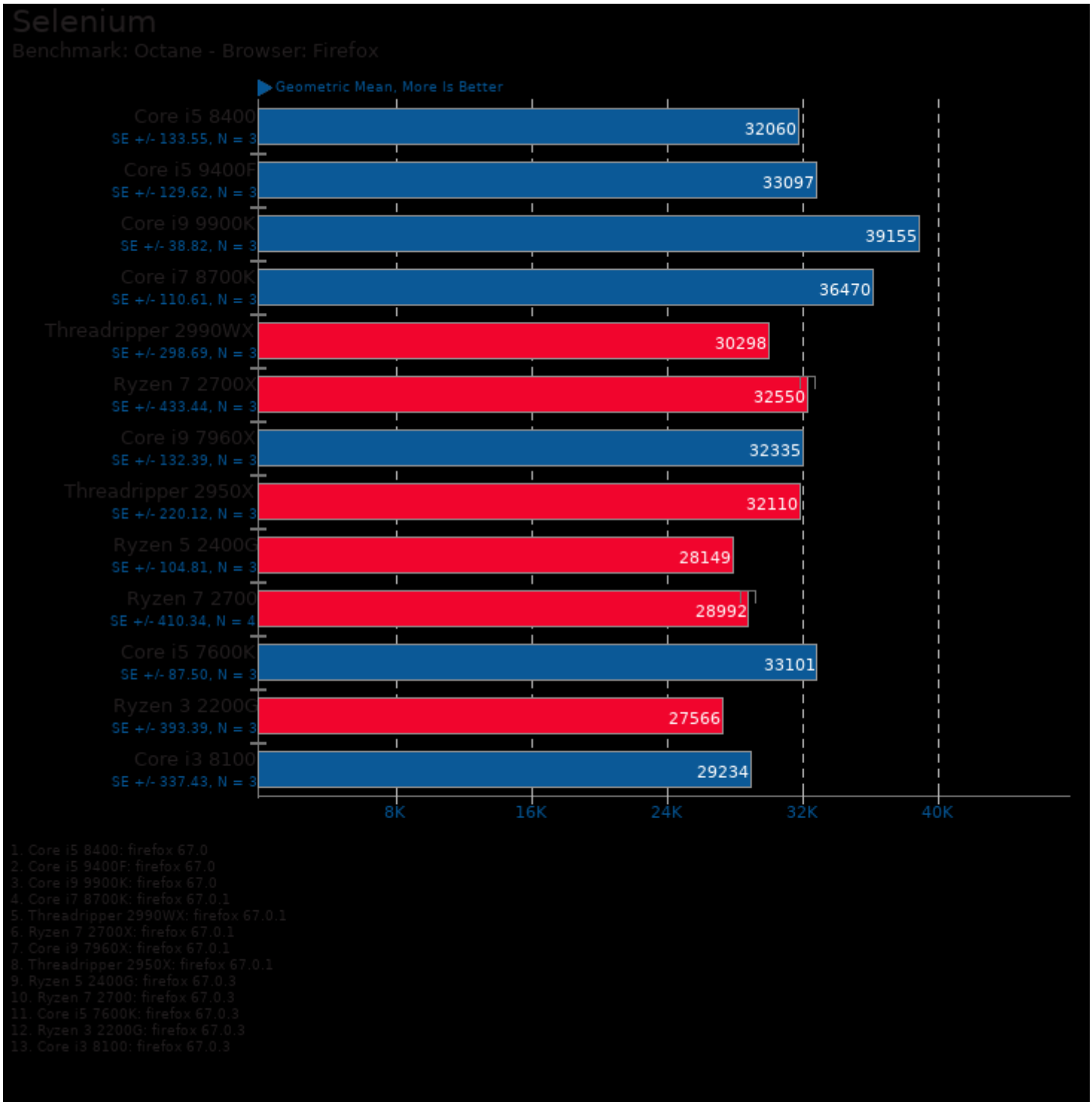

Zstd Compression 1.3.4
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 37 / Avg: 49.92 / Max: 54
Core i5 9400F
Min: 40 / Avg: 52.79 / Max: 57
Core i9 9900K
Min: 33 / Avg: 49.99 / Max: 55
Core i7 8700K
Min: 33 / Avg: 51.07 / Max: 58
Threadripper 2990WX
Min: 33.88 / Avg: 42.53 / Max: 45.63
Ryzen 7 2700X
Min: 33.75 / Avg: 47.34 / Max: 58.13
Core i9 7960X
Min: 41 / Avg: 51.18 / Max: 57
Threadripper 2950X
Min: 42 / Avg: 51.69 / Max: 55.63
Ryzen 5 2400G
Min: 38.5 / Avg: 50.04 / Max: 52.5
Ryzen 7 2700
Min: 50.5 / Avg: 59.11 / Max: 64
Core i5 7600K
Min: 34 / Avg: 45.04 / Max: 48
Ryzen 3 2200G
Min: 38.13 / Avg: 47.72 / Max: 50.38
Core i3 8100
Min: 39 / Avg: 49.26 / Max: 52
13
26
39
52
65

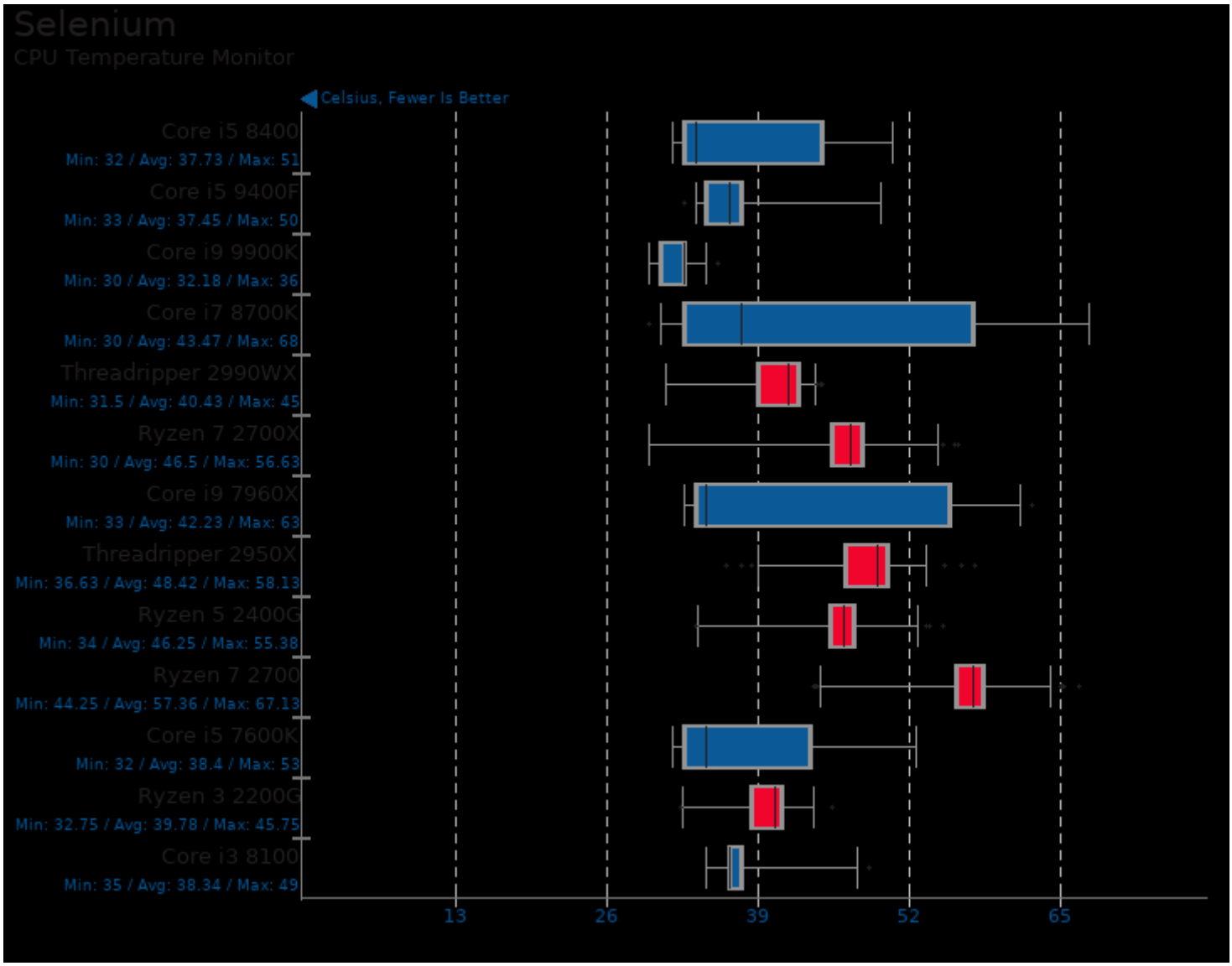

Selenium
Benchmark: ARES-6 - Browser: Firefox
ms, Fewer Is Better
Core i5 8400
SE +/- 0.16, N = 3
54.80
Core i5 9400F
SE +/- 0.35, N = 3
54.83
Core i9 9900K
SE +/- 0.23, N = 3
53.28
Core i7 8700K
SE +/- 0.07, N = 3
56.64
Threadripper 2990WX
SE +/- 0.28, N = 3
65.34
Ryzen 7 2700X
SE +/- 0.31, N = 3
60.04
Core i9 7960X
SE +/- 0.17, N = 3
62.72
Threadripper 2950X
SE +/- 0.10, N = 3
62.20
Ryzen 5 2400G
SE +/- 0.24, N = 3
69.70
Ryzen 7 2700
SE +/- 0.39, N = 3
67.92
Core i5 7600K
SE +/- 0.04, N = 3
54.05
Ryzen 3 2200G
SE +/- 0.44, N = 3
71.66
Core i3 8100
SE +/- 0.41, N = 3
60.68
16
32
48
64
80
1. Core i5 8400: firefox 67.0
2. Core i5 9400F: firefox 67.0
3. Core i9 9900K: firefox 67.0
4. Core i7 8700K: firefox 67.0.1
5. Threadripper 2990WX: firefox 67.0.1
6. Ryzen 7 2700X: firefox 67.0.1
7. Core i9 7960X: firefox 67.0.1
8. Threadripper 2950X: firefox 67.0.1
9. Ryzen 5 2400G: firefox 67.0.3
10. Ryzen 7 2700: firefox 67.0.3
11. Core i5 7600K: firefox 67.0.3
12. Ryzen 3 2200G: firefox 67.0.3
13. Core i3 8100: firefox 67.0.3

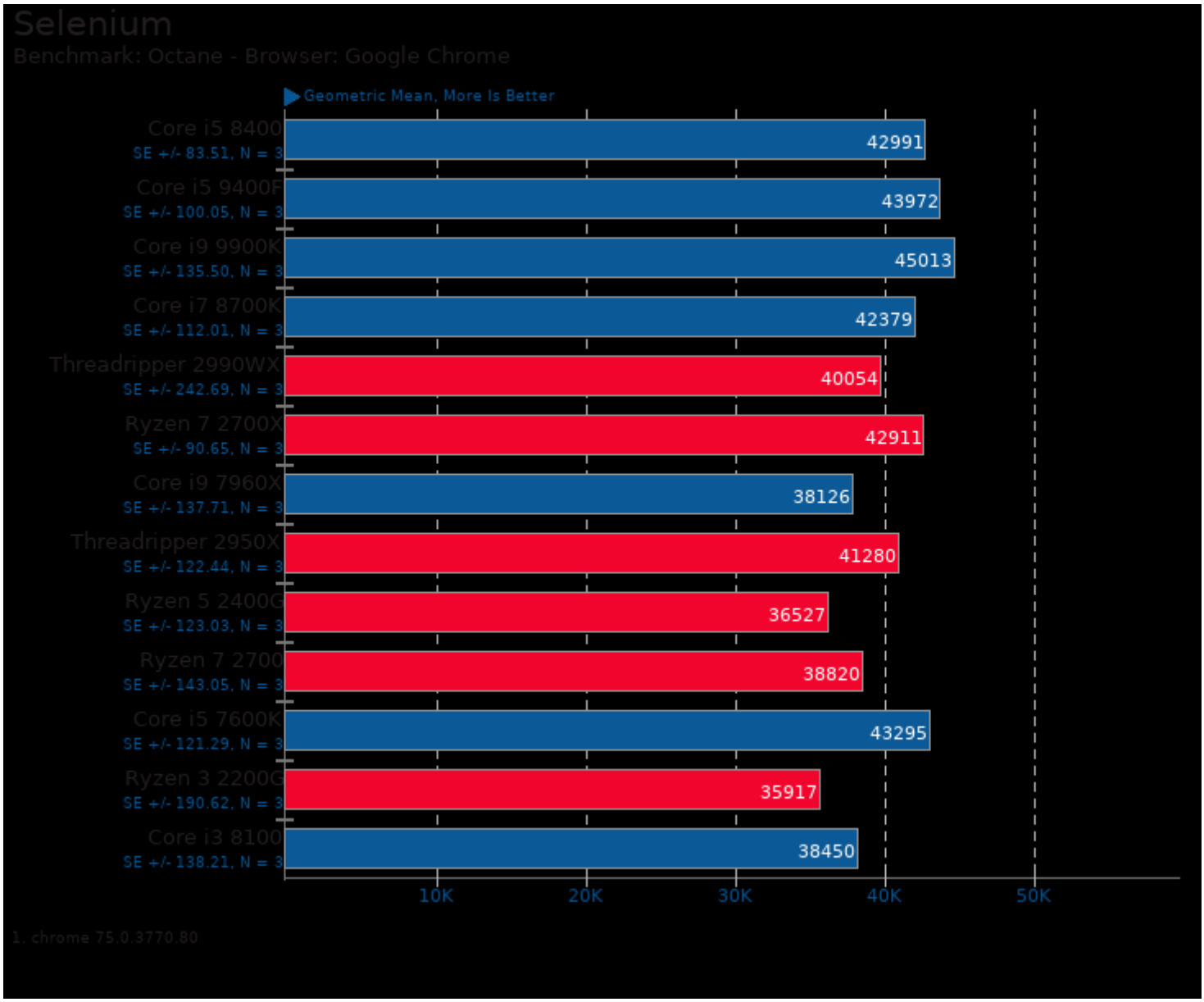

Selenium
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 33 / Avg: 37.6 / Max: 53
Core i5 9400F
Min: 36 / Avg: 41.51 / Max: 57
Core i9 9900K
Min: 30 / Avg: 37.89 / Max: 55
Core i7 8700K
Min: 31 / Avg: 44.44 / Max: 68
Threadripper 2990WX
Min: 32.25 / Avg: 44.1 / Max: 48.25
Ryzen 7 2700X
Min: 33.5 / Avg: 48.64 / Max: 52.25
Core i9 7960X
Min: 33 / Avg: 45.08 / Max: 68
Threadripper 2950X
Min: 38.88 / Avg: 51.45 / Max: 57.13
Ryzen 5 2400G
Min: 36.38 / Avg: 49.58 / Max: 55
Ryzen 7 2700
Min: 47.75 / Avg: 61.01 / Max: 64.5
Core i5 7600K
Min: 32 / Avg: 39.27 / Max: 56
Ryzen 3 2200G
Min: 34 / Avg: 43.29 / Max: 48.75
Core i3 8100
Min: 37 / Avg: 41.53 / Max: 52
13
26
39
52
65

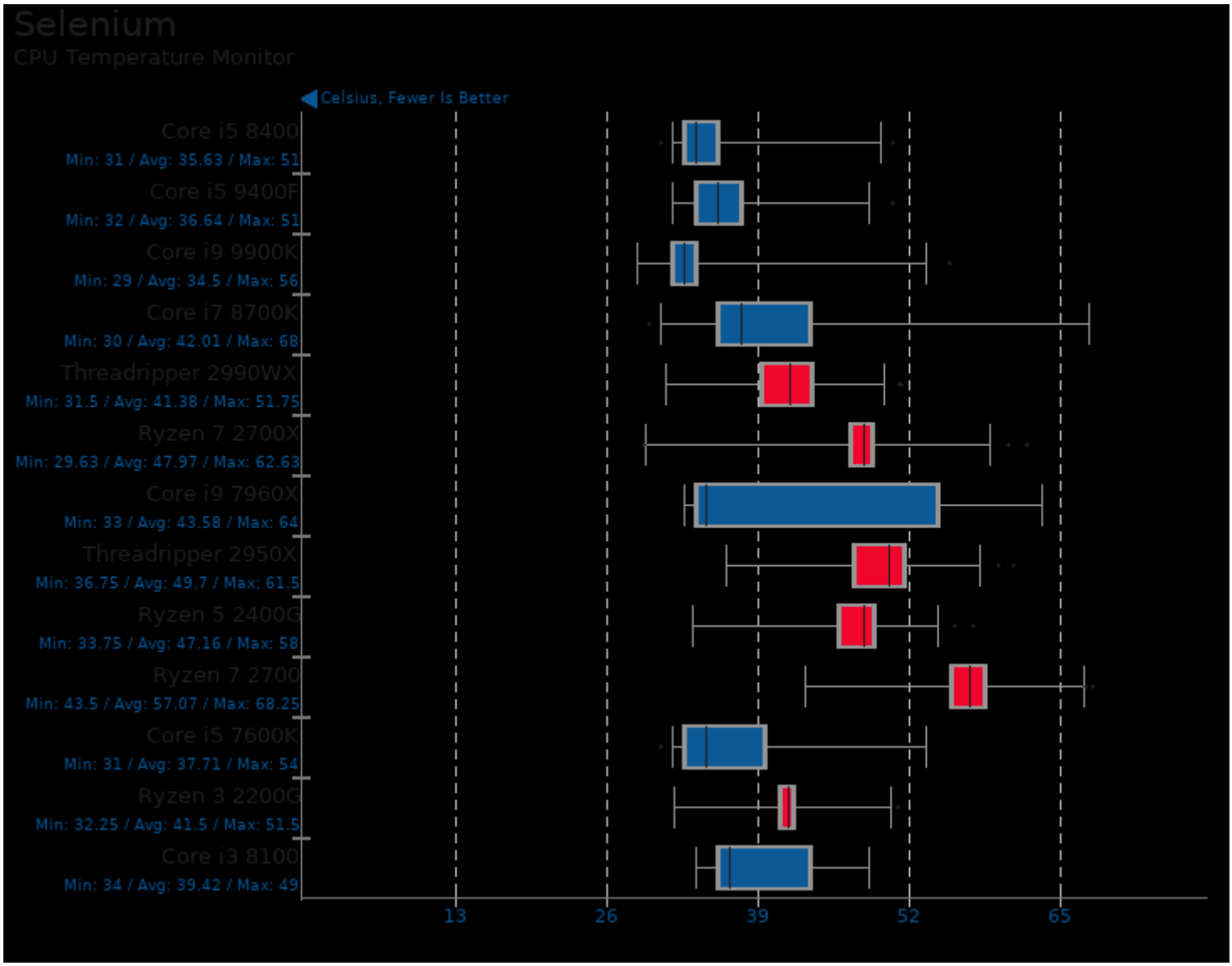

Selenium
Benchmark: ARES-6 - Browser: Google Chrome
ms, Fewer Is Better
Core i5 8400
SE +/- 0.03, N = 3
21.35
Core i5 9400F
SE +/- 0.25, N = 3
21.15
Core i9 9900K
SE +/- 0.13, N = 3
23.32
Core i7 8700K
SE +/- 0.03, N = 3
25.04
Threadripper 2990WX
SE +/- 0.01, N = 3
25.54
Ryzen 7 2700X
SE +/- 0.11, N = 3
23.49
Core i9 7960X
SE +/- 0.04, N = 3
27.00
Threadripper 2950X
SE +/- 0.02, N = 3
24.66
Ryzen 5 2400G
SE +/- 0.21, N = 3
28.16
Ryzen 7 2700
SE +/- 0.09, N = 3
26.23
Core i5 7600K
SE +/- 0.02, N = 3
21.06
Ryzen 3 2200G
SE +/- 0.09, N = 3
26.74
Core i3 8100
SE +/- 0.08, N = 3
23.09
7
14
21
28
35
1. chrome 75.0.3770.80

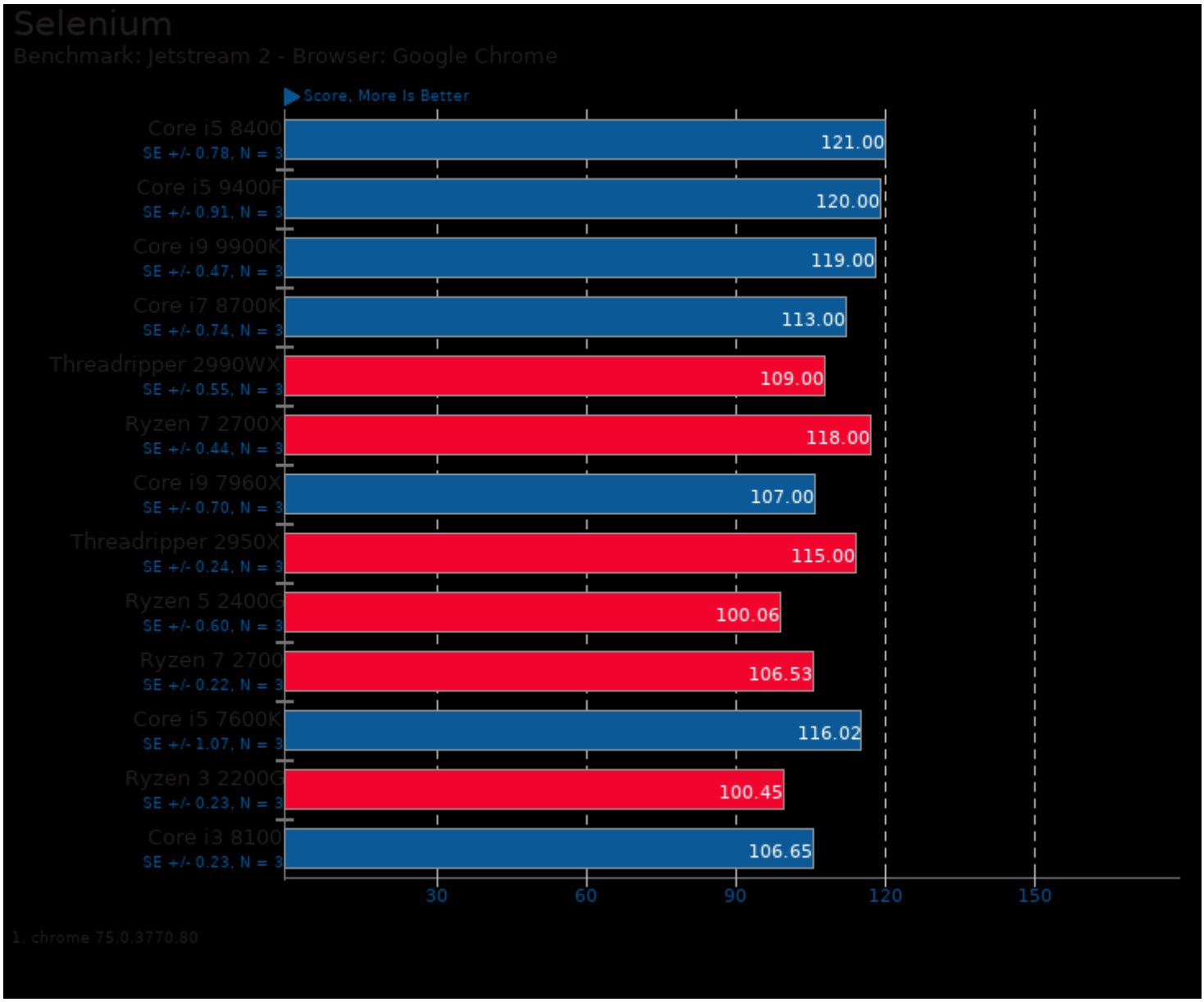

Selenium
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 32 / Avg: 35.84 / Max: 50
Core i5 9400F
Min: 34 / Avg: 39.71 / Max: 53
Core i9 9900K
Min: 29 / Avg: 35.28 / Max: 55
Core i7 8700K
Min: 30 / Avg: 40.27 / Max: 68
Threadripper 2990WX
Min: 31.75 / Avg: 40.67 / Max: 45.75
Ryzen 7 2700X
Min: 30 / Avg: 47.05 / Max: 52.38
Core i9 7960X
Min: 32 / Avg: 43.67 / Max: 61
Threadripper 2950X
Min: 36.5 / Avg: 48.51 / Max: 53
Ryzen 5 2400G
Min: 34 / Avg: 47.42 / Max: 53.88
Ryzen 7 2700
Min: 44.25 / Avg: 58.37 / Max: 65.38
Core i5 7600K
Min: 32 / Avg: 38.89 / Max: 53
Ryzen 3 2200G
Min: 32.75 / Avg: 41.44 / Max: 45
Core i3 8100
Min: 35 / Avg: 40.29 / Max: 50
13
26
39
52
65

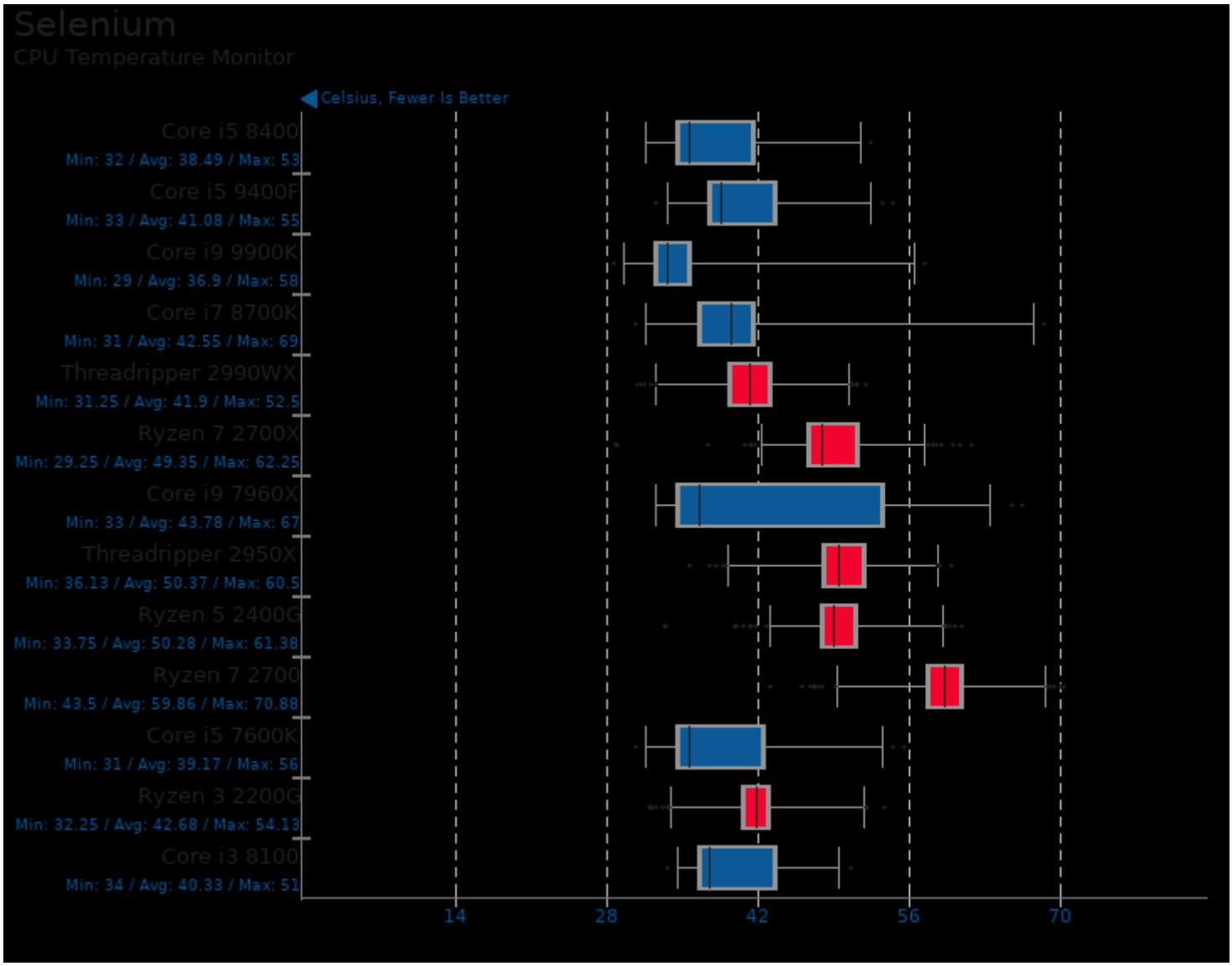

Selenium
Benchmark: Octane - Browser: Firefox
Geometric Mean, More Is Better
Core i5 8400
SE +/- 133.55, N = 3
32060
Core i5 9400F
SE +/- 129.62, N = 3
33097
Core i9 9900K
SE +/- 38.82, N = 3
39155
Core i7 8700K
SE +/- 110.61, N = 3
36470
Threadripper 2990WX
SE +/- 298.69, N = 3
30298
Ryzen 7 2700X
SE +/- 433.44, N = 3
32550
Core i9 7960X
SE +/- 132.39, N = 3
32335
Threadripper 2950X
SE +/- 220.12, N = 3
32110
Ryzen 5 2400G
SE +/- 104.81, N = 3
28149
Ryzen 7 2700
SE +/- 410.34, N = 4
28992
Core i5 7600K
SE +/- 87.50, N = 3
33101
Ryzen 3 2200G
SE +/- 393.39, N = 3
27566
Core i3 8100
SE +/- 337.43, N = 3
29234
8K
16K
24K
32K
40K
1. Core i5 8400: firefox 67.0
2. Core i5 9400F: firefox 67.0
3. Core i9 9900K: firefox 67.0
4. Core i7 8700K: firefox 67.0.1
5. Threadripper 2990WX: firefox 67.0.1
6. Ryzen 7 2700X: firefox 67.0.1
7. Core i9 7960X: firefox 67.0.1
8. Threadripper 2950X: firefox 67.0.1
9. Ryzen 5 2400G: firefox 67.0.3
10. Ryzen 7 2700: firefox 67.0.3
11. Core i5 7600K: firefox 67.0.3
12. Ryzen 3 2200G: firefox 67.0.3
13. Core i3 8100: firefox 67.0.3

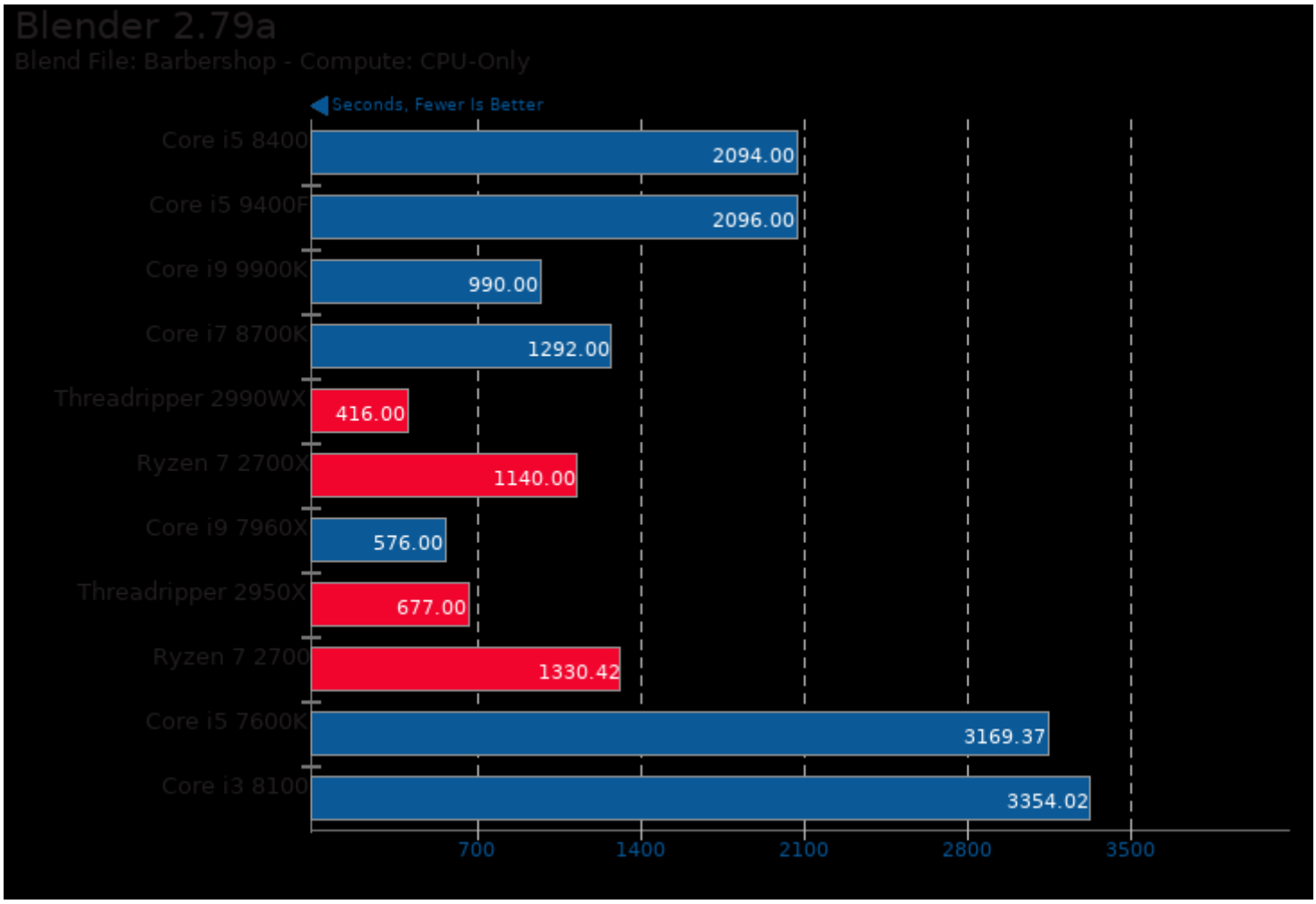

Selenium
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 32 / Avg: 37.73 / Max: 51
Core i5 9400F
Min: 33 / Avg: 37.45 / Max: 50
Core i9 9900K
Min: 30 / Avg: 32.18 / Max: 36
Core i7 8700K
Min: 30 / Avg: 43.47 / Max: 68
Threadripper 2990WX
Min: 31.5 / Avg: 40.43 / Max: 45
Ryzen 7 2700X
Min: 30 / Avg: 46.5 / Max: 56.63
Core i9 7960X
Min: 33 / Avg: 42.23 / Max: 63
Threadripper 2950X
Min: 36.63 / Avg: 48.42 / Max: 58.13
Ryzen 5 2400G
Min: 34 / Avg: 46.25 / Max: 55.38
Ryzen 7 2700
Min: 44.25 / Avg: 57.36 / Max: 67.13
Core i5 7600K
Min: 32 / Avg: 38.4 / Max: 53
Ryzen 3 2200G
Min: 32.75 / Avg: 39.78 / Max: 45.75
Core i3 8100
Min: 35 / Avg: 38.34 / Max: 49
13
26
39
52
65

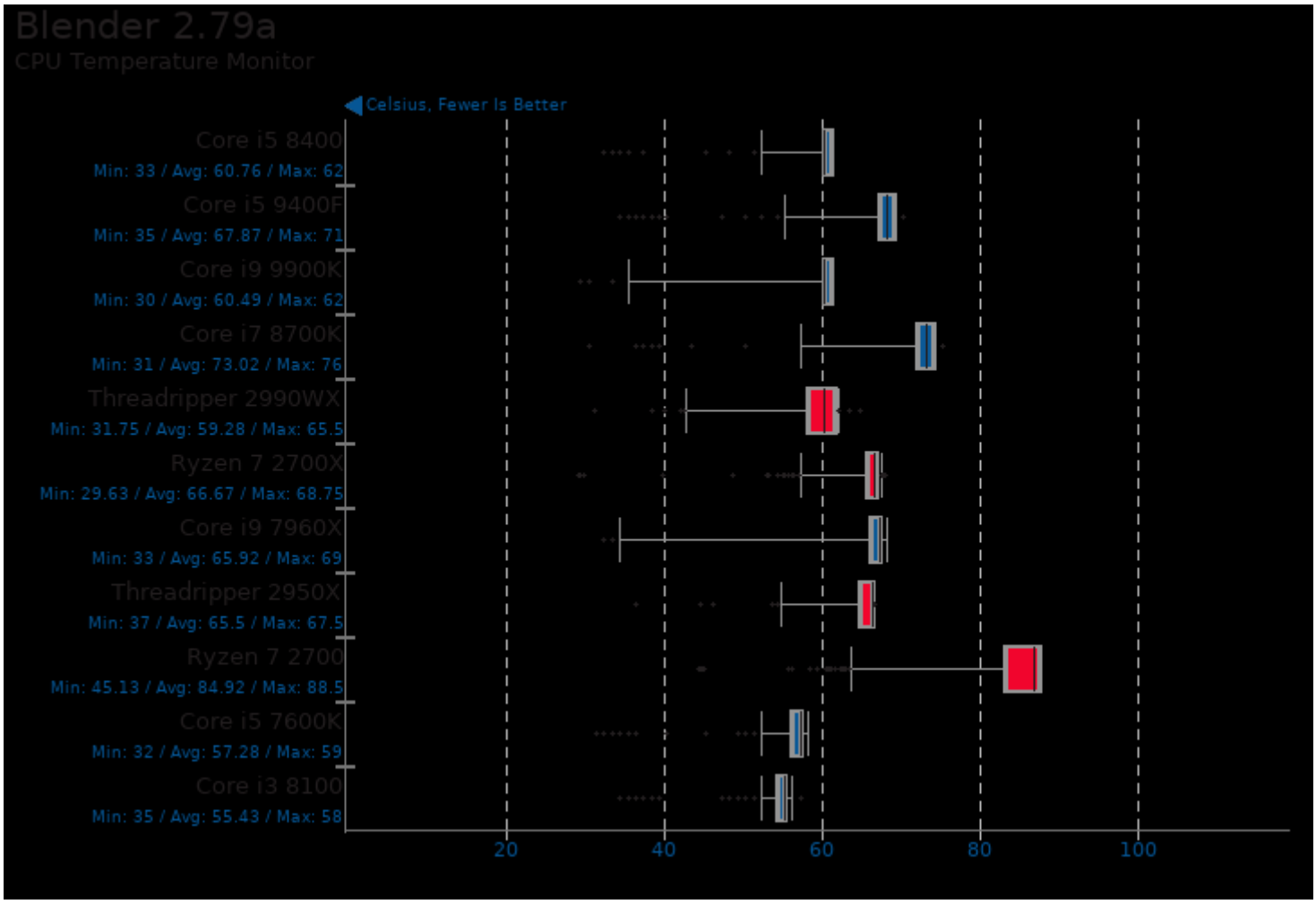

Selenium
Benchmark: Octane - Browser: Google Chrome
Geometric Mean, More Is Better
Core i5 8400
SE +/- 83.51, N = 3
42991
Core i5 9400F
SE +/- 100.05, N = 3
43972
Core i9 9900K
SE +/- 135.50, N = 3
45013
Core i7 8700K
SE +/- 112.01, N = 3
42379
Threadripper 2990WX
SE +/- 242.69, N = 3
40054
Ryzen 7 2700X
SE +/- 90.65, N = 3
42911
Core i9 7960X
SE +/- 137.71, N = 3
38126
Threadripper 2950X
SE +/- 122.44, N = 3
41280
Ryzen 5 2400G
SE +/- 123.03, N = 3
36527
Ryzen 7 2700
SE +/- 143.05, N = 3
38820
Core i5 7600K
SE +/- 121.29, N = 3
43295
Ryzen 3 2200G
SE +/- 190.62, N = 3
35917
Core i3 8100
SE +/- 138.21, N = 3
38450
10K
20K
30K
40K
50K
1. chrome 75.0.3770.80

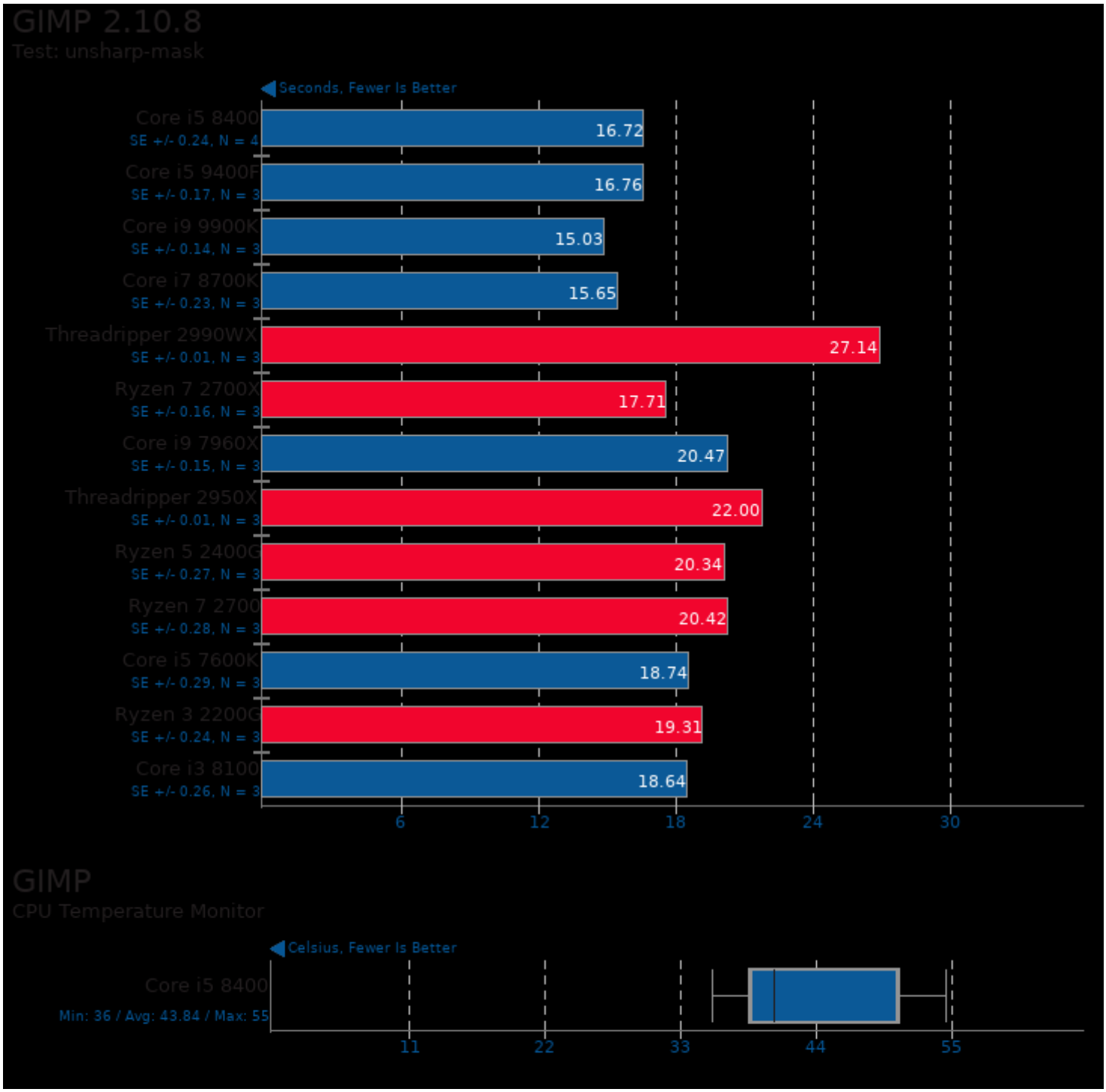

Selenium
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 31 / Avg: 35.63 / Max: 51
Core i5 9400F
Min: 32 / Avg: 36.64 / Max: 51
Core i9 9900K
Min: 29 / Avg: 34.5 / Max: 56
Core i7 8700K
Min: 30 / Avg: 42.01 / Max: 68
Threadripper 2990WX
Min: 31.5 / Avg: 41.38 / Max: 51.75
Ryzen 7 2700X
Min: 29.63 / Avg: 47.97 / Max: 62.63
Core i9 7960X
Min: 33 / Avg: 43.58 / Max: 64
Threadripper 2950X
Min: 36.75 / Avg: 49.7 / Max: 61.5
Ryzen 5 2400G
Min: 33.75 / Avg: 47.16 / Max: 58
Ryzen 7 2700
Min: 43.5 / Avg: 57.07 / Max: 68.25
Core i5 7600K
Min: 31 / Avg: 37.71 / Max: 54
Ryzen 3 2200G
Min: 32.25 / Avg: 41.5 / Max: 51.5
Core i3 8100
Min: 34 / Avg: 39.42 / Max: 49
13
26
39
52
65

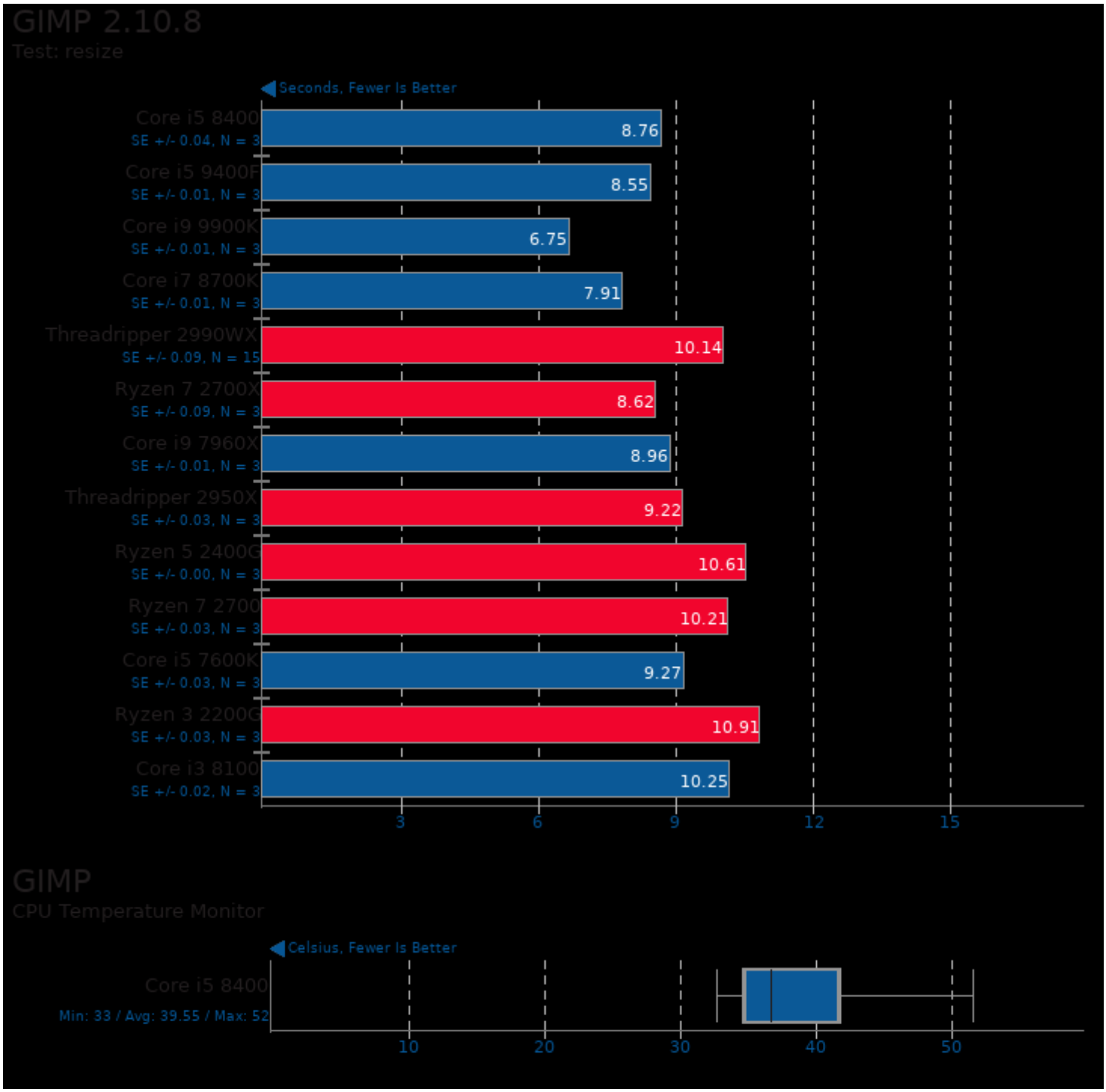

Selenium
Benchmark: Jetstream 2 - Browser: Google Chrome
Score, More Is Better
Core i5 8400
SE +/- 0.78, N = 3
121.00
Core i5 9400F
SE +/- 0.91, N = 3
120.00
Core i9 9900K
SE +/- 0.47, N = 3
119.00
Core i7 8700K
SE +/- 0.74, N = 3
113.00
Threadripper 2990WX
SE +/- 0.55, N = 3
109.00
Ryzen 7 2700X
SE +/- 0.44, N = 3
118.00
Core i9 7960X
SE +/- 0.70, N = 3
107.00
Threadripper 2950X
SE +/- 0.24, N = 3
115.00
Ryzen 5 2400G
SE +/- 0.60, N = 3
100.06
Ryzen 7 2700
SE +/- 0.22, N = 3
106.53
Core i5 7600K
SE +/- 1.07, N = 3
116.02
Ryzen 3 2200G
SE +/- 0.23, N = 3
100.45
Core i3 8100
SE +/- 0.23, N = 3
106.65
30
60
90
120
150
1. chrome 75.0.3770.80

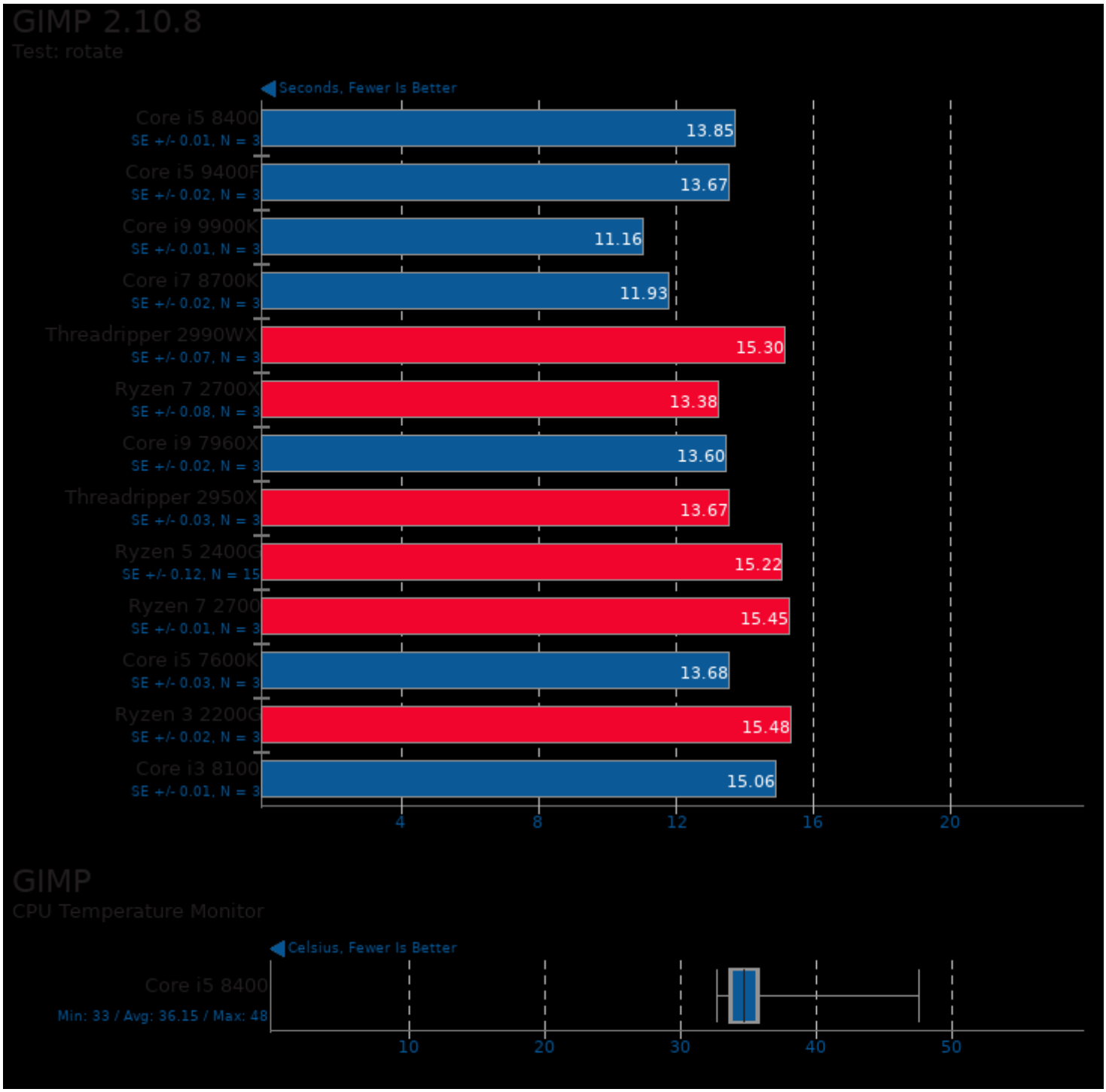

Selenium
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 32 / Avg: 38.49 / Max: 53
Core i5 9400F
Min: 33 / Avg: 41.08 / Max: 55
Core i9 9900K
Min: 29 / Avg: 36.9 / Max: 58
Core i7 8700K
Min: 31 / Avg: 42.55 / Max: 69
Threadripper 2990WX
Min: 31.25 / Avg: 41.9 / Max: 52.5
Ryzen 7 2700X
Min: 29.25 / Avg: 49.35 / Max: 62.25
Core i9 7960X
Min: 33 / Avg: 43.78 / Max: 67
Threadripper 2950X
Min: 36.13 / Avg: 50.37 / Max: 60.5
Ryzen 5 2400G
Min: 33.75 / Avg: 50.28 / Max: 61.38
Ryzen 7 2700
Min: 43.5 / Avg: 59.86 / Max: 70.88
Core i5 7600K
Min: 31 / Avg: 39.17 / Max: 56
Ryzen 3 2200G
Min: 32.25 / Avg: 42.68 / Max: 54.13
Core i3 8100
Min: 34 / Avg: 40.33 / Max: 51
14
28
42
56
70


Blender 2.79a
Blend File: Barbershop - Compute: CPU-Only
Seconds, Fewer Is Better
Core i5 8400
2094.00
Core i5 9400F
2096.00
Core i9 9900K
990.00
Core i7 8700K
1292.00
Threadripper 2990WX
416.00
Ryzen 7 2700X
1140.00
Core i9 7960X
576.00
Threadripper 2950X
677.00
Ryzen 7 2700
1330.42
Core i5 7600K
3169.37
Core i3 8100
3354.02
700
1400
2100
2800
3500

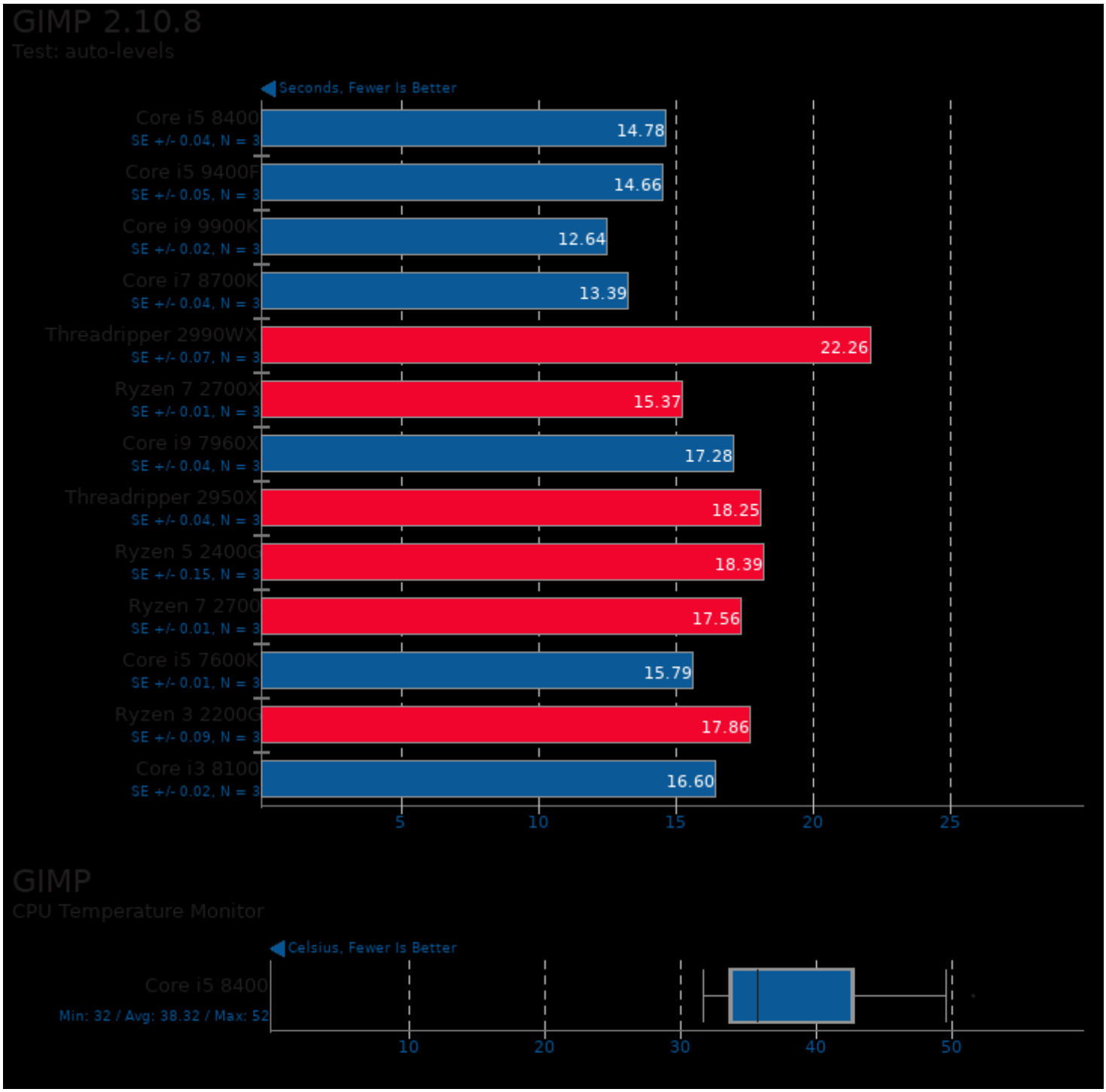

Blender 2.79a
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 33 / Avg: 60.76 / Max: 62
Core i5 9400F
Min: 35 / Avg: 67.87 / Max: 71
Core i9 9900K
Min: 30 / Avg: 60.49 / Max: 62
Core i7 8700K
Min: 31 / Avg: 73.02 / Max: 76
Threadripper 2990WX
Min: 31.75 / Avg: 59.28 / Max: 65.5
Ryzen 7 2700X
Min: 29.63 / Avg: 66.67 / Max: 68.75
Core i9 7960X
Min: 33 / Avg: 65.92 / Max: 69
Threadripper 2950X
Min: 37 / Avg: 65.5 / Max: 67.5
Ryzen 7 2700
Min: 45.13 / Avg: 84.92 / Max: 88.5
Core i5 7600K
Min: 32 / Avg: 57.28 / Max: 59
Core i3 8100
Min: 35 / Avg: 55.43 / Max: 58
20
40
60
80
100


GIMP 2.10.8
Test: unsharp-mask
Seconds, Fewer Is Better
Core i5 8400
SE +/- 0.24, N = 4
16.72
Core i5 9400F
SE +/- 0.17, N = 3
16.76
Core i9 9900K
SE +/- 0.14, N = 3
15.03
Core i7 8700K
SE +/- 0.23, N = 3
15.65
Threadripper 2990WX
SE +/- 0.01, N = 3
27.14
Ryzen 7 2700X
SE +/- 0.16, N = 3
17.71
Core i9 7960X
SE +/- 0.15, N = 3
20.47
Threadripper 2950X
SE +/- 0.01, N = 3
22.00
Ryzen 5 2400G
SE +/- 0.27, N = 3
20.34
Ryzen 7 2700
SE +/- 0.28, N = 3
20.42
Core i5 7600K
SE +/- 0.29, N = 3
18.74
Ryzen 3 2200G
SE +/- 0.24, N = 3
19.31
Core i3 8100
SE +/- 0.26, N = 3
18.64
6
12
18
24
30
GIMP
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 36 / Avg: 43.84 / Max: 55
11
22
33
44
55

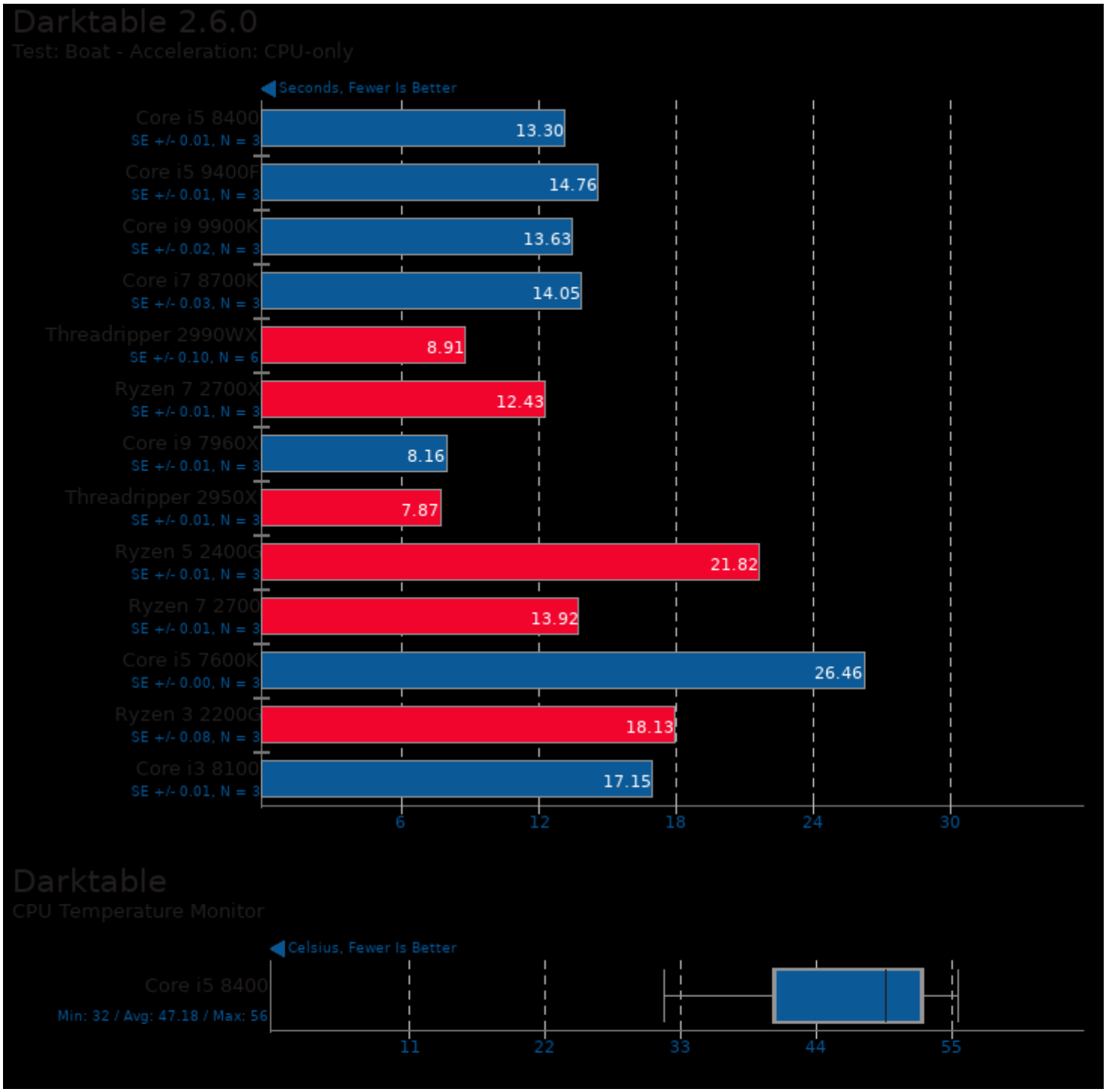

GIMP 2.10.8
Test: resize
Seconds, Fewer Is Better
Core i5 8400
SE +/- 0.04, N = 3
8.76
Core i5 9400F
SE +/- 0.01, N = 3
8.55
Core i9 9900K
SE +/- 0.01, N = 3
6.75
Core i7 8700K
SE +/- 0.01, N = 3
7.91
Threadripper 2990WX
SE +/- 0.09, N = 15
10.14
Ryzen 7 2700X
SE +/- 0.09, N = 3
8.62
Core i9 7960X
SE +/- 0.01, N = 3
8.96
Threadripper 2950X
SE +/- 0.03, N = 3
9.22
Ryzen 5 2400G
SE +/- 0.00, N = 3
10.61
Ryzen 7 2700
SE +/- 0.03, N = 3
10.21
Core i5 7600K
SE +/- 0.03, N = 3
9.27
Ryzen 3 2200G
SE +/- 0.03, N = 3
10.91
Core i3 8100
SE +/- 0.02, N = 3
10.25
3
6
9
12
15
GIMP
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 33 / Avg: 39.55 / Max: 52
10
20
30
40
50

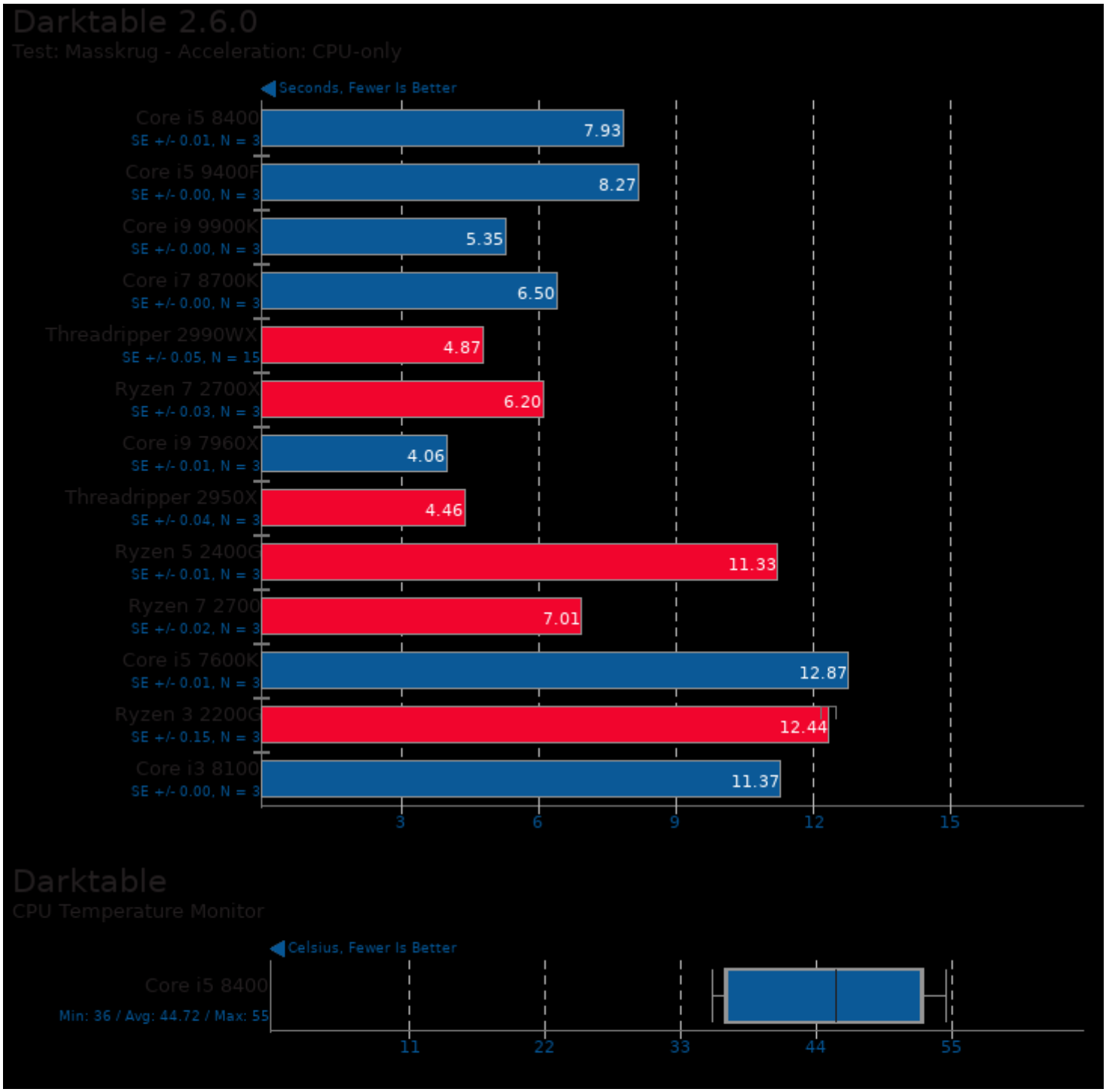

GIMP 2.10.8
Test: rotate
Seconds, Fewer Is Better
Core i5 8400
SE +/- 0.01, N = 3
13.85
Core i5 9400F
SE +/- 0.02, N = 3
13.67
Core i9 9900K
SE +/- 0.01, N = 3
11.16
Core i7 8700K
SE +/- 0.02, N = 3
11.93
Threadripper 2990WX
SE +/- 0.07, N = 3
15.30
Ryzen 7 2700X
SE +/- 0.08, N = 3
13.38
Core i9 7960X
SE +/- 0.02, N = 3
13.60
Threadripper 2950X
SE +/- 0.03, N = 3
13.67
Ryzen 5 2400G
SE +/- 0.12, N = 15
15.22
Ryzen 7 2700
SE +/- 0.01, N = 3
15.45
Core i5 7600K
SE +/- 0.03, N = 3
13.68
Ryzen 3 2200G
SE +/- 0.02, N = 3
15.48
Core i3 8100
SE +/- 0.01, N = 3
15.06
4
8
12
16
20
GIMP
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 33 / Avg: 36.15 / Max: 48
10
20
30
40
50

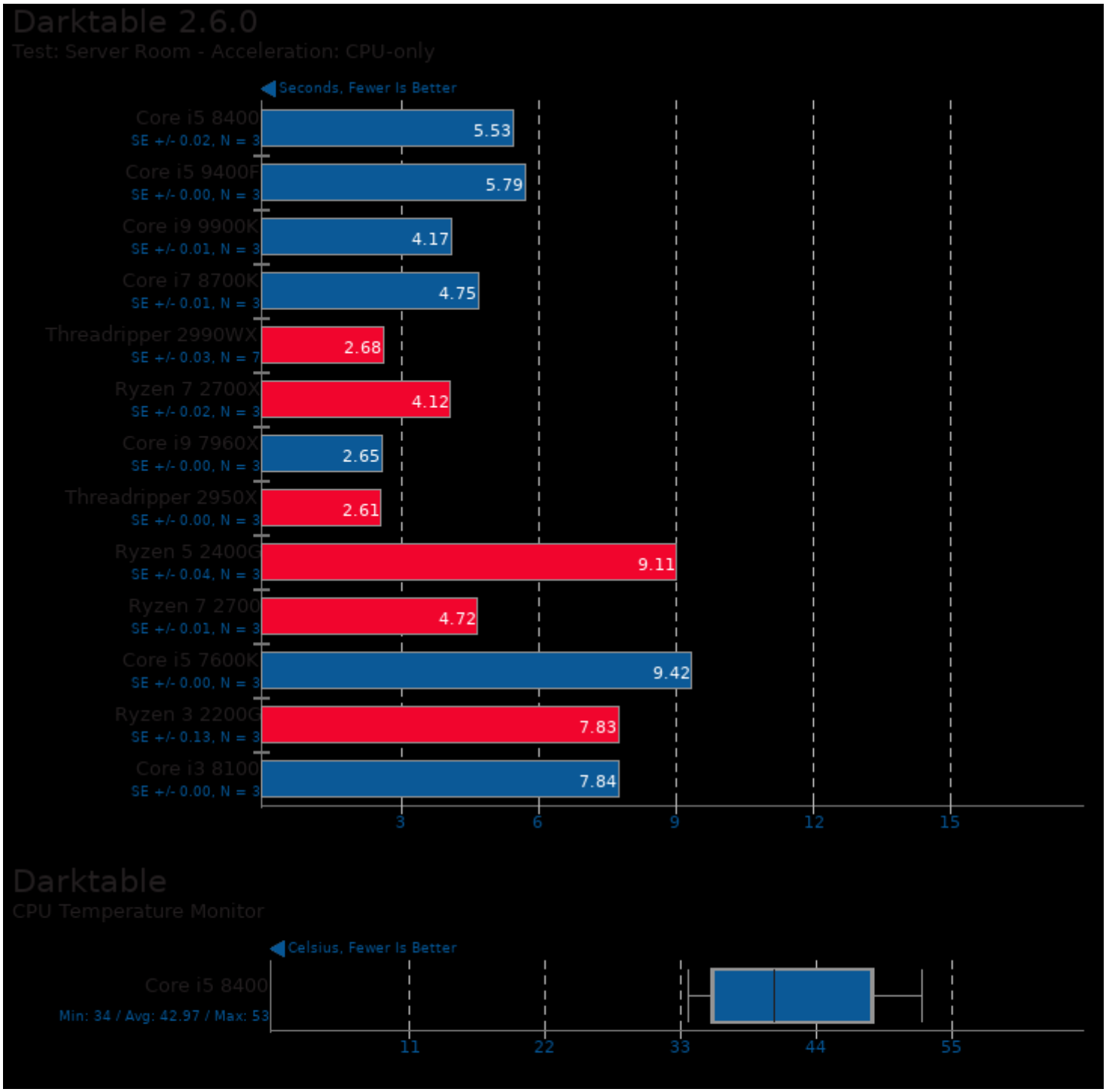
CPU Benchmarks

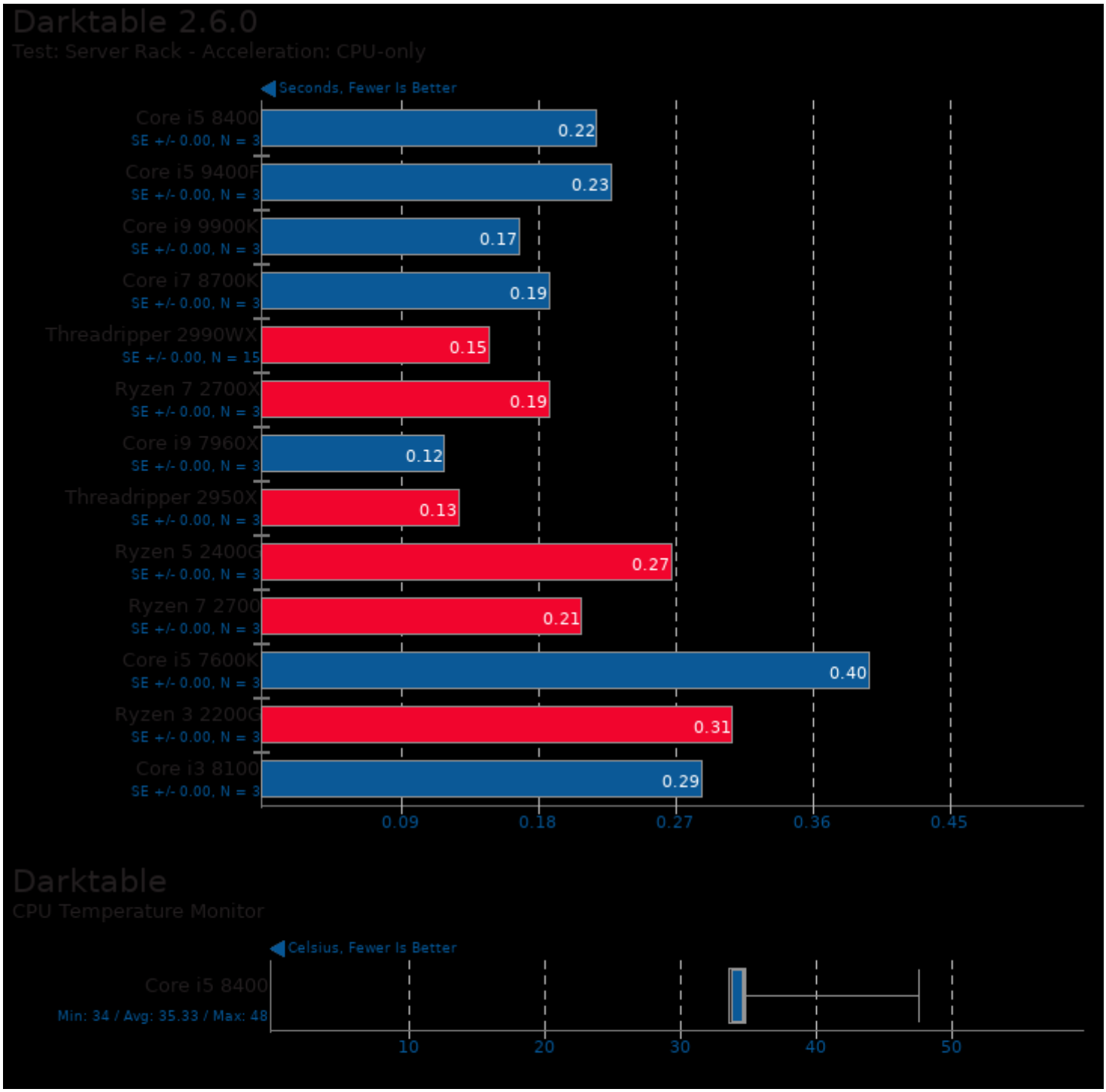


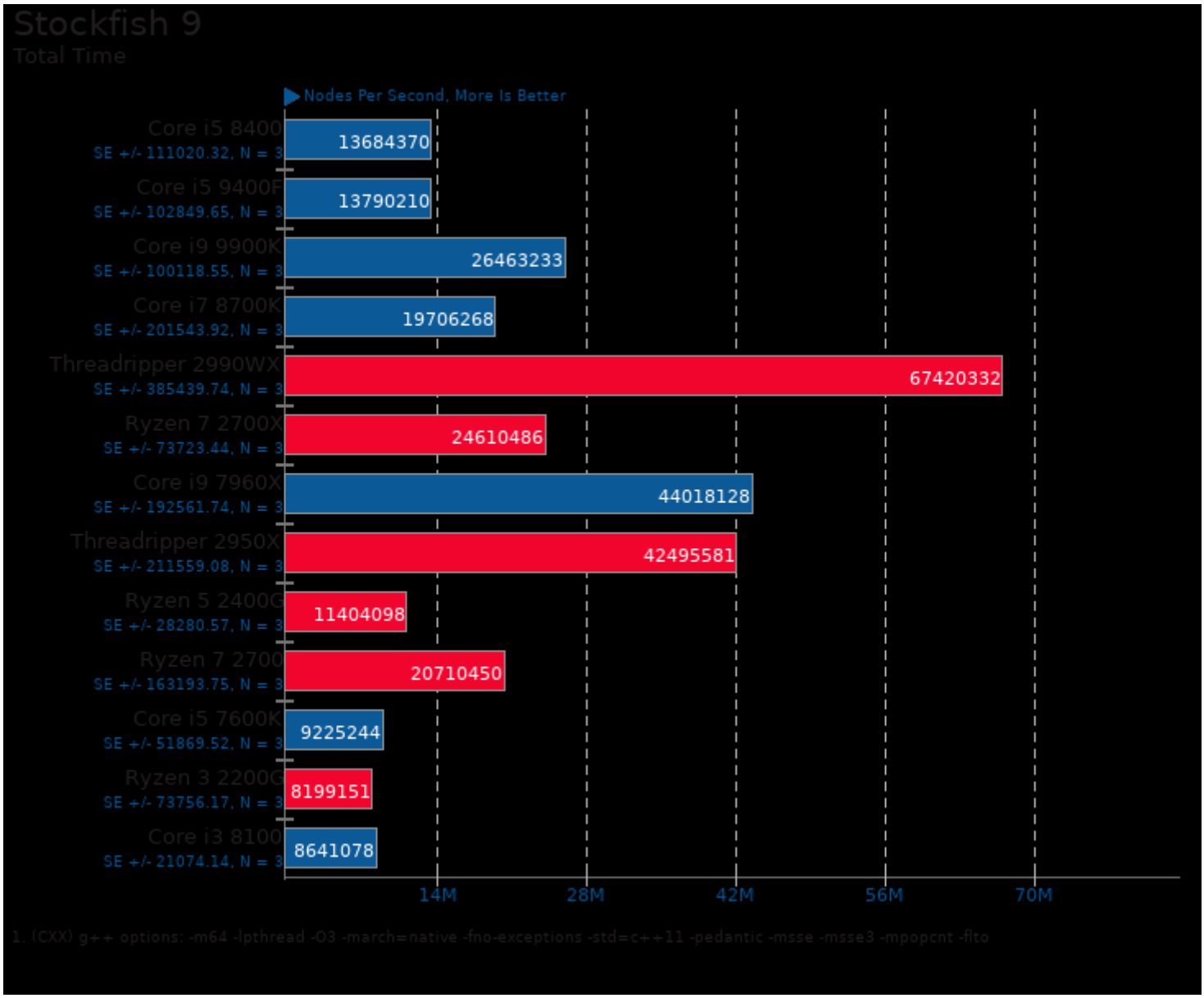
CPU Benchmarks

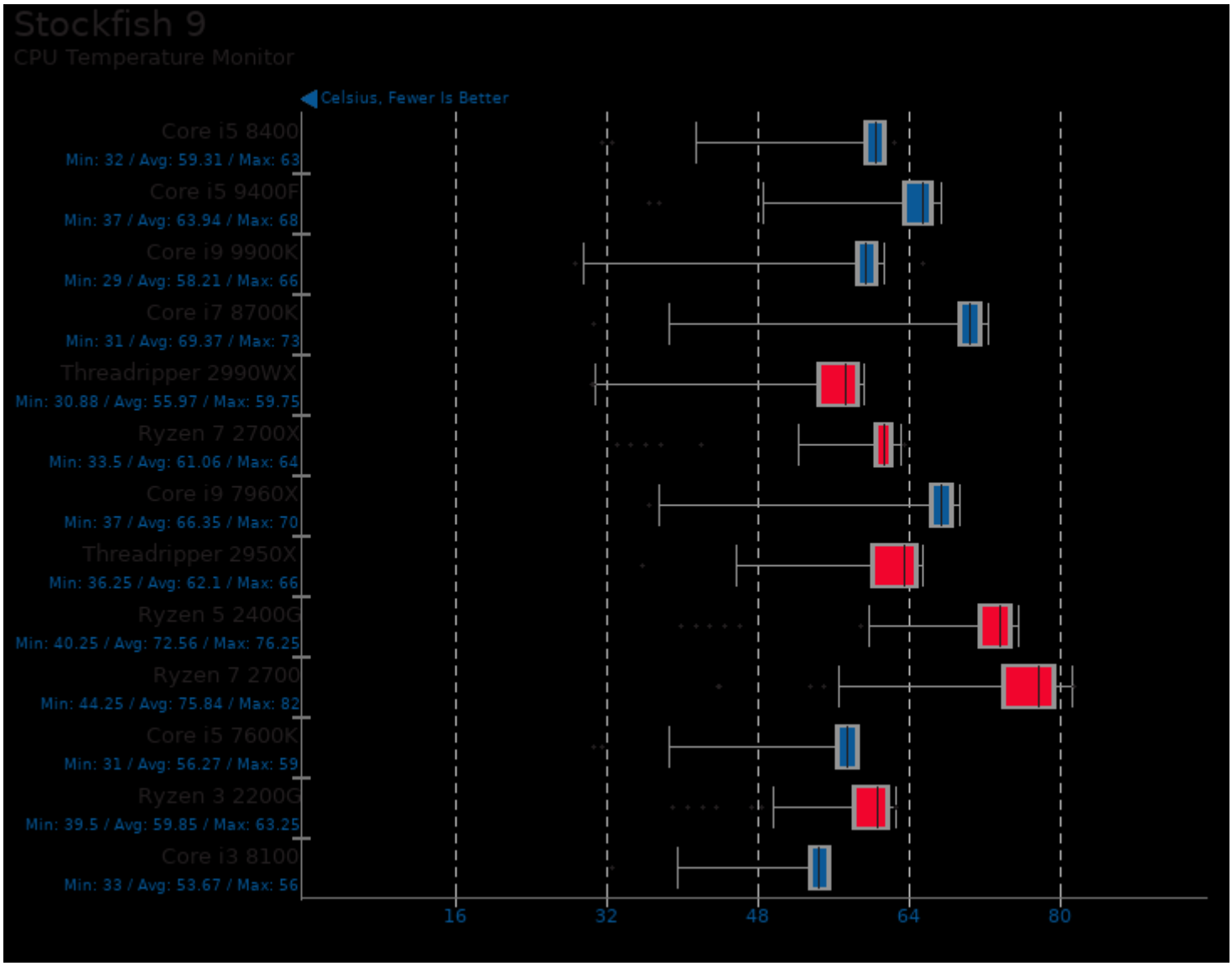


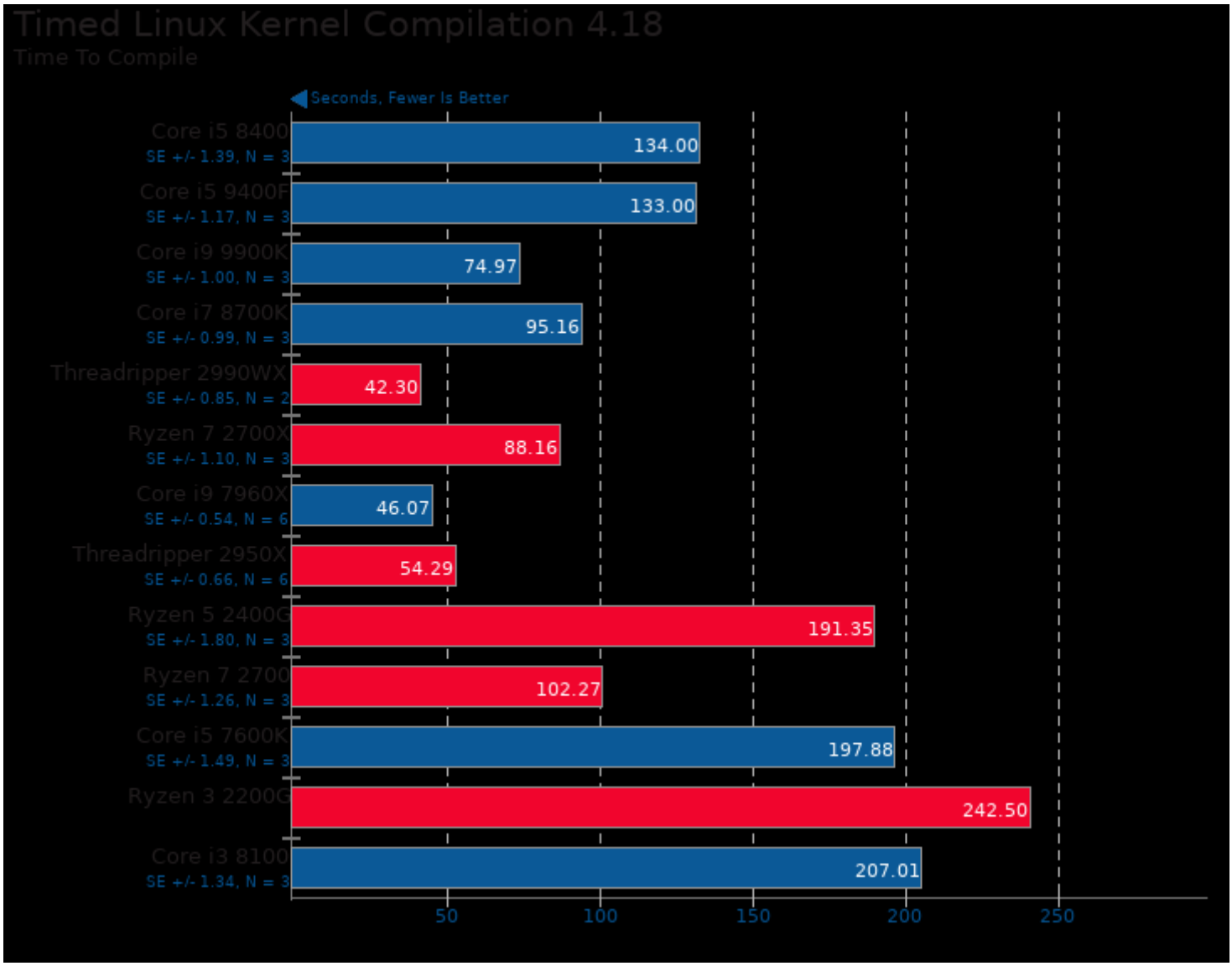

Darktable 2.6.0
Test: Masskrug - Acceleration: CPU-only
Seconds, Fewer Is Better
Core i5 8400
SE +/- 0.01, N = 3
7.93
Core i5 9400F
SE +/- 0.00, N = 3
8.27
Core i9 9900K
SE +/- 0.00, N = 3
5.35
Core i7 8700K
SE +/- 0.00, N = 3
6.50
Threadripper 2990WX
SE +/- 0.05, N = 15
4.87
Ryzen 7 2700X
SE +/- 0.03, N = 3
6.20
Core i9 7960X
SE +/- 0.01, N = 3
4.06
Threadripper 2950X
SE +/- 0.04, N = 3
4.46
Ryzen 5 2400G
SE +/- 0.01, N = 3
11.33
Ryzen 7 2700
SE +/- 0.02, N = 3
7.01
Core i5 7600K
SE +/- 0.01, N = 3
12.87
Ryzen 3 2200G
SE +/- 0.15, N = 3
12.44
Core i3 8100
SE +/- 0.00, N = 3
11.37
3
6
9
12
15
Darktable
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 36 / Avg: 44.72 / Max: 55
11
22
33
44
55

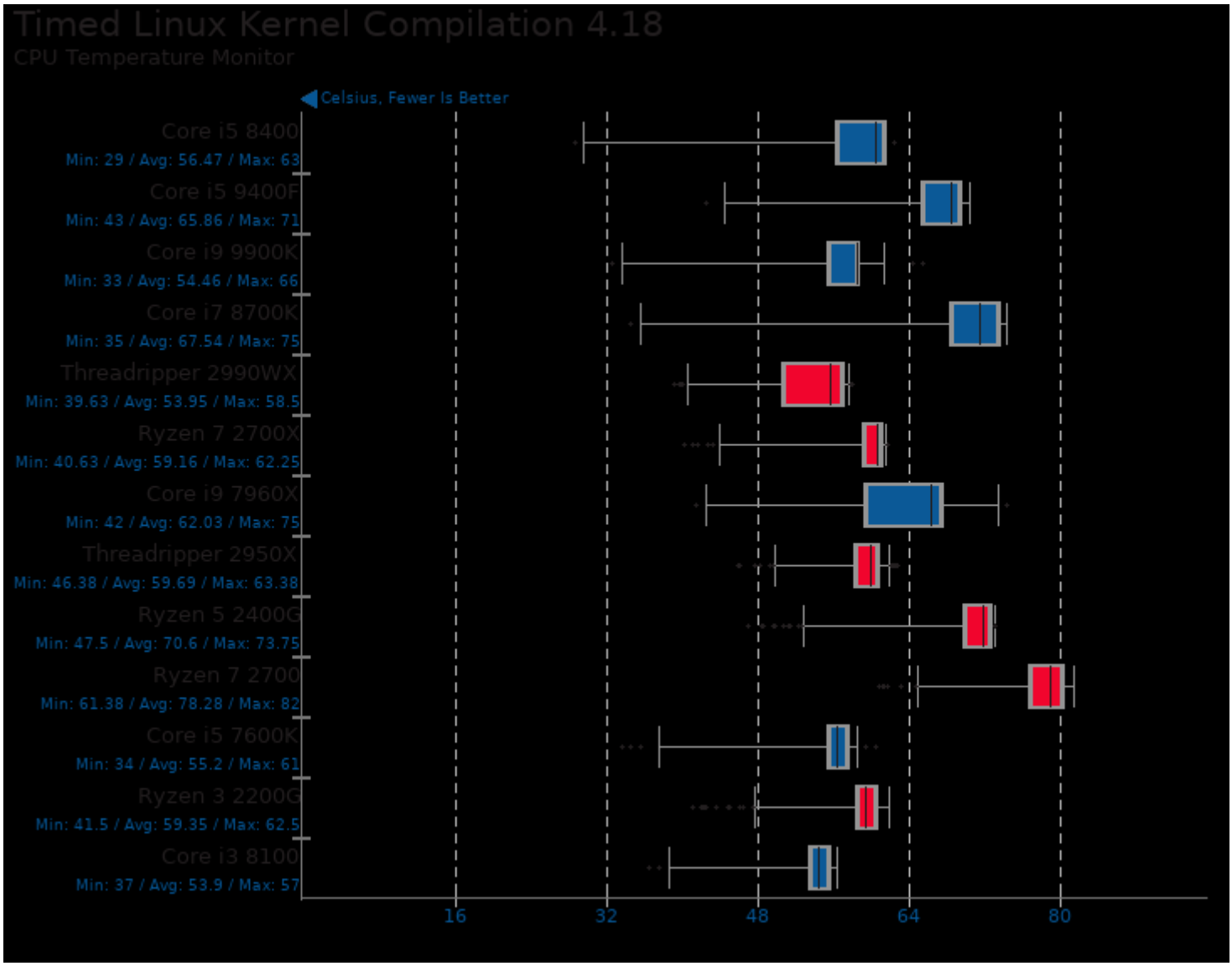

Darktable 2.6.0
Test: Server Room - Acceleration: CPU-only
Seconds, Fewer Is Better
Core i5 8400
SE +/- 0.02, N = 3
5.53
Core i5 9400F
SE +/- 0.00, N = 3
5.79
Core i9 9900K
SE +/- 0.01, N = 3
4.17
Core i7 8700K
SE +/- 0.01, N = 3
4.75
Threadripper 2990WX
SE +/- 0.03, N = 7
2.68
Ryzen 7 2700X
SE +/- 0.02, N = 3
4.12
Core i9 7960X
SE +/- 0.00, N = 3
2.65
Threadripper 2950X
SE +/- 0.00, N = 3
2.61
Ryzen 5 2400G
SE +/- 0.04, N = 3
9.11
Ryzen 7 2700
SE +/- 0.01, N = 3
4.72
Core i5 7600K
SE +/- 0.00, N = 3
9.42
Ryzen 3 2200G
SE +/- 0.13, N = 3
7.83
Core i3 8100
SE +/- 0.00, N = 3
7.84
3
6
9
12
15
Darktable
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 34 / Avg: 42.97 / Max: 53
11
22
33
44
55

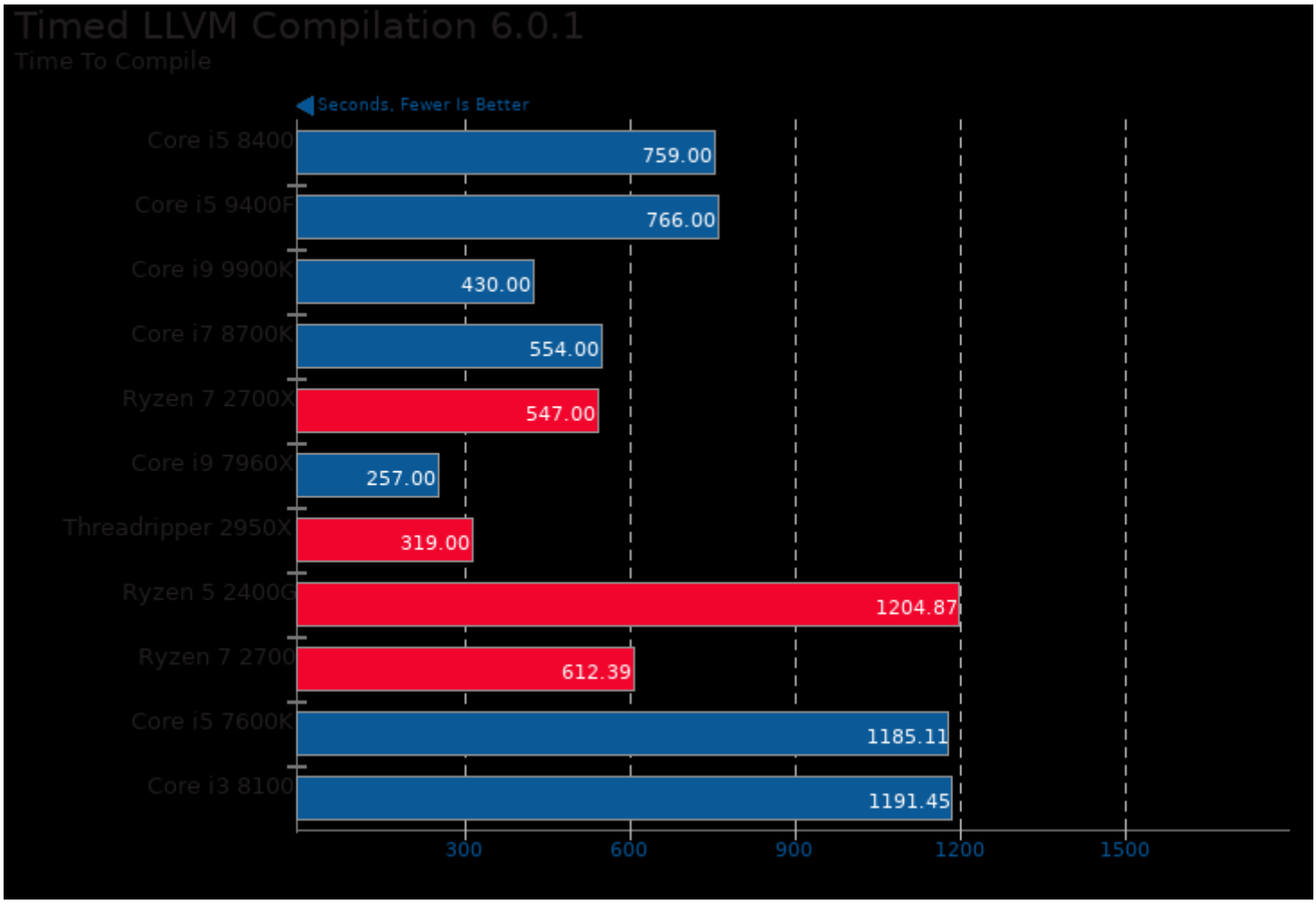

Darktable 2.6.0
Test: Server Rack - Acceleration: CPU-only
Seconds, Fewer Is Better
Core i5 8400
SE +/- 0.00, N = 3
0.22
Core i5 9400F
SE +/- 0.00, N = 3
0.23
Core i9 9900K
SE +/- 0.00, N = 3
0.17
Core i7 8700K
SE +/- 0.00, N = 3
0.19
Threadripper 2990WX
SE +/- 0.00, N = 15
0.15
Ryzen 7 2700X
SE +/- 0.00, N = 3
0.19
Core i9 7960X
SE +/- 0.00, N = 3
0.12
Threadripper 2950X
SE +/- 0.00, N = 3
0.13
Ryzen 5 2400G
SE +/- 0.00, N = 3
0.27
Ryzen 7 2700
SE +/- 0.00, N = 3
0.21
Core i5 7600K
SE +/- 0.00, N = 3
0.40
Ryzen 3 2200G
SE +/- 0.00, N = 3
0.31
Core i3 8100
SE +/- 0.00, N = 3
0.29
0.09
0.18
0.27
0.36
0.45
Darktable
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 34 / Avg: 35.33 / Max: 48
10
20
30
40
50

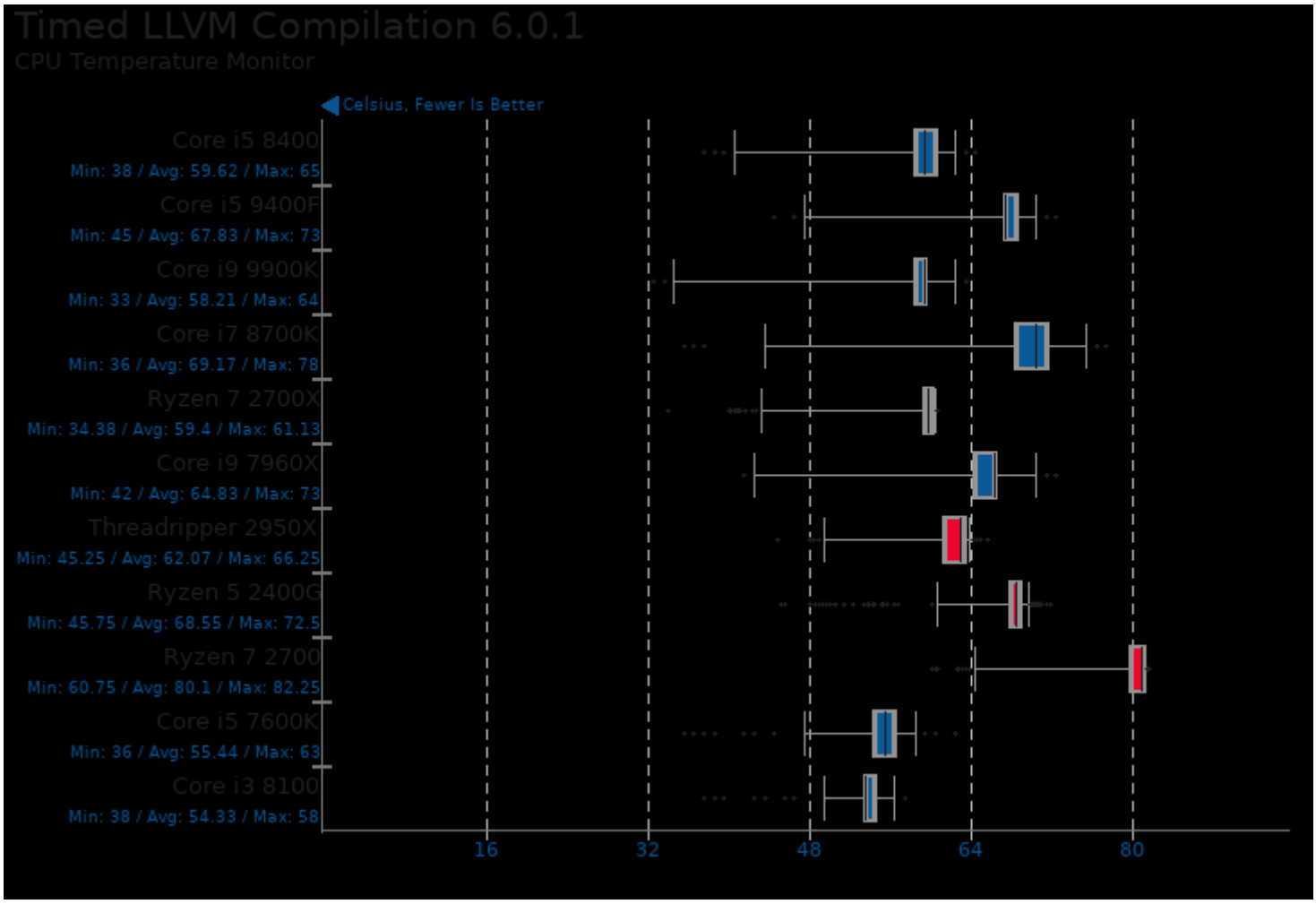

Stockfish 9
Total Time
Nodes Per Second, More Is Better
Core i5 8400
SE +/- 111020.32, N = 3
13684370
Core i5 9400F
SE +/- 102849.65, N = 3
13790210
Core i9 9900K
SE +/- 100118.55, N = 3
26463233
Core i7 8700K
SE +/- 201543.92, N = 3
19706268
Threadripper 2990WX
SE +/- 385439.74, N = 3
67420332
Ryzen 7 2700X
SE +/- 73723.44, N = 3
24610486
Core i9 7960X
SE +/- 192561.74, N = 3
44018128
Threadripper 2950X
SE +/- 211559.08, N = 3
42495581
Ryzen 5 2400G
SE +/- 28280.57, N = 3
11404098
Ryzen 7 2700
SE +/- 163193.75, N = 3
20710450
Core i5 7600K
SE +/- 51869.52, N = 3
9225244
Ryzen 3 2200G
SE +/- 73756.17, N = 3
8199151
Core i3 8100
SE +/- 21074.14, N = 3
8641078
14M
28M
42M
56M
70M
1. (CXX) g++ options: -m64 -lpthread -O3 -march=native -fno-exceptions -std=c++11 -pedantic -msse -msse3 -mpopcnt -flto

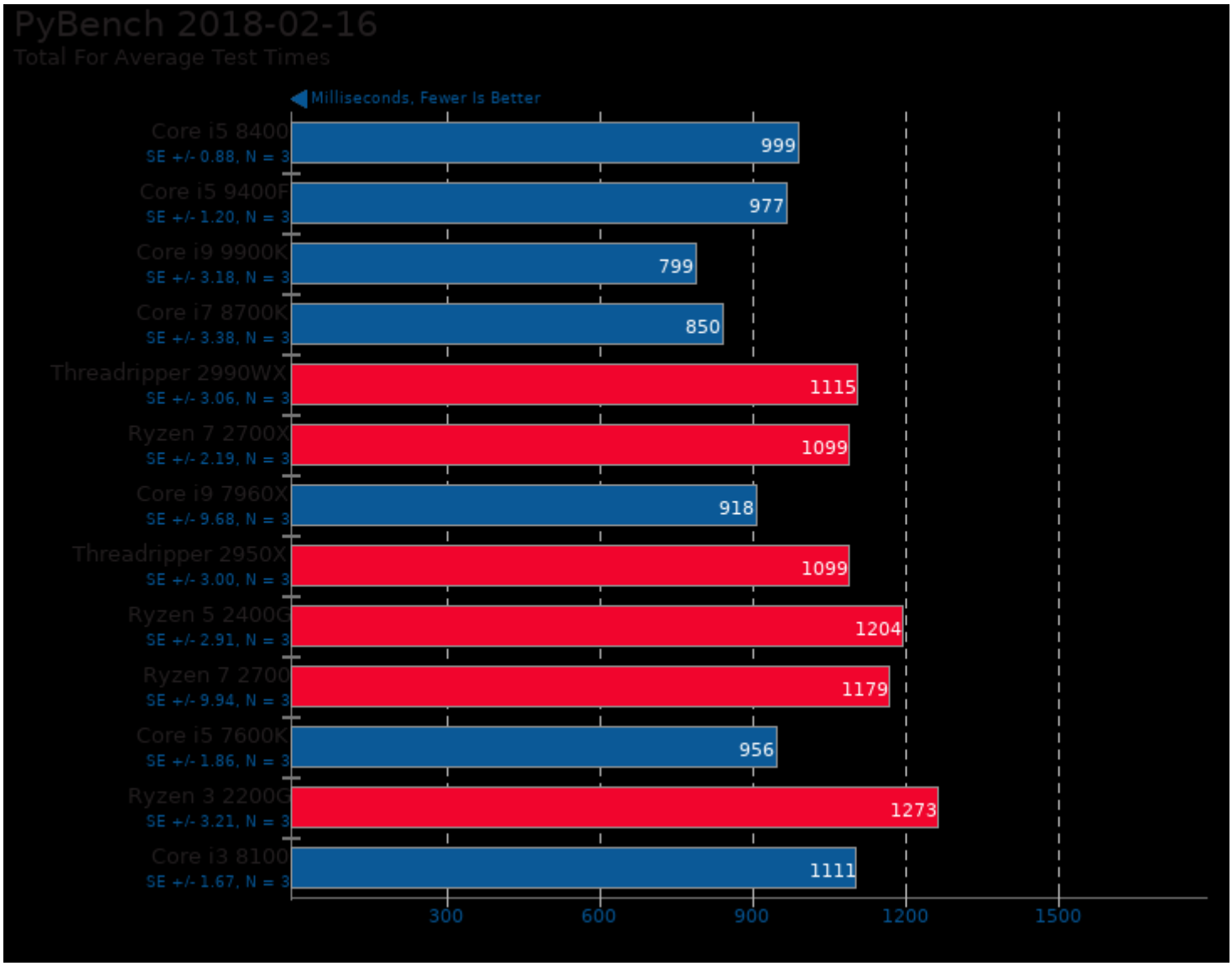

Stockfish 9
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 32 / Avg: 59.31 / Max: 63
Core i5 9400F
Min: 37 / Avg: 63.94 / Max: 68
Core i9 9900K
Min: 29 / Avg: 58.21 / Max: 66
Core i7 8700K
Min: 31 / Avg: 69.37 / Max: 73
Threadripper 2990WX
Min: 30.88 / Avg: 55.97 / Max: 59.75
Ryzen 7 2700X
Min: 33.5 / Avg: 61.06 / Max: 64
Core i9 7960X
Min: 37 / Avg: 66.35 / Max: 70
Threadripper 2950X
Min: 36.25 / Avg: 62.1 / Max: 66
Ryzen 5 2400G
Min: 40.25 / Avg: 72.56 / Max: 76.25
Ryzen 7 2700
Min: 44.25 / Avg: 75.84 / Max: 82
Core i5 7600K
Min: 31 / Avg: 56.27 / Max: 59
Ryzen 3 2200G
Min: 39.5 / Avg: 59.85 / Max: 63.25
Core i3 8100
Min: 33 / Avg: 53.67 / Max: 56
16
32
48
64
80

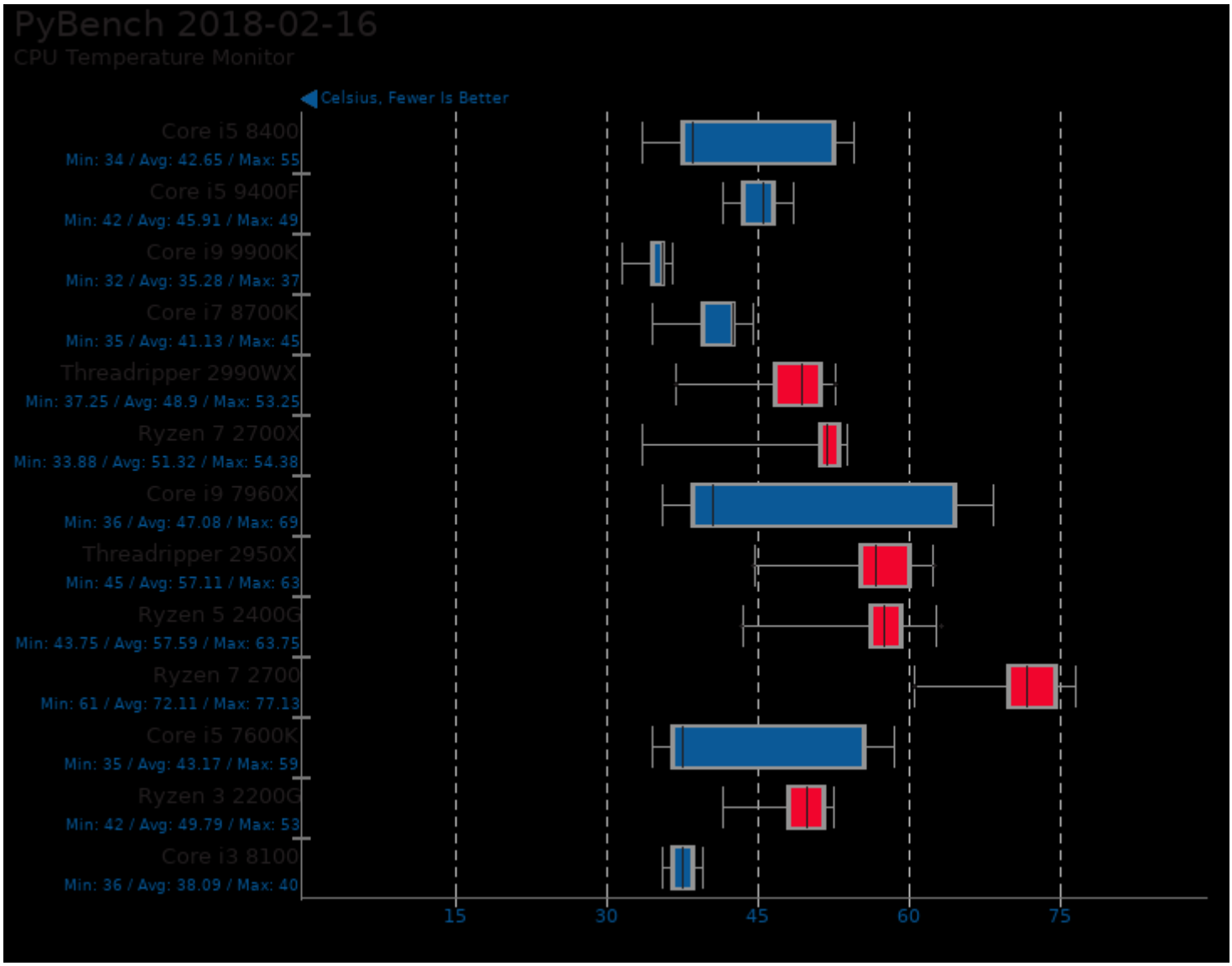

Timed Linux Kernel Compilation 4.18
Time To Compile
Seconds, Fewer Is Better
Core i5 8400
SE +/- 1.39, N = 3
134.00
Core i5 9400F
SE +/- 1.17, N = 3
133.00
Core i9 9900K
SE +/- 1.00, N = 3
74.97
Core i7 8700K
SE +/- 0.99, N = 3
95.16
Threadripper 2990WX
SE +/- 0.85, N = 2
42.30
Ryzen 7 2700X
SE +/- 1.10, N = 3
88.16
Core i9 7960X
SE +/- 0.54, N = 6
46.07
Threadripper 2950X
SE +/- 0.66, N = 6
54.29
Ryzen 5 2400G
SE +/- 1.80, N = 3
191.35
Ryzen 7 2700
SE +/- 1.26, N = 3
102.27
Core i5 7600K
SE +/- 1.49, N = 3
197.88
Ryzen 3 2200G
242.50
Core i3 8100
SE +/- 1.34, N = 3
207.01
50
100
150
200
250

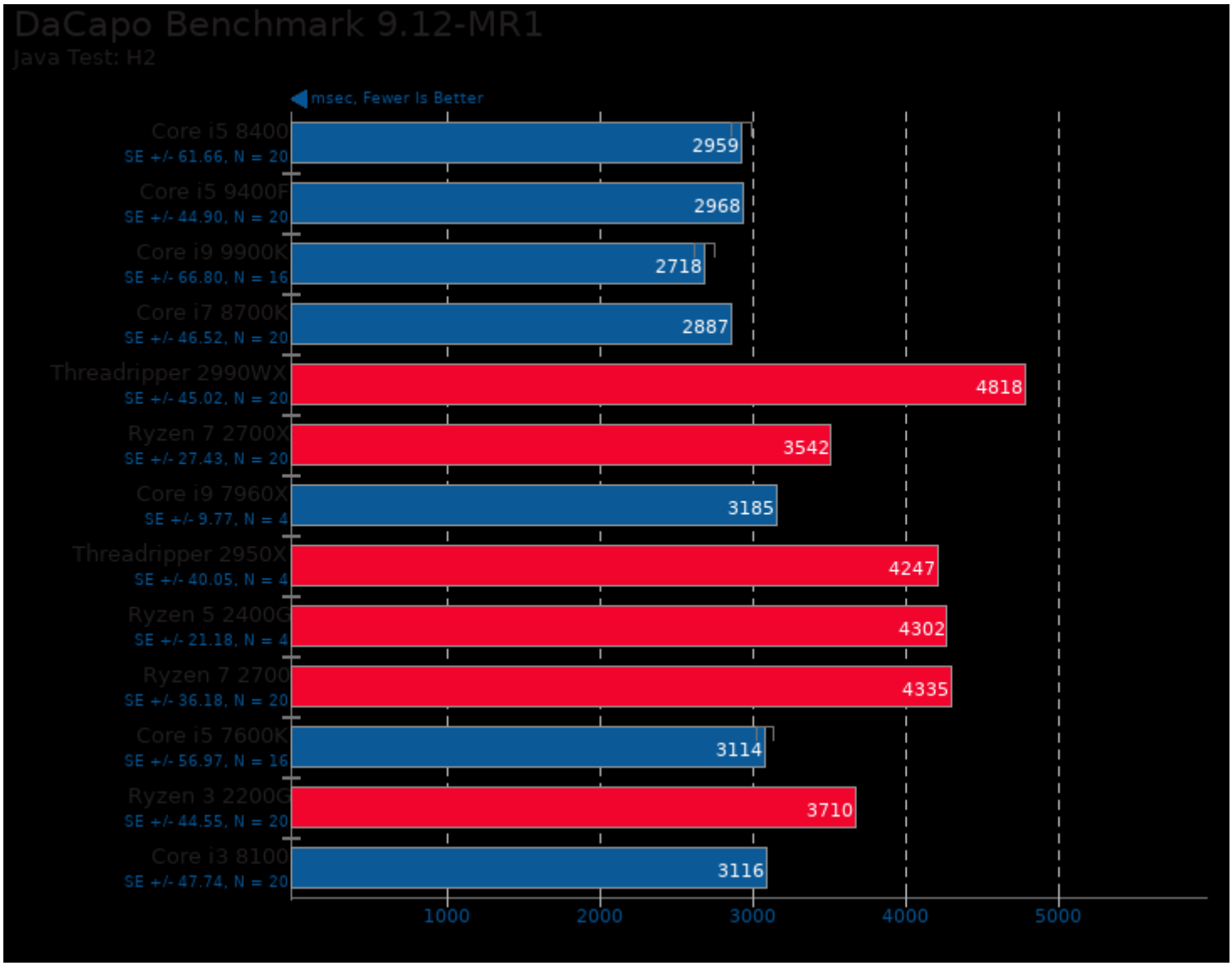

Timed Linux Kernel Compilation 4.18
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 29 / Avg: 56.47 / Max: 63
Core i5 9400F
Min: 43 / Avg: 65.86 / Max: 71
Core i9 9900K
Min: 33 / Avg: 54.46 / Max: 66
Core i7 8700K
Min: 35 / Avg: 67.54 / Max: 75
Threadripper 2990WX
Min: 39.63 / Avg: 53.95 / Max: 58.5
Ryzen 7 2700X
Min: 40.63 / Avg: 59.16 / Max: 62.25
Core i9 7960X
Min: 42 / Avg: 62.03 / Max: 75
Threadripper 2950X
Min: 46.38 / Avg: 59.69 / Max: 63.38
Ryzen 5 2400G
Min: 47.5 / Avg: 70.6 / Max: 73.75
Ryzen 7 2700
Min: 61.38 / Avg: 78.28 / Max: 82
Core i5 7600K
Min: 34 / Avg: 55.2 / Max: 61
Ryzen 3 2200G
Min: 41.5 / Avg: 59.35 / Max: 62.5
Core i3 8100
Min: 37 / Avg: 53.9 / Max: 57
16
32
48
64
80

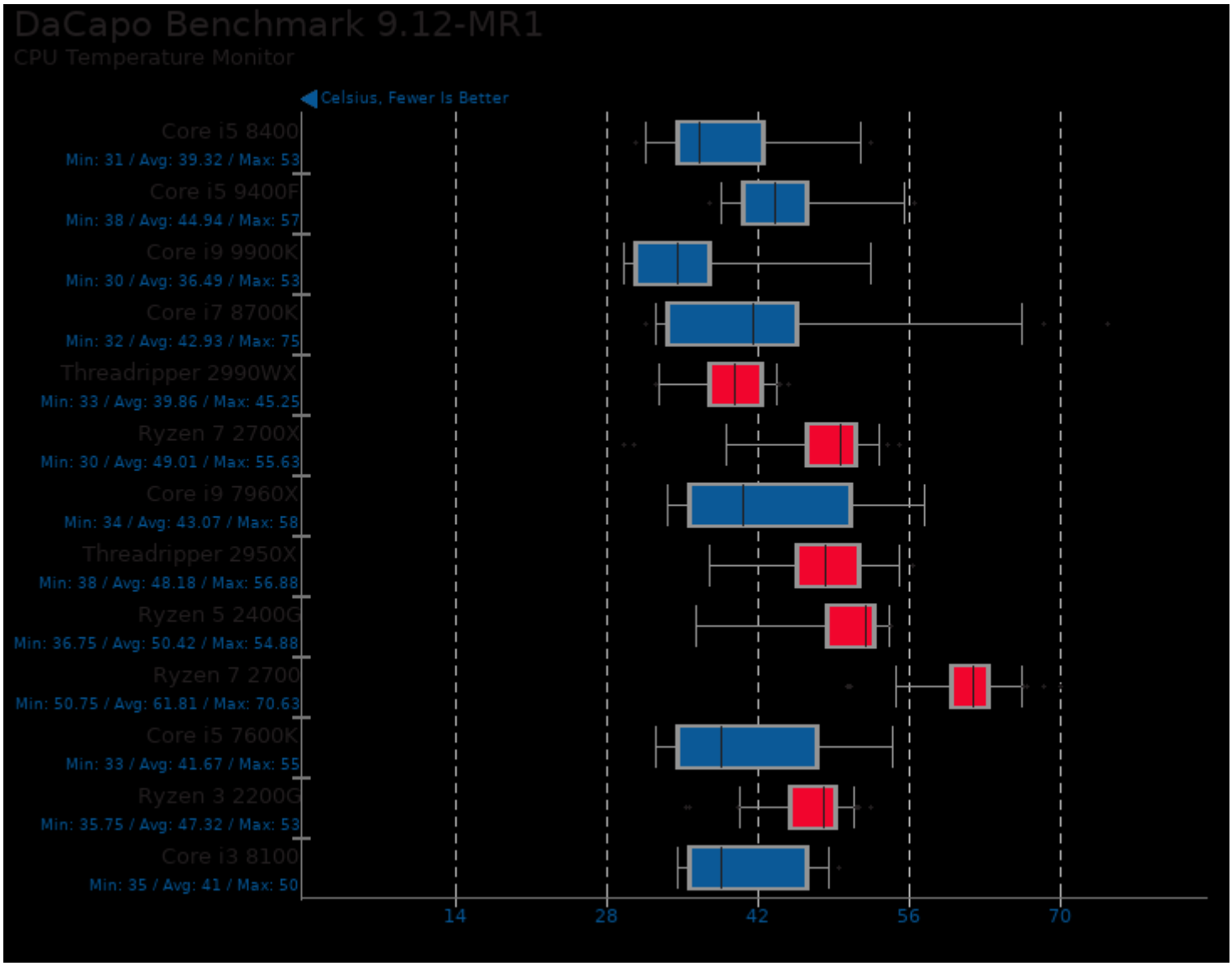

Timed LLVM Compilation 6.0.1
Time To Compile
Seconds, Fewer Is Better
Core i5 8400
759.00
Core i5 9400F
766.00
Core i9 9900K
430.00
Core i7 8700K
554.00
Ryzen 7 2700X
547.00
Core i9 7960X
257.00
Threadripper 2950X
319.00
Ryzen 5 2400G
1204.87
Ryzen 7 2700
612.39
Core i5 7600K
1185.11
Core i3 8100
1191.45
300
600
900
1200
1500

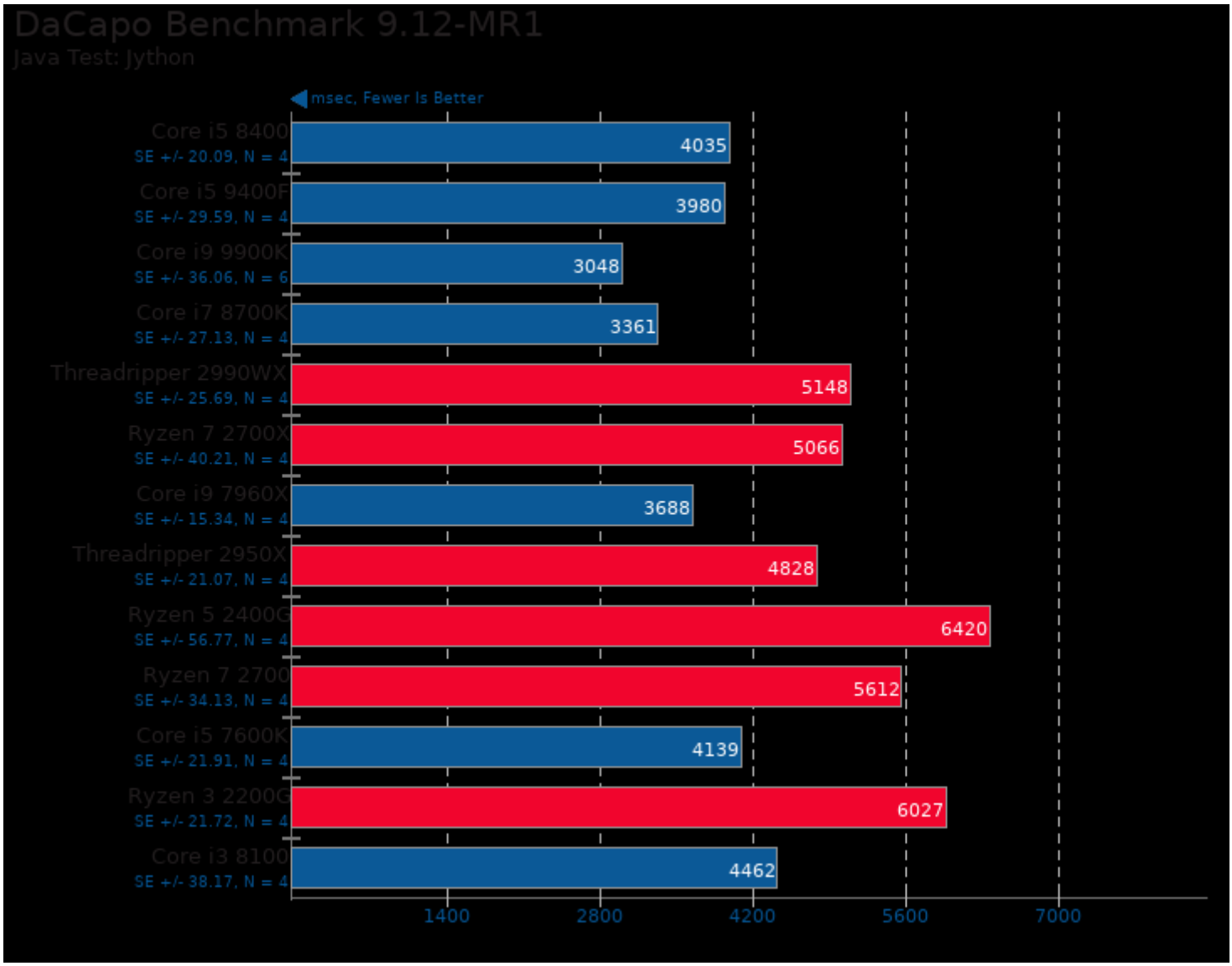

Timed LLVM Compilation 6.0.1
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 38 / Avg: 59.62 / Max: 65
Core i5 9400F
Min: 45 / Avg: 67.83 / Max: 73
Core i9 9900K
Min: 33 / Avg: 58.21 / Max: 64
Core i7 8700K
Min: 36 / Avg: 69.17 / Max: 78
Ryzen 7 2700X
Min: 34.38 / Avg: 59.4 / Max: 61.13
Core i9 7960X
Min: 42 / Avg: 64.83 / Max: 73
Threadripper 2950X
Min: 45.25 / Avg: 62.07 / Max: 66.25
Ryzen 5 2400G
Min: 45.75 / Avg: 68.55 / Max: 72.5
Ryzen 7 2700
Min: 60.75 / Avg: 80.1 / Max: 82.25
Core i5 7600K
Min: 36 / Avg: 55.44 / Max: 63
Core i3 8100
Min: 38 / Avg: 54.33 / Max: 58
16
32
48
64
80

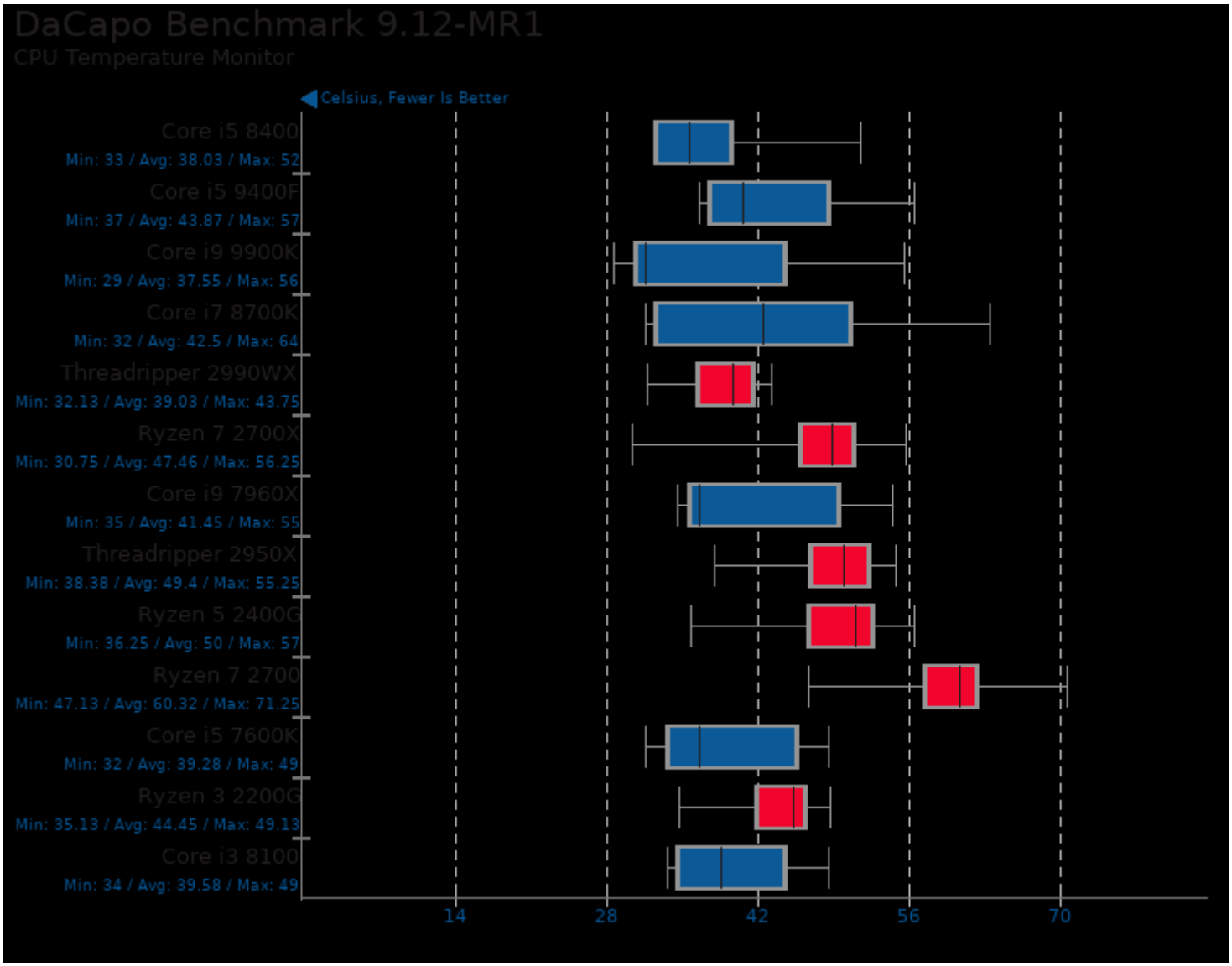

PyBench 2018-02-16
Total For Average Test Times
Milliseconds, Fewer Is Better
Core i5 8400
SE +/- 0.88, N = 3
999
Core i5 9400F
SE +/- 1.20, N = 3
977
Core i9 9900K
SE +/- 3.18, N = 3
799
Core i7 8700K
SE +/- 3.38, N = 3
850
Threadripper 2990WX
SE +/- 3.06, N = 3
1115
Ryzen 7 2700X
SE +/- 2.19, N = 3
1099
Core i9 7960X
SE +/- 9.68, N = 3
918
Threadripper 2950X
SE +/- 3.00, N = 3
1099
Ryzen 5 2400G
SE +/- 2.91, N = 3
1204
Ryzen 7 2700
SE +/- 9.94, N = 3
1179
Core i5 7600K
SE +/- 1.86, N = 3
956
Ryzen 3 2200G
SE +/- 3.21, N = 3
1273
Core i3 8100
SE +/- 1.67, N = 3
1111
300
600
900
1200
1500

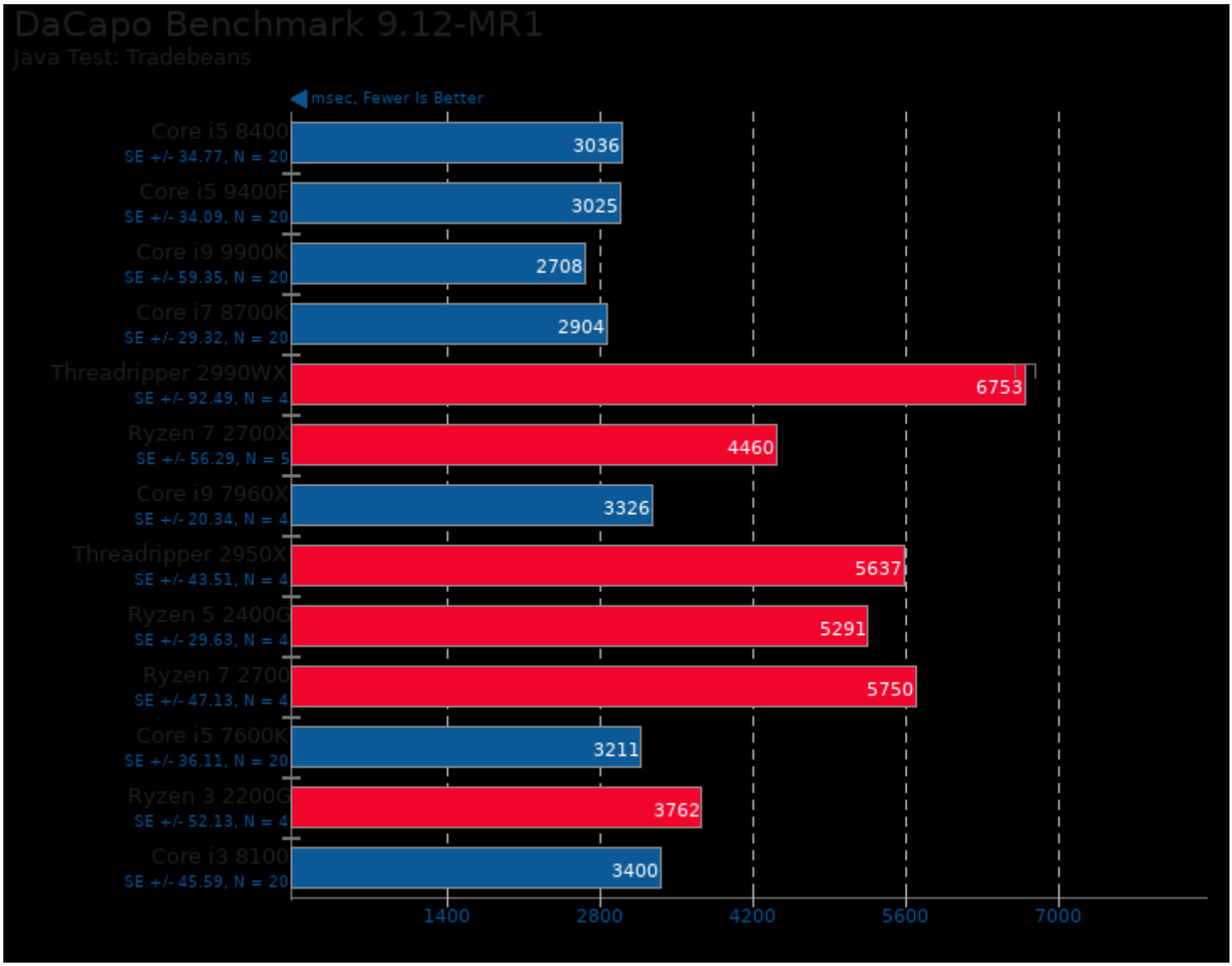

PyBench 2018-02-16
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 34 / Avg: 42.65 / Max: 55
Core i5 9400F
Min: 42 / Avg: 45.91 / Max: 49
Core i9 9900K
Min: 32 / Avg: 35.28 / Max: 37
Core i7 8700K
Min: 35 / Avg: 41.13 / Max: 45
Threadripper 2990WX
Min: 37.25 / Avg: 48.9 / Max: 53.25
Ryzen 7 2700X
Min: 33.88 / Avg: 51.32 / Max: 54.38
Core i9 7960X
Min: 36 / Avg: 47.08 / Max: 69
Threadripper 2950X
Min: 45 / Avg: 57.11 / Max: 63
Ryzen 5 2400G
Min: 43.75 / Avg: 57.59 / Max: 63.75
Ryzen 7 2700
Min: 61 / Avg: 72.11 / Max: 77.13
Core i5 7600K
Min: 35 / Avg: 43.17 / Max: 59
Ryzen 3 2200G
Min: 42 / Avg: 49.79 / Max: 53
Core i3 8100
Min: 36 / Avg: 38.09 / Max: 40
15
30
45
60
75

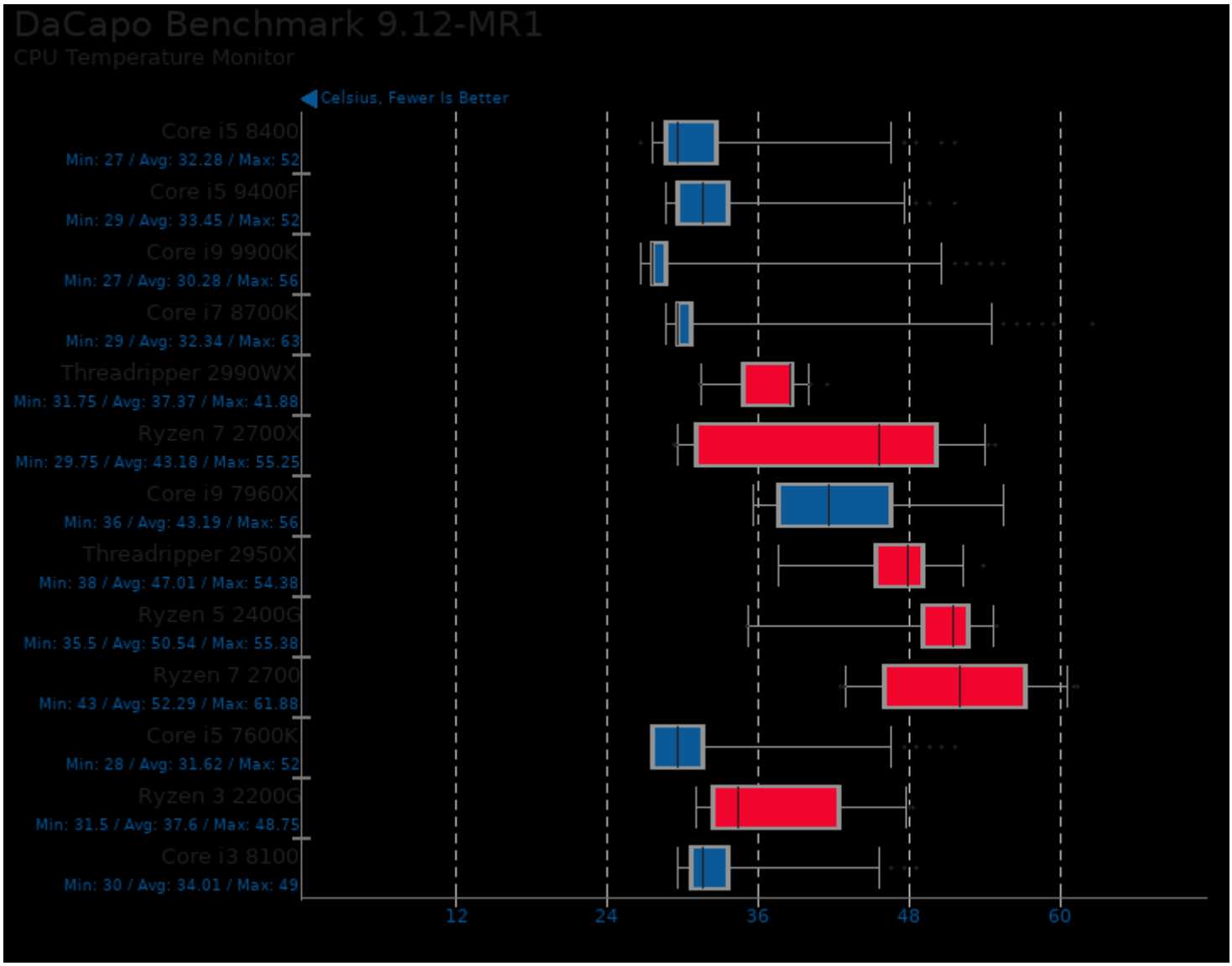

DaCapo Benchmark 9.12-MR1
Java Test: H2
msec, Fewer Is Better
Core i5 8400
SE +/- 61.66, N = 20
2959
Core i5 9400F
SE +/- 44.90, N = 20
2968
Core i9 9900K
SE +/- 66.80, N = 16
2718
Core i7 8700K
SE +/- 46.52, N = 20
2887
Threadripper 2990WX
SE +/- 45.02, N = 20
4818
Ryzen 7 2700X
SE +/- 27.43, N = 20
3542
Core i9 7960X
SE +/- 9.77, N = 4
3185
Threadripper 2950X
SE +/- 40.05, N = 4
4247
Ryzen 5 2400G
SE +/- 21.18, N = 4
4302
Ryzen 7 2700
SE +/- 36.18, N = 20
4335
Core i5 7600K
SE +/- 56.97, N = 16
3114
Ryzen 3 2200G
SE +/- 44.55, N = 20
3710
Core i3 8100
SE +/- 47.74, N = 20
3116
1000
2000
3000
4000
5000

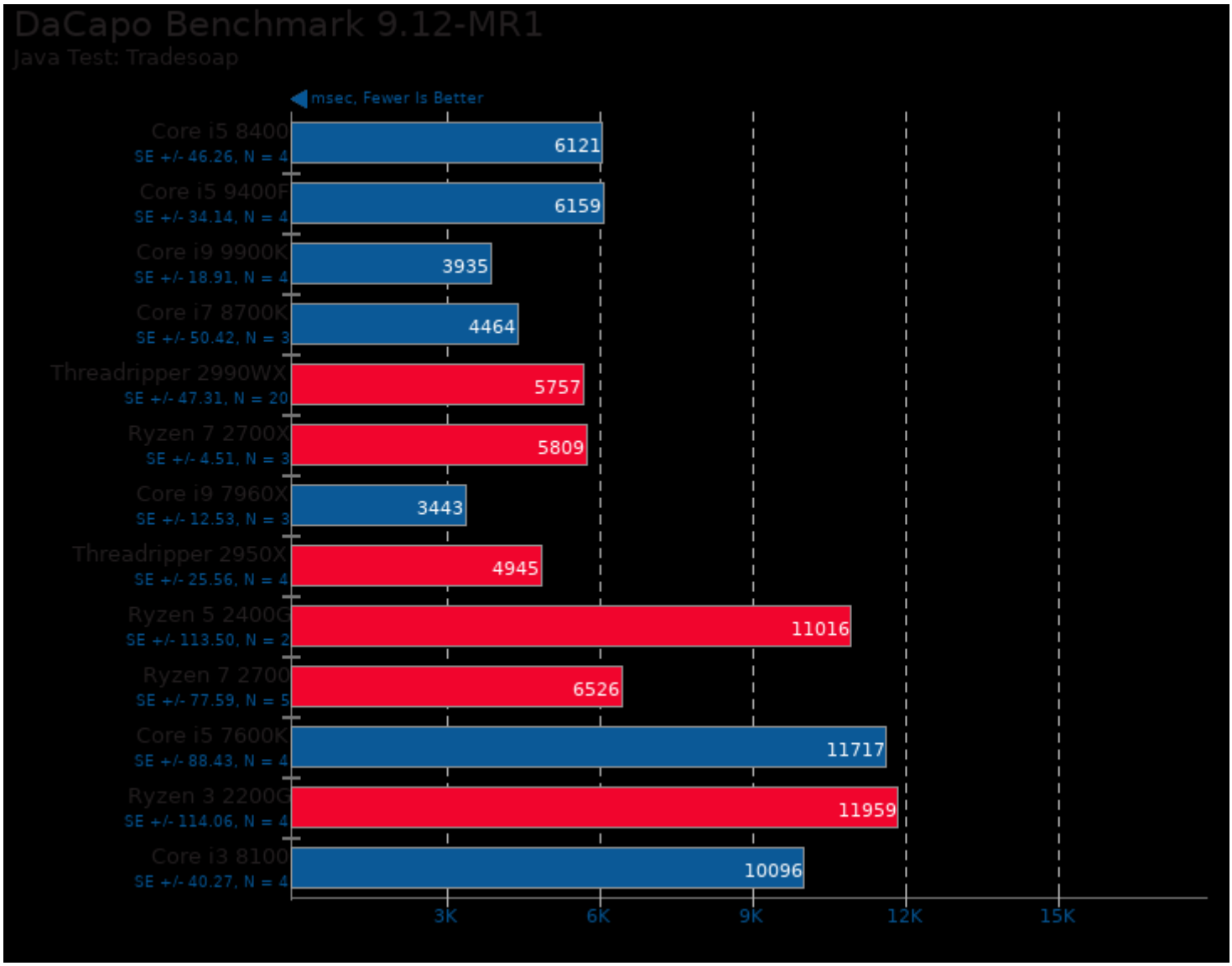

DaCapo Benchmark 9.12-MR1
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 31 / Avg: 39.32 / Max: 53
Core i5 9400F
Min: 38 / Avg: 44.94 / Max: 57
Core i9 9900K
Min: 30 / Avg: 36.49 / Max: 53
Core i7 8700K
Min: 32 / Avg: 42.93 / Max: 75
Threadripper 2990WX
Min: 33 / Avg: 39.86 / Max: 45.25
Ryzen 7 2700X
Min: 30 / Avg: 49.01 / Max: 55.63
Core i9 7960X
Min: 34 / Avg: 43.07 / Max: 58
Threadripper 2950X
Min: 38 / Avg: 48.18 / Max: 56.88
Ryzen 5 2400G
Min: 36.75 / Avg: 50.42 / Max: 54.88
Ryzen 7 2700
Min: 50.75 / Avg: 61.81 / Max: 70.63
Core i5 7600K
Min: 33 / Avg: 41.67 / Max: 55
Ryzen 3 2200G
Min: 35.75 / Avg: 47.32 / Max: 53
Core i3 8100
Min: 35 / Avg: 41 / Max: 50
14
28
42
56
70

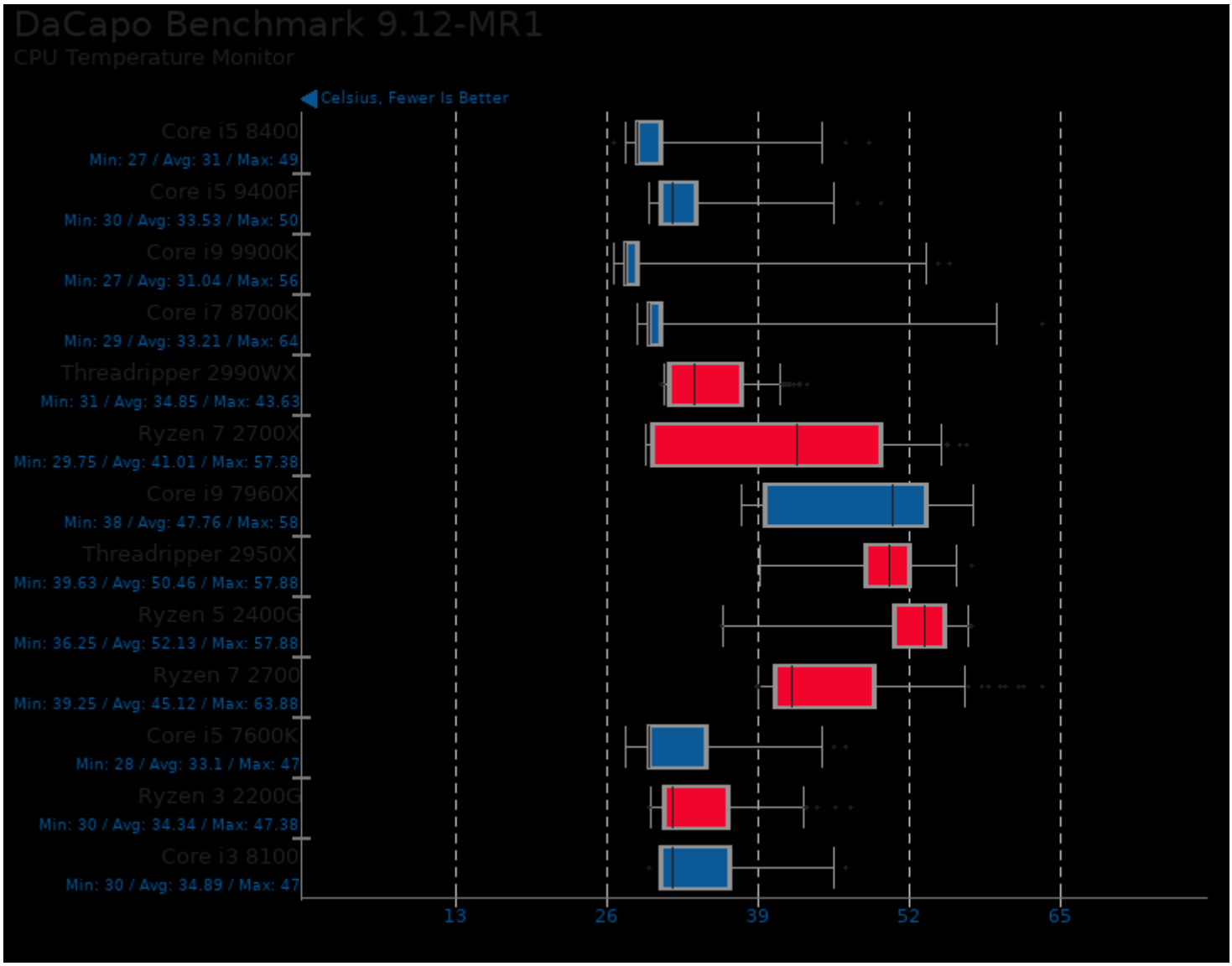

DaCapo Benchmark 9.12-MR1
Java Test: Jython
msec, Fewer Is Better
Core i5 8400
SE +/- 20.09, N = 4
4035
Core i5 9400F
SE +/- 29.59, N = 4
3980
Core i9 9900K
SE +/- 36.06, N = 6
3048
Core i7 8700K
SE +/- 27.13, N = 4
3361
Threadripper 2990WX
SE +/- 25.69, N = 4
5148
Ryzen 7 2700X
SE +/- 40.21, N = 4
5066
Core i9 7960X
SE +/- 15.34, N = 4
3688
Threadripper 2950X
SE +/- 21.07, N = 4
4828
Ryzen 5 2400G
SE +/- 56.77, N = 4
6420
Ryzen 7 2700
SE +/- 34.13, N = 4
5612
Core i5 7600K
SE +/- 21.91, N = 4
4139
Ryzen 3 2200G
SE +/- 21.72, N = 4
6027
Core i3 8100
SE +/- 38.17, N = 4
4462
1400
2800
4200
5600
7000

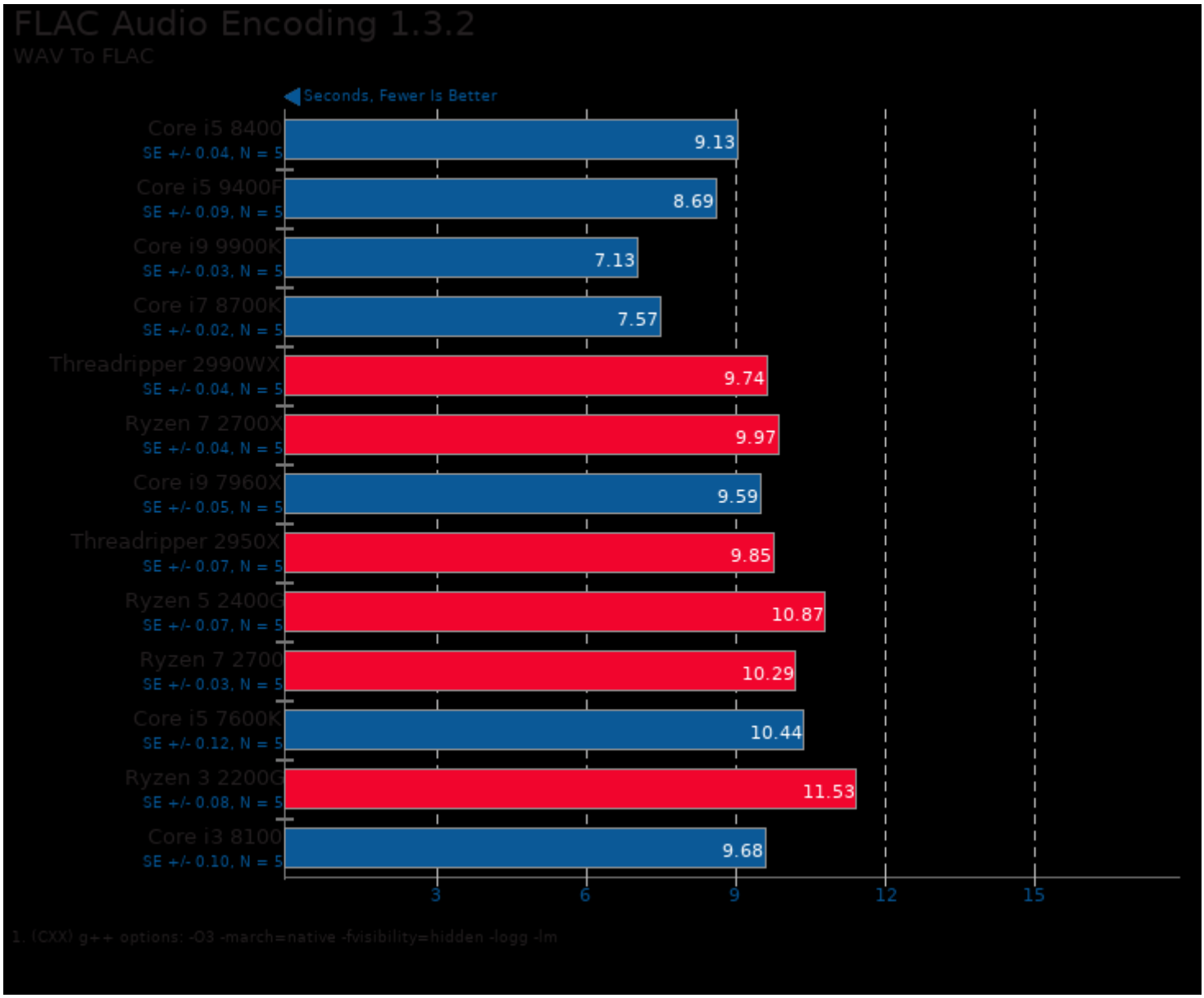

DaCapo Benchmark 9.12-MR1
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 33 / Avg: 38.03 / Max: 52
Core i5 9400F
Min: 37 / Avg: 43.87 / Max: 57
Core i9 9900K
Min: 29 / Avg: 37.55 / Max: 56
Core i7 8700K
Min: 32 / Avg: 42.5 / Max: 64
Threadripper 2990WX
Min: 32.13 / Avg: 39.03 / Max: 43.75
Ryzen 7 2700X
Min: 30.75 / Avg: 47.46 / Max: 56.25
Core i9 7960X
Min: 35 / Avg: 41.45 / Max: 55
Threadripper 2950X
Min: 38.38 / Avg: 49.4 / Max: 55.25
Ryzen 5 2400G
Min: 36.25 / Avg: 50 / Max: 57
Ryzen 7 2700
Min: 47.13 / Avg: 60.32 / Max: 71.25
Core i5 7600K
Min: 32 / Avg: 39.28 / Max: 49
Ryzen 3 2200G
Min: 35.13 / Avg: 44.45 / Max: 49.13
Core i3 8100
Min: 34 / Avg: 39.58 / Max: 49
14
28
42
56
70

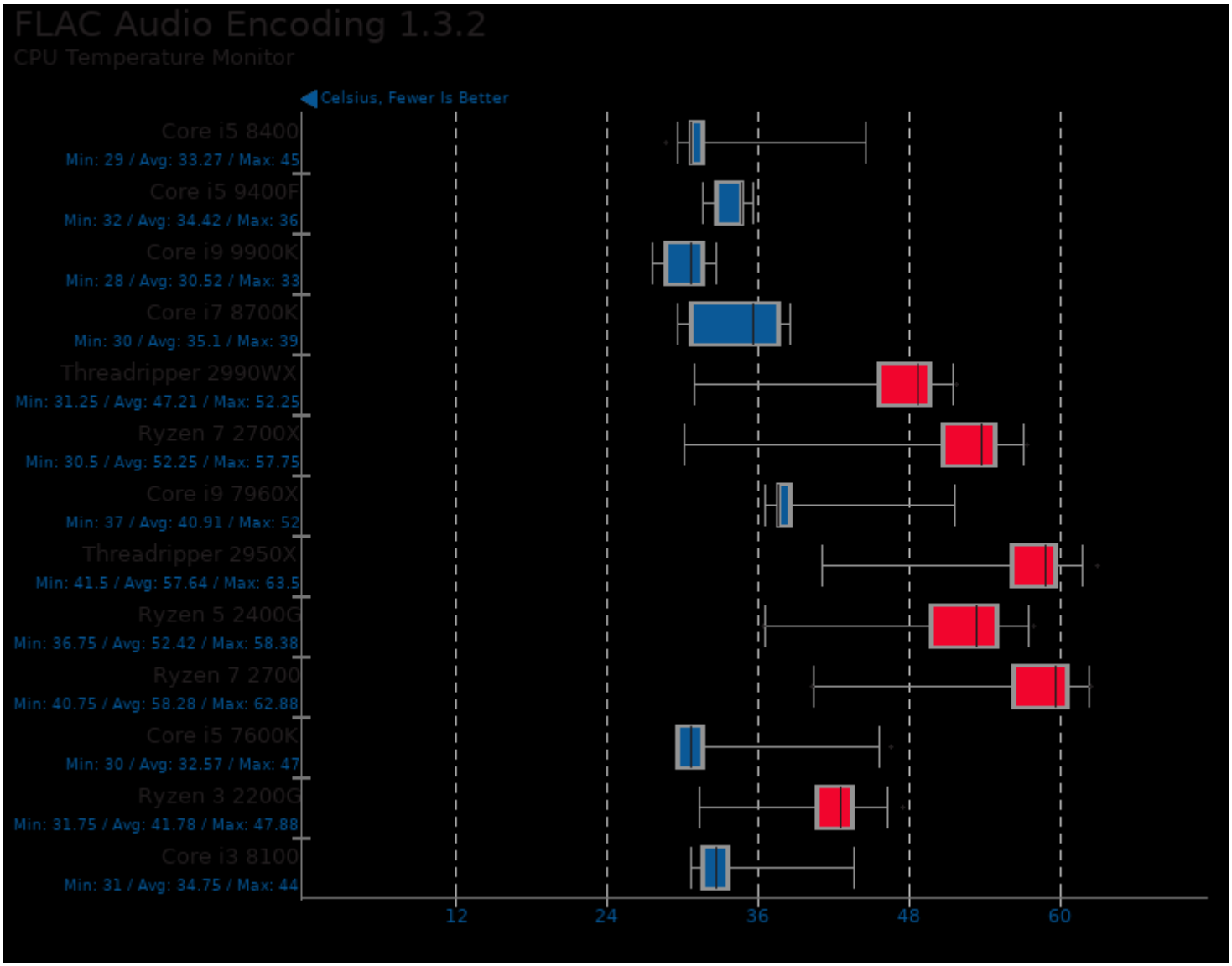

DaCapo Benchmark 9.12-MR1
Java Test: Tradebeans
msec, Fewer Is Better
Core i5 8400
SE +/- 34.77, N = 20
3036
Core i5 9400F
SE +/- 34.09, N = 20
3025
Core i9 9900K
SE +/- 59.35, N = 20
2708
Core i7 8700K
SE +/- 29.32, N = 20
2904
Threadripper 2990WX
SE +/- 92.49, N = 4
6753
Ryzen 7 2700X
SE +/- 56.29, N = 5
4460
Core i9 7960X
SE +/- 20.34, N = 4
3326
Threadripper 2950X
SE +/- 43.51, N = 4
5637
Ryzen 5 2400G
SE +/- 29.63, N = 4
5291
Ryzen 7 2700
SE +/- 47.13, N = 4
5750
Core i5 7600K
SE +/- 36.11, N = 20
3211
Ryzen 3 2200G
SE +/- 52.13, N = 4
3762
Core i3 8100
SE +/- 45.59, N = 20
3400
1400
2800
4200
5600
7000

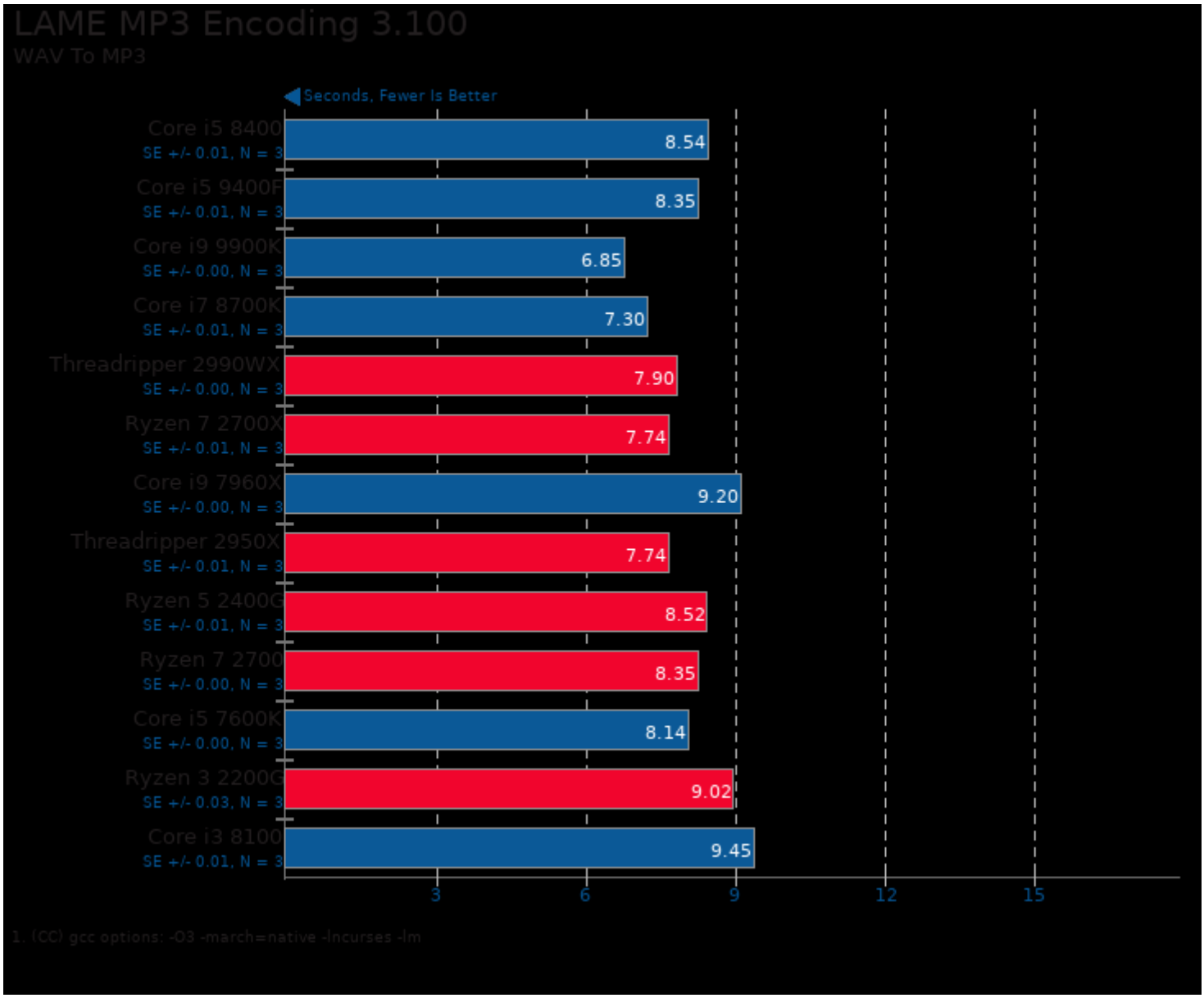

DaCapo Benchmark 9.12-MR1
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 27 / Avg: 32.28 / Max: 52
Core i5 9400F
Min: 29 / Avg: 33.45 / Max: 52
Core i9 9900K
Min: 27 / Avg: 30.28 / Max: 56
Core i7 8700K
Min: 29 / Avg: 32.34 / Max: 63
Threadripper 2990WX
Min: 31.75 / Avg: 37.37 / Max: 41.88
Ryzen 7 2700X
Min: 29.75 / Avg: 43.18 / Max: 55.25
Core i9 7960X
Min: 36 / Avg: 43.19 / Max: 56
Threadripper 2950X
Min: 38 / Avg: 47.01 / Max: 54.38
Ryzen 5 2400G
Min: 35.5 / Avg: 50.54 / Max: 55.38
Ryzen 7 2700
Min: 43 / Avg: 52.29 / Max: 61.88
Core i5 7600K
Min: 28 / Avg: 31.62 / Max: 52
Ryzen 3 2200G
Min: 31.5 / Avg: 37.6 / Max: 48.75
Core i3 8100
Min: 30 / Avg: 34.01 / Max: 49
12
24
36
48
60

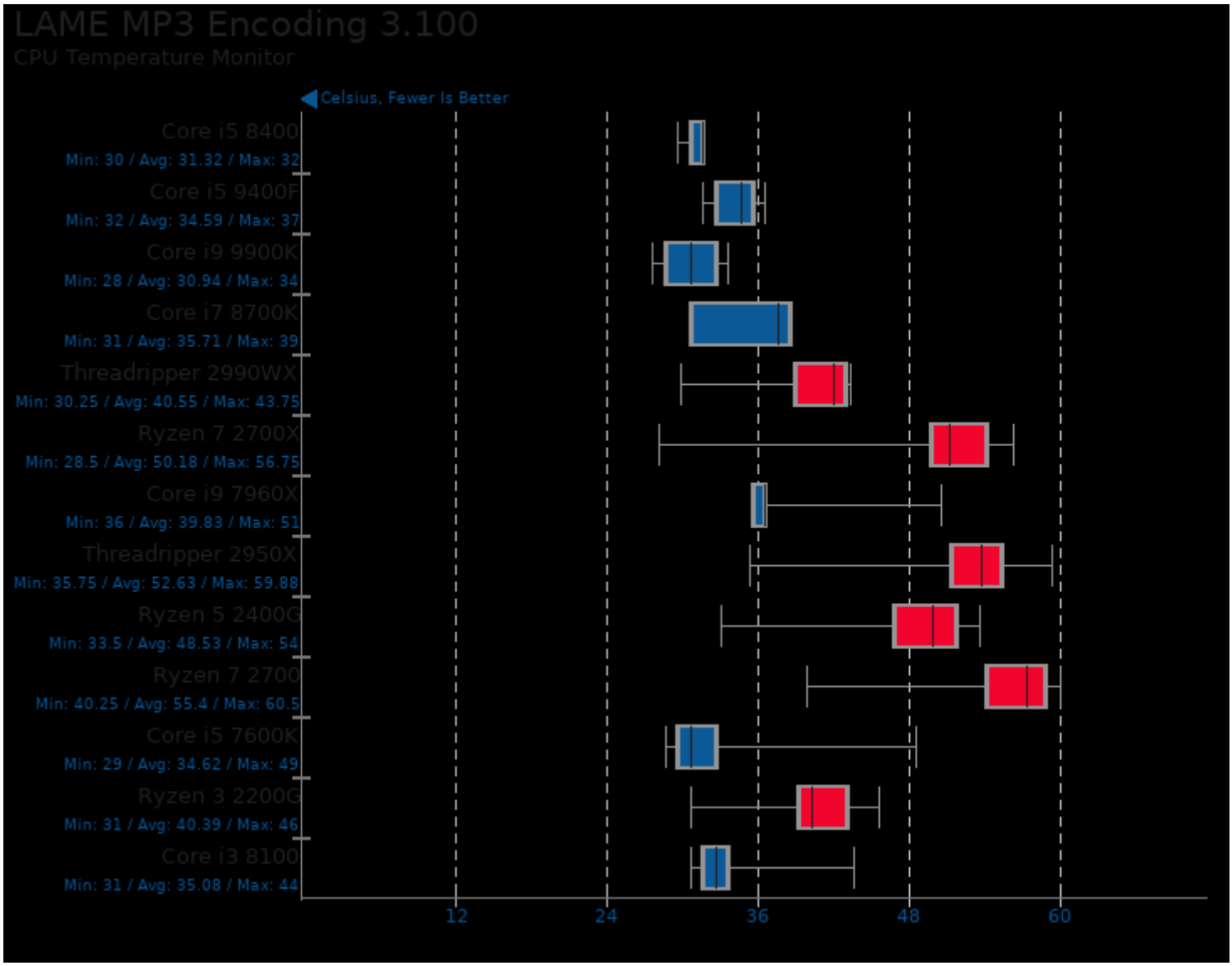

DaCapo Benchmark 9.12-MR1
Java Test: Tradesoap
msec, Fewer Is Better
Core i5 8400
SE +/- 46.26, N = 4
6121
Core i5 9400F
SE +/- 34.14, N = 4
6159
Core i9 9900K
SE +/- 18.91, N = 4
3935
Core i7 8700K
SE +/- 50.42, N = 3
4464
Threadripper 2990WX
SE +/- 47.31, N = 20
5757
Ryzen 7 2700X
SE +/- 4.51, N = 3
5809
Core i9 7960X
SE +/- 12.53, N = 3
3443
Threadripper 2950X
SE +/- 25.56, N = 4
4945
Ryzen 5 2400G
SE +/- 113.50, N = 2
11016
Ryzen 7 2700
SE +/- 77.59, N = 5
6526
Core i5 7600K
SE +/- 88.43, N = 4
11717
Ryzen 3 2200G
SE +/- 114.06, N = 4
11959
Core i3 8100
SE +/- 40.27, N = 4
10096
3K
6K
9K
12K
15K

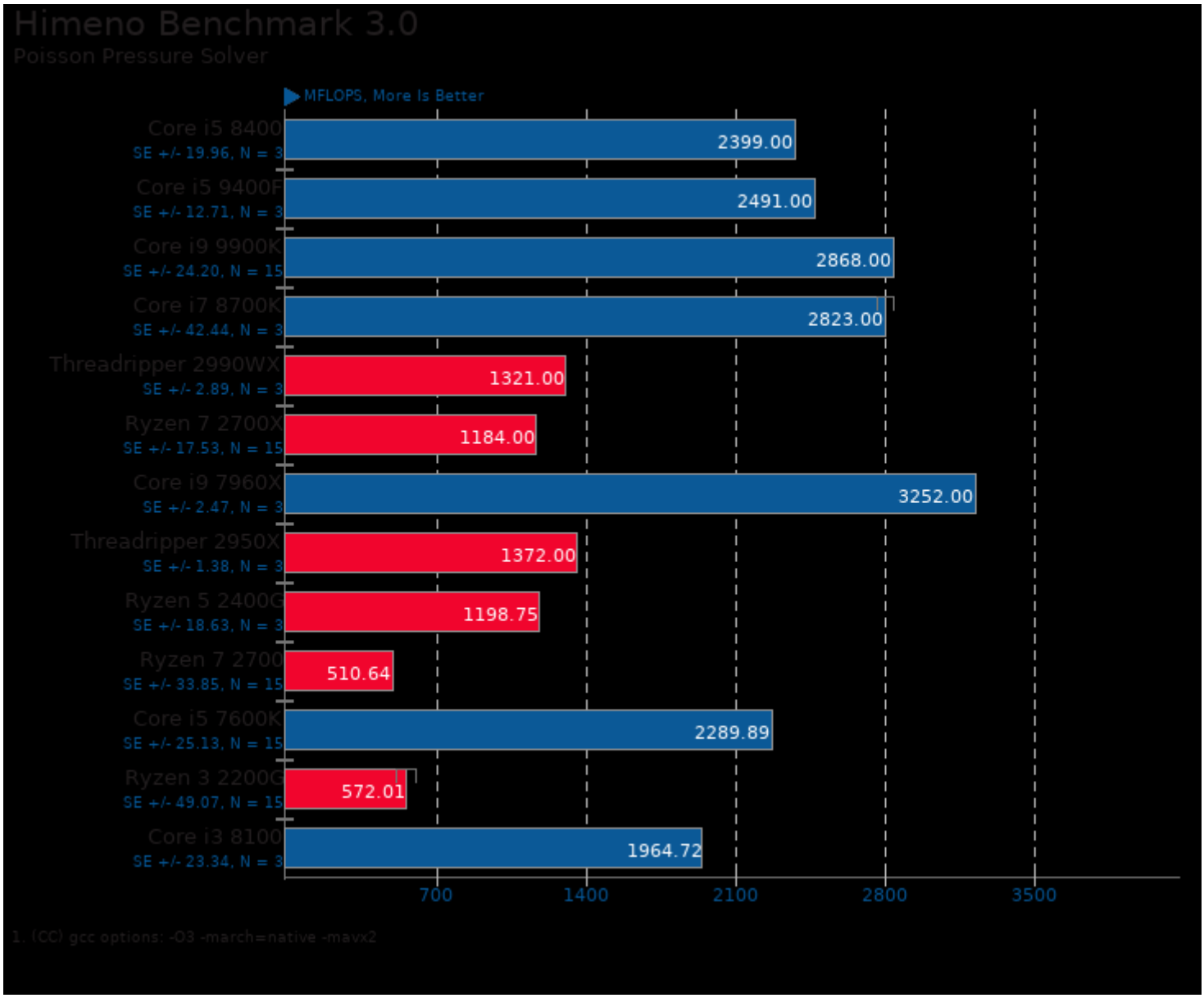

DaCapo Benchmark 9.12-MR1
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 27 / Avg: 31 / Max: 49
Core i5 9400F
Min: 30 / Avg: 33.53 / Max: 50
Core i9 9900K
Min: 27 / Avg: 31.04 / Max: 56
Core i7 8700K
Min: 29 / Avg: 33.21 / Max: 64
Threadripper 2990WX
Min: 31 / Avg: 34.85 / Max: 43.63
Ryzen 7 2700X
Min: 29.75 / Avg: 41.01 / Max: 57.38
Core i9 7960X
Min: 38 / Avg: 47.76 / Max: 58
Threadripper 2950X
Min: 39.63 / Avg: 50.46 / Max: 57.88
Ryzen 5 2400G
Min: 36.25 / Avg: 52.13 / Max: 57.88
Ryzen 7 2700
Min: 39.25 / Avg: 45.12 / Max: 63.88
Core i5 7600K
Min: 28 / Avg: 33.1 / Max: 47
Ryzen 3 2200G
Min: 30 / Avg: 34.34 / Max: 47.38
Core i3 8100
Min: 30 / Avg: 34.89 / Max: 47
13
26
39
52
65

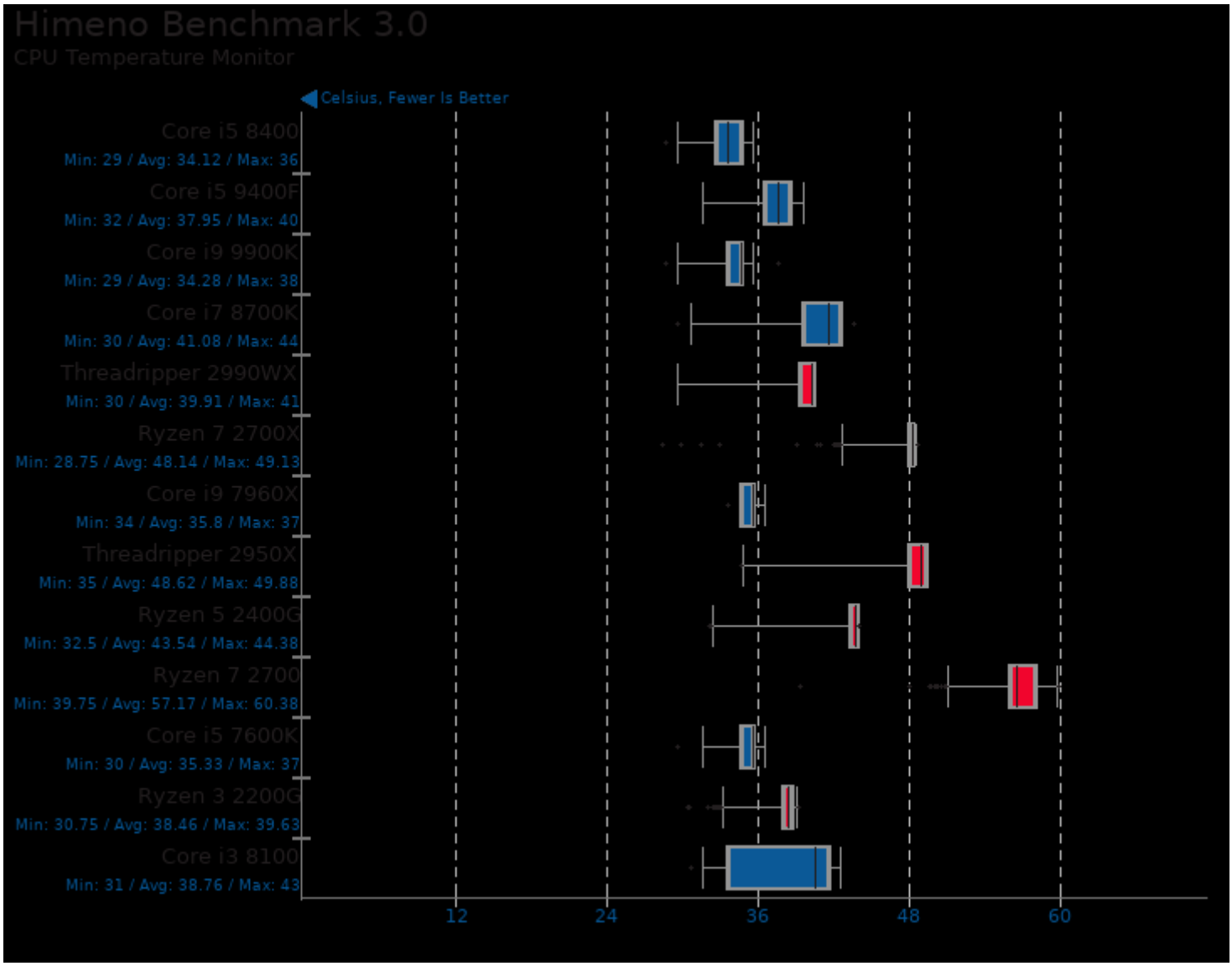

FLAC Audio Encoding 1.3.2
WAV To FLAC
Seconds, Fewer Is Better
Core i5 8400
SE +/- 0.04, N = 5
9.13
Core i5 9400F
SE +/- 0.09, N = 5
8.69
Core i9 9900K
SE +/- 0.03, N = 5
7.13
Core i7 8700K
SE +/- 0.02, N = 5
7.57
Threadripper 2990WX
SE +/- 0.04, N = 5
9.74
Ryzen 7 2700X
SE +/- 0.04, N = 5
9.97
Core i9 7960X
SE +/- 0.05, N = 5
9.59
Threadripper 2950X
SE +/- 0.07, N = 5
9.85
Ryzen 5 2400G
SE +/- 0.07, N = 5
10.87
Ryzen 7 2700
SE +/- 0.03, N = 5
10.29
Core i5 7600K
SE +/- 0.12, N = 5
10.44
Ryzen 3 2200G
SE +/- 0.08, N = 5
11.53
Core i3 8100
SE +/- 0.10, N = 5
9.68
3
6
9
12
15
1. (CXX) g++ options: -O3 -march=native -fvisibility=hidden -logg -lm

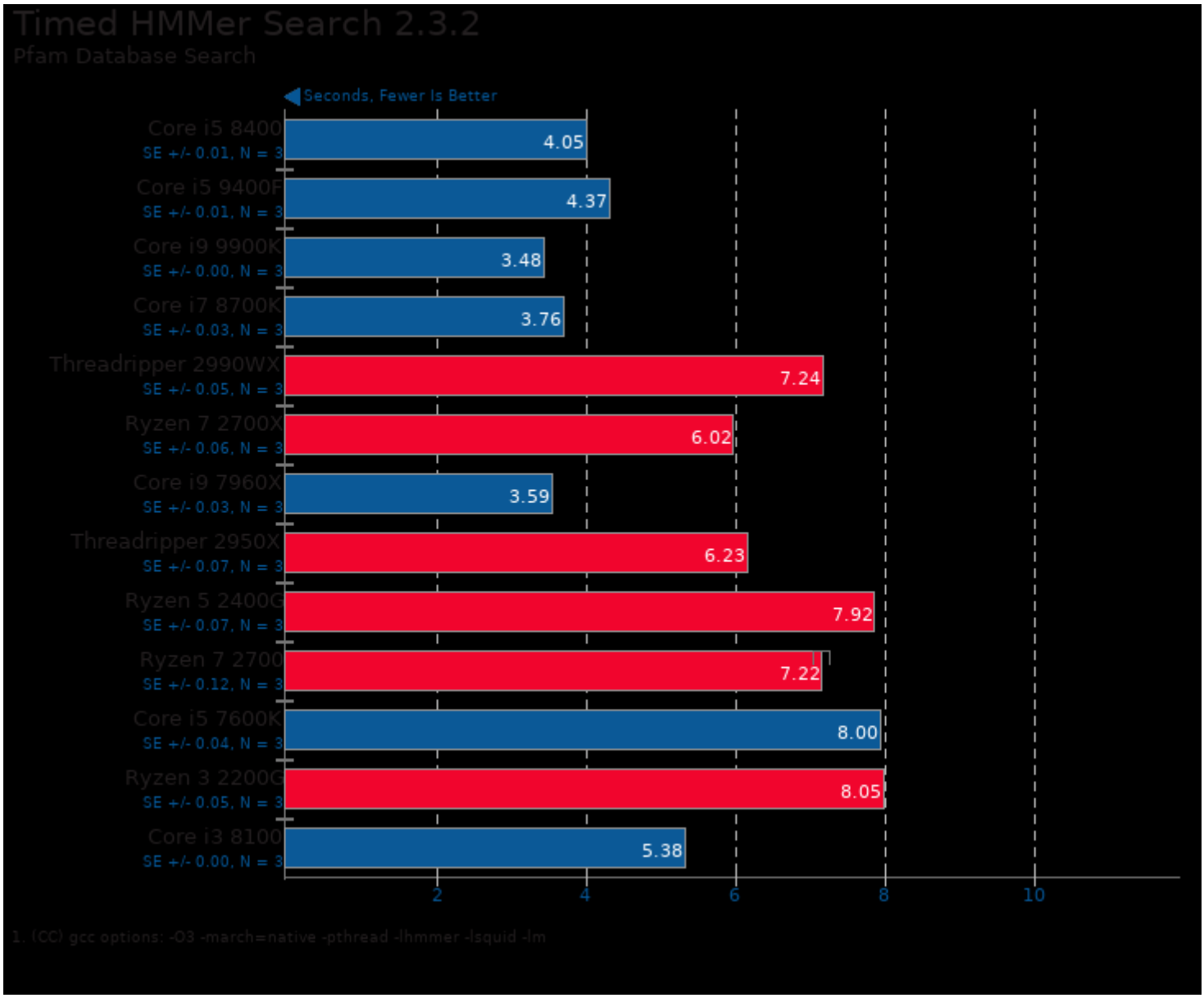

FLAC Audio Encoding 1.3.2
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 29 / Avg: 33.27 / Max: 45
Core i5 9400F
Min: 32 / Avg: 34.42 / Max: 36
Core i9 9900K
Min: 28 / Avg: 30.52 / Max: 33
Core i7 8700K
Min: 30 / Avg: 35.1 / Max: 39
Threadripper 2990WX
Min: 31.25 / Avg: 47.21 / Max: 52.25
Ryzen 7 2700X
Min: 30.5 / Avg: 52.25 / Max: 57.75
Core i9 7960X
Min: 37 / Avg: 40.91 / Max: 52
Threadripper 2950X
Min: 41.5 / Avg: 57.64 / Max: 63.5
Ryzen 5 2400G
Min: 36.75 / Avg: 52.42 / Max: 58.38
Ryzen 7 2700
Min: 40.75 / Avg: 58.28 / Max: 62.88
Core i5 7600K
Min: 30 / Avg: 32.57 / Max: 47
Ryzen 3 2200G
Min: 31.75 / Avg: 41.78 / Max: 47.88
Core i3 8100
Min: 31 / Avg: 34.75 / Max: 44
12
24
36
48
60

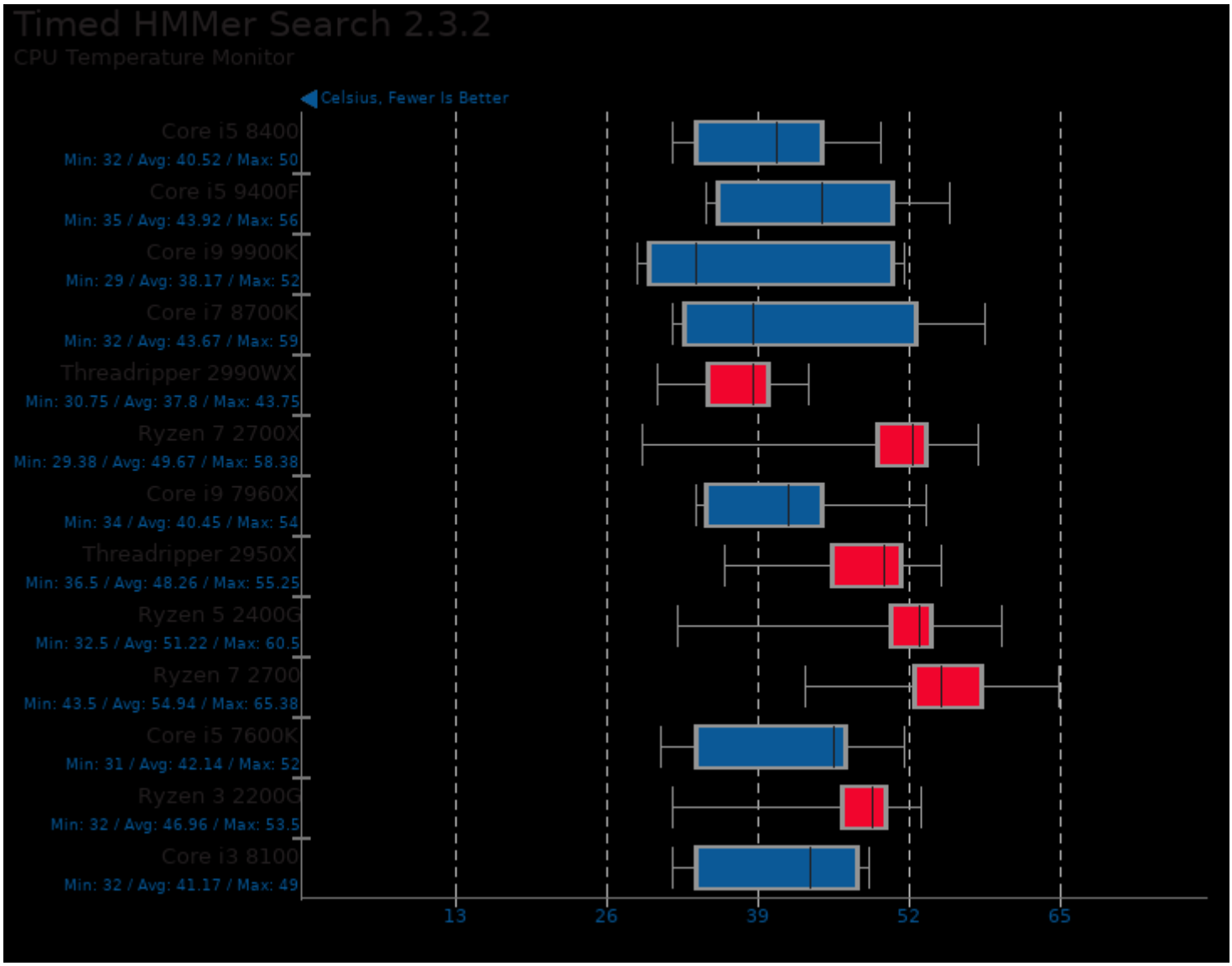

LAME MP3 Encoding 3.100
WAV To MP3
Seconds, Fewer Is Better
Core i5 8400
SE +/- 0.01, N = 3
8.54
Core i5 9400F
SE +/- 0.01, N = 3
8.35
Core i9 9900K
SE +/- 0.00, N = 3
6.85
Core i7 8700K
SE +/- 0.01, N = 3
7.30
Threadripper 2990WX
SE +/- 0.00, N = 3
7.90
Ryzen 7 2700X
SE +/- 0.01, N = 3
7.74
Core i9 7960X
SE +/- 0.00, N = 3
9.20
Threadripper 2950X
SE +/- 0.01, N = 3
7.74
Ryzen 5 2400G
SE +/- 0.01, N = 3
8.52
Ryzen 7 2700
SE +/- 0.00, N = 3
8.35
Core i5 7600K
SE +/- 0.00, N = 3
8.14
Ryzen 3 2200G
SE +/- 0.03, N = 3
9.02
Core i3 8100
SE +/- 0.01, N = 3
9.45
3
6
9
12
15
1. (CC) gcc options: -O3 -march=native -lncurses -lm

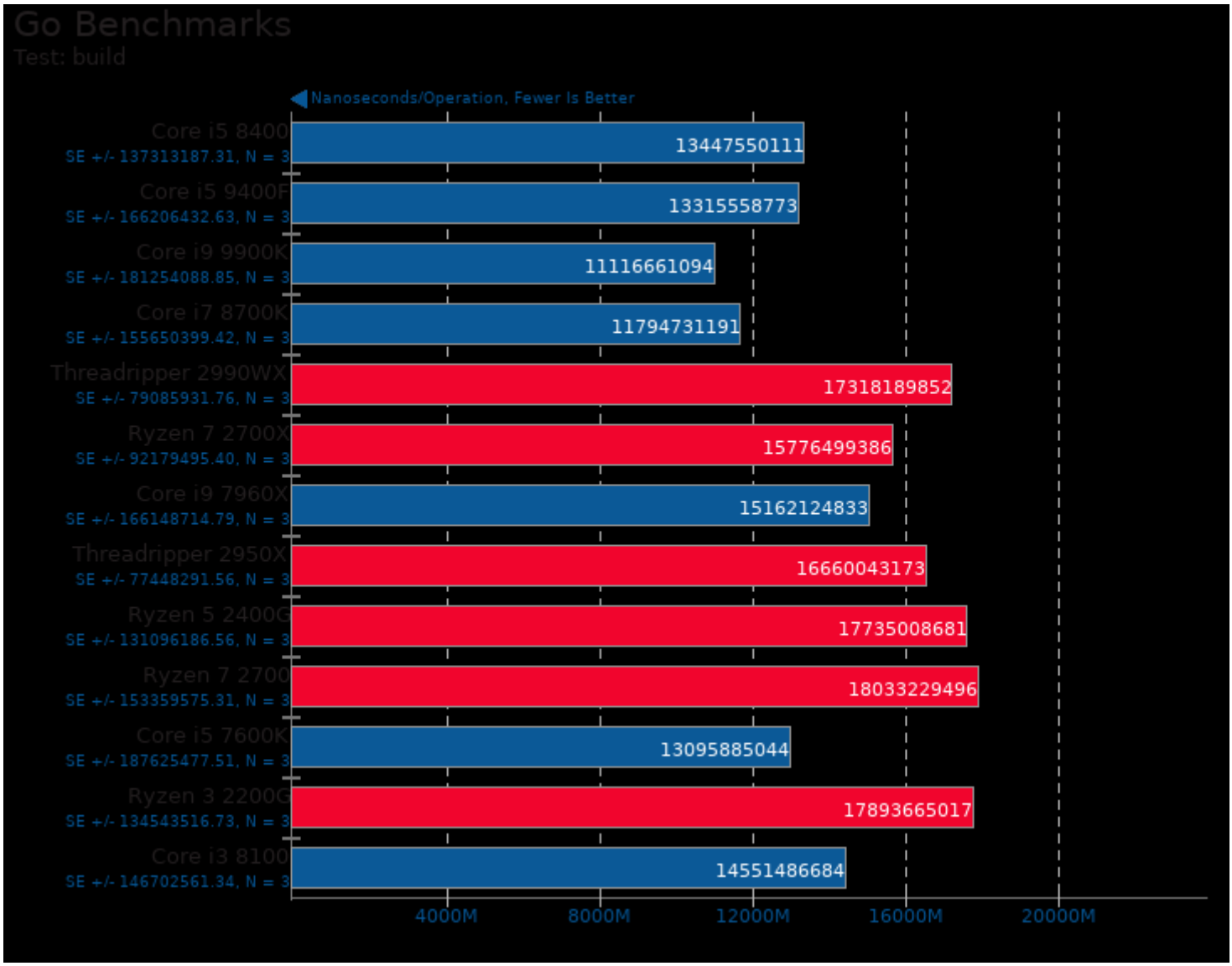

LAME MP3 Encoding 3.100
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 30 / Avg: 31.32 / Max: 32
Core i5 9400F
Min: 32 / Avg: 34.59 / Max: 37
Core i9 9900K
Min: 28 / Avg: 30.94 / Max: 34
Core i7 8700K
Min: 31 / Avg: 35.71 / Max: 39
Threadripper 2990WX
Min: 30.25 / Avg: 40.55 / Max: 43.75
Ryzen 7 2700X
Min: 28.5 / Avg: 50.18 / Max: 56.75
Core i9 7960X
Min: 36 / Avg: 39.83 / Max: 51
Threadripper 2950X
Min: 35.75 / Avg: 52.63 / Max: 59.88
Ryzen 5 2400G
Min: 33.5 / Avg: 48.53 / Max: 54
Ryzen 7 2700
Min: 40.25 / Avg: 55.4 / Max: 60.5
Core i5 7600K
Min: 29 / Avg: 34.62 / Max: 49
Ryzen 3 2200G
Min: 31 / Avg: 40.39 / Max: 46
Core i3 8100
Min: 31 / Avg: 35.08 / Max: 44
12
24
36
48
60

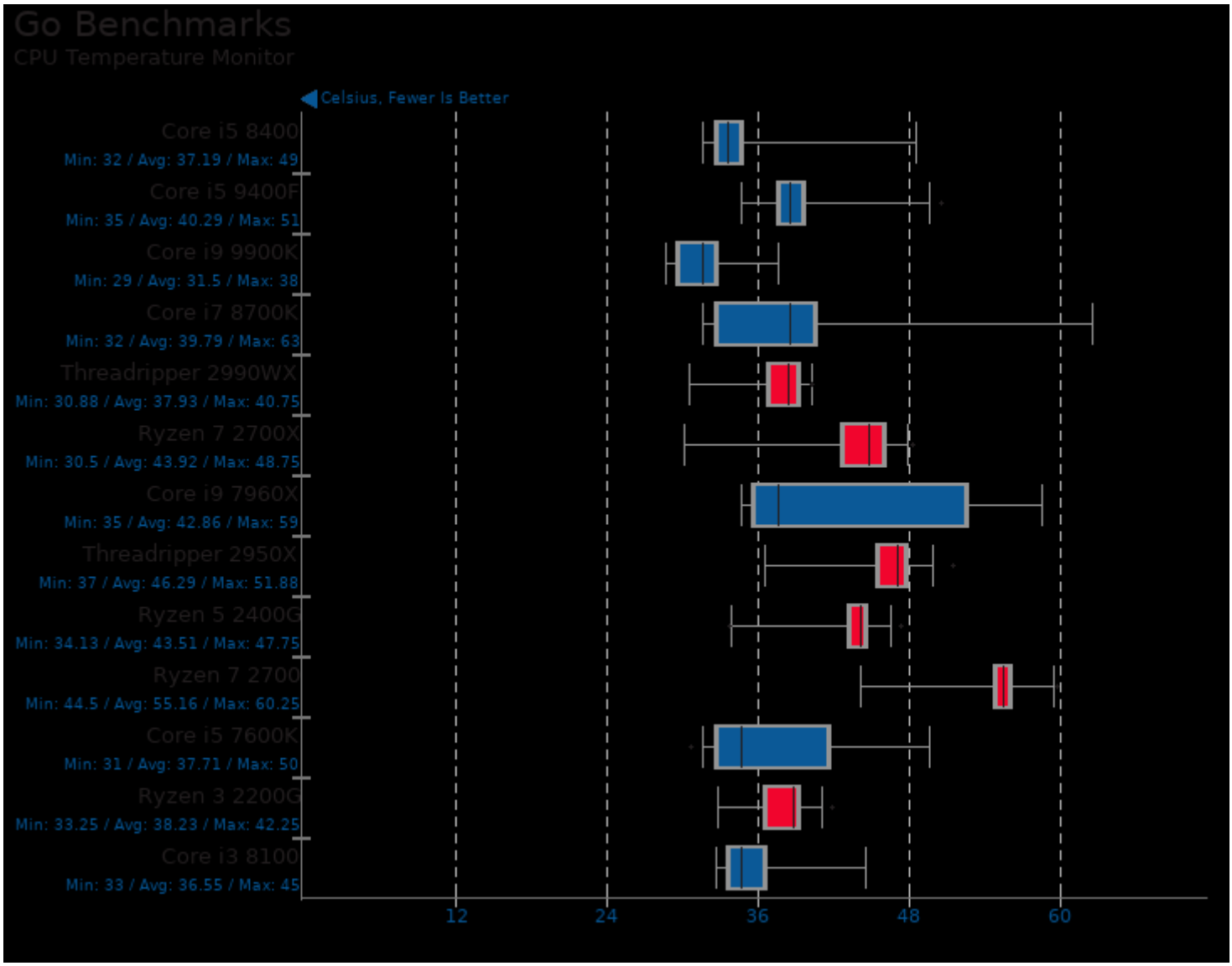

Himeno Benchmark 3.0
Poisson Pressure Solver
MFLOPS, More Is Better
Core i5 8400
SE +/- 19.96, N = 3
2399.00
Core i5 9400F
SE +/- 12.71, N = 3
2491.00
Core i9 9900K
SE +/- 24.20, N = 15
2868.00
Core i7 8700K
SE +/- 42.44, N = 3
2823.00
Threadripper 2990WX
SE +/- 2.89, N = 3
1321.00
Ryzen 7 2700X
SE +/- 17.53, N = 15
1184.00
Core i9 7960X
SE +/- 2.47, N = 3
3252.00
Threadripper 2950X
SE +/- 1.38, N = 3
1372.00
Ryzen 5 2400G
SE +/- 18.63, N = 3
1198.75
Ryzen 7 2700
SE +/- 33.85, N = 15
510.64
Core i5 7600K
SE +/- 25.13, N = 15
2289.89
Ryzen 3 2200G
SE +/- 49.07, N = 15
572.01
Core i3 8100
SE +/- 23.34, N = 3
1964.72
700
1400
2100
2800
3500
1. (CC) gcc options: -O3 -march=native -mavx2

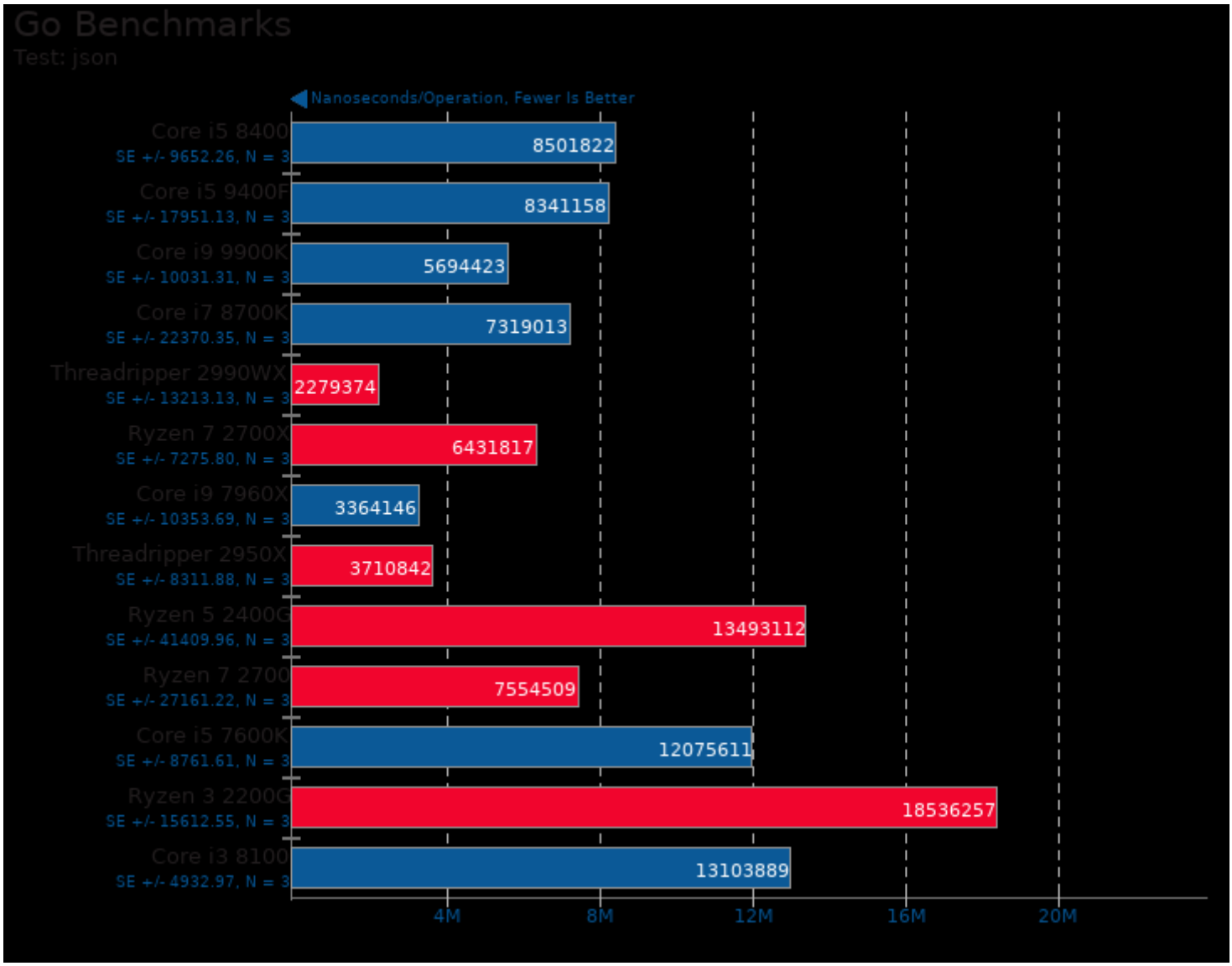

Himeno Benchmark 3.0
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 29 / Avg: 34.12 / Max: 36
Core i5 9400F
Min: 32 / Avg: 37.95 / Max: 40
Core i9 9900K
Min: 29 / Avg: 34.28 / Max: 38
Core i7 8700K
Min: 30 / Avg: 41.08 / Max: 44
Threadripper 2990WX
Min: 30 / Avg: 39.91 / Max: 41
Ryzen 7 2700X
Min: 28.75 / Avg: 48.14 / Max: 49.13
Core i9 7960X
Min: 34 / Avg: 35.8 / Max: 37
Threadripper 2950X
Min: 35 / Avg: 48.62 / Max: 49.88
Ryzen 5 2400G
Min: 32.5 / Avg: 43.54 / Max: 44.38
Ryzen 7 2700
Min: 39.75 / Avg: 57.17 / Max: 60.38
Core i5 7600K
Min: 30 / Avg: 35.33 / Max: 37
Ryzen 3 2200G
Min: 30.75 / Avg: 38.46 / Max: 39.63
Core i3 8100
Min: 31 / Avg: 38.76 / Max: 43
12
24
36
48
60

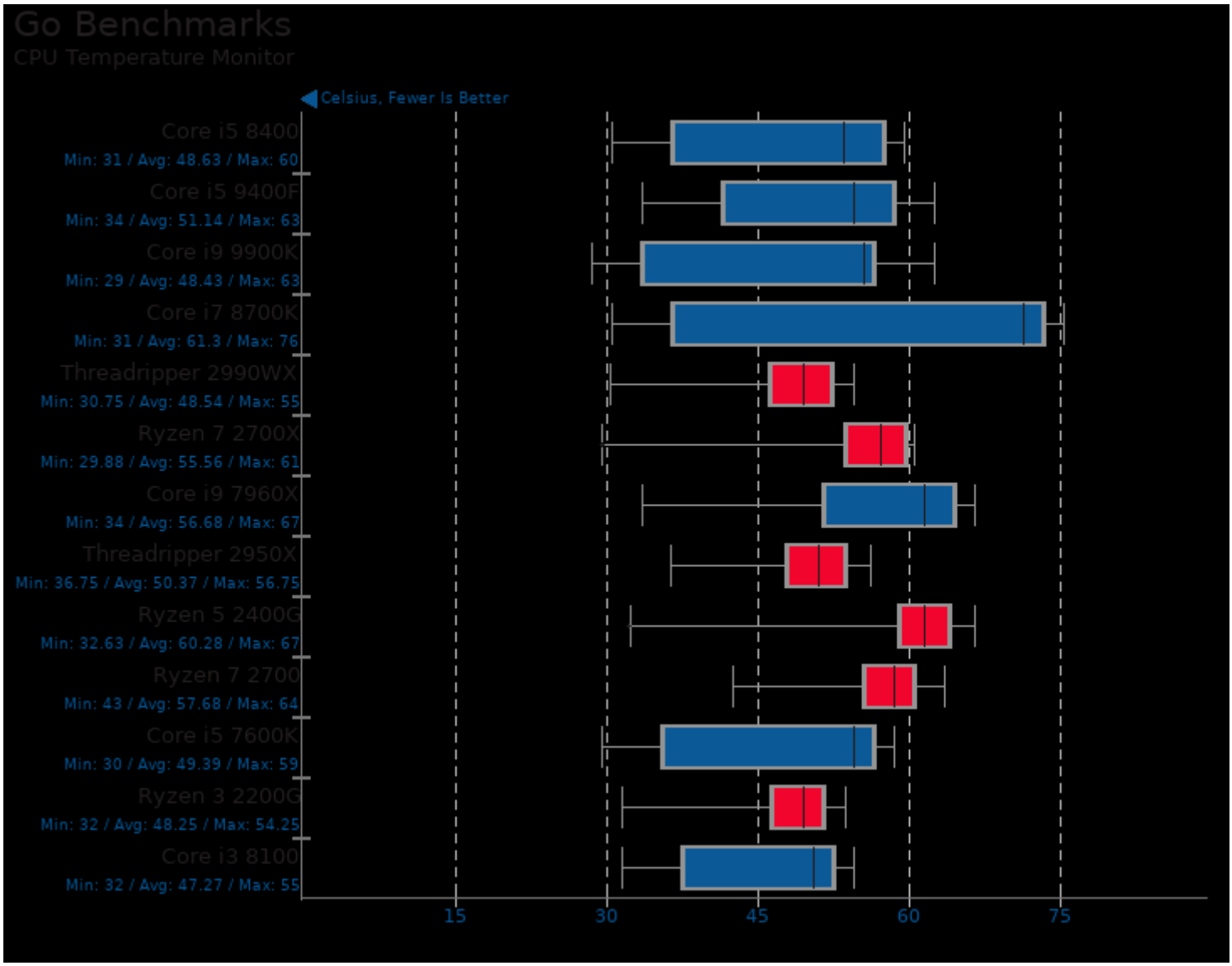

Timed HMMer Search 2.3.2
Pfam Database Search
Seconds, Fewer Is Better
Core i5 8400
SE +/- 0.01, N = 3
4.05
Core i5 9400F
SE +/- 0.01, N = 3
4.37
Core i9 9900K
SE +/- 0.00, N = 3
3.48
Core i7 8700K
SE +/- 0.03, N = 3
3.76
Threadripper 2990WX
SE +/- 0.05, N = 3
7.24
Ryzen 7 2700X
SE +/- 0.06, N = 3
6.02
Core i9 7960X
SE +/- 0.03, N = 3
3.59
Threadripper 2950X
SE +/- 0.07, N = 3
6.23
Ryzen 5 2400G
SE +/- 0.07, N = 3
7.92
Ryzen 7 2700
SE +/- 0.12, N = 3
7.22
Core i5 7600K
SE +/- 0.04, N = 3
8.00
Ryzen 3 2200G
SE +/- 0.05, N = 3
8.05
Core i3 8100
SE +/- 0.00, N = 3
5.38
2
4
6
8
10
1. (CC) gcc options: -O3 -march=native -pthread -lhmmer -lsquid -lm

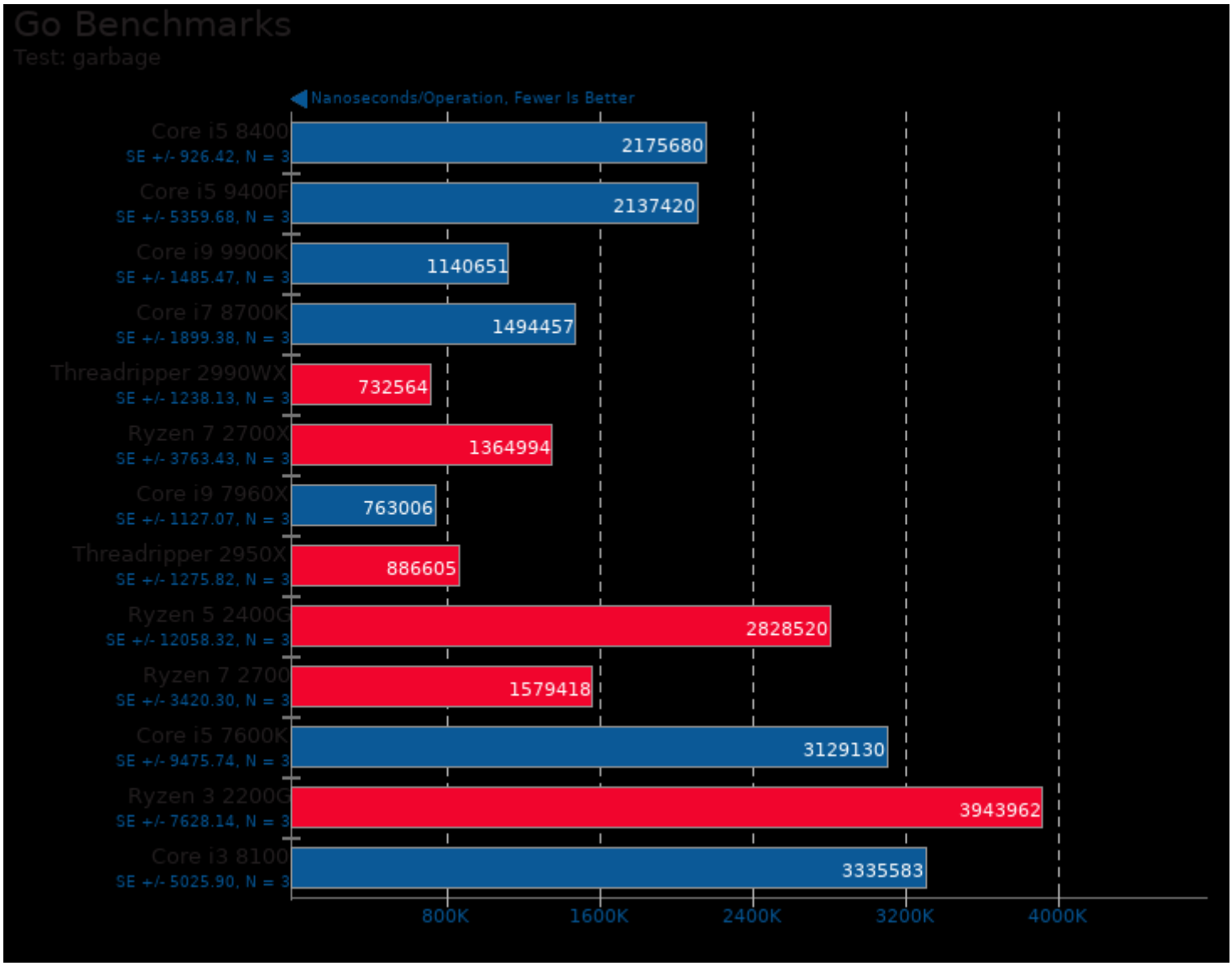

Timed HMMer Search 2.3.2
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 32 / Avg: 40.52 / Max: 50
Core i5 9400F
Min: 35 / Avg: 43.92 / Max: 56
Core i9 9900K
Min: 29 / Avg: 38.17 / Max: 52
Core i7 8700K
Min: 32 / Avg: 43.67 / Max: 59
Threadripper 2990WX
Min: 30.75 / Avg: 37.8 / Max: 43.75
Ryzen 7 2700X
Min: 29.38 / Avg: 49.67 / Max: 58.38
Core i9 7960X
Min: 34 / Avg: 40.45 / Max: 54
Threadripper 2950X
Min: 36.5 / Avg: 48.26 / Max: 55.25
Ryzen 5 2400G
Min: 32.5 / Avg: 51.22 / Max: 60.5
Ryzen 7 2700
Min: 43.5 / Avg: 54.94 / Max: 65.38
Core i5 7600K
Min: 31 / Avg: 42.14 / Max: 52
Ryzen 3 2200G
Min: 32 / Avg: 46.96 / Max: 53.5
Core i3 8100
Min: 32 / Avg: 41.17 / Max: 49
13
26
39
52
65

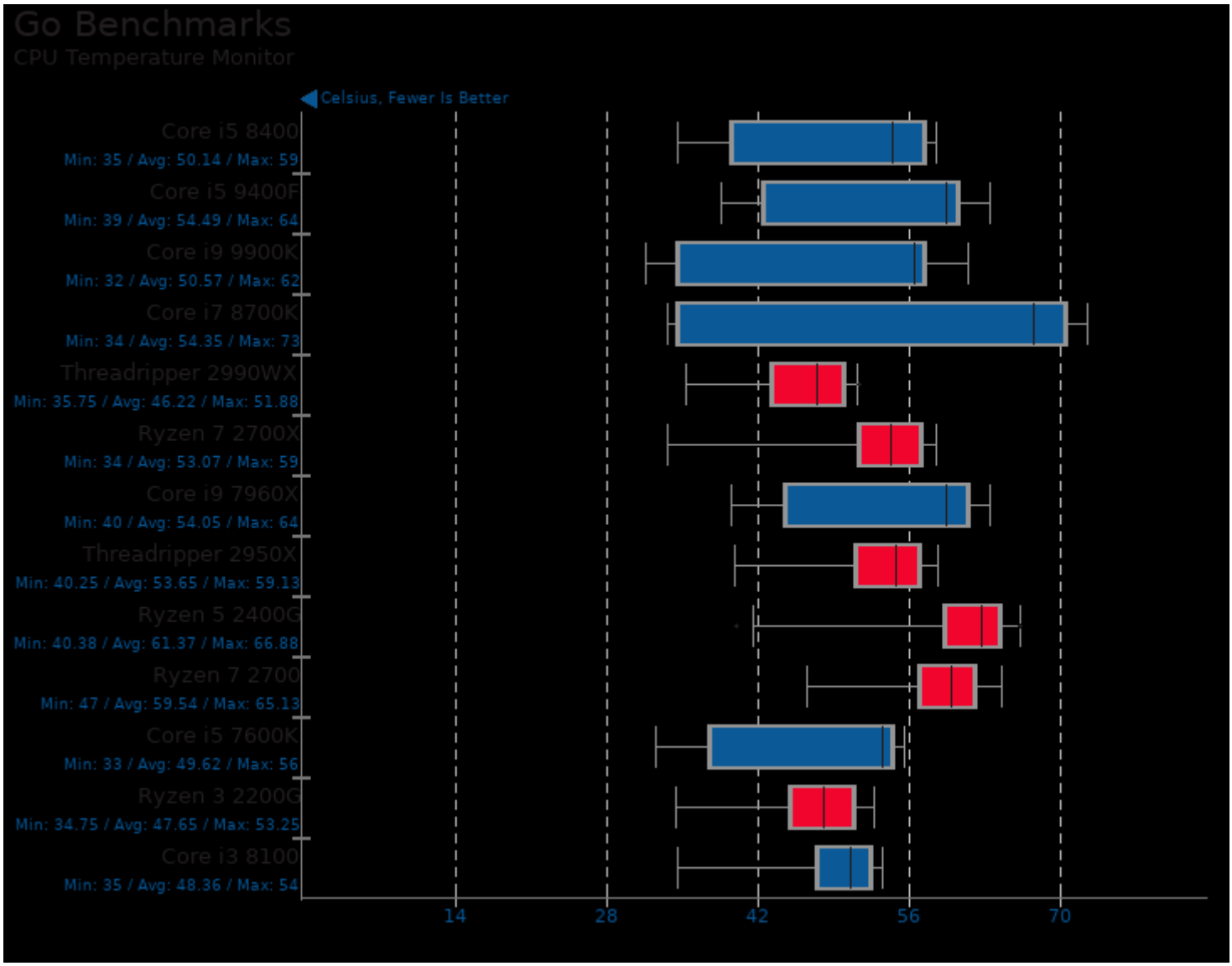

Go Benchmarks
Test: build
Nanoseconds/Operation, Fewer Is Better
Core i5 8400
SE +/- 137313187.31, N = 3
13447550111
Core i5 9400F
SE +/- 166206432.63, N = 3
13315558773
Core i9 9900K
SE +/- 181254088.85, N = 3
11116661094
Core i7 8700K
SE +/- 155650399.42, N = 3
11794731191
Threadripper 2990WX
SE +/- 79085931.76, N = 3
17318189852
Ryzen 7 2700X
SE +/- 92179495.40, N = 3
15776499386
Core i9 7960X
SE +/- 166148714.79, N = 3
15162124833
Threadripper 2950X
SE +/- 77448291.56, N = 3
16660043173
Ryzen 5 2400G
SE +/- 131096186.56, N = 3
17735008681
Ryzen 7 2700
SE +/- 153359575.31, N = 3
18033229496
Core i5 7600K
SE +/- 187625477.51, N = 3
13095885044
Ryzen 3 2200G
SE +/- 134543516.73, N = 3
17893665017
Core i3 8100
SE +/- 146702561.34, N = 3
14551486684
4000M
8000M
12000M
16000M
20000M

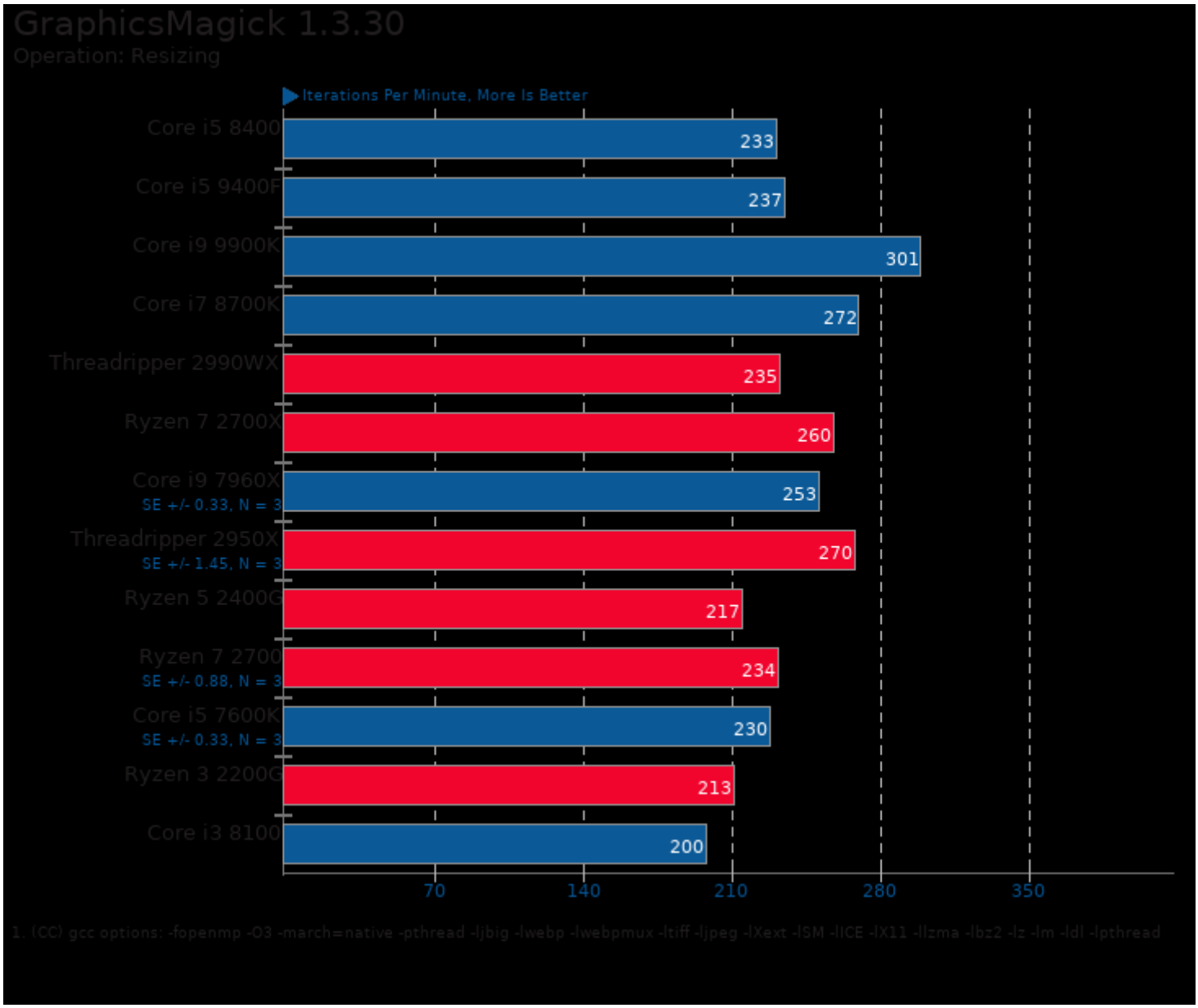

Go Benchmarks
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 32 / Avg: 37.19 / Max: 49
Core i5 9400F
Min: 35 / Avg: 40.29 / Max: 51
Core i9 9900K
Min: 29 / Avg: 31.5 / Max: 38
Core i7 8700K
Min: 32 / Avg: 39.79 / Max: 63
Threadripper 2990WX
Min: 30.88 / Avg: 37.93 / Max: 40.75
Ryzen 7 2700X
Min: 30.5 / Avg: 43.92 / Max: 48.75
Core i9 7960X
Min: 35 / Avg: 42.86 / Max: 59
Threadripper 2950X
Min: 37 / Avg: 46.29 / Max: 51.88
Ryzen 5 2400G
Min: 34.13 / Avg: 43.51 / Max: 47.75
Ryzen 7 2700
Min: 44.5 / Avg: 55.16 / Max: 60.25
Core i5 7600K
Min: 31 / Avg: 37.71 / Max: 50
Ryzen 3 2200G
Min: 33.25 / Avg: 38.23 / Max: 42.25
Core i3 8100
Min: 33 / Avg: 36.55 / Max: 45
12
24
36
48
60

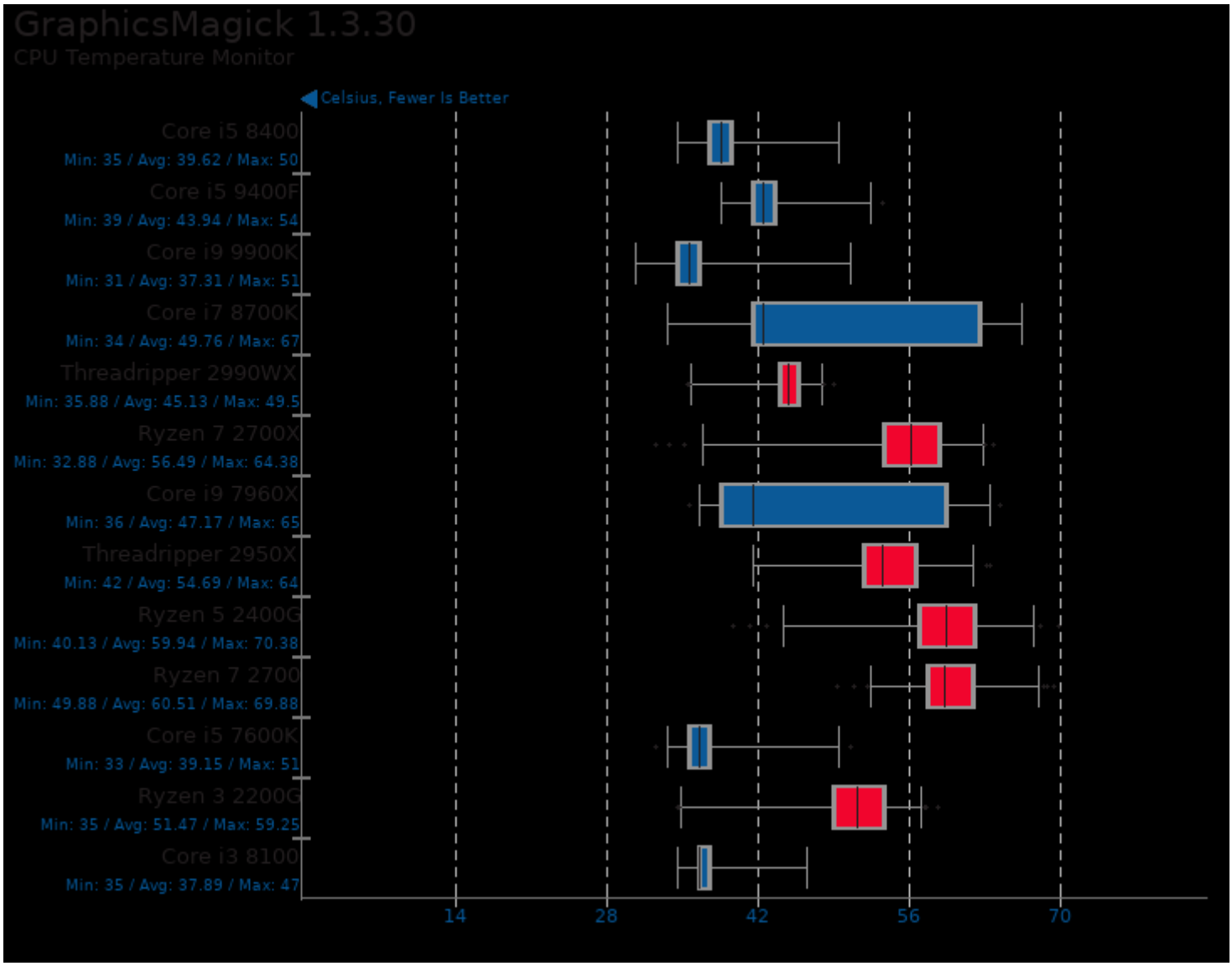

Go Benchmarks
Test: json
Nanoseconds/Operation, Fewer Is Better
Core i5 8400
SE +/- 9652.26, N = 3
8501822
Core i5 9400F
SE +/- 17951.13, N = 3
8341158
Core i9 9900K
SE +/- 10031.31, N = 3
5694423
Core i7 8700K
SE +/- 22370.35, N = 3
7319013
Threadripper 2990WX
SE +/- 13213.13, N = 3
2279374
Ryzen 7 2700X
SE +/- 7275.80, N = 3
6431817
Core i9 7960X
SE +/- 10353.69, N = 3
3364146
Threadripper 2950X
SE +/- 8311.88, N = 3
3710842
Ryzen 5 2400G
SE +/- 41409.96, N = 3
13493112
Ryzen 7 2700
SE +/- 27161.22, N = 3
7554509
Core i5 7600K
SE +/- 8761.61, N = 3
12075611
Ryzen 3 2200G
SE +/- 15612.55, N = 3
18536257
Core i3 8100
SE +/- 4932.97, N = 3
13103889
4M
8M
12M
16M
20M

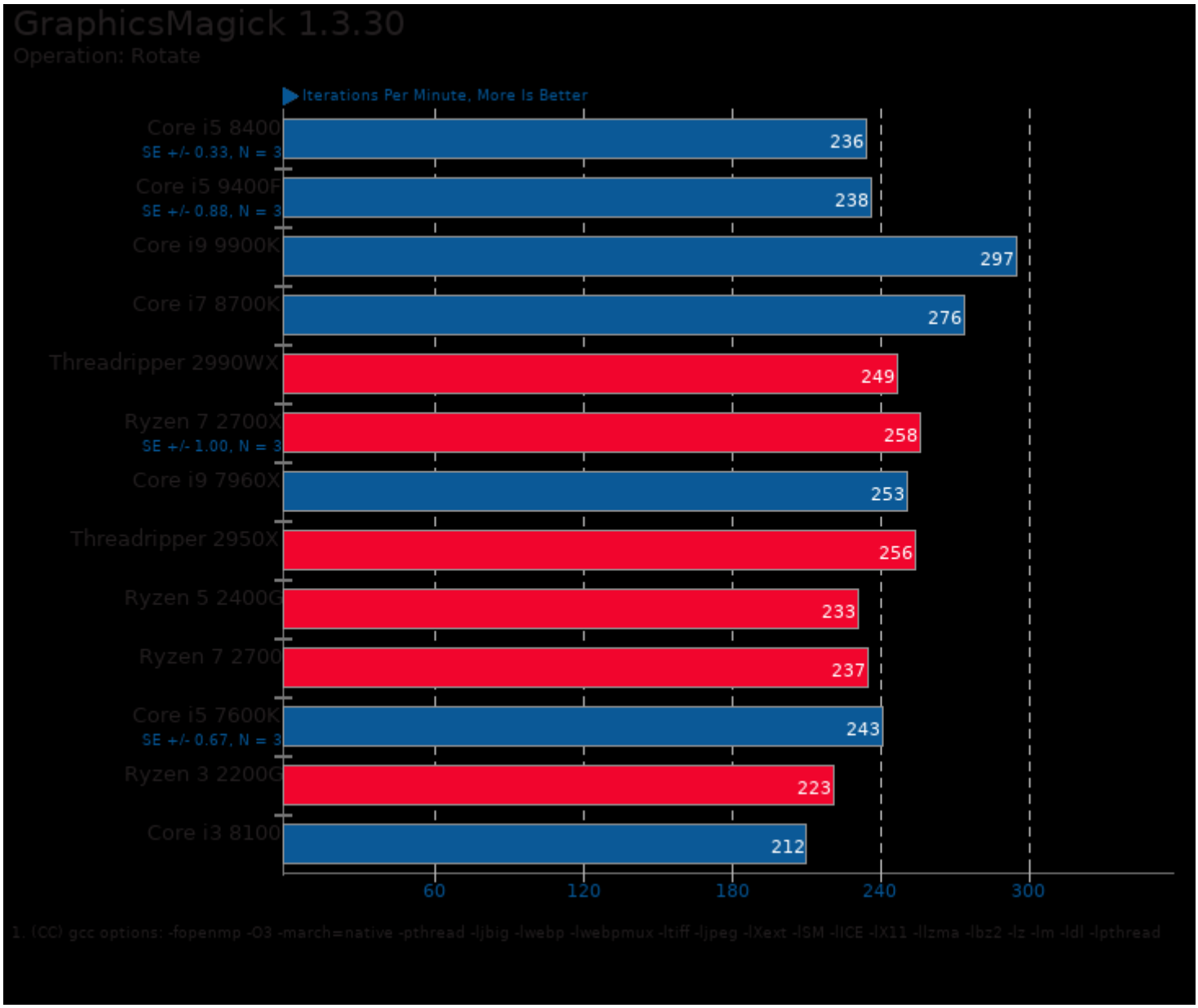

Go Benchmarks
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 31 / Avg: 48.63 / Max: 60
Core i5 9400F
Min: 34 / Avg: 51.14 / Max: 63
Core i9 9900K
Min: 29 / Avg: 48.43 / Max: 63
Core i7 8700K
Min: 31 / Avg: 61.3 / Max: 76
Threadripper 2990WX
Min: 30.75 / Avg: 48.54 / Max: 55
Ryzen 7 2700X
Min: 29.88 / Avg: 55.56 / Max: 61
Core i9 7960X
Min: 34 / Avg: 56.68 / Max: 67
Threadripper 2950X
Min: 36.75 / Avg: 50.37 / Max: 56.75
Ryzen 5 2400G
Min: 32.63 / Avg: 60.28 / Max: 67
Ryzen 7 2700
Min: 43 / Avg: 57.68 / Max: 64
Core i5 7600K
Min: 30 / Avg: 49.39 / Max: 59
Ryzen 3 2200G
Min: 32 / Avg: 48.25 / Max: 54.25
Core i3 8100
Min: 32 / Avg: 47.27 / Max: 55
15
30
45
60
75

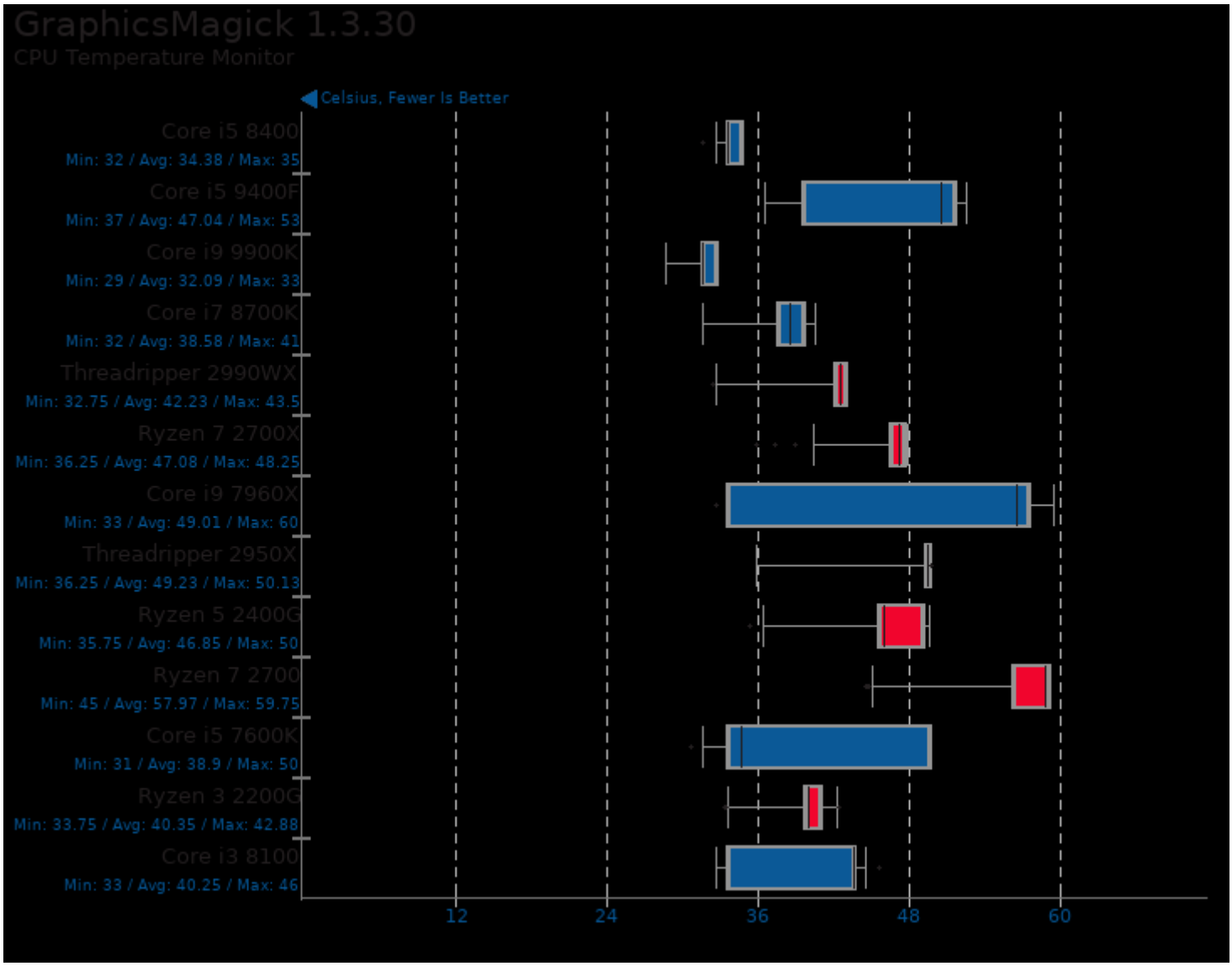

Go Benchmarks
Test: garbage
Nanoseconds/Operation, Fewer Is Better
Core i5 8400
SE +/- 926.42, N = 3
2175680
Core i5 9400F
SE +/- 5359.68, N = 3
2137420
Core i9 9900K
SE +/- 1485.47, N = 3
1140651
Core i7 8700K
SE +/- 1899.38, N = 3
1494457
Threadripper 2990WX
SE +/- 1238.13, N = 3
732564
Ryzen 7 2700X
SE +/- 3763.43, N = 3
1364994
Core i9 7960X
SE +/- 1127.07, N = 3
763006
Threadripper 2950X
SE +/- 1275.82, N = 3
886605
Ryzen 5 2400G
SE +/- 12058.32, N = 3
2828520
Ryzen 7 2700
SE +/- 3420.30, N = 3
1579418
Core i5 7600K
SE +/- 9475.74, N = 3
3129130
Ryzen 3 2200G
SE +/- 7628.14, N = 3
3943962
Core i3 8100
SE +/- 5025.90, N = 3
3335583
800K
1600K
2400K
3200K
4000K

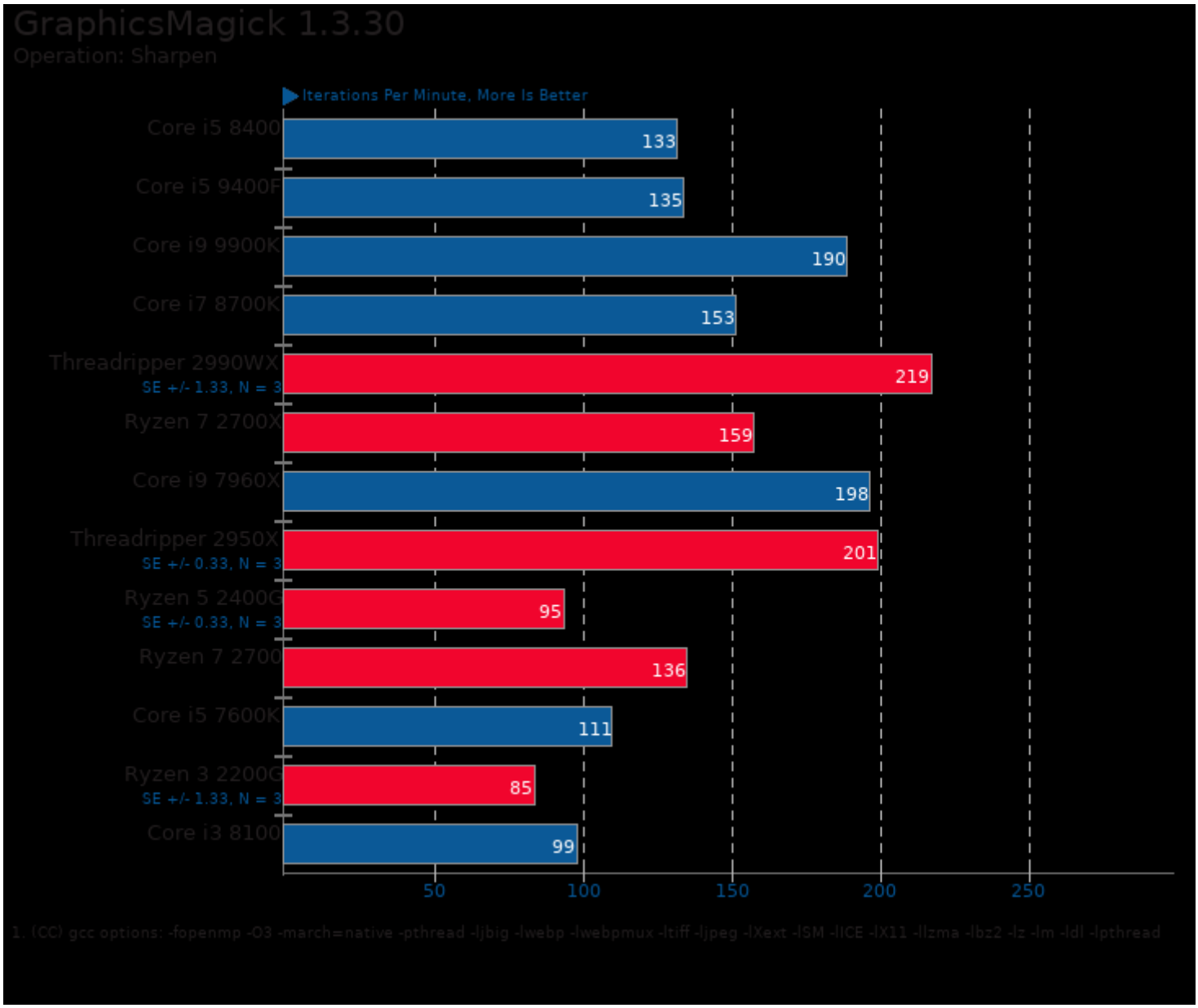

Go Benchmarks
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 35 / Avg: 50.14 / Max: 59
Core i5 9400F
Min: 39 / Avg: 54.49 / Max: 64
Core i9 9900K
Min: 32 / Avg: 50.57 / Max: 62
Core i7 8700K
Min: 34 / Avg: 54.35 / Max: 73
Threadripper 2990WX
Min: 35.75 / Avg: 46.22 / Max: 51.88
Ryzen 7 2700X
Min: 34 / Avg: 53.07 / Max: 59
Core i9 7960X
Min: 40 / Avg: 54.05 / Max: 64
Threadripper 2950X
Min: 40.25 / Avg: 53.65 / Max: 59.13
Ryzen 5 2400G
Min: 40.38 / Avg: 61.37 / Max: 66.88
Ryzen 7 2700
Min: 47 / Avg: 59.54 / Max: 65.13
Core i5 7600K
Min: 33 / Avg: 49.62 / Max: 56
Ryzen 3 2200G
Min: 34.75 / Avg: 47.65 / Max: 53.25
Core i3 8100
Min: 35 / Avg: 48.36 / Max: 54
14
28
42
56
70

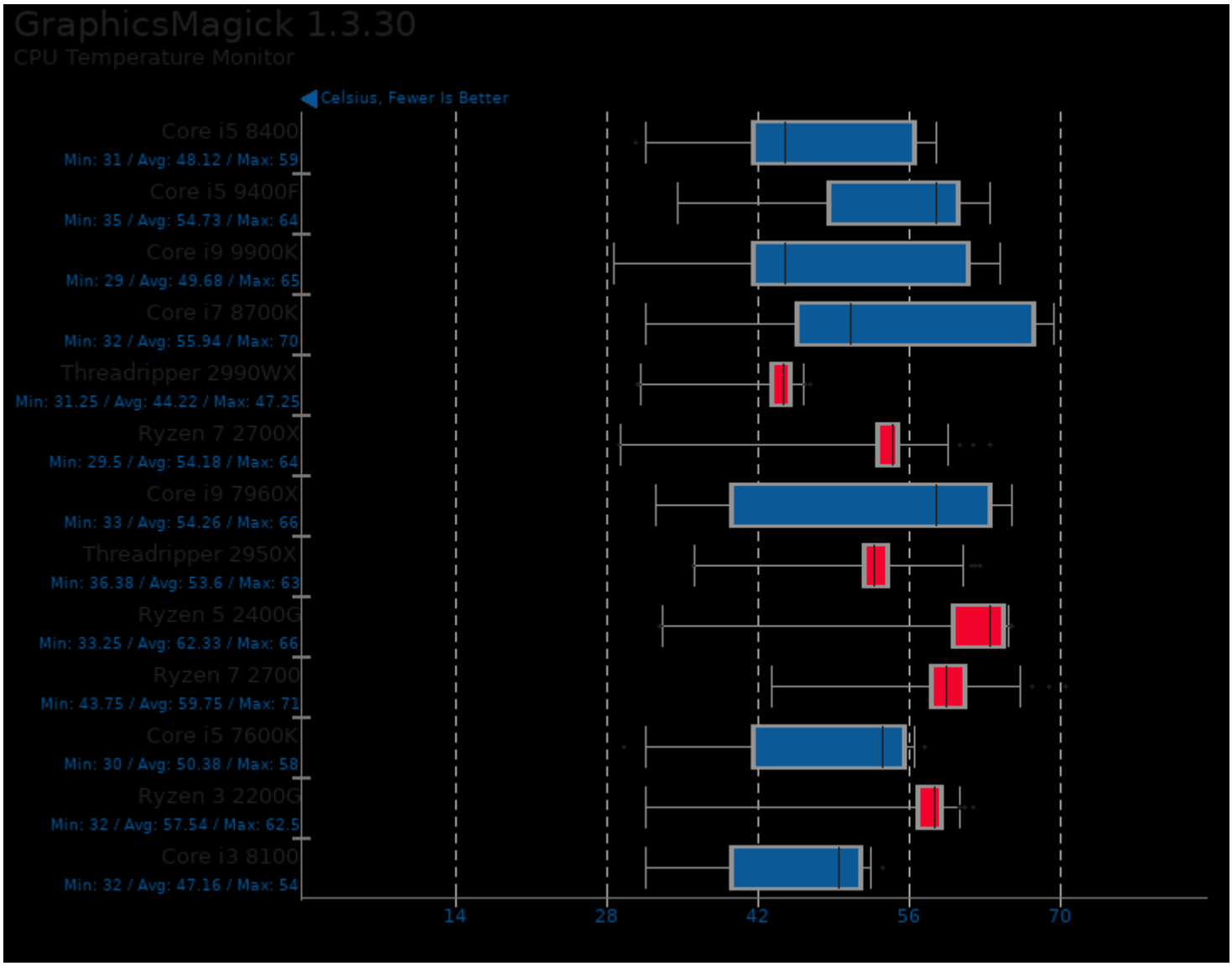

GraphicsMagick 1.3.30
Operation: Resizing
Iterations Per Minute, More Is Better
Core i5 8400
233
Core i5 9400F
237
Core i9 9900K
301
Core i7 8700K
272
Threadripper 2990WX
235
Ryzen 7 2700X
260
Core i9 7960X
253
SE +/- 0.33, N = 3
Threadripper 2950X
270
SE +/- 1.45, N = 3
Ryzen 5 2400G
217
Ryzen 7 2700
234
SE +/- 0.88, N = 3
Core i5 7600K
230
SE +/- 0.33, N = 3
Ryzen 3 2200G
213
Core i3 8100
200
70
140
210
280
350
1. (CC) gcc options: -fopenmp -O3 -march=native -pthread -ljbig -lwebp -lwebpmux -ltiff -ljpeg -lXext -lSM -lICE -lX11 -llzma -lbz2 -lz -lm -ldl -lpthread

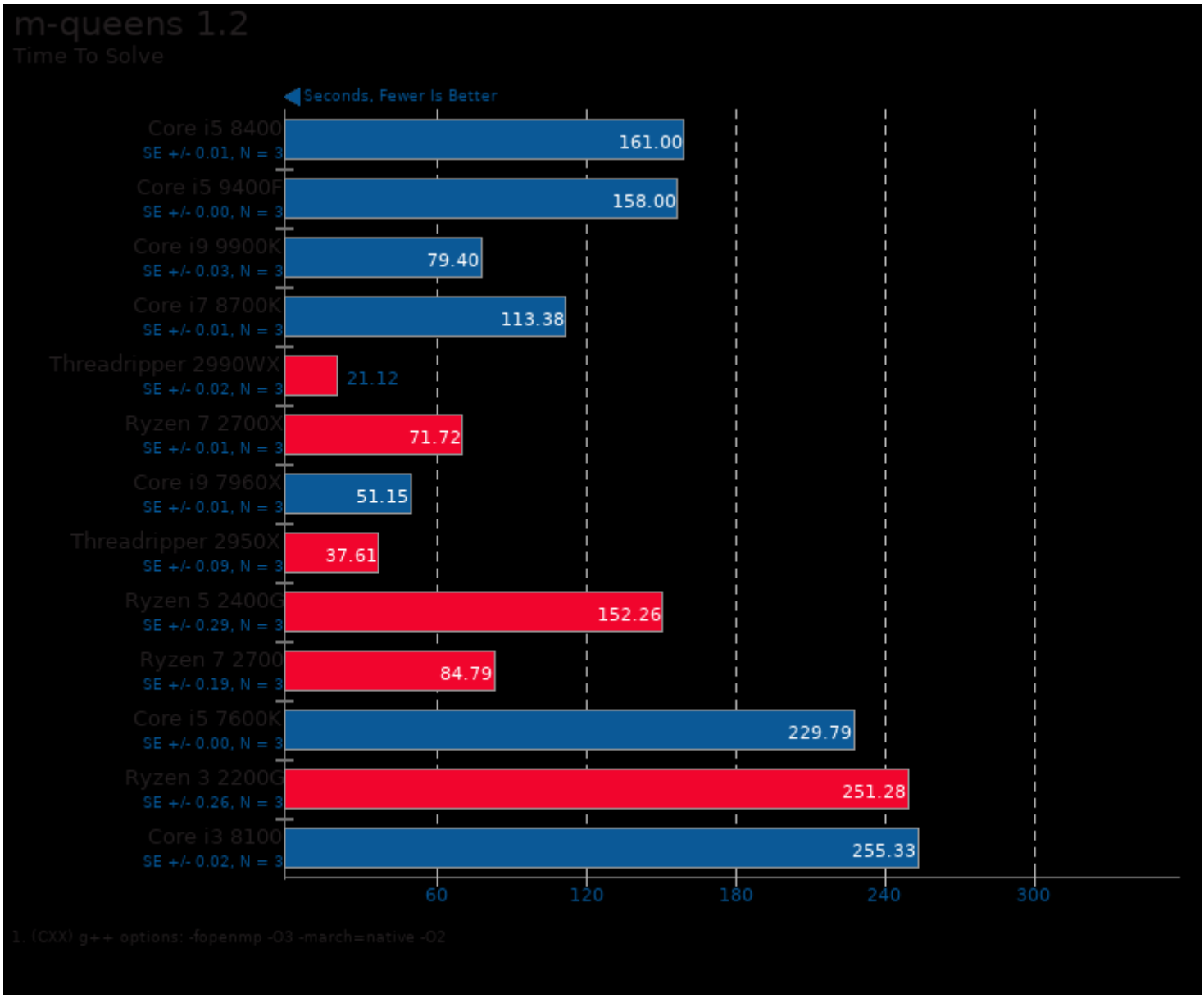

GraphicsMagick 1.3.30
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 35 / Avg: 39.62 / Max: 50
Core i5 9400F
Min: 39 / Avg: 43.94 / Max: 54
Core i9 9900K
Min: 31 / Avg: 37.31 / Max: 51
Core i7 8700K
Min: 34 / Avg: 49.76 / Max: 67
Threadripper 2990WX
Min: 35.88 / Avg: 45.13 / Max: 49.5
Ryzen 7 2700X
Min: 32.88 / Avg: 56.49 / Max: 64.38
Core i9 7960X
Min: 36 / Avg: 47.17 / Max: 65
Threadripper 2950X
Min: 42 / Avg: 54.69 / Max: 64
Ryzen 5 2400G
Min: 40.13 / Avg: 59.94 / Max: 70.38
Ryzen 7 2700
Min: 49.88 / Avg: 60.51 / Max: 69.88
Core i5 7600K
Min: 33 / Avg: 39.15 / Max: 51
Ryzen 3 2200G
Min: 35 / Avg: 51.47 / Max: 59.25
Core i3 8100
Min: 35 / Avg: 37.89 / Max: 47
14
28
42
56
70

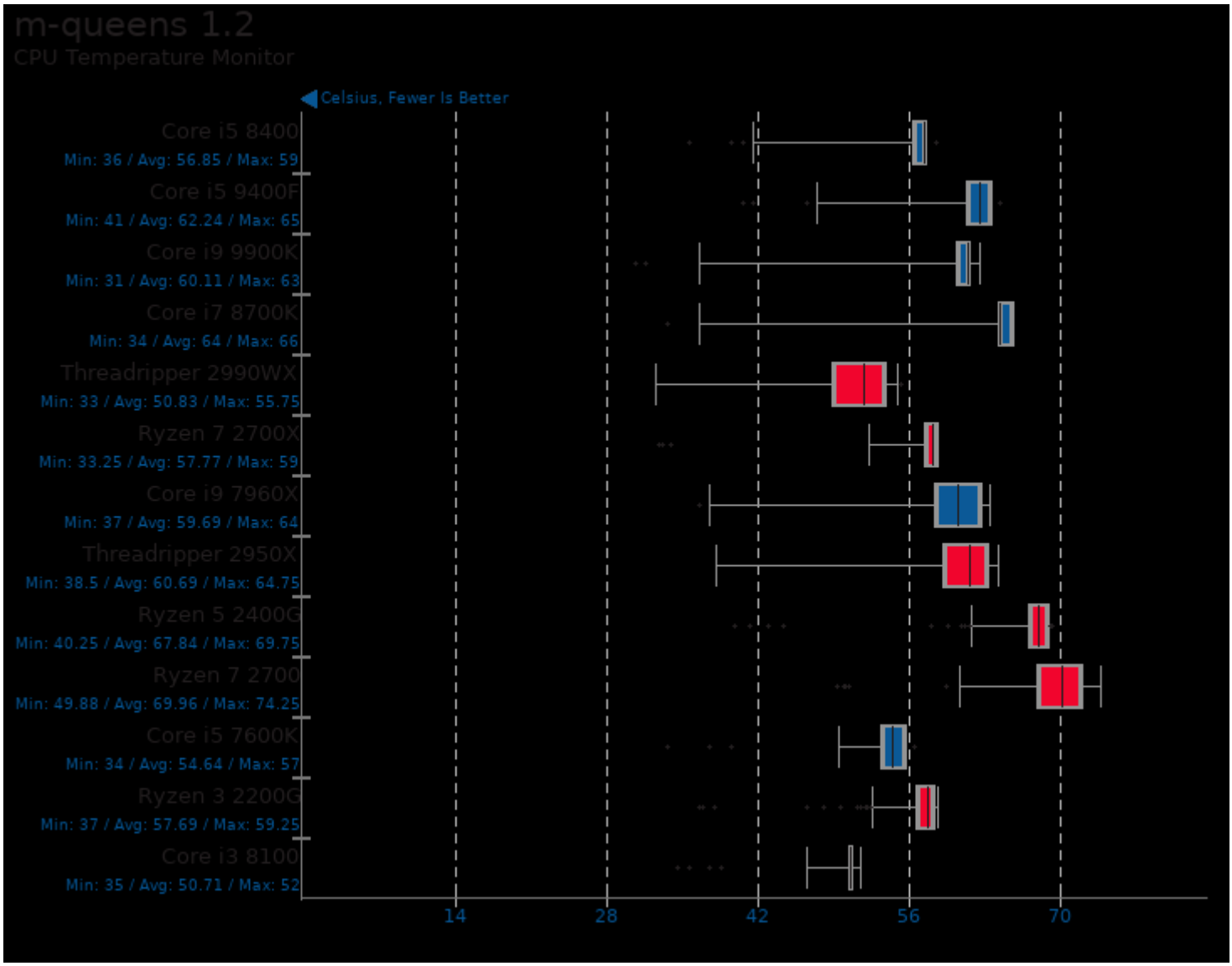

GraphicsMagick 1.3.30
Operation: Rotate
Iterations Per Minute, More Is Better
Core i5 8400
SE +/- 0.33, N = 3
236
Core i5 9400F
SE +/- 0.88, N = 3
238
Core i9 9900K
297
Core i7 8700K
276
Threadripper 2990WX
249
Ryzen 7 2700X
SE +/- 1.00, N = 3
258
Core i9 7960X
253
Threadripper 2950X
256
Ryzen 5 2400G
233
Ryzen 7 2700
237
Core i5 7600K
SE +/- 0.67, N = 3
243
Ryzen 3 2200G
223
Core i3 8100
212
60
120
180
240
300
1. (CC) gcc options: -fopenmp -O3 -march=native -pthread -ljbig -lwebp -lwebpmux -ltiff -ljpeg -lXext -lSM -lICE -lX11 -llzma -lbz2 -lz -lm -ldl -lpthread

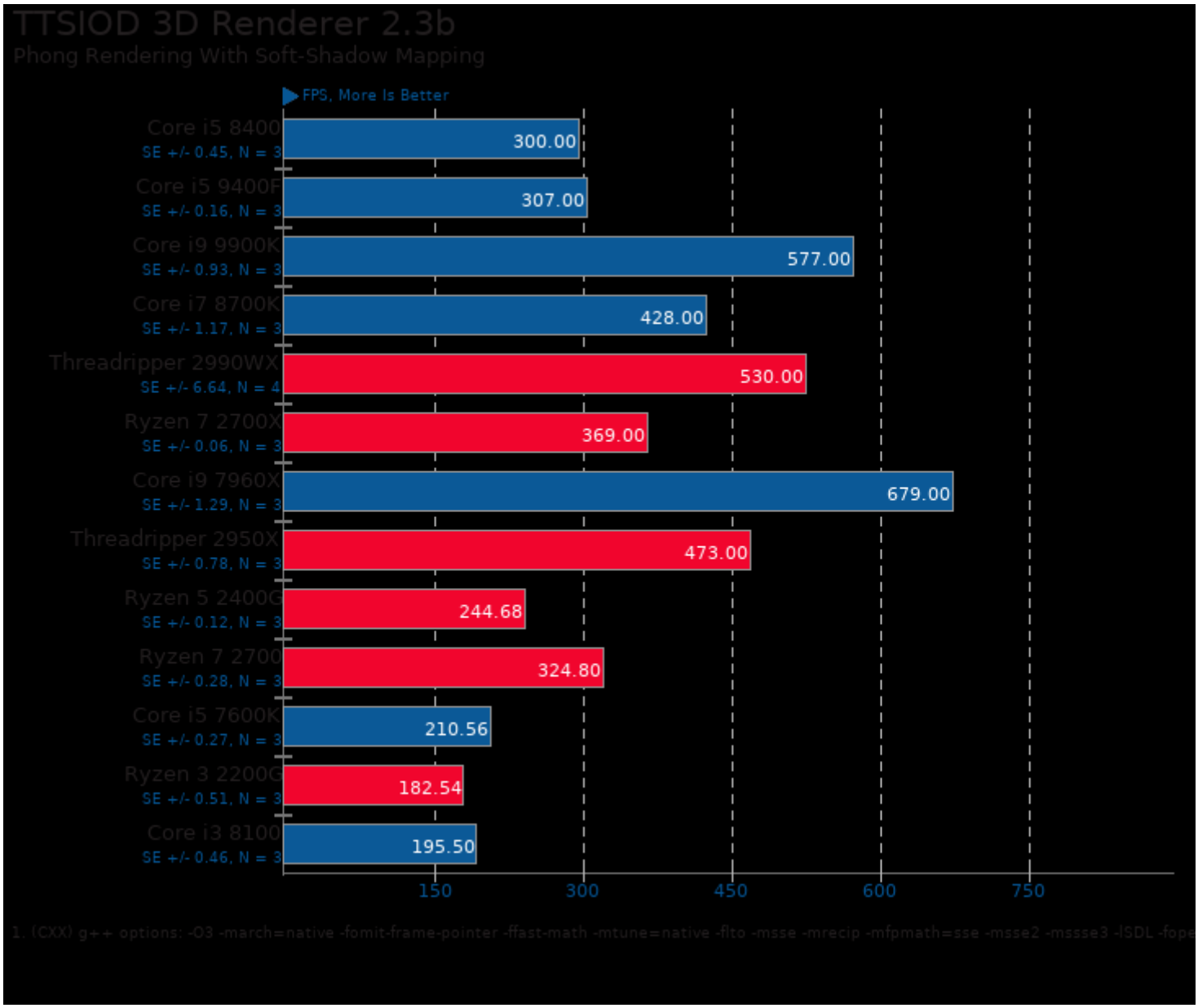

GraphicsMagick 1.3.30
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 32 / Avg: 34.38 / Max: 35
Core i5 9400F
Min: 37 / Avg: 47.04 / Max: 53
Core i9 9900K
Min: 29 / Avg: 32.09 / Max: 33
Core i7 8700K
Min: 32 / Avg: 38.58 / Max: 41
Threadripper 2990WX
Min: 32.75 / Avg: 42.23 / Max: 43.5
Ryzen 7 2700X
Min: 36.25 / Avg: 47.08 / Max: 48.25
Core i9 7960X
Min: 33 / Avg: 49.01 / Max: 60
Threadripper 2950X
Min: 36.25 / Avg: 49.23 / Max: 50.13
Ryzen 5 2400G
Min: 35.75 / Avg: 46.85 / Max: 50
Ryzen 7 2700
Min: 45 / Avg: 57.97 / Max: 59.75
Core i5 7600K
Min: 31 / Avg: 38.9 / Max: 50
Ryzen 3 2200G
Min: 33.75 / Avg: 40.35 / Max: 42.88
Core i3 8100
Min: 33 / Avg: 40.25 / Max: 46
12
24
36
48
60

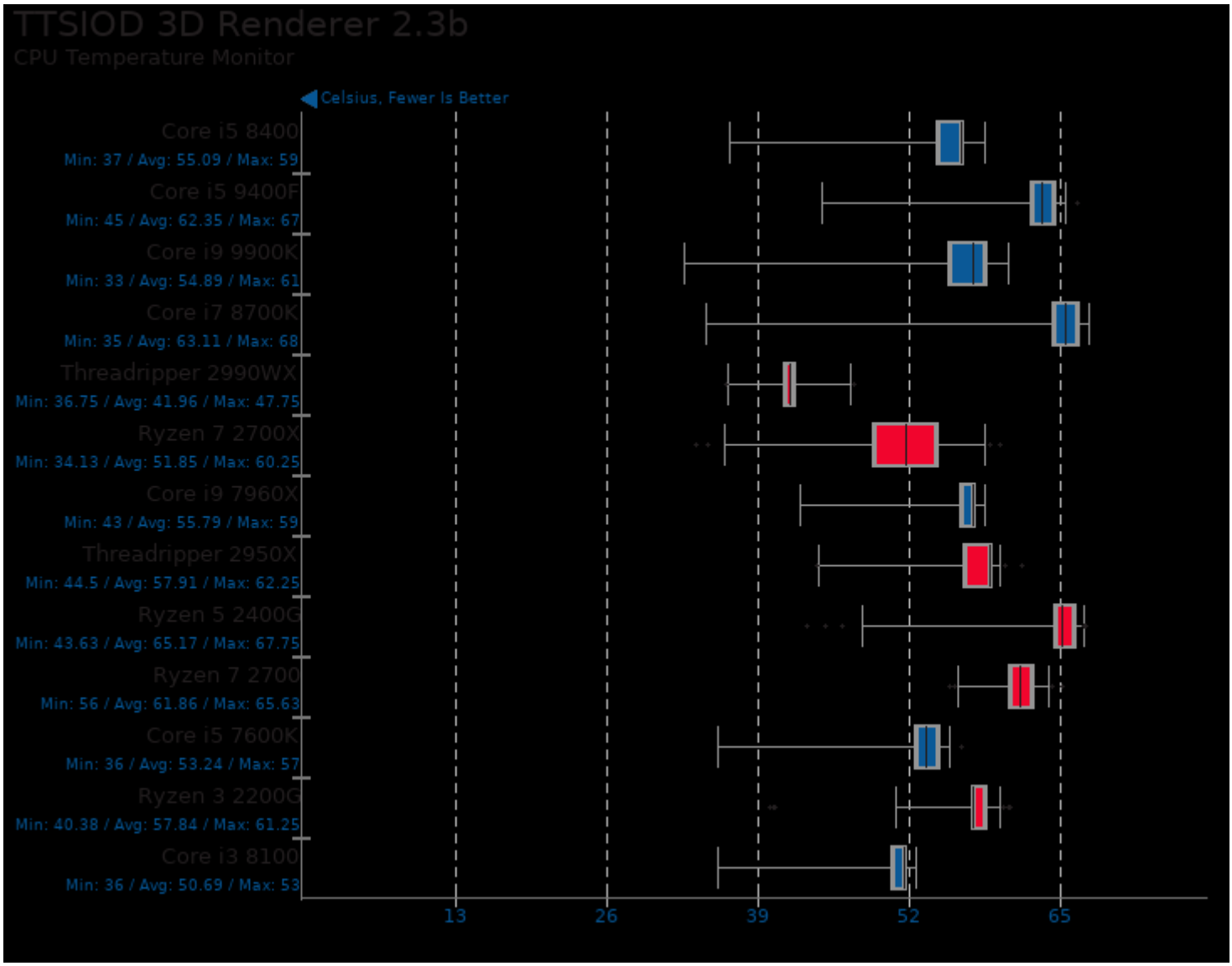

GraphicsMagick 1.3.30
Operation: Sharpen
Iterations Per Minute, More Is Better
Core i5 8400
133
Core i5 9400F
135
Core i9 9900K
190
Core i7 8700K
153
Threadripper 2990WX
SE +/- 1.33, N = 3
219
Ryzen 7 2700X
159
Core i9 7960X
198
Threadripper 2950X
SE +/- 0.33, N = 3
201
Ryzen 5 2400G
SE +/- 0.33, N = 3
95
Ryzen 7 2700
136
Core i5 7600K
111
Ryzen 3 2200G
SE +/- 1.33, N = 3
85
Core i3 8100
99
50
100
150
200
250
1. (CC) gcc options: -fopenmp -O3 -march=native -pthread -ljbig -lwebp -lwebpmux -ltiff -ljpeg -lXext -lSM -lICE -lX11 -llzma -lbz2 -lz -lm -ldl -lpthread

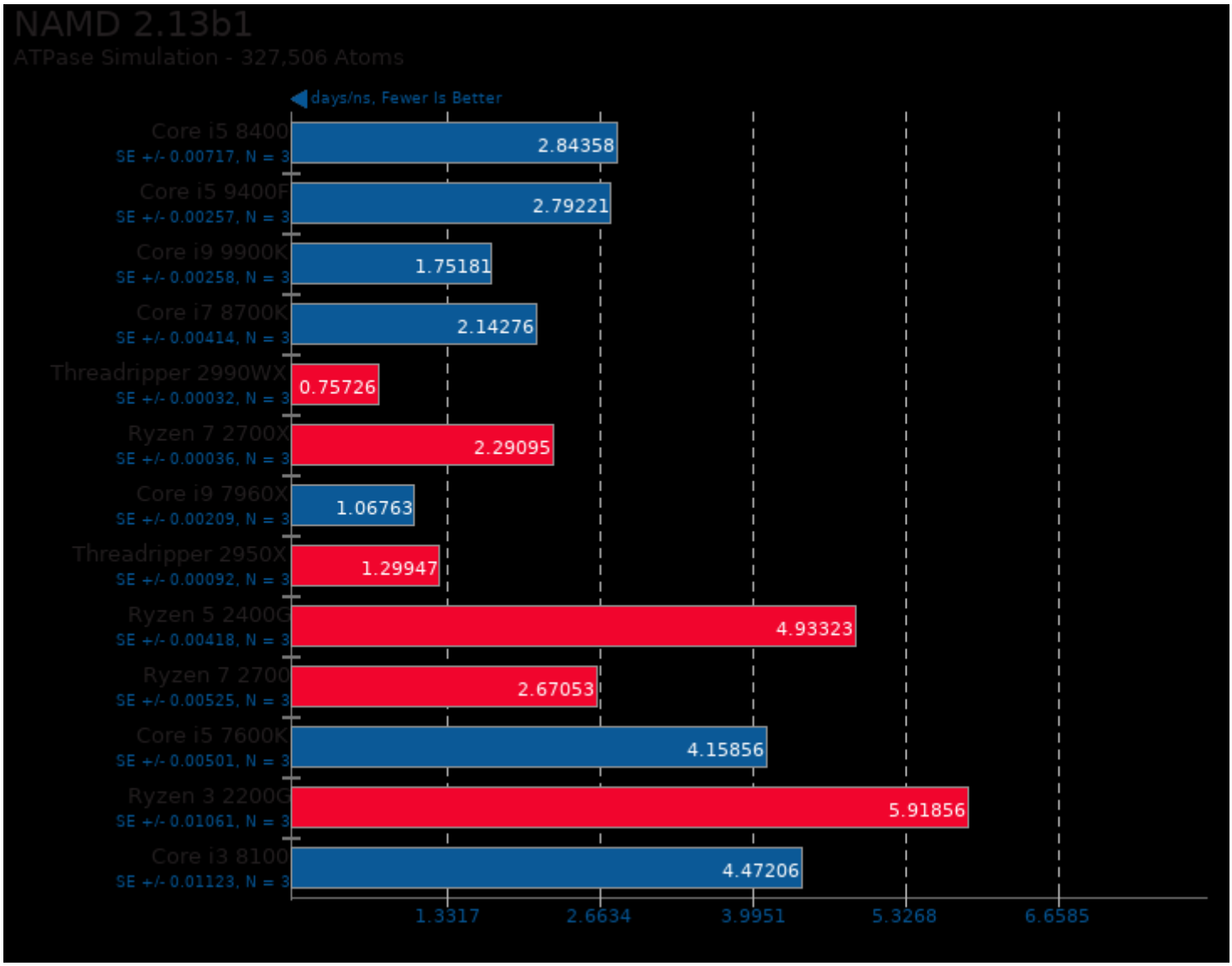

GraphicsMagick 1.3.30
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 31 / Avg: 48.12 / Max: 59
Core i5 9400F
Min: 35 / Avg: 54.73 / Max: 64
Core i9 9900K
Min: 29 / Avg: 49.68 / Max: 65
Core i7 8700K
Min: 32 / Avg: 55.94 / Max: 70
Threadripper 2990WX
Min: 31.25 / Avg: 44.22 / Max: 47.25
Ryzen 7 2700X
Min: 29.5 / Avg: 54.18 / Max: 64
Core i9 7960X
Min: 33 / Avg: 54.26 / Max: 66
Threadripper 2950X
Min: 36.38 / Avg: 53.6 / Max: 63
Ryzen 5 2400G
Min: 33.25 / Avg: 62.33 / Max: 66
Ryzen 7 2700
Min: 43.75 / Avg: 59.75 / Max: 71
Core i5 7600K
Min: 30 / Avg: 50.38 / Max: 58
Ryzen 3 2200G
Min: 32 / Avg: 57.54 / Max: 62.5
Core i3 8100
Min: 32 / Avg: 47.16 / Max: 54
14
28
42
56
70

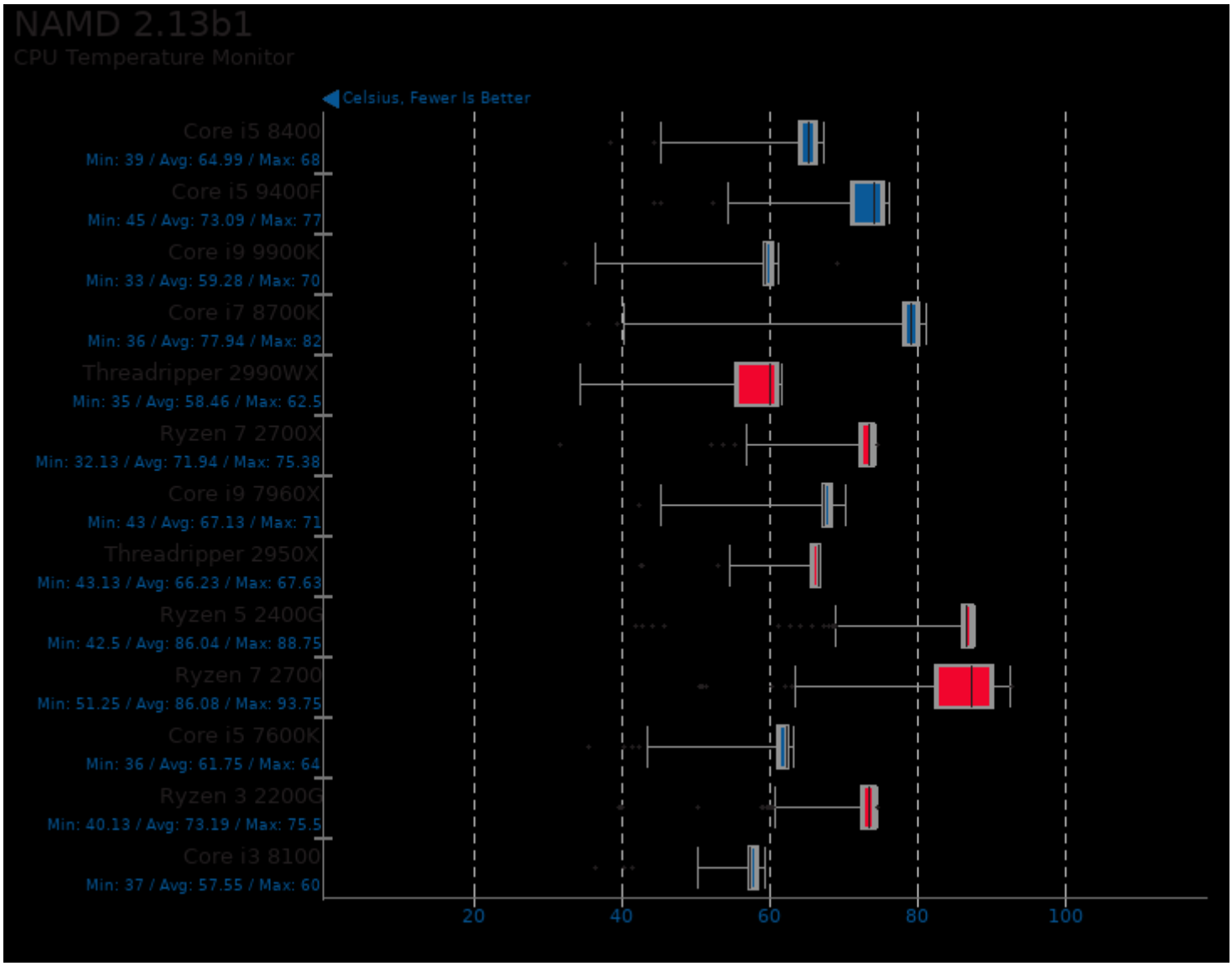

m-queens 1.2
Time To Solve
Seconds, Fewer Is Better
Core i5 8400
SE +/- 0.01, N = 3
161.00
Core i5 9400F
SE +/- 0.00, N = 3
158.00
Core i9 9900K
SE +/- 0.03, N = 3
79.40
Core i7 8700K
SE +/- 0.01, N = 3
113.38
Threadripper 2990WX
SE +/- 0.02, N = 3
21.12
Ryzen 7 2700X
SE +/- 0.01, N = 3
71.72
Core i9 7960X
SE +/- 0.01, N = 3
51.15
Threadripper 2950X
SE +/- 0.09, N = 3
37.61
Ryzen 5 2400G
SE +/- 0.29, N = 3
152.26
Ryzen 7 2700
SE +/- 0.19, N = 3
84.79
Core i5 7600K
SE +/- 0.00, N = 3
229.79
Ryzen 3 2200G
SE +/- 0.26, N = 3
251.28
Core i3 8100
SE +/- 0.02, N = 3
255.33
60
120
180
240
300
1. (CXX) g++ options: -fopenmp -O3 -march=native -O2

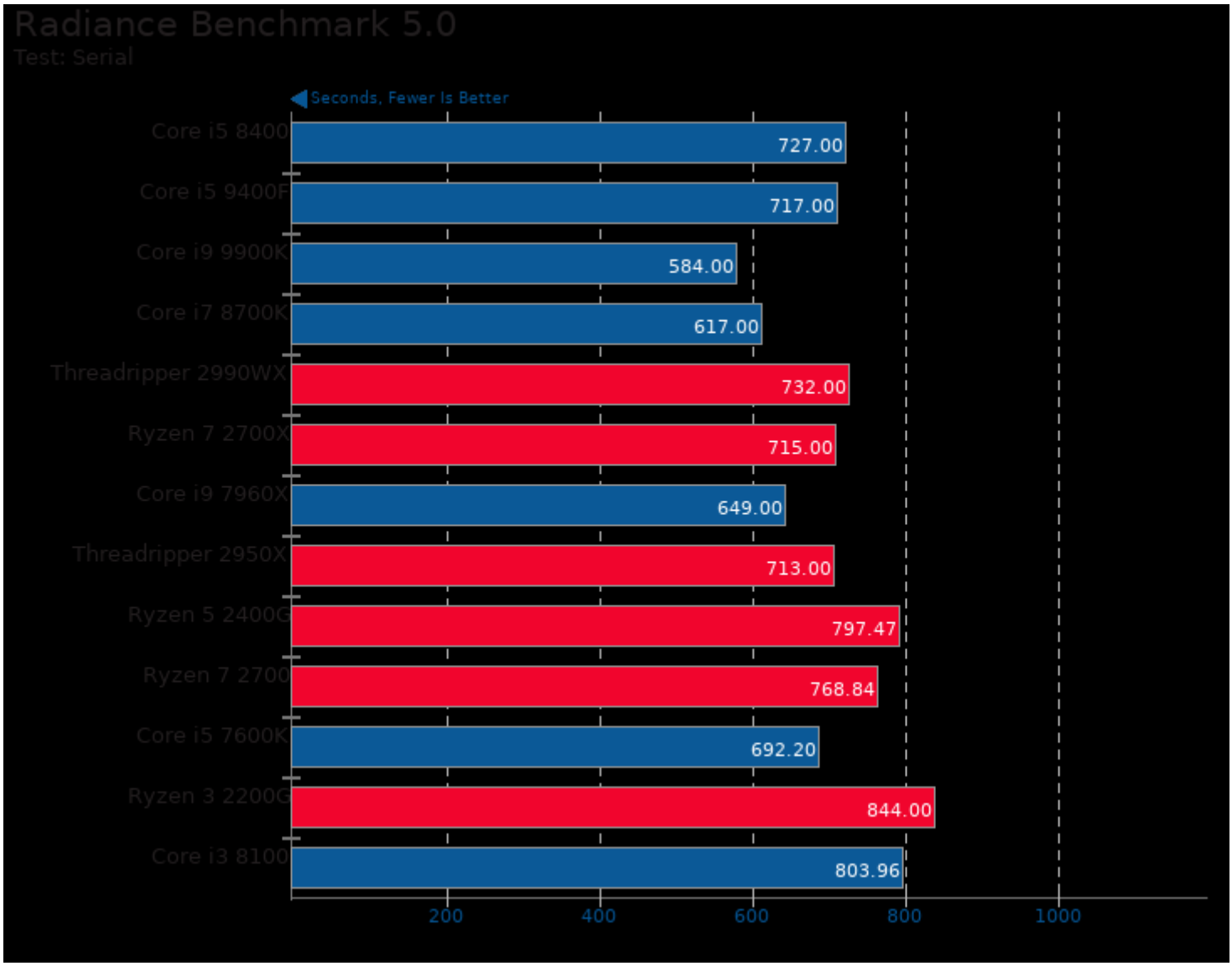

m-queens 1.2
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 36 / Avg: 56.85 / Max: 59
Core i5 9400F
Min: 41 / Avg: 62.24 / Max: 65
Core i9 9900K
Min: 31 / Avg: 60.11 / Max: 63
Core i7 8700K
Min: 34 / Avg: 64 / Max: 66
Threadripper 2990WX
Min: 33 / Avg: 50.83 / Max: 55.75
Ryzen 7 2700X
Min: 33.25 / Avg: 57.77 / Max: 59
Core i9 7960X
Min: 37 / Avg: 59.69 / Max: 64
Threadripper 2950X
Min: 38.5 / Avg: 60.69 / Max: 64.75
Ryzen 5 2400G
Min: 40.25 / Avg: 67.84 / Max: 69.75
Ryzen 7 2700
Min: 49.88 / Avg: 69.96 / Max: 74.25
Core i5 7600K
Min: 34 / Avg: 54.64 / Max: 57
Ryzen 3 2200G
Min: 37 / Avg: 57.69 / Max: 59.25
Core i3 8100
Min: 35 / Avg: 50.71 / Max: 52
14
28
42
56
70

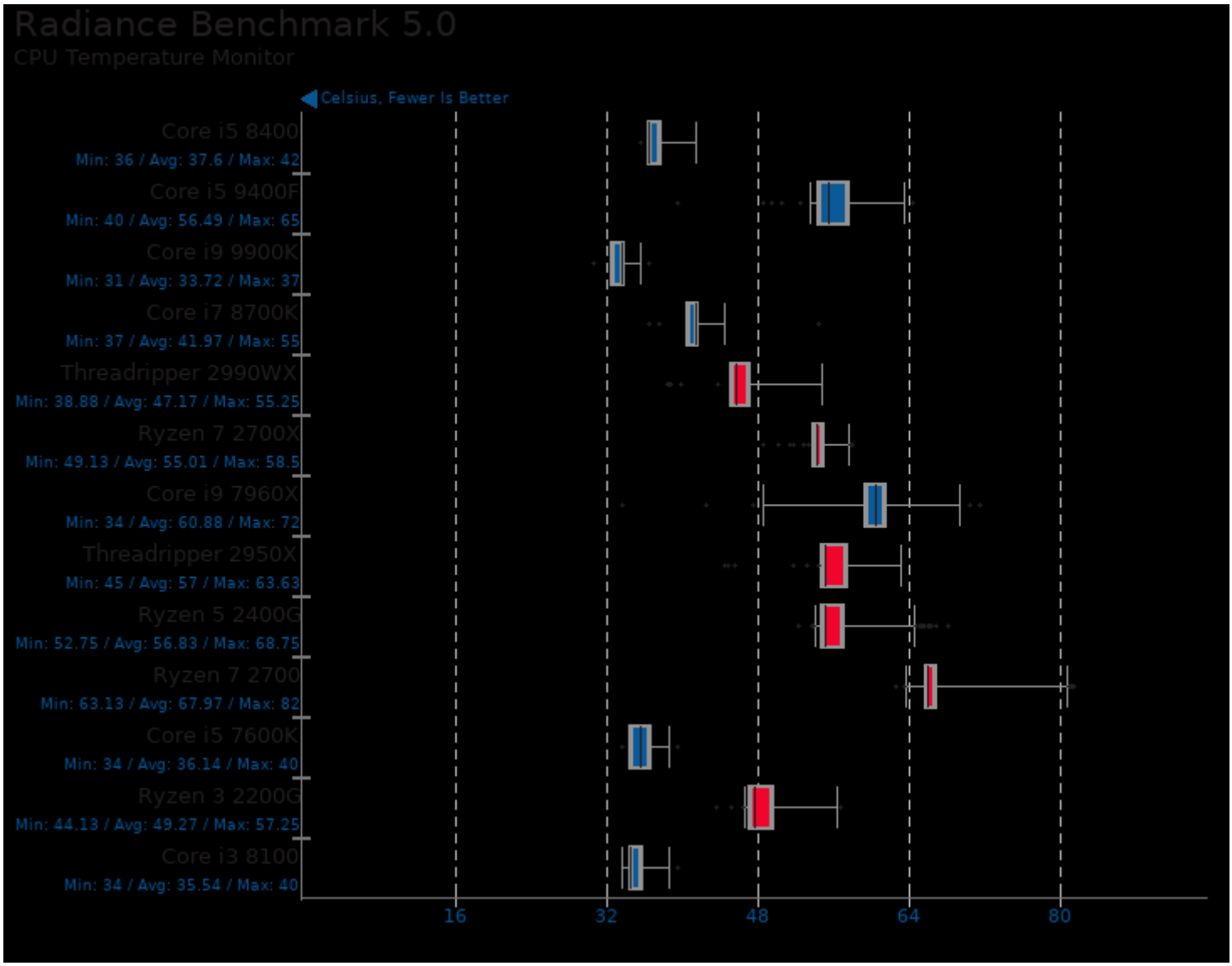

TTSIOD 3D Renderer 2.3b
Phong Rendering With Soft-Shadow Mapping
FPS, More Is Better
Core i5 8400
SE +/- 0.45, N = 3
300.00
Core i5 9400F
SE +/- 0.16, N = 3
307.00
Core i9 9900K
SE +/- 0.93, N = 3
577.00
Core i7 8700K
SE +/- 1.17, N = 3
428.00
Threadripper 2990WX
SE +/- 6.64, N = 4
530.00
Ryzen 7 2700X
SE +/- 0.06, N = 3
369.00
Core i9 7960X
SE +/- 1.29, N = 3
679.00
Threadripper 2950X
SE +/- 0.78, N = 3
473.00
Ryzen 5 2400G
SE +/- 0.12, N = 3
244.68
Ryzen 7 2700
SE +/- 0.28, N = 3
324.80
Core i5 7600K
SE +/- 0.27, N = 3
210.56
Ryzen 3 2200G
SE +/- 0.51, N = 3
182.54
Core i3 8100
SE +/- 0.46, N = 3
195.50
150
300
450
600
750
1. (CXX) g++ options: -O3 -march=native -fomit-frame-pointer -ffast-math -mtune=native -flto -msse -mrecip -mfpmath=sse -msse2 -mssse3 -lSDL -fopen

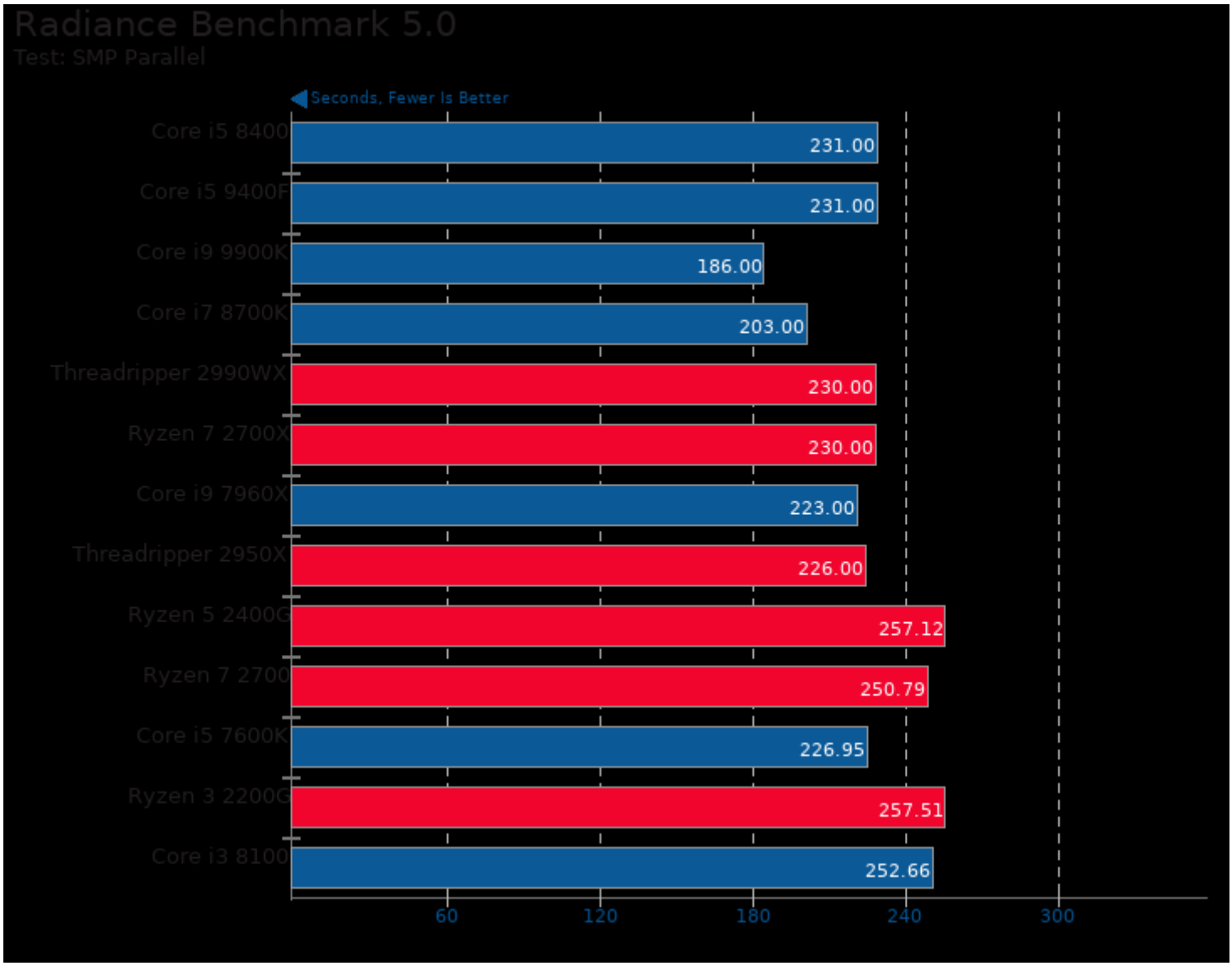

TTSIOD 3D Renderer 2.3b
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 37 / Avg: 55.09 / Max: 59
Core i5 9400F
Min: 45 / Avg: 62.35 / Max: 67
Core i9 9900K
Min: 33 / Avg: 54.89 / Max: 61
Core i7 8700K
Min: 35 / Avg: 63.11 / Max: 68
Threadripper 2990WX
Min: 36.75 / Avg: 41.96 / Max: 47.75
Ryzen 7 2700X
Min: 34.13 / Avg: 51.85 / Max: 60.25
Core i9 7960X
Min: 43 / Avg: 55.79 / Max: 59
Threadripper 2950X
Min: 44.5 / Avg: 57.91 / Max: 62.25
Ryzen 5 2400G
Min: 43.63 / Avg: 65.17 / Max: 67.75
Ryzen 7 2700
Min: 56 / Avg: 61.86 / Max: 65.63
Core i5 7600K
Min: 36 / Avg: 53.24 / Max: 57
Ryzen 3 2200G
Min: 40.38 / Avg: 57.84 / Max: 61.25
Core i3 8100
Min: 36 / Avg: 50.69 / Max: 53
13
26
39
52
65


NAMD 2.13b1
ATPase Simulation - 327,506 Atoms
days/ns, Fewer Is Better
Core i5 8400
SE +/- 0.00717, N = 3
2.84358
Core i5 9400F
SE +/- 0.00257, N = 3
2.79221
Core i9 9900K
SE +/- 0.00258, N = 3
1.75181
Core i7 8700K
SE +/- 0.00414, N = 3
2.14276
Threadripper 2990WX
SE +/- 0.00032, N = 3
0.75726
Ryzen 7 2700X
SE +/- 0.00036, N = 3
2.29095
Core i9 7960X
SE +/- 0.00209, N = 3
1.06763
Threadripper 2950X
SE +/- 0.00092, N = 3
1.29947
Ryzen 5 2400G
SE +/- 0.00418, N = 3
4.93323
Ryzen 7 2700
SE +/- 0.00525, N = 3
2.67053
Core i5 7600K
SE +/- 0.00501, N = 3
4.15856
Ryzen 3 2200G
SE +/- 0.01061, N = 3
5.91856
Core i3 8100
SE +/- 0.01123, N = 3
4.47206
1.3317
2.6634
3.9951
5.3268
6.6585

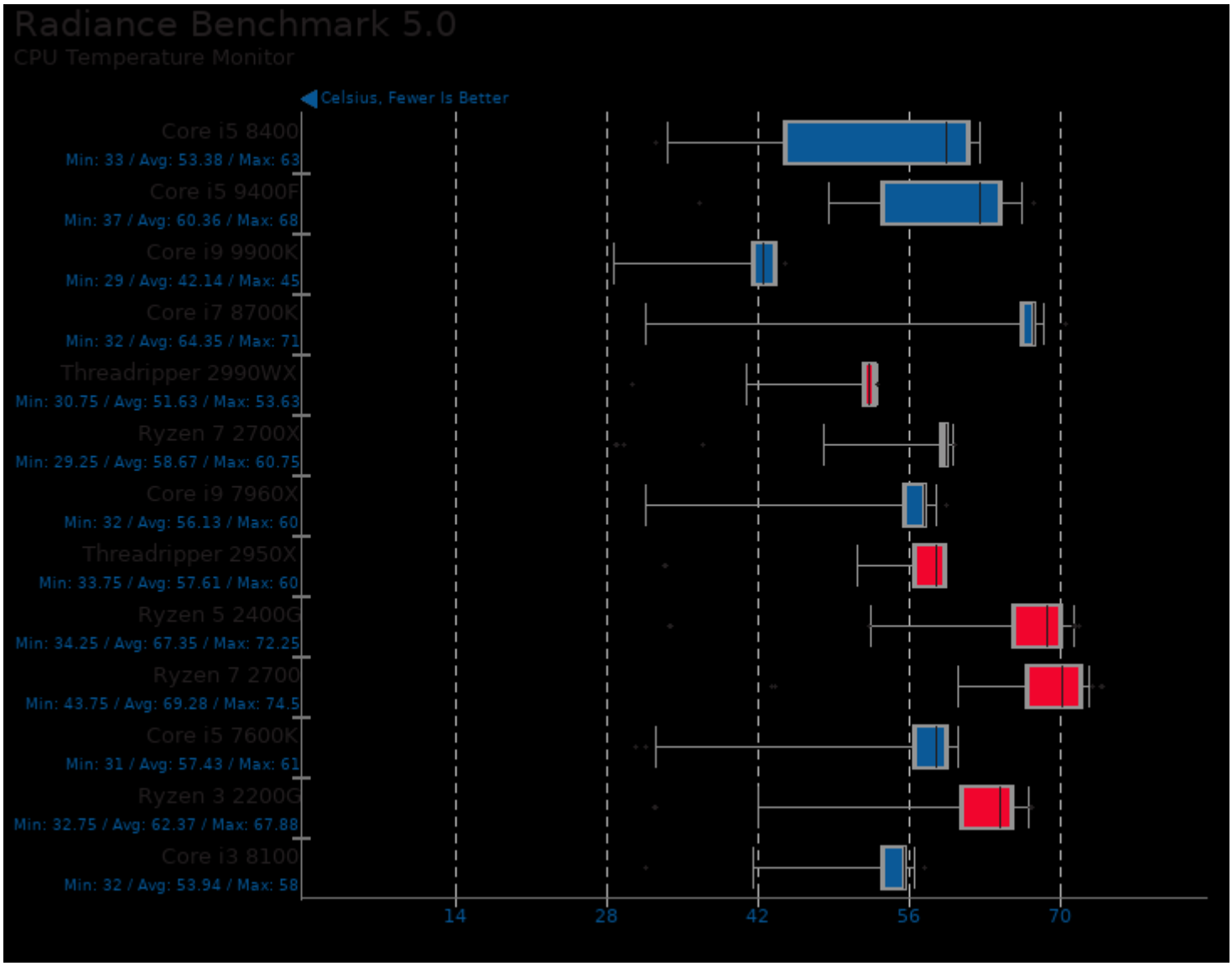

NAMD 2.13b1
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 39 / Avg: 64.99 / Max: 68
Core i5 9400F
Min: 45 / Avg: 73.09 / Max: 77
Core i9 9900K
Min: 33 / Avg: 59.28 / Max: 70
Core i7 8700K
Min: 36 / Avg: 77.94 / Max: 82
Threadripper 2990WX
Min: 35 / Avg: 58.46 / Max: 62.5
Ryzen 7 2700X
Min: 32.13 / Avg: 71.94 / Max: 75.38
Core i9 7960X
Min: 43 / Avg: 67.13 / Max: 71
Threadripper 2950X
Min: 43.13 / Avg: 66.23 / Max: 67.63
Ryzen 5 2400G
Min: 42.5 / Avg: 86.04 / Max: 88.75
Ryzen 7 2700
Min: 51.25 / Avg: 86.08 / Max: 93.75
Core i5 7600K
Min: 36 / Avg: 61.75 / Max: 64
Ryzen 3 2200G
Min: 40.13 / Avg: 73.19 / Max: 75.5
Core i3 8100
Min: 37 / Avg: 57.55 / Max: 60
20
40
60
80
100

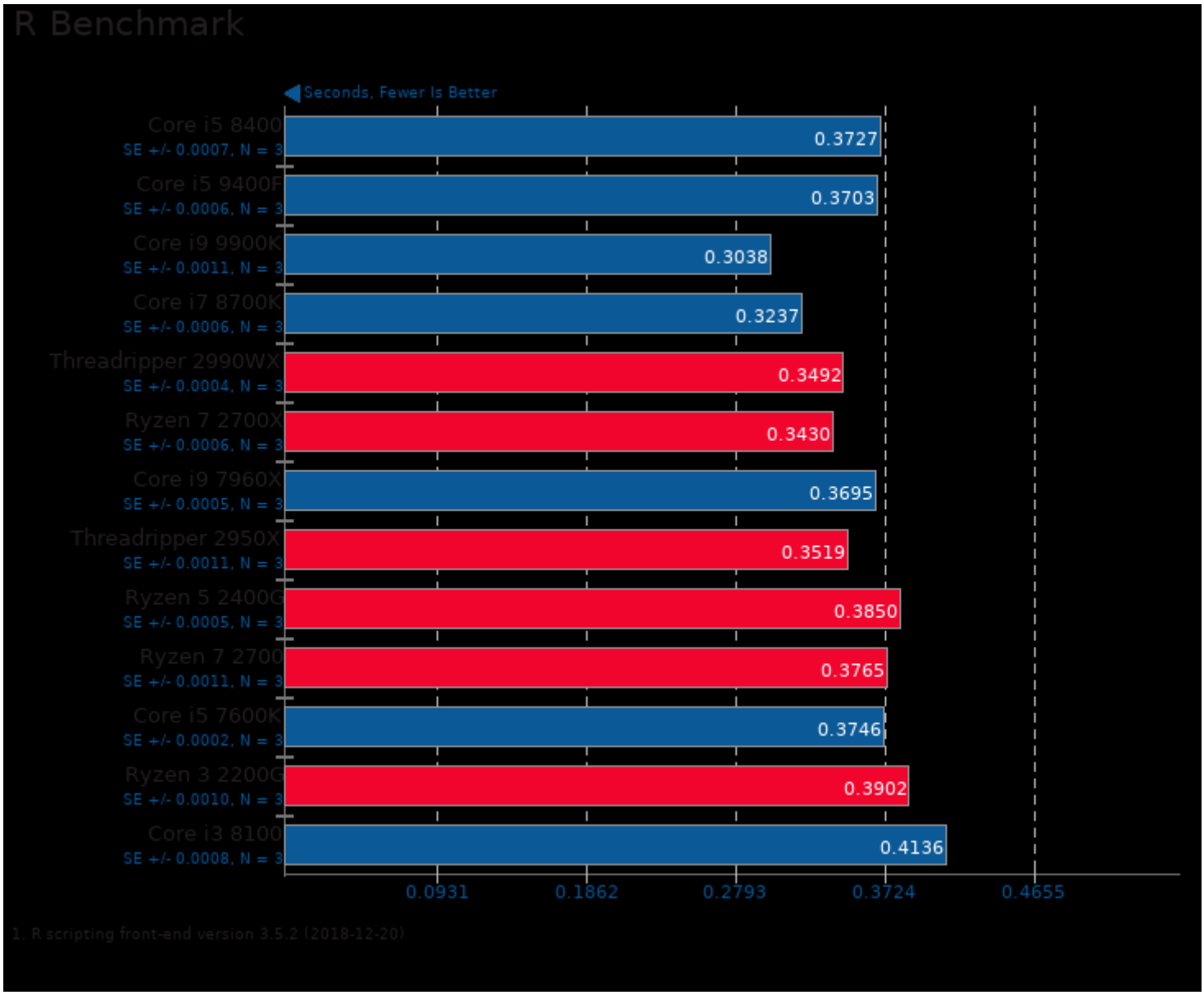

Radiance Benchmark 5.0
Test: Serial
Seconds, Fewer Is Better
Core i5 8400
727.00
Core i5 9400F
717.00
Core i9 9900K
584.00
Core i7 8700K
617.00
Threadripper 2990WX
732.00
Ryzen 7 2700X
715.00
Core i9 7960X
649.00
Threadripper 2950X
713.00
Ryzen 5 2400G
797.47
Ryzen 7 2700
768.84
Core i5 7600K
692.20
Ryzen 3 2200G
844.00
Core i3 8100
803.96
200
400
600
800
1000

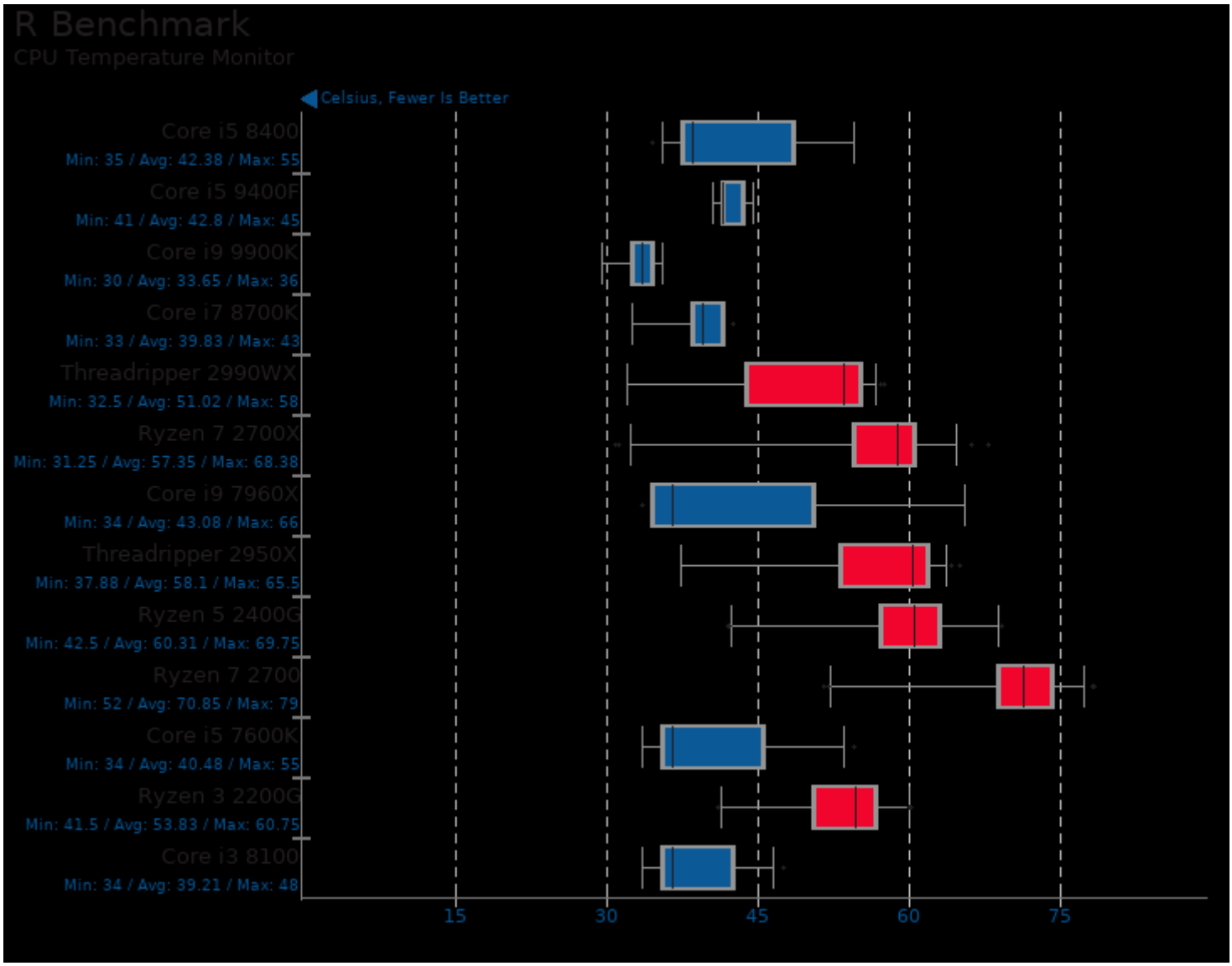

Radiance Benchmark 5.0
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 36 / Avg: 37.6 / Max: 42
Core i5 9400F
Min: 40 / Avg: 56.49 / Max: 65
Core i9 9900K
Min: 31 / Avg: 33.72 / Max: 37
Core i7 8700K
Min: 37 / Avg: 41.97 / Max: 55
Threadripper 2990WX
Min: 38.88 / Avg: 47.17 / Max: 55.25
Ryzen 7 2700X
Min: 49.13 / Avg: 55.01 / Max: 58.5
Core i9 7960X
Min: 34 / Avg: 60.88 / Max: 72
Threadripper 2950X
Min: 45 / Avg: 57 / Max: 63.63
Ryzen 5 2400G
Min: 52.75 / Avg: 56.83 / Max: 68.75
Ryzen 7 2700
Min: 63.13 / Avg: 67.97 / Max: 82
Core i5 7600K
Min: 34 / Avg: 36.14 / Max: 40
Ryzen 3 2200G
Min: 44.13 / Avg: 49.27 / Max: 57.25
Core i3 8100
Min: 34 / Avg: 35.54 / Max: 40
16
32
48
64
80

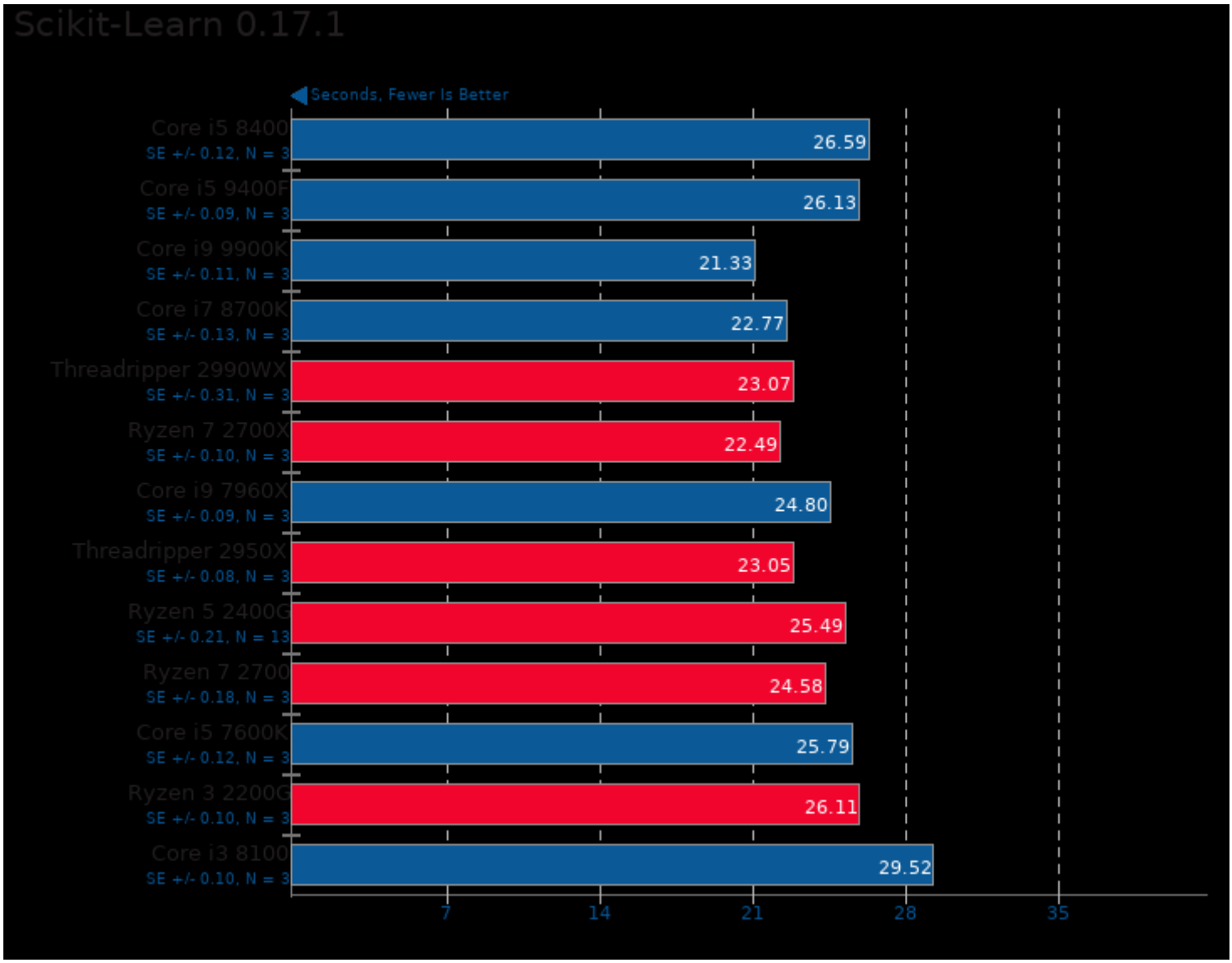

Radiance Benchmark 5.0
Test: SMP Parallel
Seconds, Fewer Is Better
Core i5 8400
231.00
Core i5 9400F
231.00
Core i9 9900K
186.00
Core i7 8700K
203.00
Threadripper 2990WX
230.00
Ryzen 7 2700X
230.00
Core i9 7960X
223.00
Threadripper 2950X
226.00
Ryzen 5 2400G
257.12
Ryzen 7 2700
250.79
Core i5 7600K
226.95
Ryzen 3 2200G
257.51
Core i3 8100
252.66
60
120
180
240
300

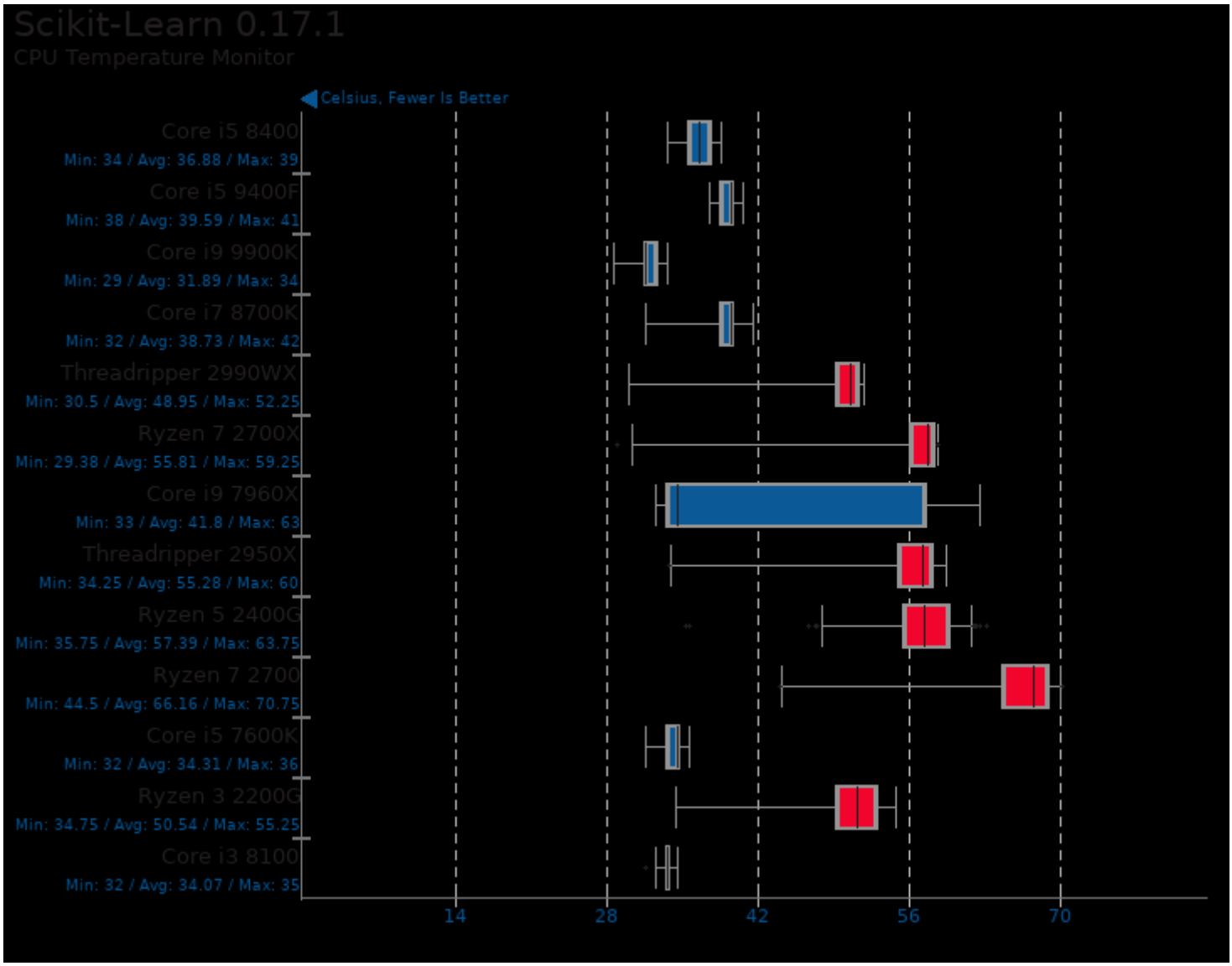
CPU Benchmarks

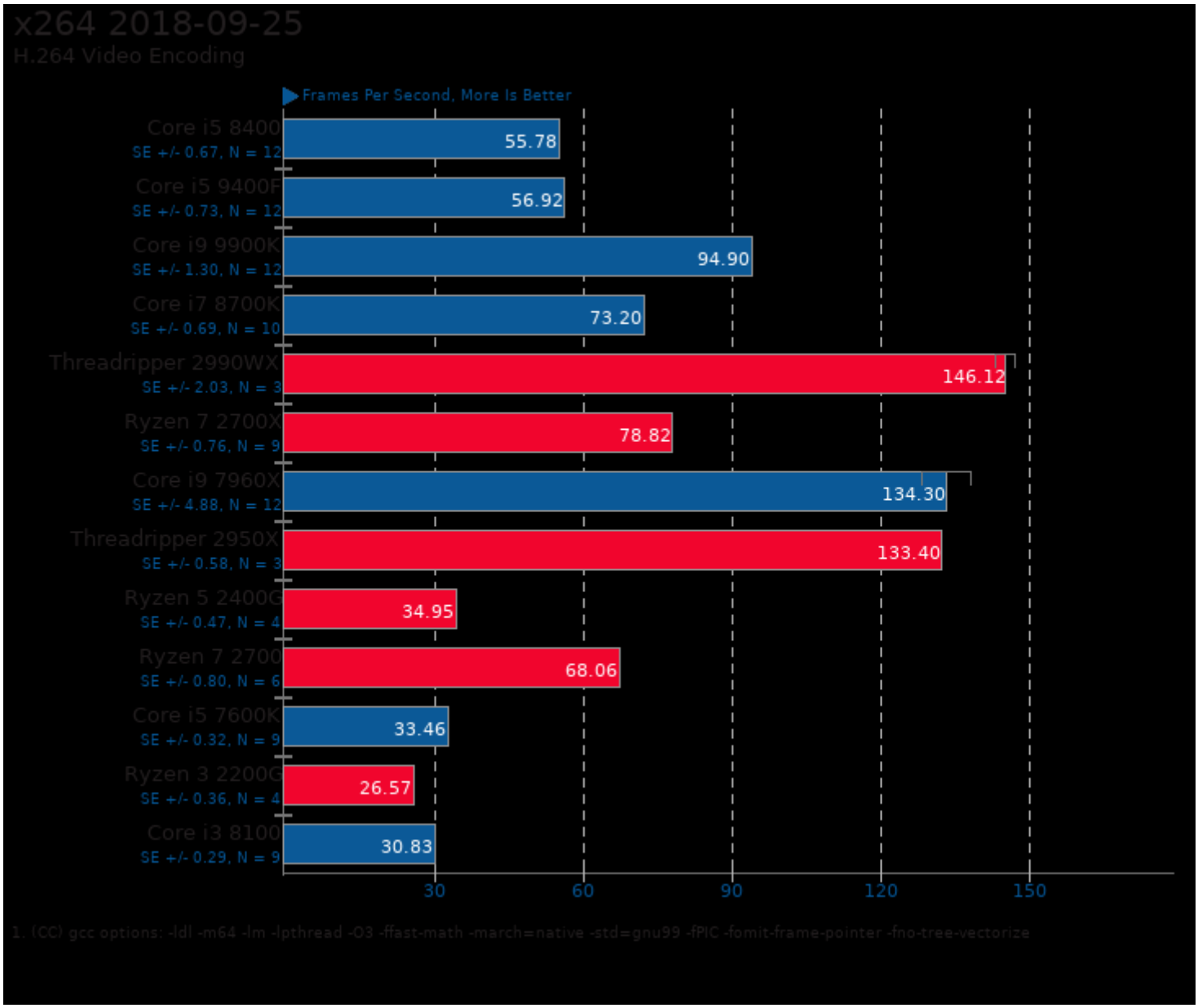


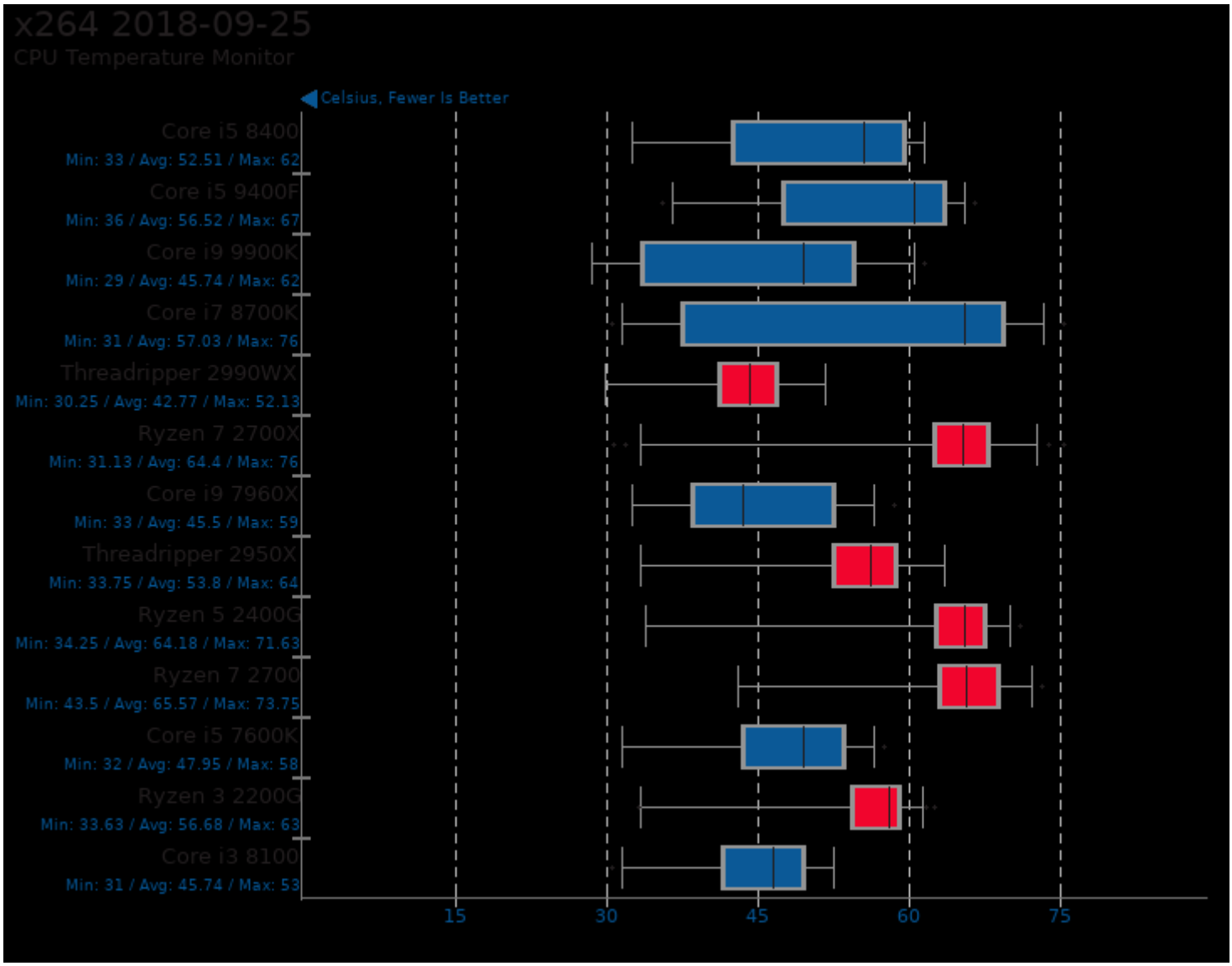

R Benchmark
Seconds, Fewer Is Better
Core i5 8400
SE +/- 0.0007, N = 3
0.3727
Core i5 9400F
SE +/- 0.0006, N = 3
0.3703
Core i9 9900K
SE +/- 0.0011, N = 3
0.3038
Core i7 8700K
SE +/- 0.0006, N = 3
0.3237
Threadripper 2990WX
SE +/- 0.0004, N = 3
0.3492
Ryzen 7 2700X
SE +/- 0.0006, N = 3
0.3430
Core i9 7960X
SE +/- 0.0005, N = 3
0.3695
Threadripper 2950X
SE +/- 0.0011, N = 3
0.3519
Ryzen 5 2400G
SE +/- 0.0005, N = 3
0.3850
Ryzen 7 2700
SE +/- 0.0011, N = 3
0.3765
Core i5 7600K
SE +/- 0.0002, N = 3
0.3746
Ryzen 3 2200G
SE +/- 0.0010, N = 3
0.3902
Core i3 8100
SE +/- 0.0008, N = 3
0.4136
0.0931
0.1862
0.2793
0.3724
0.4655
1. R scripting front-end version 3.5.2 (2018-12-20)

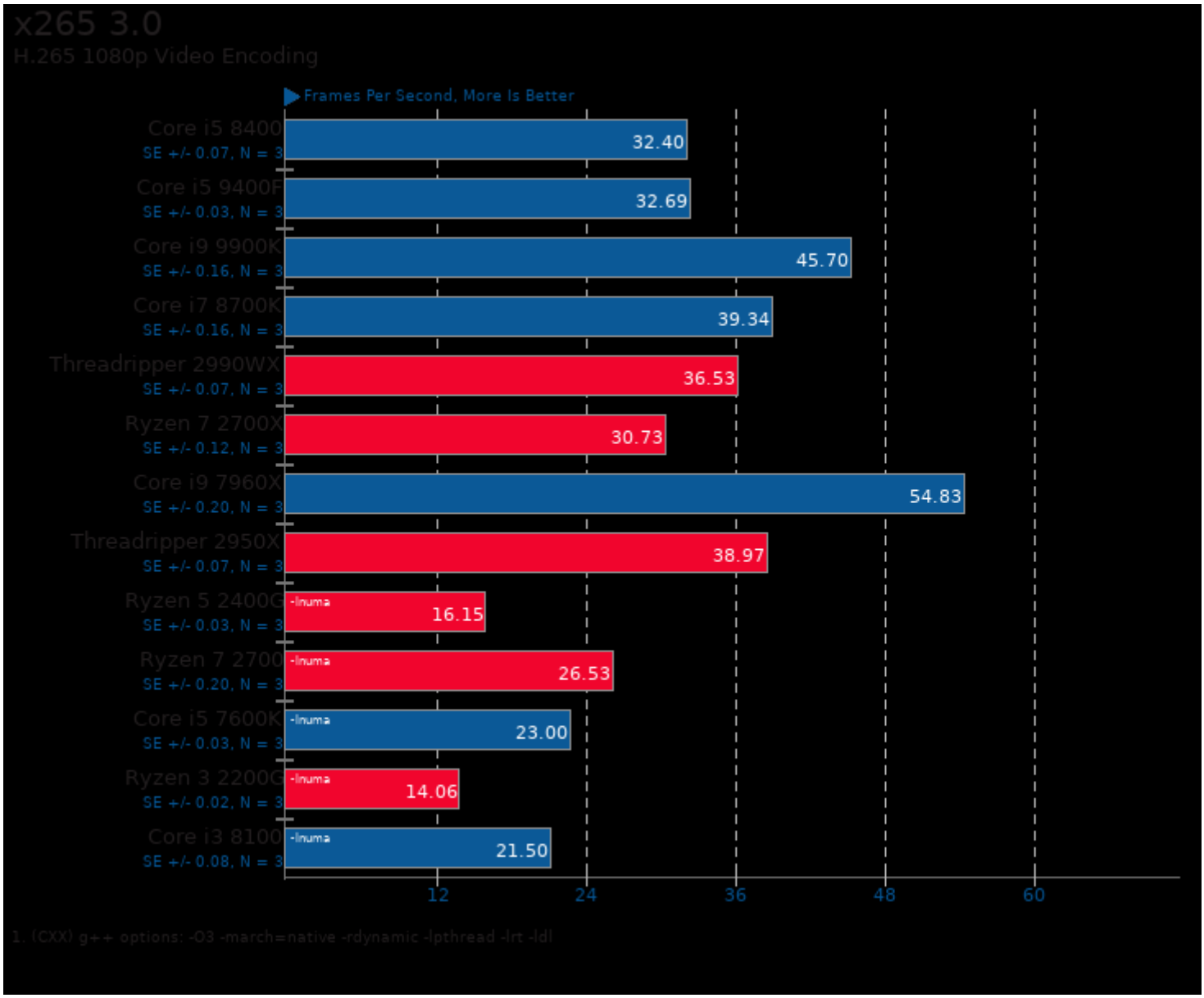

R Benchmark
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 35 / Avg: 42.38 / Max: 55
Core i5 9400F
Min: 41 / Avg: 42.8 / Max: 45
Core i9 9900K
Min: 30 / Avg: 33.65 / Max: 36
Core i7 8700K
Min: 33 / Avg: 39.83 / Max: 43
Threadripper 2990WX
Min: 32.5 / Avg: 51.02 / Max: 58
Ryzen 7 2700X
Min: 31.25 / Avg: 57.35 / Max: 68.38
Core i9 7960X
Min: 34 / Avg: 43.08 / Max: 66
Threadripper 2950X
Min: 37.88 / Avg: 58.1 / Max: 65.5
Ryzen 5 2400G
Min: 42.5 / Avg: 60.31 / Max: 69.75
Ryzen 7 2700
Min: 52 / Avg: 70.85 / Max: 79
Core i5 7600K
Min: 34 / Avg: 40.48 / Max: 55
Ryzen 3 2200G
Min: 41.5 / Avg: 53.83 / Max: 60.75
Core i3 8100
Min: 34 / Avg: 39.21 / Max: 48
15
30
45
60
75

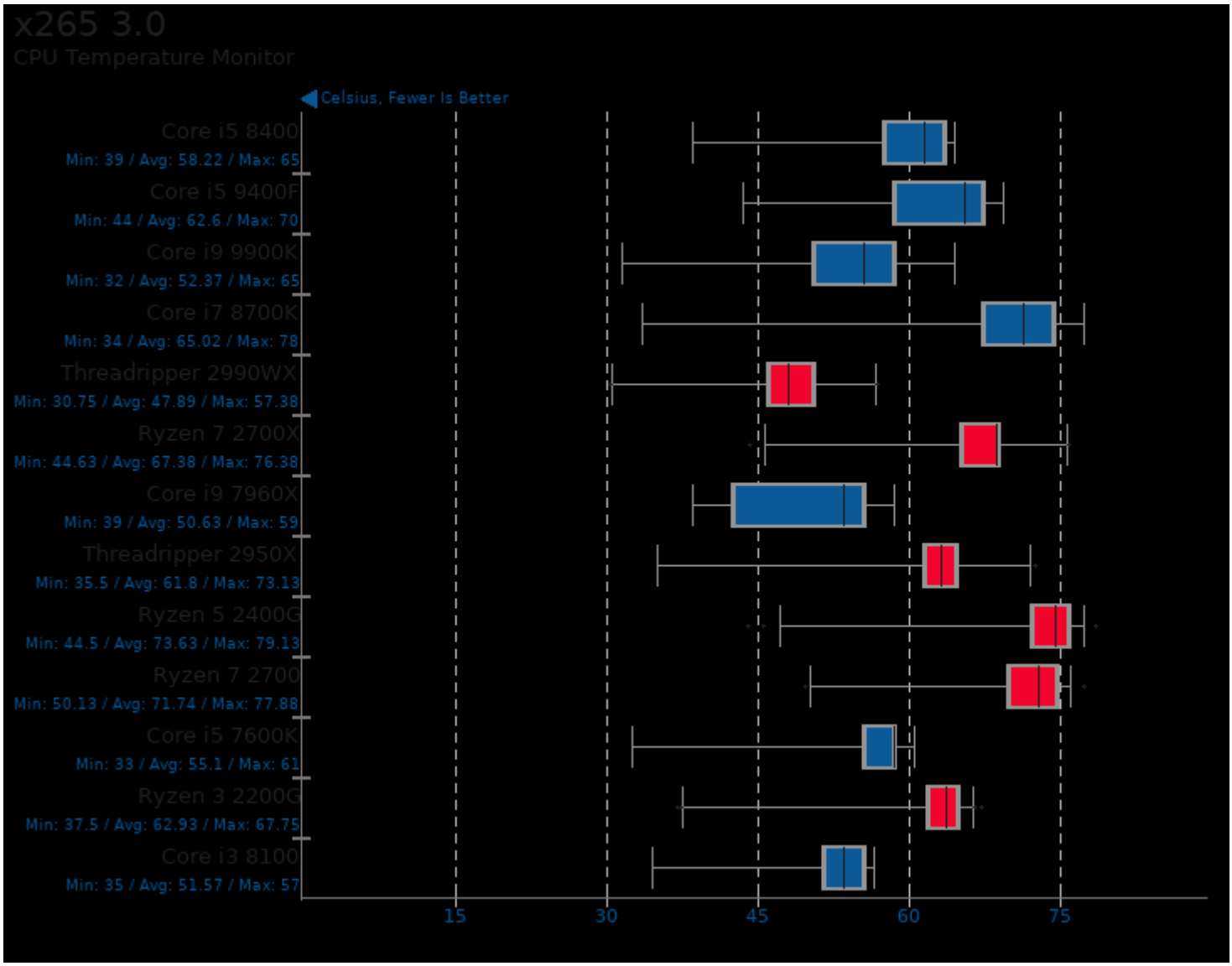

Scikit-Learn 0.17.1
Seconds, Fewer Is Better
Core i5 8400
SE +/- 0.12, N = 3
26.59
Core i5 9400F
SE +/- 0.09, N = 3
26.13
Core i9 9900K
SE +/- 0.11, N = 3
21.33
Core i7 8700K
SE +/- 0.13, N = 3
22.77
Threadripper 2990WX
SE +/- 0.31, N = 3
23.07
Ryzen 7 2700X
SE +/- 0.10, N = 3
22.49
Core i9 7960X
SE +/- 0.09, N = 3
24.80
Threadripper 2950X
SE +/- 0.08, N = 3
23.05
Ryzen 5 2400G
SE +/- 0.21, N = 13
25.49
Ryzen 7 2700
SE +/- 0.18, N = 3
24.58
Core i5 7600K
SE +/- 0.12, N = 3
25.79
Ryzen 3 2200G
SE +/- 0.10, N = 3
26.11
Core i3 8100
SE +/- 0.10, N = 3
29.52
7
14
21
28
35

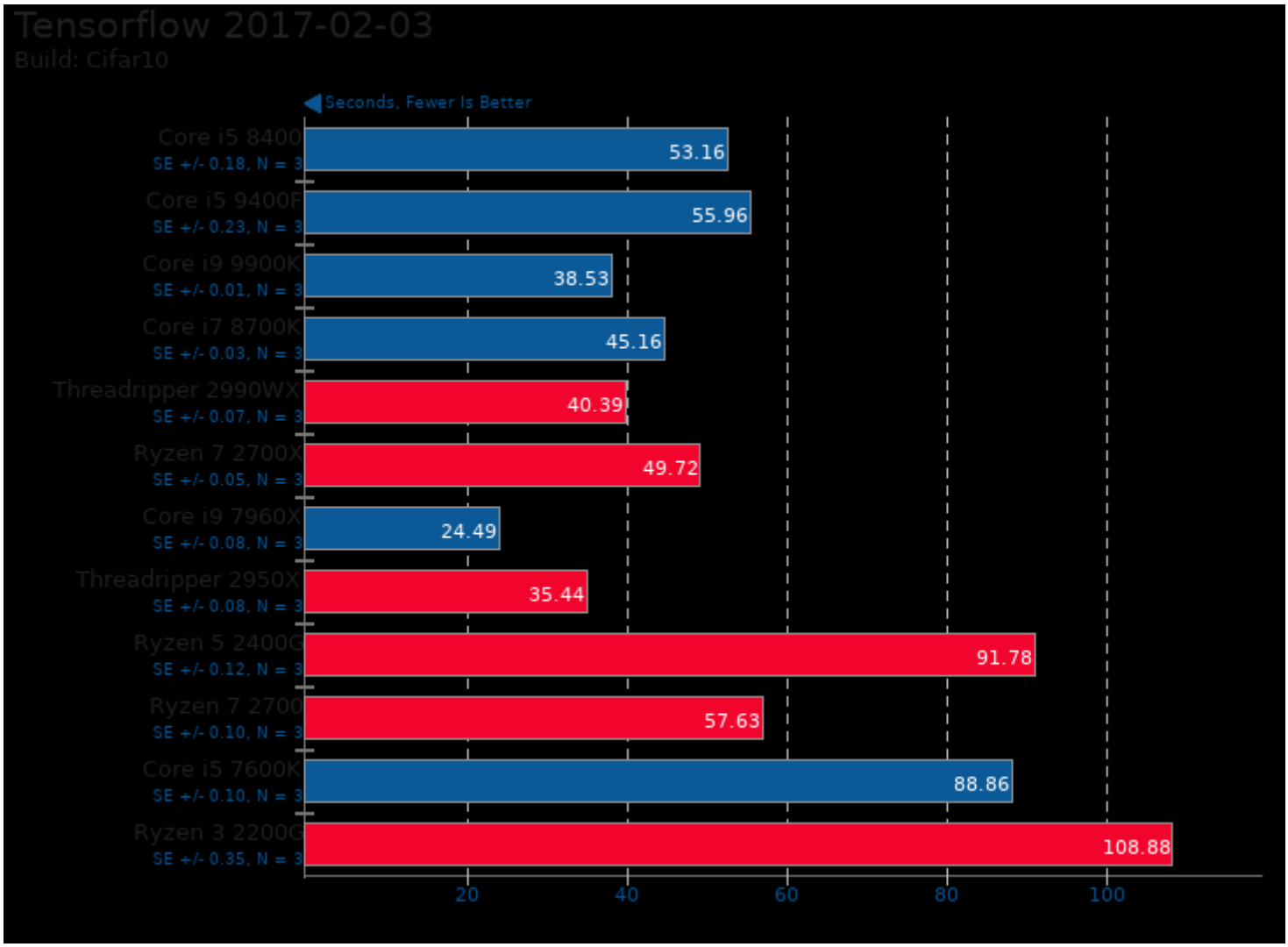

Scikit-Learn 0.17.1
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 34 / Avg: 36.88 / Max: 39
Core i5 9400F
Min: 38 / Avg: 39.59 / Max: 41
Core i9 9900K
Min: 29 / Avg: 31.89 / Max: 34
Core i7 8700K
Min: 32 / Avg: 38.73 / Max: 42
Threadripper 2990WX
Min: 30.5 / Avg: 48.95 / Max: 52.25
Ryzen 7 2700X
Min: 29.38 / Avg: 55.81 / Max: 59.25
Core i9 7960X
Min: 33 / Avg: 41.8 / Max: 63
Threadripper 2950X
Min: 34.25 / Avg: 55.28 / Max: 60
Ryzen 5 2400G
Min: 35.75 / Avg: 57.39 / Max: 63.75
Ryzen 7 2700
Min: 44.5 / Avg: 66.16 / Max: 70.75
Core i5 7600K
Min: 32 / Avg: 34.31 / Max: 36
Ryzen 3 2200G
Min: 34.75 / Avg: 50.54 / Max: 55.25
Core i3 8100
Min: 32 / Avg: 34.07 / Max: 35
14
28
42
56
70

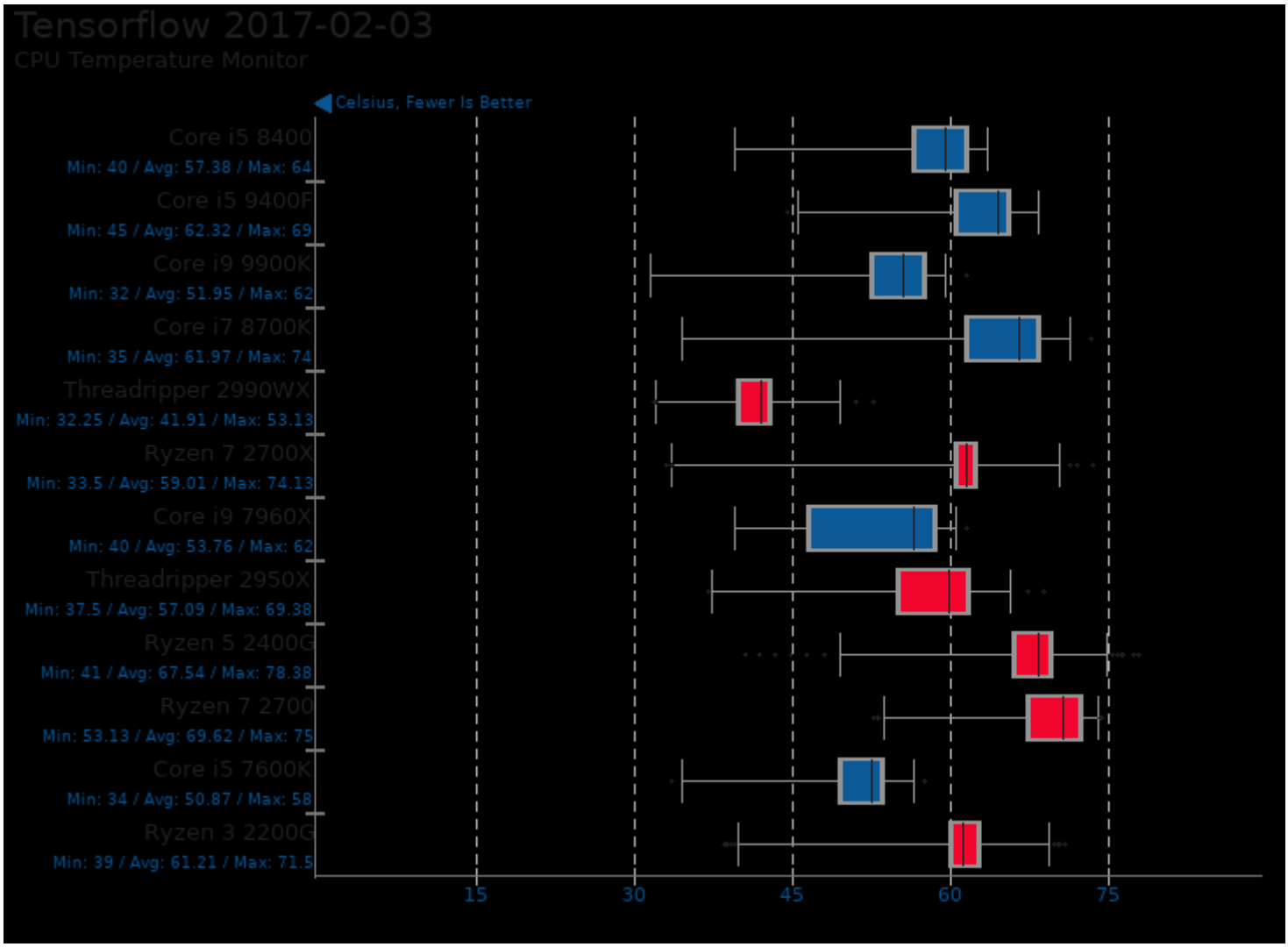

x264 2018-09-25
H.264 Video Encoding
Frames Per Second, More Is Better
Core i5 8400
SE +/- 0.67, N = 12
55.78
Core i5 9400F
SE +/- 0.73, N = 12
56.92
Core i9 9900K
SE +/- 1.30, N = 12
94.90
Core i7 8700K
SE +/- 0.69, N = 10
73.20
Threadripper 2990WX
SE +/- 2.03, N = 3
146.12
Ryzen 7 2700X
SE +/- 0.76, N = 9
78.82
Core i9 7960X
SE +/- 4.88, N = 12
134.30
Threadripper 2950X
SE +/- 0.58, N = 3
133.40
Ryzen 5 2400G
SE +/- 0.47, N = 4
34.95
Ryzen 7 2700
SE +/- 0.80, N = 6
68.06
Core i5 7600K
SE +/- 0.32, N = 9
33.46
Ryzen 3 2200G
SE +/- 0.36, N = 4
26.57
Core i3 8100
SE +/- 0.29, N = 9
30.83
30
60
90
120
150
1. (CC) gcc options: -ldl -m64 -lm -lpthread -O3 -ffast-math -march=native -std=gnu99 -fPIC -fomit-frame-pointer -fno-tree-vectorize

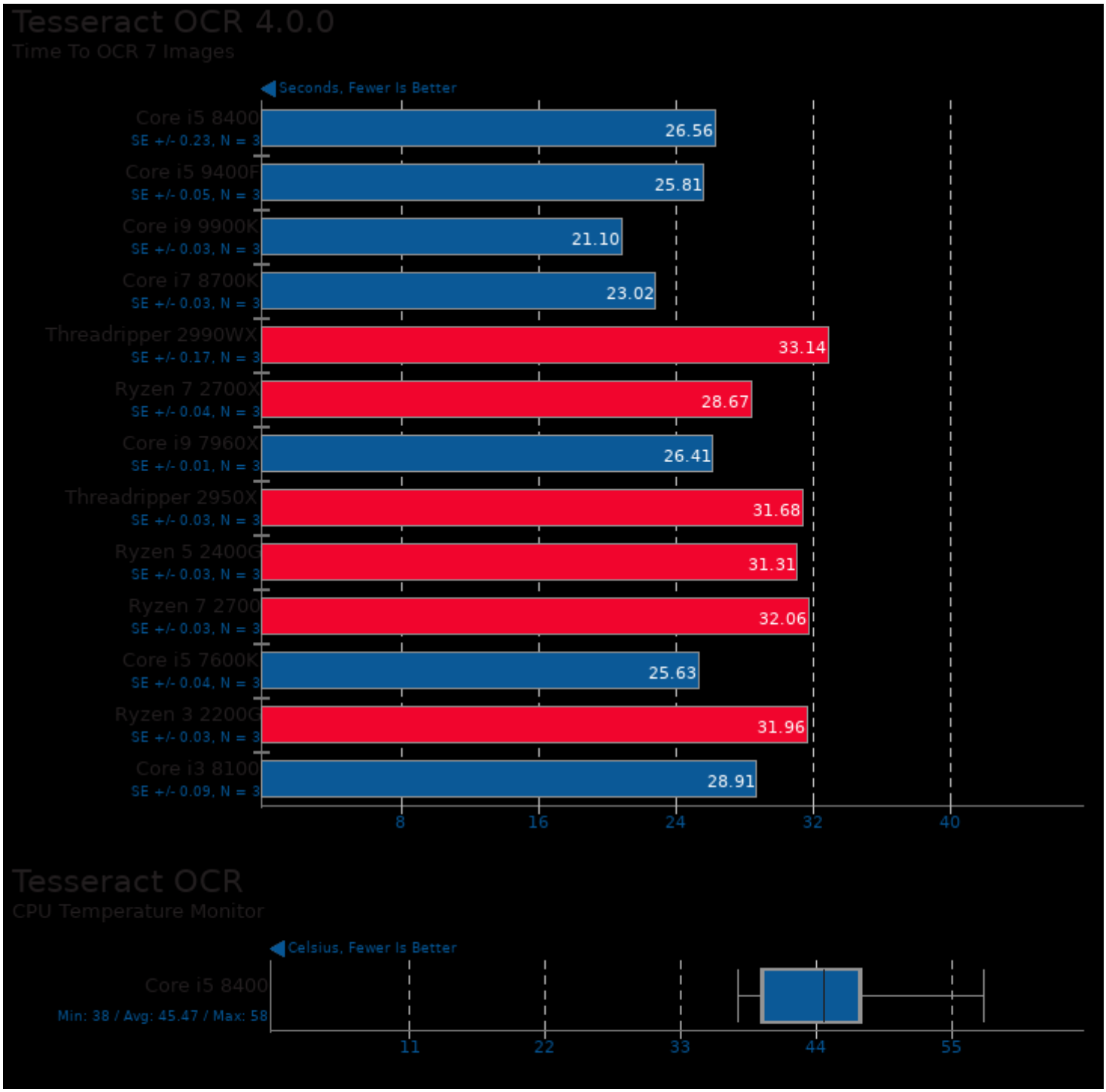

x264 2018-09-25
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 33 / Avg: 52.51 / Max: 62
Core i5 9400F
Min: 36 / Avg: 56.52 / Max: 67
Core i9 9900K
Min: 29 / Avg: 45.74 / Max: 62
Core i7 8700K
Min: 31 / Avg: 57.03 / Max: 76
Threadripper 2990WX
Min: 30.25 / Avg: 42.77 / Max: 52.13
Ryzen 7 2700X
Min: 31.13 / Avg: 64.4 / Max: 76
Core i9 7960X
Min: 33 / Avg: 45.5 / Max: 59
Threadripper 2950X
Min: 33.75 / Avg: 53.8 / Max: 64
Ryzen 5 2400G
Min: 34.25 / Avg: 64.18 / Max: 71.63
Ryzen 7 2700
Min: 43.5 / Avg: 65.57 / Max: 73.75
Core i5 7600K
Min: 32 / Avg: 47.95 / Max: 58
Ryzen 3 2200G
Min: 33.63 / Avg: 56.68 / Max: 63
Core i3 8100
Min: 31 / Avg: 45.74 / Max: 53
15
30
45
60
75

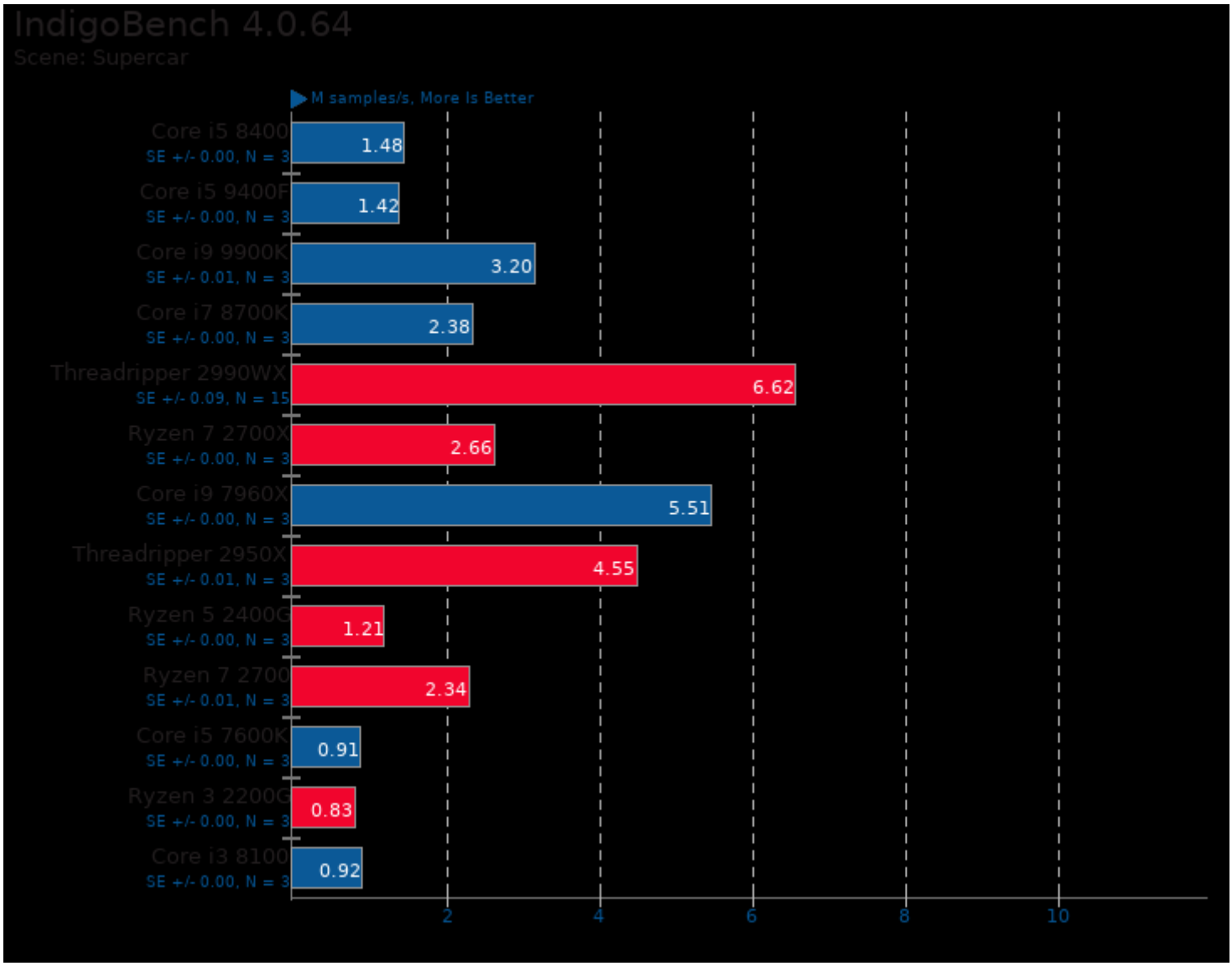

x265 3.0
H.265 1080p Video Encoding
Frames Per Second, More Is Better
Core i5 8400
SE +/- 0.07, N = 3
32.40
Core i5 9400F
SE +/- 0.03, N = 3
32.69
Core i9 9900K
SE +/- 0.16, N = 3
45.70
Core i7 8700K
SE +/- 0.16, N = 3
39.34
Threadripper 2990WX
SE +/- 0.07, N = 3
36.53
Ryzen 7 2700X
SE +/- 0.12, N = 3
30.73
Core i9 7960X
SE +/- 0.20, N = 3
54.83
Threadripper 2950X
SE +/- 0.07, N = 3
38.97
Ryzen 5 2400G
SE +/- 0.03, N = 3
-lnuma
16.15
Ryzen 7 2700
SE +/- 0.20, N = 3
-lnuma
26.53
Core i5 7600K
SE +/- 0.03, N = 3
-lnuma
23.00
Ryzen 3 2200G
SE +/- 0.02, N = 3
-lnuma
14.06
Core i3 8100
SE +/- 0.08, N = 3
-lnuma
21.50
12
24
36
48
60
1. (CXX) g++ options: -O3 -march=native -rdynamic -lpthread -lrt -ldl

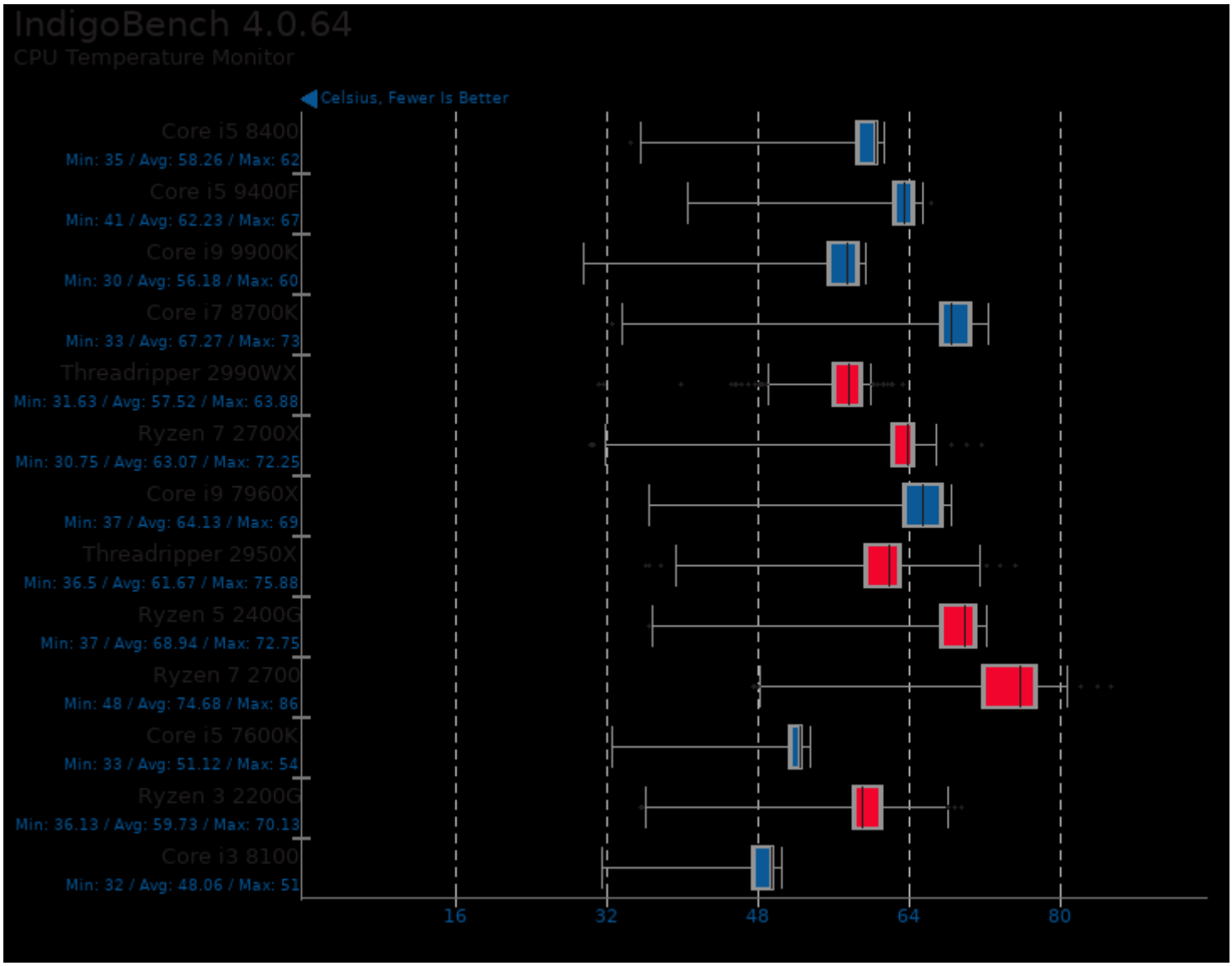

x265 3.0
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 39 / Avg: 58.22 / Max: 65
Core i5 9400F
Min: 44 / Avg: 62.6 / Max: 70
Core i9 9900K
Min: 32 / Avg: 52.37 / Max: 65
Core i7 8700K
Min: 34 / Avg: 65.02 / Max: 78
Threadripper 2990WX
Min: 30.75 / Avg: 47.89 / Max: 57.38
Ryzen 7 2700X
Min: 44.63 / Avg: 67.38 / Max: 76.38
Core i9 7960X
Min: 39 / Avg: 50.63 / Max: 59
Threadripper 2950X
Min: 35.5 / Avg: 61.8 / Max: 73.13
Ryzen 5 2400G
Min: 44.5 / Avg: 73.63 / Max: 79.13
Ryzen 7 2700
Min: 50.13 / Avg: 71.74 / Max: 77.88
Core i5 7600K
Min: 33 / Avg: 55.1 / Max: 61
Ryzen 3 2200G
Min: 37.5 / Avg: 62.93 / Max: 67.75
Core i3 8100
Min: 35 / Avg: 51.57 / Max: 57
15
30
45
60
75

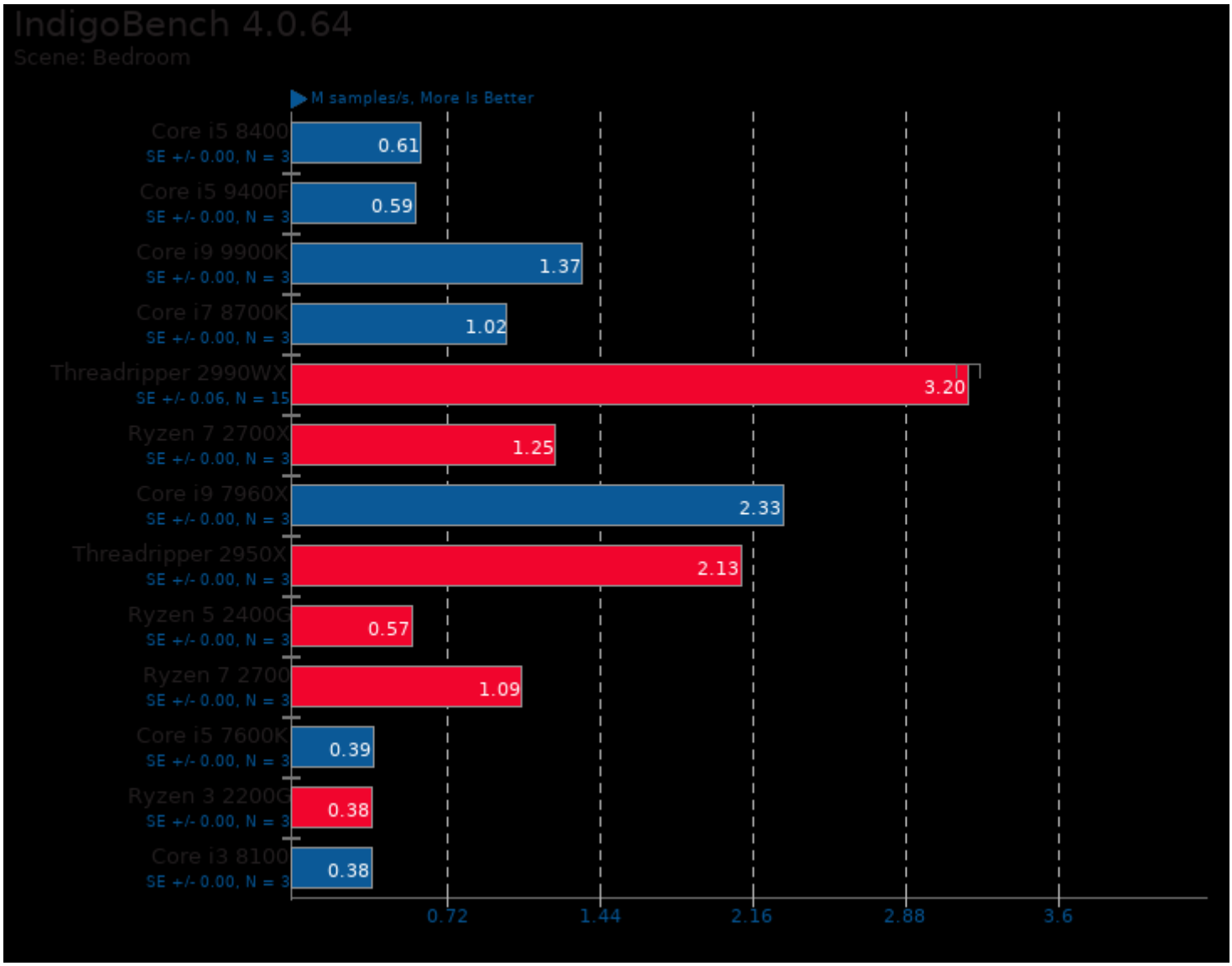

Tensorflow 2017-02-03
Build: Cifar10
Seconds, Fewer Is Better
Core i5 8400
SE +/- 0.18, N = 3
53.16
Core i5 9400F
SE +/- 0.23, N = 3
55.96
Core i9 9900K
SE +/- 0.01, N = 3
38.53
Core i7 8700K
SE +/- 0.03, N = 3
45.16
Threadripper 2990WX
SE +/- 0.07, N = 3
40.39
Ryzen 7 2700X
SE +/- 0.05, N = 3
49.72
Core i9 7960X
SE +/- 0.08, N = 3
24.49
Threadripper 2950X
SE +/- 0.08, N = 3
35.44
Ryzen 5 2400G
SE +/- 0.12, N = 3
91.78
Ryzen 7 2700
SE +/- 0.10, N = 3
57.63
Core i5 7600K
SE +/- 0.10, N = 3
88.86
Ryzen 3 2200G
SE +/- 0.35, N = 3
108.88
20
40
60
80
100

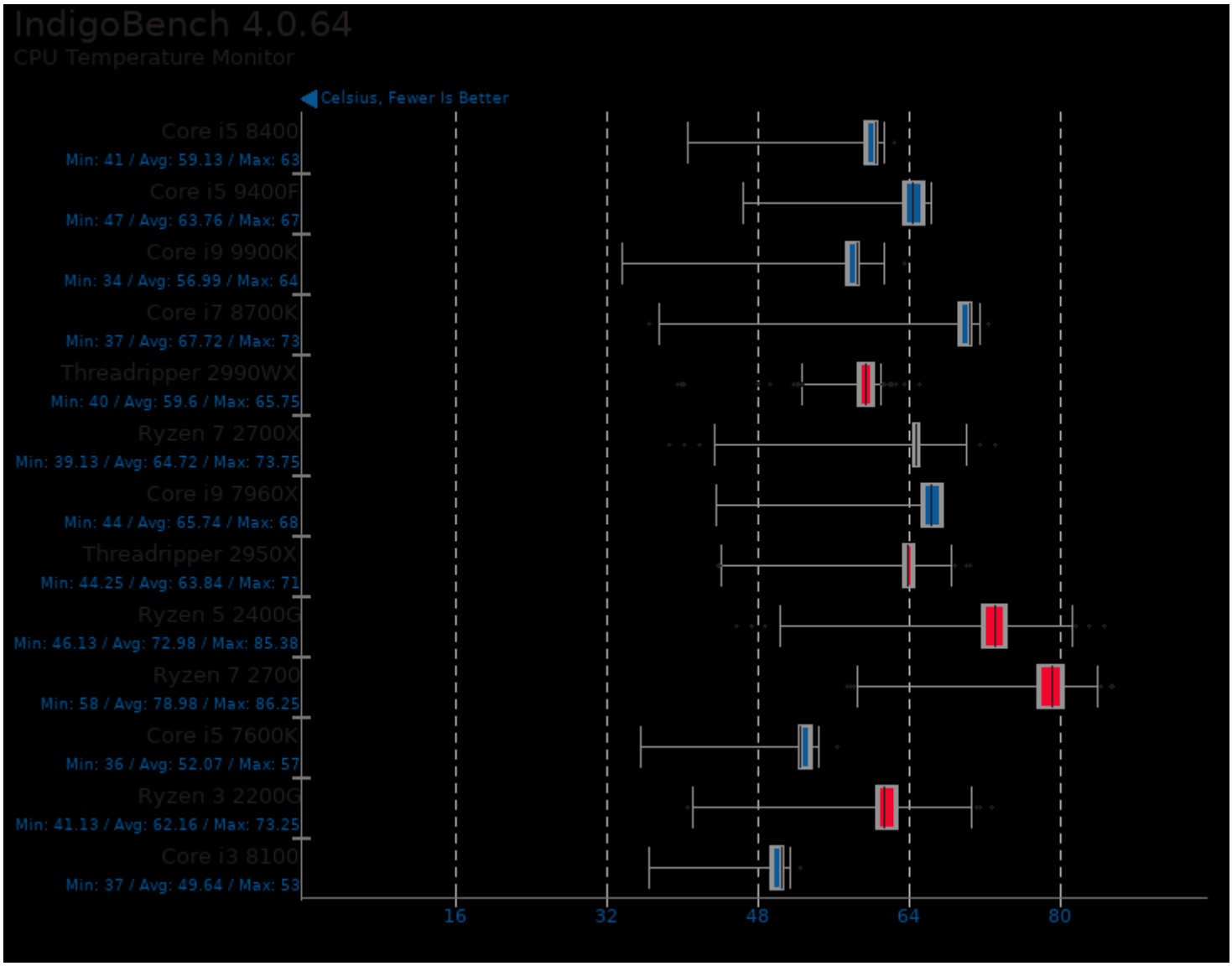

Tensorflow 2017-02-03
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 40 / Avg: 57.38 / Max: 64
Core i5 9400F
Min: 45 / Avg: 62.32 / Max: 69
Core i9 9900K
Min: 32 / Avg: 51.95 / Max: 62
Core i7 8700K
Min: 35 / Avg: 61.97 / Max: 74
Threadripper 2990WX
Min: 32.25 / Avg: 41.91 / Max: 53.13
Ryzen 7 2700X
Min: 33.5 / Avg: 59.01 / Max: 74.13
Core i9 7960X
Min: 40 / Avg: 53.76 / Max: 62
Threadripper 2950X
Min: 37.5 / Avg: 57.09 / Max: 69.38
Ryzen 5 2400G
Min: 41 / Avg: 67.54 / Max: 78.38
Ryzen 7 2700
Min: 53.13 / Avg: 69.62 / Max: 75
Core i5 7600K
Min: 34 / Avg: 50.87 / Max: 58
Ryzen 3 2200G
Min: 39 / Avg: 61.21 / Max: 71.5
15
30
45
60
75

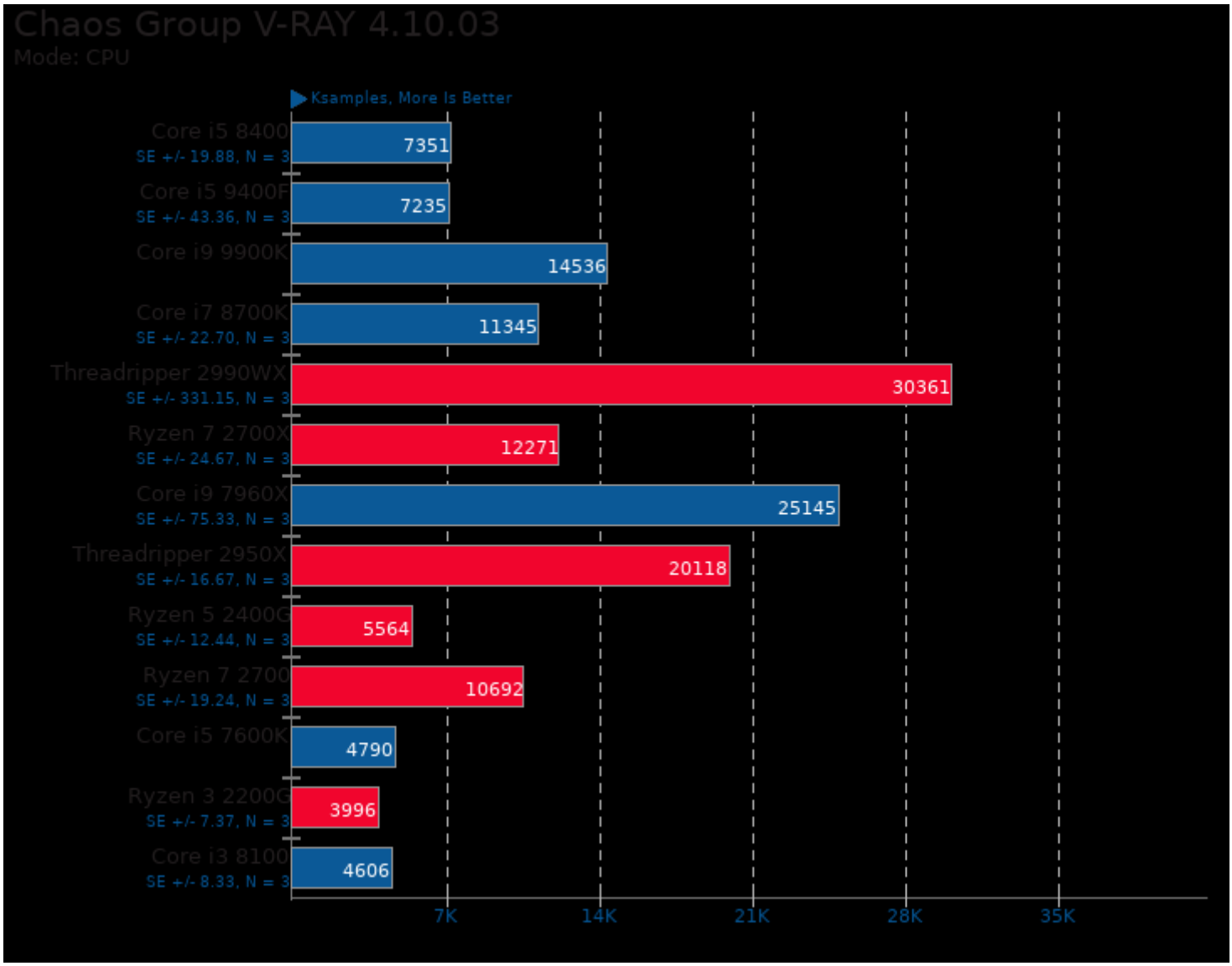

Tesseract OCR 4.0.0
Time To OCR 7 Images
Seconds, Fewer Is Better
Core i5 8400
SE +/- 0.23, N = 3
26.56
Core i5 9400F
SE +/- 0.05, N = 3
25.81
Core i9 9900K
SE +/- 0.03, N = 3
21.10
Core i7 8700K
SE +/- 0.03, N = 3
23.02
Threadripper 2990WX
SE +/- 0.17, N = 3
33.14
Ryzen 7 2700X
SE +/- 0.04, N = 3
28.67
Core i9 7960X
SE +/- 0.01, N = 3
26.41
Threadripper 2950X
SE +/- 0.03, N = 3
31.68
Ryzen 5 2400G
SE +/- 0.03, N = 3
31.31
Ryzen 7 2700
SE +/- 0.03, N = 3
32.06
Core i5 7600K
SE +/- 0.04, N = 3
25.63
Ryzen 3 2200G
SE +/- 0.03, N = 3
31.96
Core i3 8100
SE +/- 0.09, N = 3
28.91
8
16
24
32
40
Tesseract OCR
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 38 / Avg: 45.47 / Max: 58
11
22
33
44
55

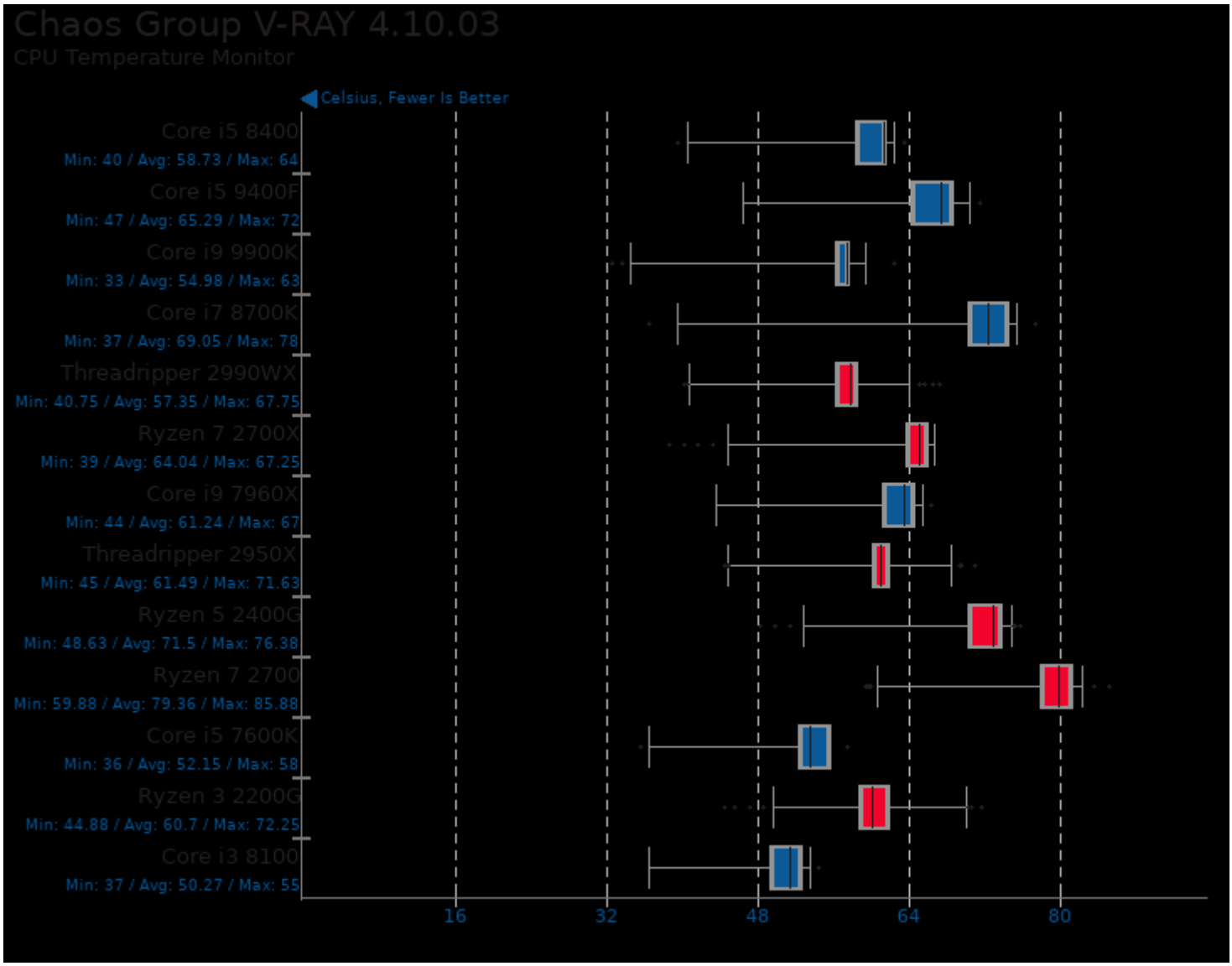

IndigoBench 4.0.64
Scene: Supercar
M samples/s, More Is Better
Core i5 8400
SE +/- 0.00, N = 3
1.48
Core i5 9400F
SE +/- 0.00, N = 3
1.42
Core i9 9900K
SE +/- 0.01, N = 3
3.20
Core i7 8700K
SE +/- 0.00, N = 3
2.38
Threadripper 2990WX
SE +/- 0.09, N = 15
6.62
Ryzen 7 2700X
SE +/- 0.00, N = 3
2.66
Core i9 7960X
SE +/- 0.00, N = 3
5.51
Threadripper 2950X
SE +/- 0.01, N = 3
4.55
Ryzen 5 2400G
SE +/- 0.00, N = 3
1.21
Ryzen 7 2700
SE +/- 0.01, N = 3
2.34
Core i5 7600K
SE +/- 0.00, N = 3
0.91
Ryzen 3 2200G
SE +/- 0.00, N = 3
0.83
Core i3 8100
SE +/- 0.00, N = 3
0.92
2
4
6
8
10

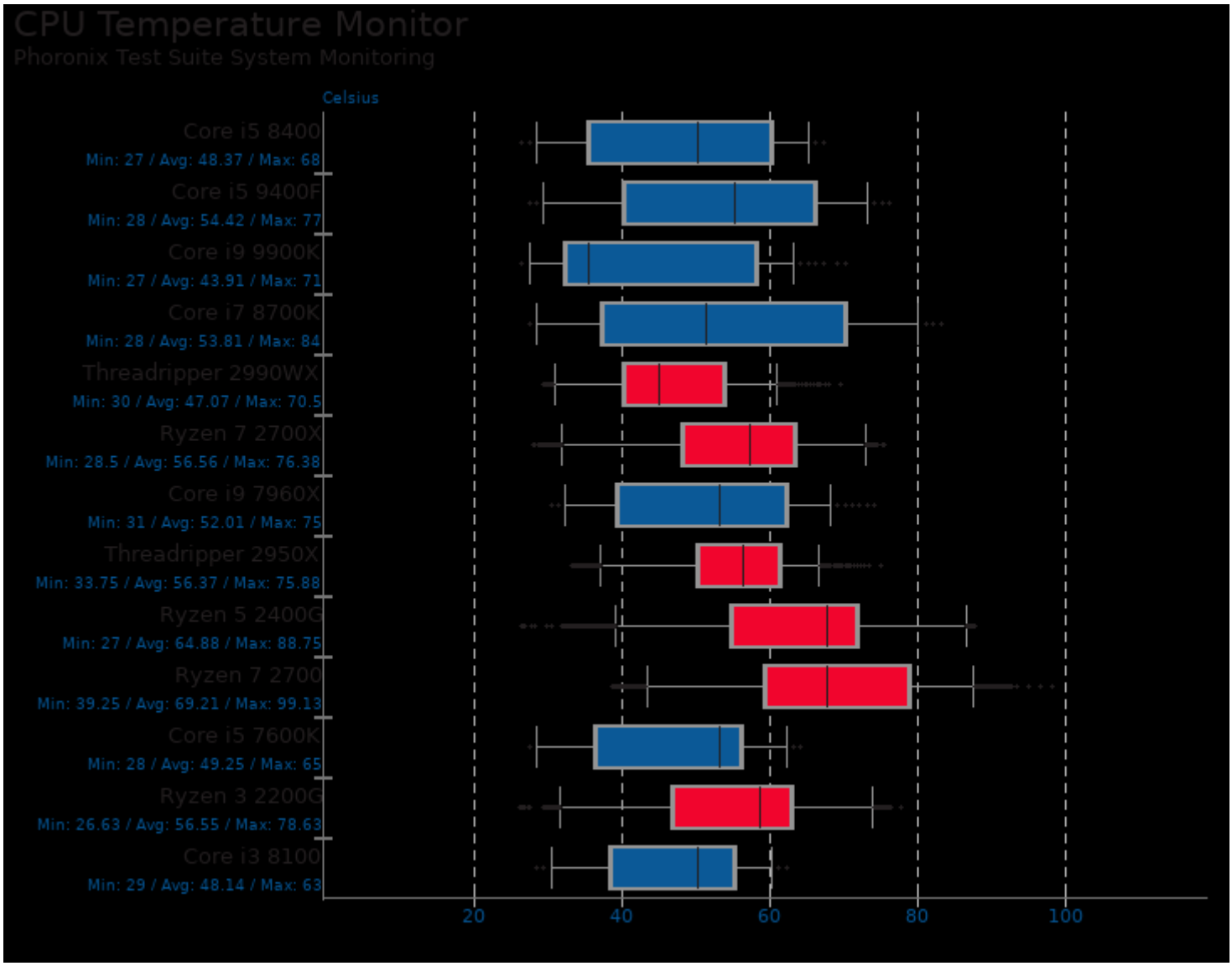

IndigoBench 4.0.64
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 35 / Avg: 58.26 / Max: 62
Core i5 9400F
Min: 41 / Avg: 62.23 / Max: 67
Core i9 9900K
Min: 30 / Avg: 56.18 / Max: 60
Core i7 8700K
Min: 33 / Avg: 67.27 / Max: 73
Threadripper 2990WX
Min: 31.63 / Avg: 57.52 / Max: 63.88
Ryzen 7 2700X
Min: 30.75 / Avg: 63.07 / Max: 72.25
Core i9 7960X
Min: 37 / Avg: 64.13 / Max: 69
Threadripper 2950X
Min: 36.5 / Avg: 61.67 / Max: 75.88
Ryzen 5 2400G
Min: 37 / Avg: 68.94 / Max: 72.75
Ryzen 7 2700
Min: 48 / Avg: 74.68 / Max: 86
Core i5 7600K
Min: 33 / Avg: 51.12 / Max: 54
Ryzen 3 2200G
Min: 36.13 / Avg: 59.73 / Max: 70.13
Core i3 8100
Min: 32 / Avg: 48.06 / Max: 51
16
32
48
64
80

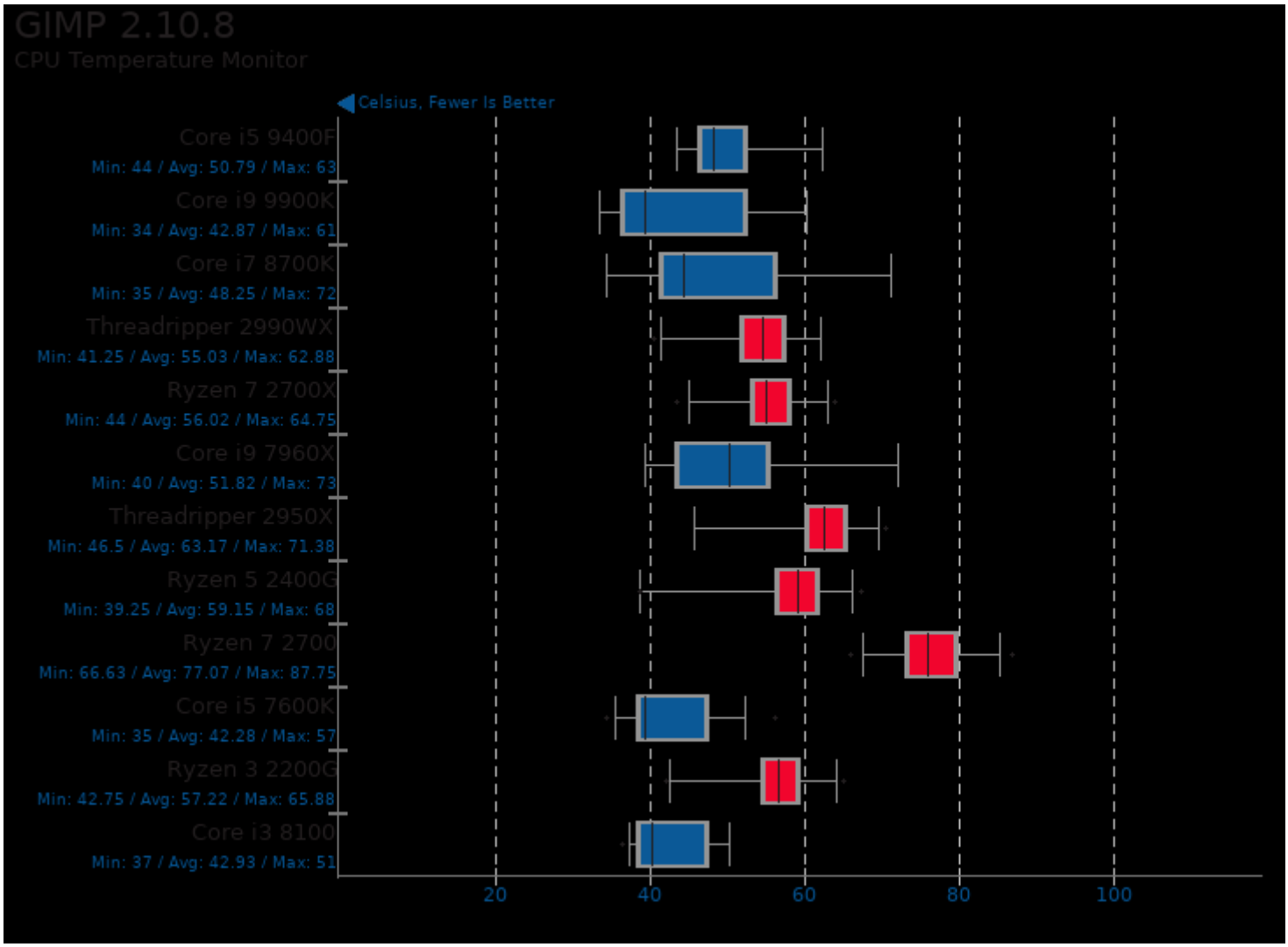

IndigoBench 4.0.64
Scene: Bedroom
M samples/s, More Is Better
Core i5 8400
SE +/- 0.00, N = 3
0.61
Core i5 9400F
SE +/- 0.00, N = 3
0.59
Core i9 9900K
SE +/- 0.00, N = 3
1.37
Core i7 8700K
SE +/- 0.00, N = 3
1.02
Threadripper 2990WX
SE +/- 0.06, N = 15
3.20
Ryzen 7 2700X
SE +/- 0.00, N = 3
1.25
Core i9 7960X
SE +/- 0.00, N = 3
2.33
Threadripper 2950X
SE +/- 0.00, N = 3
2.13
Ryzen 5 2400G
SE +/- 0.00, N = 3
0.57
Ryzen 7 2700
SE +/- 0.00, N = 3
1.09
Core i5 7600K
SE +/- 0.00, N = 3
0.39
Ryzen 3 2200G
SE +/- 0.00, N = 3
0.38
Core i3 8100
SE +/- 0.00, N = 3
0.38
0.72
1.44
2.16
2.88
3.6

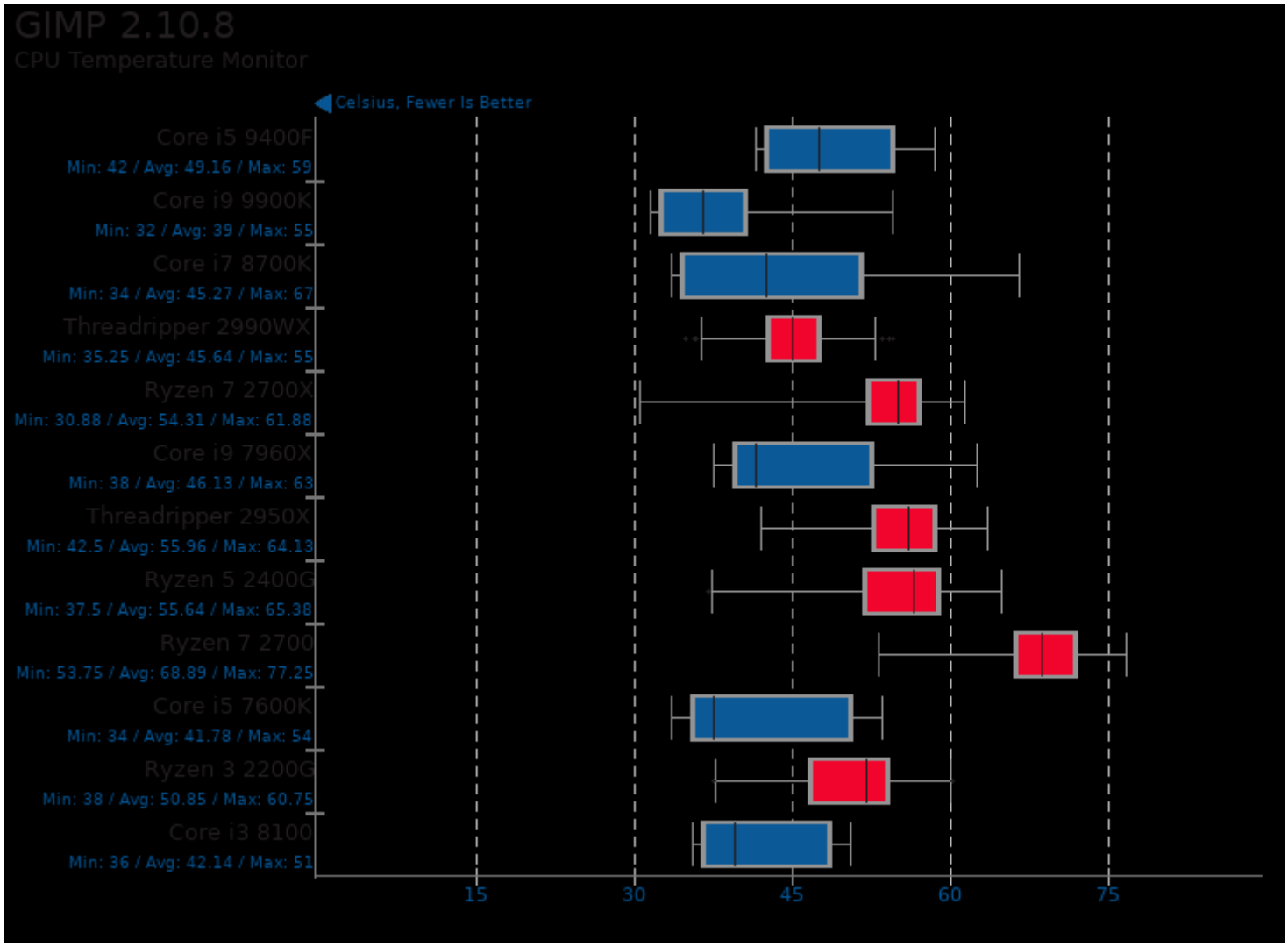

IndigoBench 4.0.64
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 41 / Avg: 59.13 / Max: 63
Core i5 9400F
Min: 47 / Avg: 63.76 / Max: 67
Core i9 9900K
Min: 34 / Avg: 56.99 / Max: 64
Core i7 8700K
Min: 37 / Avg: 67.72 / Max: 73
Threadripper 2990WX
Min: 40 / Avg: 59.6 / Max: 65.75
Ryzen 7 2700X
Min: 39.13 / Avg: 64.72 / Max: 73.75
Core i9 7960X
Min: 44 / Avg: 65.74 / Max: 68
Threadripper 2950X
Min: 44.25 / Avg: 63.84 / Max: 71
Ryzen 5 2400G
Min: 46.13 / Avg: 72.98 / Max: 85.38
Ryzen 7 2700
Min: 58 / Avg: 78.98 / Max: 86.25
Core i5 7600K
Min: 36 / Avg: 52.07 / Max: 57
Ryzen 3 2200G
Min: 41.13 / Avg: 62.16 / Max: 73.25
Core i3 8100
Min: 37 / Avg: 49.64 / Max: 53
16
32
48
64
80

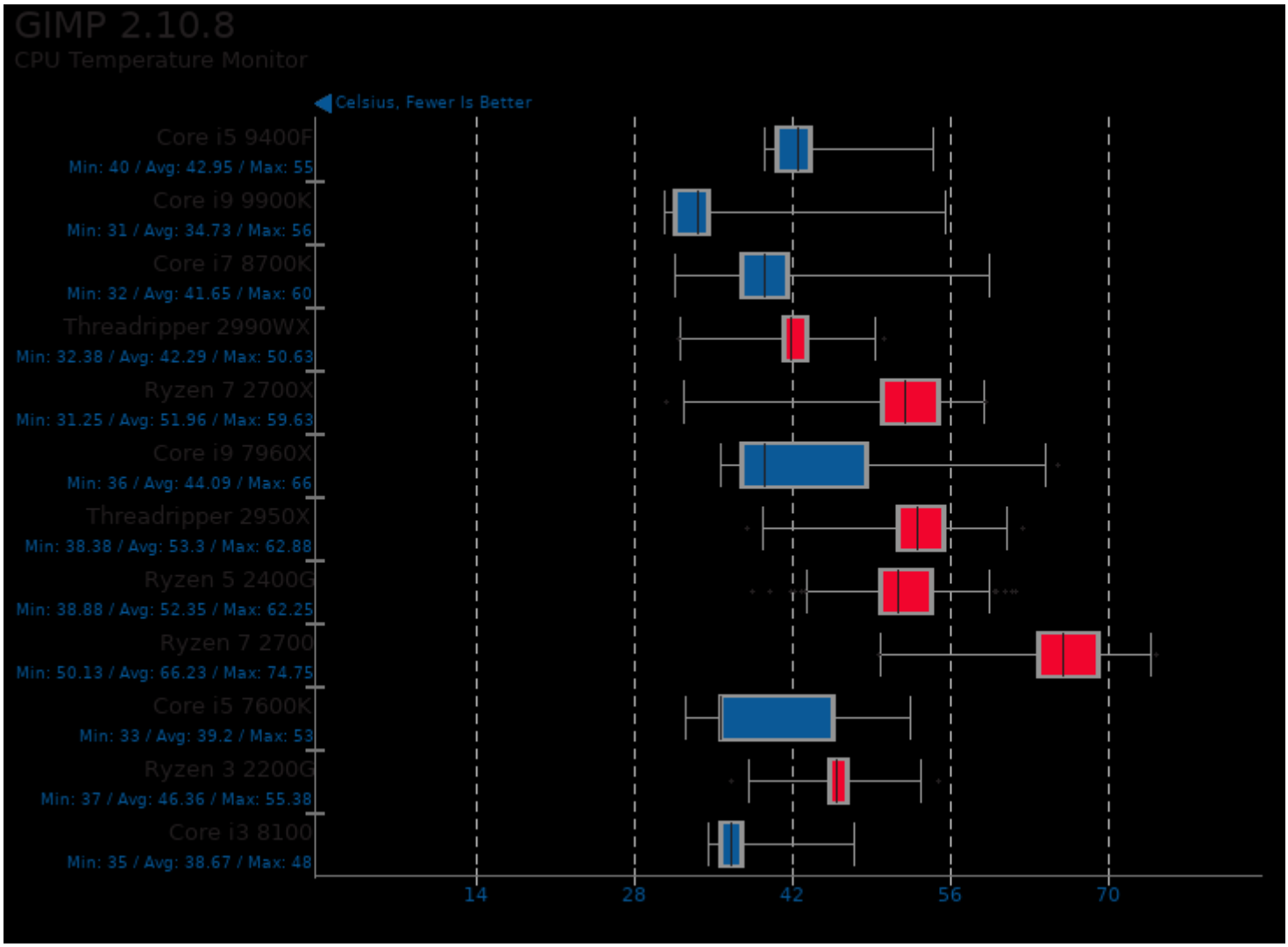

Chaos Group V-RAY 4.10.03
Mode: CPU
Ksamples, More Is Better
Core i5 8400
SE +/- 19.88, N = 3
7351
Core i5 9400F
SE +/- 43.36, N = 3
7235
Core i9 9900K
14536
Core i7 8700K
SE +/- 22.70, N = 3
11345
Threadripper 2990WX
SE +/- 331.15, N = 3
30361
Ryzen 7 2700X
SE +/- 24.67, N = 3
12271
Core i9 7960X
SE +/- 75.33, N = 3
25145
Threadripper 2950X
SE +/- 16.67, N = 3
20118
Ryzen 5 2400G
SE +/- 12.44, N = 3
5564
Ryzen 7 2700
SE +/- 19.24, N = 3
10692
Core i5 7600K
4790
Ryzen 3 2200G
SE +/- 7.37, N = 3
3996
Core i3 8100
SE +/- 8.33, N = 3
4606
7K
14K
21K
28K
35K

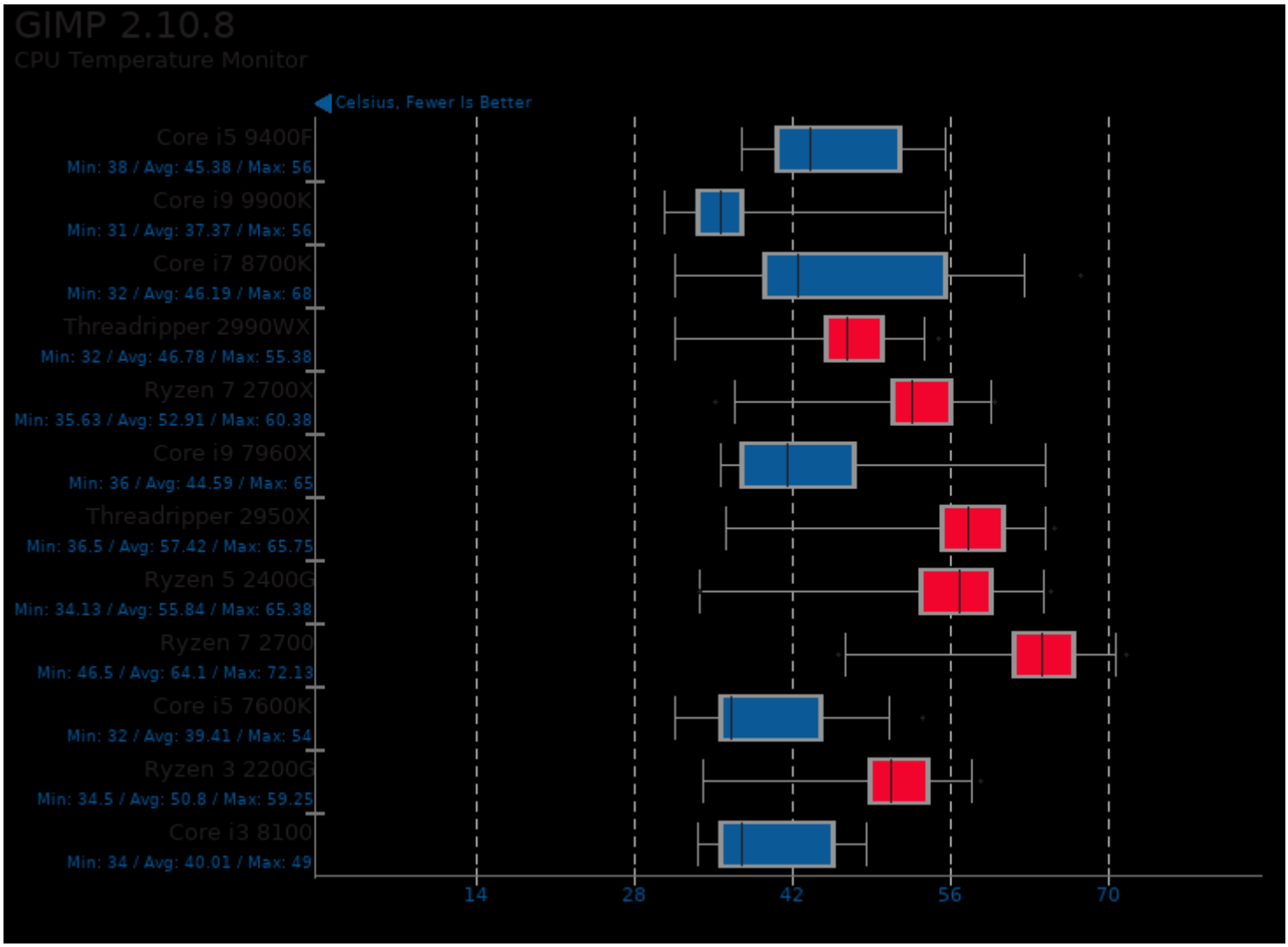

Chaos Group V-RAY 4.10.03
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 8400
Min: 40 / Avg: 58.73 / Max: 64
Core i5 9400F
Min: 47 / Avg: 65.29 / Max: 72
Core i9 9900K
Min: 33 / Avg: 54.98 / Max: 63
Core i7 8700K
Min: 37 / Avg: 69.05 / Max: 78
Threadripper 2990WX
Min: 40.75 / Avg: 57.35 / Max: 67.75
Ryzen 7 2700X
Min: 39 / Avg: 64.04 / Max: 67.25
Core i9 7960X
Min: 44 / Avg: 61.24 / Max: 67
Threadripper 2950X
Min: 45 / Avg: 61.49 / Max: 71.63
Ryzen 5 2400G
Min: 48.63 / Avg: 71.5 / Max: 76.38
Ryzen 7 2700
Min: 59.88 / Avg: 79.36 / Max: 85.88
Core i5 7600K
Min: 36 / Avg: 52.15 / Max: 58
Ryzen 3 2200G
Min: 44.88 / Avg: 60.7 / Max: 72.25
Core i3 8100
Min: 37 / Avg: 50.27 / Max: 55
16
32
48
64
80

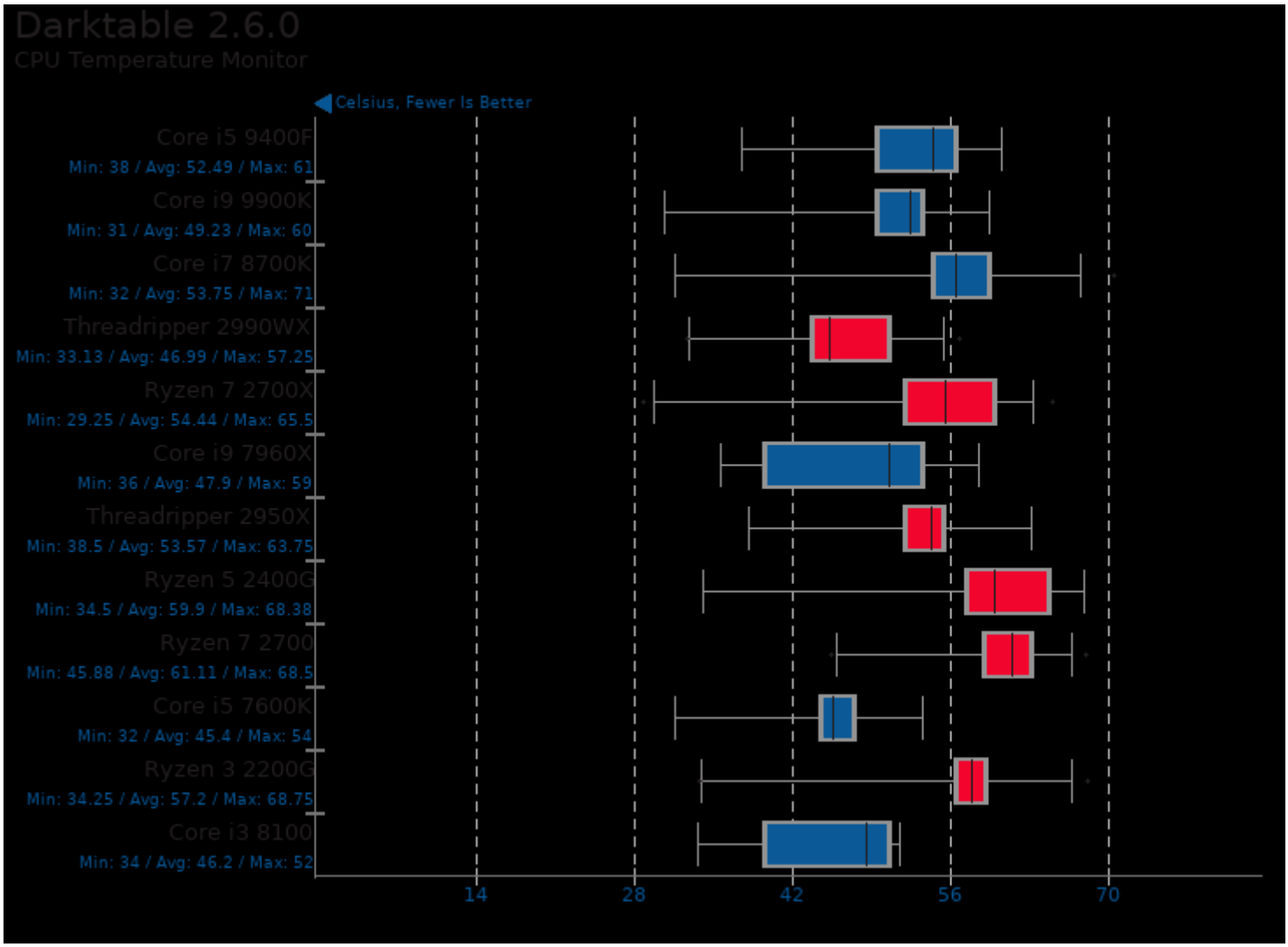

CPU Temperature Monitor
Phoronix Test Suite System Monitoring
Celsius
Core i5 8400
Min: 27 / Avg: 48.37 / Max: 68
Core i5 9400F
Min: 28 / Avg: 54.42 / Max: 77
Core i9 9900K
Min: 27 / Avg: 43.91 / Max: 71
Core i7 8700K
Min: 28 / Avg: 53.81 / Max: 84
Threadripper 2990WX
Min: 30 / Avg: 47.07 / Max: 70.5
Ryzen 7 2700X
Min: 28.5 / Avg: 56.56 / Max: 76.38
Core i9 7960X
Min: 31 / Avg: 52.01 / Max: 75
Threadripper 2950X
Min: 33.75 / Avg: 56.37 / Max: 75.88
Ryzen 5 2400G
Min: 27 / Avg: 64.88 / Max: 88.75
Ryzen 7 2700
Min: 39.25 / Avg: 69.21 / Max: 99.13
Core i5 7600K
Min: 28 / Avg: 49.25 / Max: 65
Ryzen 3 2200G
Min: 26.63 / Avg: 56.55 / Max: 78.63
Core i3 8100
Min: 29 / Avg: 48.14 / Max: 63
20
40
60
80
100

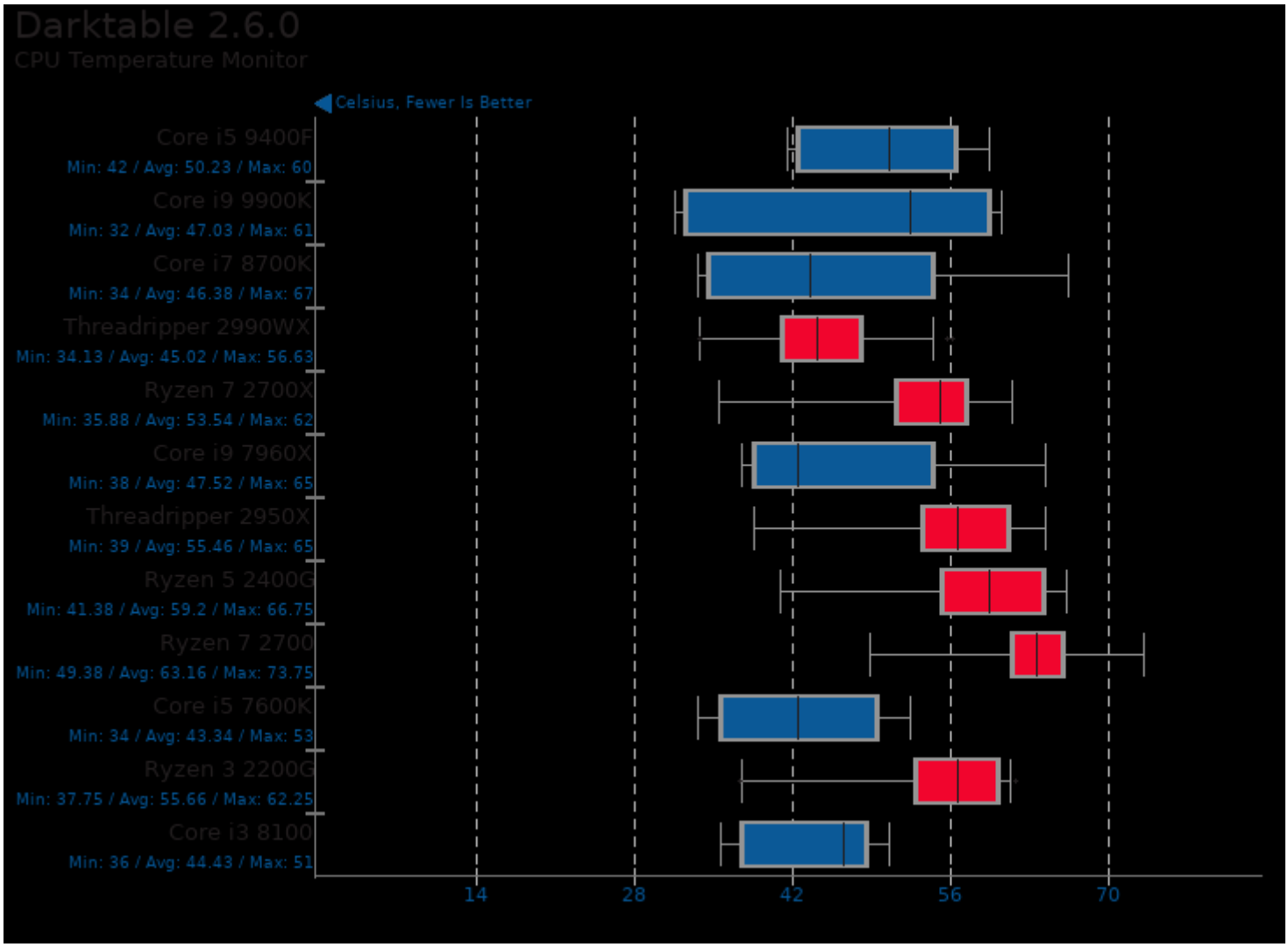

GIMP 2.10.8
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 9400F
Min: 44 / Avg: 50.79 / Max: 63
Core i9 9900K
Min: 34 / Avg: 42.87 / Max: 61
Core i7 8700K
Min: 35 / Avg: 48.25 / Max: 72
Threadripper 2990WX
Min: 41.25 / Avg: 55.03 / Max: 62.88
Ryzen 7 2700X
Min: 44 / Avg: 56.02 / Max: 64.75
Core i9 7960X
Min: 40 / Avg: 51.82 / Max: 73
Threadripper 2950X
Min: 46.5 / Avg: 63.17 / Max: 71.38
Ryzen 5 2400G
Min: 39.25 / Avg: 59.15 / Max: 68
Ryzen 7 2700
Min: 66.63 / Avg: 77.07 / Max: 87.75
Core i5 7600K
Min: 35 / Avg: 42.28 / Max: 57
Ryzen 3 2200G
Min: 42.75 / Avg: 57.22 / Max: 65.88
Core i3 8100
Min: 37 / Avg: 42.93 / Max: 51
20
40
60
80
100

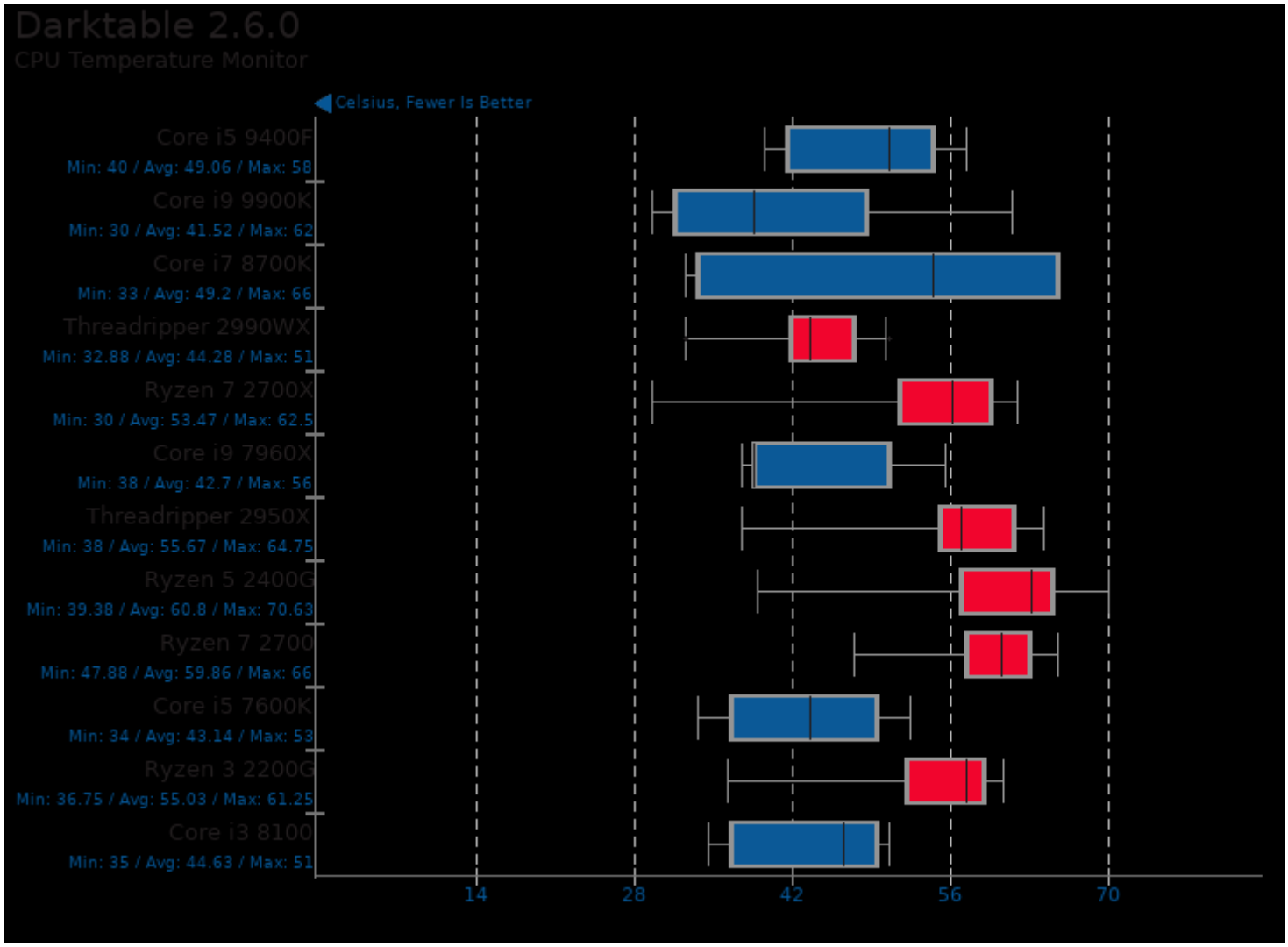

GIMP 2.10.8
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 9400F
Min: 42 / Avg: 49.16 / Max: 59
Core i9 9900K
Min: 32 / Avg: 39 / Max: 55
Core i7 8700K
Min: 34 / Avg: 45.27 / Max: 67
Threadripper 2990WX
Min: 35.25 / Avg: 45.64 / Max: 55
Ryzen 7 2700X
Min: 30.88 / Avg: 54.31 / Max: 61.88
Core i9 7960X
Min: 38 / Avg: 46.13 / Max: 63
Threadripper 2950X
Min: 42.5 / Avg: 55.96 / Max: 64.13
Ryzen 5 2400G
Min: 37.5 / Avg: 55.64 / Max: 65.38
Ryzen 7 2700
Min: 53.75 / Avg: 68.89 / Max: 77.25
Core i5 7600K
Min: 34 / Avg: 41.78 / Max: 54
Ryzen 3 2200G
Min: 38 / Avg: 50.85 / Max: 60.75
Core i3 8100
Min: 36 / Avg: 42.14 / Max: 51
15
30
45
60
75

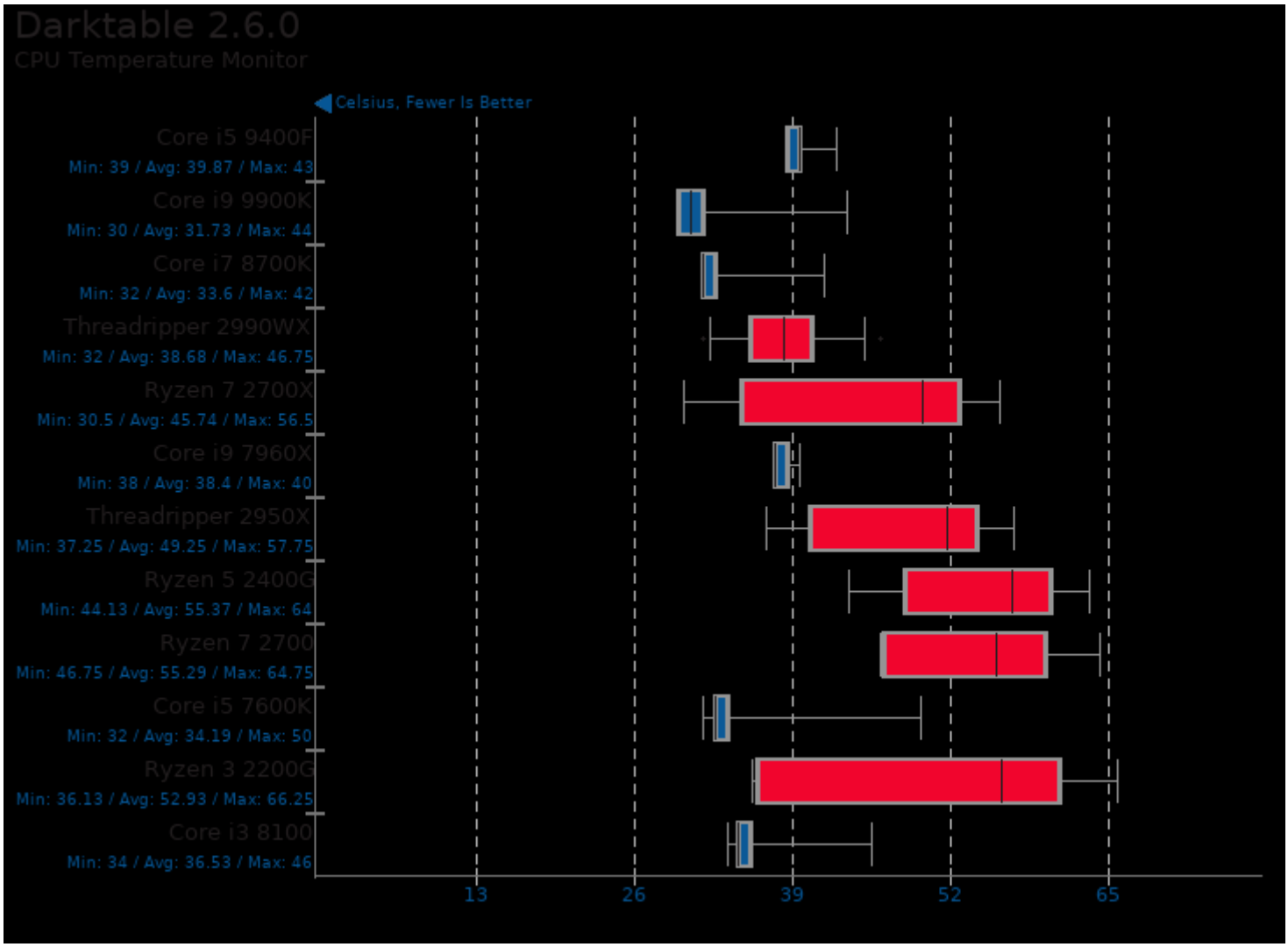

GIMP 2.10.8
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 9400F
Min: 40 / Avg: 42.95 / Max: 55
Core i9 9900K
Min: 31 / Avg: 34.73 / Max: 56
Core i7 8700K
Min: 32 / Avg: 41.65 / Max: 60
Threadripper 2990WX
Min: 32.38 / Avg: 42.29 / Max: 50.63
Ryzen 7 2700X
Min: 31.25 / Avg: 51.96 / Max: 59.63
Core i9 7960X
Min: 36 / Avg: 44.09 / Max: 66
Threadripper 2950X
Min: 38.38 / Avg: 53.3 / Max: 62.88
Ryzen 5 2400G
Min: 38.88 / Avg: 52.35 / Max: 62.25
Ryzen 7 2700
Min: 50.13 / Avg: 66.23 / Max: 74.75
Core i5 7600K
Min: 33 / Avg: 39.2 / Max: 53
Ryzen 3 2200G
Min: 37 / Avg: 46.36 / Max: 55.38
Core i3 8100
Min: 35 / Avg: 38.67 / Max: 48
14
28
42
56
70

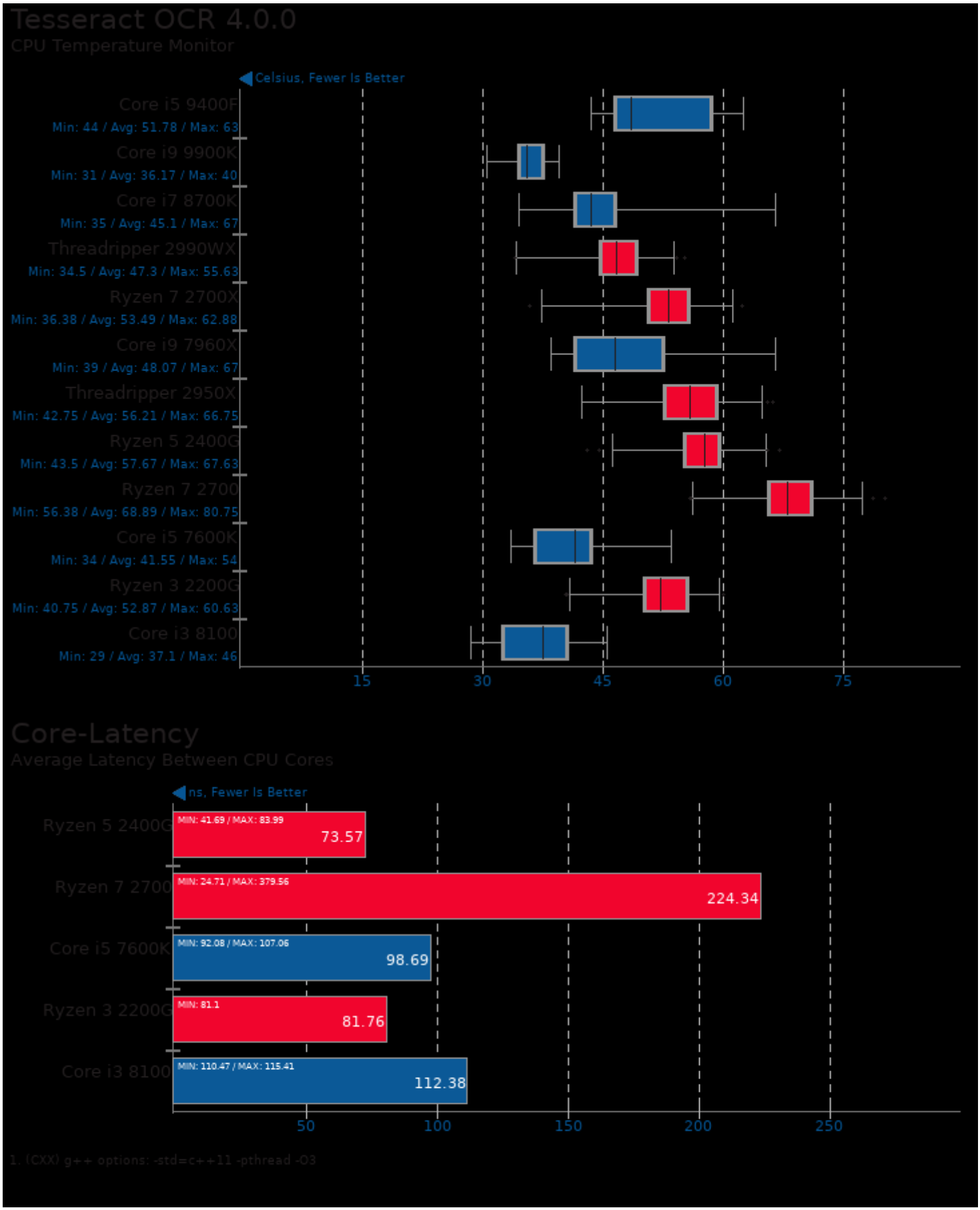

GIMP 2.10.8
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 9400F
Min: 38 / Avg: 45.38 / Max: 56
Core i9 9900K
Min: 31 / Avg: 37.37 / Max: 56
Core i7 8700K
Min: 32 / Avg: 46.19 / Max: 68
Threadripper 2990WX
Min: 32 / Avg: 46.78 / Max: 55.38
Ryzen 7 2700X
Min: 35.63 / Avg: 52.91 / Max: 60.38
Core i9 7960X
Min: 36 / Avg: 44.59 / Max: 65
Threadripper 2950X
Min: 36.5 / Avg: 57.42 / Max: 65.75
Ryzen 5 2400G
Min: 34.13 / Avg: 55.84 / Max: 65.38
Ryzen 7 2700
Min: 46.5 / Avg: 64.1 / Max: 72.13
Core i5 7600K
Min: 32 / Avg: 39.41 / Max: 54
Ryzen 3 2200G
Min: 34.5 / Avg: 50.8 / Max: 59.25
Core i3 8100
Min: 34 / Avg: 40.01 / Max: 49
14
28
42
56
70

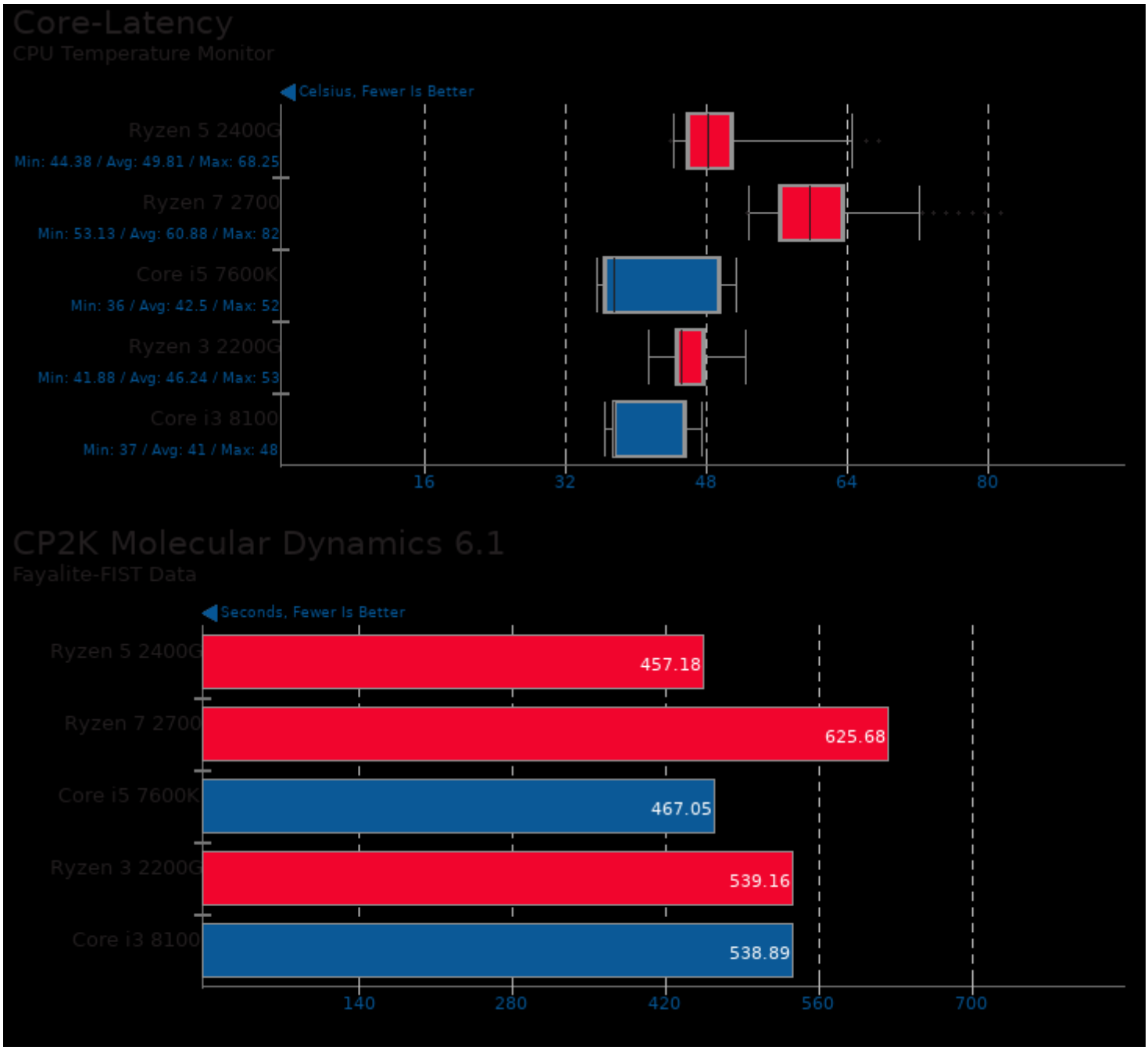

Darktable 2.6.0
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 9400F
Min: 38 / Avg: 52.49 / Max: 61
Core i9 9900K
Min: 31 / Avg: 49.23 / Max: 60
Core i7 8700K
Min: 32 / Avg: 53.75 / Max: 71
Threadripper 2990WX
Min: 33.13 / Avg: 46.99 / Max: 57.25
Ryzen 7 2700X
Min: 29.25 / Avg: 54.44 / Max: 65.5
Core i9 7960X
Min: 36 / Avg: 47.9 / Max: 59
Threadripper 2950X
Min: 38.5 / Avg: 53.57 / Max: 63.75
Ryzen 5 2400G
Min: 34.5 / Avg: 59.9 / Max: 68.38
Ryzen 7 2700
Min: 45.88 / Avg: 61.11 / Max: 68.5
Core i5 7600K
Min: 32 / Avg: 45.4 / Max: 54
Ryzen 3 2200G
Min: 34.25 / Avg: 57.2 / Max: 68.75
Core i3 8100
Min: 34 / Avg: 46.2 / Max: 52
14
28
42
56
70

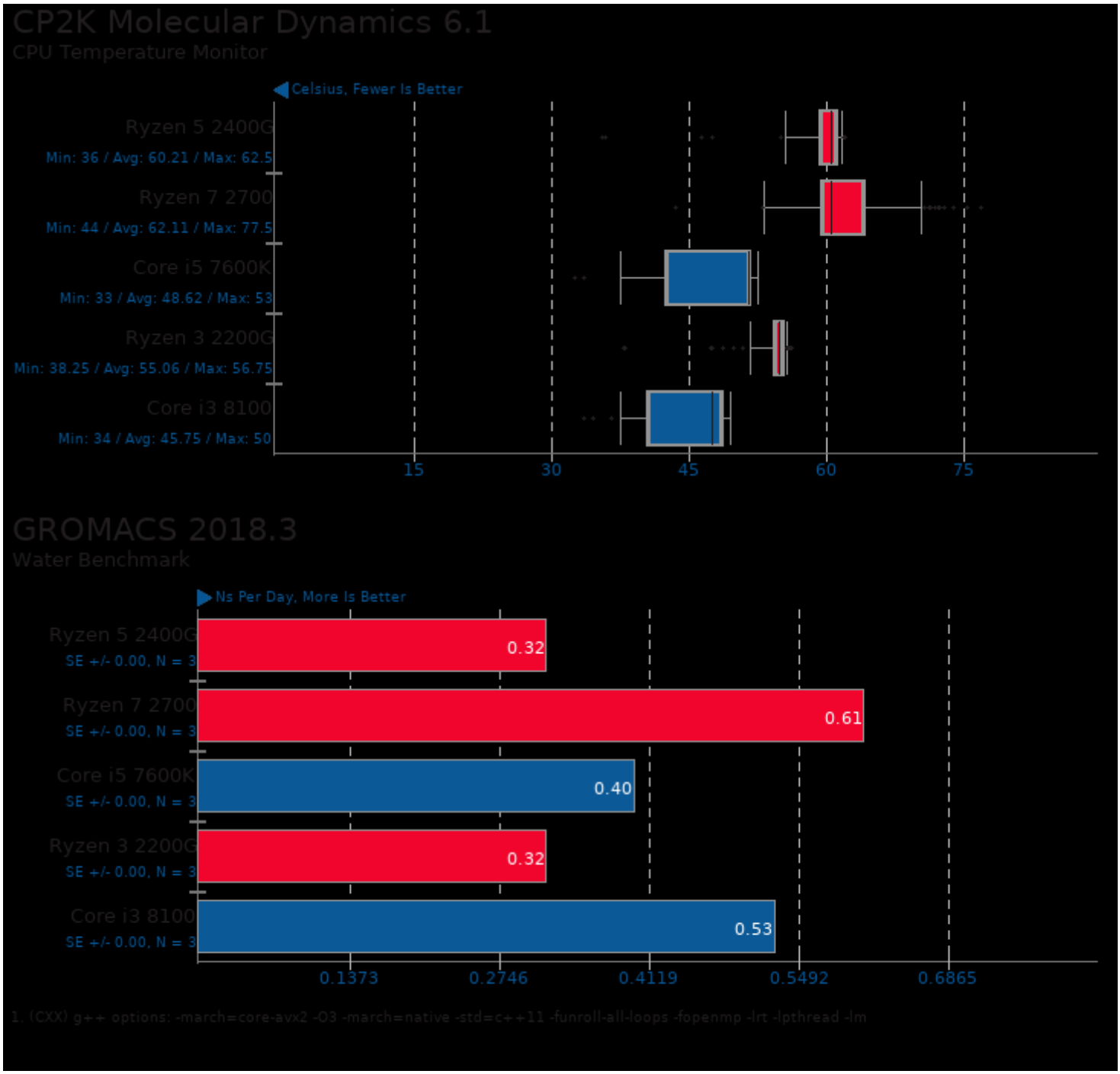

Darktable 2.6.0
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 9400F
Min: 42 / Avg: 50.23 / Max: 60
Core i9 9900K
Min: 32 / Avg: 47.03 / Max: 61
Core i7 8700K
Min: 34 / Avg: 46.38 / Max: 67
Threadripper 2990WX
Min: 34.13 / Avg: 45.02 / Max: 56.63
Ryzen 7 2700X
Min: 35.88 / Avg: 53.54 / Max: 62
Core i9 7960X
Min: 38 / Avg: 47.52 / Max: 65
Threadripper 2950X
Min: 39 / Avg: 55.46 / Max: 65
Ryzen 5 2400G
Min: 41.38 / Avg: 59.2 / Max: 66.75
Ryzen 7 2700
Min: 49.38 / Avg: 63.16 / Max: 73.75
Core i5 7600K
Min: 34 / Avg: 43.34 / Max: 53
Ryzen 3 2200G
Min: 37.75 / Avg: 55.66 / Max: 62.25
Core i3 8100
Min: 36 / Avg: 44.43 / Max: 51
14
28
42
56
70


Darktable 2.6.0
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 9400F
Min: 40 / Avg: 49.06 / Max: 58
Core i9 9900K
Min: 30 / Avg: 41.52 / Max: 62
Core i7 8700K
Min: 33 / Avg: 49.2 / Max: 66
Threadripper 2990WX
Min: 32.88 / Avg: 44.28 / Max: 51
Ryzen 7 2700X
Min: 30 / Avg: 53.47 / Max: 62.5
Core i9 7960X
Min: 38 / Avg: 42.7 / Max: 56
Threadripper 2950X
Min: 38 / Avg: 55.67 / Max: 64.75
Ryzen 5 2400G
Min: 39.38 / Avg: 60.8 / Max: 70.63
Ryzen 7 2700
Min: 47.88 / Avg: 59.86 / Max: 66
Core i5 7600K
Min: 34 / Avg: 43.14 / Max: 53
Ryzen 3 2200G
Min: 36.75 / Avg: 55.03 / Max: 61.25
Core i3 8100
Min: 35 / Avg: 44.63 / Max: 51
14
28
42
56
70


Darktable 2.6.0
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 9400F
Min: 39 / Avg: 39.87 / Max: 43
Core i9 9900K
Min: 30 / Avg: 31.73 / Max: 44
Core i7 8700K
Min: 32 / Avg: 33.6 / Max: 42
Threadripper 2990WX
Min: 32 / Avg: 38.68 / Max: 46.75
Ryzen 7 2700X
Min: 30.5 / Avg: 45.74 / Max: 56.5
Core i9 7960X
Min: 38 / Avg: 38.4 / Max: 40
Threadripper 2950X
Min: 37.25 / Avg: 49.25 / Max: 57.75
Ryzen 5 2400G
Min: 44.13 / Avg: 55.37 / Max: 64
Ryzen 7 2700
Min: 46.75 / Avg: 55.29 / Max: 64.75
Core i5 7600K
Min: 32 / Avg: 34.19 / Max: 50
Ryzen 3 2200G
Min: 36.13 / Avg: 52.93 / Max: 66.25
Core i3 8100
Min: 34 / Avg: 36.53 / Max: 46
13
26
39
52
65

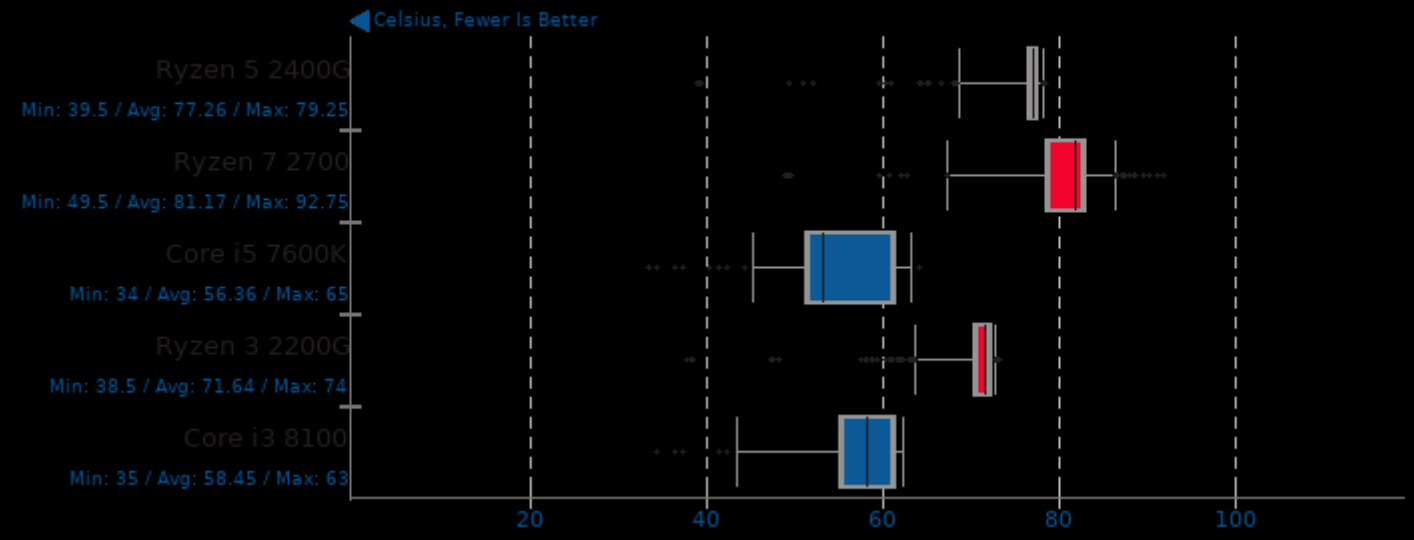

Tesseract OCR 4.0.0
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 9400F
Min: 44 / Avg: 51.78 / Max: 63
Core i9 9900K
Min: 31 / Avg: 36.17 / Max: 40
Core i7 8700K
Min: 35 / Avg: 45.1 / Max: 67
Threadripper 2990WX
Min: 34.5 / Avg: 47.3 / Max: 55.63
Ryzen 7 2700X
Min: 36.38 / Avg: 53.49 / Max: 62.88
Core i9 7960X
Min: 39 / Avg: 48.07 / Max: 67
Threadripper 2950X
Min: 42.75 / Avg: 56.21 / Max: 66.75
Ryzen 5 2400G
Min: 43.5 / Avg: 57.67 / Max: 67.63
Ryzen 7 2700
Min: 56.38 / Avg: 68.89 / Max: 80.75
Core i5 7600K
Min: 34 / Avg: 41.55 / Max: 54
Ryzen 3 2200G
Min: 40.75 / Avg: 52.87 / Max: 60.63
Core i3 8100
Min: 29 / Avg: 37.1 / Max: 46
15
30
45
60
75
Core-Latency
Average Latency Between CPU Cores
ns, Fewer Is Better
Ryzen 5 2400G
MIN: 41.69 / MAX: 83.99
73.57
Ryzen 7 2700
MIN: 24.71 / MAX: 379.56
224.34
Core i5 7600K
MIN: 92.08 / MAX: 107.06
98.69
Ryzen 3 2200G
MIN: 81.1
81.76
Core i3 8100
MIN: 110.47 / MAX: 115.41
112.38
50
100
150
200
250
1. (CXX) g++ options: -std=c++11 -pthread -O3


Core-Latency
CPU Temperature Monitor
Celsius, Fewer Is Better
Ryzen 5 2400G
Min: 44.38 / Avg: 49.81 / Max: 68.25
Ryzen 7 2700
Min: 53.13 / Avg: 60.88 / Max: 82
Core i5 7600K
Min: 36 / Avg: 42.5 / Max: 52
Ryzen 3 2200G
Min: 41.88 / Avg: 46.24 / Max: 53
Core i3 8100
Min: 37 / Avg: 41 / Max: 48
16
32
48
64
80
CP2K Molecular Dynamics 6.1
Fayalite-FIST Data
Seconds, Fewer Is Better
Ryzen 5 2400G
457.18
Ryzen 7 2700
625.68
Core i5 7600K
467.05
Ryzen 3 2200G
539.16
Core i3 8100
538.89
140
280
420
560
700


CP2K Molecular Dynamics 6.1
CPU Temperature Monitor
Celsius, Fewer Is Better
Ryzen 5 2400G
Min: 36 / Avg: 60.21 / Max: 62.5
Ryzen 7 2700
Min: 44 / Avg: 62.11 / Max: 77.5
Core i5 7600K
Min: 33 / Avg: 48.62 / Max: 53
Ryzen 3 2200G
Min: 38.25 / Avg: 55.06 / Max: 56.75
Core i3 8100
Min: 34 / Avg: 45.75 / Max: 50
15
30
45
60
75
GROMACS 2018.3
Water Benchmark
Ns Per Day, More Is Better
Ryzen 5 2400G
SE +/- 0.00, N = 3
0.32
Ryzen 7 2700
SE +/- 0.00, N = 3
0.61
Core i5 7600K
SE +/- 0.00, N = 3
0.40
Ryzen 3 2200G
SE +/- 0.00, N = 3
0.32
Core i3 8100
SE +/- 0.00, N = 3
0.53
0.1373
0.2746
0.4119
0.5492
0.6865
1. (CXX) g++ options: -march=core-avx2 -O3 -march=native -std=c++11 -funroll-all-loops -fopenmp -lrt -lpthread -lm

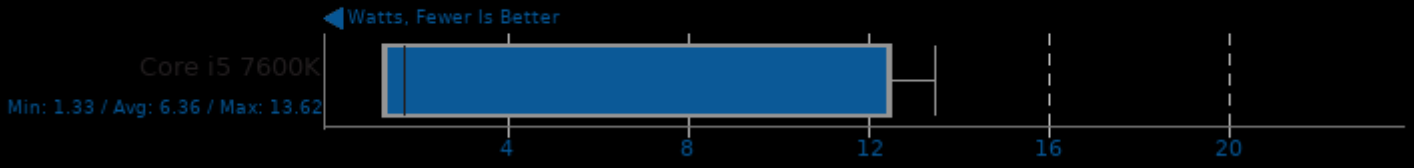
GROMACS 2018.3

CPU Temperature Monitor



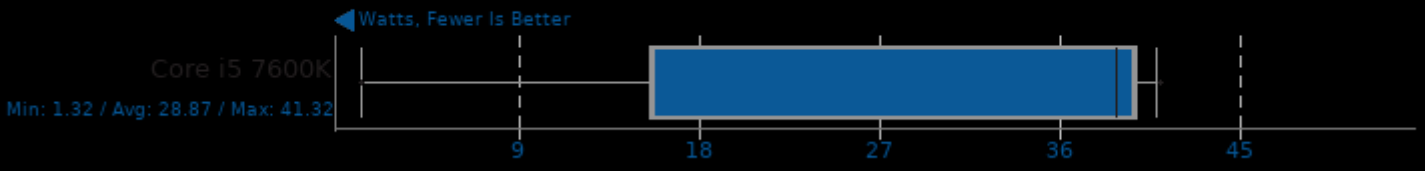
ctx_clock

CPU Power Consumption Monitor



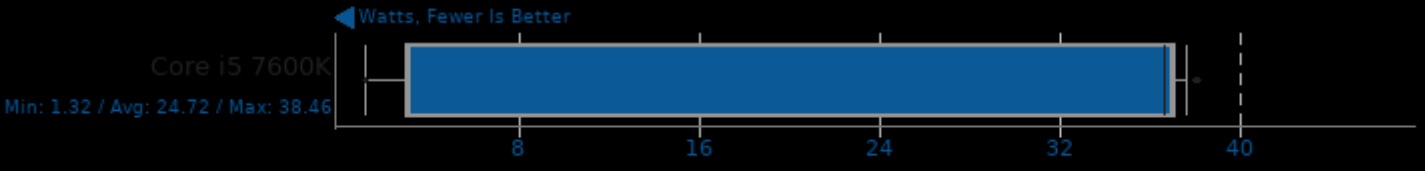
SVT-AV1 0.5

CPU Power Consumption Monitor



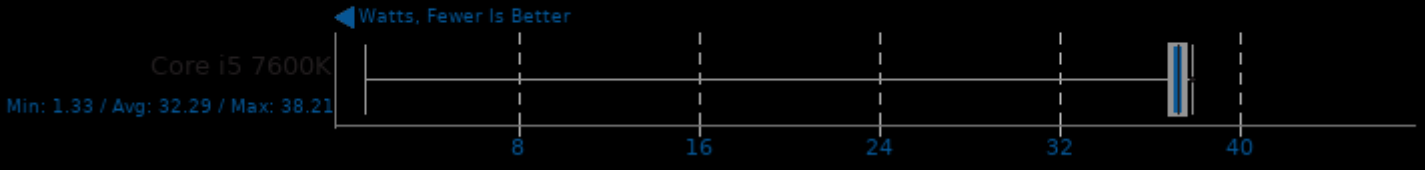
SVT-HEVC 2019-02-03

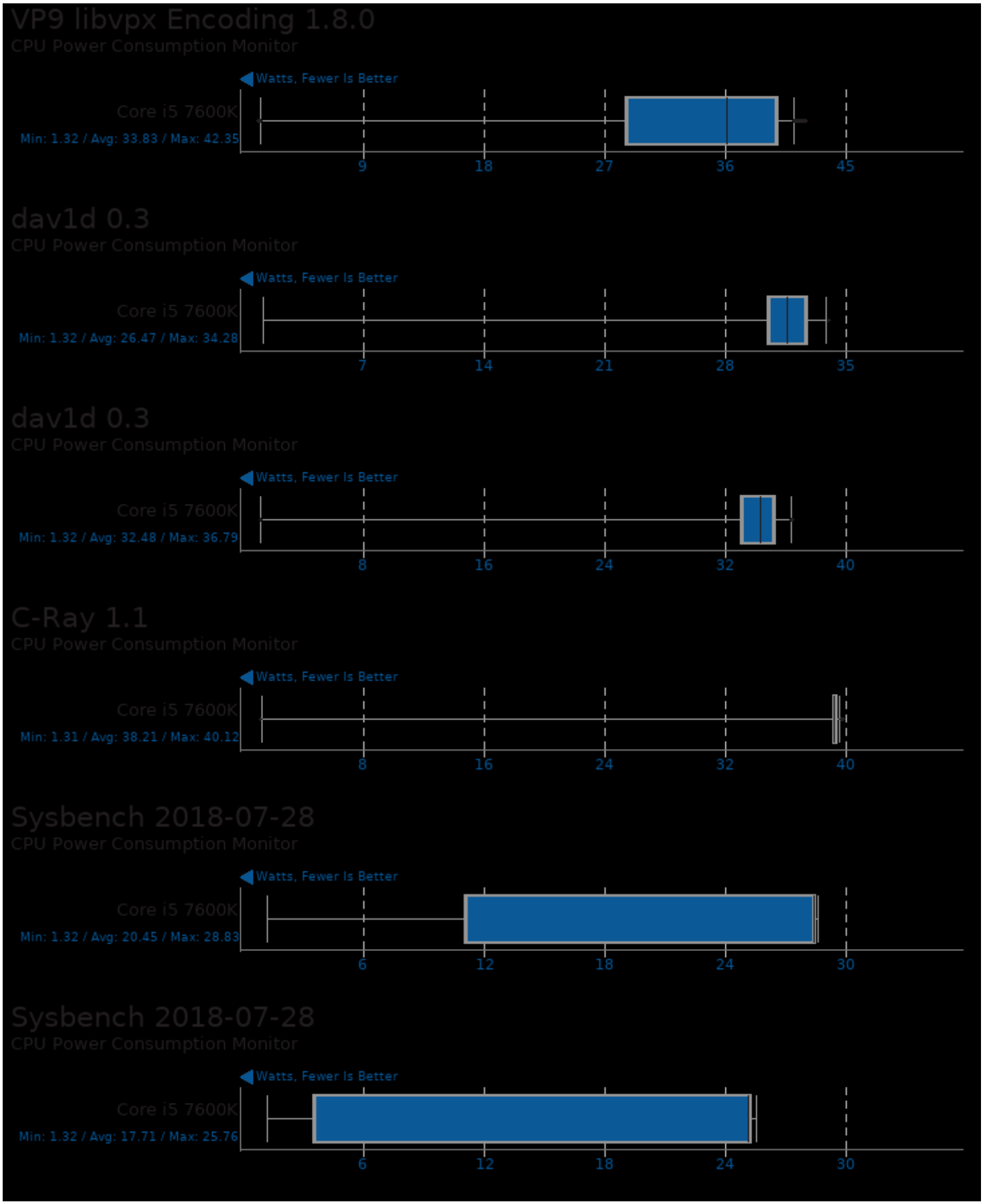
CPU Power Consumption Monitor

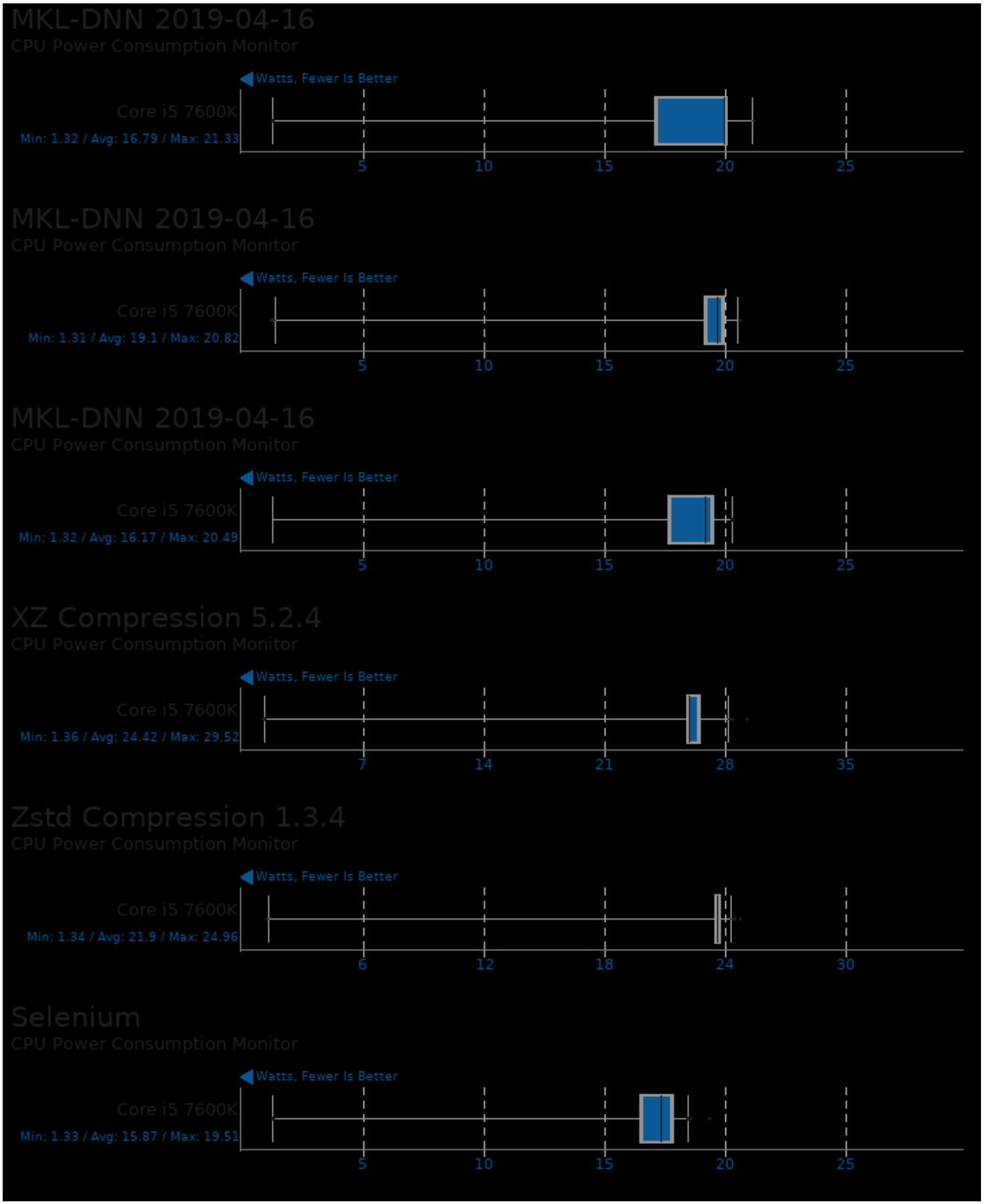


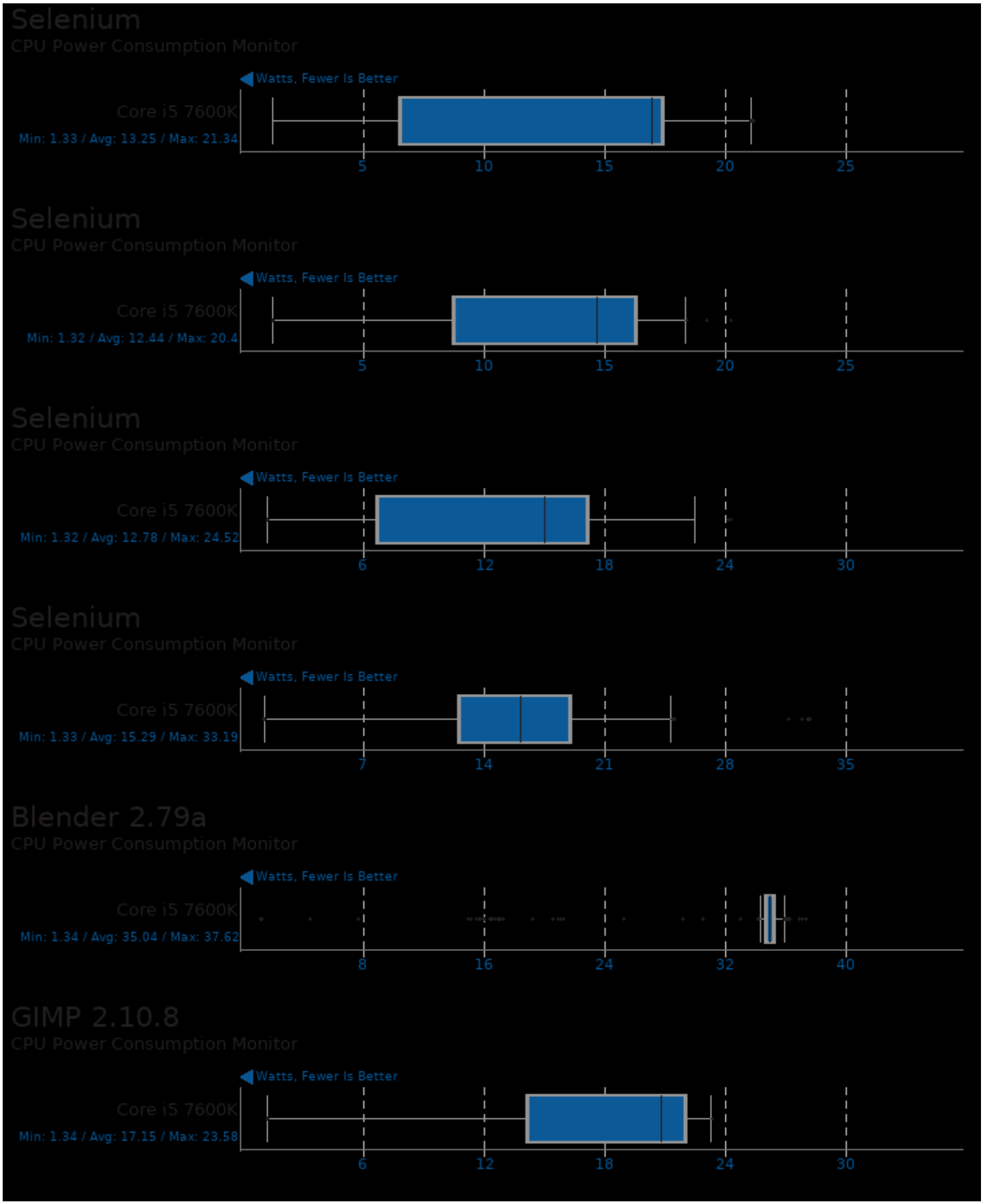
SVT-VP9 2019-02-17

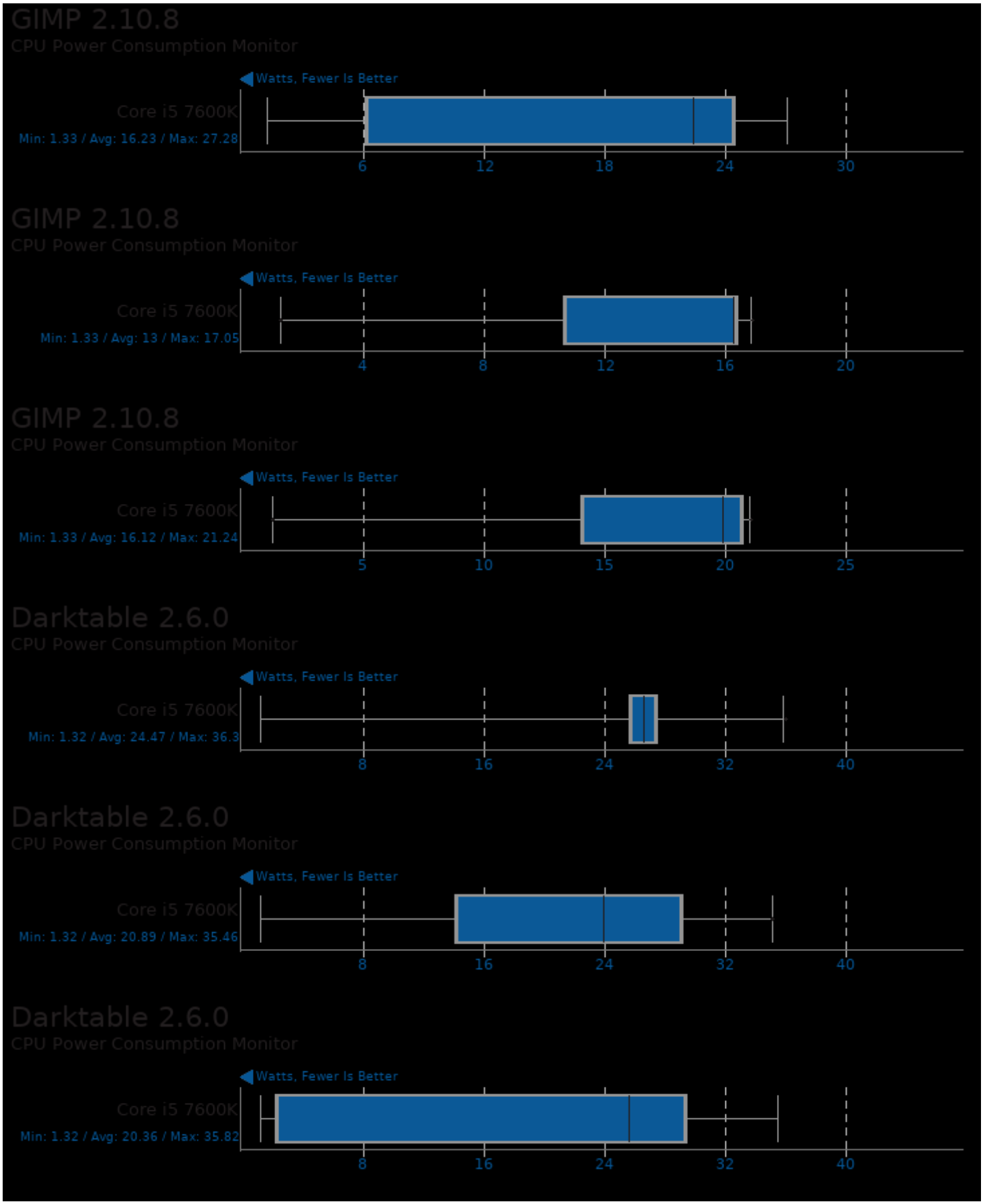
CPU Power Consumption Monitor




VP9 libvpx Encoding 1.8.0
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 33.83 / Max: 42.35
9
18
27
36
45
dav1d 0.3
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 26.47 / Max: 34.28
7
14
21
28
35
dav1d 0.3
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 32.48 / Max: 36.79
8
16
24
32
40
C-Ray 1.1
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.31 / Avg: 38.21 / Max: 40.12
8
16
24
32
40
Sysbench 2018-07-28
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 20.45 / Max: 28.83
6
12
18
24
30
Sysbench 2018-07-28
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 17.71 / Max: 25.76
6
12
18
24
30


MKL-DNN 2019-04-16
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 16.79 / Max: 21.33
5
10
15
20
25
MKL-DNN 2019-04-16
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.31 / Avg: 19.1 / Max: 20.82
5
10
15
20
25
MKL-DNN 2019-04-16
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 16.17 / Max: 20.49
5
10
15
20
25
XZ Compression 5.2.4
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.36 / Avg: 24.42 / Max: 29.52
7
14
21
28
35
Zstd Compression 1.3.4
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.34 / Avg: 21.9 / Max: 24.96
6
12
18
24
30
Selenium
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.33 / Avg: 15.87 / Max: 19.51
5
10
15
20
25

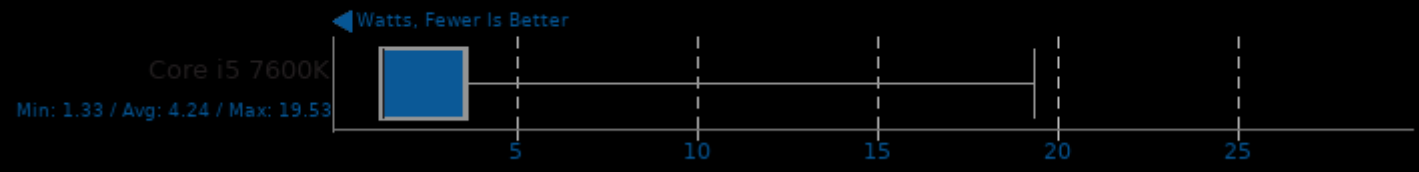

Selenium
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.33 / Avg: 13.25 / Max: 21.34
5
10
15
20
25
Selenium
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 12.44 / Max: 20.4
5
10
15
20
25
Selenium
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 12.78 / Max: 24.52
6
12
18
24
30
Selenium
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.33 / Avg: 15.29 / Max: 33.19
7
14
21
28
35
Blender 2.79a
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.34 / Avg: 35.04 / Max: 37.62
8
16
24
32
40
GIMP 2.10.8
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.34 / Avg: 17.15 / Max: 23.58
6
12
18
24
30


GIMP 2.10.8
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.33 / Avg: 16.23 / Max: 27.28
6
12
18
24
30
GIMP 2.10.8
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.33 / Avg: 13 / Max: 17.05
4
8
12
16
20
GIMP 2.10.8
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.33 / Avg: 16.12 / Max: 21.24
5
10
15
20
25
Darktable 2.6.0
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 24.47 / Max: 36.3
8
16
24
32
40
Darktable 2.6.0
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 20.89 / Max: 35.46
8
16
24
32
40
Darktable 2.6.0
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 20.36 / Max: 35.82
8
16
24
32
40

CPU Benchmarks

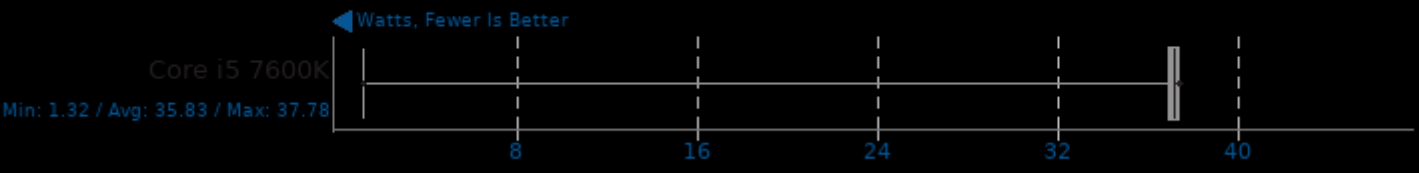
Darktable 2.6.0

CPU Power Consumption Monitor



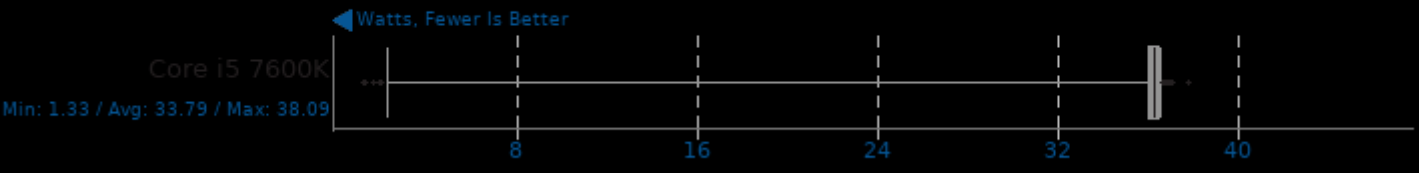
Stockfish 9

CPU Power Consumption Monitor



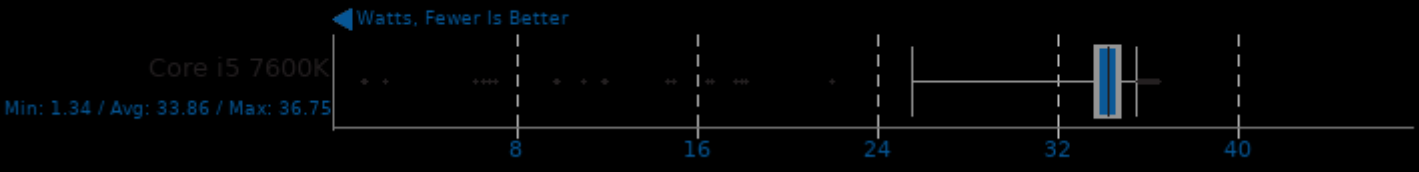
Timed Linux Kernel Compilation 4.18

CPU Power Consumption Monitor



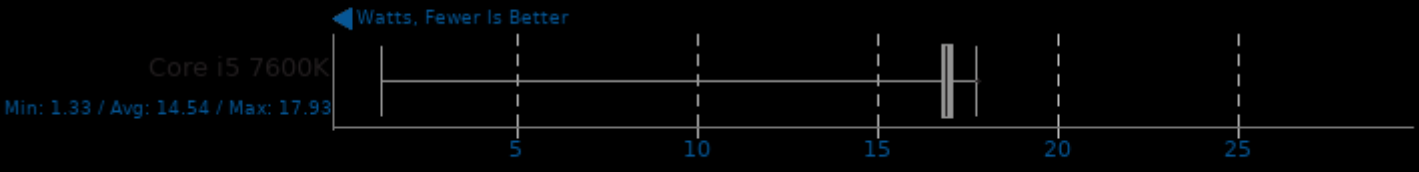
Timed LLVM Compilation 6.0.1

CPU Power Consumption Monitor



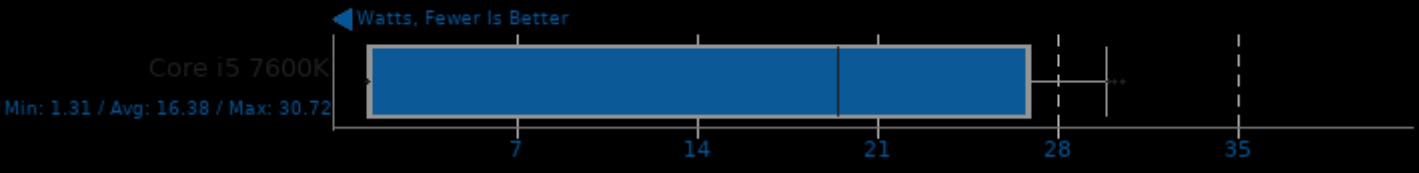
PyBench 2018-02-16

CPU Power Consumption Monitor

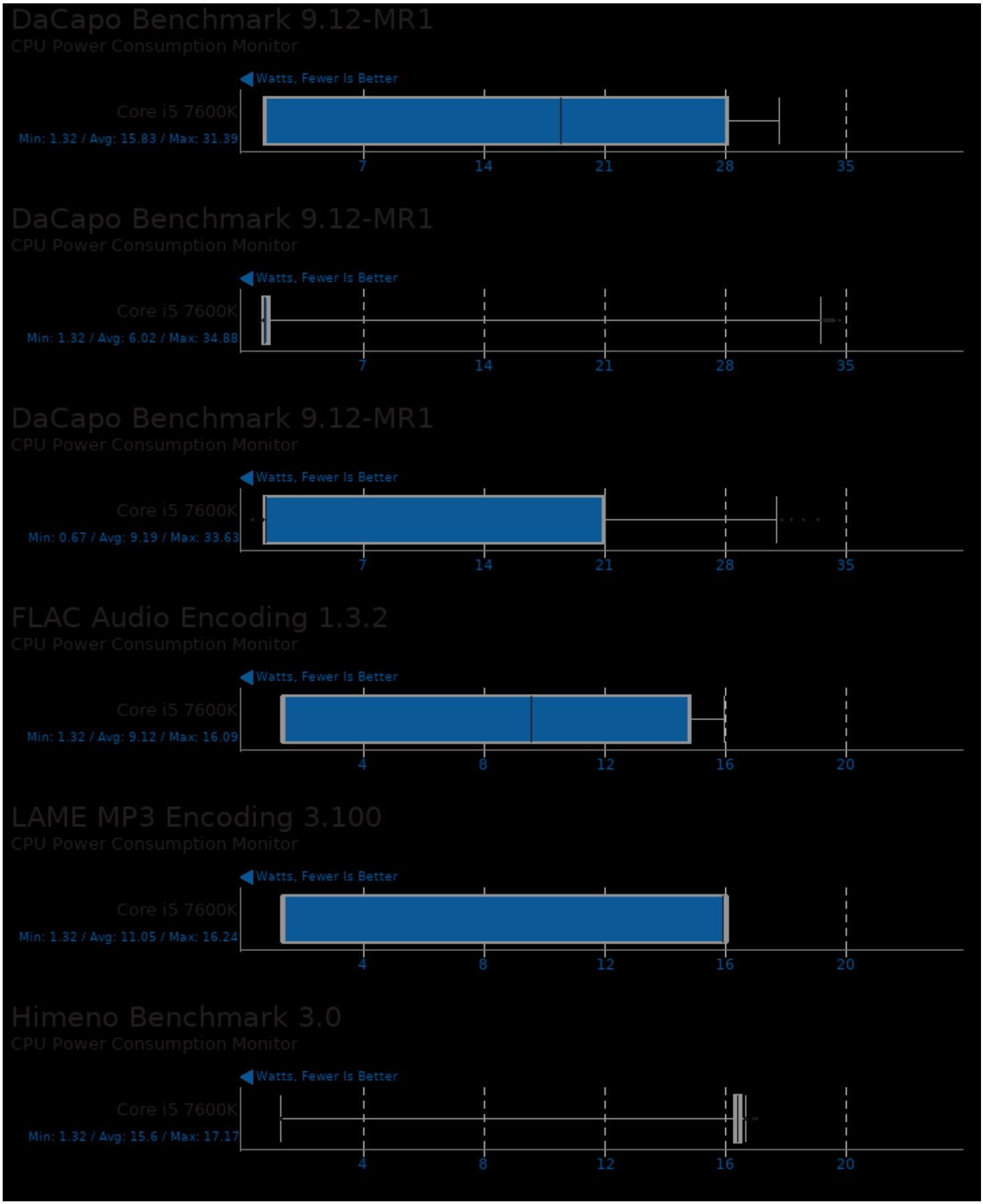


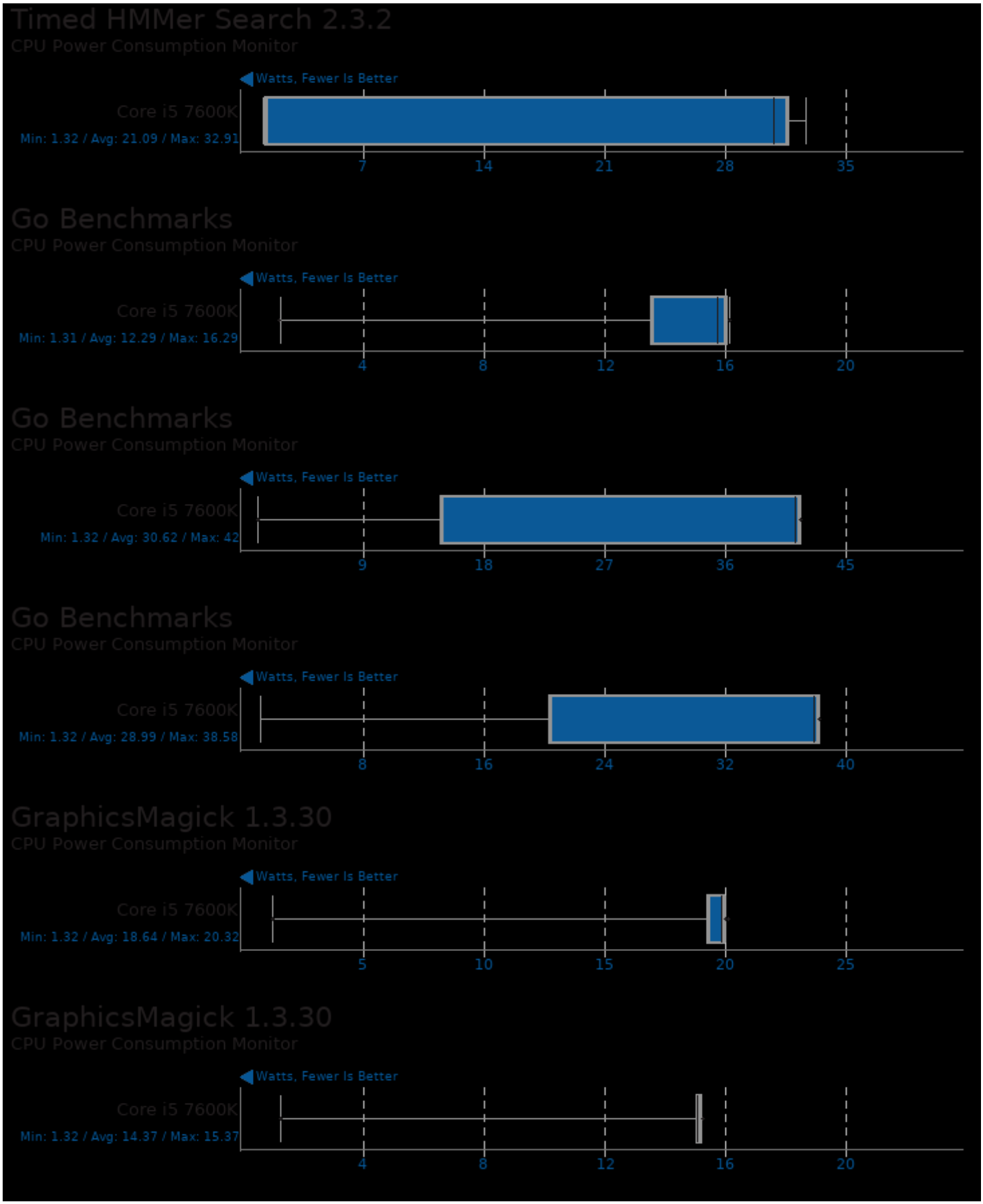
DaCapo Benchmark 9.12-MR1

CPU Power Consumption Monitor



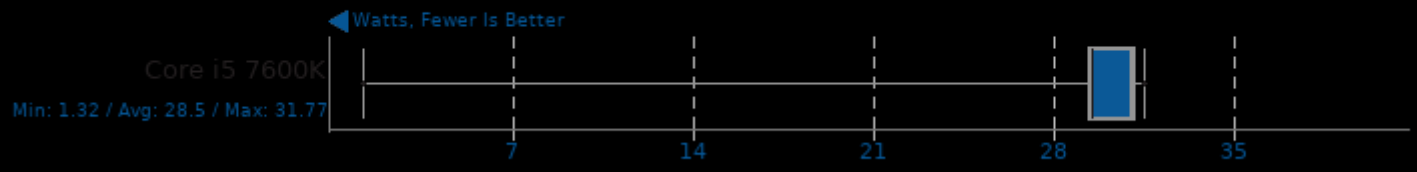
CPU Benchmarks




Timed HMMer Search 2.3.2
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 21.09 / Max: 32.91
7
14
21
28
35
Go Benchmarks
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.31 / Avg: 12.29 / Max: 16.29
4
8
12
16
20
Go Benchmarks
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 30.62 / Max: 42
9
18
27
36
45
Go Benchmarks
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 28.99 / Max: 38.58
8
16
24
32
40
GraphicsMagick 1.3.30
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 18.64 / Max: 20.32
5
10
15
20
25
GraphicsMagick 1.3.30
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 14.37 / Max: 15.37
4
8
12
16
20

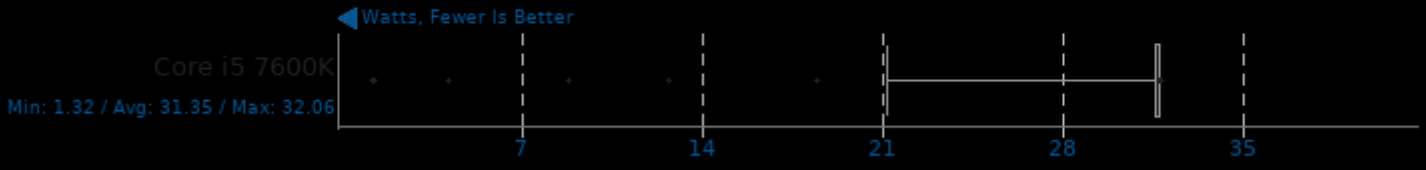
GraphicsMagick 1.3.30

CPU Power Consumption Monitor



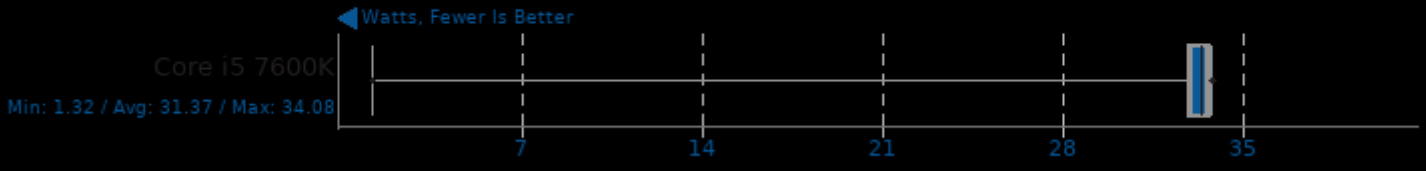
m-queens 1.2

CPU Power Consumption Monitor



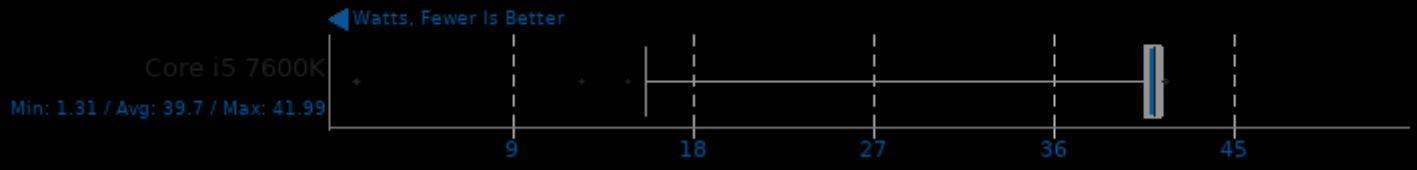
TTSIOD 3D Renderer 2.3b

CPU Power Consumption Monitor



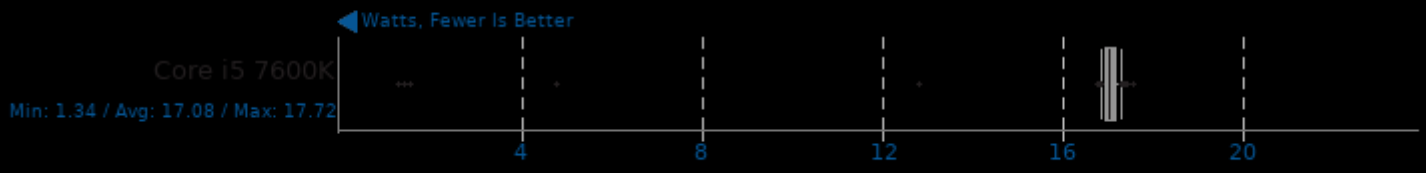
NAMD 2.13b1

CPU Power Consumption Monitor



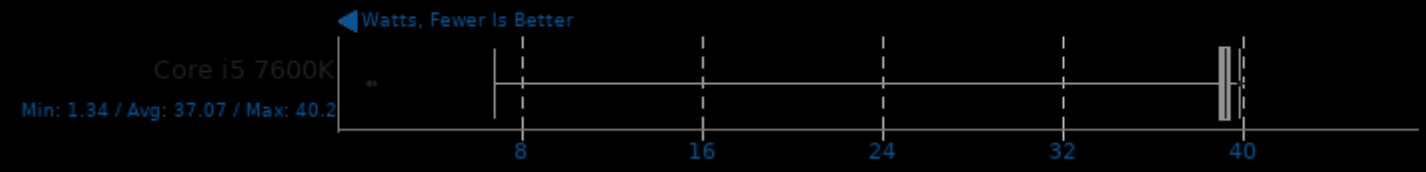
Radiance Benchmark 5.0

CPU Power Consumption Monitor



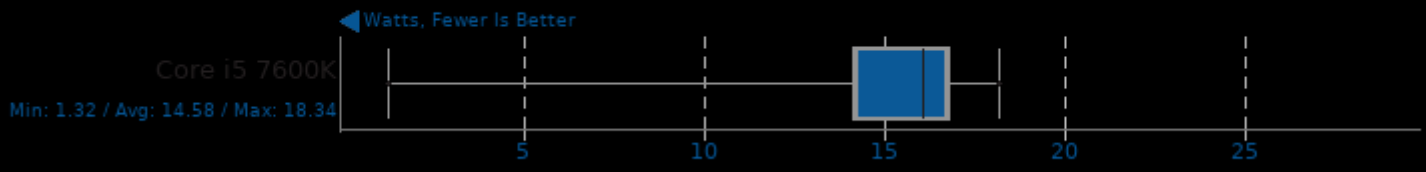
Radiance Benchmark 5.0

CPU Power Consumption Monitor



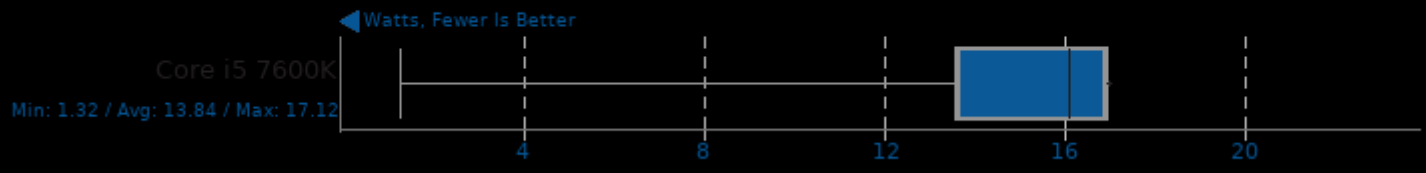
R Benchmark

CPU Power Consumption Monitor



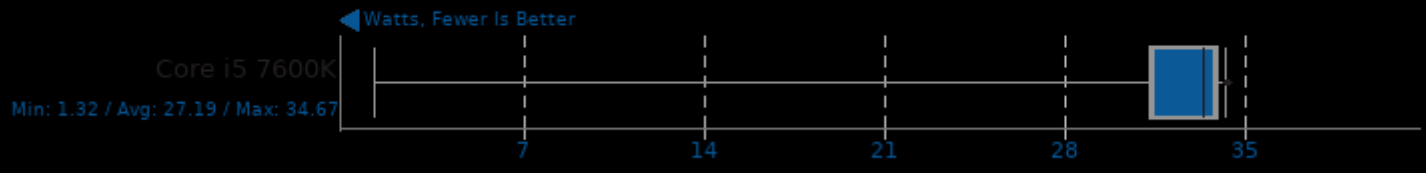
Scikit-Learn 0.17.1

CPU Power Consumption Monitor



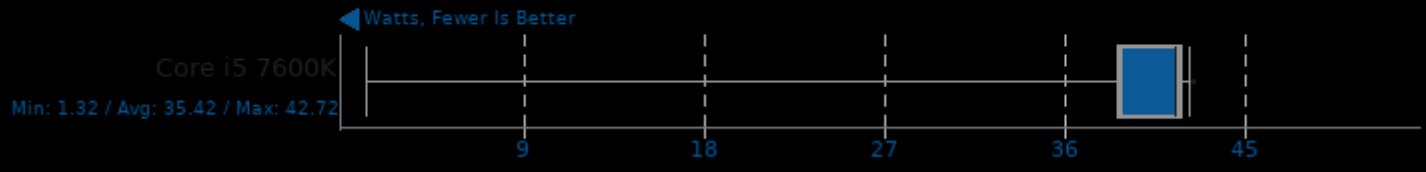
x264 2018-09-25

CPU Power Consumption Monitor



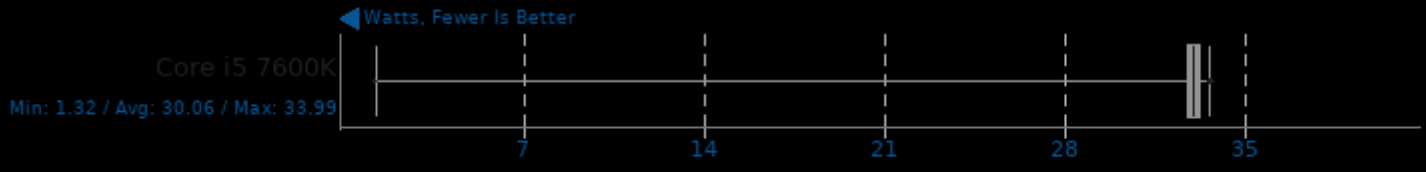
x265 3.0

CPU Power Consumption Monitor



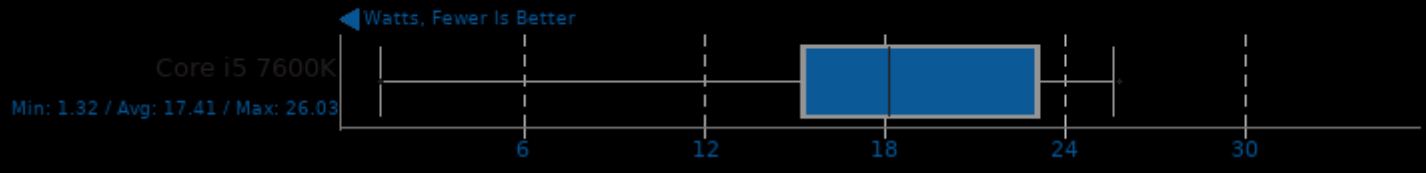
Tensorflow 2017-02-03

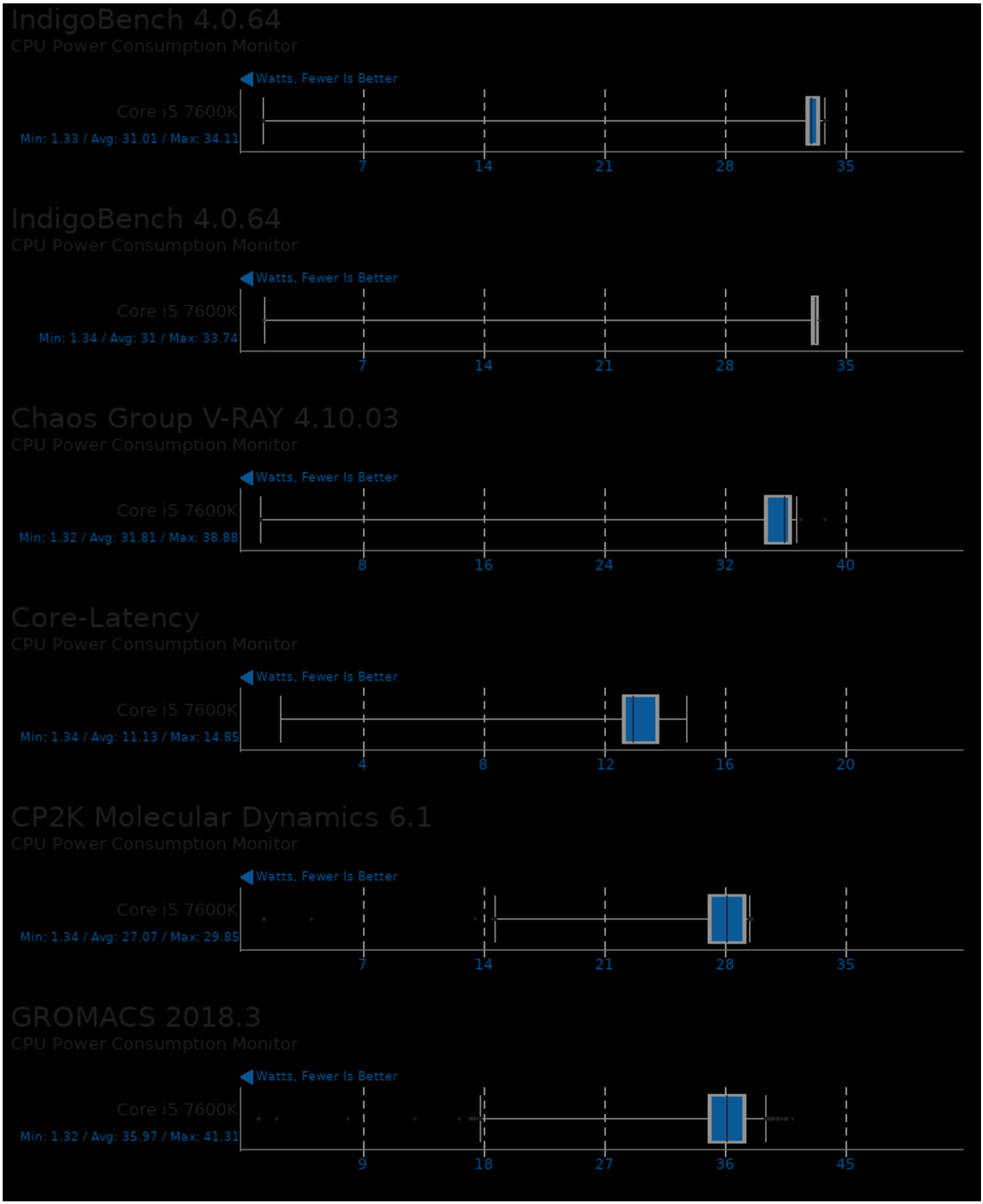
CPU Power Consumption Monitor



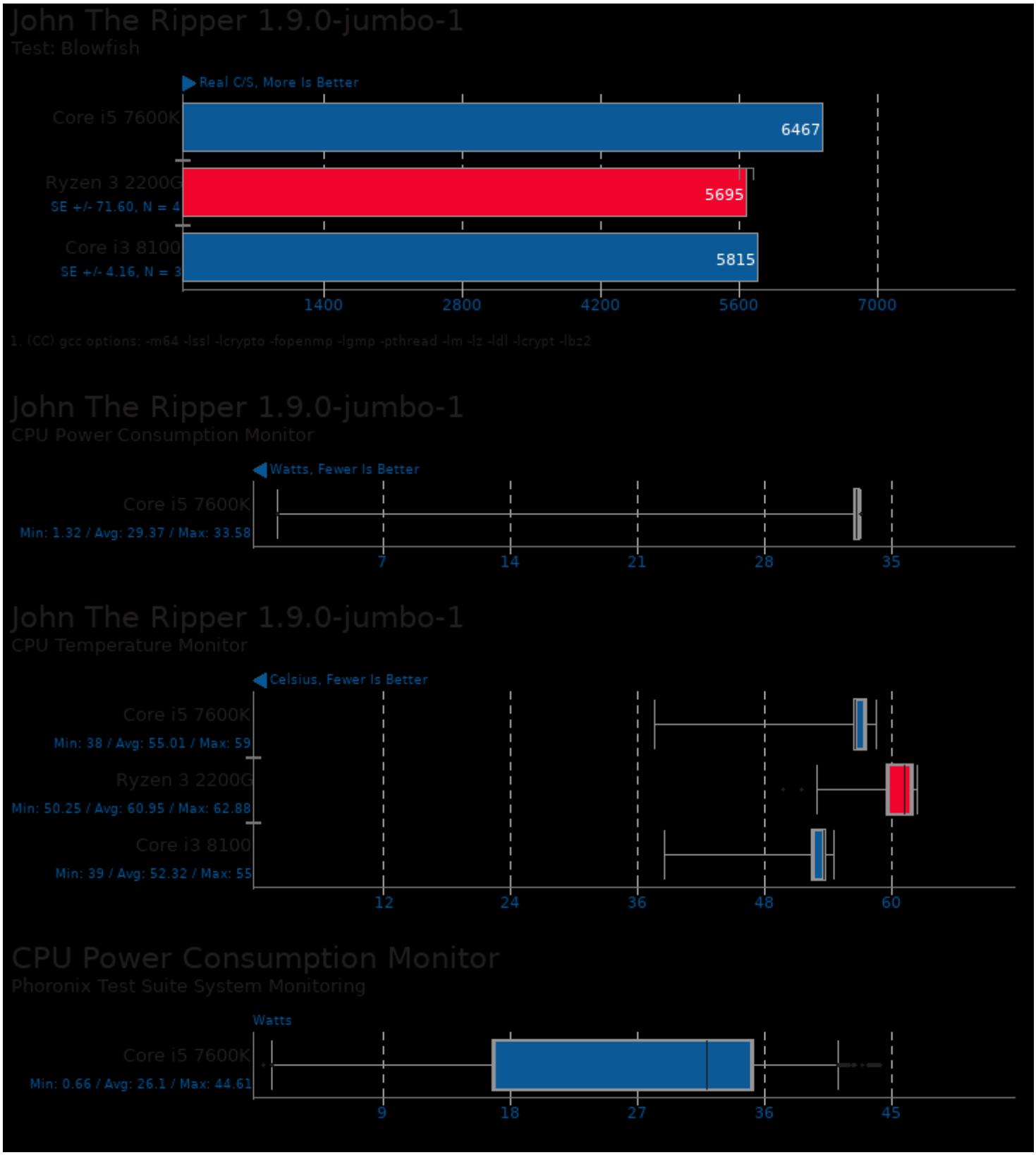
Tesseract OCR 4.0.0

CPU Power Consumption Monitor

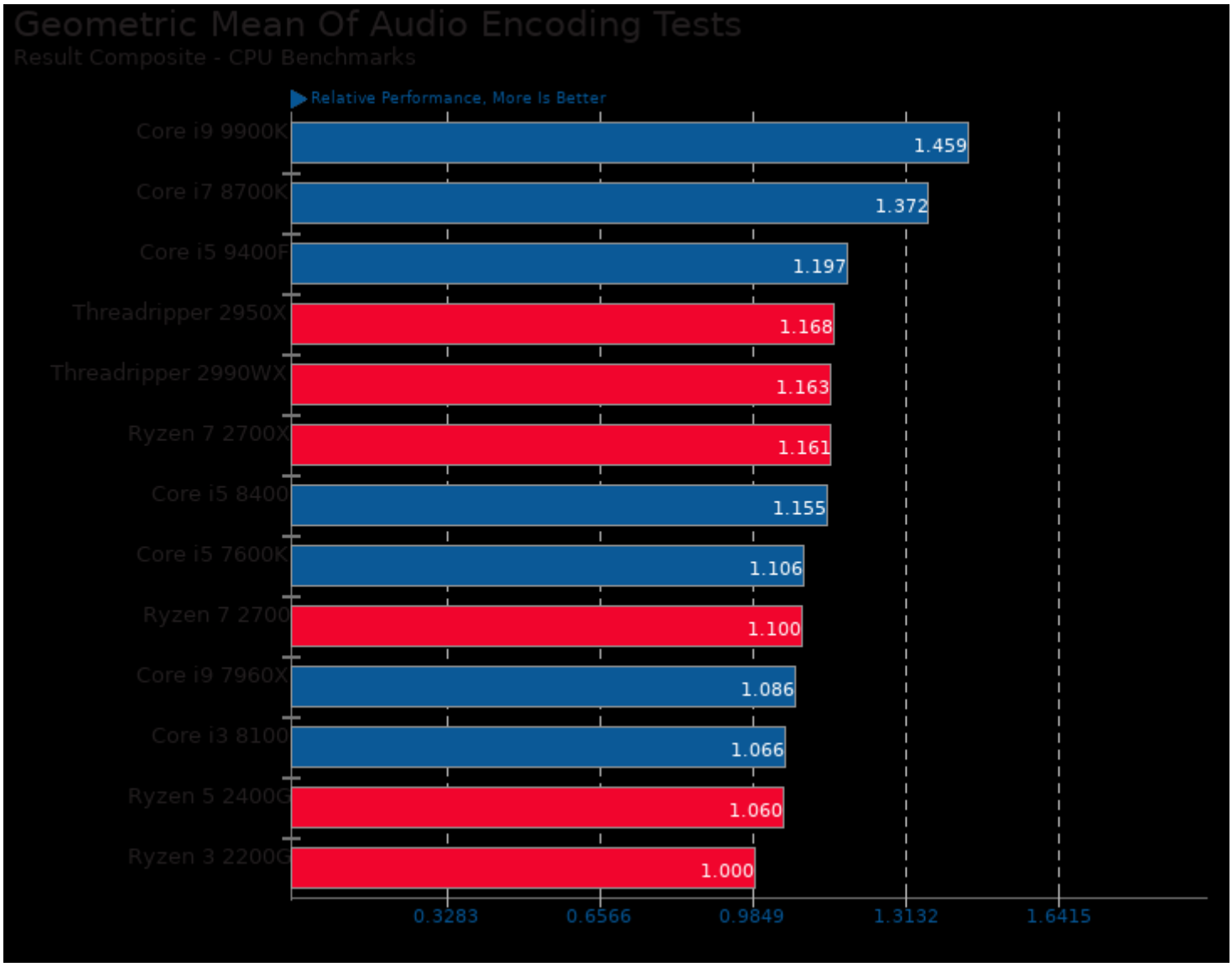



IndigoBench 4.0.64
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.33 / Avg: 31.01 / Max: 34.11
7
14
21
28
35
IndigoBench 4.0.64
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.34 / Avg: 31 / Max: 33.74
7
14
21
28
35
Chaos Group V-RAY 4.10.03
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 31.81 / Max: 38.88
8
16
24
32
40
Core-Latency
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.34 / Avg: 11.13 / Max: 14.85
4
8
12
16
20
CP2K Molecular Dynamics 6.1
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.34 / Avg: 27.07 / Max: 29.85
7
14
21
28
35
GROMACS 2018.3
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 35.97 / Max: 41.31
9
18
27
36
45

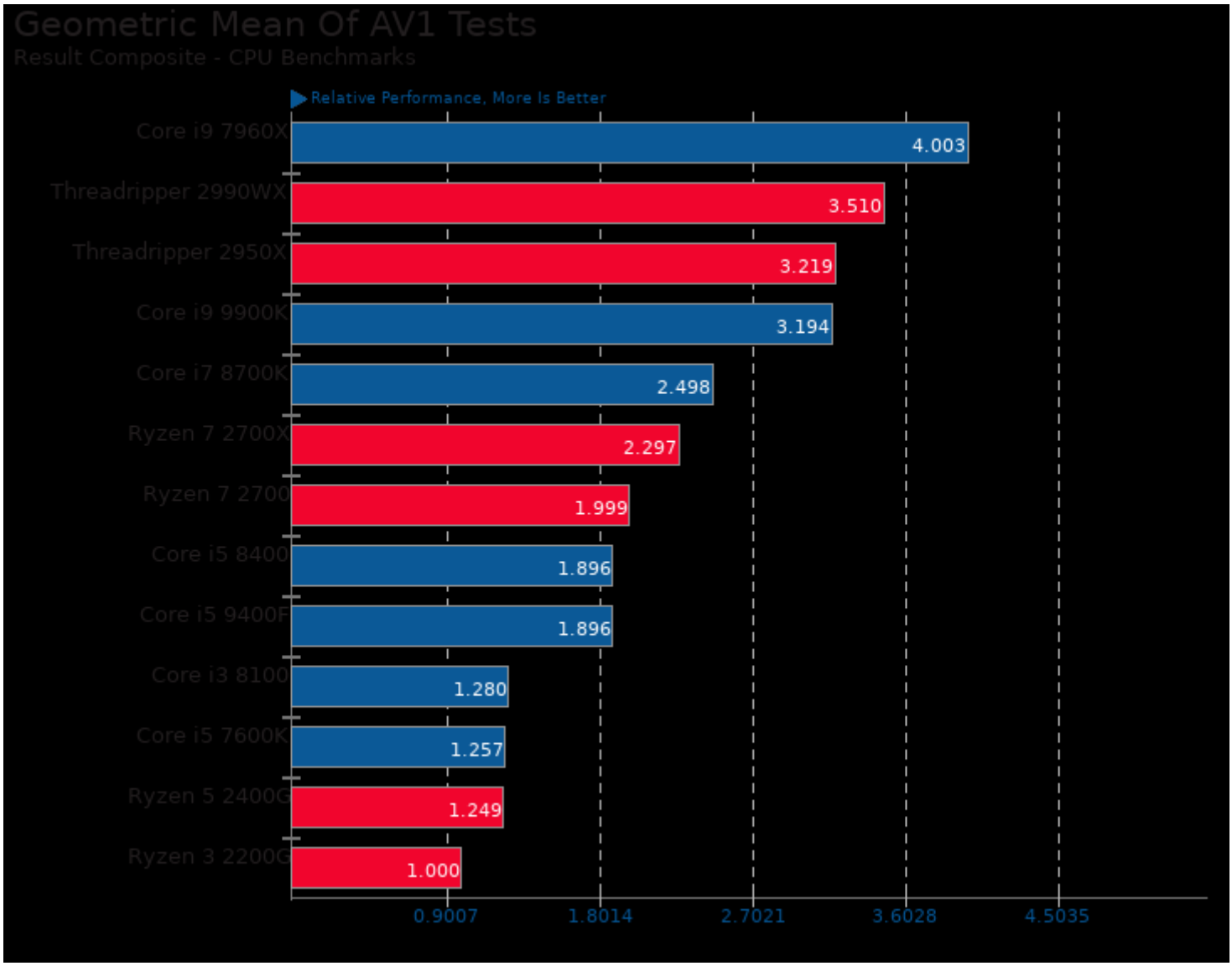

John The Ripper 1.9.0-jumbo-1
Test: MD5
Real C/S, More Is Better
Core i5 7600K
SE +/- 947.28, N = 3
430182
Ryzen 3 2200G
SE +/- 816.44, N = 3
250086
Core i3 8100
SE +/- 147.89, N = 3
387775
90K
180K
270K
360K
450K
1. (CC) gcc options: -m64 -lssl -lcrypto -fopenmp -lgmp -pthread -lm -lz -ldl -lcrypt -lbz2
John The Ripper 1.9.0-jumbo-1
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.31 / Avg: 41.17 / Max: 44.61
9
18
27
36
45
John The Ripper 1.9.0-jumbo-1
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 7600K
Min: 37 / Avg: 62.51 / Max: 65
Ryzen 3 2200G
Min: 45.75 / Avg: 75.04 / Max: 78.63
Core i3 8100
Min: 40 / Avg: 58.52 / Max: 61
15
30
45
60
75


John The Ripper 1.9.0-jumbo-1
Test: Blowfish
Real C/S, More Is Better
Core i5 7600K
6467
Ryzen 3 2200G
SE +/- 71.60, N = 4
5695
Core i3 8100
SE +/- 4.16, N = 3
5815
1400
2800
4200
5600
7000
1. (CC) gcc options: -m64 -lssl -lcrypto -fopenmp -lgmp -pthread -lm -lz -ldl -lcrypt -lbz2
John The Ripper 1.9.0-jumbo-1
CPU Power Consumption Monitor
Watts, Fewer Is Better
Core i5 7600K
Min: 1.32 / Avg: 29.37 / Max: 33.58
7
14
21
28
35
John The Ripper 1.9.0-jumbo-1
CPU Temperature Monitor
Celsius, Fewer Is Better
Core i5 7600K
Min: 38 / Avg: 55.01 / Max: 59
Ryzen 3 2200G
Min: 50.25 / Avg: 60.95 / Max: 62.88
Core i3 8100
Min: 39 / Avg: 52.32 / Max: 55
12
24
36
48
60
CPU Power Consumption Monitor
Phoronix Test Suite System Monitoring
Watts
Core i5 7600K
Min: 0.66 / Avg: 26.1 / Max: 44.61
9
18
27
36
45

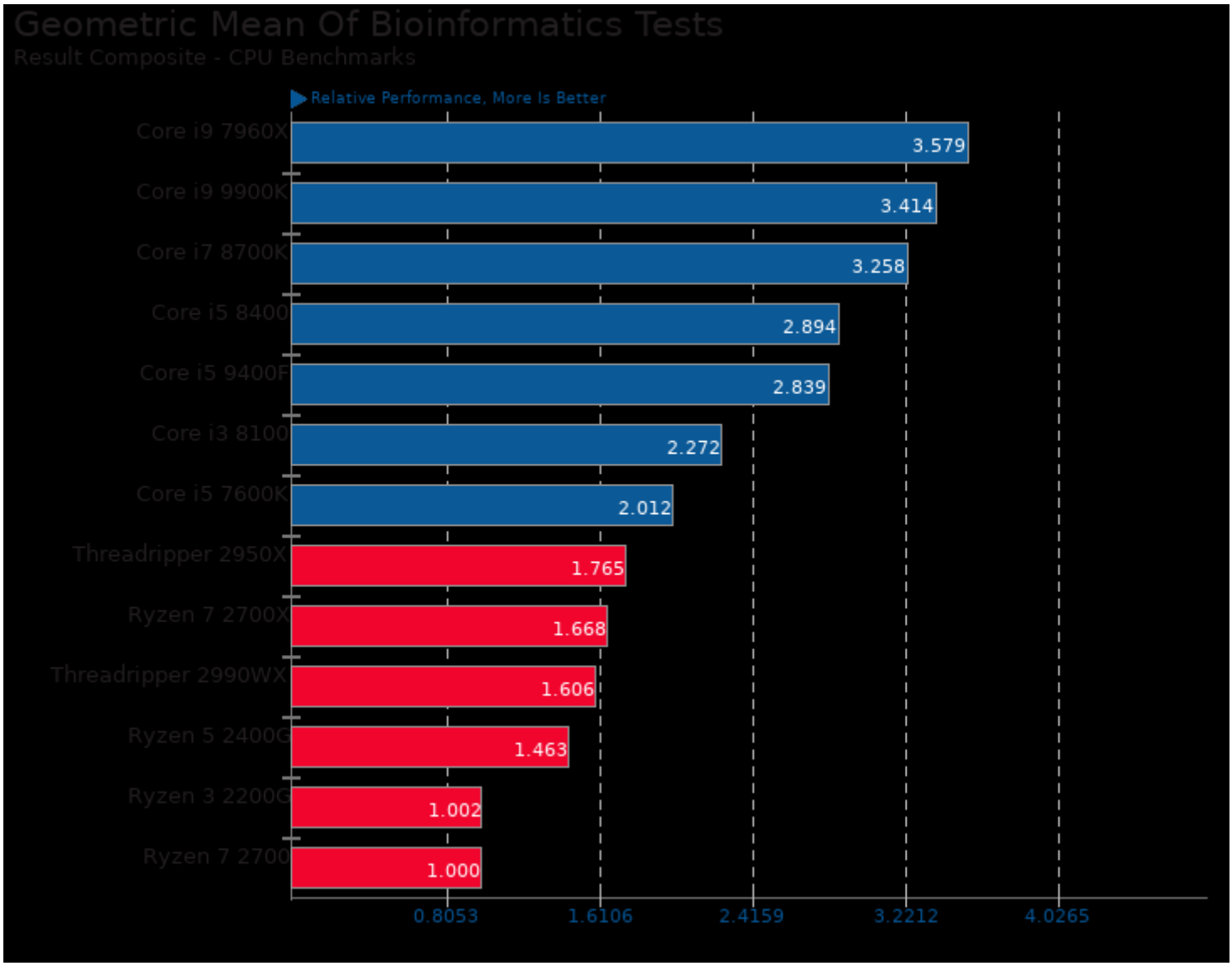
These geometric means are based upon test groupings / test suites for this result file.



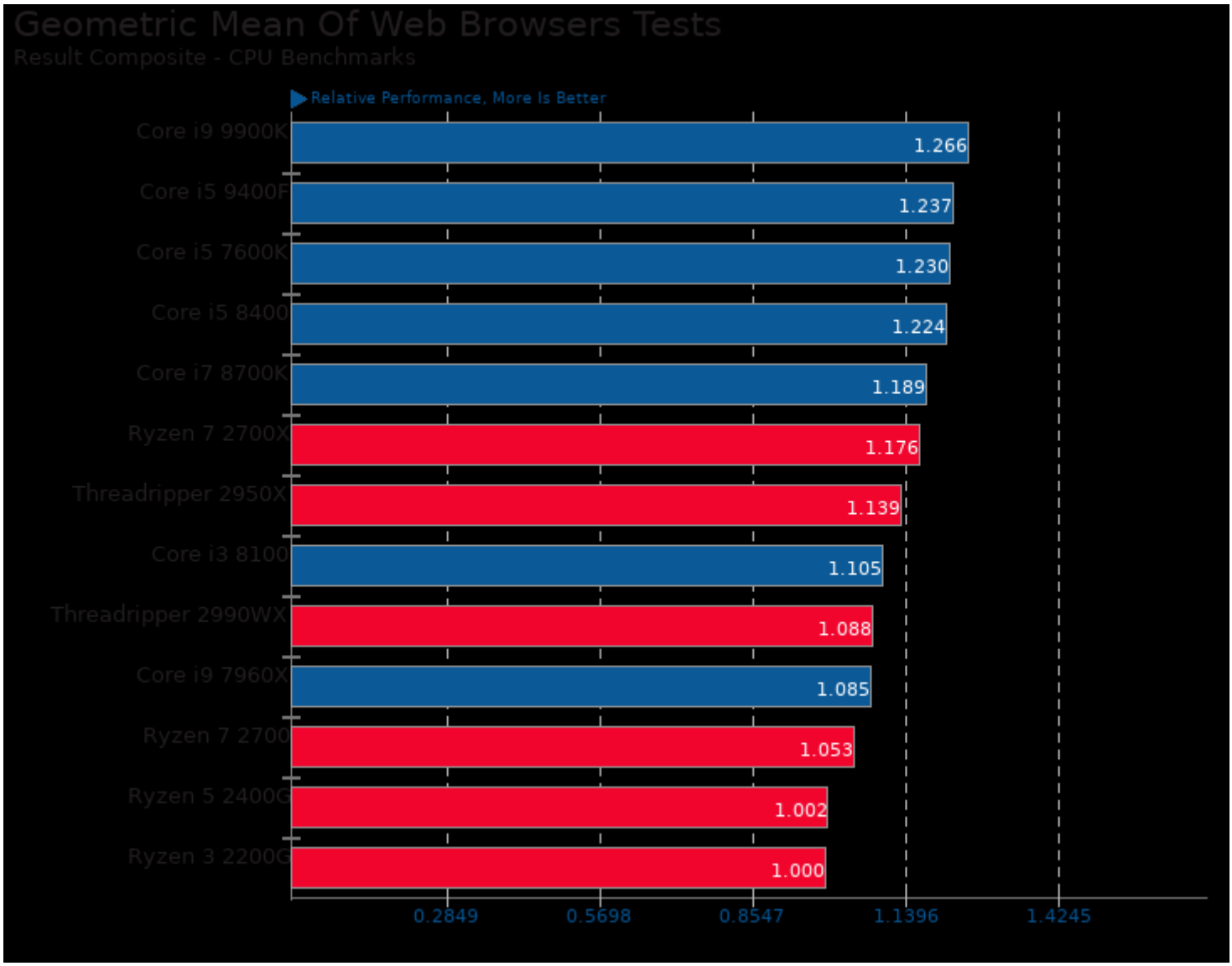
Geometric mean based upon tests: pts/encode-mp3 and pts/encode-flac



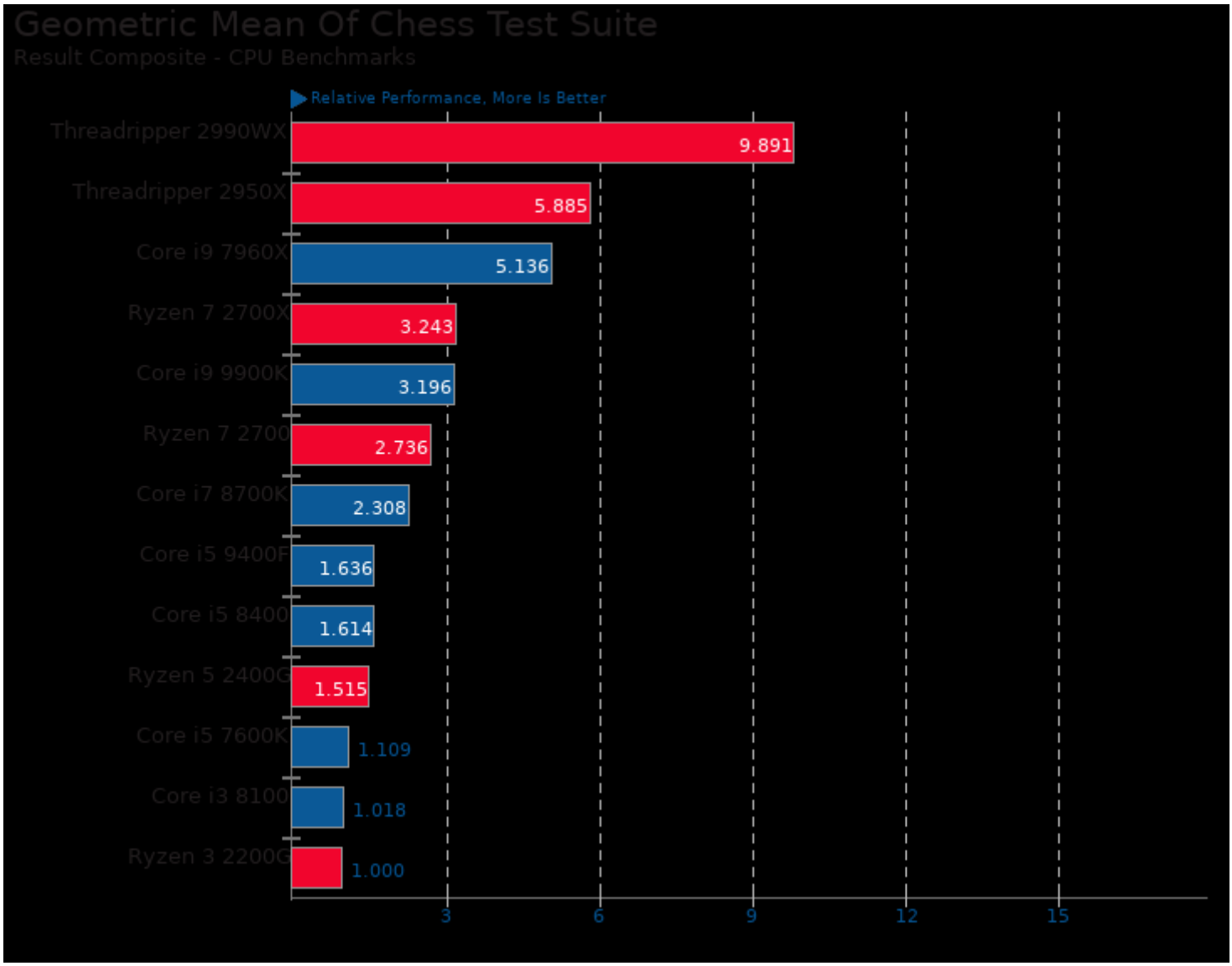
Geometric mean based upon tests: pts/dav1d and pts/svt-av1



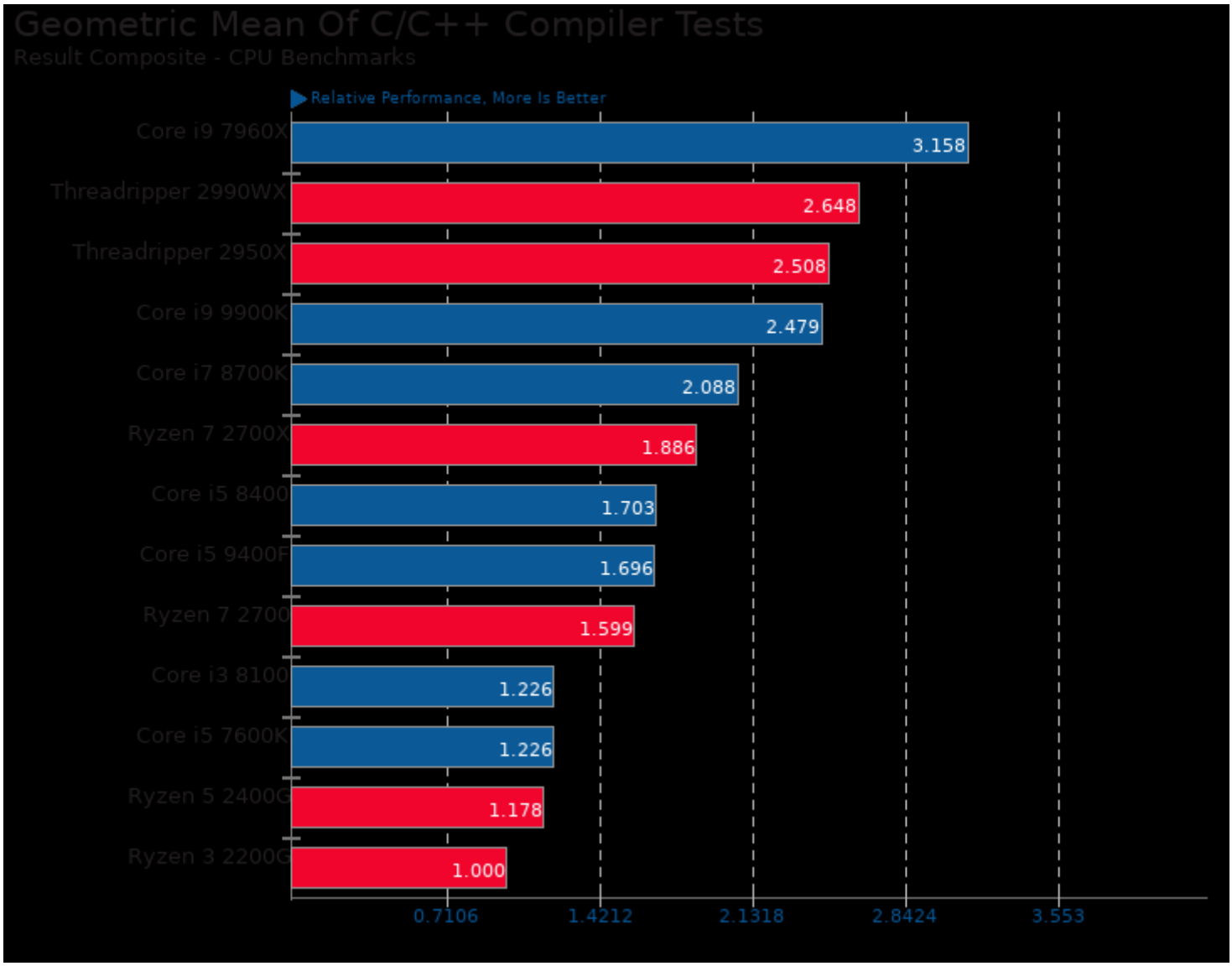
Geometric mean based upon tests: pts/himeno and pts/hmmer



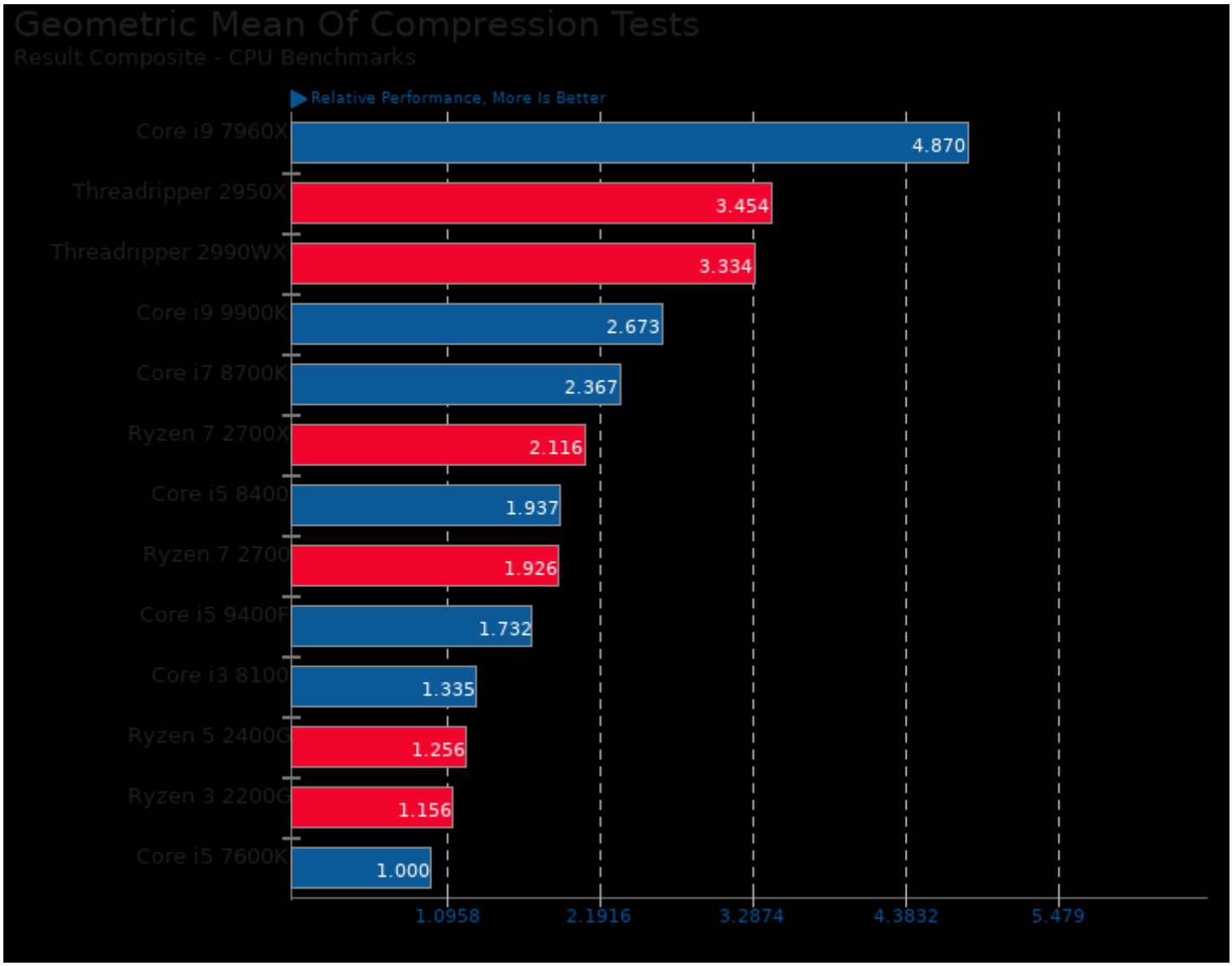
Geometric mean based upon tests: system/selenium



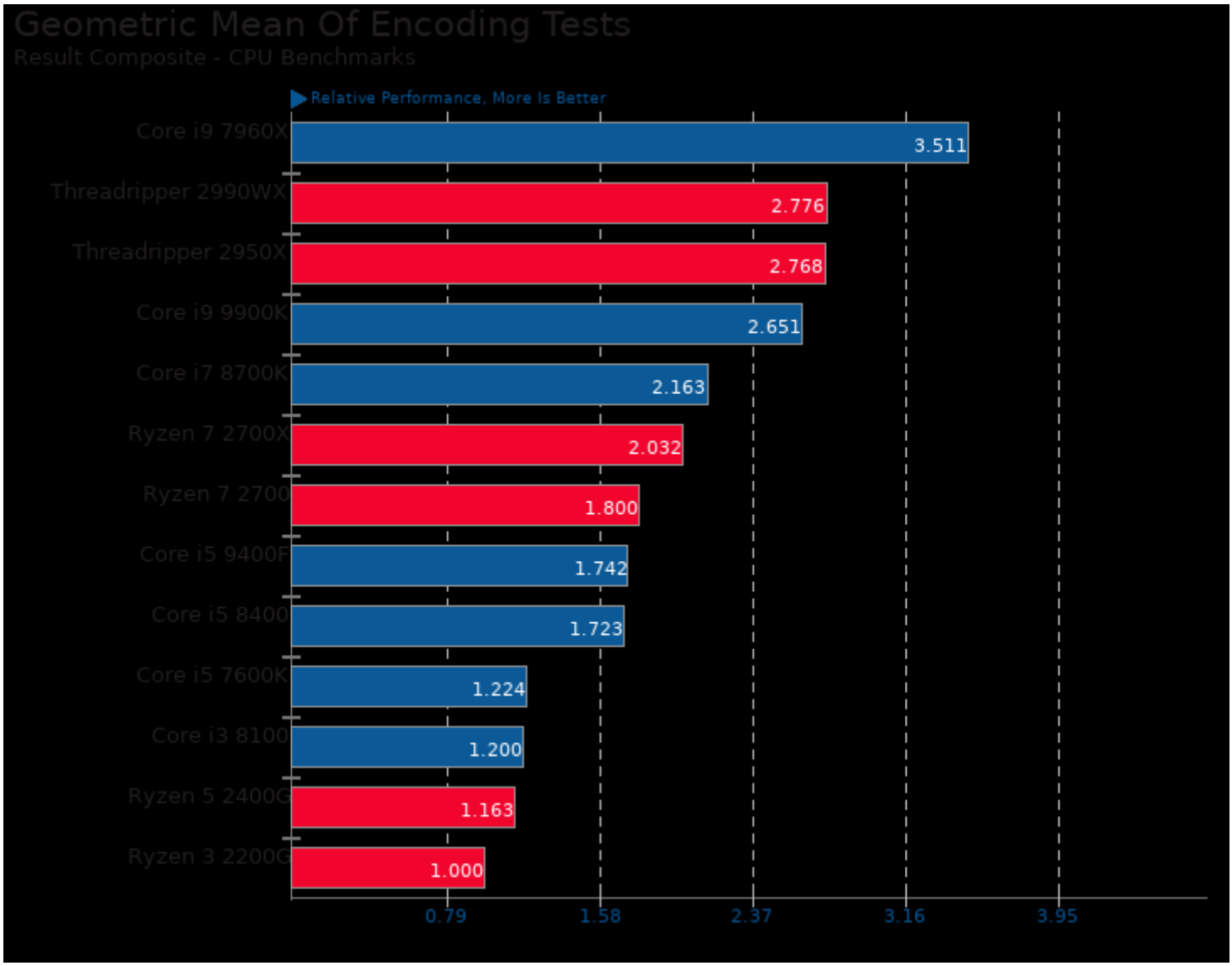
Geometric mean based upon tests: pts/stockfish and pts/m-queens



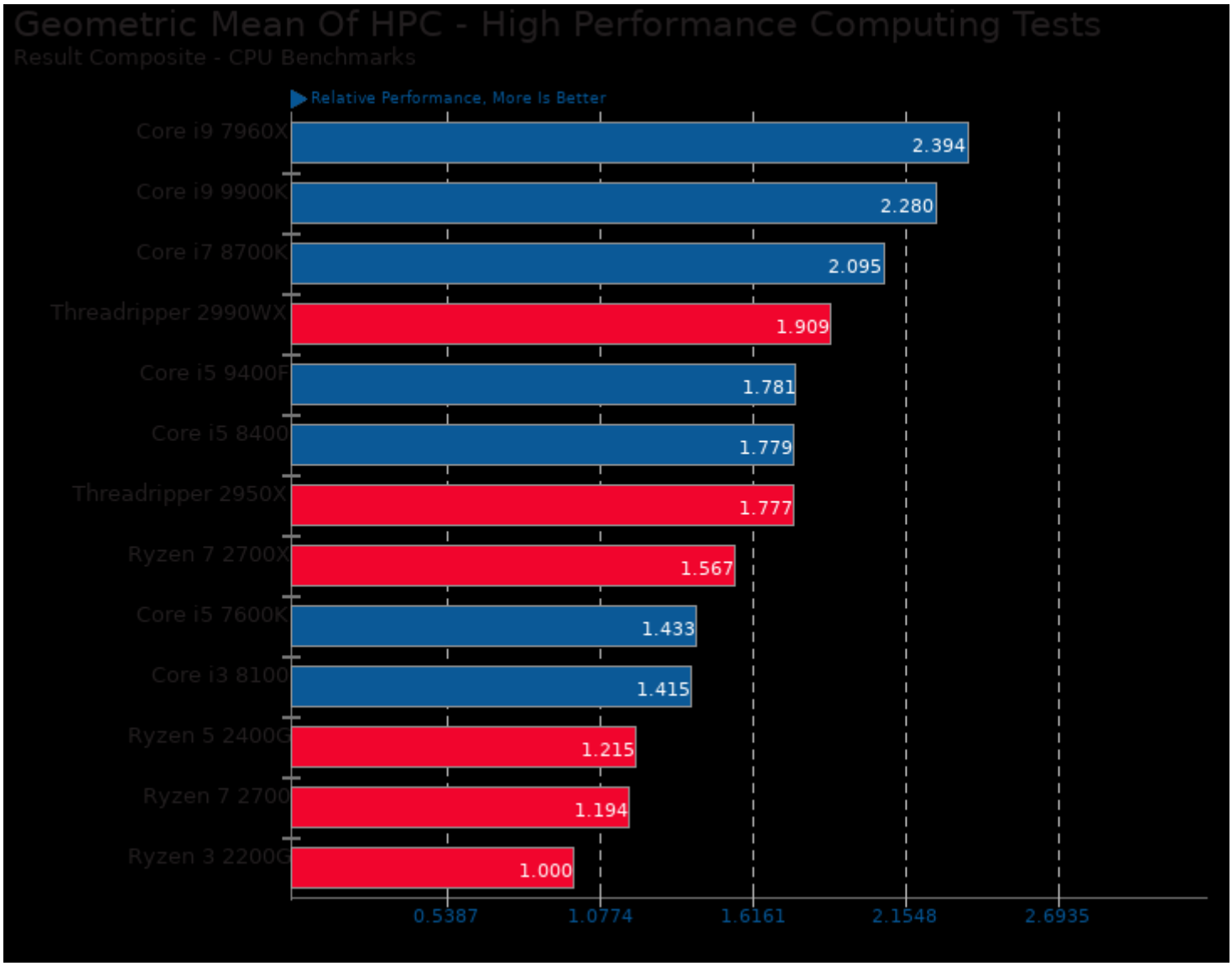
Geometric mean based upon tests: pts/vpxenc, pts/graphics-magick, pts/himeno, pts/stockfish, pts/hmmer, pts/build-llvm, pts/c-ray, pts/encode-mp3, pts/encode-flac, pts/john-the-ripper, pts/dav1d, pts/x264, pts/x265, pts/compress-xz, pts/compress-zstd, pts/svt-av1, pts/svt-vp9 and pts/gromacs



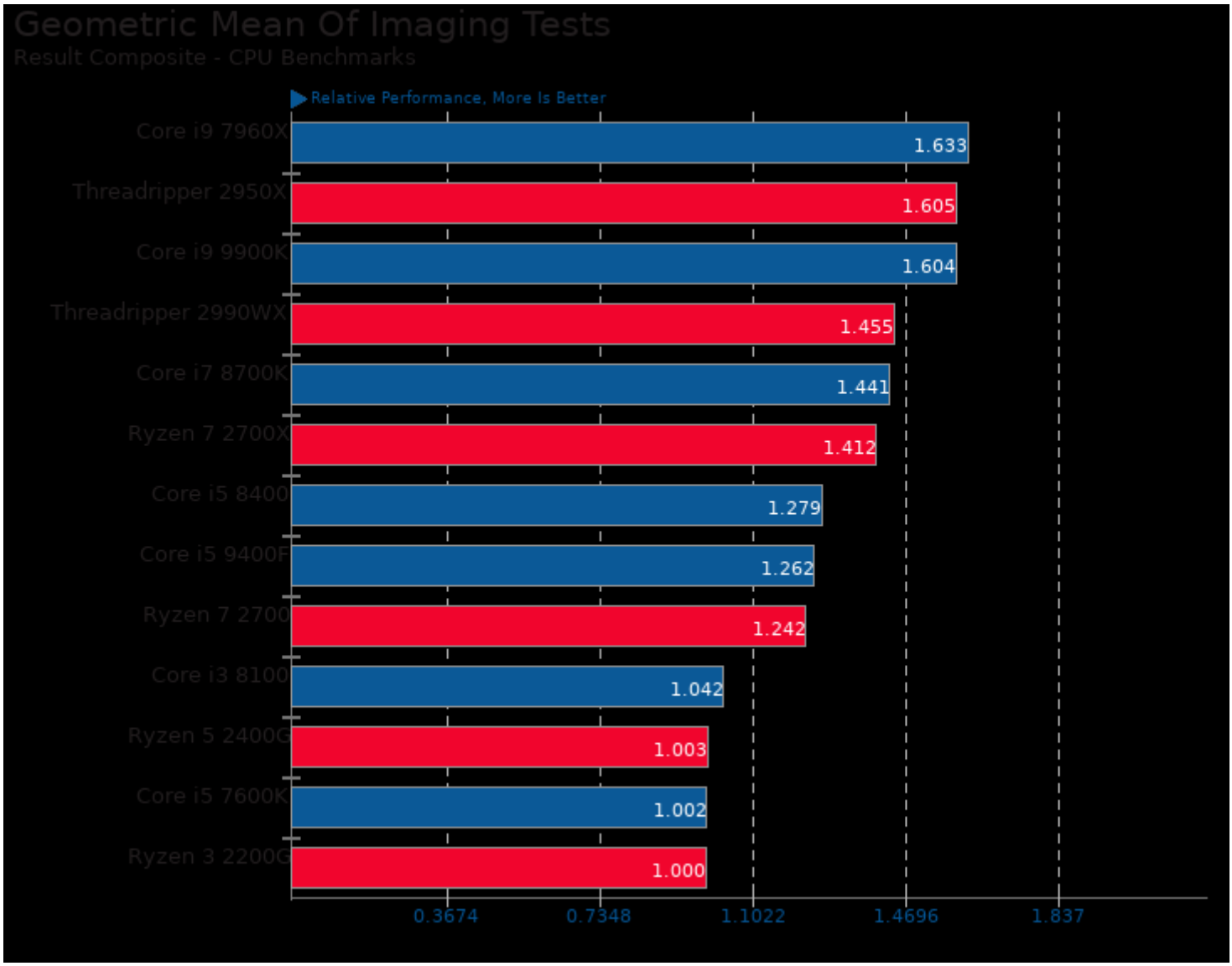
Geometric mean based upon tests: pts/compress-zstd and pts/compress-xz



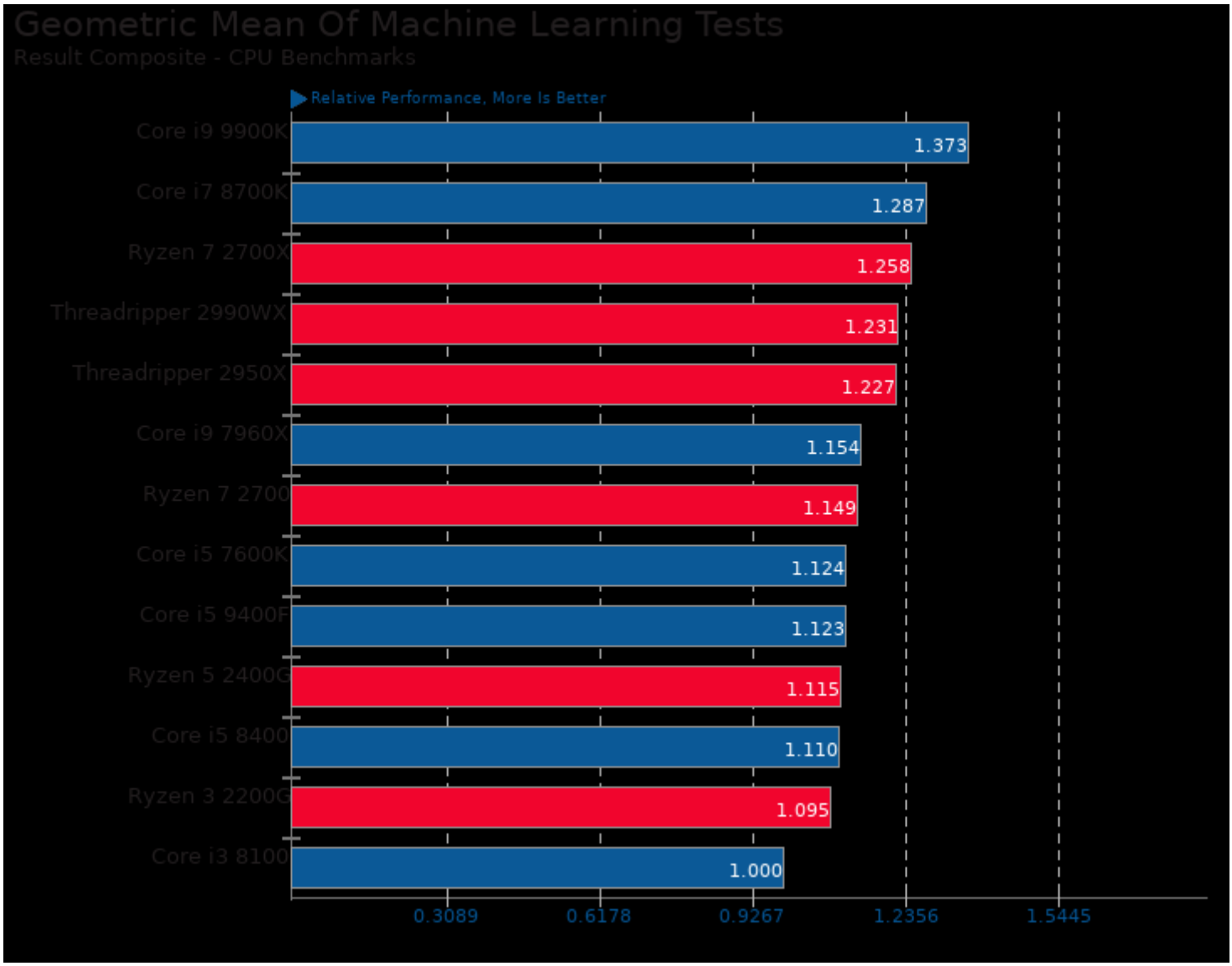
Geometric mean based upon tests: pts/encode-mp3, pts/encode-flac, pts/svt-vp9, pts/svt-hevc, pts/x264, pts/x265, pts/vpxenc, pts/dav1d and pts/svt-av1



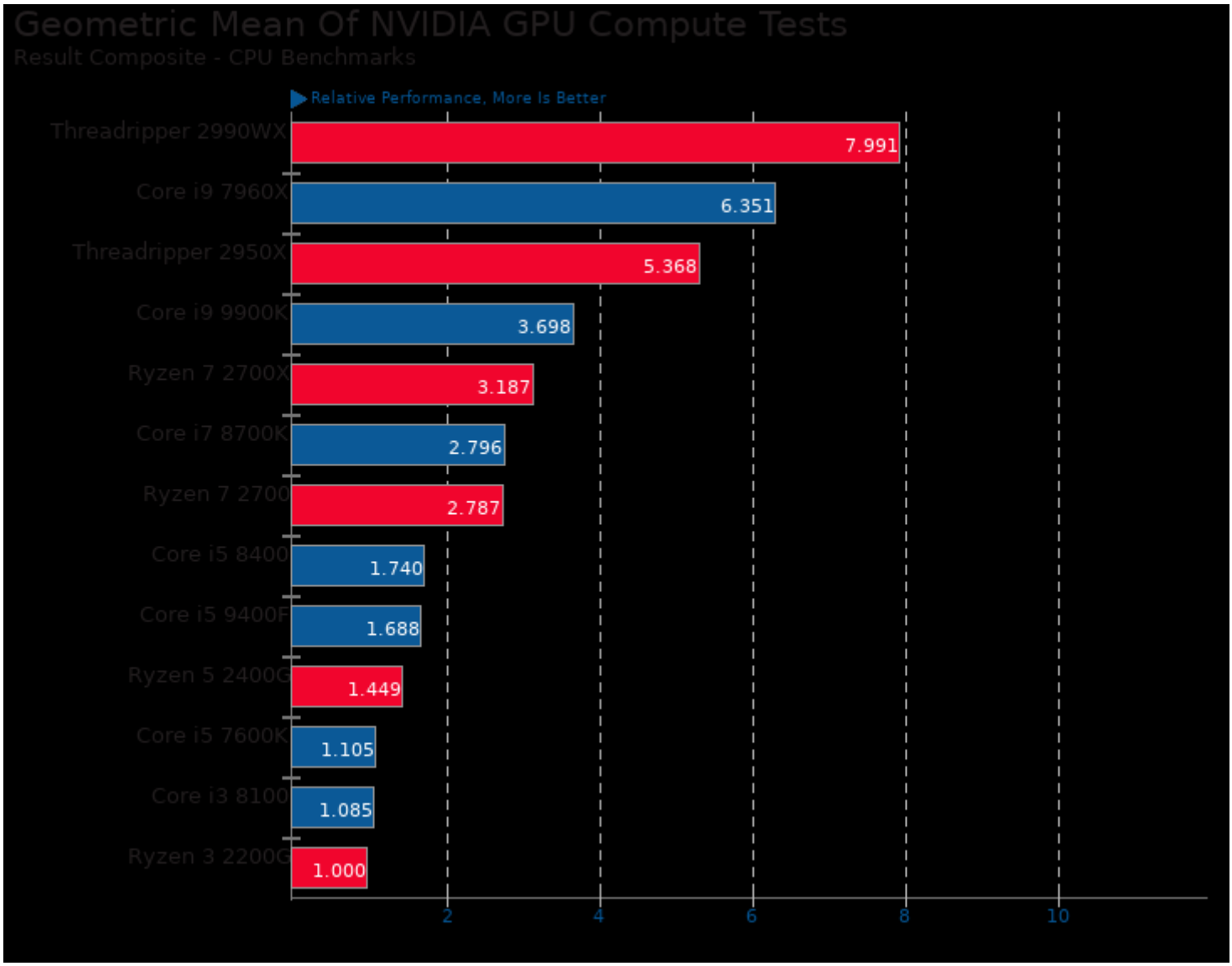
Geometric mean based upon tests: pts/namd, pts/gromacs, pts/cp2k, pts/himeno, pts/hmmer, pts/rbenchmark, pts/scikit-learn and pts/tensorflow



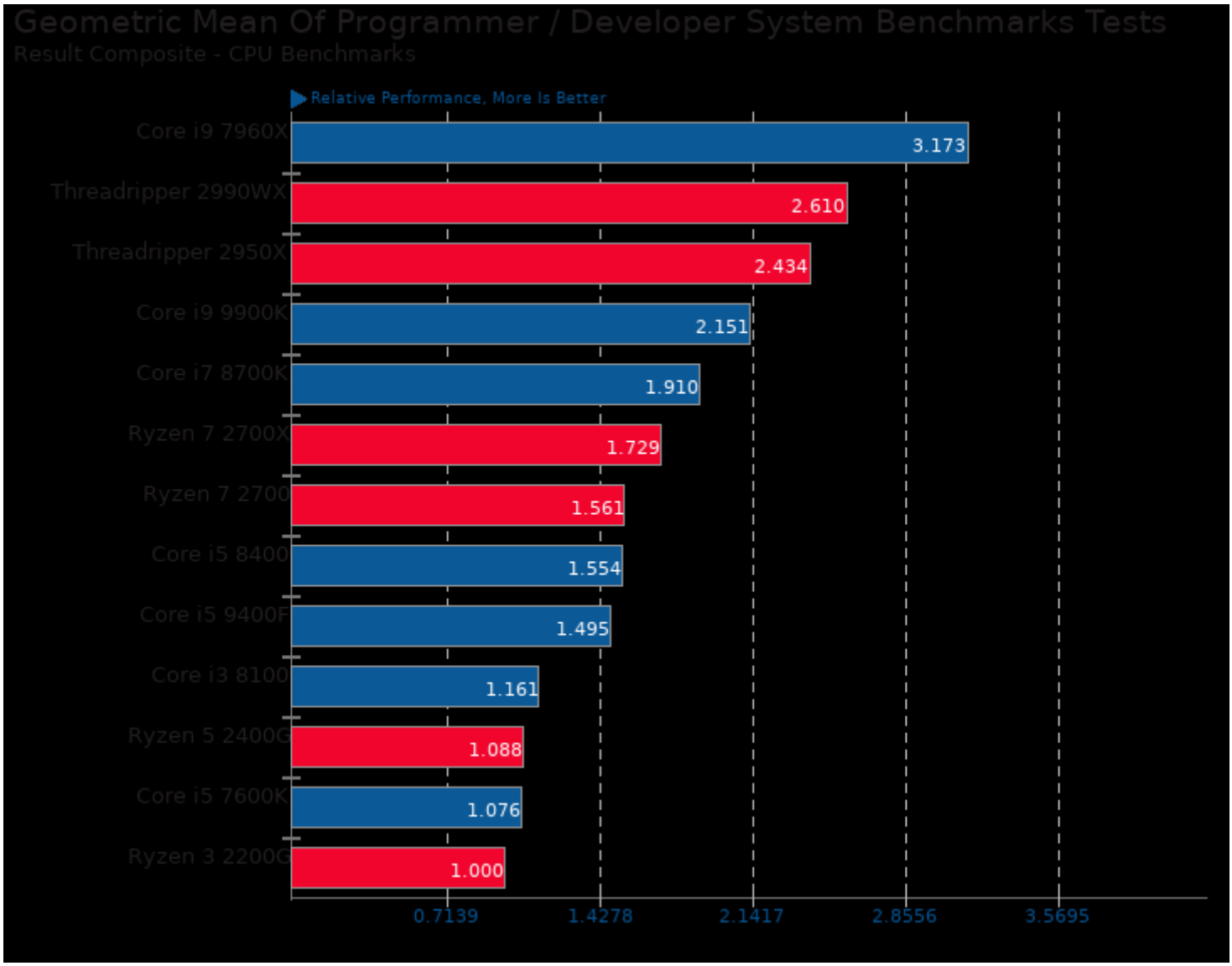
Geometric mean based upon tests: pts/graphics-magick, system/gimp and system/darktable



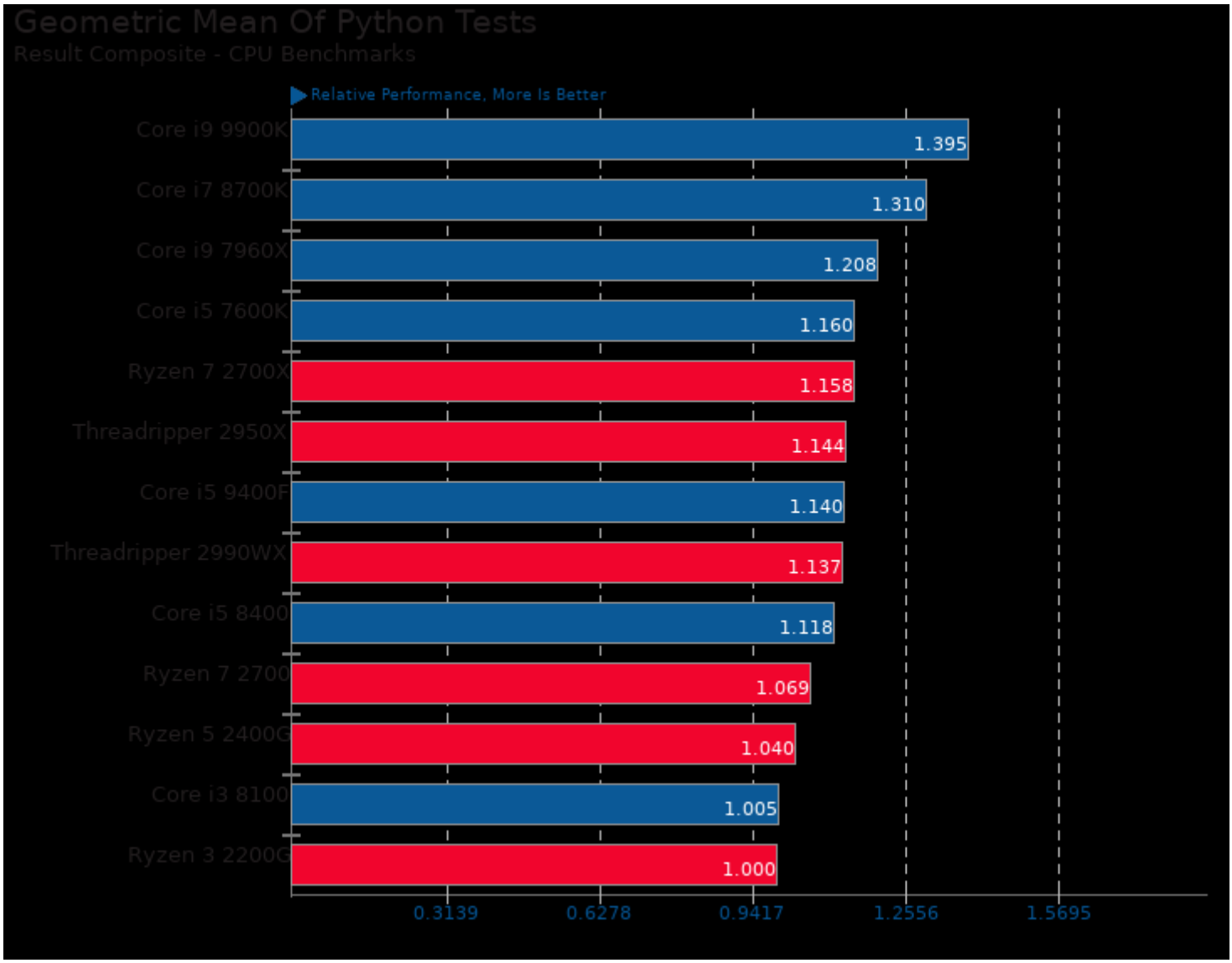
Geometric mean based upon tests: pts/rbenchmark, pts/scikit-learn and pts/tensorflow



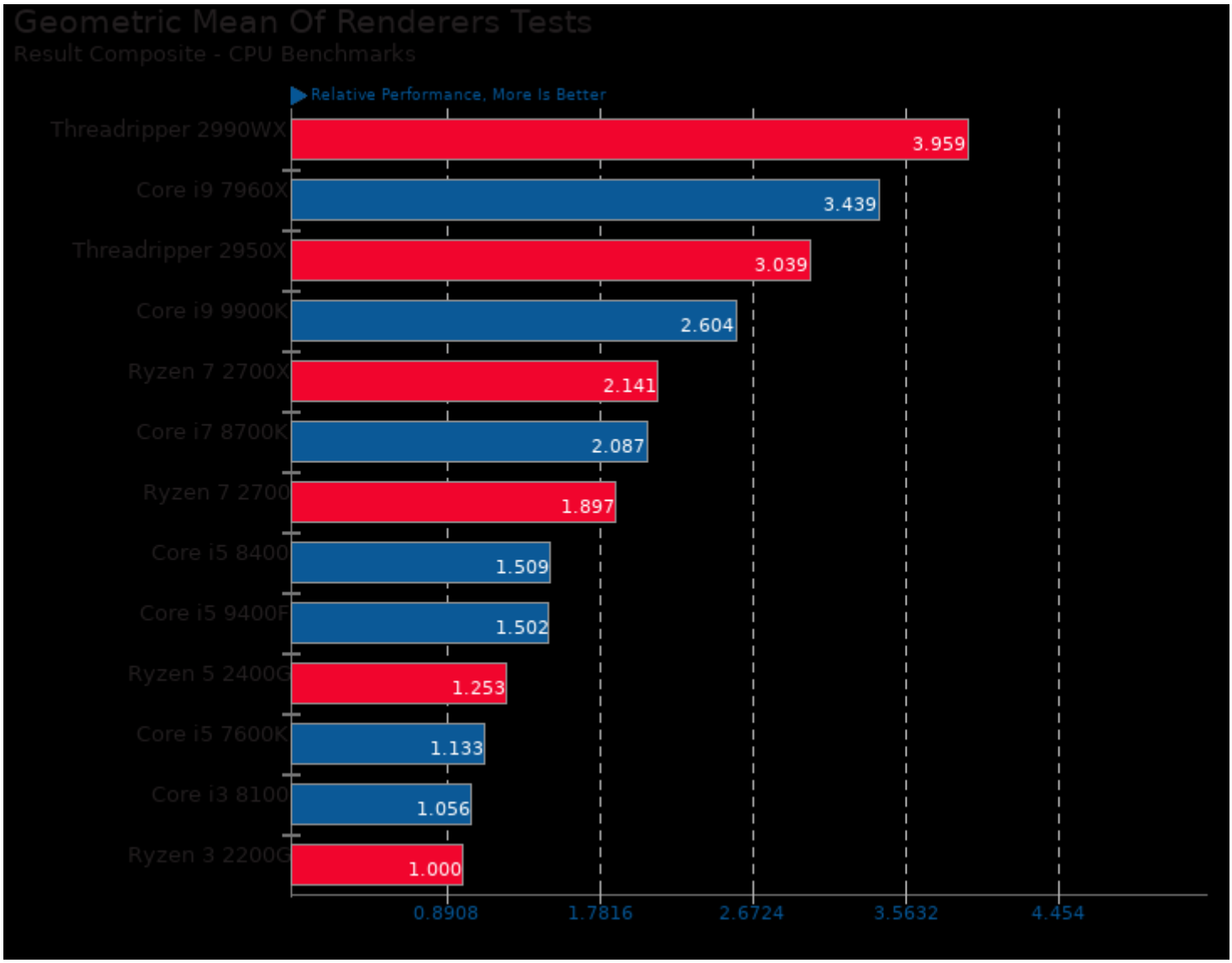
Geometric mean based upon tests: pts/gromacs, pts/indigobench, pts/v-ray and pts/blender



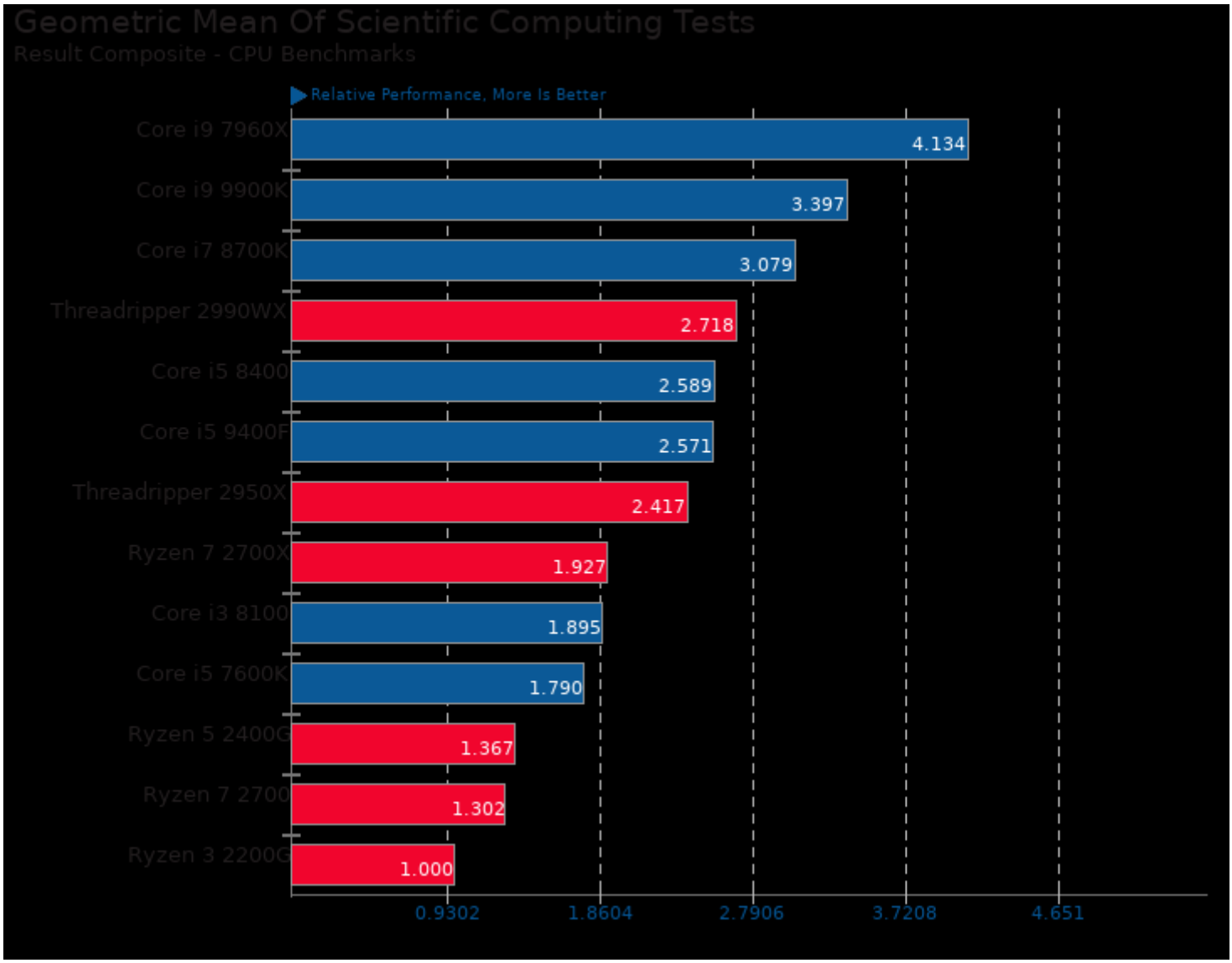
Geometric mean based upon tests: pts/compress-zstd, pts/pybench, pts/build-linux-kernel and pts/build-llvm



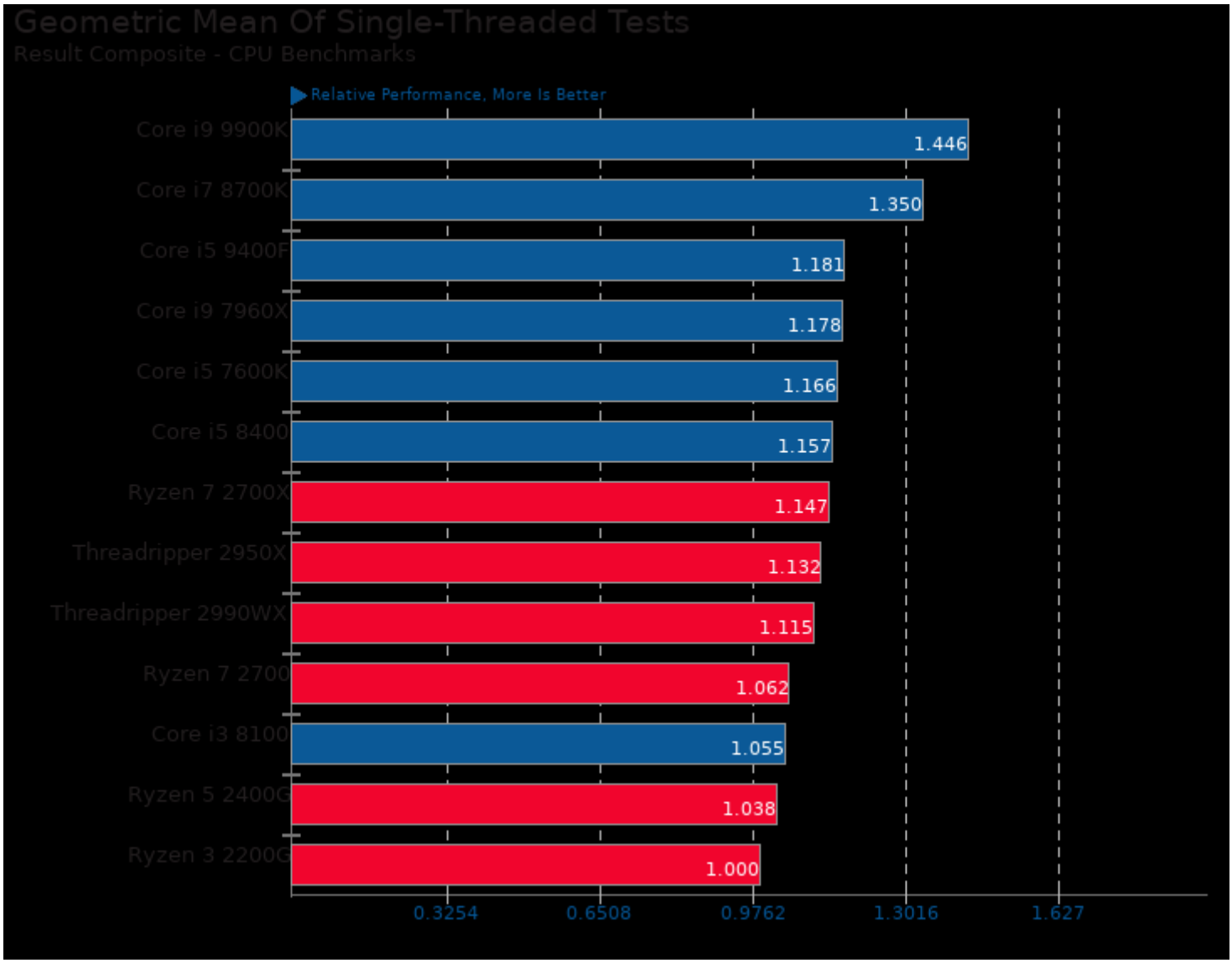
Geometric mean based upon tests: pts/pybench and pts/scikit-learn



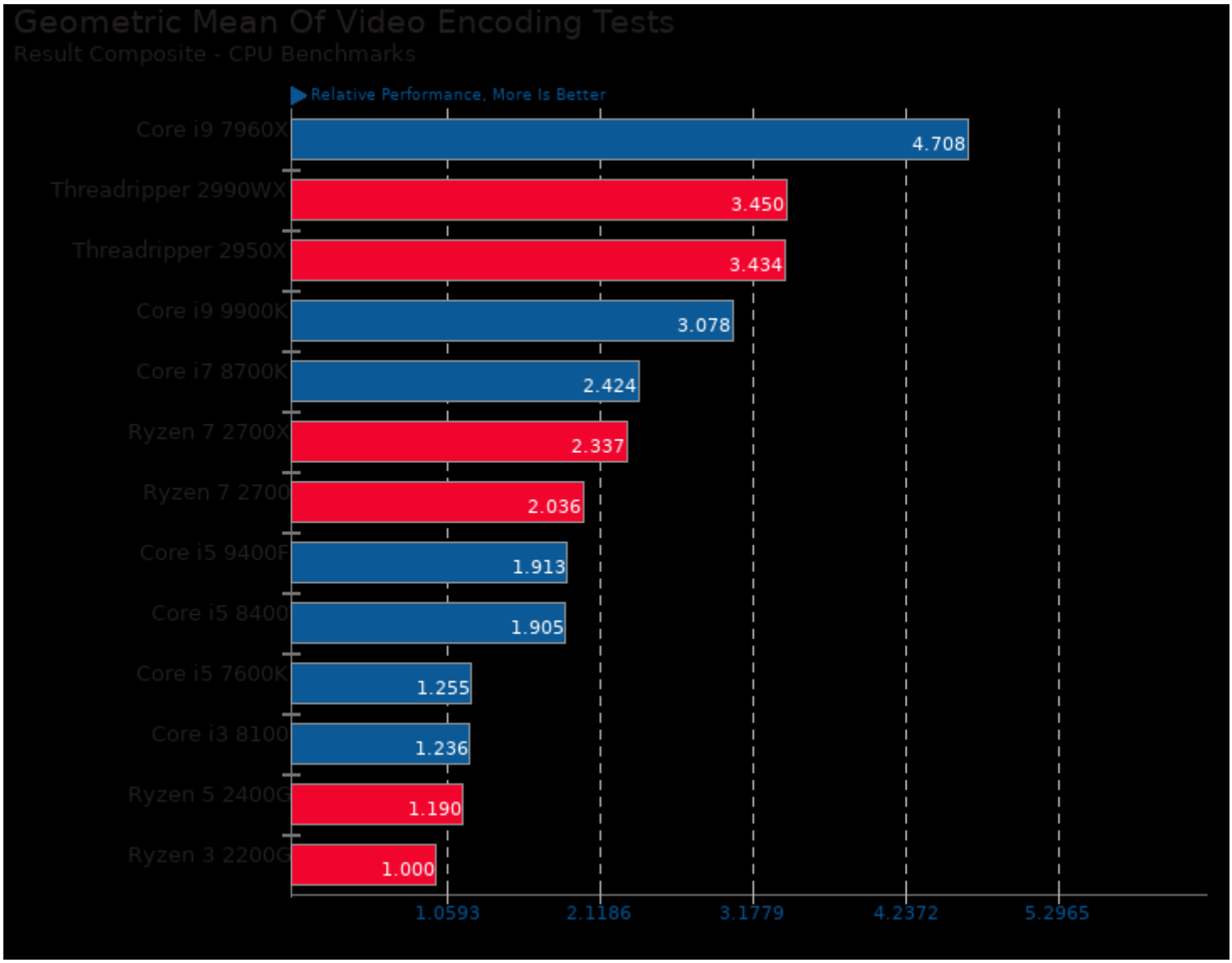
Geometric mean based upon tests: pts/c-ray, pts/blender, pts/radiance, pts/ttsiod-renderer, pts/v-ray and pts/indigobench



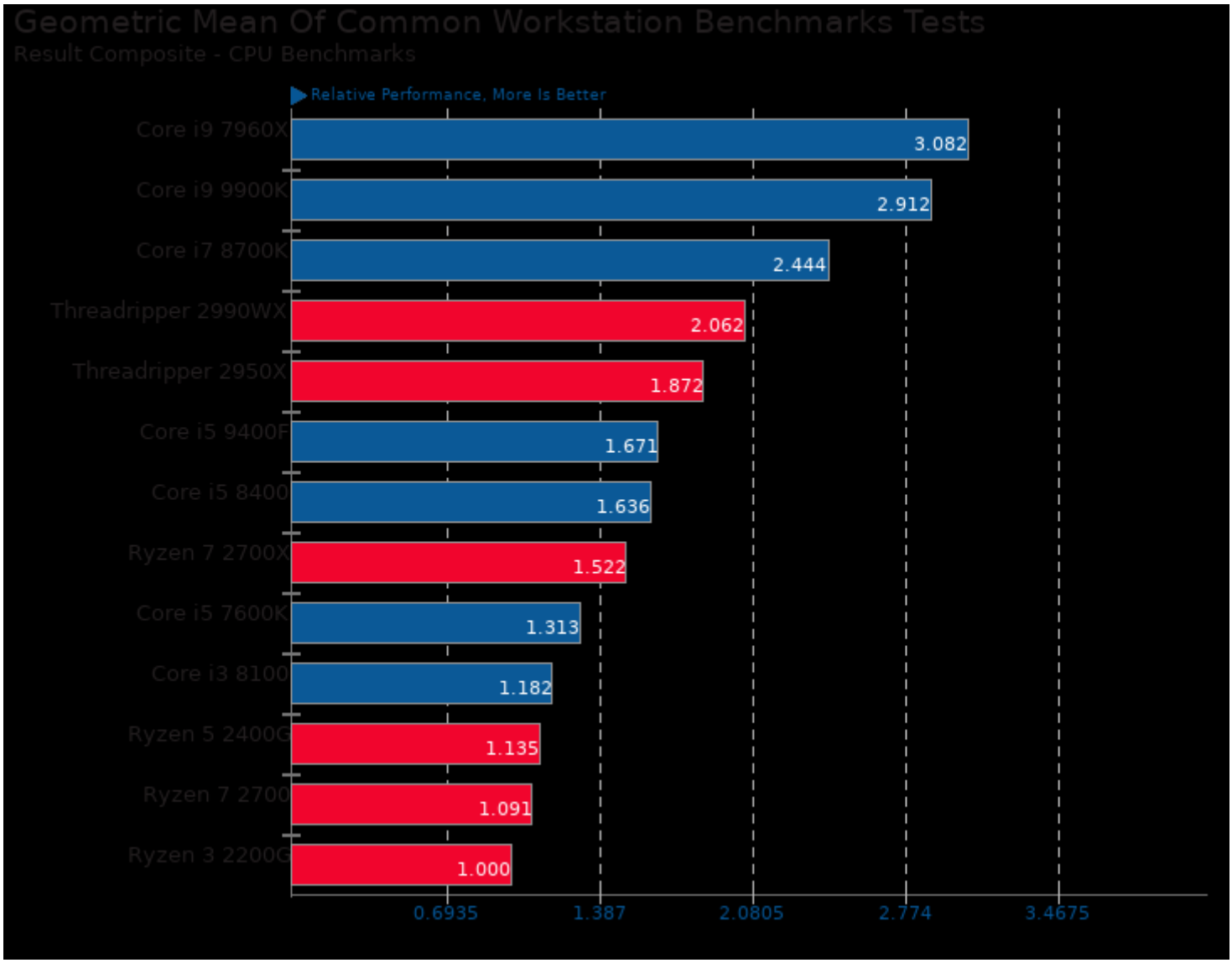
Geometric mean based upon tests: pts/namd, pts/gromacs, pts/cp2k, pts/himeno and pts/hmmer



Geometric mean based upon tests: pts/encode-flac, pts/encode-mp3, pts/radiance, pts/rbenchmark, pts/pybench and system/tesseract-ocr



Geometric mean based upon tests: pts/svt-vp9, pts/svt-hevc, pts/x264, pts/x265, pts/vpxenc, pts/dav1d and pts/svt-av1



Geometric mean based upon tests: pts/blender, pts/himeno, pts/x265 and pts/sysbench

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 11:52.