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ARM Cortex-A15 Quad-Core ODROID-XU Performance Benchmarks

ODROID-XU quad-core ARM Cortex-A15 big.LITTLE benchmarks. Benchmarks by Michael Larabel (MichaelLarabel.com) for a future article on Phoronix.com reviewing the Intel Core i3 4130 CPU on Linux.

Automated Executive Summary

Intel Core i7 3960X had the most wins, coming in first place for 36% of the tests.

Based on the geometric mean of all complete results, the fastest (Intel Core i7 3960X) was 14.036x the speed of the slowest (Hikey 1/96). Intel Core i7 4770K was 0.825x the speed of Intel Core i7 3960X, AMD FX-8350 was 0.954x the speed of Intel Core i7 4770K, Intel Core i7 3770K was 0.924x the speed of AMD FX-8350, Intel Core i5 3470 was 0.754x the speed of Intel Core i7 3770K, Intel Core i5 2500K was 0.942x the speed of Intel Core i5 3470, Intel Core i5 2400S was 0.79x the speed of Intel Core i5 2500K, Intel Core i3 4130 was 0.975x the speed of Intel Core i5 2400S, Intel Core i3 2120 was 0.813x the speed of Intel Core i3 4130, ODROID-XU was 0.425x the speed of Intel Core i3 2120, Hikey 1/96 was 0.519x the speed of ODROID-XU.

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

x264 (H.264 Video Encoding) at 46.823x
Smallpt (Global Illumination Renderer; 100 Samples) at 18.531x
OpenSSL (RSA 4096-bit Performance) at 15.784x
LAMMPS Molecular Dynamics Simulator (Test: Rhodopsin Protein) at 14.974x

PolyBench-C (Test: 3 Matrix Multiplications) at 10.583x
C-Ray (Total Time) at 10.246x
FFmpeg (H.264 HD To NTSC DV) at 9.387x
Rodinia (Test: OpenMP CFD Solver) at 8.434x
N-Queens (Elapsed Time) at 7.615x
Dolfyn (Computational Fluid Dynamics) at 7.471x.

Test Systems:

AMD FX-8350

Processor: AMD FX-8350 Eight-Core @ 4.00GHz (8 Cores), Motherboard: ASUS Crosshair V Formula, Chipset: AMD RD890 bridge, Memory: 8192MB, Disk: 240GB OCZ VERTEX3, Graphics: Sapphire AMD Radeon HD 4870 512MB, Audio: Realtek ALC889, Monitor: AL2223W, Network: Intel 82583V Gigabit Connection

OS: Ubuntu 13.10, Kernel: 3.11.0-11-generic (x86_64), Desktop: Unity 7.1.1, Display Server: X Server 1.14.2.901 (1.14.3 RC 1), Display Driver: radeon 7.2.0, OpenGL: 3.1 Mesa 9.2.0 Gallium 0.4, Compiler: GCC 4.8, File-System: ext4, Screen Resolution: 1680x1050

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand

Intel Core i3 2120

Processor: Intel Core i3-2120 @ 3.30GHz (4 Cores), Motherboard: ECS Z77H2-A2X v1.0, Chipset: Intel 2nd Generation Core Family DRAM, Memory: 8192MB, Disk: 240GB OCZ VERTEX3, Graphics: Sapphire AMD Radeon HD 4870 512MB, Audio: Realtek ALC892, Monitor: AL2223W, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.11.0-11-generic (x86_64), Desktop: Unity 7.1.1, Display Server: X Server 1.14.2.901 (1.14.3 RC 1), Display Driver: radeon 7.2.0, OpenGL: 3.1 Mesa 9.2.0 Gallium 0.4, Compiler: GCC 4.8, File-System: ext4, Screen Resolution: 1680x1050

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand

Intel Core i5 2400S

Processor: Intel Core i5-2400S @ 2.50GHz (4 Cores), Motherboard: ECS Z77H2-A2X v1.0, Chipset: Intel 2nd Generation Core Family DRAM, Memory: 8192MB, Disk: 240GB OCZ VERTEX3, Graphics: Sapphire AMD Radeon HD 4870 512MB, Audio: Realtek ALC892, Monitor: AL2223W, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.11.0-11-generic (x86_64), Desktop: Unity 7.1.1, Display Server: X Server 1.14.2.901 (1.14.3 RC 1), Display Driver: radeon 7.2.0, OpenGL: 3.1 Mesa 9.2.0 Gallium 0.4, Compiler: GCC 4.8, File-System: ext4, Screen Resolution: 1680x1050

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand

Intel Core i5 2500K

Processor: Intel Core i5-2500K @ 3.30GHz (4 Cores), Motherboard: ECS Z77H2-A2X v1.0, Chipset: Intel 2nd Generation Core Family DRAM, Memory: 8192MB, Disk: 240GB OCZ VERTEX3, Graphics: Sapphire AMD Radeon HD 4870 512MB, Audio: Realtek ALC892, Monitor: AL2223W, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.11.0-11-generic (x86_64), Desktop: Unity 7.1.1, Display Server: X Server 1.14.2.901 (1.14.3 RC 1), Display Driver: radeon 7.2.0, OpenGL: 3.1 Mesa 9.2.0 Gallium 0.4, Compiler: GCC 4.8, File-System: ext4, Screen Resolution: 1680x1050

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand

Intel Core i5 3470

Processor: Intel Core i5-3470 @ 3.20GHz (4 Cores), Motherboard: ECS Z77H2-A2X v1.0, Chipset: Intel Xeon E3-1200 v2/3rd, Memory: 8192MB, Disk: 240GB OCZ VERTEX3, Graphics: Sapphire AMD Radeon HD 4870 512MB, Audio: Realtek ALC892, Monitor: AL2223W, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.11.0-11-generic (x86_64), Desktop: Unity 7.1.1, Display Server: X Server 1.14.2.901 (1.14.3 RC 1), Display Driver: radeon 7.2.0, OpenGL: 3.1 Mesa 9.2.0 Gallium 0.4, Compiler: GCC 4.8, File-System: ext4, Screen Resolution: 1680x1050

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand

Intel Core i7 3770K

Processor: Intel Core i7-3770K @ 3.50GHz (8 Cores), Motherboard: ECS Z77H2-A2X v1.0, Chipset: Intel Xeon E3-1200 v2/3rd, Memory: 8192MB, Disk: 240GB OCZ VERTEX3, Graphics: Sapphire AMD Radeon HD 4870 512MB, Audio: Realtek ALC892, Monitor: AL2223W, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.11.0-11-generic (x86_64), Desktop: Unity 7.1.1, Display Server: X Server 1.14.2.901 (1.14.3 RC 1), Display Driver: radeon 7.2.0, OpenGL: 3.1 Mesa 9.2.0 Gallium 0.4, Compiler: GCC 4.8, File-System: ext4, Screen Resolution: 1680x1050

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object

--enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand

Intel Core i7 3960X

Processor: Intel Core i7-3960X @ 3.30GHz (12 Cores), Motherboard: Intel DX79SI, Chipset: Intel Xeon E5/Core, Memory: 8192MB, Disk: 240GB OCZ VERTEX3, Graphics: Sapphire AMD Radeon HD 4870 512MB, Audio: Realtek ALC892, Monitor: AL2223W, Network: Intel 82579LM Gigabit Connection

OS: Ubuntu 13.10, Kernel: 3.11.0-11-generic (x86_64), Desktop: Unity 7.1.1, Display Server: X Server 1.14.2.901 (1.14.3 RC 1), Display Driver: radeon 7.2.0, OpenGL: 3.1 Mesa 9.2.0 Gallium 0.4, Compiler: GCC 4.8, File-System: ext4, Screen Resolution: 1680x1050

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand

Intel Core i3 4130

Processor: Intel Core i3-4130 @ 3.40GHz (4 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 8192MB, Disk: 240GB OCZ VERTEX3, Graphics: Intel Device 041e (1150MHz), Audio: Intel Haswell HDMI, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.11.0-11-generic (x86_64), Desktop: Unity 7.1.1, Display Server: X Server 1.14.2.901 (1.14.3 RC 1), Display Driver: intel 2.21.14, OpenGL: 3.1 Mesa 9.2.0, Compiler: GCC 4.8, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand

Intel Core i7 4770K

Processor: Intel Core i7-4770K @ 3.50GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 8192MB, Disk: 240GB OCZ VERTEX3, Graphics: Sapphire AMD Radeon HD 4870 512MB, Audio: Intel Haswell HDMI, Monitor: AL2223W, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.11.0-11-generic (x86_64), Desktop: Unity 7.1.1, Display Server: X Server 1.14.2.901 (1.14.3 RC 1), Display Driver: radeon 7.2.0, OpenGL: 3.1 Mesa 9.2.0 Gallium 0.4, Compiler: GCC 4.8, File-System: ext4, Screen Resolution: 1680x1050

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand

ODROID-XU

Processor: ARMv7 rev 3 @ 1.80GHz (4 Cores), Motherboard: ODROIDXU, Memory: 2048MB, Disk: 8GB SD08G

OS: Ubuntu 13.10, Kernel: 3.4.5 (armv7l), Compiler: GCC 4.8, File-System: ext4, Screen Resolution: 1280x720

Compiler Notes: --build=arm-linux-gnueabihf --disable-browser-plugin --disable-libitm --disable-libquadmath --disable-sjlj-exceptions --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=arm-linux-gnueabihf --target=arm-linux-gnueabihf --with-arch-directory=arm --with-arch=armv7-a --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-float=hard --with-fpu=vfpv3-d16 --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-armhf/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-armhf --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-armhf --with-mode=thumb -v
Processor Notes: Scaling Governor: exynos_cpufreq performance

Hikey 1/96

Processor: AArch64 rev 3 @ 1.20GHz (8 Cores), Motherboard: HiKey Development Board, Memory: 879MB, Disk: 4GB MMC04G

OS: Debian 8.0, Kernel: 3.18.0-linaro-hikey (aarch64), Compiler: GCC 4.9.1, File-System: ext4, Screen Resolution: 1280x1440

Compiler Notes: --build=aarch64-linux-gnu --disable-browser-plugin --disable-libquadmath --disable-libsanitizer --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --target=aarch64-linux-gnu --with-arch-directory=arm64 -v
Processor Notes: Scaling Governor: hisi-acpu ondemand

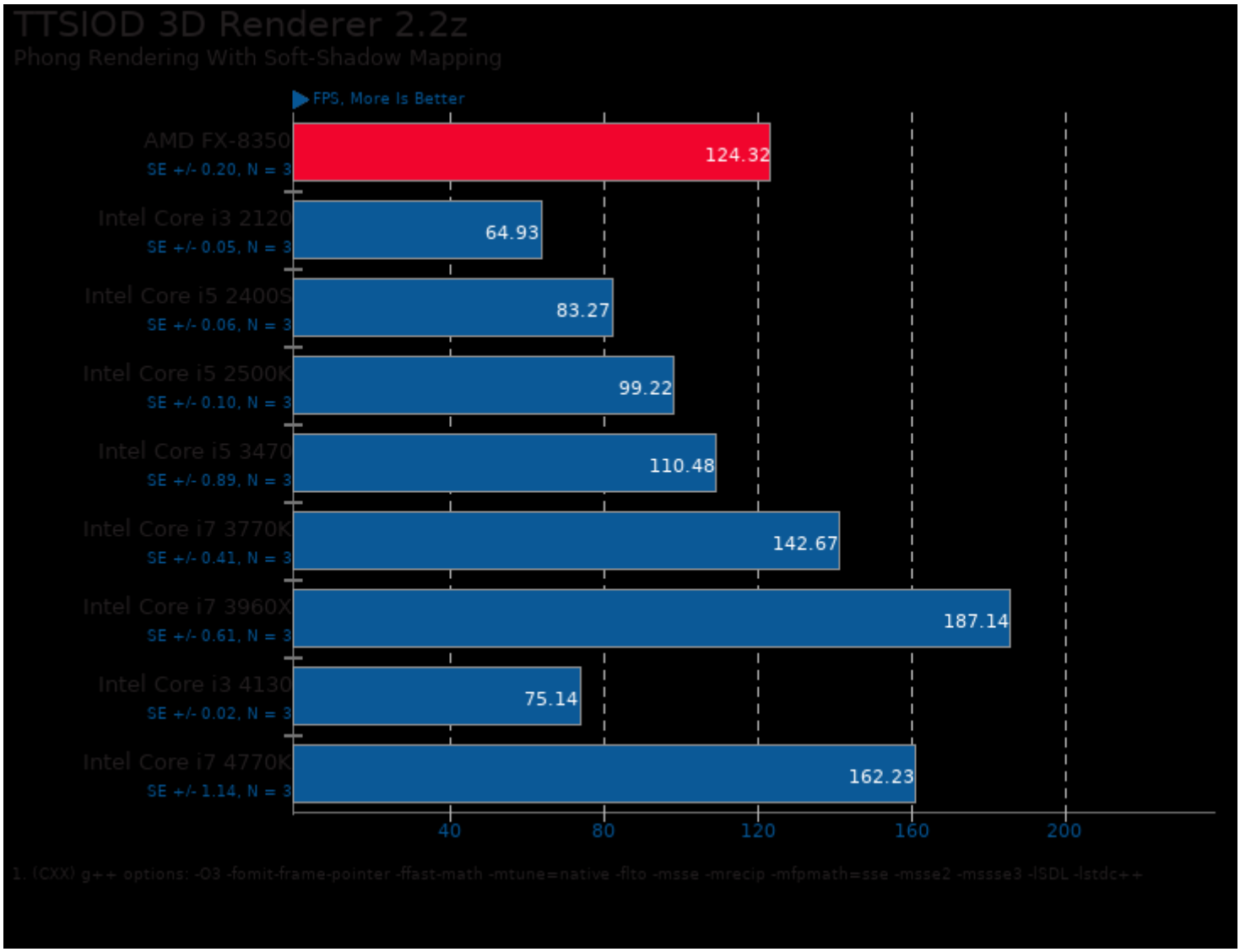
	AMD FX-8350	Intel Core i3 2120	Intel Core i5 2400S	Intel Core i5 2500K	Intel Core i5 3470	Intel Core i7 3770K	Intel Core i7 3960X	Intel Core i3 4130	Intel Core i7 4770K	ODROID -XU	Hikey 1/96
TTSIOD 3D Renderer - P.R.W.S.S.M (FPS)	124.32	**64.93**	83.27	99.22	110.48	142.67	**187.14**	75.14	162.23		
Normalized	66.43%	34.7%	44.5%	53.02%	59.04%	76.24%	100%	40.15%	86.69%		
Standard Deviation	0.3%	0.1%	0.1%	0.2%	1.4%	0.5%	0.6%	0.1%	1.2%		
x264 - H.2.V.E (FPS)	159.02	68.12	83.35	103.96	112.16	152.57	**216.32**	88.82	181.52	23.15	**4.62**
Normalized	73.51%	31.49%	38.53%	48.06%	51.85%	70.53%	100%	41.06%	83.91%	10.7%	2.14%
Standard Deviation	0.7%	1%	0.9%	1%	0.9%	0.6%	1.6%	0.5%	1%	3.7%	7.5%
Fhourstones - C.C.4.S (Kpos / sec)	10140	10076	**9980**	10871	10967	11748	12001	11276	**12784**		
Normalized	79.32%	78.82%	78.07%	85.04%	85.79%	91.89%	93.88%	88.21%	100%		
Standard Deviation	0.1%	0.1%	0%	0.2%	0.3%	0.3%	0.3%	0.2%	0.5%		
John The Ripper - Blowfish (Real	7105	**2257**	2464	3202	3708	6000	**8064**	3062	6650		
Normalized	88.11%	27.99%	30.56%	39.71%	45.98%	74.4%	100%	37.97%	82.47%		
Standard Deviation	0.6%	1%	0.6%	0.5%	0.6%	0%	0%	0.6%	0.6%		

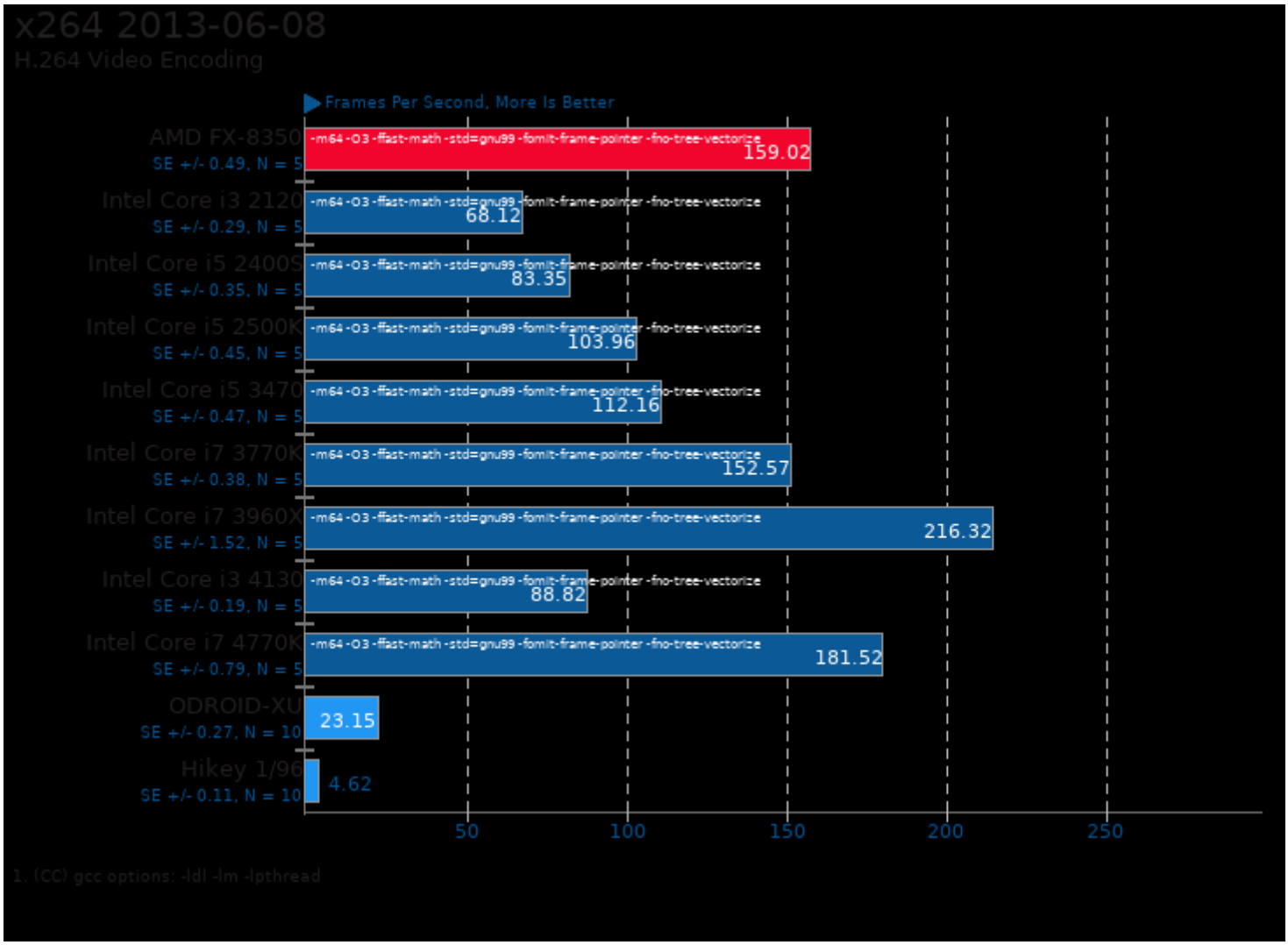
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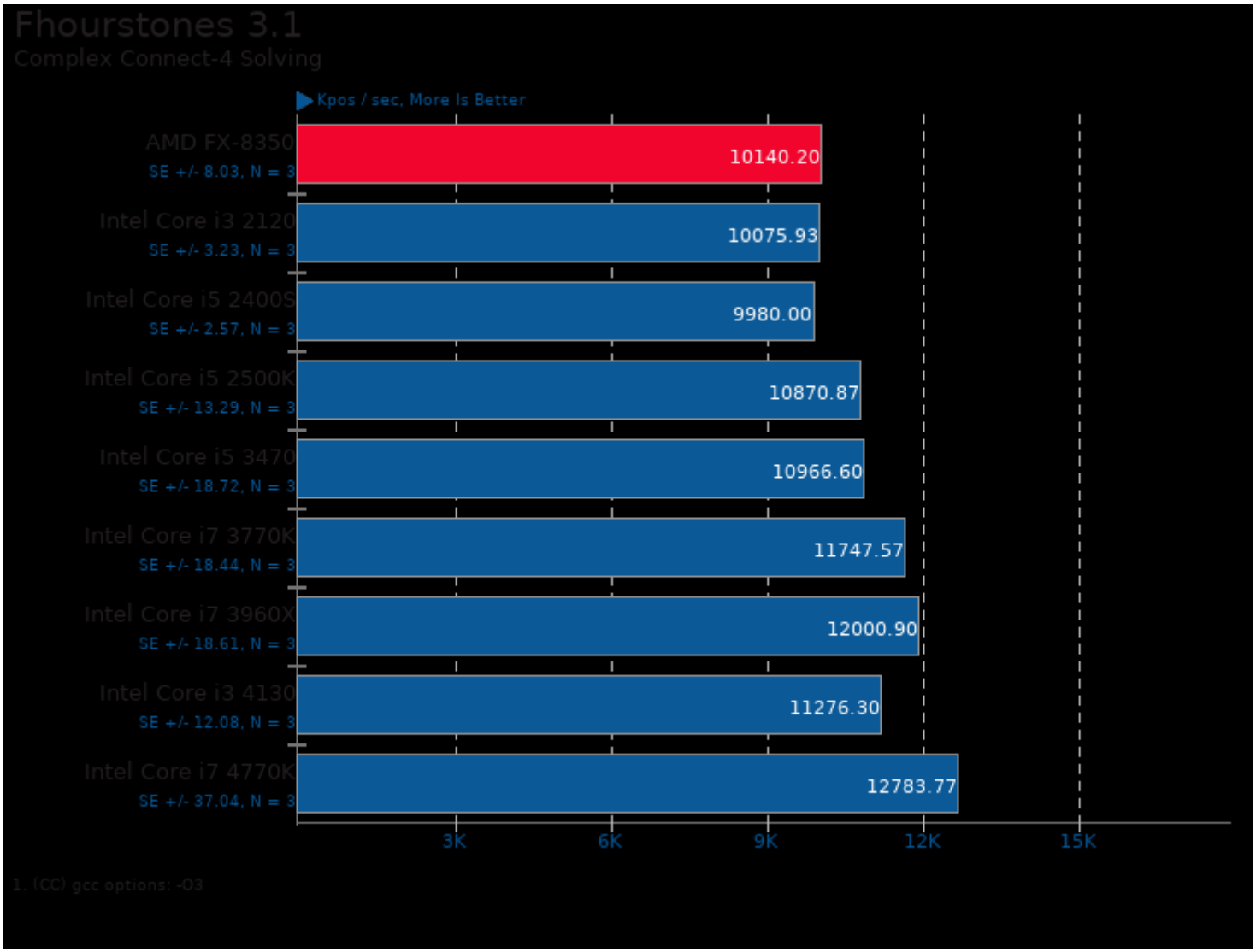
John The Ripper - Traditional DES (Real C/S)	**19191000**	**3815000**	6012000	7838000	9114333	10048333	13467000	4751000	10354000		
Normalized	100%	19.88%	31.33%	40.84%	47.49%	52.36%	70.17%	24.76%	53.95%		
Standard Deviation	0.1%	0.5%	0%	0.6%	0.1%	0.2%	0%	0%	0%		
John The Ripper - MD5 (Real C/S)	32768	32396	**32244**	36224	37384	40472	38532	36252	**41656**		
Normalized	78.66%	77.77%	77.41%	86.96%	89.74%	97.16%	92.5%	87.03%	100%		
Standard Deviation	0.2%	0.6%	0.6%	1%	0%	0%	0.1%	0.1%	0.3%		
OpenSSL - R.4.b.P (Signs/sec)	89.57	102.90	102.20	115.13	120.10	130.10	121.77	128.80	**148.37**	**9.40**	
Normalized	60.37%	69.35%	68.88%	77.6%	80.95%	87.69%	82.07%	86.81%	100%	6.34%	
Standard Deviation	0.1%	0%	0.1%	0.1%	0.1%	0.2%	0.1%	0.9%	0.1%	0%	
LAMMPS Molecular Dynamics Simulator - Rhodopsin Protein (Loop	56.05	48.07	46.13	41.29	38.97	35.79	39.37	39.79	**33.49**		**501.48**
Normalized	59.75%	69.67%	72.6%	81.11%	85.94%	93.57%	85.06%	84.17%	100%		6.68%
Standard Deviation	0.1%	0.2%	0.1%	0.3%	0.1%	0.1%	0.5%	0.2%	0.1%		0.1%
Rodinia - OpenMP CFD Solver (sec)	**83.41**	210.30	169.75	139.75	134.35	107.15	87.39	172.40	95.16		**703.52**
Normalized	100%	39.66%	49.14%	59.69%	62.08%	77.84%	95.45%	48.38%	87.65%		11.86%
Standard Deviation	0.1%	0.1%	0.5%	0.3%	0.7%	0.9%	1%	0.3%	0.1%		1.6%
Dolfyn - C.F.D (sec)	36.94	30.96	29.05	25.92	25.38	23.03	24.24	25.81	**21.08**	**157.48**	
Normalized	57.07%	68.09%	72.56%	81.33%	83.06%	91.53%	86.96%	81.67%	100%	13.39%	
Standard Deviation	0.5%	1%	0.6%	0.2%	0.3%	0.5%	0.8%	1.6%	0.6%	1.3%	
Timed HMMer Search - P.D.S (sec)	**11.94**	22.61	19.48	16.59	15.73	13.64	15.22	19.77	12.36	**58.79**	
Normalized	100%	52.81%	61.29%	71.97%	75.91%	87.54%	78.45%	60.39%	96.6%	20.31%	
Standard Deviation	5.2%	0.2%	0.3%	0.5%	0.8%	0.3%	0.2%	0.4%	0.1%	1.9%	
Timed MAFFT Alignment - M.S.A (sec)	6.47	11.74	10.14	8.13	7.84	6.57	6.20	9.83	**5.93**	23.70	**33.63**
Normalized	91.65%	50.51%	58.48%	72.94%	75.64%	90.26%	95.65%	60.33%	100%	25.02%	17.63%
Standard Deviation	6.8%	5.5%	4.4%	3.9%	3.8%	4.7%	6.2%	5.6%	6.3%	9.4%	6.8%
Timed Linux Kernel Compilation -	84.62	**202.43**	154.33	122.04	119.89	90.74	**62.60**	157.87	73.97		
Normalized	73.98%	30.92%	40.56%	51.29%	52.21%	68.99%	100%	39.65%	84.63%		
Standard Deviation	1.6%	0.8%	0.9%	0.9%	1.2%	1.2%	2.3%	0.6%	1.2%		
C-Ray - Total Time (sec)	25.72	67.62	43.61	33.41	32.81	27.90	**19.32**	49.87	22.87	147.98	**197.95**
Normalized	75.12%	28.57%	44.3%	57.83%	58.88%	69.25%	100%	38.74%	84.48%	13.06%	9.76%
Standard Deviation	0.1%	0%	0.1%	0.2%	0.3%	0.3%	0.1%	0%	0.1%	13.3%	4.3%

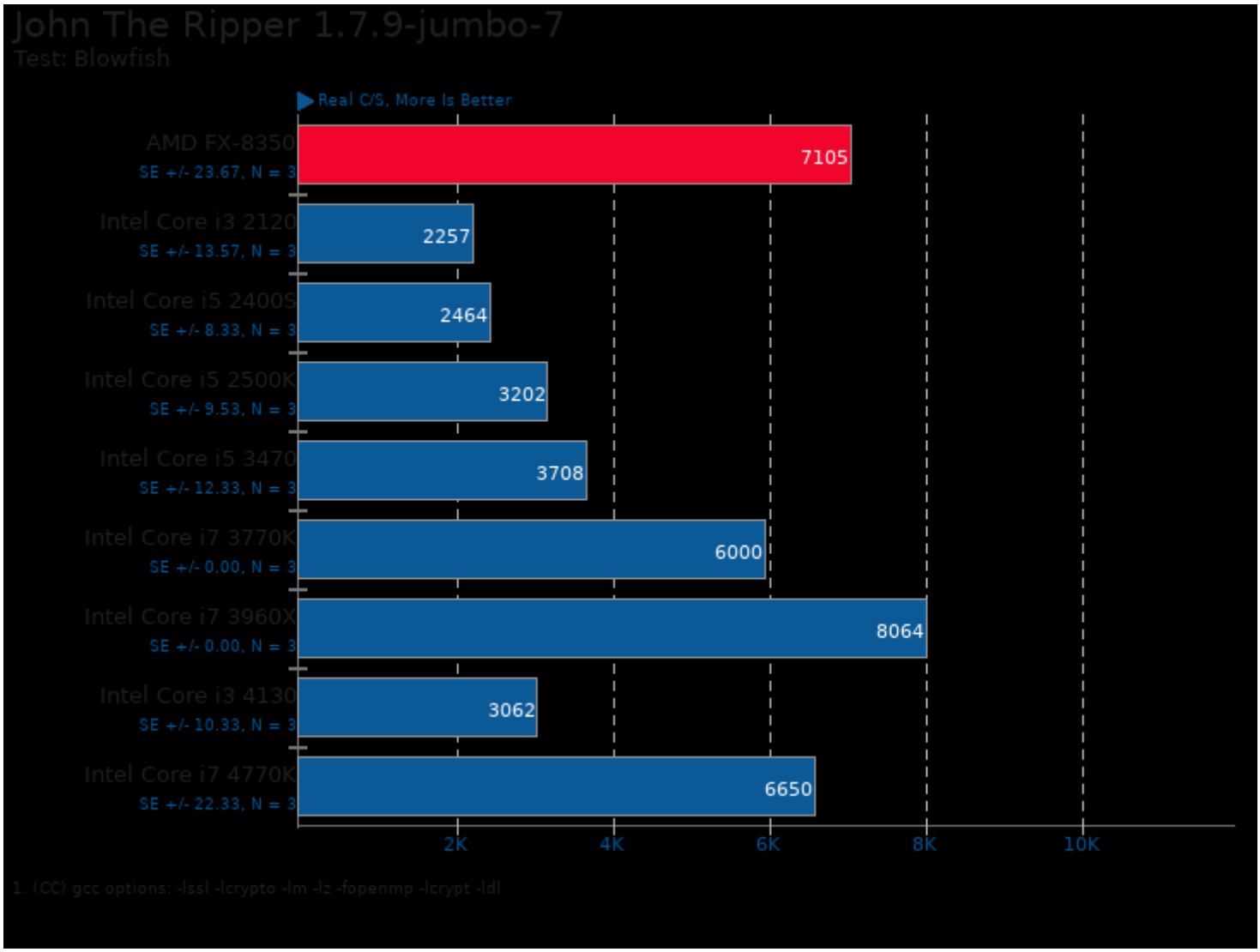
ARM Cortex-A15 Quad-Core ODROID-XU Performance Benchmarks

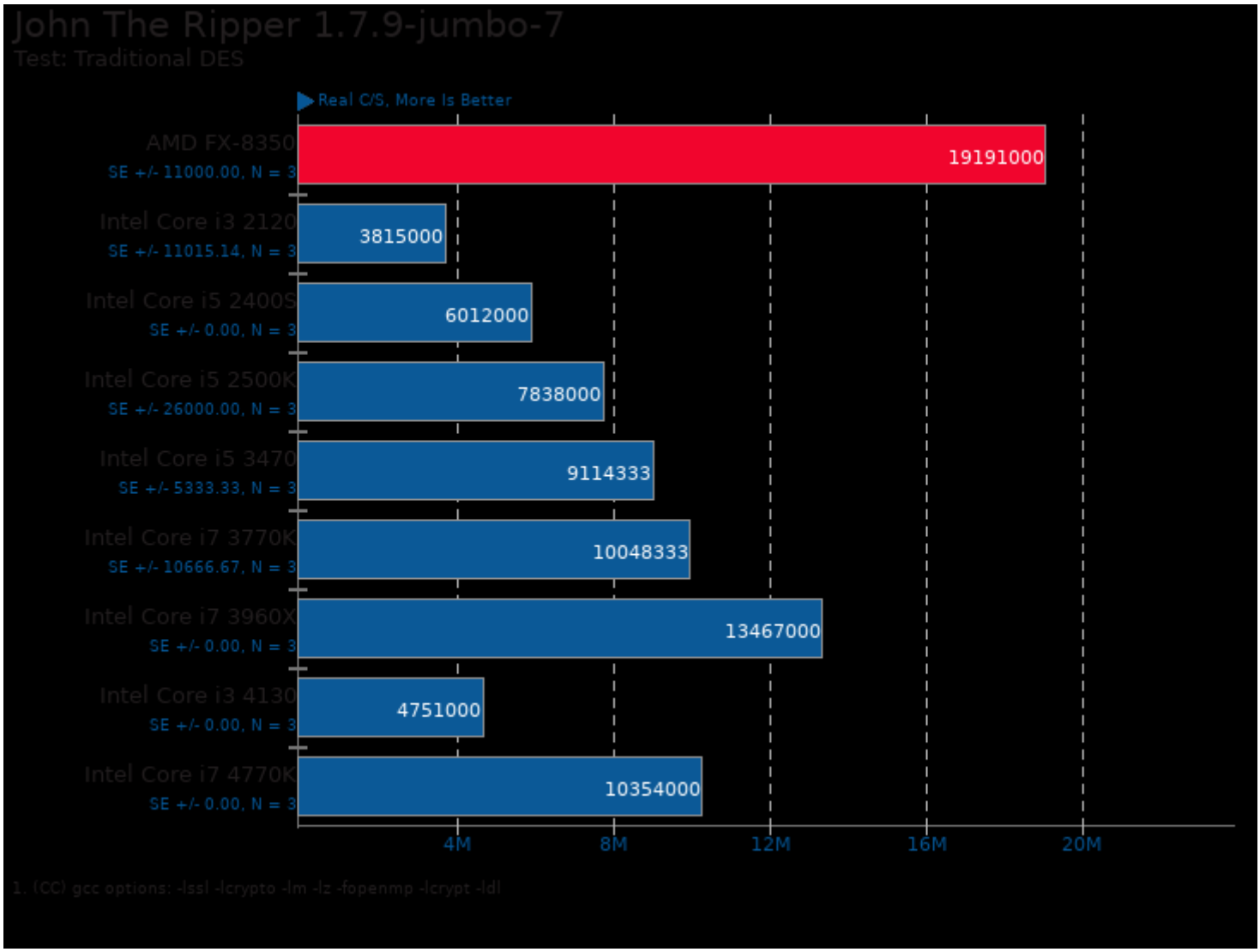
Parallel BZIP2 Compression - 2.F.C (sec)	6.48	20.48	14.24	12.09	11.17	9.01	**6.14**	17.24	7.55	51.57	**127.70**
Normalized	94.75%	29.98%	43.12%	50.79%	54.97%	68.15%	100%	35.61%	81.32%	11.91%	4.81%
Standard Deviation	2.9%	2.4%	0.9%	1.1%	2.4%	6.8%	10.5%	6.3%	2.5%	11.7%	80%
Smallpt - G.I.R.1.S (sec)	93	227	198	151	133	88	**64**	180	83	693	**1186**
Normalized	68.82%	28.19%	32.32%	42.38%	48.12%	72.73%	100%	35.56%	77.11%	9.24%	5.4%
Standard Deviation	0%	0.5%	0%	0%	0%	0.7%	0%	0%	0%	0.5%	0.8%
FFmpeg - H.2.H.T.N.D (sec)	22.49	24.13	22.63	20.65	20.05	20.08	21.02	17.05	**12.32**	**115.65**	
Normalized	54.78%	51.06%	54.44%	59.66%	61.45%	61.35%	58.61%	72.26%	100%	10.65%	
Standard Deviation	0.1%	0.5%	1%	0.5%	0.3%	1.5%	0.9%	0.6%	0.4%	3.2%	
N-Queens - Elapsed Time	37.70	90.82	81.76	62.50	61.25	40.22	**25.89**	83.06	38.22	154.87	**197.16**
Normalized	68.67%	28.51%	31.67%	41.42%	42.27%	64.37%	100%	31.17%	67.74%	16.72%	13.13%
Standard Deviation	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	2.1%
POV-Ray - Total Time (sec)	812	780	785	698	705	651	661	697	**607**	**2153**	
Normalized	74.75%	77.82%	77.32%	86.96%	86.1%	93.24%	91.83%	87.09%	100%	28.19%	
PolyBench-C - C.C (sec)		5.84	5.90	5.25	5.41	**4.94**		5.21		**22.14**	
Normalized		84.59%	83.73%	94.1%	91.31%	100%		94.82%		22.31%	
Standard Deviation		0.2%	0.5%	0.2%	0.8%	0.3%		0.4%		0.1%	
PolyBench-C - C.C (sec)		5.85	5.89	5.25	5.40	**4.94**		5.21		**22.15**	
Normalized		84.44%	83.87%	94.1%	91.48%	100%		94.82%		22.3%	
Standard Deviation		0.2%	0.4%	0%	0.2%	0.2%		0.1%		0.1%	
PolyBench-C - 3.M.M (sec)		30.27	27.13	26.28	23.72	**21.16**		26.93		**223.94**	
Normalized		69.9%	77.99%	80.52%	89.21%	100%		78.57%		9.45%	
Standard Deviation		0.4%	0.8%	1.3%	0.5%	1.1%		0.7%		1.3%	

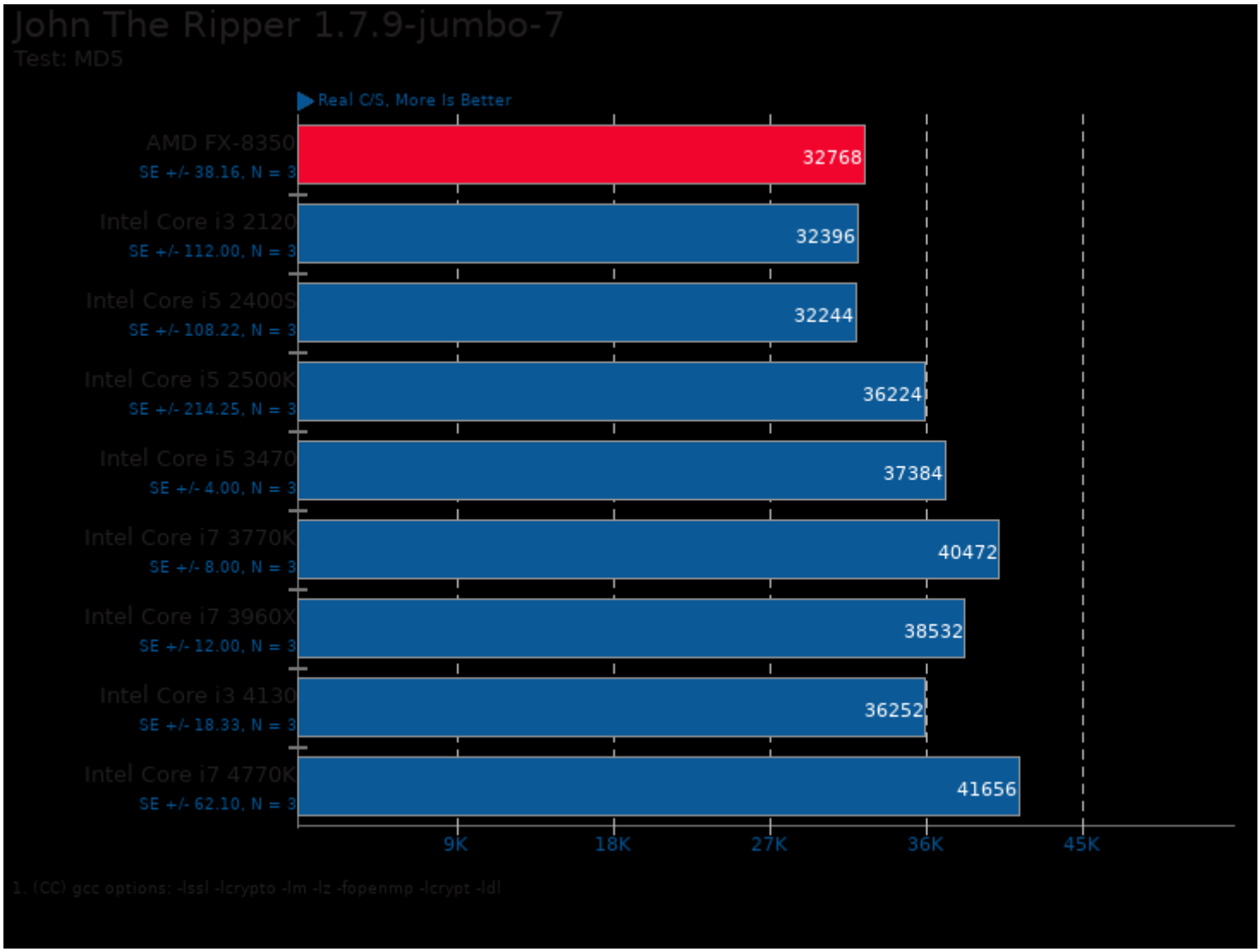

TTSIOD 3D Renderer 2.2z
Phong Rendering With Soft-Shadow Mapping
FPS, More Is Better
AMD FX-8350
SE +/- 0.20, N = 3
124.32
Intel Core i3 2120
SE +/- 0.05, N = 3
64.93
Intel Core i5 2400S
SE +/- 0.06, N = 3
83.27
Intel Core i5 2500K
SE +/- 0.10, N = 3
99.22
Intel Core i5 3470
SE +/- 0.89, N = 3
110.48
Intel Core i7 3770K
SE +/- 0.41, N = 3
142.67
Intel Core i7 3960X
SE +/- 0.61, N = 3
187.14
Intel Core i3 4130
SE +/- 0.02, N = 3
75.14
Intel Core i7 4770K
SE +/- 1.14, N = 3
162.23
40
80
120
160
200
1. (CXX) g++ options: -O3 -fomit-frame-pointer -ffast-math -mtune=native -flto -msse -mrecip -mfpmath=sse -msse2 -mssse3 -lSDL -lstdc++

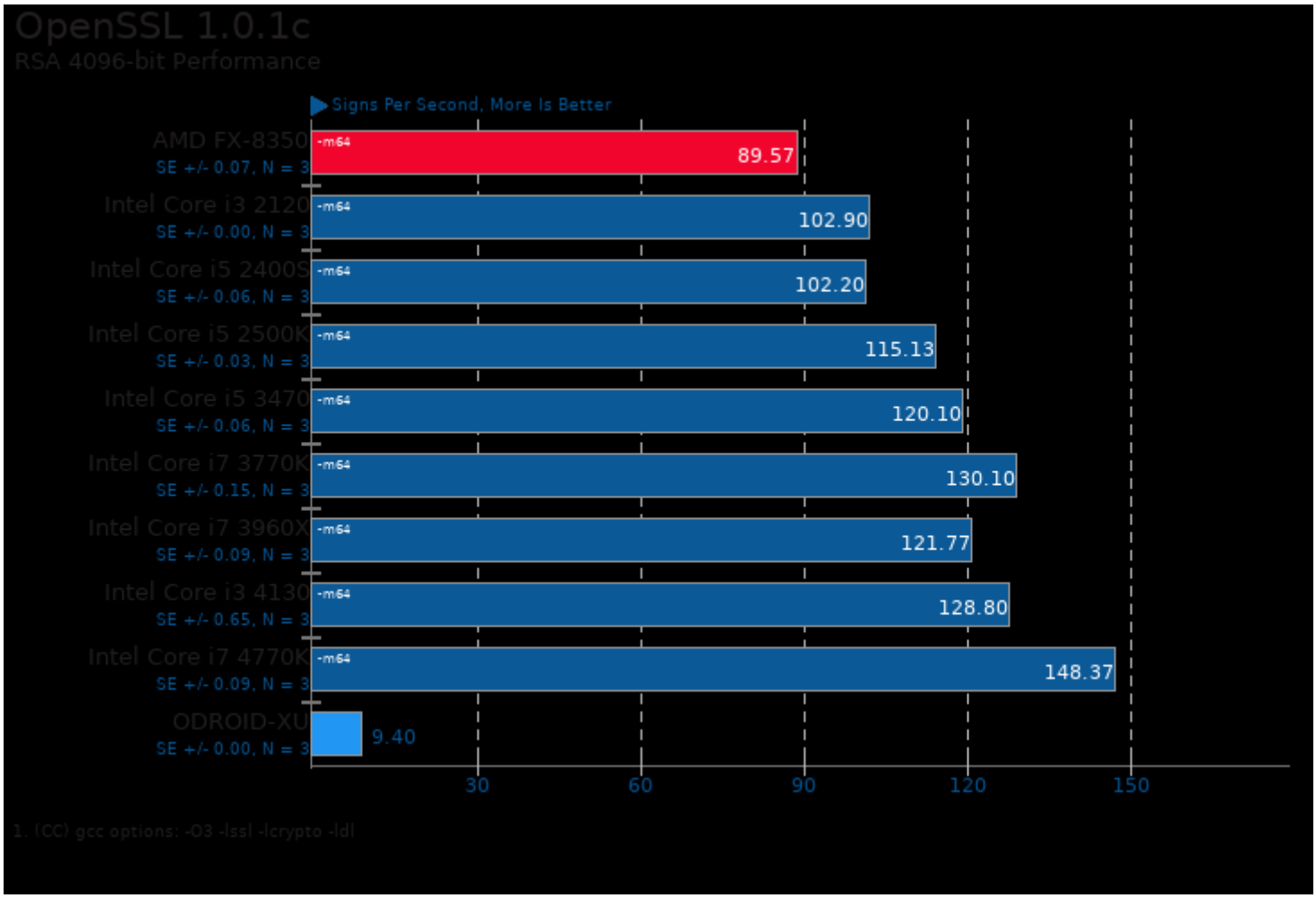

x264 2013-06-08
H.264 Video Encoding
Frames Per Second, More Is Better
AMD FX-8350
SE +/- 0.49, N = 5
-m64 -O3 -ffast-math -std=gnu99 -fomit-frame-pointer -fno-tree-vectorize
159.02
Intel Core i3 2120
SE +/- 0.29, N = 5
68.12
Intel Core i5 2400S
SE +/- 0.35, N = 5
83.35
Intel Core i5 2500K
SE +/- 0.45, N = 5
103.96
Intel Core i5 3470
SE +/- 0.47, N = 5
112.16
Intel Core i7 3770K
SE +/- 0.38, N = 5
152.57
Intel Core i7 3960X
SE +/- 1.52, N = 5
216.32
Intel Core i3 4130
SE +/- 0.19, N = 5
88.82
Intel Core i7 4770K
SE +/- 0.79, N = 5
181.52
ODROID-XU
SE +/- 0.27, N = 10
23.15
Hikey 1/96
SE +/- 0.11, N = 10
4.62
50
100
150
200
250
1. (CC) gcc options: -ldl -lm -lpthread

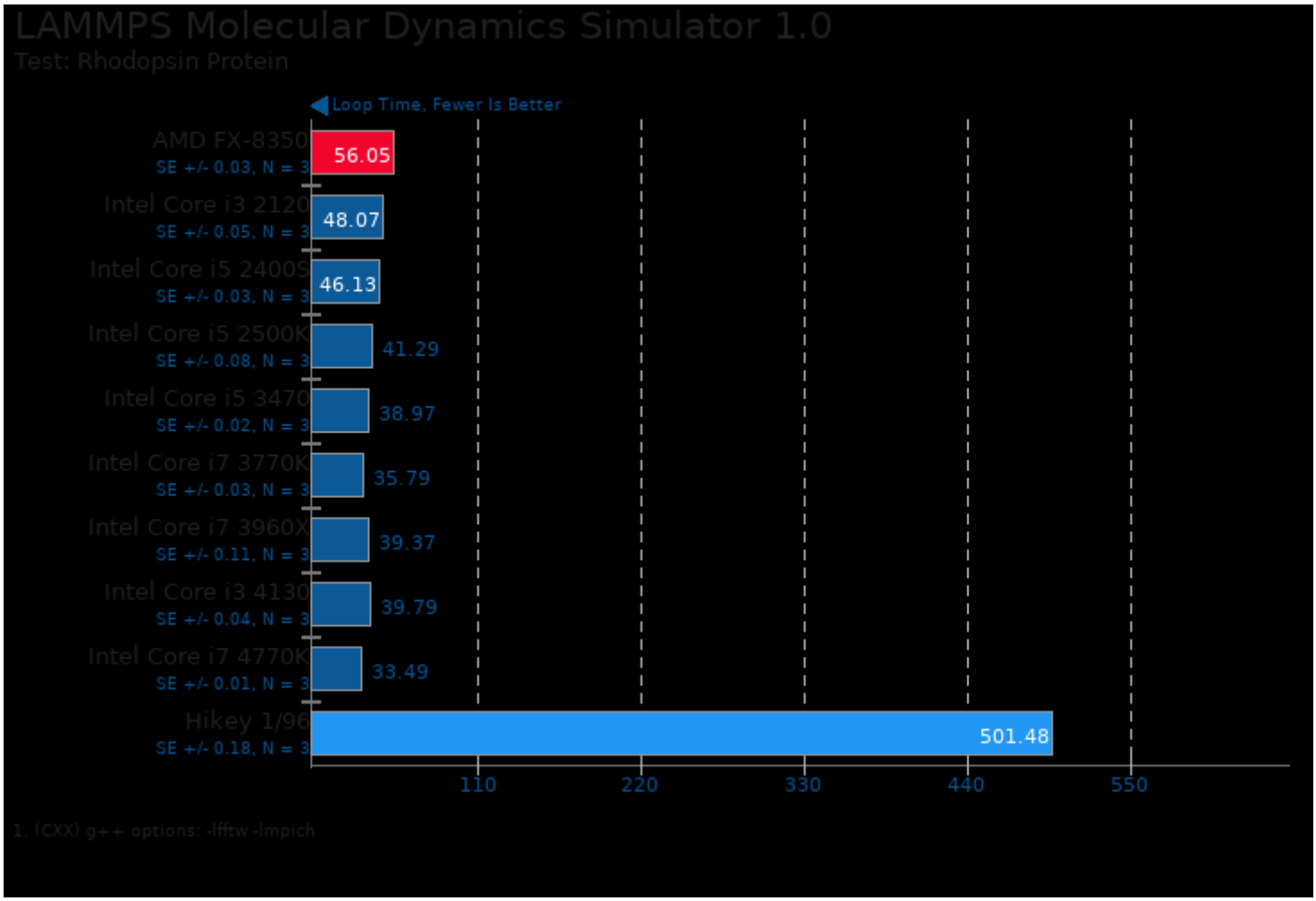

Fhourstones 3.1
Complex Connect-4 Solving
Kpos / sec, More Is Better
AMD FX-8350
SE +/- 8.03, N = 3
10140.20
Intel Core i3 2120
SE +/- 3.23, N = 3
10075.93
Intel Core i5 2400S
SE +/- 2.57, N = 3
9980.00
Intel Core i5 2500K
SE +/- 13.29, N = 3
10870.87
Intel Core i5 3470
SE +/- 18.72, N = 3
10966.60
Intel Core i7 3770K
SE +/- 18.44, N = 3
11747.57
Intel Core i7 3960X
SE +/- 18.61, N = 3
12000.90
Intel Core i3 4130
SE +/- 12.08, N = 3
11276.30
Intel Core i7 4770K
SE +/- 37.04, N = 3
12783.77
3K
6K
9K
12K
15K
1. (CC) gcc options: -O3

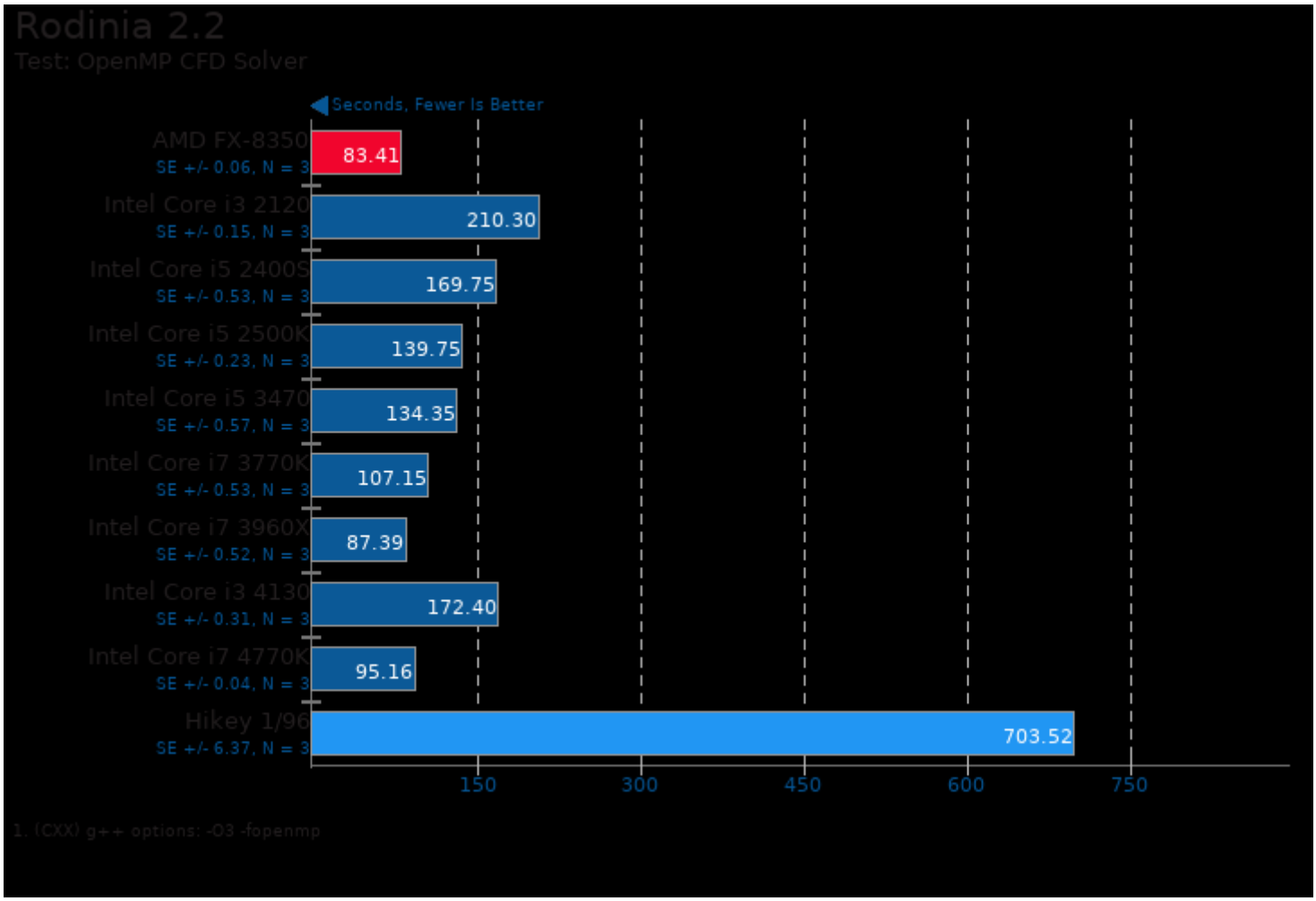

John The Ripper 1.7.9-jumbo-7
Test: Blowfish
Real C/S, More Is Better
AMD FX-8350
SE +/- 23.67, N = 3
7105
Intel Core i3 2120
SE +/- 13.57, N = 3
2257
Intel Core i5 2400S
SE +/- 8.33, N = 3
2464
Intel Core i5 2500K
SE +/- 9.53, N = 3
3202
Intel Core i5 3470
SE +/- 12.33, N = 3
3708
Intel Core i7 3770K
SE +/- 0.00, N = 3
6000
Intel Core i7 3960X
SE +/- 0.00, N = 3
8064
Intel Core i3 4130
SE +/- 10.33, N = 3
3062
Intel Core i7 4770K
SE +/- 22.33, N = 3
6650
2K
4K
6K
8K
10K
1. (CC) gcc options: -lssl -lcrypto -lm -lz -fopenmp -lcrypt -ldl

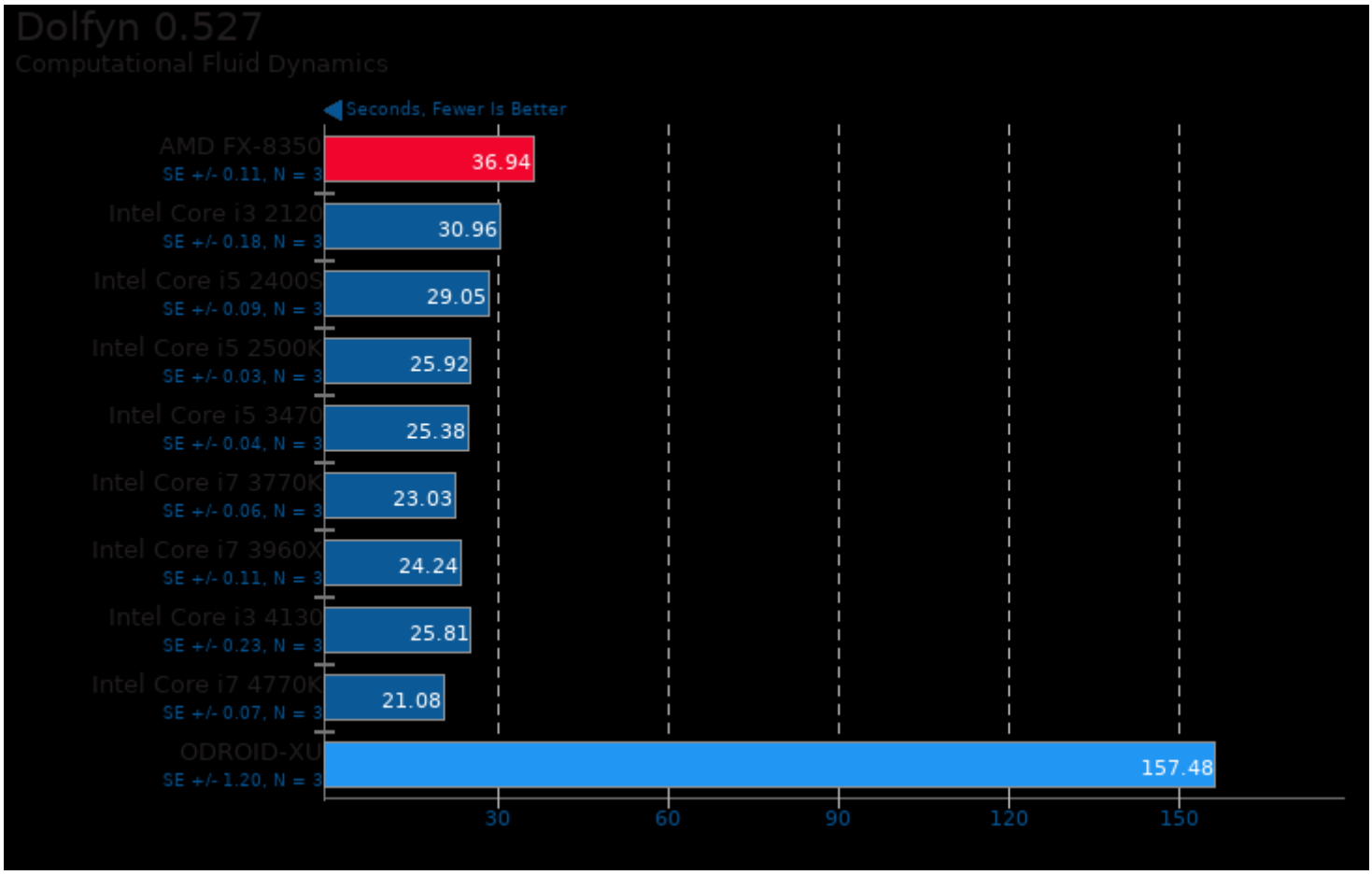

John The Ripper 1.7.9-jumbo-7
Test: Traditional DES
Real C/S, More Is Better
AMD FX-8350
SE +/- 11000.00, N = 3
19191000
Intel Core i3 2120
SE +/- 11015.14, N = 3
3815000
Intel Core i5 2400S
SE +/- 0.00, N = 3
6012000
Intel Core i5 2500K
SE +/- 26000.00, N = 3
7838000
Intel Core i5 3470
SE +/- 5333.33, N = 3
9114333
Intel Core i7 3770K
SE +/- 10666.67, N = 3
10048333
Intel Core i7 3960X
SE +/- 0.00, N = 3
13467000
Intel Core i3 4130
SE +/- 0.00, N = 3
4751000
Intel Core i7 4770K
SE +/- 0.00, N = 3
10354000
4M
8M
12M
16M
20M
1. (CC) gcc options: -lssl -lcrypto -lm -lz -fopenmp -lcrypt -ldl

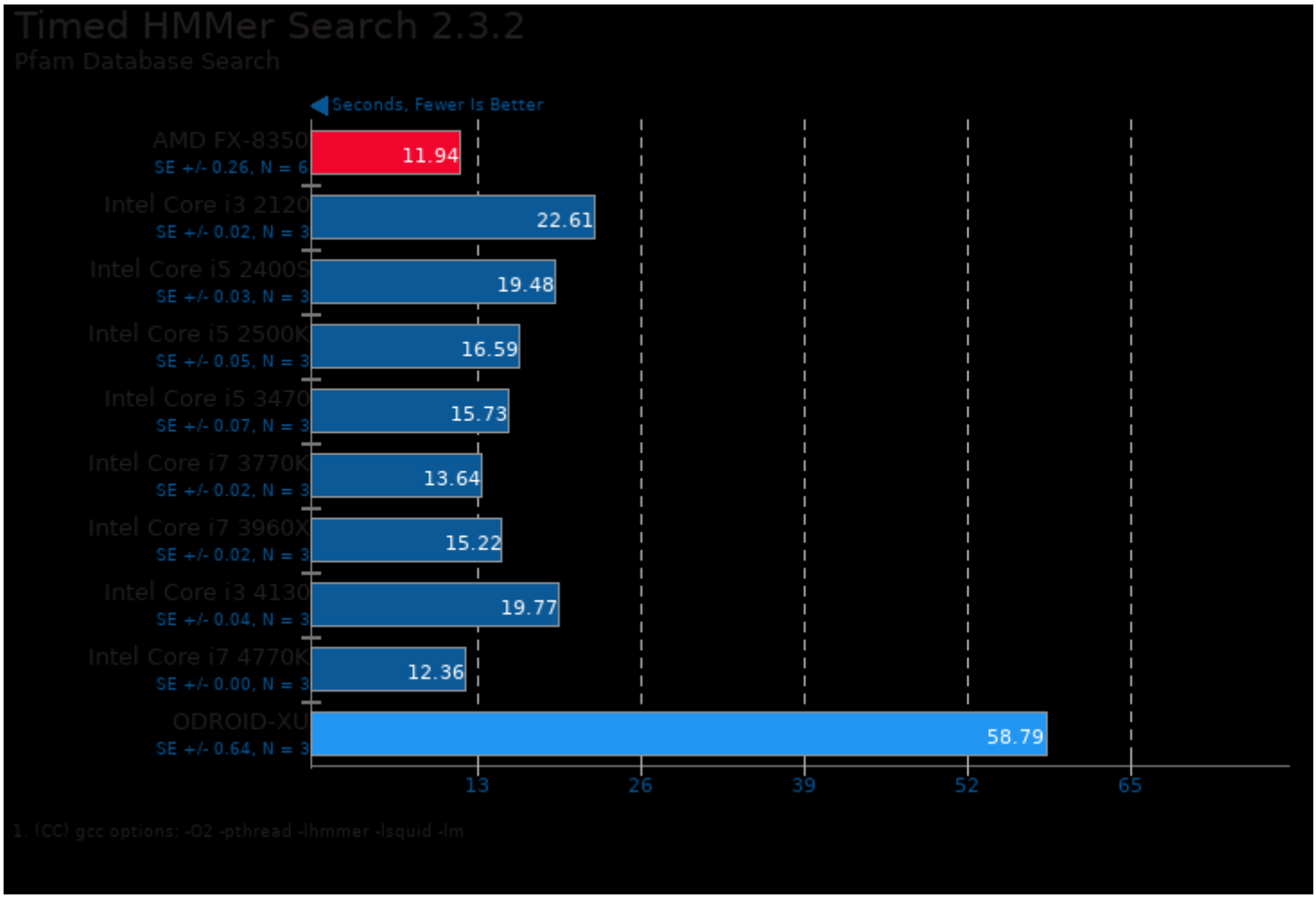

John The Ripper 1.7.9-jumbo-7
Test: MD5
Real C/S, More Is Better
AMD FX-8350
SE +/- 38.16, N = 3
32768
Intel Core i3 2120
SE +/- 112.00, N = 3
32396
Intel Core i5 2400S
SE +/- 108.22, N = 3
32244
Intel Core i5 2500K
SE +/- 214.25, N = 3
36224
Intel Core i5 3470
SE +/- 4.00, N = 3
37384
Intel Core i7 3770K
SE +/- 8.00, N = 3
40472
Intel Core i7 3960X
SE +/- 12.00, N = 3
38532
Intel Core i3 4130
SE +/- 18.33, N = 3
36252
Intel Core i7 4770K
SE +/- 62.10, N = 3
41656
9K
18K
27K
36K
45K
1. (CC) gcc options: -lssl -lcrypto -lm -lz -fopenmp -lcrypt -ldl

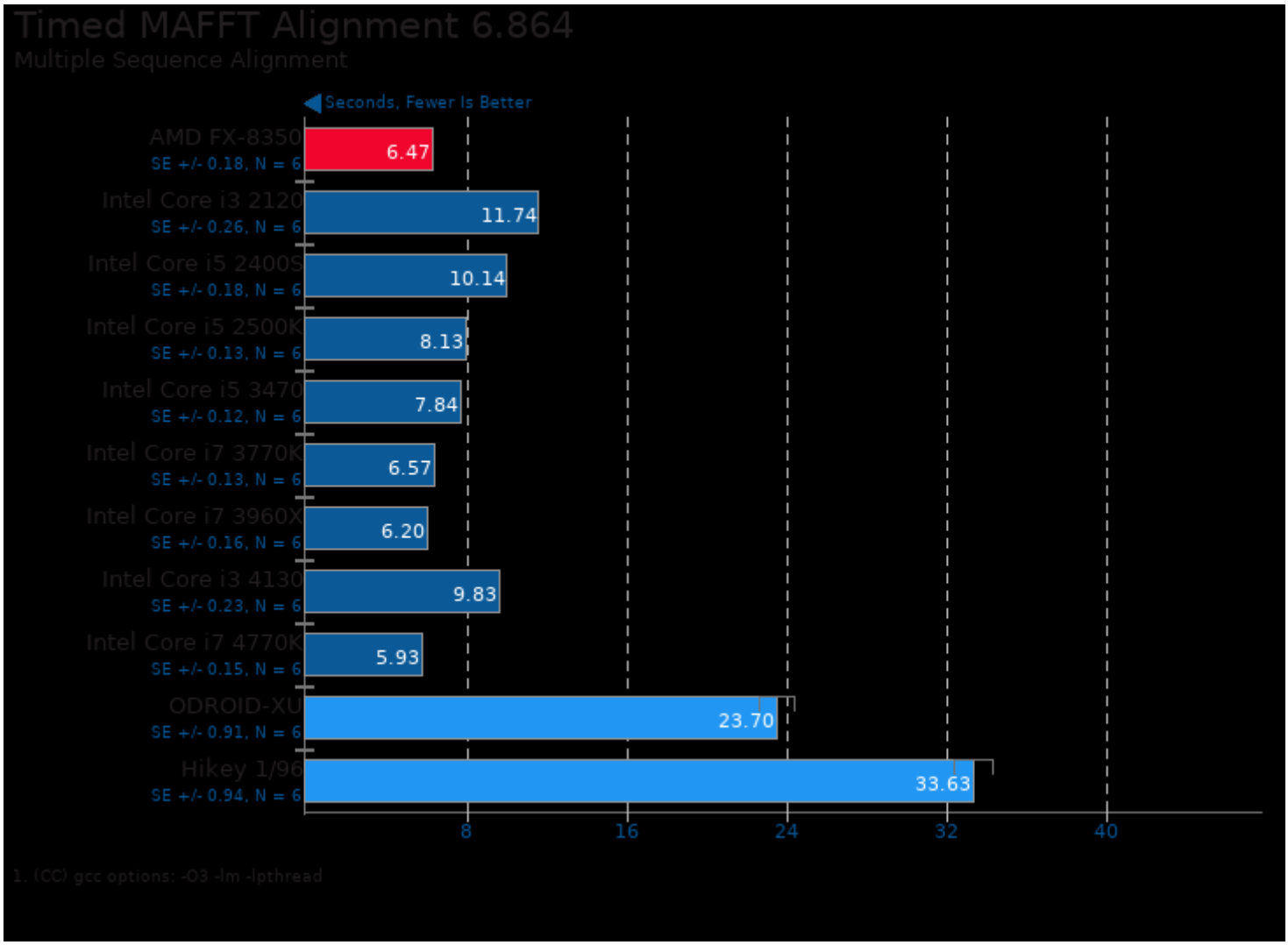

OpenSSL 1.0.1c
RSA 4096-bit Performance
Signs Per Second, More Is Better
AMD FX-8350
SE +/- 0.07, N = 3
-m64
89.57
Intel Core i3 2120
SE +/- 0.00, N = 3
-m64
102.90
Intel Core i5 2400S
SE +/- 0.06, N = 3
-m64
102.20
Intel Core i5 2500K
SE +/- 0.03, N = 3
-m64
115.13
Intel Core i5 3470
SE +/- 0.06, N = 3
-m64
120.10
Intel Core i7 3770K
SE +/- 0.15, N = 3
-m64
130.10
Intel Core i7 3960X
SE +/- 0.09, N = 3
-m64
121.77
Intel Core i3 4130
SE +/- 0.65, N = 3
-m64
128.80
Intel Core i7 4770K
SE +/- 0.09, N = 3
-m64
148.37
ODROID-XU
SE +/- 0.00, N = 3
9.40
30
60
90
120
150
1. (CC) gcc options: -O3 -lssl -lcrypto -ldl

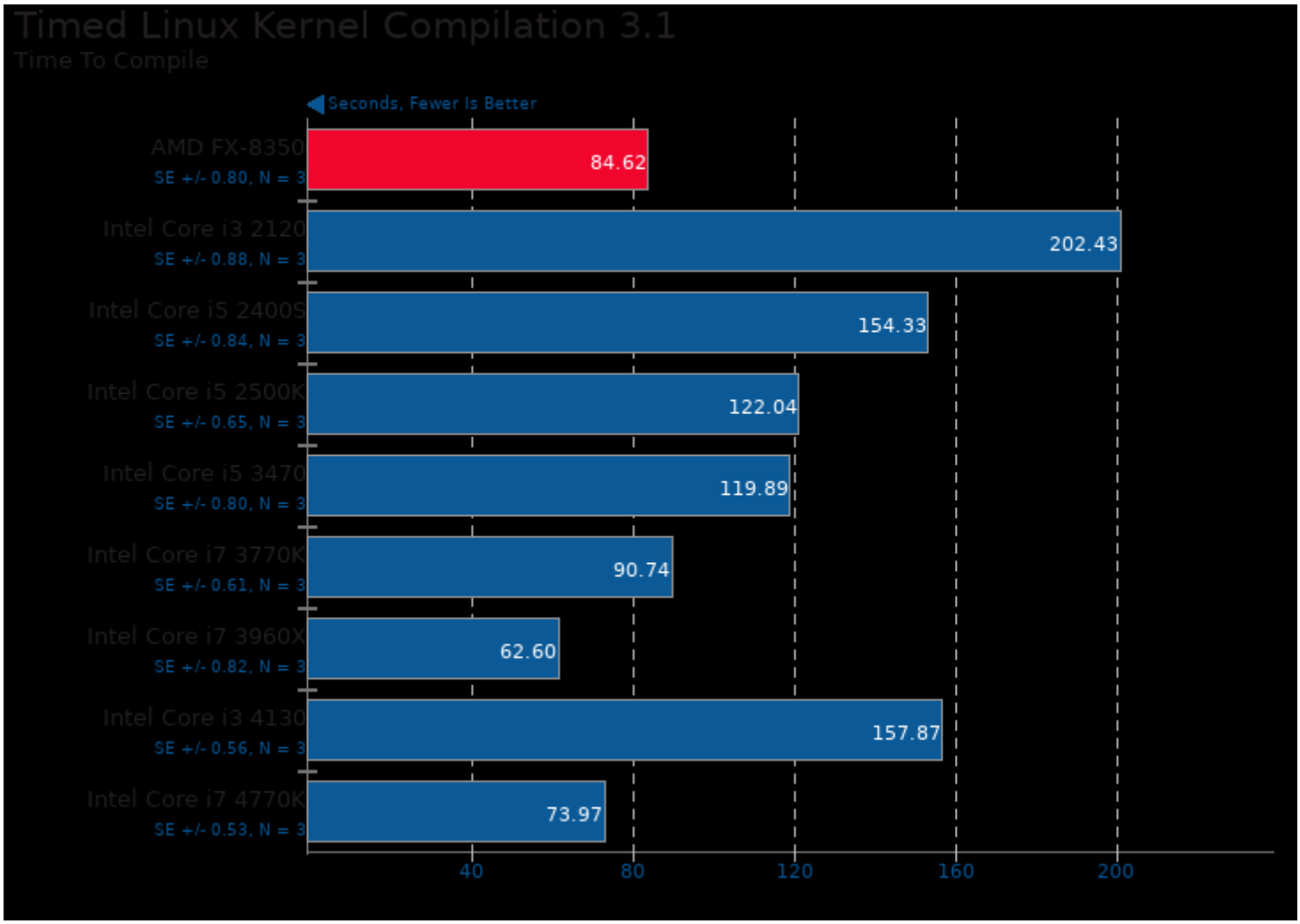

LAMMPS Molecular Dynamics Simulator 1.0
Test: Rhodopsin Protein
Loop Time, Fewer Is Better
AMD FX-8350
SE +/- 0.03, N = 3
56.05
Intel Core i3 2120
SE +/- 0.05, N = 3
48.07
Intel Core i5 2400S
SE +/- 0.03, N = 3
46.13
Intel Core i5 2500K
SE +/- 0.08, N = 3
41.29
Intel Core i5 3470
SE +/- 0.02, N = 3
38.97
Intel Core i7 3770K
SE +/- 0.03, N = 3
35.79
Intel Core i7 3960X
SE +/- 0.11, N = 3
39.37
Intel Core i3 4130
SE +/- 0.04, N = 3
39.79
Intel Core i7 4770K
SE +/- 0.01, N = 3
33.49
Hikey 1/96
SE +/- 0.18, N = 3
501.48
110
220
330
440
550
1. (CXX) g++ options: -lfftw -lmpich

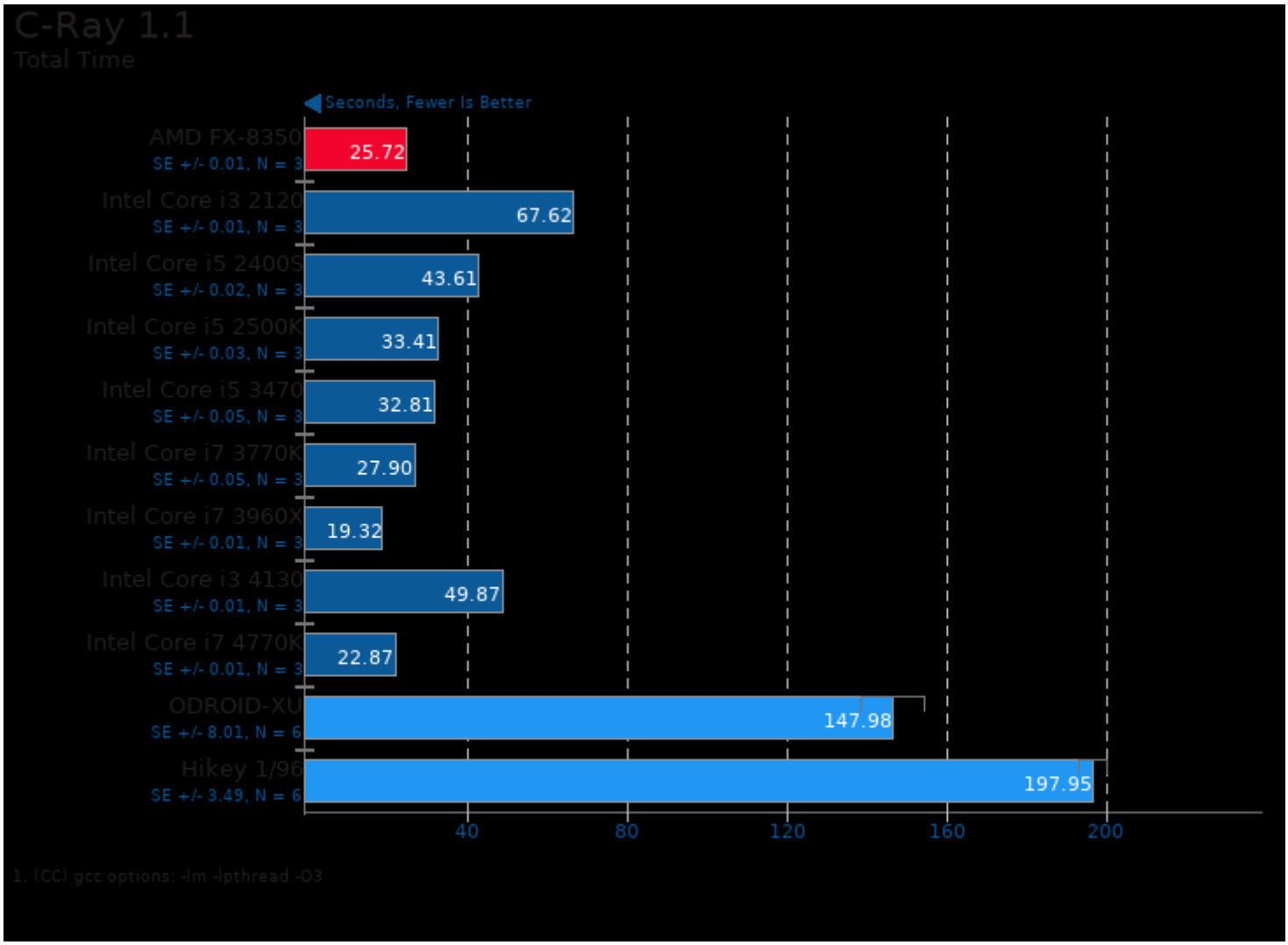

Rodinia 2.2
Test: OpenMP CFD Solver
Seconds, Fewer Is Better
AMD FX-8350
SE +/- 0.06, N = 3
83.41
Intel Core i3 2120
SE +/- 0.15, N = 3
210.30
Intel Core i5 2400S
SE +/- 0.53, N = 3
169.75
Intel Core i5 2500K
SE +/- 0.23, N = 3
139.75
Intel Core i5 3470
SE +/- 0.57, N = 3
134.35
Intel Core i7 3770K
SE +/- 0.53, N = 3
107.15
Intel Core i7 3960X
SE +/- 0.52, N = 3
87.39
Intel Core i3 4130
SE +/- 0.31, N = 3
172.40
Intel Core i7 4770K
SE +/- 0.04, N = 3
95.16
Hikey 1/96
SE +/- 6.37, N = 3
703.52
150
300
450
600
750
1. (CXX) g++ options: -O3 -fopenmp

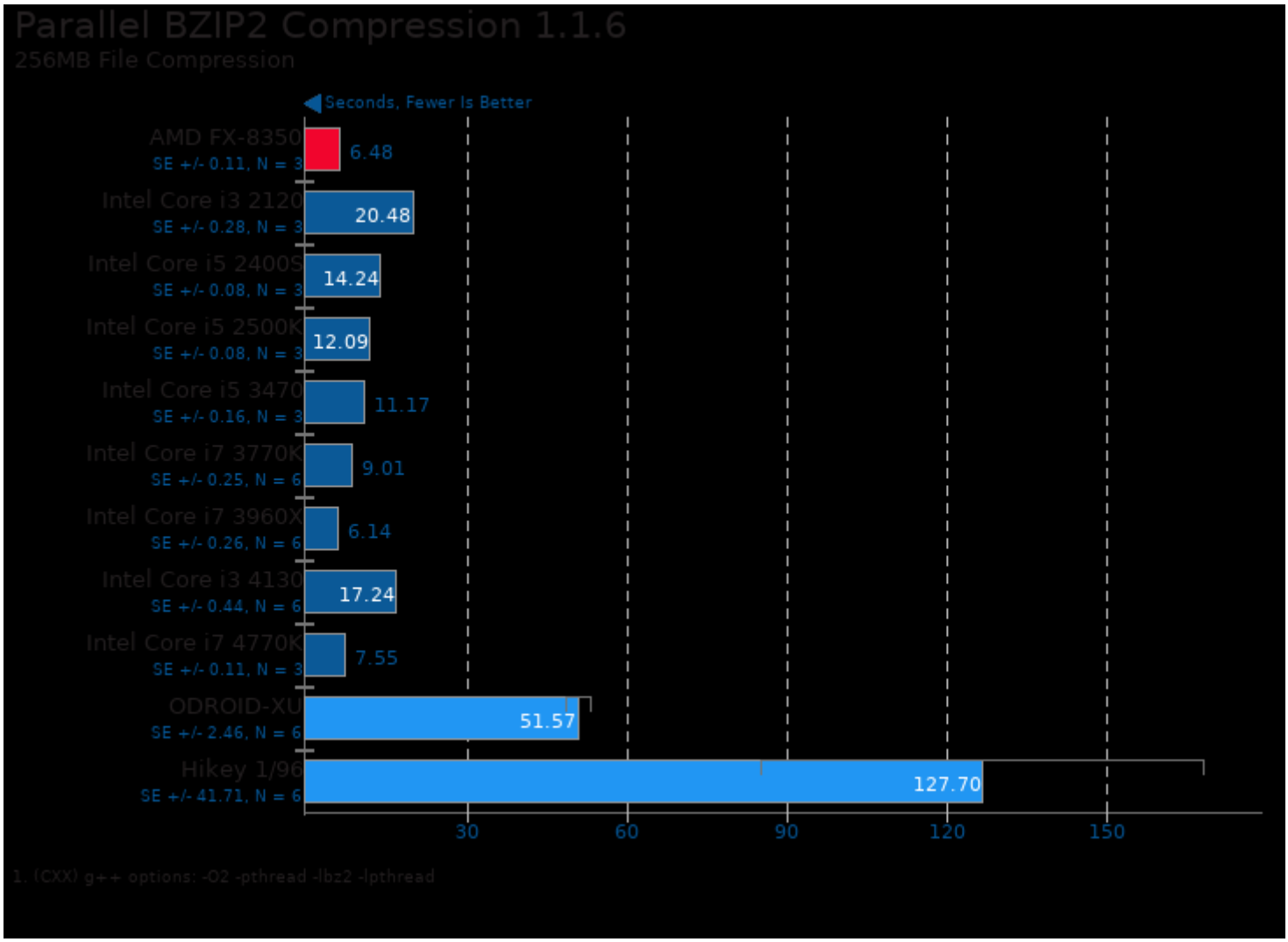

Dolfyn 0.527
Computational Fluid Dynamics
Seconds, Fewer Is Better
AMD FX-8350
SE +/- 0.11, N = 3
36.94
Intel Core i3 2120
SE +/- 0.18, N = 3
30.96
Intel Core i5 2400S
SE +/- 0.09, N = 3
29.05
Intel Core i5 2500K
SE +/- 0.03, N = 3
25.92
Intel Core i5 3470
SE +/- 0.04, N = 3
25.38
Intel Core i7 3770K
SE +/- 0.06, N = 3
23.03
Intel Core i7 3960X
SE +/- 0.11, N = 3
24.24
Intel Core i3 4130
SE +/- 0.23, N = 3
25.81
Intel Core i7 4770K
SE +/- 0.07, N = 3
21.08
ODROID-XU
SE +/- 1.20, N = 3
157.48
30
60
90
120
150

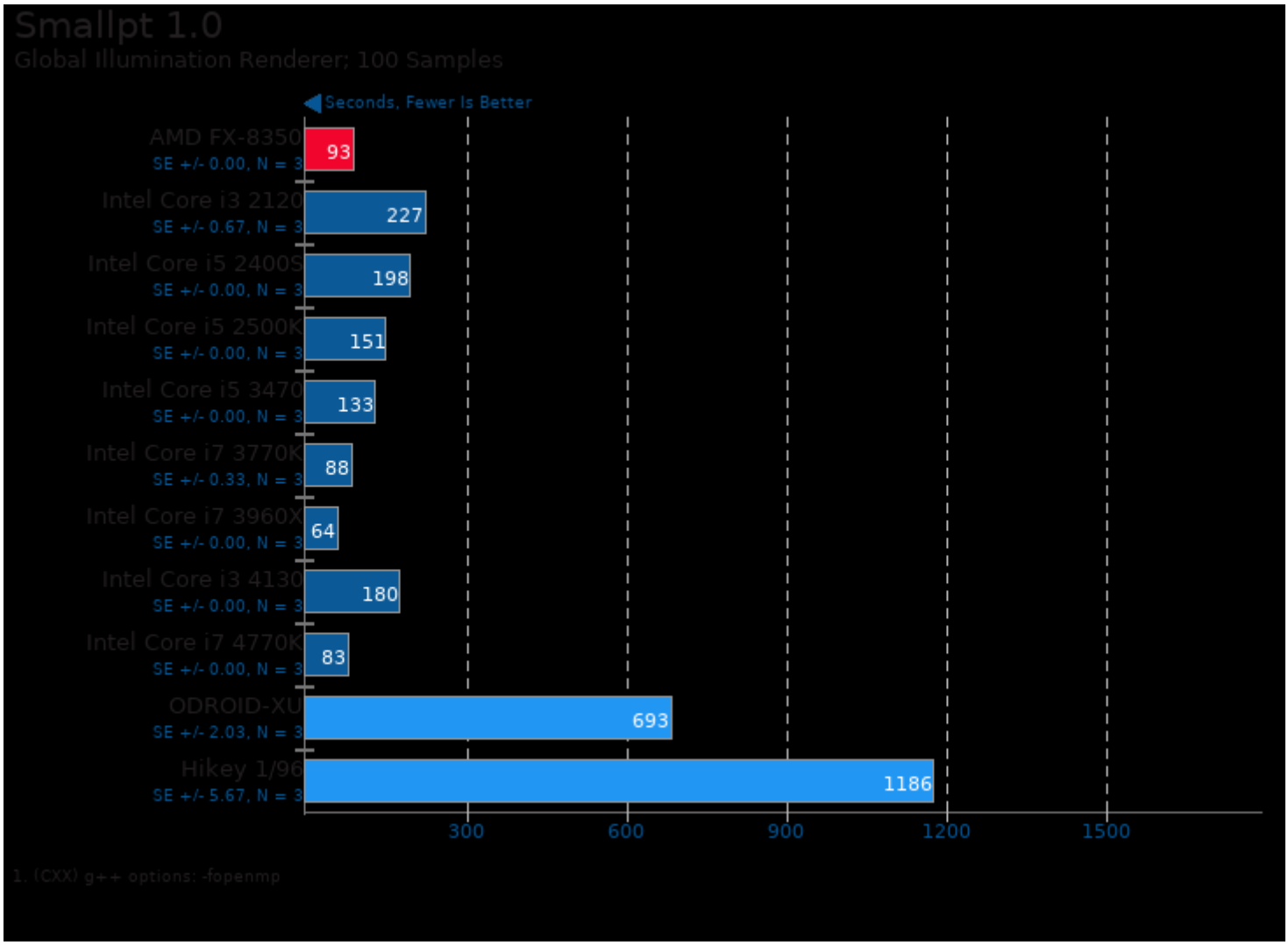

Timed HMMer Search 2.3.2
Pfam Database Search
Seconds, Fewer Is Better
AMD FX-8350
SE +/- 0.26, N = 6
11.94
Intel Core i3 2120
SE +/- 0.02, N = 3
22.61
Intel Core i5 2400S
SE +/- 0.03, N = 3
19.48
Intel Core i5 2500K
SE +/- 0.05, N = 3
16.59
Intel Core i5 3470
SE +/- 0.07, N = 3
15.73
Intel Core i7 3770K
SE +/- 0.02, N = 3
13.64
Intel Core i7 3960X
SE +/- 0.02, N = 3
15.22
Intel Core i3 4130
SE +/- 0.04, N = 3
19.77
Intel Core i7 4770K
SE +/- 0.00, N = 3
12.36
ODROID-XU
SE +/- 0.64, N = 3
58.79
13
26
39
52
65
1. (CC) gcc options: -O2 -pthread -lhmmer -lsquid -lm

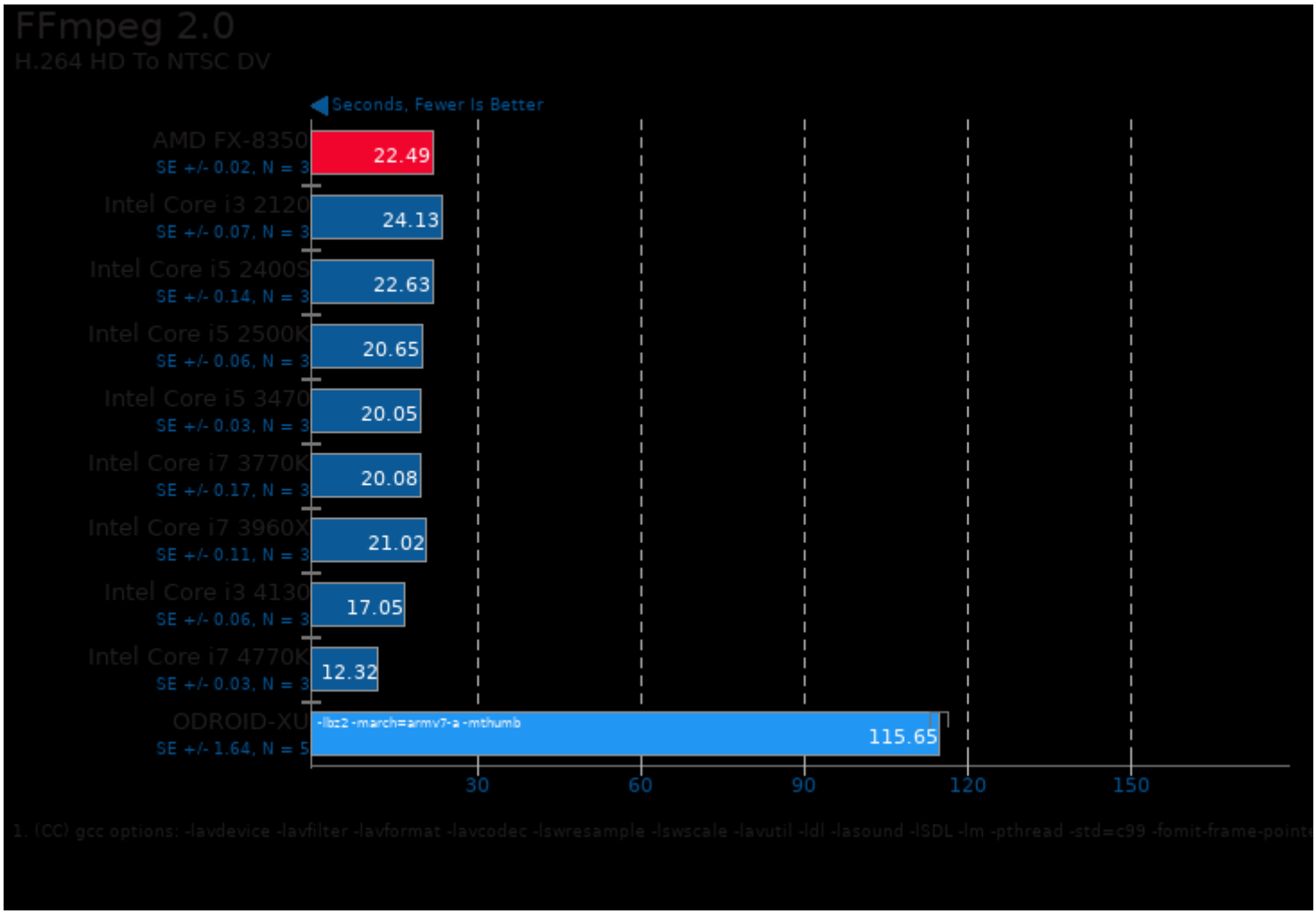

Timed MAFFT Alignment 6.864
Multiple Sequence Alignment
Seconds, Fewer Is Better
AMD FX-8350
SE +/- 0.18, N = 6
6.47
Intel Core i3 2120
SE +/- 0.26, N = 6
11.74
Intel Core i5 2400S
SE +/- 0.18, N = 6
10.14
Intel Core i5 2500K
SE +/- 0.13, N = 6
8.13
Intel Core i5 3470
SE +/- 0.12, N = 6
7.84
Intel Core i7 3770K
SE +/- 0.13, N = 6
6.57
Intel Core i7 3960X
SE +/- 0.16, N = 6
6.20
Intel Core i3 4130
SE +/- 0.23, N = 6
9.83
Intel Core i7 4770K
SE +/- 0.15, N = 6
5.93
ODROID-XU
SE +/- 0.91, N = 6
23.70
Hikey 1/96
SE +/- 0.94, N = 6
33.63
8
16
24
32
40
1. (CC) gcc options: -O3 -lm -lpthread

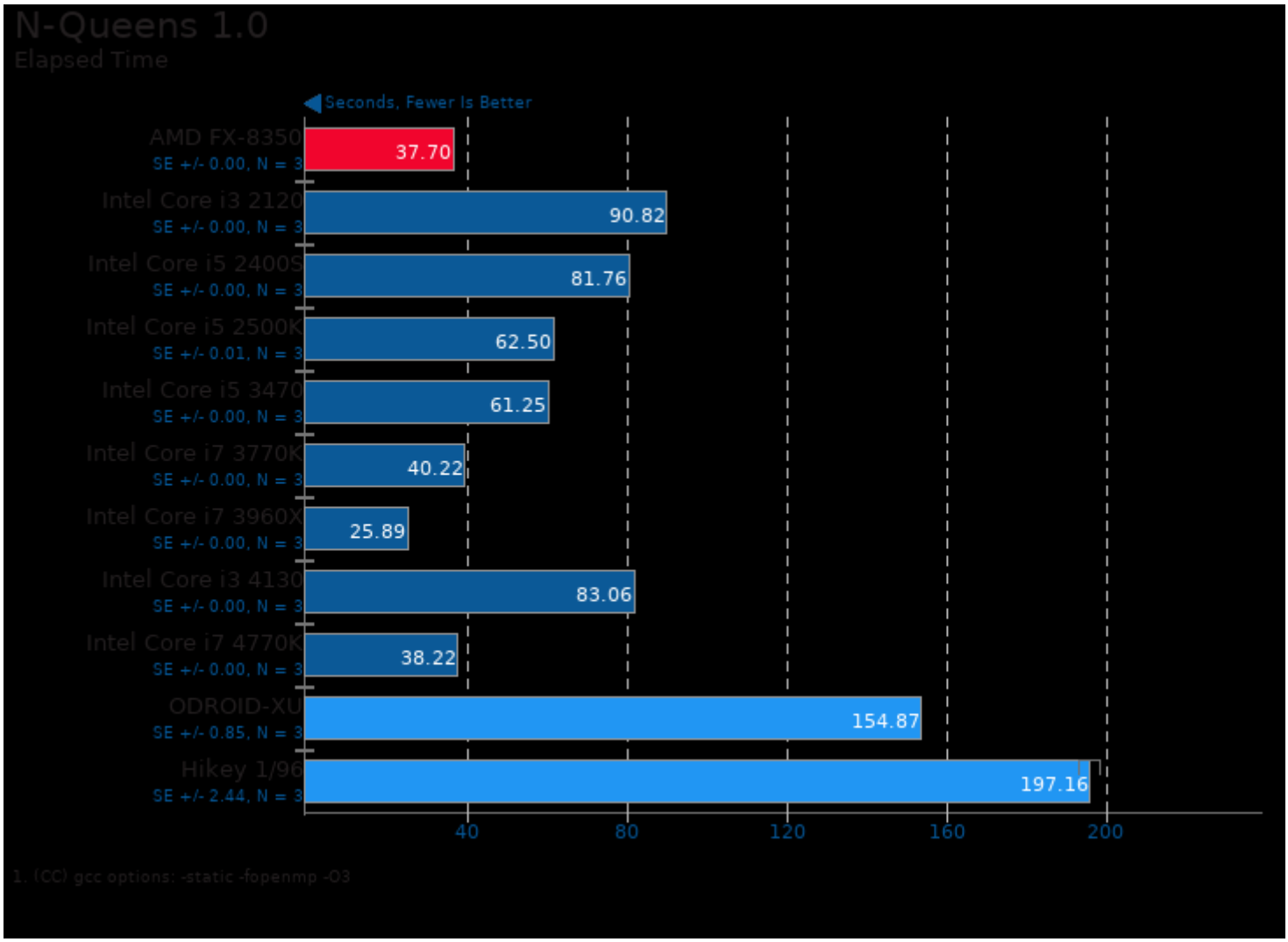

Timed Linux Kernel Compilation 3.1
Time To Compile
Seconds, Fewer Is Better
AMD FX-8350
SE +/- 0.80, N = 3
84.62
Intel Core i3 2120
SE +/- 0.88, N = 3
202.43
Intel Core i5 2400S
SE +/- 0.84, N = 3
154.33
Intel Core i5 2500K
SE +/- 0.65, N = 3
122.04
Intel Core i5 3470
SE +/- 0.80, N = 3
119.89
Intel Core i7 3770K
SE +/- 0.61, N = 3
90.74
Intel Core i7 3960X
SE +/- 0.82, N = 3
62.60
Intel Core i3 4130
SE +/- 0.56, N = 3
157.87
Intel Core i7 4770K
SE +/- 0.53, N = 3
73.97
40
80
120
160
200

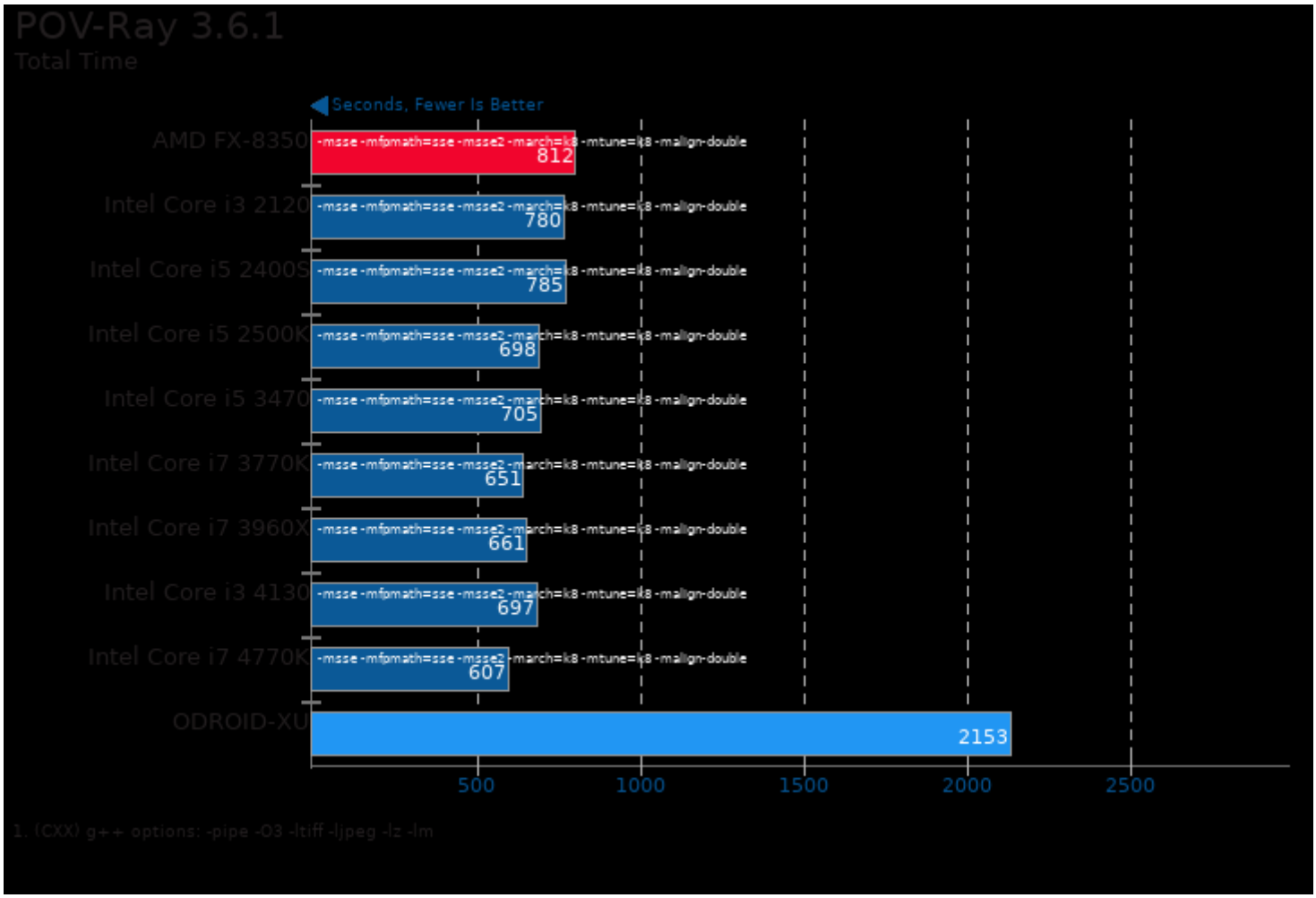

C-Ray 1.1
Total Time
Seconds, Fewer Is Better
AMD FX-8350
SE +/- 0.01, N = 3
25.72
Intel Core i3 2120
SE +/- 0.01, N = 3
67.62
Intel Core i5 2400S
SE +/- 0.02, N = 3
43.61
Intel Core i5 2500K
SE +/- 0.03, N = 3
33.41
Intel Core i5 3470
SE +/- 0.05, N = 3
32.81
Intel Core i7 3770K
SE +/- 0.05, N = 3
27.90
Intel Core i7 3960X
SE +/- 0.01, N = 3
19.32
Intel Core i3 4130
SE +/- 0.01, N = 3
49.87
Intel Core i7 4770K
SE +/- 0.01, N = 3
22.87
ODROID-XU
SE +/- 8.01, N = 6
147.98
Hikey 1/96
SE +/- 3.49, N = 6
197.95
40
80
120
160
200
1. (CC) gcc options: -lm -lpthread -O3

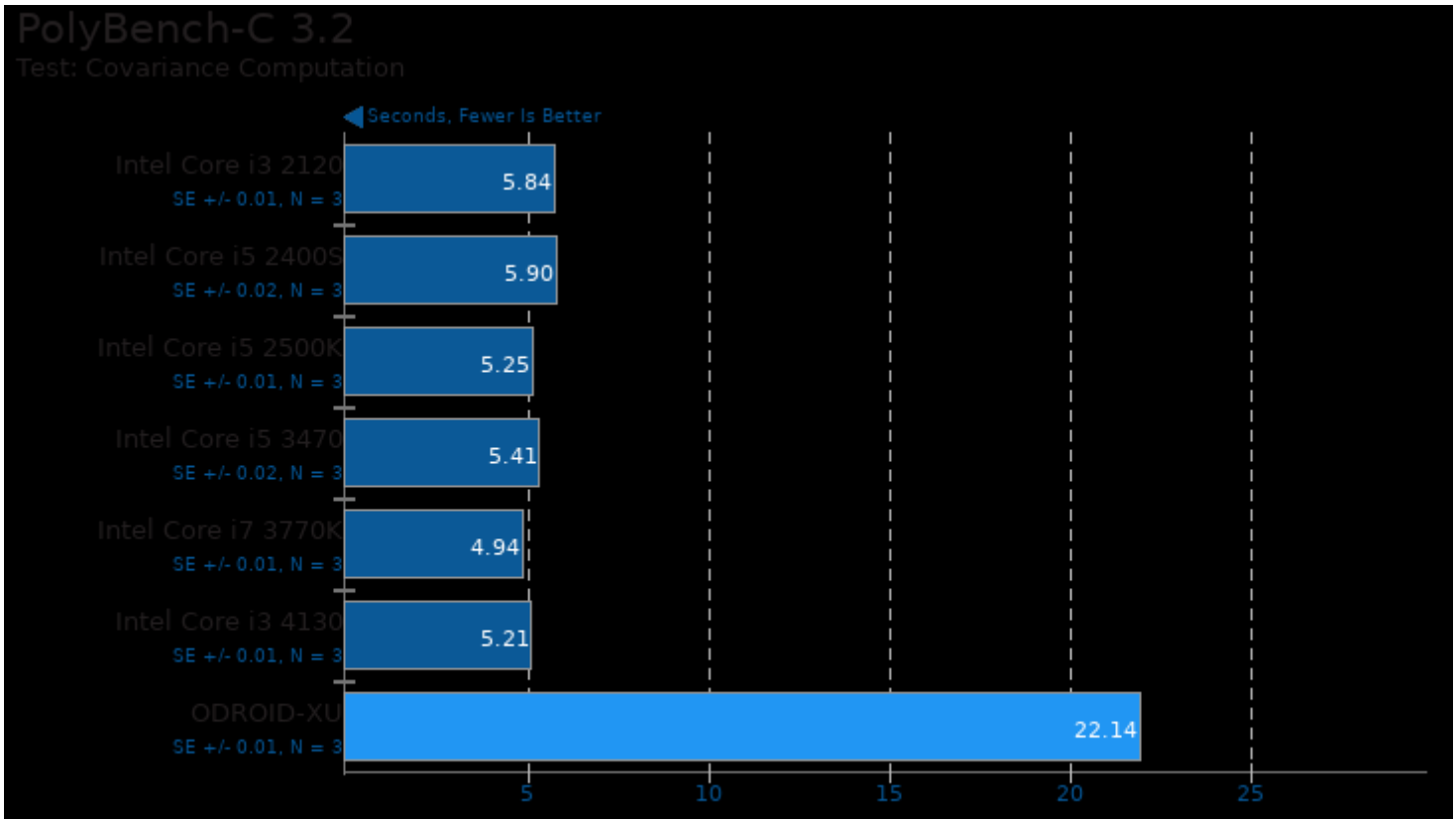

Parallel BZIP2 Compression 1.1.6
256MB File Compression
Seconds, Fewer Is Better
AMD FX-8350
SE +/- 0.11, N = 3
6.48
Intel Core i3 2120
SE +/- 0.28, N = 3
20.48
Intel Core i5 2400S
SE +/- 0.08, N = 3
14.24
Intel Core i5 2500K
SE +/- 0.08, N = 3
12.09
Intel Core i5 3470
SE +/- 0.16, N = 3
11.17
Intel Core i7 3770K
SE +/- 0.25, N = 6
9.01
Intel Core i7 3960X
SE +/- 0.26, N = 6
6.14
Intel Core i3 4130
SE +/- 0.44, N = 6
17.24
Intel Core i7 4770K
SE +/- 0.11, N = 3
7.55
ODROID-XU
SE +/- 2.46, N = 6
51.57
Hikey 1/96
SE +/- 41.71, N = 6
127.70
30
60
90
120
150
1. (CXX) g++ options: -O2 -pthread -lbz2 -lpthread

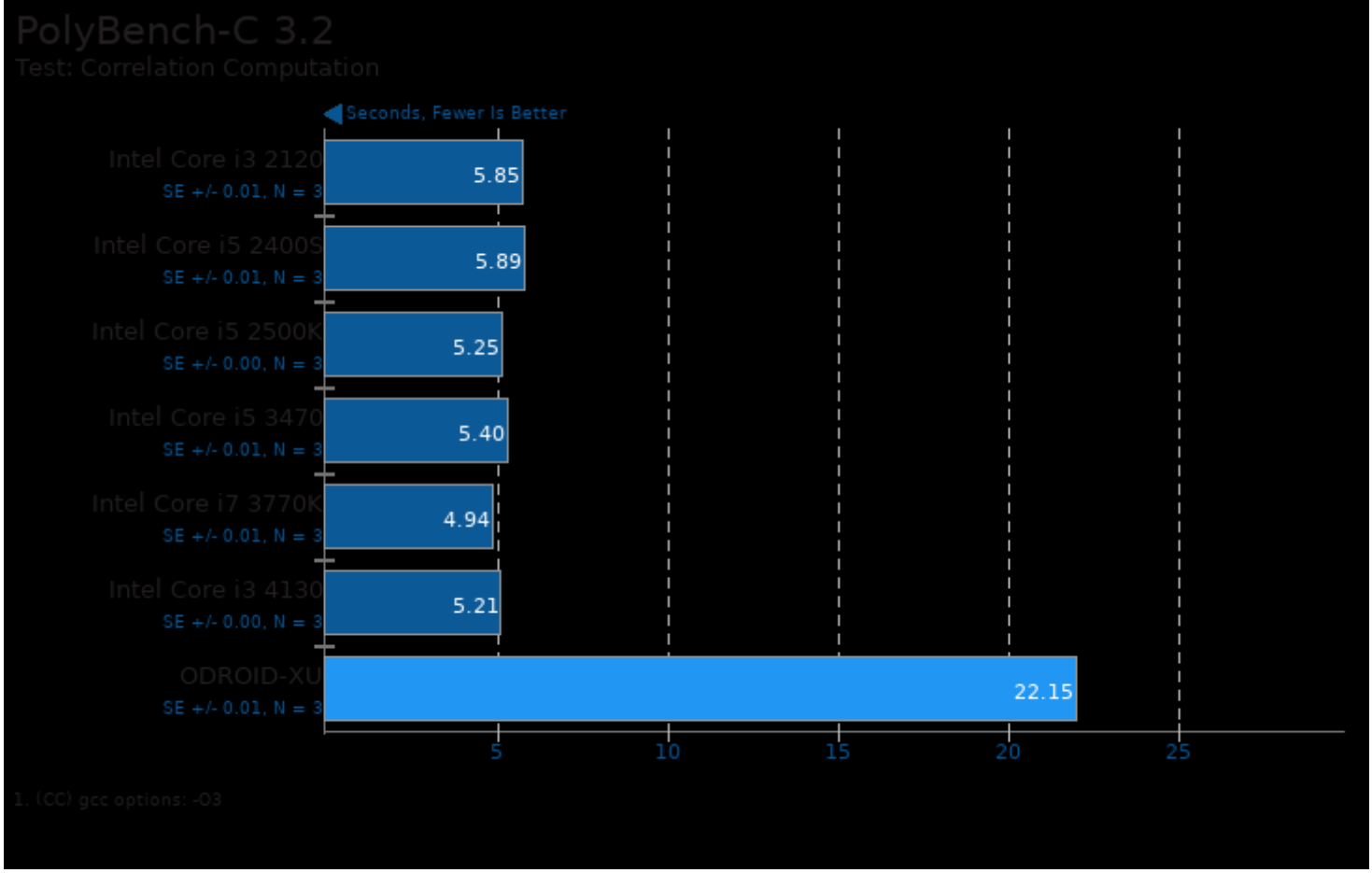

Smallpt 1.0
Global Illumination Renderer; 100 Samples
Seconds, Fewer Is Better
AMD FX-8350
SE +/- 0.00, N = 3
93
Intel Core i3 2120
SE +/- 0.67, N = 3
227
Intel Core i5 2400S
SE +/- 0.00, N = 3
198
Intel Core i5 2500K
SE +/- 0.00, N = 3
151
Intel Core i5 3470
SE +/- 0.00, N = 3
133
Intel Core i7 3770K
SE +/- 0.33, N = 3
88
Intel Core i7 3960X
SE +/- 0.00, N = 3
64
Intel Core i3 4130
SE +/- 0.00, N = 3
180
Intel Core i7 4770K
SE +/- 0.00, N = 3
83
ODROID-XU
SE +/- 2.03, N = 3
693
Hikey 1/96
SE +/- 5.67, N = 3
1186
300
600
900
1200
1500
1. (CXX) g++ options: -fopenmp

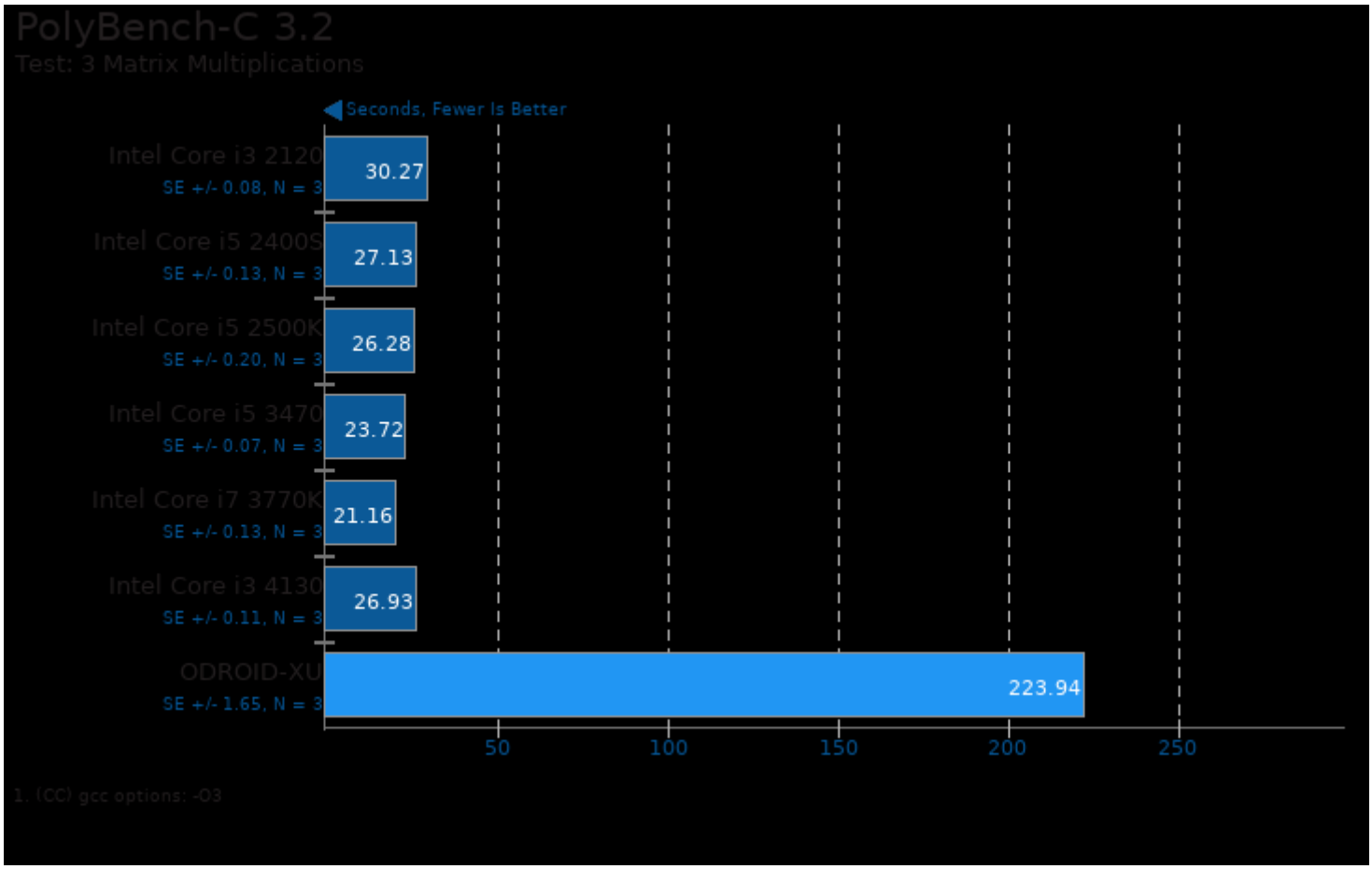

FFmpeg 2.0
H.264 HD To NTSC DV
Seconds, Fewer Is Better
AMD FX-8350
SE +/- 0.02, N = 3
22.49
Intel Core i3 2120
SE +/- 0.07, N = 3
24.13
Intel Core i5 2400S
SE +/- 0.14, N = 3
22.63
Intel Core i5 2500K
SE +/- 0.06, N = 3
20.65
Intel Core i5 3470
SE +/- 0.03, N = 3
20.05
Intel Core i7 3770K
SE +/- 0.17, N = 3
20.08
Intel Core i7 3960X
SE +/- 0.11, N = 3
21.02
Intel Core i3 4130
SE +/- 0.06, N = 3
17.05
Intel Core i7 4770K
SE +/- 0.03, N = 3
12.32
ODROID-XU
SE +/- 1.64, N = 5
-lbz2 -march=armv7-a -mthumb
115.65
30
60
90
120
150
1. (CC) gcc options: -lavdevice -lavfilter -lavformat -lavcodec -lswresample -lswscale -lavutil -ldl -lasound -lSDL -lm -pthread -std=c99 -fomit-frame-pointe


N-Queens 1.0
Elapsed Time
Seconds, Fewer Is Better
AMD FX-8350
SE +/- 0.00, N = 3
37.70
Intel Core i3 2120
SE +/- 0.00, N = 3
90.82
Intel Core i5 2400S
SE +/- 0.00, N = 3
81.76
Intel Core i5 2500K
SE +/- 0.01, N = 3
62.50
Intel Core i5 3470
SE +/- 0.00, N = 3
61.25
Intel Core i7 3770K
SE +/- 0.00, N = 3
40.22
Intel Core i7 3960X
SE +/- 0.00, N = 3
25.89
Intel Core i3 4130
SE +/- 0.00, N = 3
83.06
Intel Core i7 4770K
SE +/- 0.00, N = 3
38.22
ODROID-XU
SE +/- 0.85, N = 3
154.87
Hikey 1/96
SE +/- 2.44, N = 3
197.16
40
80
120
160
200
1. (CC) gcc options: -static -fopenmp -O3

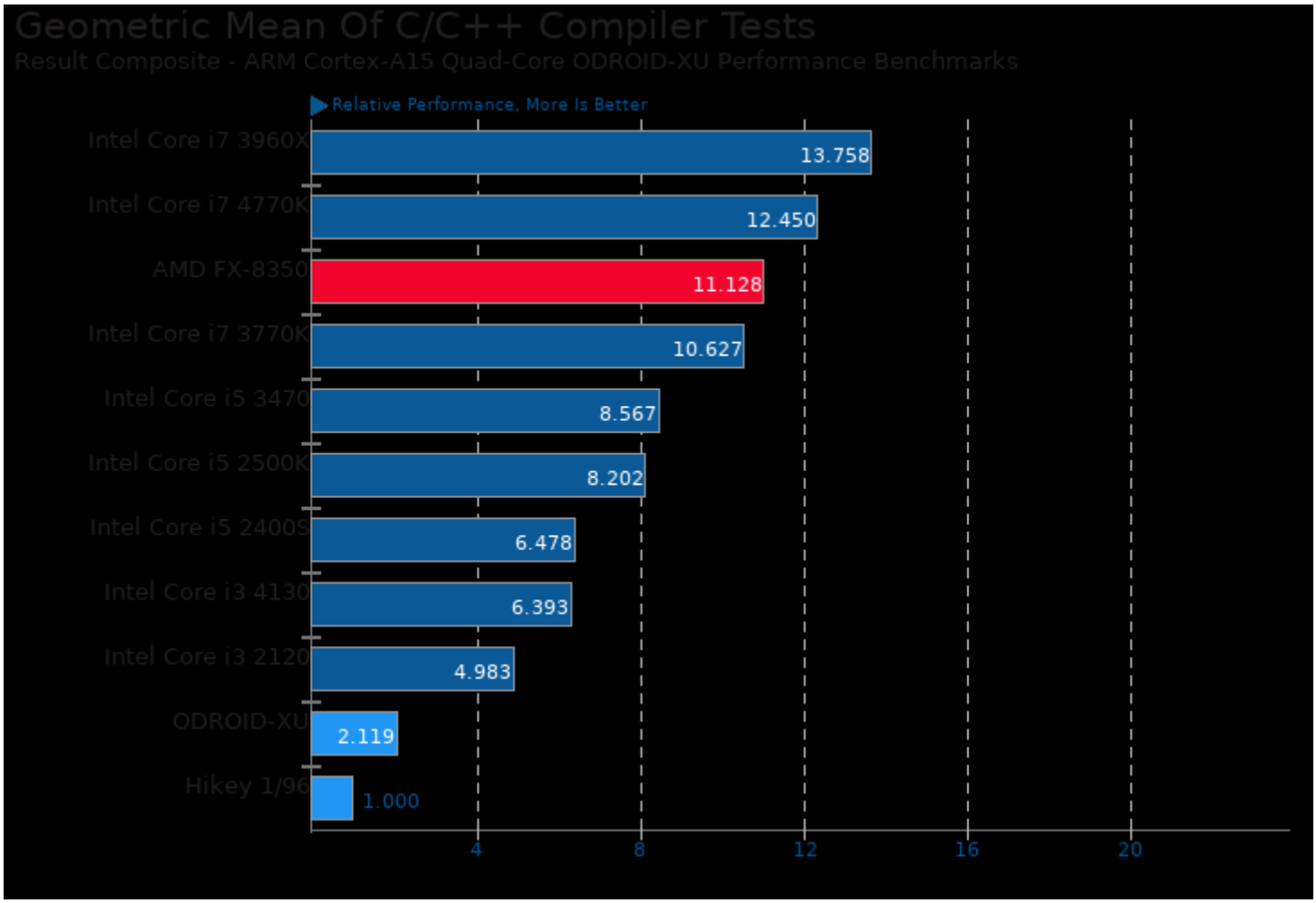

POV-Ray 3.6.1
Total Time
Seconds, Fewer Is Better
AMD FX-8350
Intel Core i3 2120
Intel Core i5 2400S
Intel Core i5 2500K
Intel Core i5 3470
Intel Core i7 3770K
Intel Core i7 3960X
Intel Core i3 4130
Intel Core i7 4770K
ODROID-XU
-msse -mfpmath=sse -msse2 -march=k8 -mtune=k8 -malign-double
812
780
785
698
705
651
661
697
607
2153
500
1000
1500
2000
2500
1. (CXX) g++ options: -pipe -O3 -ltiff -ljpeg -lz -lm


PolyBench-C 3.2
Test: Covariance Computation
Seconds, Fewer Is Better
Intel Core i3 2120
SE +/- 0.01, N = 3
5.84
Intel Core i5 2400S
SE +/- 0.02, N = 3
5.90
Intel Core i5 2500K
SE +/- 0.01, N = 3
5.25
Intel Core i5 3470
SE +/- 0.02, N = 3
5.41
Intel Core i7 3770K
SE +/- 0.01, N = 3
4.94
Intel Core i3 4130
SE +/- 0.01, N = 3
5.21
ODROID-XU
SE +/- 0.01, N = 3
22.14
5
10
15
20
25
1. (CC) gcc options: -O3

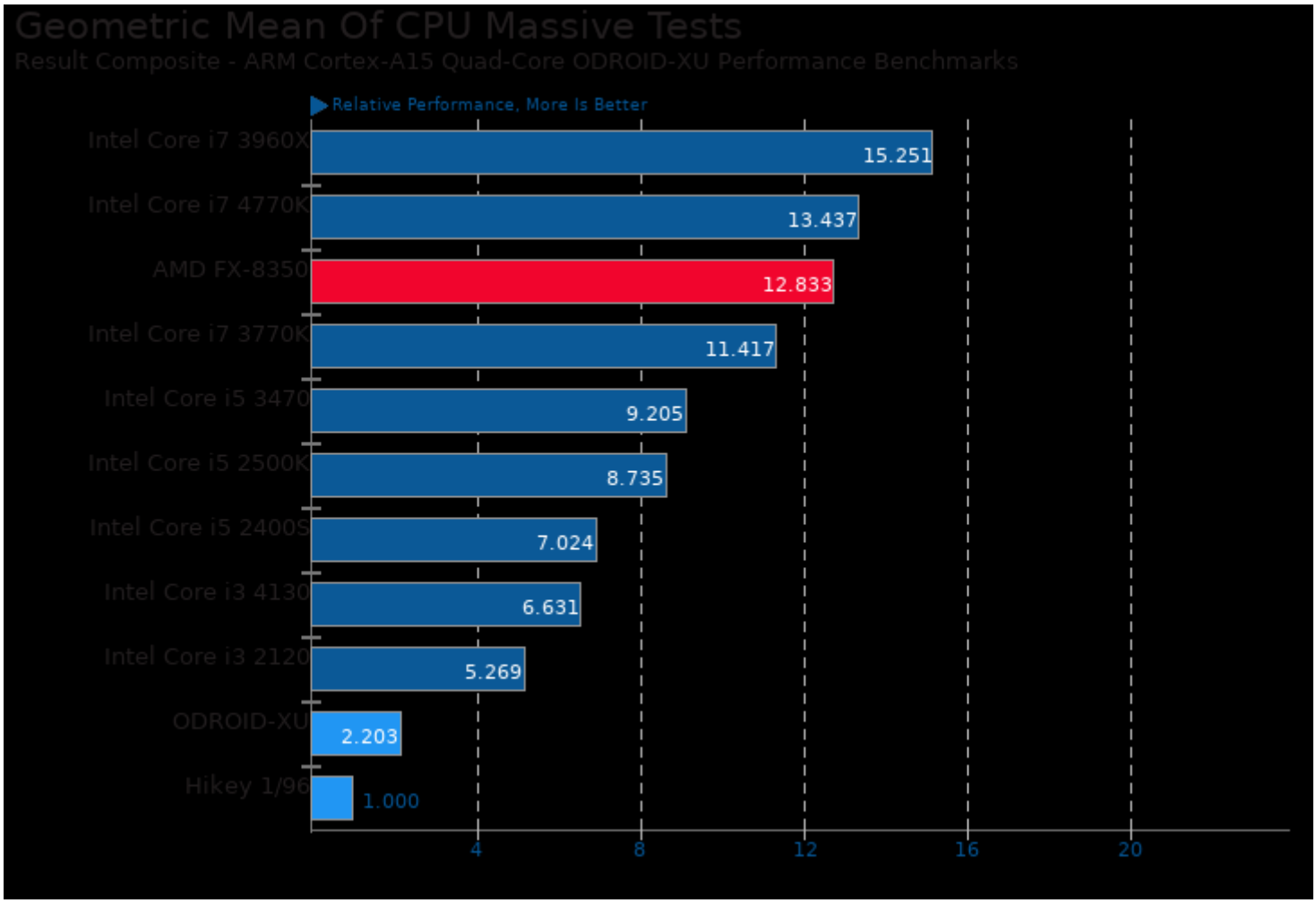

PolyBench-C 3.2
Test: Correlation Computation
Seconds, Fewer Is Better
Intel Core i3 2120
SE +/- 0.01, N = 3
5.85
Intel Core i5 2400S
SE +/- 0.01, N = 3
5.89
Intel Core i5 2500K
SE +/- 0.00, N = 3
5.25
Intel Core i5 3470
SE +/- 0.01, N = 3
5.40
Intel Core i7 3770K
SE +/- 0.01, N = 3
4.94
Intel Core i3 4130
SE +/- 0.00, N = 3
5.21
ODROID-XU
SE +/- 0.01, N = 3
22.15
5
10
15
20
25
1. (CC) gcc options: -O3


PolyBench-C 3.2
Test: 3 Matrix Multiplications
Seconds, Fewer Is Better
Intel Core i3 2120
SE +/- 0.08, N = 3
30.27
Intel Core i5 2400S
SE +/- 0.13, N = 3
27.13
Intel Core i5 2500K
SE +/- 0.20, N = 3
26.28
Intel Core i5 3470
SE +/- 0.07, N = 3
23.72
Intel Core i7 3770K
SE +/- 0.13, N = 3
21.16
Intel Core i3 4130
SE +/- 0.11, N = 3
26.93
ODROID-XU
SE +/- 1.65, N = 3
223.94
50
100
150
200
250
1. (CC) gcc options: -O3

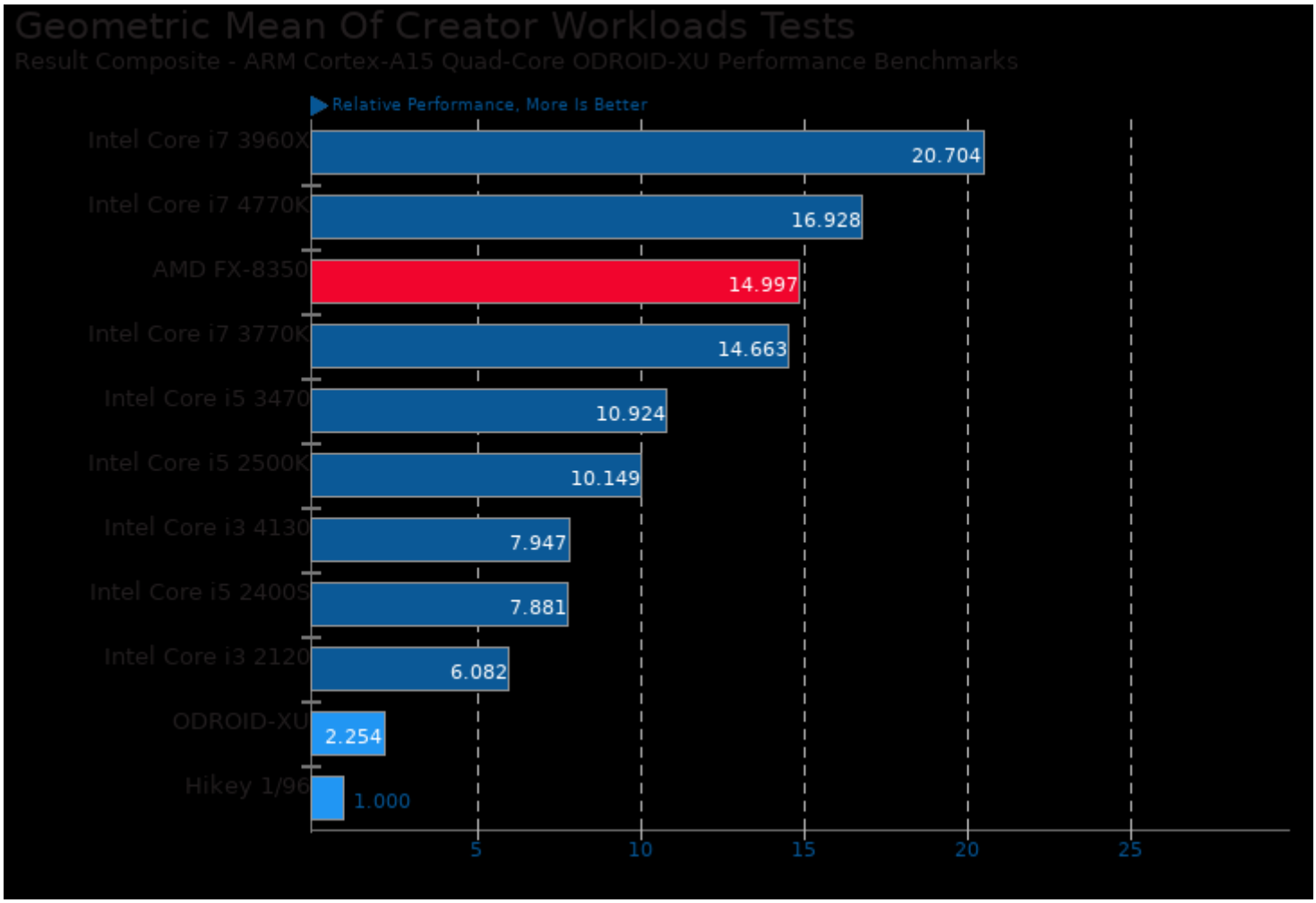
These geometric means are based upon test groupings / test suites for this result file.



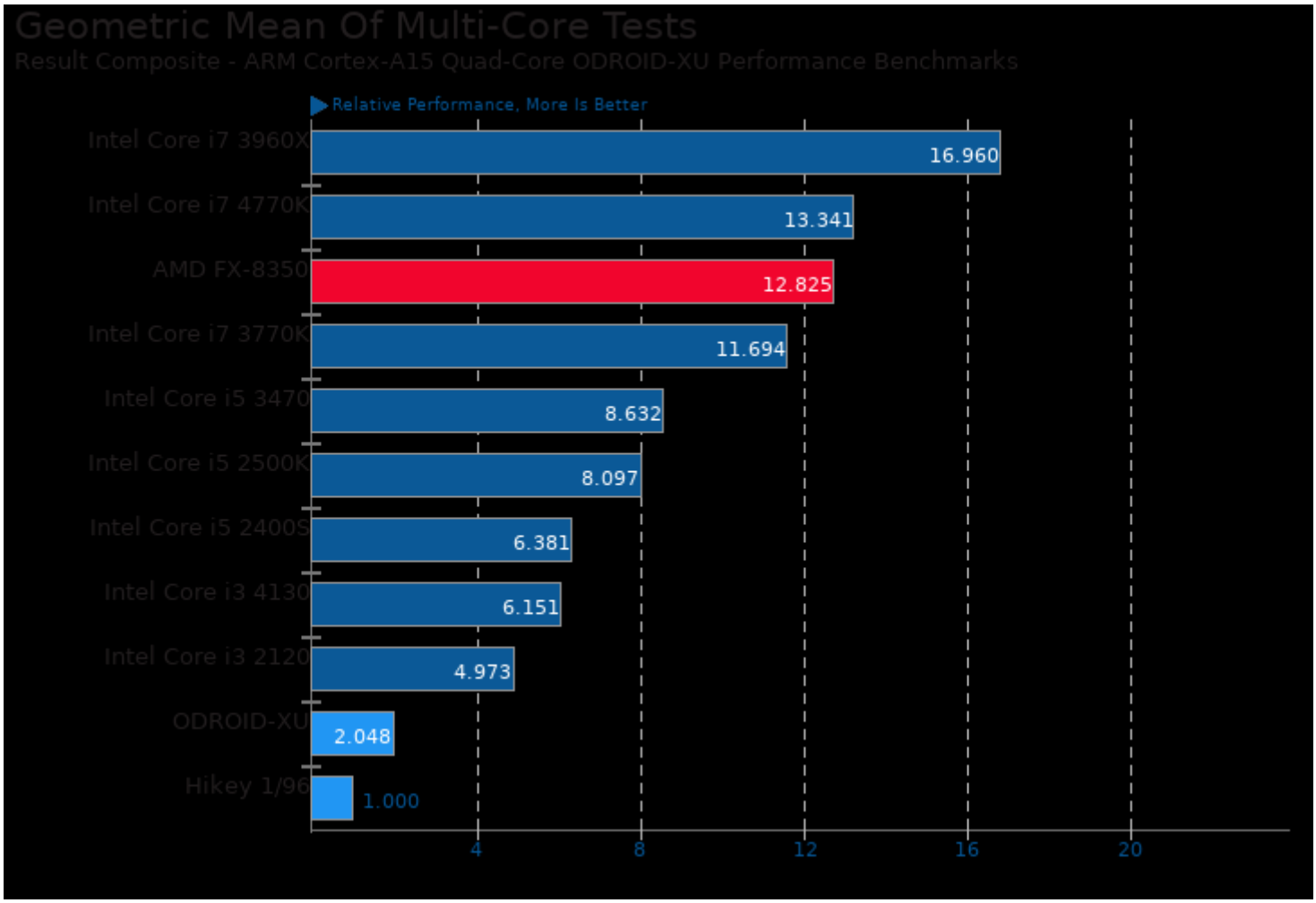
Geometric mean based upon tests: pts/mafft, pts/hmmer, pts/c-ray, pts/john-the-ripper, pts/x264, pts/openssl and pts/lammps



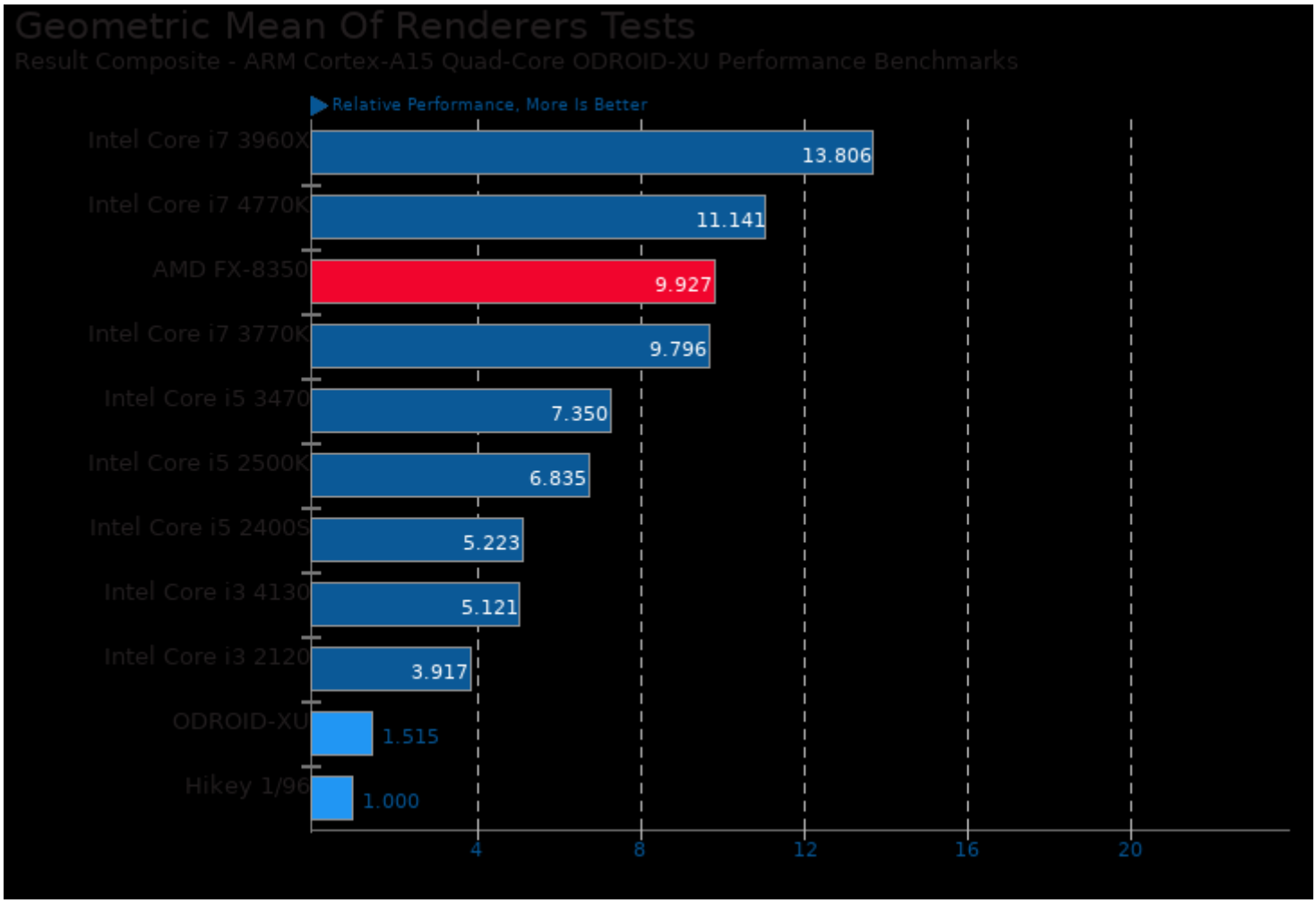
Geometric mean based upon tests: pts/build-linux-kernel, pts/c-ray, pts/compress-pbzip2, pts/x264, pts/dolfyn, pts/hmmer, pts/john-the-ripper, pts/openssl, pts/lammps, pts/mafft, pts/povray, pts/rodinia and pts/ttsiod-renderer



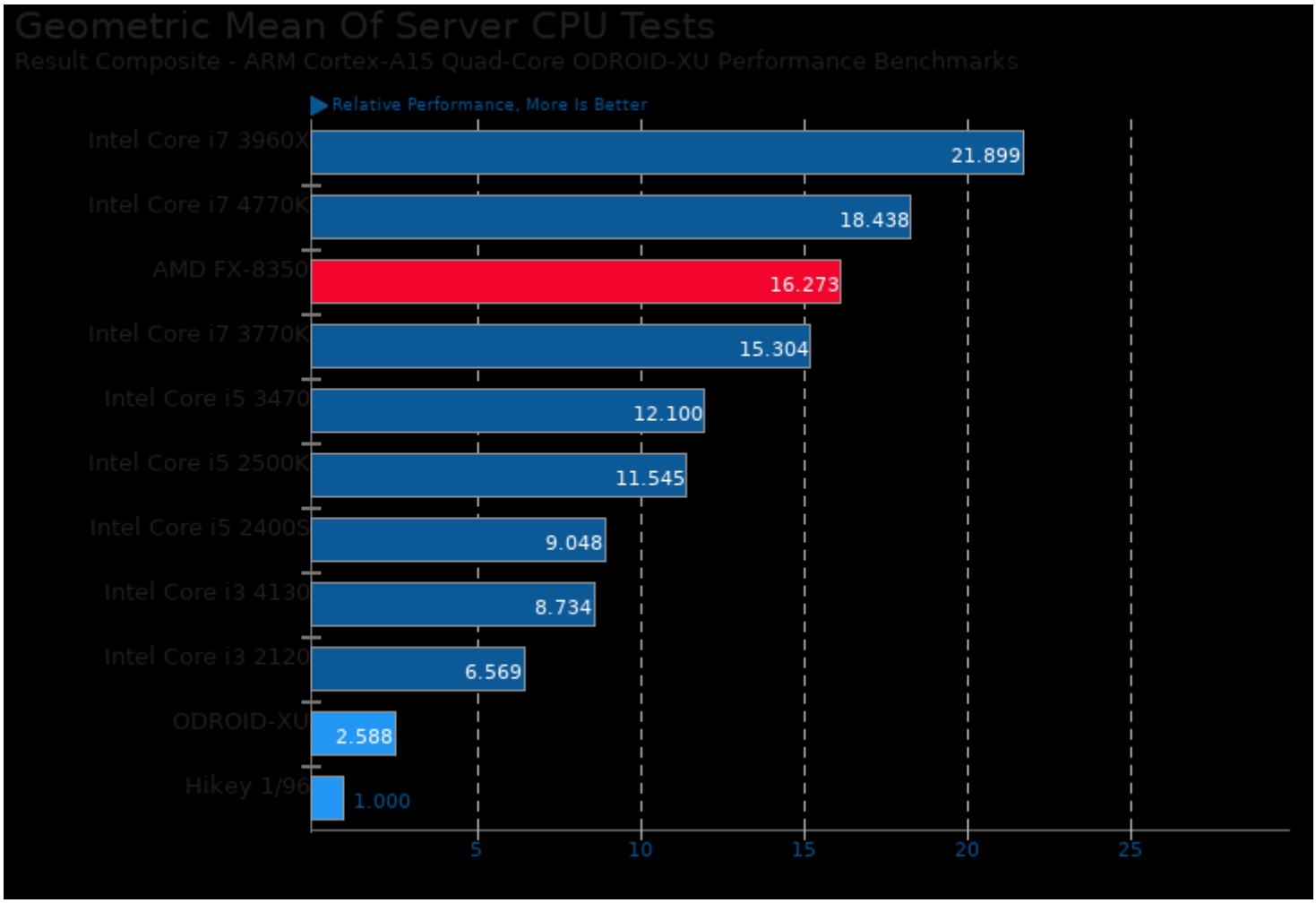
Geometric mean based upon tests: pts/c-ray, pts/povray, pts/smallpt, pts/ttsiod-renderer, pts/x264 and pts/ffmpeg



Geometric mean based upon tests: pts/c-ray, pts/povray, pts/n-queens, pts/x264, pts/ffmpeg, pts/rodinia, pts/john-the-ripper, pts/smallpt, pts/lammps, pts/compress-pbzip2, pts/build-linux-kernel and pts/ttsiod-renderer



Geometric mean based upon tests: pts/c-ray, pts/povray, pts/smallpt and pts/ttsiod-renderer



Geometric mean based upon tests: pts/rodinia, pts/john-the-ripper, pts/x264, pts/build-linux-kernel, pts/c-ray, pts/povray and pts/openssl

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 05:06.