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Raspberry Pi vs Orange Pi vs Banana Pi 2016-03 Showdown by LoveRPi

Debian Sid with Linux 5.15 on RB5

Test Systems:

Orange Pi One on Armbian

Processor: ARMv7 rev 5 @ 1.20GHz (4 Cores), Motherboard: sun8i, Memory: 494MB, Disk: 32GB 00000

OS: Debian 8.3, Kernel: 3.4.110-sun8i (armv7l), Compiler: GCC 4.9.2, File-System: ext4, Screen Resolution: 1280x1440

Compiler Notes: --build=arm-linux-gnueabihf --disable-browser-plugin --disable-libitm --disable-libquadmath --disable-sjlj-exceptions --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=arm-linux-gnueabihf --target=arm-linux-gnueabihf --with-arch-directory=arm --with-arch=armv7-a --with-float=hard --with-fpu=vfpv3-d16 --with-mode=thumb -v
Processor Notes: Scaling Governor: cpufreq-sunxi interactive

Orange Pi PC on Armbian

Processor: ARMv7 rev 5 @ 1.30GHz (4 Cores), Motherboard: sun8i, Memory: 1024MB, Disk: 32GB 00000

OS: Debian 8.3, Kernel: 3.4.110-sun8i (armv7l), Compiler: GCC 4.9.2, File-System: ext4, Screen Resolution: 1280x1440

Compiler Notes: --build=arm-linux-gnueabihf --disable-browser-plugin --disable-libitm --disable-libquadmath --disable-sjlj-exceptions --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=arm-linux-gnueabihf --target=arm-linux-gnueabihf --with-arch-directory=arm --with-arch=armv7-a --with-float=hard --with-fpu=vfpv3-d16 --with-mode=thumb -v
Processor Notes: Scaling Governor: cpufreq-sunxi interactive

Orange Pi Plus on Armbian

Processor: ARMv7 rev 5 @ 1.30GHz (4 Cores), Motherboard: sun8i, Memory: 1024MB, Disk: 32GB 00000 + 8GB M8G1GC

OS: Debian 8.3, Kernel: 3.4.110-sun8i (armv7l), Compiler: GCC 4.9.2, File-System: ext4, Screen Resolution: 1280x1440

Compiler Notes: --build=arm-linux-gnueabihf --disable-browser-plugin --disable-libitm --disable-libquadmath --disable-sjlj-exceptions --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=arm-linux-gnueabihf --target=arm-linux-gnueabihf --with-arch-directory=arm --with-arch=armv7-a --with-float=hard --with-fpu=vfpv3-d16 --with-mode=thumb -v
Processor Notes: Scaling Governor: cpufreq-sunxi interactive

Raspberry Pi 2 on Raspbian

Processor: ARMv7 rev 5 @ 0.90GHz (4 Cores), Motherboard: BCM2709 Raspberry Pi 2 Model B Rev 1.1, Memory: 925MB, Disk: 8GB SD

OS: Raspbian 8.0, Kernel: 4.1.13-v7+ (armv7l), Desktop: LXDE 0.7.2, Display Server: X Server 1.16.4, Compiler: GCC 4.9.2, File-System: ext4, Screen Resolution: 1824x984

Compiler Notes: --build=arm-linux-gnueabihf --disable-browser-plugin --disable-libitm --disable-libquadmath --disable-sjlj-exceptions --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=arm-linux-gnueabihf --target=arm-linux-gnueabihf --with-arch-directory=arm --with-arch=armv6 --with-float=hard --with-fpu=vfp -v
Processor Notes: Scaling Governor: BCM2835 Freq ondemand

Raspberry Pi 3 on Raspbian

Processor: ARMv7 rev 4 @ 1.20GHz (4 Cores), Motherboard: BCM2709 Raspberry Pi 3 Model B Rev 1.2, Memory: 925MB, Disk: 63GB 00000

OS: Raspbian GNU/Linux 8, Kernel: 4.1.20-v7+ (armv7l), Compiler: GCC 4.9.2, File-System: ext4, Screen Resolution: 1824x984

Compiler Notes: --build=arm-linux-gnueabihf --disable-browser-plugin --disable-libitm --disable-libquadmath --disable-sjlj-exceptions --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=arm-linux-gnueabihf --target=arm-linux-gnueabihf --with-arch-directory=arm --with-arch=armv6 --with-float=hard --with-fpu=vfp -v
Processor Notes: Scaling Governor: BCM2835 Freq ondemand

Banana Pi M2 by LoveRPi

Processor: ARMv7 rev 3 @ 1.01GHz (4 Cores), Motherboard: Allwinner sun6i (A31) Family Sinovoip BPI-M2, Memory: 1024MB, Disk: 129GB 00000

OS: Ubuntu 14.04, Kernel: 4.4.1-sunxi (armv7l), Compiler: GCC 4.8.4, File-System: ext4

Compiler Notes: --build=arm-linux-gnueabihf --disable-browser-plugin --disable-libitm --disable-libmudflap --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-float=hard --with-fpu=vfpv3-d16 --with-mode=thumb -v
Processor Notes: Scaling Governor: cpufreq-dt ondemand

Banana Pi M3 by LoveRPi

Processor: ARMv7 rev 5 @ 1.80GHz (8 Cores), Motherboard: sun8i, Memory: 2048MB, Disk: 8GB M8G1GC + 129GB TO

OS: Ubuntu 15.10, Kernel: 3.4.39-BPI-M3-aufs (armv7l), Compiler: GCC 5.2.1 20151010, File-System: aufs, Screen Resolution: 1920x2160

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,ada,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --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-default-libstdcxx-abi=new --with-float=hard --with-fpu=vfpv3-d16 --with-mode=thumb -v
Processor Notes: Scaling Governor: sunxi-iks interactive

Banana Pi M2+ SinoVoip

Processor: ARMv7 rev 5 @ 1.20GHz (1 Core), Motherboard: sun8i, Memory: 745MB, Disk: 64GB 00000 + 8GB 8WMB3R

OS: Debian 8.4, Kernel: 3.4.111-sun8i (armv7l), Desktop: Xfce, Display Driver: modesetting 0.9.0, Compiler: GCC 4.9.2, File-System: ext4, Screen Resolution: 1280x720

Compiler Notes: --build=arm-linux-gnueabihf --disable-browser-plugin --disable-libitm --disable-libquadmath --disable-sjlj-exceptions --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=arm-linux-gnueabihf --target=arm-linux-gnueabihf --with-arch-directory=arm --with-arch=armv7-a --with-float=hard --with-fpu=vfpv3-d16 --with-mode=thumb -v
Processor Notes: Scaling Governor: cpufreq-sunxi interactive

Banana Pi M2+ on Armbian

Processor: ARMv7 rev 5 @ 1.20GHz (4 Cores), Motherboard: sun8i, Memory: 745MB, Disk: 64GB 00000 + 8GB 8WMB3R

OS: Debian 8.4, Kernel: 3.4.111-sun8i (armv7l), Desktop: Xfce, Display Driver: modesetting 0.9.0, Compiler: GCC 4.9.2, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=arm-linux-gnueabihf --disable-browser-plugin --disable-libitm --disable-libquadmath --disable-sjlj-exceptions --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=arm-linux-gnueabihf --target=arm-linux-gnueabihf --with-arch-directory=arm --with-arch=armv7-a --with-float=hard --with-fpu=vfpv3-d16 --with-mode=thumb -v
Processor Notes: Scaling Governor: cpufreq-sunxi interactive

Banana Pi M2+ Raspbian 8.0

Processor: ARMv7 rev 5 @ 1.20GHz (3 Cores), Motherboard: sun8i, Memory: 1024MB, Disk: 8GB SU08G + 8GB 8WMB3R

OS: Raspbian 8.0, Kernel: 3.4.39-02-lobo (armv7l), Desktop: LXDE, Compiler: GCC 4.9.2, File-System: ext4, Screen Resolution: 1280x720

Compiler Notes: --build=arm-linux-gnueabihf --disable-browser-plugin --disable-libitm --disable-libquadmath --disable-sjlj-exceptions --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=arm-linux-gnueabihf --target=arm-linux-gnueabihf --with-arch-directory=arm --with-arch=armv6 --with-float=hard --with-fpu=vfp -v
Processor Notes: Scaling Governor: cpufreq-sunxi ondemand

MiQi on Lubuntu 14.04

Processor: ARMv7 rev 1 @ 1.80GHz (4 Cores), Motherboard: Rockchip RK3288 (Flattened Device Tree), Memory: 2048MB, Disk: 31GB BIWIN

OS: Ubuntu 14.04, Kernel: 3.10.0 (armv7l), Desktop: LXDE, Compiler: GCC 4.8.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=arm-linux-gnueabihf --disable-browser-plugin --disable-libitm --disable-libmudflap --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-float=hard --with-fpu=vfpv3-d16 --with-mode=thumb -v
Processor Notes: Scaling Governor: rockchip interactive

DragonBoard 410c on Debian RPB 16.03

Processor: Unknown @ 1.21GHz (4 Cores), Memory: 833MB, Disk: 8GB DS2008, Monitor: TX-NR636

OS: Debian 8.3, Kernel: 4.4.0-104-arm64 (aarch64), Desktop: LXDE, Compiler: GCC 4.9.2, File-System: ext4, Screen Resolution: 1920x1080

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: cpufreq-dt ondemand

MeUbuntu 14.04.3

Processor: Intel Atom Z3735F @ 1.83GHz (4 Cores), Motherboard: Mini PC v2.80, Chipset: Intel ValleyView SSA-CUnit, Memory: 2048MB, Disk: 31GB NCard, Graphics: Intel ValleyView Gen7 (646MHz), Monitor: TX-NR636

OS: Ubuntu 14.04, Kernel: 3.16.0-45-generic (x86_64), Desktop: Unity 7.2.6, Display Driver: intel 2.99.914, Compiler: GCC 4.8.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-libmudflap --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-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: intel_pstate powersave

NanoPi NEO 512MB No Heatsink

Processor: ARMv7 rev 5 @ 0.82GHz (4 Cores), Motherboard: sun8i, Memory: 495MB, Disk: 8GB SL08G

OS: Ubuntu 15.10, Kernel: 3.4.39-h3 (armv7l), Compiler: GCC 5.2.1 20151010, File-System: ext4, Screen Resolution: 1280x1440

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,ada,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --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-default-libstdcxx-abi=new --with-float=hard --with-fpu=vfpv3-d16 --with-mode=thumb -v
Processor Notes: Scaling Governor: cpufreq-sunxi interactive

NanoPi NEO 512MB Heatsink

NanoPi NEO 512MB Heatsink 2

NanoPi NEO 512MB Heatsink2

Processor: ARMv7 rev 5 @ 1.20GHz (4 Cores), Motherboard: sun8i, Memory: 495MB, Disk: 8GB SL08G

OS: Ubuntu 15.10, Kernel: 3.4.39-h3 (armv7l), Compiler: GCC 5.2.1 20151010, File-System: ext4, Screen Resolution: 1280x1440

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,ada,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --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-default-libstdcxx-abi=new --with-float=hard --with-fpu=vfpv3-d16 --with-mode=thumb -v
Processor Notes: Scaling Governor: cpufreq-sunxi interactive

NanoPi NEO 2 FA Ubuntu 16.04.2

Processor: AArch64 rev 4 @ 0.82GHz (4 Cores), Motherboard: sun50iw2, Memory: 468MB, Disk: 8GB SL08G

OS: Ubuntu 16.04, Kernel: 3.10.65 (aarch64), Compiler: GCC 5.4.0 20160609, File-System: ext4, Screen Resolution: 1280x1440

Compiler Notes: --build=aarch64-linux-gnu --disable-browser-plugin --disable-libquadmath --disable-werror --enable-checking=release --enable-clocale=gnu --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,ada,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=aarch64 --with-default-libstdcxx-abi=new -v
Processor Notes: Scaling Governor: cpufreq-sunxi interactive

NanoPi NEO 2 Armbian Ubuntu 16.04.2

Processor: AArch64 rev 4 (4 Cores), Motherboard: Xunlong Orange Pi PC 2, Memory: 483MB, Disk: 8GB SL08G

OS: Ubuntu 16.04, Kernel: 4.10.0-sun50iw2 (aarch64), Compiler: GCC 5.4.0 20160609, File-System: ext4

Compiler Notes: --build=aarch64-linux-gnu --disable-browser-plugin --disable-libquadmath --disable-werror --enable-checking=release --enable-clocale=gnu --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,ada,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=aarch64 --with-default-libstdcxx-abi=new -v

VS-RK3399 Board - Debian 9

Processor: ARMv8 rev 4 @ 1.42GHz (6 Cores), Motherboard: Rockchip RK3399 VideoStrong Board MID (Android), Memory: 4096MB, Disk: 31GB BWBD3R, Monitor: TX-NR636

OS: Debian 9.1, Kernel: 4.4.55 (aarch64), Desktop: LXDE, Compiler: GCC 6.3.0 20170516, File-System: ext4, Screen Resolution: 1024x600p86

Compiler Notes: --build=arm-linux-gnueabihf --disable-browser-plugin --disable-libitm --disable-libquadmath --disable-sjlj-exceptions --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,ada,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc=auto --enable-plugin --enable-shared --enable-threads=posix --host=arm-linux-gnueabihf --program-prefix=arm-linux-gnueabihf- --target=arm-linux-gnueabihf --with-arch-directory=arm --with-arch=armv7-a --with-default-libstdcxx-abi=new --with-float=hard --with-fpu=vfpv3-d16 --with-mode=thumb --with-target-system-zlib -v
Processor Notes: Scaling Governor: cpufreq-dt ondemand

Raspberry Pi 4 on Raspbian

Processor: ARMv7 rev 3 @ 1.50GHz (4 Cores), Motherboard: BCM2835 Raspberry Pi 4 Model B Rev 1.1, Memory: 924MB, Disk: 1000GB Expansion + 16GB SL16G, Graphics: DRM emulated, Monitor: TX-NR636

OS: Raspbian 10, Kernel: 4.19.46-v7l+ (armv7l), Desktop: LXDE, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=arm-linux-gnueabihf --disable-libitm --disable-libquadmath --disable-libquadmath-support --disable-sjlj-exceptions --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc=auto --enable-plugin --enable-shared --enable-threads=posix --host=arm-linux-gnueabihf --program-prefix=arm-linux-gnueabihf- --target=arm-linux-gnueabihf --with-arch=armv6 --with-default-libstdcxx-abi=new --with-float=hard --with-fpu=vfp --with-gcc-major-version-only --with-target-system-zlib -v
Processor Notes: Scaling Governor: BCM2835 Freq ondemand

Qualcomm RB5 on Debian Sid Linaro Snapshot

Processor: ARMv8 Cortex-A77 @ 1.80GHz (4 Cores / 8 Threads), Motherboard: QRB5165, Memory: 8GB, Disk: 126GB Samsung HN8T05BZGKX015 + 2GB Samsung HN8T05BZGKX015, Graphics: FD650 128MB, Monitor: LG TV

OS: Debian unstable, Kernel: 5.15.0-qcomlt-arm64 (aarch64), Desktop: GNOME Shell 41.1, Display Server: X Server, OpenGL: 3.3 Mesa 21.2.6, Compiler: GCC 11.2.0, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: Transparent Huge Pages: always
Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-serialization=2 --enable-multiarch --enable-nls --enable-objc-gc=auto --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-build-config=bootstrap-lto-lean --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-target-system-zlib=auto -v
Processor Notes: Scaling Governor: qcom-cpufreq-hw ondemand
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl + spectre_v1: Mitigation of __user pointer sanitization + spectre_v2: Not affected + srbds: Not affected + tsx_async_abort: Not affected

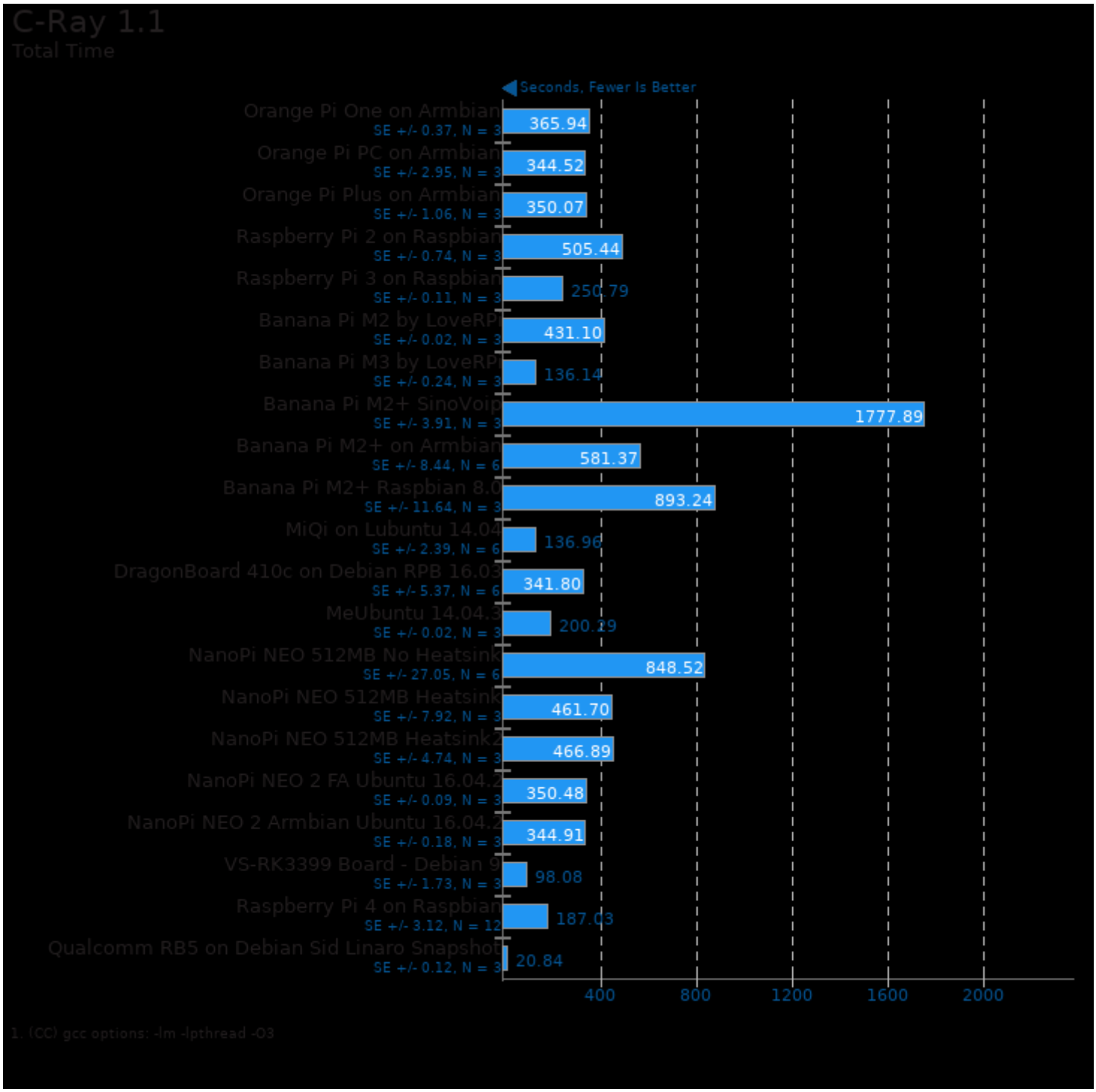
Raspberry Pi vs Orange Pi vs Banana Pi 2016-03 Showdown by LoveRPi

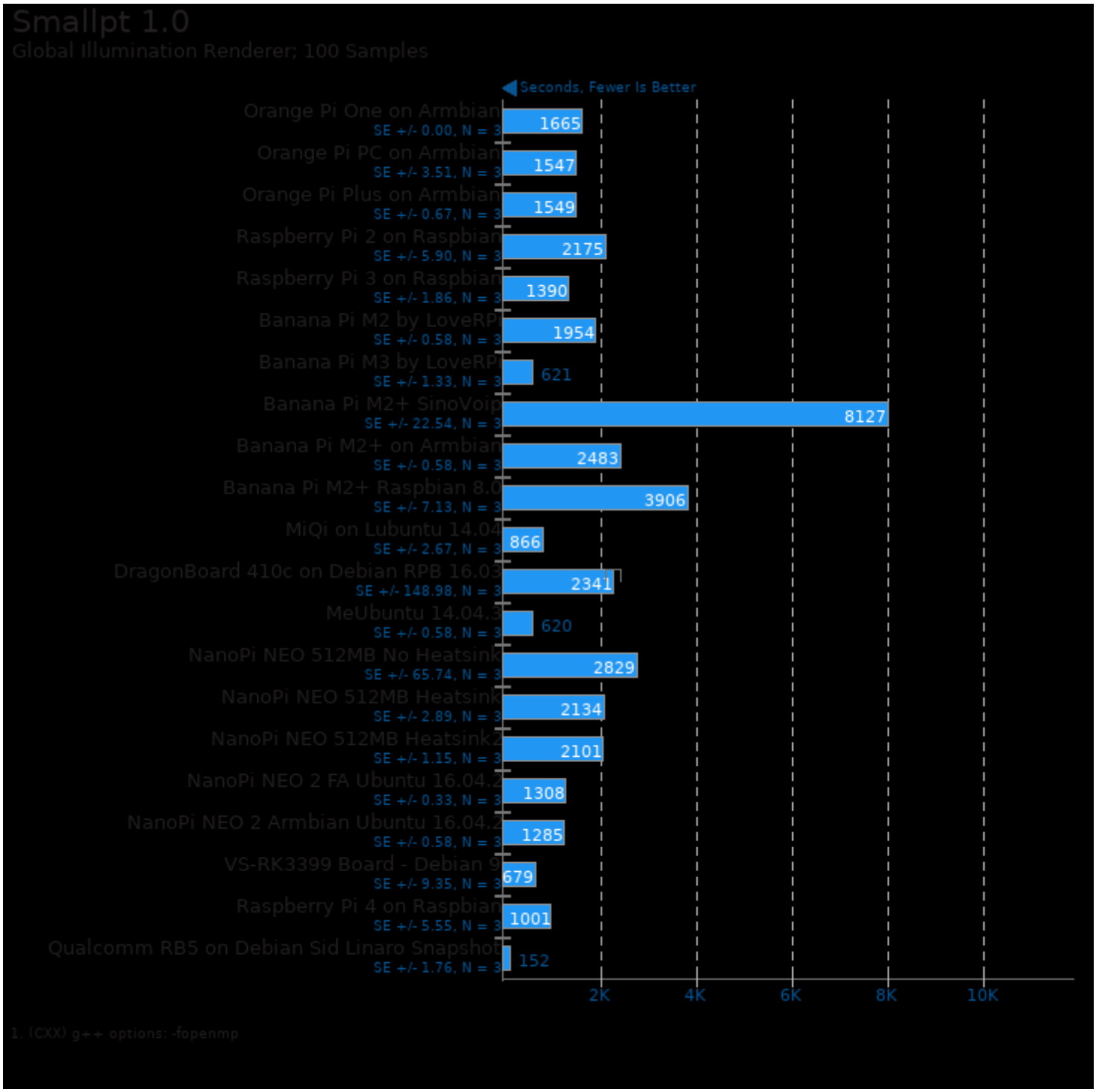
	Orange Pi One on Armbian	Orange Pi PC on Armbian	Orange Pi Plus on Armbian	Raspberry Pi 2 on Raspbian	Raspberry Pi 3 on Raspbian	Banana Pi M2 by LoveRPi	Banana Pi M3 by LoveRPi	Banana Pi M2 + SinoVoip	Banana Pi M2 + on Armbian	Banana Pi M2 + Raspbian 8.0	MiQi on Lubuntu 14.04	Dragon Board 410c on Debian RPB 16.03	Me Ubuntu 14.04.3	NanoPi NEO 512MB NoHeatsink	NanoPi NEO 512MB Heatsink	NanoPi NEO 512MB Heatsink 2	NanoPi NEO 512MB Heatsink2	NanoPi NEO 2 FA Ubuntu 16.04.2	NanoPi NEO 2 Armbian Ubuntu 16.04.2	VS-RK3399 Board - Debian 9	Raspberry Pi 4 on Raspbian	Qualcomm RB5 on Debian Sid Linaro Snapsh
C-Ray - Total Time (sec)	365.94	344.52	350.07	505.44	250.79	431.10	136.14	1778	581.37	893.24	136.96	341.80	200.29	848.52	461.70		466.89	350.48	344.91	98.08	187.03	20.844
Normalized	5.7%	6.05%	5.95%	4.12%	8.31%	4.84%	15.31%	1.17%	3.59%	2.33%	15.2%	6.1%	10.4%	2.46%	4.51%		4.46%	5.95%	6.04%	21.25%	11.14%	100%
Standard Deviation	0.2%	1.5%	0.5%	0.3%	0.1%	0%	0.3%	0.4%	3.6%	2.3%	4.3%	3.8%	0%	7.8%	3%		1.8%	0%	0.1%	3.1%	5.8%	1%
Smallpt - G.I.R.1.S (sec)	1665	1547	1549	2175	1390	1954	621	8127	2483	3906	866	2341	620	2829	2134		2101	1308	1285	679	1001	152
Normalized	9.13%	9.83%	9.81%	6.99%	10.94%	7.78%	24.48%	1.87%	6.12%	3.89%	17.55%	6.49%	24.52%	5.37%	7.12%		7.23%	11.62%	11.83%	22.39%	15.18%	100%
Standard Deviation	0%	0.4%	0.1%	0.5%	0.2%	0.1%	0.4%	0.5%	0%	0.3%	0.5%	11%	0.2%	4%	0.2%		0.1%	0%	0.1%	2.4%	1%	2%
OpenSSL - Performance / Cost - R.4.b.P (Signs/sec/Dollar	1.60	1.15	0.44		0.59	0.30	0.54															
Normalized	100%	71.88%	27.5%		36.88%	18.75%	33.75%															

John The Ripper - Performance / Cost - Blowfish (Real C/S/Dolla	**50.90**	36.67	13.85		17.11	**9.73**	17.60																		
Normalized	100%	72.0%	27.2%		33.6%	19.1%	34.5%																		
Meta Performance Per Dollar - P.P.D (Performance/Dollar)	**19.65**	14.12	5.34		6.48	**3.80**	6.18																		
Normalized	100%	71.8%	27.1%		32.9%	19.3%	31.4%																		
John The Ripper - Blowfish (Real	509	550	540	387	599	438	1408	**104**	390	323	1055	535	1003	313	462		452	456	478	759	539	**2922**			
Normalized	17.42%	18.82%	18.48%	13.24%	20.5%	14.99%	48.19%	3.56%	13.35%	11.05%	36.11%	18.31%	34.33%	10.71%	15.81%		15.47%	15.61%	16.36%	25.97%	18.45%	100%			
Standard Deviation	0.1%	0%	0%	0.3%	0.6%	0.1%	0.6%	3%	14.2%	0.8%	0.2%	11.2%	20.4%	9.1%	2.7%		2.7%	0.6%		3.3%	11.8%	0.3%			
FLAC Audio Encoding - WAV To FLAC (sec)	229.54	228.09	231.38	314.58	237.30	288.16		279.95	230.20	282.60	81.96	198.14	36.43	**325.72**	231.39		230.99	236.51	290.91	48.84	63.70	**14.515**			
Normalized	6.32%	6.36%	6.27%	4.61%	6.12%	5.04%		5.18%	6.31%	5.14%	17.7%	7.33%	39.8%	4.46%	6.27%		6.28%	6.14%	4.99%	29.7%	22.7%	100%			
Standard Deviation	0.2%	1%	1.4%	0.9%	1.6%	0.1%		0.2%	0.3%	0.3%	0.9%	3.3%	7.7%	1.8%	0.3%		0.1%	0.2%	0%	0.2%	5.7%	0.3%			

Raspberry Pi vs Orange Pi vs Banana Pi 2016-03 Showdown by LoveRPi

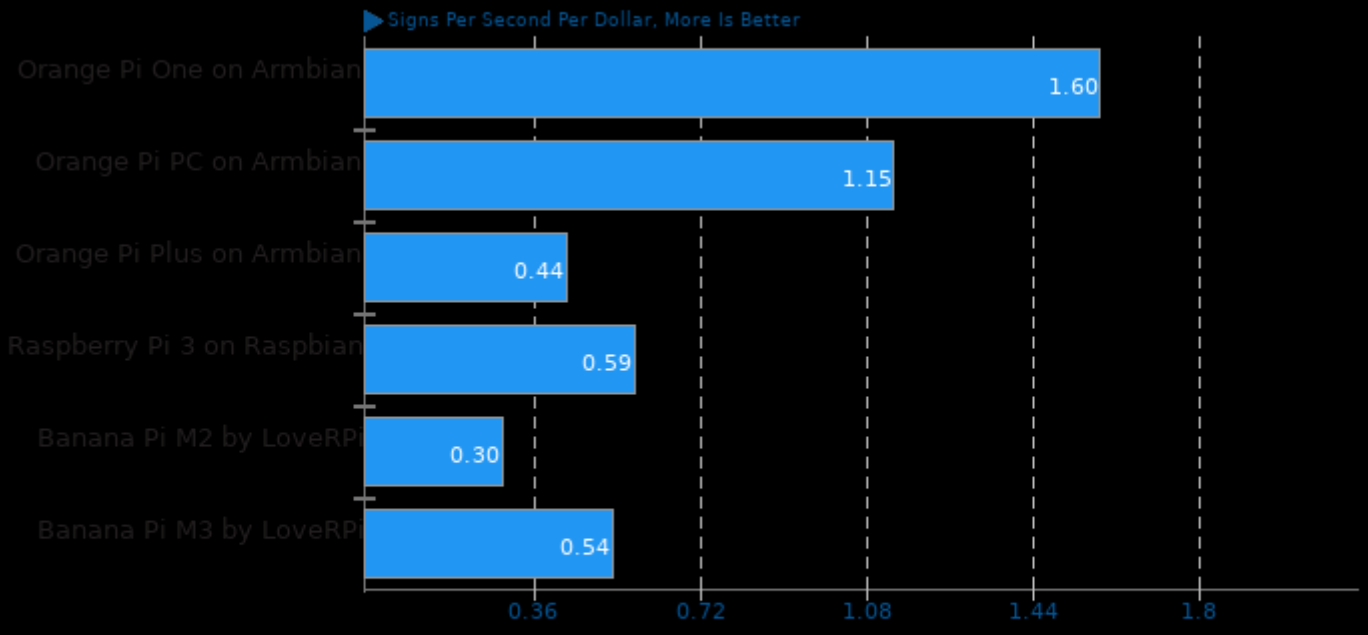
Himeno Benchmark - Performance / Cost - P.P.S (MFLOPS/Dollar)	6.44	4.55	1.74		1.72	1.36	0.40															
Normalized	100%	70.6%	27.0%		26.7%	21.1%	6.21%															
Himeno Benchmark - P.P.S (MFLOP	64.38	68.23	68.01	33.29	60.28	61.26	31.80	56.83	64.35	63.04	89.84	66.91	443.65	41.32	15.34		15.31	52.67	49.18	195.30	292.43	1855
Normalized	3.47%	3.68%	3.67%	1.8%	3.25%	3.3%	1.71%	3.06%	3.47%	3.4%	4.84%	3.61%	23.9%	2.23%	0.83%		0.83%	2.84%	2.65%	10.5%	15.7%	100%
Standard Deviation	0.4%	0.8%	0.1%	2.4%	1.1%	0.2%	2.7%	1.4%	1%	1.5%	3%	1.2%	0.9%	0.2%	0.5%		1.8%	8.2%	0.7%	0.7%	4.7%	1.1%
Timed MAFFT Alignment - M.S.A		62.45	63.17	75.46	61.06	70.58	29.72	210.62	81.13	121.86	42.84	73.91	33.12	132.29	77.66		75.34	63.73	64.47			8.799
Normalized		14.09%	13.93%	11.6%	14.46%	12.47%	29.6%	4.18%	10.85%	7.22%	20.5%	11.91%	26.5%	6.65%	11.3%		11.6%	13.8%	13.6%			100%
Standard Deviation		8.2%	2.1%	2.3%	10.4%	2%	0.8%	0%	8.4%	9.5%	4.6%	8.1%	1.2%	9.4%	2.5%		1.6%	8.2%	0.4%			8.5%
OpenSSL - R.4.b.P (Signs/s	16	17.20	17.13	11.93	20.60	13.40	43.30	3.30	10.48	6.67	29.70	10.90	66.53	7.68	12.35		12.40				21.07	107.2
Normalized	14.93%	16.04%	15.98%	11.1%	19.26%	12.5%	40.3%	3.08%	9.78%	6.22%	27.7%	10.1%	62.0%	7.16%	11.5%		11.5%				19.6%	100%
Standard Deviation	0%	0%	0.3%	0.5%	8.9%	0%	2%	0%	14.2%	0.9%	0%	9%	1.4%	18.6%	3.4%		4.4%				7.9%	1.8%


C-Ray 1.1
Total Time
Seconds, Fewer Is Better
Orange Pi One on Armbian
SE +/- 0.37, N = 3
365.94
Orange Pi PC on Armbian
SE +/- 2.95, N = 3
344.52
Orange Pi Plus on Armbian
SE +/- 1.06, N = 3
350.07
Raspberry Pi 2 on Raspbian
SE +/- 0.74, N = 3
505.44
Raspberry Pi 3 on Raspbian
SE +/- 0.11, N = 3
250.79
Banana Pi M2 by LoveRPi
SE +/- 0.02, N = 3
431.10
Banana Pi M3 by LoveRPi
SE +/- 0.24, N = 3
136.14
Banana Pi M2+ SinoVoip
SE +/- 3.91, N = 3
1777.89
Banana Pi M2+ on Armbian
SE +/- 8.44, N = 6
581.37
Banana Pi M2+ Raspbian 8.0
SE +/- 11.64, N = 3
893.24
MiQi on Lubuntu 14.04
SE +/- 2.39, N = 6
136.96
DragonBoard 410c on Debian RPB 16.03
SE +/- 5.37, N = 6
341.80
MeUbuntu 14.04.3
SE +/- 0.02, N = 3
200.29
NanoPi NEO 512MB No Heatsink
SE +/- 27.05, N = 6
848.52
NanoPi NEO 512MB Heatsink
SE +/- 7.92, N = 3
461.70
NanoPi NEO 512MB Heatsink2
SE +/- 4.74, N = 3
466.89
NanoPi NEO 2 FA Ubuntu 16.04.2
SE +/- 0.09, N = 3
350.48
NanoPi NEO 2 Armbian Ubuntu 16.04.2
SE +/- 0.18, N = 3
344.91
VS-RK3399 Board - Debian 9
SE +/- 1.73, N = 3
98.08
Raspberry Pi 4 on Raspbian
SE +/- 3.12, N = 12
187.03
Qualcomm RB5 on Debian Sid Linaro Snapshot
SE +/- 0.12, N = 3
20.84
400
800
1200
1600
2000
1. (CC) gcc options: -lm -lpthread -O3


Smallpt 1.0
Global Illumination Renderer; 100 Samples
Seconds, Fewer Is Better
Orange Pi One on Armbian
SE +/- 0.00, N = 3
1665
Orange Pi PC on Armbian
SE +/- 3.51, N = 3
1547
Orange Pi Plus on Armbian
SE +/- 0.67, N = 3
1549
Raspberry Pi 2 on Raspbian
SE +/- 5.90, N = 3
2175
Raspberry Pi 3 on Raspbian
SE +/- 1.86, N = 3
1390
Banana Pi M2 by LoveRPi
SE +/- 0.58, N = 3
1954
Banana Pi M3 by LoveRPi
SE +/- 1.33, N = 3
621
Banana Pi M2+ SinoVoip
SE +/- 22.54, N = 3
8127
Banana Pi M2+ on Armbian
SE +/- 0.58, N = 3
2483
Banana Pi M2+ Raspbian 8.0
SE +/- 7.13, N = 3
3906
MiQi on Lubuntu 14.04
SE +/- 2.67, N = 3
866
DragonBoard 410c on Debian RPB 16.03
SE +/- 148.98, N = 3
2341
MeUbuntu 14.04.3
SE +/- 0.58, N = 3
620
NanoPi NEO 512MB No Heatsink
SE +/- 65.74, N = 3
2829
NanoPi NEO 512MB Heatsink
SE +/- 2.89, N = 3
2134
NanoPi NEO 512MB Heatsink2
SE +/- 1.15, N = 3
2101
NanoPi NEO 2 FA Ubuntu 16.04.2
SE +/- 0.33, N = 3
1308
NanoPi NEO 2 Armbian Ubuntu 16.04.2
SE +/- 0.58, N = 3
1285
VS-RK3399 Board - Debian 9
SE +/- 9.35, N = 3
679
Raspberry Pi 4 on Raspbian
SE +/- 5.55, N = 3
1001
Qualcomm RB5 on Debian Sid Linaro Snapshot
SE +/- 1.76, N = 3
152
2K
4K
6K
8K
10K
1. (CXX) g++ options: -fopenmp

OpenSSL 1.0.1g

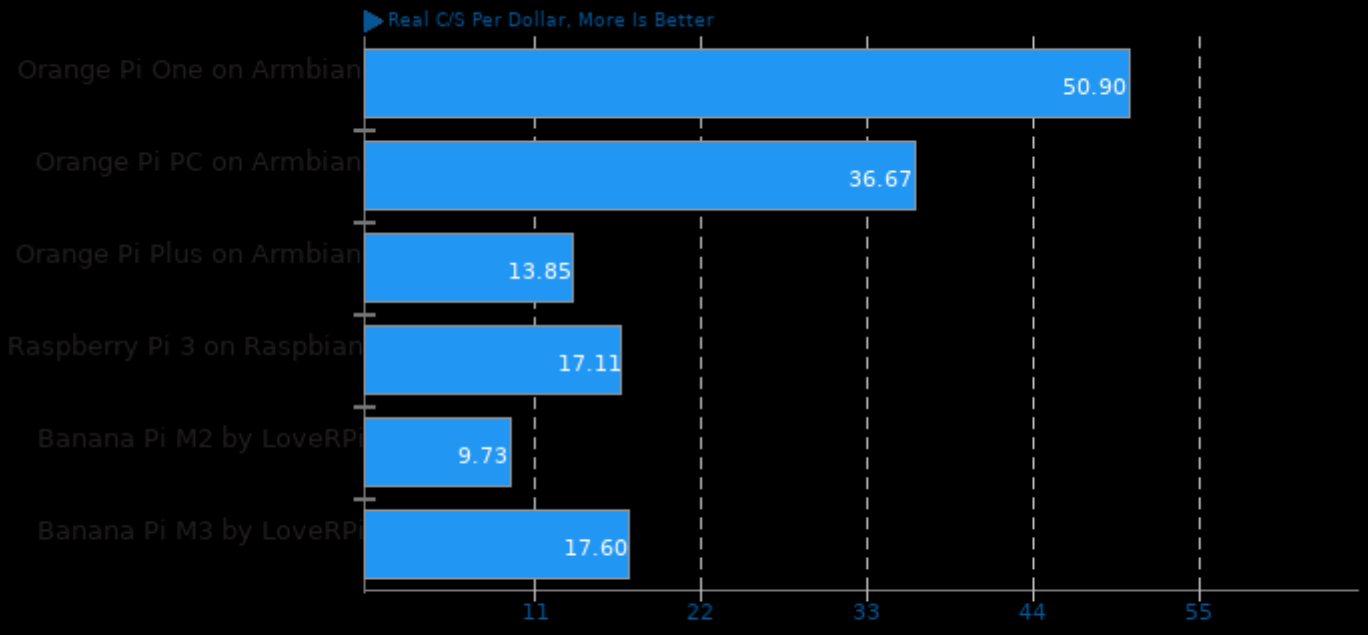
Performance / Cost - RSA 4096-bit Performance



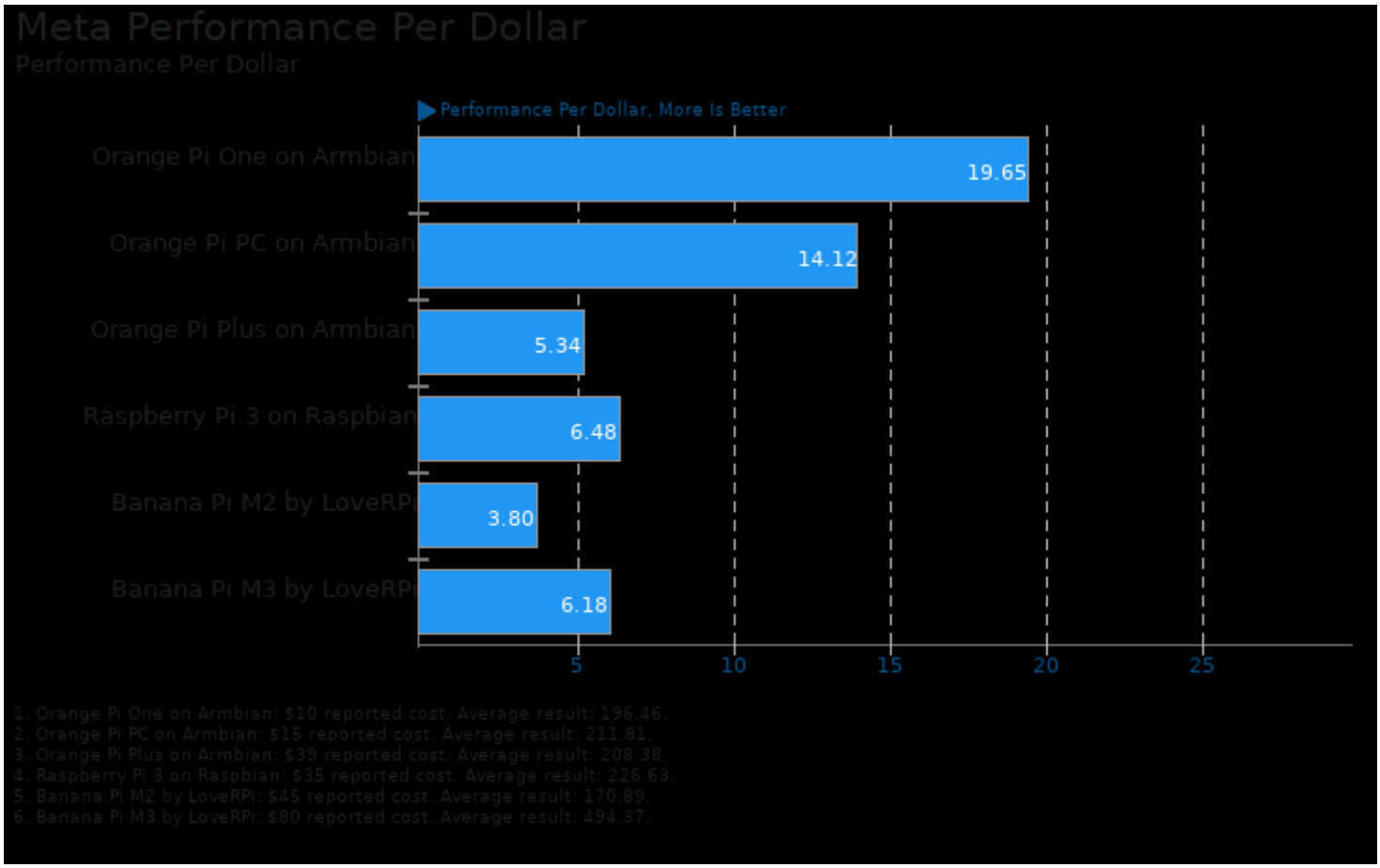
1. Orange Pi One on Armbian: $10 reported cost.
2. Orange Pi PC on Armbian: $15 reported cost.
3. Orange Pi Plus on Armbian: $39 reported cost.
4. Raspberry Pi 3 on Raspbian: $35 reported cost.
5. Banana Pi M2 by LoveRPi: $45 reported cost.
6. Banana Pi M3 by LoveRPi: $80 reported cost.

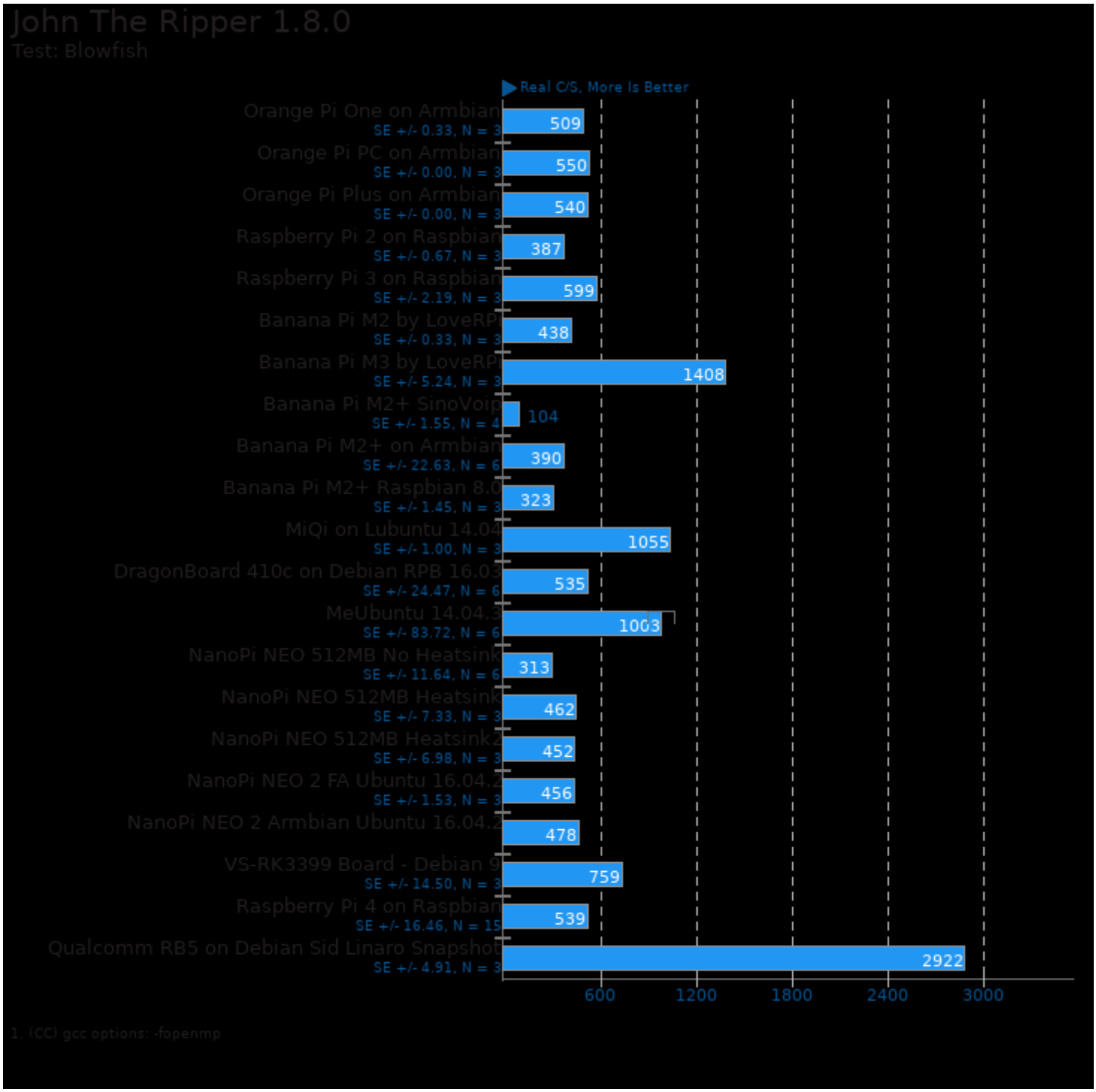
John The Ripper 1.8.0

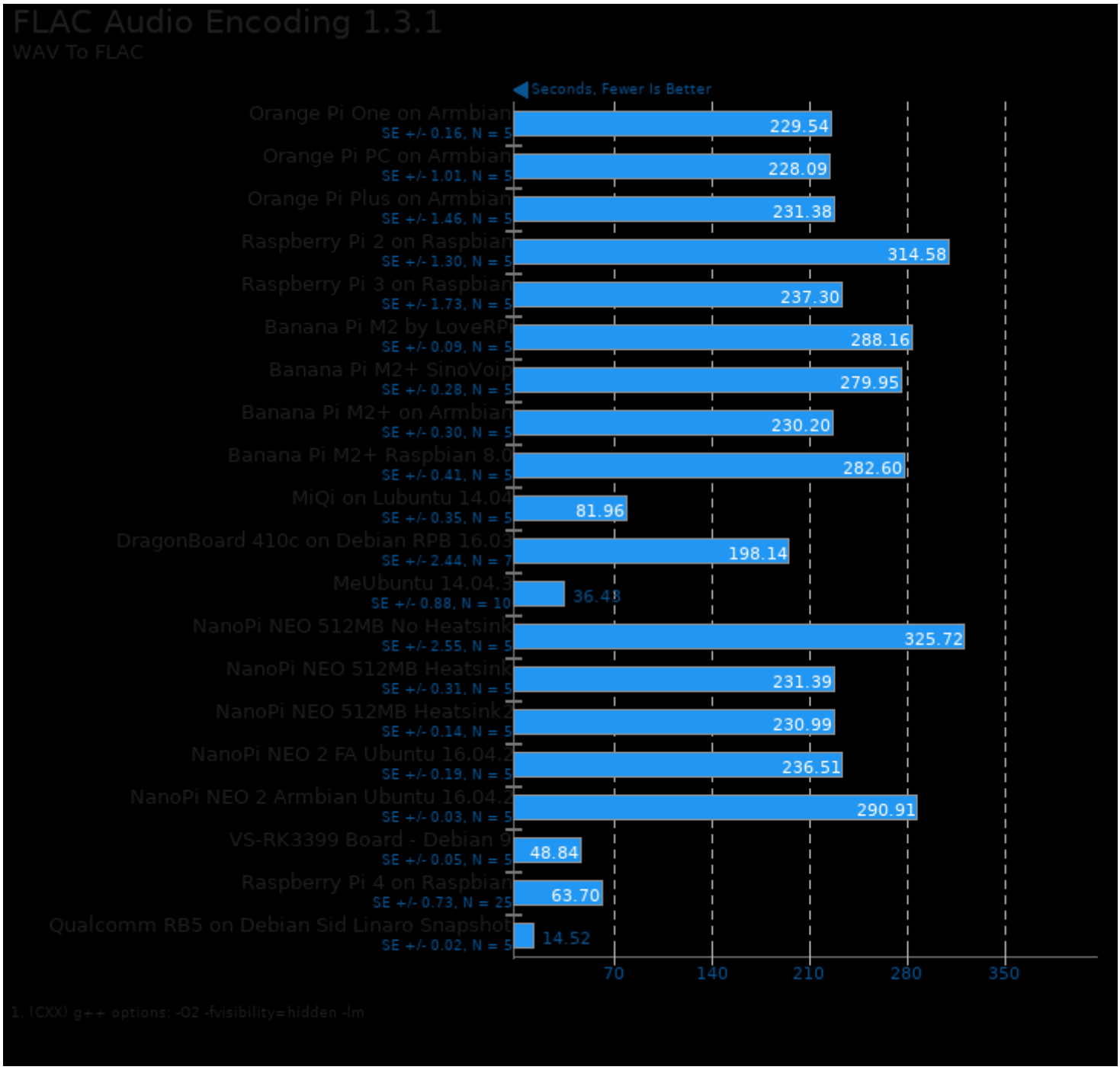
Performance / Cost - Test: Blowfish

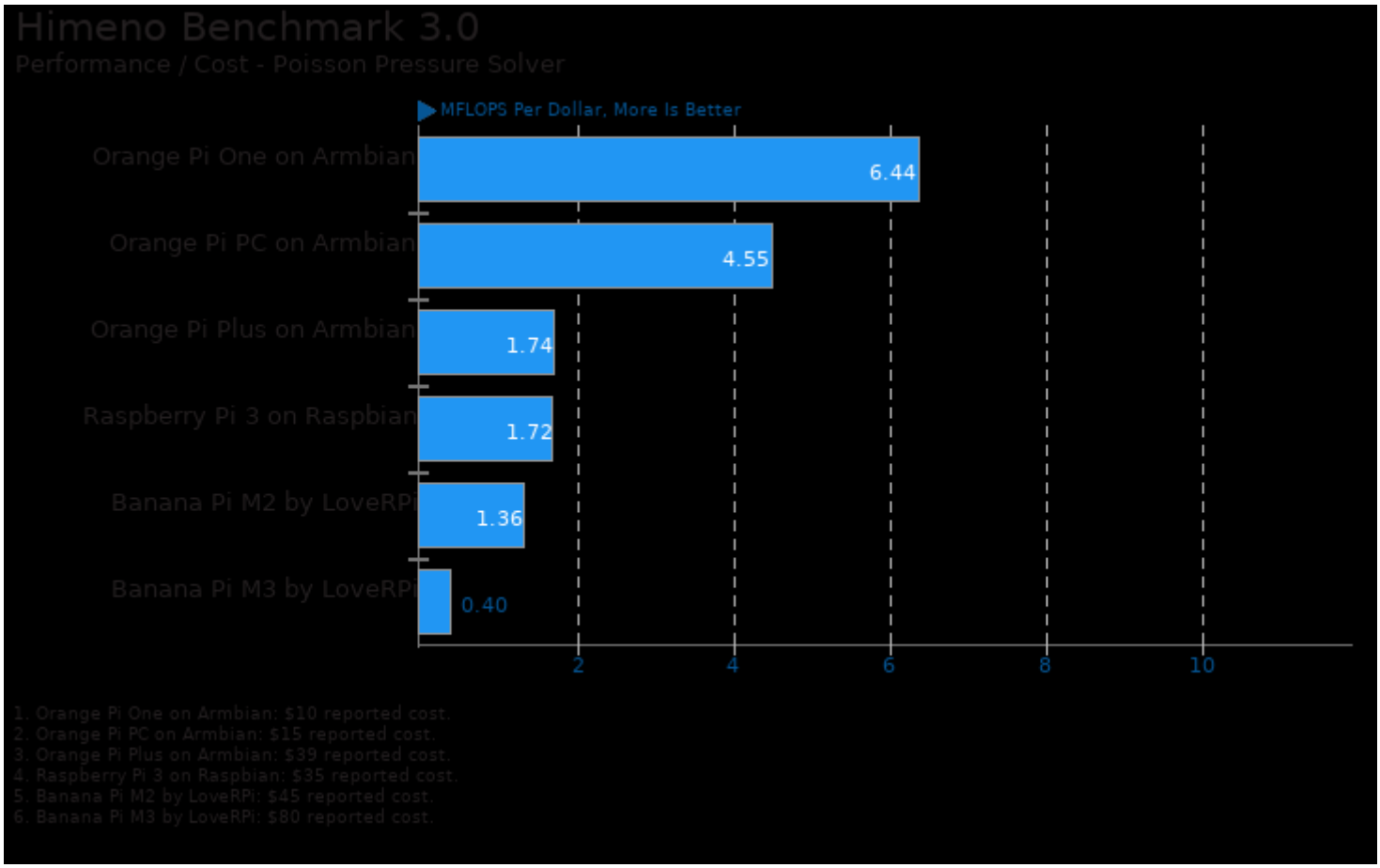


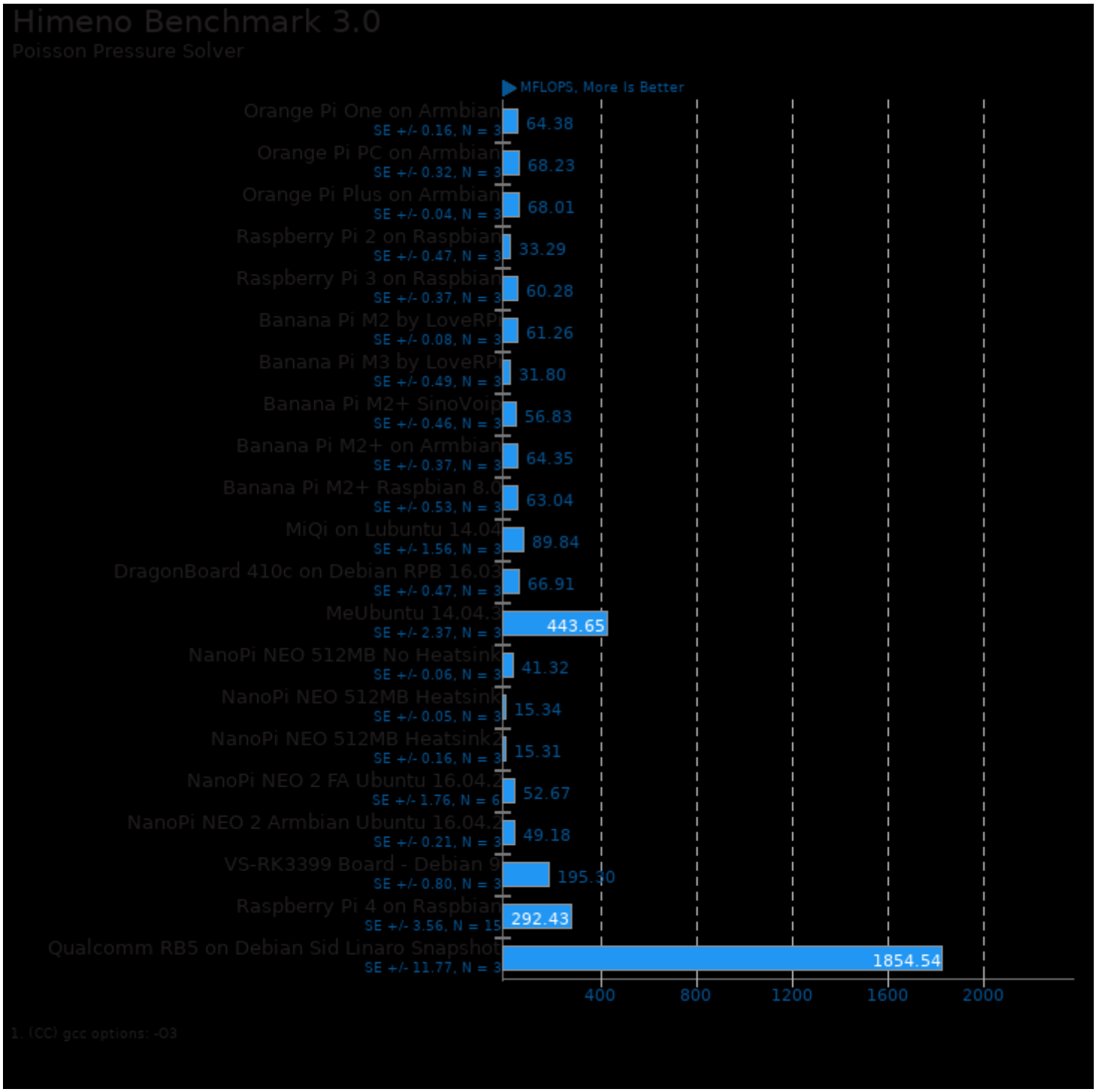
1. Orange Pi One on Armbian: $10 reported cost.
2. Orange Pi PC on Armbian: $15 reported cost.
3. Orange Pi Plus on Armbian: $39 reported cost.
4. Raspberry Pi 3 on Raspbian: $35 reported cost.
5. Banana Pi M2 by LoveRPi: $45 reported cost.
6. Banana Pi M3 by LoveRPi: $80 reported cost.

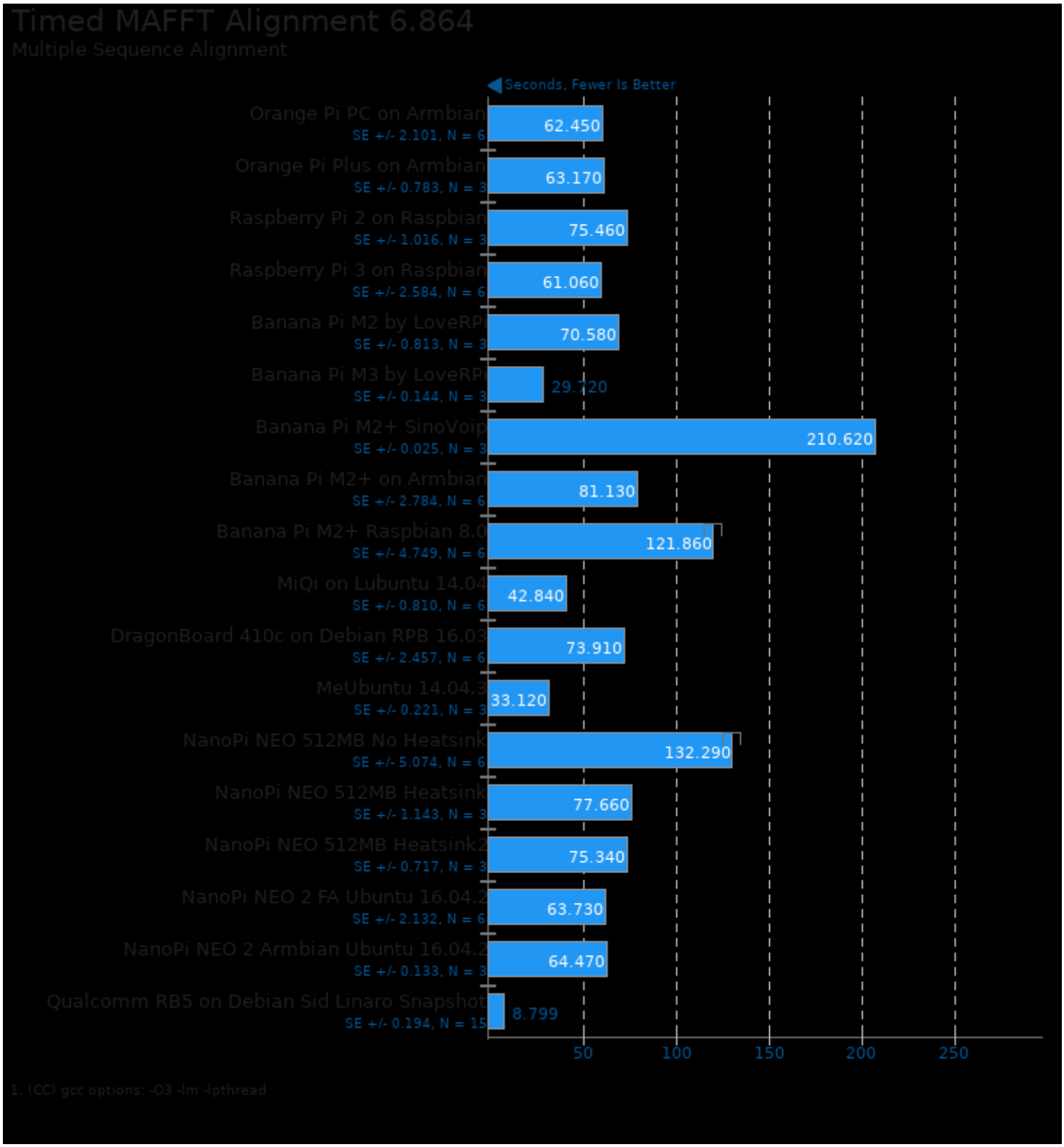

Meta Performance Per Dollar
Performance Per Dollar
Performance Per Dollar, More Is Better
Orange Pi One on Armbian
Orange Pi PC on Armbian
Orange Pi Plus on Armbian
Raspberry Pi 3 on Raspbian
Banana Pi M2 by LoveRPi
Banana Pi M3 by LoveRPi
19.65
14.12
5.34
6.48
3.80
6.18
5
10
15
20
25
1. Orange Pi One on Armbian: $10 reported cost. Average result: 196.46.
2. Orange Pi PC on Armbian: $15 reported cost. Average result: 211.81.
3. Orange Pi Plus on Armbian: $39 reported cost. Average result: 208.38.
4. Raspberry Pi 3 on Raspbian: $35 reported cost. Average result: 226.63.
5. Banana Pi M2 by LoveRPi: $45 reported cost. Average result: 170.89.
6. Banana Pi M3 by LoveRPi: $80 reported cost. Average result: 494.37.

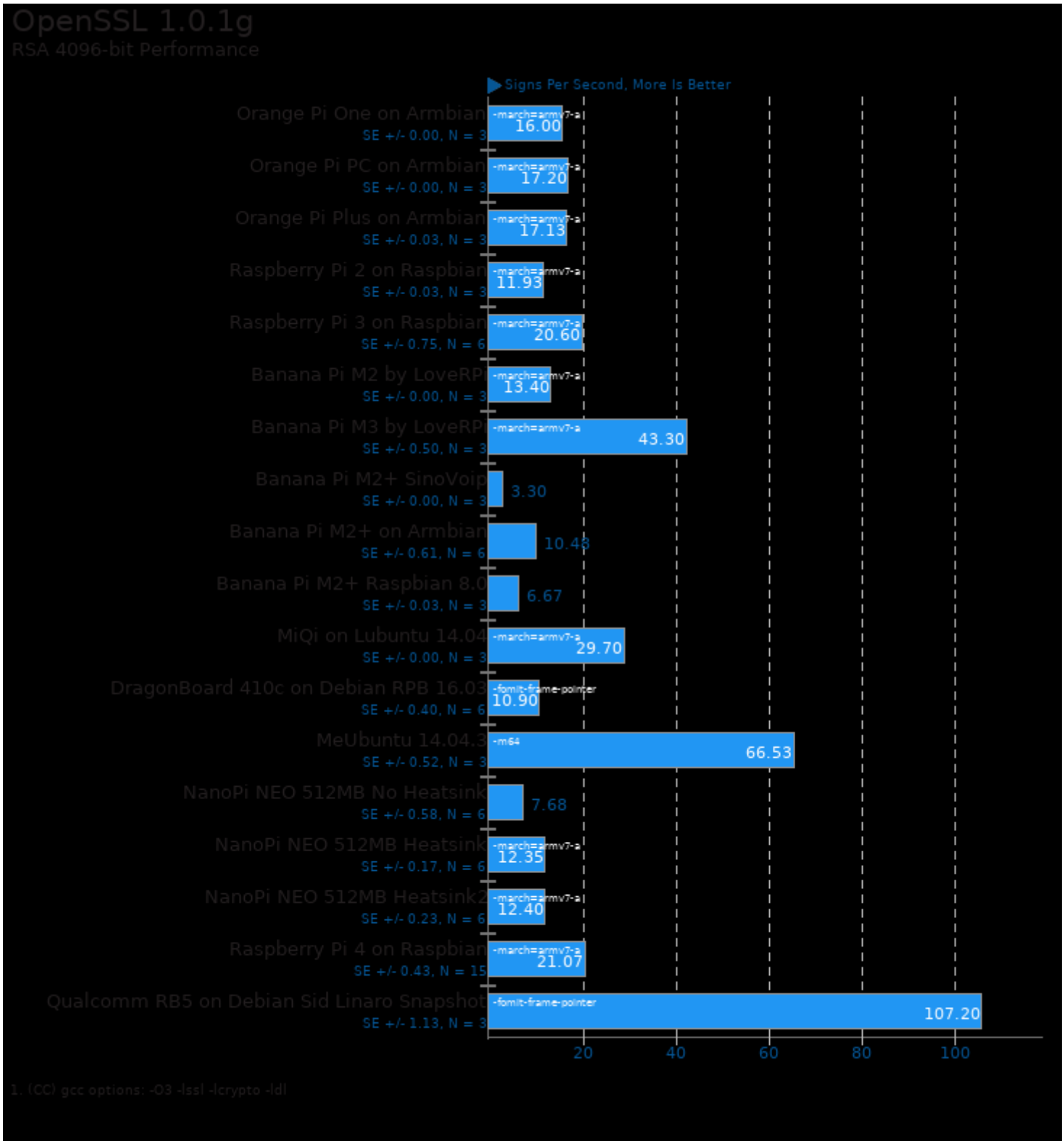

John The Ripper 1.8.0
Test: Blowfish
Real C/S, More Is Better
Orange Pi One on Armbian
SE +/- 0.33, N = 3
509
Orange Pi PC on Armbian
SE +/- 0.00, N = 3
550
Orange Pi Plus on Armbian
SE +/- 0.00, N = 3
540
Raspberry Pi 2 on Raspbian
SE +/- 0.67, N = 3
387
Raspberry Pi 3 on Raspbian
SE +/- 2.19, N = 3
599
Banana Pi M2 by LoveRPi
SE +/- 0.33, N = 3
438
Banana Pi M3 by LoveRPi
SE +/- 5.24, N = 3
1408
Banana Pi M2+ SinoVoip
SE +/- 1.55, N = 4
104
Banana Pi M2+ on Armbian
SE +/- 22.63, N = 6
390
Banana Pi M2+ Raspbian 8.0
SE +/- 1.45, N = 3
323
MiQi on Lubuntu 14.04
SE +/- 1.00, N = 3
1055
DragonBoard 410c on Debian RPB 16.03
SE +/- 24.47, N = 6
535
MeUbuntu 14.04.3
SE +/- 83.72, N = 6
1003
NanoPi NEO 512MB No Heatsink
SE +/- 11.64, N = 6
313
NanoPi NEO 512MB Heatsink
SE +/- 7.33, N = 3
462
NanoPi NEO 512MB Heatsink2
SE +/- 6.98, N = 3
452
NanoPi NEO 2 FA Ubuntu 16.04.2
SE +/- 1.53, N = 3
456
NanoPi NEO 2 Armbian Ubuntu 16.04.2
478
VS-RK3399 Board - Debian 9
SE +/- 14.50, N = 3
759
Raspberry Pi 4 on Raspbian
SE +/- 16.46, N = 15
539
Qualcomm RB5 on Debian Sid Linaro Snapshot
SE +/- 4.91, N = 3
2922
600
1200
1800
2400
3000
1. (CC) gcc options: -fopenmp


FLAC Audio Encoding 1.3.1
WAV To FLAC
Seconds, Fewer Is Better
Orange Pi One on Armbian
SE +/- 0.16, N = 5
229.54
Orange Pi PC on Armbian
SE +/- 1.01, N = 5
228.09
Orange Pi Plus on Armbian
SE +/- 1.46, N = 5
231.38
Raspberry Pi 2 on Raspbian
SE +/- 1.30, N = 5
314.58
Raspberry Pi 3 on Raspbian
SE +/- 1.73, N = 5
237.30
Banana Pi M2 by LoveRPi
SE +/- 0.09, N = 5
288.16
Banana Pi M2+ SinoVoip
SE +/- 0.28, N = 5
279.95
Banana Pi M2+ on Armbian
SE +/- 0.30, N = 5
230.20
Banana Pi M2+ Raspbian 8.0
SE +/- 0.41, N = 5
282.60
MiQi on Lubuntu 14.04
SE +/- 0.35, N = 5
81.96
DragonBoard 410c on Debian RPB 16.03
SE +/- 2.44, N = 7
198.14
MeUbuntu 14.04.3
SE +/- 0.88, N = 10
36.48
NanoPi NEO 512MB No Heatsink
SE +/- 2.55, N = 5
325.72
NanoPi NEO 512MB Heatsink
SE +/- 0.31, N = 5
231.39
NanoPi NEO 512MB Heatsink2
SE +/- 0.14, N = 5
230.99
NanoPi NEO 2 FA Ubuntu 16.04.2
SE +/- 0.19, N = 5
236.51
NanoPi NEO 2 Armbian Ubuntu 16.04.2
SE +/- 0.03, N = 5
290.91
VS-RK3399 Board - Debian 9
SE +/- 0.05, N = 5
48.84
Raspberry Pi 4 on Raspbian
SE +/- 0.73, N = 25
63.70
Qualcomm RB5 on Debian Sid Linaro Snapshot
SE +/- 0.02, N = 5
14.52
70
140
210
280
350
1. (CXX) g++ options: -O2 -fvisibility=hidden -lm


Himeno Benchmark 3.0
Performance / Cost - Poisson Pressure Solver
MFLOPS Per Dollar, More Is Better
Orange Pi One on Armbian
6.44
Orange Pi PC on Armbian
4.55
Orange Pi Plus on Armbian
1.74
Raspberry Pi 3 on Raspbian
1.72
Banana Pi M2 by LoveRPi
1.36
Banana Pi M3 by LoveRPi
0.40
2
4
6
8
10
1. Orange Pi One on Armbian: $10 reported cost.
2. Orange Pi PC on Armbian: $15 reported cost.
3. Orange Pi Plus on Armbian: $39 reported cost.
4. Raspberry Pi 3 on Raspbian: $35 reported cost.
5. Banana Pi M2 by LoveRPi: $45 reported cost.
6. Banana Pi M3 by LoveRPi: $80 reported cost.


Himeno Benchmark 3.0
Poisson Pressure Solver
MFLOPS, More Is Better
Orange Pi One on Armbian
SE +/- 0.16, N = 3
64.38
Orange Pi PC on Armbian
SE +/- 0.32, N = 3
68.23
Orange Pi Plus on Armbian
SE +/- 0.04, N = 3
68.01
Raspberry Pi 2 on Raspbian
SE +/- 0.47, N = 3
33.29
Raspberry Pi 3 on Raspbian
SE +/- 0.37, N = 3
60.28
Banana Pi M2 by LoveRPi
SE +/- 0.08, N = 3
61.26
Banana Pi M3 by LoveRPi
SE +/- 0.49, N = 3
31.80
Banana Pi M2+ SinoVoip
SE +/- 0.46, N = 3
56.83
Banana Pi M2+ on Armbian
SE +/- 0.37, N = 3
64.35
Banana Pi M2+ Raspbian 8.0
SE +/- 0.53, N = 3
63.04
MiQi on Lubuntu 14.04
SE +/- 1.56, N = 3
89.84
DragonBoard 410c on Debian RPB 16.03
SE +/- 0.47, N = 3
66.91
MeUbuntu 14.04.3
SE +/- 2.37, N = 3
443.65
NanoPi NEO 512MB No Heatsink
SE +/- 0.06, N = 3
41.32
NanoPi NEO 512MB Heatsink
SE +/- 0.05, N = 3
15.34
NanoPi NEO 512MB Heatsink2
SE +/- 0.16, N = 3
15.31
NanoPi NEO 2 FA Ubuntu 16.04.2
SE +/- 1.76, N = 6
52.67
NanoPi NEO 2 Armbian Ubuntu 16.04.2
SE +/- 0.21, N = 3
49.18
VS-RK3399 Board - Debian 9
SE +/- 0.80, N = 3
195.80
Raspberry Pi 4 on Raspbian
SE +/- 3.56, N = 15
292.43
Qualcomm RB5 on Debian Sid Linaro Snapshot
SE +/- 11.77, N = 3
1854.54
400
800
1200
1600
2000
1. (CC) gcc options: -O3


Timed MAFFT Alignment 6.864
Multiple Sequence Alignment
Seconds, Fewer Is Better
Orange Pi PC on Armbian
SE +/- 2.101, N = 6
62.450
Orange Pi Plus on Armbian
SE +/- 0.783, N = 3
63.170
Raspberry Pi 2 on Raspbian
SE +/- 1.016, N = 3
75.460
Raspberry Pi 3 on Raspbian
SE +/- 2.584, N = 6
61.060
Banana Pi M2 by LoveRPi
SE +/- 0.813, N = 3
70.580
Banana Pi M3 by LoveRPi
SE +/- 0.144, N = 3
29.720
Banana Pi M2+ SinoVoip
SE +/- 0.025, N = 3
210.620
Banana Pi M2+ on Armbian
SE +/- 2.784, N = 6
81.130
Banana Pi M2+ Raspbian 8.0
SE +/- 4.749, N = 6
121.860
MiQi on Lubuntu 14.04
SE +/- 0.810, N = 6
42.840
DragonBoard 410c on Debian RPB 16.03
SE +/- 2.457, N = 6
73.910
MeUbuntu 14.04.3
SE +/- 0.221, N = 3
33.120
NanoPi NEO 512MB No Heatsink
SE +/- 5.074, N = 6
132.290
NanoPi NEO 512MB Heatsink
SE +/- 1.143, N = 3
77.660
NanoPi NEO 512MB Heatsink2
SE +/- 0.717, N = 3
75.340
NanoPi NEO 2 FA Ubuntu 16.04.2
SE +/- 2.132, N = 6
63.730
NanoPi NEO 2 Armbian Ubuntu 16.04.2
SE +/- 0.133, N = 3
64.470
Qualcomm RB5 on Debian Sid Linaro Snapshot
SE +/- 0.194, N = 15
8.799
50
100
150
200
250
1. (CC) gcc options: -O3 -lm -lpthread



This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 17:14.