

www.phoronix-test-suite.com

AMD Rembrandt Linux Drivers

AMD Ryzen 7 PRO 6850U Radeon 680M benchmarks by Michael Larabel for a future article.

Automated Executive Summary

Linux 5.18 + Mesa 22.0.1 had the most wins, coming in first place for 34% of the tests.

Based on the geometric mean of all complete results, the fastest (Linux 5.18 + Mesa 22.0.1) was 1.369x the speed of the slowest (ASUS AMD Radeon RX 560). Linux 5.15 + Mesa 22.0.1 was 0.992x the speed of Linux 5.18 + Mesa 22.0.1, Linux 5.18 + Mesa 22.2-dev was 0.987x the speed of Linux 5.15 + Mesa 22.0.1, Linux 5.15 + Mesa 22.1 was 0.998x the speed of Linux 5.18 + Mesa 22.2-dev, Linux 5.15 + Mesa 22.2-dev was 1x the speed of Linux 5.15 + Mesa 22.1, Linux 5.19 + Mesa 22.2-dev was 0.998x the speed of Linux 5.15 + Mesa 22.2-dev, ASUS AMD Radeon RX 560 was 0.749x the speed of Linux 5.19 + Mesa 22.2-dev.

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

OpenArena (Resolution: 1920 x 1080 - Total Frame Time) at 37x
DDraceNetwork (Resolution: 1920 x 1080 - Mode: Fullscreen - Renderer: OpenGL 3.3 - Zoom: Default - Demo: RaiNyMore2 - Total Frame Time) at 12.938x
DDraceNetwork (Resolution: 1920 x 1080 - Mode: Fullscreen - Renderer: OpenGL 3.3 - Zoom: Default - Demo: Multeasymap - Total Frame Time) at 11.562x
VKMark (Resolution: 1920 x 1080 - Present Mode: Mailbox) at 4.982x

GpuTest (Test: Triangle - Resolution: 1920 x 1080 - Mode: Fullscreen) at 4.887x
GpuTest (Test: Pixmark Volplosion - Resolution: 1920 x 1080 - Mode: Fullscreen) at 2.269x
GpuTest (Test: Pixmark Piano - Resolution: 1920 x 1080 - Mode: Fullscreen) at 2.138x
ParaView (Test: Many Spheres - Resolution: 1920 x 1080) at 2.017x
GpuTest (Test: Plot3D - Resolution: 1920 x 1080 - Mode: Fullscreen) at 1.872x
yquake2 (Renderer: Vulkan - AF: Off - MSAA: Off - Resolution: 1920 x 1080) at 1.655x.

Test Systems:

Linux 5.19 + Mesa 22.2-dev

Processor: AMD Ryzen 7 PRO 6850U @ 2.70GHz (8 Cores / 16 Threads), Motherboard: LENOVO 21CM0001US (R22ET46W 1.16 BIOS), Chipset: AMD Device 14b5, Memory: 16GB, Disk: 512GB Micron MTFDKBA512TFK, Graphics: AMD Rembrandt 1GB (2200/400MHz), Audio: AMD Rembrandt Radeon HD Audio, Network: Qualcomm Atheros QCNFA765

OS: Ubuntu 22.04, Kernel: 5.19.0-051900rc7-generic (x86_64), Desktop: GNOME Shell 42.2, Display Server: X Server + Wayland, OpenGL: 4.6 Mesa 22.2.0-devel (git-4ff28bd 2022-07-25 jammy-oibaf-ppa) (LLVM 14.0.6 DRM 3.47), Vulkan: 1.3.219, Compiler: GCC 11.2.0, File-System: ext4, Screen Resolution: 1920x1200

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-cet --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-serialization=2 --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-gcn/usr --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-build-config=bootstrap-lto-lean --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq schedutil (Boost: Enabled) - Platform Profile: balanced - CPU Microcode: 0xa404102 - ACPI Profile: balanced
Graphics Notes: BAR1 / Visible vRAM Size: 1024 MB - vBIOS Version: 113-REMBRANDT-X35
Python Notes: Python 3.10.4
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + retbleed: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Retpolines IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

Linux 5.18 + Mesa 22.2-dev

Processor: AMD Ryzen 7 PRO 6850U @ 2.70GHz (8 Cores / 16 Threads), Motherboard: LENOVO 21CM0001US (R22ET46W 1.16 BIOS), Chipset: AMD Device 14b5, Memory: 16GB, Disk: 512GB Micron MTFDKBA512TFK, Graphics: AMD Rembrandt 1GB (2200/400MHz), Audio: AMD Rembrandt Radeon HD Audio, Network: Qualcomm Atheros QCNFA765

OS: Ubuntu 22.04, Kernel: 5.18.8-051808-generic (x86_64), Desktop: GNOME Shell 42.2, Display Server: X Server + Wayland, OpenGL: 4.6 Mesa 22.2.0-devel (git-4ff28bd 2022-07-25 jammy-oibaf-ppa) (LLVM 14.0.6 DRM 3.46), Vulkan: 1.3.219, Compiler: GCC 11.2.0, File-System: ext4, Screen Resolution: 1920x1200

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-cet --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-serialization=2 --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-gcn/usr --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-build-config=bootstrap-lto-lean --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v

Processor Notes: Scaling Governor: acpi-cpufreq schedutil (Boost: Enabled) - Platform Profile: balanced - CPU Microcode: 0xa404102 - ACPI Profile: balanced
Graphics Notes: BAR1 / Visible vRAM Size: 1024 MB - vBIOS Version: 113-REMBRANDT-X35
Python Notes: Python 3.10.4
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Retpolines IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

Linux 5.18 + Mesa 22.0.1

Processor: AMD Ryzen 7 PRO 6850U @ 2.70GHz (8 Cores / 16 Threads), Motherboard: LENOVO 21CM0001US (R22ET46W 1.16 BIOS), Chipset: AMD Device 14b5, Memory: 16GB, Disk: 512GB Micron MTFDKBA512TFK, Graphics: AMD Rembrandt 1GB (2200/400MHz), Audio: AMD Rembrandt Radeon HD Audio, Network: Qualcomm Atheros QCNFA765

OS: Ubuntu 22.04, Kernel: 5.18.8-051808-generic (x86_64), Desktop: GNOME Shell 42.2, Display Server: X Server + Wayland, OpenGL: 4.6 Mesa 22.0.1 (LLVM 13.0.1 DRM 3.46), Vulkan: 1.3.204, Compiler: GCC 11.2.0, File-System: ext4, Screen Resolution: 1920x1200

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-cet --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-serialization=2 --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-gcn/usr --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-build-config=bootstrap-lto-lean --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq schedutil (Boost: Enabled) - Platform Profile: balanced - CPU Microcode: 0xa404102 - ACPI Profile: balanced
Graphics Notes: BAR1 / Visible vRAM Size: 1024 MB - vBIOS Version: 113-REMBRANDT-X35
Python Notes: Python 3.10.4
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Retpolines IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

Linux 5.15 + Mesa 22.0.1

Processor: AMD Ryzen 7 PRO 6850U @ 4.77GHz (8 Cores / 16 Threads), Motherboard: LENOVO 21CM0001US (R22ET46W 1.16 BIOS), Chipset: AMD Device 14b5, Memory: 16GB, Disk: 512GB Micron MTFDKBA512TFK, Graphics: AMD Rembrandt 1GB, Audio: AMD Rembrandt Radeon HD Audio, Network: Qualcomm Atheros QCNFA765

OS: Ubuntu 22.04, Kernel: 5.15.0-41-generic (x86_64), Desktop: GNOME Shell 42.2, Display Server: X Server + Wayland, OpenGL: 4.6 Mesa 22.0.1 (LLVM 13.0.1 DRM 3.42), Vulkan: 1.3.204, Compiler: GCC 11.2.0, File-System: ext4, Screen Resolution: 1920x1200

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-cet --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-serialization=2 --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-gcn/usr --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-build-config=bootstrap-lto-lean --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: amd-pstate schedutil (Boost: Enabled) - Platform Profile: balanced - CPU Microcode: 0xa404102 - ACPI Profile: balanced
Graphics Notes: BAR1 / Visible vRAM Size: 1024 MB - vBIOS Version: 113-REMBRANDT-X35
Python Notes: Python 3.10.4
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Retpolines IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

Linux 5.15 + Mesa 22.1

Processor: AMD Ryzen 7 PRO 6850U @ 4.77GHz (8 Cores / 16 Threads), Motherboard: LENOVO 21CM0001US (R22ET46W 1.16 BIOS), Chipset: AMD Device 14b5, Memory: 16GB, Disk: 512GB Micron MTFDKBA512TFK, Graphics: AMD Rembrandt 1GB, Audio: AMD Rembrandt Radeon HD Audio, Network: Qualcomm Atheros QCNFA765

OS: Ubuntu 22.04, Kernel: 5.15.0-41-generic (x86_64), Desktop: GNOME Shell 42.2, Display Server: X Server + Wayland, OpenGL: 4.6 Mesa 22.1.4 kisak-mesa PPA (LLVM 14.0.6 DRM 3.42), Vulkan: 1.3.211, Compiler: GCC 11.2.0, File-System: ext4, Screen Resolution: 1920x1200

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-cet --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-serialization=2 --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-gcn/usr --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-build-config=bootstrap-lto-lean --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: amd-pstate schedutil (Boost: Enabled) - Platform Profile: balanced - CPU Microcode: 0xa404102 - ACPI Profile: balanced
Graphics Notes: BAR1 / Visible vRAM Size: 1024 MB - vBIOS Version: 113-REMBRANDT-X35
Python Notes: Python 3.10.4
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Retpolines IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

Linux 5.15 + Mesa 22.2-dev

Processor: AMD Ryzen 7 PRO 6850U @ 4.77GHz (8 Cores / 16 Threads), Motherboard: LENOVO 21CM0001US (R22ET46W 1.16 BIOS), Chipset: AMD Device 14b5, Memory: 16GB, Disk: 512GB Micron MTFDKBA512TFK, Graphics: AMD Rembrandt 1GB, Audio: AMD Rembrandt Radeon HD Audio, Network: Qualcomm Atheros QCNFA765

OS: Ubuntu 22.04, Kernel: 5.15.0-41-generic (x86_64), Desktop: GNOME Shell 42.2, Display Server: X Server + Wayland, OpenGL: 4.6 Mesa 22.2.0-devel (git-ba461f8 2022-07-26 jammy-oibaf-ppa) (LLVM 14.0.6 DRM 3.42), Vulkan: 1.3.219, Compiler: GCC 11.2.0, File-System: ext4, Screen Resolution: 1920x1200

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-cet --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-serialization=2 --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-gcn/usr --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-build-config=bootstrap-lto-lean --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: amd-pstate schedutil (Boost: Enabled) - Platform Profile: balanced - CPU Microcode: 0xa404102 - ACPI Profile: balanced
Graphics Notes: BAR1 / Visible vRAM Size: 1024 MB - vBIOS Version: 113-REMBRANDT-X35
Python Notes: Python 3.10.4
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Retpolines IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

ASUS AMD Radeon RX 560

Processor: AMD Ryzen 5 3600 6-Core @ 3.60GHz (6 Cores / 12 Threads), Motherboard: Gigabyte B450 AORUS M (F50 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: Samsung SSD 960 EVO 500GB + 0GB SD Card Reader, Graphics: ASUS AMD Radeon RX 560 4GB (1187/1500MHz), Audio: AMD Baffin HDMI/DP, Monitor: 27GL850, Network: Realtek RTL8111/8168/8411 + Intel Wi-Fi 6 AX210/AX211/AX411

OS: Fedora Linux 36, Kernel: 5.18.16-200.fc36.x86_64 (x86_64), Desktop: KDE Plasma 5.25.4, Display Server: X Server 1.20.14, OpenGL: 4.6 Mesa 22.1.6 (LLVM 14.0.0 DRM 3.46), Vulkan: 1.3.211, Compiler: GCC 12.1.1 20220507, File-System: btrfs, Screen Resolution: 2560x1440

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-redhat-linux --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-cet --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,fortran,objc,obj-c++,ada,go,d,lto --enable-libstdcxx-backtrace --enable-link-serialization=1 --enable-multilib --enable-offload-defaulted --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=i686 --with-build-config=bootstrap-lto --with-gcc-major-version-only --with-linker-hash-style=gnu --with-tune=generic --without-cuda-driver
Processor Notes: Scaling Governor: acpi-cpufreq schedutil (Boost: Enabled) - CPU Microcode: 0x8701013
Graphics Notes: GLAMOR - BAR1 / Visible vRAM Size: 256 MB - vBIOS Version: 115-C994PI0-102
Python Notes: Python 3.10.6
Security Notes: SELinux + itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + retbleed: Mitigation

of untrained return thunk; SMT enabled with STIBP protection + spec_store_bypass: Mitigation of SSB disabled via prctl + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Retpolines IBPB: conditional STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

	Linux 5.19 + Mesa 22.2-dev	Linux 5.18 + Mesa 22.2-dev	Linux 5.18 + Mesa 22.0.1	Linux 5.15 + Mesa 22.0.1	Linux 5.15 + Mesa 22.1	Linux 5.15 + Mesa 22.2-dev	ASUS AMD Radeon RX 560
GravityMark - 1920 x 1080 - OpenGL (FPS)	29.4	29.1	29.2	31.5	31.4	31.7	31.5
Normalized	92.74%	91.8%	92.11%	99.37%	99.05%	100%	99.37%
Standard Deviation	3.4%	2.4%	1.4%	1.3%	2.4%	1.6%	0.5%
GravityMark - 1920 x 1080 - Vulkan (FPS)	33.2	32.6	33.7	32.9	32.8	33.3	32.2
Normalized	98.52%	96.74%	100%	97.63%	97.33%	98.81%	95.55%
Standard Deviation	0.6%	0.9%	0.6%	1%	0.5%	0.8%	1.4%
DDraceNetwork - 1920 x 1080 - Fullscreen - OpenGL 3.3 - Default - RaiNyMore2 (FPS)	526.99	516.17	540.78	522.89	523.43	531.99	347.31
Normalized	97.45%	95.45%	100%	96.69%	96.79%	98.37%	64.22%
Standard Deviation	1.4%	0.5%	0.2%	0.7%	0.7%	0.6%	0%
DDraceNetwork - 1920 x 1080 - Fullscreen - OpenGL 3.3 - Default - Multeasymap (FPS)	751.57	748.93	753.79	720.08	718.87	722.19	627.72
Normalized	99.71%	99.36%	100%	95.53%	95.37%	95.81%	83.28%
Standard Deviation	0.8%	1.2%	1.2%	1.1%	0.9%	1.3%	0.3%
OpenArena - 1920 x 1080 (FPS)	265.6	266.7	273.4	268.3	272.7	264.6	223.6
Normalized	97.15%	97.55%	100%	98.13%	99.74%	96.78%	81.78%
Standard Deviation	1.1%	2%	0.9%	2%	2.4%	1.6%	0.4%
Tesseract - 1920 x 1080 (FPS)	252.8445	255.7188	253.6925	254.2062	252.0219	250.5050	270.3892
Normalized	93.51%	94.57%	93.82%	94.01%	93.21%	92.65%	100%
Standard Deviation	0.4%	0.5%	0.7%	1.6%	1.1%	0.6%	1.3%
Unigine Heaven - 1920 x 1080 - Fullscreen - OpenGL (FPS)	43.4973	43.8089	45.6321	44.1977	44.3584	44.4568	33.5528
Normalized	95.32%	96%	100%	96.86%	97.21%	97.42%	73.53%
Standard Deviation	1.8%	1.1%	0.8%	2.1%	2.4%	2.4%	0.2%
Unigine Superposition - 1920 x 1080 - Fullscreen - Low - OpenGL (FPS)	53.1	54.3	55.5	53.9	53.1	54.2	43.7
Normalized	95.68%	97.84%	100%	97.12%	95.68%	97.66%	78.74%
Standard Deviation	2.2%	1.5%	1.8%	2.1%	1.9%	1.7%	1%
Xonotic - 1920 x 1080 - Low (FPS)	485.0492809	483.0492810	486.3260778	487.3837634	482.5771501	490.4897503	512.3258567
Normalized	94.68%	94.29%	94.93%	95.13%	94.19%	95.74%	100%
Standard Deviation	1.7%	0.6%	1.5%	0.8%	0.6%	1%	0.7%

AMD Rembrandt Linux Drivers

Xonotic - 1920 x 1080 - High (FPS)	309.0591213	313.5708340	312.7460791	312.6204238	309.2897168	316.5003320	375.7265848
Normalized	82.26%	83.46%	83.24%	83.2%	82.32%	84.24%	100%
Standard Deviation	1.1%	0.5%	1%	1.3%	0.9%	1.2%	0.6%
Xonotic - 1920 x 1080 - Ultra (FPS)	272.7836001	272.4358809	271.2674897	270.3610903	267.3767360	275.5728788	326.7994005
Normalized	83.47%	83.36%	83.01%	82.73%	81.82%	84.32%	100%
Standard Deviation	0.8%	1%	0.6%	1.8%	0.7%	1%	0.5%
Xonotic - 1920 x 1080 - Ultimate (FPS)	194.5030431	195.7918471	194.6761811	189.7277498	193.2440746	195.5588275	228.4149474
Normalized	85.15%	85.72%	85.23%	83.06%	84.6%	85.62%	100%
Standard Deviation	0.5%	0.4%	0.9%	1.8%	0.9%	0.2%	0.1%
yquake2 - Vulkan - On - On - 1920 x 1080 (FPS)	262.0	268.7	262.6	255.2	258.5	258.5	179.7
Normalized	97.51%	100%	97.73%	94.98%	96.2%	96.2%	66.88%
Standard Deviation	0.8%	2.4%	0.5%	0.8%	1.8%	0.7%	0%
yquake2 - Vulkan - Off - On - 1920 x 1080 (FPS)	277.5	278.0	272.9	267.9	271.0	265.3	186.9
Normalized	99.82%	100%	98.17%	96.37%	97.48%	95.43%	67.23%
Standard Deviation	2.4%	0.6%	1.4%	0.3%	0.7%	0.5%	0.1%
yquake2 - Vulkan - On - Off - 1920 x 1080 (FPS)	1231	1253	1246	1245	1222	1168	772.5
Normalized	98.24%	100%	99.45%	99.35%	97.57%	93.25%	61.67%
Standard Deviation	1.7%	1.7%	3.6%	2.4%	3.9%	2.5%	2.1%
yquake2 - Vulkan - Off - Off - 1920 x 1080 (FPS)	1259	1289	1287	1251	1230	1189	779.0
Normalized	97.7%	100%	99.85%	97.01%	95.41%	92.22%	60.43%
Standard Deviation	3.4%	1.2%	0.7%	2.3%	2.1%	1.1%	0.1%
yquake2 - OpenGL 3.x - On - On - 1920 x 1080	792.4	794.4	884.4	886.0	805.6	791.6	851.7
Normalized	89.44%	89.66%	99.82%	100%	90.93%	89.35%	96.13%
Standard Deviation	1.5%	2.7%	1.2%	0.4%	1.7%	2.9%	2.3%
yquake2 - OpenGL 3.x - Off - On - 1920 x 1080	800.4	801.0	892.2	871.8	812.3	816.2	872.9
Normalized	89.71%	89.78%	100%	97.71%	91.04%	91.48%	97.84%
Standard Deviation	1.4%	3.5%	2.4%	1.3%	2.4%	0.5%	0.1%
yquake2 - OpenGL 3.x - On - Off - 1920 x 1080	1078	1050	1399	1348	1070	1058	1264
Normalized	77.07%	75.06%	100%	96.42%	76.5%	75.68%	90.39%
Standard Deviation	2.2%	3.2%	1.5%	3.8%	3.2%	3.4%	0.7%
yquake2 - OpenGL 3.x - Off - Off - 1920 x 1080	1118	1096	1398	1395	1098	1082	1267
Normalized	80%	78.4%	100%	99.83%	78.58%	77.43%	90.64%
Standard Deviation	2.2%	2.6%	1.7%	6%	2.2%	3.2%	1.3%
GLmark2 - 1920 x 1080 (Score)	5854	5837	5886	5616	5723	5710	
Normalized	99.46%	99.17%	100%	95.41%	97.23%	97.01%	
ParaView - Many Spheres - 1920 x 1080 (Frames /	26.88	26.91	27.44	28.66	29.14	29.26	14.51
Normalized	91.87%	91.97%	93.78%	97.95%	99.59%	100%	49.59%
Standard Deviation	2.2%	1.3%	3.3%	0.3%	0.3%	0.4%	0.1%

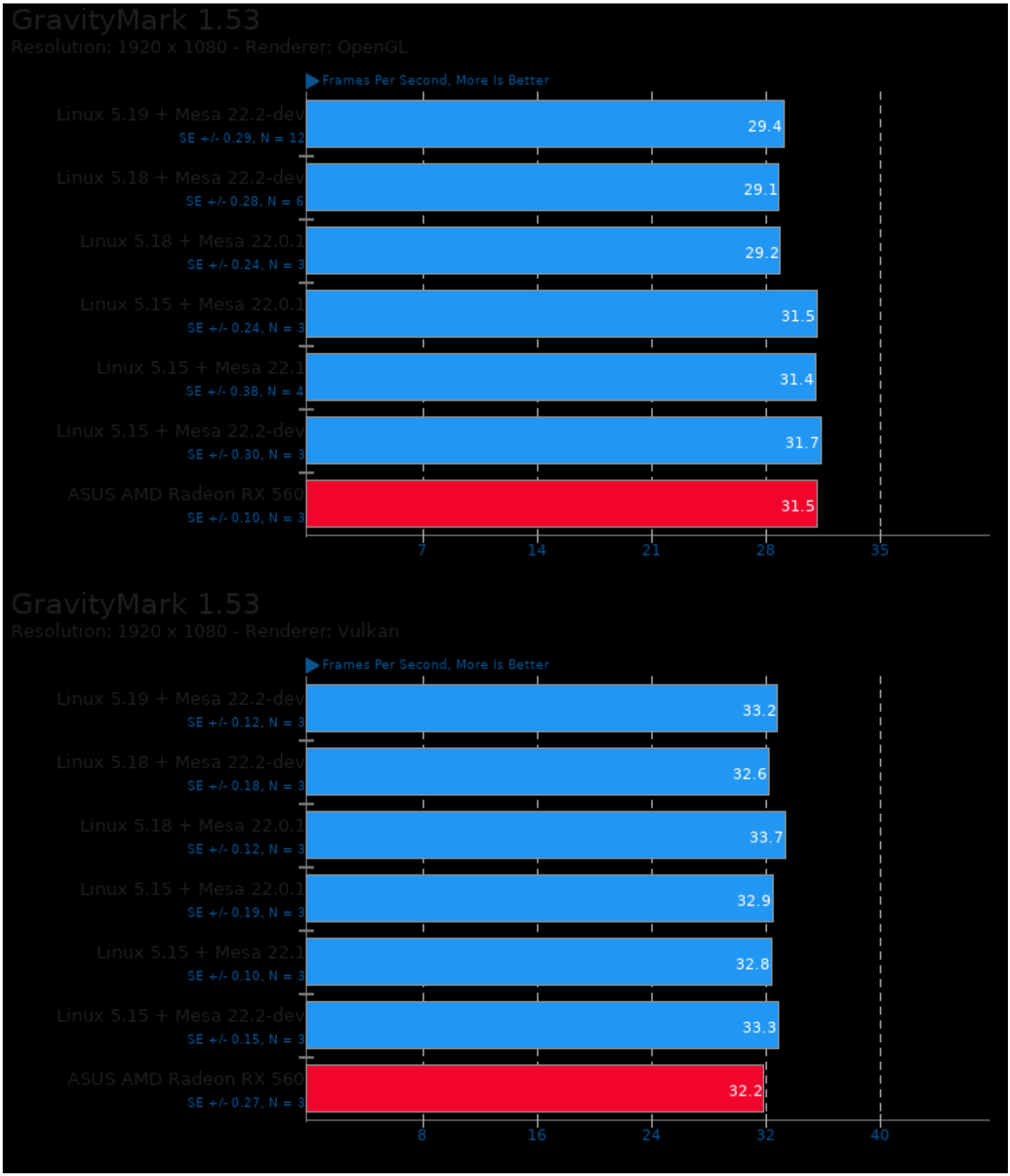
AMD Rembrandt Linux Drivers

ParaView - Many Spheres - 1920 x 1080 (MiPolys /	2694	2698	2751	2873	2921	**2934**	**1454**
Normalized	91.84%	91.97%	93.78%	97.93%	99.57%	100%	49.57%
Standard Deviation	2.2%	1.3%	3.3%	0.3%	0.3%	0.4%	0.1%
ParaView - Wavelet Volume - 1920 x 1080 (Frames / Sec)	146.62	145.29	**156.25**	141.77	136.79	137.46	**96.33**
Normalized	93.84%	92.99%	100%	90.73%	87.55%	87.97%	61.65%
Standard Deviation	2.4%	0.8%	2.3%	4.2%	5.2%	4.4%	0.4%
ParaView - Wavelet Volume - 1920 x 1080 (MiVoxels / Sec)	2346	2325	**2500**	2268	2189	2199	**1541**
Normalized	93.84%	92.99%	100%	90.73%	87.55%	87.98%	61.65%
Standard Deviation	2.4%	0.8%	2.3%	4.2%	5.2%	4.4%	0.4%
ParaView - Wavelet Contour - 1920 x 1080 (Frames / Sec)	85.65	91.67	**79.08**	94.13	95.26	**95.71**	92.40
Normalized	89.49%	95.78%	82.62%	98.35%	99.53%	100%	96.54%
Standard Deviation	7.2%	1.1%	10.3%	0.8%	0.7%	0.8%	0.1%
ParaView - Wavelet Contour - 1920 x 1080 (MiPolys / Sec)	892.551	955.284	**824.103**	980.986	992.792	**997.437**	962.878
Normalized	89.48%	95.77%	82.62%	98.35%	99.53%	100%	96.54%
Standard Deviation	7.2%	1.1%	10.3%	0.8%	0.7%	0.8%	0.1%
GpuTest - GiMark - 1920 x 1080 - Fullscreen (Points)	4250	**4261**	4228	4168	4229	4252	**3602**
Normalized	99.74%	100%	99.23%	97.82%	99.25%	99.79%	84.53%
Standard Deviation	0.2%	0.2%	0.3%	0.3%	0.2%	0.3%	2%
GpuTest - Plot3D - 1920 x 1080 - Fullscreen (Points)	55772	55936	55670	55782	**56169**	55915	**29998**
Normalized	99.29%	99.59%	99.11%	99.31%	100%	99.55%	53.41%
Standard Deviation	0.5%	0.1%	0.5%	0.2%	0.3%	0.4%	0.1%
GpuTest - Furmark - 1920 x 1080 - Fullscreen	**2124**	2123	2114	2107	2109	2119	**1598**
Normalized	100%	99.95%	99.53%	99.2%	99.29%	99.76%	75.24%
Standard Deviation	0.2%	0.1%	0.2%	0.2%	0.1%	0.3%	2.5%
GpuTest - TessMark - 1920 x 1080 - Fullscreen	8969	**9017**	8970	8604	8876	8945	**6729**
Normalized	99.47%	100%	99.48%	95.42%	98.44%	99.2%	74.63%
Standard Deviation	0.2%	0.1%	0.3%	1.1%	0.4%	0.2%	0%
GpuTest - Triangle - 1920 x 1080 - Fullscreen	**622596**	615045	609733	567456	594012	589110	**127405**
Normalized	100%	98.79%	97.93%	91.14%	95.41%	94.62%	20.46%
Standard Deviation	0.7%	0.7%	0.4%	1.7%	2.3%	0.8%	0%
GpuTest - Pixmark Piano - 1920 x 1080 - Fullscreen (Points)	786	**791**	787	764	789	785	**370**
Normalized	99.37%	100%	99.49%	96.59%	99.75%	99.24%	46.78%
Standard Deviation	0.3%	0.2%	0.2%	0.6%	0.1%	0.1%	0%

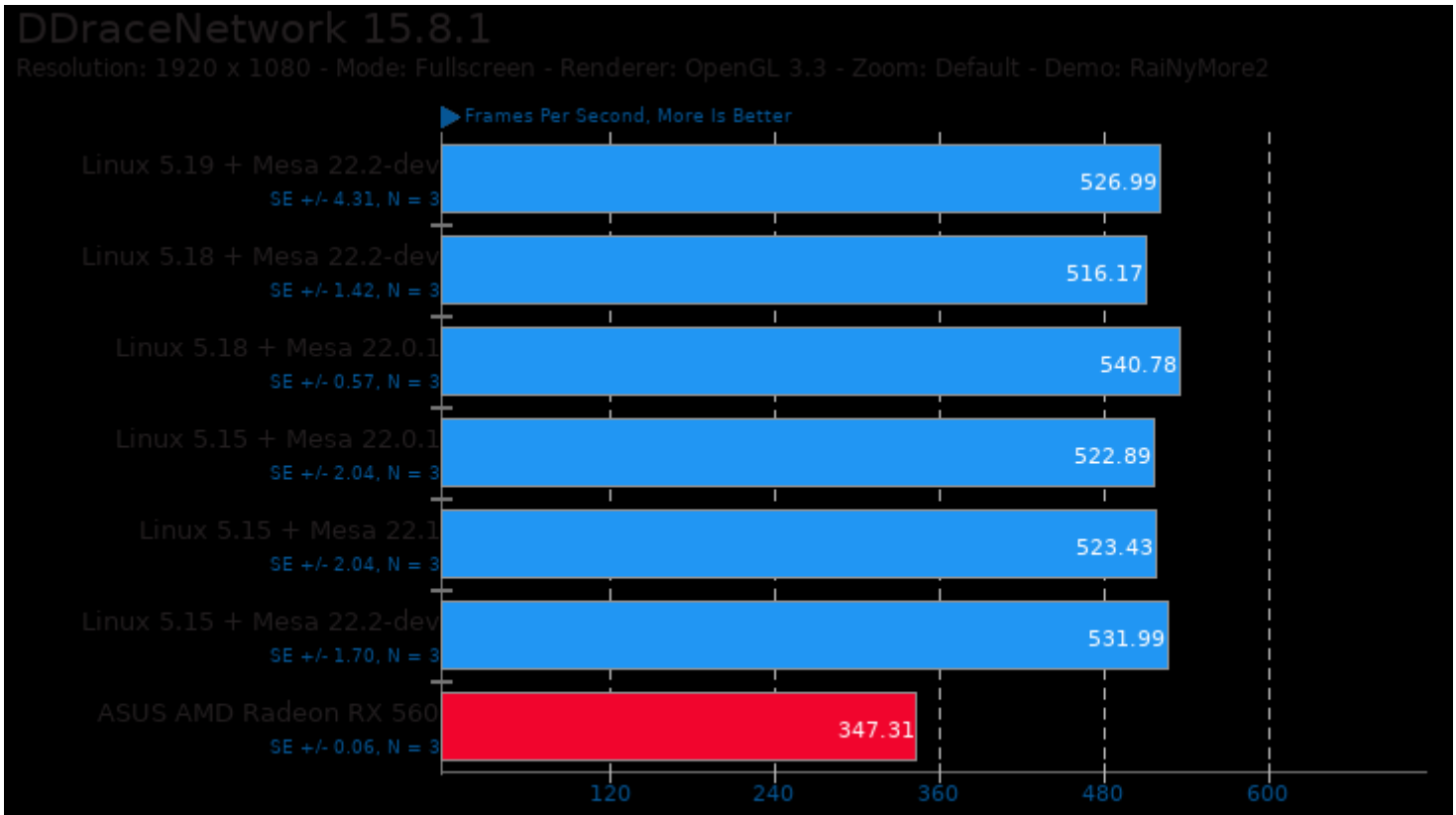
AMD Rembrandt Linux Drivers

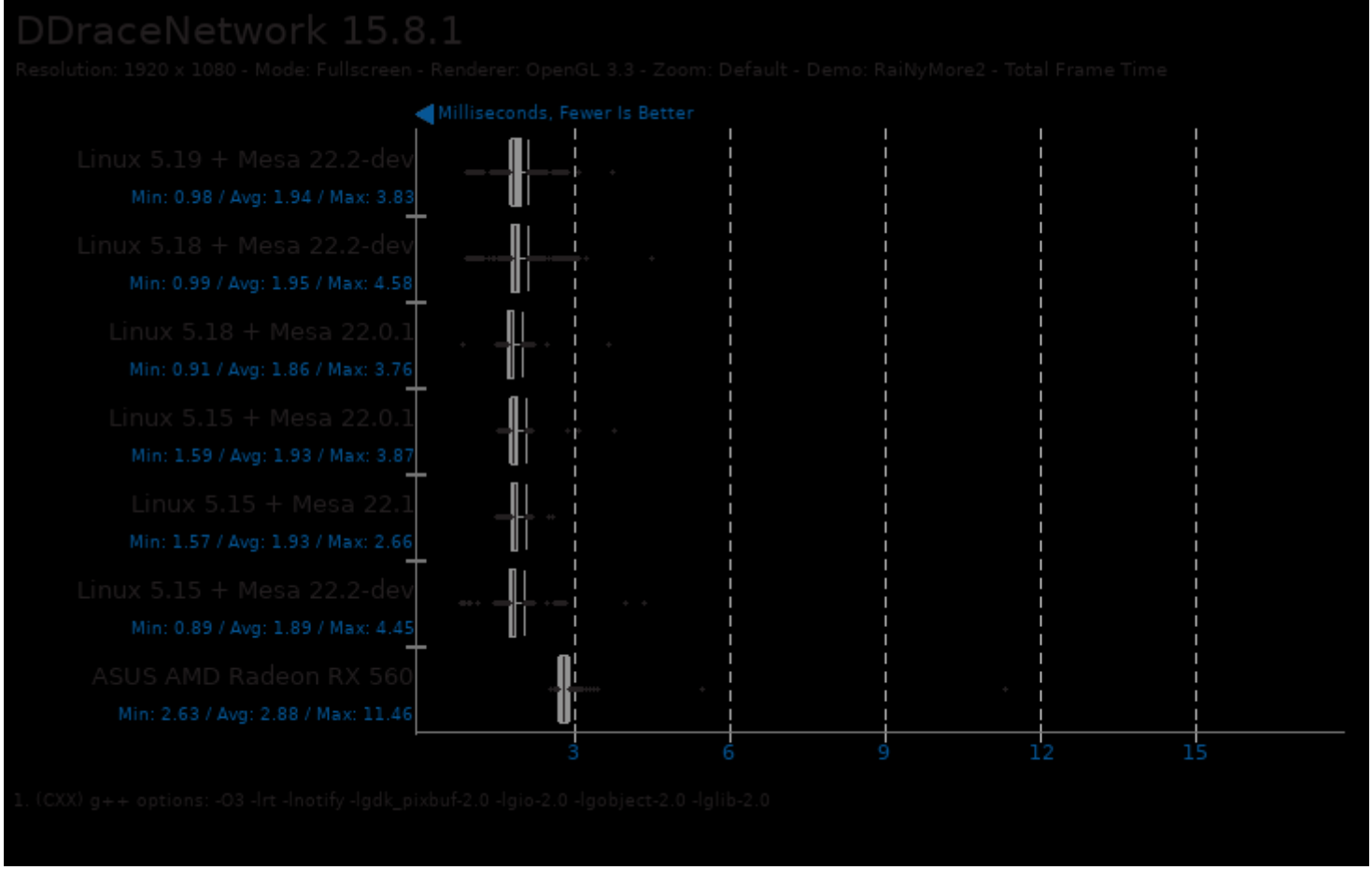
GpuTest - Pixmark Volplosion - 1920 x 1080 - Fullscreen (Points)	**1924**	1919	1913	1885	**1924**	1923	**848**
Normalized	100%	99.74%	99.43%	97.97%	100%	99.95%	44.07%
Standard Deviation	0.2%	0.7%	0.3%	0.3%	0.3%	0.4%	0%
VKMark - 1920 x 1080 - Mailbox (VKMark Score)	**13173**	12943	12828	12029	12441	12278	**2644**
Normalized	100%	98.25%	97.38%	91.32%	94.44%	93.21%	20.07%
Standard Deviation	2.1%	0.9%	1.7%	4.9%	4.8%	4.4%	0.2%

AMD Rembrandt Linux Drivers

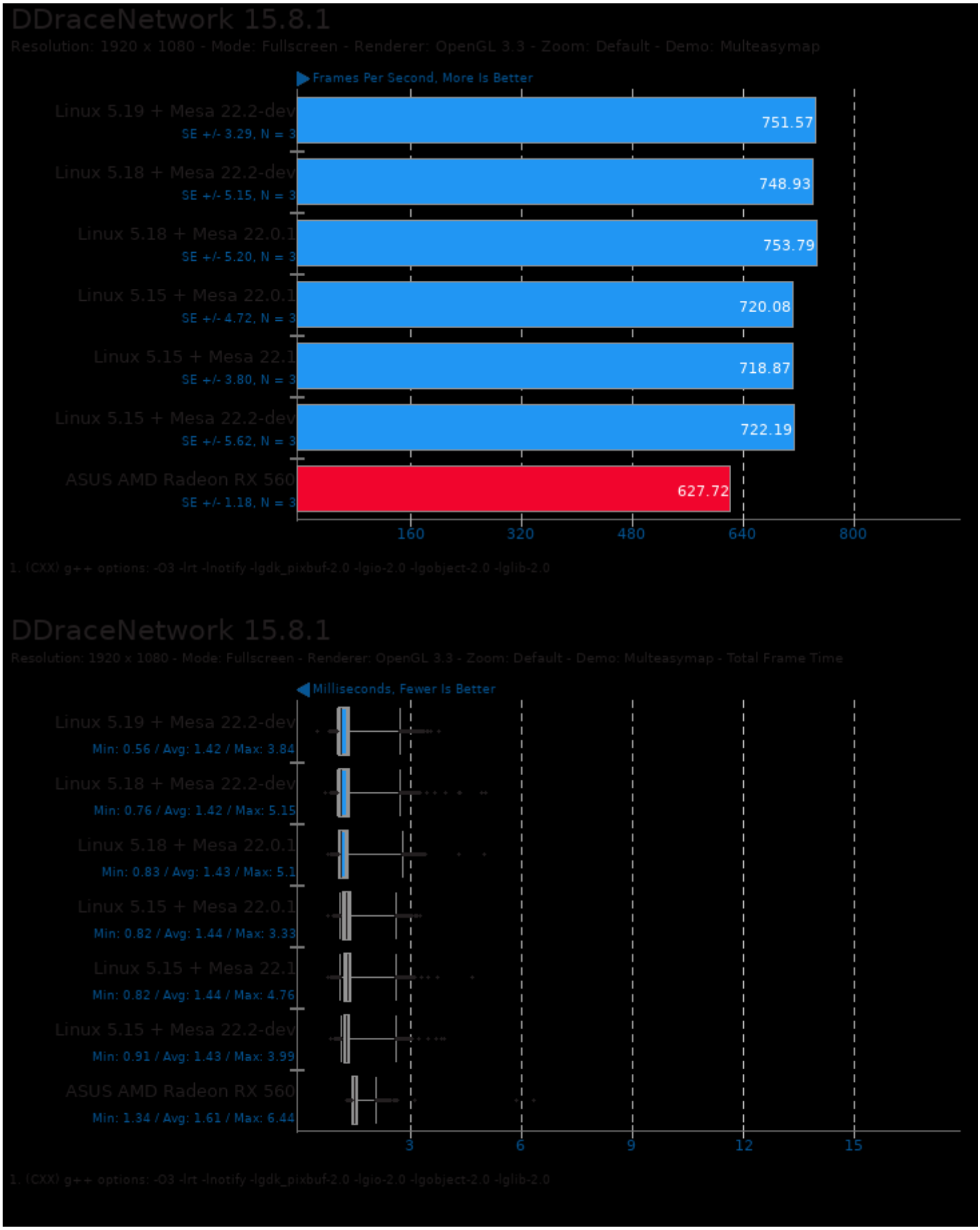


AMD Rembrandt Linux Drivers

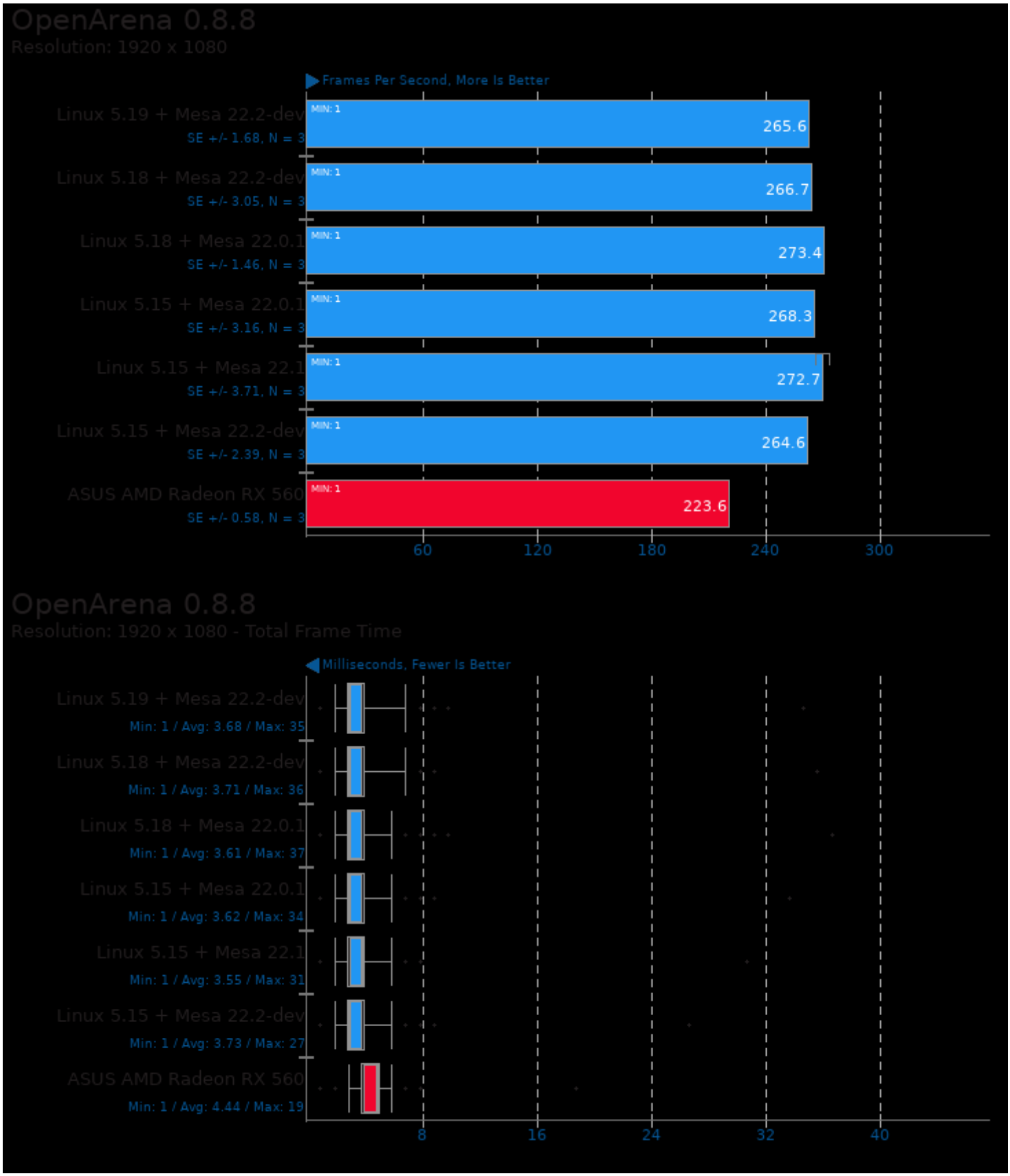




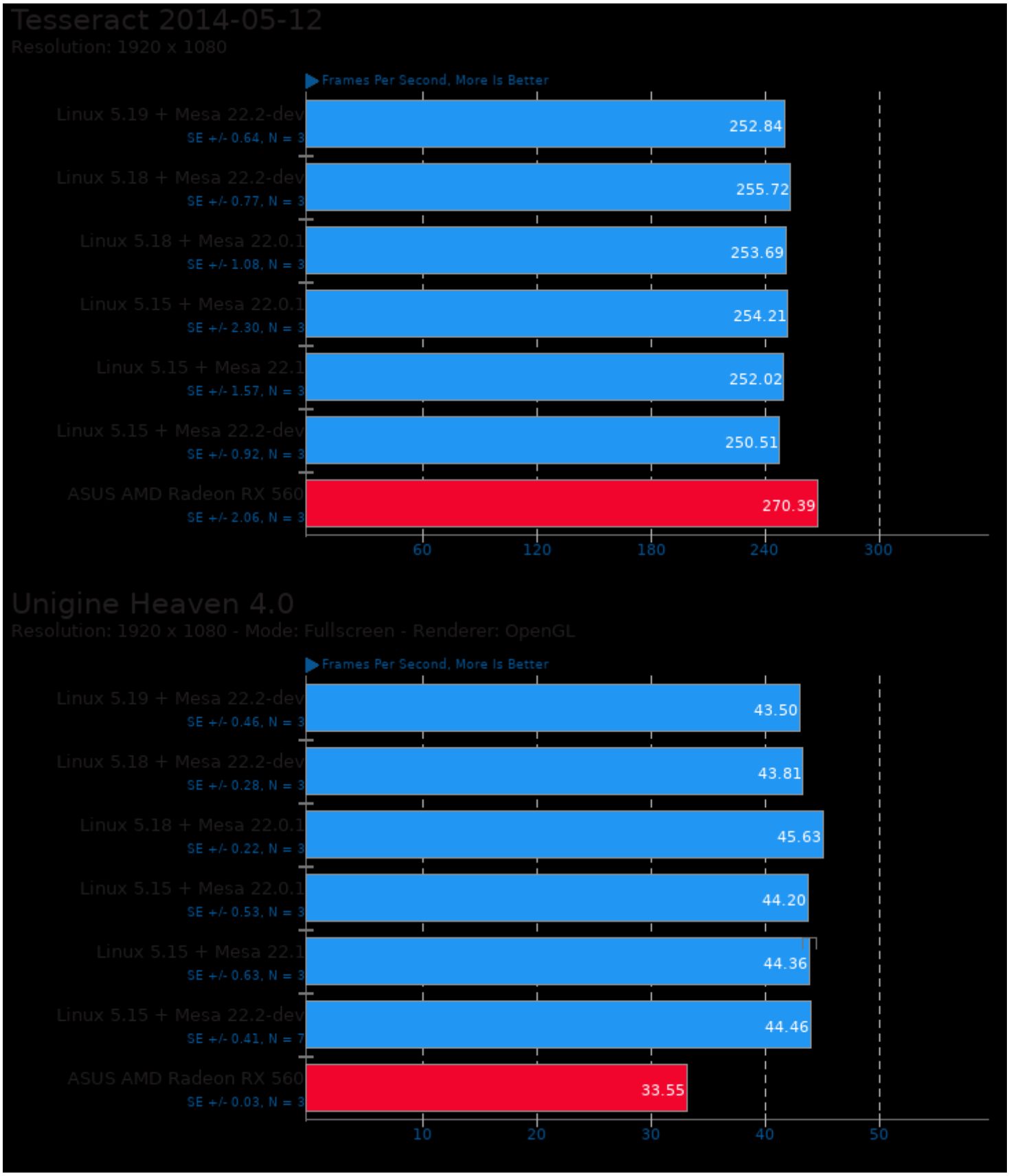
AMD Rembrandt Linux Drivers



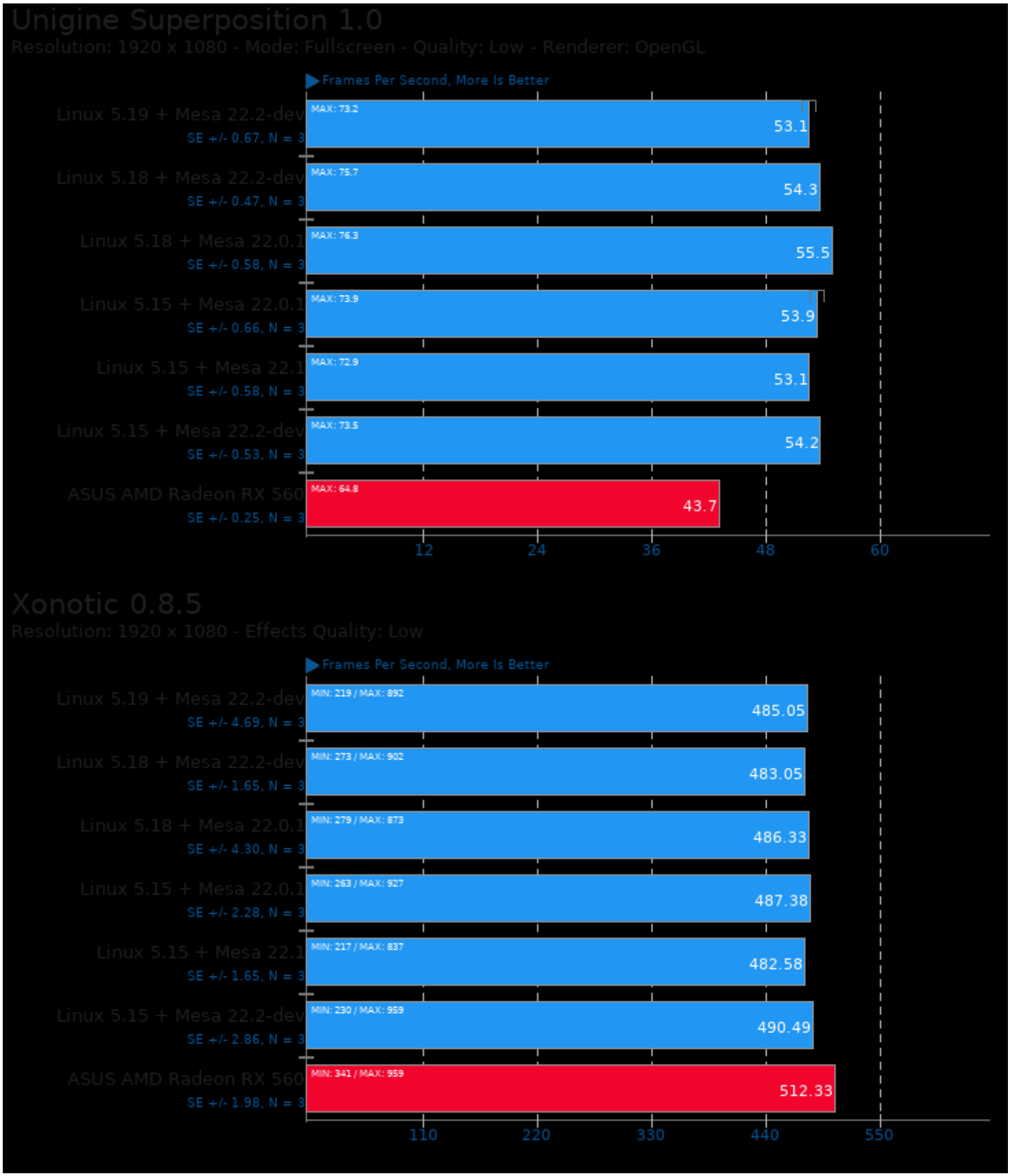
AMD Rembrandt Linux Drivers



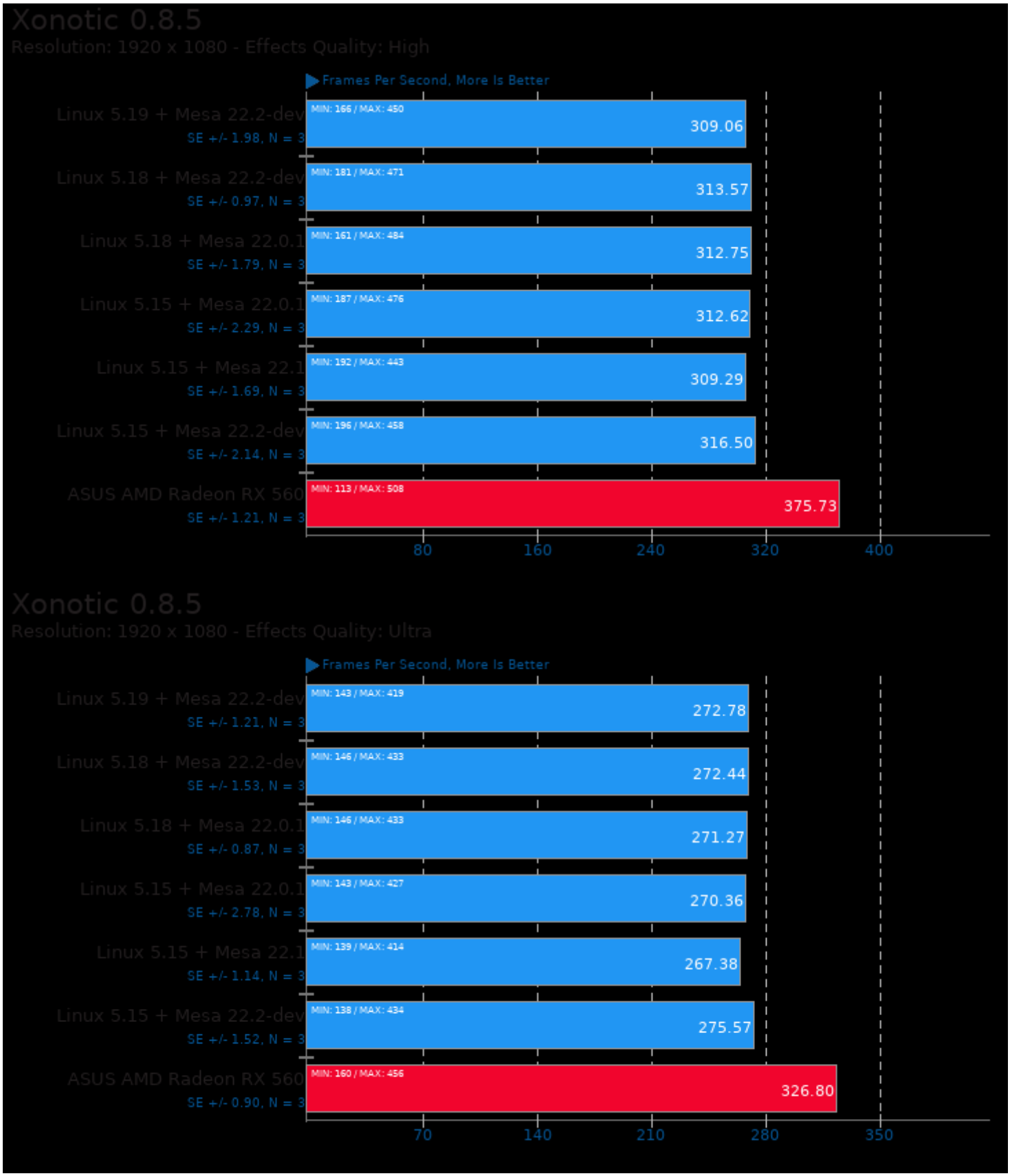
AMD Rembrandt Linux Drivers

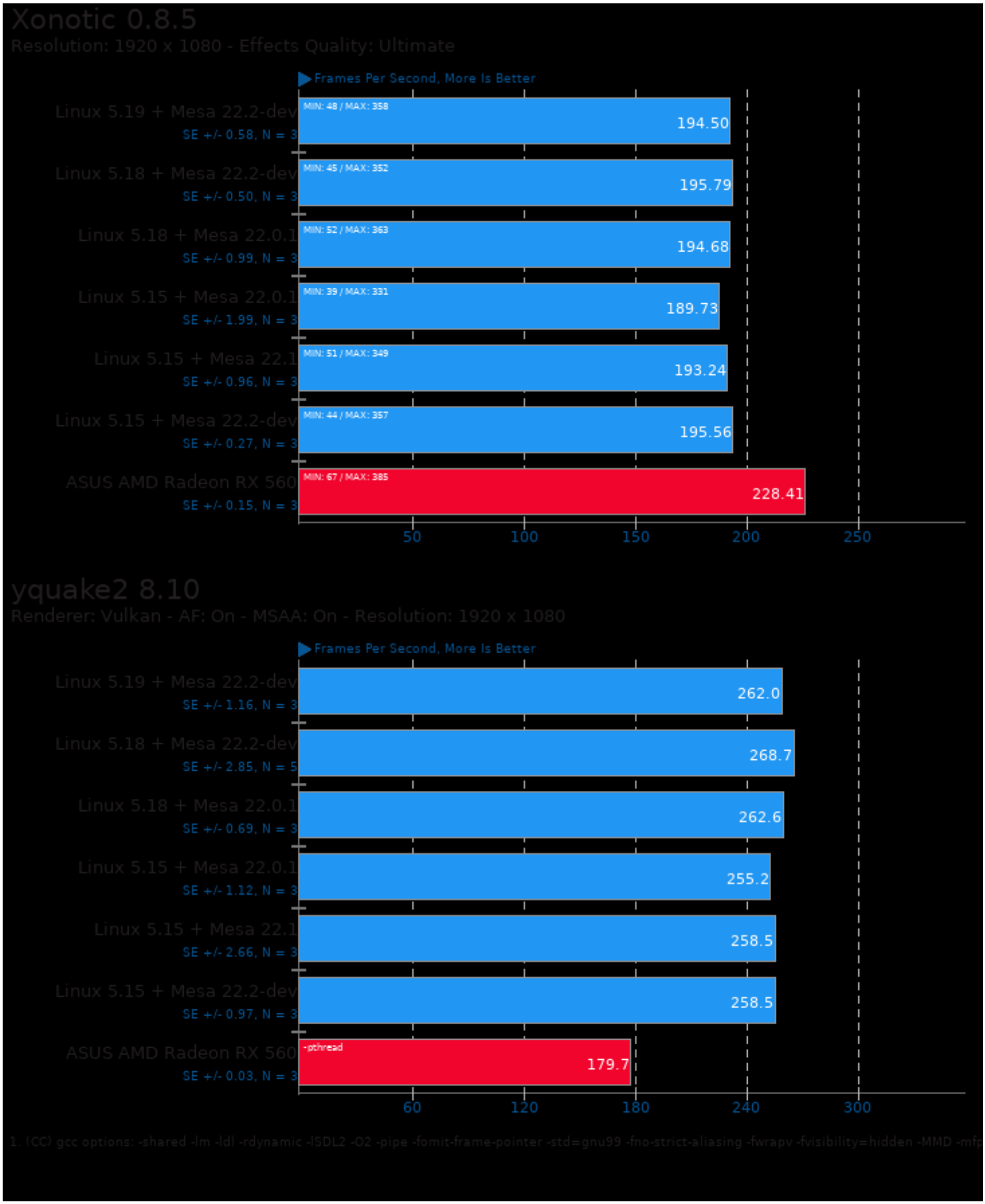


AMD Rembrandt Linux Drivers

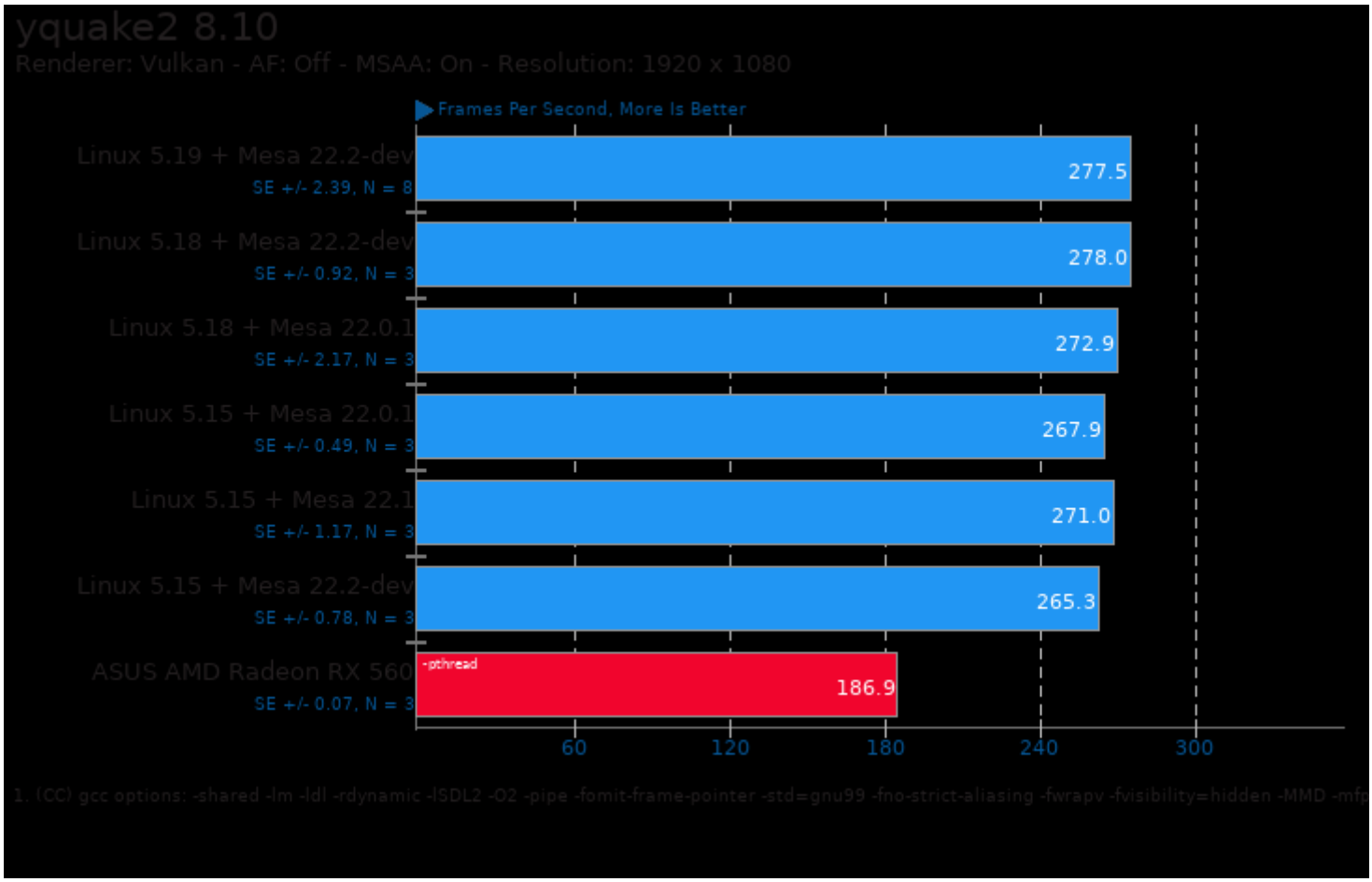


AMD Rembrandt Linux Drivers

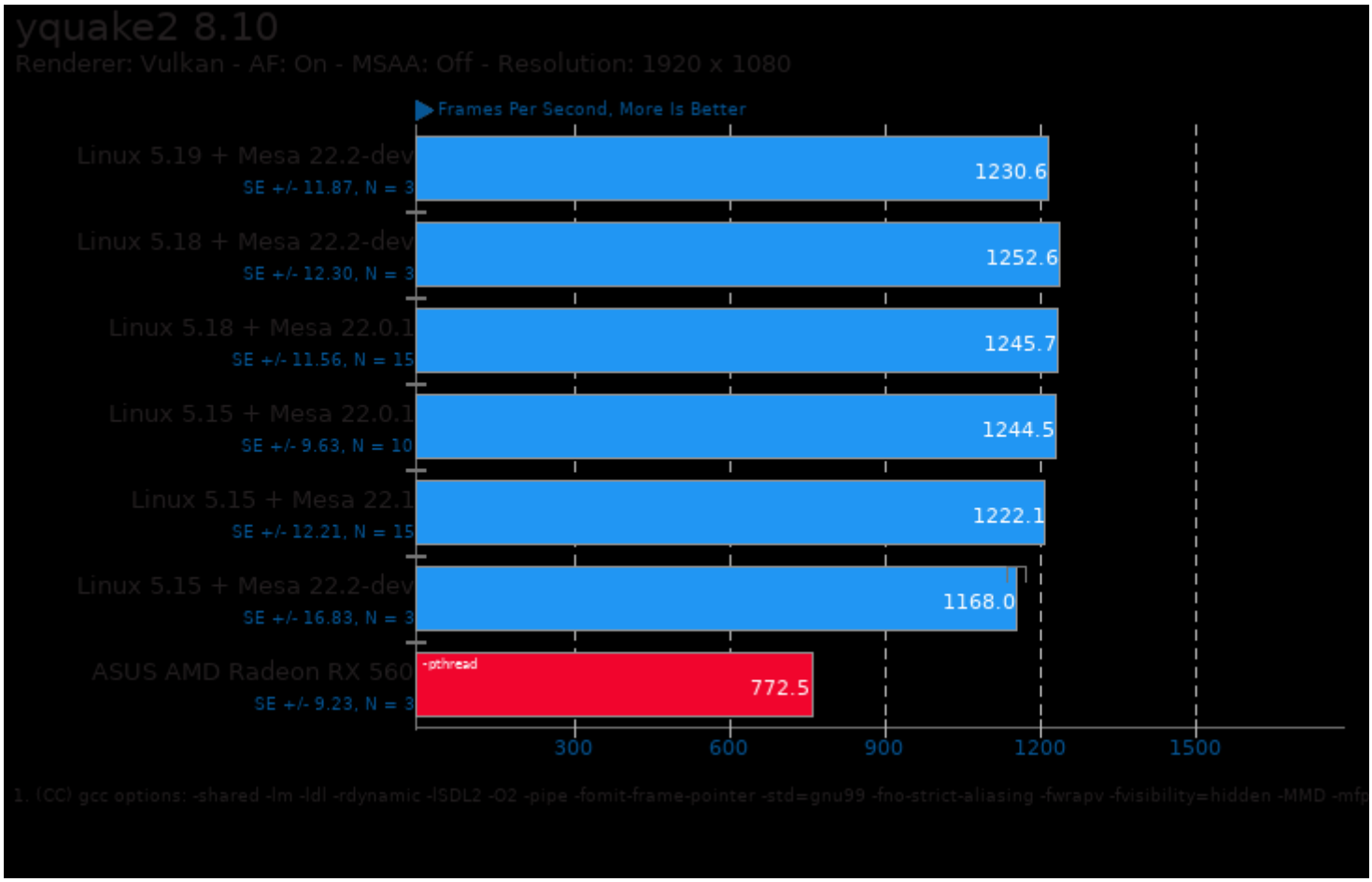



Xonotic 0.8.5
Resolution: 1920 x 1080 - Effects Quality: Ultimate
Frames Per Second, More Is Better
Linux 5.19 + Mesa 22.2-dev
SE +/- 0.58, N = 3
MIN: 48 / MAX: 358
194.50
Linux 5.18 + Mesa 22.2-dev
SE +/- 0.50, N = 3
MIN: 45 / MAX: 352
195.79
Linux 5.18 + Mesa 22.0.1
SE +/- 0.99, N = 3
MIN: 52 / MAX: 363
194.68
Linux 5.15 + Mesa 22.0.1
SE +/- 1.99, N = 3
MIN: 39 / MAX: 331
189.73
Linux 5.15 + Mesa 22.1
SE +/- 0.96, N = 3
MIN: 51 / MAX: 349
193.24
Linux 5.15 + Mesa 22.2-dev
SE +/- 0.27, N = 3
MIN: 44 / MAX: 357
195.56
ASUS AMD Radeon RX 560
SE +/- 0.15, N = 3
MIN: 67 / MAX: 385
228.41
50
100
150
200
250
yquake2 8.10
Renderer: Vulkan - AF: On - MSAA: On - Resolution: 1920 x 1080
Frames Per Second, More Is Better
Linux 5.19 + Mesa 22.2-dev
SE +/- 1.16, N = 3
262.0
Linux 5.18 + Mesa 22.2-dev
SE +/- 2.85, N = 5
268.7
Linux 5.18 + Mesa 22.0.1
SE +/- 0.69, N = 3
262.6
Linux 5.15 + Mesa 22.0.1
SE +/- 1.12, N = 3
255.2
Linux 5.15 + Mesa 22.1
SE +/- 2.66, N = 3
258.5
Linux 5.15 + Mesa 22.2-dev
SE +/- 0.97, N = 3
258.5
ASUS AMD Radeon RX 560
SE +/- 0.03, N = 3
-pthread
179.7
60
120
180
240
300
1. (CC) gcc options: -shared -lm -ldl -rdynamic -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf

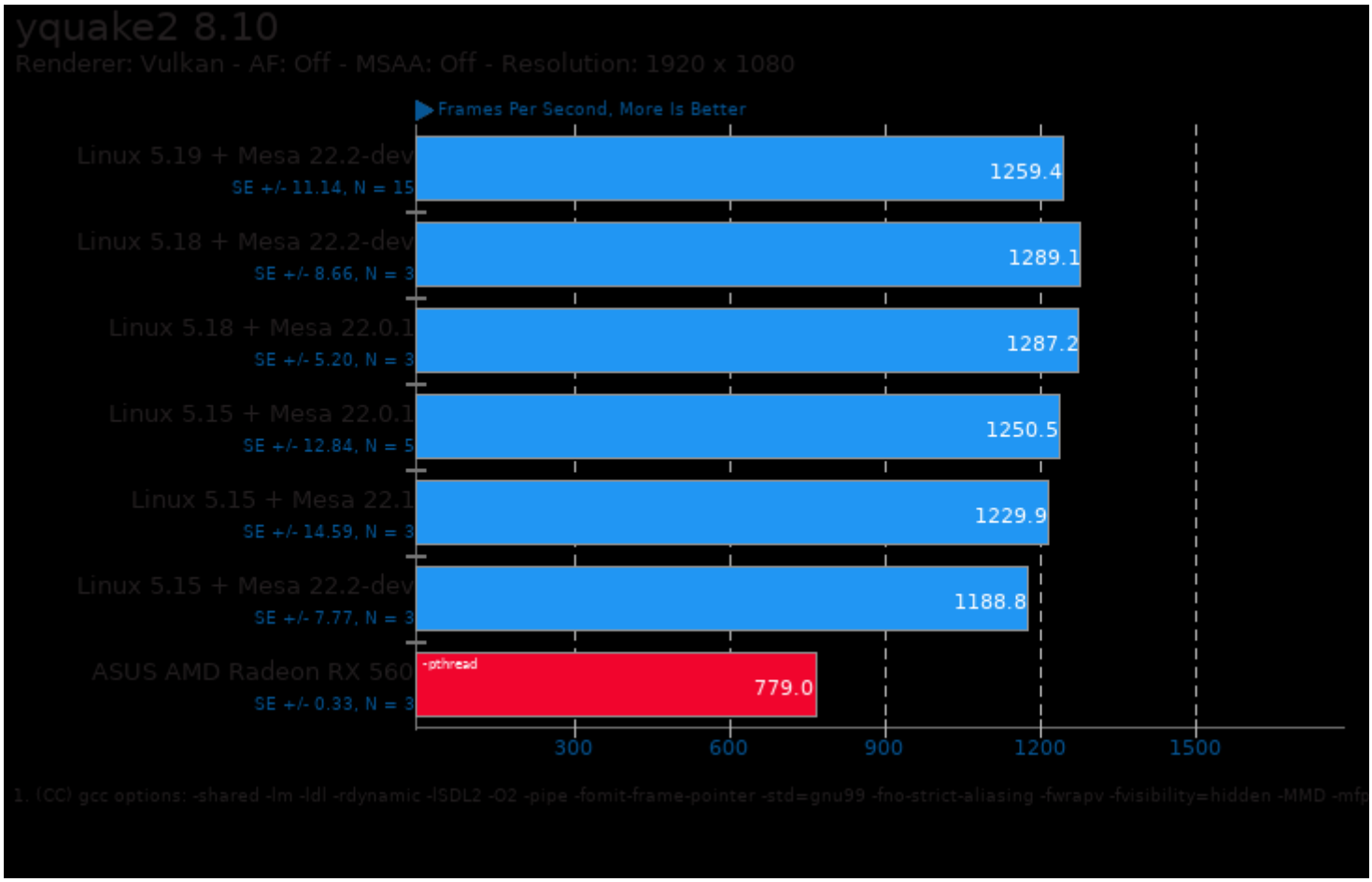
AMD Rembrandt Linux Drivers



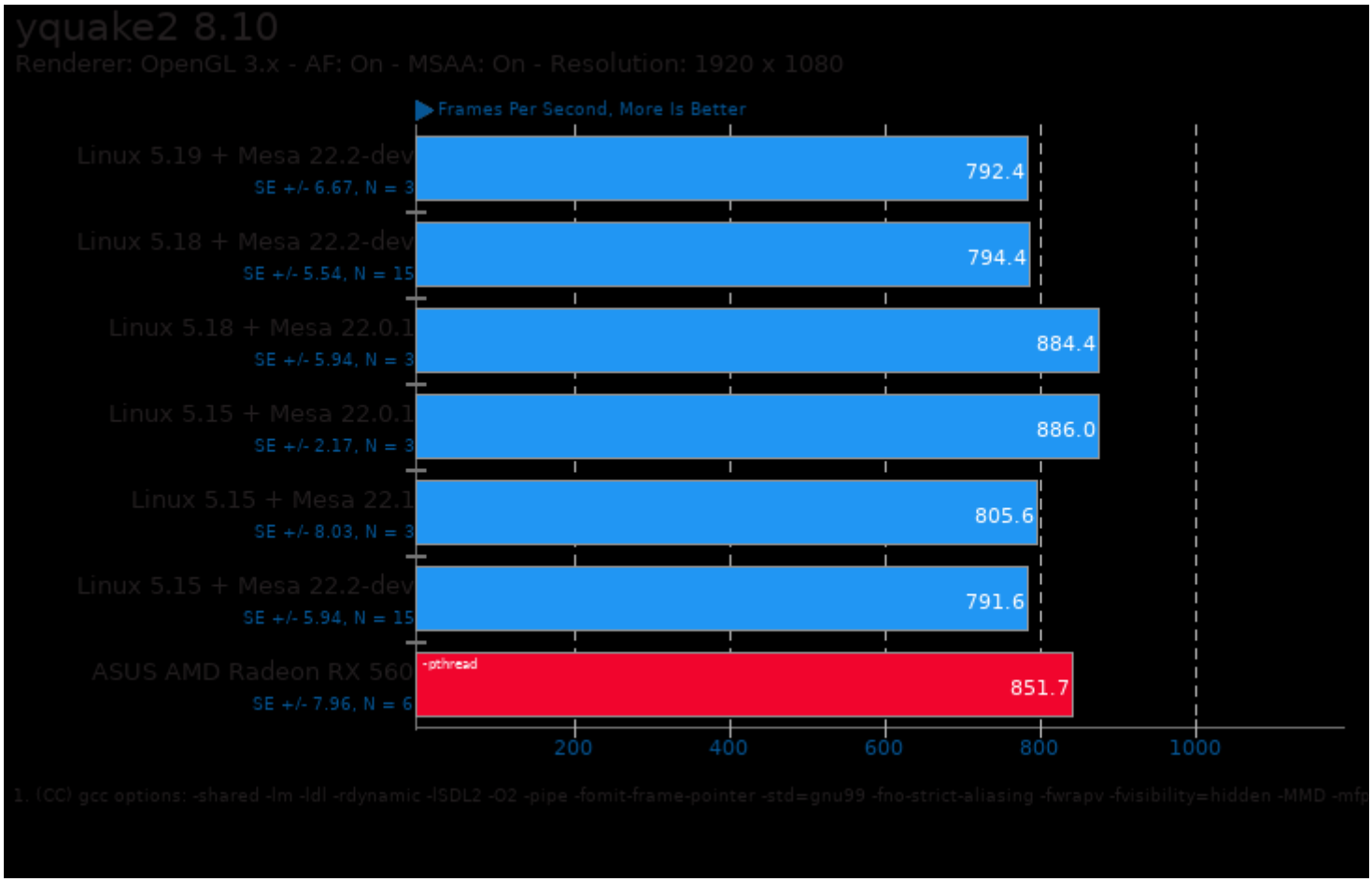
AMD Rembrandt Linux Drivers



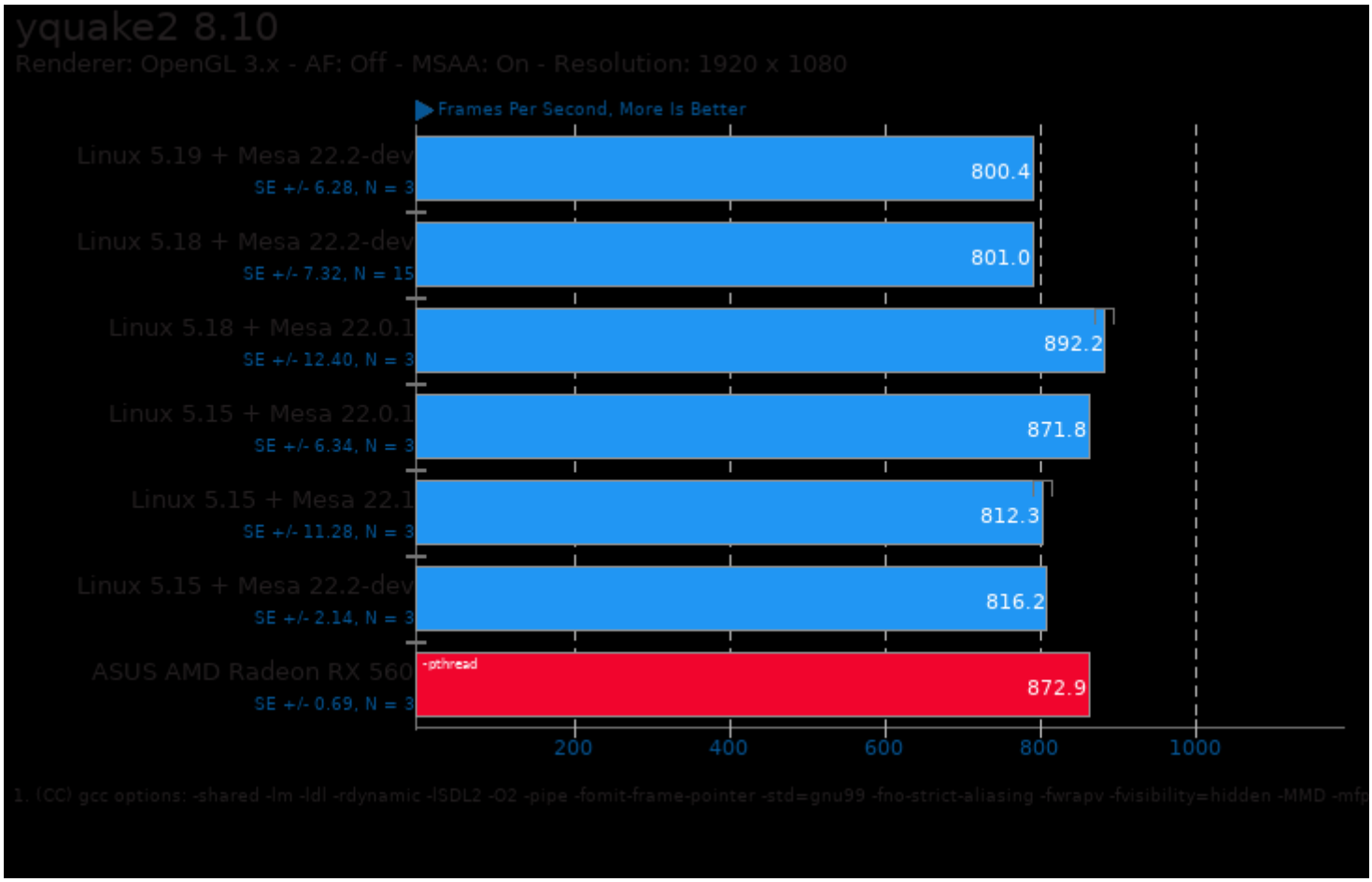
AMD Rembrandt Linux Drivers



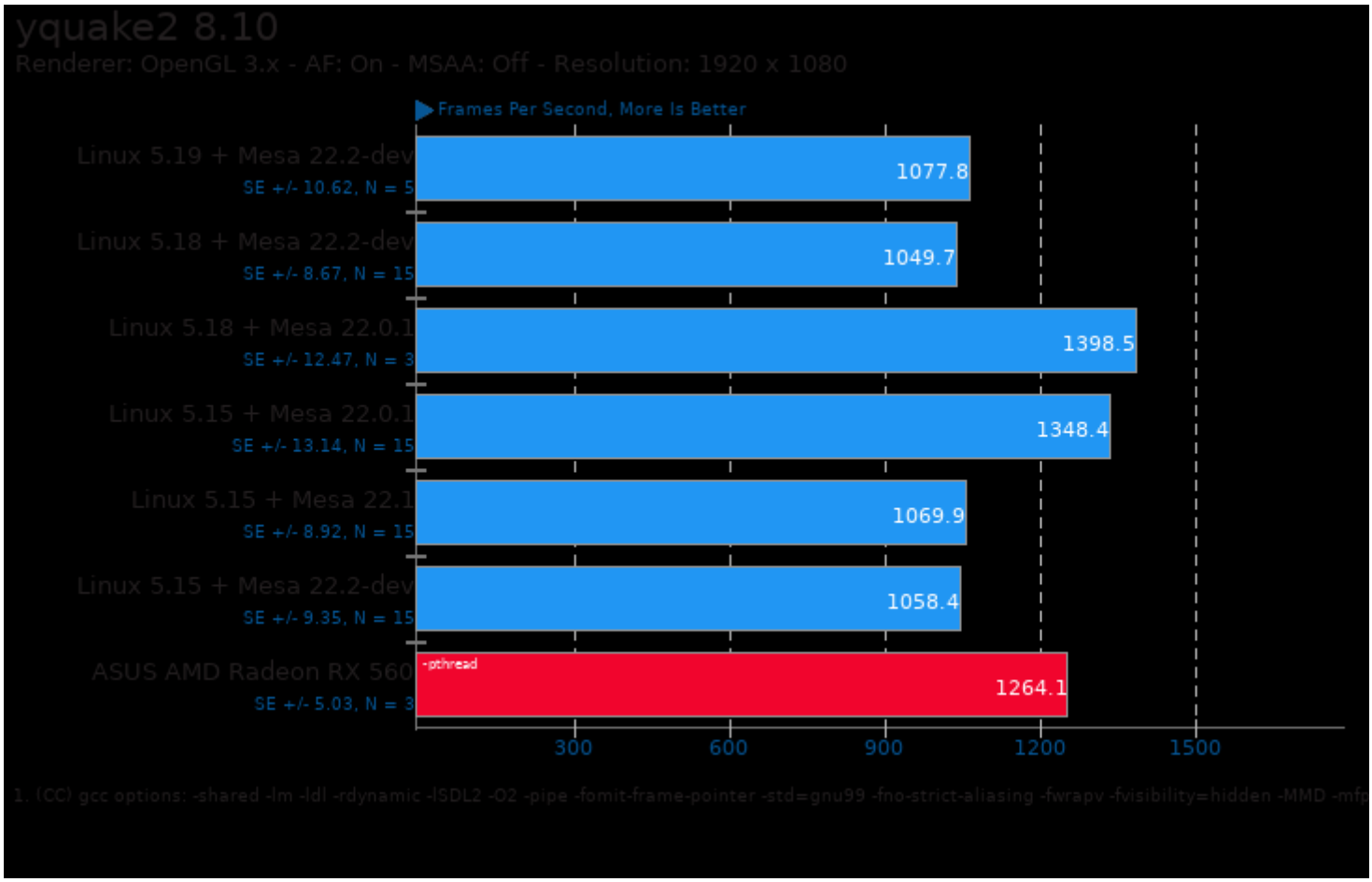
AMD Rembrandt Linux Drivers



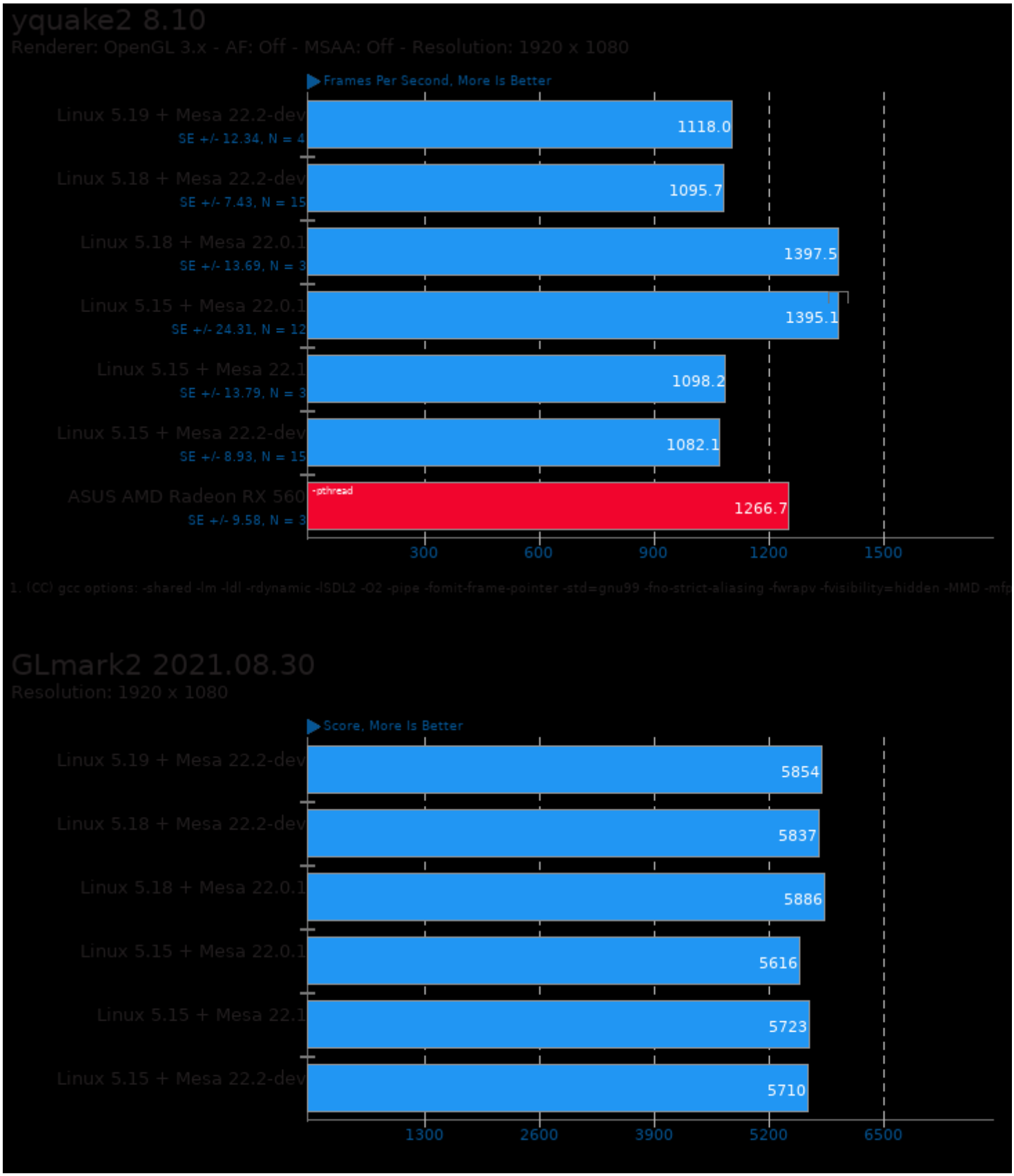
AMD Rembrandt Linux Drivers



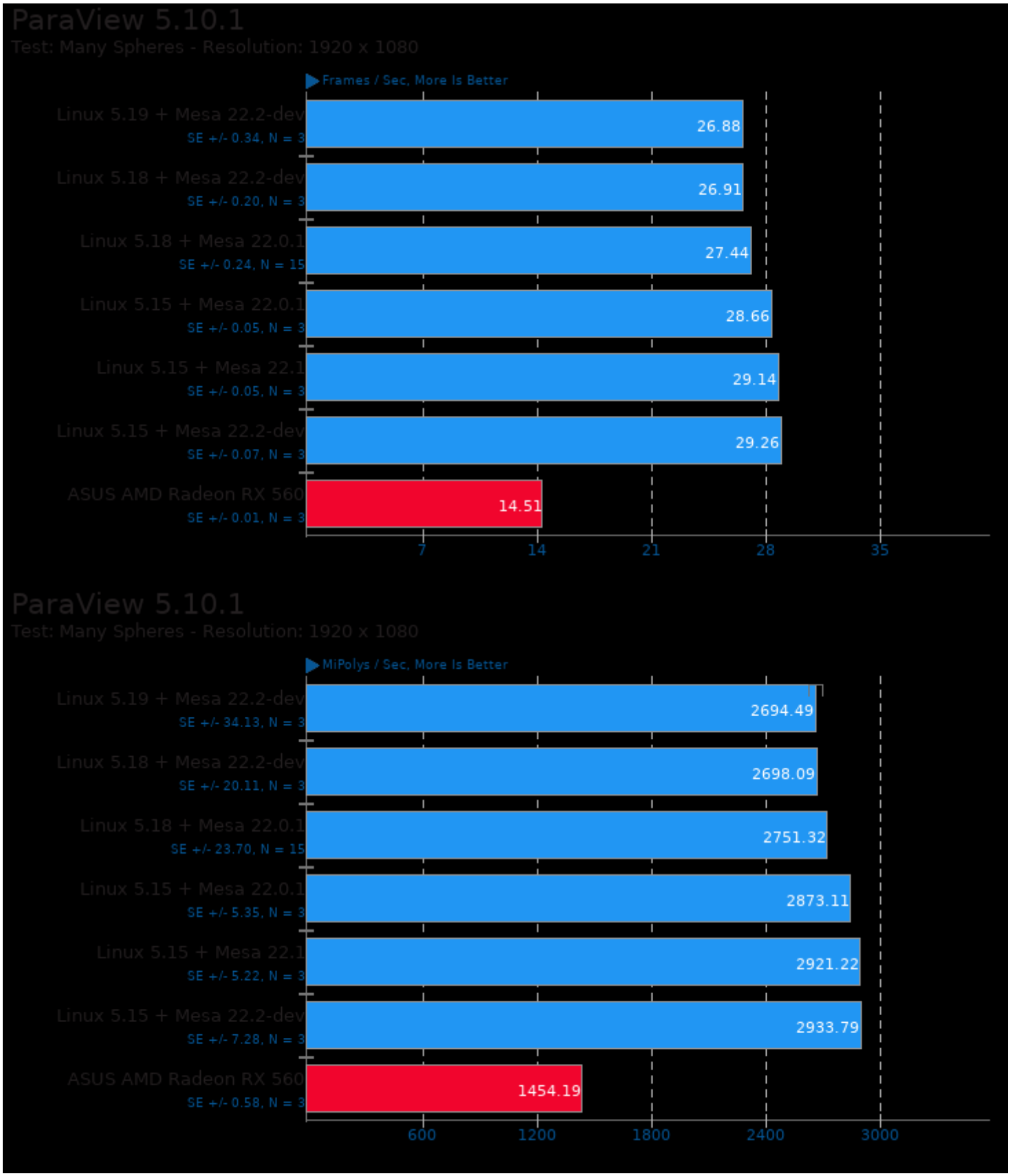
AMD Rembrandt Linux Drivers



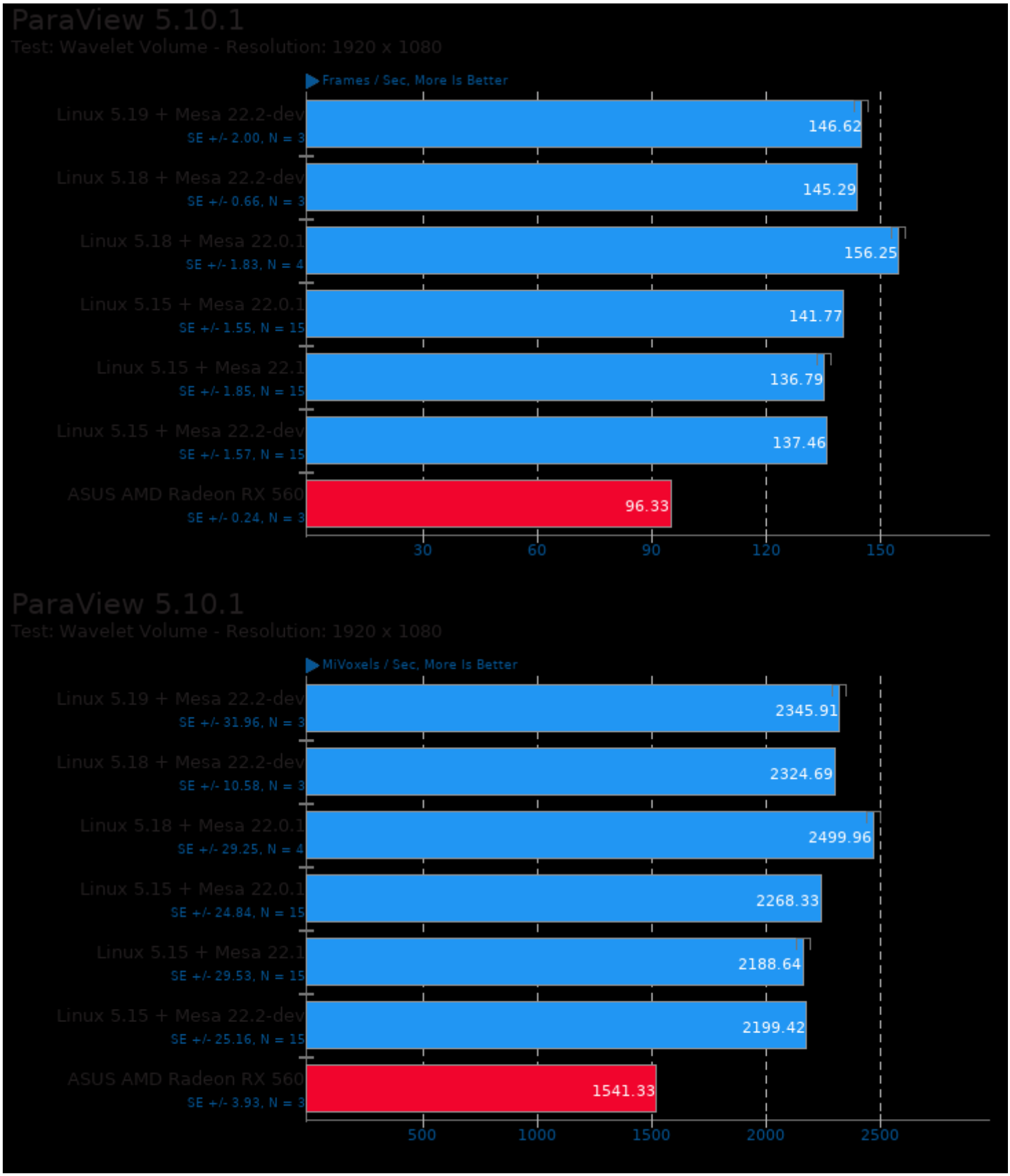
AMD Rembrandt Linux Drivers



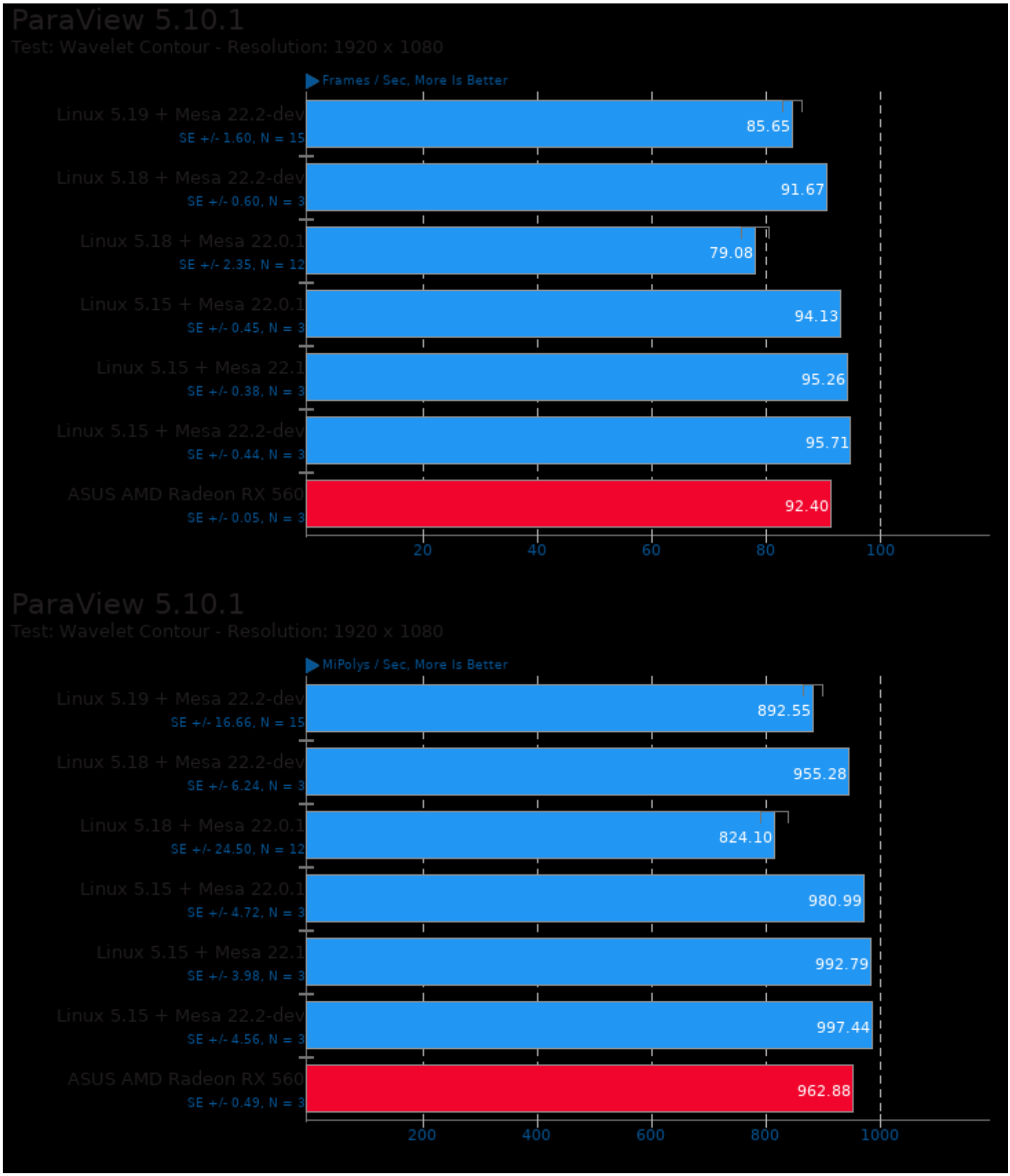
AMD Rembrandt Linux Drivers



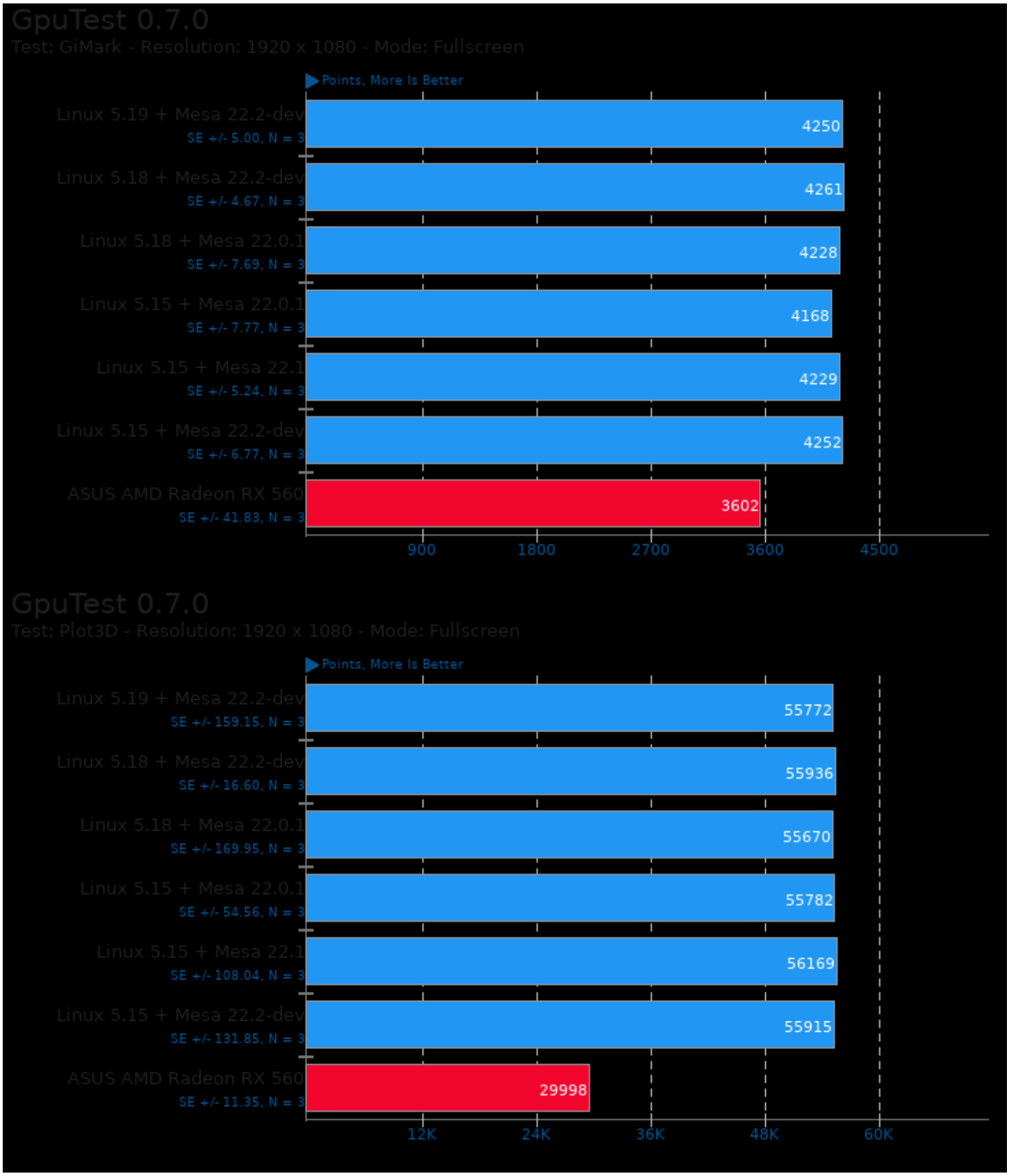
AMD Rembrandt Linux Drivers



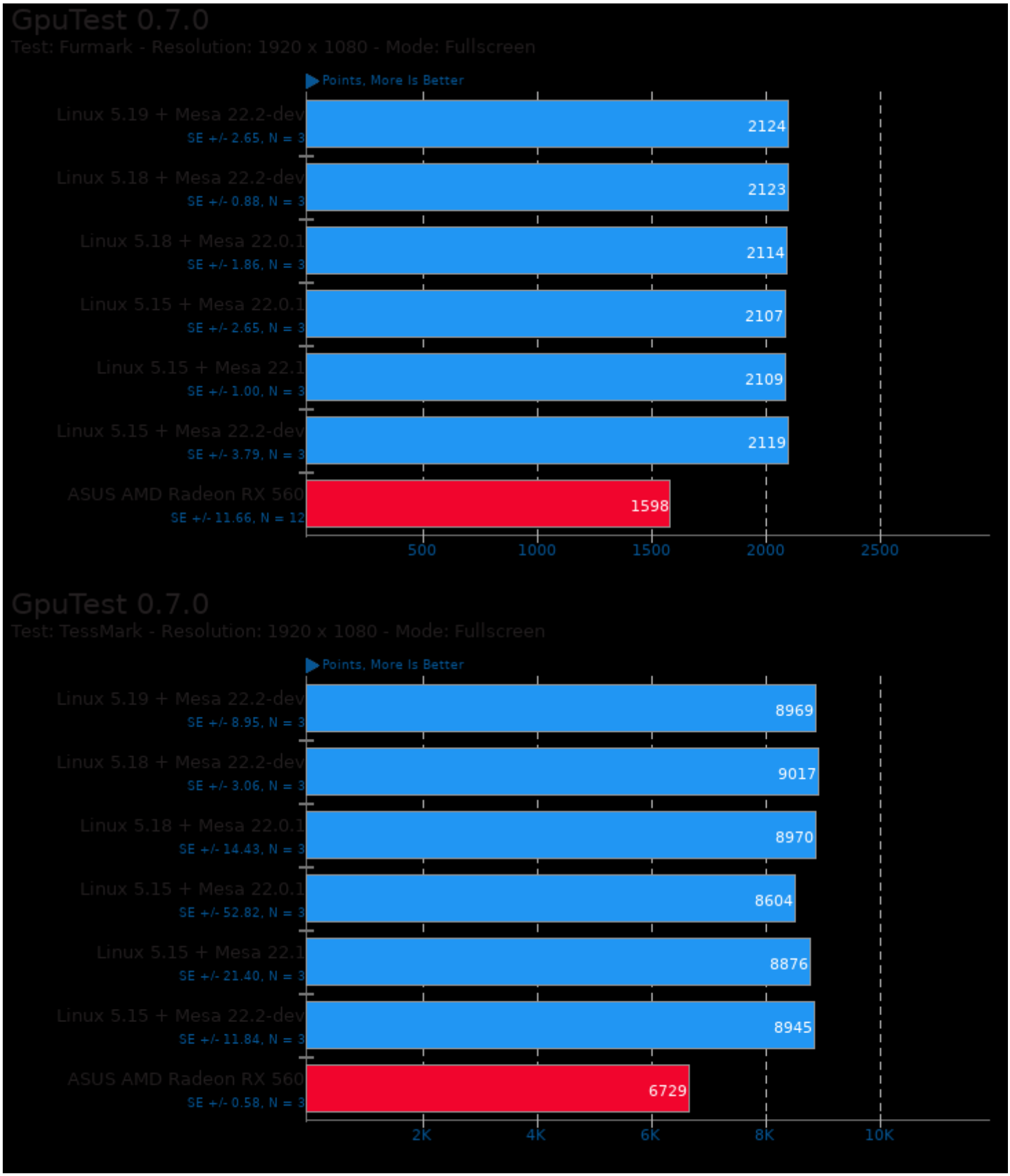
AMD Rembrandt Linux Drivers



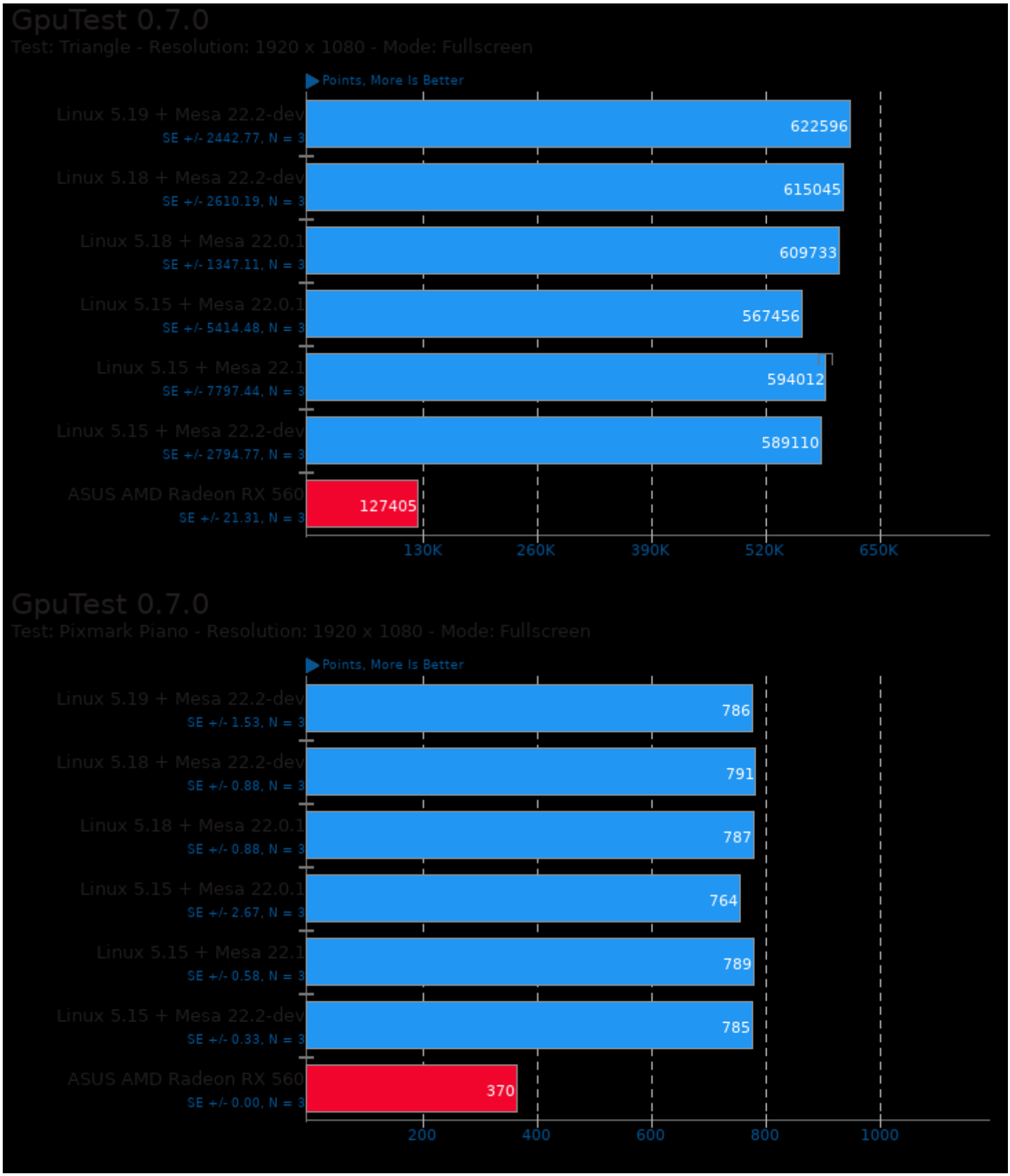
AMD Rembrandt Linux Drivers

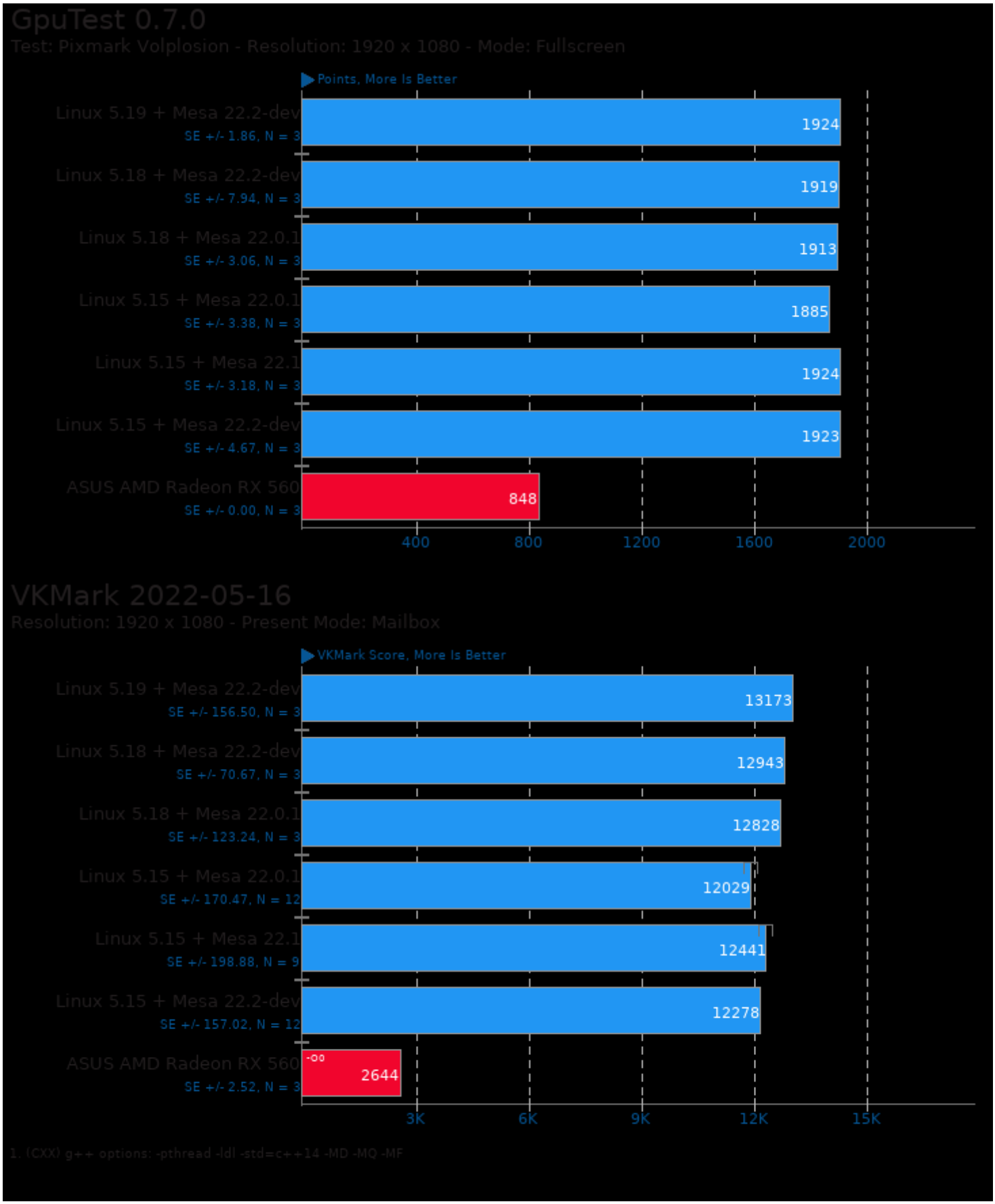


AMD Rembrandt Linux Drivers



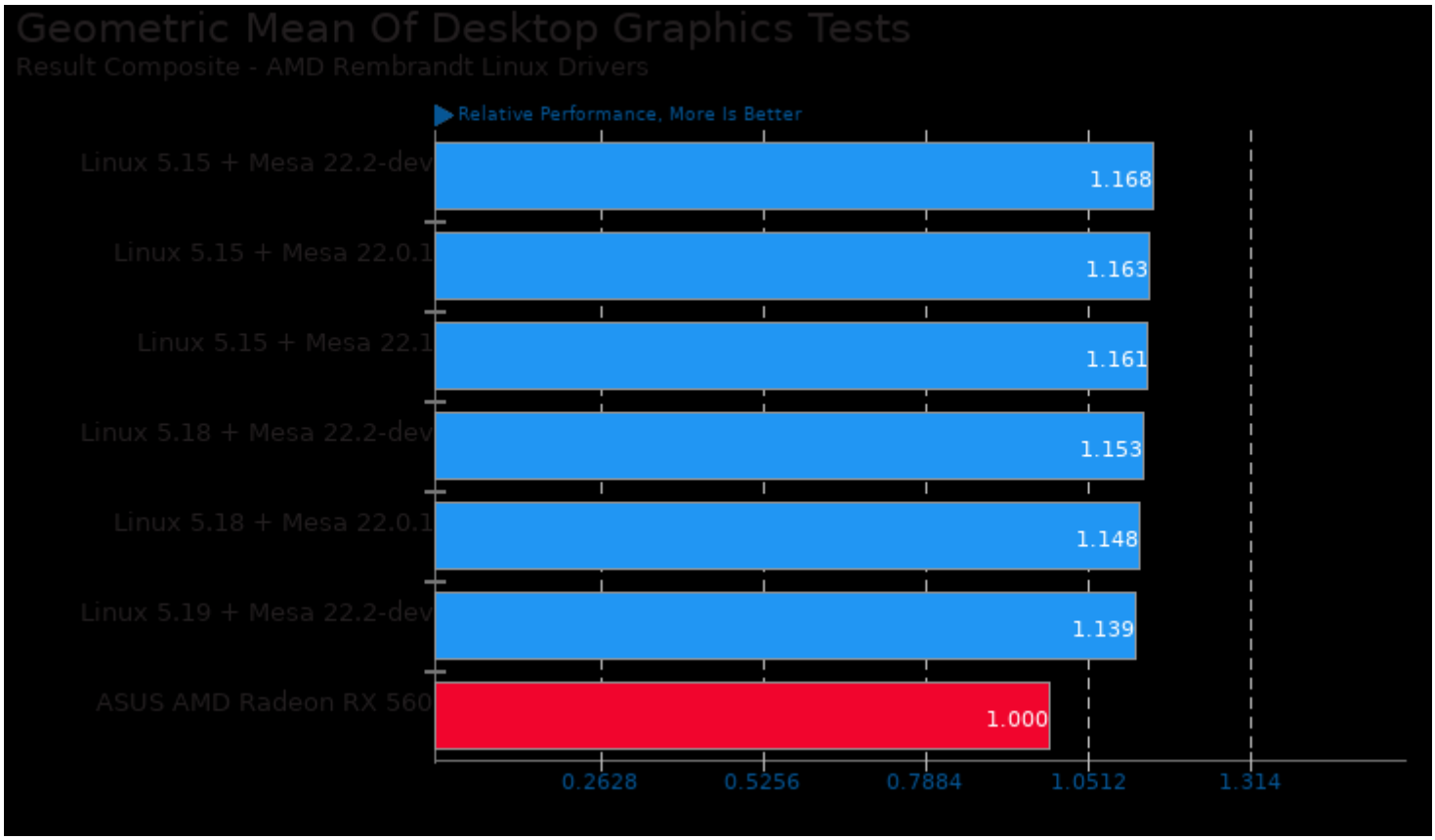
AMD Rembrandt Linux Drivers



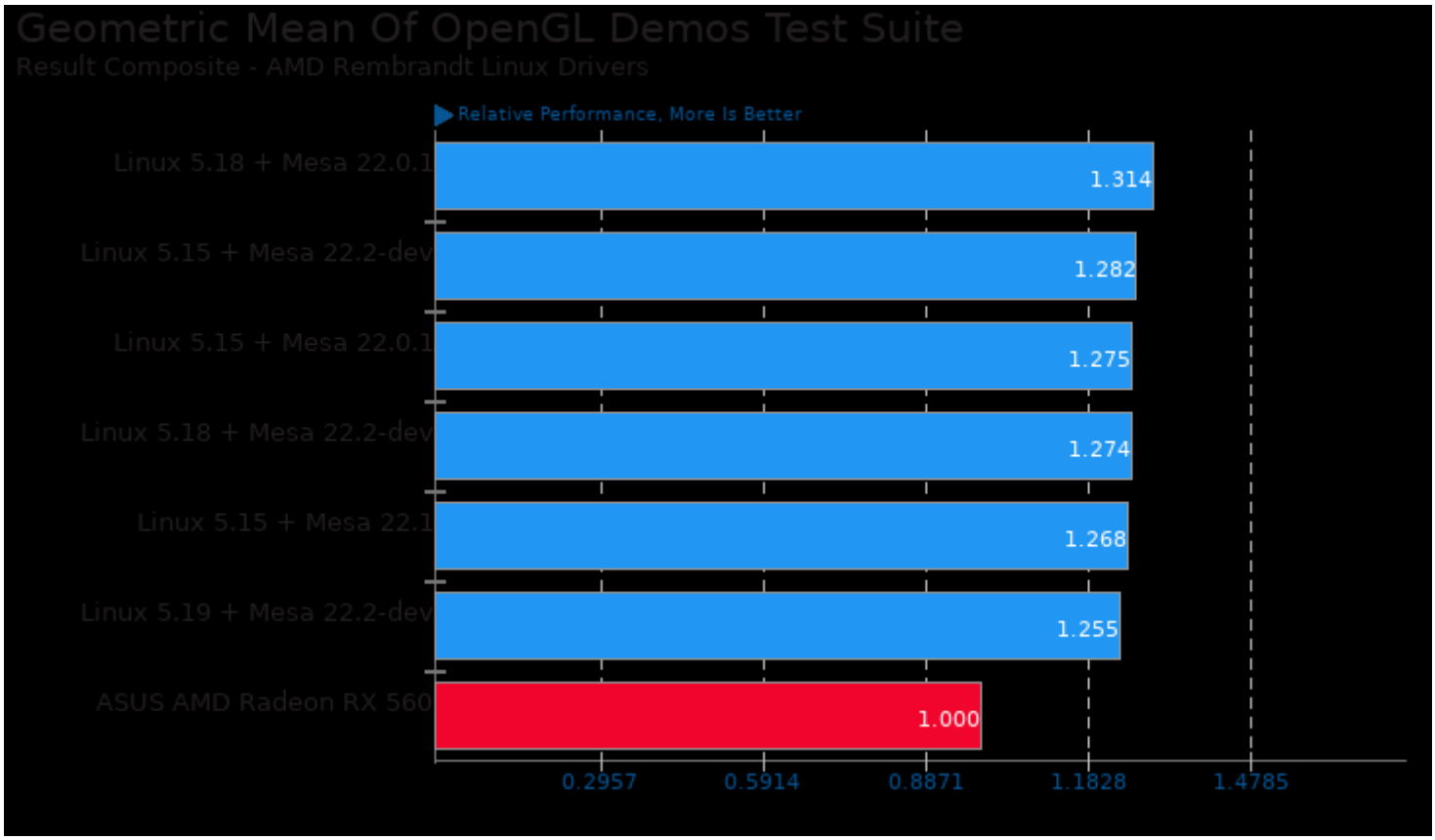

GpuTest 0.7.0
Test: Pixmark Volplosion - Resolution: 1920 x 1080 - Mode: Fullscreen
Points, More Is Better
Linux 5.19 + Mesa 22.2-dev
SE +/- 1.86, N = 3
1924
Linux 5.18 + Mesa 22.2-dev
SE +/- 7.94, N = 3
1919
Linux 5.18 + Mesa 22.0.1
SE +/- 3.06, N = 3
1913
Linux 5.15 + Mesa 22.0.1
SE +/- 3.38, N = 3
1885
Linux 5.15 + Mesa 22.1
SE +/- 3.18, N = 3
1924
Linux 5.15 + Mesa 22.2-dev
SE +/- 4.67, N = 3
1923
ASUS AMD Radeon RX 560
SE +/- 0.00, N = 3
848
400
800
1200
1600
2000
VKMark 2022-05-16
Resolution: 1920 x 1080 - Present Mode: Mailbox
VKMark Score, More Is Better
Linux 5.19 + Mesa 22.2-dev
SE +/- 156.50, N = 3
13173
Linux 5.18 + Mesa 22.2-dev
SE +/- 70.67, N = 3
12943
Linux 5.18 + Mesa 22.0.1
SE +/- 123.24, N = 3
12828
Linux 5.15 + Mesa 22.0.1
SE +/- 170.47, N = 12
12029
Linux 5.15 + Mesa 22.1
SE +/- 198.88, N = 9
12441
Linux 5.15 + Mesa 22.2-dev
SE +/- 157.02, N = 12
12278
ASUS AMD Radeon RX 560
SE +/- 2.52, N = 3
-O0
2644
3K
6K
9K
12K
15K
1. (CXX) g++ options: -pthread -ldl -std=c++14 -MD -MQ -MF

AMD Rembrandt Linux Drivers

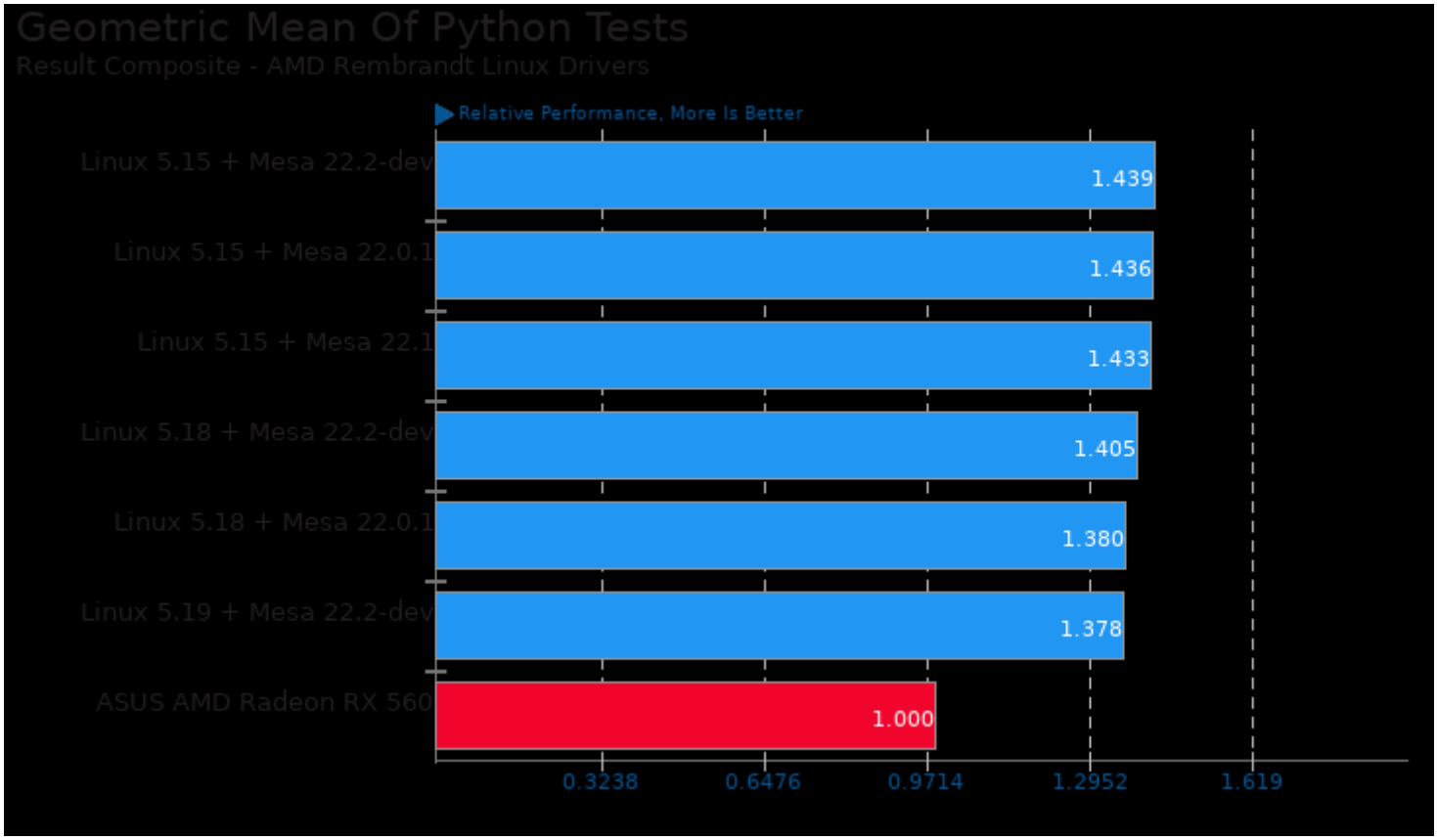
These geometric means are based upon test groupings / test suites for this result file.



Geometric mean based upon tests: pts/xonotic, pts/openarena, pts/tesseract, pts/paraview, pts/unigine-heaven and pts/glmark2

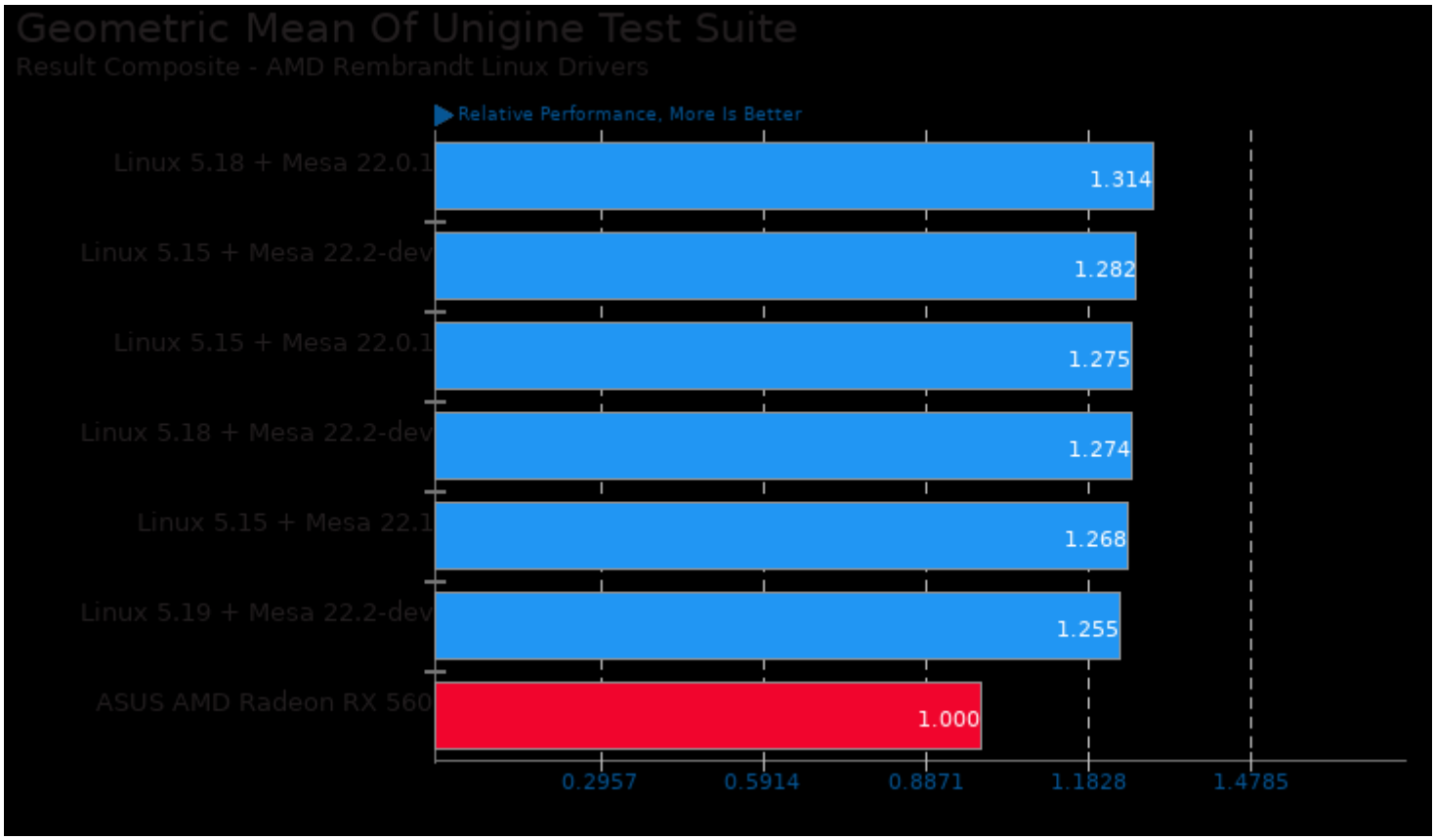


Geometric mean based upon tests: pts/unigine-heaven and pts/unigine-super



Geometric mean based upon tests: pts/glmark2 and pts/paraview

AMD Rembrandt Linux Drivers



Geometric mean based upon tests: pts/unigine-heaven and pts/unigine-super

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 05:27.