



NVIDIA Linux GPU Benchmarks 2021

Various NVIDIA GPU benchmarks by Michael Larabel.

Automated Executive Summary

RTX 3080 had the most wins, coming in first place for 61% of the tests.

Based on the geometric mean of all complete results, the fastest (RTX 3090) was 3.427x the speed of the slowest (GTX 1080).

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

Ray Tracing In Vulkan (Resolution: 3840 x 2160 - Scene: Cornell Box + Lucy) at 31.466x
Ray Tracing In Vulkan (Resolution: 2560 x 1440 - Scene: Cornell Box + Lucy) at 30.611x
Ray Tracing In Vulkan (Resolution: 1920 x 1200 - Scene: Cornell Box + Lucy) at 30.431x
Ray Tracing In Vulkan (Resolution: 1920 x 1080 - Scene: Cornell Box + Lucy) at 30.14x
Ray Tracing In Vulkan (Resolution: 1920 x 1200 - Scene: Cornell Box) at 21.78x
Ray Tracing In Vulkan (Resolution: 3840 x 2160 - Scene: Cornell Box) at 21.668x
Ray Tracing In Vulkan (Resolution: 2560 x 1440 - Scene: Cornell Box) at 21.661x
Ray Tracing In Vulkan (Resolution: 1920 x 1080 - Scene: Cornell Box) at 21.544x
Ray Tracing In Vulkan (Resolution: 1920 x 1080 - Scene: Lucy In One Weekend) at 18.95x
Ray Tracing In Vulkan (Resolution: 3840 x 2160 - Scene: Lucy In One Weekend) at 18.866x.

Test Systems:

GTX 1080

Processor: AMD Ryzen 9 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (3202 BIOS), Chipset: AMD Starship/Matisse, Memory: 32GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: NVIDIA GeForce GTX 1080 8GB (1607/5005MHz), Audio: NVIDIA GP104 HD Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.10, Kernel: 5.8.0-41-generic (x86_64), Desktop: GNOME Shell 3.38.2, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.39, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.136, Vulkan: 1.2.155, Compiler: GCC 10.2.0 + Clang 11.0.1-1~oibaf~g, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: madvise

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgc-n-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/ur,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v

Processor Notes: Scaling Governor: acpi-cpufreq performance (Boost: Enabled) - CPU Microcode: 0xa201009

OpenCL Notes: GPU Compute Cores: 2560

Python Notes: Python 3.8.6

Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swaps barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

RTX 2060

Processor: AMD Ryzen 9 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (3202 BIOS), Chipset: AMD Starship/Matisse, Memory: 32GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: NVIDIA GeForce RTX 2060 6GB (1365/7000MHz), Audio: NVIDIA TU106 HD Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.10, Kernel: 5.8.0-41-generic (x86_64), Desktop: GNOME Shell 3.38.2, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.39, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.136, Vulkan: 1.2.155, Compiler: GCC 10.2.0 + Clang 11.0.1-1~oibaf~g, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: madvise

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgc-n-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/ur,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v

Processor Notes: Scaling Governor: acpi-cpufreq performance (Boost: Enabled) - CPU Microcode: 0xa201009

OpenCL Notes: GPU Compute Cores: 1920

Python Notes: Python 3.8.6

Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swaps barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

RTX 2060 SUPER

Processor: AMD Ryzen 9 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (3202 BIOS), Chipset: AMD Starship/Matisse, Memory: 32GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: NVIDIA GeForce RTX 2060 SUPER 8GB (390/405MHz), Audio: NVIDIA TU106 HD Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.10, Kernel: 5.8.0-41-generic (x86_64), Desktop: GNOME Shell 3.38.2, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.39, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.136, Vulkan: 1.2.155, Compiler: GCC 10.2.0 + Clang 11.0.1-1~oibaf~g, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: madvise

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgc-n-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v

Processor Notes: Scaling Governor: acpi-cpufreq performance (Boost: Enabled) - CPU Microcode: 0xa201009

OpenCL Notes: GPU Compute Cores: 2176

Python Notes: Python 3.8.6

Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swaps barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

RTX 2070

Processor: AMD Ryzen 9 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (3202 BIOS), Chipset: AMD Starship/Matisse, Memory: 32GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: ASUS NVIDIA GeForce RTX 2070 8GB (1410/7000MHz), Audio: NVIDIA TU106 HD Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.10, Kernel: 5.8.0-41-generic (x86_64), Desktop: GNOME Shell 3.38.2, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.39, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.136, Vulkan: 1.2.155, Compiler: GCC 10.2.0 + Clang 11.0.1-1~oibaf~g, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: madvise

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgc-n-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v

Processor Notes: Scaling Governor: acpi-cpufreq performance (Boost: Enabled) - CPU Microcode: 0xa201009

OpenCL Notes: GPU Compute Cores: 2304

Python Notes: Python 3.8.6

Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swaps barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

RTX 2070 SUPER

Processor: AMD Ryzen 9 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (3202 BIOS), Chipset: AMD Starship/Matisse, Memory: 32GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: NVIDIA GeForce RTX 2070 SUPER 8GB (1605/7000MHz), Audio: NVIDIA TU104 HD Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.10, Kernel: 5.8.0-41-generic (x86_64), Desktop: GNOME Shell 3.38.2, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.39, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.136, Vulkan: 1.2.155, Compiler: GCC 10.2.0 + Clang 11.0.1-1~oibaf~g, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: madvise

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgc-n-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v

Processor Notes: Scaling Governor: acpi-cpufreq performance (Boost: Enabled) - CPU Microcode: 0xa201009

OpenCL Notes: GPU Compute Cores: 2560

Python Notes: Python 3.8.6

Security Notes: itlb_multihit: Not affected + 1tft: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

RTX 2080

Processor: AMD Ryzen 9 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (3202 BIOS), Chipset: AMD Starship/Matisse, Memory: 32GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: Zotac NVIDIA GeForce RTX 2080 8GB (1515/7000MHz), Audio: NVIDIA TU104 HD Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.10, Kernel: 5.8.0-41-generic (x86_64), Desktop: GNOME Shell 3.38.2, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.39, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.136, Vulkan: 1.2.155, Compiler: GCC 10.2.0 + Clang 11.0.1-1~oibaf~g, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: madvise

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdc++-debug --enable-libstdc++-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgc-n-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdc++-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 performance (Boost: Enabled) - CPU Microcode: 0xa201009

OpenCL Notes: GPU Compute Cores: 2944

Python Notes: Python 3.8.6

Security Notes: itlb_multihit: Not affected + 1tft: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

RTX 2080 SUPER

Processor: AMD Ryzen 9 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (3202 BIOS), Chipset: AMD Starship/Matisse, Memory: 32GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: NVIDIA GeForce RTX 2080 SUPER 8GB (1650/7750MHz), Audio: NVIDIA TU104 HD Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.10, Kernel: 5.8.0-41-generic (x86_64), Desktop: GNOME Shell 3.38.2, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.39, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.136, Vulkan: 1.2.155, Compiler: GCC 10.2.0 + Clang 11.0.1-1~oibaf~g, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: madvise

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdc++-debug --enable-libstdc++-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgc-n-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdc++-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 performance (Boost: Enabled) - CPU Microcode: 0xa201009

OpenCL Notes: GPU Compute Cores: 3072

Python Notes: Python 3.8.6

Security Notes: itlb_multihit: Not affected + 1tft: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

RTX 2080 Ti

Processor: AMD Ryzen 9 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (3202 BIOS), Chipset: AMD Starship/Matisse, Memory: 32GB, Disk: 2000GB Corsair Force MP600 +

2000GB, Graphics: NVIDIA GeForce RTX 2080 Ti 11GB (1350/7000MHz), Audio: NVIDIA TU102 HD Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.10, Kernel: 5.8.0-41-generic (x86_64), Desktop: GNOME Shell 3.38.2, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.39, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.136, Vulkan: 1.2.155, Compiler: GCC 10.2.0 + Clang 11.0.1-1~oibaf~g, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: madvise

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdc++-debug --enable-libstdc++-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgc-n-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdc++-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 performance (Boost: Enabled) - CPU Microcode: 0xa201009

OpenCL Notes: GPU Compute Cores: 4352

Python Notes: Python 3.8.6

Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swaps barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

TITAN RTX

Processor: AMD Ryzen 9 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (3202 BIOS), Chipset: AMD Starship/Matisse, Memory: 32GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: NVIDIA TITAN RTX 24GB (390/405MHz), Audio: NVIDIA TU102 HD Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.10, Kernel: 5.8.0-41-generic (x86_64), Desktop: GNOME Shell 3.38.2, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.39, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.136, Vulkan: 1.2.155, Compiler: GCC 10.2.0 + Clang 11.0.1-1~oibaf~g, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: madvise

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdc++-debug --enable-libstdc++-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgc-n-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdc++-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 performance (Boost: Enabled) - CPU Microcode: 0xa201009

OpenCL Notes: GPU Compute Cores: 4608

Python Notes: Python 3.8.6

Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swaps barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

RTX 3060 Ti

Processor: AMD Ryzen 9 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (3202 BIOS), Chipset: AMD Starship/Matisse, Memory: 32GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: NVIDIA GeForce RTX 3060 Ti 8GB (375/5000MHz), Audio: NVIDIA Device 228b, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.10, Kernel: 5.8.0-41-generic (x86_64), Desktop: GNOME Shell 3.38.2, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.39, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.136, Vulkan: 1.2.155, Compiler: GCC 10.2.0 + Clang 11.0.1-1~oibaf~g, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: madvise

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdc++-debug


```
--enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto
--enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgc-n-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/us
r,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64
--with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic
--without-cuda-driver -v
```

Processor Notes: Scaling Governor: acpi-cpufreq performance (Boost: Enabled) - CPU Microcode: 0xa201009

OpenCL Notes: GPU Compute Cores: 4864

Python Notes: Python 3.8.6

Security Notes: itlb_multihit: Not affected + 1tft: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swaps barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

RTX 3080

Processor: AMD Ryzen 9 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (3202 BIOS), Chipset: AMD Starship/Matisse, Memory: 32GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: NVIDIA GeForce RTX 3080 10GB (1710/9501MHz), Audio: NVIDIA Device 1aef, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.10, Kernel: 5.8.0-41-generic (x86_64), Desktop: GNOME Shell 3.38.2, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.39, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.136, Vulkan: 1.2.155, Compiler: GCC 10.2.0 + Clang 11.0.1-1~oibaf~g, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: madvise

```
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie
--enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug
--enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto
--enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgc-n-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/us
r,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64
--with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic
--without-cuda-driver -v
```

Processor Notes: Scaling Governor: acpi-cpufreq performance (Boost: Enabled) - CPU Microcode: 0xa201009

OpenCL Notes: GPU Compute Cores: 8704

Python Notes: Python 3.8.6

Security Notes: itlb_multihit: Not affected + 1tft: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swaps barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

RTX 3090

Processor: AMD Ryzen Threadripper 3960X 24-Core @ 3.80GHz (24 Cores / 48 Threads), Motherboard: ASRock TRX40 Creator v1 (P1.74A BIOS), Chipset: AMD Starship/Matisse, Memory: 64GB, Disk: 1000GB PNY CS3030 1TB SSD, Graphics: Zotac NVIDIA GeForce RTX 3090 24GB, Audio: NVIDIA Device 1aef, Monitor: E241-A1, Network: Aquantia AQC107 NBase-T/IEEE + Realtek RTL8125 2.5GbE + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.04, Kernel: 5.8.0-44-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.39, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.136, Vulkan: 1.2.155, Compiler: GCC 9.3.0 + CUDA 11.1, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: Transparent Huge Pages: madvise

```
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie
--enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch
--enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-9-HskZEa/gcc-9-9.3.0/debian/tmp-nvptx/usr,hsa --enable-plugin
--enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686
--with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
```

Processor Notes: Scaling Governor: acpi-cpufreq ondemand (Boost: Enabled) - CPU Microcode: 0x8301039

OpenCL Notes: GPU Compute Cores: 10496

Security Notes: itlb_multihit: Not affected + 1tft: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swaps barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional STIBP: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

NVIDIA Linux GPU Benchmarks 2021

	GTX 1080	RTX 2060	RTX 2060 SUPER	RTX 2070	RTX 2070 SUPER	RTX 2080	RTX 2080 SUPER	RTX 2080 Ti	TITAN RTX	RTX 3060 Ti	RTX 3080	RTX 3090
Betsy GPU Compressor - ETC1 - Highest (sec)	9.262	6.814	6.032	5.914	5.456	6.098	5.296	3.822	4.046	5.102	3.328	
Normalized	35.93%	48.84%	55.17%	56.27%	61%	54.58%	62.84%	87.07%	82.25%	65.23%	100%	
Standard Deviation	0.2%	1.6%	0.5%	0.9%	0.7%	2.9%	0.9%	2.5%	7.9%	5.7%	1.2%	
Betsy GPU Compressor - ETC2 RGB - Highest (sec)	11.942		8.394	8.342	7.330	7.407	6.831	5.008	5.043	6.851	4.416	
Normalized	36.98%		52.61%	52.94%	60.25%	59.62%	64.65%	88.18%	87.57%	64.46%	100%	
Standard Deviation	0.5%		0.2%	1.1%	0.3%	1.2%	0.1%	0.2%	6.2%	1.2%	0.4%	
Chaos Group V-RAY - NVIDIA RTX GPU (vrays)		659	733	713	977	892	905	1246	1295	1546	2183	
Normalized		30.19%	33.58%	32.66%	44.75%	40.86%	41.46%	57.08%	59.32%	70.82%	100%	
Standard Deviation		0.4%		0.2%		0.3%	0.2%		0%		0.5%	
Chaos Group V-RAY - NVIDIA CUDA GPU (vpaths)	389	473	492	480	785	730	742	926	936	1180	1666	
Normalized	23.35%	28.39%	29.53%	28.81%	47.12%	43.82%	44.54%	55.58%	56.18%	70.83%	100%	
Standard Deviation	0.3%	0.1%	0.1%		0.1%		0.1%	0.1%			0.1%	
Darktable - Boat - OpenCL (sec)	14.699	14.426	1.716	14.456	1.709	14.793	1.591	1.485	1.489	14.484	1.282	
Normalized	8.72%	8.89%	74.71%	8.87%	75.01%	8.67%	80.58%	86.33%	86.1%	8.85%	100%	
Standard Deviation	0.2%	0.2%	0.5%	0.3%	0.8%	0.2%	0.8%	1.2%	1.5%	0.4%	0.8%	
Darktable - Masskrug - OpenCL (sec)	5.924	5.851	2.118	5.853	2.156	6.031	2.169	2.084	2.184	5.903	2.090	
Normalized	35.18%	35.62%	98.39%	35.61%	96.66%	34.55%	96.08%	100%	95.42%	35.3%	99.71%	
Standard Deviation	0.1%	0.3%	0.2%	0.1%	0.6%	0.6%	0.8%	0.5%	2.4%	0.2%	0.5%	
Darktable - Server Rack - OpenCL (sec)	0.185	0.190	0.097	0.182	0.097	0.193	0.097	0.096	0.105	0.191	0.095	
Normalized	51.35%	50%	97.94%	52.2%	97.94%	49.22%	97.94%	98.96%	90.48%	49.74%	100%	
Standard Deviation	1.1%	0.5%	1.2%	0.6%	1.8%	0.5%	1%	0.6%	7.5%	1.3%	0%	
Darktable - Server Room - OpenCL (sec)	5.889	5.765	0.723	5.776	0.776	5.892	0.756	0.710	0.723	5.808	0.706	
Normalized	11.99%	12.25%	97.65%	12.22%	90.98%	11.98%	93.39%	99.44%	97.65%	12.16%	100%	
Standard Deviation	0.3%	0.2%	0.5%	0.1%	0.8%	0.1%	1%	1.7%	5.8%	0.4%	0.2%	
FAHBench (Ns/Day)	150.945	184.155	208.707	206.032	232.777	236.814	257.989	307.202	308.155	235.614	321.998	
Normalized	0	5	5	1	5	5	6	8	5	9	6	
Standard Deviation	46.88%	57.19%	64.82%	63.99%	72.29%	73.55%	80.12%	95.41%	95.7%	73.17%	100%	
Standard Deviation	0.2%	0.3%	0.4%	0.4%	0.6%	0.8%	0.4%	0.5%	0.4%	0.4%	0.3%	

NVIDIA Linux GPU Benchmarks 2021

FinanceBench - Monte-Carlo OpenCL (ms)	1834	1060	752.413	781.941	816.009	824.735	843.452	649.820	558.330	463.014	386.046
Normalized	21.05%	36.42%	51.31%	49.37%	47.31%	46.81%	45.77%	59.41%	69.14%	83.38%	100%
Standard Deviation	0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.7%	0.5%
FinanceBench - B.S.O (ms)	11.099	19.832	16.4863	16.097	12.804	12.161	10.610	9.226	8.757	12.957	7.307
Normalized	65.83%	36.84%	44.32%	45.39%	57.07%	60.09%	68.87%	79.2%	83.44%	56.39%	100%
Standard Deviation	2.3%	0.8%	2.1%	1%	1.1%	2.4%	2.4%	0.3%	0.1%	0.1%	0.3%
Hashcat - MD5 (H/s)	240181	259167	292802	299422	353981	376934	423930	552981	580785	329371	560396
Normalized	25.33%	27.33%	30.87%	31.57%	37.32%	39.74%	44.7%	58.31%	61.24%	34.73%	59.09%
Standard Deviation	0.2%	0.1%	0.1%	0.1%	0.1%	0.3%	0.2%	0.1%	0.2%	0.1%	0.2%
Hashcat - SHA1 (H/s)	827883	825126	934176	951600	111214	119952	134204	177184	186088	110832	190988
Normalized	19.4%	19.33%	21.89%	22.3%	26.06%	28.1%	31.44%	41.51%	43.6%	25.97%	44.75%
Standard Deviation	0%	0.1%	0.1%	0.1%	0.2%	0.2%	0%	0.3%	0.2%	0.3%	0.2%
Hashcat - 7-Zip (H/s)	364000	442667	495567	503967	596367	625133	692500	894867	947467	588367	990567
Normalized	16.8%	20.43%	22.87%	23.26%	27.53%	28.85%	31.96%	41.31%	43.73%	27.16%	45.72%
Standard Deviation	0.2%	0.2%	0.4%	0.1%	0.3%	0.4%	1.7%	0.4%	0.2%	0.6%	0.3%
Hashcat - SHA-512 (H/s)	863260	105003	118793	121323	142420	153136	170843	223926	235176	141273	242040
Normalized	14.26%	17.34%	19.62%	20.03%	23.52%	25.29%	28.21%	36.98%	38.84%	23.33%	39.97%
Standard Deviation	5%	0.2%	0.1%	0.2%	0.2%	0.1%	0.2%	0.1%	0.1%	0.1%	0.2%
Hashcat - T.R.X (H/s)	266267	310833	351200	358367	426200	451667	520673	657067	687067	427233	721867
Normalized	16.73%	19.53%	22.07%	22.52%	26.78%	28.38%	32.72%	41.29%	43.18%	26.85%	45.36%
Standard Deviation	0.4%	0.2%	0.1%	0.1%	0.1%	0.4%	3.2%	0.2%	0.4%	0.3%	0.1%
IndigoBench - OpenCL GPU - Bedroom (M samples/s)	4.436	5.591	7.392	7.398	7.776	7.640	7.845	11.012	11.650	11.421	17.650
Normalized	25.13%	31.68%	41.88%	41.92%	44.06%	43.29%	44.45%	62.39%	66.01%	64.71%	100%
Standard Deviation	0.1%	0.1%	0.3%	0.2%	0.1%	0.1%	0%	0.2%	0.1%	0.3%	0.4%
IndigoBench - OpenCL GPU - Supercar (M samples/s)	13.900	18.400	23.311	23.419	24.706	24.458	25.326	33.236	35.280	33.876	46.405
Normalized	29.95%	39.65%	50.23%	50.47%	53.24%	52.71%	54.58%	71.62%	76.03%	73%	100%
Standard Deviation	0%	0.2%	0%	0%	0.1%	0.1%	0.2%	0.1%	0.2%	0.2%	0.1%
NAMD CUDA - ATPase Simulation - 327,506 Atoms (days/ns)	0.19282	0.17213	0.15857	0.15679	0.14823	0.15074	0.14894	0.14084	0.14029	0.13664	0.13291
Normalized	68.93%	77.21%	83.82%	84.77%	89.66%	88.17%	89.24%	94.37%	94.74%	97.27%	100%
Standard Deviation	0.2%	0.9%	0.3%	0.5%	0.4%	0.7%	0.6%	0.1%	0.5%	0.5%	1.7%

NVIDIA Linux GPU Benchmarks 2021

OctaneBench -	131.138	195.070	241.445	244.679	261.261	256.387	262.843	358.549	383.258	383.446	562.818
Total Score (Score)	381	769	325	189	302	918	677	904	253	01	641
Normalized	23.3%	34.66%	42.9%	43.47%	46.42%	45.55%	46.7%	63.71%	68.1%	68.13%	100%
ParaView - Many Spheres - 1920 x 1080 (Frames / Sec)	50.74	39.85	38.15	38.95	44.88	49.97	54.32	74.50	134.22	44.79	78.21
Normalized	37.8%	29.69%	28.42%	29.02%	33.44%	37.23%	40.47%	55.51%	100%	33.37%	58.27%
Standard Deviation	0.3%	0.2%	0.4%	0.3%	0.4%	0.4%	0.5%	0.4%	0.9%	0%	0.4%
ParaView - Many Spheres - 1920 x 1080 (MiPolys / Sec)	5087	3995	3825	3905	4499	5009	5446	7469	13456	4491	7841
Normalized	37.8%	29.69%	28.42%	29.02%	33.44%	37.23%	40.47%	55.51%	100%	33.37%	58.27%
Standard Deviation	0.3%	0.2%	0.4%	0.3%	0.4%	0.4%	0.5%	0.4%	0.9%	0%	0.4%
ParaView - Many Spheres - 3840 x 2160 (Frames / Sec)	48.26	38.06	37.39	38.23	43.96	48.65	53.10	72.78	120.53	44.47	76.61
Normalized	40.04%	31.58%	31.02%	31.72%	36.47%	40.36%	44.06%	60.38%	100%	36.9%	63.56%
Standard Deviation	0.1%	0%	0.1%	0.2%	0.1%	0.2%	0%	0.2%	0.7%	0.1%	0.3%
ParaView - Many Spheres - 3840 x 2160 (MiPolys / Sec)	4839	3815	3749	3833	4407	4877	5323	7297	12084	4458	7681
Normalized	40.04%	31.57%	31.02%	31.72%	36.47%	40.36%	44.05%	60.38%	100%	36.89%	63.56%
Standard Deviation	0.1%	0%	0.1%	0.2%	0.1%	0.2%	0.1%	0.2%	0.7%	0.1%	0.3%
ParaView - Wavelet Volume - 1920 x 1080 (Frames / Sec)	455.99	392.77	426.74	432.52	482.20	501.74	534.48	600.41	521.64	494.10	662.92
Normalized	68.79%	59.25%	64.37%	65.24%	72.74%	75.69%	80.63%	90.57%	78.69%	74.53%	100%
Standard Deviation	0.8%	0.9%	0.7%	0.9%	0.5%	2.4%	0.3%	1.3%	9.9%	0.9%	0.6%
ParaView - Wavelet Volume - 1920 x 1080 (MiVoxels / Sec)	7296	6284	6828	6920	7715	8028	8552	9607	8346	7906	10607
Normalized	68.78%	59.25%	64.37%	65.24%	72.74%	75.69%	80.63%	90.57%	78.69%	74.53%	100%
Standard Deviation	0.8%	0.9%	0.7%	0.9%	0.5%	2.4%	0.3%	1.3%	9.9%	0.9%	0.6%
ParaView - Wavelet Volume - 3840 x 2160 (Frames / Sec)	195.38	156.50	177.97	181.23	205.52	225.60	240.83	308.48	302.24	217.09	339.42
Normalized	57.56%	46.11%	52.43%	53.39%	60.55%	66.47%	70.95%	90.88%	89.05%	63.96%	100%
Standard Deviation	0.8%	0.4%	0.2%	0.4%	0.4%	0.5%	0.6%	1%	6.5%	0.7%	0.7%

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ParaView - Wavelet Volume - 3840 x 2160 (MiVoxels / Sec)	3126	2504	2847	2900	3288	3610	3853	4936	4836	3473	5431
Normalized	57.56%	46.11%	52.43%	53.39%	60.55%	66.47%	70.96%	90.89%	89.05%	63.96%	100%
Standard Deviation	0.8%	0.4%	0.2%	0.4%	0.4%	0.5%	0.6%	1%	6.5%	0.7%	0.7%
ParaView - Wavelet Contour - 1920 x 1080 (Frames / Sec)	267.02	259.79	274.70	272.41	354.21	367.84	405.49	450.11	543.16	300.98	515.65
Normalized	49.16%	47.83%	50.57%	50.15%	65.21%	67.72%	74.65%	82.87%	100%	55.41%	94.94%
Standard Deviation	1.2%	1.3%	0.9%	0.7%	0.5%	4.2%	1.5%	0.3%	0.6%	0.7%	1.2%
ParaView - Wavelet Contour - 1920 x 1080 (MiPolys / Sec)	2783	2707	2863	2839	3691	3833	4226	4691	5660	3137	5374
Normalized	49.16%	47.83%	50.57%	50.15%	65.21%	67.72%	74.65%	82.87%	100%	55.41%	94.93%
Standard Deviation	1.2%	1.3%	0.9%	0.7%	0.5%	4.2%	1.5%	0.3%	0.6%	0.7%	1.2%
ParaView - Wavelet Contour - 3840 x 2160 (Frames / Sec)	175.05	165.97	178.45	176.17	220.65	225.83	251.05	293.63	307.80	222.19	333.82
Normalized	52.44%	49.72%	53.46%	52.77%	66.1%	67.65%	75.21%	87.96%	92.21%	66.56%	100%
Standard Deviation	1.9%	0.5%	1.2%	0.4%	0.9%	2.9%	2.4%	0.7%	3.8%	0.4%	3.2%
ParaView - Wavelet Contour - 3840 x 2160 (MiPolys / Sec)	1824	1730	1860	1836	2299	2353	2616	3060	3208	2316	3479
Normalized	52.44%	49.72%	53.46%	52.77%	66.1%	67.65%	75.2%	87.96%	92.2%	66.56%	100%
Standard Deviation	1.9%	0.5%	1.2%	0.4%	0.9%	2.9%	2.4%	0.7%	3.8%	0.4%	3.2%
Ray Tracing In Vulkan - 1920 x 1080 - Cornell Box (FPS)	5.47352	45.9973	52.1534	52.8109	61.7059	67.9307	75.2446	102.060	106.170	67.8041	117.919
Normalized	4.64%	39.01%	44.23%	44.79%	52.33%	57.61%	63.81%	86.55%	90.04%	57.5%	100%
Standard Deviation	0%	0.3%	0%	0%	0.3%	0.8%	0%	0.2%	0%	0.2%	0.1%
Ray Tracing In Vulkan - 1920 x 1200 - Cornell Box (FPS)	4.46278	37.8297	42.9372	43.6675	50.7312	55.2715	61.6809	84.0012	87.4715	55.3943	97.1997
Normalized	4.59%	38.92%	44.17%	44.93%	52.19%	56.86%	63.46%	86.42%	89.99%	56.99%	100%
Standard Deviation	0%	0.5%	0%	0.1%	0.1%	0.5%	0%	0.1%	0%	0%	0.1%
Ray Tracing In Vulkan - 2560 x 1440 - Cornell Box (FPS)	3.11507	26.4615	29.8870	30.4928	35.2750	38.7120	42.8800	57.9535	60.1276	38.7543	67.4759
Normalized	4.62%	39.22%	44.29%	45.19%	52.28%	57.37%	63.55%	85.89%	89.11%	57.43%	100%
Standard Deviation	0%	0.2%	0.2%	0%	0%	0.5%	0%	0.1%	0.4%	0%	0.5%

NVIDIA Linux GPU Benchmarks 2021

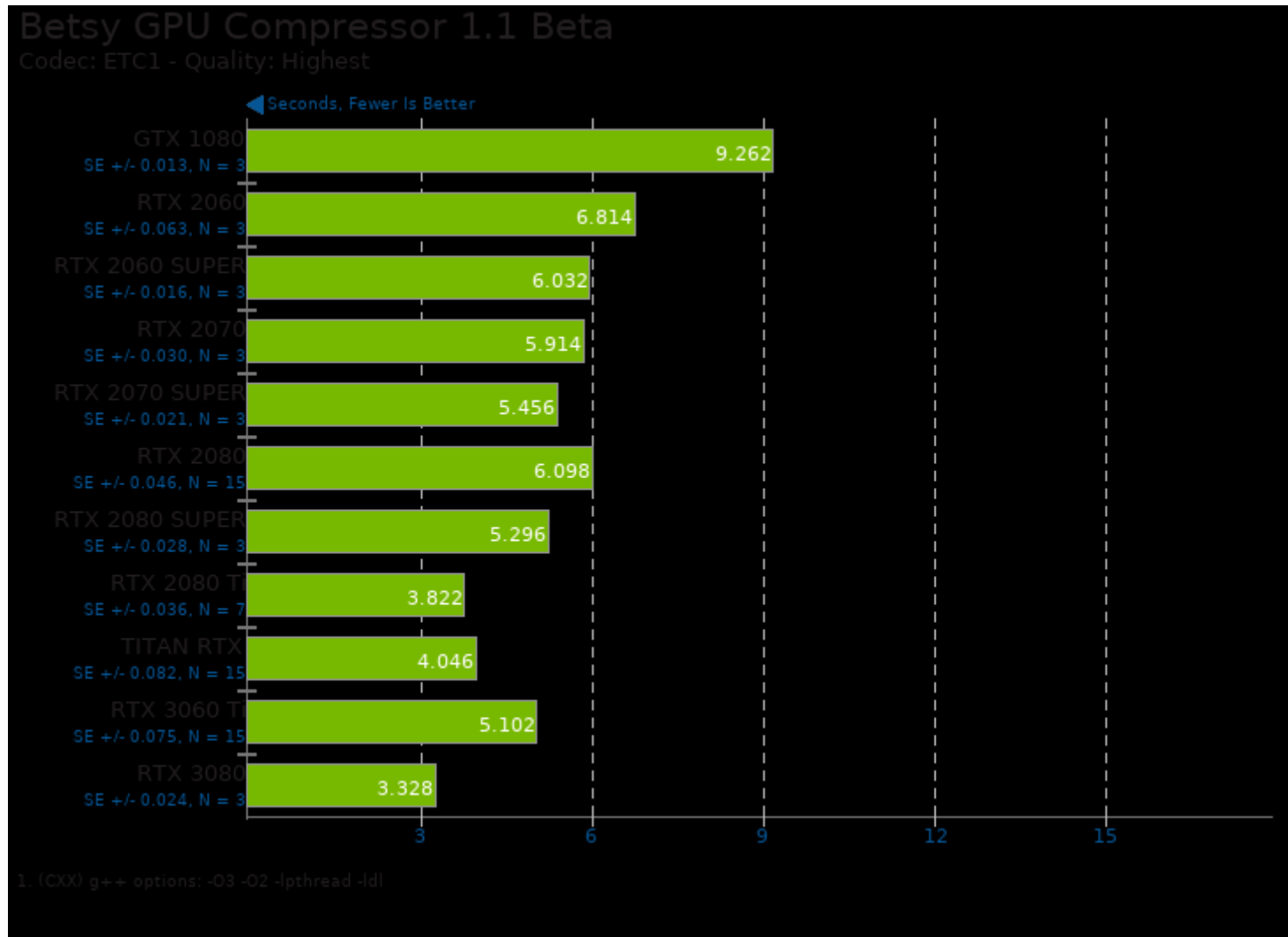
Ray Tracing In Vulkan - 3840 x 2160 - Cornell Box (FPS)	1.47529	12.1010	14.1848	13.8708	16.7912	18.4929	20.3361	27.5750	28.8574	18.4933	31.9668
Normalized	4.62%	37.85%	44.37%	43.39%	52.53%	57.85%	63.62%	86.26%	90.27%	57.85%	100%
Standard Deviation	0%	14.2%	0%	16.5%	0%	0.5%	0%	0.1%	0.1%	0.1%	0%
Ray Tracing In Vulkan - 1920 x 1080 - Cornell Box + Lucy	1.96057	17.0458	21.8369	22.1751	24.5964	24.8550	25.7529	37.7862	39.9035	34.1786	59.0920
Normalized	3.32%	28.85%	36.95%	37.53%	41.62%	42.06%	43.58%	63.94%	67.53%	57.84%	100%
Standard Deviation	0%	0%	0.2%	0.1%	0.1%	0.4%	0.2%	0.3%	0.1%	0.2%	0.3%
Ray Tracing In Vulkan - 1920 x 1200 - Cornell Box + Lucy	1.59142	13.9785	17.8450	18.0821	20.0635	20.3702	21.1197	31.0242	32.6436	27.9662	48.4290
Normalized	3.29%	28.86%	36.85%	37.34%	41.43%	42.06%	43.61%	64.06%	67.41%	57.75%	100%
Standard Deviation	0.3%	0.3%	0.1%	0.3%	0.3%	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%
Ray Tracing In Vulkan - 2560 x 1440 - Cornell Box + Lucy	1.10882	9.77161	12.4373	12.7161	14.1030	14.3634	14.8708	21.8005	23.0031	19.5707	33.9422
Normalized	3.27%	28.79%	36.64%	37.46%	41.55%	42.32%	43.81%	64.23%	67.77%	57.66%	100%
Standard Deviation	0.4%	0.3%	0.3%	0.3%	0.1%	0.2%	0.1%	0.2%	0.1%	0.1%	0.1%
Ray Tracing In Vulkan - 3840 x 2160 - Cornell Box + Lucy	0.52251	4.69217	5.97602	6.08705	6.77717	6.92702	7.14784	10.5369	11.1440	9.39923	16.4413
Normalized	3.18%	28.54%	36.35%	37.02%	41.22%	42.13%	43.47%	64.09%	67.78%	57.17%	100%
Standard Deviation	0%	0.5%	0.1%	0.1%	0.3%	0.1%	0.1%	0.1%	0.2%	0.2%	0.1%
Ray Tracing In Vulkan - 1920 x 1080 - L.I.O.W (FPS)	3.05130	18.7946	23.3070	23.6611	26.2753	27.1444	28.4471	40.4178	42.4781	33.8326	57.8223
Normalized	5.28%	32.5%	40.31%	40.92%	45.44%	46.94%	49.2%	69.9%	73.46%	58.51%	100%
Standard Deviation	0%	0.4%	0.3%	0.1%	0.1%	0.2%	0.2%	0.1%	0.1%	0.2%	0.5%
Ray Tracing In Vulkan - 1920 x 1200 - L.I.O.W (FPS)	2.63553	16.2549	20.1725	20.5090	22.7902	23.5628	24.5890	35.0178	36.7819	29.2143	48.6939
Normalized	5.41%	33.38%	41.43%	42.12%	46.8%	48.39%	50.5%	71.91%	75.54%	60%	100%
Standard Deviation	0%	0.3%	0.1%	0.1%	0.1%	0%	0.1%	0.1%	0.2%	0.2%	0.1%
Ray Tracing In Vulkan - 2560 x 1440 - L.I.O.W (FPS)	1.78979	11.1374	13.7568	13.9933	15.6550	16.3257	17.1498	24.3719	25.5978	19.5562	33.0545
Normalized	5.41%	33.69%	41.62%	42.33%	47.36%	49.39%	51.88%	73.73%	77.44%	59.16%	100%
Standard Deviation	0%	0%	0%	0.1%	0%	0.2%	0.1%	0.2%	0.1%	0.3%	0.1%

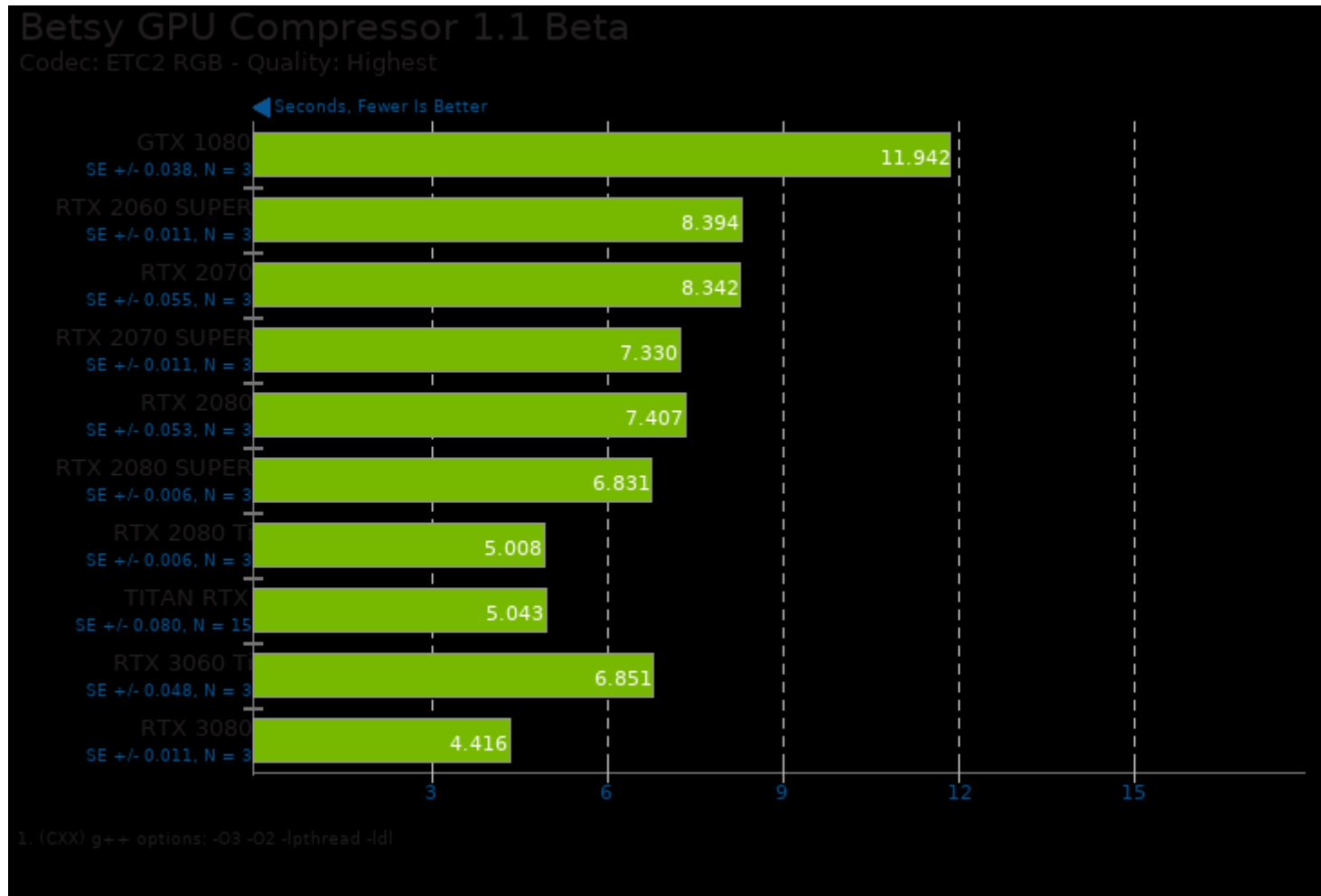
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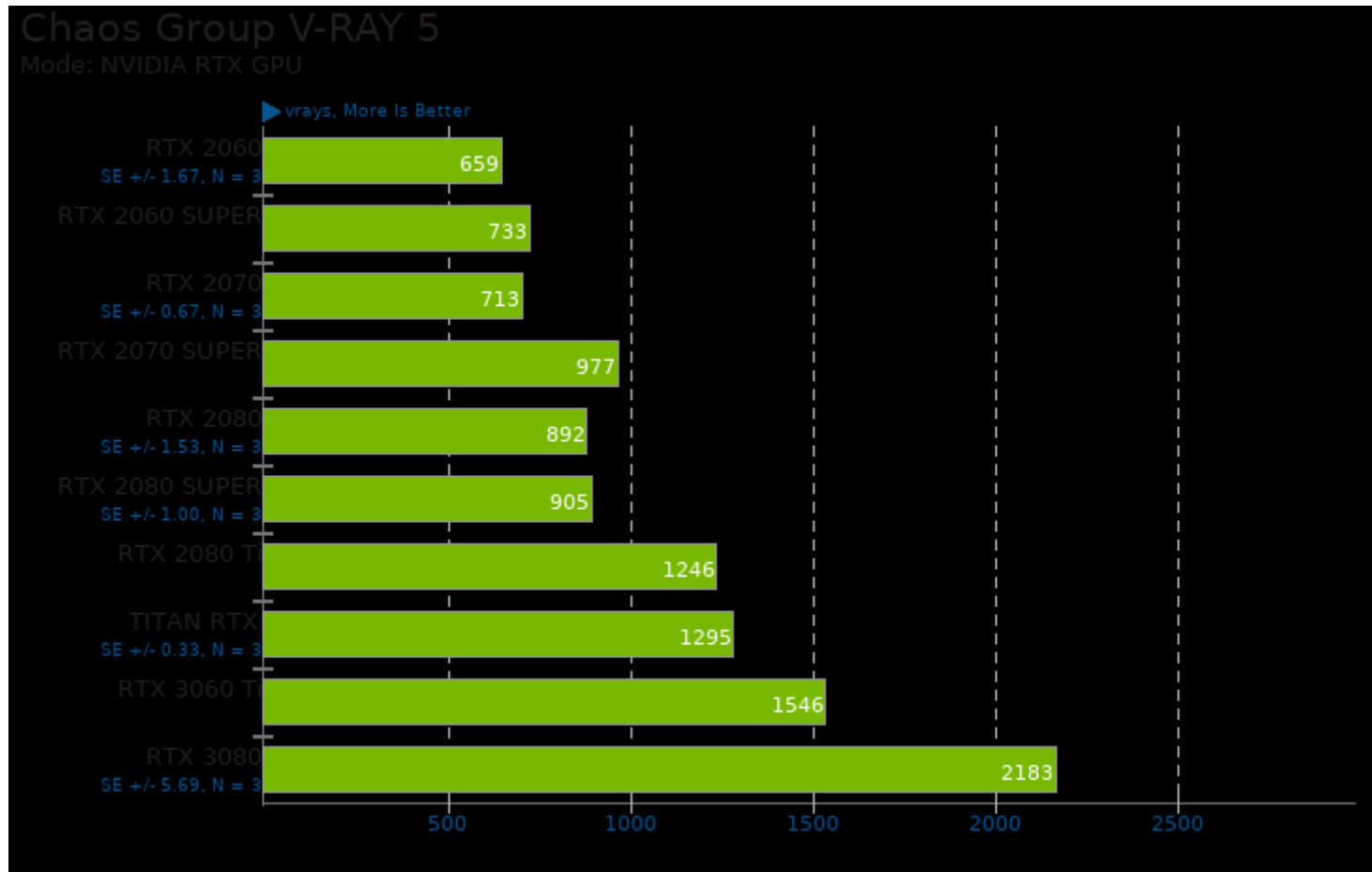
Ray Tracing In Vulkan - 3840 x 2160 - L.I.O.W (FPS)	0.87095	5.62478	6.87206	7.01641	7.93153	8.34534	8.82616	12.4673	13.0878	9.63553	16.4312
Normalized	5.3%	34.23%	41.82%	42.7%	48.27%	50.79%	53.72%	75.88%	79.65%	58.64%	100%
Standard Deviation	0%	0%	0.1%	0.1%	0%	0.1%	0.1%	0.1%	0.2%	0.4%	0.1%
Ray Tracing In Vulkan - 1920 x 1080 - P.I.O.W (FPS)	5.39064	30.0639	33.8886	34.4011	39.9825	44.0053	48.3452	64.4970	67.1617	36.8359	63.7969
Normalized	8.03%	44.76%	50.46%	51.22%	59.53%	65.52%	71.98%	96.03%	100%	54.85%	94.99%
Standard Deviation	0%	0.1%	0%	0%	0%	0%	0%	0.6%	0.3%	0%	0.3%
Ray Tracing In Vulkan - 1920 x 1200 - P.I.O.W (FPS)	4.82227	26.7578	30.1809	30.6556	35.4654	39.0657	43.0463	57.4290	59.9530	32.7530	57.1482
Normalized	8.04%	44.63%	50.34%	51.13%	59.16%	65.16%	71.8%	95.79%	100%	54.63%	95.32%
Standard Deviation	0%	0.4%	0%	0.1%	0%	0%	0%	0.1%	0%	0.2%	0.5%
Ray Tracing In Vulkan - 2560 x 1440 - P.I.O.W (FPS)	3.08659	17.1543	19.3343	19.6296	22.7453	25.1104	27.5123	36.7571	38.4624	21.0674	36.5362
Normalized	8.02%	44.6%	50.27%	51.04%	59.14%	65.29%	71.53%	95.57%	100%	54.77%	94.99%
Standard Deviation	0%	0.4%	0%	0.1%	0%	0%	0%	0.1%	0.1%	0%	0.1%
Ray Tracing In Vulkan - 3840 x 2160 - P.I.O.W (FPS)	1.46788	8.12923	9.17886	9.33677	10.8262	12.0172	13.1467	17.6370	18.4455	10.0316	17.5512
Normalized	7.96%	44.07%	49.76%	50.62%	58.69%	65.15%	71.27%	95.62%	100%	54.39%	95.15%
Standard Deviation	0.3%	0.4%	0.2%	0%	0%	0%	0%	0.1%	0%	0%	0.1%
Ray Tracing In Vulkan - 1920 x 1080 - R.T.I.O.W (FPS)	5.24630	29.6042	33.2083	33.7982	39.1433	43.1016	47.5230	63.3046	66.1316	36.0726	62.7312
Normalized	7.93%	44.77%	50.22%	51.11%	59.19%	65.18%	71.86%	95.73%	100%	54.55%	94.86%
Standard Deviation	0%	0.4%	0%	0.5%	0%	0%	0%	0.4%	0.3%	0%	0.6%
Ray Tracing In Vulkan - 1920 x 1200 - R.T.I.O.W (FPS)	4.68250	26.1751	29.4861	29.9717	34.6587	38.2012	42.0649	56.2395	58.7452	31.9772	55.5417
Normalized	7.97%	44.56%	50.19%	51.02%	59%	65.03%	71.61%	95.73%	100%	54.43%	94.55%
Standard Deviation	0%	0.4%	0.1%	0%	0%	0%	0.1%	0.2%	0.2%	0%	0.1%
Ray Tracing In Vulkan - 2560 x 1440 - R.T.I.O.W (FPS)	3.00195	16.8579	18.9526	19.2381	22.2612	24.5924	26.9538	36.0794	37.7246	20.5886	35.6185
Normalized	7.96%	44.69%	50.24%	51%	59.01%	65.19%	71.45%	95.64%	100%	54.58%	94.42%
Standard Deviation	0%	0.4%	0%	0%	0%	0%	0%	0.1%	0%	0%	0%

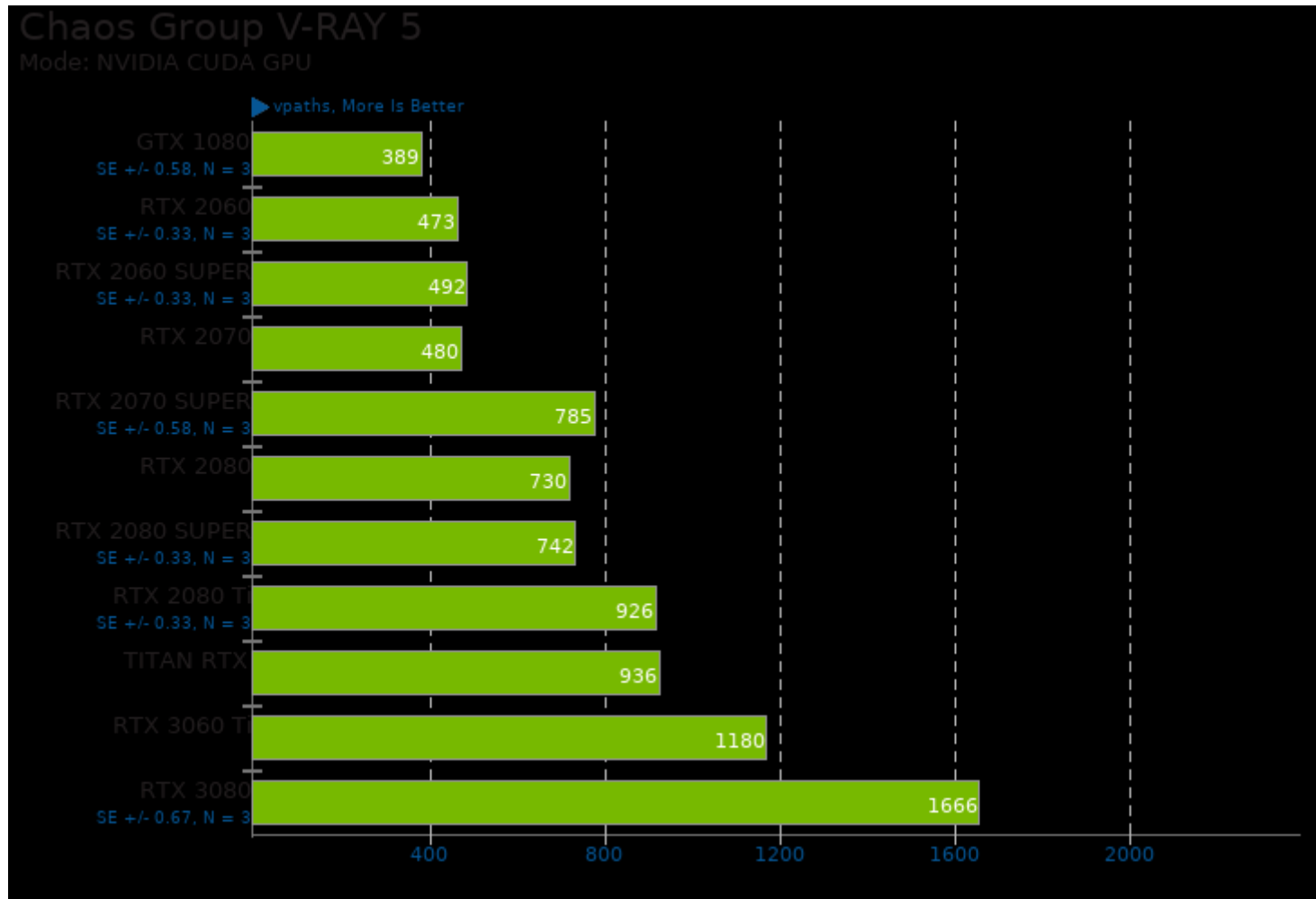
NVIDIA Linux GPU Benchmarks 2021

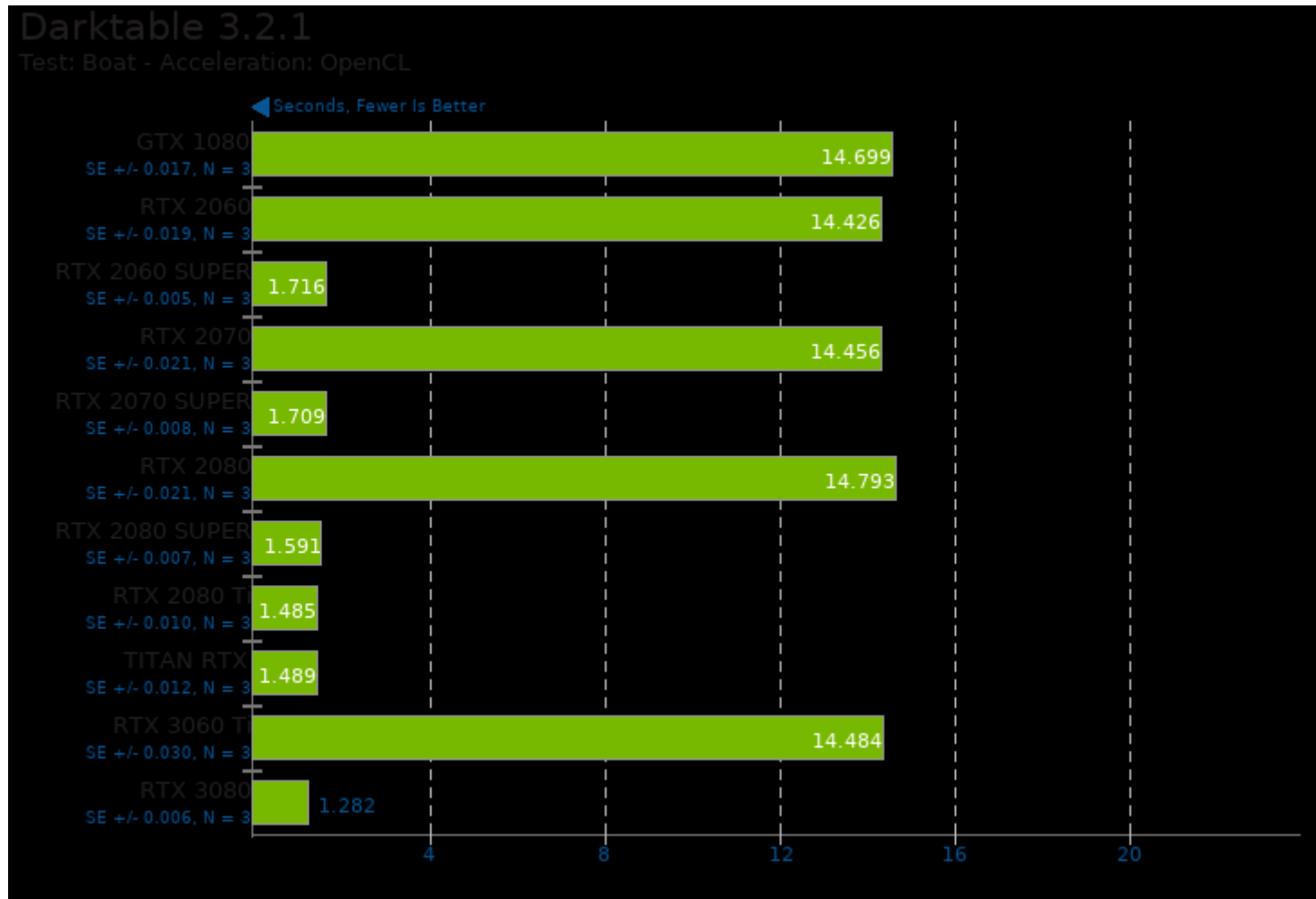
Ray Tracing In Vulkan - 3840 x 2160 - R.T.I.O.W (FPS)	1.42723	7.98707	8.99633	9.16797	10.6371	11.7571	12.8719	17.3073	18.1051	9.80246	17.1359	
Normalized	7.88%	44.12%	49.69%	50.64%	58.75%	64.94%	71.1%	95.59%	100%	54.14%	94.65%	
Standard Deviation	0.3%	0.4%	0%	0.4%	0.4%	0%	0%	0.1%	0.2%	0%	0%	
RealSR-NCNN - 4x - No (sec)	15.657	12.644	11.501	11.179	9.901	9.411	9.010	7.506	7.256	8.703	6.250	6.785
Normalized	39.92%	49.43%	54.34%	55.91%	63.12%	66.41%	69.37%	83.27%	86.14%	71.81%	100%	92.11%
Standard Deviation	0.8%	1.3%	2.3%	1.1%	0.7%	2.4%	10%	1.3%	2.4%	1%	1.2%	0.6%
RealSR-NCNN - 4x - Yes (sec)	110.233	85.402	75.755	74.526	63.020	60.264	54.895	43.816	41.729	53.801	34.114	32.163
Normalized	29.18%	37.66%	42.46%	43.16%	51.04%	53.37%	58.59%	73.4%	77.08%	59.78%	94.28%	100%
Standard Deviation	0.2%	0.7%	0.7%	1.1%	0.8%	0.9%	0.5%	0.9%	0.9%	0.4%	0.4%	0.3%
RedShift Demo (sec)	749	469	379	374	348	346	328	246	236	240	164	
Normalized	21.9%	34.97%	43.27%	43.85%	47.13%	47.4%	50%	66.67%	69.49%	68.33%	100%	
Standard Deviation	0.4%	0.2%	0.3%	0.5%	0.2%	0.4%		0.2%		0.4%		
VkFFT (Benchmark Score)	22178	23484	31000	30922	32063	32463	34719	42152	44769	35207	56583	40226
Normalized	39.2%	41.5%	54.79%	54.65%	56.67%	57.37%	61.36%	74.5%	79.12%	62.22%	100%	71.09%
Standard Deviation	0%	0%	0%	0.2%	0.7%	0%	0%	0.5%	0.2%	0.4%	0.1%	1.7%
VkResample - 2x - Double (ms)	253.613	344.554	309.185	301.682	262.249	236.786	217.311	155.743	148.615	262.937	148.005	128.244
Normalized	50.57%	37.22%	41.48%	42.51%	48.9%	54.16%	59.01%	82.34%	86.29%	48.77%	86.65%	100%
Standard Deviation	0.1%	0.3%	0.1%	0.2%	0.4%	0.1%	0.4%	0.1%	0.1%	0.1%	0.1%	0.1%
VkResample - 2x - Single (ms)	29.865	27.079	22.234	22.204	19.469	19.298	17.779	14.780	13.533	17.643	11.232	9.344
Normalized	31.29%	34.51%	42.03%	42.08%	47.99%	48.42%	52.56%	63.22%	69.05%	52.96%	83.19%	100%
Standard Deviation	0%	0.2%	0.2%	0.2%	0.1%	0.1%	0.3%	0.4%	0.3%	0.2%	0.3%	0.1%
Waifu2x-NCNN Vulkan - 2x - 3 - Yes (sec)	6.368	5.771	5.262	5.275	4.689	4.612	4.347	3.776	3.812	4.360	3.439	3.836
Normalized	54%	59.59%	65.36%	65.19%	73.34%	74.57%	79.11%	91.08%	90.22%	78.88%	100%	89.65%
Standard Deviation	2.3%	1.9%	2.2%	2.4%	0.6%	2.3%	0.8%	0.5%	2.4%	0.3%	0.3%	0.1%

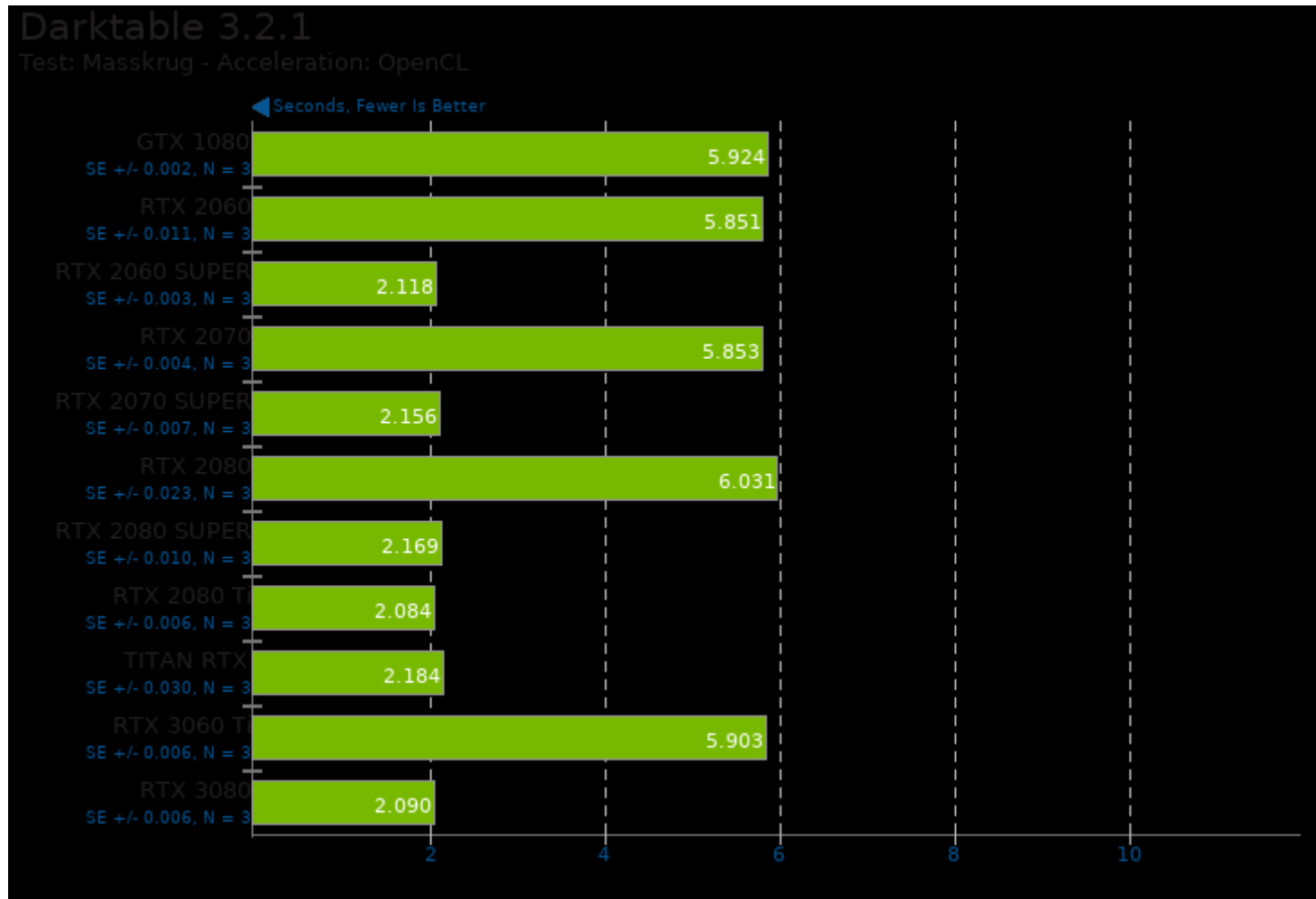


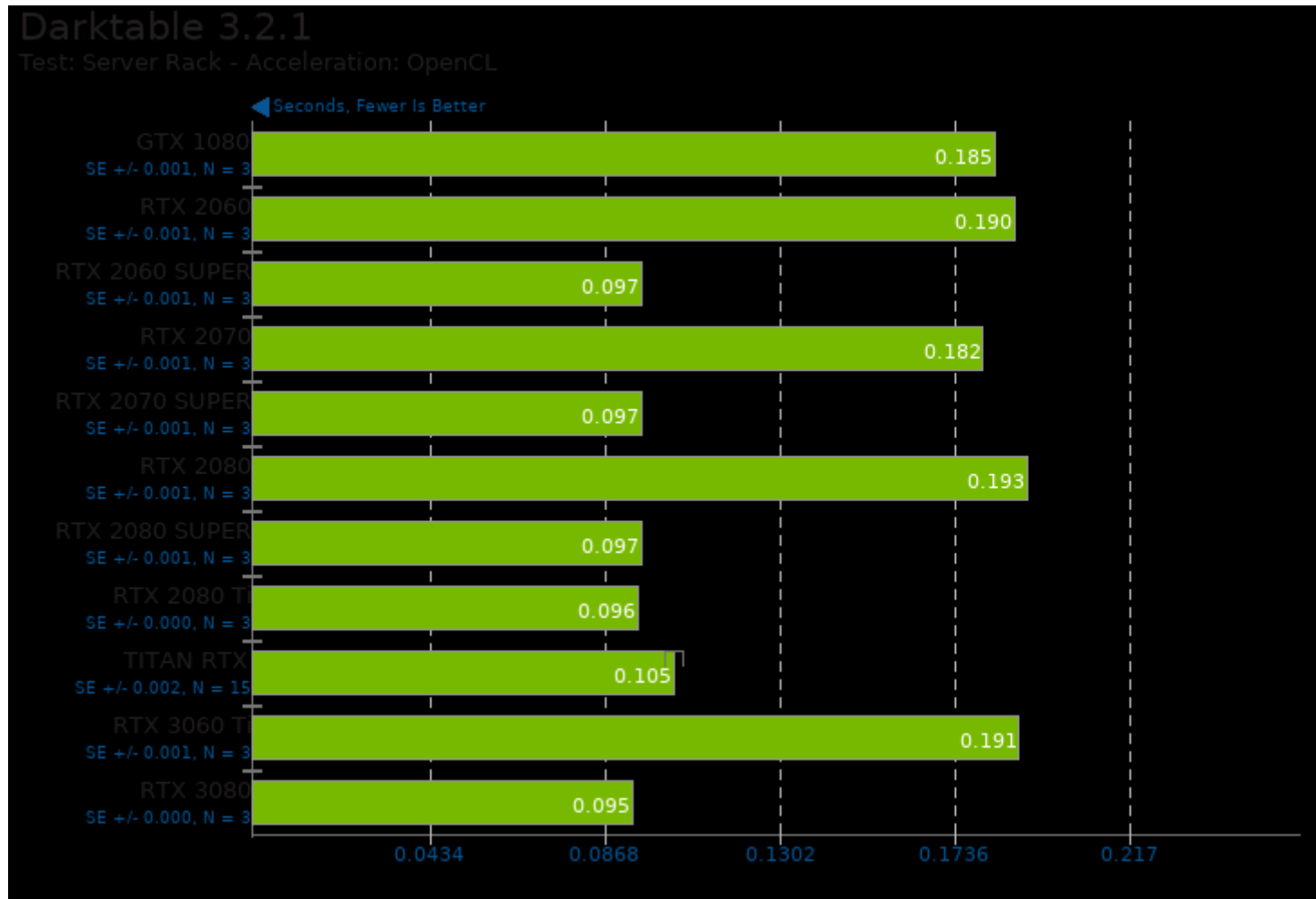


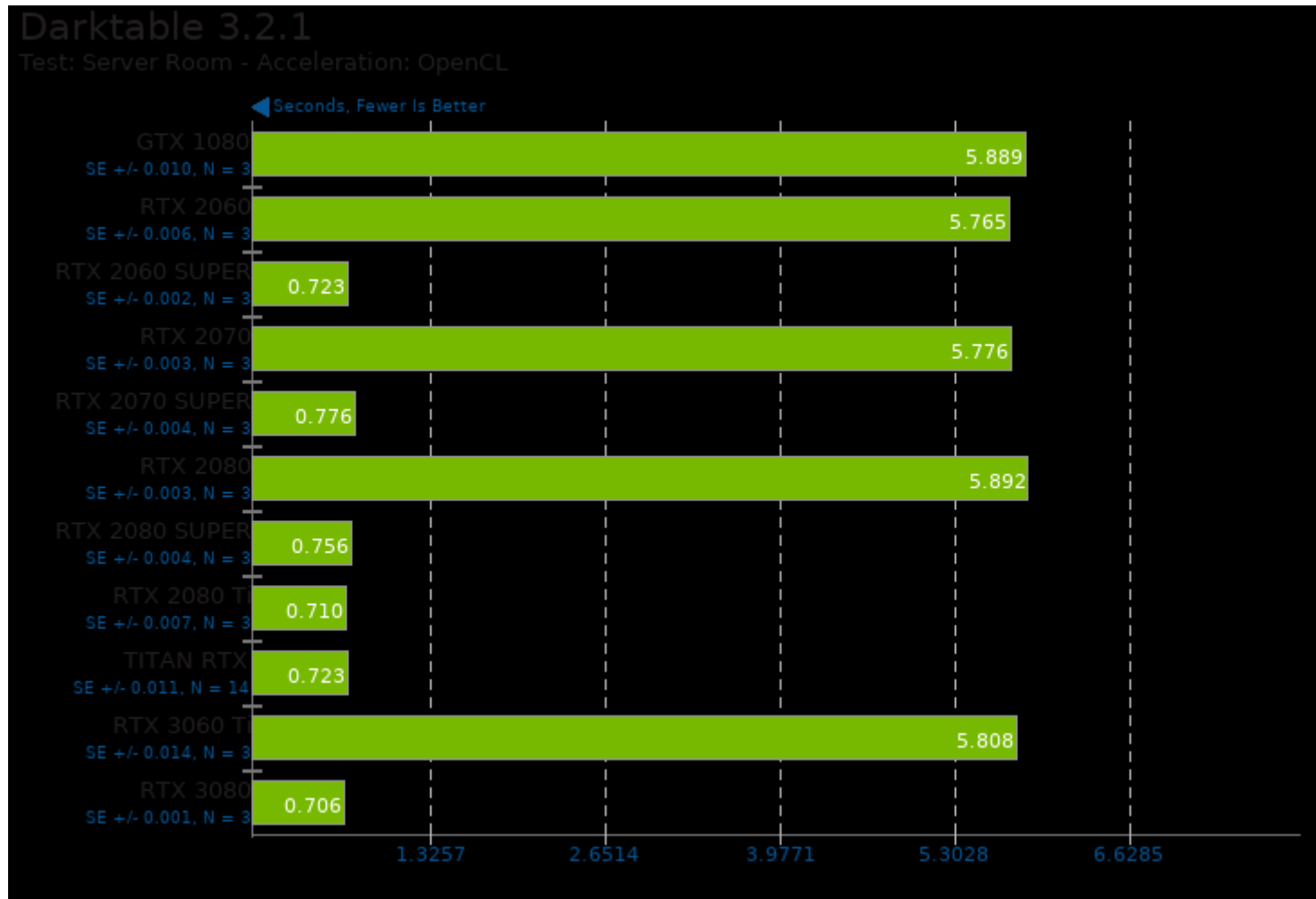


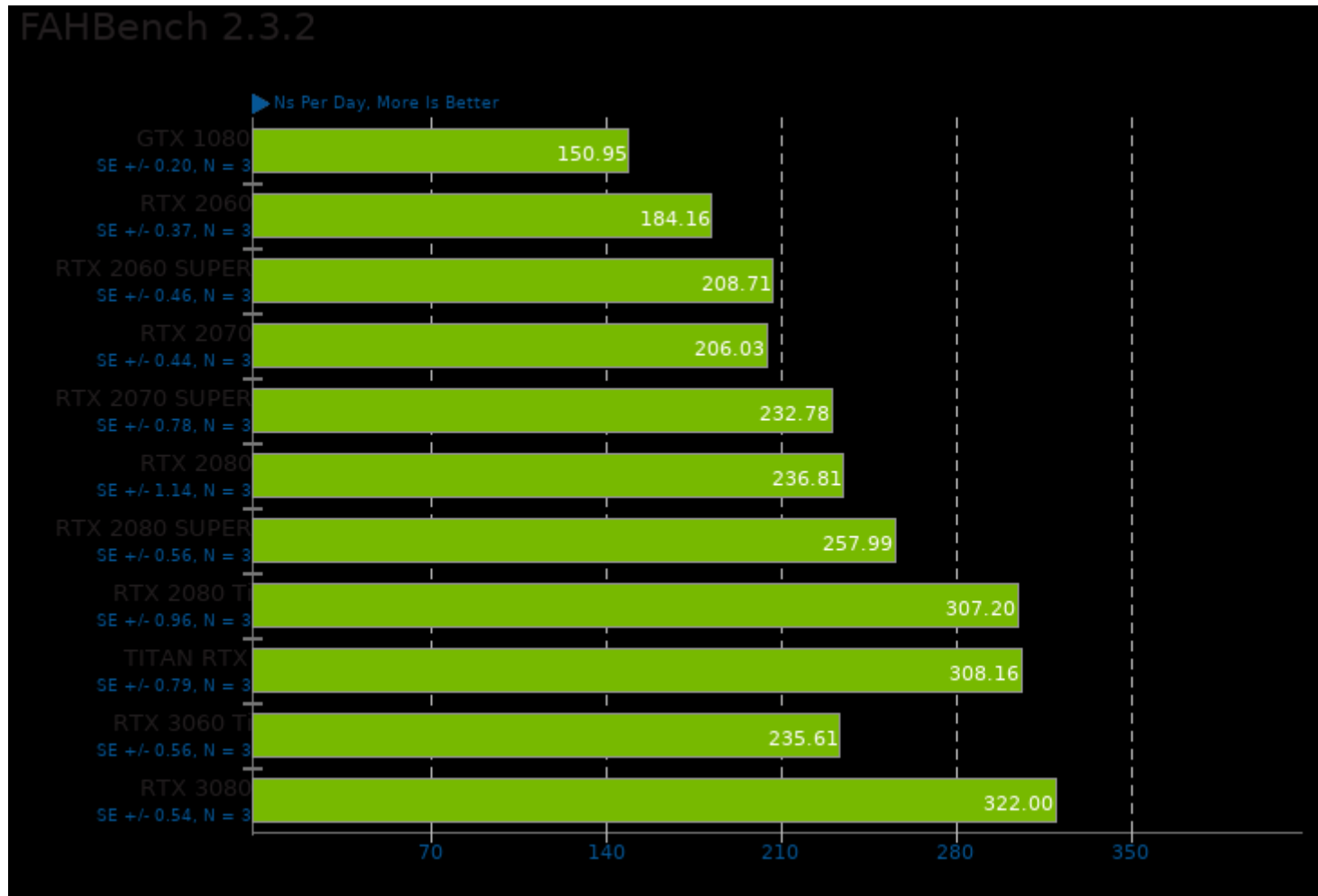


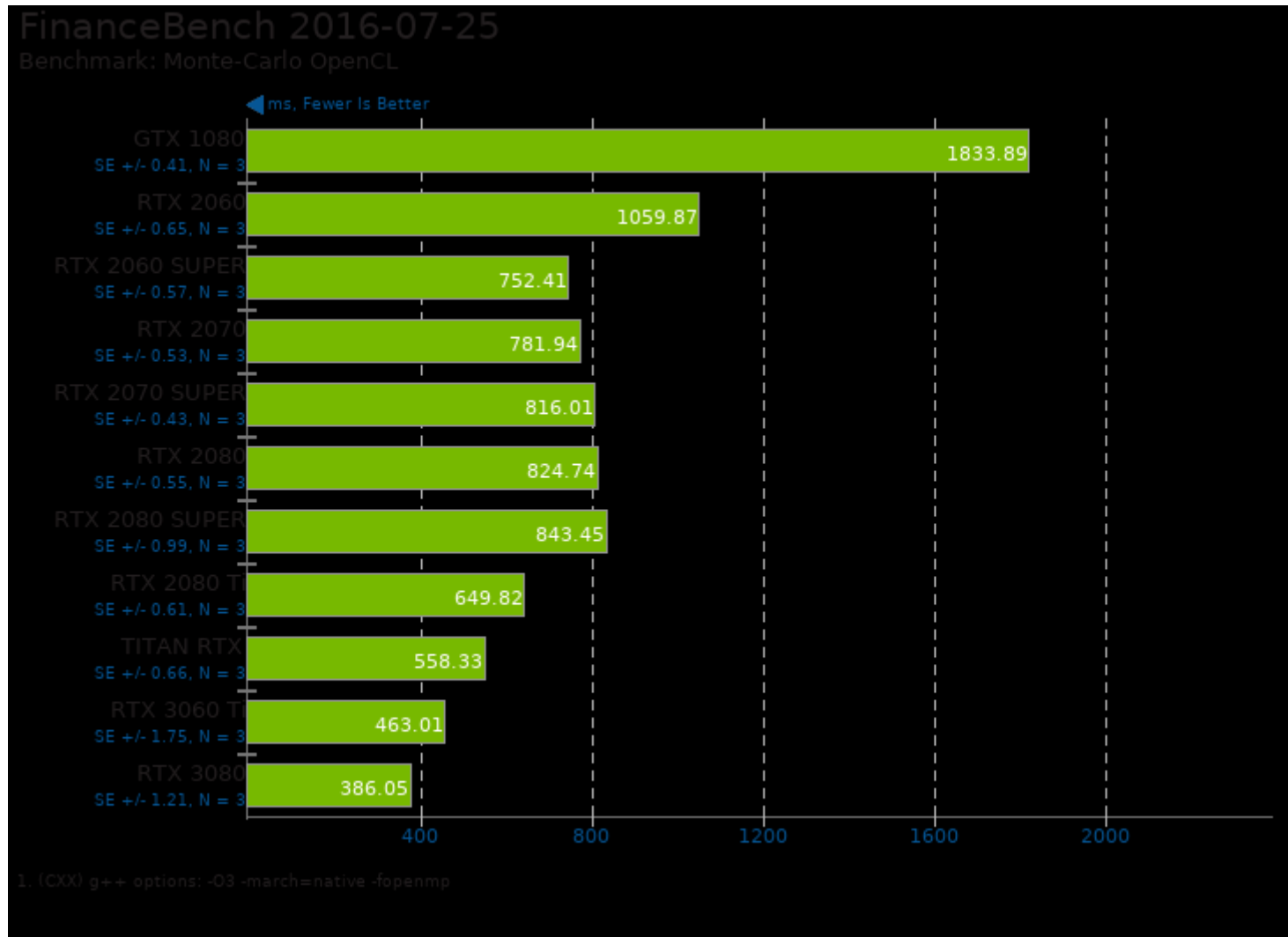


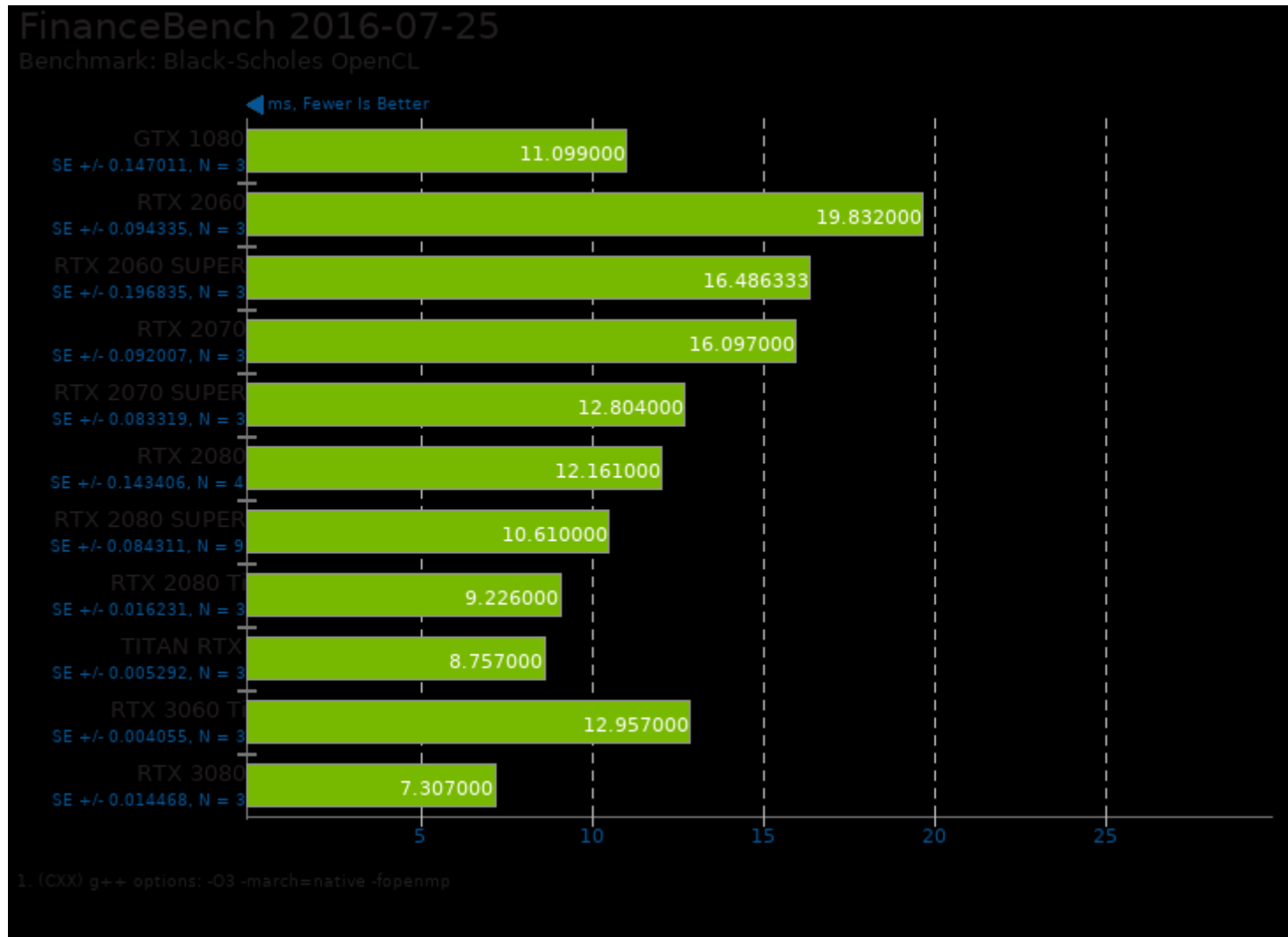


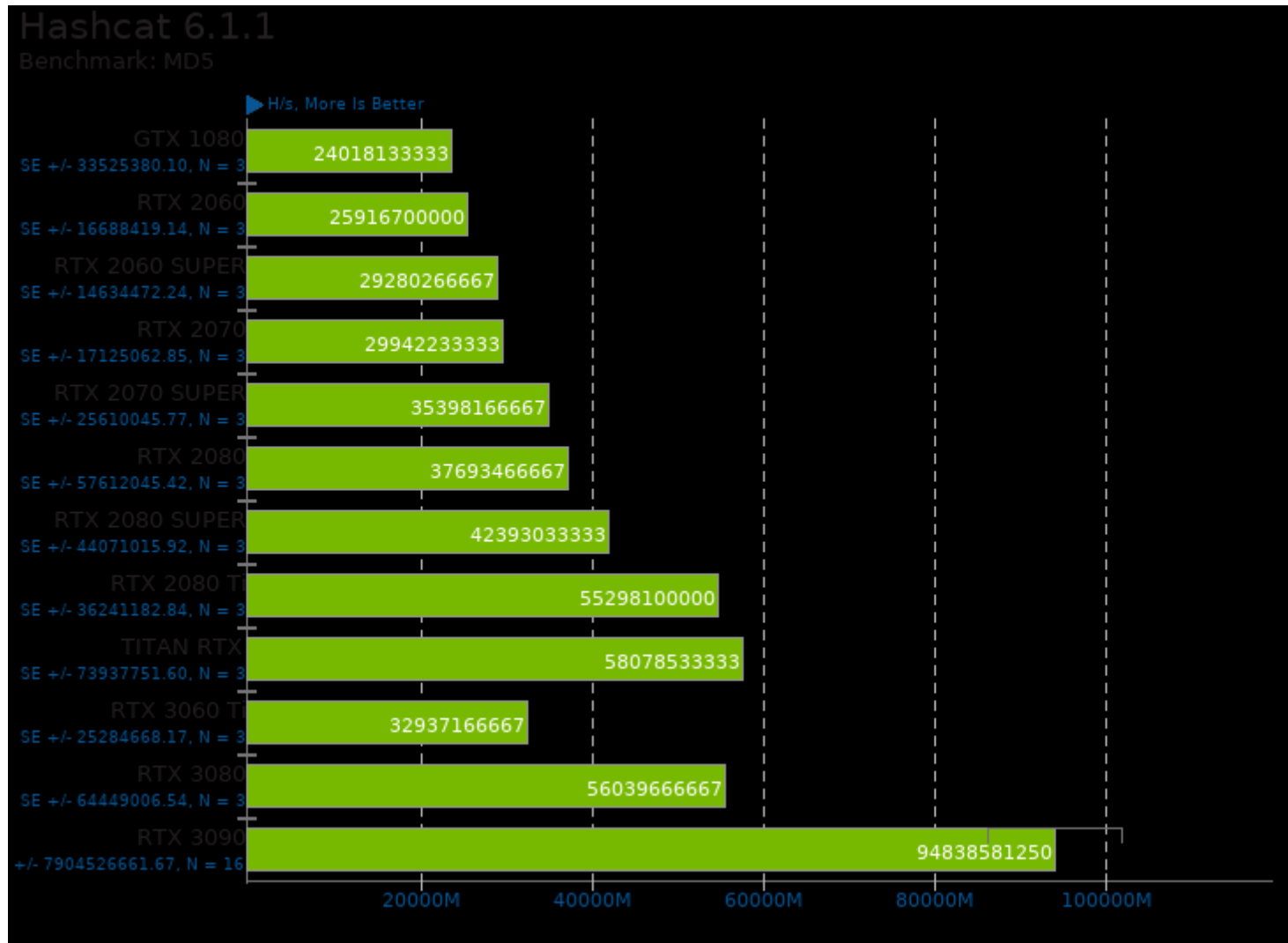


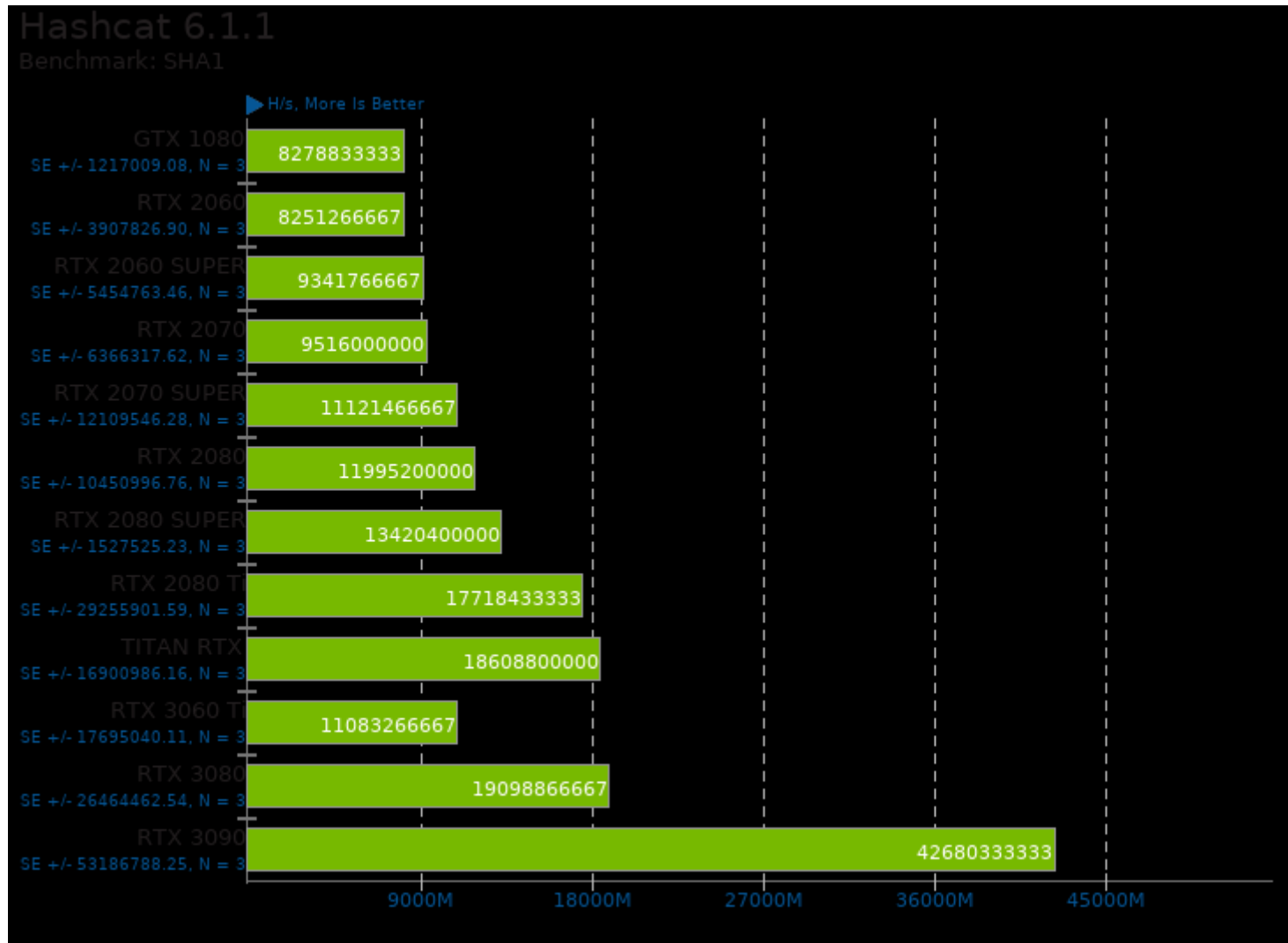


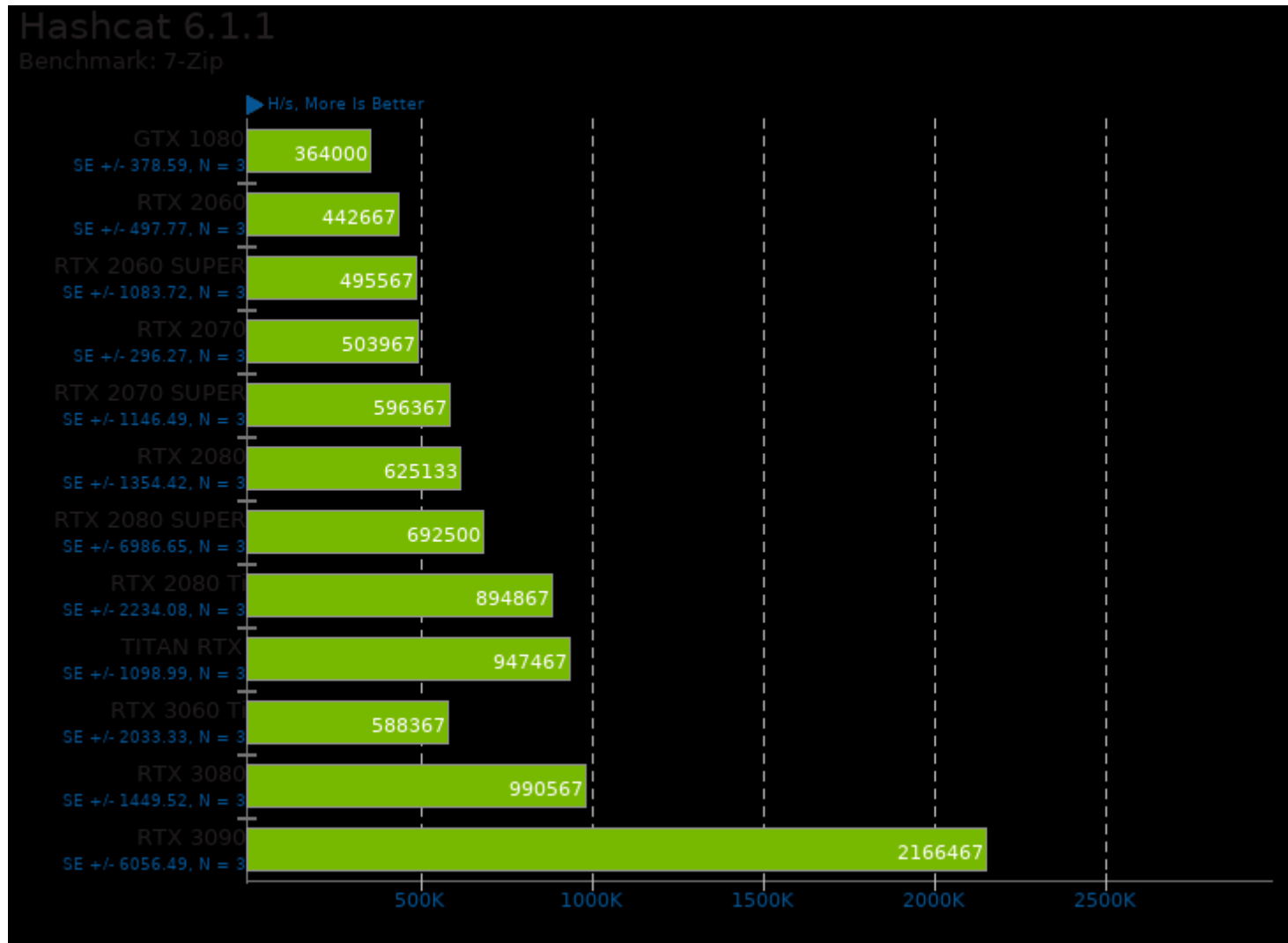


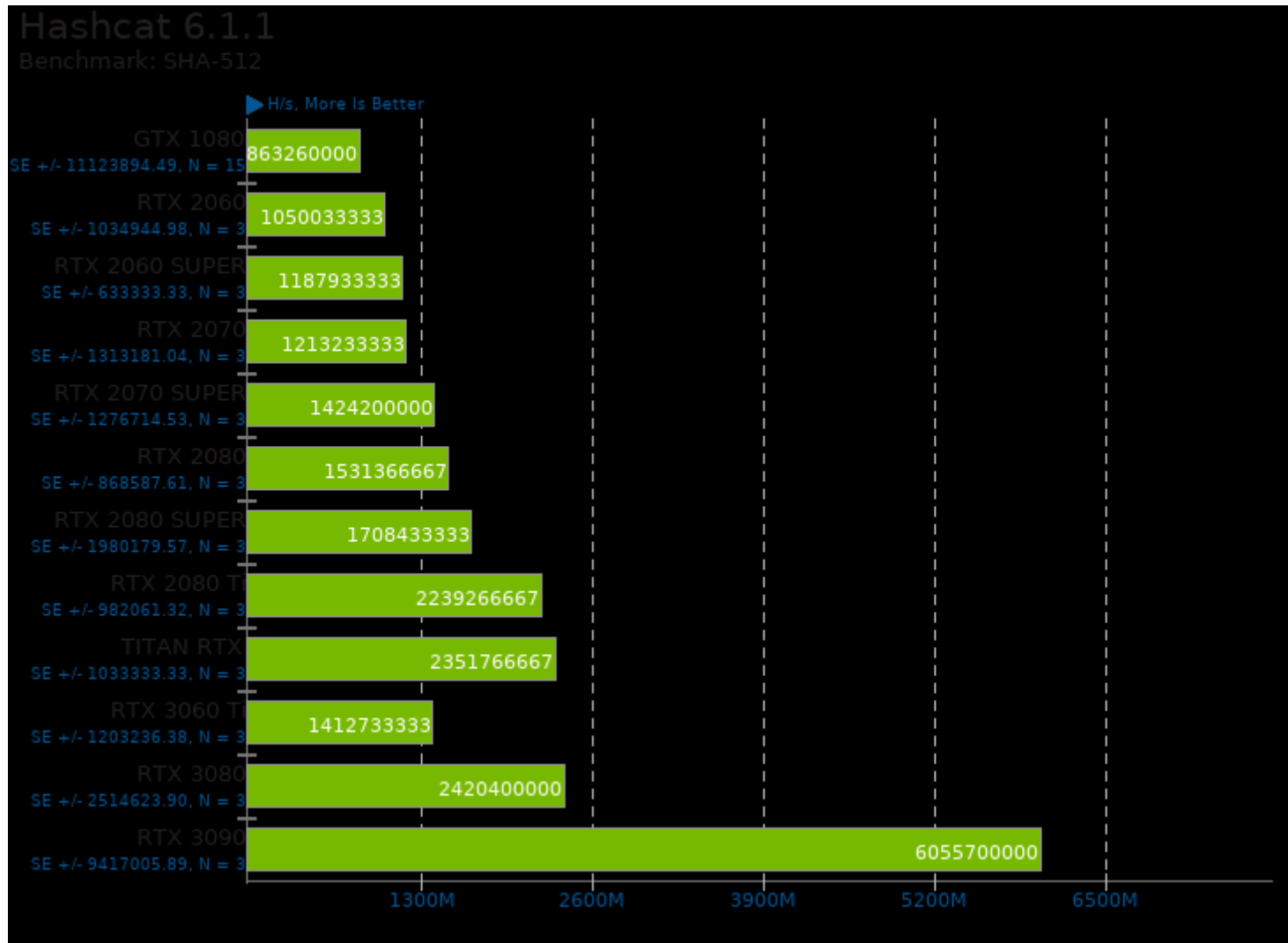


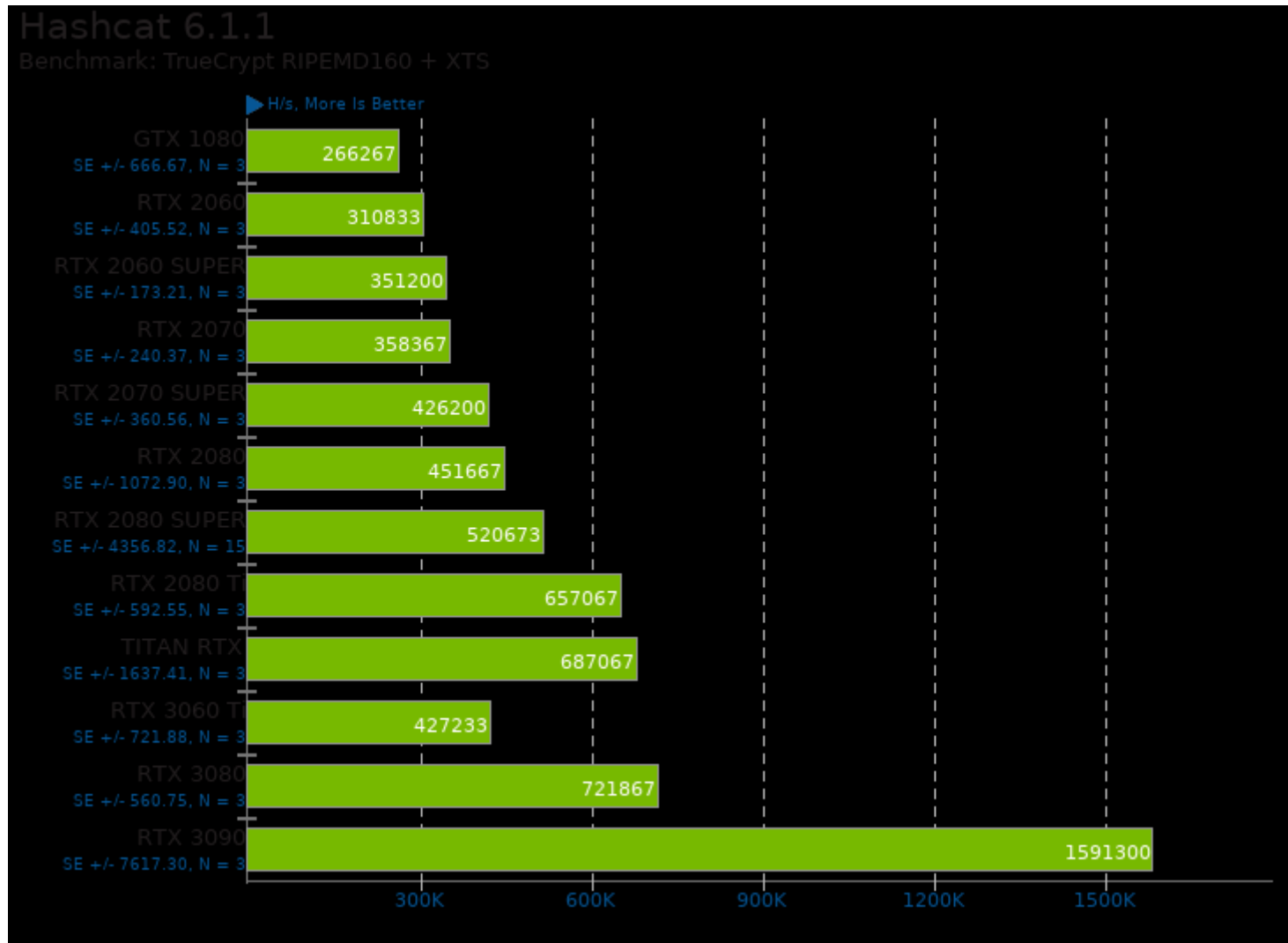


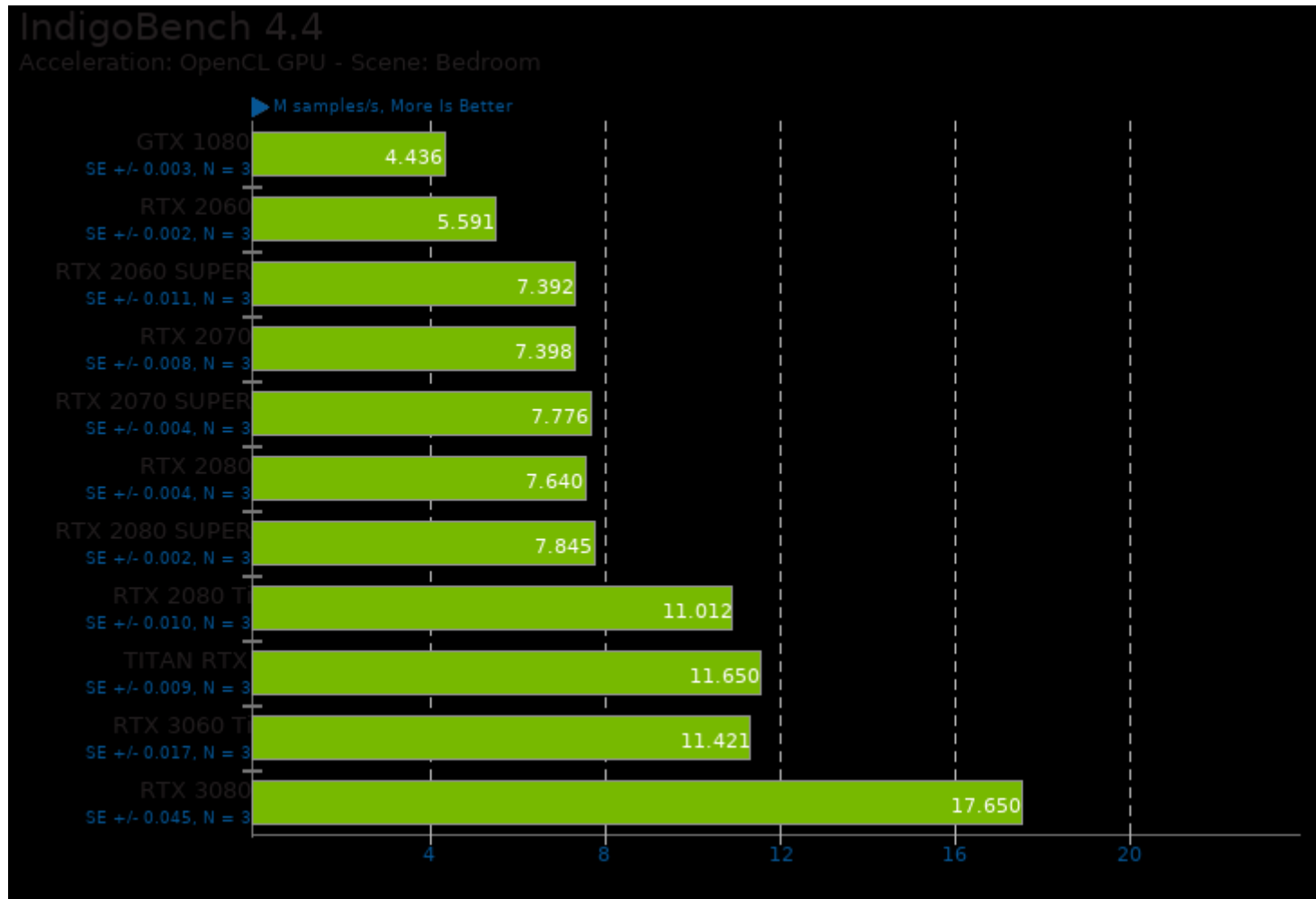


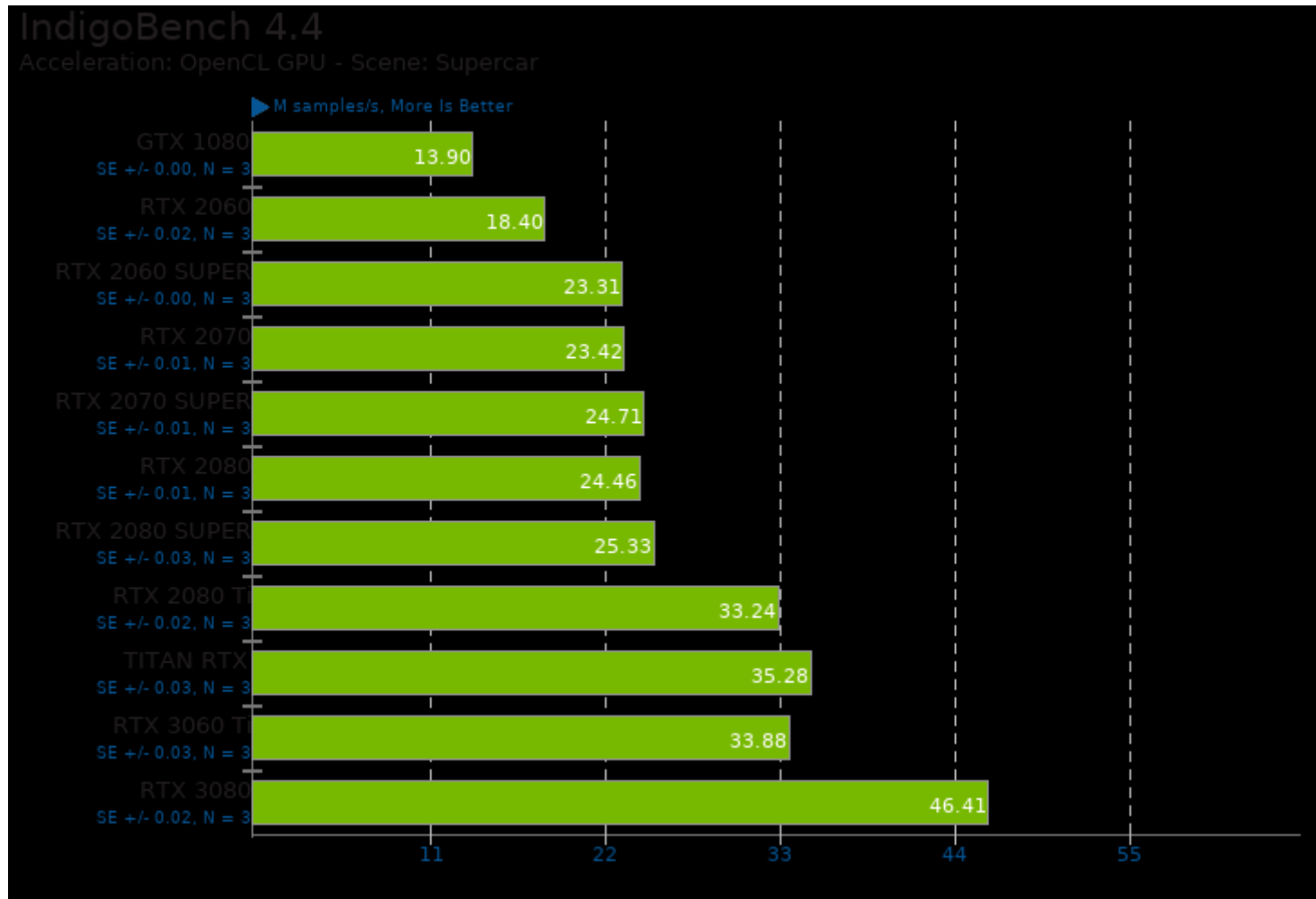


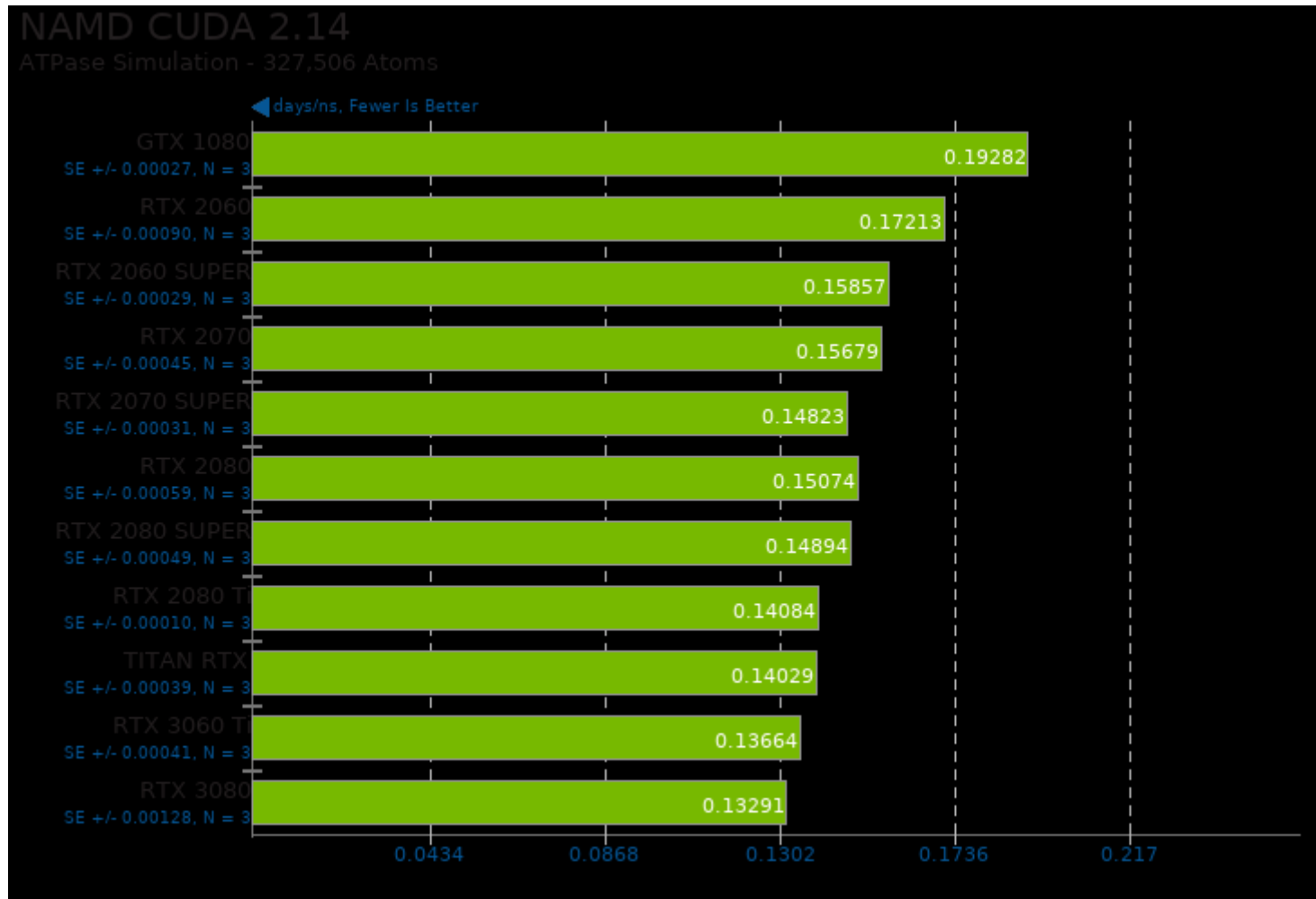


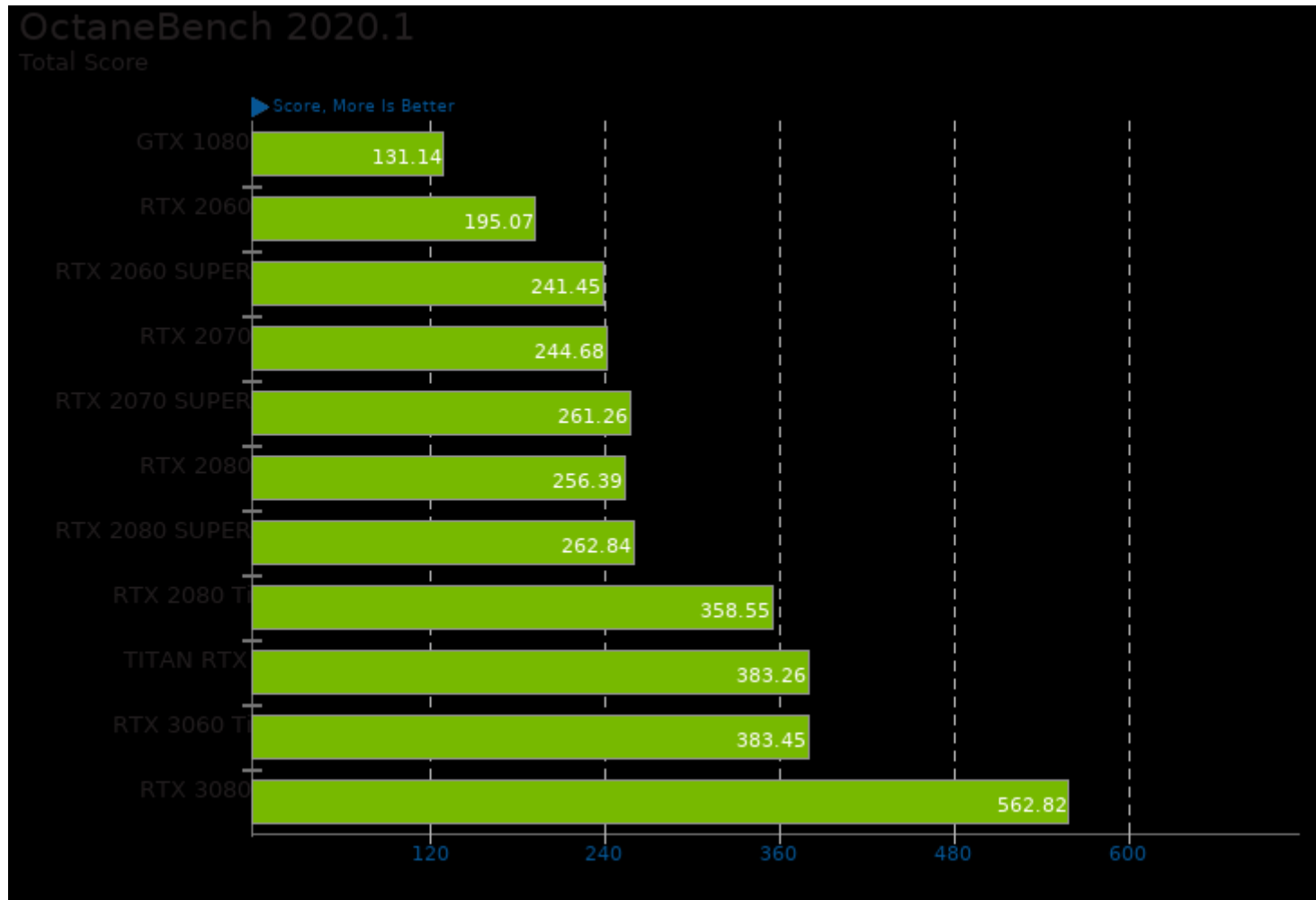


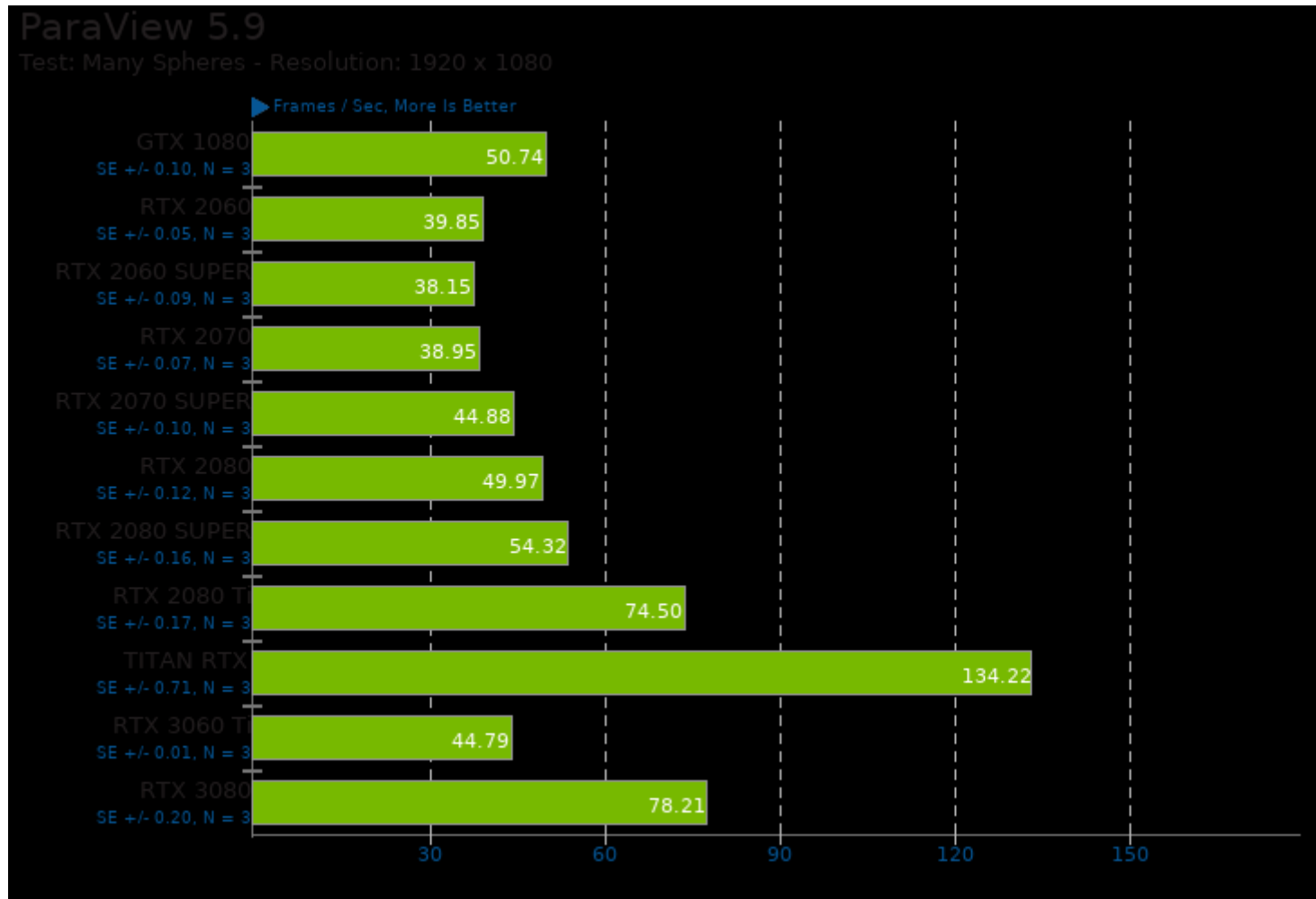


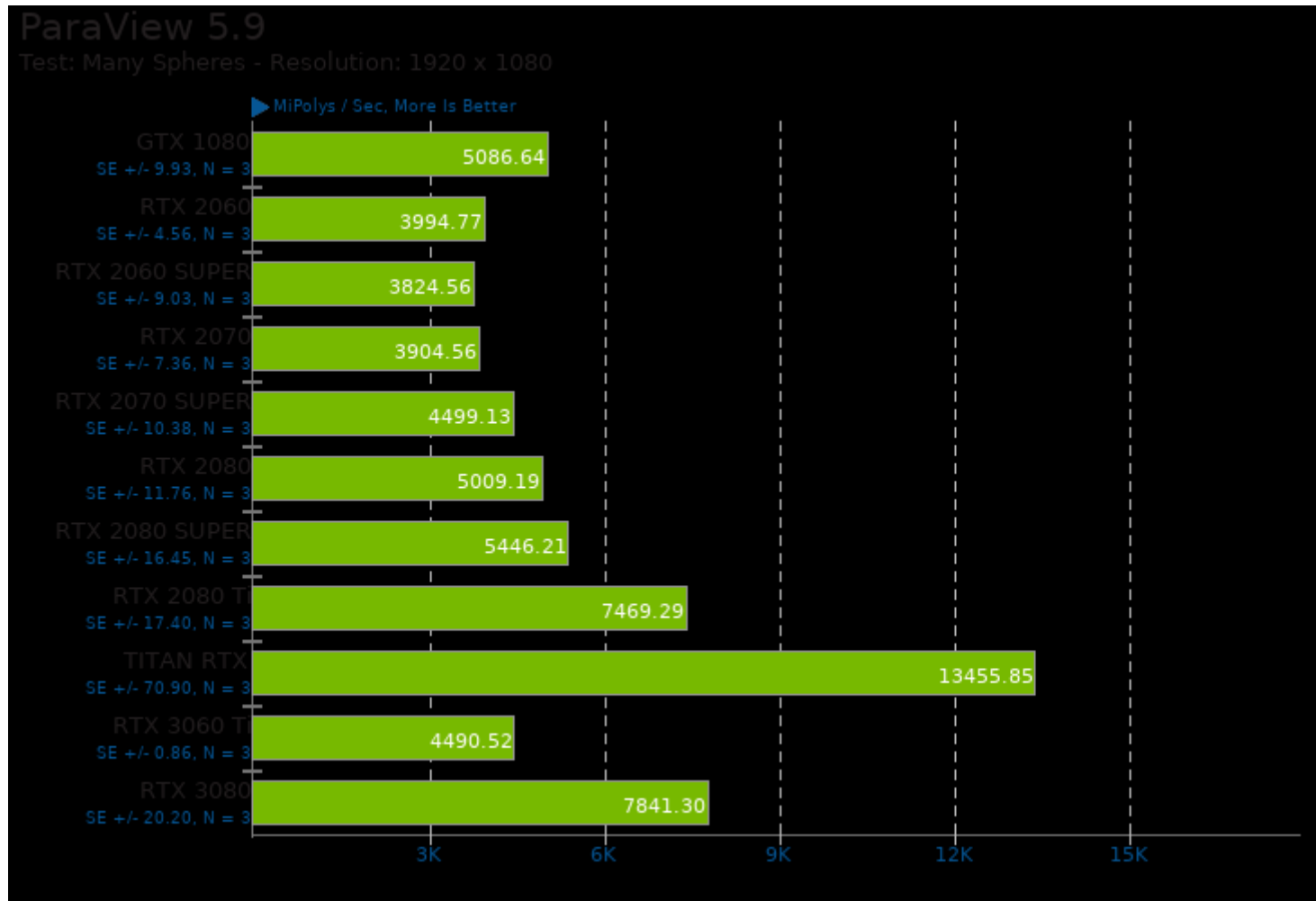


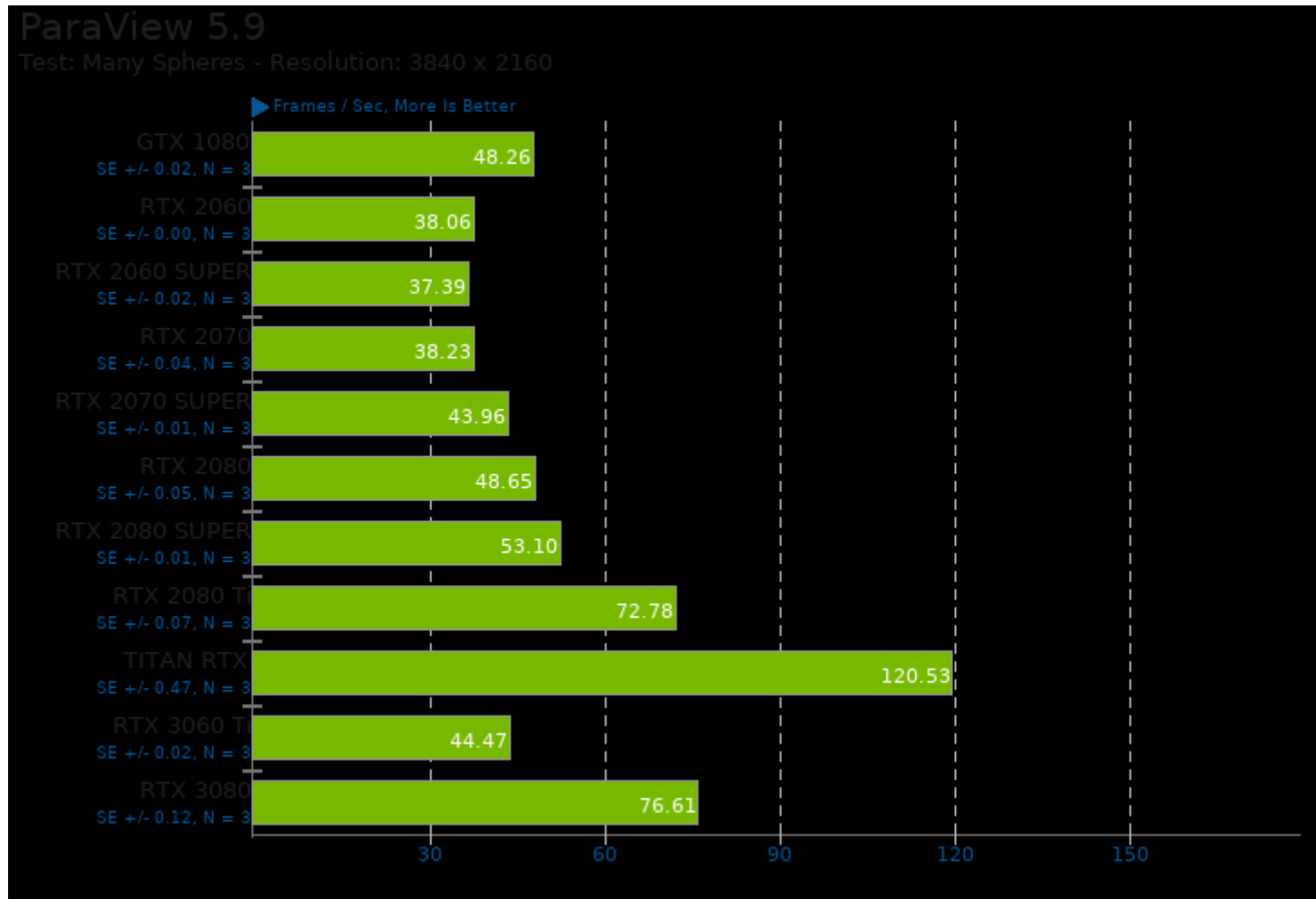


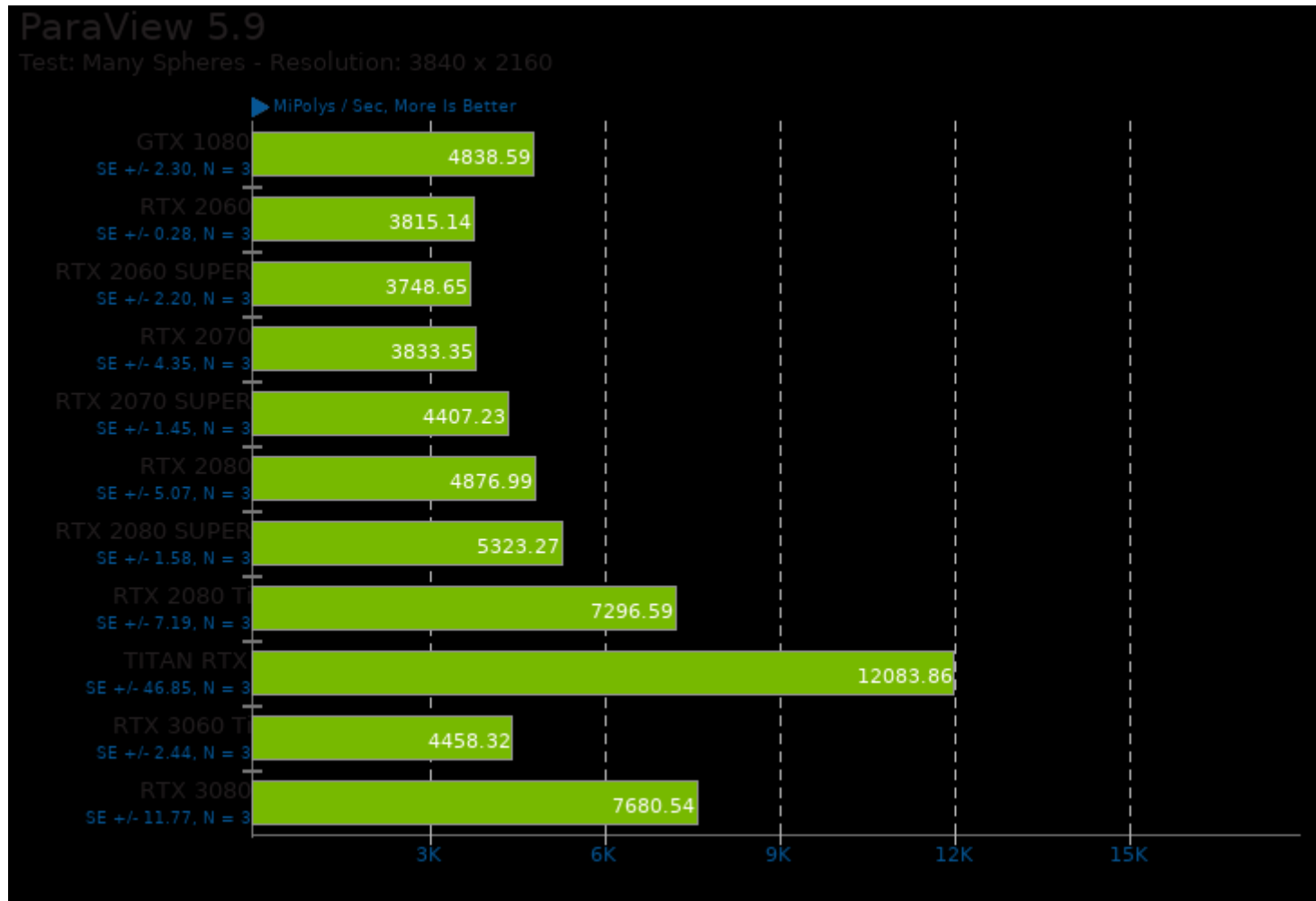


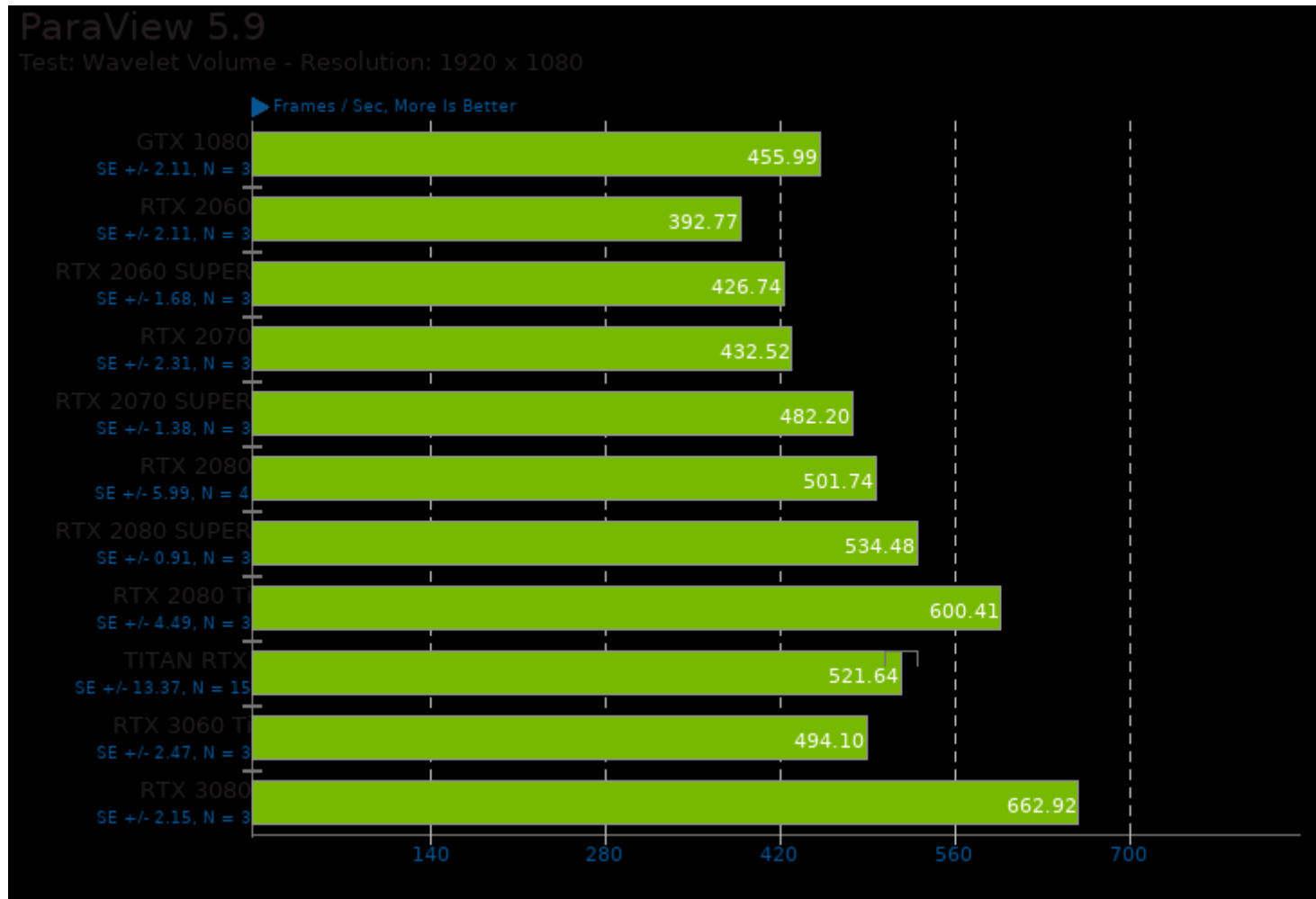


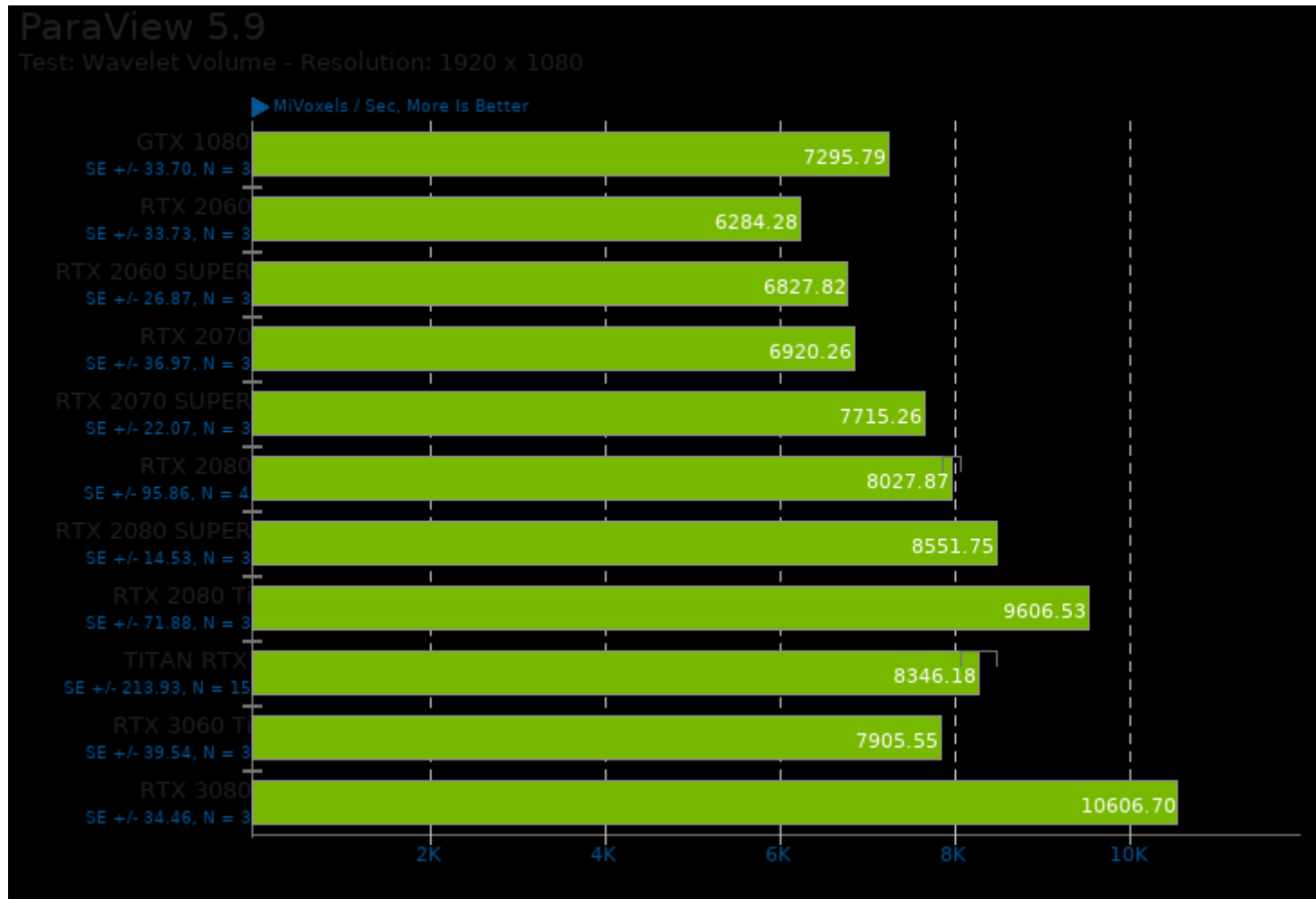


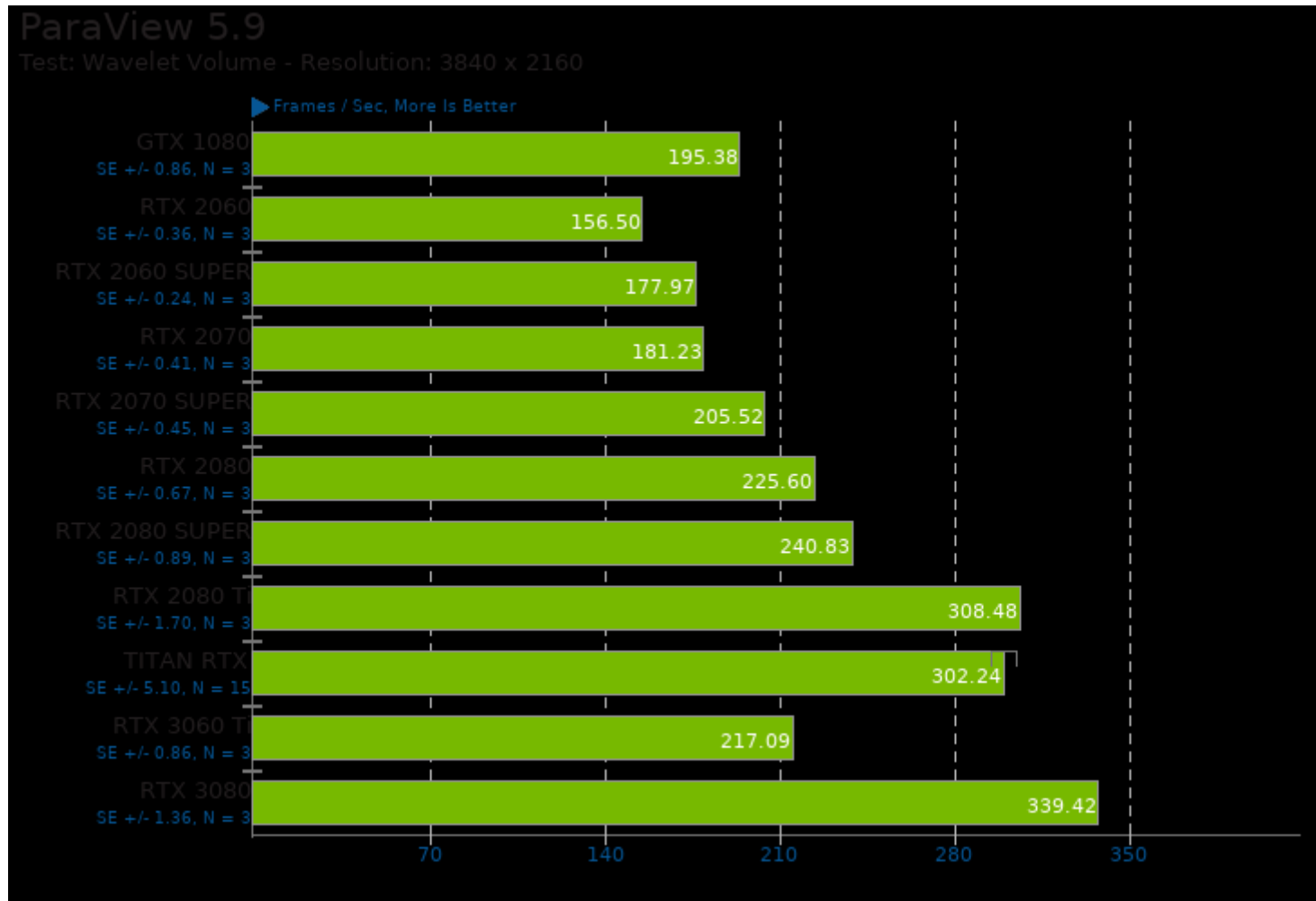


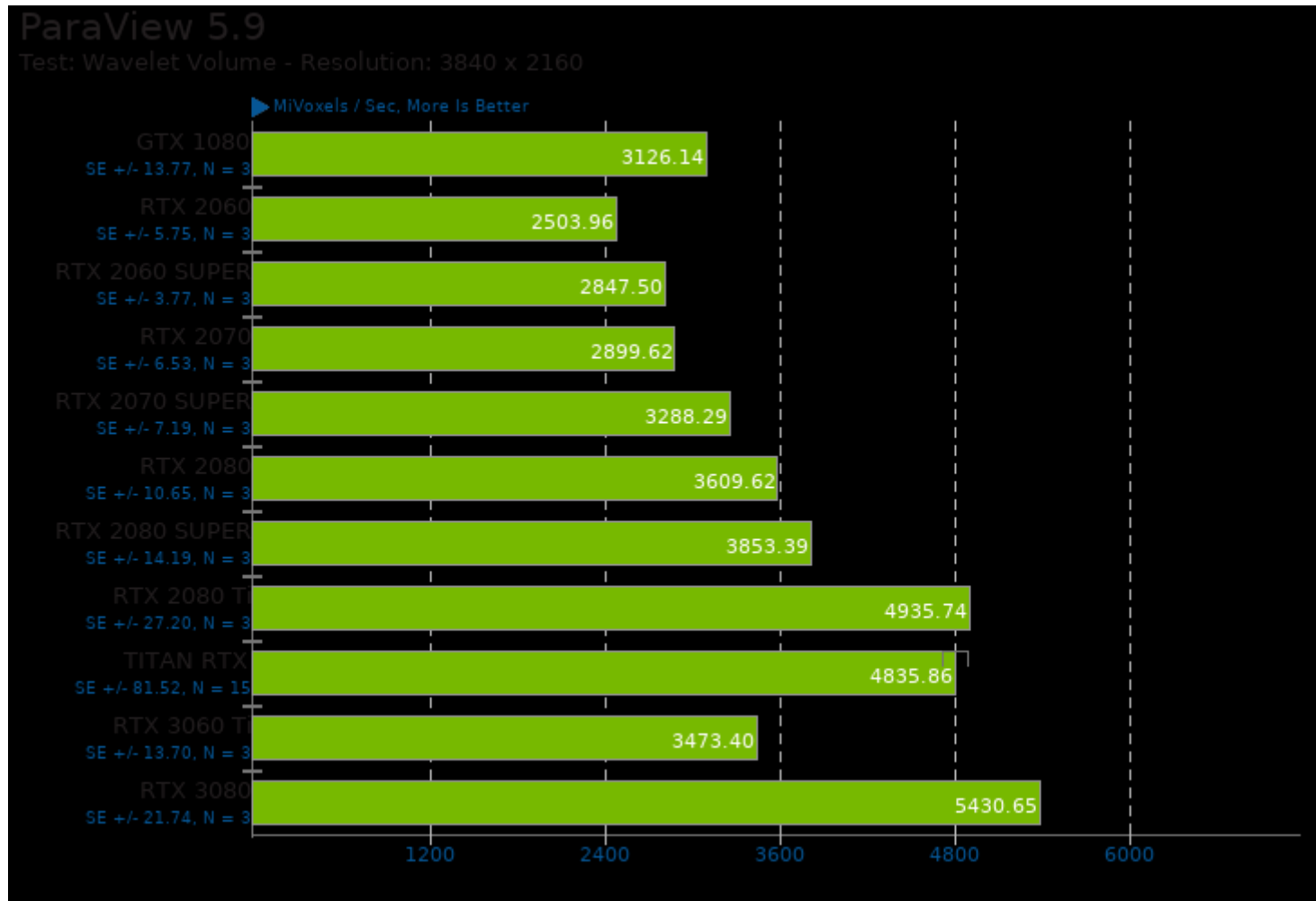


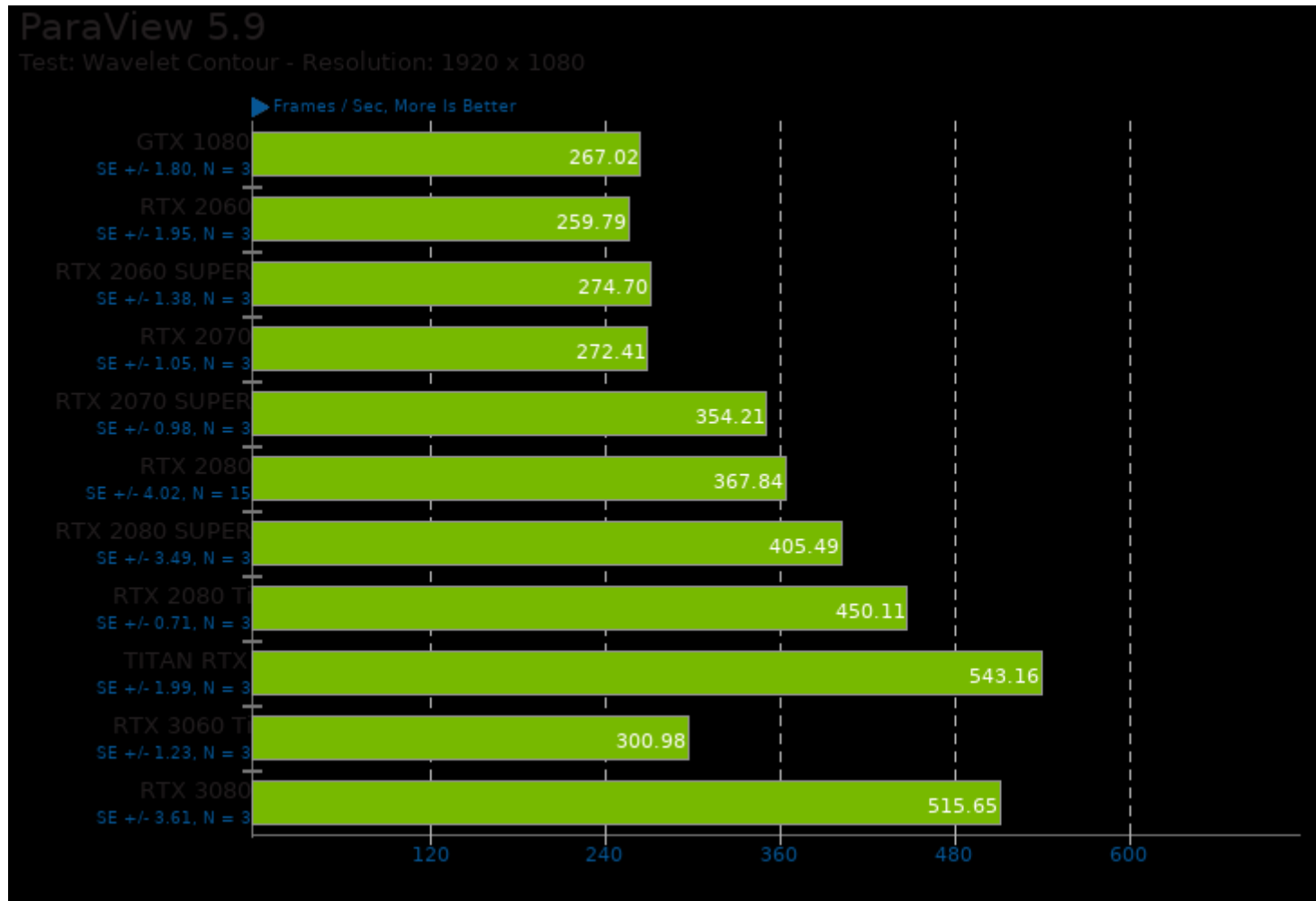


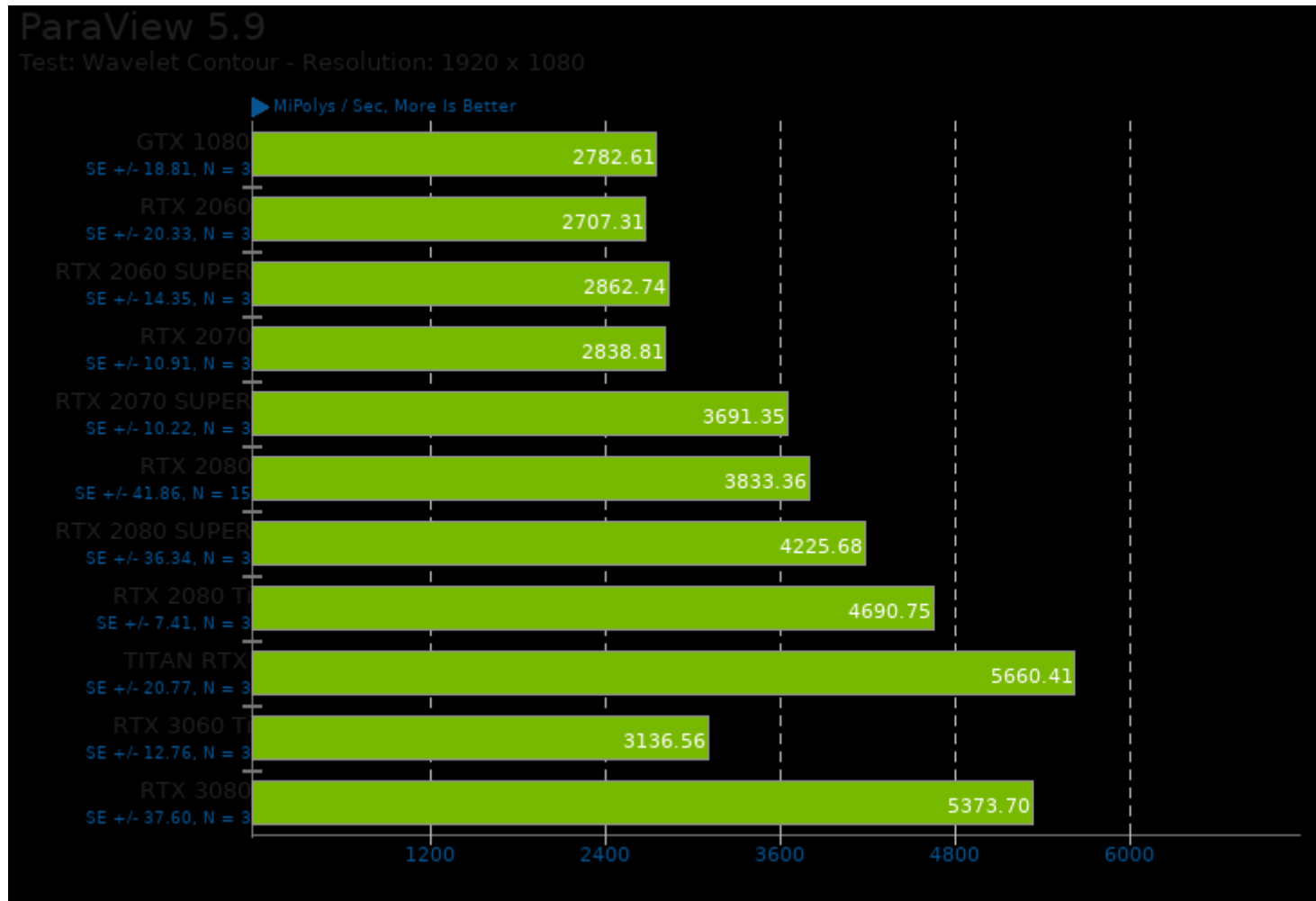


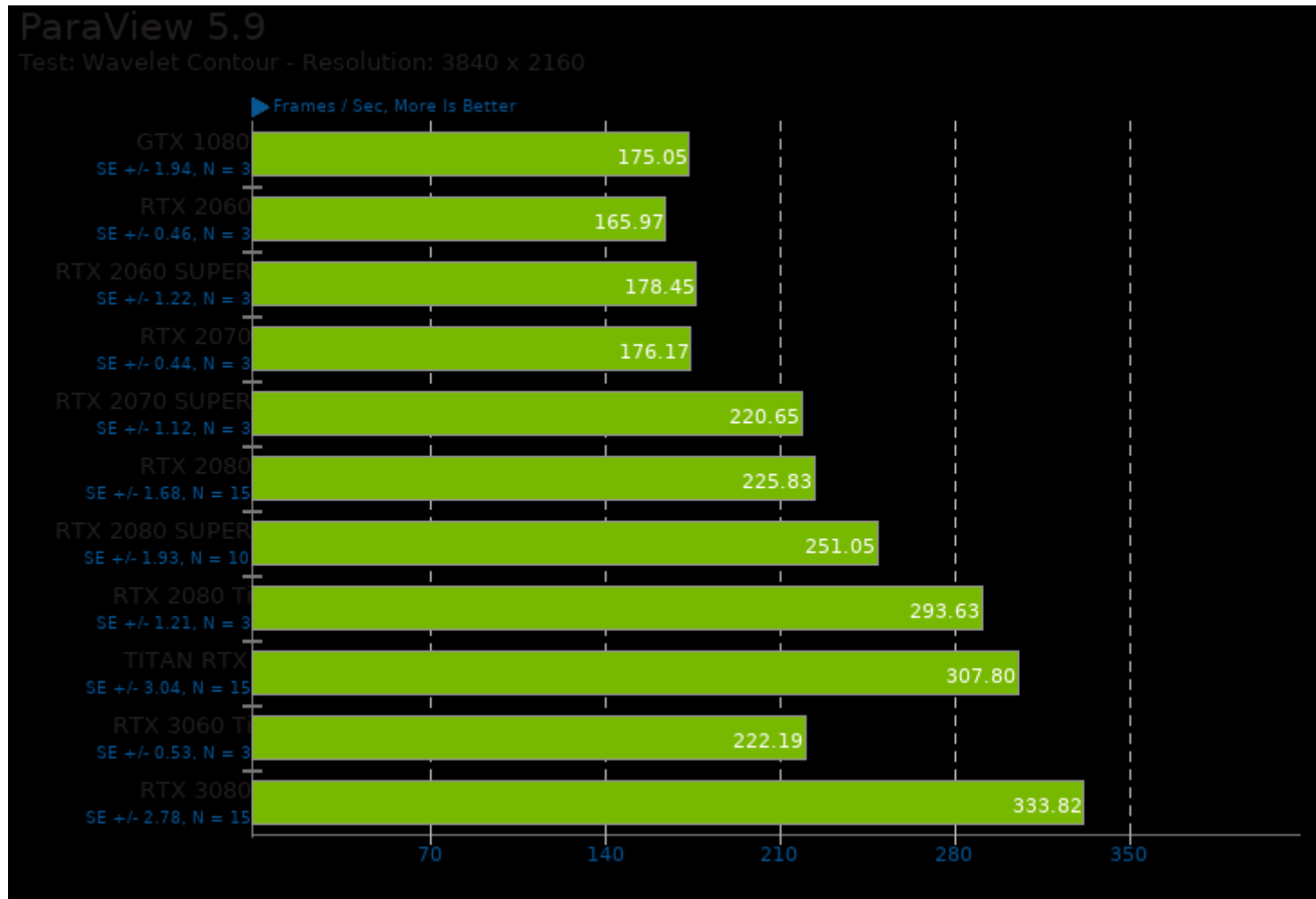


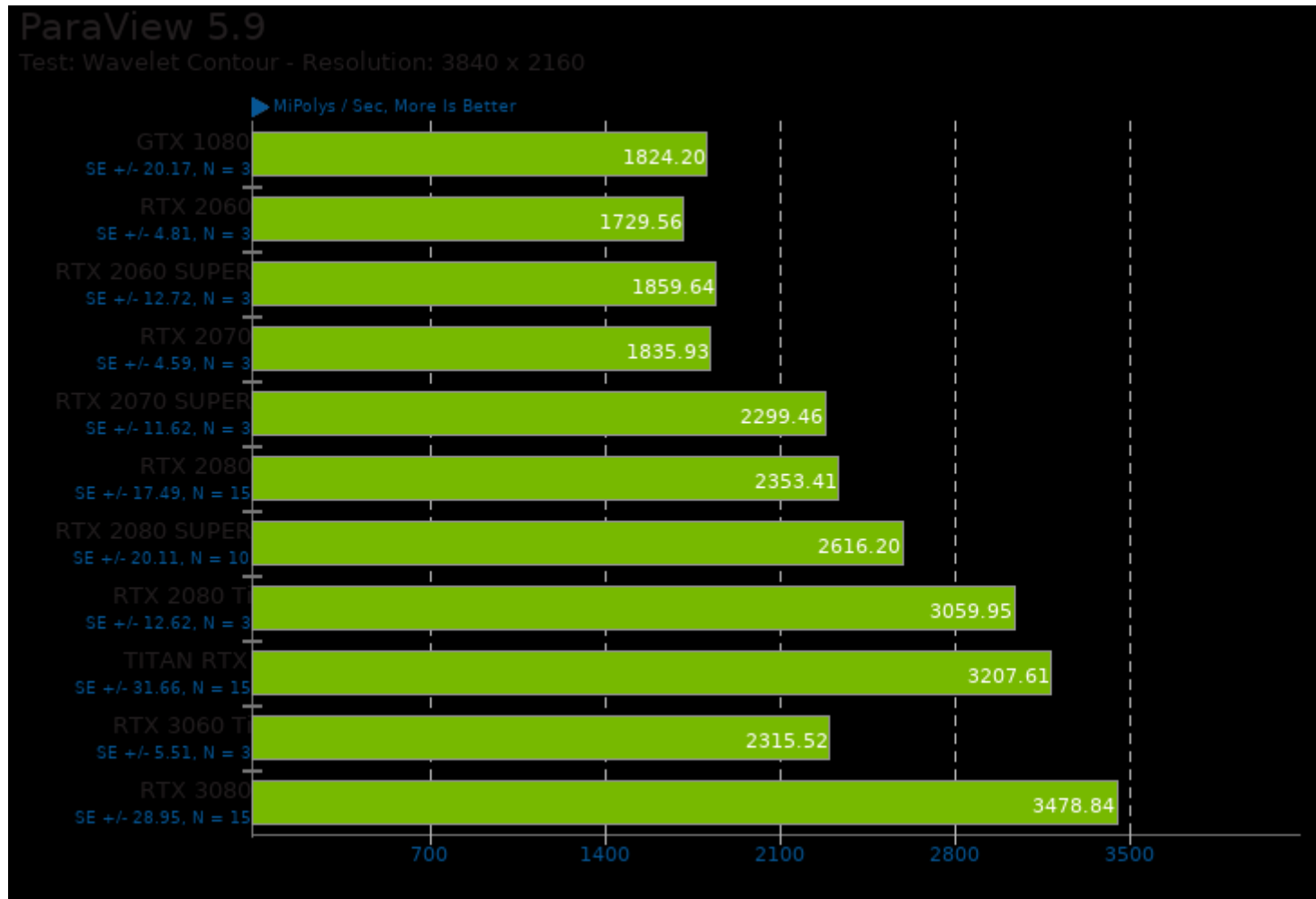


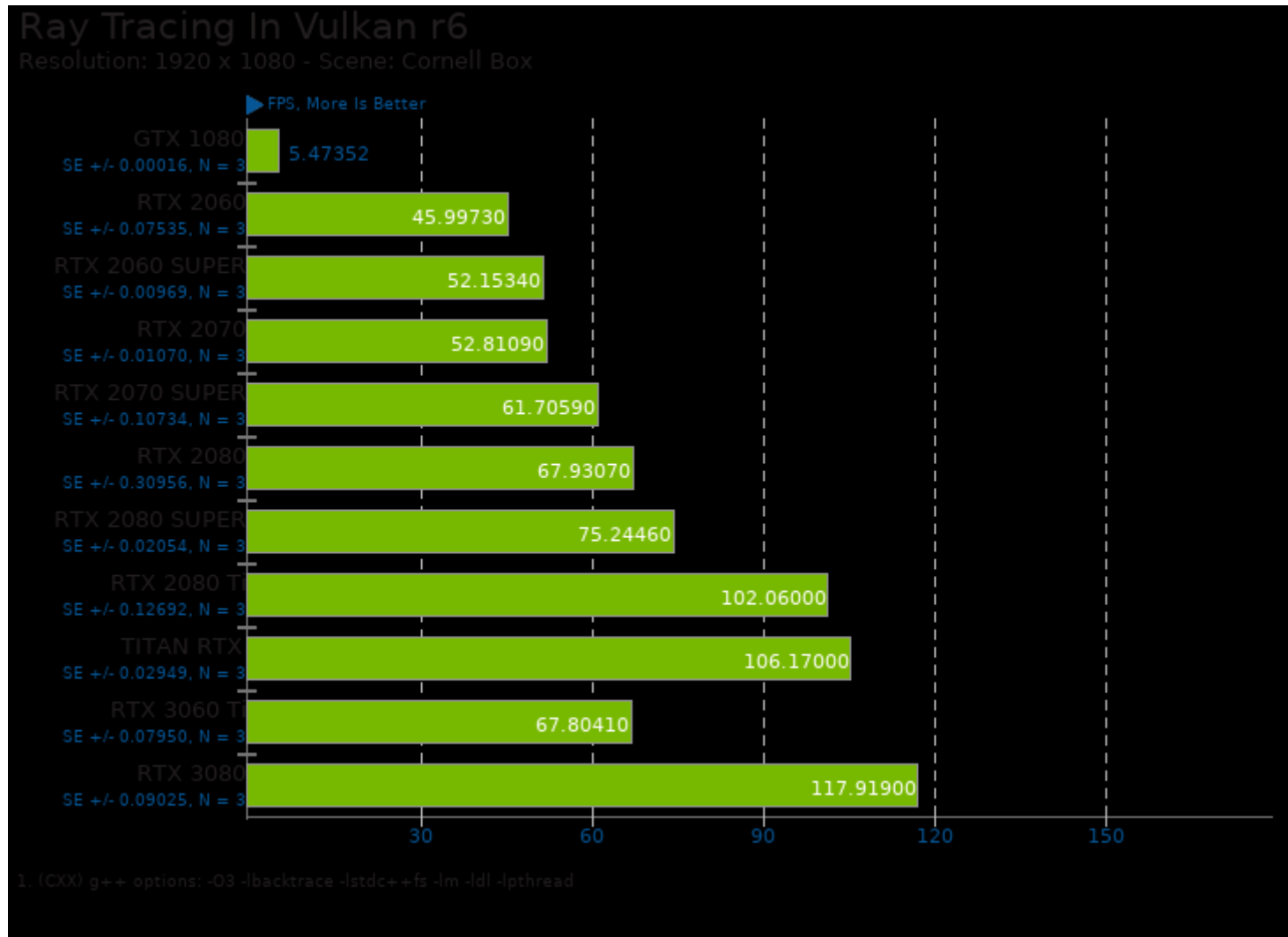


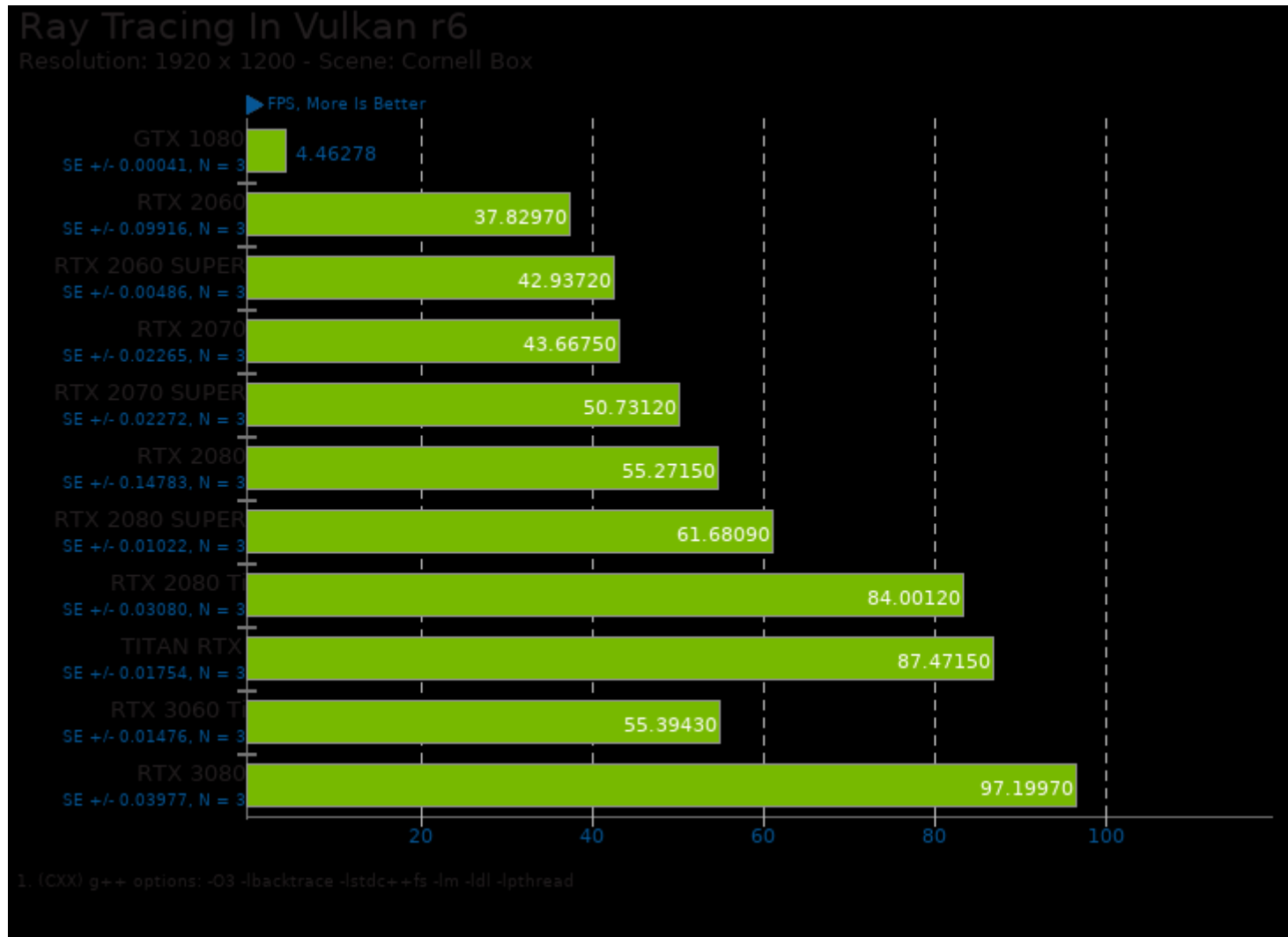


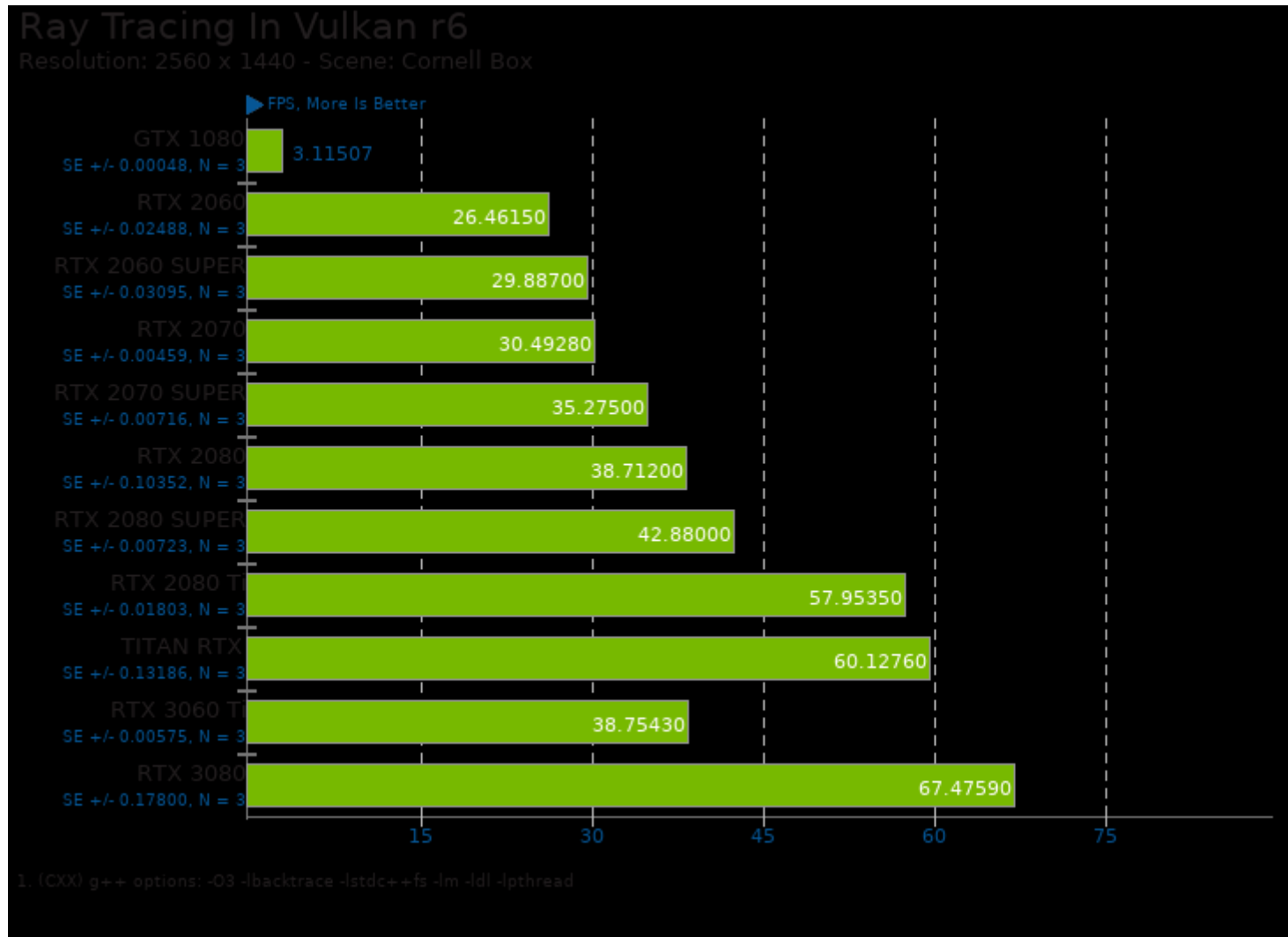


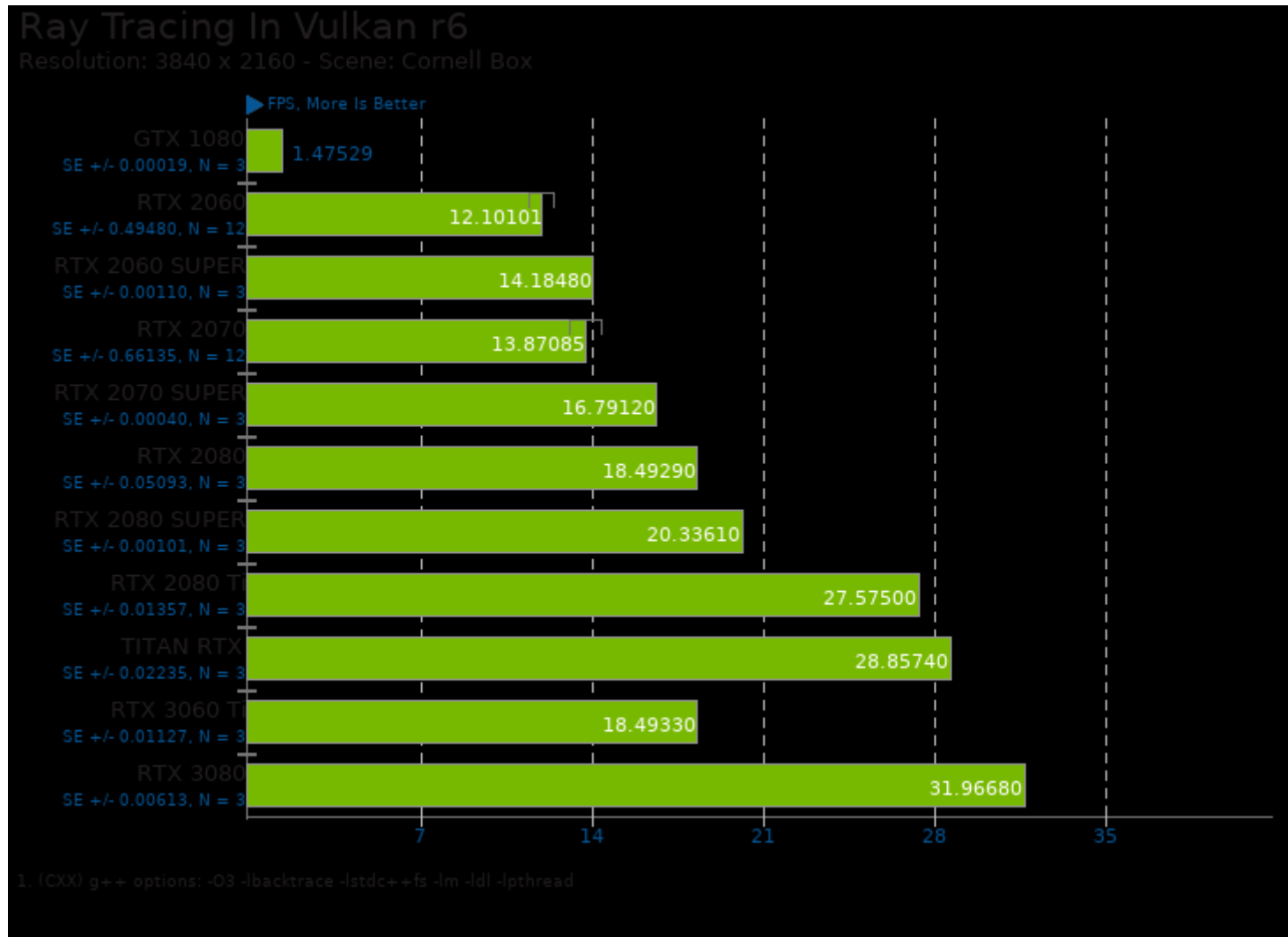


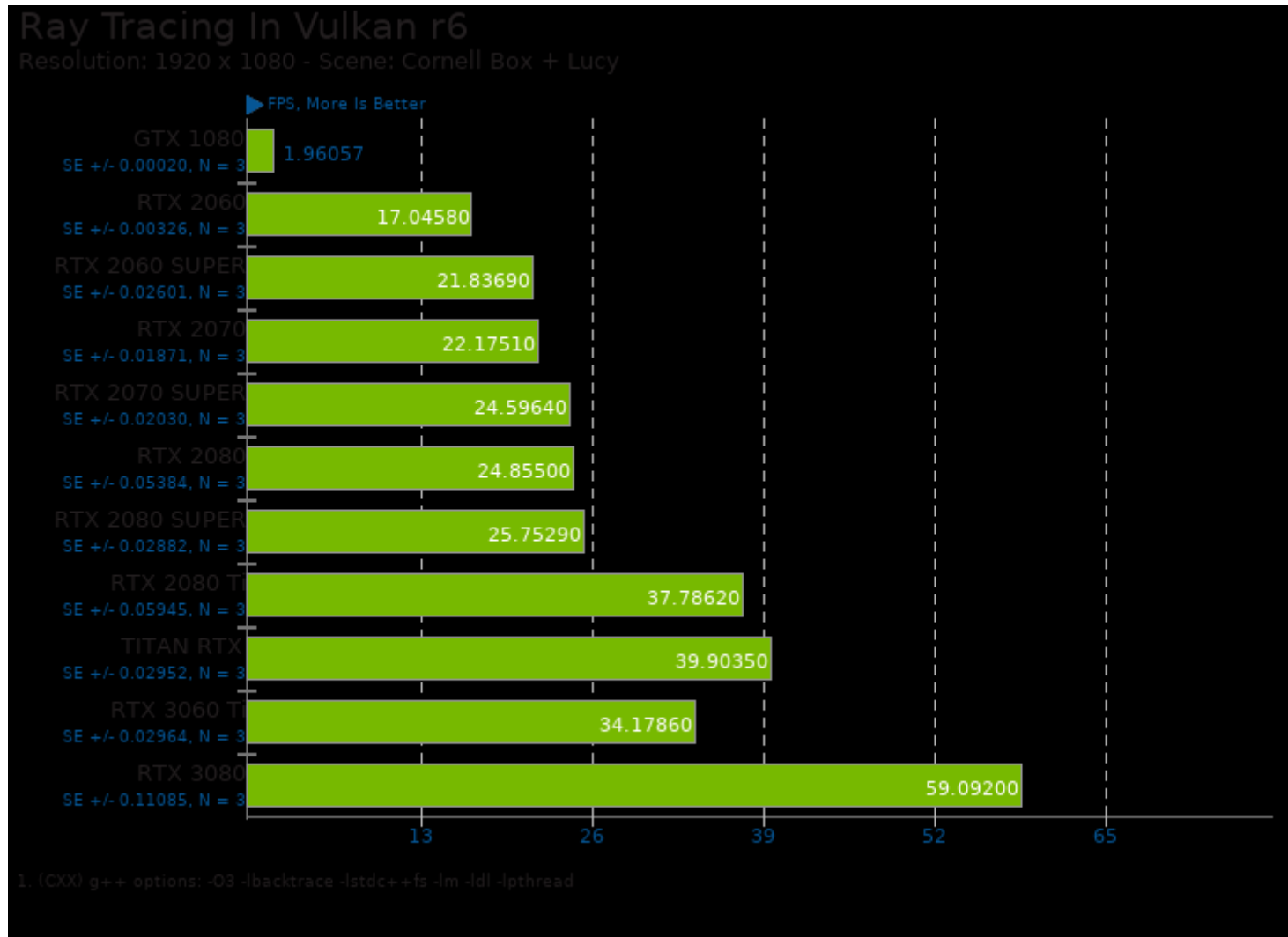


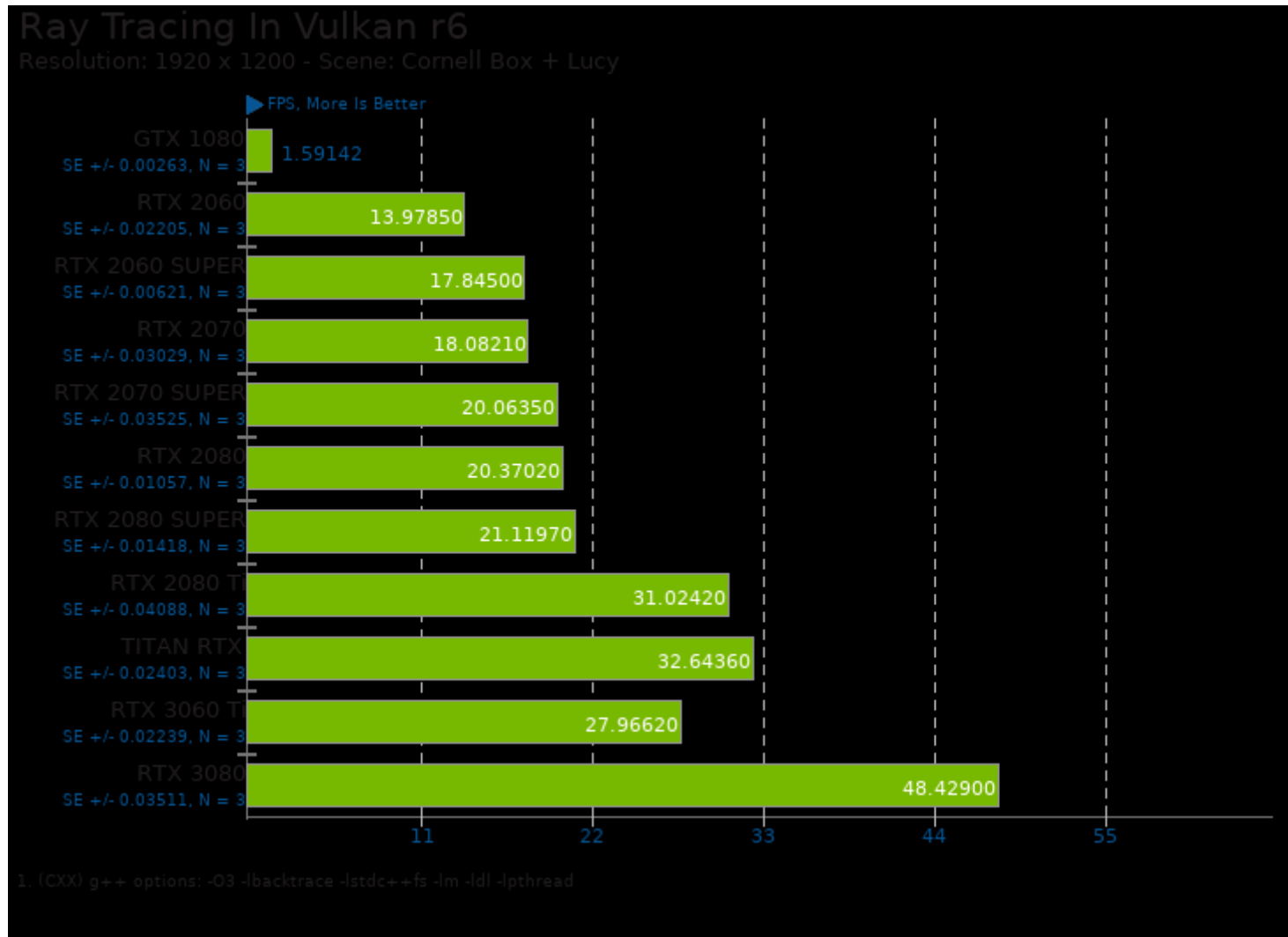


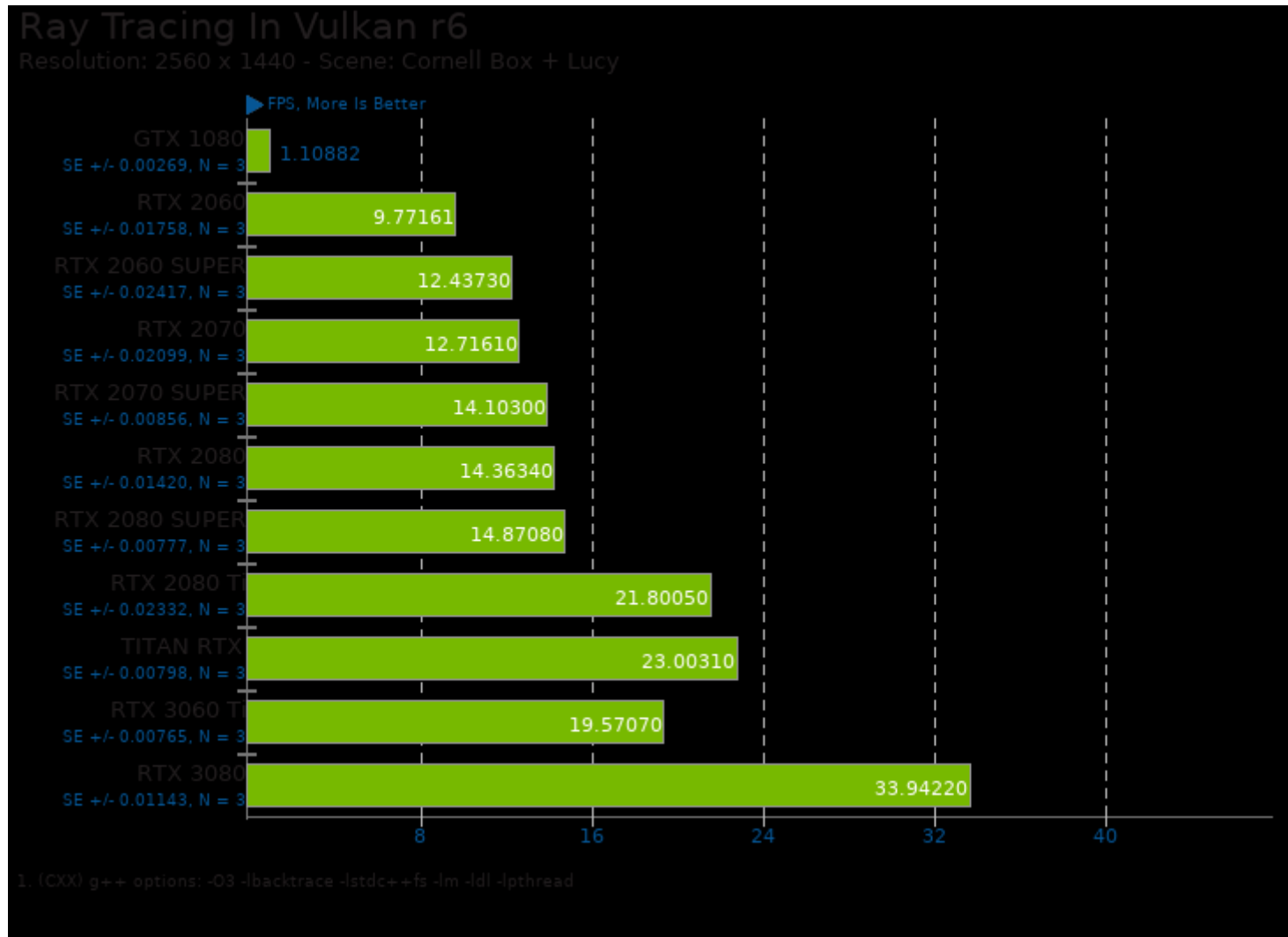


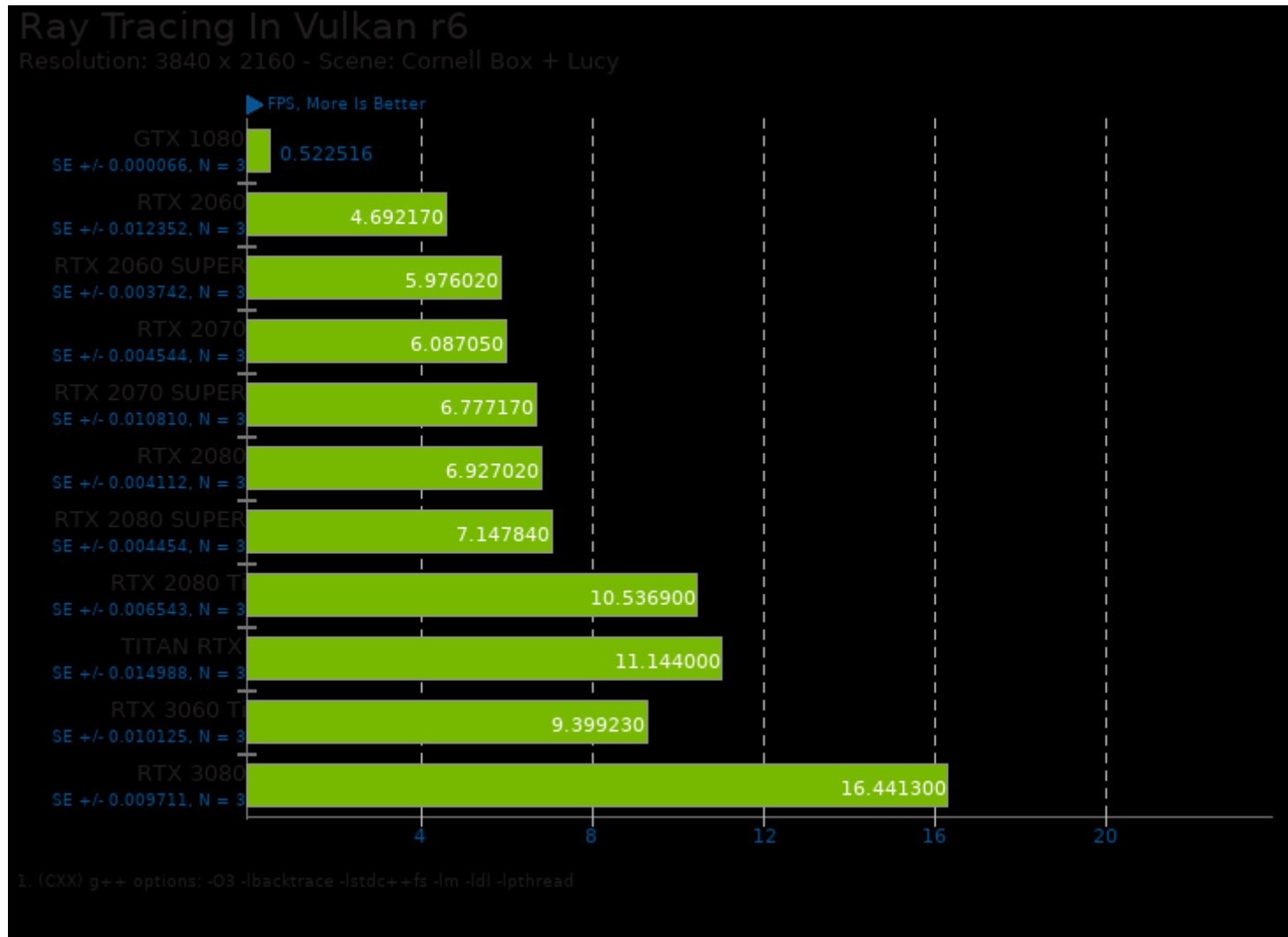


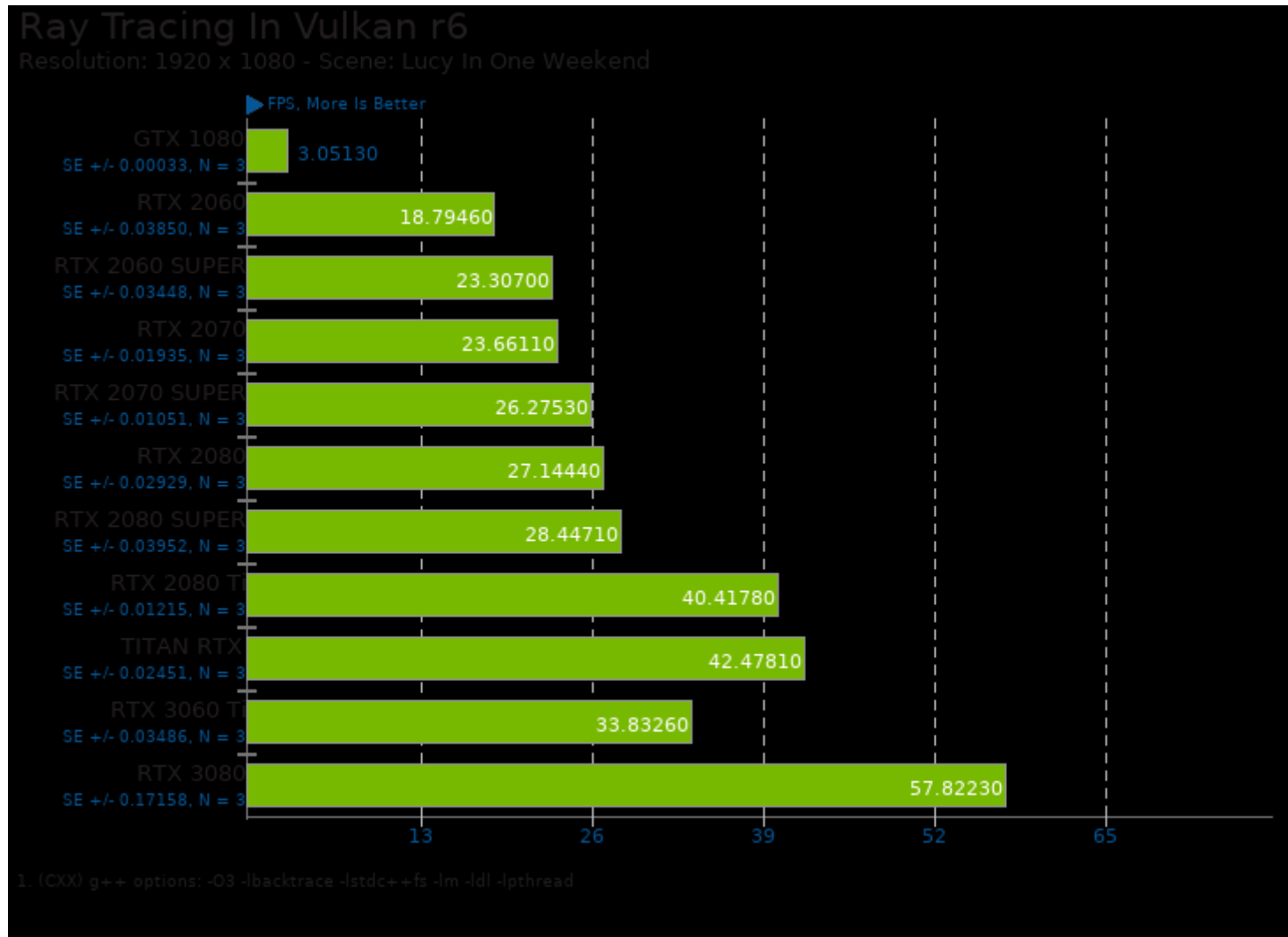


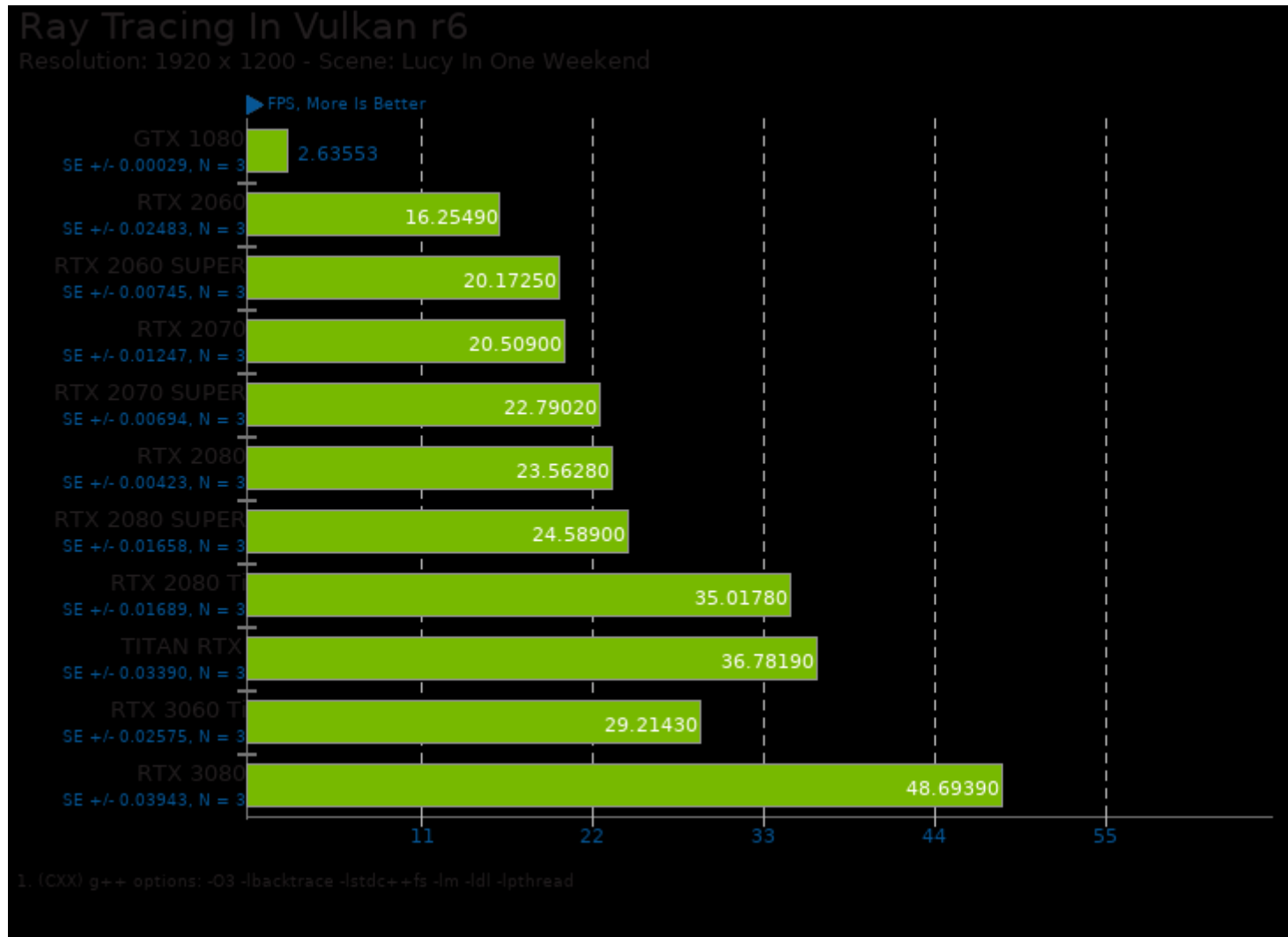


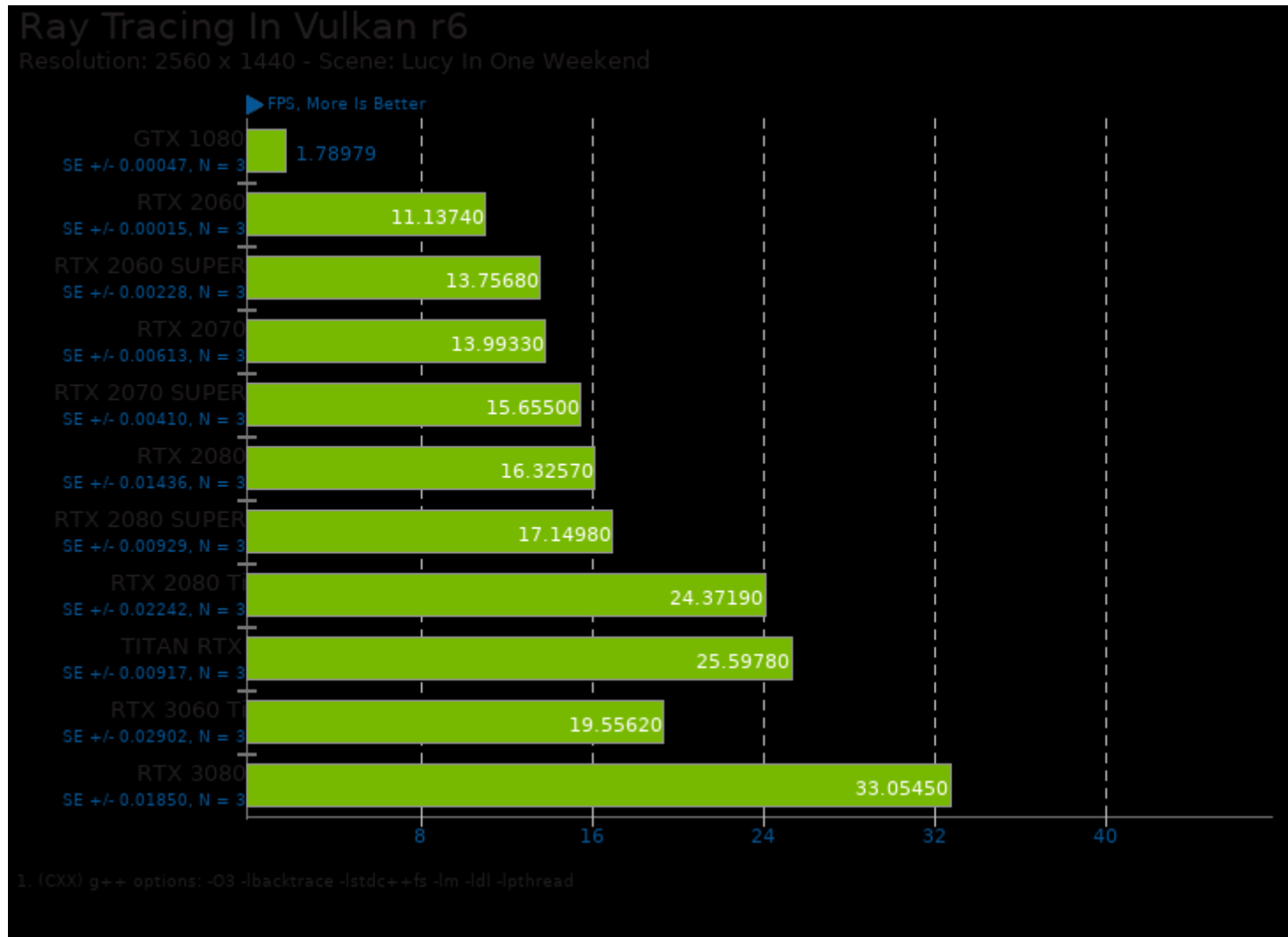


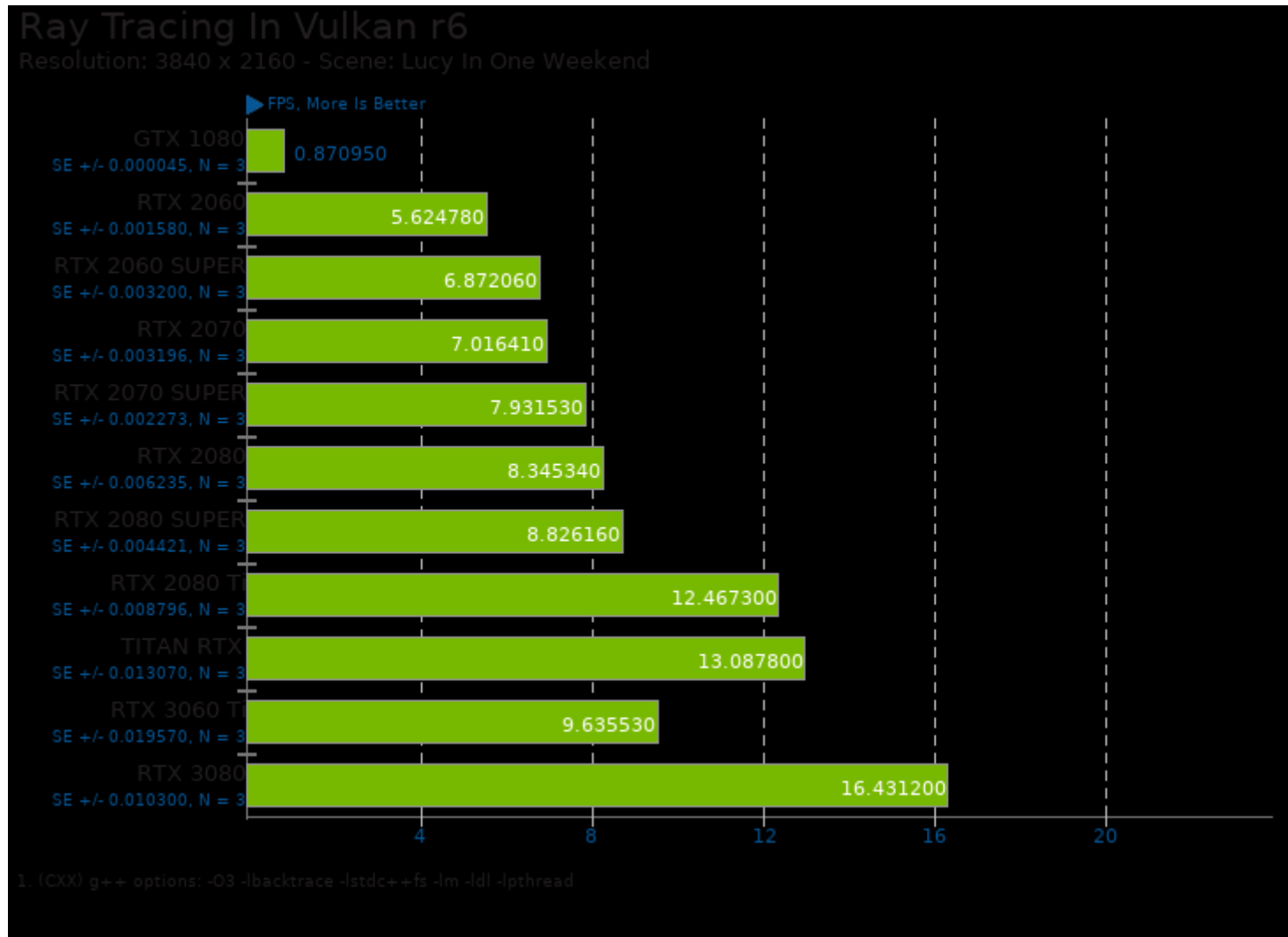


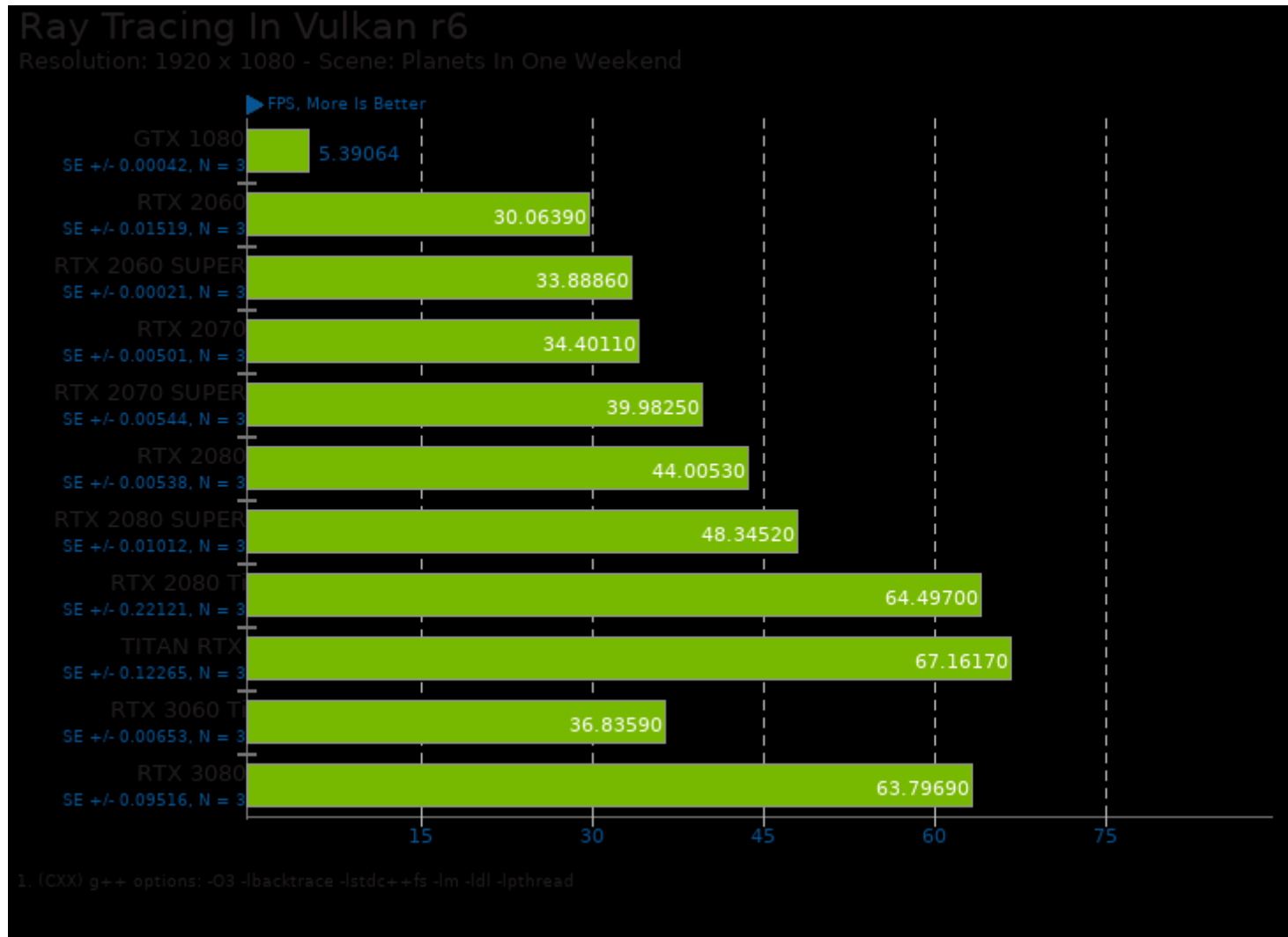


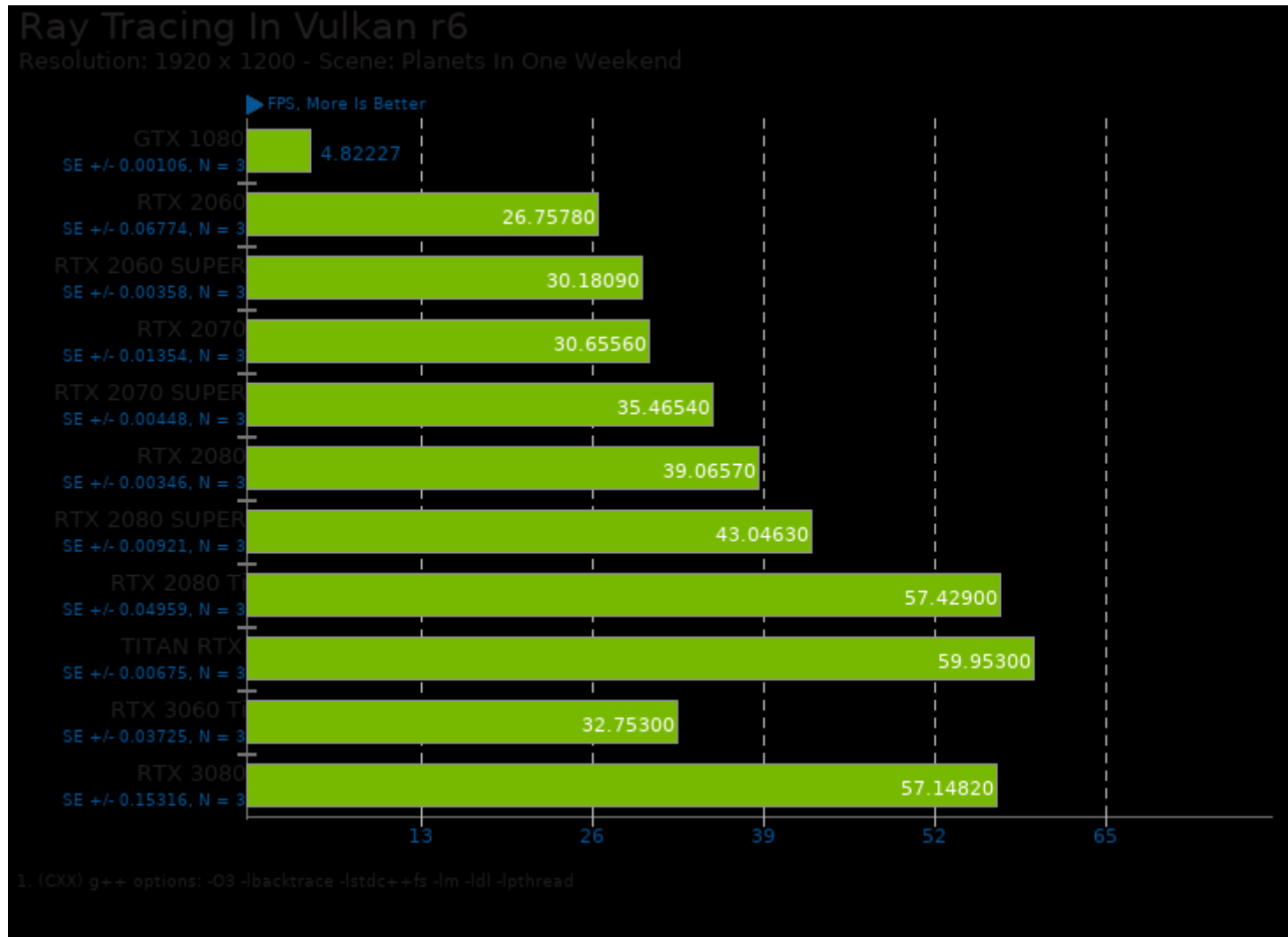


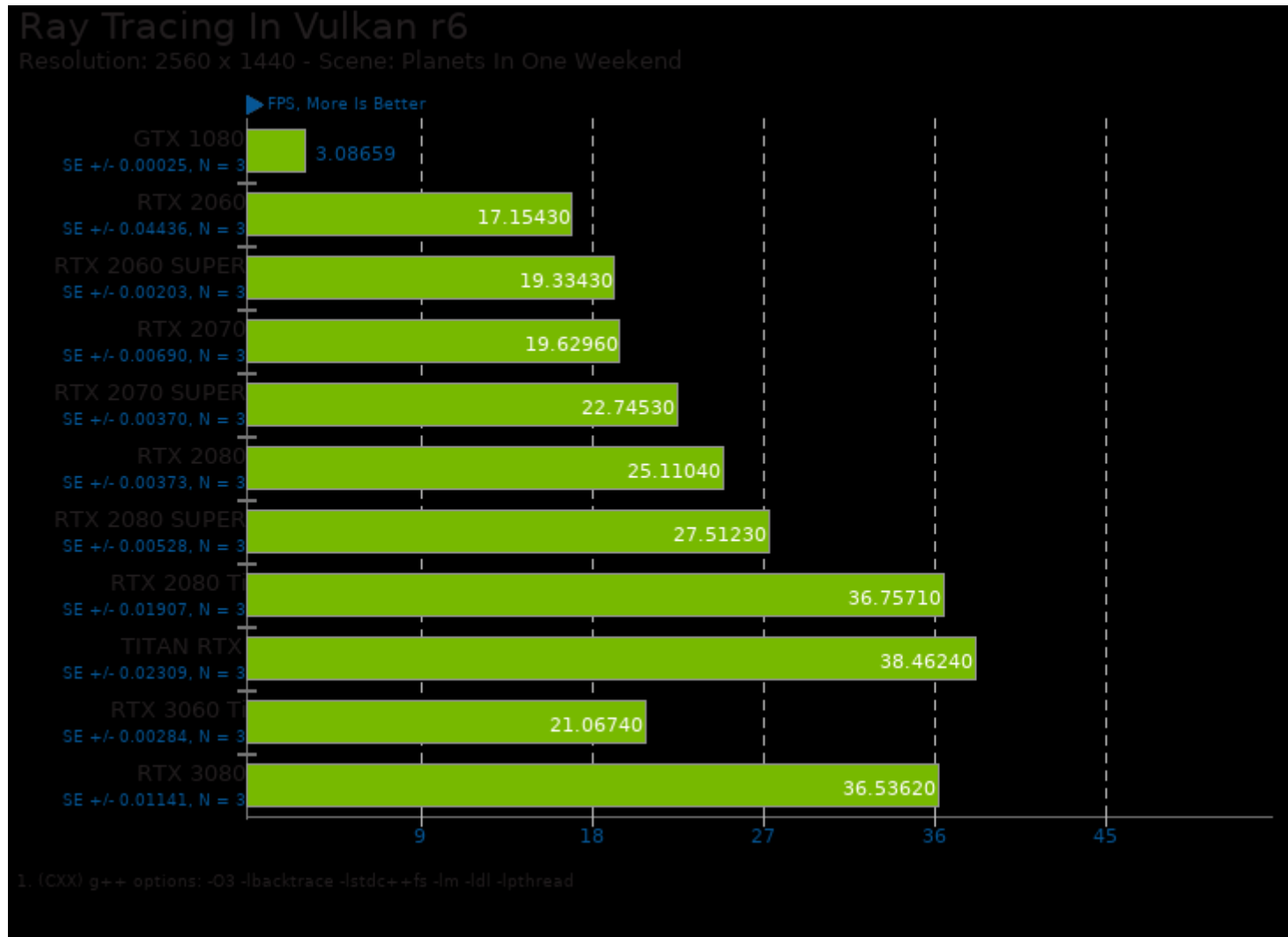


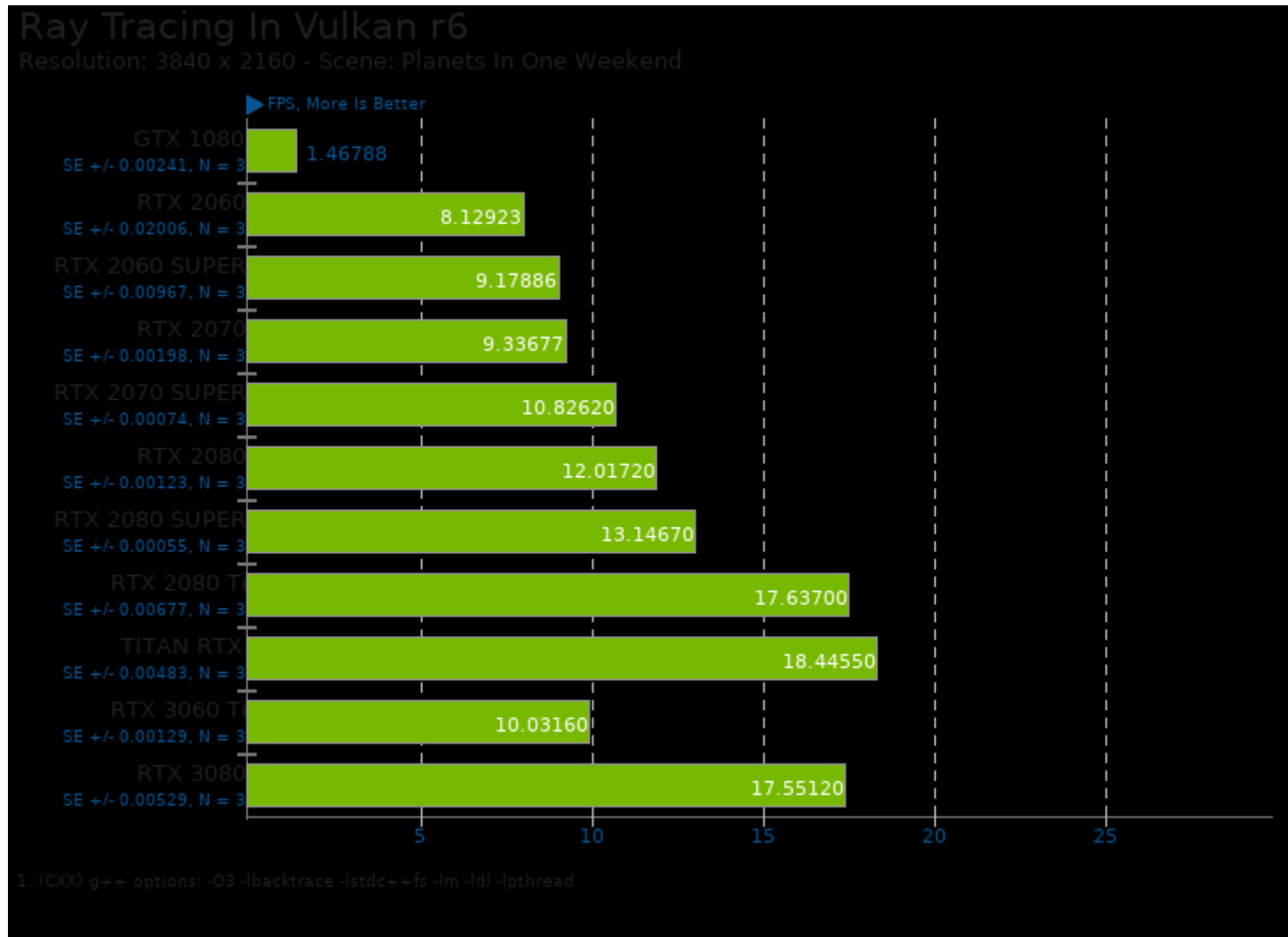


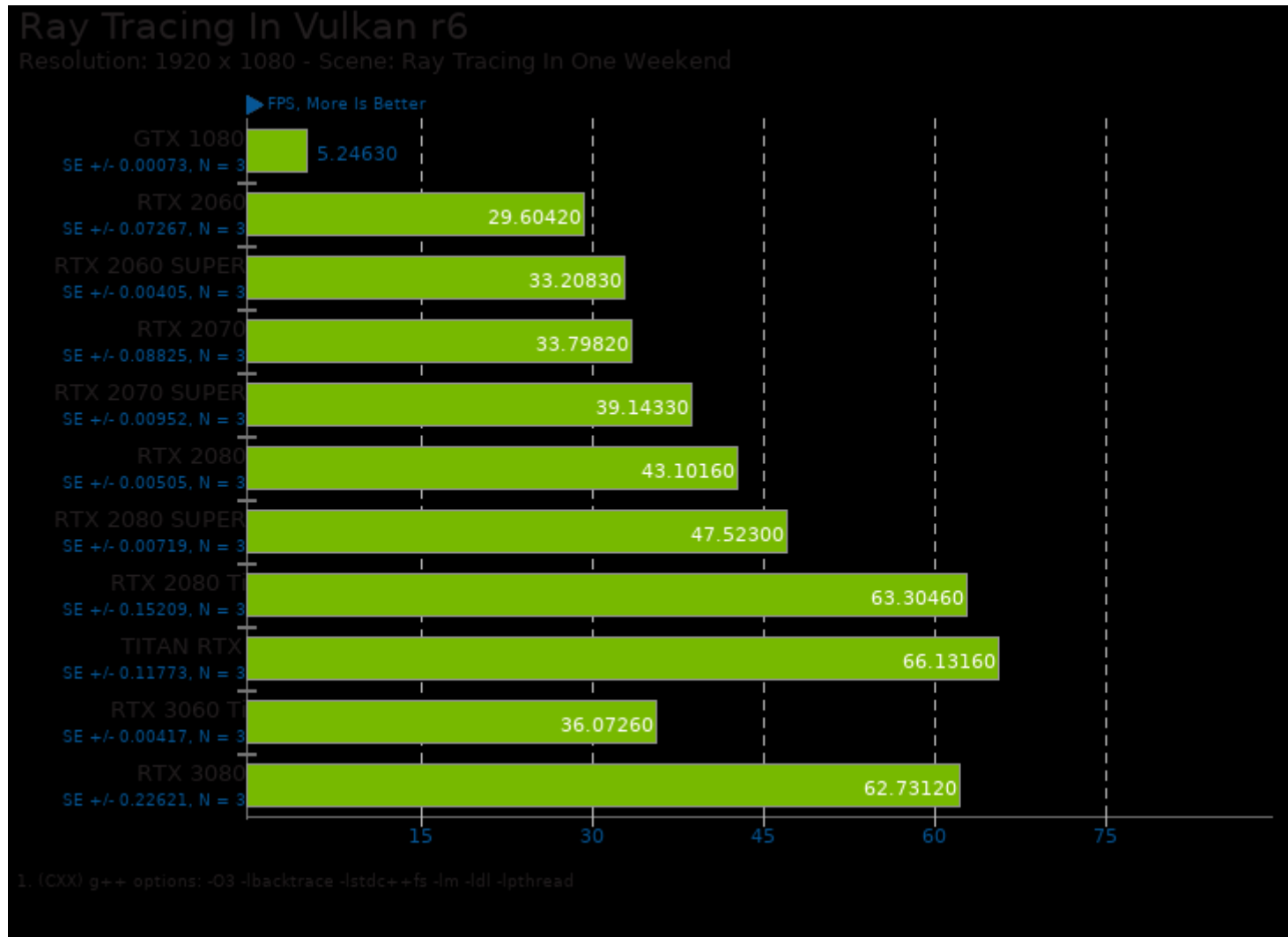


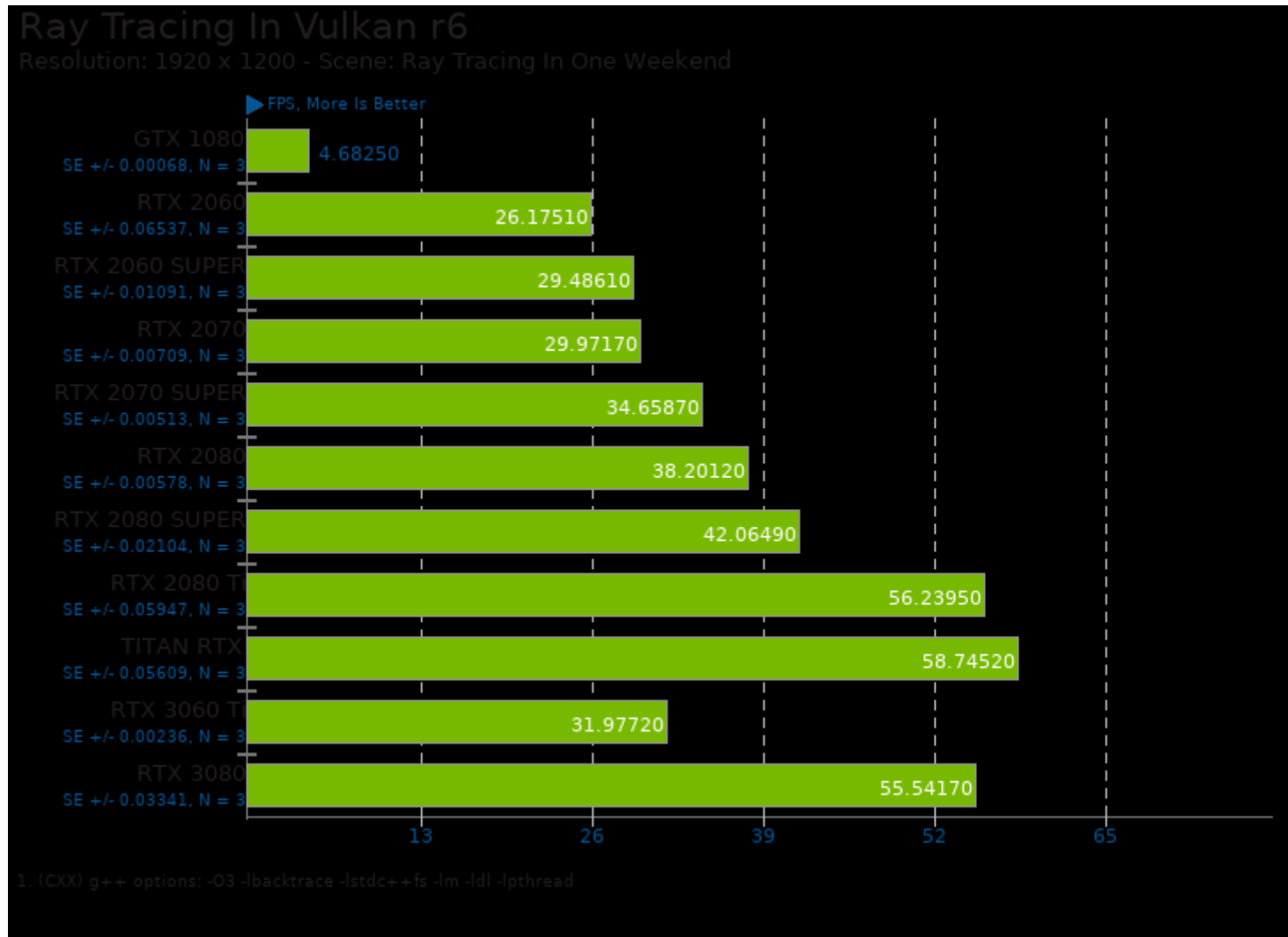


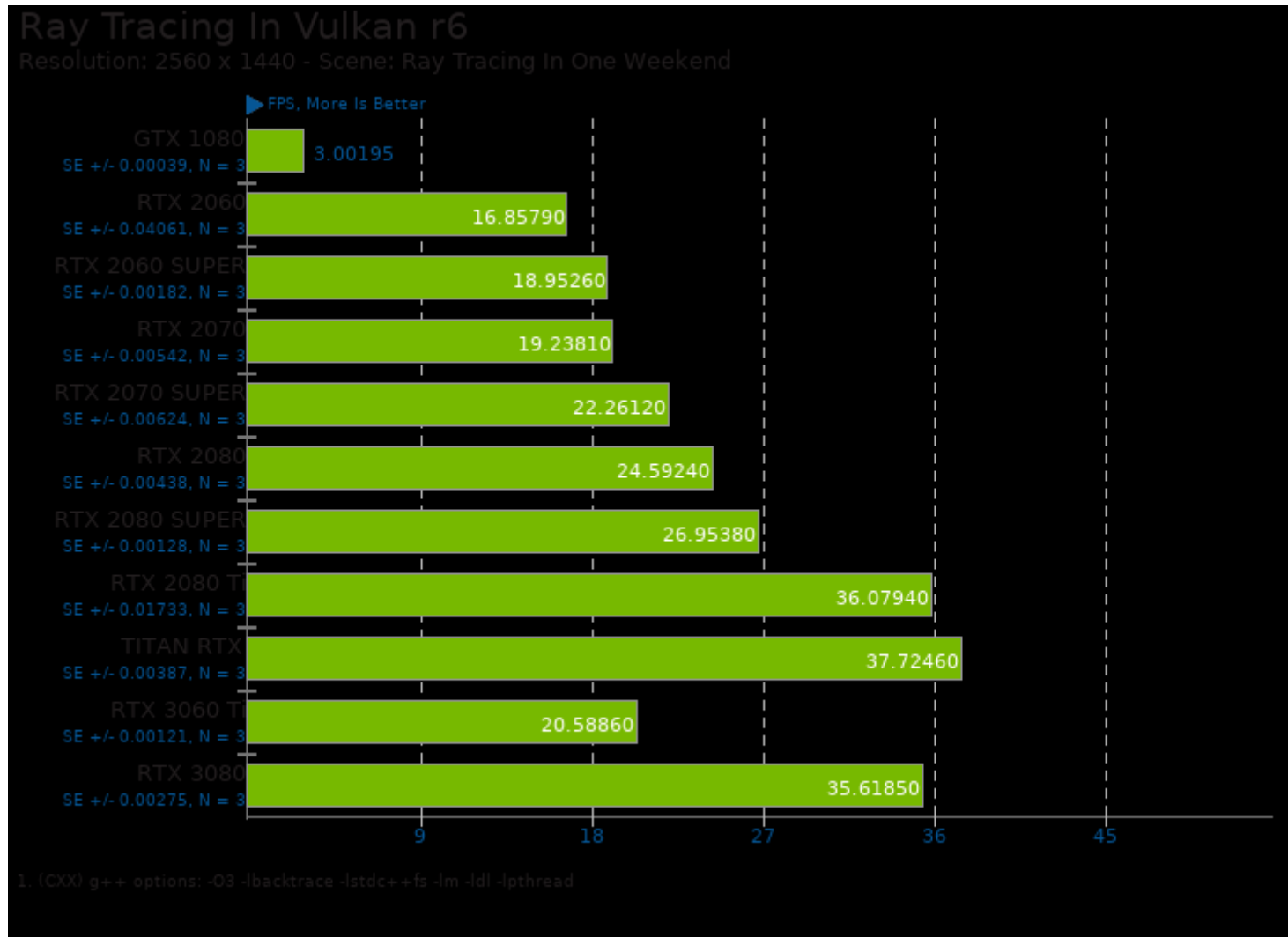


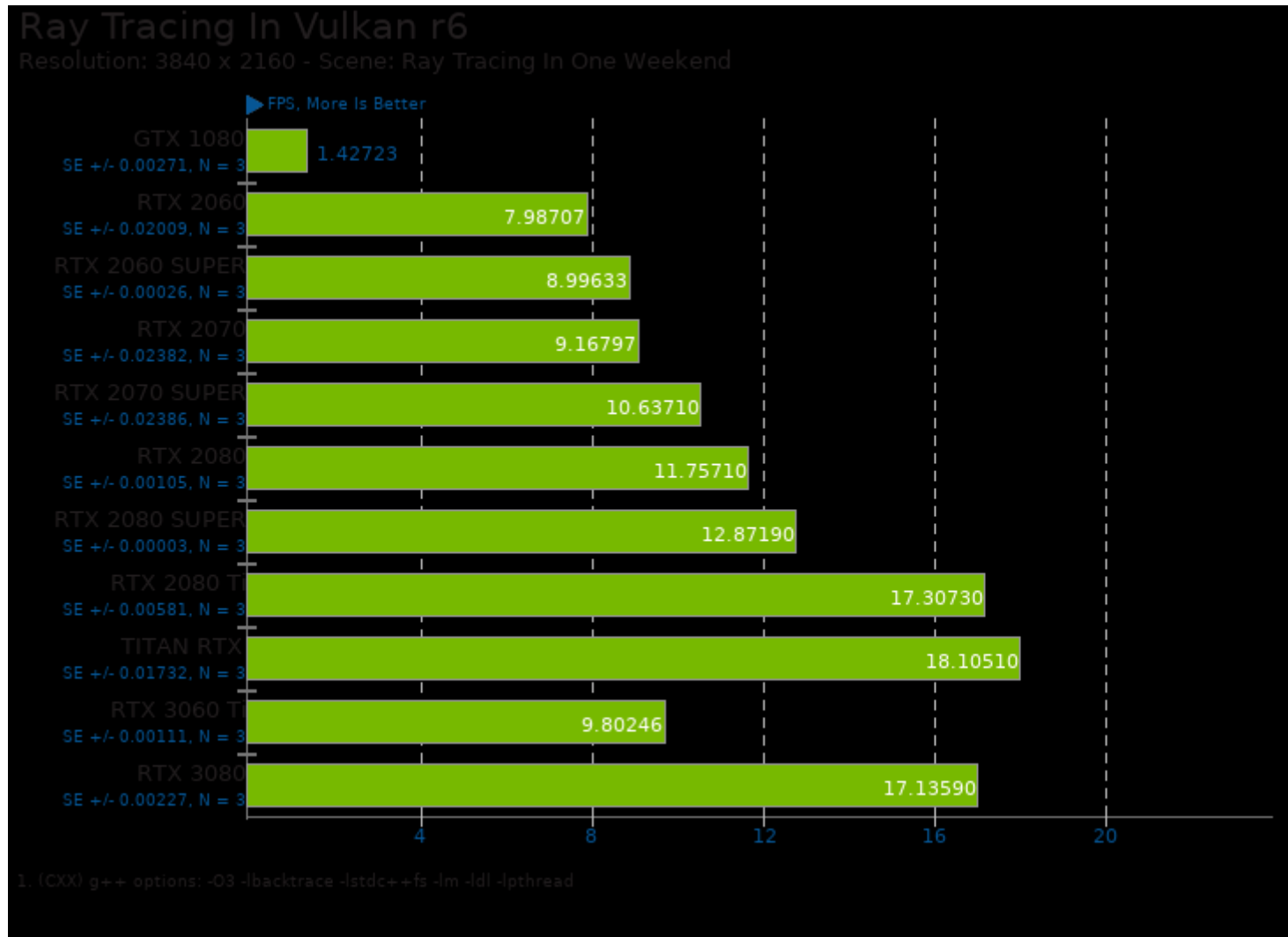


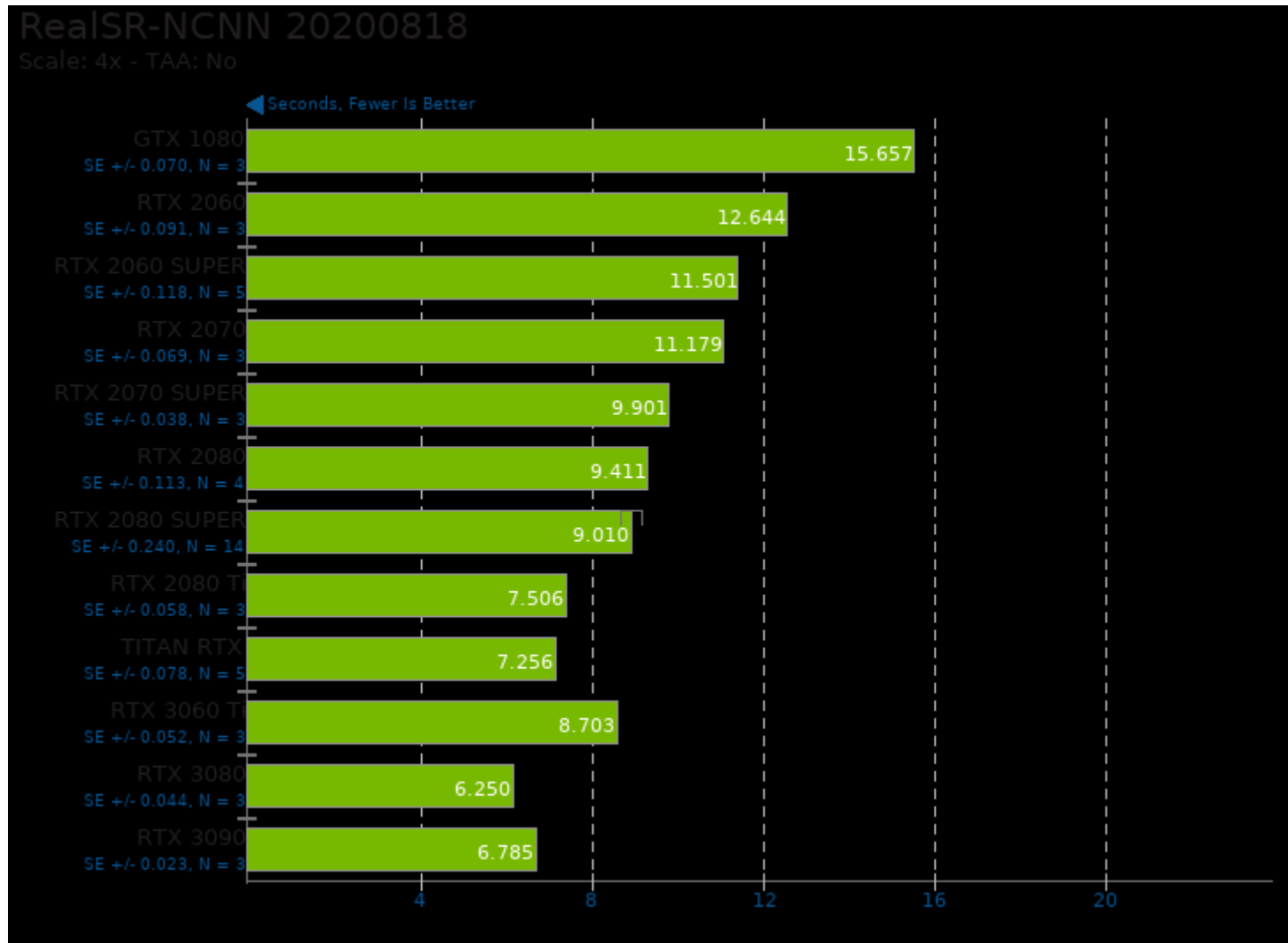


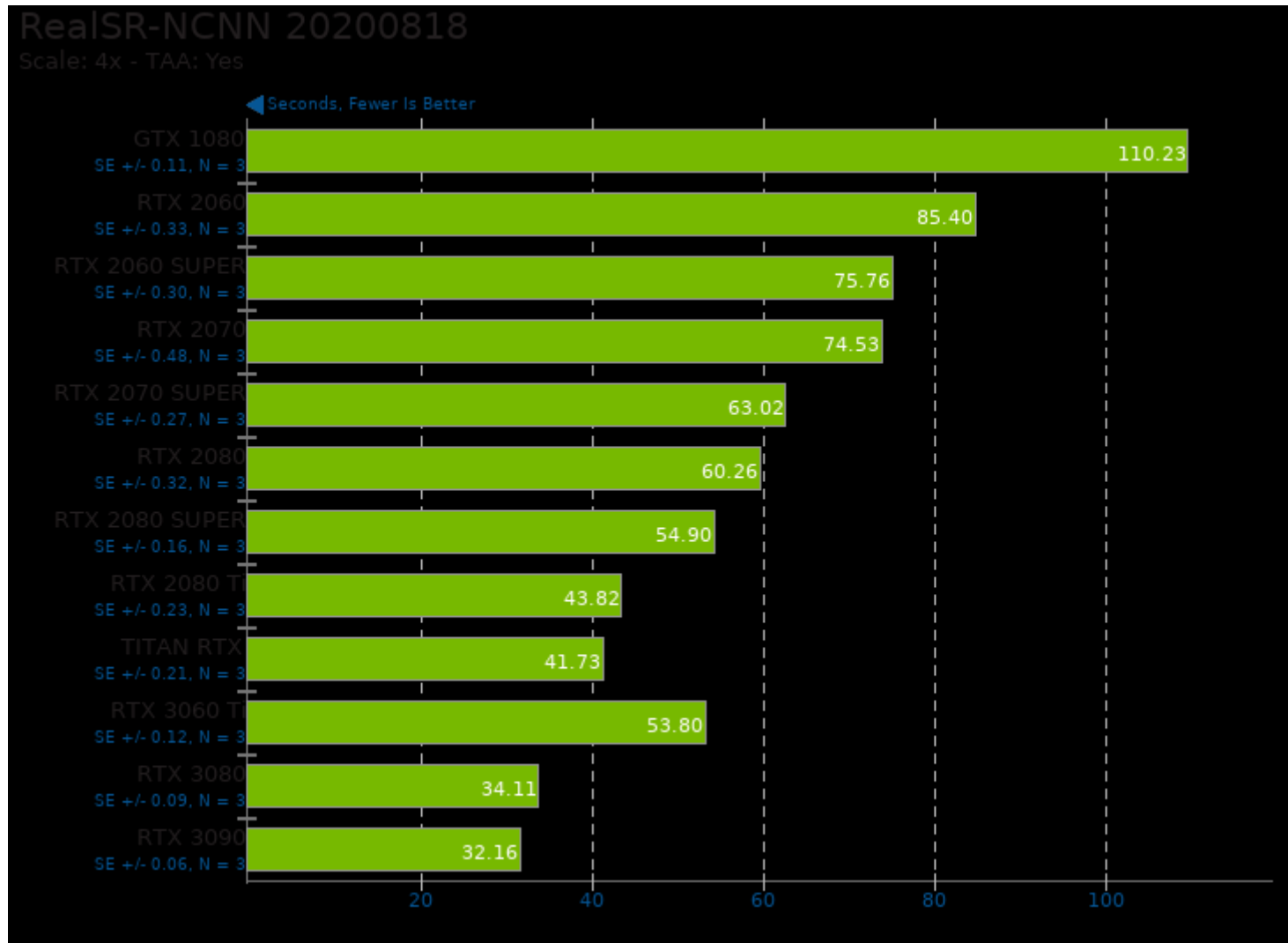


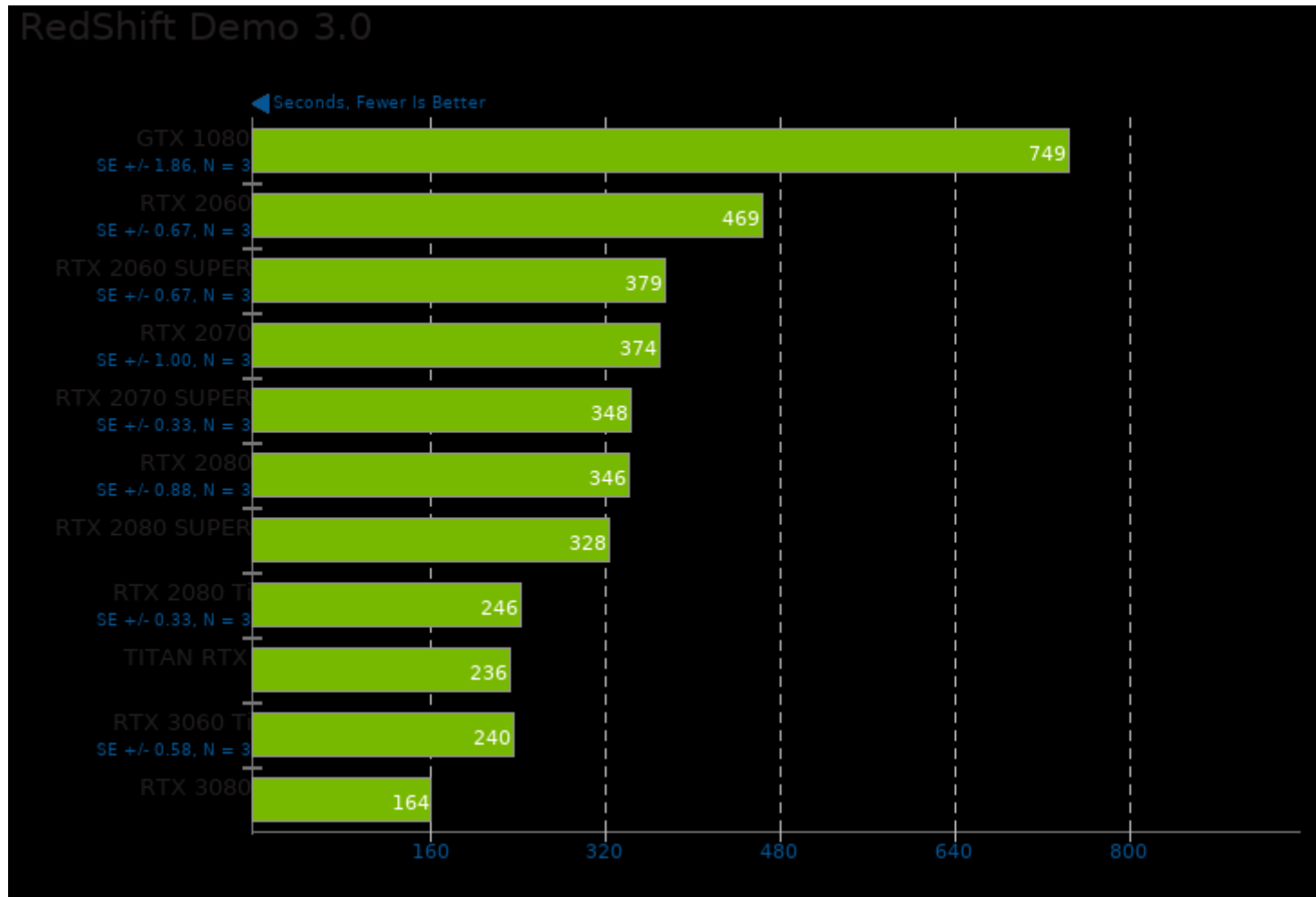




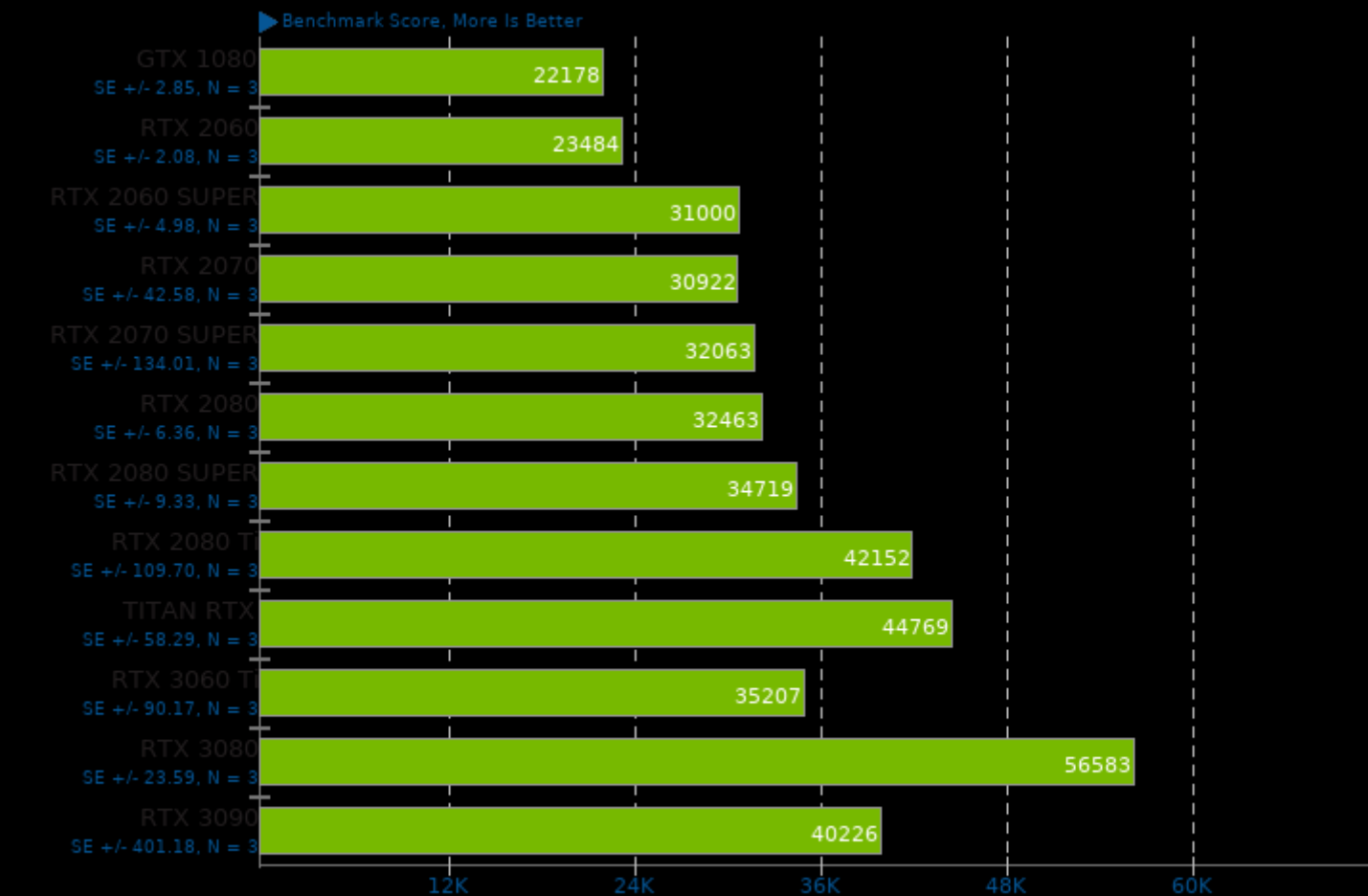




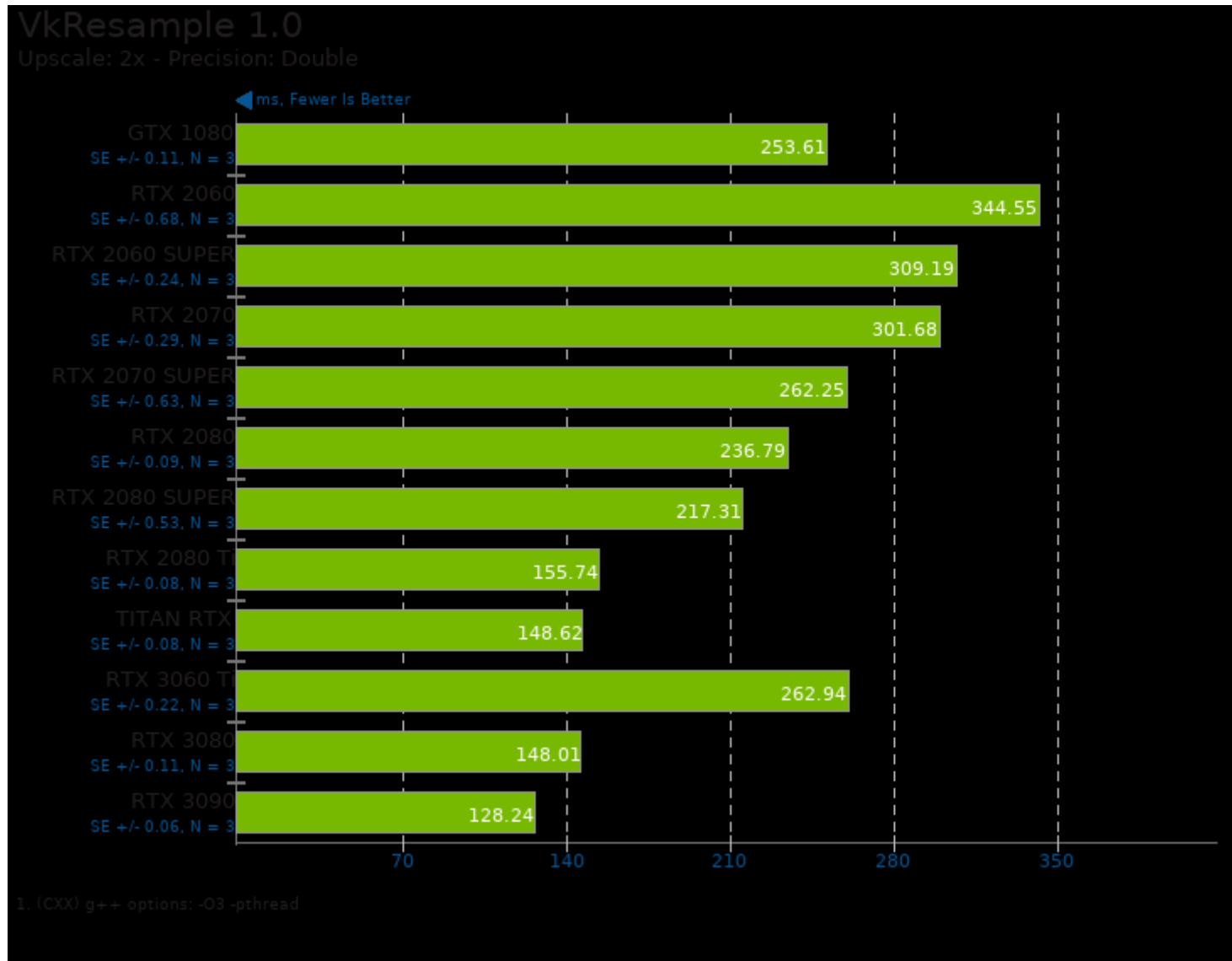


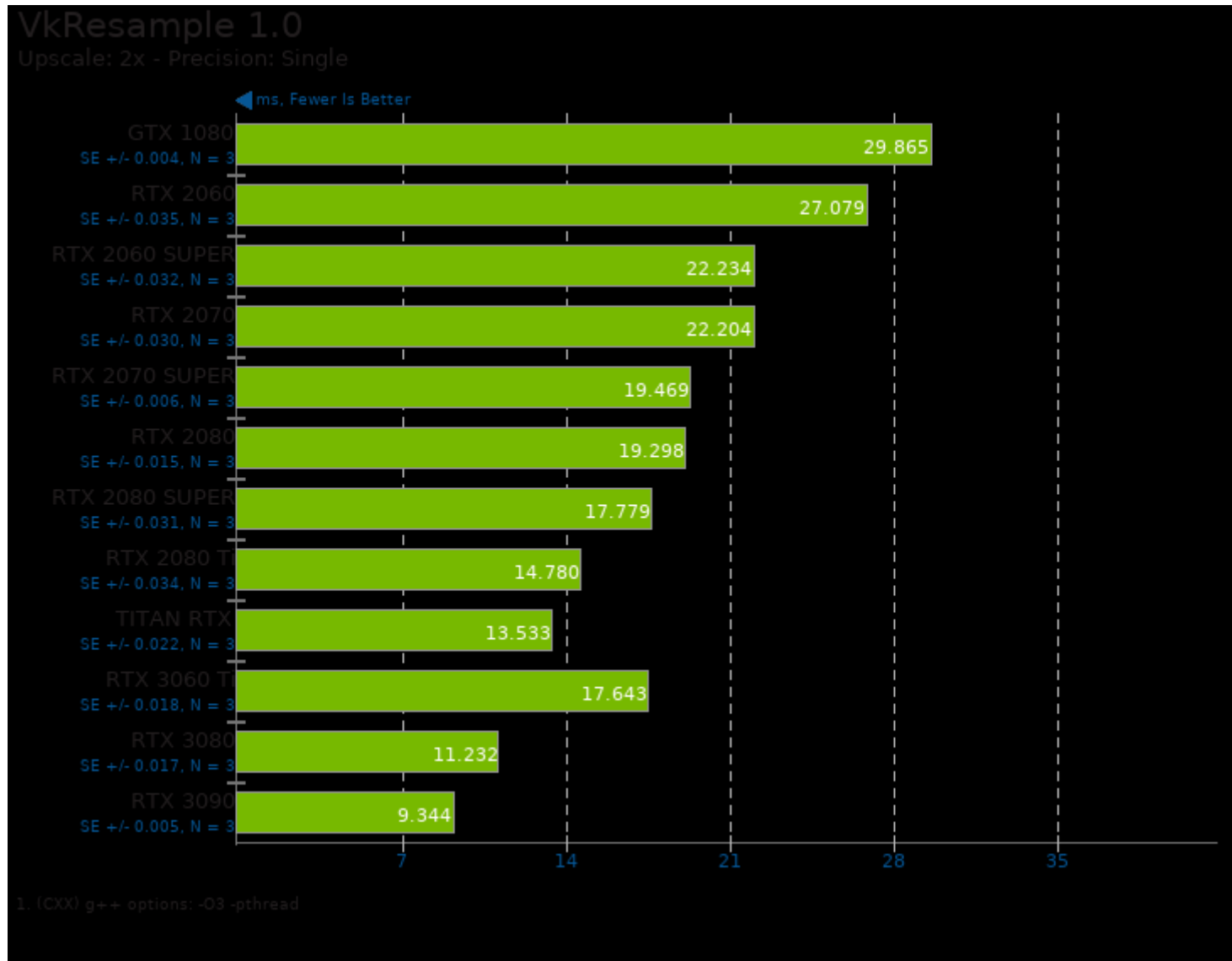


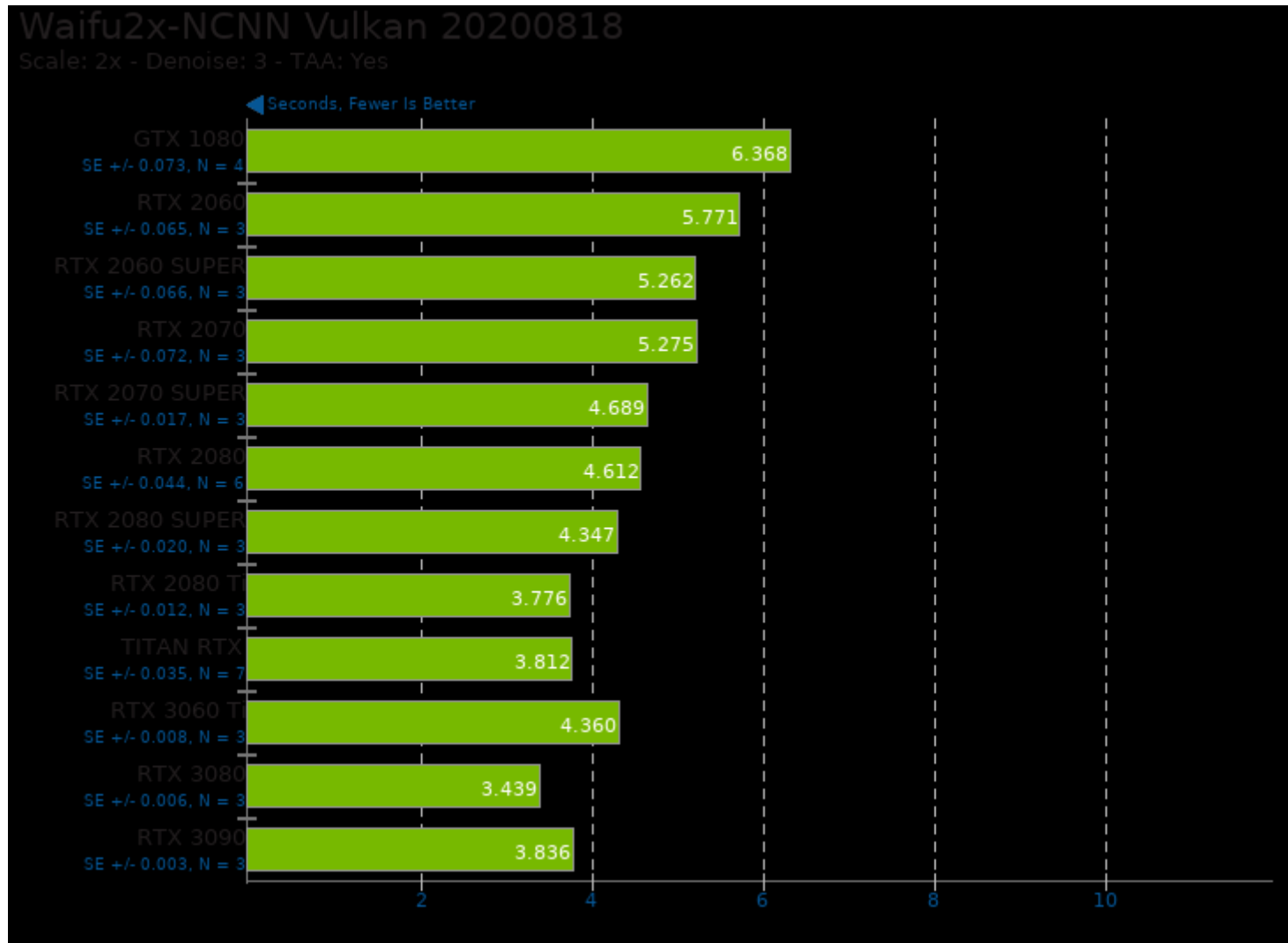
VkFFT 1.1.1



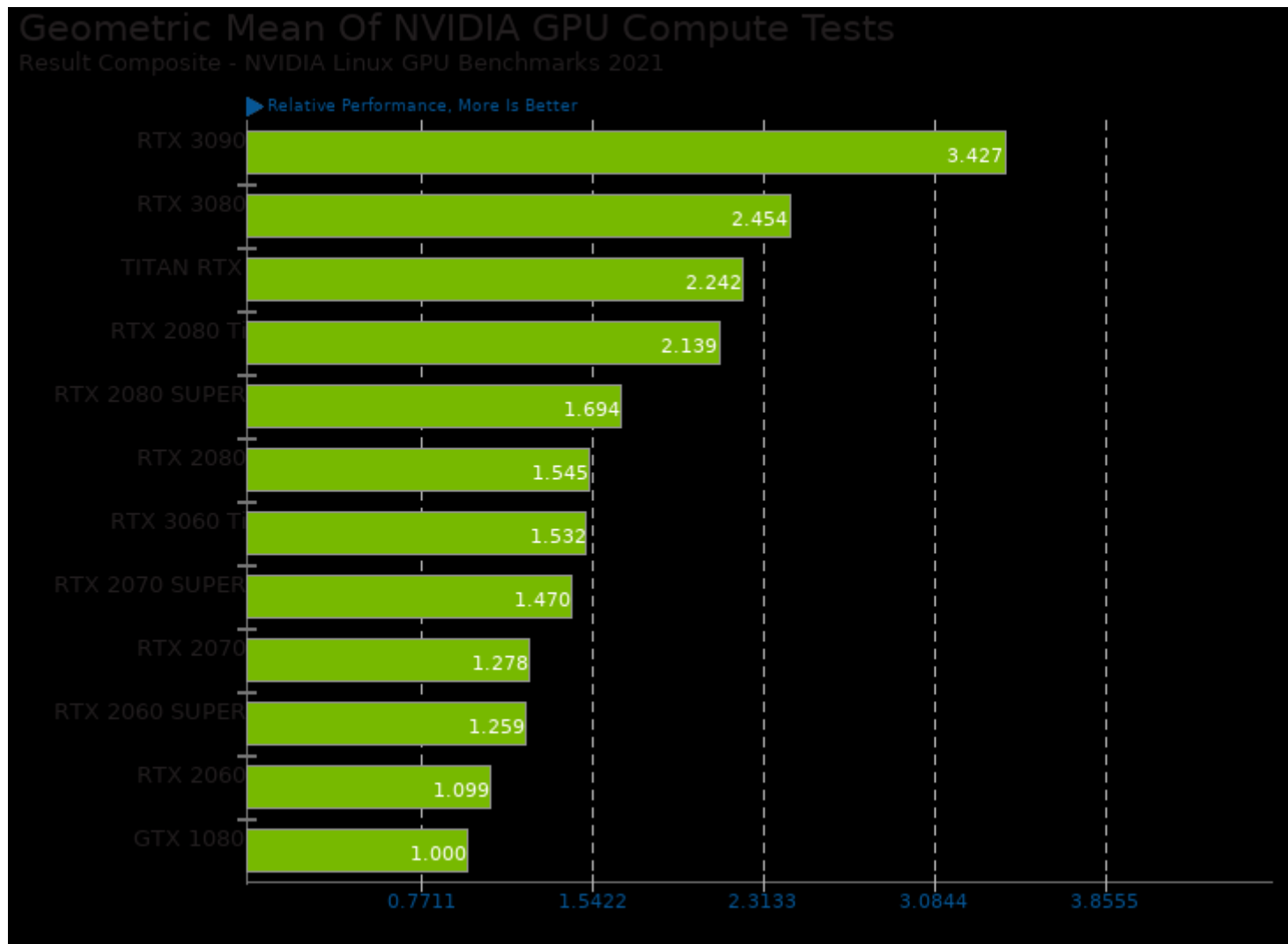
1. (CXX) g++ options: -O3 -pthread



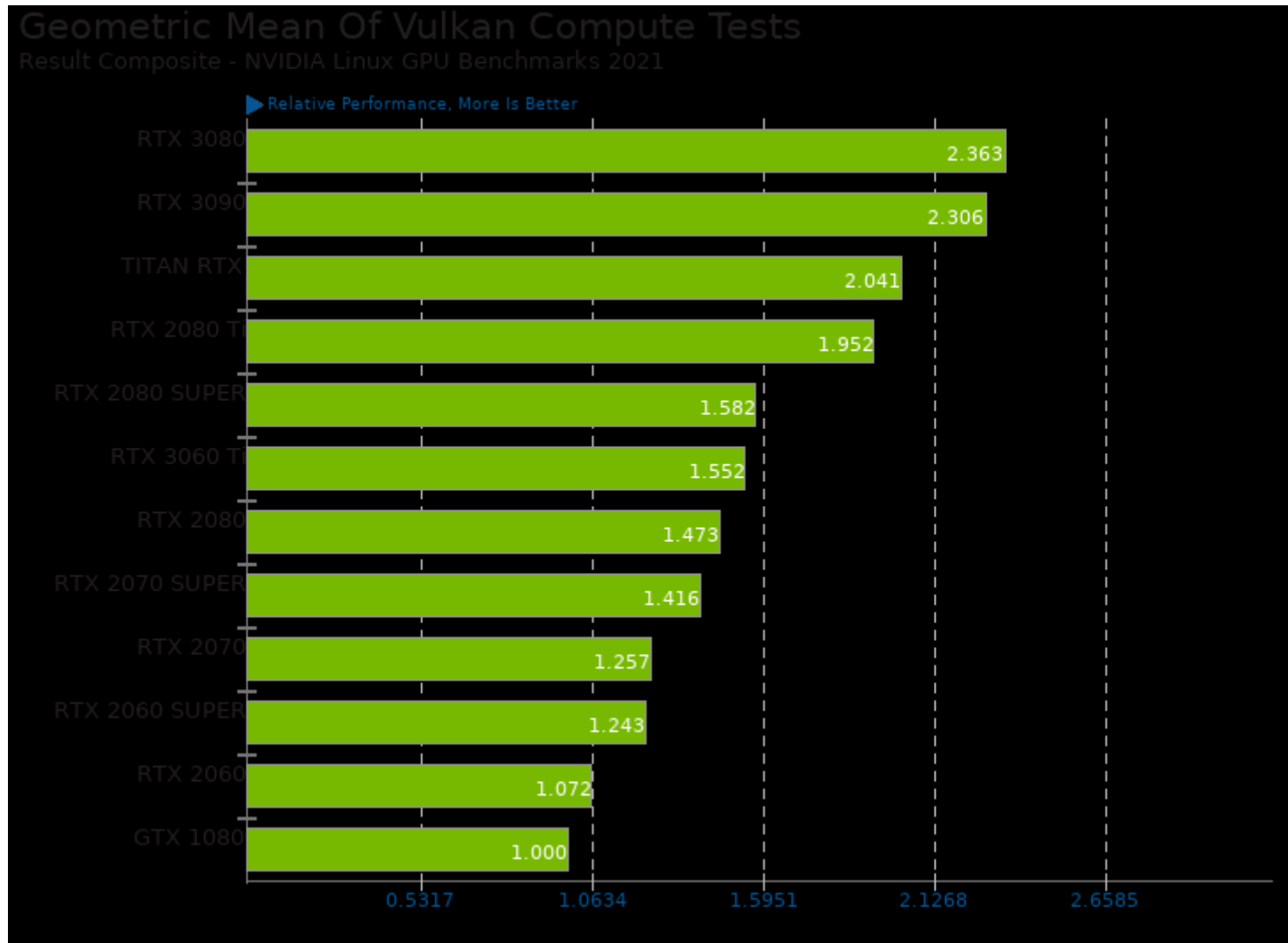




These geometric means are based upon test groupings / test suites for this result file.



Geometric mean based upon tests: pts/hashcat, pts/fahbench, pts/namd-cuda, pts/octanebench, pts/financebench, pts/redshift, pts/indigobench, pts/v-ray, pts/vkfft, pts/vkresample, pts/realsr-ncnn, pts/waifu2x-ncnn and pts/betsy



Geometric mean based upon tests: pts/vkfft, pts/vkresample, pts/realsr-ncnn, pts/waifu2x-ncnn and pts/betsy

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 26 December 2024 22:07.