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4K Linux Gaming April 2021

AMD Radeon vs. NVIDIA GeForce Linux gaming benchmarks RTX 30 series by Michael Larabel for a future article.

Automated Executive Summary

RTX 3090 had the most wins, coming in first place for 90% of the tests.

Based on the geometric mean of all complete results, the fastest (RTX 3090) was 2.608x the speed of the slowest (RTX 2060).

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

F1 2020 (Resolution: 3840 x 2160 - Graphics Preset: Ultra - Total Frame Time) at 66.06x
HITMAN 2 (Resolution: 3840 x 2160 - Quality Level: Ultra - Total Frame Time) at 22.891x
Shadow of the Tomb Raider (Resolution: 3840 x 2160 - Graphics Preset: Highest - Anti Aliasing: Off) at 5.419x
Shadow of the Tomb Raider (Resolution: 3840 x 2160 - Graphics Preset: High - Anti Aliasing: Off) at 4.148x
Ray Tracing In Vulkan (Resolution: 3840 x 2160 - Scene: Cornell Box + Lucy) at 4.122x
Unigine Heaven (Resolution: 3840 x 2160 - Mode: Fullscreen - Renderer: OpenGL) at 3.489x
Ray Tracing In Vulkan (Resolution: 3840 x 2160 - Scene: Lucy In One Weekend) at 3.444x
GeeXLab Vulkan Ray-Tracing Demo (Resolution: 3840 x 2160) at 3.081x
Batman: Arkham Knight (Resolution: 3840 x 2160 - Quality: High) at 3.053x
Strange Brigade (Resolution: 3840 x 2160 - Graphics Setting: High) at 2.981x.

Test Systems:

RTX 2060

Processor: AMD Ryzen 9 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (3402 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 Plus + 2000GB, Graphics: NVIDIA GeForce RTX 2060 6GB, Audio: NVIDIA TU106 HD Audio, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.8.0-48-generic (x86_64), Desktop: GNOME Shell 3.36.7, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.67, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.162, Vulkan: 1.2.155, Compiler: GCC 9.3.0 + CUDA 11.2, 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++,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 performance (Boost: Enabled) - CPU Microcode: 0xa201009
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/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 2060 SUPER

Processor: AMD Ryzen 9 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (3402 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 Plus + 2000GB, Graphics: NVIDIA GeForce RTX 2060 SUPER 8GB, Audio: NVIDIA TU106 HD Audio, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.8.0-48-generic (x86_64), Desktop: GNOME Shell 3.36.7, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.67, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.162, Vulkan: 1.2.155, Compiler: GCC 9.3.0 + CUDA 11.2, 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++,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 performance (Boost: Enabled) - CPU Microcode: 0xa201009
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/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 2070

Processor: AMD Ryzen 9 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (3402 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 Plus + 2000GB, Graphics: ASUS NVIDIA GeForce RTX 2070 8GB, Audio: NVIDIA TU106 HD Audio, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.8.0-48-generic (x86_64), Desktop: GNOME Shell 3.36.7, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.67, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.162, Vulkan: 1.2.155, Compiler: GCC 9.3.0 + CUDA 11.2, 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++,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 performance (Boost: Enabled) - CPU Microcode: 0xa201009
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/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 2070 SUPER

Processor: AMD Ryzen 9 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (3402 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 Plus + 2000GB, Graphics: NVIDIA GeForce RTX 2070 SUPER 8GB, Audio: NVIDIA TU104 HD Audio, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.8.0-48-generic (x86_64), Desktop: GNOME Shell 3.36.7, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.67, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.162, Vulkan: 1.2.155, Compiler: GCC 9.3.0 + CUDA 11.2, 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++,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 performance (Boost: Enabled) - CPU Microcode: 0xa201009
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/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 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (3402 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 Plus + 2000GB, Graphics: Zotac NVIDIA GeForce RTX 2080 8GB, Audio: NVIDIA TU104 HD Audio, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.8.0-48-generic (x86_64), Desktop: GNOME Shell 3.36.7, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.67, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.162, Vulkan: 1.2.155, Compiler: GCC 9.3.0 + CUDA 11.2, 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++,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 performance (Boost: Enabled) - CPU Microcode: 0xa201009
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/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 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (3402 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 Plus + 2000GB, Graphics: NVIDIA GeForce RTX 2080 SUPER 8GB, Audio: NVIDIA TU104 HD Audio, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.8.0-48-generic (x86_64), Desktop: GNOME Shell 3.36.7, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.67, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.162, Vulkan: 1.2.155, Compiler: GCC 9.3.0 + CUDA 11.2, 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++,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 performance (Boost: Enabled) - CPU Microcode: 0xa201009
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/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 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (3402 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 Plus + 2000GB, Graphics: NVIDIA GeForce RTX 2080 Ti 11GB, Audio: NVIDIA TU102 HD Audio, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.8.0-48-generic (x86_64), Desktop: GNOME Shell 3.36.7, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.67, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.162, Vulkan: 1.2.155, Compiler: GCC 9.3.0 + CUDA 11.2, 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++,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 performance (Boost: Enabled) - CPU Microcode: 0xa201009
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/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

TITAN RTX

Processor: AMD Ryzen 9 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (3402 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 Plus + 2000GB, Graphics: NVIDIA TITAN RTX 24GB, Audio: NVIDIA TU102 HD Audio, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.8.0-48-generic (x86_64), Desktop: GNOME Shell 3.36.7, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.67, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.162, Vulkan: 1.2.155, Compiler: GCC 9.3.0 + CUDA 11.2, 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++,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 performance (Boost: Enabled) - CPU Microcode: 0xa201009
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/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 3060

Processor: AMD Ryzen 9 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR

VIII HERO (3402 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 Plus + 2000GB, Graphics: eVGA NVIDIA GeForce RTX 3060 12GB, Audio: NVIDIA Device 228e, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.8.0-48-generic (x86_64), Desktop: GNOME Shell 3.36.7, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.67, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.162, Vulkan: 1.2.155, Compiler: GCC 9.3.0 + CUDA 11.2, 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++,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 performance (Boost: Enabled) - CPU Microcode: 0xa201009
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/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 3060 Ti

Processor: AMD Ryzen 9 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (3402 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 Plus + 2000GB, Graphics: NVIDIA GeForce RTX 3060 Ti 8GB, Audio: NVIDIA Device 228b, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.8.0-48-generic (x86_64), Desktop: GNOME Shell 3.36.7, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.67, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.162, Vulkan: 1.2.155, Compiler: GCC 9.3.0 + CUDA 11.2, 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++,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 performance (Boost: Enabled) - CPU Microcode: 0xa201009
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/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 3070

Processor: AMD Ryzen 9 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (3402 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 Plus + 2000GB, Graphics: NVIDIA GeForce RTX 3070 8GB, Audio: NVIDIA Device 228b, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.8.0-48-generic (x86_64), Desktop: GNOME Shell 3.36.7, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.67, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.162, Vulkan: 1.2.155, Compiler: GCC 9.3.0 + CUDA 11.2, 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++,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 performance (Boost: Enabled) - CPU Microcode: 0xa201009
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/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 3080

Processor: AMD Ryzen 9 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (3402 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 Plus + 2000GB, Graphics: NVIDIA GeForce RTX 3080 10GB, Audio: NVIDIA Device 1aef, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.8.0-48-generic (x86_64), Desktop: GNOME Shell 3.36.7, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.67, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.162, Vulkan: 1.2.155, Compiler: GCC 9.3.0 + CUDA 11.2, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: madvise
Processor Notes: Scaling Governor: acpi-cpufreq performance (Boost: Enabled) - CPU Microcode: 0xa201009
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/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 3090

Processor: AMD Ryzen 9 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (3402 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 Plus + 2000GB, Graphics: NVIDIA GeForce RTX 3090 24GB, Audio: NVIDIA Device 1aef, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.8.0-48-generic (x86_64), Desktop: GNOME Shell 3.36.7, Display Server: X Server 1.20.9, Display Driver: NVIDIA 460.67, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.162, Vulkan: 1.2.155, Compiler: GCC 9.3.0 + CUDA 11.2, 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++,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 performance (Boost: Enabled) - CPU Microcode: 0xa201009
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/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

RX 5600 XT

Processor: AMD Ryzen 9 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (3402 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 Plus + 2000GB, Graphics: Sapphire AMD Radeon RX 5600 OEM/5600 XT / 5700/5700 6GB (1780/875MHz), Audio: AMD Navi 10 HDMI Audio, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.12.0-051200rc6daily20210408-generic (x86_64) 20210407, Desktop: GNOME Shell 3.36.7, Display Server: X Server 1.20.9, OpenGL: 4.6 Mesa 21.1.0-devel (git-d1f96e0 2021-04-08 focal-oibaf-ppa) (LLVM 12.0.0), Vulkan: 1.1.168, Compiler: GCC 9.3.0 + CUDA 11.2, 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++,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 performance (Boost: Enabled) - CPU Microcode: 0xa201009

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/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

RX 5700 XT

Processor: AMD Ryzen 9 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (3402 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 Plus + 2000GB, Graphics: AMD Radeon RX 5600 OEM/5600 XT / 5700/5700 8GB (2100/875MHz), Audio: AMD Navi 10 HDMI Audio, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.12.0-051200rc6daily20210408-generic (x86_64) 20210407, Desktop: GNOME Shell 3.36.7, Display Server: X Server 1.20.9, OpenGL: 4.6 Mesa 21.1.0-devel (git-d1f96e0 2021-04-08 focal-oibaf-ppa) (LLVM 12.0.0), Vulkan: 1.1.168, Compiler: GCC 9.3.0 + CUDA 11.2, 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++,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 performance (Boost: Enabled) - CPU Microcode: 0xa201009
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/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

Radeon VII

Processor: AMD Ryzen 9 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (3402 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 Plus + 2000GB, Graphics: AMD Radeon VII 16GB (1801/1000MHz), Audio: AMD Vega 20 HDMI Audio, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.12.0-051200rc6daily20210408-generic (x86_64) 20210407, Desktop: GNOME Shell 3.36.7, Display Server: X Server 1.20.9, OpenGL: 4.6 Mesa 21.1.0-devel (git-d1f96e0 2021-04-08 focal-oibaf-ppa) (LLVM 12.0.0), Vulkan: 1.1.168, Compiler: GCC 9.3.0 + CUDA 11.2, 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++,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 performance (Boost: Enabled) - CPU Microcode: 0xa201009
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/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

RX 6700 XT

Processor: AMD Ryzen 9 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (3402 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 Plus + 2000GB, Graphics: AMD NAVY_FLOUNDER 12GB (2855/1000MHz), Audio: AMD Device ab28, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.12.0-051200rc6daily20210408-generic (x86_64) 20210407, Desktop: GNOME Shell 3.36.7, Display Server: X Server 1.20.9, OpenGL: 4.6 Mesa 21.1.0-devel (git-d1f96e0 2021-04-08 focal-oibaf-ppa) (LLVM 12.0.0), Vulkan: 1.1.168, Compiler: GCC 9.3.0 + CUDA 11.2, 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++,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 performance (Boost: Enabled) - CPU Microcode: 0xa201009
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/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

RX 6800

Processor: AMD Ryzen 9 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (3402 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 Plus + 2000GB, Graphics: AMD Radeon RX 6800 16GB (2475/1000MHz), Audio: AMD Device ab28, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.12.0-051200rc6daily20210408-generic (x86_64) 20210407, Desktop: GNOME Shell 3.36.7, Display Server: X Server 1.20.9, OpenGL: 4.6 Mesa 21.1.0-devel (git-d1f96e0 2021-04-08 focal-oibaf-ppa) (LLVM 12.0.0), Vulkan: 1.1.168, Compiler: GCC 9.3.0 + CUDA 11.2, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: madvise
Processor Notes: Scaling Governor: acpi-cpufreq performance (Boost: Enabled) - CPU Microcode: 0xa201009
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/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

RX 6800 XT

Processor: AMD Ryzen 9 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (3402 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 Plus + 2000GB, Graphics: AMD Radeon RX 6800 XT 16GB (2575/1000MHz), Audio: AMD Device ab28, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.12.0-051200rc6daily20210408-generic (x86_64) 20210407, Desktop: GNOME Shell 3.36.7, Display Server: X Server 1.20.9, OpenGL: 4.6 Mesa 21.1.0-devel (git-d1f96e0 2021-04-08 focal-oibaf-ppa) (LLVM 12.0.0), Vulkan: 1.1.168, Compiler: GCC 9.3.0 + CUDA 11.2, 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++,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 performance (Boost: Enabled) - CPU Microcode: 0xa201009
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/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

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	RTX 2060	RTX 2060 SUPER	RTX 2070	RTX 2070 SUPER	RTX 2080	RTX 2080 SUPER	RTX 2080 Ti	TITAN RTX	RTX 3060	RTX 3060 Ti	RTX 3070	RTX 3080	RTX 3090	RX 5600 XT	RX 5700 XT	Radeon VII	RX 6700 XT	RX 6800	RX 6800 XT
Batman: Arkham Knight - 3840 x 2160 - High	50.25	61.75	61.60	69.28	72.75	77.21	100.69	103.76	56.10	86.44	97.08	123.60	153.39	51.83	65.55	76.84	83.34	109.13	124.79
Normalized	32.76%	40.26%	40.16%	45.17%	47.43%	50.34%	65.64%	67.64%	36.57%	56.35%	63.29%	80.58%	100%	33.79%	42.73%	50.09%	54.33%	71.15%	81.35%
Standard Deviation	0.8%	1%	1.2%	0.9%	0.7%	0.9%	1.3%	0.4%	0.2%	0.9%	0.2%	1.4%	0.8%	0.2%	0.2%	0.1%	0.1%	0.2%	0.9%
Counter-Strike: Global Offensive - 3840 x 2160 (FPS)	150.4	169.4	171.5	198.6	210.9	227.4	274.3	274.9	159.2	221.2	251.7	287.6	333.4	199.1	230.3	237.5	283.8	312.5	355.5
Normalized	42.31%	47.65%	48.24%	55.86%	59.32%	63.97%	77.16%	77.33%	44.78%	62.22%	70.8%	80.9%	93.78%	56.01%	64.78%	66.81%	79.83%	87.9%	100%
Standard Deviation	0.1%	0.2%	0.2%	0.4%	0.6%	0.3%	0.3%	0.8%	0%	0.2%	0.1%	0.1%	0.6%	0.1%	2.4%	2.9%	3.1%	3%	0.4%
DiRT Rally 2.0 - 3840 x 1600 - Low (FPS)	137.890	155.514	157.289	179.538	189.734	205.284	252.660	256.611	169.736	226.119	253.527	303.955	361.181	196.688	224.419	240.264	276.471	335.511	386.559
Normalized	35.67%	40.23%	40.69%	46.45%	49.08%	53.11%	65.36%	66.38%	43.91%	58.5%	65.59%	78.63%	93.43%	50.88%	58.06%	62.15%	71.52%	86.79%	100%
Standard Deviation	0.5%	0.2%	0.4%	0.2%	0.2%	0.4%	0.3%	0.3%	0.3%	0.1%	0.1%	0.3%	0.3%	0.1%	0.2%	0%	0.1%	0.4%	0.1%
DiRT Rally 2.0 - 3840 x 1600 - High	76.9516	85.8273	85.5586	100.282	106.755	113.695	141.555	141.837	89.3212	118.357	134.465	161.663	196.009	98.7666	111.949	117.242	137.827	167.414	196.837
Normalized	39.09%	43.6%	43.47%	50.95%	54.24%	57.76%	71.91%	72.06%	45.38%	60.13%	68.31%	82.13%	99.58%	50.18%	56.87%	59.56%	70.02%	85.05%	100%
Standard Deviation	0.4%	0.4%	0.7%	0.4%	0.2%	0.7%	0.3%	0.2%	0.4%	0.2%	0%	0.1%	0.2%	0%	0%	0%	0.2%	0.3%	0.1%
DiRT Rally 2.0 - 3840 x 1600 - Ultra	47.3185	53.0439	53.4252	62.2163	66.5318	71.6050	89.1987	90.4072	53.6846	72.3268	82.8799	102.231	124.472	53.5177	63.2472	73.3429	81.7237	100.772	119.859
Normalized	38.02%	42.62%	42.92%	49.98%	53.45%	57.53%	71.66%	72.63%	43.13%	58.11%	66.59%	82.13%	100%	43%	50.81%	58.92%	65.66%	80.96%	96.29%
Standard Deviation	0.5%	0.4%	0.2%	0.5%	0.6%	0.5%	0.6%	0.3%	0%	0.2%	0.1%	0.1%	0%	0.1%	0%	0%	0.2%	0.3%	0.1%

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Dawn of War III - 3840 x 2160 - Ultra - Vulkan (FPS)	**43.1394**	49.8816	50.7078	58.4870	63.4751	69.1774	84.8773	86.1299	53.1638	74.0305	83.9026	97.3676	**107.836**	44.6914	52.2847	61.2927	71.1627	88.7063	98.1157
Normalized	40%	46.26%	47.02%	54.24%	58.86%	64.15%	78.71%	79.87%	49.3%	68.65%	77.81%	90.29%	100%	41.44%	48.49%	56.84%	65.99%	82.26%	90.99%
Standard Deviation	1.3%	0.4%	0.1%	0.9%	0.6%	0.1%	0.8%	0.8%	0.8%	0.3%	0.7%	0.2%	0.8%	1.2%	1.3%	1%	1.7%	1.2%	0.4%
F1 2017 - 3840 x 2160 - High - Off (FPS)	**84**	95	96	112	118	130	156	158	103	137	156	175	**199**	91	107	116	135	158	177
Normalized	42.21%	47.74%	48.24%	56.28%	59.3%	65.33%	78.39%	79.4%	51.76%	68.84%	78.39%	87.94%	100%	45.73%	53.77%	58.29%	67.84%	79.4%	88.94%
Standard Deviation			0.6%	0.5%				0.4%	0.6%							0.5%		0.7%	0.9%
F1 2020 - 3840 x 2160 - Low (FPS)	**120**	135	138	158	166	181	217	218	140	185	209	239	**262**	122	146	142	181	222	247
Normalized	45.8%	51.53%	52.67%	60.31%	63.36%	69.08%	82.82%	83.21%	53.44%	70.61%	79.77%	91.22%	100%	46.56%	55.73%	54.2%	69.08%	84.73%	94.27%
Standard Deviation								0.3%				0.2%	0.4%	0.5%			0.3%	0.5%	0.5%
F1 2020 - 3840 x 2160 - High	99	111	112	131	136	149	179	179	112	149	168	198	**224**	**98**	117	116	146	175	199
Normalized	44.2%	49.55%	50%	58.48%	60.71%	66.52%	79.91%	79.91%	50%	66.52%	75%	88.39%	100%	43.75%	52.23%	51.79%	65.18%	78.13%	88.84%
Standard Deviation												0.5%					0.4%	0.3%	
F1 2020 - 3840 x 2160 - Ultra	73	82	83	97	102	112	133	134	84	112	128	151	**176**	**71**	86	83	104	125	146
Normalized	41.48%	46.59%	47.16%	55.11%	57.95%	63.64%	75.57%	76.14%	47.73%	63.64%	72.73%	85.8%	100%	40.34%	48.86%	47.16%	59.09%	71.02%	82.95%
Standard Deviation				0.6%									0.6%						0.4%
HITMAN 2 - 3840 x 2160 - Ultra	**36.60**	41.45	42.24	49.15	51.91	57.52	69.27	69.89	43.76	59.59	67.02	80.98	**96.09**	41.67	49.14	55.50	62.09	75.85	86.10
Normalized	38.09%	43.14%	43.96%	51.15%	54.02%	59.86%	72.09%	72.73%	45.54%	62.01%	69.75%	84.28%	100%	43.37%	51.14%	57.76%	64.62%	78.94%	89.6%
Standard Deviation	0.1%	0.1%	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%	0.1%	0%	0.3%	0.1%	0.5%	0.5%	0.2%	0.4%

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Shadow of the Tomb Raider - 3840 x 2160 - High - Off	41.1	47.3	47.9	55.7	58.0	64.2	77.9	79.2	48.6	65	73.2	92.0	**112.4**	**27.1**	55.0	61	64.1	80.6	91.7
Normalized	36.57%	42.08%	42.62%	49.56%	51.6%	57.12%	69.31%	70.46%	43.24%	57.83%	65.12%	81.85%	100%	24.11%	48.93%	54.27%	57.03%	71.71%	81.58%
Standard Deviation	0.1%	0%	0%	0.1%	0.2%	0.2%	0.1%	0.1%	0.1%		0.1%	0.1%	0.1%	20.4%	0.1%		0%	0%	0%
Shadow of the Tomb Raider - 3840 x 2160 - Highest -	35.8	42.9	43.6	50.7	52.7	58.4	71.2	72.4	44.6	59.6	67.0	84.7	**103.5**	**19.1**	49.3	54.5	57.6	73.0	82.8
Normalized	34.59%	41.45%	42.13%	48.99%	50.92%	56.43%	68.79%	69.95%	43.09%	57.58%	64.73%	81.84%	100%	18.45%	47.63%	52.66%	55.65%	70.53%	80%
Standard Deviation	0.3%	0.1%	0.1%	0%	0.2%	0.2%	0%	0.2%	0%	0.1%	0.1%	0%	0.1%	2%	0.1%	0.1%	0%	0.1%	0.1%
Strange Brigade - 3840 x 2160 - Low (FPS)	**82.5**	96.3	97.5	110.7	115.8	127.8	156.6	163.2	98.1	132.6	146.1	189.2	**229.5**						
Normalized	35.95%	41.96%	42.48%	48.24%	50.46%	55.69%	68.24%	71.11%	42.75%	57.78%	63.66%	82.44%	100%						
Standard Deviation	1%	0.5%	0.6%	1.3%	0.4%	0%	0.7%	0.8%	0.6%	0.5%	0.6%	0.3%	0.6%						
Strange Brigade - 3840 x 2160 - High	**67.7**	80.2	81.3	93.1	96.8	106.8	134.0	138.5	86.0	115.2	126.7	165.3	**201.8**						
Normalized	33.55%	39.74%	40.29%	46.13%	47.97%	52.92%	66.4%	68.63%	42.62%	57.09%	62.78%	81.91%	100%						
Standard Deviation	0.6%	0.6%	0.4%	0.4%	0.6%	0.6%	0.7%	0.1%	0.7%	0.2%	0.7%	0.3%	0.9%						
Strange Brigade - 3840 x 2160 - Ultra	**65.5**	76.9	77.4	88.4	93.3	102.3	128.0	131.7	82.1	110.0	121.8	158.1	**194.6**						
Normalized	33.66%	39.52%	39.77%	45.43%	47.94%	52.57%	65.78%	67.68%	42.19%	56.53%	62.59%	81.24%	100%						
Standard Deviation	0.8%	0.5%	0.4%	0.5%	0.6%	0.6%	0.3%	0.3%	0.2%	0.3%	0.2%	0.7%	0.3%						

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Strange Brigade - 3840 x 2160 - Medium (FPS)	73.2	86.3	87.8	99.0	103.5	114.8	142.6	145.9	90.3	122.2	134.8	174.7	213.5					
Normalized	34.29%	40.42%	41.12%	46.37%	48.48%	53.77%	66.79%	68.34%	42.3%	57.24%	63.14%	81.83%	100%					
Standard Deviation	0.5%	0%	1%	0.8%	1.3%	0.5%	0.7%	0.6%	0.9%	0.5%	0.4%	0.4%	0.4%					
The Talos Principle - Vulkan - 3840 x 2160 (FPS)	72.7	83.8	84.4	99.4	104.2	110.8	134.6	141.5	85.6	121.1	137.1	163.6	198.4	84.9	102.2	114.3	132.8	166.2	198.1
Normalized	36.64%	42.24%	42.54%	50.1%	52.52%	55.85%	67.84%	71.32%	43.15%	61.04%	69.1%	82.46%	100%	42.79%	51.51%	57.61%	66.94%	83.77%	99.85%
Standard Deviation	2.4%	0.5%	0.6%	1.8%	2.5%	2.5%	1.6%	0.9%	1.3%	1%	0.9%	0.3%	1.5%	0.2%	0.7%	0.5%	0.7%	0.5%	0.6%
Total War: Three Kingdoms - 3840 x 2160 - Low - Battle Benchmar	57.7	65.0	66.3	78.7	83.2	92.7	112.8	115.6	68.2	95.4	107.1	134.5	165.7	63.1	73.7	82.5	90.4	118.9	130.8
Normalized	34.82%	39.23%	40.01%	47.5%	50.21%	55.94%	68.07%	69.76%	41.16%	57.57%	64.63%	81.17%	100%	38.08%	44.48%	49.79%	54.56%	71.76%	78.94%
Standard Deviation	0.7%	0.8%	0.6%	0.5%	0.8%	0.8%	1.3%	0.5%	1.8%	0.6%	0.3%	1.1%	0.8%	0.3%	0.7%	0.3%	0.8%	0.1%	1.3%
Total War: Three Kingdoms - 3840 x 2160 - High - Battle Benchmark (FPS)	24.2	28.4	29.1	33.1	34.6	37.9	47.3	48.5	28.6	38.2	44.2	54.0	66.3	24.9	30.9	33.4	38.0	48.4	54.9
Normalized	36.5%	42.84%	43.89%	49.92%	52.19%	57.16%	71.34%	73.15%	43.14%	57.62%	66.67%	81.45%	100%	37.56%	46.61%	50.38%	57.32%	73%	82.81%
Standard Deviation	1.3%	1.2%	1.6%	1.1%	1%	1.3%	1.3%	2.3%	2.5%	0.9%	2.8%	2.4%	3.5%	1.1%	0.5%	0.5%	0.5%	0.5%	0.8%

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Unigine Heaven - 3840 x 2160 - Fullscreen - OpenGL (FPS)	34.924	42.112	42.231	49.502	51.572	57.659	74.040	67.777	40.420	57.845	67.904	84.502	108.290	31.393	38.393	43.438	61.420	78.353	94.155
Normalized	32.31%	38.89%	39.64%	45.71%	47.7%	52.7%	68.99%	62.59%	37.35%	52.99%	62.05%	77.8%	100%	28.66%	35.59%	39.93%	57.02%	72.71%	86.82%
Standard Deviation	0.1%	0.1%	0.1%	0%	0.1%	0.1%	0.3%	0.3%	0.1%	0.2%	0.1%	0.2%	0.2%	0.2%	0.1%	0.3%	0.1%	0.1%	0%
Unigine Superposition - 3840 x 2160 - Fullscreen - High - OpenGL (FPS)	22.4	25.5	25.8	30.2	31.3	34.7	41.7	42.5	24.7	34.2	38.9	48.1	59.8	20.6	24.6	25.9	33.8	43.3	49.7
Normalized	37.46%	42.64%	43.14%	50.5%	52.34%	58.03%	69.73%	71.07%	41.3%	57.19%	65.05%	80.43%	100%	34.45%	41.14%	43.31%	56.52%	72.41%	83.11%
Standard Deviation	0.3%	0.2%	0.2%	0%	0.2%	0%	0.1%	0.2%	0%	0%	0%	0.1%	0.1%	0%	0.2%	0%	0%	0.1%	0%
Unigine Superposition - 3840 x 2160 - Fullscreen - Medium - OpenGL (FPS)	32.4	36.7	37.1	43.3	45.2	50.1	60.7	61.5	35.3	49.6	56.6	68.5	85.6	32.8	38.1	38.5	52.2	66.4	77.1
Normalized	37.85%	42.87%	43.34%	50.58%	52.8%	58.53%	70.91%	71.85%	41.24%	57.94%	66.12%	80.02%	100%	38.32%	44.51%	44.98%	60.98%	77.57%	90.07%
Standard Deviation	0%	0%	0.2%	0%	0.1%	0.1%	0%	0.2%	0%	0.1%	0.1%	0.1%	0%	0.2%	0%	0.1%	0.1%	0.1%	0.1%
Basemark GPU - Vulkan - 3840 x 2160 - High	64.37	76.78	77.78	85.85	89.63	98.57	123.47	128.61	76.44	103.21	113.12	153.47	190.60						
Normalized	33.77%	40.28%	40.81%	45.04%	47.03%	51.72%	64.78%	67.48%	40.1%	54.15%	59.35%	80.52%	100%						
Standard Deviation	0.1%	0.1%	0.2%	0.1%	0.2%	0%	0.1%	0.1%	0.2%	0.2%	0%	0.5%	0.2%						

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Basemark GPU - Vulkan - 3840 x 2160 - Medium (FPS)	**237.25**	289.11	292.31	310.29	319.08	349.76	433.00	454.56	272.00	375.59	397.87	527.36	**663.98**						
Normalized	35.73%	43.54%	44.02%	46.73%	48.06%	52.68%	65.21%	68.46%	40.97%	56.57%	59.92%	79.42%	100%						
Standard Deviation	0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0%	0.1%	0.1%	0.1%	0.5%	0.1%						
Batman: Arkham Knight - 3840 x 2160 - High (FPS/Watt	**0.406**	0.45	0.454	0.43	0.434	0.44	0.50	0.476	0.453	0.56	0.569	0.50	0.566	0.512	0.48	0.49	0.59	**0.723**	0.64
Normalized	56.15%	62.24%	62.79%	59.47%	60.03%	60.86%	69.16%	65.84%	62.66%	77.46%	78.7%	69.16%	78.28%	70.82%	66.39%	67.77%	81.6%	100%	88.52%
DiRT Rally 2.0 - 3840 x 1600 - Low (FPS/Watt	**0.95**	0.98	0.994	**0.95**	1.012	0.98	1.07	1.007	1.182	1.25	1.289	1.08	1.145	1.432	1.379	1.244	1.637	**1.83**	1.67
Normalized	51.91%	53.55%	54.32%	51.91%	55.3%	53.55%	58.47%	55.03%	64.59%	68.31%	70.44%	59.02%	62.57%	78.25%	75.36%	67.98%	89.45%	100%	91.26%
DiRT Rally 2.0 - 3840 x 1600 - High (FPS/Watt	0.529	0.54	0.539	**0.52**	0.569	0.54	0.60	0.555	0.623	0.65	0.681	0.57	0.623	0.733	0.682	0.614	0.818	**0.919**	0.847
Normalized	57.56%	58.76%	58.65%	56.58%	61.92%	58.76%	65.29%	60.39%	67.79%	70.73%	74.1%	62.02%	67.79%	79.76%	74.21%	66.81%	89.01%	100%	92.17%
DiRT Rally 2.0 - 3840 x 1600 - Ultra (FPS/Watt	**0.327**	0.33	0.339	0.33	0.356	0.34	0.38	0.354	0.389	0.40	0.428	0.36	0.398	0.421	0.387	0.381	0.484	**0.558**	0.516
Normalized	58.6%	59.14%	60.75%	59.14%	63.8%	60.93%	68.1%	63.44%	69.71%	71.68%	76.7%	64.52%	71.33%	75.45%	69.35%	68.28%	86.74%	100%	92.47%

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Dawn of War III - 3840 x 2160 - Ultra - Vulkan (FPS/Watt	0.451	0.47	0.482	0.48	0.49	0.49	0.55	0.512	0.539	0.63	0.666	0.51	0.516	0.534	0.539	0.496	0.715	0.844	0.718
Normalized	53.44%	55.69%	57.11%	56.87%	58.06%	58.06%	65.17%	60.66%	63.86%	74.64%	78.91%	60.43%	61.14%	63.27%	63.86%	58.77%	84.72%	100%	85.07%
F1 2017 - 3840 x 2160 - High - Off (FPS/Watt	0.605	0.64	0.634	0.61	0.659	0.62	0.71	0.657	0.736	0.82	0.843	0.67	0.681	1.051	0.834	1.128	0.917	2.066	1.045
Normalized	29.28%	30.98%	30.69%	29.53%	31.9%	30.01%	34.37%	31.8%	35.62%	39.69%	40.8%	32.43%	32.96%	50.87%	40.37%	54.6%	44.39%	100%	50.58%
Shadow of the Tomb Raider - 3840 x 2160 - High - Off	0.288	0.30	0.306	0.29	0.313	0.30	0.34	0.322	0.332	0.37	0.381	0.33	0.37	0.267	0.347	0.328	0.392	0.456	0.404
Normalized	63.16%	65.79%	67.11%	63.6%	68.64%	65.79%	74.56%	70.61%	72.81%	81.14%	83.55%	72.37%	81.14%	58.55%	76.1%	71.93%	85.96%	100%	88.6%
Shadow of the Tomb Raider - 3840 x 2160 - Highest - Off	0.25	0.27	0.276	0.26	0.282	0.27	0.31	0.29	0.3	0.33	0.341	0.30	0.333	0.205	0.305	0.286	0.344	0.406	0.363
Normalized	61.58%	66.5%	67.98%	64.04%	69.46%	66.5%	76.35%	71.43%	73.89%	81.28%	83.99%	73.89%	82.02%	50.49%	75.12%	70.44%	84.73%	100%	89.41%
Strange Brigade - 3840 x 2160 - Low	0.749	0.80	0.817	0.77	0.776	0.77	0.88	0.836	0.851	0.97	0.989	0.83	0.926						
Normalized	75.73%	80.89%	82.61%	77.86%	78.46%	77.86%	88.98%	84.53%	86.05%	98.08%	100%	83.92%	93.63%						

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Strange Brigade - 3840 x 2160 - High (FPS/Watt	0.604	0.65	0.662	0.63	0.641	0.62	0.74	0.695	0.729	0.83	0.834	0.72	0.804						
Normalized	72.42%	77.94%	79.38%	75.54%	76.86%	74.34%	88.73%	83.33%	87.41%	99.52%	100%	86.33%	96.4%						
Strange Brigade - 3840 x 2160 - Ultra (FPS/Watt	0.58	0.62	0.632	0.60	0.614	0.61	0.70	0.662	0.697	0.80	0.798	0.69	0.777						
Normalized	72.5%	77.5%	79%	75%	76.75%	76.25%	87.5%	82.75%	87.13%	100%	99.75%	86.25%	97.13%						
Strange Brigade - 3840 x 2160 - Medium (FPS/Watt	0.651	0.69	0.715	0.68	0.681	0.68	0.78	0.771	0.765	0.88	0.889	0.76	0.849						
Normalized	73.23%	77.62%	80.43%	76.49%	76.6%	76.49%	87.74%	86.73%	86.05%	98.99%	100%	85.49%	95.5%						
The Talos Principle - Vulkan - 3840 x 2160 (FPS/Watt	0.637	0.72	0.737	0.74	0.74	0.76	0.83	0.873	0.776	0.98	1.043	0.82	0.909	0.954	0.923	0.885	1.201	1.34	1.278
Normalized	47.54%	53.73%	55%	55.22%	55.22%	56.72%	61.94%	65.15%	57.91%	73.13%	77.84%	61.19%	67.84%	71.19%	68.88%	66.04%	89.63%	100%	95.37%
Total War: Three Kingdoms - 3840 x 2160 - Low - Battle Benchmark	0.441	0.45	0.47	0.46	0.477	0.46	0.53	0.522	0.498	0.58	0.595	0.52	0.575	0.515	0.501	0.446	0.606	0.73	0.634
Normalized	60.41%	61.64%	64.38%	63.01%	65.34%	63.01%	72.6%	71.51%	68.22%	79.45%	81.51%	71.23%	78.77%	70.55%	68.63%	61.1%	83.01%	100%	86.85%

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Total War: Three Kingdoms - 3840 x 2160 - High - Battle Benchmark (FPS/Watt	0.18	0.19	0.2	0.19	0.195	0.19	0.22	0.208	0.201	0.23	0.238	0.20	0.222	0.202	0.206	**0.175**	0.243	**0.288**	0.254
Normalized	62.5%	65.97%	69.44%	65.97%	67.71%	65.97%	76.39%	72.22%	69.79%	79.86%	82.64%	69.44%	77.08%	70.14%	71.53%	60.76%	84.38%	100%	88.19%
Unigine Heaven - 3840 x 2160 - Fullscreen - OpenGL (FPS/Watt	0.231	0.25	0.258	0.24	0.265	0.25	0.30	0.255	0.258	0.30	0.322	0.28	0.325	0.232	0.223	**0.209**	0.345	**0.403**	0.382
Normalized	57.32%	62.03%	64.02%	59.55%	65.76%	62.03%	74.44%	63.28%	64.02%	74.44%	79.9%	69.48%	80.65%	57.57%	55.33%	51.86%	85.61%	100%	94.79%
Unigine Superposition - 3840 x 2160 - Fullscreen - High - OpenGL (FPS/Watt	0.162	0.17	0.17	0.16	0.174	0.16	0.18	0.173	0.171	0.20	0.203	0.17	0.196	0.147	0.147	**0.123**	0.194	**0.229**	0.208
Normalized	70.74%	74.24%	74.24%	69.87%	75.98%	69.87%	78.6%	75.55%	74.67%	87.34%	88.65%	74.24%	85.59%	64.19%	64.19%	53.71%	84.72%	100%	90.83%
Unigine Superposition - 3840 x 2160 - Fullscreen - Medium - OpenGL (FPS/Watt	0.232	0.24	0.244	0.23	0.249	0.22	0.27	0.25	0.252	0.28	0.296	0.25	0.281	0.23	0.229	**0.188**	0.3	**0.351**	0.323
Normalized	66.1%	68.38%	69.52%	65.53%	70.94%	62.68%	76.92%	71.23%	71.79%	79.77%	84.33%	71.23%	80.06%	65.53%	65.24%	53.56%	85.47%	100%	92.02%

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Basemark GPU - Vulkan - 3840 x 2160 - High (FPS/Watt	**0.449**	0.50	0.508	0.47	0.476	0.52	0.57	0.547	0.543	0.61	0.618	0.59	**0.69**
Normalized	65.07%	72.46%	73.62%	68.12%	68.99%	75.36%	82.61%	79.28%	78.7%	88.41%	89.57%	85.51%	100%
Basemark GPU - Vulkan - 3840 x 2160 - Medium (FPS/Watt	**2.1**	2.24	2.312	2.25	2.199	2.57	2.55	2.584	2.544	2.80	2.841	2.61	**3.084**
Normalized	68.09%	72.63%	74.97%	72.96%	71.3%	83.33%	82.68%	83.79%	82.49%	90.79%	92.12%	84.63%	100%
GeeXLab Vulkan Ray-Tracing Demo - 3840 x 2160 (FPS)	**8.6**	9.9	10.2	12	12.9	14.5	19.1	19.7	9.3	13.1	15.6	23.0	**26.5**
Normalized	32.45%	37.36%	38.49%	45.28%	48.68%	54.72%	72.08%	74.34%	35.09%	49.43%	58.87%	86.79%	100%
Standard Deviation	0%	1%	1%		1.2%	0%	0.3%	0.6%	1.9%	1.8%	0%	0.5%	0.4%
Ray Tracing In Vulkan - 3840 x 2160 - Cornell Box (FPS)	**12.5848**	14.2083	14.4863	16.7906	18.5747	20.0068	27.6239	28.0578	13.1386	18.4928	21.9104	31.8624	**37.4199**
Normalized	33.63%	37.97%	38.71%	44.87%	49.64%	53.47%	73.82%	74.98%	35.11%	49.42%	58.55%	85.15%	100%
Standard Deviation	0.5%	0%	0.4%	0.1%	0.5%	2.4%	0.3%	2.4%	0.3%	0%	0.3%	0.4%	1.9%

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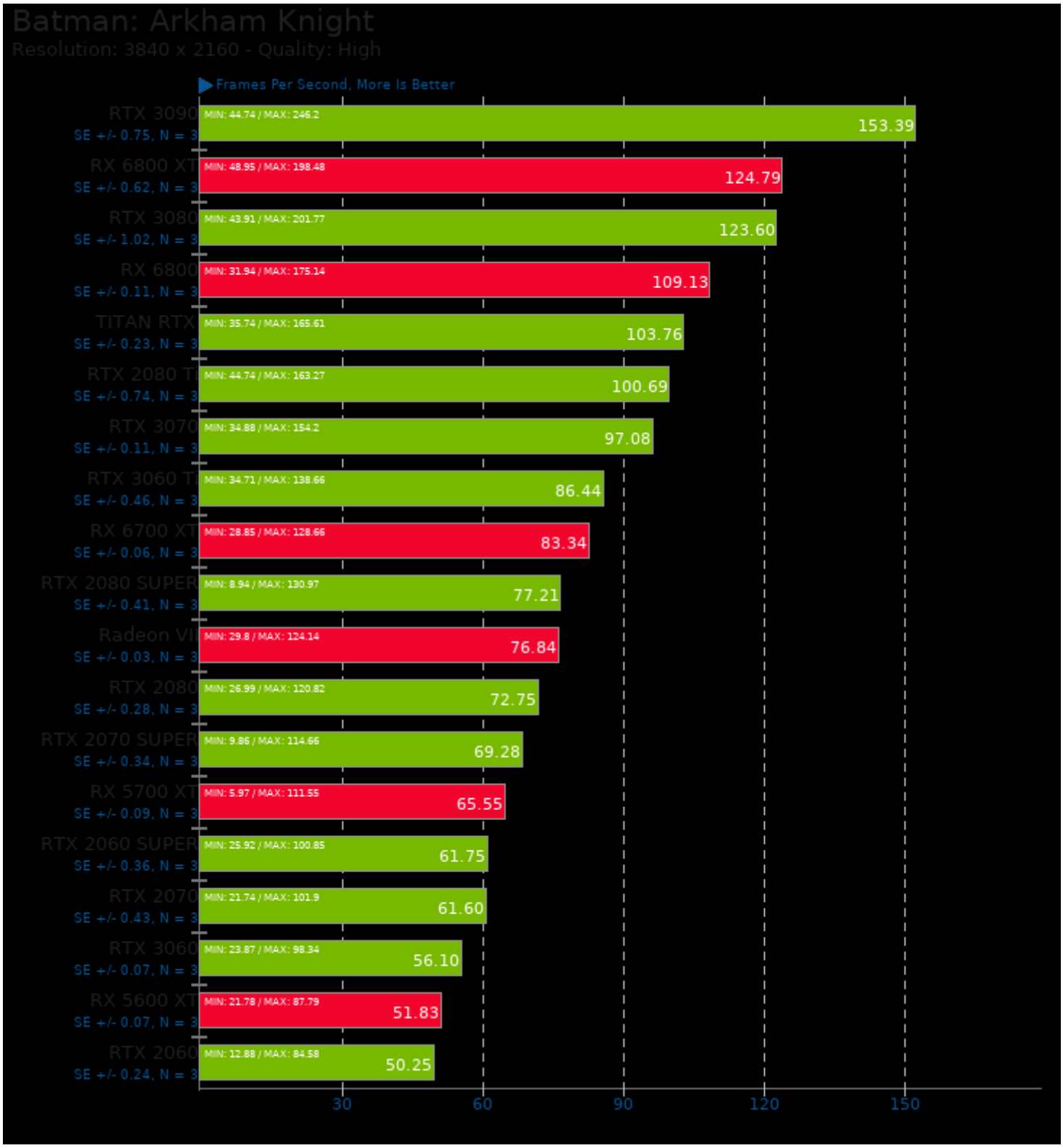
Ray Tracing In Vulkan - 3840 x 2160 - Cornell Box + Lucy	**4.71**	6.02	6.12	6.71	6.94	7.15	10.5	10.8	5.69	9.40	11.2	16.3	**19.4**
Normalized	24.26%	31%	31.55%	34.57%	35.75%	36.83%	54.44%	56.02%	29.33%	48.43%	57.92%	84.39%	100%
Standard Deviation	0.2%	0.4%	0.2%	1.7%	0.2%	0.2%	0.1%	2.4%	0.1%	0.2%	0.7%	0.3%	0.2%
Ray Tracing In Vulkan - 3840 x 2160 - L.I.O.W (FPS)	**5.63**	6.82	7.00	7.92	8.22	8.85	12.4	12.9	6.80	9.63	11.4	16.3	**19.3**
Normalized	29.04%	35.16%	36.11%	40.87%	42.42%	45.63%	64.33%	66.89%	35.08%	49.65%	58.9%	84.15%	100%
Standard Deviation	0.1%	2.5%	0.7%	0.1%	4.5%	0.2%	0.1%	0.4%	0.1%	0%	0.2%	0.3%	0.1%
Ray Tracing In Vulkan - 3840 x 2160 - P.I.O.W (FPS)	8.10	9.18	9.37	10.8	11.9	13.1	17.6	18.1	**7.08**	10.0	11.8	17.4	**20.9**
Normalized	38.74%	43.91%	44.79%	51.76%	56.89%	63.06%	84.39%	86.96%	33.85%	47.94%	56.54%	83.27%	100%
Standard Deviation	0.2%	0%	0.5%	0.2%	2.5%	0.4%	0.2%	0.2%	0%	0.2%	0.6%	0.2%	0.5%
Ray Tracing In Vulkan - 3840 x 2160 - R.T.I.O.W (FPS)	7.90	8.99	9.17	10.6	11.7	12.9	17.3	17.8	**6.92**	9.78	11.6	17.0	**20.4**
Normalized	38.7%	44.03%	44.9%	51.97%	57.68%	63.17%	84.82%	87.41%	33.88%	47.87%	56.85%	83.29%	100%
Standard Deviation	1%	0%	0.5%	0.2%	0.1%	0.2%	0.1%	0.3%	0%	0%	0.1%	0.3%	0.3%

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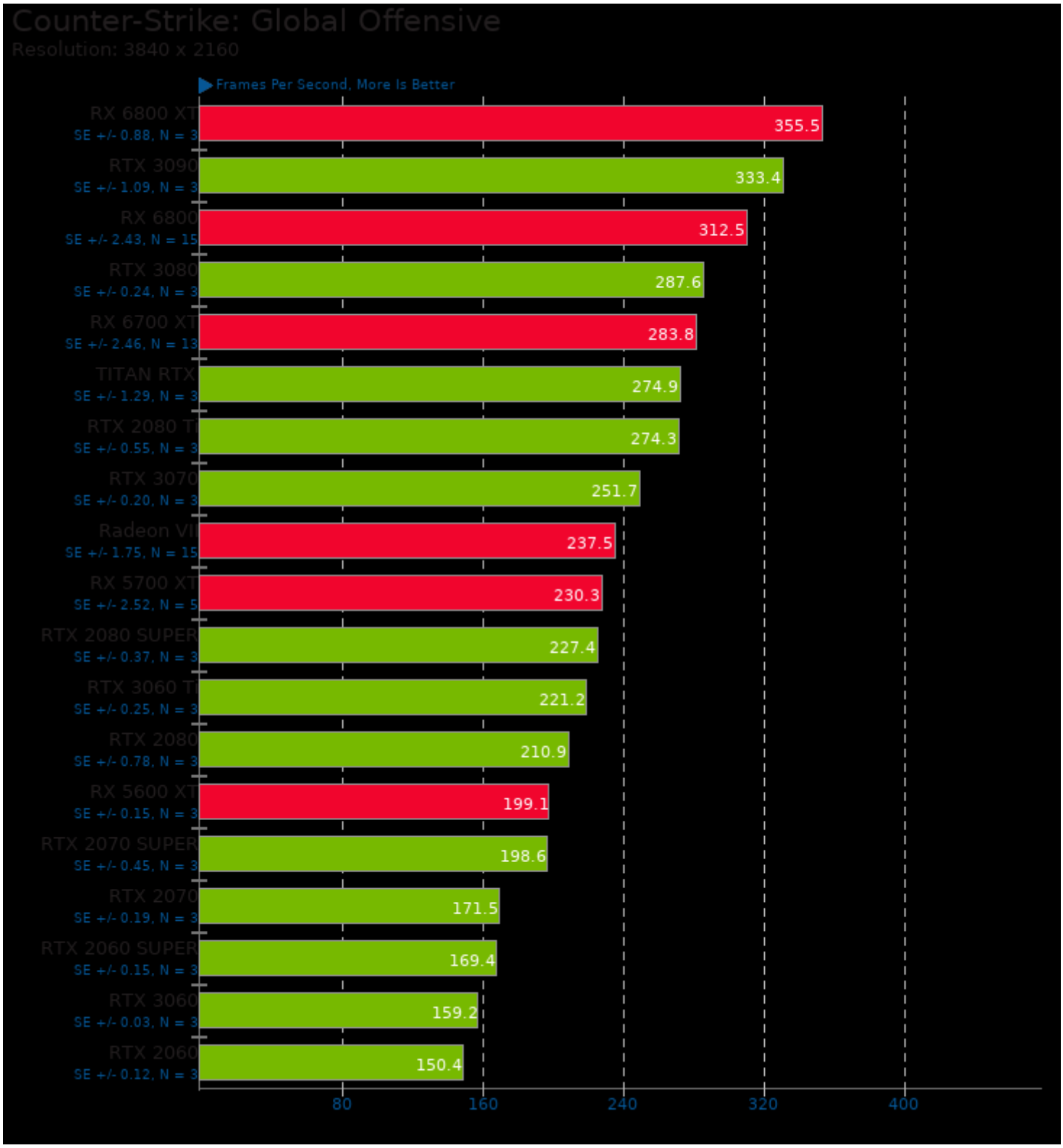
GeeXLab Vulkan Ray-Tracing Demo - 3840 x 2160 (FPS/Watt	**0.066**	0.07	0.07	0.07	0.072	0.07	0.09	0.086	0.073	0.08	0.088	**0.092**
Normalized	71.74%	76.09%	76.09%	76.09%	78.26%	76.09%	97.83%	93.48%	79.35%	86.96%	95.65%	100%
Ray Tracing In Vulkan - 3840 x 2160 - Cornell Box (FPS/Watt	**0.105**	0.11	0.113	0.12	0.109	0.12	0.12	0.115	0.128	0.13	**0.132**	0.123
Normalized	79.55%	83.33%	85.61%	90.91%	82.58%	90.91%	90.91%	87.12%	96.97%	98.48%	100%	93.18%
Ray Tracing In Vulkan - 3840 x 2160 - Cornell Box + Lucy	**0.038**	0.04	0.041	0.04	0.04	0.04	0.05	0.044	0.045	0.06	0.059	**0.064**
Normalized	59.38%	62.5%	64.06%	62.5%	62.5%	62.5%	78.13%	68.75%	70.31%	93.75%	92.19%	100%
Ray Tracing In Vulkan - 3840 x 2160 - L.I.O.W (FPS/Watt	**0.045**	0.05	0.046	0.05	**0.045**	0.05	0.06	0.054	0.055	0.06	0.061	**0.064**
Normalized	70.31%	78.13%	71.88%	78.13%	70.31%	78.13%	93.75%	84.38%	85.94%	93.75%	95.31%	100%

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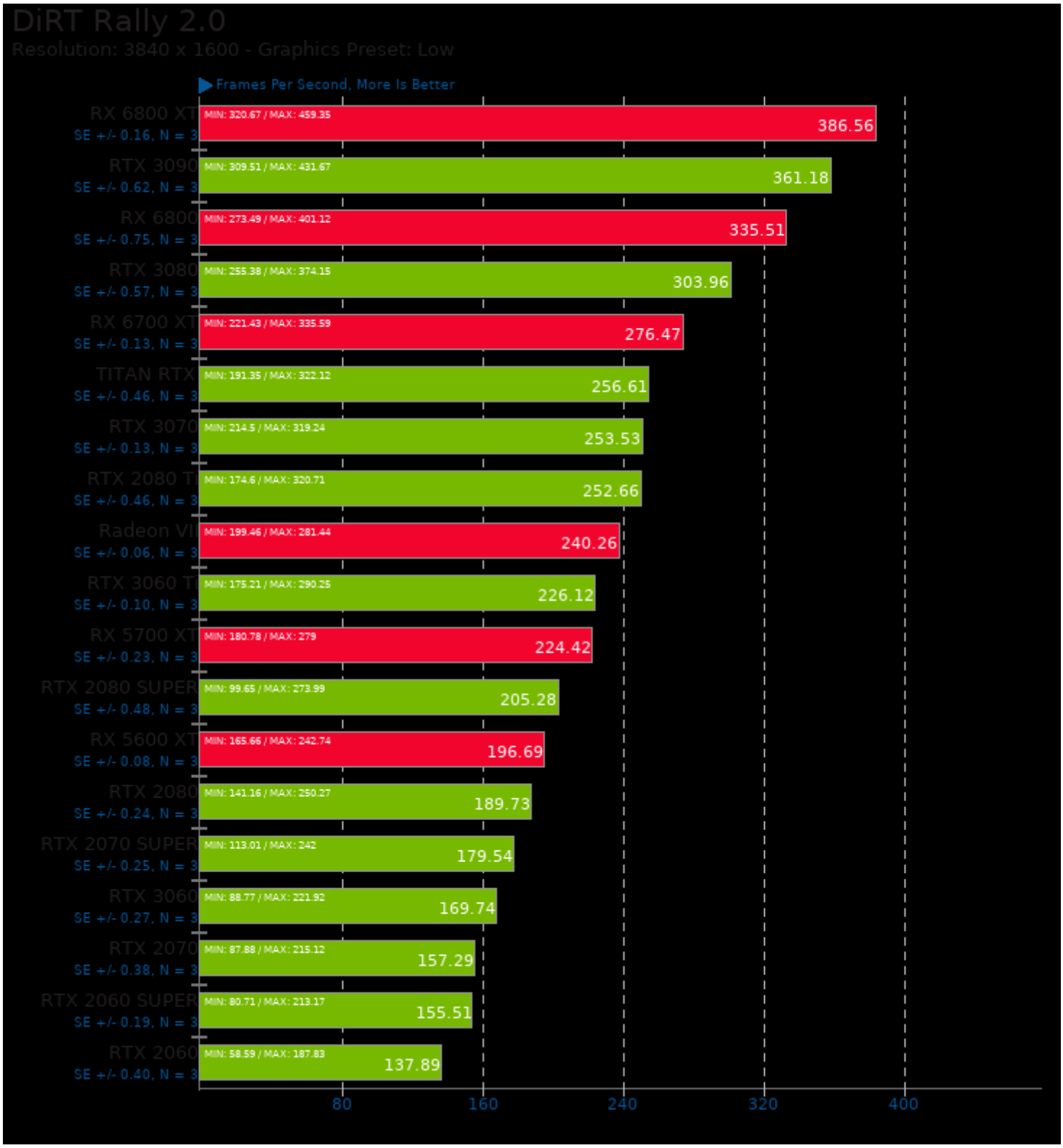
Ray Tracing In Vulkan - 3840 x 2160 - P.I.O.W (FPS/Watt	0.064	**0.06**	0.067	0.07	0.065	0.07	**0.08**	0.076	0.073	0.07	0.077		0.069					
Normalized	80%	75%	83.75%	87.5%	81.25%	87.5%	100%	95%	91.25%	87.5%	96.25%		86.25%					
Ray Tracing In Vulkan - 3840 x 2160 - R.T.I.O.W (FPS/Watt	0.062	**0.06**	0.067	0.07	0.064	0.07	**0.08**	0.073	0.073	0.07	0.076		0.068					
Normalized	77.5%	75%	83.75%	87.5%	80%	87.5%	100%	91.25%	91.25%	87.5%	95%		85%					
Geometric Mean Of All Test Results - Result Composite - 4.L.G.A.2 (Geometri	**56.023**	64.211	65.013	75.432	79.371	86.697	106.215	107.222	65.167	89.238	101.315	122.219	**146.130**	56.915	72.479	78.125	92.374	114.311	130.993
Normalized	38.34%	43.94%	44.49%	51.62%	54.32%	59.33%	72.69%	73.37%	44.6%	61.07%	69.33%	83.64%	100%	38.95%	49.6%	53.46%	63.21%	78.23%	89.64%


Batman: Arkham Knight
Resolution: 3840 x 2160 - Quality: High
Frames Per Second, More Is Better
RTX 3090
SE +/- 0.75, N = 3
MIN: 44.74 / MAX: 246.2
153.39
RX 6800 XT
SE +/- 0.62, N = 3
MIN: 48.95 / MAX: 198.48
124.79
RTX 3080
SE +/- 1.02, N = 3
MIN: 43.91 / MAX: 201.77
123.60
RX 6800
SE +/- 0.11, N = 3
MIN: 31.94 / MAX: 175.14
109.13
TITAN RTX
SE +/- 0.23, N = 3
MIN: 35.74 / MAX: 165.61
103.76
RTX 2080 Ti
SE +/- 0.74, N = 3
MIN: 44.74 / MAX: 163.27
100.69
RTX 3070
SE +/- 0.11, N = 3
MIN: 34.88 / MAX: 154.2
97.08
RTX 3060 Ti
SE +/- 0.46, N = 3
MIN: 34.71 / MAX: 138.66
86.44
RX 6700 XT
SE +/- 0.06, N = 3
MIN: 28.85 / MAX: 128.66
83.34
RTX 2080 SUPER
SE +/- 0.41, N = 3
MIN: 8.94 / MAX: 130.97
77.21
Radeon VII
SE +/- 0.03, N = 3
MIN: 29.8 / MAX: 124.14
76.84
RTX 2080
SE +/- 0.28, N = 3
MIN: 26.99 / MAX: 120.82
72.75
RTX 2070 SUPER
SE +/- 0.34, N = 3
MIN: 9.86 / MAX: 114.66
69.28
RX 5700 XT
SE +/- 0.09, N = 3
MIN: 5.97 / MAX: 111.55
65.55
RTX 2060 SUPER
SE +/- 0.36, N = 3
MIN: 25.92 / MAX: 100.85
61.75
RTX 2070
SE +/- 0.43, N = 3
MIN: 21.74 / MAX: 101.9
61.60
RTX 3060
SE +/- 0.07, N = 3
MIN: 23.87 / MAX: 98.34
56.10
RX 5600 XT
SE +/- 0.07, N = 3
MIN: 21.78 / MAX: 87.79
51.83
RTX 2060
SE +/- 0.24, N = 3
MIN: 12.88 / MAX: 84.58
50.25
30
60
90
120
150

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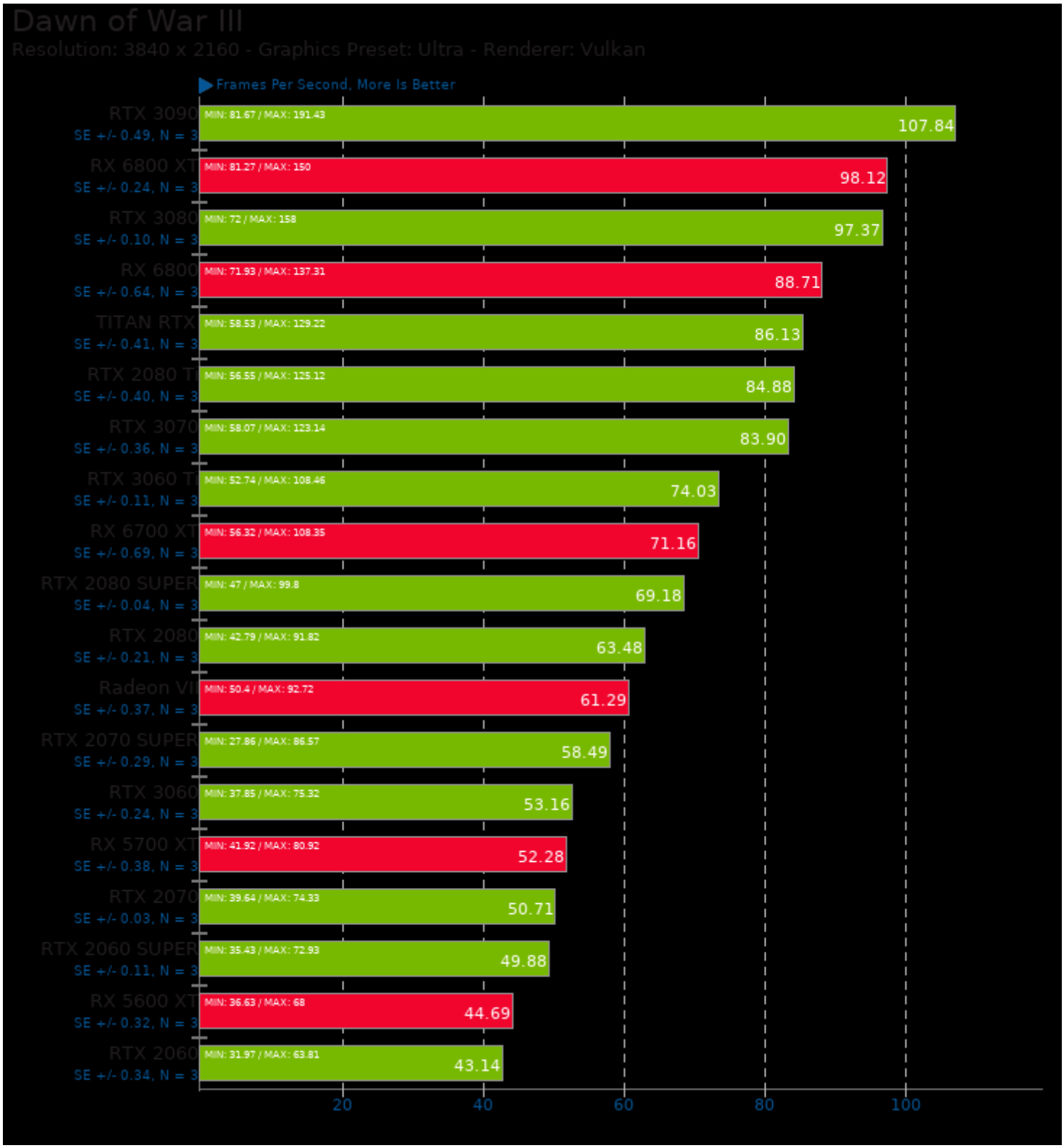
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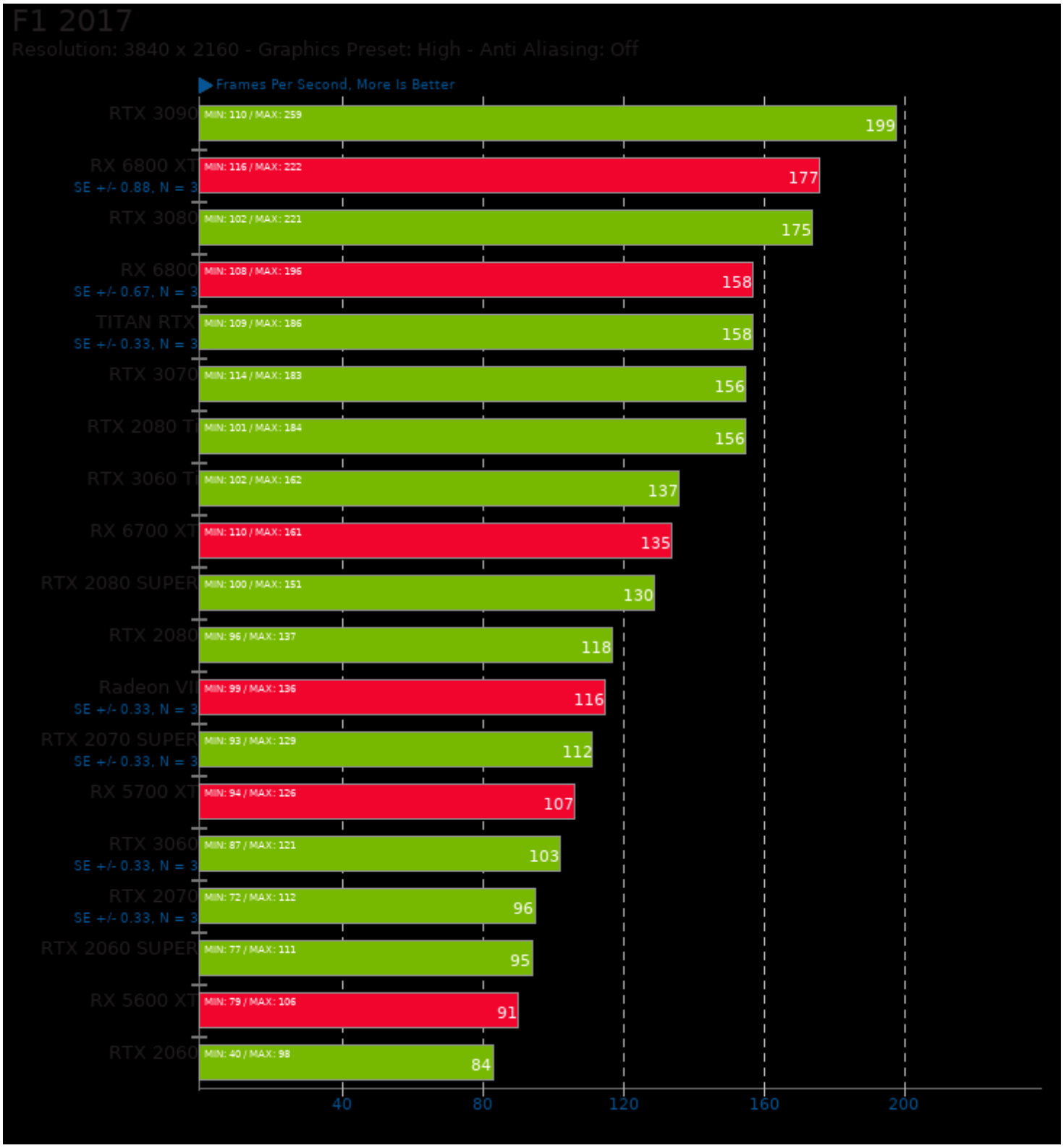
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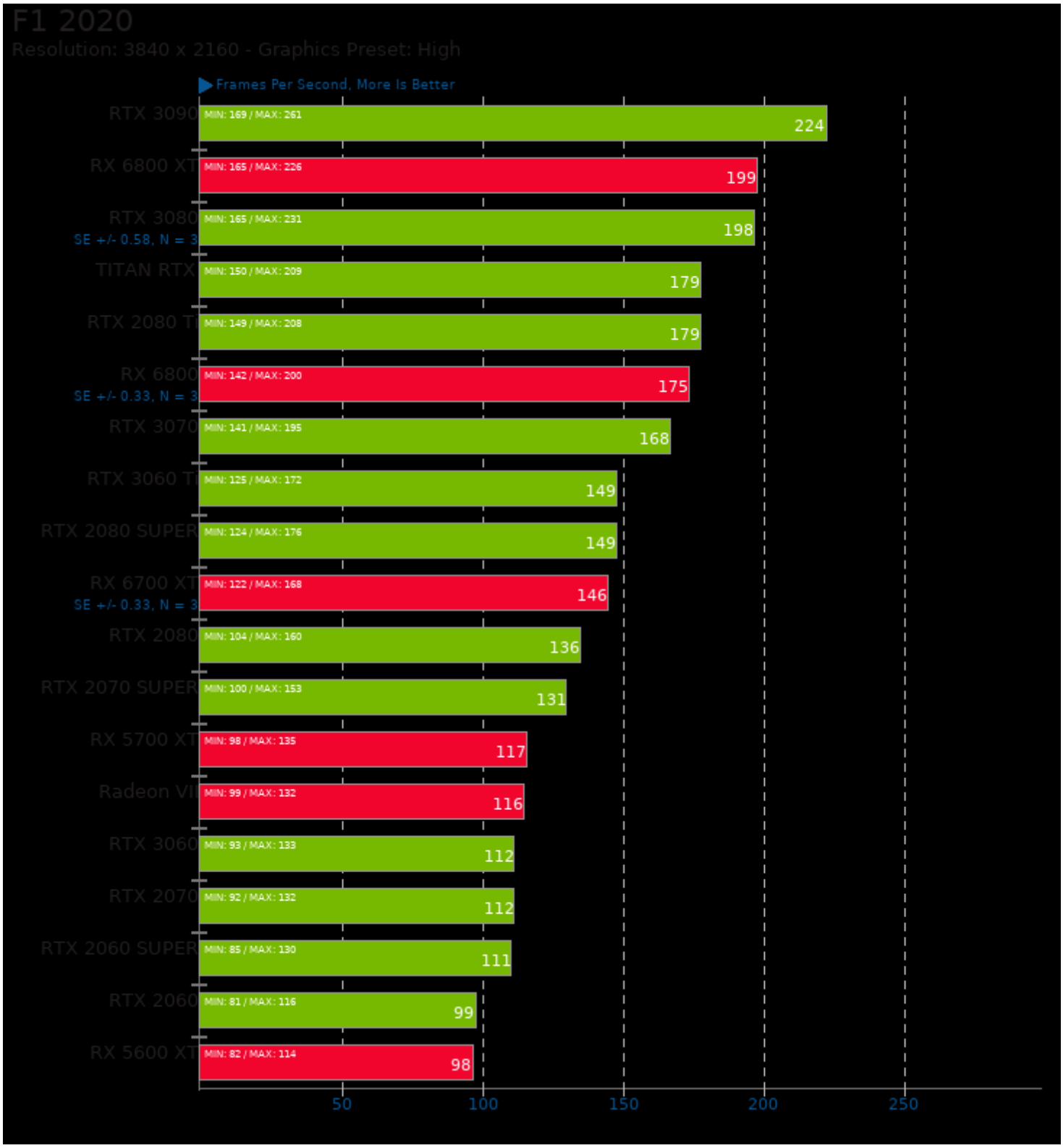
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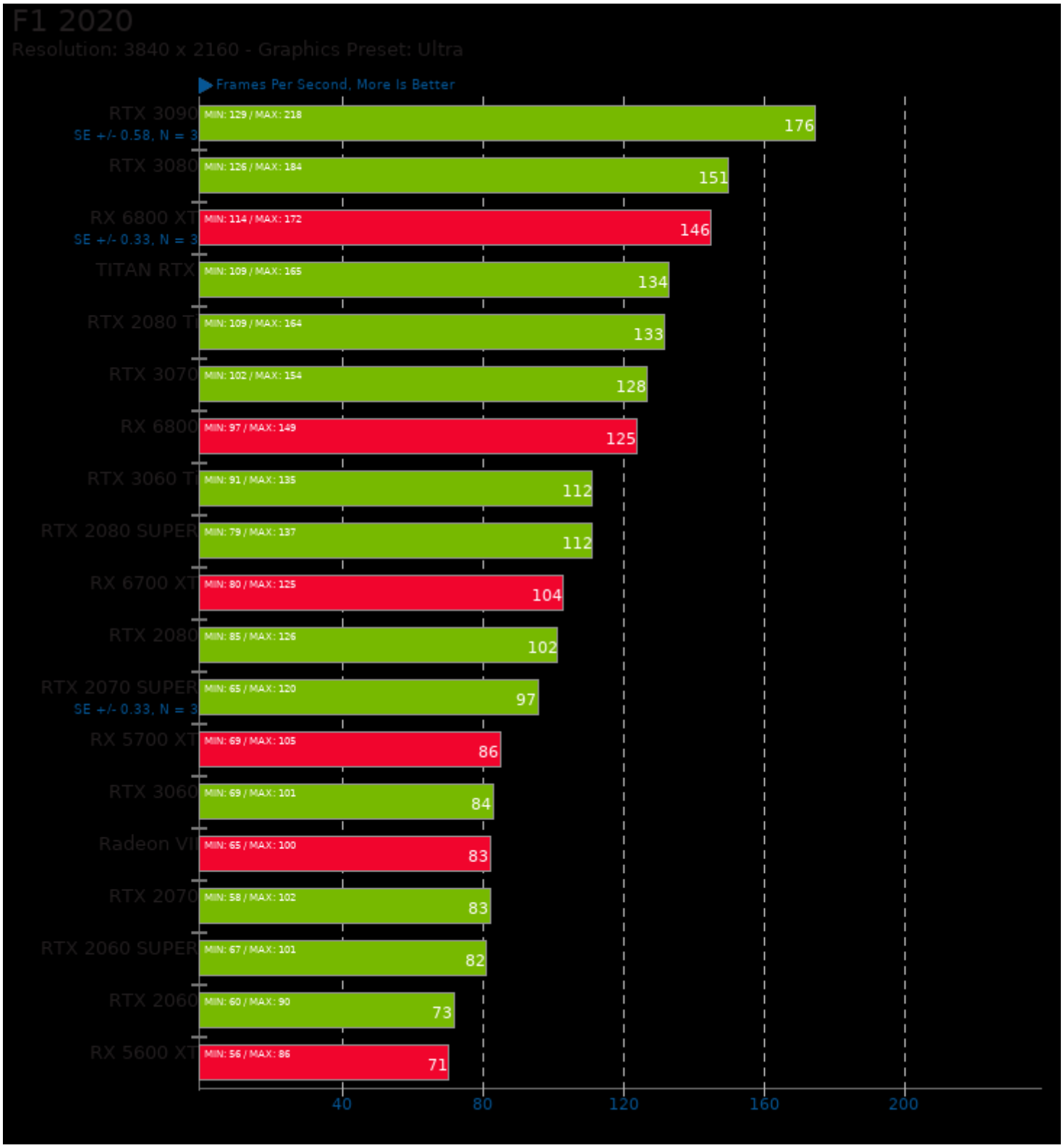
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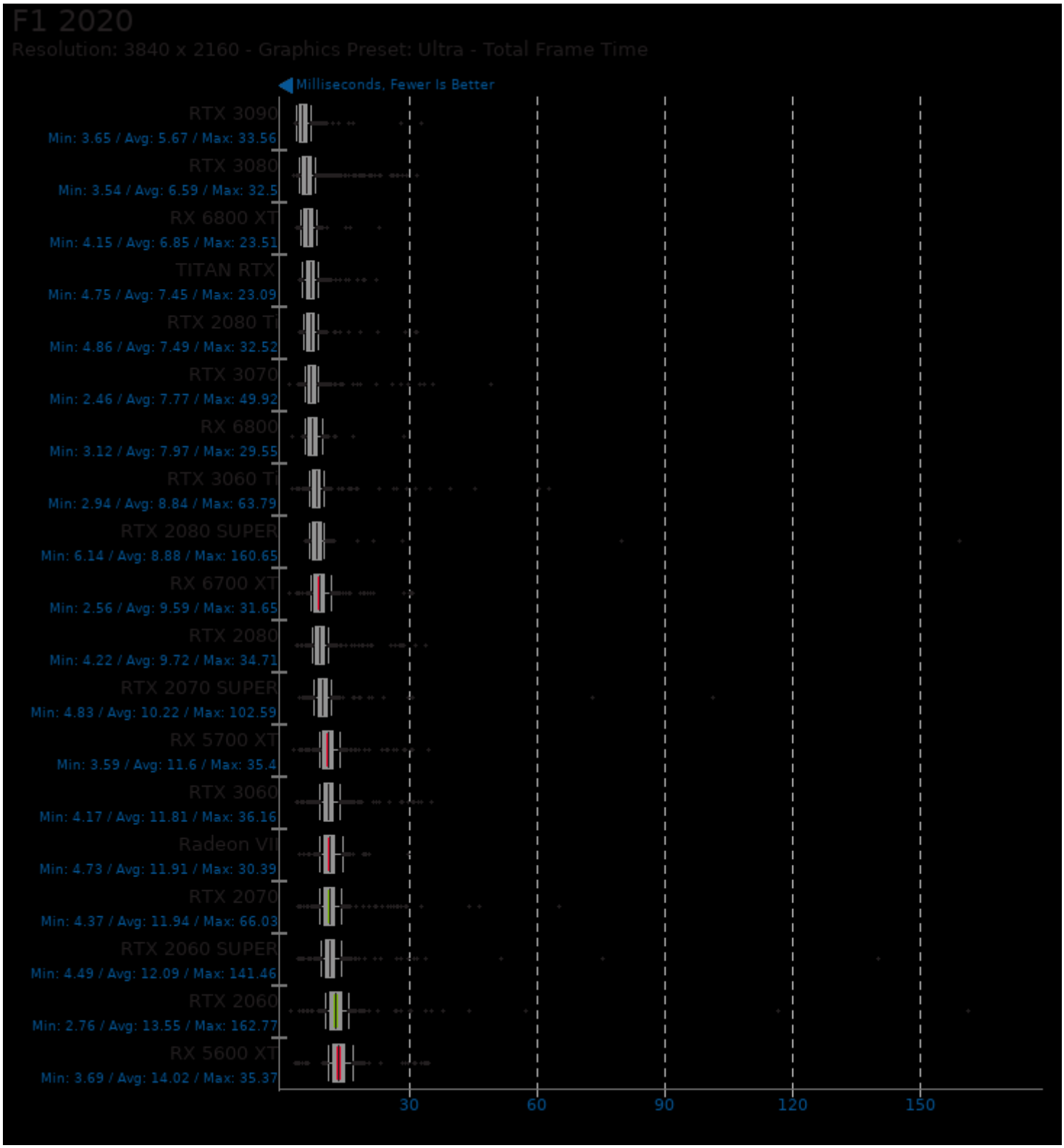
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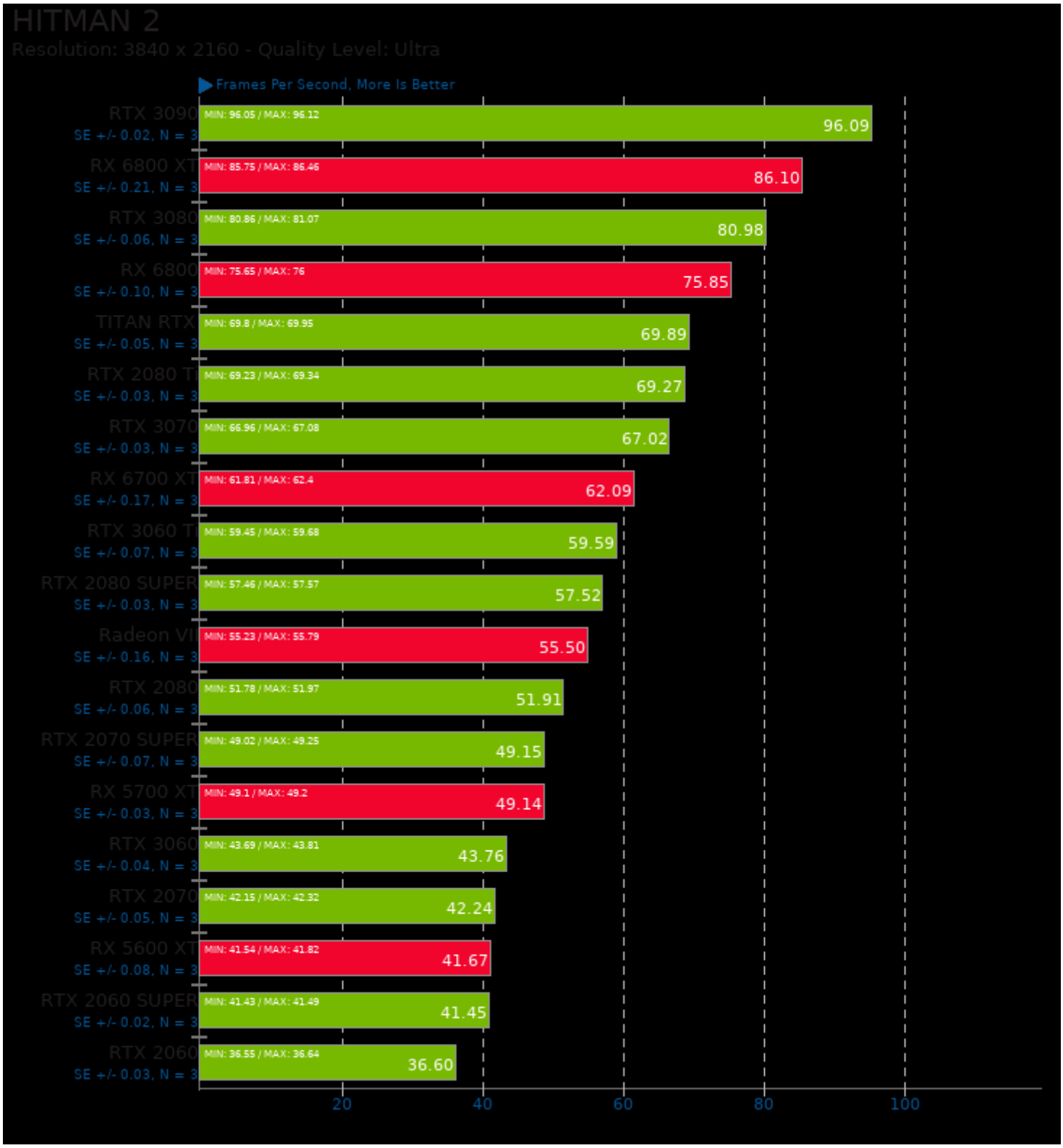


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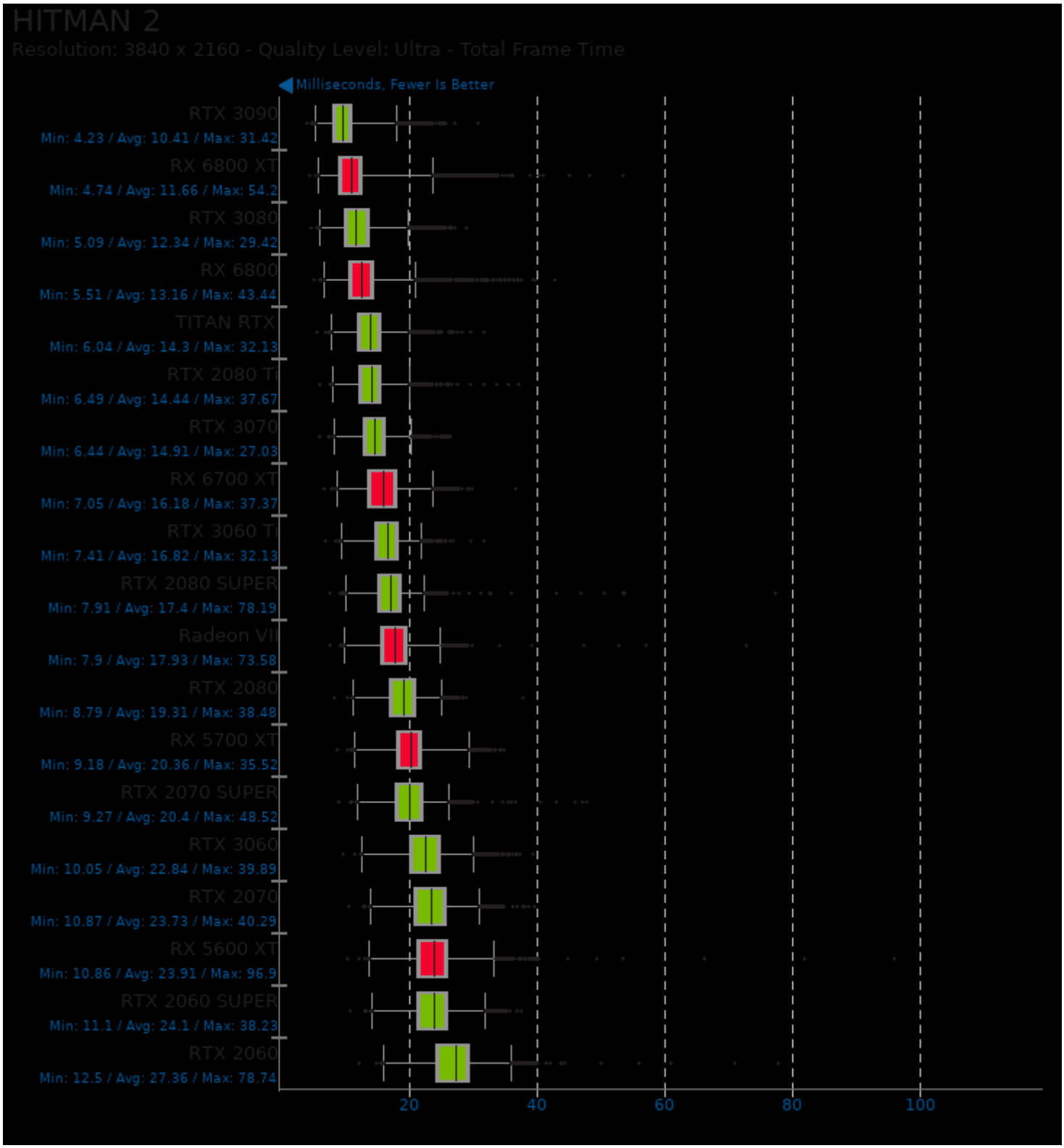


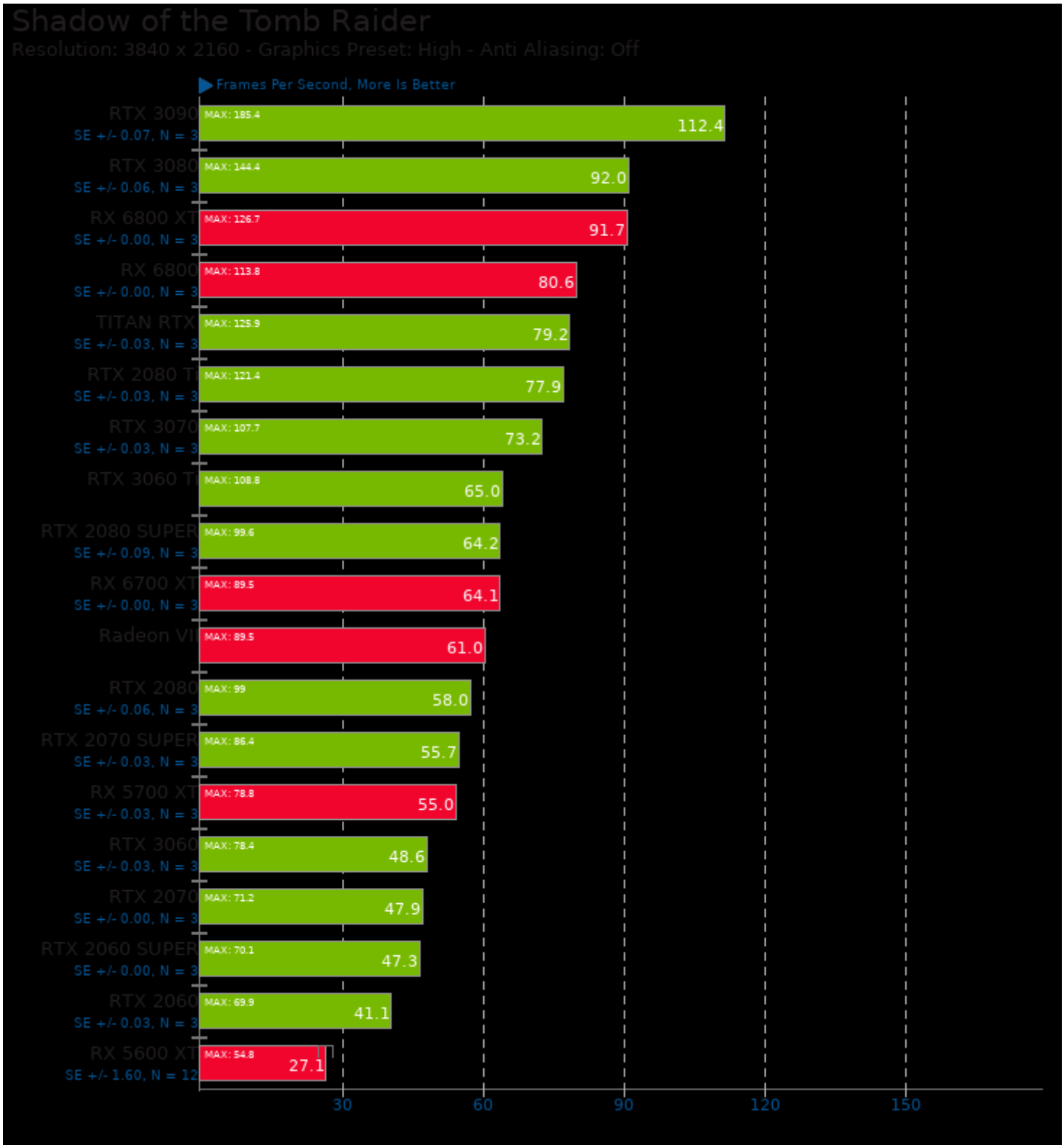
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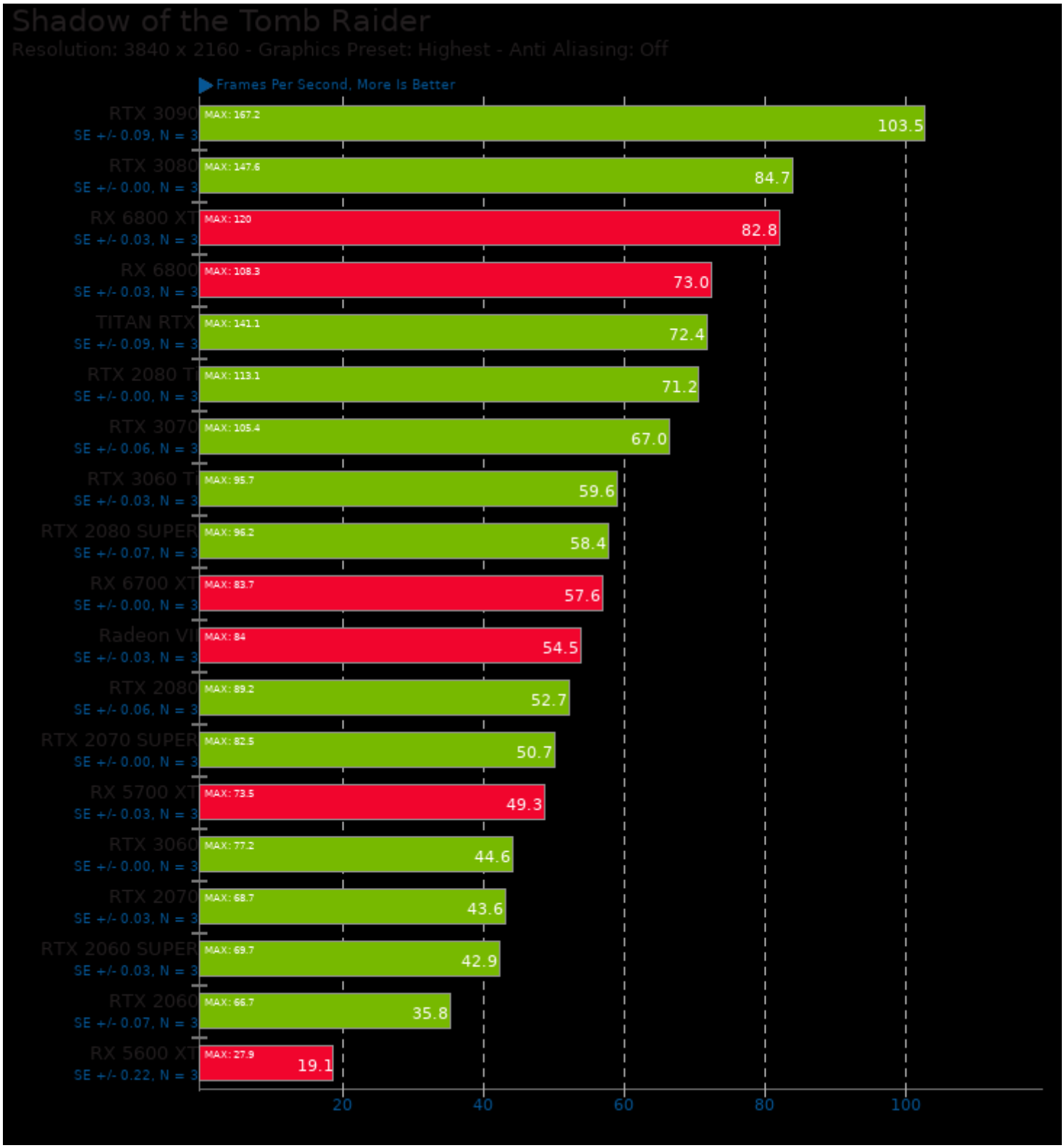

HITMAN 2
Resolution: 3840 x 2160 - Quality Level: Ultra
Frames Per Second, More Is Better
RTX 3090
SE +/- 0.02, N = 3
MIN: 96.05 / MAX: 96.12
96.09
RX 6800 XT
SE +/- 0.21, N = 3
MIN: 85.75 / MAX: 86.46
86.10
RTX 3080
SE +/- 0.06, N = 3
MIN: 80.86 / MAX: 81.07
80.98
RX 6800
SE +/- 0.10, N = 3
MIN: 75.65 / MAX: 76
75.85
TITAN RTX
SE +/- 0.05, N = 3
MIN: 69.8 / MAX: 69.95
69.89
RTX 2080 Ti
SE +/- 0.03, N = 3
MIN: 69.23 / MAX: 69.34
69.27
RTX 3070
SE +/- 0.03, N = 3
MIN: 66.96 / MAX: 67.08
67.02
RX 6700 XT
SE +/- 0.17, N = 3
MIN: 61.81 / MAX: 62.4
62.09
RTX 3060 Ti
SE +/- 0.07, N = 3
MIN: 59.45 / MAX: 59.68
59.59
RTX 2080 SUPER
SE +/- 0.03, N = 3
MIN: 57.46 / MAX: 57.57
57.52
Radeon VII
SE +/- 0.16, N = 3
MIN: 55.23 / MAX: 55.79
55.50
RTX 2080
SE +/- 0.06, N = 3
MIN: 51.78 / MAX: 51.97
51.91
RTX 2070 SUPER
SE +/- 0.07, N = 3
MIN: 49.02 / MAX: 49.25
49.15
RX 5700 XT
SE +/- 0.03, N = 3
MIN: 49.1 / MAX: 49.2
49.14
RTX 3060
SE +/- 0.04, N = 3
MIN: 43.69 / MAX: 43.81
43.76
RTX 2070
SE +/- 0.05, N = 3
MIN: 42.15 / MAX: 42.32
42.24
RX 5600 XT
SE +/- 0.08, N = 3
MIN: 41.54 / MAX: 41.82
41.67
RTX 2060 SUPER
SE +/- 0.02, N = 3
MIN: 41.43 / MAX: 41.49
41.45
RTX 2060
SE +/- 0.03, N = 3
MIN: 36.55 / MAX: 36.64
36.60
20
40
60
80
100

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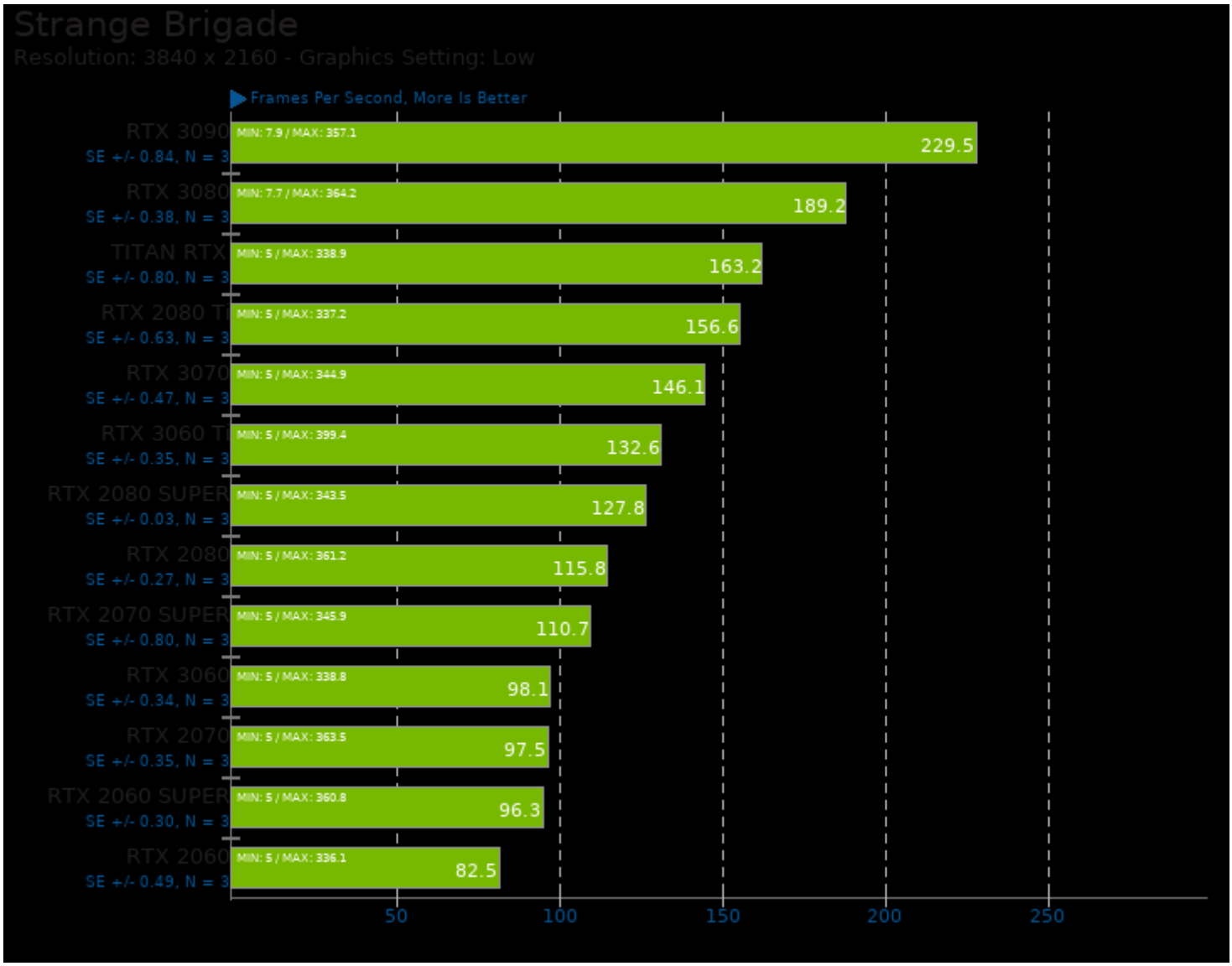



Shadow of the Tomb Raider
Resolution: 3840 x 2160 - Graphics Preset: High - Anti Aliasing: Off
Frames Per Second, More Is Better
RTX 3090
SE +/- 0.07, N = 3
MAX: 185.4
112.4
RTX 3080
SE +/- 0.06, N = 3
MAX: 144.4
92.0
RX 6800 XT
SE +/- 0.00, N = 3
MAX: 126.7
91.7
RX 6800
SE +/- 0.00, N = 3
MAX: 113.8
80.6
TITAN RTX
SE +/- 0.03, N = 3
MAX: 125.9
79.2
RTX 2080 Ti
SE +/- 0.03, N = 3
MAX: 121.4
77.9
RTX 3070
SE +/- 0.03, N = 3
MAX: 107.7
73.2
RTX 3060 Ti
MAX: 108.8
65.0
RTX 2080 SUPER
SE +/- 0.09, N = 3
MAX: 99.6
64.2
RX 6700 XT
SE +/- 0.00, N = 3
MAX: 89.5
64.1
Radeon VII
MAX: 89.5
61.0
RTX 2080
SE +/- 0.06, N = 3
MAX: 99
58.0
RTX 2070 SUPER
SE +/- 0.03, N = 3
MAX: 86.4
55.7
RX 5700 XT
SE +/- 0.03, N = 3
MAX: 78.8
55.0
RTX 3060
SE +/- 0.03, N = 3
MAX: 78.4
48.6
RTX 2070
SE +/- 0.00, N = 3
MAX: 71.2
47.9
RTX 2060 SUPER
SE +/- 0.00, N = 3
MAX: 70.1
47.3
RTX 2060
SE +/- 0.03, N = 3
MAX: 69.9
41.1
RX 5600 XT
SE +/- 1.60, N = 12
MAX: 54.8
27.1
30
60
90
120
150

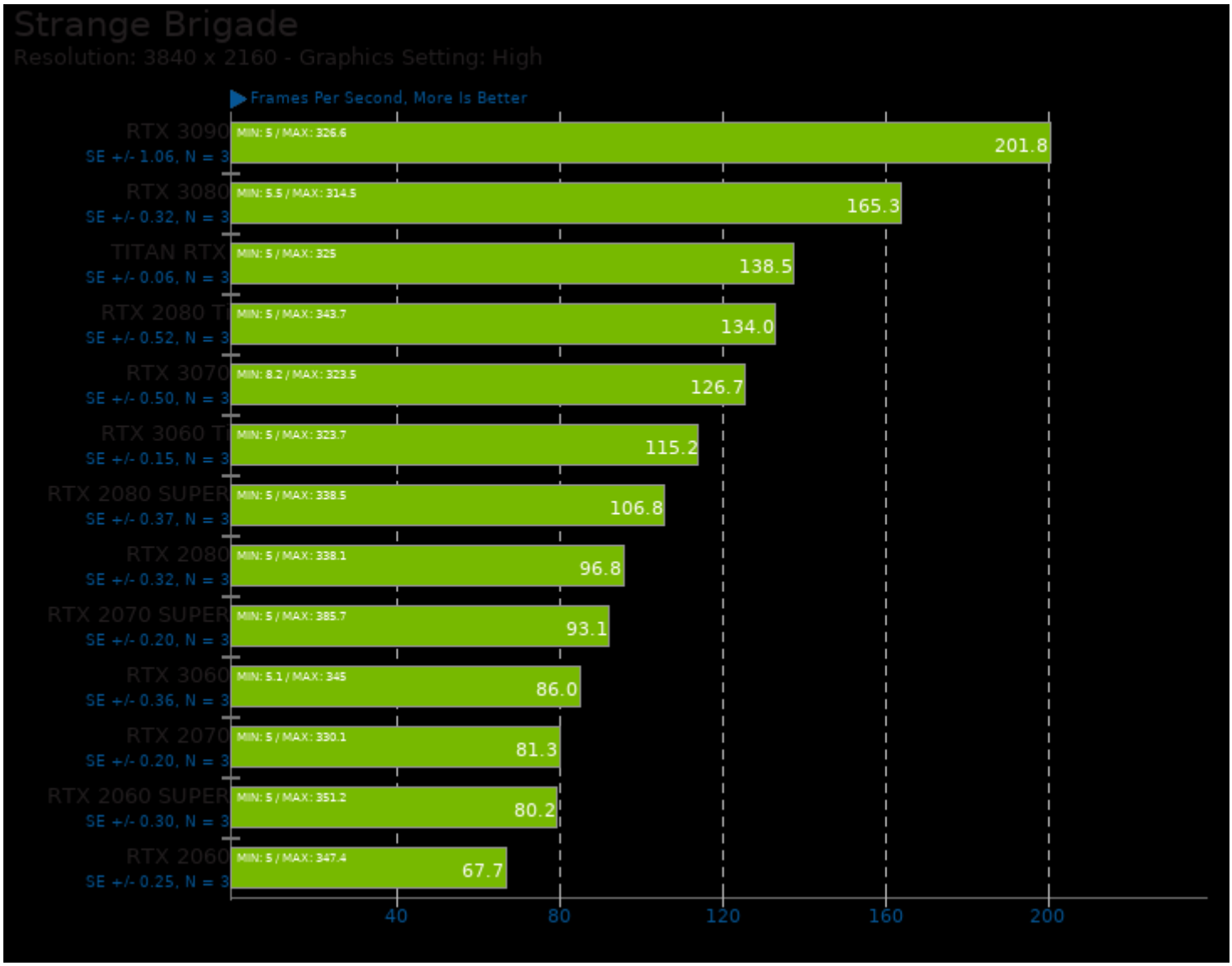
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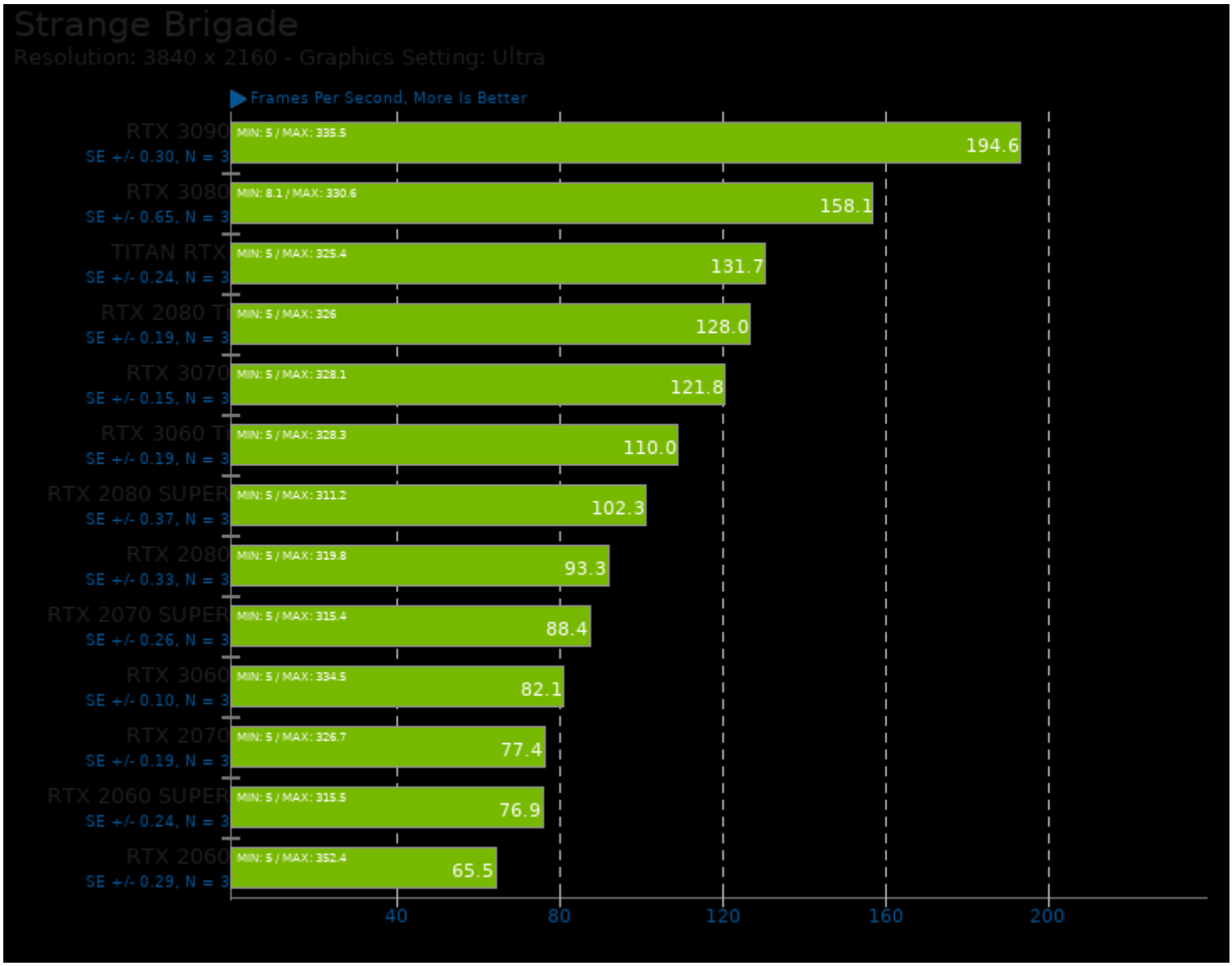


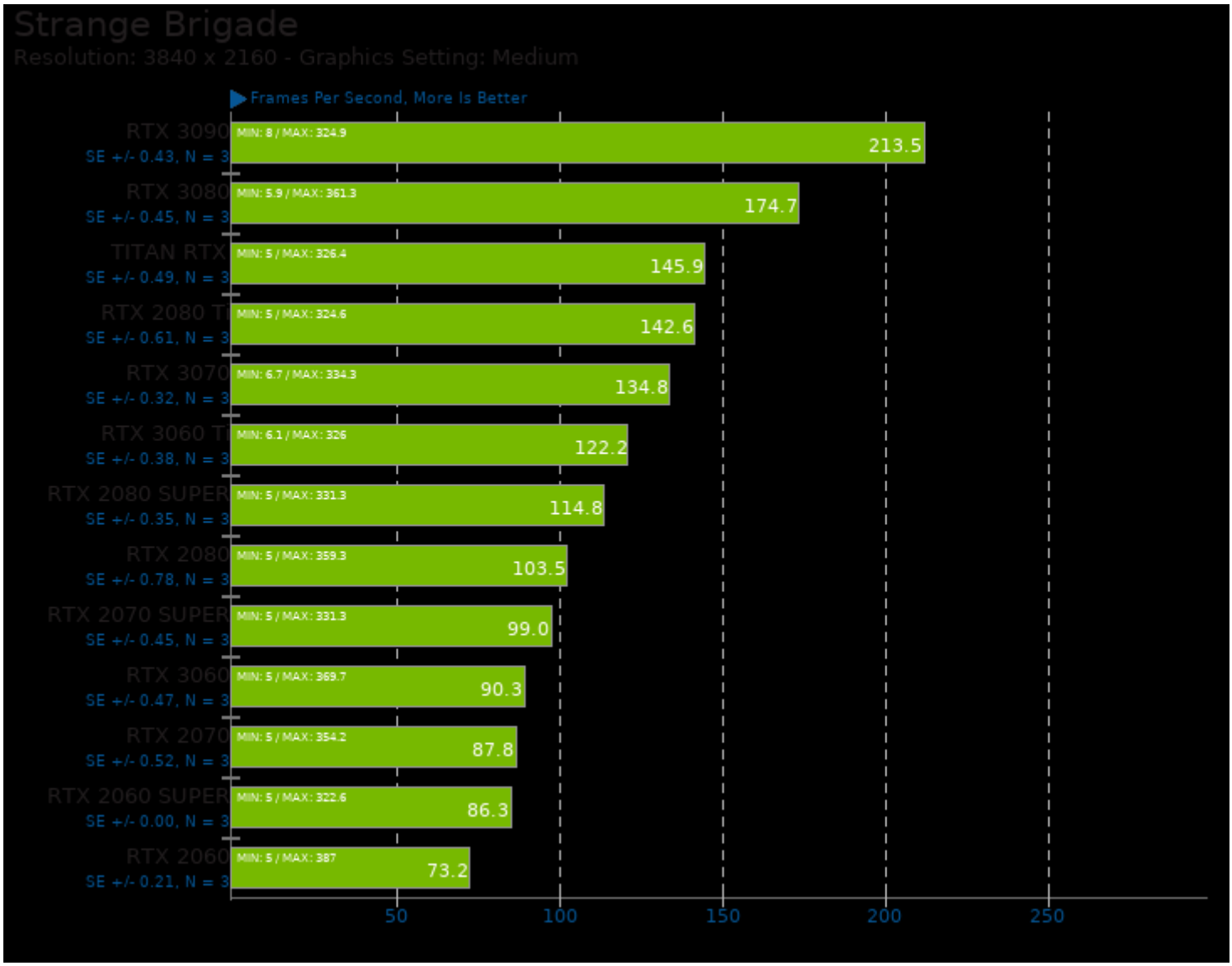
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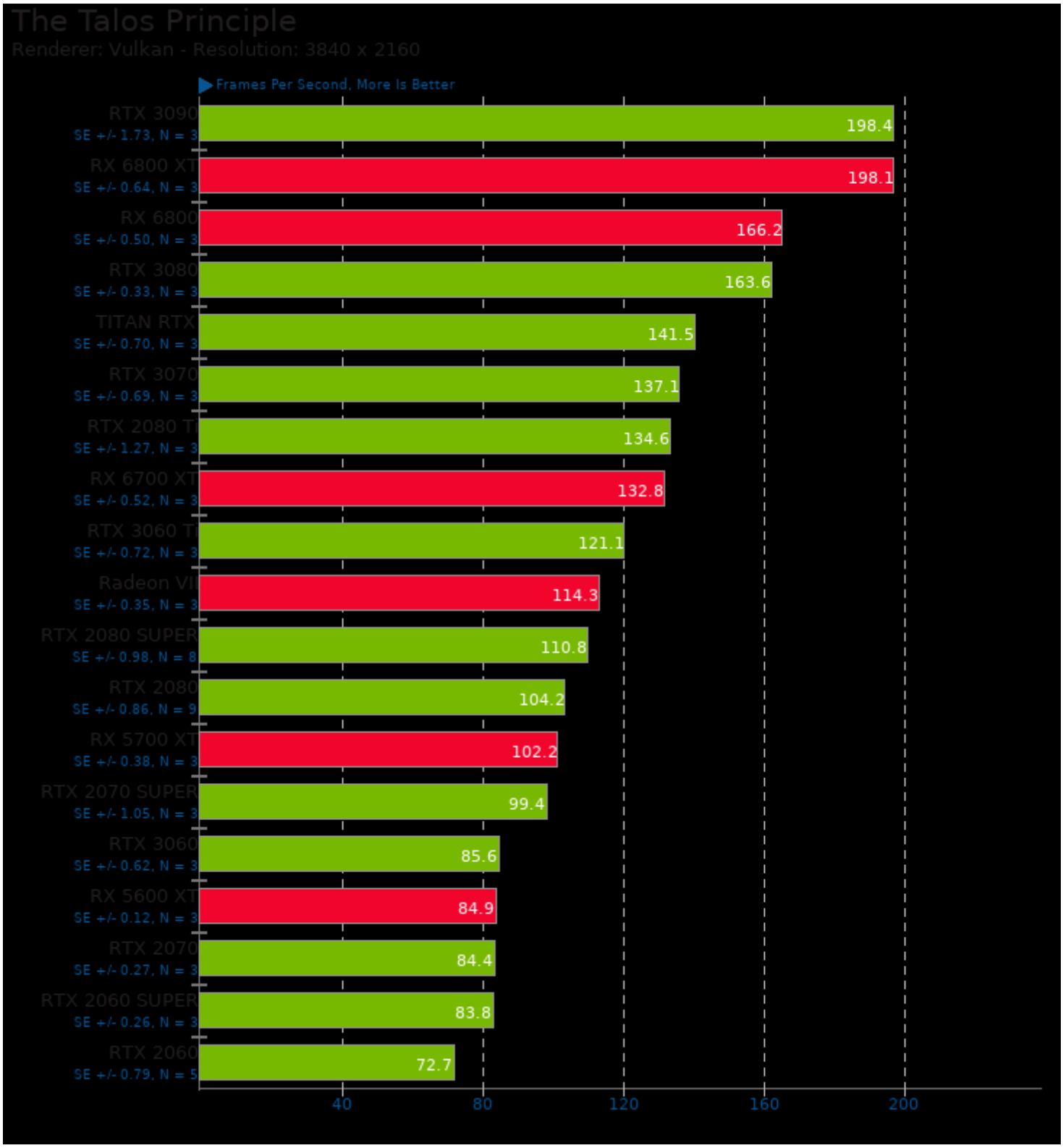
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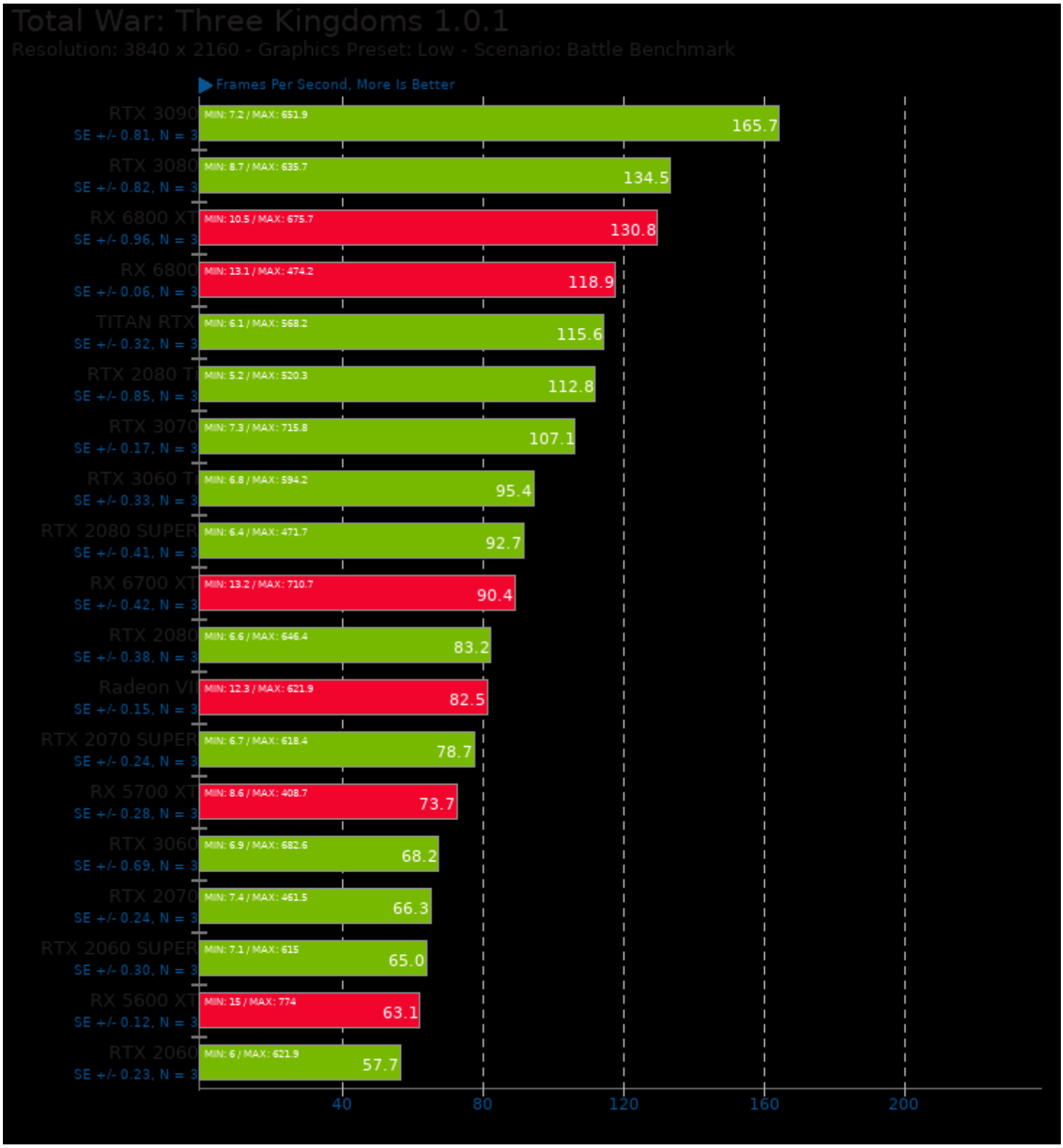



Strange Brigade
Resolution: 3840 x 2160 - Graphics Setting: Ultra
Frames Per Second, More Is Better
RTX 3090
SE +/- 0.30, N = 3
MIN: 5 / MAX: 335.5
194.6
RTX 3080
SE +/- 0.65, N = 3
MIN: 8.1 / MAX: 330.6
158.1
TITAN RTX
SE +/- 0.24, N = 3
MIN: 5 / MAX: 325.4
131.7
RTX 2080 T
SE +/- 0.19, N = 3
MIN: 5 / MAX: 326
128.0
RTX 3070
SE +/- 0.15, N = 3
MIN: 5 / MAX: 328.1
121.8
RTX 3060 T
SE +/- 0.19, N = 3
MIN: 5 / MAX: 328.3
110.0
RTX 2080 SUPER
SE +/- 0.37, N = 3
MIN: 5 / MAX: 311.2
102.3
RTX 2080
SE +/- 0.33, N = 3
MIN: 5 / MAX: 319.8
93.3
RTX 2070 SUPER
SE +/- 0.26, N = 3
MIN: 5 / MAX: 315.4
88.4
RTX 3060
SE +/- 0.10, N = 3
MIN: 5 / MAX: 334.5
82.1
RTX 2070
SE +/- 0.19, N = 3
MIN: 5 / MAX: 326.7
77.4
RTX 2060 SUPER
SE +/- 0.24, N = 3
MIN: 5 / MAX: 315.5
76.9
RTX 2060
SE +/- 0.29, N = 3
MIN: 5 / MAX: 352.4
65.5
40
80
120
160
200

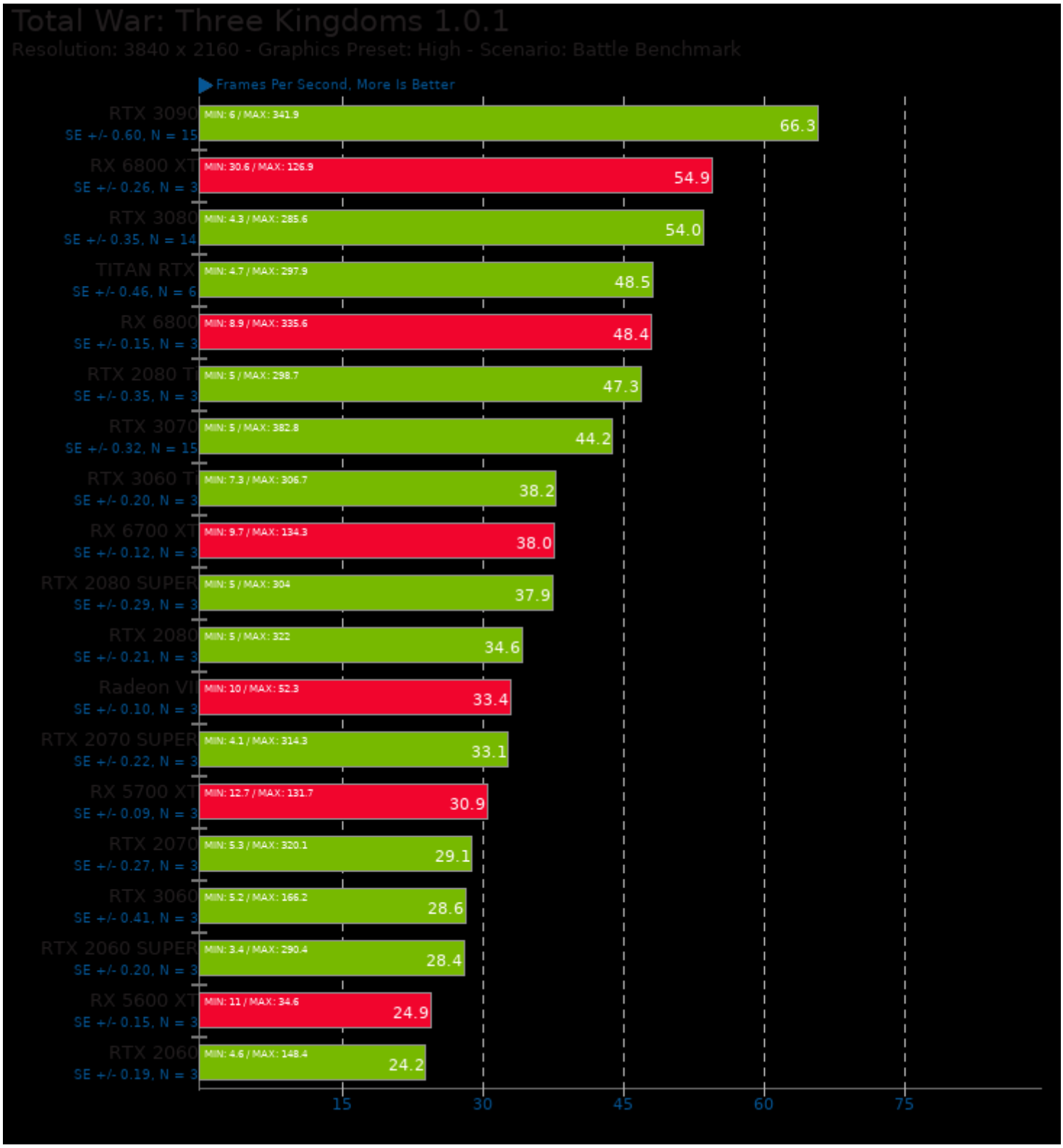

Strange Brigade
Resolution: 3840 x 2160 - Graphics Setting: Medium
Frames Per Second, More Is Better
RTX 3090
SE +/- 0.43, N = 3
MIN: 8 / MAX: 324.9
213.5
RTX 3080
SE +/- 0.45, N = 3
MIN: 5.9 / MAX: 361.3
174.7
TITAN RTX
SE +/- 0.49, N = 3
MIN: 5 / MAX: 326.4
145.9
RTX 2080 T
SE +/- 0.61, N = 3
MIN: 5 / MAX: 324.6
142.6
RTX 3070
SE +/- 0.32, N = 3
MIN: 6.7 / MAX: 334.3
134.8
RTX 3060 T
SE +/- 0.38, N = 3
MIN: 6.1 / MAX: 326
122.2
RTX 2080 SUPER
SE +/- 0.35, N = 3
MIN: 5 / MAX: 331.3
114.8
RTX 2080
SE +/- 0.78, N = 3
MIN: 5 / MAX: 359.3
103.5
RTX 2070 SUPER
SE +/- 0.45, N = 3
MIN: 5 / MAX: 331.3
99.0
RTX 3060
SE +/- 0.47, N = 3
MIN: 5 / MAX: 369.7
90.3
RTX 2070
SE +/- 0.52, N = 3
MIN: 5 / MAX: 354.2
87.8
RTX 2060 SUPER
SE +/- 0.00, N = 3
MIN: 5 / MAX: 322.6
86.3
RTX 2060
SE +/- 0.21, N = 3
MIN: 5 / MAX: 387
73.2
50
100
150
200
250

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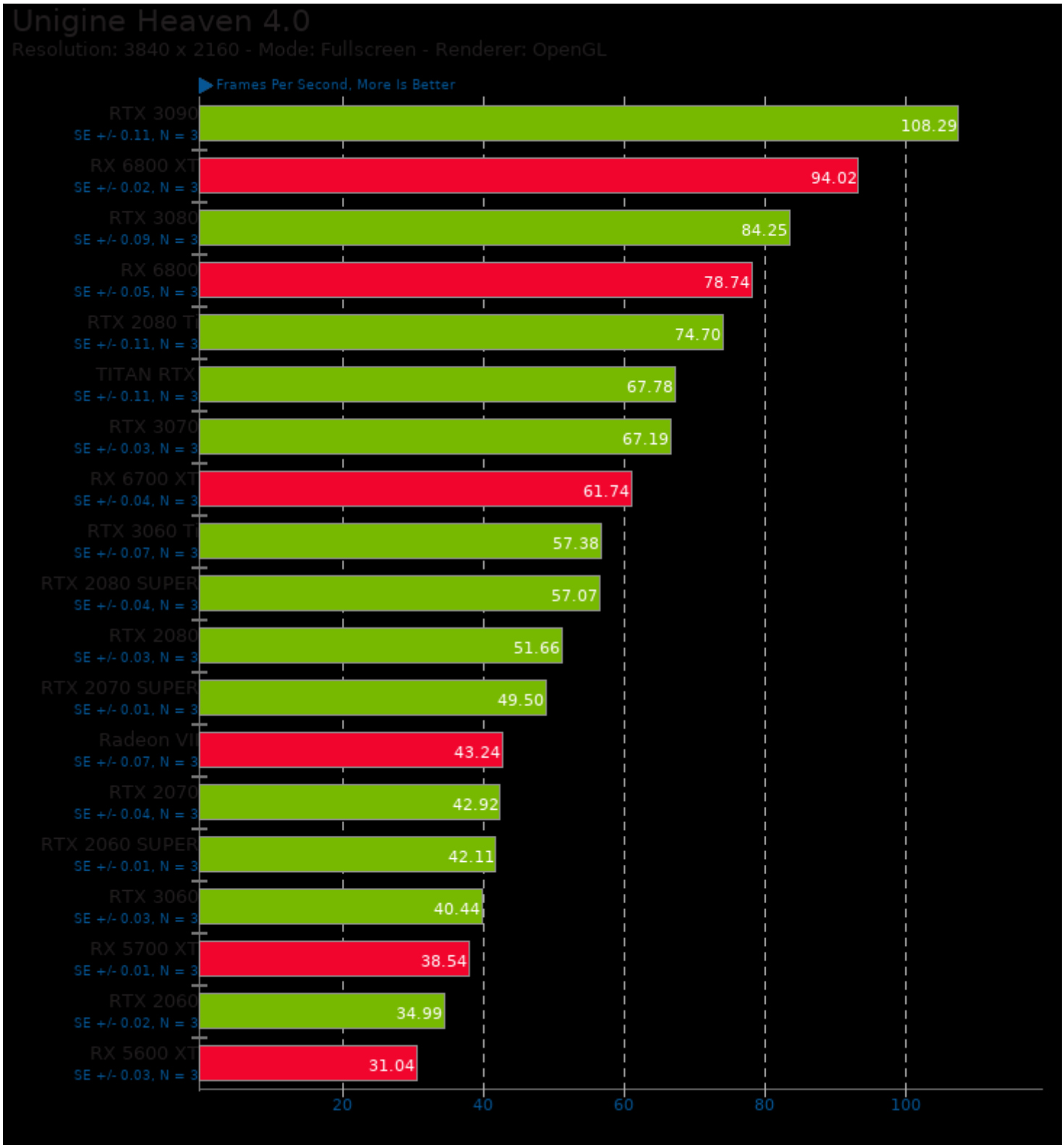


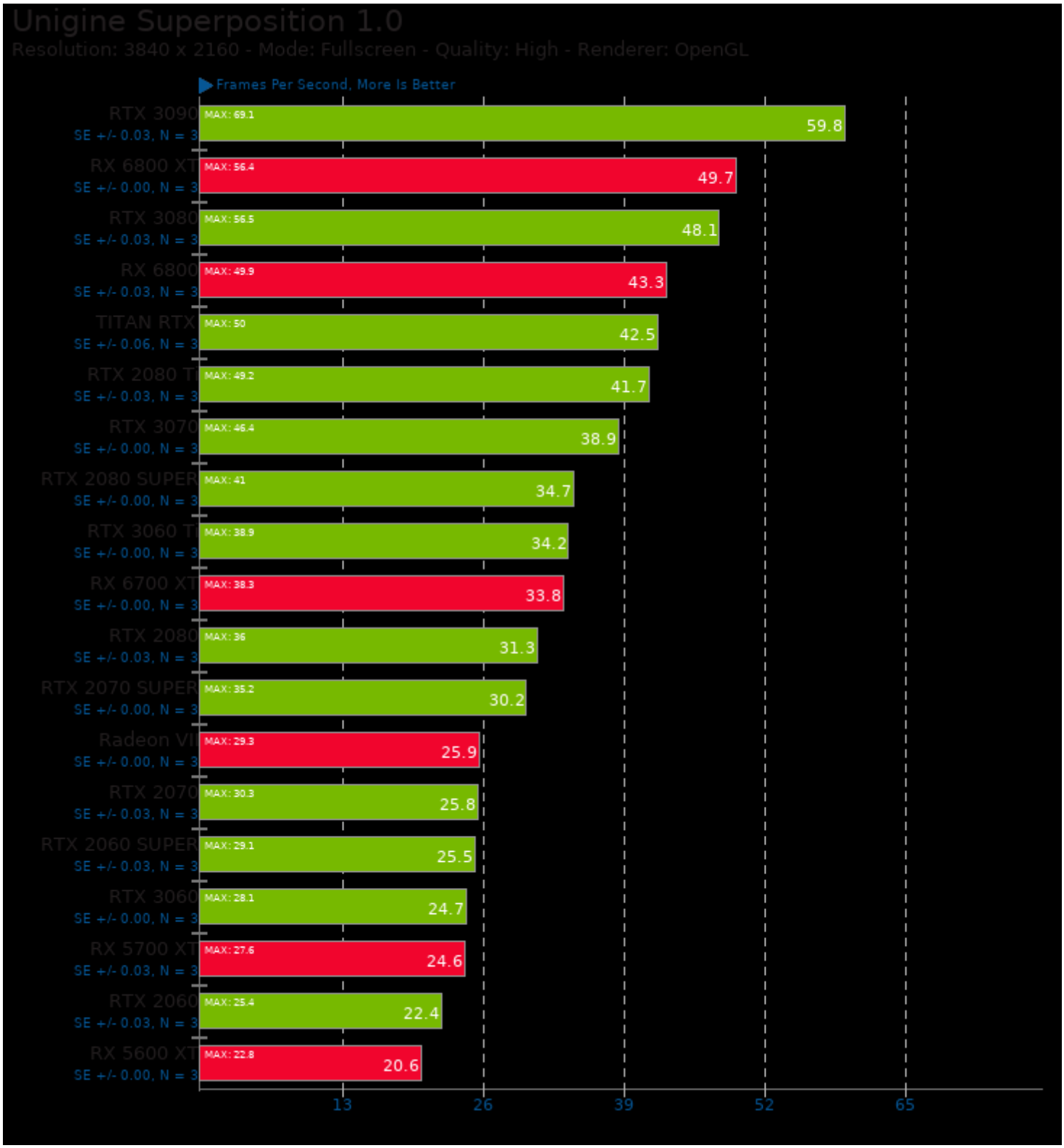

Total War: Three Kingdoms 1.0.1
Resolution: 3840 x 2160 - Graphics Preset: Low - Scenario: Battle Benchmark
Frames Per Second, More Is Better
RTX 3090
SE +/- 0.81, N = 3
MIN: 7.2 / MAX: 651.9
165.7
RTX 3080
SE +/- 0.82, N = 3
MIN: 8.7 / MAX: 635.7
134.5
RX 6800 XT
SE +/- 0.96, N = 3
MIN: 10.5 / MAX: 675.7
130.8
RX 6800
SE +/- 0.06, N = 3
MIN: 13.1 / MAX: 474.2
118.9
TITAN RTX
SE +/- 0.32, N = 3
MIN: 6.1 / MAX: 568.2
115.6
RTX 2080 Ti
SE +/- 0.85, N = 3
MIN: 5.2 / MAX: 520.3
112.8
RTX 3070
SE +/- 0.17, N = 3
MIN: 7.3 / MAX: 715.8
107.1
RTX 3060 Ti
SE +/- 0.33, N = 3
MIN: 6.8 / MAX: 594.2
95.4
RTX 2080 SUPER
SE +/- 0.41, N = 3
MIN: 6.4 / MAX: 471.7
92.7
RX 6700 XT
SE +/- 0.42, N = 3
MIN: 13.2 / MAX: 710.7
90.4
RTX 2080
SE +/- 0.38, N = 3
MIN: 6.6 / MAX: 646.4
83.2
Radeon VII
SE +/- 0.15, N = 3
MIN: 12.3 / MAX: 621.9
82.5
RTX 2070 SUPER
SE +/- 0.24, N = 3
MIN: 6.7 / MAX: 618.4
78.7
RX 5700 XT
SE +/- 0.28, N = 3
MIN: 8.6 / MAX: 408.7
73.7
RTX 3060
SE +/- 0.69, N = 3
MIN: 6.9 / MAX: 682.6
68.2
RTX 2070
SE +/- 0.24, N = 3
MIN: 7.4 / MAX: 461.5
66.3
RTX 2060 SUPER
SE +/- 0.30, N = 3
MIN: 7.1 / MAX: 615
65.0
RX 5600 XT
SE +/- 0.12, N = 3
MIN: 15 / MAX: 774
63.1
RTX 2060
SE +/- 0.23, N = 3
MIN: 6 / MAX: 621.9
57.7
40
80
120
160
200

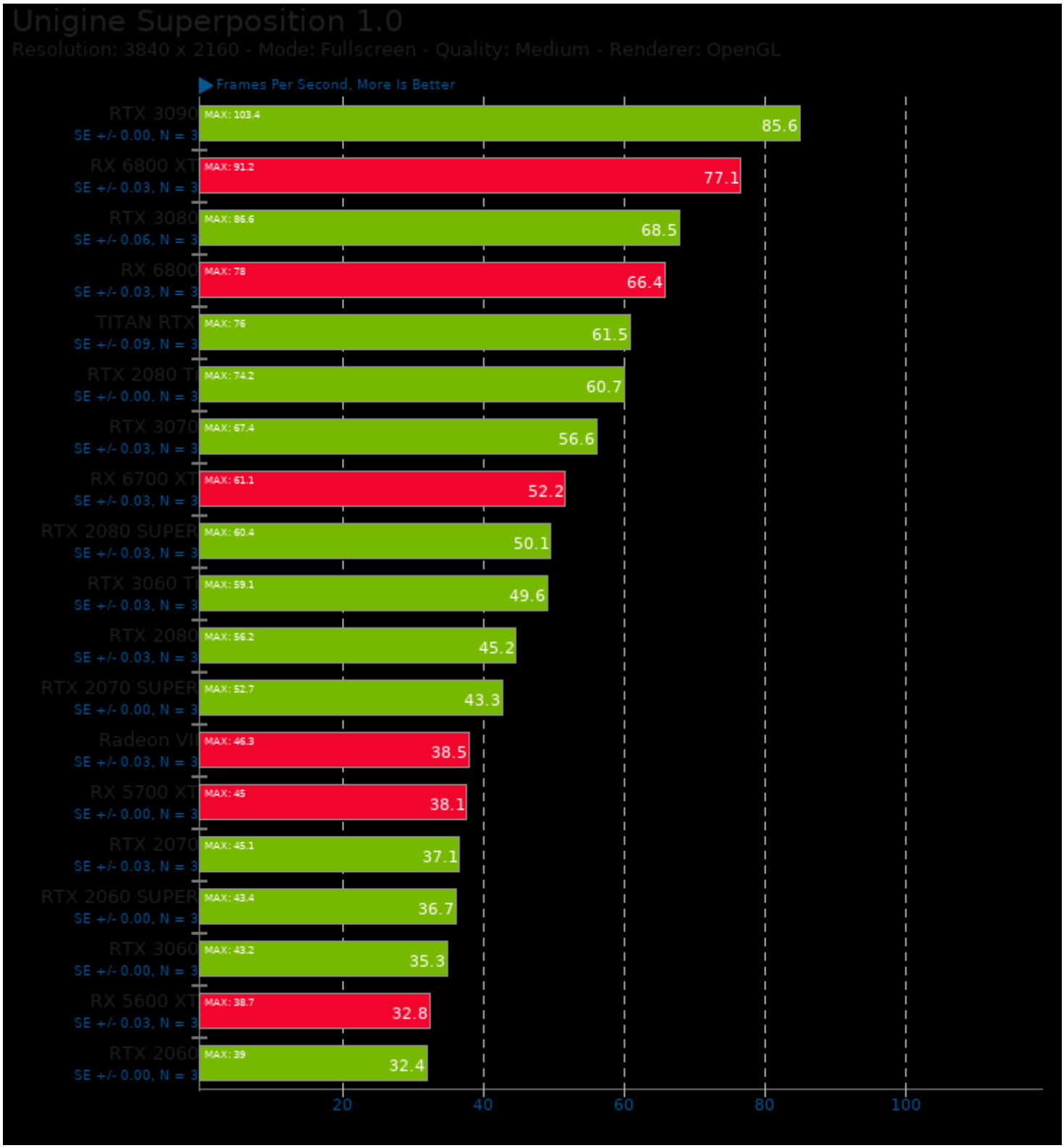
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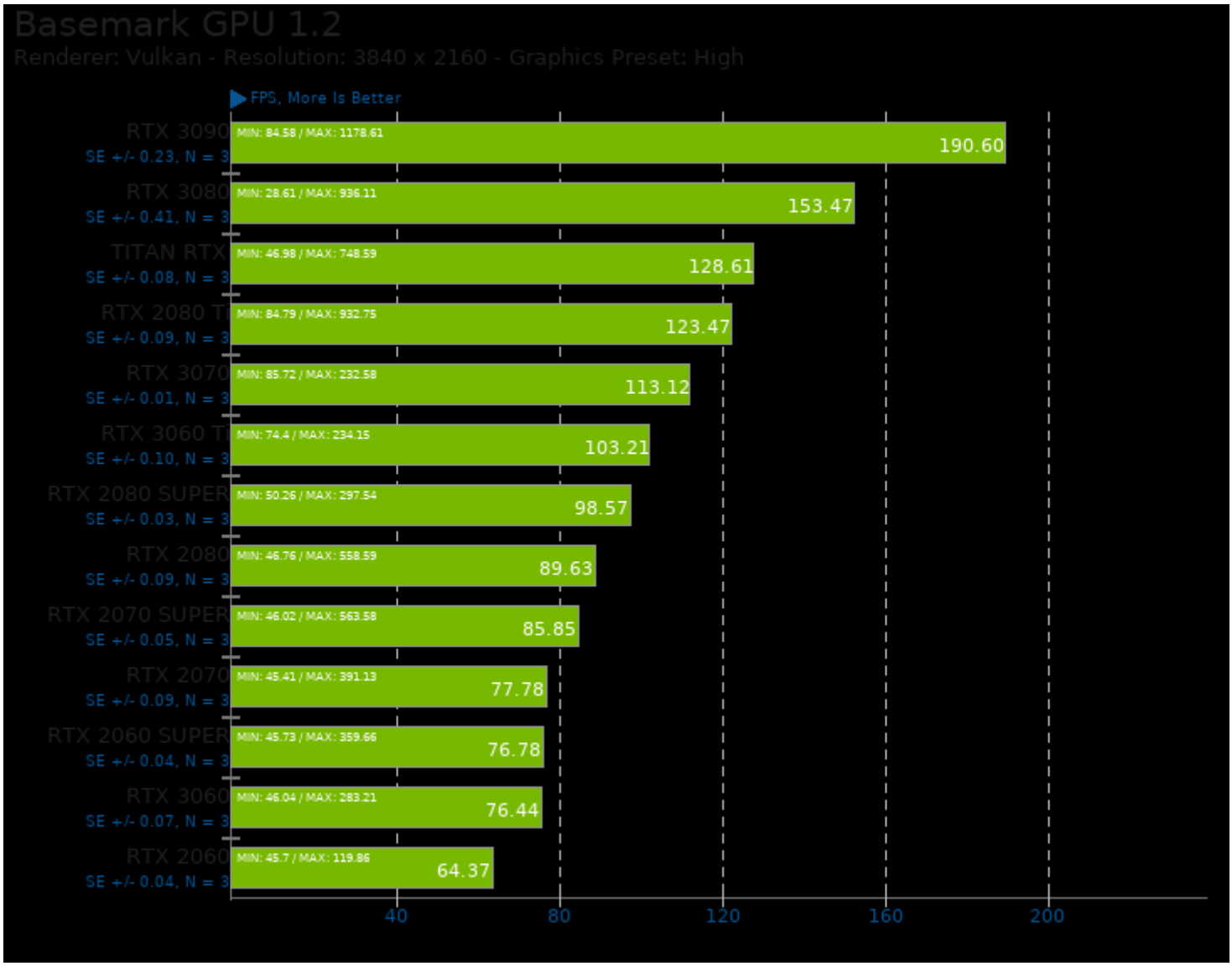


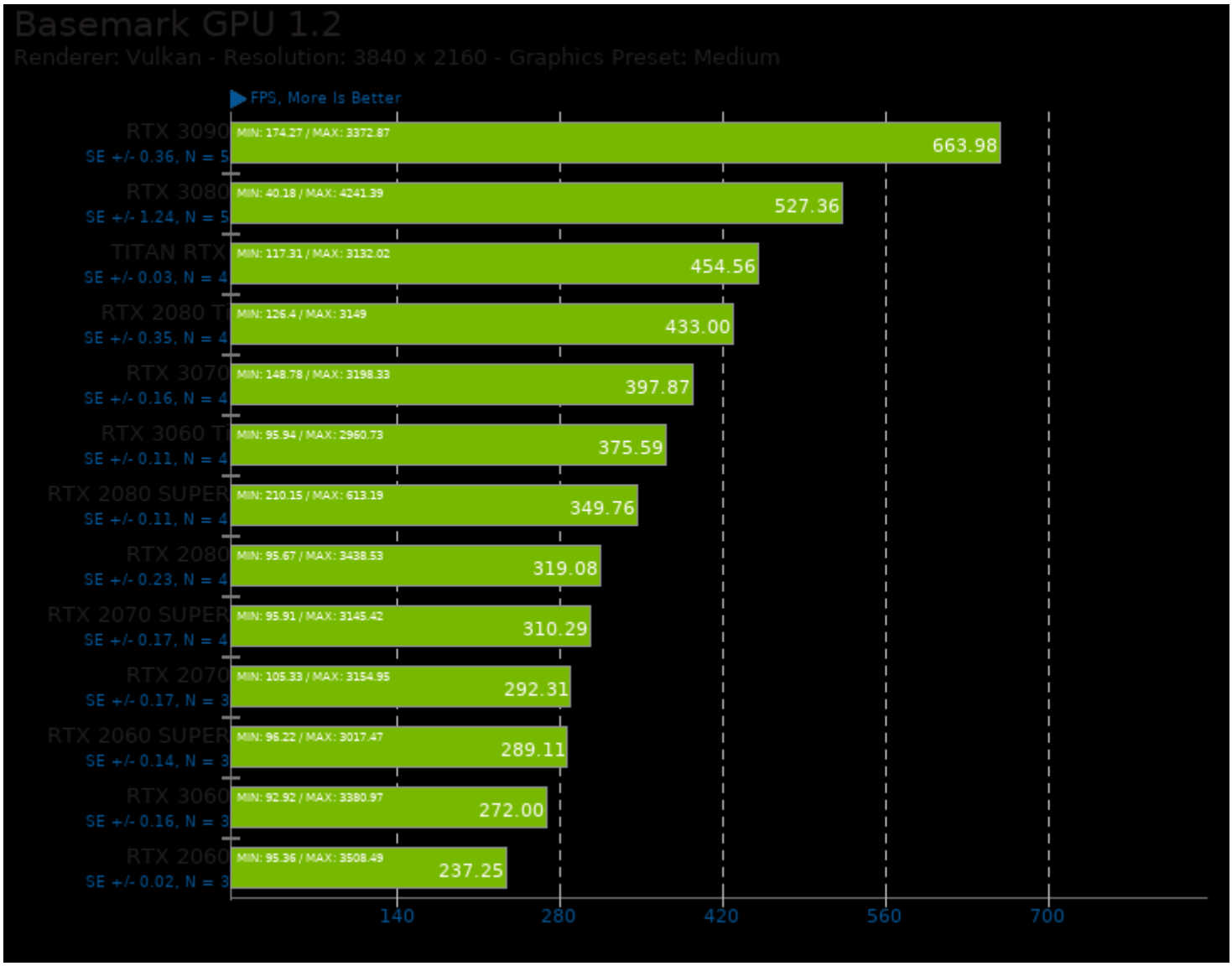
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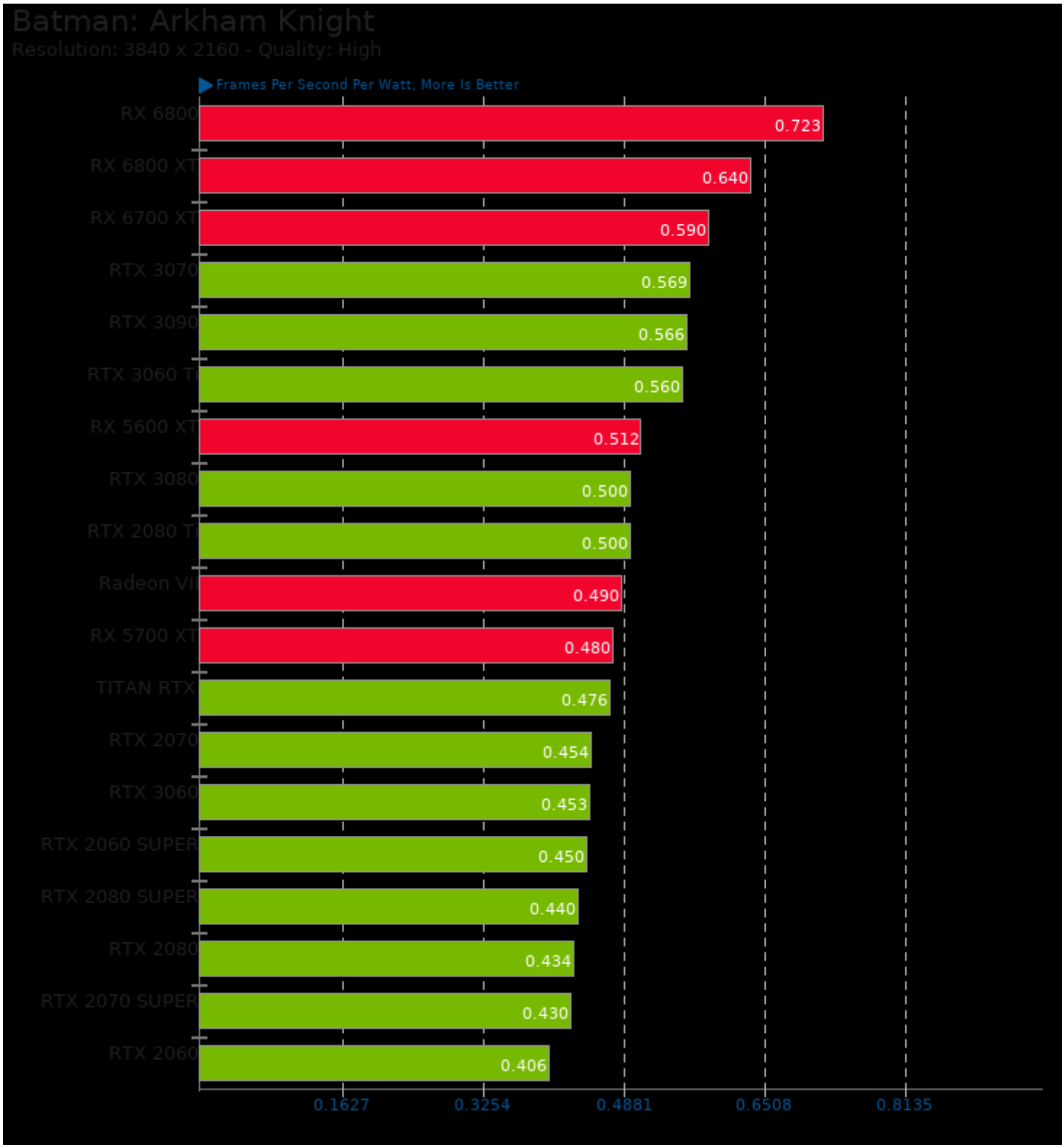

Unigine Superposition 1.0
Resolution: 3840 x 2160 - Mode: Fullscreen - Quality: High - Renderer: OpenGL
Frames Per Second, More Is Better
RTX 3090
SE +/- 0.03, N = 3
MAX: 69.1
59.8
RX 6800 XT
SE +/- 0.00, N = 3
MAX: 56.4
49.7
RTX 3080
SE +/- 0.03, N = 3
MAX: 56.5
48.1
RX 6800
SE +/- 0.03, N = 3
MAX: 49.9
43.3
TITAN RTX
SE +/- 0.06, N = 3
MAX: 50
42.5
RTX 2080 Ti
SE +/- 0.03, N = 3
MAX: 49.2
41.7
RTX 3070
SE +/- 0.00, N = 3
MAX: 46.4
38.9
RTX 2080 SUPER
SE +/- 0.00, N = 3
MAX: 41
34.7
RTX 3060 Ti
SE +/- 0.00, N = 3
MAX: 38.9
34.2
RX 6700 XT
SE +/- 0.00, N = 3
MAX: 38.3
33.8
RTX 2080
SE +/- 0.03, N = 3
MAX: 36
31.3
RTX 2070 SUPER
SE +/- 0.00, N = 3
MAX: 35.2
30.2
Radeon VII
SE +/- 0.00, N = 3
MAX: 29.3
25.9
RTX 2070
SE +/- 0.03, N = 3
MAX: 30.3
25.8
RTX 2060 SUPER
SE +/- 0.03, N = 3
MAX: 29.1
25.5
RTX 3060
SE +/- 0.00, N = 3
MAX: 28.1
24.7
RX 5700 XT
SE +/- 0.03, N = 3
MAX: 27.6
24.6
RTX 2060
SE +/- 0.03, N = 3
MAX: 25.4
22.4
RX 5600 XT
SE +/- 0.00, N = 3
MAX: 22.8
20.6
13
26
39
52
65


Unigine Superposition 1.0
Resolution: 3840 x 2160 - Mode: Fullscreen - Quality: Medium - Renderer: OpenGL
Frames Per Second, More Is Better
RTX 3090
SE +/- 0.00, N = 3
MAX: 103.4
85.6
RX 6800 XT
SE +/- 0.03, N = 3
MAX: 91.2
77.1
RTX 3080
SE +/- 0.06, N = 3
MAX: 86.6
68.5
RX 6800
SE +/- 0.03, N = 3
MAX: 78
66.4
TITAN RTX
SE +/- 0.09, N = 3
MAX: 76
61.5
RTX 2080 Ti
SE +/- 0.00, N = 3
MAX: 74.2
60.7
RTX 3070
SE +/- 0.03, N = 3
MAX: 67.4
56.6
RX 6700 XT
SE +/- 0.03, N = 3
MAX: 61.1
52.2
RTX 2080 SUPER
SE +/- 0.03, N = 3
MAX: 60.4
50.1
RTX 3060 Ti
SE +/- 0.03, N = 3
MAX: 59.1
49.6
RTX 2080
SE +/- 0.03, N = 3
MAX: 56.2
45.2
RTX 2070 SUPER
SE +/- 0.00, N = 3
MAX: 52.7
43.3
Radeon VII
SE +/- 0.03, N = 3
MAX: 46.3
38.5
RX 5700 XT
SE +/- 0.00, N = 3
MAX: 45
38.1
RTX 2070
SE +/- 0.03, N = 3
MAX: 45.1
37.1
RTX 2060 SUPER
SE +/- 0.00, N = 3
MAX: 43.4
36.7
RTX 3060
SE +/- 0.00, N = 3
MAX: 43.2
35.3
RX 5600 XT
SE +/- 0.03, N = 3
MAX: 38.7
32.8
RTX 2060
SE +/- 0.00, N = 3
MAX: 39
32.4
20
40
60
80
100

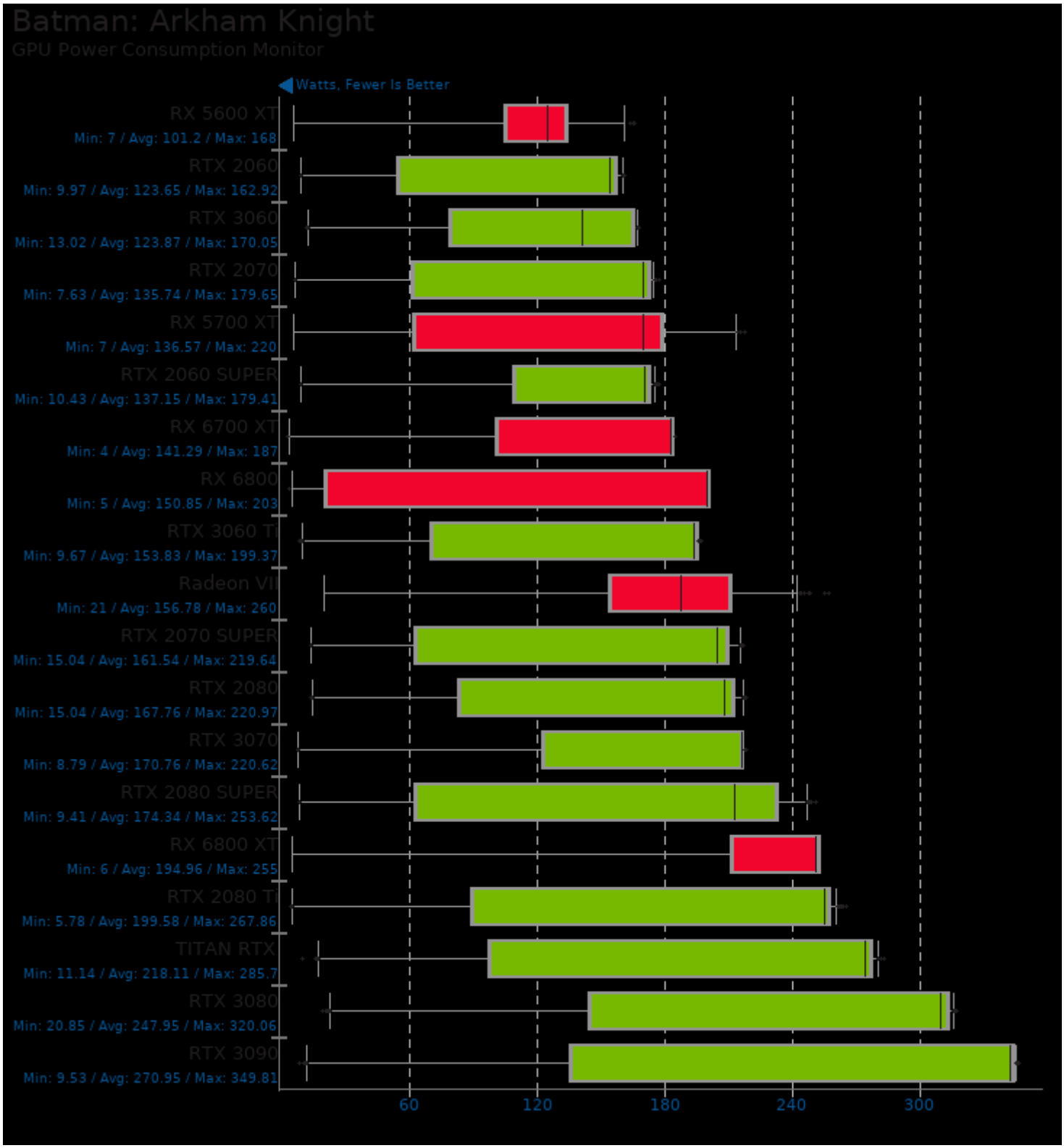

Basemark GPU 1.2
Renderer: Vulkan - Resolution: 3840 x 2160 - Graphics Preset: High
FPS, More Is Better
RTX 3090
SE +/- 0.23, N = 3
MIN: 84.58 / MAX: 1178.61
190.60
RTX 3080
SE +/- 0.41, N = 3
MIN: 28.61 / MAX: 936.11
153.47
TITAN RTX
SE +/- 0.08, N = 3
MIN: 46.98 / MAX: 748.59
128.61
RTX 2080 T
SE +/- 0.09, N = 3
MIN: 84.79 / MAX: 932.75
123.47
RTX 3070
SE +/- 0.01, N = 3
MIN: 85.72 / MAX: 232.58
113.12
RTX 3060 T
SE +/- 0.10, N = 3
MIN: 74.4 / MAX: 234.15
103.21
RTX 2080 SUPER
SE +/- 0.03, N = 3
MIN: 50.26 / MAX: 297.54
98.57
RTX 2080
SE +/- 0.09, N = 3
MIN: 46.76 / MAX: 558.59
89.63
RTX 2070 SUPER
SE +/- 0.05, N = 3
MIN: 46.02 / MAX: 563.58
85.85
RTX 2070
SE +/- 0.09, N = 3
MIN: 45.41 / MAX: 391.13
77.78
RTX 2060 SUPER
SE +/- 0.04, N = 3
MIN: 45.73 / MAX: 359.66
76.78
RTX 3060
SE +/- 0.07, N = 3
MIN: 46.04 / MAX: 283.21
76.44
RTX 2060
SE +/- 0.04, N = 3
MIN: 45.7 / MAX: 119.86
64.37
40
80
120
160
200

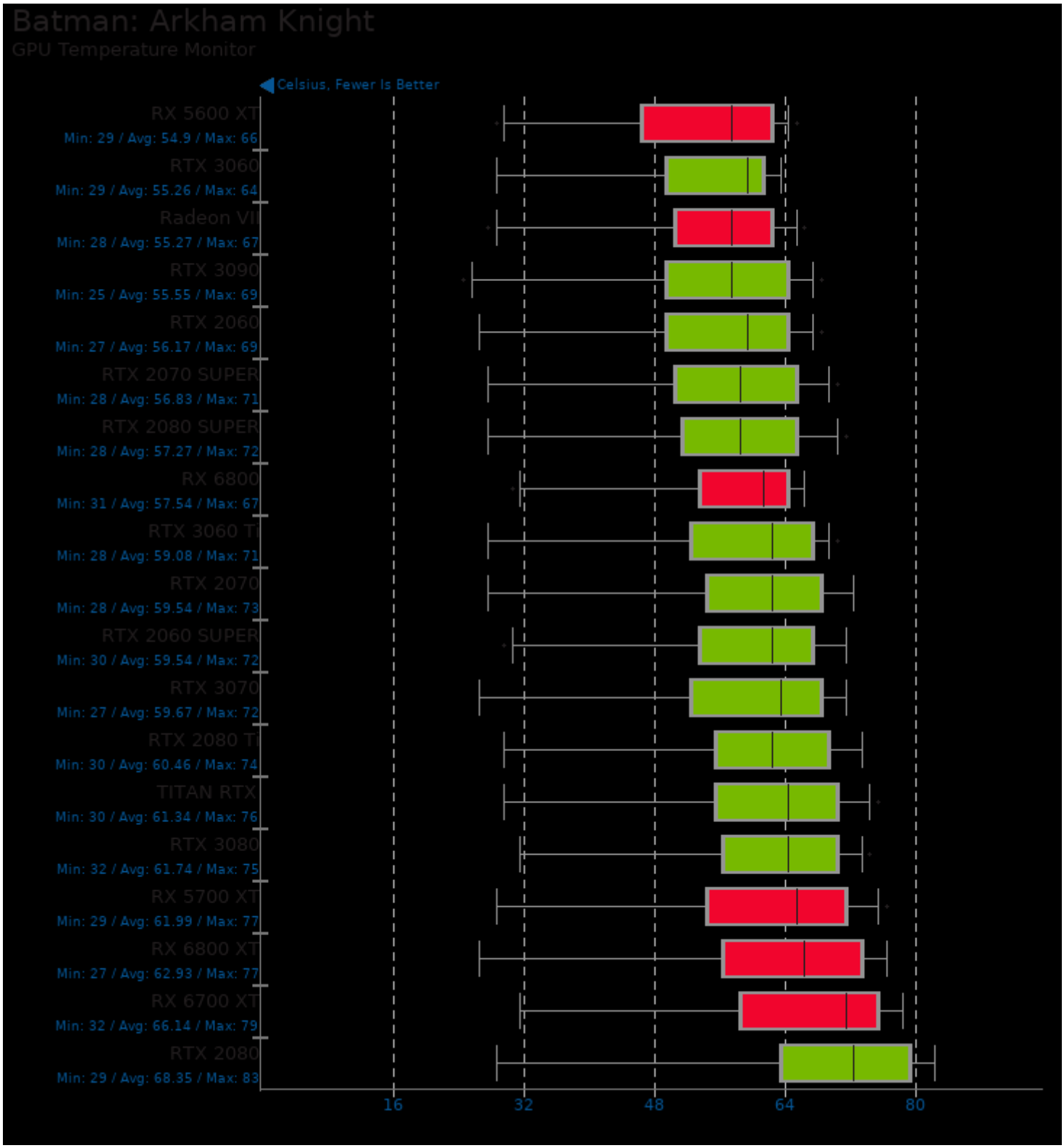

Basemark GPU 1.2
Renderer: Vulkan - Resolution: 3840 x 2160 - Graphics Preset: Medium
FPS, More Is Better
RTX 3090
SE +/- 0.36, N = 5
MIN: 174.27 / MAX: 3372.87
663.98
RTX 3080
SE +/- 1.24, N = 5
MIN: 40.18 / MAX: 4241.39
527.36
TITAN RTX
SE +/- 0.03, N = 4
MIN: 117.31 / MAX: 3132.02
454.56
RTX 2080 T
SE +/- 0.35, N = 4
MIN: 126.4 / MAX: 3149
433.00
RTX 3070
SE +/- 0.16, N = 4
MIN: 148.78 / MAX: 3198.33
397.87
RTX 3060 T
SE +/- 0.11, N = 4
MIN: 95.94 / MAX: 2960.73
375.59
RTX 2080 SUPER
SE +/- 0.11, N = 4
MIN: 210.15 / MAX: 613.19
349.76
RTX 2080
SE +/- 0.23, N = 4
MIN: 95.67 / MAX: 3438.53
319.08
RTX 2070 SUPER
SE +/- 0.17, N = 4
MIN: 95.91 / MAX: 3145.42
310.29
RTX 2070
SE +/- 0.17, N = 3
MIN: 105.33 / MAX: 3154.95
292.31
RTX 2060 SUPER
SE +/- 0.14, N = 3
MIN: 96.22 / MAX: 3017.47
289.11
RTX 3060
SE +/- 0.16, N = 3
MIN: 92.92 / MAX: 3380.97
272.00
RTX 2060
SE +/- 0.02, N = 3
MIN: 95.36 / MAX: 3508.49
237.25
140
280
420
560
700

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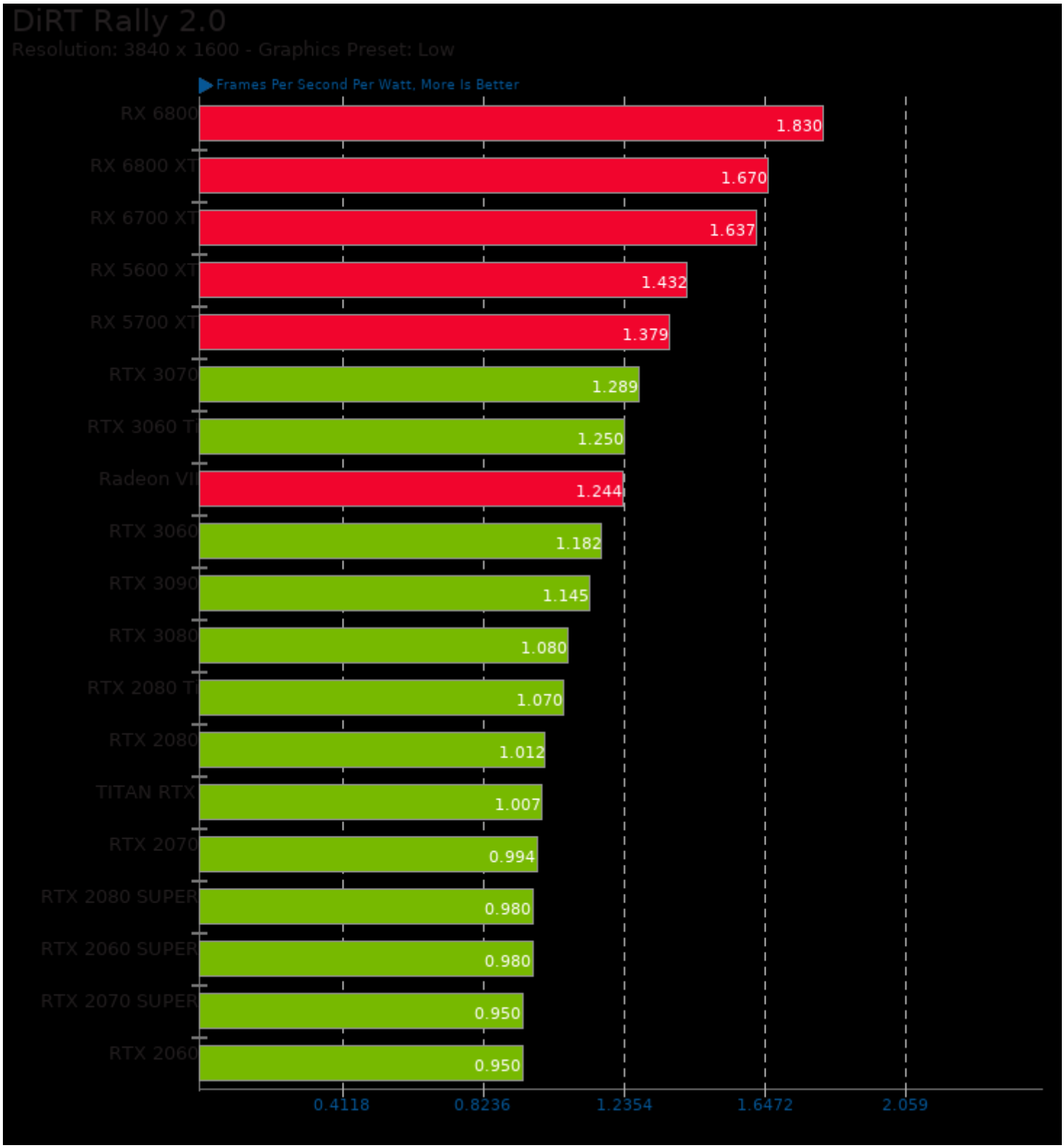


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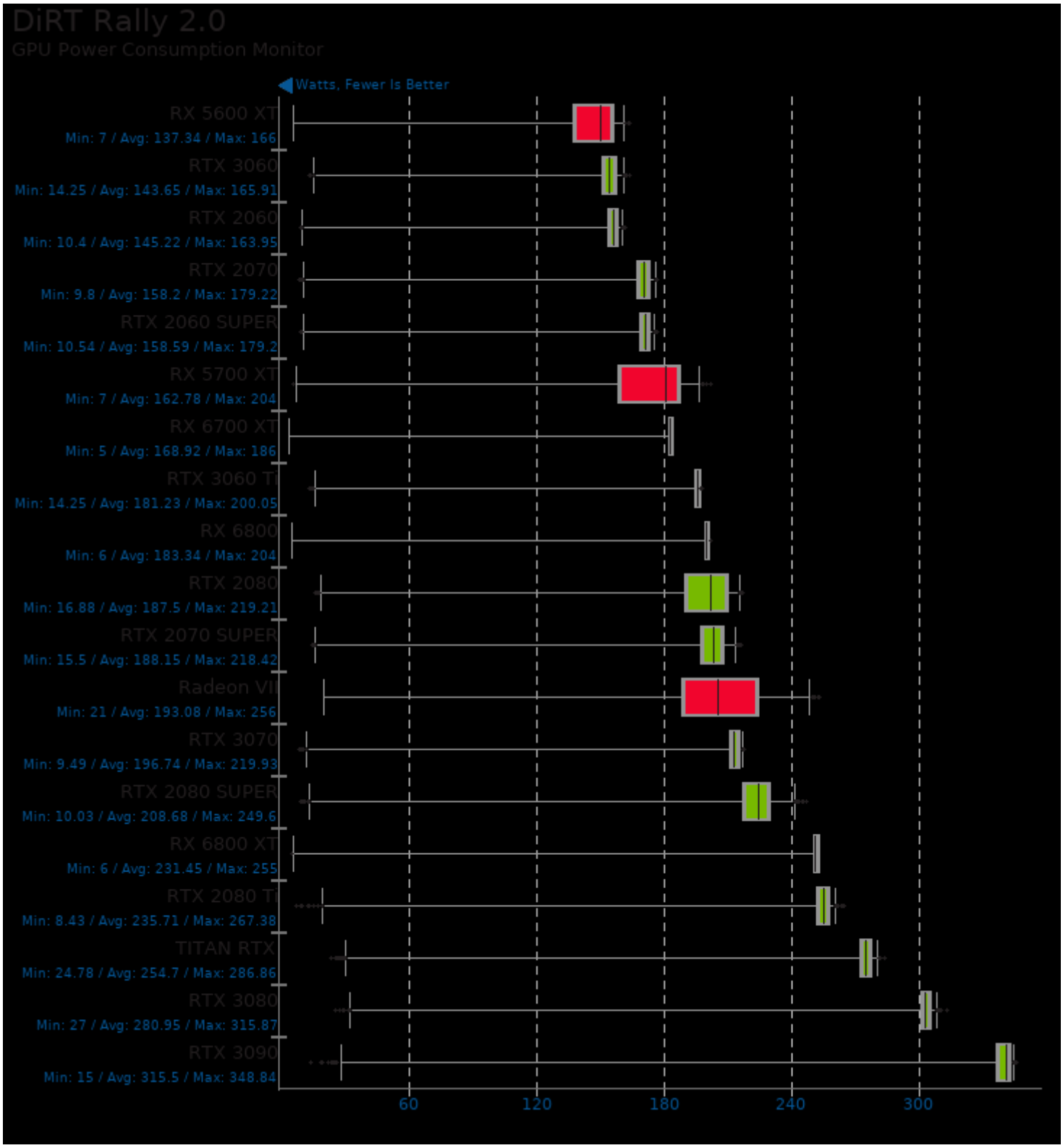


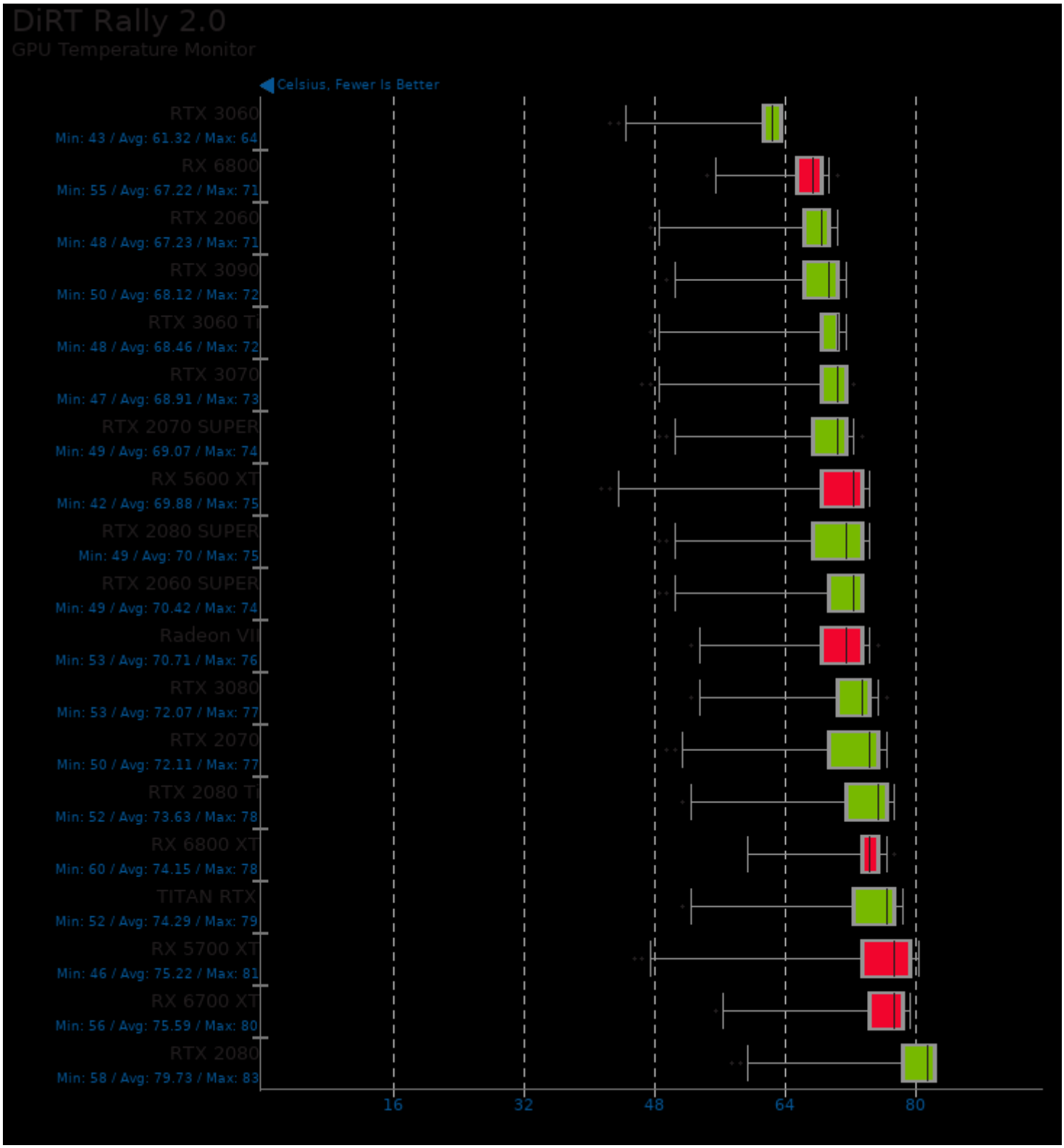

Batman: Arkham Knight
GPU Temperature Monitor
Celsius, Fewer Is Better
RX 5600 XT
Min: 29 / Avg: 54.9 / Max: 66
RTX 3060
Min: 29 / Avg: 55.26 / Max: 64
Radeon VII
Min: 28 / Avg: 55.27 / Max: 67
RTX 3090
Min: 25 / Avg: 55.55 / Max: 69
RTX 2060
Min: 27 / Avg: 56.17 / Max: 69
RTX 2070 SUPER
Min: 28 / Avg: 56.83 / Max: 71
RTX 2080 SUPER
Min: 28 / Avg: 57.27 / Max: 72
RX 6800
Min: 31 / Avg: 57.54 / Max: 67
RTX 3060 Ti
Min: 28 / Avg: 59.08 / Max: 71
RTX 2070
Min: 28 / Avg: 59.54 / Max: 73
RTX 2060 SUPER
Min: 30 / Avg: 59.54 / Max: 72
RTX 3070
Min: 27 / Avg: 59.67 / Max: 72
RTX 2080 Ti
Min: 30 / Avg: 60.46 / Max: 74
TITAN RTX
Min: 30 / Avg: 61.34 / Max: 76
RTX 3080
Min: 32 / Avg: 61.74 / Max: 75
RX 5700 XT
Min: 29 / Avg: 61.99 / Max: 77
RX 6800 XT
Min: 27 / Avg: 62.93 / Max: 77
RX 6700 XT
Min: 32 / Avg: 66.14 / Max: 79
RTX 2080
Min: 29 / Avg: 68.35 / Max: 83
16
32
48
64
80

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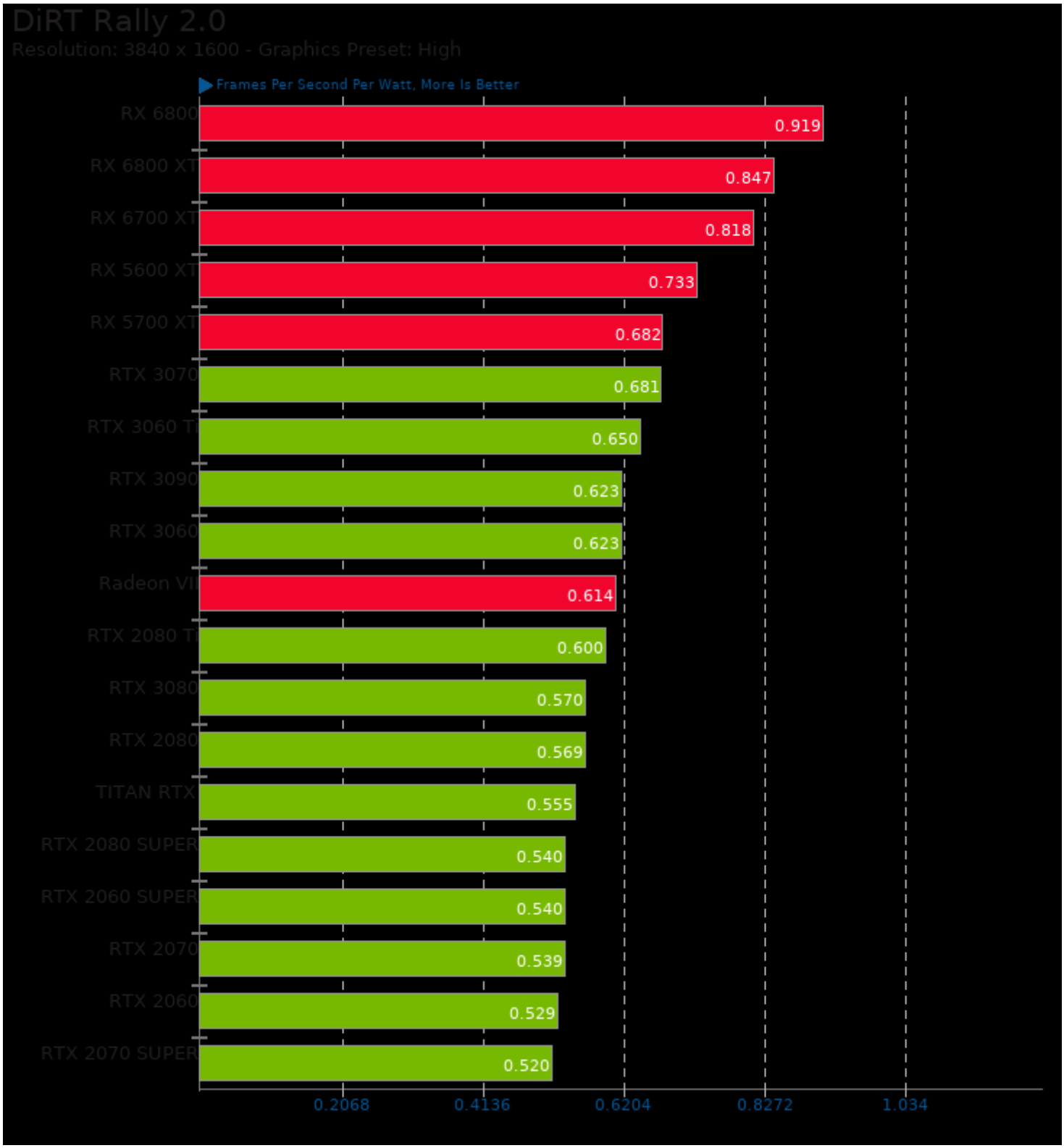


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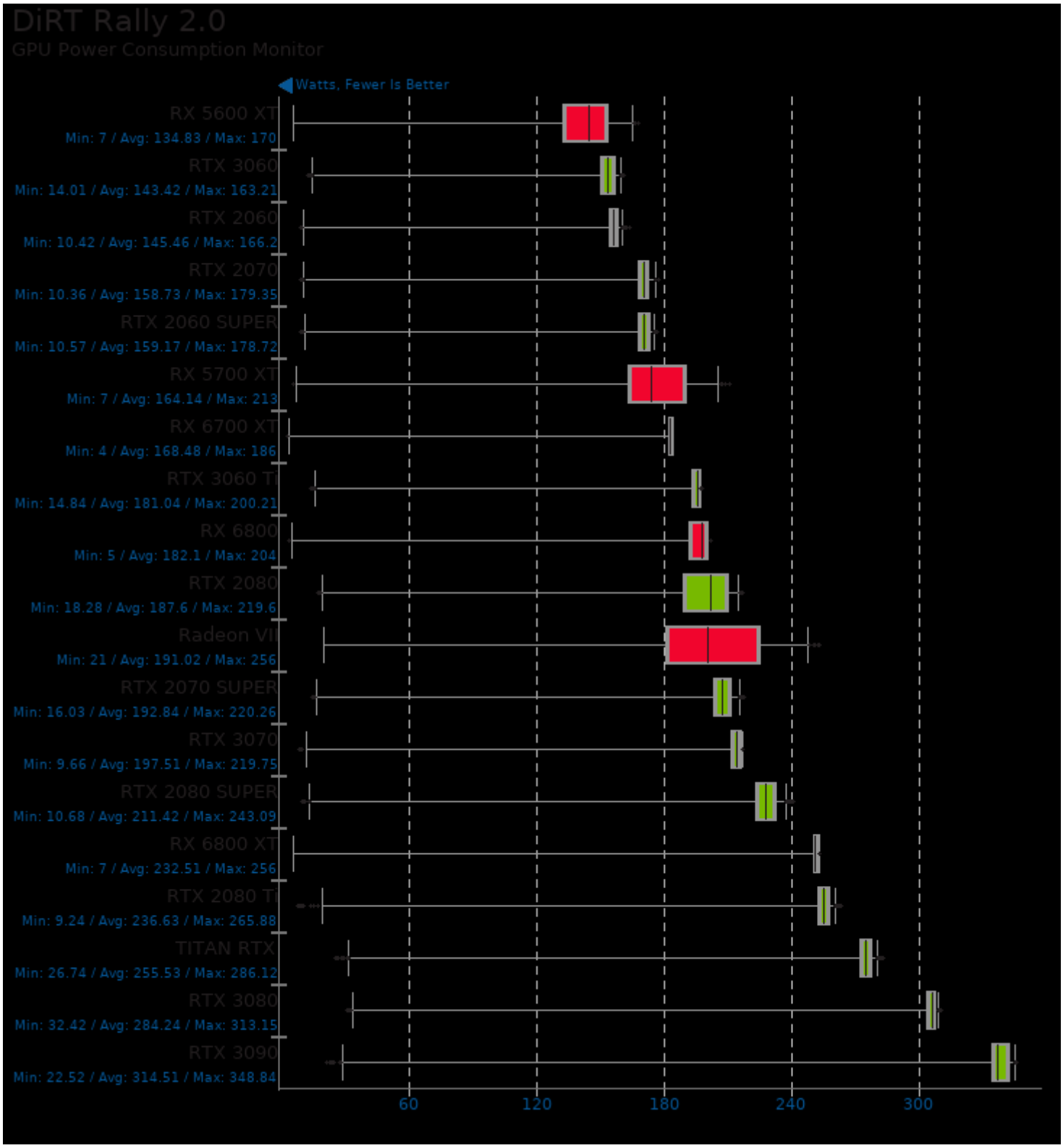



DiRT Rally 2.0
GPU Temperature Monitor
Celsius, Fewer Is Better
RTX 3060
Min: 43 / Avg: 61.32 / Max: 64
RX 6800
Min: 55 / Avg: 67.22 / Max: 71
RTX 2060
Min: 48 / Avg: 67.23 / Max: 71
RTX 3090
Min: 50 / Avg: 68.12 / Max: 72
RTX 3060 Ti
Min: 48 / Avg: 68.46 / Max: 72
RTX 3070
Min: 47 / Avg: 68.91 / Max: 73
RTX 2070 SUPER
Min: 49 / Avg: 69.07 / Max: 74
RX 5600 XT
Min: 42 / Avg: 69.88 / Max: 75
RTX 2080 SUPER
Min: 49 / Avg: 70 / Max: 75
RTX 2060 SUPER
Min: 49 / Avg: 70.42 / Max: 74
Radeon VII
Min: 53 / Avg: 70.71 / Max: 76
RTX 3080
Min: 53 / Avg: 72.07 / Max: 77
RTX 2070
Min: 50 / Avg: 72.11 / Max: 77
RTX 2080 Ti
Min: 52 / Avg: 73.63 / Max: 78
RX 6800 XT
Min: 60 / Avg: 74.15 / Max: 78
TITAN RTX
Min: 52 / Avg: 74.29 / Max: 79
RX 5700 XT
Min: 46 / Avg: 75.22 / Max: 81
RX 6700 XT
Min: 56 / Avg: 75.59 / Max: 80
RTX 2080
Min: 58 / Avg: 79.73 / Max: 83
16
32
48
64
80

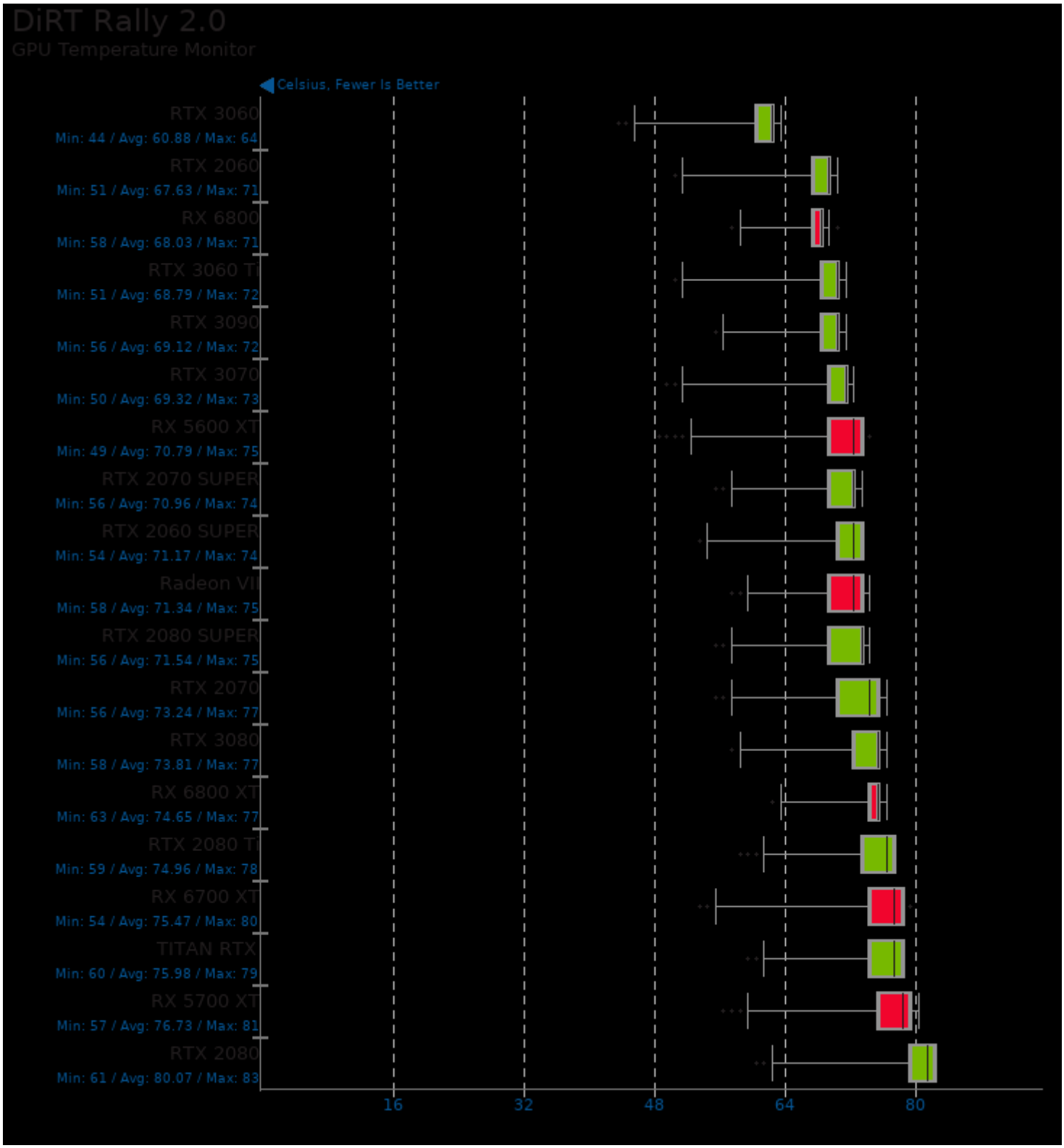
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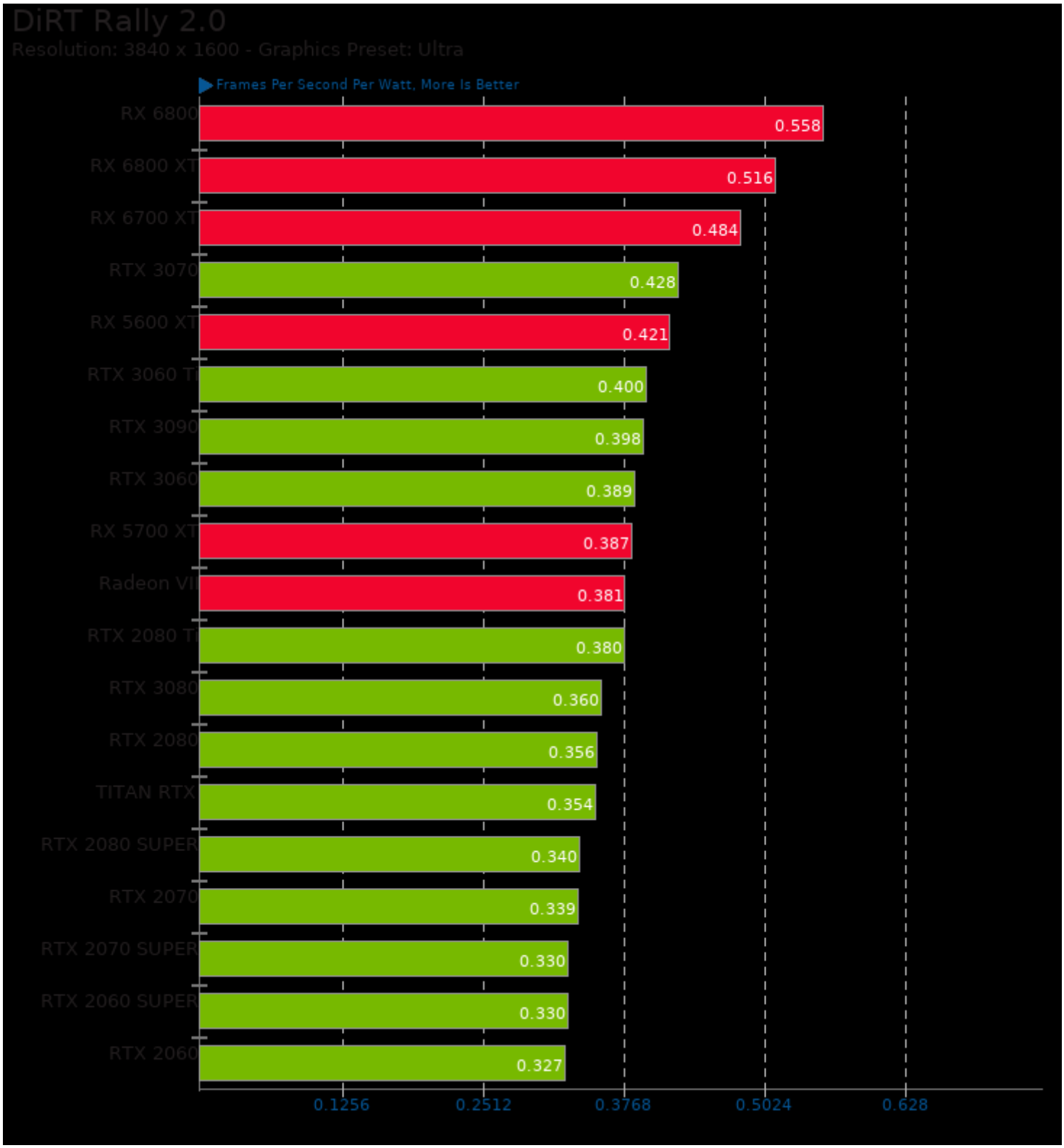
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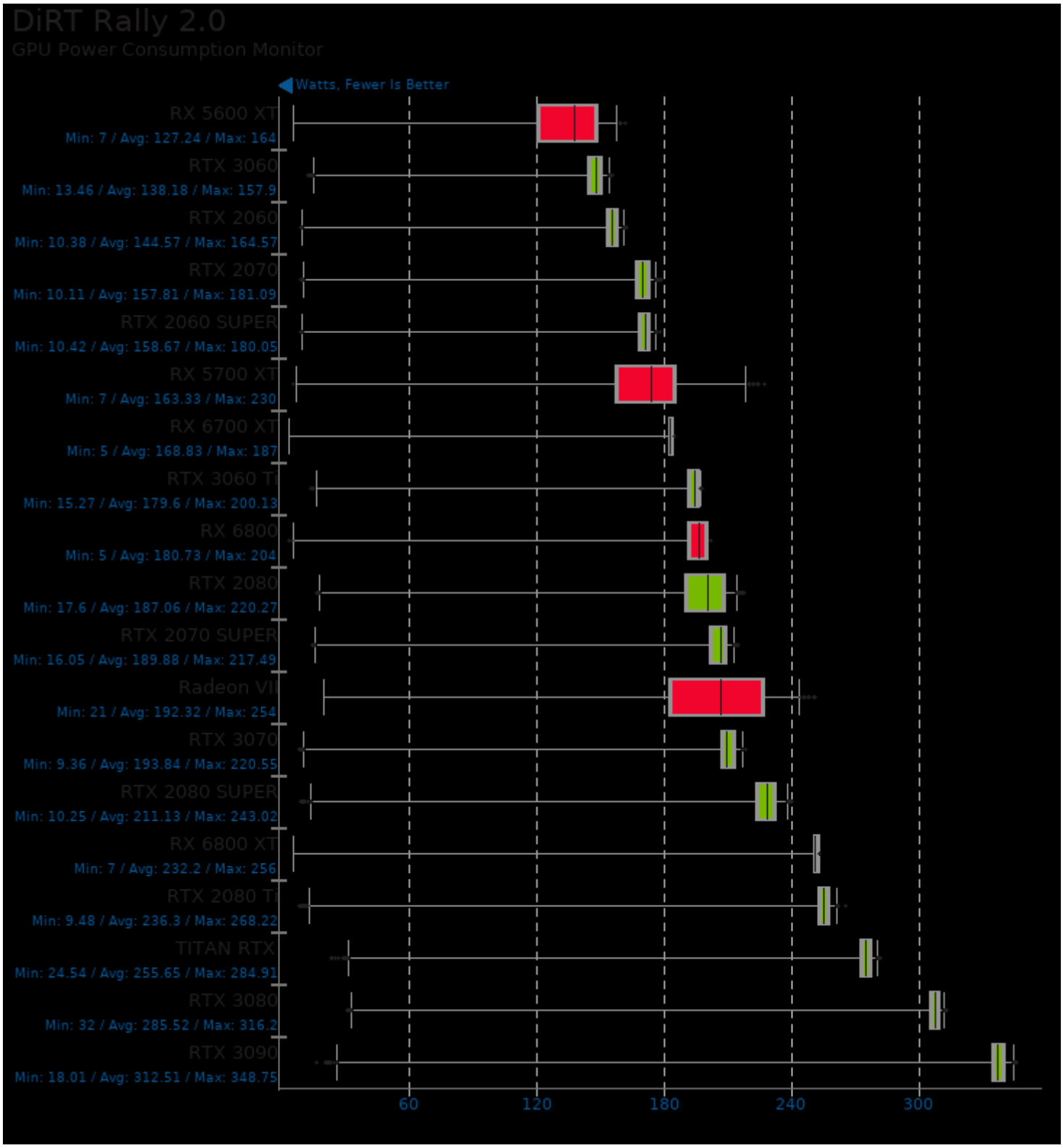
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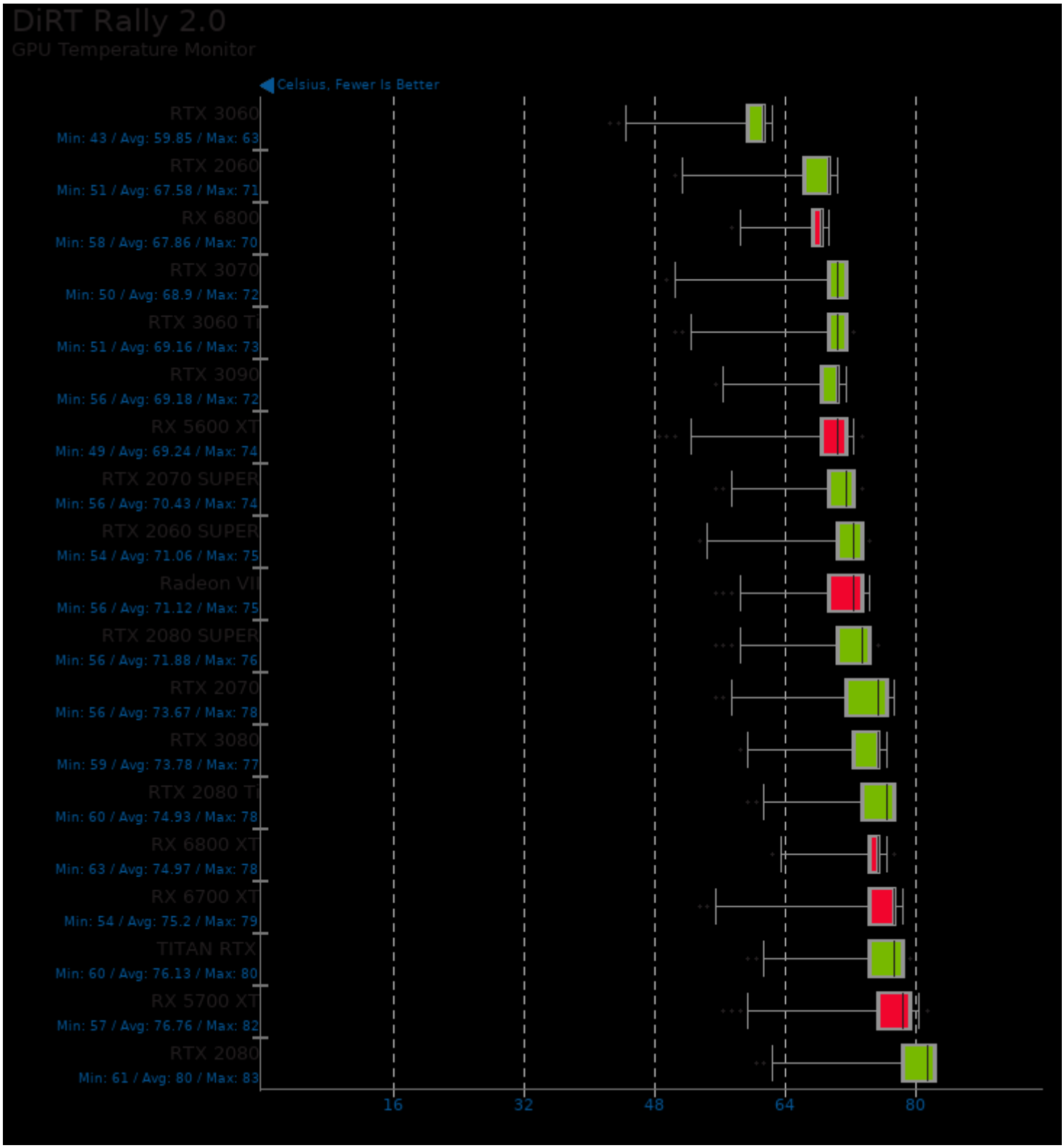
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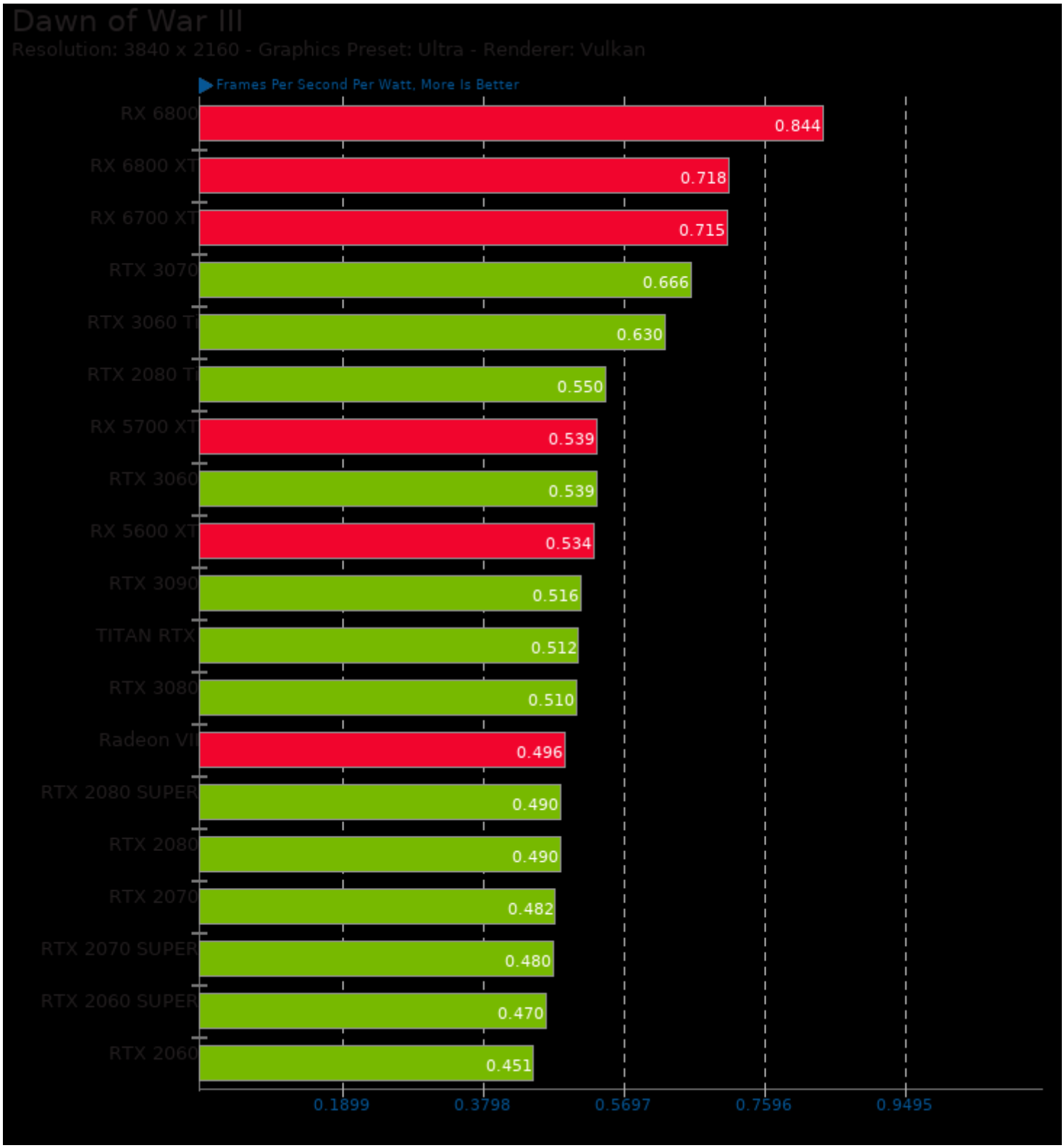


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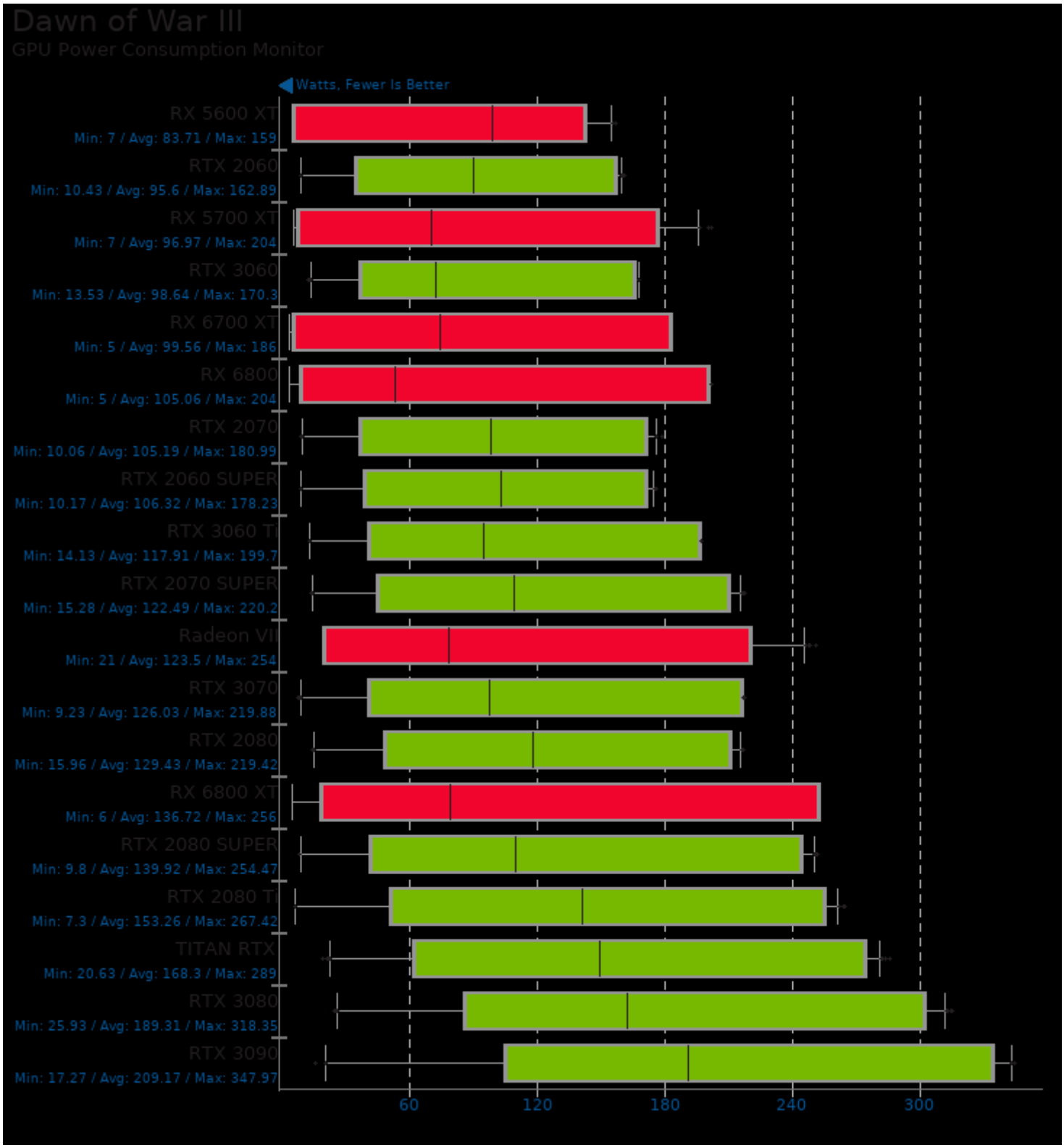


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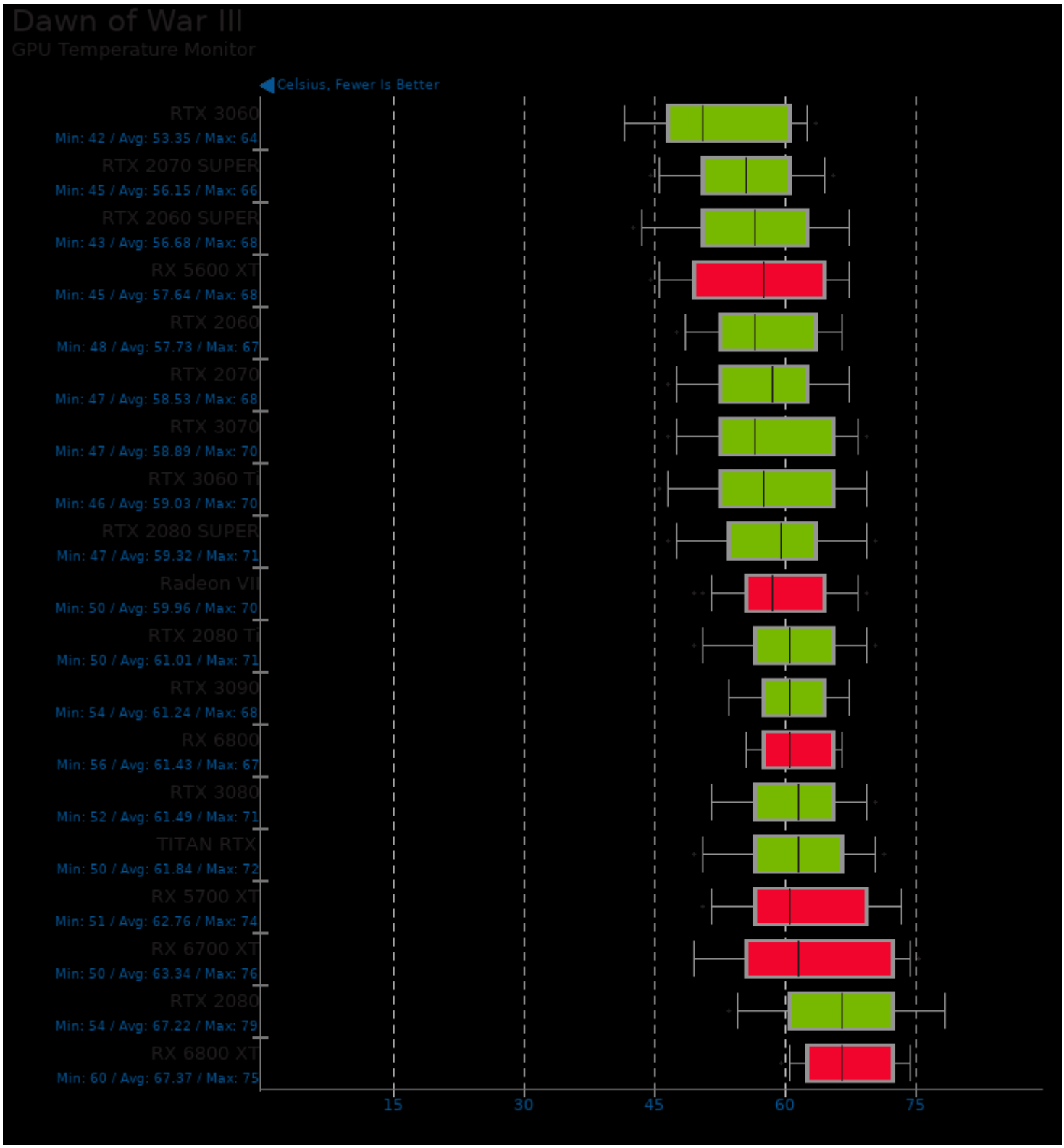


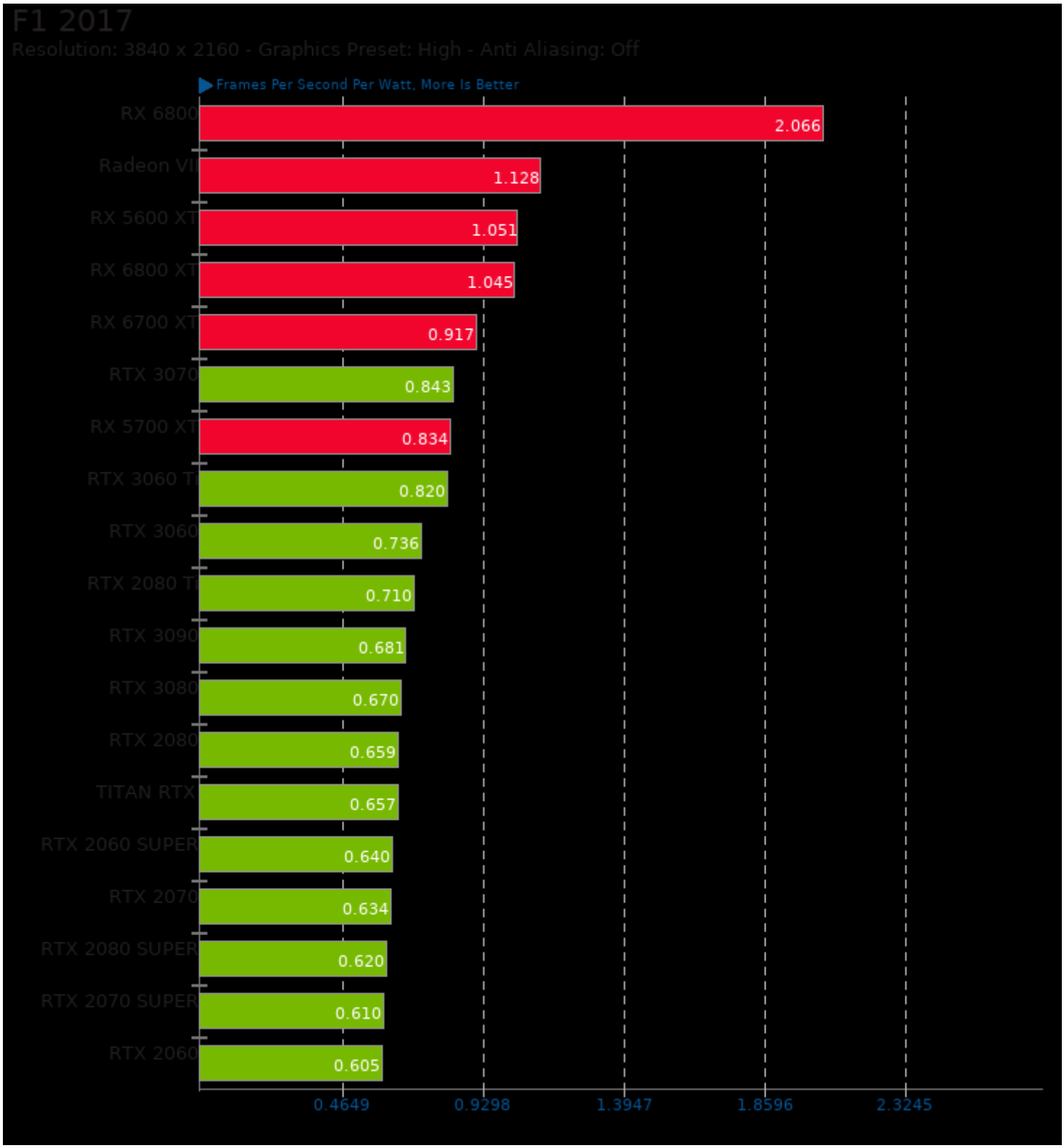

Dawn of War III
Resolution: 3840 x 2160 - Graphics Preset: Ultra - Renderer: Vulkan
Frames Per Second Per Watt, More Is Better
RX 6800
0.844
RX 6800 XT
0.718
RX 6700 XT
0.715
RTX 3070
0.666
RTX 3060 Ti
0.630
RTX 2080 Ti
0.550
RX 5700 XT
0.539
RTX 3060
0.539
RX 5600 XT
0.534
RTX 3090
0.516
TITAN RTX
0.512
RTX 3080
0.510
Radeon VII
0.496
RTX 2080 SUPER
0.490
RTX 2080
0.490
RTX 2070
0.482
RTX 2070 SUPER
0.480
RTX 2060 SUPER
0.470
RTX 2060
0.451
0.1899
0.3798
0.5697
0.7596
0.9495

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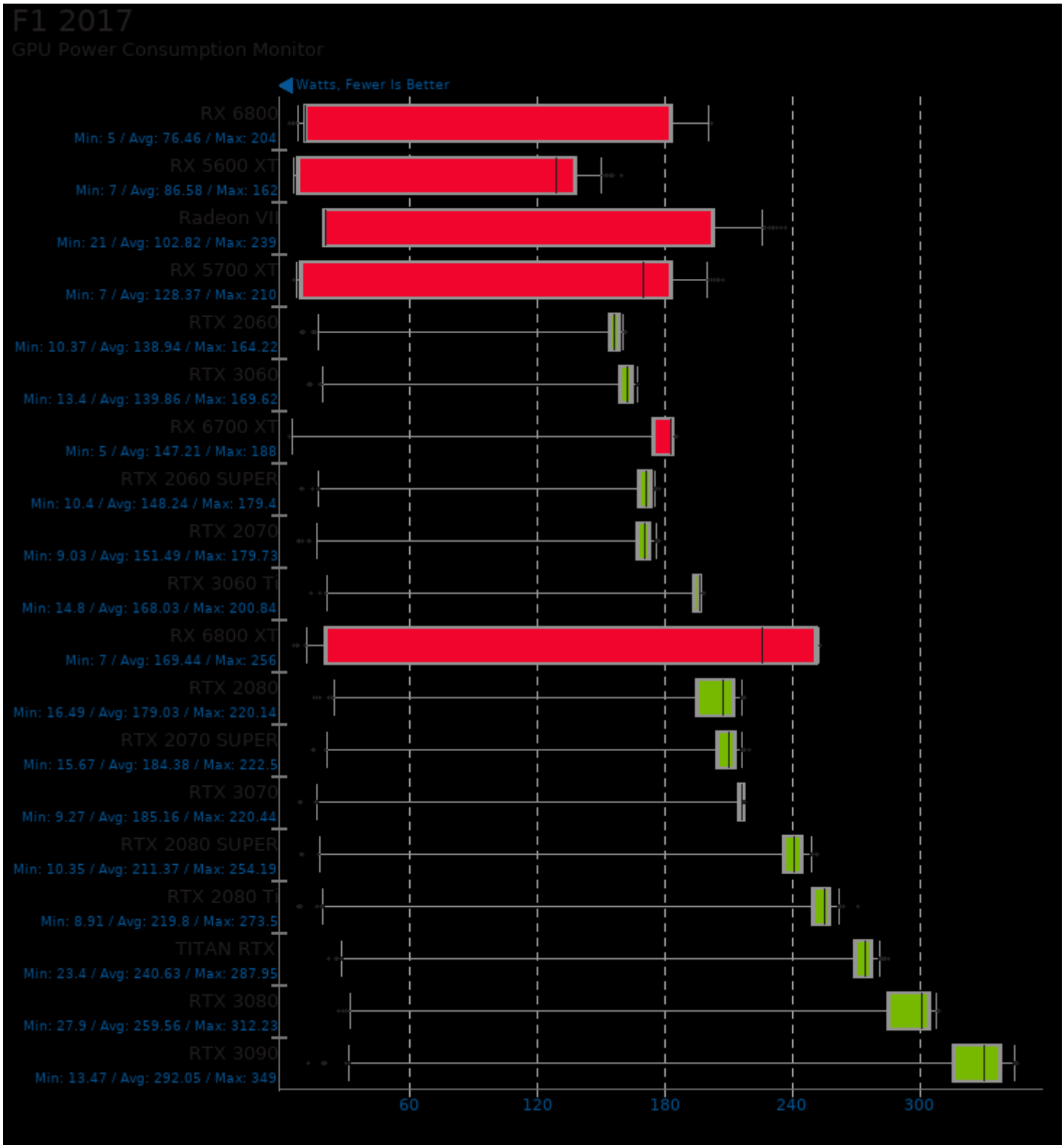


4K Linux Gaming April 2021

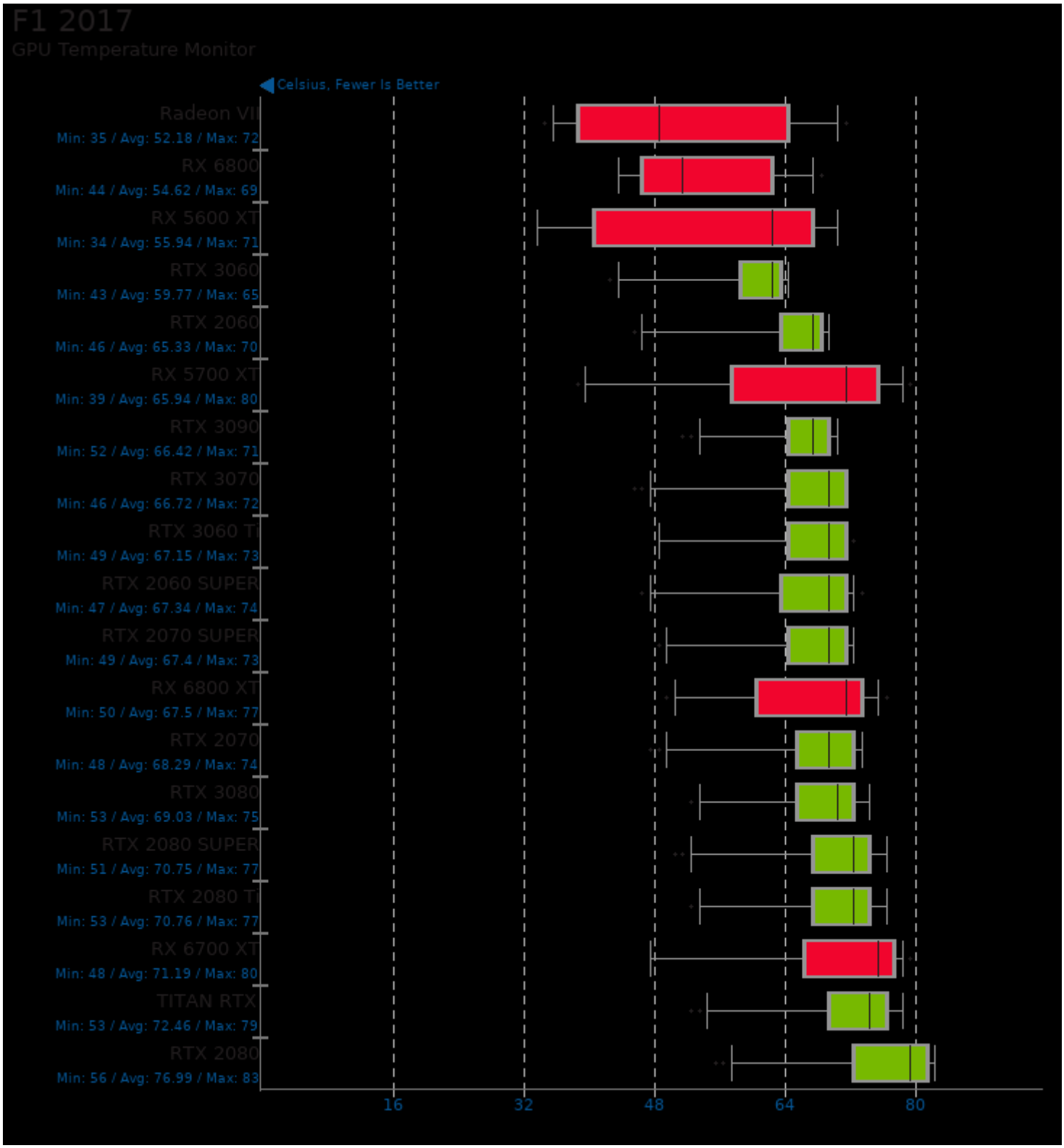



F1 2017
Resolution: 3840 x 2160 - Graphics Preset: High - Anti Aliasing: Off
Frames Per Second Per Watt, More Is Better
RX 6800
2.066
Radeon VII
1.128
RX 5600 XT
1.051
RX 6800 XT
1.045
RX 6700 XT
0.917
RTX 3070
0.843
RX 5700 XT
0.834
RTX 3060 Ti
0.820
RTX 3060
0.736
RTX 2080 Ti
0.710
RTX 3090
0.681
RTX 3080
0.670
RTX 2080
0.659
TITAN RTX
0.657
RTX 2060 SUPER
0.640
RTX 2070
0.634
RTX 2080 SUPER
0.620
RTX 2070 SUPER
0.610
RTX 2060
0.605
0.4649
0.9298
1.3947
1.8596
2.3245

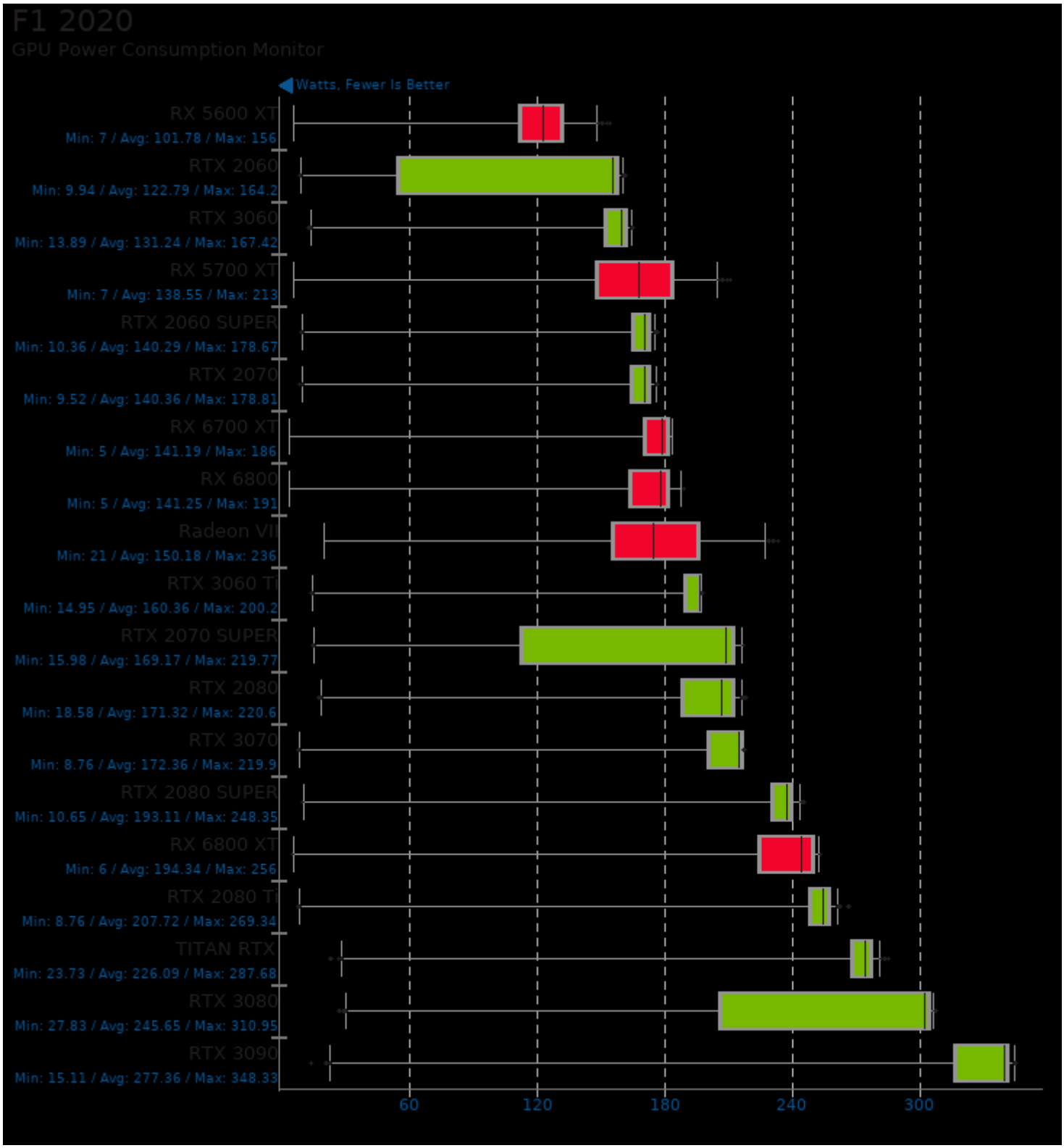
4K Linux Gaming April 2021



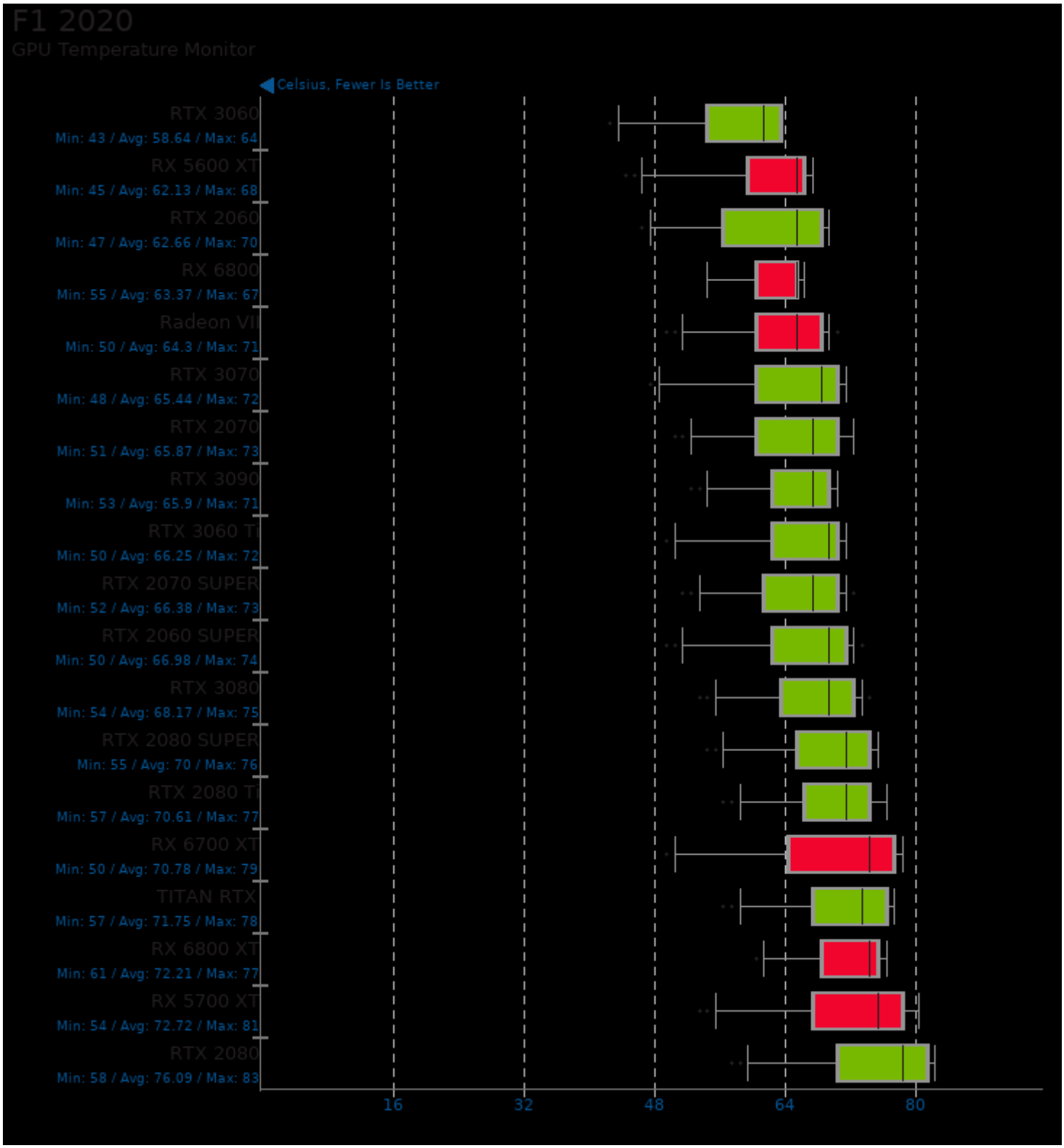
4K Linux Gaming April 2021



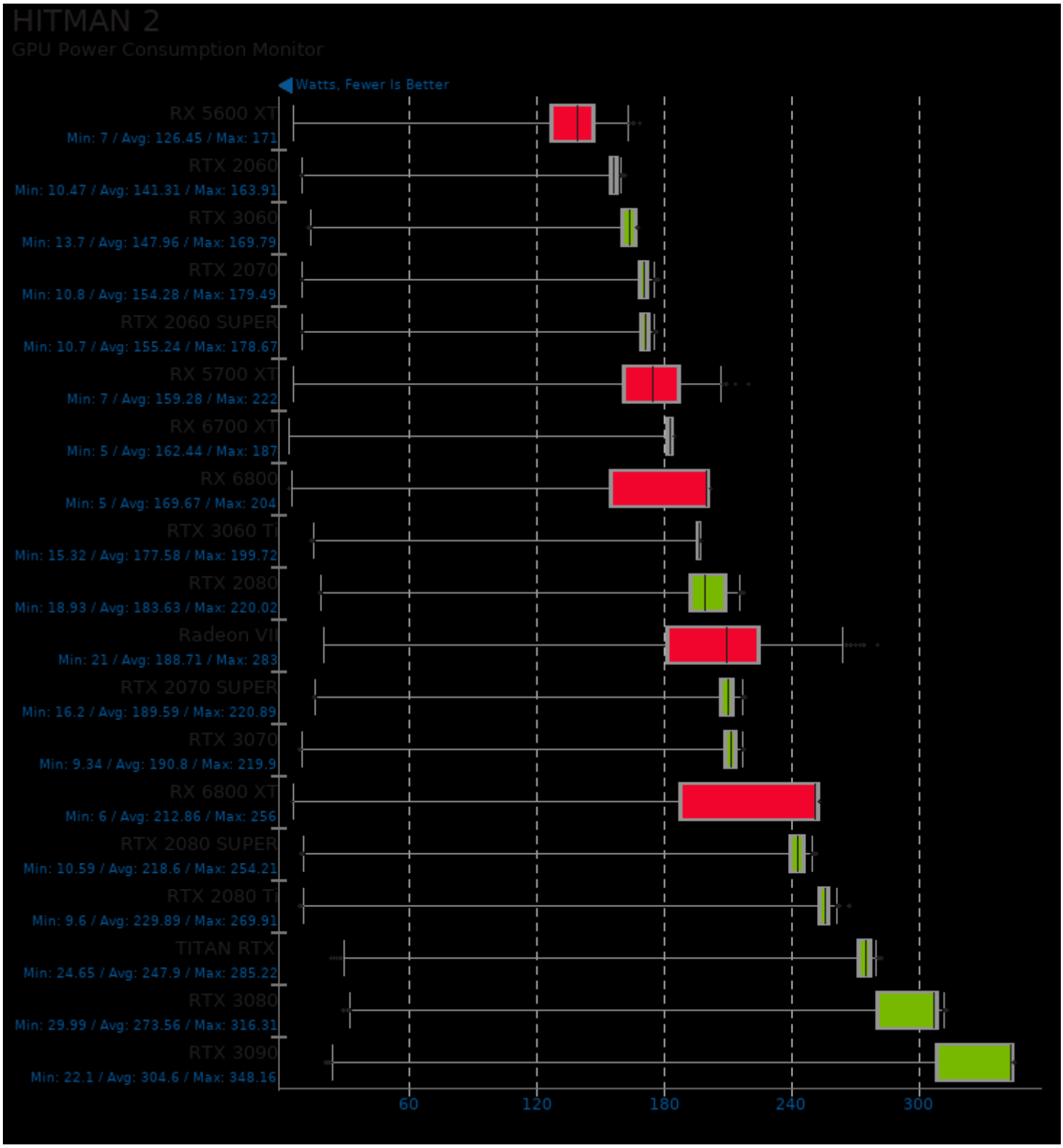
4K Linux Gaming April 2021



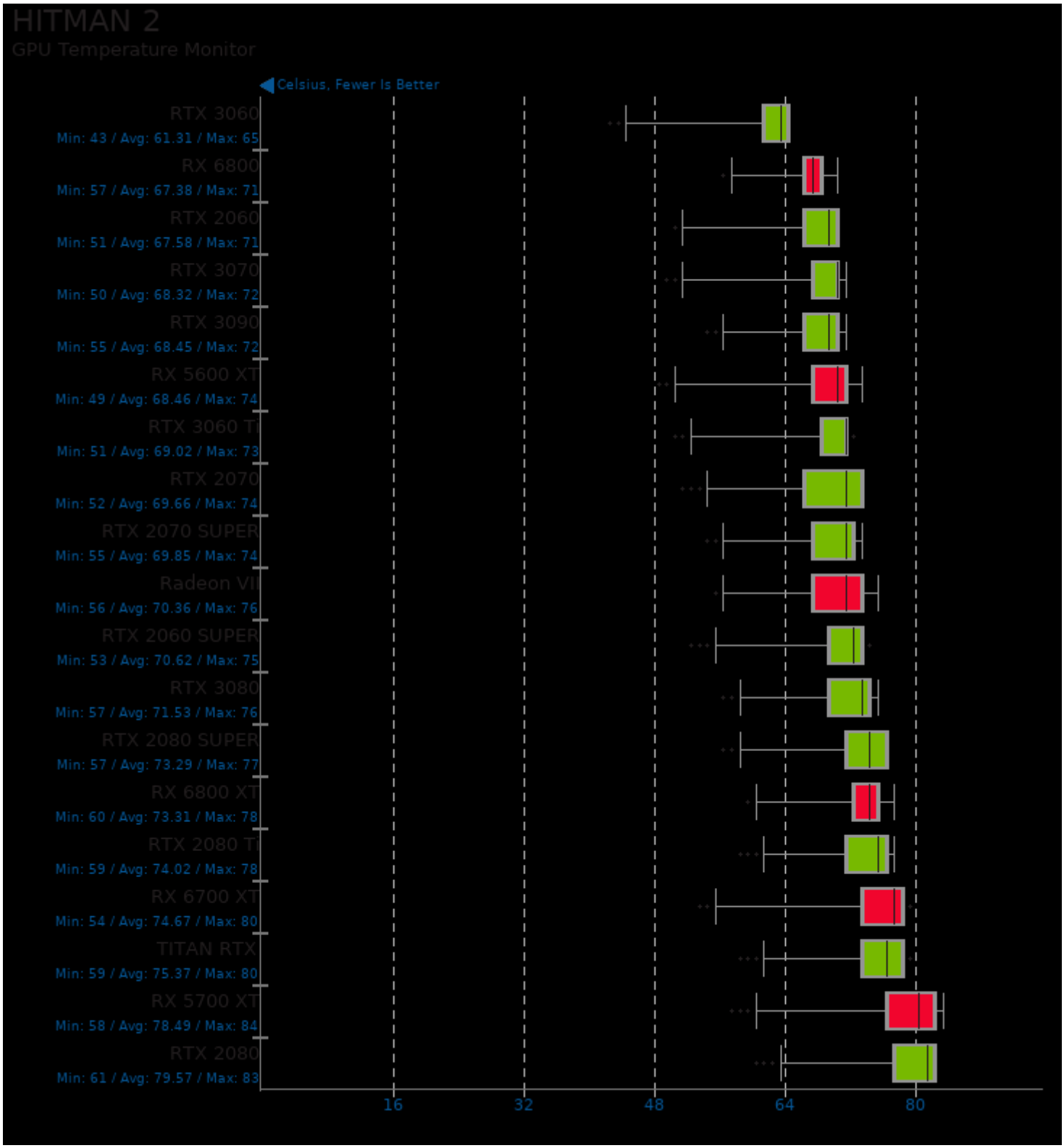
4K Linux Gaming April 2021

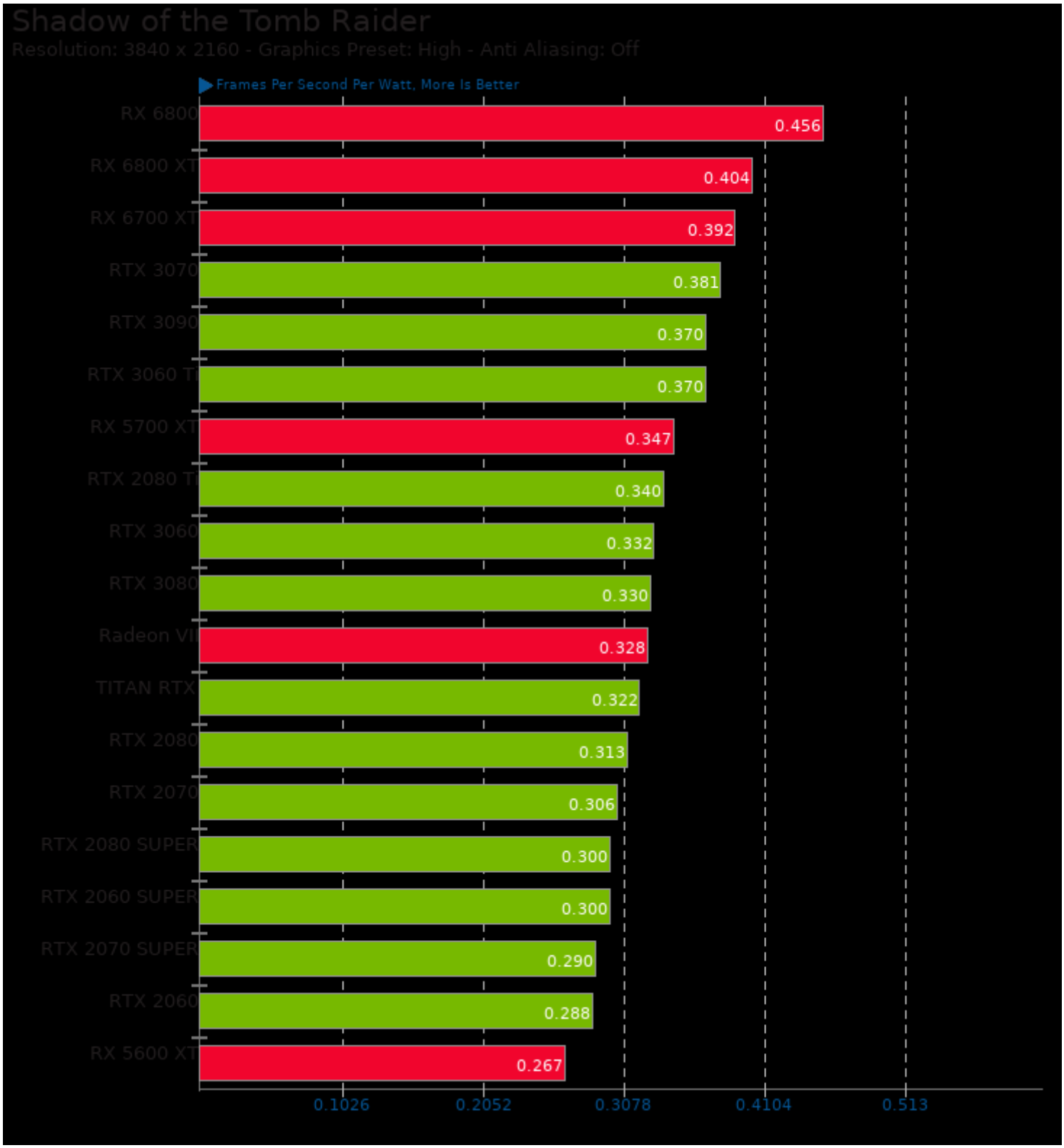


4K Linux Gaming April 2021

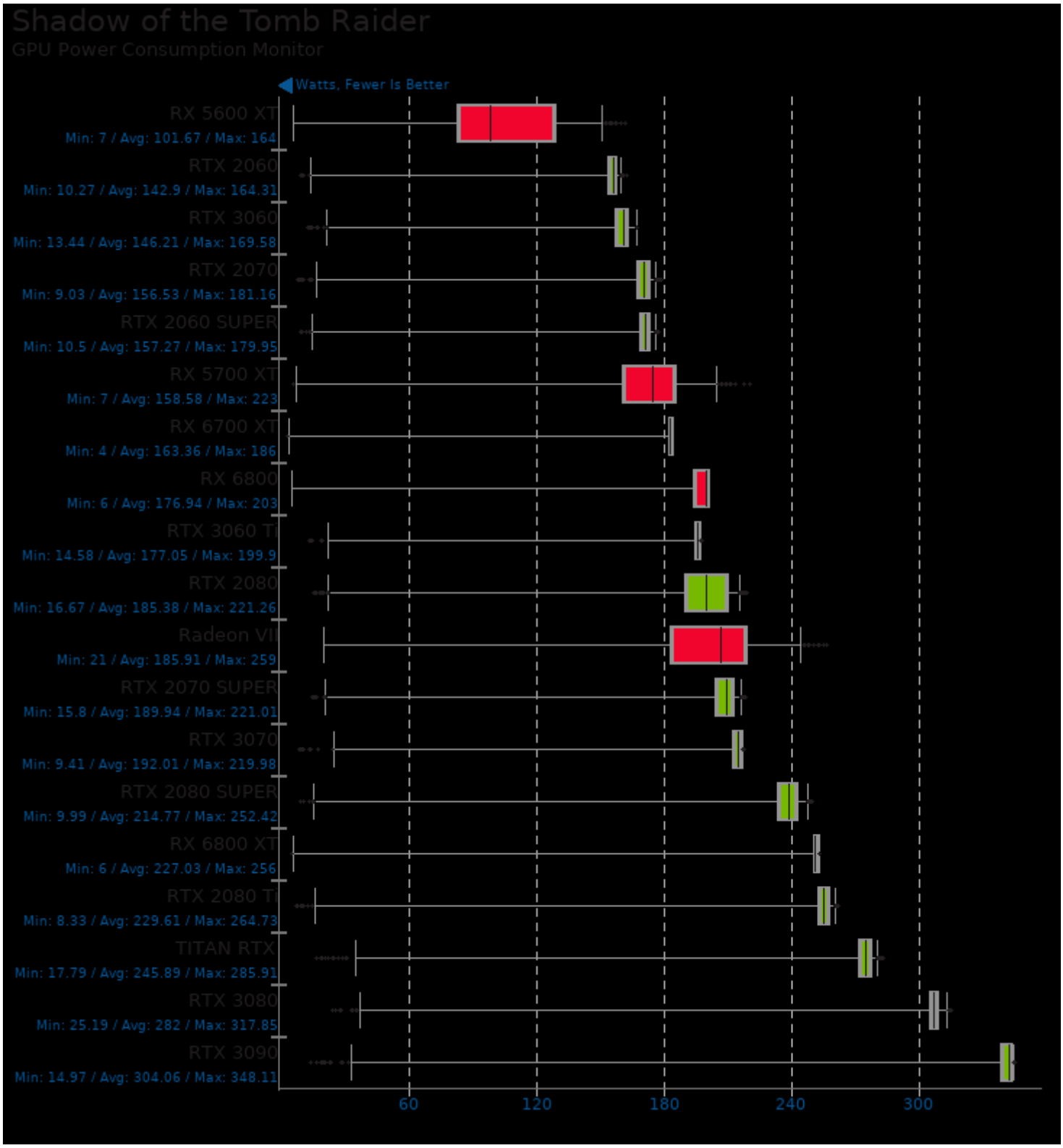


4K Linux Gaming April 2021

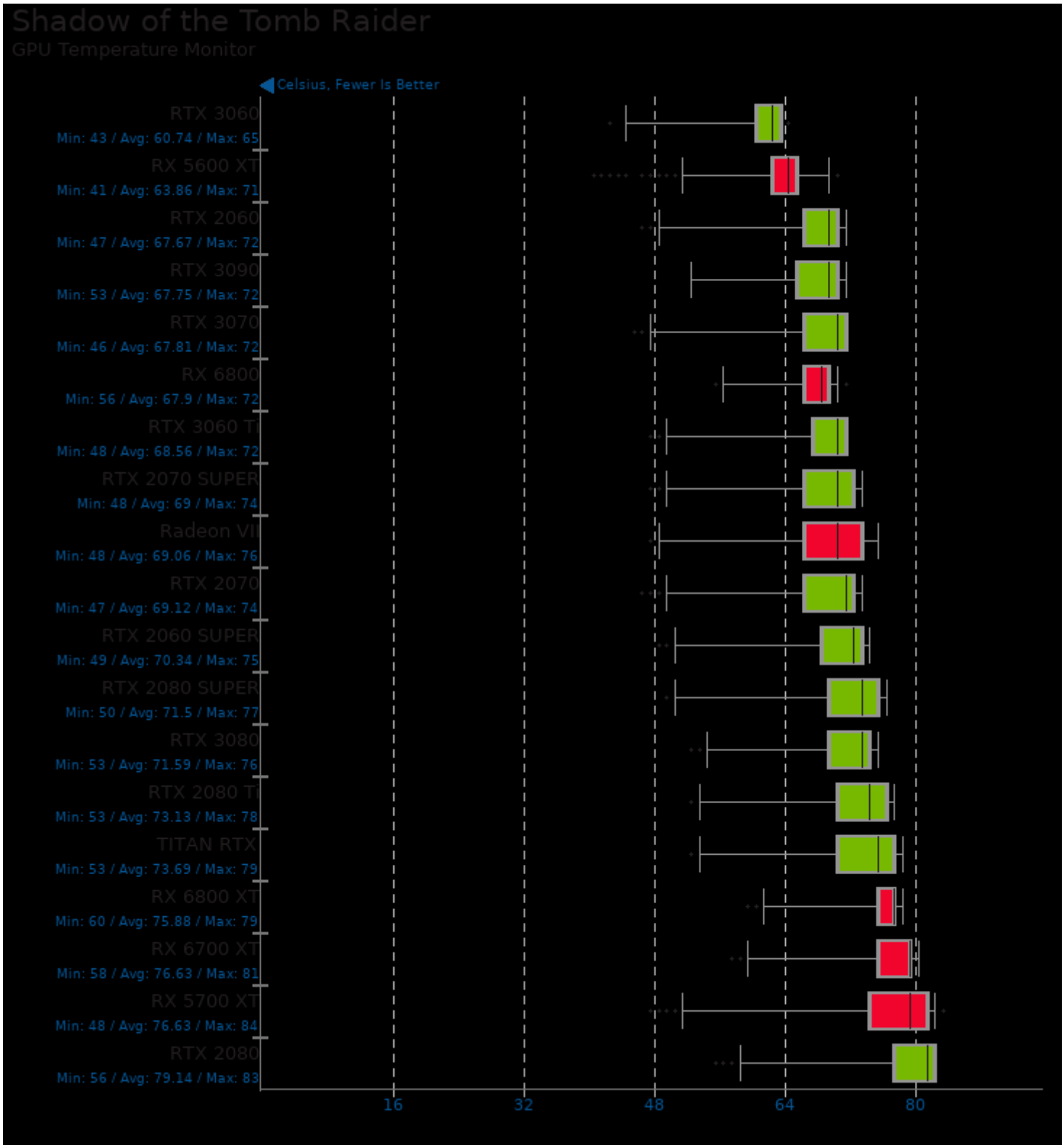



Shadow of the Tomb Raider
Resolution: 3840 x 2160 - Graphics Preset: High - Anti Aliasing: Off
Frames Per Second Per Watt, More Is Better
RX 6800
0.456
RX 6800 XT
0.404
RX 6700 XT
0.392
RTX 3070
0.381
RTX 3090
0.370
RTX 3060 Ti
0.370
RX 5700 XT
0.347
RTX 2080 Ti
0.340
RTX 3060
0.332
RTX 3080
0.330
Radeon VII
0.328
TITAN RTX
0.322
RTX 2080
0.313
RTX 2070
0.306
RTX 2080 SUPER
0.300
RTX 2060 SUPER
0.300
RTX 2070 SUPER
0.290
RTX 2060
0.288
RX 5600 XT
0.267
0.1026
0.2052
0.3078
0.4104
0.513

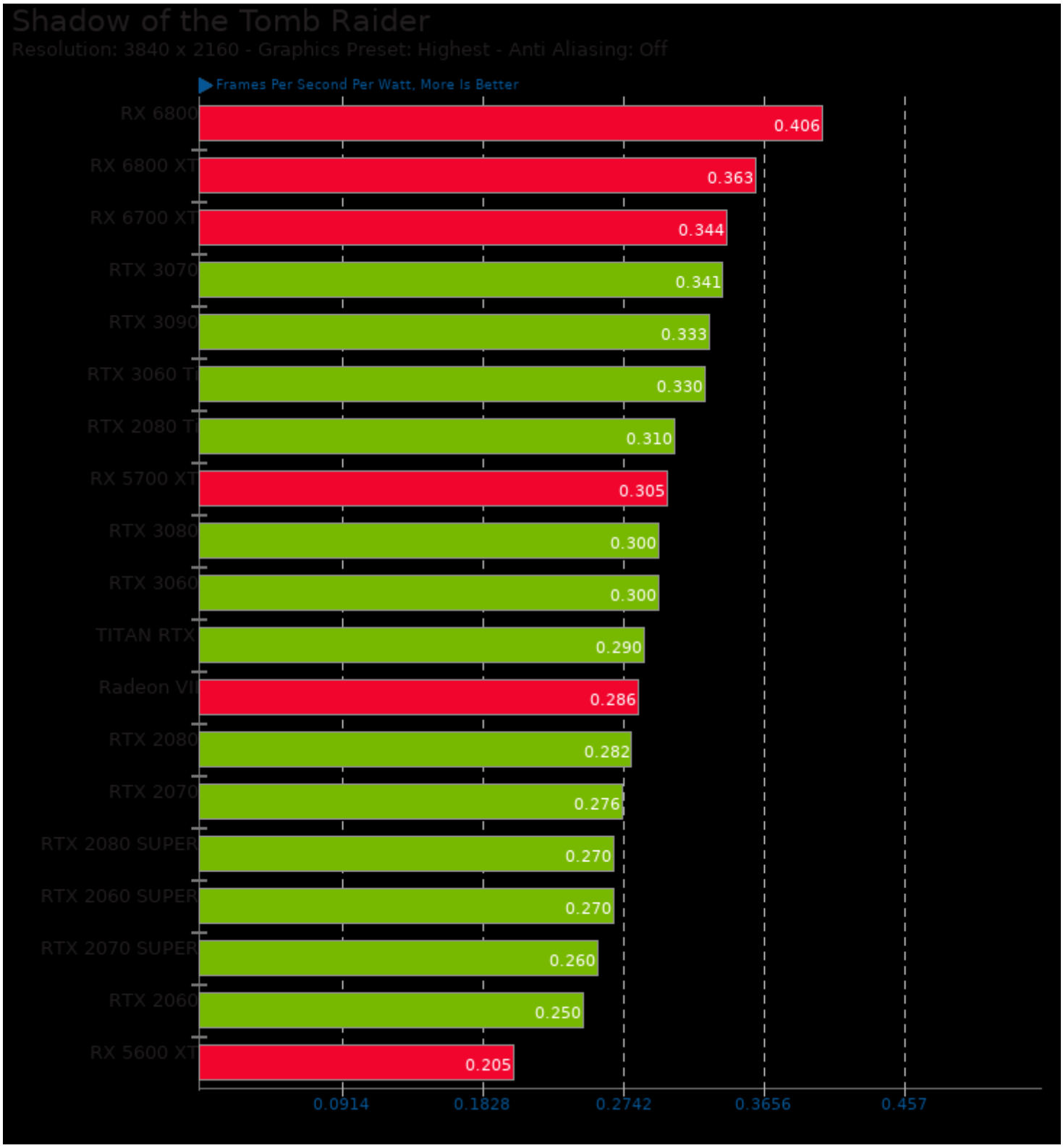
4K Linux Gaming April 2021



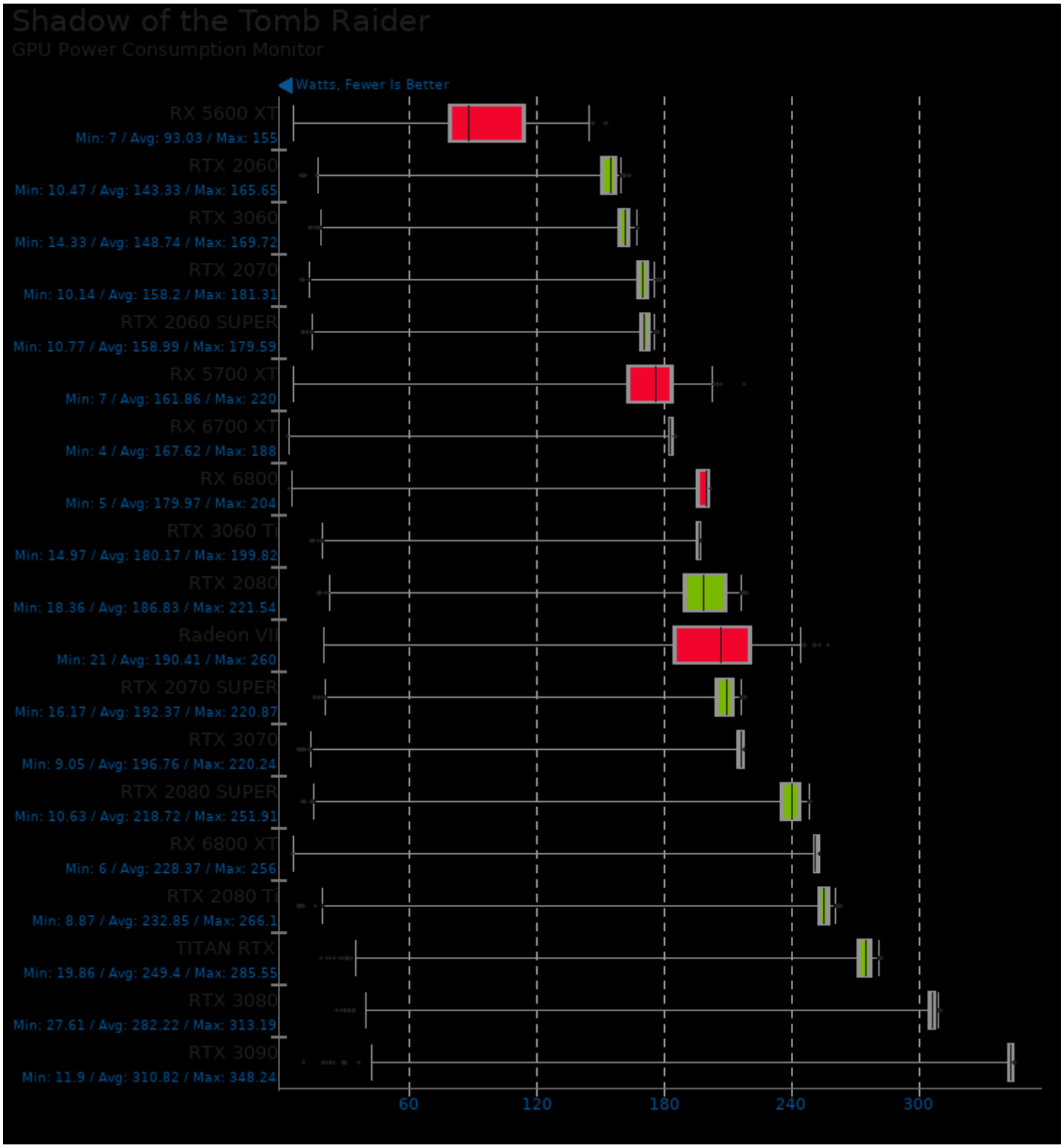
4K Linux Gaming April 2021



4K Linux Gaming April 2021

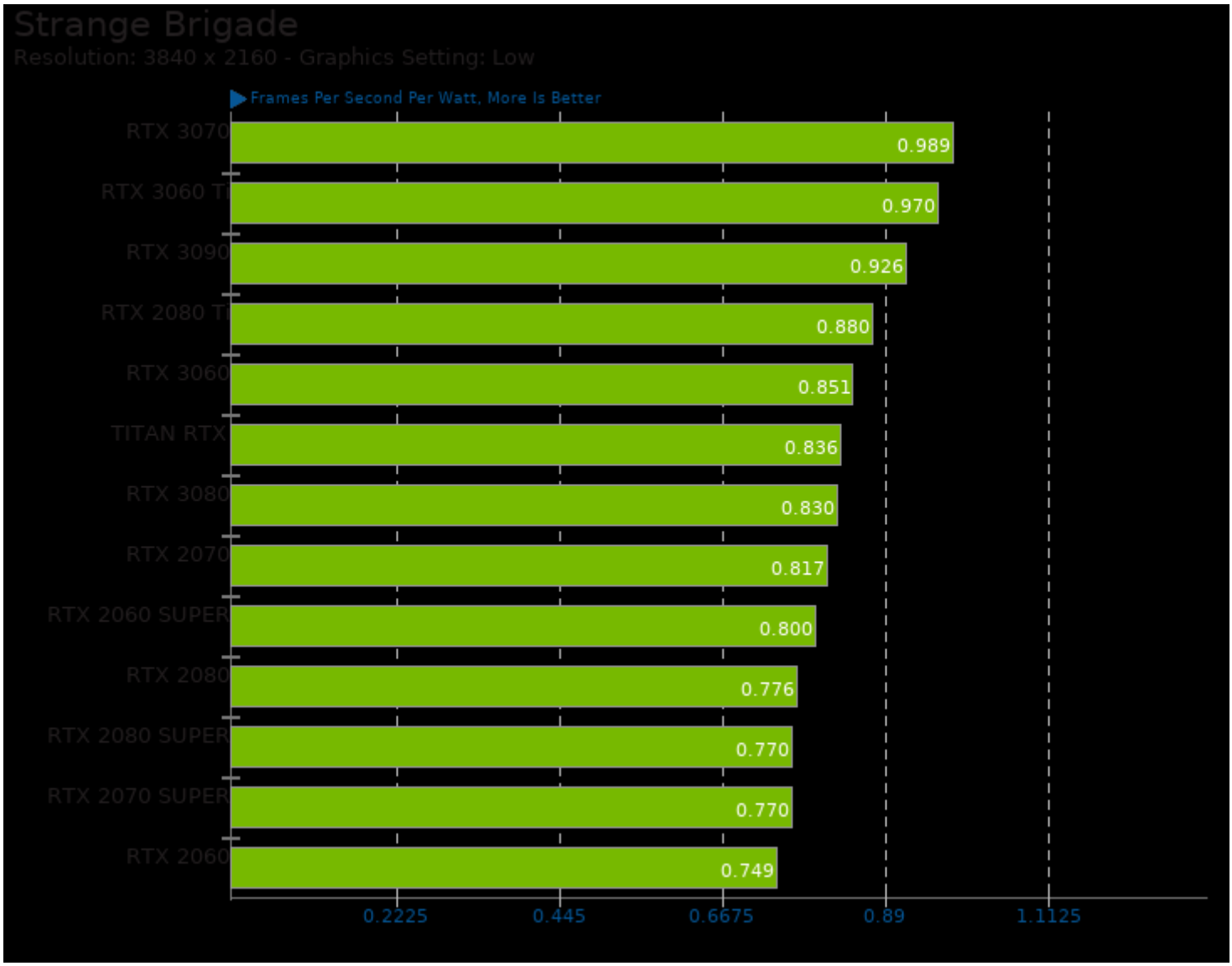


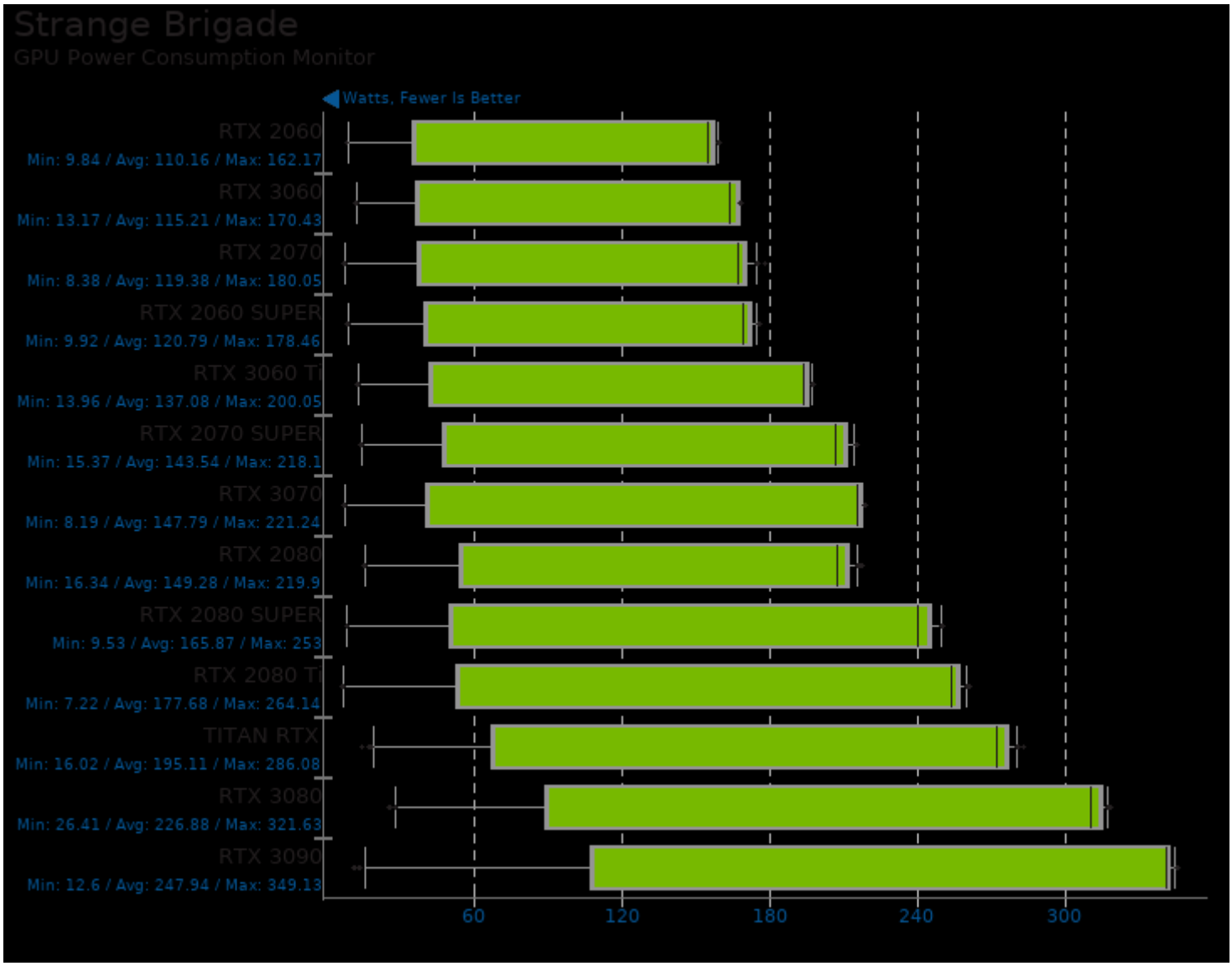
4K Linux Gaming April 2021

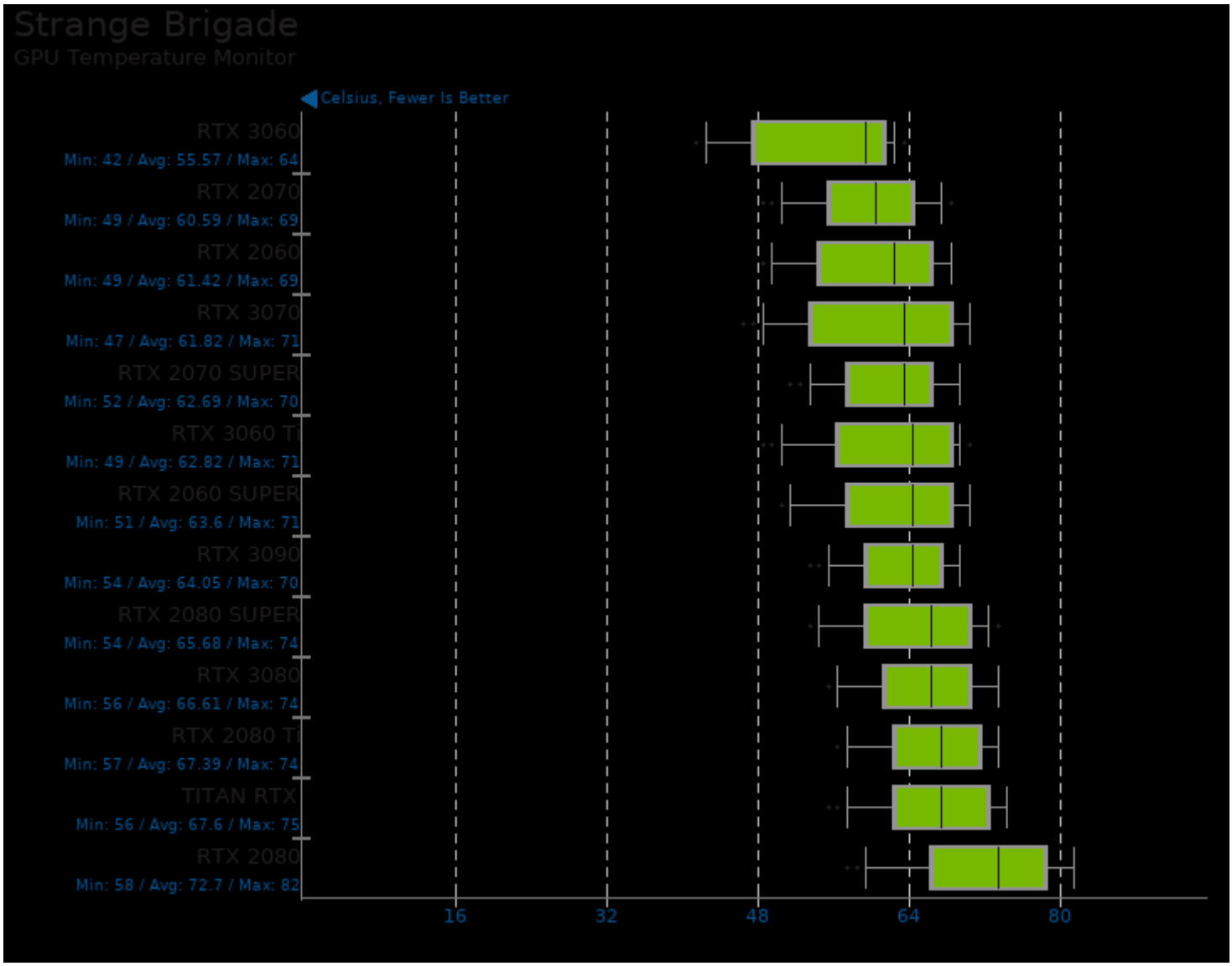


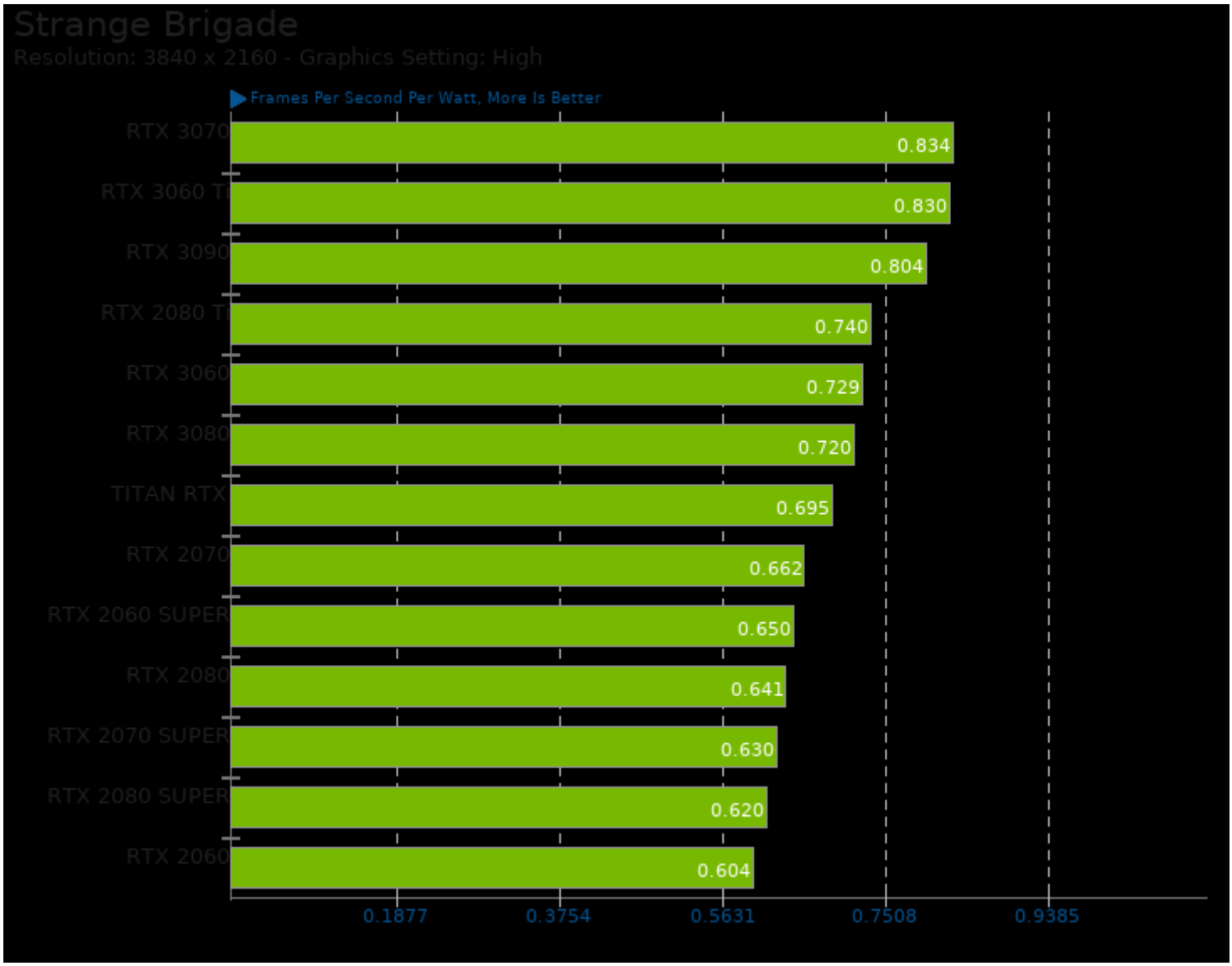
4K Linux Gaming April 2021

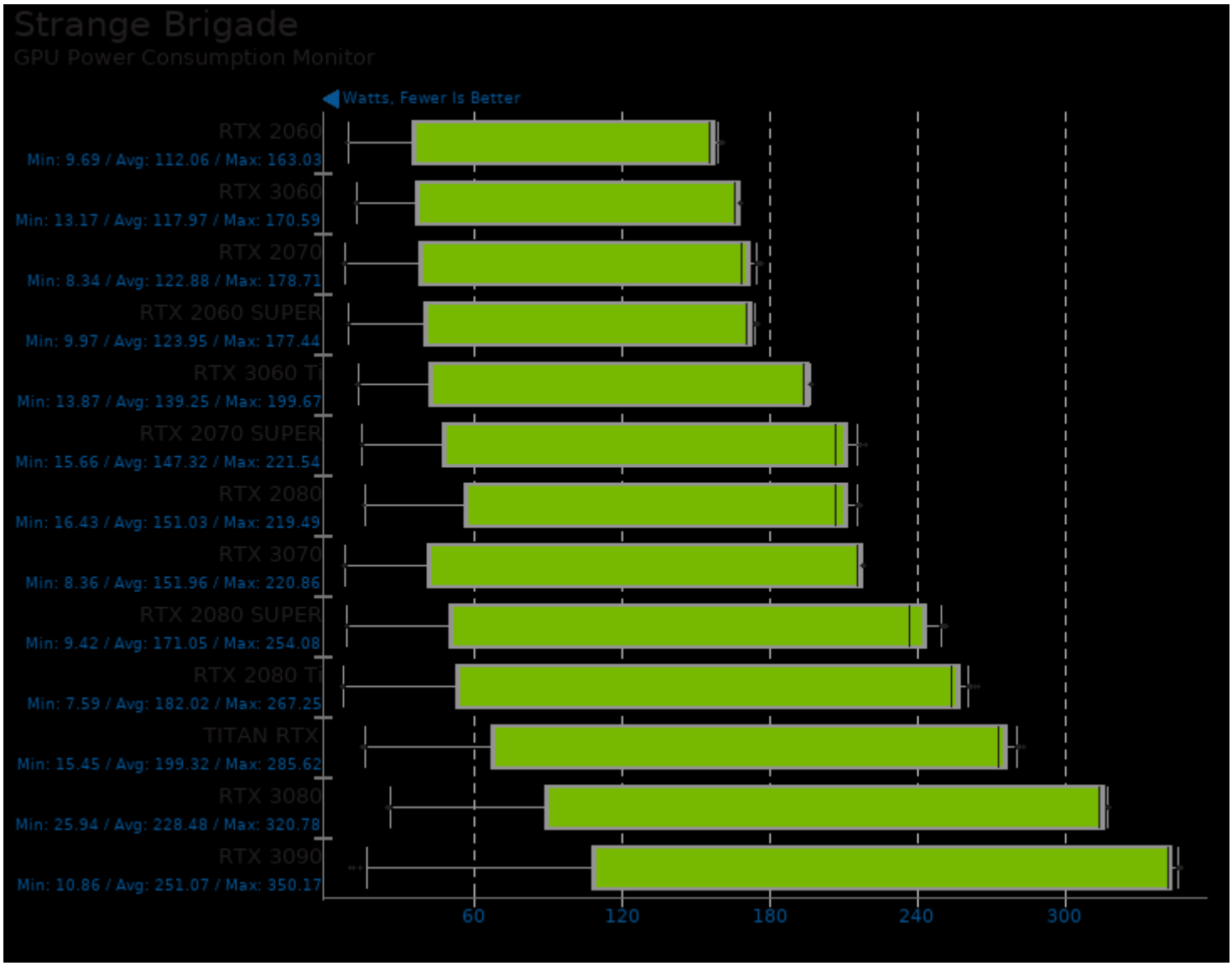


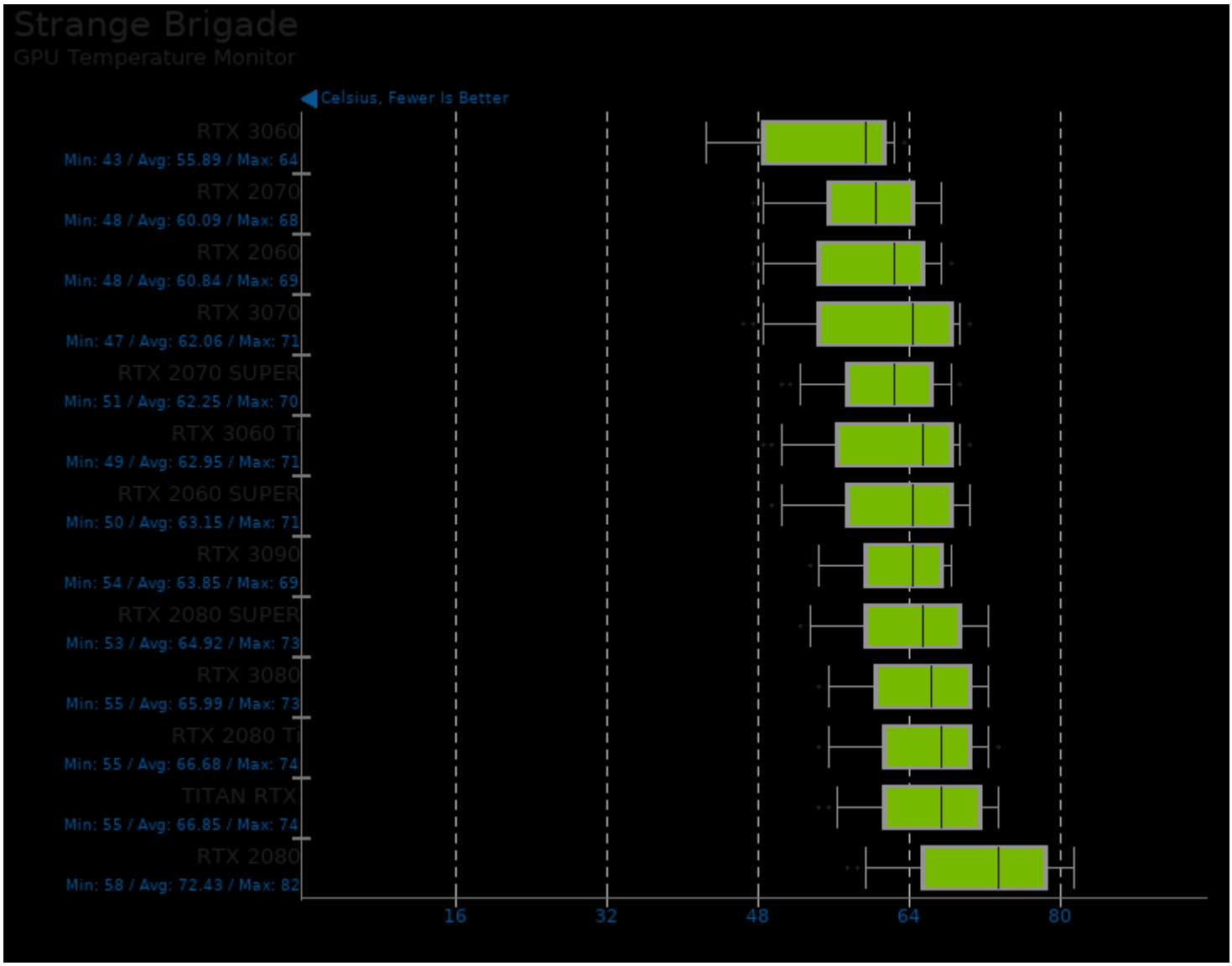

Strange Brigade
Resolution: 3840 x 2160 - Graphics Setting: Low
Frames Per Second Per Watt, More Is Better
RTX 3070
0.989
RTX 3060 Ti
0.970
RTX 3090
0.926
RTX 2080 Ti
0.880
RTX 3060
0.851
TITAN RTX
0.836
RTX 3080
0.830
RTX 2070
0.817
RTX 2060 SUPER
0.800
RTX 2080
0.776
RTX 2080 SUPER
0.770
RTX 2070 SUPER
0.770
RTX 2060
0.749
0.2225
0.445
0.6675
0.89
1.1125

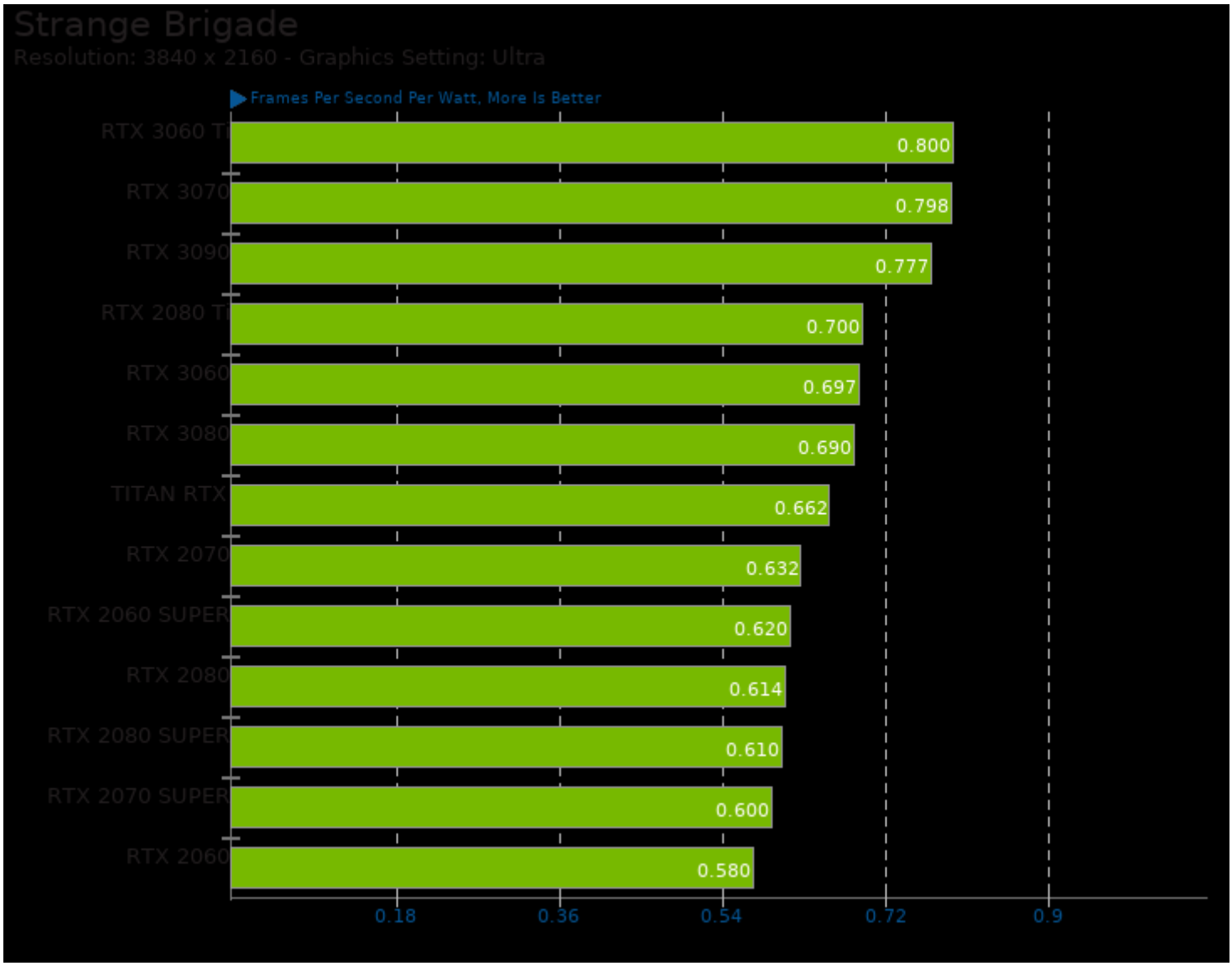

Strange Brigade
GPU Power Consumption Monitor
Watts, Fewer Is Better
RTX 2060
Min: 9.84 / Avg: 110.16 / Max: 162.17
RTX 3060
Min: 13.17 / Avg: 115.21 / Max: 170.43
RTX 2070
Min: 8.38 / Avg: 119.38 / Max: 180.05
RTX 2060 SUPER
Min: 9.92 / Avg: 120.79 / Max: 178.46
RTX 3060 Ti
Min: 13.96 / Avg: 137.08 / Max: 200.05
RTX 2070 SUPER
Min: 15.37 / Avg: 143.54 / Max: 218.1
RTX 3070
Min: 8.19 / Avg: 147.79 / Max: 221.24
RTX 2080
Min: 16.34 / Avg: 149.28 / Max: 219.9
RTX 2080 SUPER
Min: 9.53 / Avg: 165.87 / Max: 253
RTX 2080 Ti
Min: 7.22 / Avg: 177.68 / Max: 264.14
TITAN RTX
Min: 16.02 / Avg: 195.11 / Max: 286.08
RTX 3080
Min: 26.41 / Avg: 226.88 / Max: 321.63
RTX 3090
Min: 12.6 / Avg: 247.94 / Max: 349.13
60
120
180
240
300

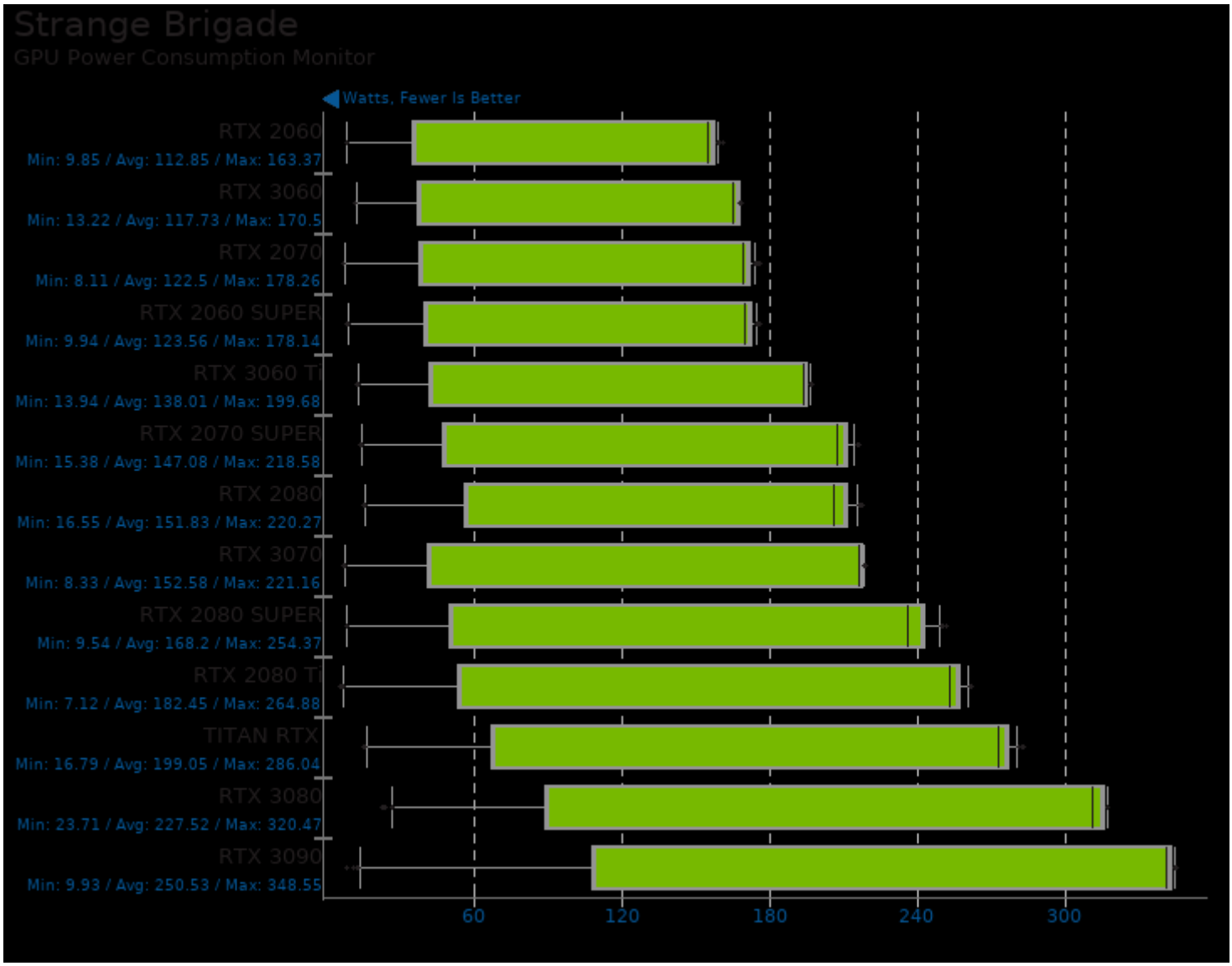

Strange Brigade
GPU Temperature Monitor
Celsius, Fewer Is Better
RTX 3060
Min: 42 / Avg: 55.57 / Max: 64
RTX 2070
Min: 49 / Avg: 60.59 / Max: 69
RTX 2060
Min: 49 / Avg: 61.42 / Max: 69
RTX 3070
Min: 47 / Avg: 61.82 / Max: 71
RTX 2070 SUPER
Min: 52 / Avg: 62.69 / Max: 70
RTX 3060 Ti
Min: 49 / Avg: 62.82 / Max: 71
RTX 2060 SUPER
Min: 51 / Avg: 63.6 / Max: 71
RTX 3090
Min: 54 / Avg: 64.05 / Max: 70
RTX 2080 SUPER
Min: 54 / Avg: 65.68 / Max: 74
RTX 3080
Min: 56 / Avg: 66.61 / Max: 74
RTX 2080 Ti
Min: 57 / Avg: 67.39 / Max: 74
TITAN RTX
Min: 56 / Avg: 67.6 / Max: 75
RTX 2080
Min: 58 / Avg: 72.7 / Max: 82
16
32
48
64
80

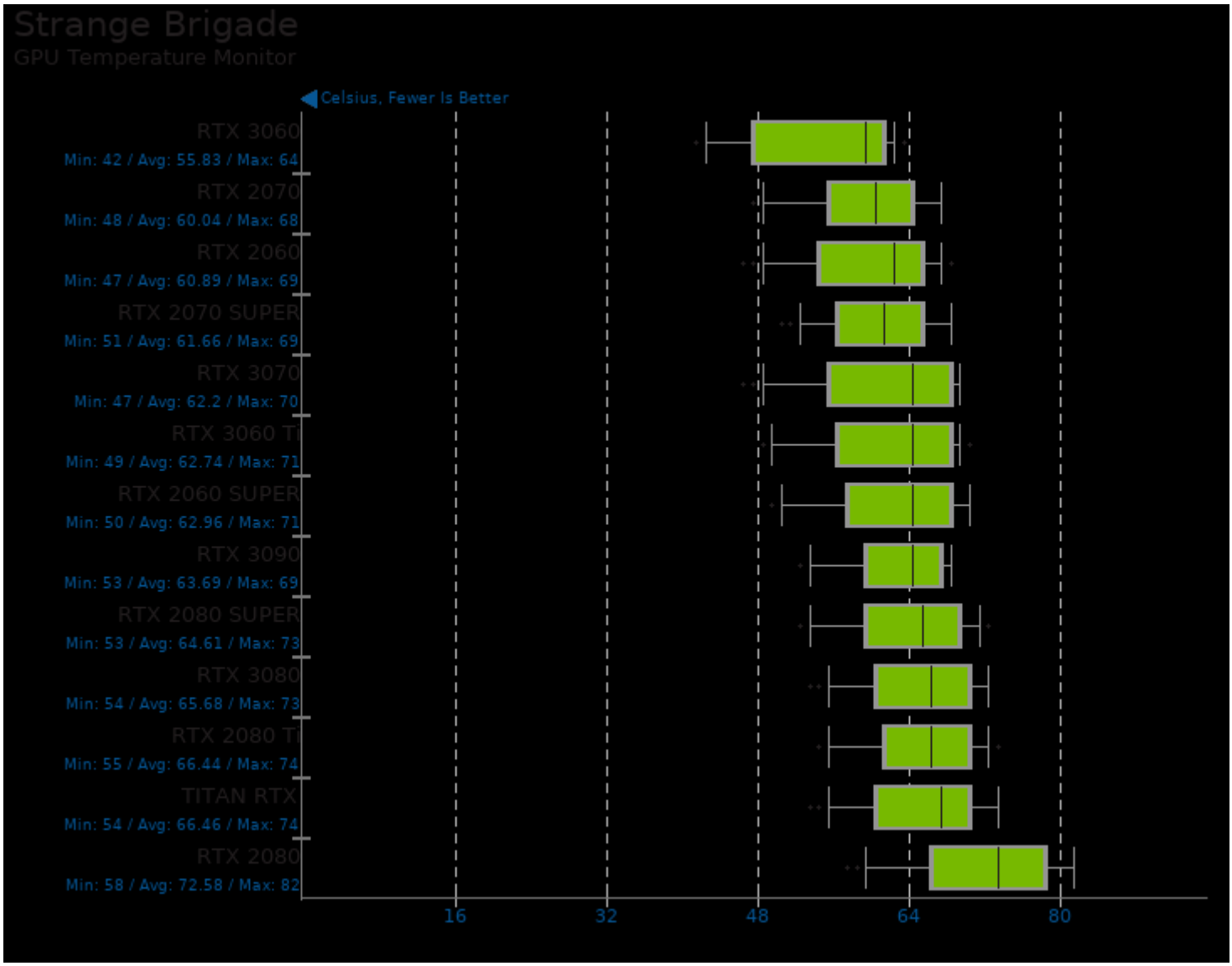

Strange Brigade
Resolution: 3840 x 2160 - Graphics Setting: High
Frames Per Second Per Watt, More Is Better
RTX 3070
0.834
RTX 3060 Ti
0.830
RTX 3090
0.804
RTX 2080 Ti
0.740
RTX 3060
0.729
RTX 3080
0.720
TITAN RTX
0.695
RTX 2070
0.662
RTX 2060 SUPER
0.650
RTX 2080
0.641
RTX 2070 SUPER
0.630
RTX 2080 SUPER
0.620
RTX 2060
0.604
0.1877
0.3754
0.5631
0.7508
0.9385

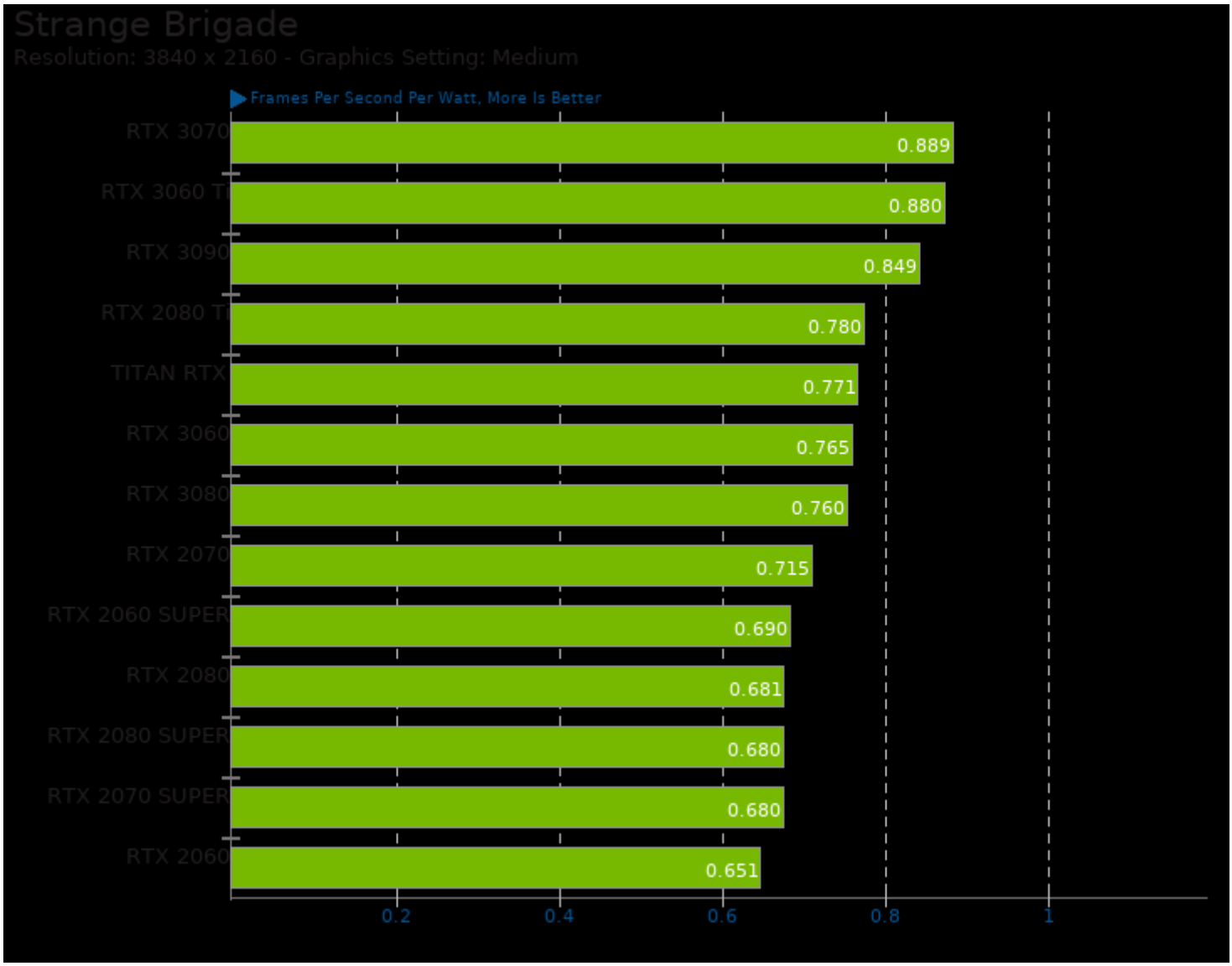

Strange Brigade
GPU Power Consumption Monitor
Watts, Fewer Is Better
RTX 2060
Min: 9.69 / Avg: 112.06 / Max: 163.03
RTX 3060
Min: 13.17 / Avg: 117.97 / Max: 170.59
RTX 2070
Min: 8.34 / Avg: 122.88 / Max: 178.71
RTX 2060 SUPER
Min: 9.97 / Avg: 123.95 / Max: 177.44
RTX 3060 Ti
Min: 13.87 / Avg: 139.25 / Max: 199.67
RTX 2070 SUPER
Min: 15.66 / Avg: 147.32 / Max: 221.54
RTX 2080
Min: 16.43 / Avg: 151.03 / Max: 219.49
RTX 3070
Min: 8.36 / Avg: 151.96 / Max: 220.86
RTX 2080 SUPER
Min: 9.42 / Avg: 171.05 / Max: 254.08
RTX 2080 Ti
Min: 7.59 / Avg: 182.02 / Max: 267.25
TITAN RTX
Min: 15.45 / Avg: 199.32 / Max: 285.62
RTX 3080
Min: 25.94 / Avg: 228.48 / Max: 320.78
RTX 3090
Min: 10.86 / Avg: 251.07 / Max: 350.17
60
120
180
240
300

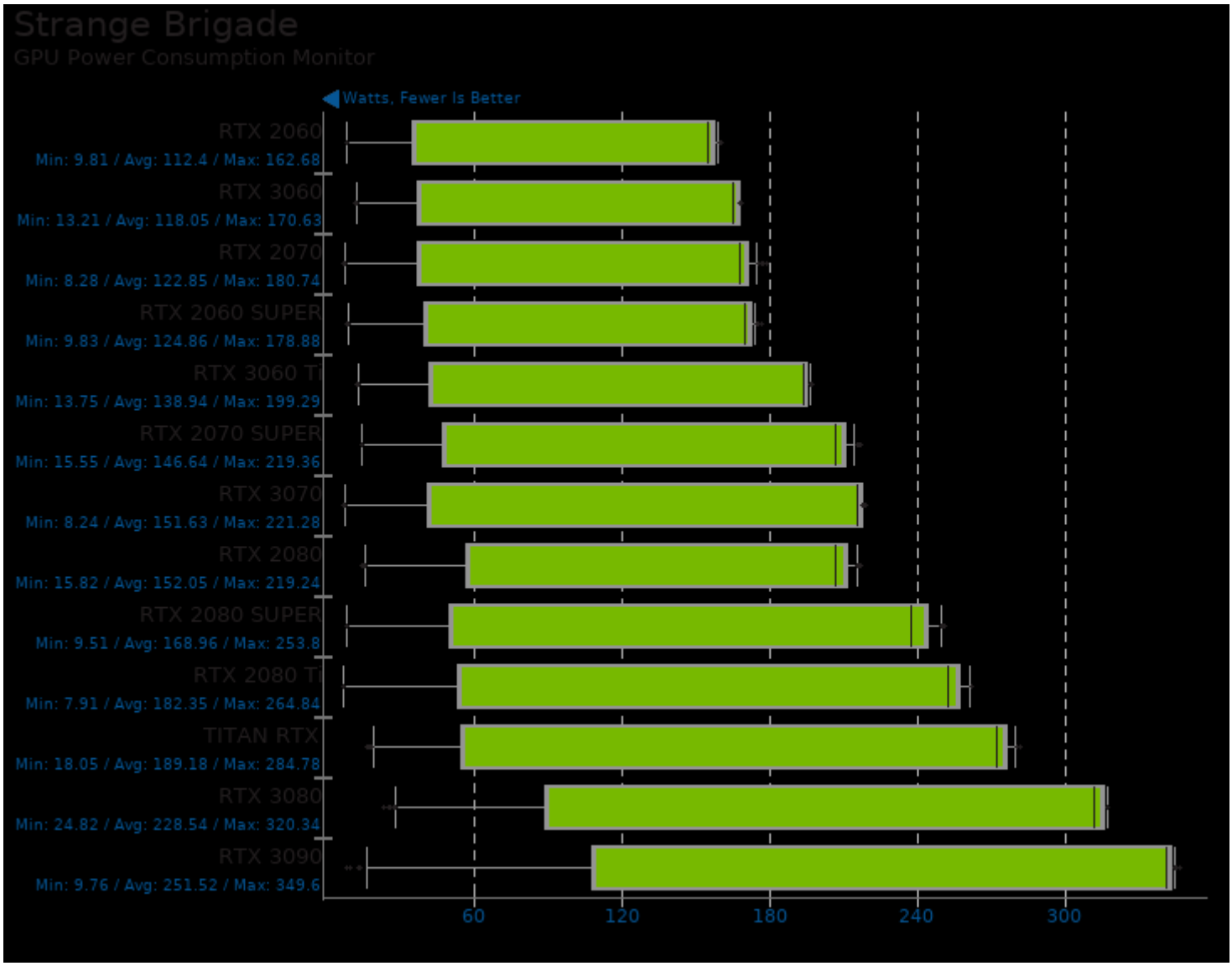

Strange Brigade
GPU Temperature Monitor
Celsius, Fewer Is Better
RTX 3060
Min: 43 / Avg: 55.89 / Max: 64
RTX 2070
Min: 48 / Avg: 60.09 / Max: 68
RTX 2060
Min: 48 / Avg: 60.84 / Max: 69
RTX 3070
Min: 47 / Avg: 62.06 / Max: 71
RTX 2070 SUPER
Min: 51 / Avg: 62.25 / Max: 70
RTX 3060 Ti
Min: 49 / Avg: 62.95 / Max: 71
RTX 2060 SUPER
Min: 50 / Avg: 63.15 / Max: 71
RTX 3090
Min: 54 / Avg: 63.85 / Max: 69
RTX 2080 SUPER
Min: 53 / Avg: 64.92 / Max: 73
RTX 3080
Min: 55 / Avg: 65.99 / Max: 73
RTX 2080 Ti
Min: 55 / Avg: 66.68 / Max: 74
TITAN RTX
Min: 55 / Avg: 66.85 / Max: 74
RTX 2080
Min: 58 / Avg: 72.43 / Max: 82
16
32
48
64
80

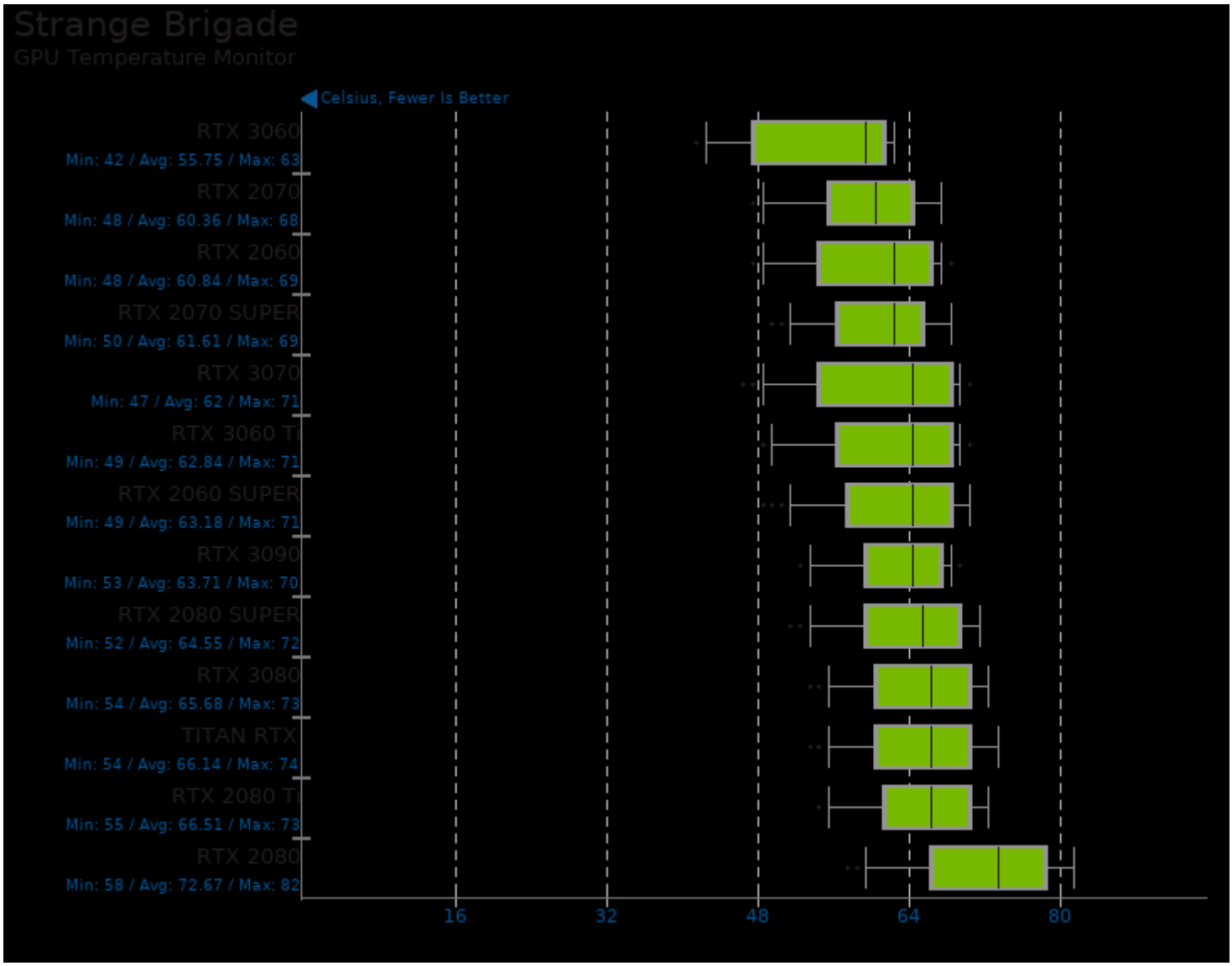

Strange Brigade
Resolution: 3840 x 2160 - Graphics Setting: Ultra
Frames Per Second Per Watt, More Is Better
RTX 3060 T
0.800
RTX 3070
0.798
RTX 3090
0.777
RTX 2080 T
0.700
RTX 3060
0.697
RTX 3080
0.690
TITAN RTX
0.662
RTX 2070
0.632
RTX 2060 SUPER
0.620
RTX 2080
0.614
RTX 2080 SUPER
0.610
RTX 2070 SUPER
0.600
RTX 2060
0.580
0.18
0.36
0.54
0.72
0.9

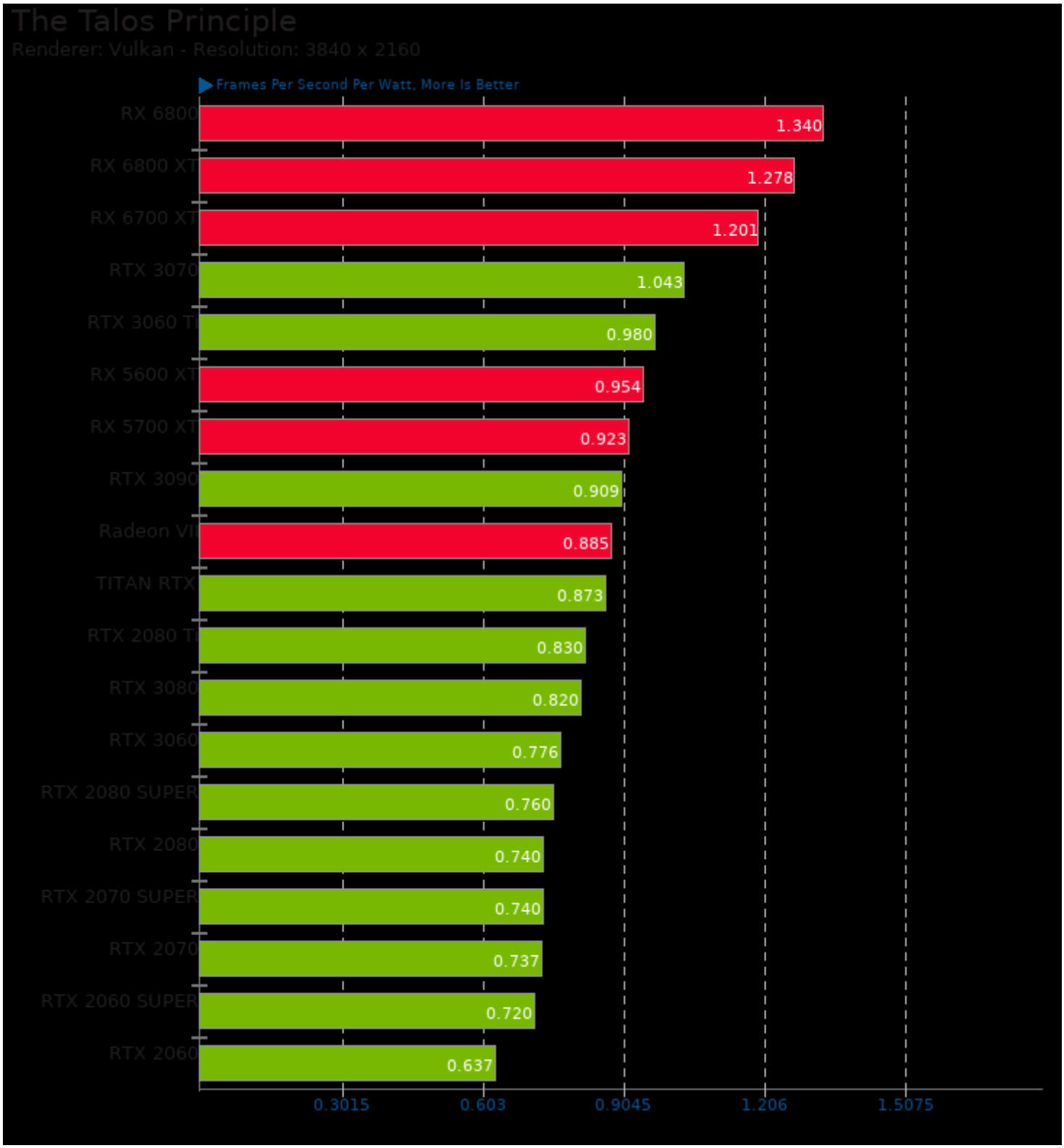

Strange Brigade
GPU Power Consumption Monitor
Watts, Fewer Is Better
RTX 2060
Min: 9.85 / Avg: 112.85 / Max: 163.37
RTX 3060
Min: 13.22 / Avg: 117.73 / Max: 170.5
RTX 2070
Min: 8.11 / Avg: 122.5 / Max: 178.26
RTX 2060 SUPER
Min: 9.94 / Avg: 123.56 / Max: 178.14
RTX 3060 Ti
Min: 13.94 / Avg: 138.01 / Max: 199.68
RTX 2070 SUPER
Min: 15.38 / Avg: 147.08 / Max: 218.58
RTX 2080
Min: 16.55 / Avg: 151.83 / Max: 220.27
RTX 3070
Min: 8.33 / Avg: 152.58 / Max: 221.16
RTX 2080 SUPER
Min: 9.54 / Avg: 168.2 / Max: 254.37
RTX 2080 Ti
Min: 7.12 / Avg: 182.45 / Max: 264.88
TITAN RTX
Min: 16.79 / Avg: 199.05 / Max: 286.04
RTX 3080
Min: 23.71 / Avg: 227.52 / Max: 320.47
RTX 3090
Min: 9.93 / Avg: 250.53 / Max: 348.55
60
120
180
240
300


Strange Brigade
GPU Temperature Monitor
Celsius, Fewer Is Better
RTX 3060
Min: 42 / Avg: 55.83 / Max: 64
RTX 2070
Min: 48 / Avg: 60.04 / Max: 68
RTX 2060
Min: 47 / Avg: 60.89 / Max: 69
RTX 2070 SUPER
Min: 51 / Avg: 61.66 / Max: 69
RTX 3070
Min: 47 / Avg: 62.2 / Max: 70
RTX 3060 Ti
Min: 49 / Avg: 62.74 / Max: 71
RTX 2060 SUPER
Min: 50 / Avg: 62.96 / Max: 71
RTX 3090
Min: 53 / Avg: 63.69 / Max: 69
RTX 2080 SUPER
Min: 53 / Avg: 64.61 / Max: 73
RTX 3080
Min: 54 / Avg: 65.68 / Max: 73
RTX 2080 Ti
Min: 55 / Avg: 66.44 / Max: 74
TITAN RTX
Min: 54 / Avg: 66.46 / Max: 74
RTX 2080
Min: 58 / Avg: 72.58 / Max: 82
16
32
48
64
80

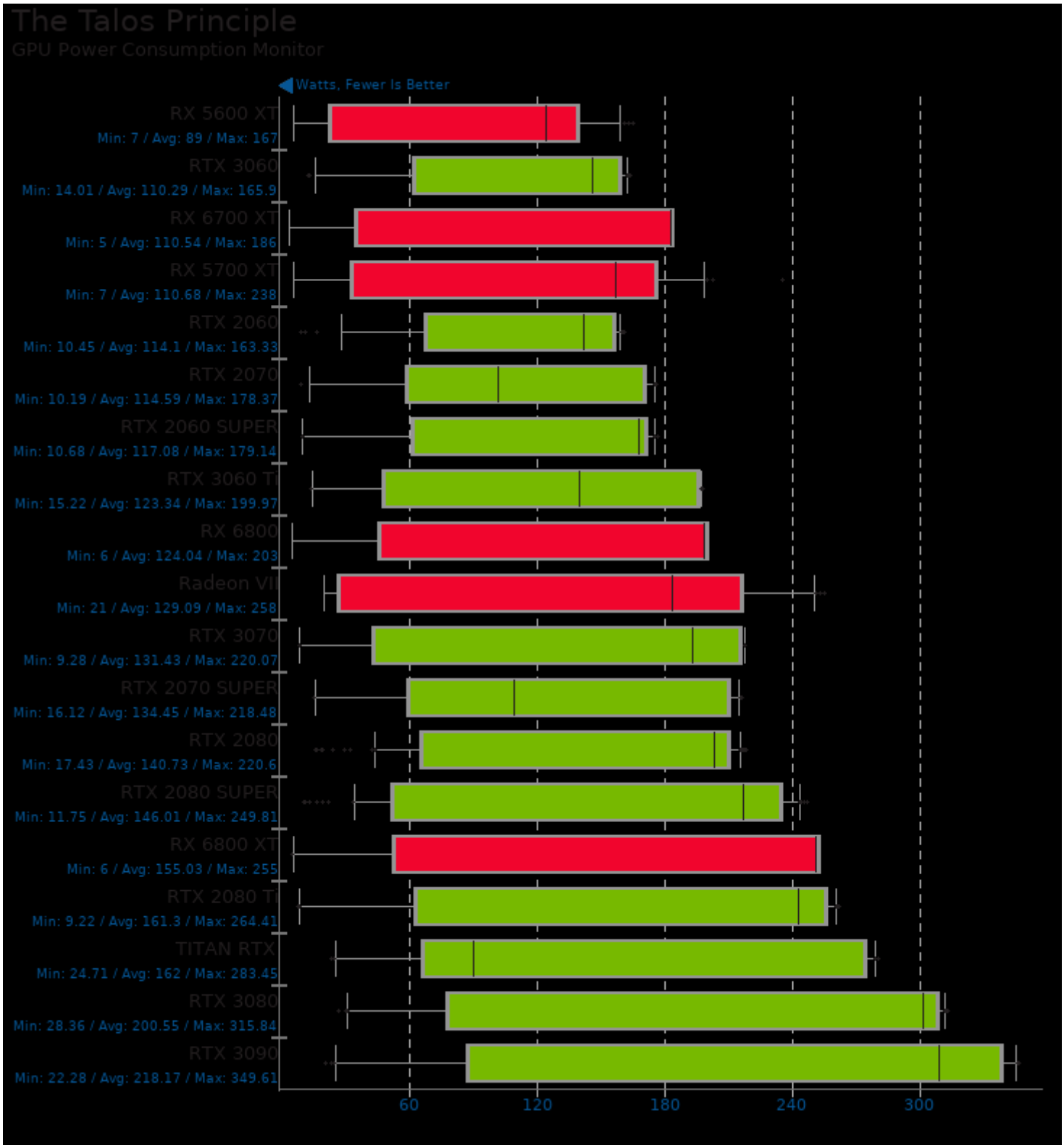

Strange Brigade
Resolution: 3840 x 2160 - Graphics Setting: Medium
Frames Per Second Per Watt, More Is Better
RTX 3070
0.889
RTX 3060 Ti
0.880
RTX 3090
0.849
RTX 2080 Ti
0.780
TITAN RTX
0.771
RTX 3060
0.765
RTX 3080
0.760
RTX 2070
0.715
RTX 2060 SUPER
0.690
RTX 2080
0.681
RTX 2080 SUPER
0.680
RTX 2070 SUPER
0.680
RTX 2060
0.651
0.2
0.4
0.6
0.8
1


Strange Brigade
GPU Power Consumption Monitor
Watts, Fewer Is Better
RTX 2060
Min: 9.81 / Avg: 112.4 / Max: 162.68
RTX 3060
Min: 13.21 / Avg: 118.05 / Max: 170.63
RTX 2070
Min: 8.28 / Avg: 122.85 / Max: 180.74
RTX 2060 SUPER
Min: 9.83 / Avg: 124.86 / Max: 178.88
RTX 3060 Ti
Min: 13.75 / Avg: 138.94 / Max: 199.29
RTX 2070 SUPER
Min: 15.55 / Avg: 146.64 / Max: 219.36
RTX 3070
Min: 8.24 / Avg: 151.63 / Max: 221.28
RTX 2080
Min: 15.82 / Avg: 152.05 / Max: 219.24
RTX 2080 SUPER
Min: 9.51 / Avg: 168.96 / Max: 253.8
RTX 2080 Ti
Min: 7.91 / Avg: 182.35 / Max: 264.84
TITAN RTX
Min: 18.05 / Avg: 189.18 / Max: 284.78
RTX 3080
Min: 24.82 / Avg: 228.54 / Max: 320.34
RTX 3090
Min: 9.76 / Avg: 251.52 / Max: 349.6
60
120
180
240
300

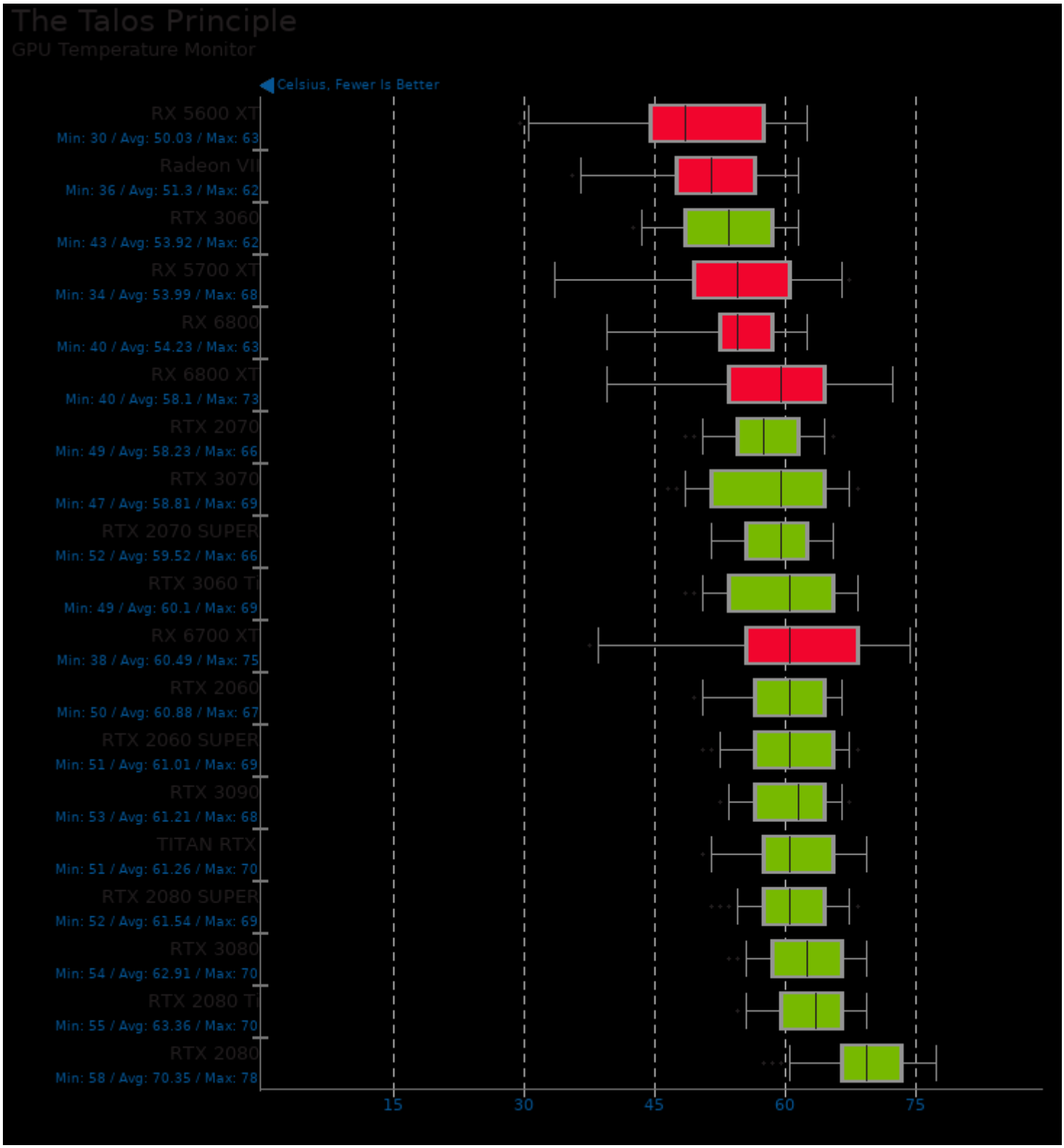

Strange Brigade
GPU Temperature Monitor
Celsius, Fewer Is Better
RTX 3060
Min: 42 / Avg: 55.75 / Max: 63
RTX 2070
Min: 48 / Avg: 60.36 / Max: 68
RTX 2060
Min: 48 / Avg: 60.84 / Max: 69
RTX 2070 SUPER
Min: 50 / Avg: 61.61 / Max: 69
RTX 3070
Min: 47 / Avg: 62 / Max: 71
RTX 3060 Ti
Min: 49 / Avg: 62.84 / Max: 71
RTX 2060 SUPER
Min: 49 / Avg: 63.18 / Max: 71
RTX 3090
Min: 53 / Avg: 63.71 / Max: 70
RTX 2080 SUPER
Min: 52 / Avg: 64.55 / Max: 72
RTX 3080
Min: 54 / Avg: 65.68 / Max: 73
TITAN RTX
Min: 54 / Avg: 66.14 / Max: 74
RTX 2080 Ti
Min: 55 / Avg: 66.51 / Max: 73
RTX 2080
Min: 58 / Avg: 72.67 / Max: 82
16
32
48
64
80


The Talos Principle
Renderer: Vulkan - Resolution: 3840 x 2160
Frames Per Second Per Watt, More Is Better
RX 6800
1.340
RX 6800 XT
1.278
RX 6700 XT
1.201
RTX 3070
1.043
RTX 3060 T
0.980
RX 5600 XT
0.954
RX 5700 XT
0.923
RTX 3090
0.909
Radeon VI
0.885
TITAN RTX
0.873
RTX 2080 T
0.830
RTX 3080
0.820
RTX 3060
0.776
RTX 2080 SUPER
0.760
RTX 2080
0.740
RTX 2070 SUPER
0.740
RTX 2070
0.737
RTX 2060 SUPER
0.720
RTX 2060
0.637
0.3015
0.603
0.9045
1.206
1.5075

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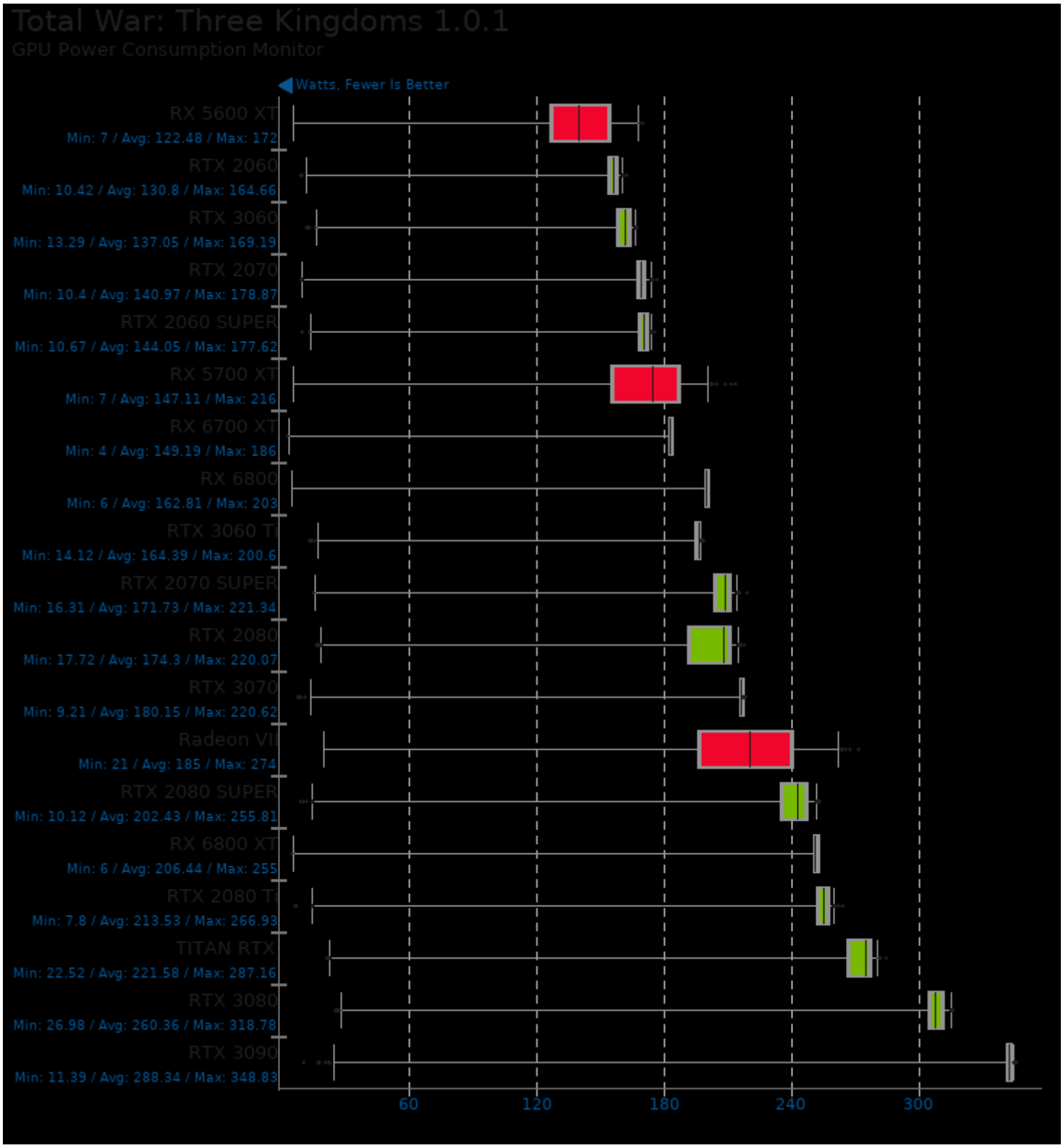


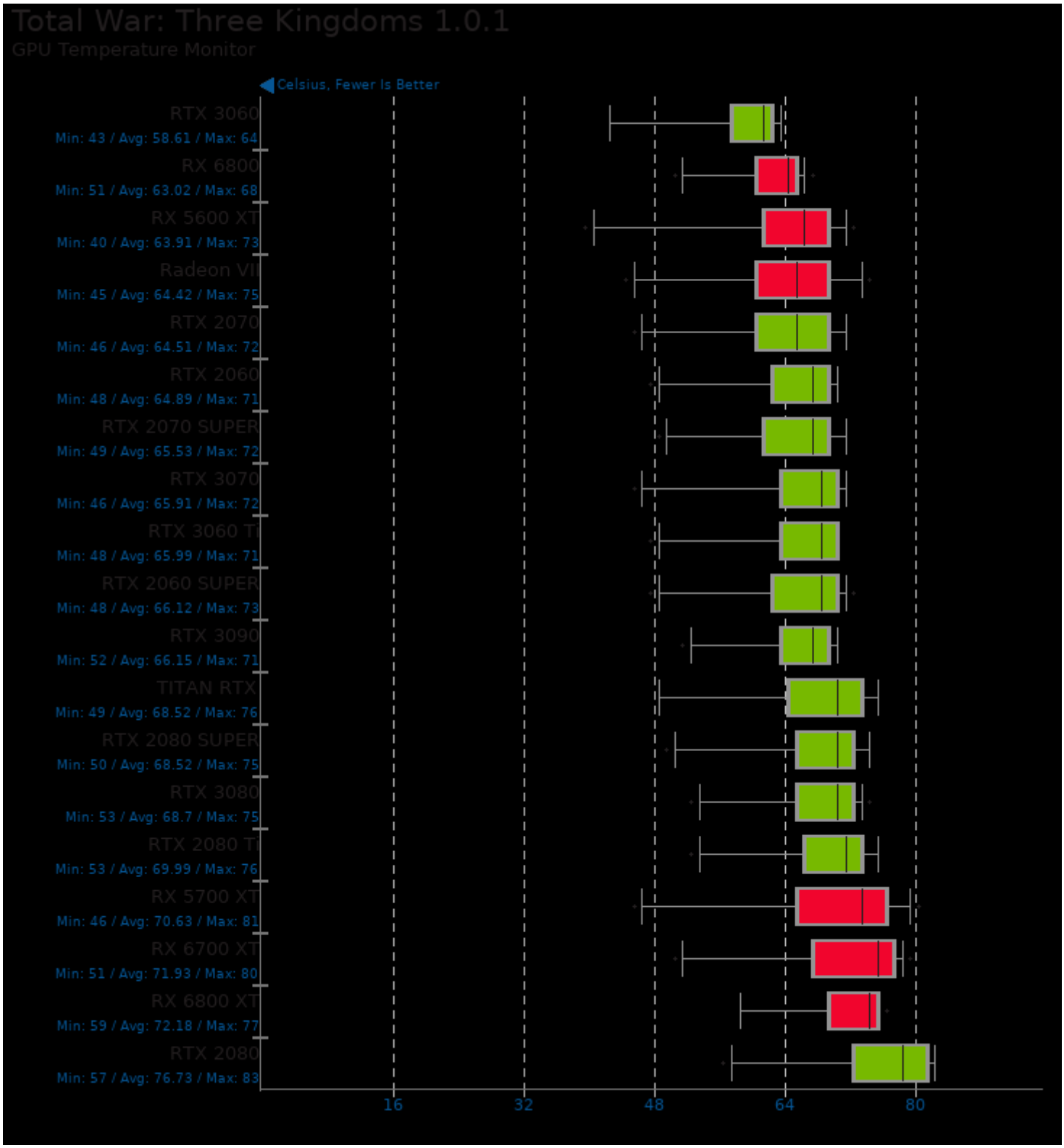
4K Linux Gaming April 2021

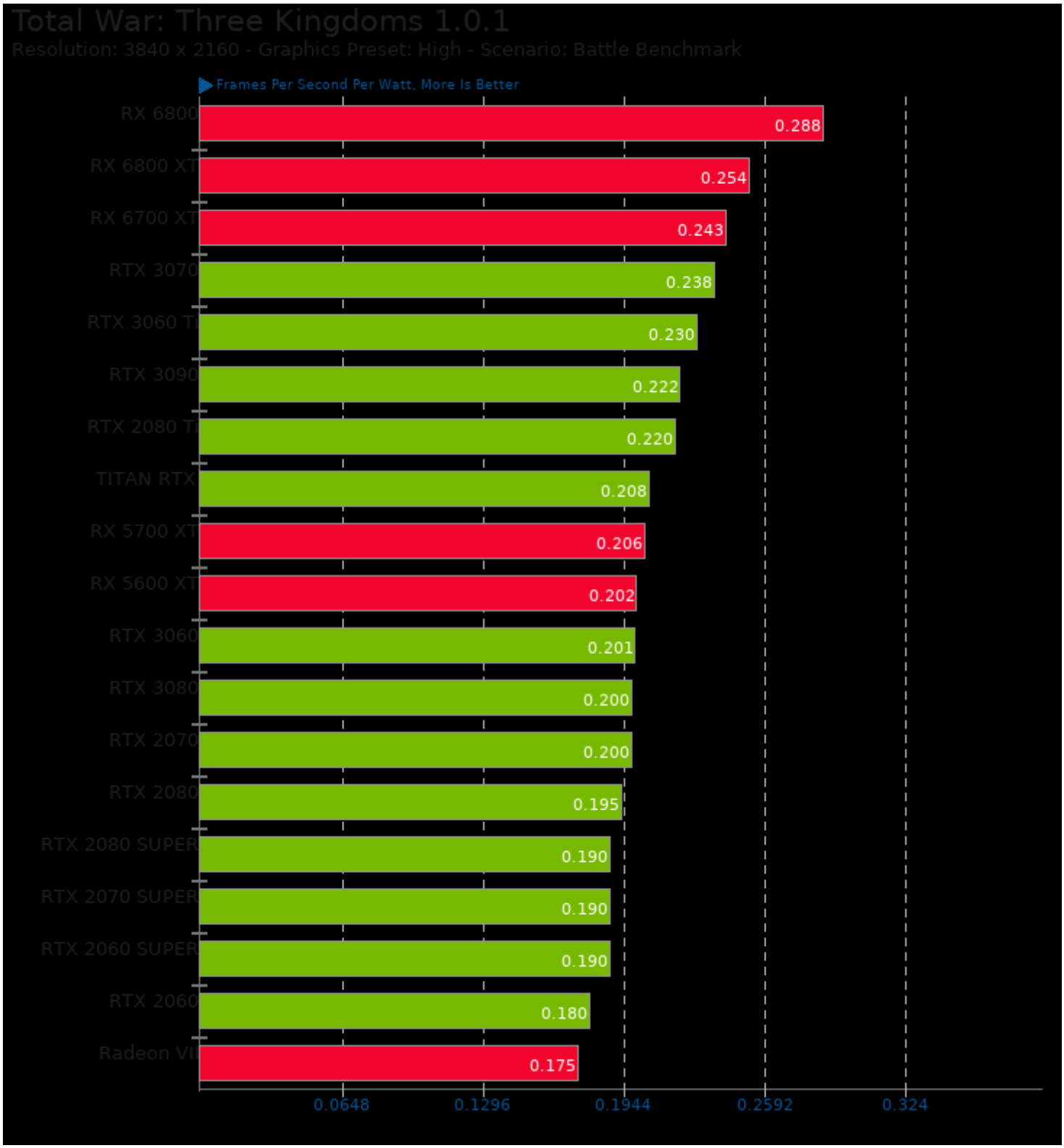


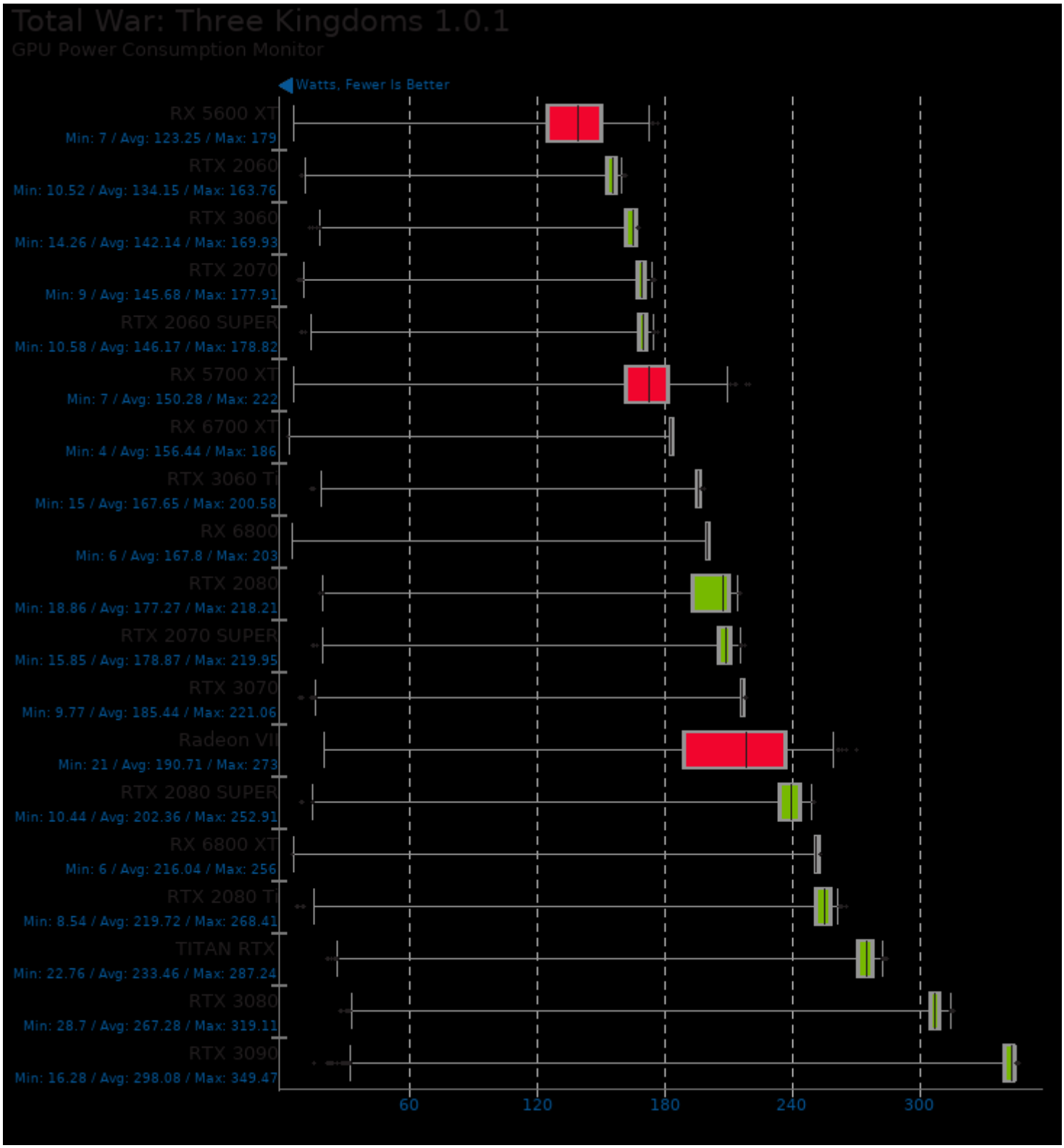
4K Linux Gaming April 2021



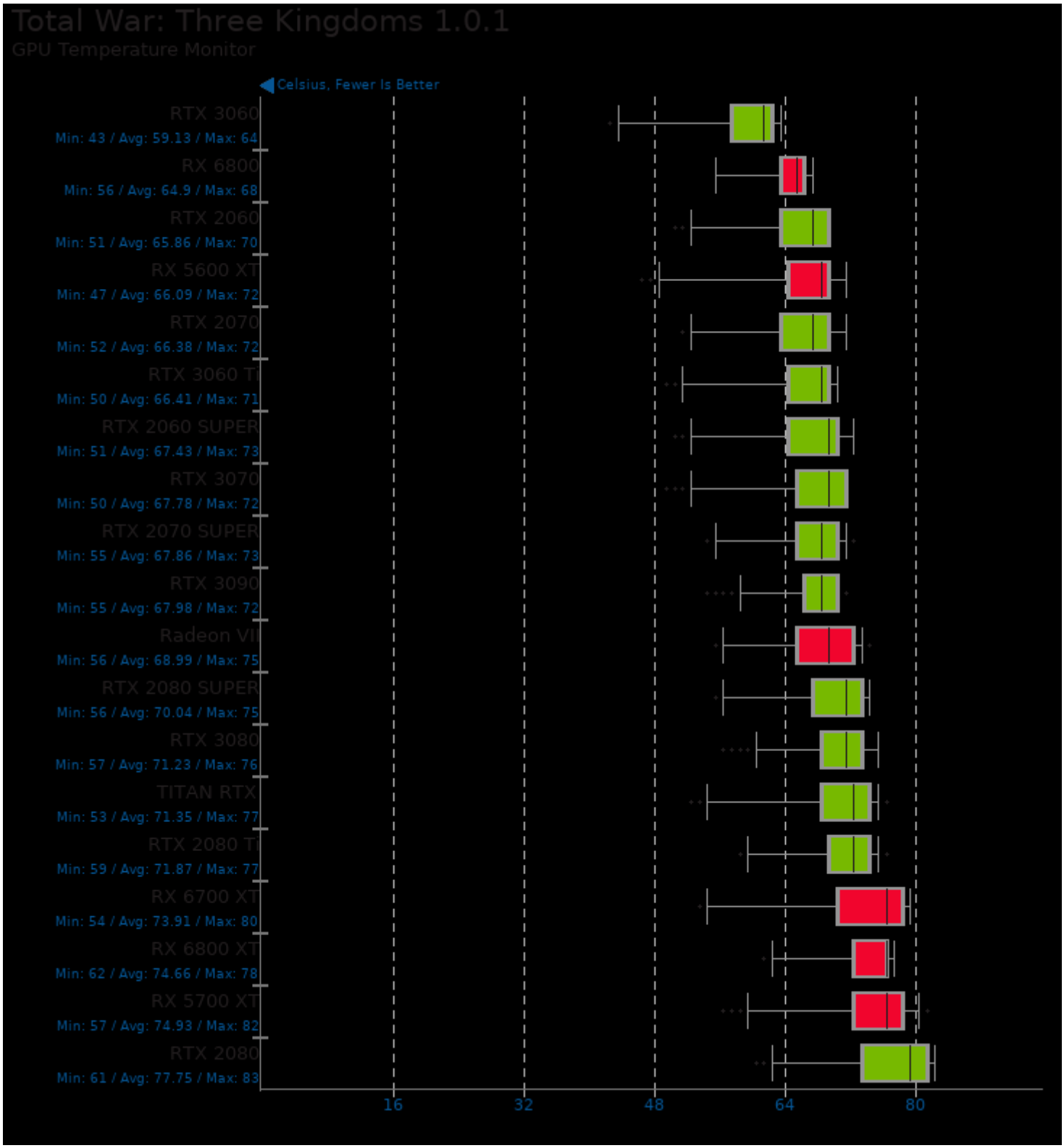

Total War: Three Kingdoms 1.0.1
GPU Power Consumption Monitor
Watts, Fewer Is Better
RX 5600 XT
Min: 7 / Avg: 122.48 / Max: 172
RTX 2060
Min: 10.42 / Avg: 130.8 / Max: 164.66
RTX 3060
Min: 13.29 / Avg: 137.05 / Max: 169.19
RTX 2070
Min: 10.4 / Avg: 140.97 / Max: 178.87
RTX 2060 SUPER
Min: 10.67 / Avg: 144.05 / Max: 177.62
RX 5700 XT
Min: 7 / Avg: 147.11 / Max: 216
RX 6700 XT
Min: 4 / Avg: 149.19 / Max: 186
RX 6800
Min: 6 / Avg: 162.81 / Max: 203
RTX 3060 Ti
Min: 14.12 / Avg: 164.39 / Max: 200.6
RTX 2070 SUPER
Min: 16.31 / Avg: 171.73 / Max: 221.34
RTX 2080
Min: 17.72 / Avg: 174.3 / Max: 220.07
RTX 3070
Min: 9.21 / Avg: 180.15 / Max: 220.62
Radeon VII
Min: 21 / Avg: 185 / Max: 274
RTX 2080 SUPER
Min: 10.12 / Avg: 202.43 / Max: 255.81
RX 6800 XT
Min: 6 / Avg: 206.44 / Max: 255
RTX 2080 Ti
Min: 7.8 / Avg: 213.53 / Max: 266.93
TITAN RTX
Min: 22.52 / Avg: 221.58 / Max: 287.16
RTX 3080
Min: 26.98 / Avg: 260.36 / Max: 318.78
RTX 3090
Min: 11.39 / Avg: 288.34 / Max: 348.83
60
120
180
240
300

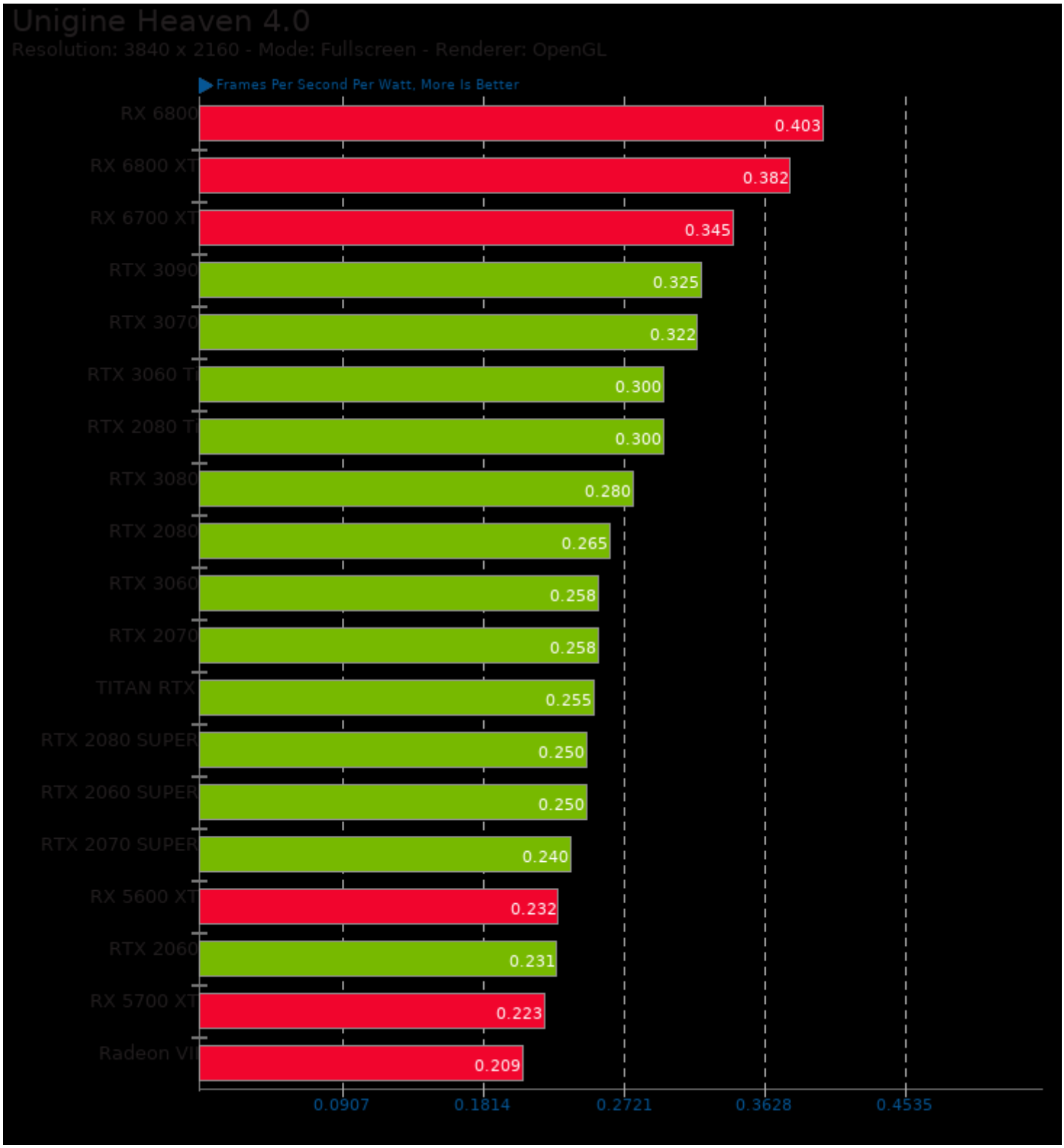

Total War: Three Kingdoms 1.0.1
GPU Temperature Monitor
Celsius, Fewer Is Better
RTX 3060
Min: 43 / Avg: 58.61 / Max: 64
RX 6800
Min: 51 / Avg: 63.02 / Max: 68
RX 5600 XT
Min: 40 / Avg: 63.91 / Max: 73
Radeon VII
Min: 45 / Avg: 64.42 / Max: 75
RTX 2070
Min: 46 / Avg: 64.51 / Max: 72
RTX 2060
Min: 48 / Avg: 64.89 / Max: 71
RTX 2070 SUPER
Min: 49 / Avg: 65.53 / Max: 72
RTX 3070
Min: 46 / Avg: 65.91 / Max: 72
RTX 3060 Ti
Min: 48 / Avg: 65.99 / Max: 71
RTX 2060 SUPER
Min: 48 / Avg: 66.12 / Max: 73
RTX 3090
Min: 52 / Avg: 66.15 / Max: 71
TITAN RTX
Min: 49 / Avg: 68.52 / Max: 76
RTX 2080 SUPER
Min: 50 / Avg: 68.52 / Max: 75
RTX 3080
Min: 53 / Avg: 68.7 / Max: 75
RTX 2080 Ti
Min: 53 / Avg: 69.99 / Max: 76
RX 5700 XT
Min: 46 / Avg: 70.63 / Max: 81
RX 6700 XT
Min: 51 / Avg: 71.93 / Max: 80
RX 6800 XT
Min: 59 / Avg: 72.18 / Max: 77
RTX 2080
Min: 57 / Avg: 76.73 / Max: 83
16
32
48
64
80


Total War: Three Kingdoms 1.0.1
Resolution: 3840 x 2160 - Graphics Preset: High - Scenario: Battle Benchmark
Frames Per Second Per Watt, More Is Better
RX 6800
0.288
RX 6800 XT
0.254
RX 6700 XT
0.243
RTX 3070
0.238
RTX 3060 Ti
0.230
RTX 3090
0.222
RTX 2080 Ti
0.220
TITAN RTX
0.208
RX 5700 XT
0.206
RX 5600 XT
0.202
RTX 3060
0.201
RTX 3080
0.200
RTX 2070
0.200
RTX 2080
0.195
RTX 2080 SUPER
0.190
RTX 2070 SUPER
0.190
RTX 2060 SUPER
0.190
RTX 2060
0.180
Radeon VII
0.175
0.0648
0.1296
0.1944
0.2592
0.324

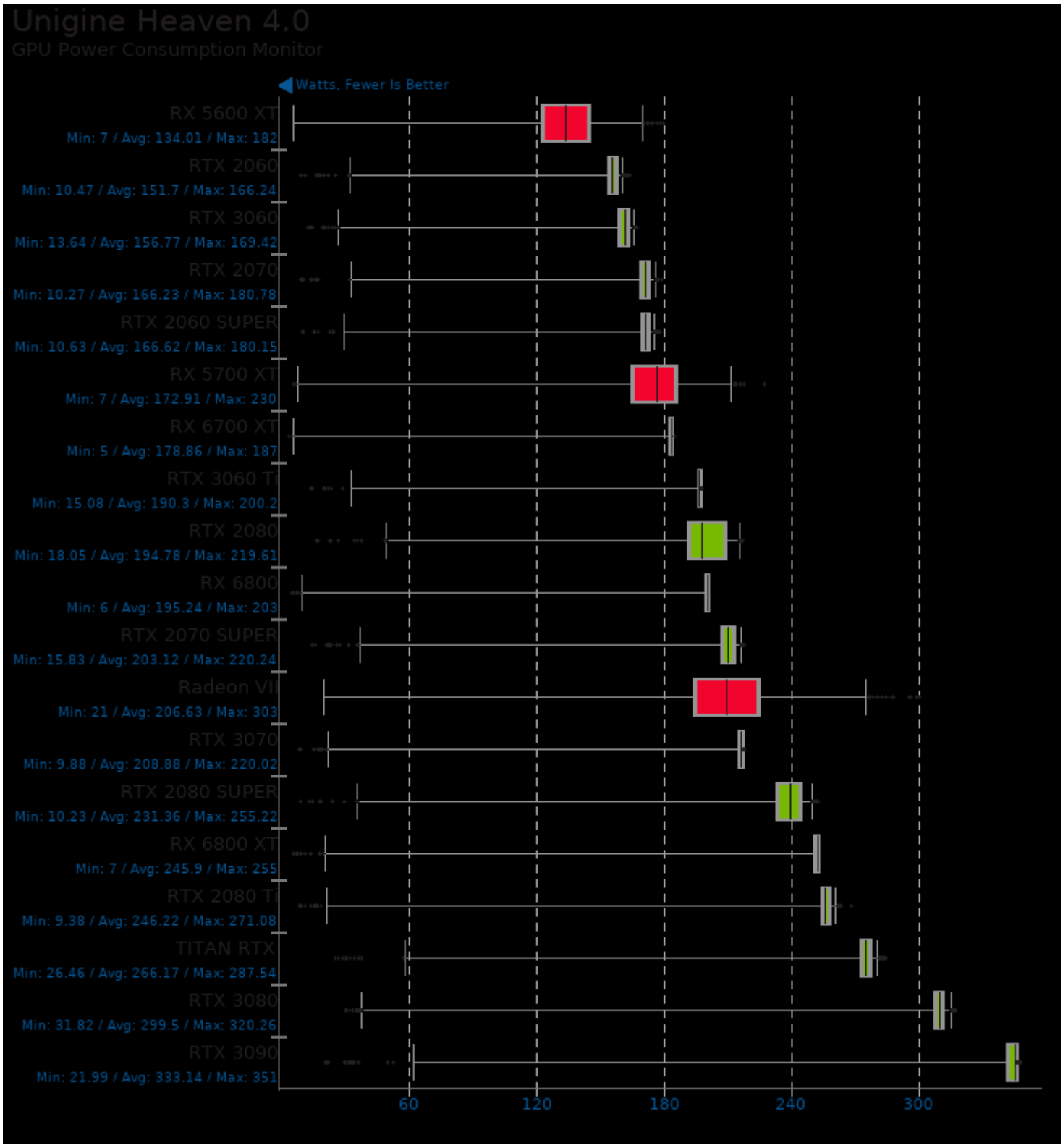

Total War: Three Kingdoms 1.0.1
GPU Power Consumption Monitor
Watts, Fewer Is Better
RX 5600 XT
Min: 7 / Avg: 123.25 / Max: 179
RTX 2060
Min: 10.52 / Avg: 134.15 / Max: 163.76
RTX 3060
Min: 14.26 / Avg: 142.14 / Max: 169.93
RTX 2070
Min: 9 / Avg: 145.68 / Max: 177.91
RTX 2060 SUPER
Min: 10.58 / Avg: 146.17 / Max: 178.82
RX 5700 XT
Min: 7 / Avg: 150.28 / Max: 222
RX 6700 XT
Min: 4 / Avg: 156.44 / Max: 186
RTX 3060 Ti
Min: 15 / Avg: 167.65 / Max: 200.58
RX 6800
Min: 6 / Avg: 167.8 / Max: 203
RTX 2080
Min: 18.86 / Avg: 177.27 / Max: 218.21
RTX 2070 SUPER
Min: 15.85 / Avg: 178.87 / Max: 219.95
RTX 3070
Min: 9.77 / Avg: 185.44 / Max: 221.06
Radeon VII
Min: 21 / Avg: 190.71 / Max: 273
RTX 2080 SUPER
Min: 10.44 / Avg: 202.36 / Max: 252.91
RX 6800 XT
Min: 6 / Avg: 216.04 / Max: 256
RTX 2080 Ti
Min: 8.54 / Avg: 219.72 / Max: 268.41
TITAN RTX
Min: 22.76 / Avg: 233.46 / Max: 287.24
RTX 3080
Min: 28.7 / Avg: 267.28 / Max: 319.11
RTX 3090
Min: 16.28 / Avg: 298.08 / Max: 349.47
60
120
180
240
300

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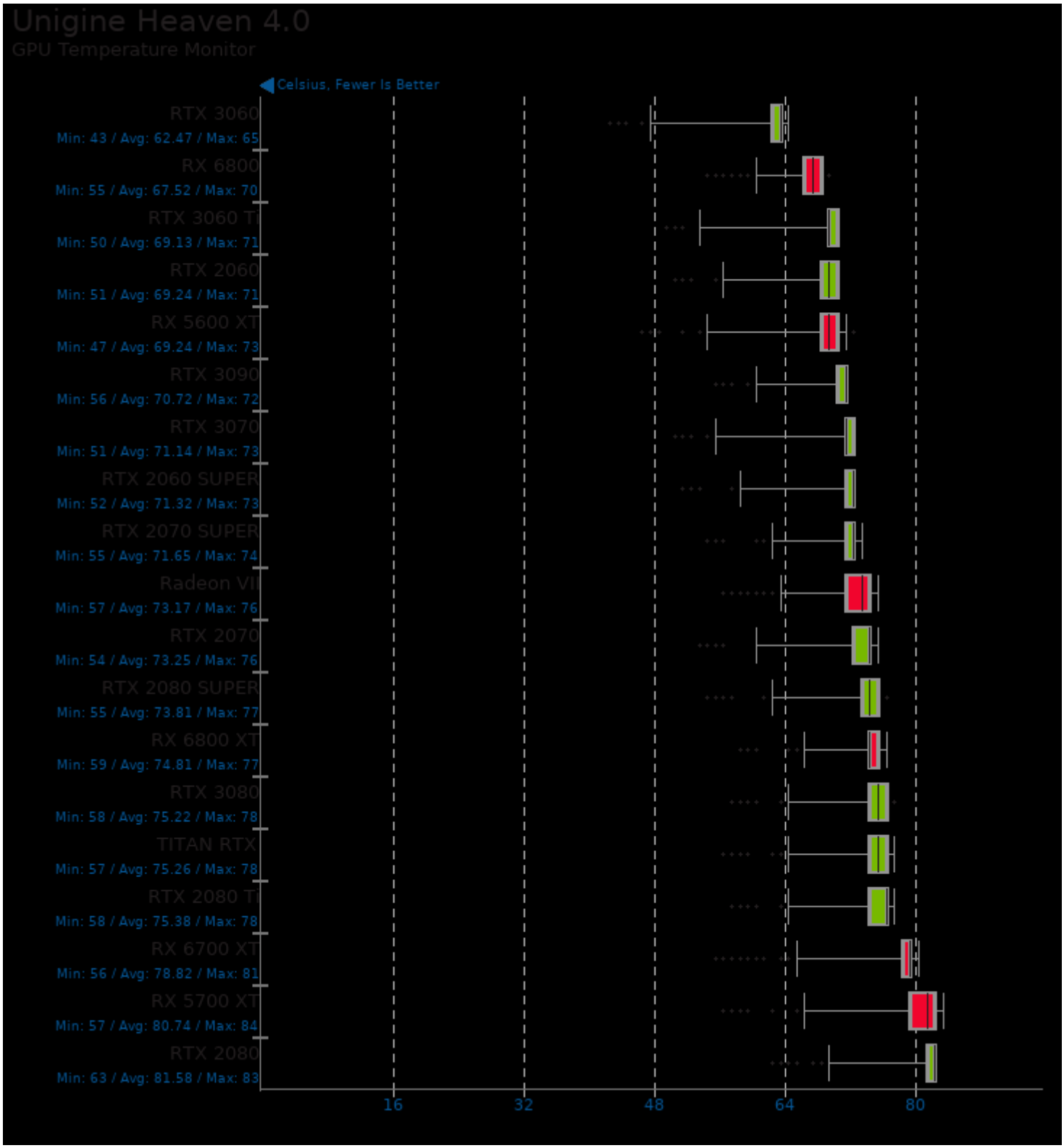


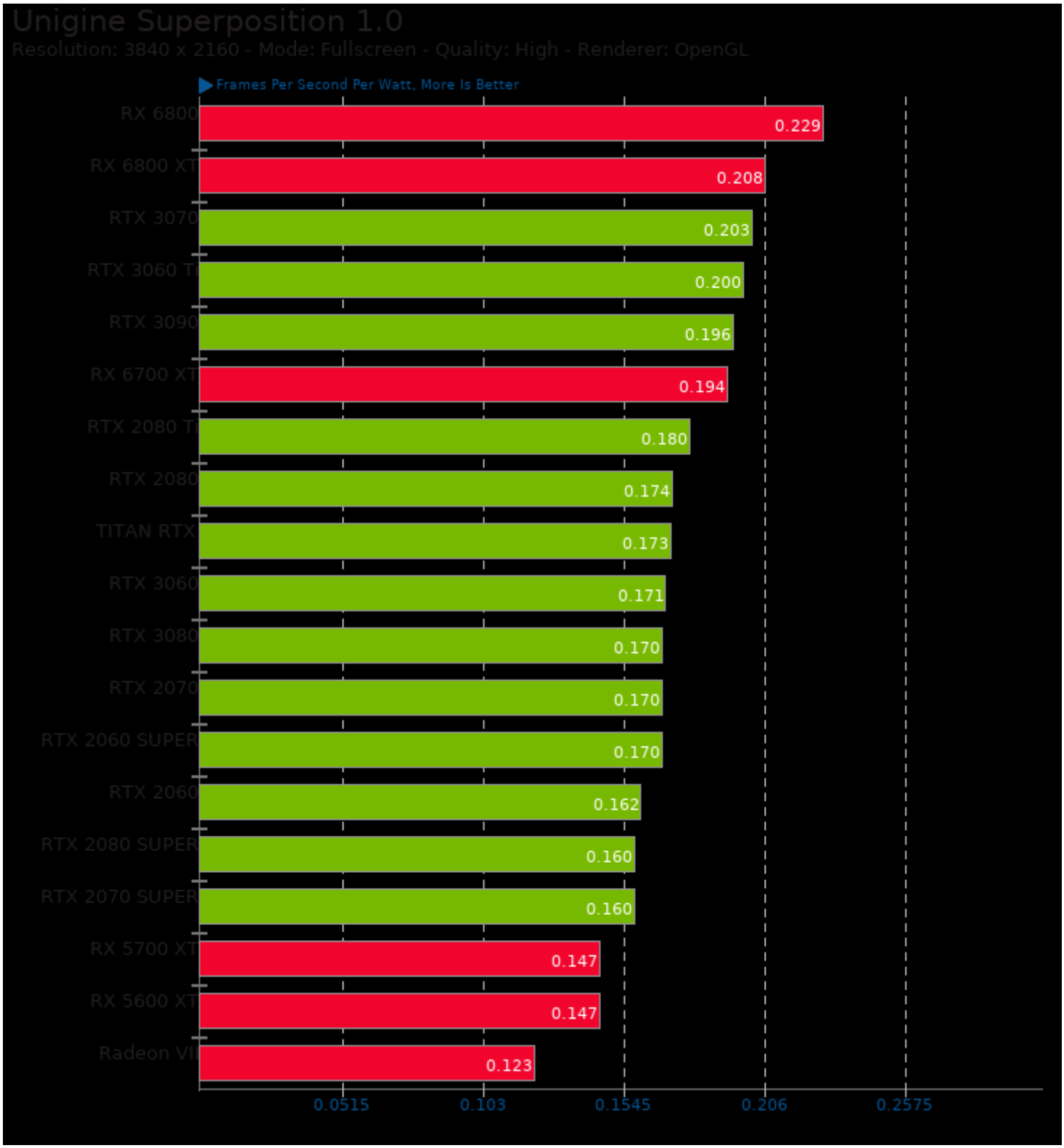

Unigine Heaven 4.0
Resolution: 3840 x 2160 - Mode: Fullscreen - Renderer: OpenGL
Frames Per Second Per Watt, More Is Better
RX 6800 0.403
RX 6800 XT 0.382
RX 6700 XT 0.345
RTX 3090 0.325
RTX 3070 0.322
RTX 3060 Ti 0.300
RTX 2080 Ti 0.300
RTX 3080 0.280
RTX 2080 0.265
RTX 3060 0.258
RTX 2070 0.258
TITAN RTX 0.255
RTX 2080 SUPER 0.250
RTX 2060 SUPER 0.250
RTX 2070 SUPER 0.240
RX 5600 XT 0.232
RTX 2060 0.231
RX 5700 XT 0.223
Radeon VII 0.209
0.0907
0.1814
0.2721
0.3628
0.4535

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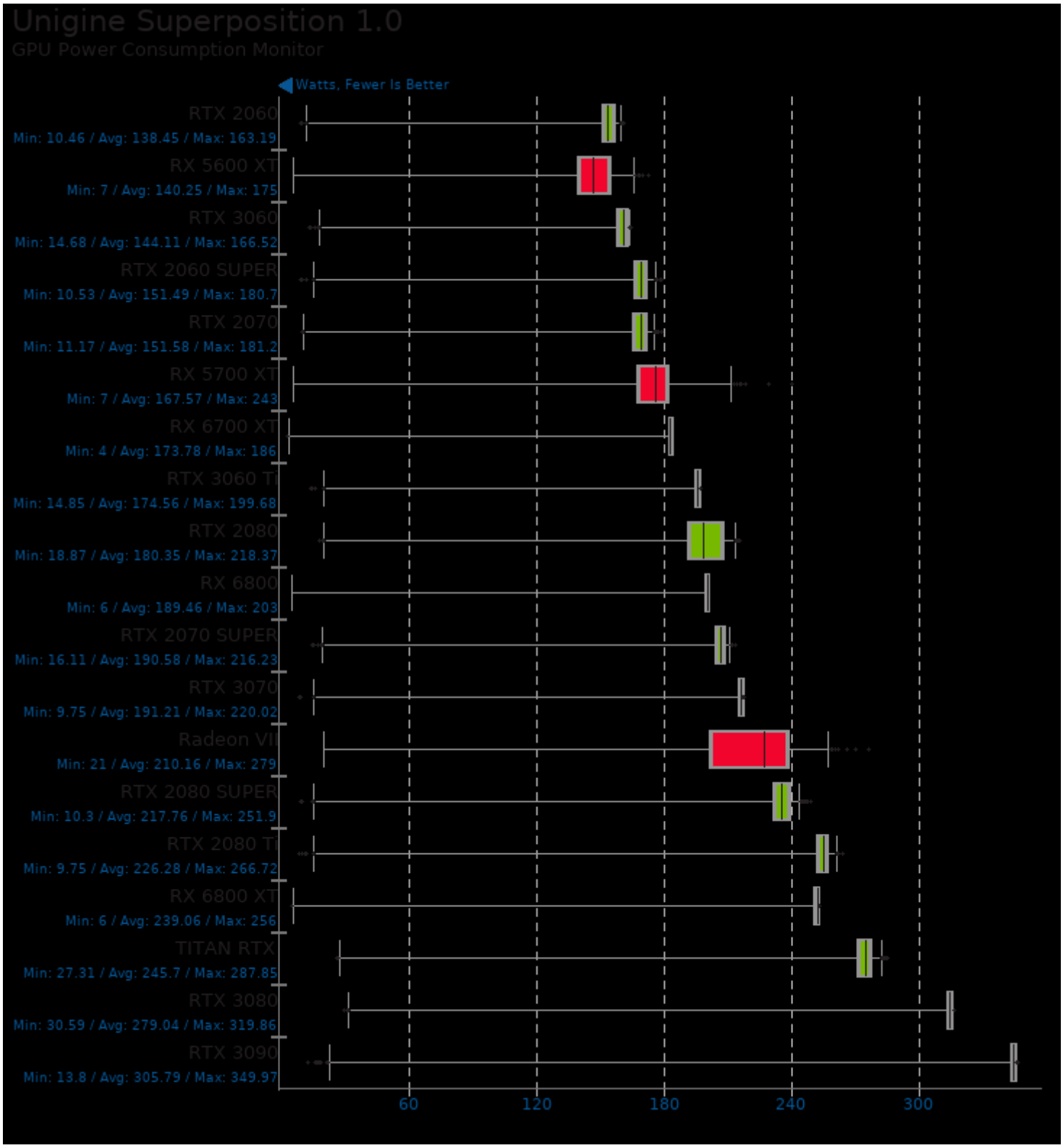


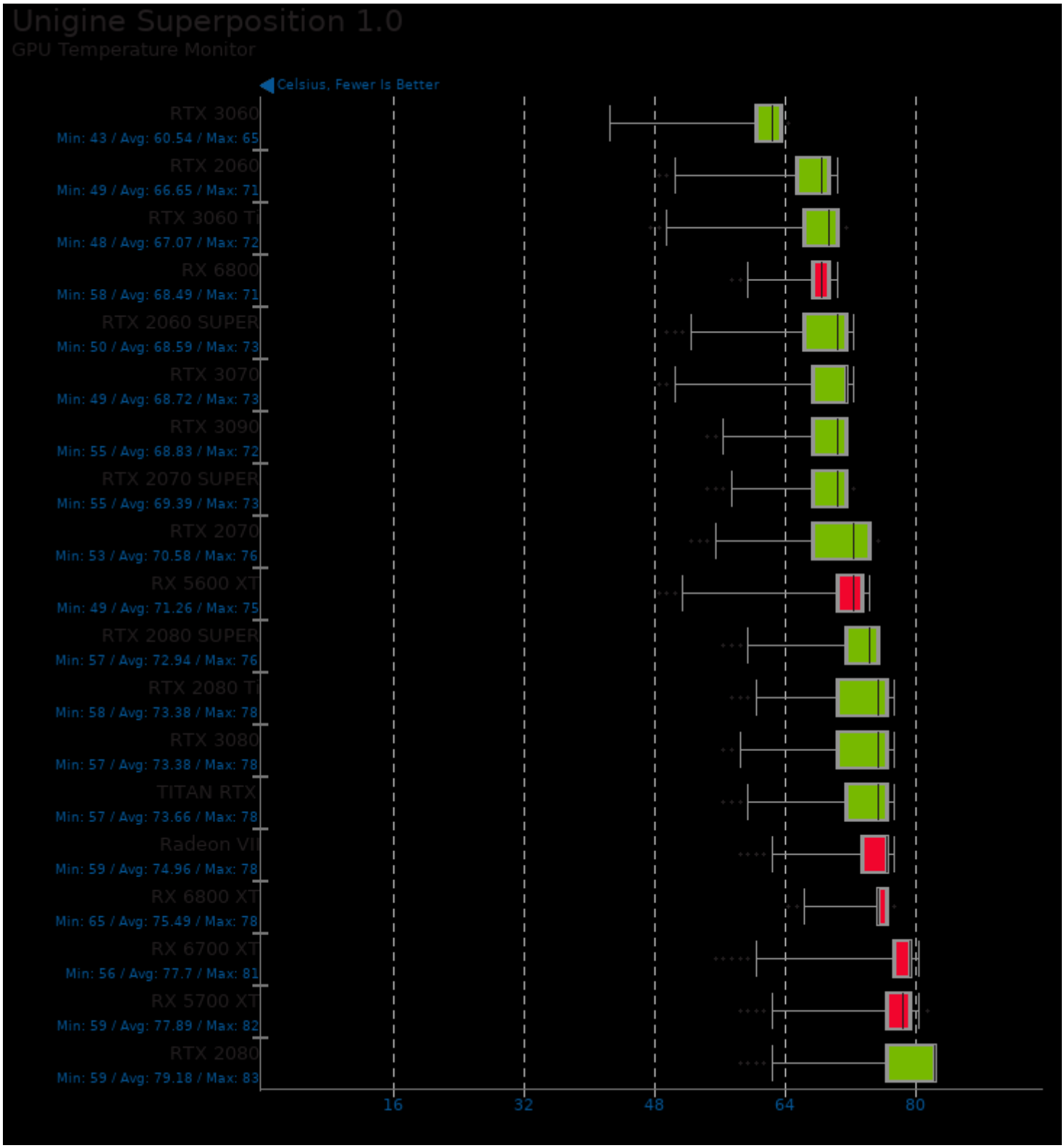
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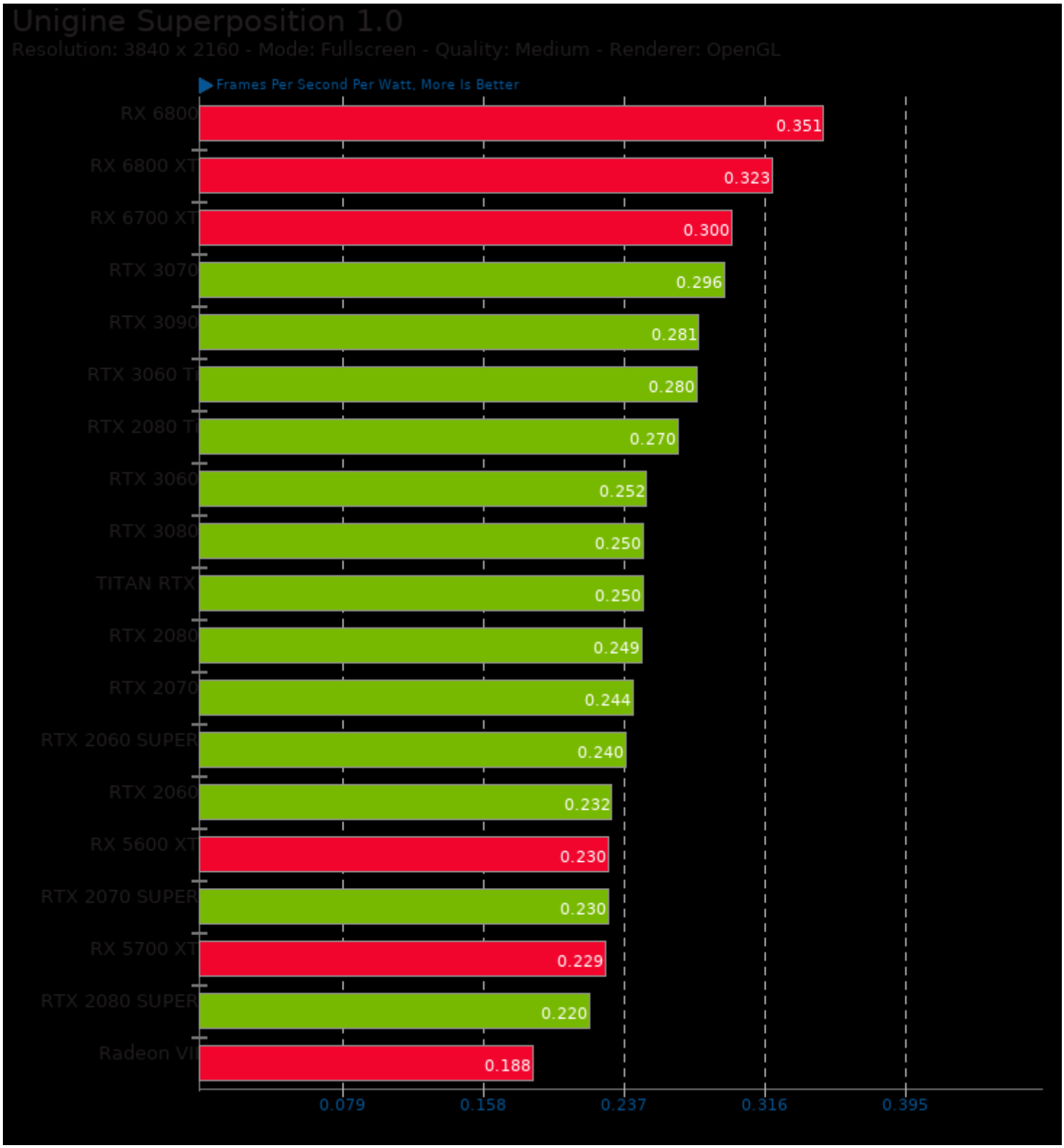



Unigine Superposition 1.0
Resolution: 3840 x 2160 - Mode: Fullscreen - Quality: High - Renderer: OpenGL
Frames Per Second Per Watt, More Is Better
RX 6800
0.229
RX 6800 XT
0.208
RTX 3070
0.203
RTX 3060 Ti
0.200
RTX 3090
0.196
RX 6700 XT
0.194
RTX 2080 Ti
0.180
RTX 2080
0.174
TITAN RTX
0.173
RTX 3060
0.171
RTX 3080
0.170
RTX 2070
0.170
RTX 2060 SUPER
0.170
RTX 2060
0.162
RTX 2080 SUPER
0.160
RTX 2070 SUPER
0.160
RX 5700 XT
0.147
RX 5600 XT
0.147
Radeon VII
0.123
0.0515
0.103
0.1545
0.206
0.2575

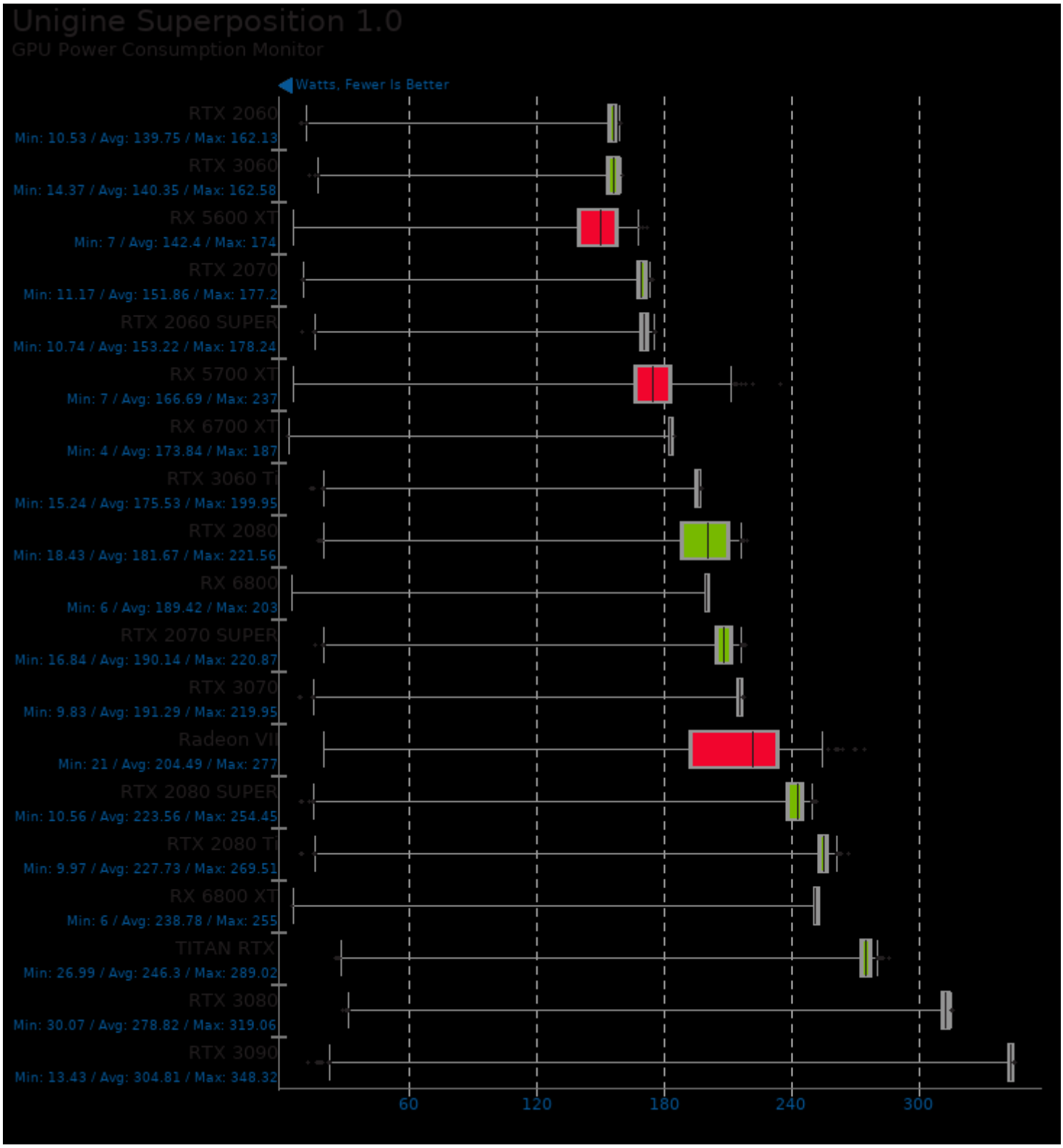
4K Linux Gaming April 2021

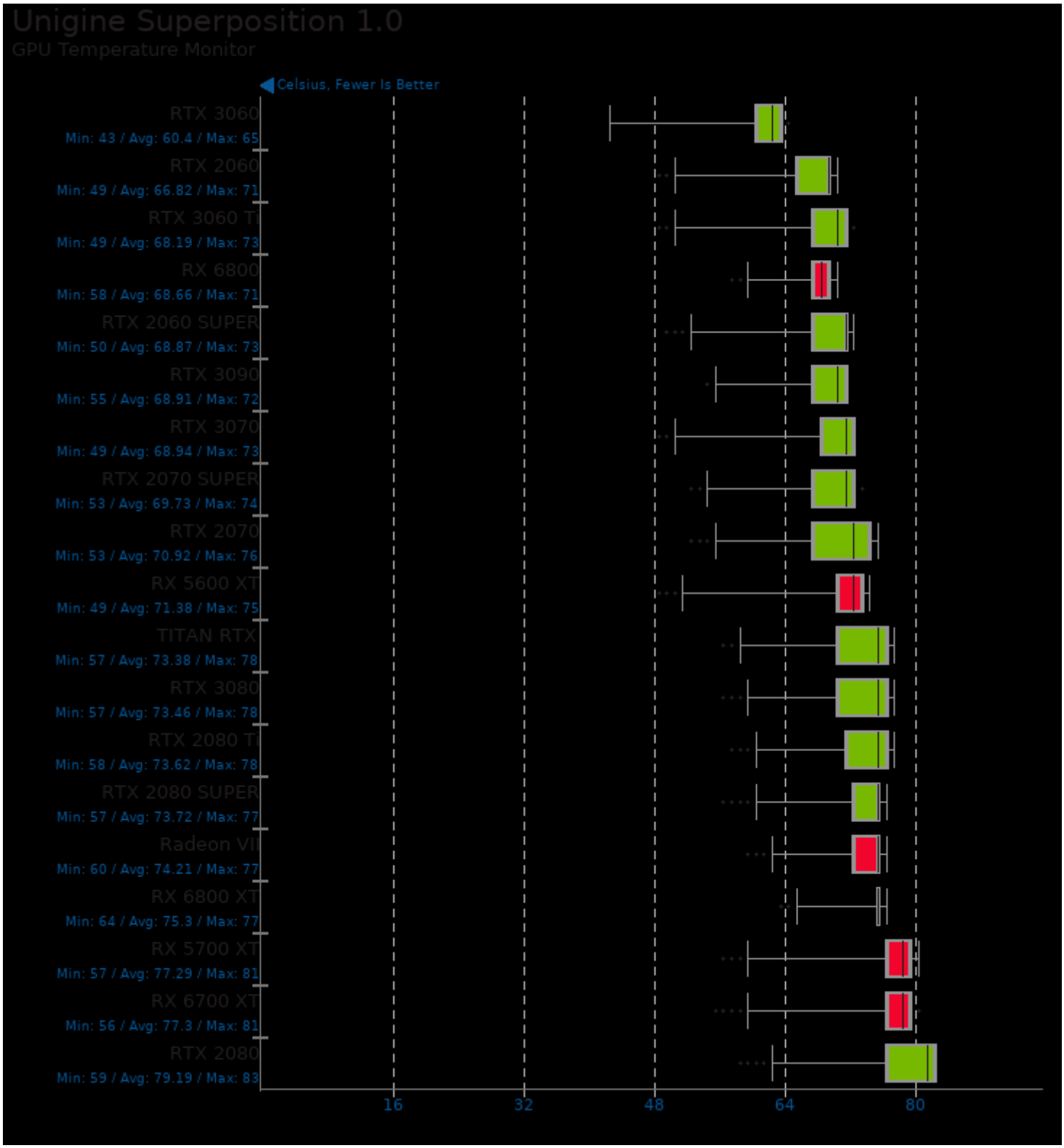


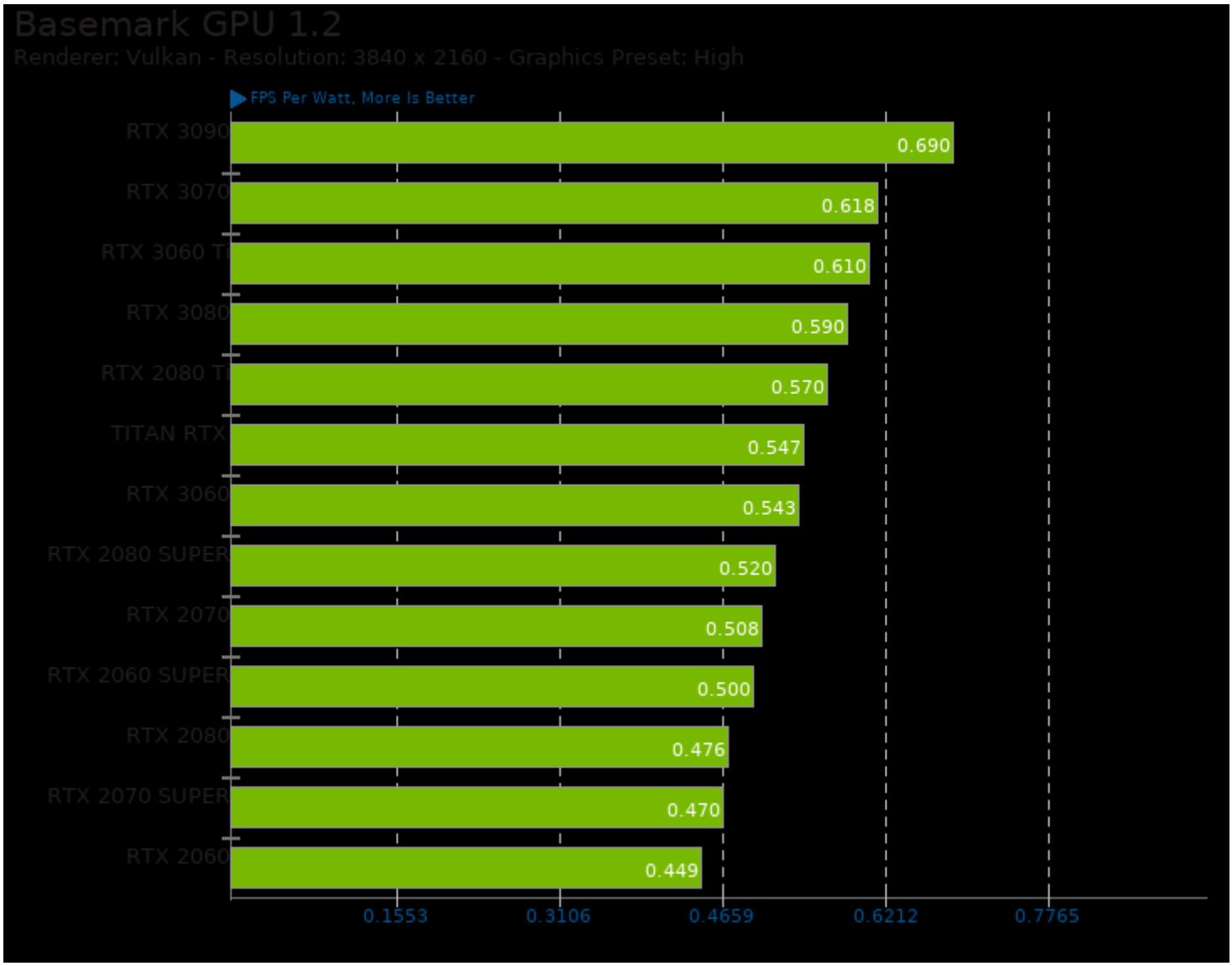

Unigine Superposition 1.0
GPU Temperature Monitor
Celsius, Fewer Is Better
RTX 3060
Min: 43 / Avg: 60.54 / Max: 65
RTX 2060
Min: 49 / Avg: 66.65 / Max: 71
RTX 3060 Ti
Min: 48 / Avg: 67.07 / Max: 72
RX 6800
Min: 58 / Avg: 68.49 / Max: 71
RTX 2060 SUPER
Min: 50 / Avg: 68.59 / Max: 73
RTX 3070
Min: 49 / Avg: 68.72 / Max: 73
RTX 3090
Min: 55 / Avg: 68.83 / Max: 72
RTX 2070 SUPER
Min: 55 / Avg: 69.39 / Max: 73
RTX 2070
Min: 53 / Avg: 70.58 / Max: 76
RX 5600 XT
Min: 49 / Avg: 71.26 / Max: 75
RTX 2080 SUPER
Min: 57 / Avg: 72.94 / Max: 76
RTX 2080 Ti
Min: 58 / Avg: 73.38 / Max: 78
RTX 3080
Min: 57 / Avg: 73.38 / Max: 78
TITAN RTX
Min: 57 / Avg: 73.66 / Max: 78
Radeon VII
Min: 59 / Avg: 74.96 / Max: 78
RX 6800 XT
Min: 65 / Avg: 75.49 / Max: 78
RX 6700 XT
Min: 56 / Avg: 77.7 / Max: 81
RX 5700 XT
Min: 59 / Avg: 77.89 / Max: 82
RTX 2080
Min: 59 / Avg: 79.18 / Max: 83
16
32
48
64
80

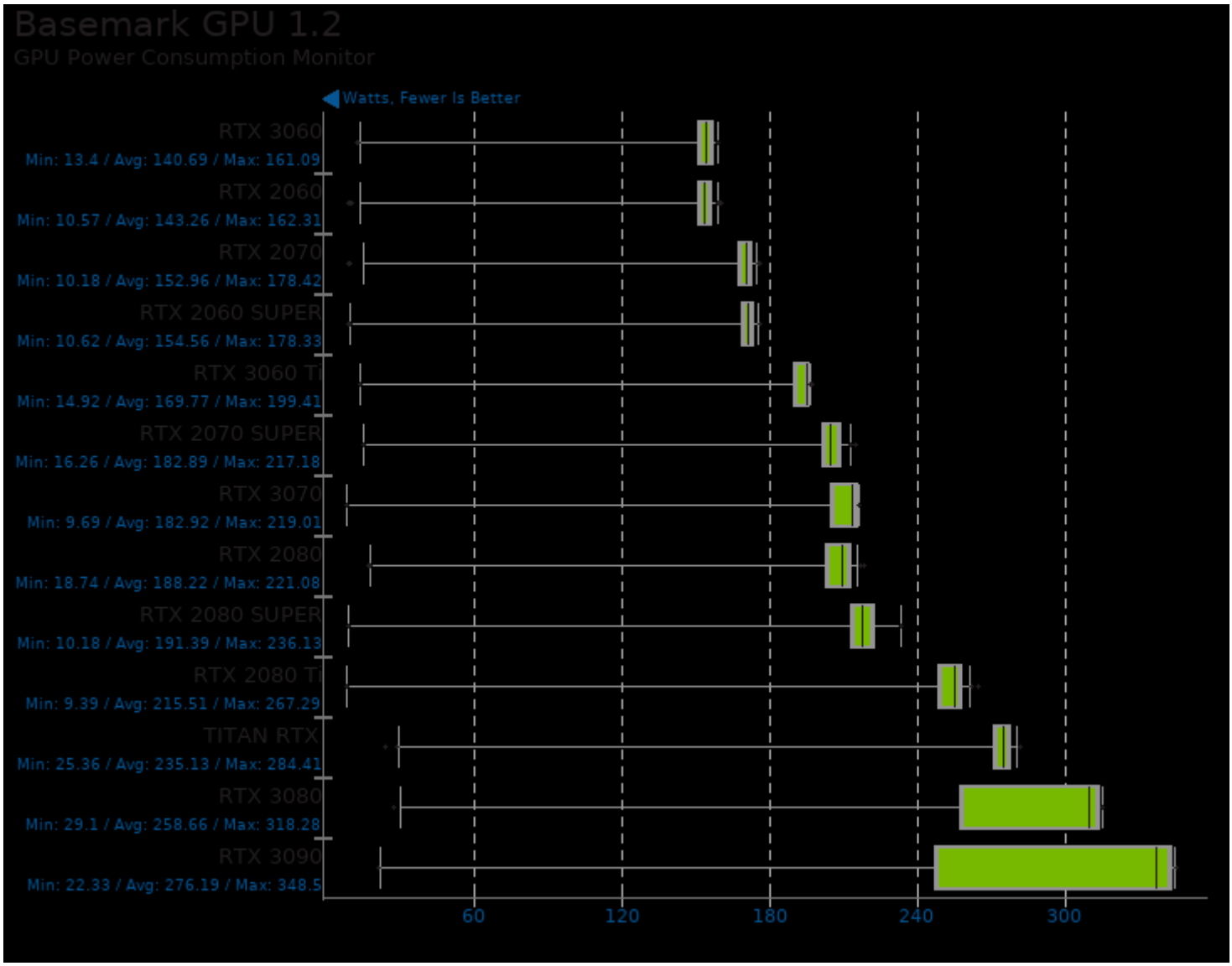

Unigine Superposition 1.0
Resolution: 3840 x 2160 - Mode: Fullscreen - Quality: Medium - Renderer: OpenGL
Frames Per Second Per Watt, More Is Better
RX 6800 0.351
RX 6800 XT 0.323
RX 6700 XT 0.300
RTX 3070 0.296
RTX 3090 0.281
RTX 3060 Ti 0.280
RTX 2080 Ti 0.270
RTX 3060 0.252
RTX 3080 0.250
TITAN RTX 0.250
RTX 2080 0.249
RTX 2070 0.244
RTX 2060 SUPER 0.240
RTX 2060 0.232
RX 5600 XT 0.230
RTX 2070 SUPER 0.230
RX 5700 XT 0.229
RTX 2080 SUPER 0.220
Radeon VII 0.188
0.079
0.158
0.237
0.316
0.395

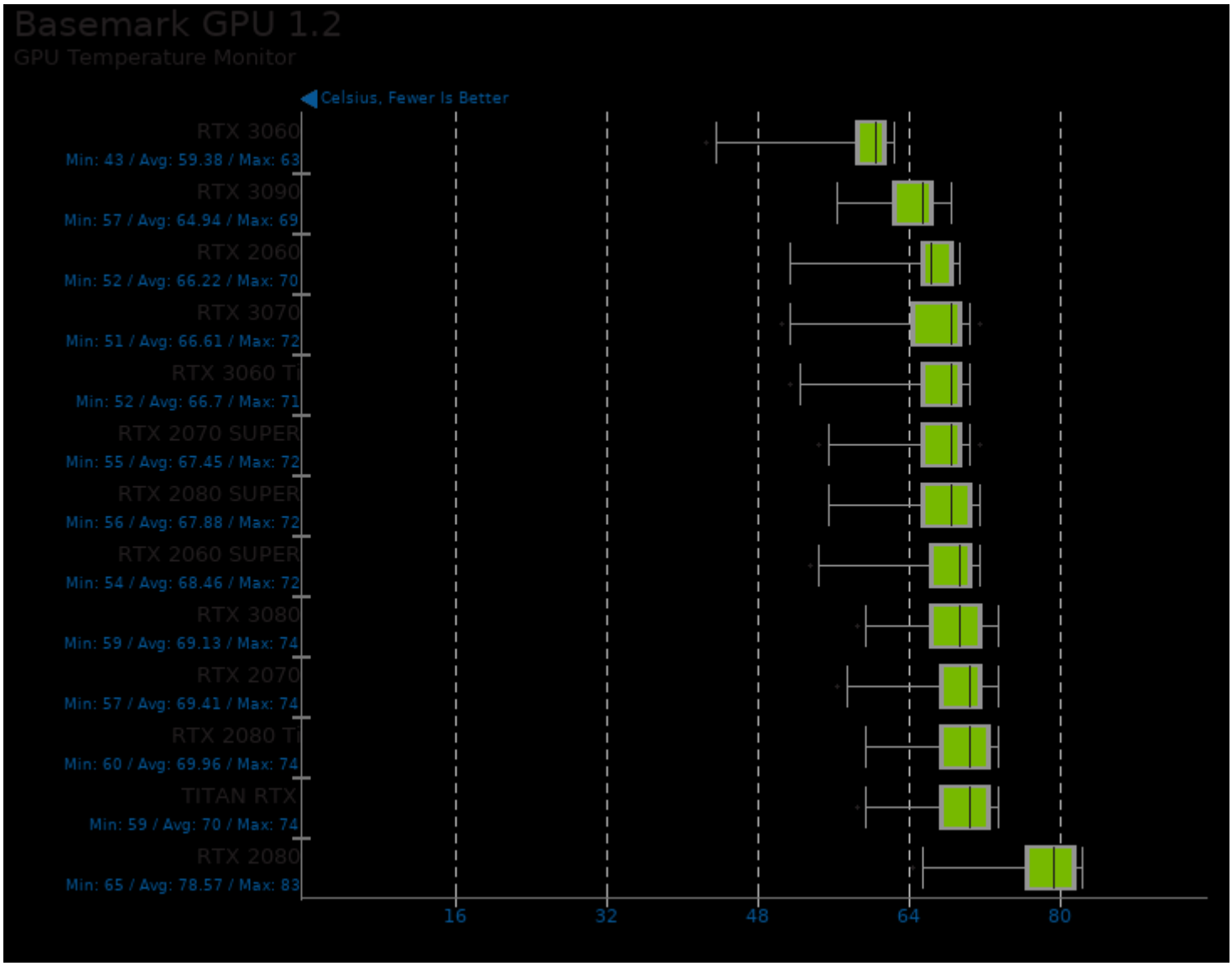
4K Linux Gaming April 2021

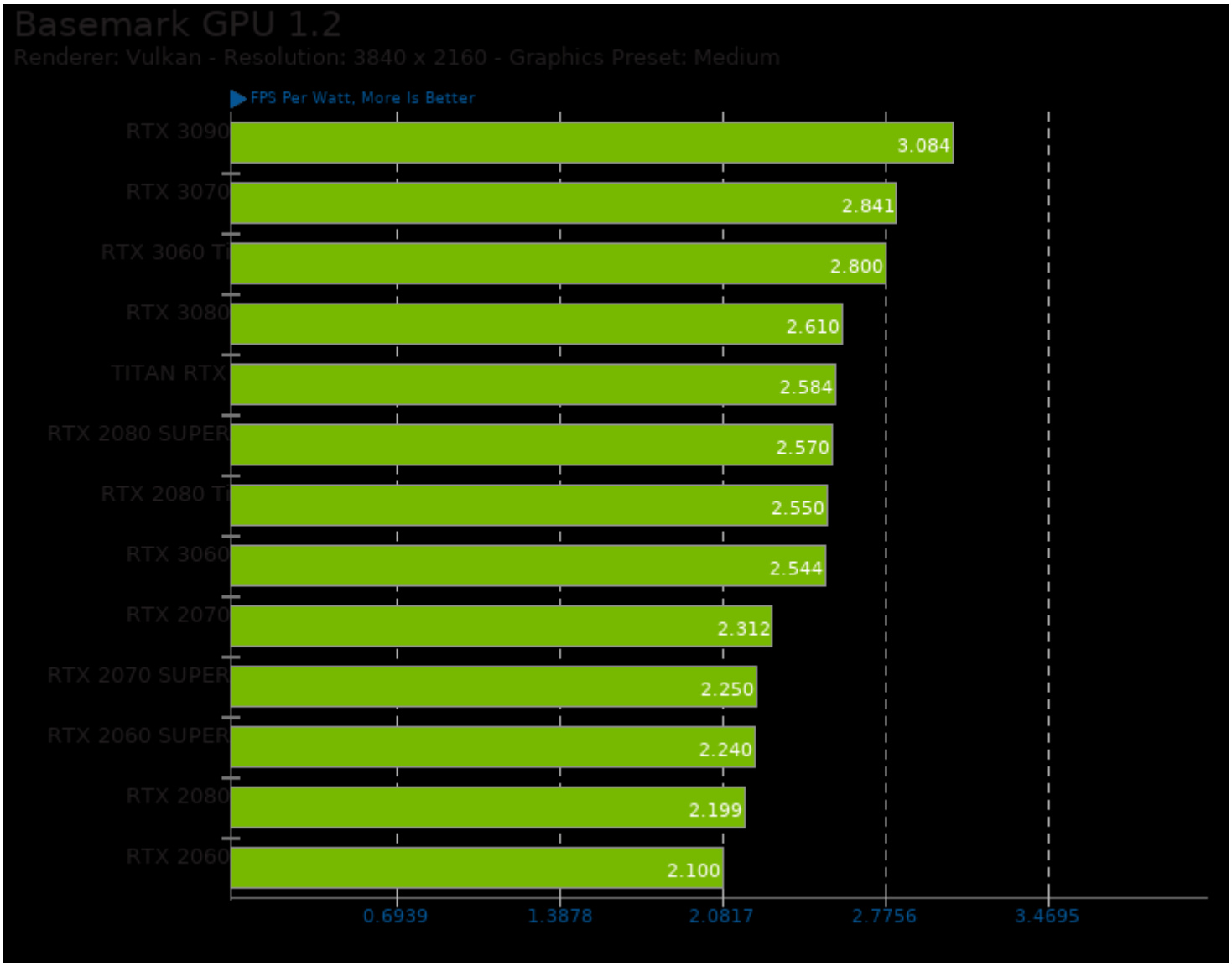


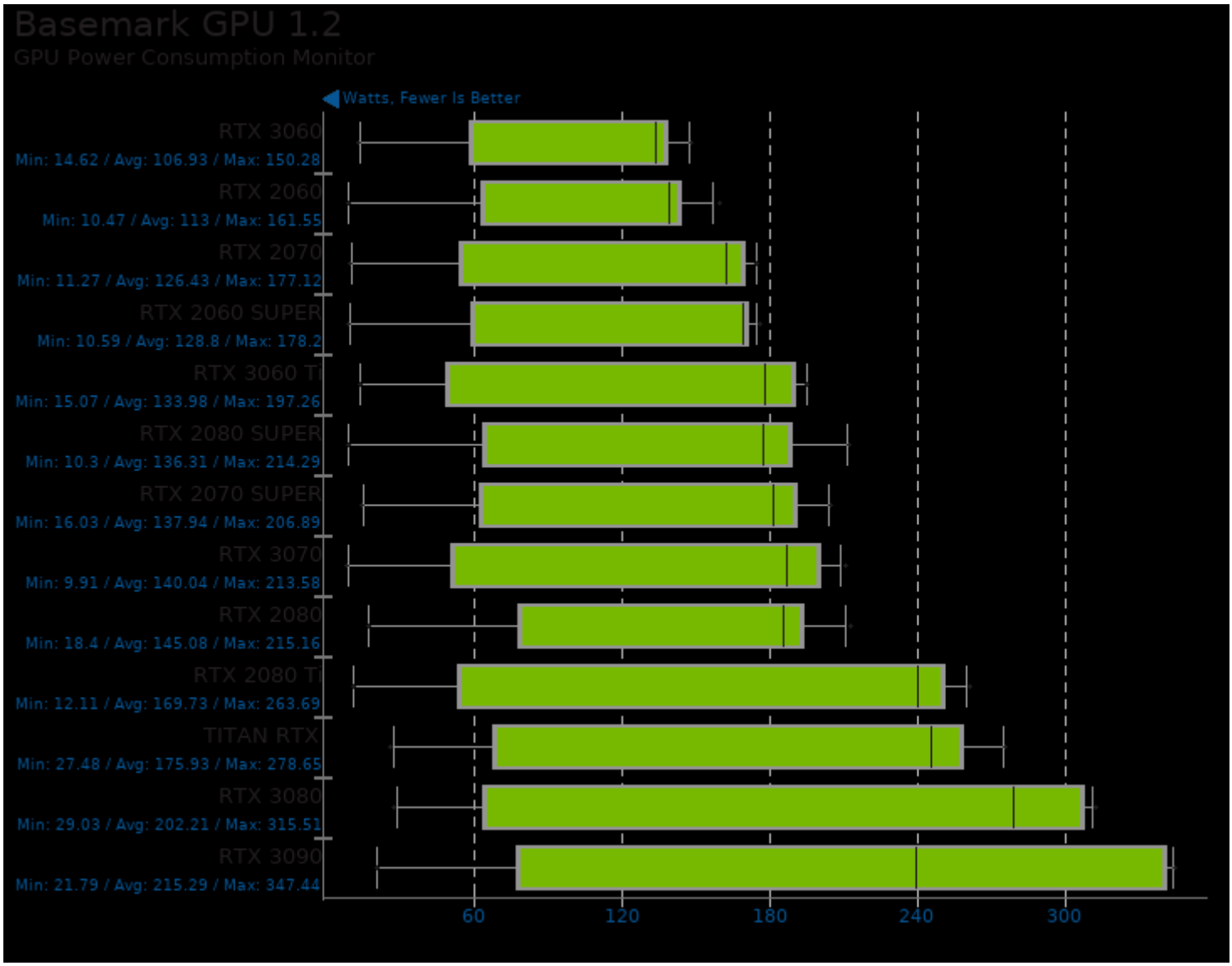

Unigine Superposition 1.0
GPU Temperature Monitor
Celsius, Fewer Is Better
RTX 3060
Min: 43 / Avg: 60.4 / Max: 65
RTX 2060
Min: 49 / Avg: 66.82 / Max: 71
RTX 3060 Ti
Min: 49 / Avg: 68.19 / Max: 73
RX 6800
Min: 58 / Avg: 68.66 / Max: 71
RTX 2060 SUPER
Min: 50 / Avg: 68.87 / Max: 73
RTX 3090
Min: 55 / Avg: 68.91 / Max: 72
RTX 3070
Min: 49 / Avg: 68.94 / Max: 73
RTX 2070 SUPER
Min: 53 / Avg: 69.73 / Max: 74
RTX 2070
Min: 53 / Avg: 70.92 / Max: 76
RX 5600 XT
Min: 49 / Avg: 71.38 / Max: 75
TITAN RTX
Min: 57 / Avg: 73.38 / Max: 78
RTX 3080
Min: 57 / Avg: 73.46 / Max: 78
RTX 2080 Ti
Min: 58 / Avg: 73.62 / Max: 78
RTX 2080 SUPER
Min: 57 / Avg: 73.72 / Max: 77
Radeon VII
Min: 60 / Avg: 74.21 / Max: 77
RX 6800 XT
Min: 64 / Avg: 75.3 / Max: 77
RX 5700 XT
Min: 57 / Avg: 77.29 / Max: 81
RX 6700 XT
Min: 56 / Avg: 77.3 / Max: 81
RTX 2080
Min: 59 / Avg: 79.19 / Max: 83
16
32
48
64
80

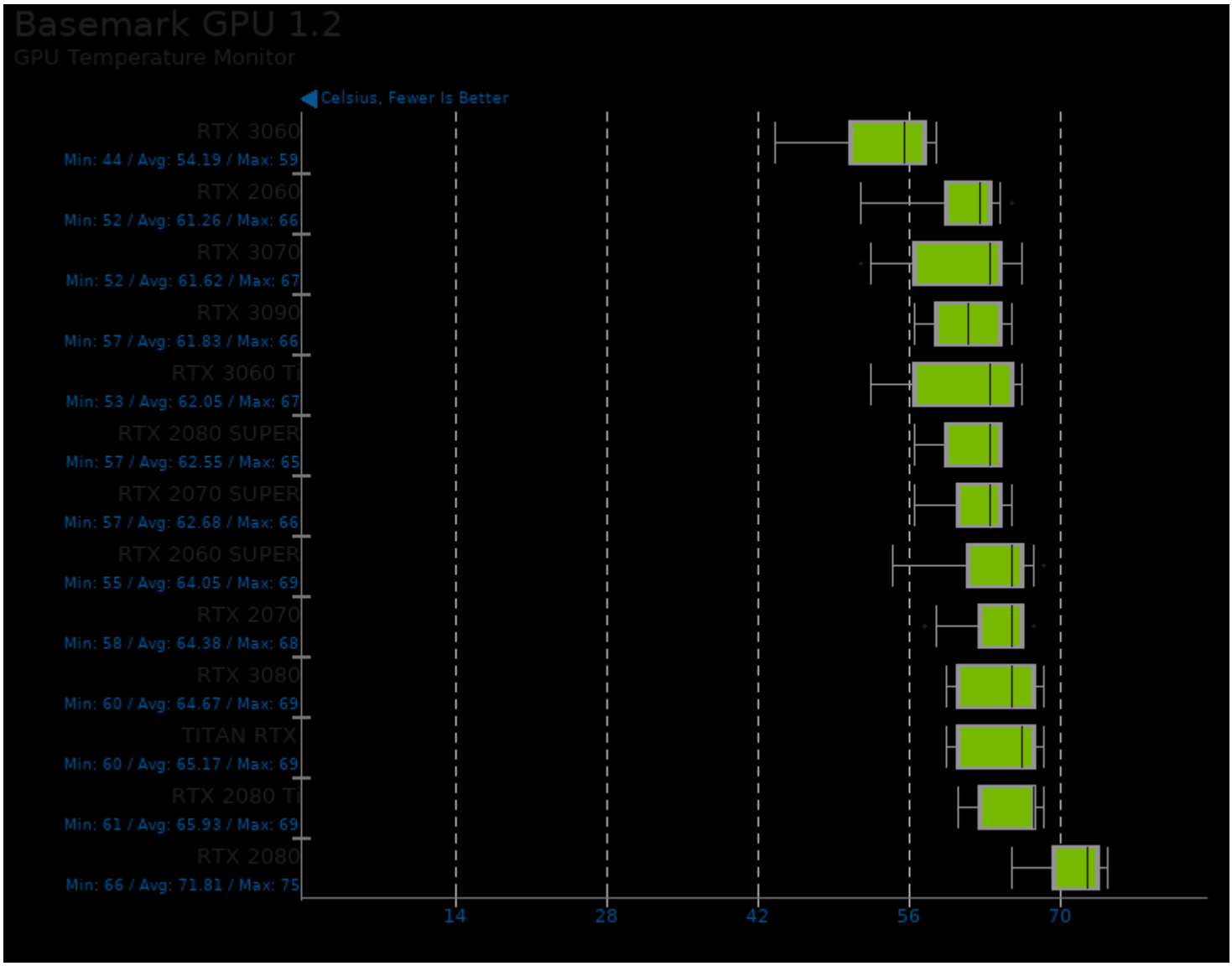

Basemark GPU 1.2
Renderer: Vulkan - Resolution: 3840 x 2160 - Graphics Preset: High
FPS Per Watt, More Is Better
RTX 3090
0.690
RTX 3070
0.618
RTX 3060 Ti
0.610
RTX 3080
0.590
RTX 2080 Ti
0.570
TITAN RTX
0.547
RTX 3060
0.543
RTX 2080 SUPER
0.520
RTX 2070
0.508
RTX 2060 SUPER
0.500
RTX 2080
0.476
RTX 2070 SUPER
0.470
RTX 2060
0.449
0.1553
0.3106
0.4659
0.6212
0.7765

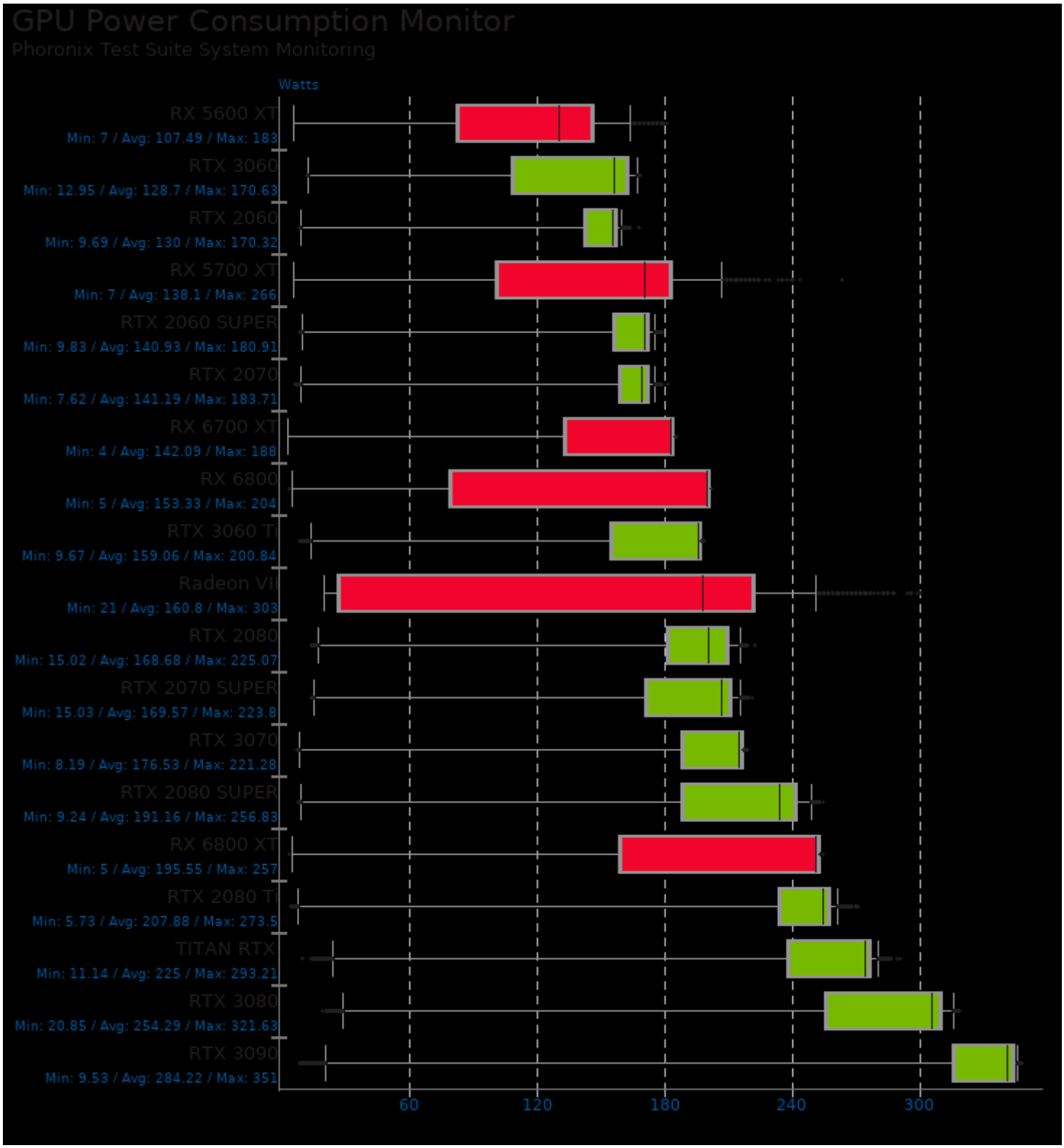

Basemark GPU 1.2
GPU Power Consumption Monitor
Watts, Fewer Is Better
RTX 3060
Min: 13.4 / Avg: 140.69 / Max: 161.09
RTX 2060
Min: 10.57 / Avg: 143.26 / Max: 162.31
RTX 2070
Min: 10.18 / Avg: 152.96 / Max: 178.42
RTX 2060 SUPER
Min: 10.62 / Avg: 154.56 / Max: 178.33
RTX 3060 Ti
Min: 14.92 / Avg: 169.77 / Max: 199.41
RTX 2070 SUPER
Min: 16.26 / Avg: 182.89 / Max: 217.18
RTX 3070
Min: 9.69 / Avg: 182.92 / Max: 219.01
RTX 2080
Min: 18.74 / Avg: 188.22 / Max: 221.08
RTX 2080 SUPER
Min: 10.18 / Avg: 191.39 / Max: 236.13
RTX 2080 Ti
Min: 9.39 / Avg: 215.51 / Max: 267.29
TITAN RTX
Min: 25.36 / Avg: 235.13 / Max: 284.41
RTX 3080
Min: 29.1 / Avg: 258.66 / Max: 318.28
RTX 3090
Min: 22.33 / Avg: 276.19 / Max: 348.5
60
120
180
240
300


Basemark GPU 1.2
GPU Temperature Monitor
Celsius, Fewer Is Better
RTX 3060
Min: 43 / Avg: 59.38 / Max: 63
RTX 3090
Min: 57 / Avg: 64.94 / Max: 69
RTX 2060
Min: 52 / Avg: 66.22 / Max: 70
RTX 3070
Min: 51 / Avg: 66.61 / Max: 72
RTX 3060 Ti
Min: 52 / Avg: 66.7 / Max: 71
RTX 2070 SUPER
Min: 55 / Avg: 67.45 / Max: 72
RTX 2080 SUPER
Min: 56 / Avg: 67.88 / Max: 72
RTX 2060 SUPER
Min: 54 / Avg: 68.46 / Max: 72
RTX 3080
Min: 59 / Avg: 69.13 / Max: 74
RTX 2070
Min: 57 / Avg: 69.41 / Max: 74
RTX 2080 Ti
Min: 60 / Avg: 69.96 / Max: 74
TITAN RTX
Min: 59 / Avg: 70 / Max: 74
RTX 2080
Min: 65 / Avg: 78.57 / Max: 83
16
32
48
64
80

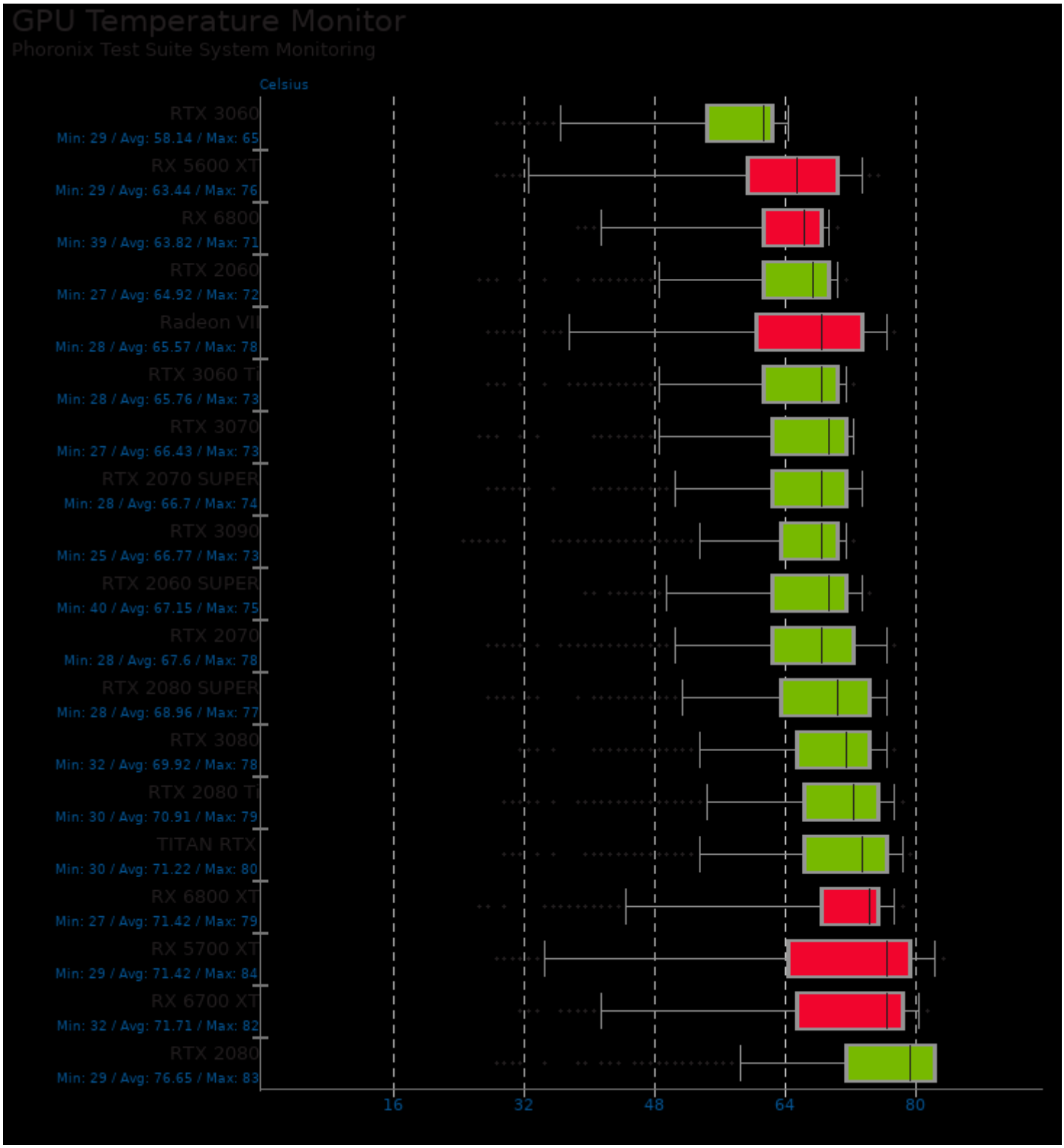

Basemark GPU 1.2
Renderer: Vulkan - Resolution: 3840 x 2160 - Graphics Preset: Medium
FPS Per Watt, More Is Better
RTX 3090
3.084
RTX 3070
2.841
RTX 3060 Ti
2.800
RTX 3080
2.610
TITAN RTX
2.584
RTX 2080 SUPER
2.570
RTX 2080 Ti
2.550
RTX 3060
2.544
RTX 2070
2.312
RTX 2070 SUPER
2.250
RTX 2060 SUPER
2.240
RTX 2080
2.199
RTX 2060
2.100
0.6939
1.3878
2.0817
2.7756
3.4695

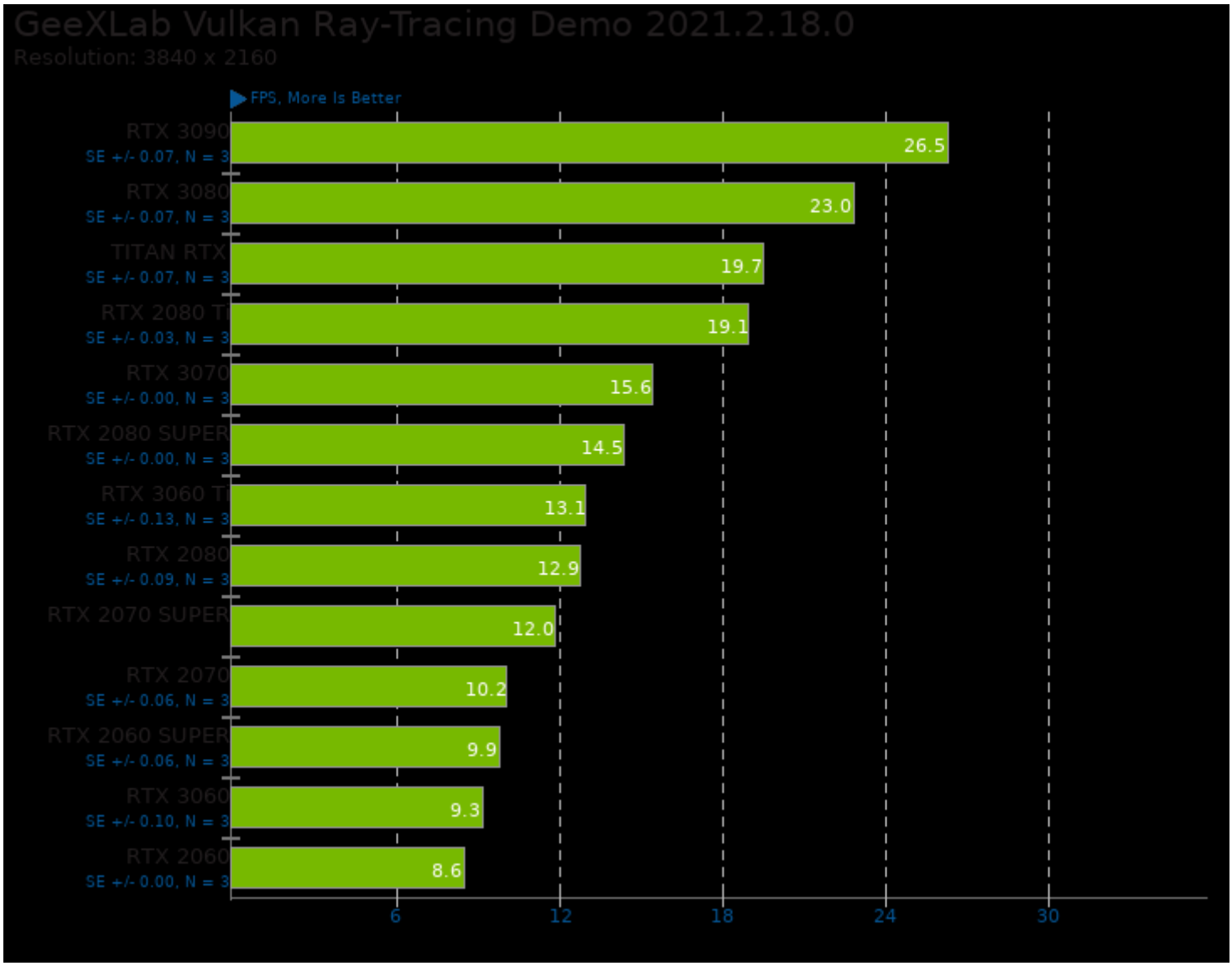

Basemark GPU 1.2
GPU Power Consumption Monitor
Watts, Fewer Is Better
RTX 3060
Min: 14.62 / Avg: 106.93 / Max: 150.28
RTX 2060
Min: 10.47 / Avg: 113 / Max: 161.55
RTX 2070
Min: 11.27 / Avg: 126.43 / Max: 177.12
RTX 2060 SUPER
Min: 10.59 / Avg: 128.8 / Max: 178.2
RTX 3060 Ti
Min: 15.07 / Avg: 133.98 / Max: 197.26
RTX 2080 SUPER
Min: 10.3 / Avg: 136.31 / Max: 214.29
RTX 2070 SUPER
Min: 16.03 / Avg: 137.94 / Max: 206.89
RTX 3070
Min: 9.91 / Avg: 140.04 / Max: 213.58
RTX 2080
Min: 18.4 / Avg: 145.08 / Max: 215.16
RTX 2080 Ti
Min: 12.11 / Avg: 169.73 / Max: 263.69
TITAN RTX
Min: 27.48 / Avg: 175.93 / Max: 278.65
RTX 3080
Min: 29.03 / Avg: 202.21 / Max: 315.51
RTX 3090
Min: 21.79 / Avg: 215.29 / Max: 347.44
60
120
180
240
300

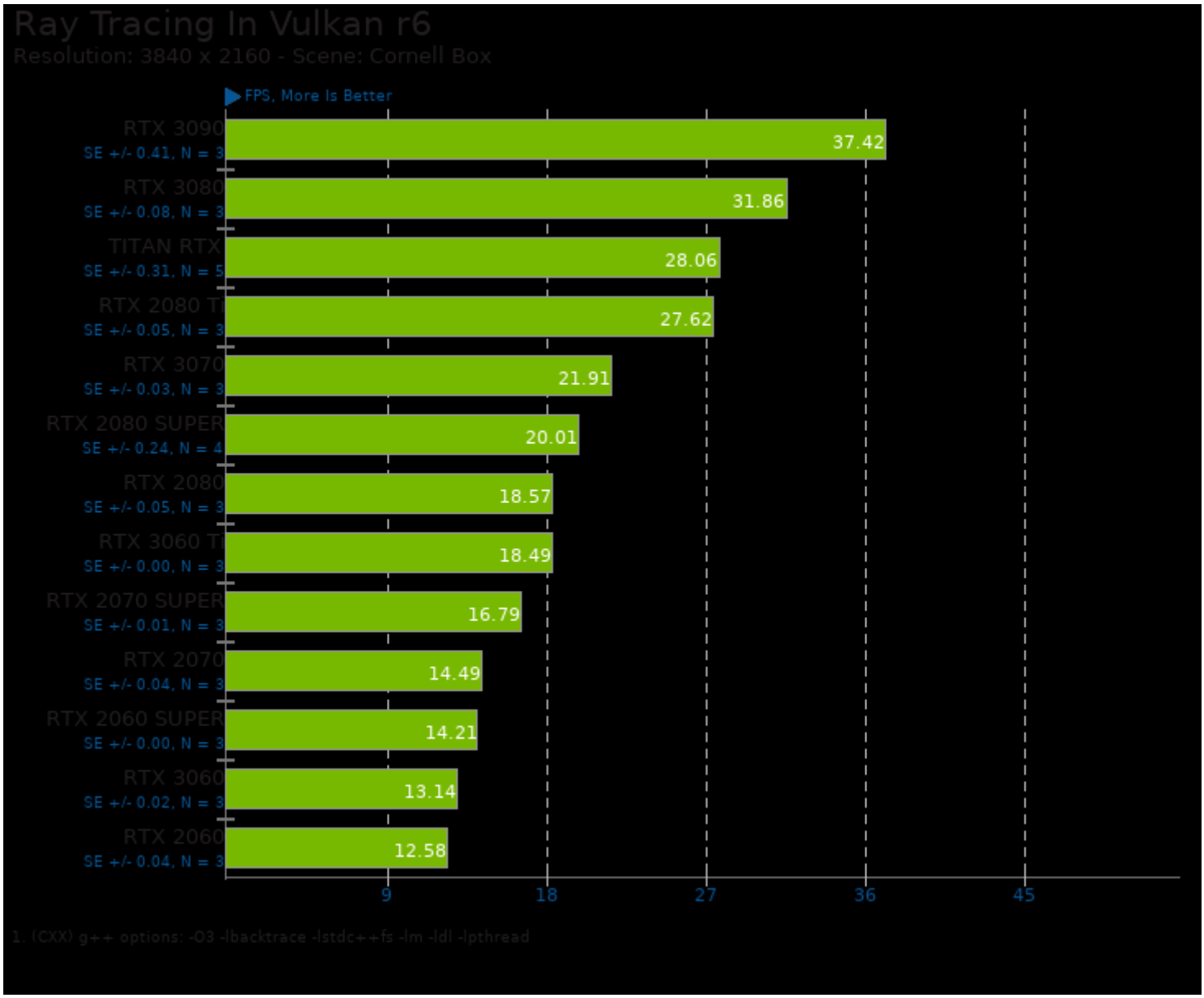

Basemark GPU 1.2
GPU Temperature Monitor
Celsius, Fewer Is Better
RTX 3060
Min: 44 / Avg: 54.19 / Max: 59
RTX 2060
Min: 52 / Avg: 61.26 / Max: 66
RTX 3070
Min: 52 / Avg: 61.62 / Max: 67
RTX 3090
Min: 57 / Avg: 61.83 / Max: 66
RTX 3060 Ti
Min: 53 / Avg: 62.05 / Max: 67
RTX 2080 SUPER
Min: 57 / Avg: 62.55 / Max: 65
RTX 2070 SUPER
Min: 57 / Avg: 62.68 / Max: 66
RTX 2060 SUPER
Min: 55 / Avg: 64.05 / Max: 69
RTX 2070
Min: 58 / Avg: 64.38 / Max: 68
RTX 3080
Min: 60 / Avg: 64.67 / Max: 69
TITAN RTX
Min: 60 / Avg: 65.17 / Max: 69
RTX 2080 Ti
Min: 61 / Avg: 65.93 / Max: 69
RTX 2080
Min: 66 / Avg: 71.81 / Max: 75
14
28
42
56
70

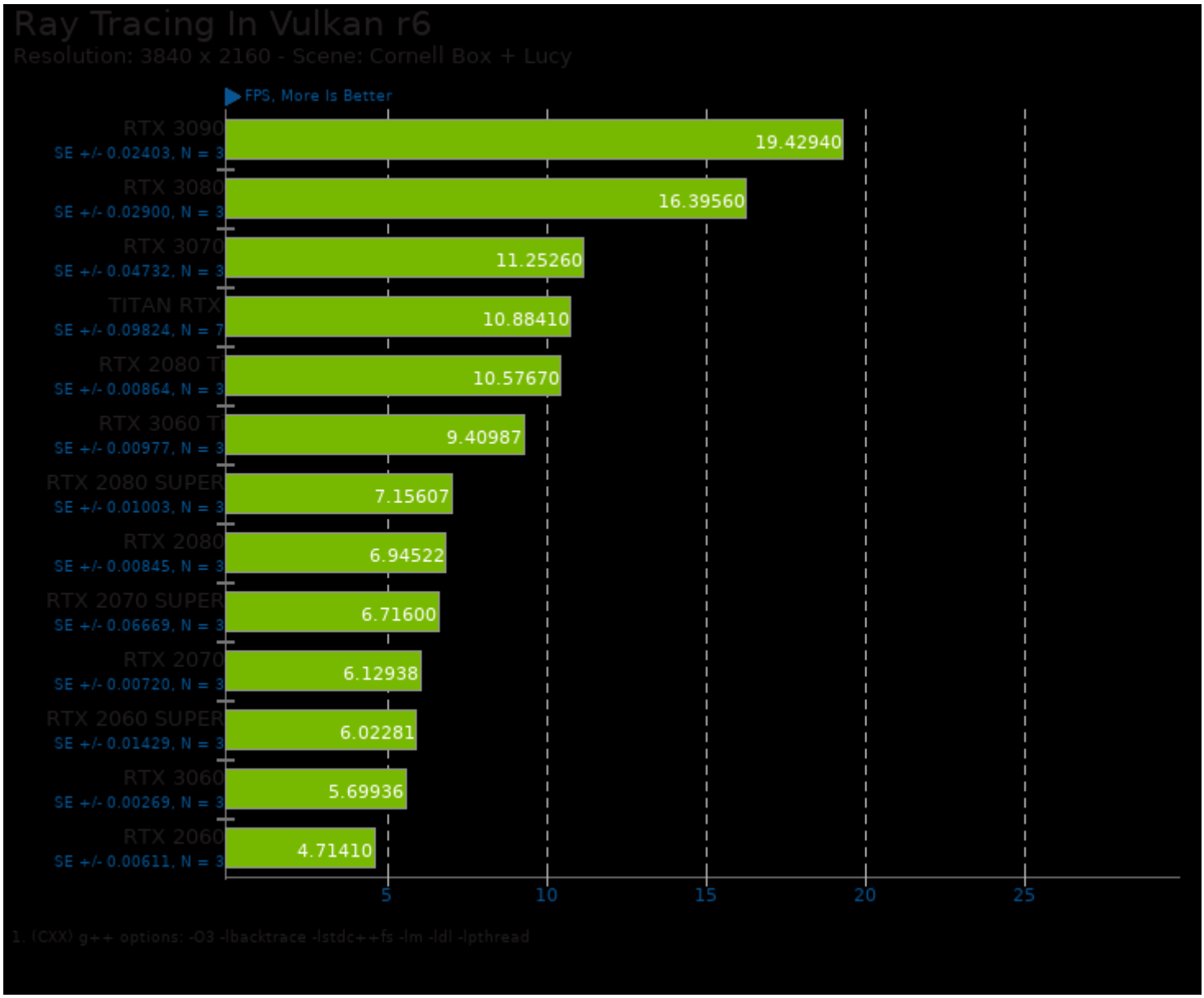

GPU Power Consumption Monitor
Phoronix Test Suite System Monitoring
Watts
RX 5600 XT
Min: 7 / Avg: 107.49 / Max: 183
RTX 3060
Min: 12.95 / Avg: 128.7 / Max: 170.63
RTX 2060
Min: 9.69 / Avg: 130 / Max: 170.32
RX 5700 XT
Min: 7 / Avg: 138.1 / Max: 266
RTX 2060 SUPER
Min: 9.83 / Avg: 140.93 / Max: 180.91
RTX 2070
Min: 7.62 / Avg: 141.19 / Max: 183.71
RX 6700 XT
Min: 4 / Avg: 142.09 / Max: 188
RX 6800
Min: 5 / Avg: 153.33 / Max: 204
RTX 3060 Ti
Min: 9.67 / Avg: 159.06 / Max: 200.84
Radeon VII
Min: 21 / Avg: 160.8 / Max: 303
RTX 2080
Min: 15.02 / Avg: 168.68 / Max: 225.07
RTX 2070 SUPER
Min: 15.03 / Avg: 169.57 / Max: 223.8
RTX 3070
Min: 8.19 / Avg: 176.53 / Max: 221.28
RTX 2080 SUPER
Min: 9.24 / Avg: 191.16 / Max: 256.83
RX 6800 XT
Min: 5 / Avg: 195.55 / Max: 257
RTX 2080 Ti
Min: 5.73 / Avg: 207.88 / Max: 273.5
TITAN RTX
Min: 11.14 / Avg: 225 / Max: 293.21
RTX 3080
Min: 20.85 / Avg: 254.29 / Max: 321.63
RTX 3090
Min: 9.53 / Avg: 284.22 / Max: 351
60
120
180
240
300

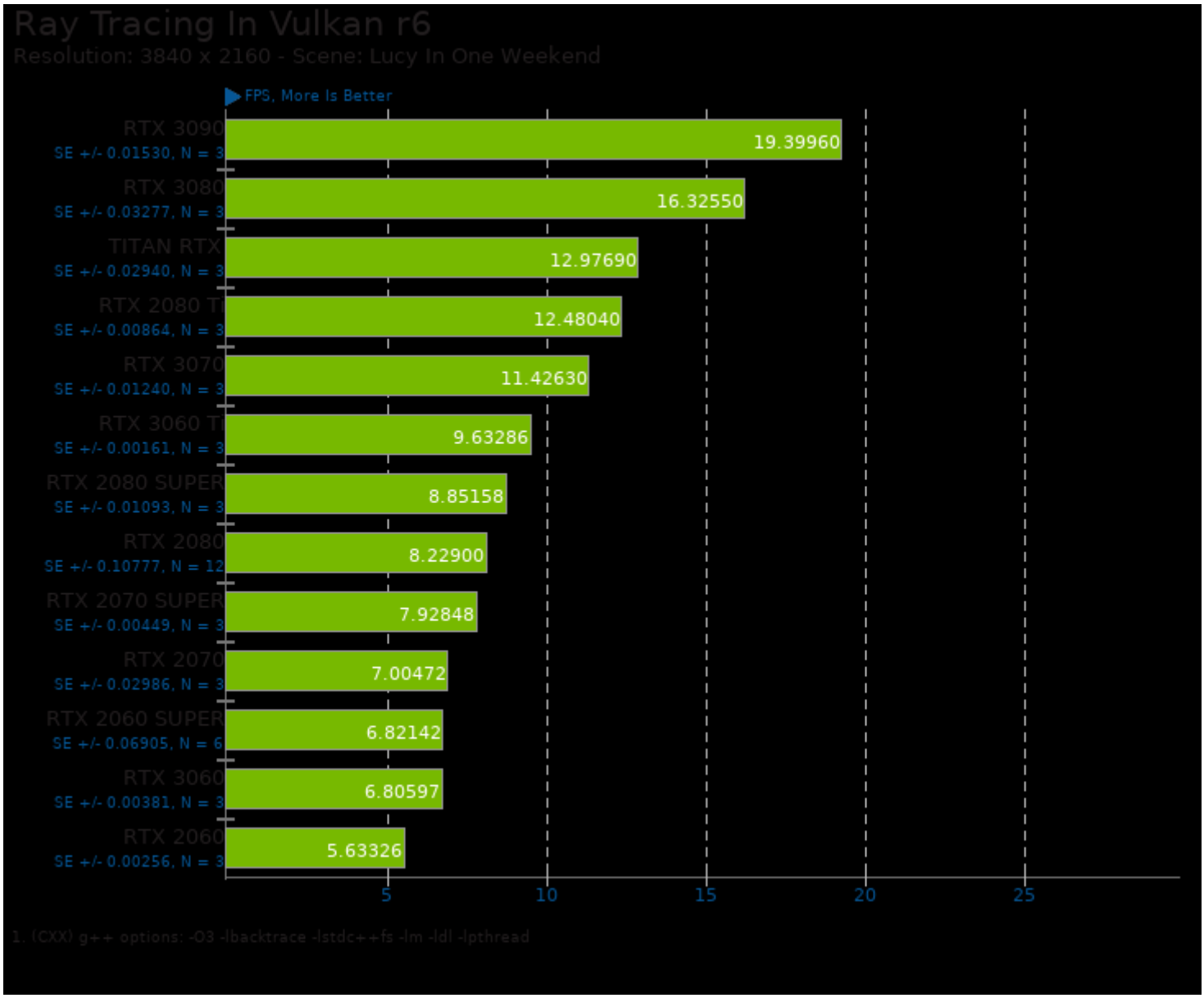
4K Linux Gaming April 2021

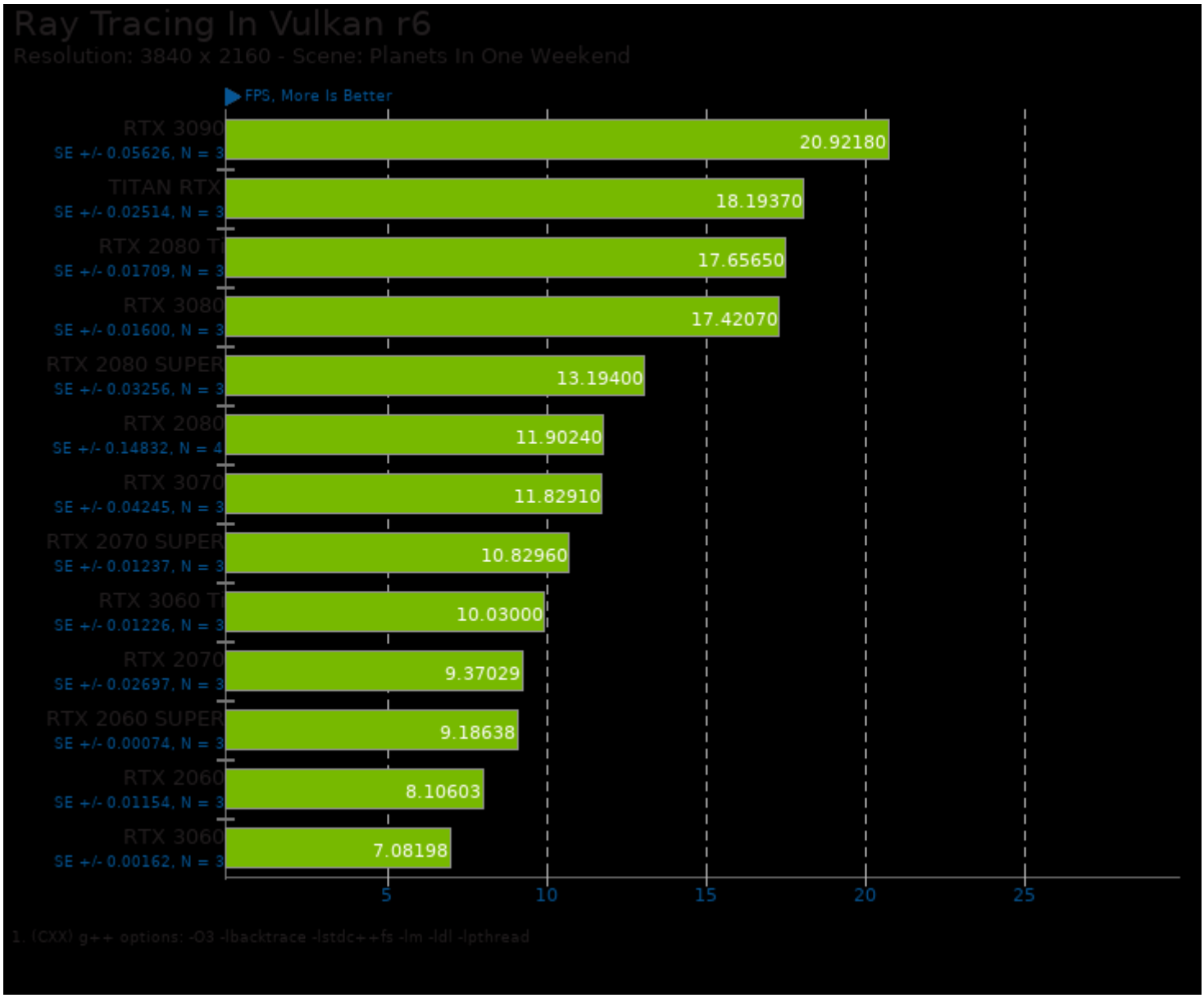


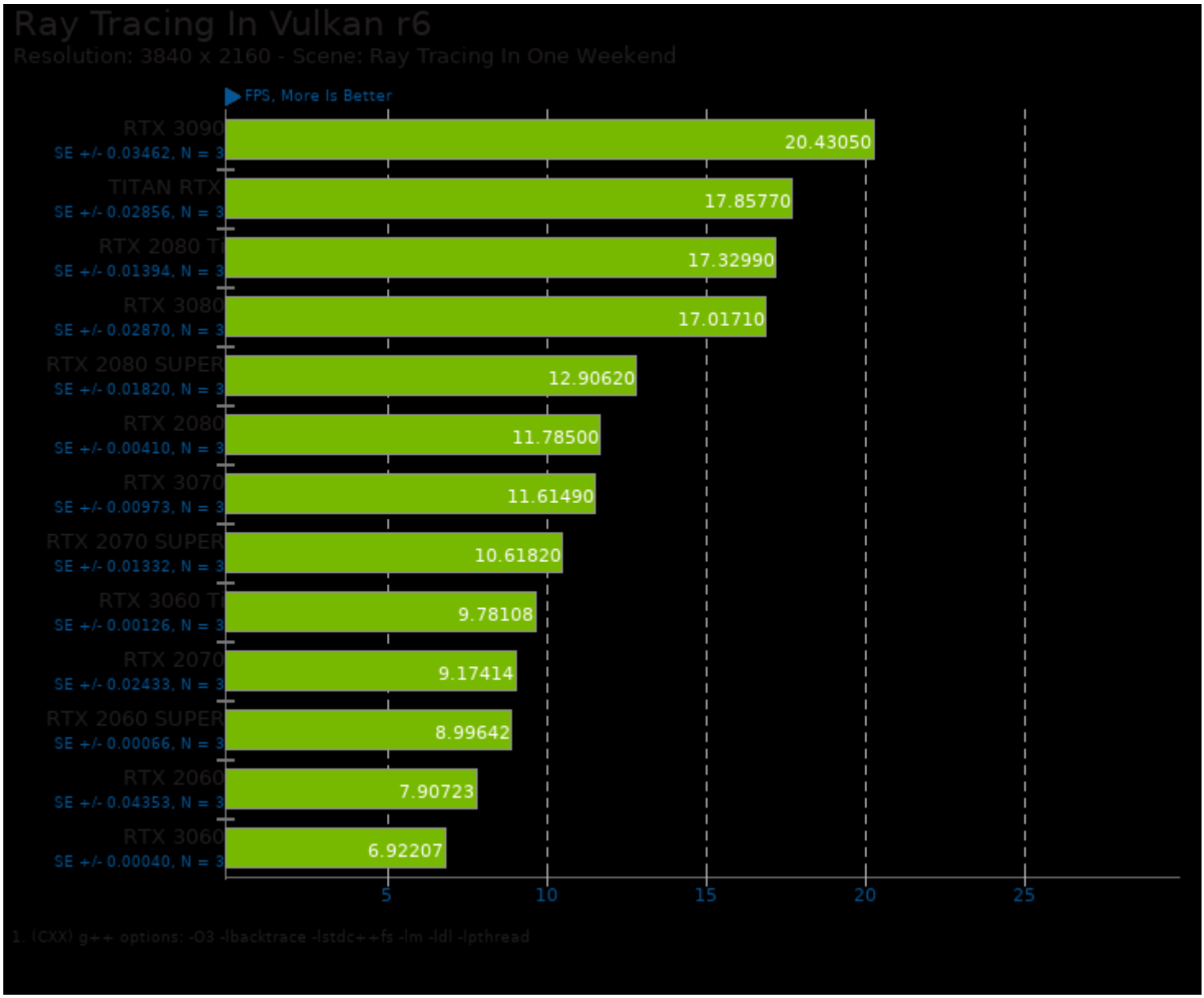

GeeXLab Vulkan Ray-Tracing Demo 2021.2.18.0
Resolution: 3840 x 2160
FPS, More Is Better
RTX 3090
SE +/- 0.07, N = 3
26.5
RTX 3080
SE +/- 0.07, N = 3
23.0
TITAN RTX
SE +/- 0.07, N = 3
19.7
RTX 2080 Ti
SE +/- 0.03, N = 3
19.1
RTX 3070
SE +/- 0.00, N = 3
15.6
RTX 2080 SUPER
SE +/- 0.00, N = 3
14.5
RTX 3060 Ti
SE +/- 0.13, N = 3
13.1
RTX 2080
SE +/- 0.09, N = 3
12.9
RTX 2070 SUPER
12.0
RTX 2070
SE +/- 0.06, N = 3
10.2
RTX 2060 SUPER
SE +/- 0.06, N = 3
9.9
RTX 3060
SE +/- 0.10, N = 3
9.3
RTX 2060
SE +/- 0.00, N = 3
8.6
6
12
18
24
30

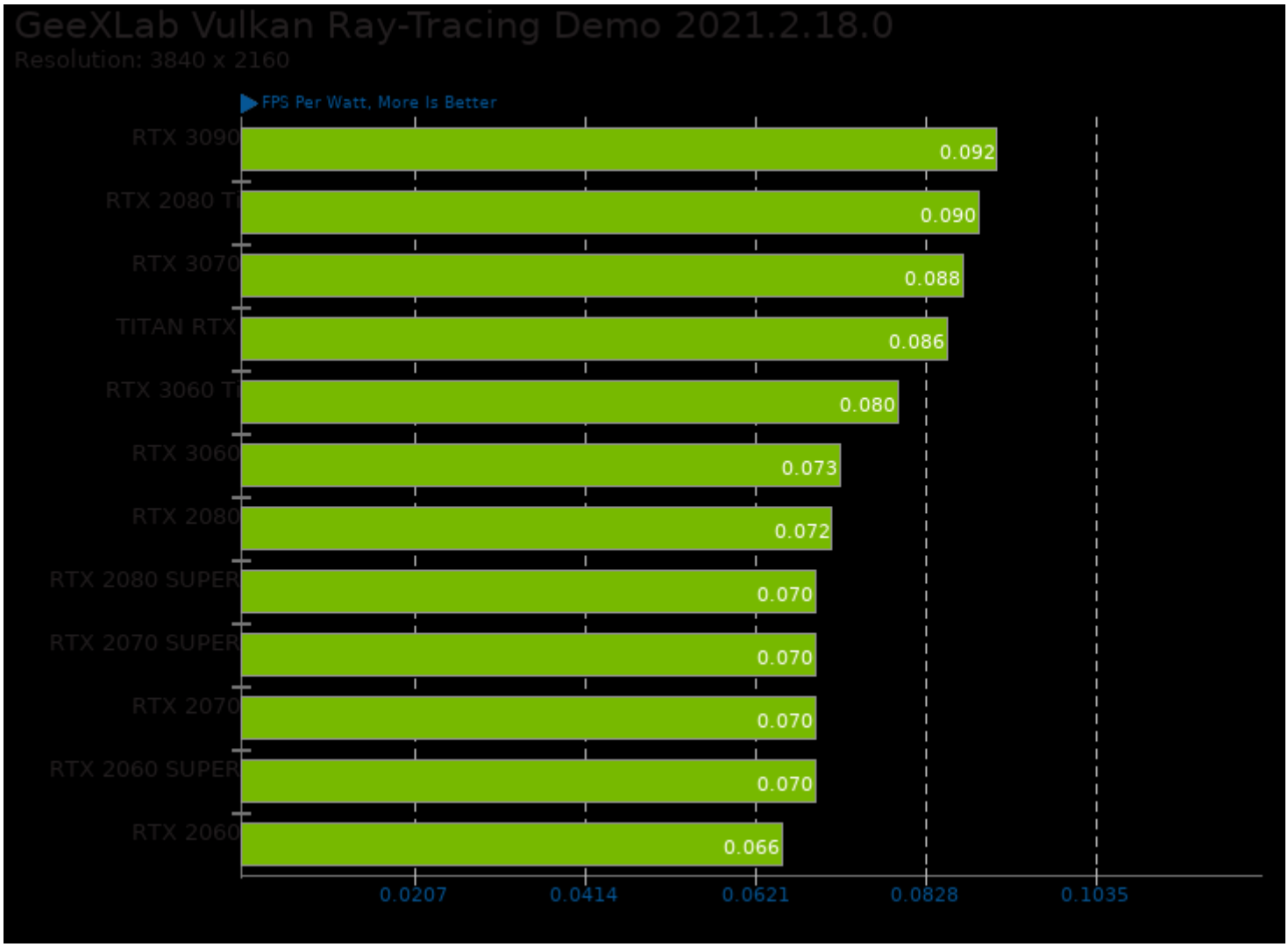

Ray Tracing In Vulkan r6
Resolution: 3840 x 2160 - Scene: Cornell Box
FPS, More Is Better
RTX 3090
SE +/- 0.41, N = 3
37.42
RTX 3080
SE +/- 0.08, N = 3
31.86
TITAN RTX
SE +/- 0.31, N = 5
28.06
RTX 2080 Ti
SE +/- 0.05, N = 3
27.62
RTX 3070
SE +/- 0.03, N = 3
21.91
RTX 2080 SUPER
SE +/- 0.24, N = 4
20.01
RTX 2080
SE +/- 0.05, N = 3
18.57
RTX 3060 Ti
SE +/- 0.00, N = 3
18.49
RTX 2070 SUPER
SE +/- 0.01, N = 3
16.79
RTX 2070
SE +/- 0.04, N = 3
14.49
RTX 2060 SUPER
SE +/- 0.00, N = 3
14.21
RTX 3060
SE +/- 0.02, N = 3
13.14
RTX 2060
SE +/- 0.04, N = 3
12.58
9
18
27
36
45
1. (CXX) g++ options: -O3 -lbacktrace -lstdc++fs -lm -ldl -lpthread

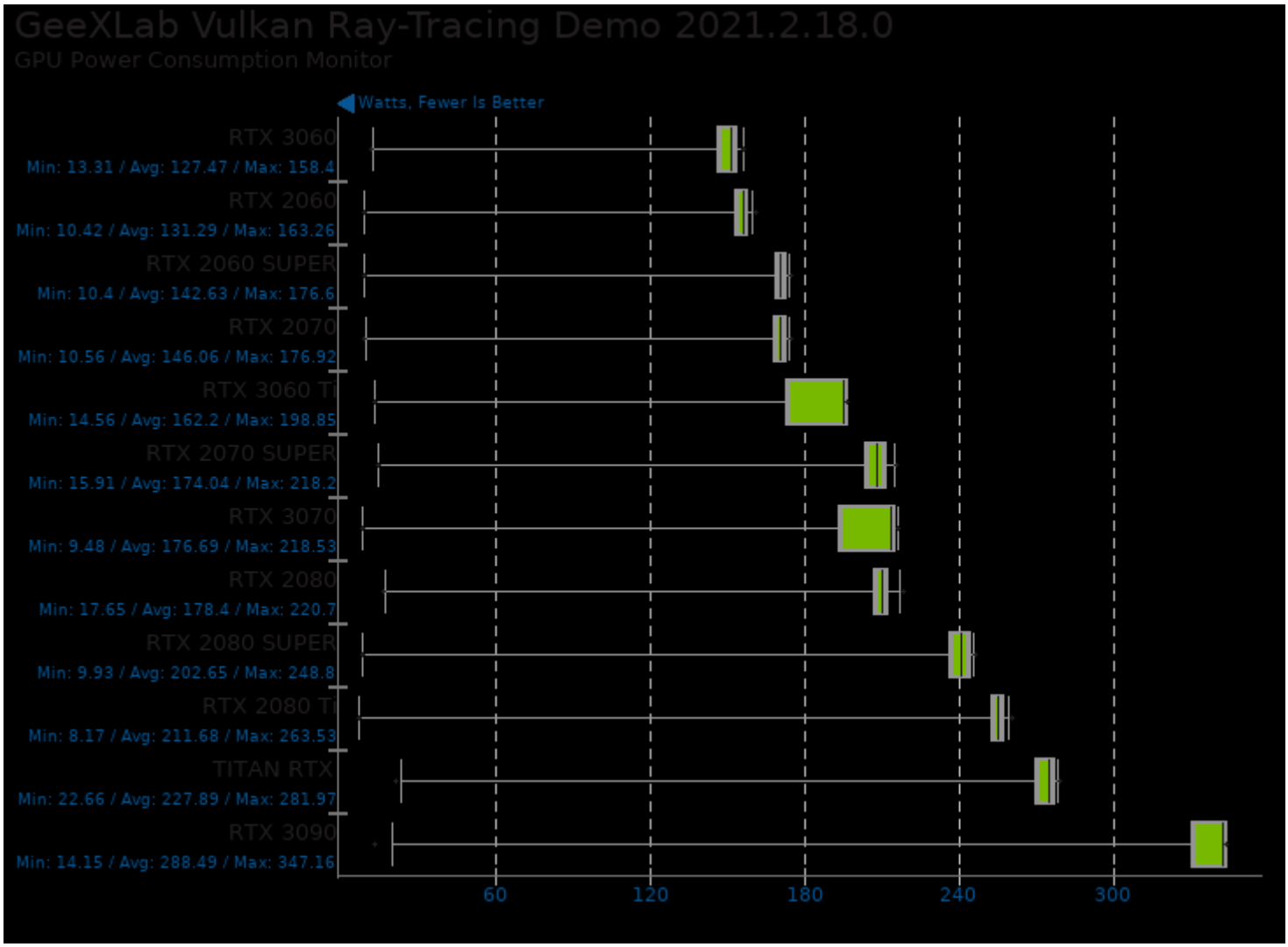

Ray Tracing In Vulkan r6
Resolution: 3840 x 2160 - Scene: Cornell Box + Lucy
FPS, More Is Better
RTX 3090
SE +/- 0.02403, N = 3
19.42940
RTX 3080
SE +/- 0.02900, N = 3
16.39560
RTX 3070
SE +/- 0.04732, N = 3
11.25260
TITAN RTX
SE +/- 0.09824, N = 7
10.88410
RTX 2080 Ti
SE +/- 0.00864, N = 3
10.57670
RTX 3060 Ti
SE +/- 0.00977, N = 3
9.40987
RTX 2080 SUPER
SE +/- 0.01003, N = 3
7.15607
RTX 2080
SE +/- 0.00845, N = 3
6.94522
RTX 2070 SUPER
SE +/- 0.06669, N = 3
6.71600
RTX 2070
SE +/- 0.00720, N = 3
6.12938
RTX 2060 SUPER
SE +/- 0.01429, N = 3
6.02281
RTX 3060
SE +/- 0.00269, N = 3
5.69936
RTX 2060
SE +/- 0.00611, N = 3
4.71410
5
10
15
20
25
1. (CXX) g++ options: -O3 -lbacktrace -lstdc++fs -lm -ldl -lpthread

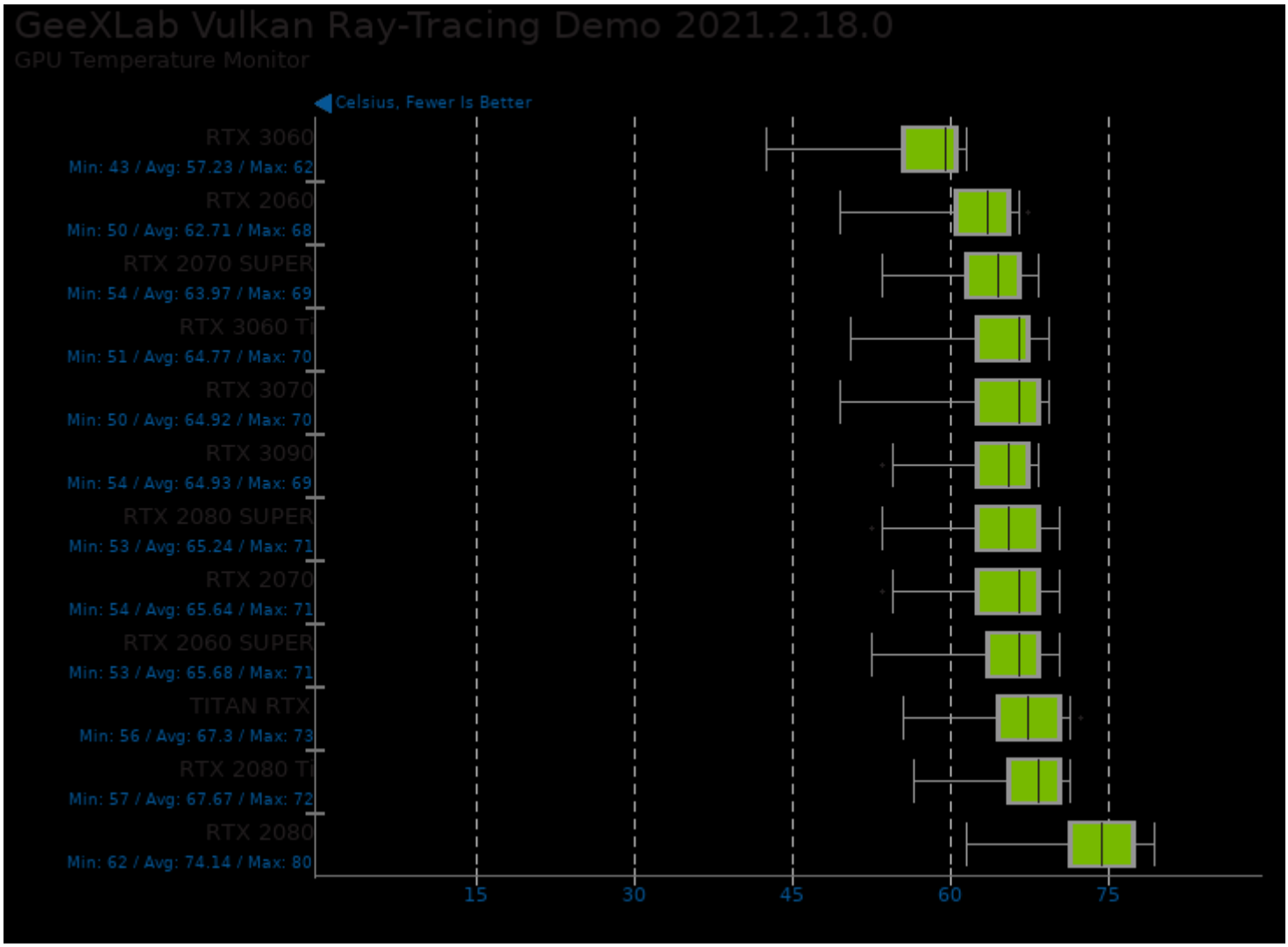

Ray Tracing In Vulkan r6
Resolution: 3840 x 2160 - Scene: Lucy In One Weekend
FPS, More Is Better
RTX 3090
SE +/- 0.01530, N = 3
19.39960
RTX 3080
SE +/- 0.03277, N = 3
16.32550
TITAN RTX
SE +/- 0.02940, N = 3
12.97690
RTX 2080 Ti
SE +/- 0.00864, N = 3
12.48040
RTX 3070
SE +/- 0.01240, N = 3
11.42630
RTX 3060 Ti
SE +/- 0.00161, N = 3
9.63286
RTX 2080 SUPER
SE +/- 0.01093, N = 3
8.85158
RTX 2080
SE +/- 0.10777, N = 12
8.22900
RTX 2070 SUPER
SE +/- 0.00449, N = 3
7.92848
RTX 2070
SE +/- 0.02986, N = 3
7.00472
RTX 2060 SUPER
SE +/- 0.06905, N = 6
6.82142
RTX 3060
SE +/- 0.00381, N = 3
6.80597
RTX 2060
SE +/- 0.00256, N = 3
5.63326
5
10
15
20
25
1. (CXX) g++ options: -O3 -lbacktrace -lstdc++fs -lm -ldl -lpthread

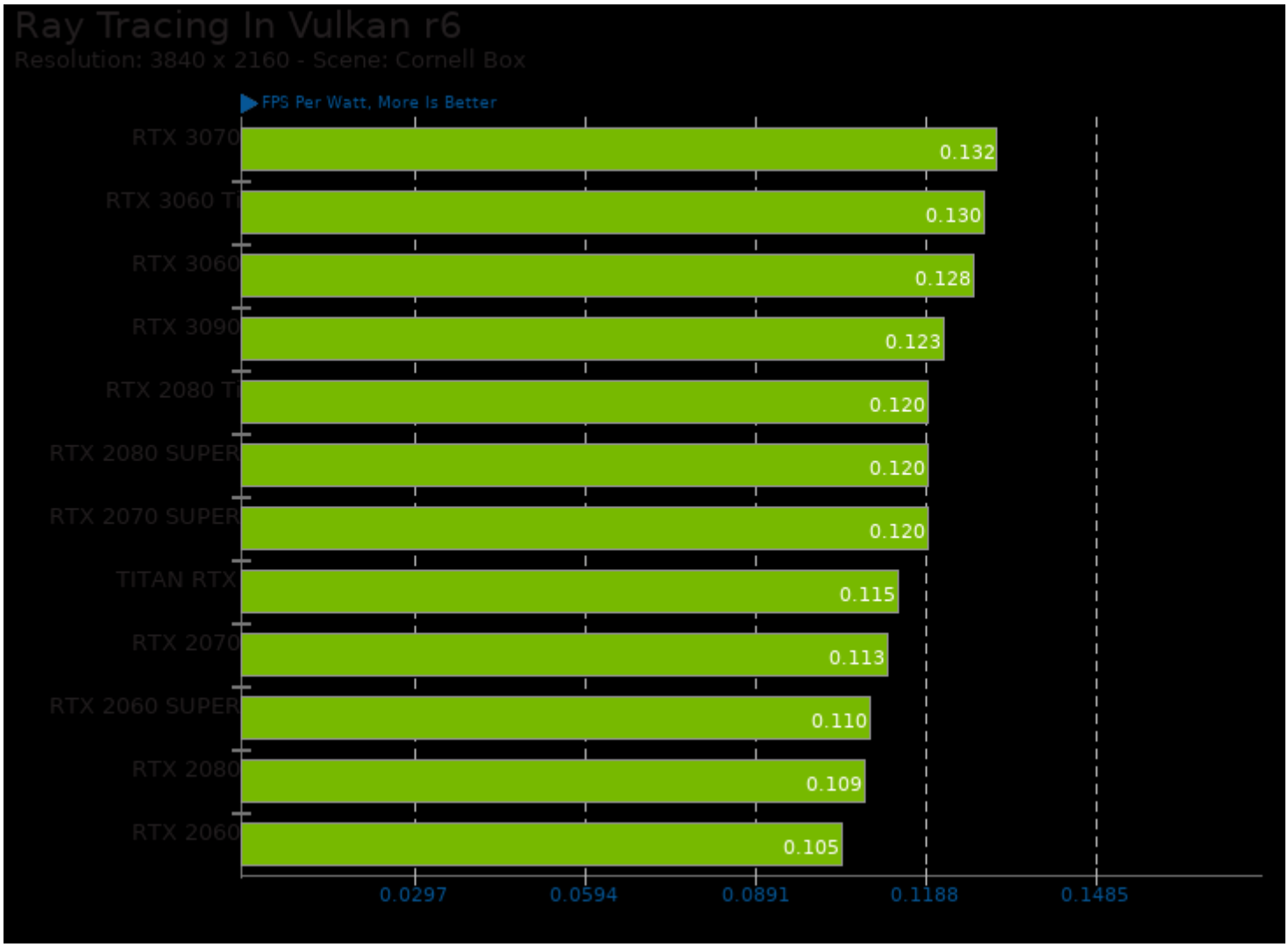

Ray Tracing In Vulkan r6
Resolution: 3840 x 2160 - Scene: Planets In One Weekend
FPS, More Is Better
RTX 3090
SE +/- 0.05626, N = 3
20.92180
TITAN RTX
SE +/- 0.02514, N = 3
18.19370
RTX 2080 Ti
SE +/- 0.01709, N = 3
17.65650
RTX 3080
SE +/- 0.01600, N = 3
17.42070
RTX 2080 SUPER
SE +/- 0.03256, N = 3
13.19400
RTX 2080
SE +/- 0.14832, N = 4
11.90240
RTX 3070
SE +/- 0.04245, N = 3
11.82910
RTX 2070 SUPER
SE +/- 0.01237, N = 3
10.82960
RTX 3060 Ti
SE +/- 0.01226, N = 3
10.03000
RTX 2070
SE +/- 0.02697, N = 3
9.37029
RTX 2060 SUPER
SE +/- 0.00074, N = 3
9.18638
RTX 2060
SE +/- 0.01154, N = 3
8.10603
RTX 3060
SE +/- 0.00162, N = 3
7.08198
5
10
15
20
25
1. (CXX) g++ options: -O3 -lbacktrace -lstdc++fs -lm -ldl -lpthread

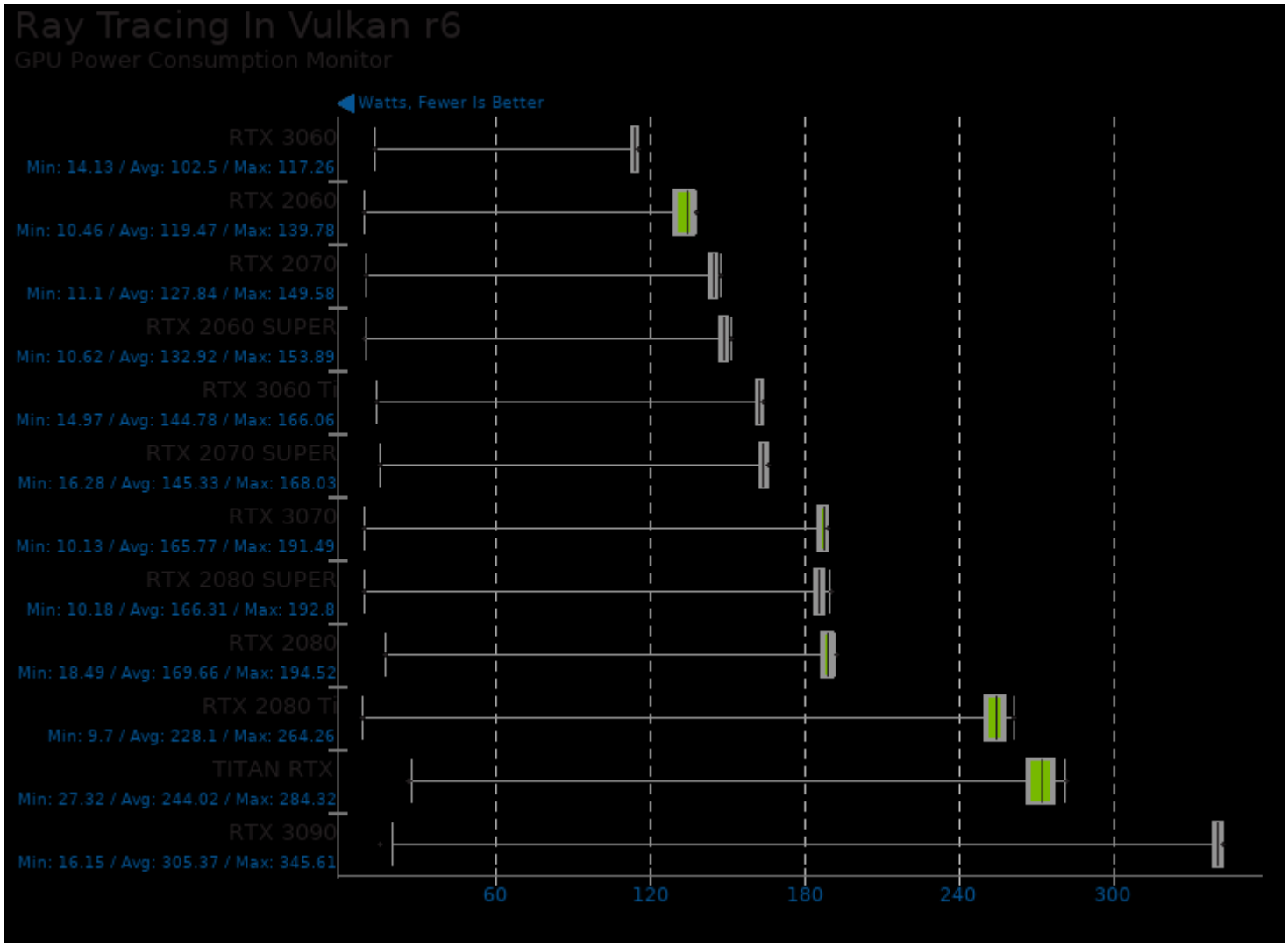

Ray Tracing In Vulkan r6
Resolution: 3840 x 2160 - Scene: Ray Tracing In One Weekend
FPS, More Is Better
RTX 3090
SE +/- 0.03462, N = 3
20.43050
TITAN RTX
SE +/- 0.02856, N = 3
17.85770
RTX 2080 Ti
SE +/- 0.01394, N = 3
17.32990
RTX 3080
SE +/- 0.02870, N = 3
17.01710
RTX 2080 SUPER
SE +/- 0.01820, N = 3
12.90620
RTX 2080
SE +/- 0.00410, N = 3
11.78500
RTX 3070
SE +/- 0.00973, N = 3
11.61490
RTX 2070 SUPER
SE +/- 0.01332, N = 3
10.61820
RTX 3060 Ti
SE +/- 0.00126, N = 3
9.78108
RTX 2070
SE +/- 0.02433, N = 3
9.17414
RTX 2060 SUPER
SE +/- 0.00066, N = 3
8.99642
RTX 2060
SE +/- 0.04353, N = 3
7.90723
RTX 3060
SE +/- 0.00040, N = 3
6.92207
5
10
15
20
25
1. (CXX) g++ options: -O3 -lbacktrace -lstdc++fs -lm -ldl -lpthread

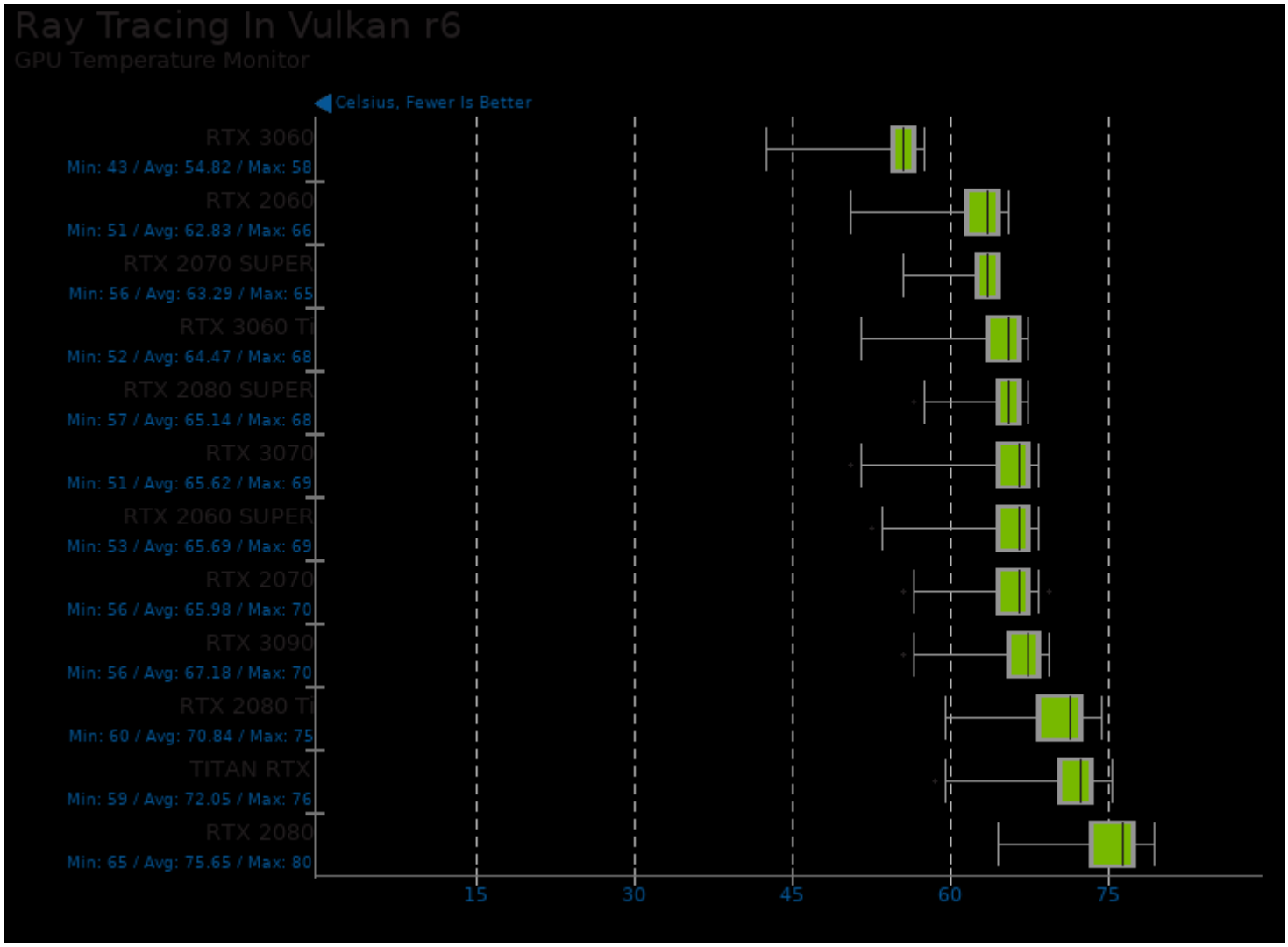

GeeXLab Vulkan Ray-Tracing Demo 2021.2.18.0
Resolution: 3840 x 2160
FPS Per Watt, More Is Better
RTX 3090
0.092
RTX 2080 Ti
0.090
RTX 3070
0.088
TITAN RTX
0.086
RTX 3060 Ti
0.080
RTX 3060
0.073
RTX 2080
0.072
RTX 2080 SUPER
0.070
RTX 2070 SUPER
0.070
RTX 2070
0.070
RTX 2060 SUPER
0.070
RTX 2060
0.066
0.0207
0.0414
0.0621
0.0828
0.1035

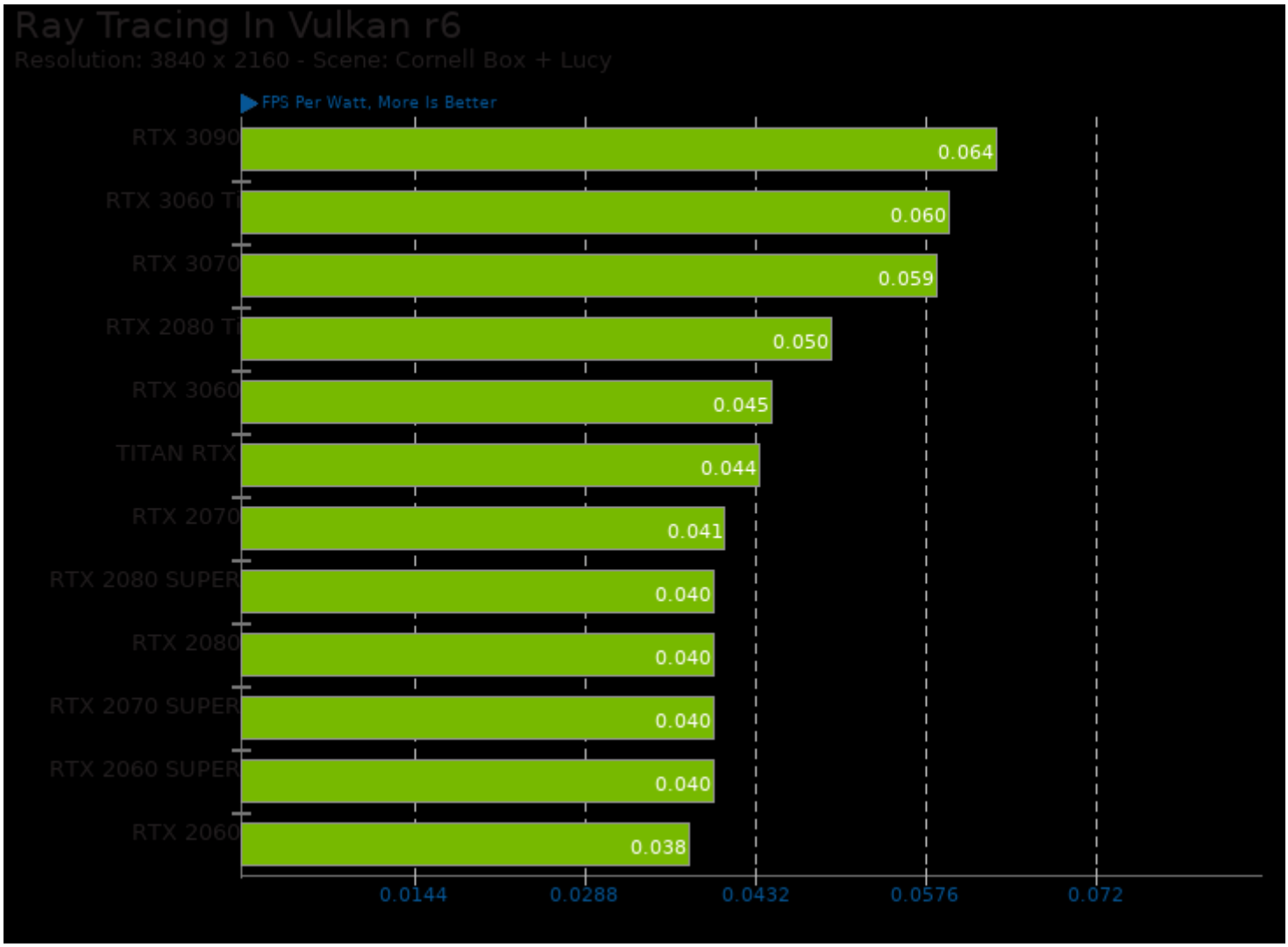

GeeXLab Vulkan Ray-Tracing Demo 2021.2.18.0
GPU Power Consumption Monitor
Watts, Fewer Is Better
RTX 3060
Min: 13.31 / Avg: 127.47 / Max: 158.4
RTX 2060
Min: 10.42 / Avg: 131.29 / Max: 163.26
RTX 2060 SUPER
Min: 10.4 / Avg: 142.63 / Max: 176.6
RTX 2070
Min: 10.56 / Avg: 146.06 / Max: 176.92
RTX 3060 Ti
Min: 14.56 / Avg: 162.2 / Max: 198.85
RTX 2070 SUPER
Min: 15.91 / Avg: 174.04 / Max: 218.2
RTX 3070
Min: 9.48 / Avg: 176.69 / Max: 218.53
RTX 2080
Min: 17.65 / Avg: 178.4 / Max: 220.7
RTX 2080 SUPER
Min: 9.93 / Avg: 202.65 / Max: 248.8
RTX 2080 Ti
Min: 8.17 / Avg: 211.68 / Max: 263.53
TITAN RTX
Min: 22.66 / Avg: 227.89 / Max: 281.97
RTX 3090
Min: 14.15 / Avg: 288.49 / Max: 347.16
60
120
180
240
300

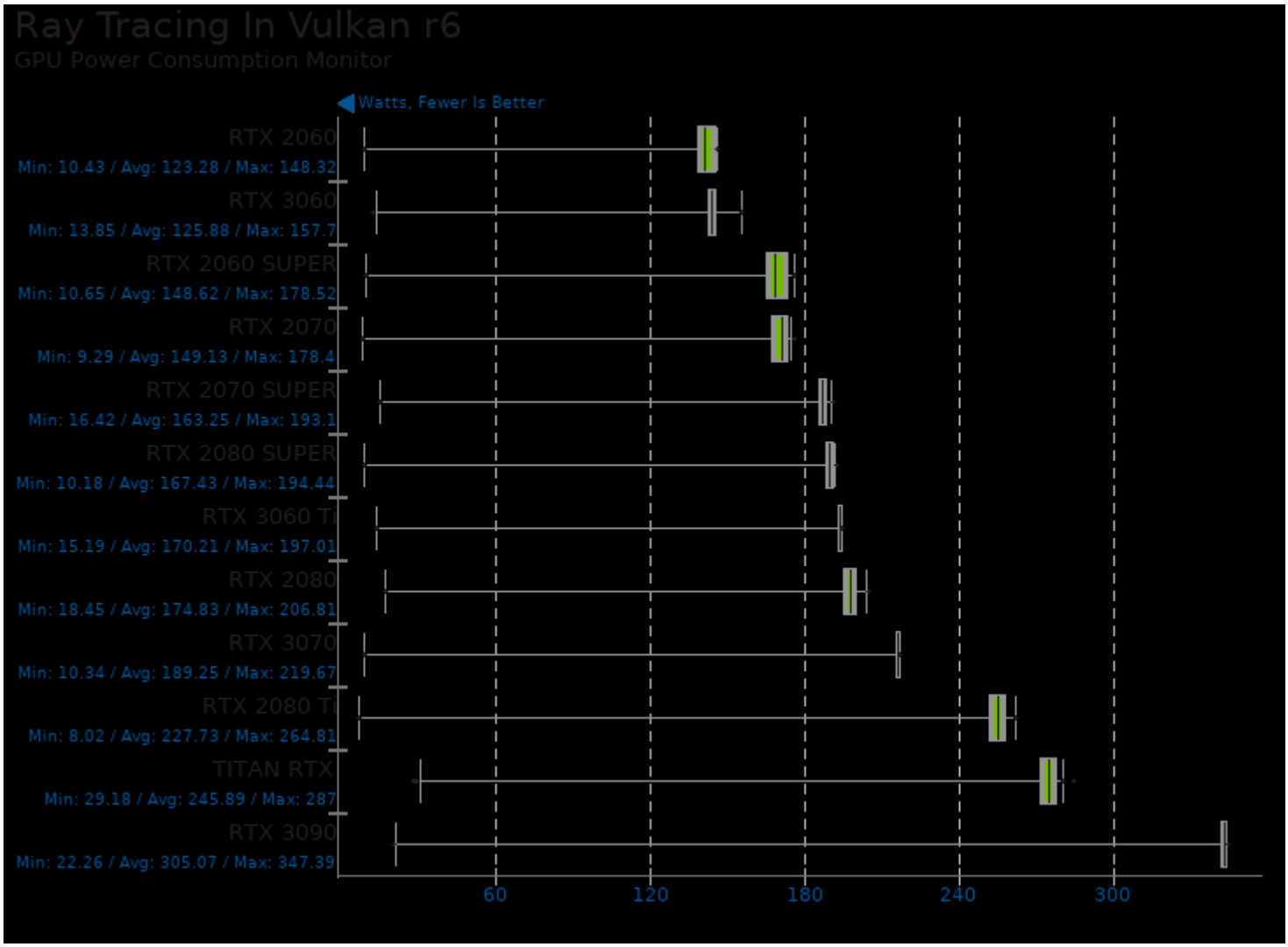

GeeXLab Vulkan Ray-Tracing Demo 2021.2.18.0
GPU Temperature Monitor
Celsius, Fewer Is Better
RTX 3060
Min: 43 / Avg: 57.23 / Max: 62
RTX 2060
Min: 50 / Avg: 62.71 / Max: 68
RTX 2070 SUPER
Min: 54 / Avg: 63.97 / Max: 69
RTX 3060 Ti
Min: 51 / Avg: 64.77 / Max: 70
RTX 3070
Min: 50 / Avg: 64.92 / Max: 70
RTX 3090
Min: 54 / Avg: 64.93 / Max: 69
RTX 2080 SUPER
Min: 53 / Avg: 65.24 / Max: 71
RTX 2070
Min: 54 / Avg: 65.64 / Max: 71
RTX 2060 SUPER
Min: 53 / Avg: 65.68 / Max: 71
TITAN RTX
Min: 56 / Avg: 67.3 / Max: 73
RTX 2080 Ti
Min: 57 / Avg: 67.67 / Max: 72
RTX 2080
Min: 62 / Avg: 74.14 / Max: 80
15
30
45
60
75

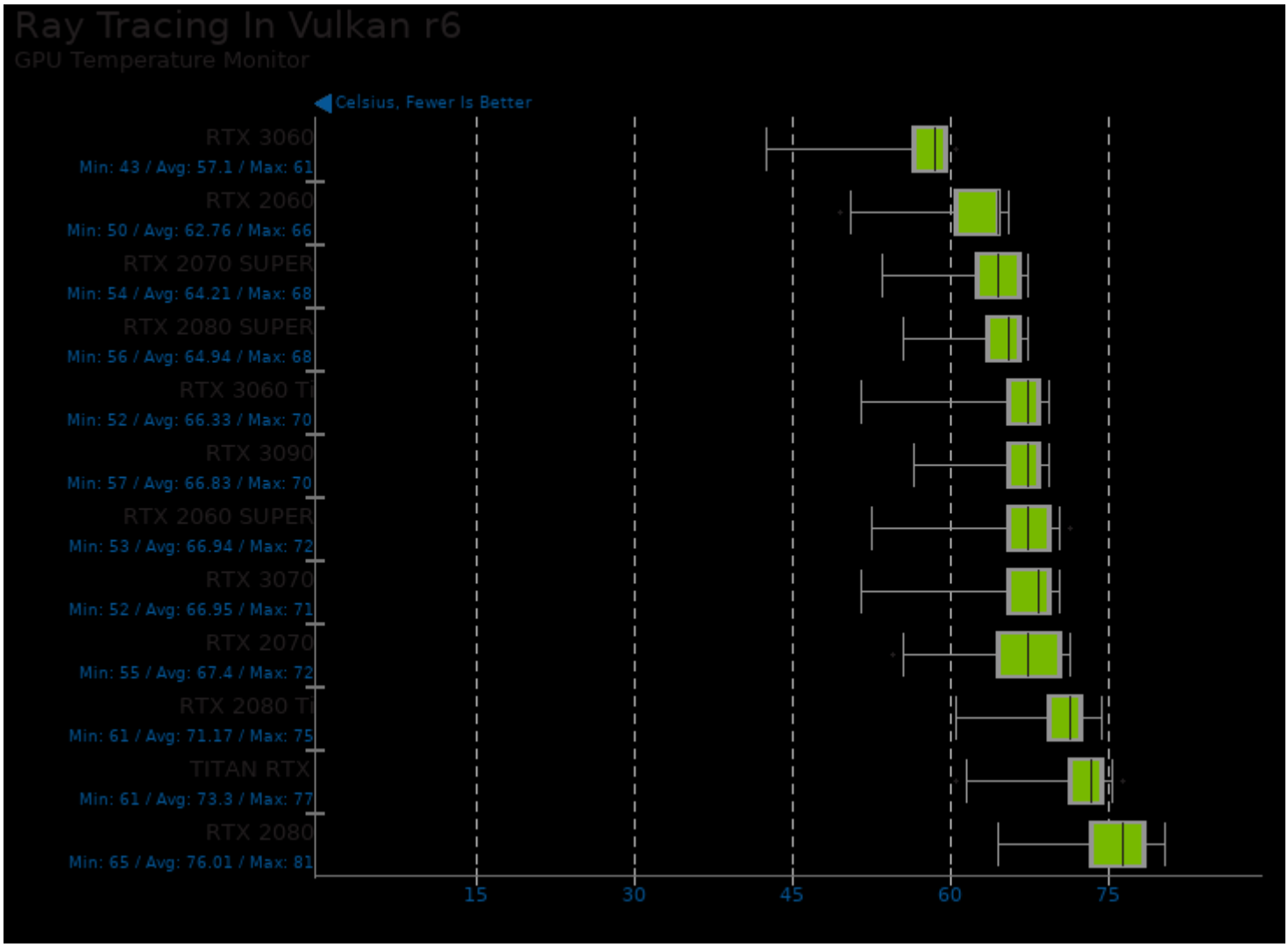

Ray Tracing In Vulkan r6
Resolution: 3840 x 2160 - Scene: Cornell Box
FPS Per Watt, More Is Better
RTX 3070
0.132
RTX 3060 T
0.130
RTX 3060
0.128
RTX 3090
0.123
RTX 2080 T
0.120
RTX 2080 SUPER
0.120
RTX 2070 SUPER
0.120
TITAN RTX
0.115
RTX 2070
0.113
RTX 2060 SUPER
0.110
RTX 2080
0.109
RTX 2060
0.105
0.0297
0.0594
0.0891
0.1188
0.1485

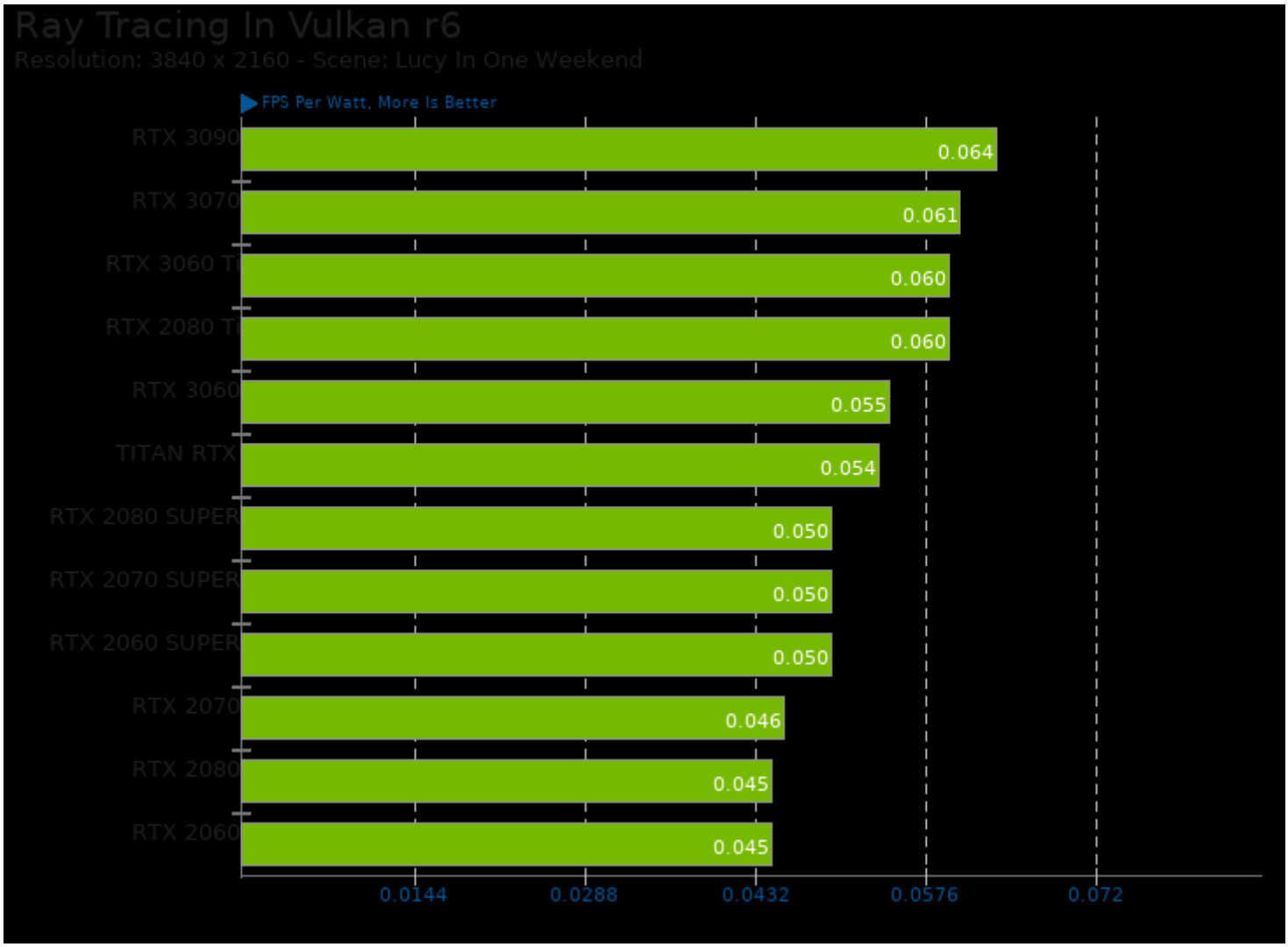

Ray Tracing In Vulkan r6
GPU Power Consumption Monitor
Watts, Fewer Is Better
RTX 3060
Min: 14.13 / Avg: 102.5 / Max: 117.26
RTX 2060
Min: 10.46 / Avg: 119.47 / Max: 139.78
RTX 2070
Min: 11.1 / Avg: 127.84 / Max: 149.58
RTX 2060 SUPER
Min: 10.62 / Avg: 132.92 / Max: 153.89
RTX 3060 Ti
Min: 14.97 / Avg: 144.78 / Max: 166.06
RTX 2070 SUPER
Min: 16.28 / Avg: 145.33 / Max: 168.03
RTX 3070
Min: 10.13 / Avg: 165.77 / Max: 191.49
RTX 2080 SUPER
Min: 10.18 / Avg: 166.31 / Max: 192.8
RTX 2080
Min: 18.49 / Avg: 169.66 / Max: 194.52
RTX 2080 Ti
Min: 9.7 / Avg: 228.1 / Max: 264.26
TITAN RTX
Min: 27.32 / Avg: 244.02 / Max: 284.32
RTX 3090
Min: 16.15 / Avg: 305.37 / Max: 345.61
60
120
180
240
300

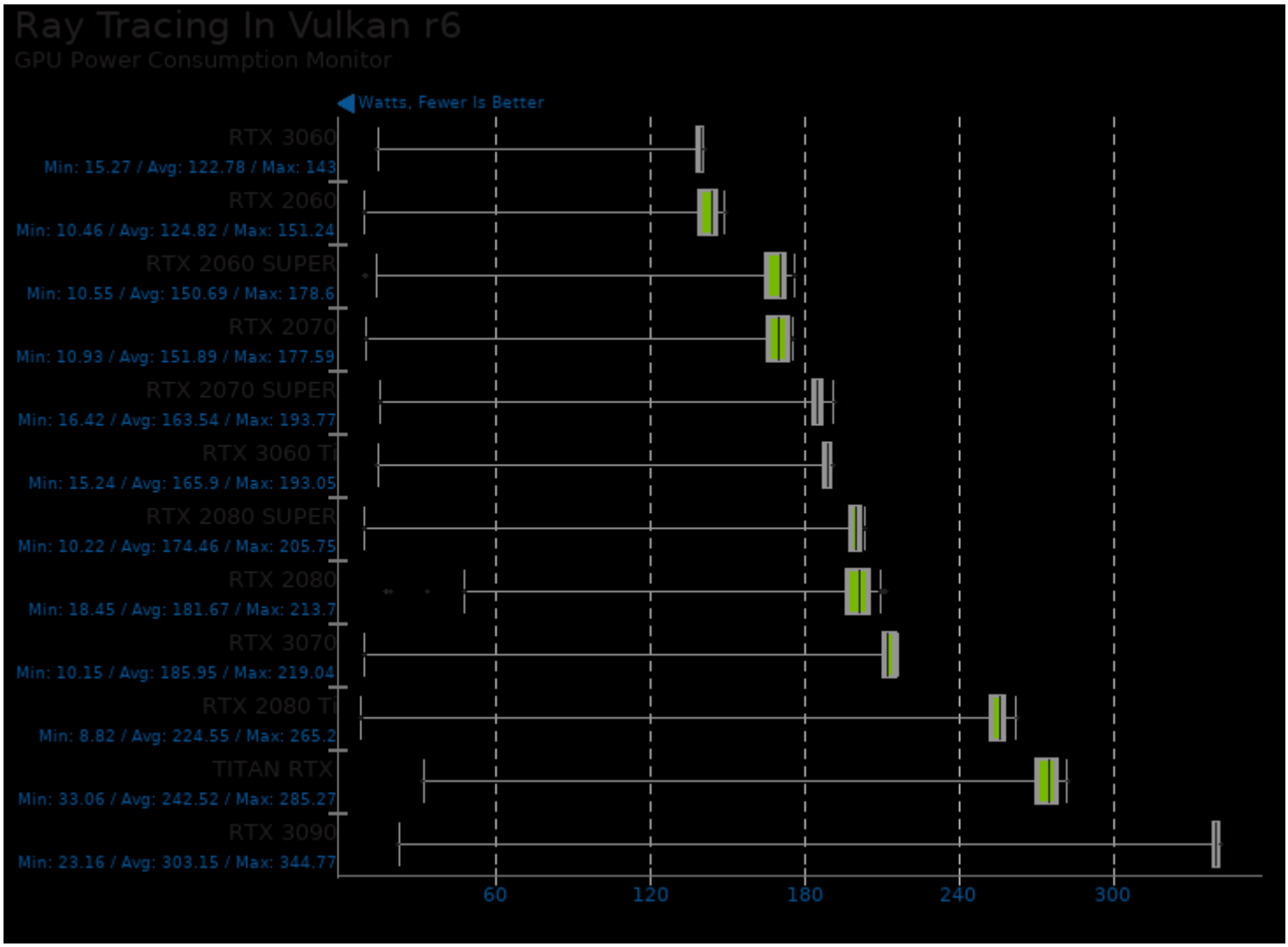

Ray Tracing In Vulkan r6
GPU Temperature Monitor
Celsius, Fewer Is Better
RTX 3060
Min: 43 / Avg: 54.82 / Max: 58
RTX 2060
Min: 51 / Avg: 62.83 / Max: 66
RTX 2070 SUPER
Min: 56 / Avg: 63.29 / Max: 65
RTX 3060 Ti
Min: 52 / Avg: 64.47 / Max: 68
RTX 2080 SUPER
Min: 57 / Avg: 65.14 / Max: 68
RTX 3070
Min: 51 / Avg: 65.62 / Max: 69
RTX 2060 SUPER
Min: 53 / Avg: 65.69 / Max: 69
RTX 2070
Min: 56 / Avg: 65.98 / Max: 70
RTX 3090
Min: 56 / Avg: 67.18 / Max: 70
RTX 2080 Ti
Min: 60 / Avg: 70.84 / Max: 75
TITAN RTX
Min: 59 / Avg: 72.05 / Max: 76
RTX 2080
Min: 65 / Avg: 75.65 / Max: 80
15
30
45
60
75

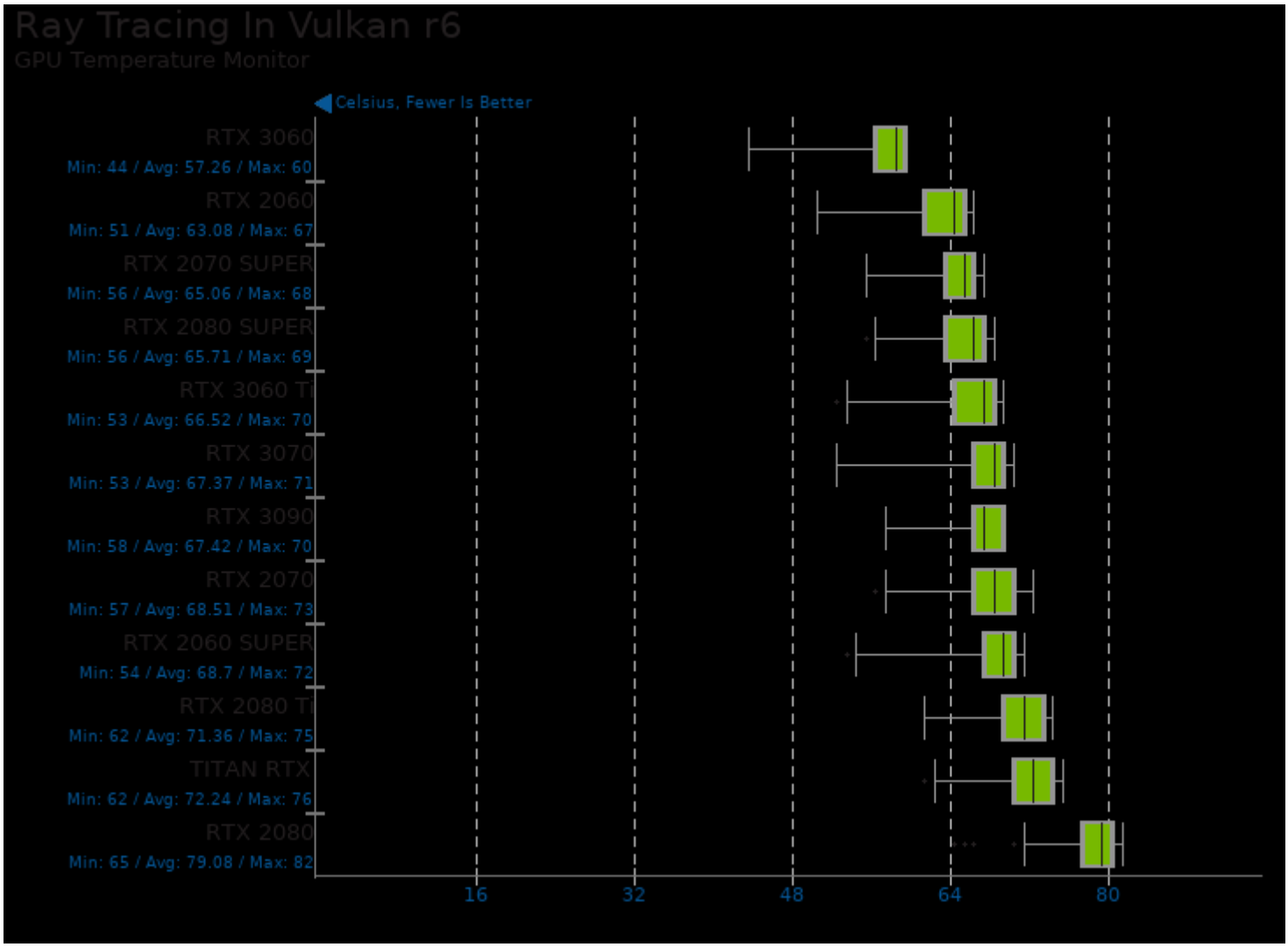

Ray Tracing In Vulkan r6
Resolution: 3840 x 2160 - Scene: Cornell Box + Lucy
FPS Per Watt, More Is Better
RTX 3090
RTX 3060 Ti
RTX 3070
RTX 2080 Ti
RTX 3060
TITAN RTX
RTX 2070
RTX 2080 SUPER
RTX 2080
RTX 2070 SUPER
RTX 2060 SUPER
RTX 2060
0.064
0.060
0.059
0.050
0.045
0.044
0.041
0.040
0.040
0.040
0.040
0.038
0.0144
0.0288
0.0432
0.0576
0.072

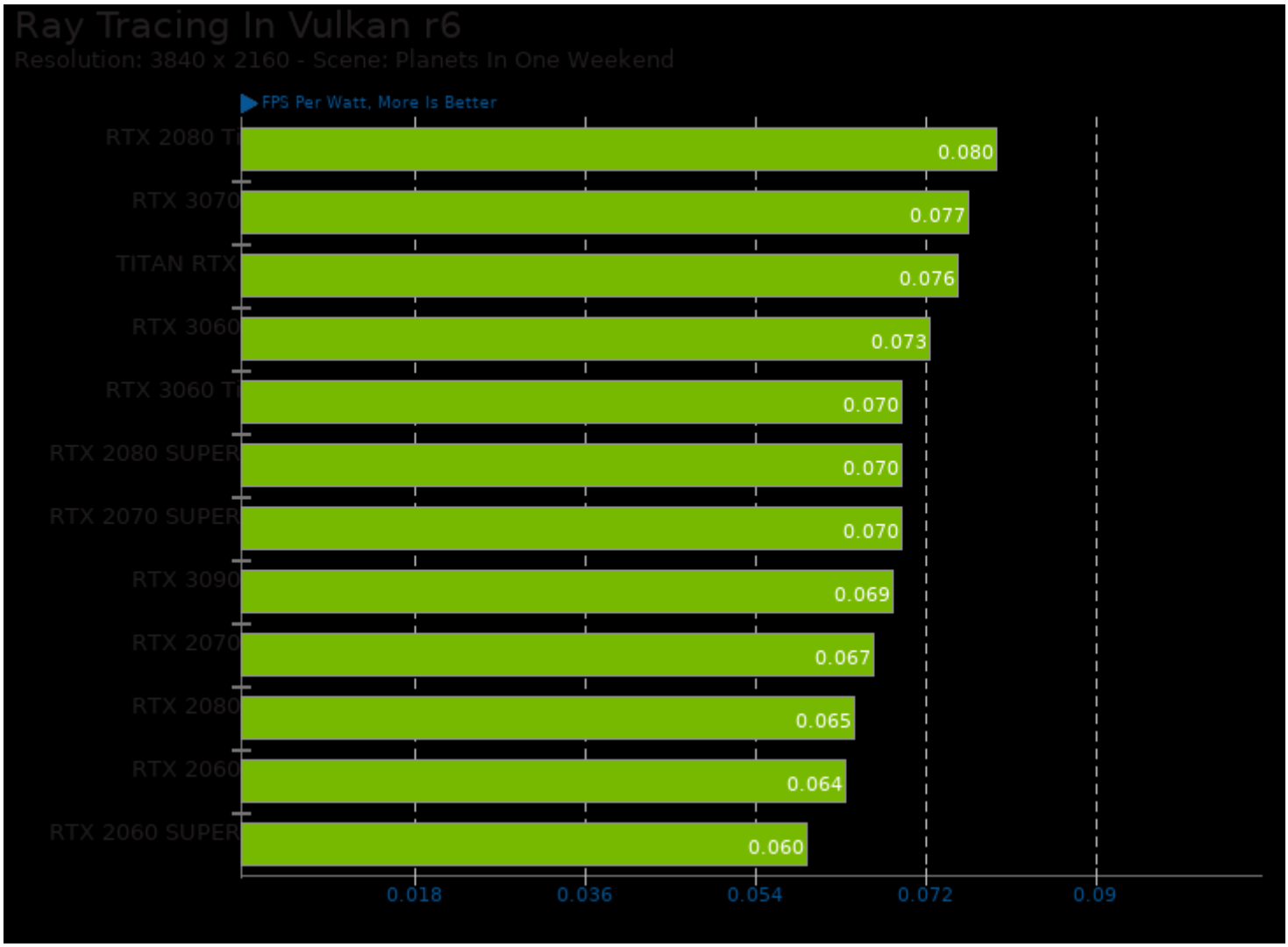

Ray Tracing In Vulkan r6
GPU Power Consumption Monitor
Watts, Fewer Is Better
RTX 2060
Min: 10.43 / Avg: 123.28 / Max: 148.32
RTX 3060
Min: 13.85 / Avg: 125.88 / Max: 157.7
RTX 2060 SUPER
Min: 10.65 / Avg: 148.62 / Max: 178.52
RTX 2070
Min: 9.29 / Avg: 149.13 / Max: 178.4
RTX 2070 SUPER
Min: 16.42 / Avg: 163.25 / Max: 193.1
RTX 2080 SUPER
Min: 10.18 / Avg: 167.43 / Max: 194.44
RTX 3060 Ti
Min: 15.19 / Avg: 170.21 / Max: 197.01
RTX 2080
Min: 18.45 / Avg: 174.83 / Max: 206.81
RTX 3070
Min: 10.34 / Avg: 189.25 / Max: 219.67
RTX 2080 Ti
Min: 8.02 / Avg: 227.73 / Max: 264.81
TITAN RTX
Min: 29.18 / Avg: 245.89 / Max: 287
RTX 3090
Min: 22.26 / Avg: 305.07 / Max: 347.39
60
120
180
240
300

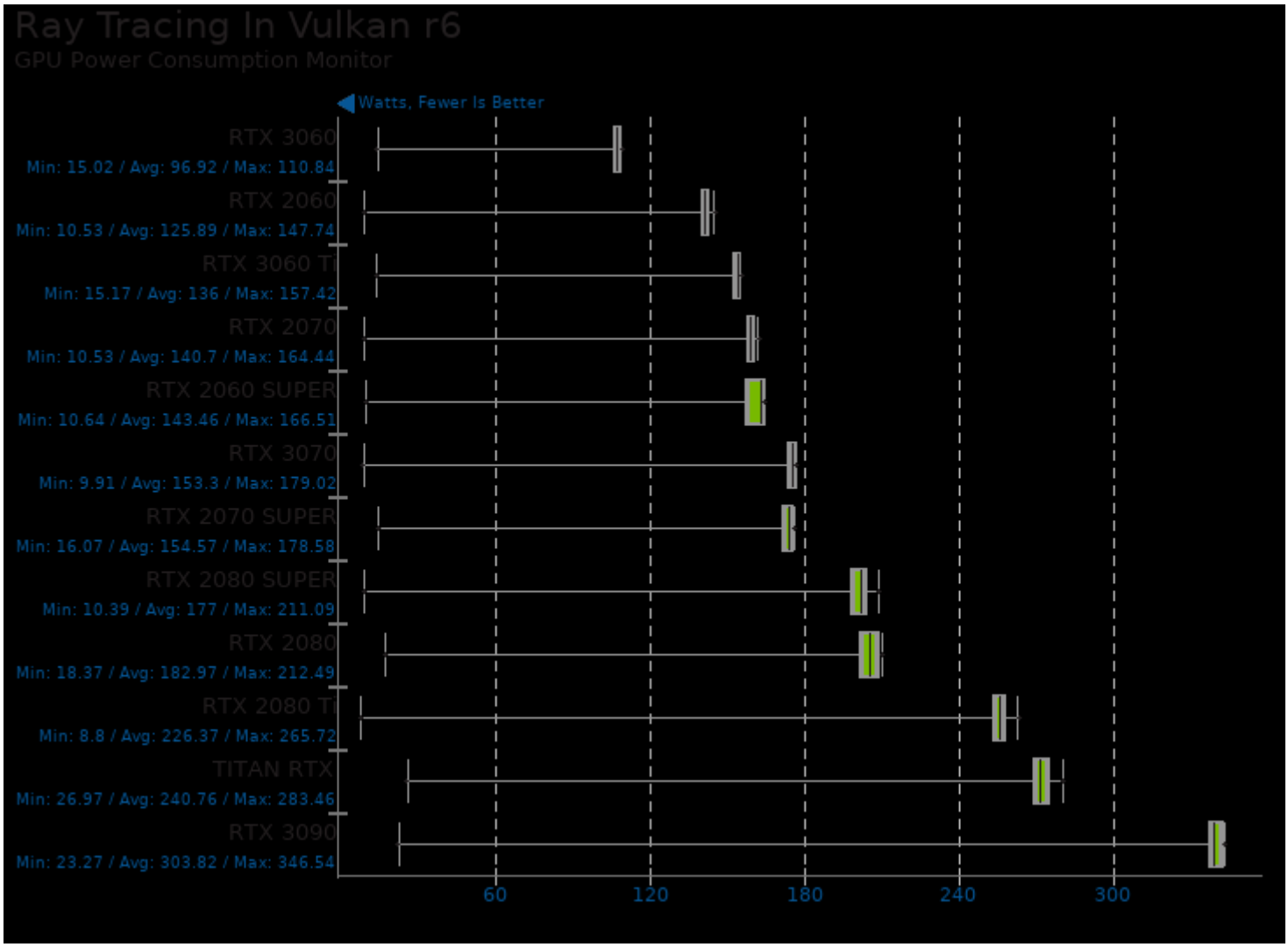

Ray Tracing In Vulkan r6
GPU Temperature Monitor
Celsius, Fewer Is Better
RTX 3060
Min: 43 / Avg: 57.1 / Max: 61
RTX 2060
Min: 50 / Avg: 62.76 / Max: 66
RTX 2070 SUPER
Min: 54 / Avg: 64.21 / Max: 68
RTX 2080 SUPER
Min: 56 / Avg: 64.94 / Max: 68
RTX 3060 Ti
Min: 52 / Avg: 66.33 / Max: 70
RTX 3090
Min: 57 / Avg: 66.83 / Max: 70
RTX 2060 SUPER
Min: 53 / Avg: 66.94 / Max: 72
RTX 3070
Min: 52 / Avg: 66.95 / Max: 71
RTX 2070
Min: 55 / Avg: 67.4 / Max: 72
RTX 2080 Ti
Min: 61 / Avg: 71.17 / Max: 75
TITAN RTX
Min: 61 / Avg: 73.3 / Max: 77
RTX 2080
Min: 65 / Avg: 76.01 / Max: 81
15
30
45
60
75

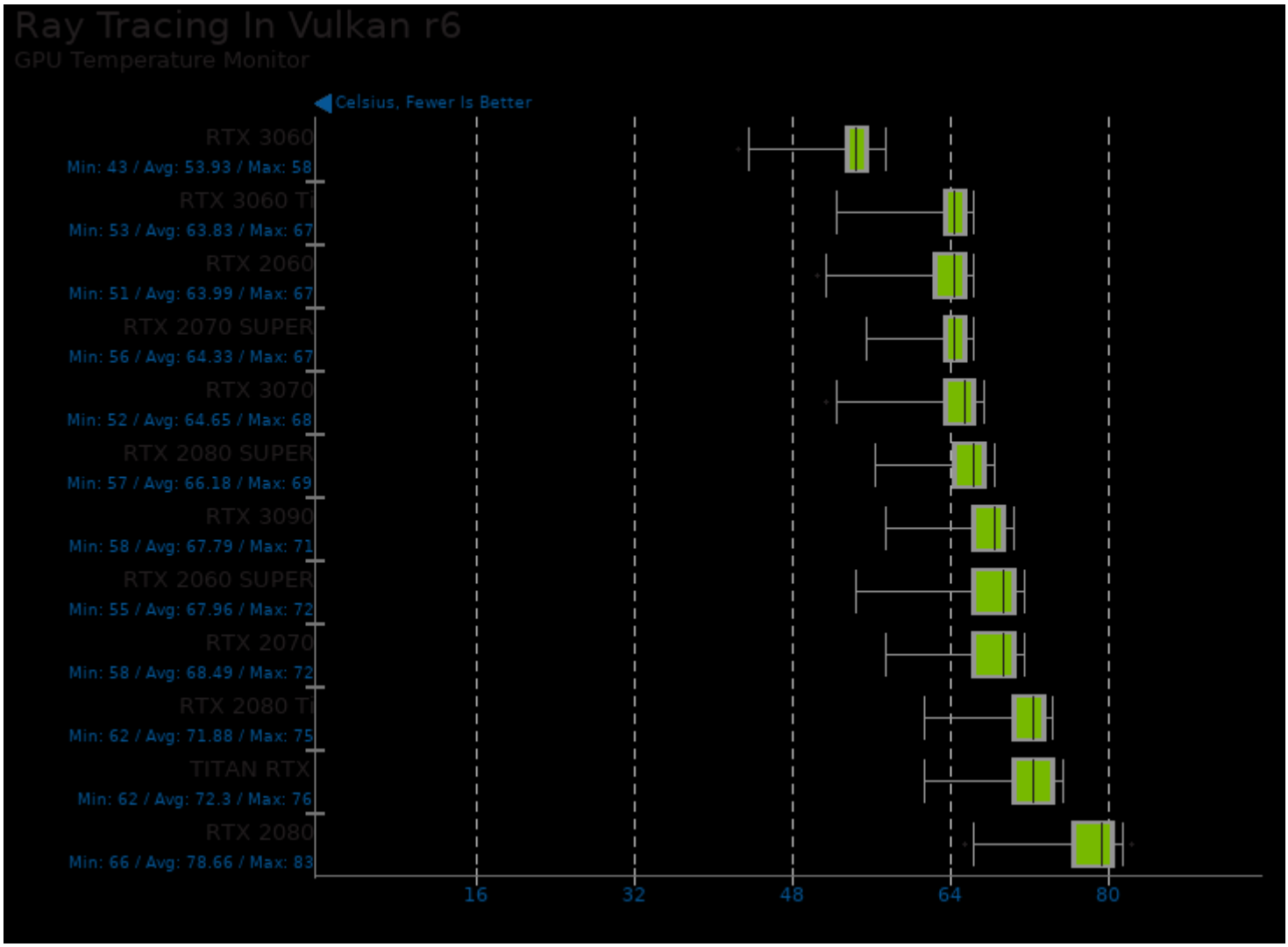

Ray Tracing In Vulkan r6
Resolution: 3840 x 2160 - Scene: Lucy In One Weekend
FPS Per Watt, More Is Better
RTX 3090
RTX 3070
RTX 3060 T
RTX 2080 T
RTX 3060
TITAN RTX
RTX 2080 SUPER
RTX 2070 SUPER
RTX 2060 SUPER
RTX 2070
RTX 2080
RTX 2060
0.064
0.061
0.060
0.060
0.055
0.054
0.050
0.050
0.050
0.046
0.045
0.045
0.0144
0.0288
0.0432
0.0576
0.072

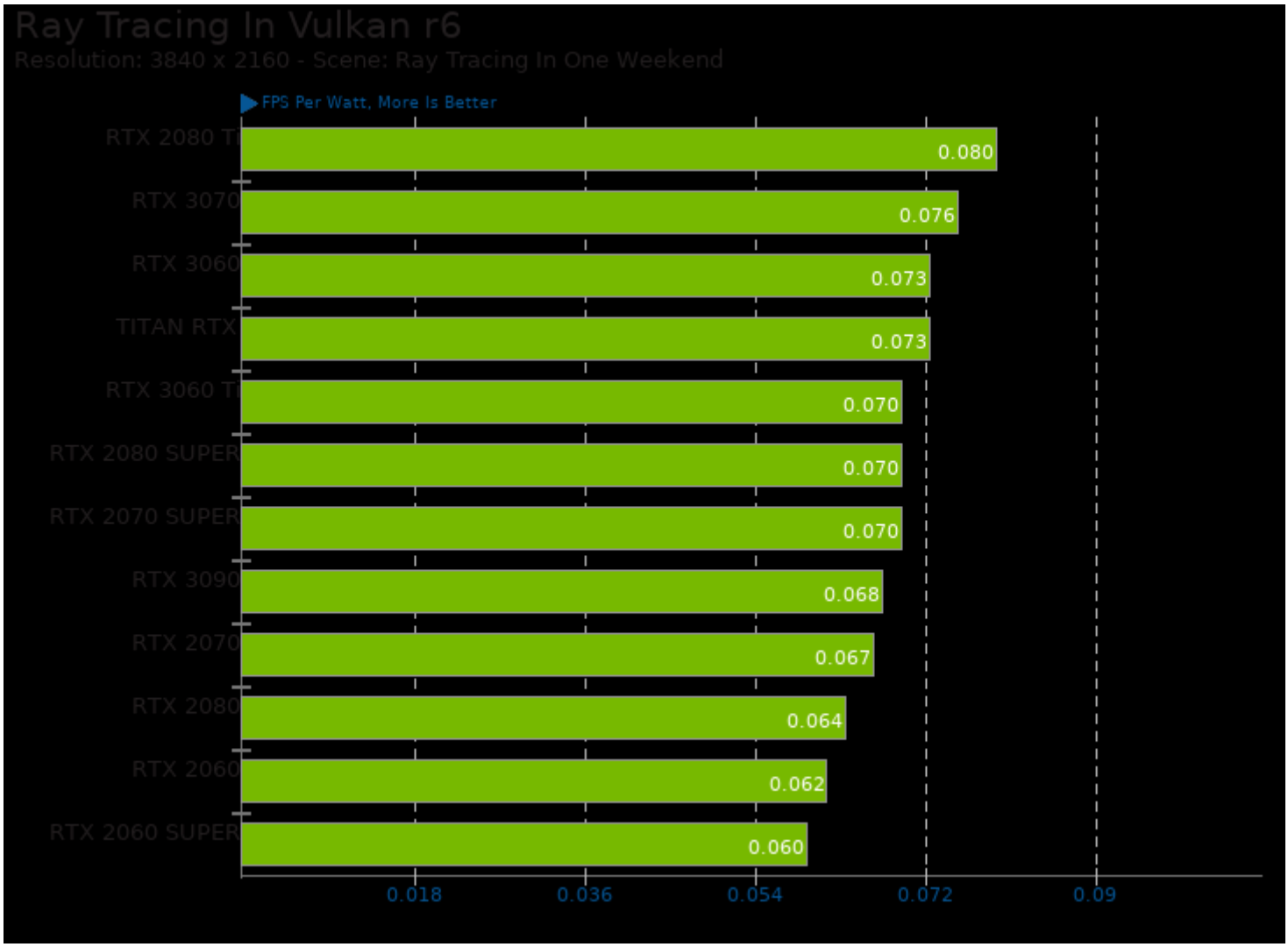

Ray Tracing In Vulkan r6
GPU Power Consumption Monitor
Watts, Fewer Is Better
RTX 3060
Min: 15.27 / Avg: 122.78 / Max: 143
RTX 2060
Min: 10.46 / Avg: 124.82 / Max: 151.24
RTX 2060 SUPER
Min: 10.55 / Avg: 150.69 / Max: 178.6
RTX 2070
Min: 10.93 / Avg: 151.89 / Max: 177.59
RTX 2070 SUPER
Min: 16.42 / Avg: 163.54 / Max: 193.77
RTX 3060 Ti
Min: 15.24 / Avg: 165.9 / Max: 193.05
RTX 2080 SUPER
Min: 10.22 / Avg: 174.46 / Max: 205.75
RTX 2080
Min: 18.45 / Avg: 181.67 / Max: 213.7
RTX 3070
Min: 10.15 / Avg: 185.95 / Max: 219.04
RTX 2080 Ti
Min: 8.82 / Avg: 224.55 / Max: 265.2
TITAN RTX
Min: 33.06 / Avg: 242.52 / Max: 285.27
RTX 3090
Min: 23.16 / Avg: 303.15 / Max: 344.77
60
120
180
240
300

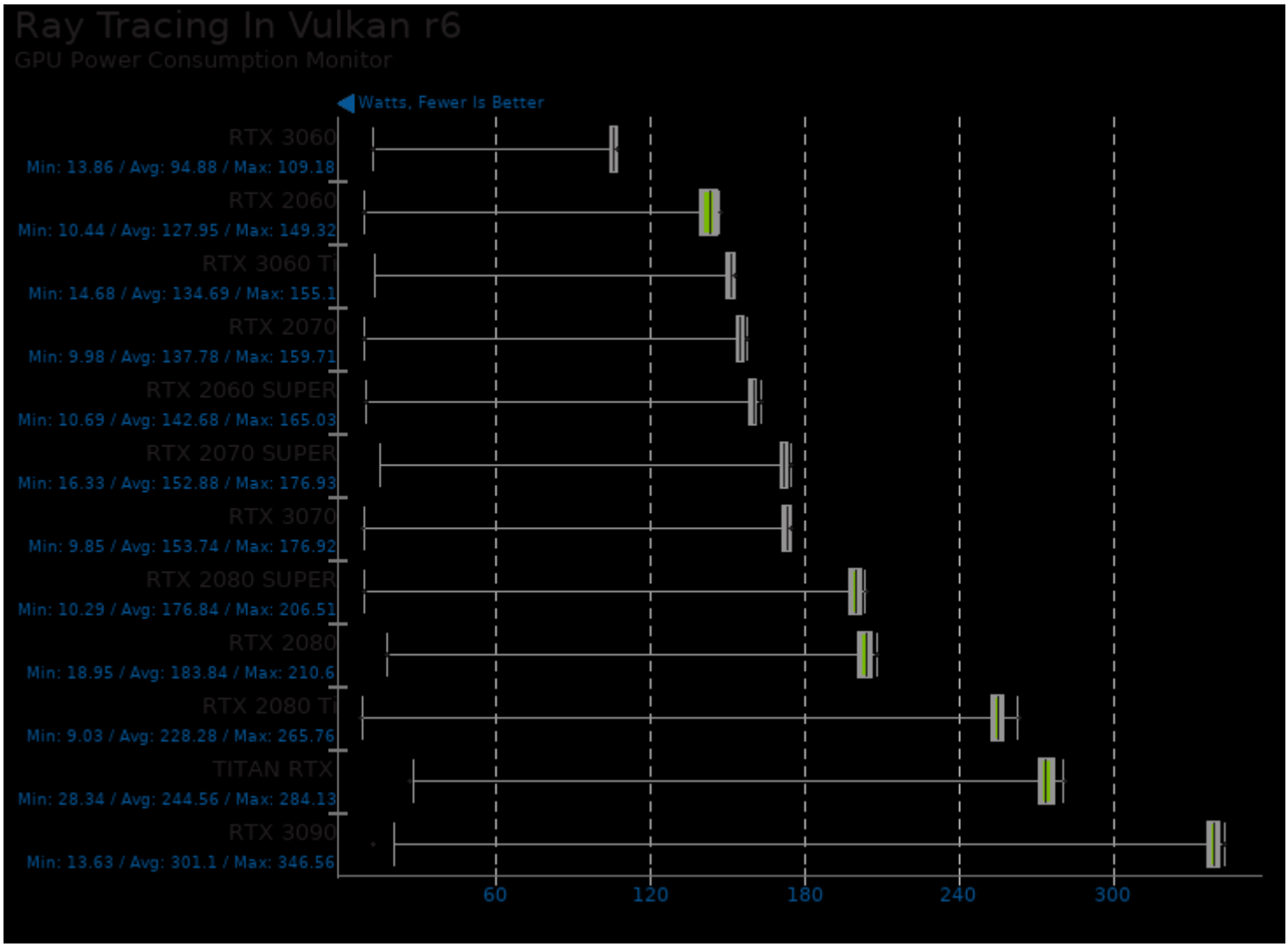

Ray Tracing In Vulkan r6
GPU Temperature Monitor
Celsius, Fewer Is Better
RTX 3060
Min: 44 / Avg: 57.26 / Max: 60
RTX 2060
Min: 51 / Avg: 63.08 / Max: 67
RTX 2070 SUPER
Min: 56 / Avg: 65.06 / Max: 68
RTX 2080 SUPER
Min: 56 / Avg: 65.71 / Max: 69
RTX 3060 Ti
Min: 53 / Avg: 66.52 / Max: 70
RTX 3070
Min: 53 / Avg: 67.37 / Max: 71
RTX 3090
Min: 58 / Avg: 67.42 / Max: 70
RTX 2070
Min: 57 / Avg: 68.51 / Max: 73
RTX 2060 SUPER
Min: 54 / Avg: 68.7 / Max: 72
RTX 2080 Ti
Min: 62 / Avg: 71.36 / Max: 75
TITAN RTX
Min: 62 / Avg: 72.24 / Max: 76
RTX 2080
Min: 65 / Avg: 79.08 / Max: 82
16
32
48
64
80

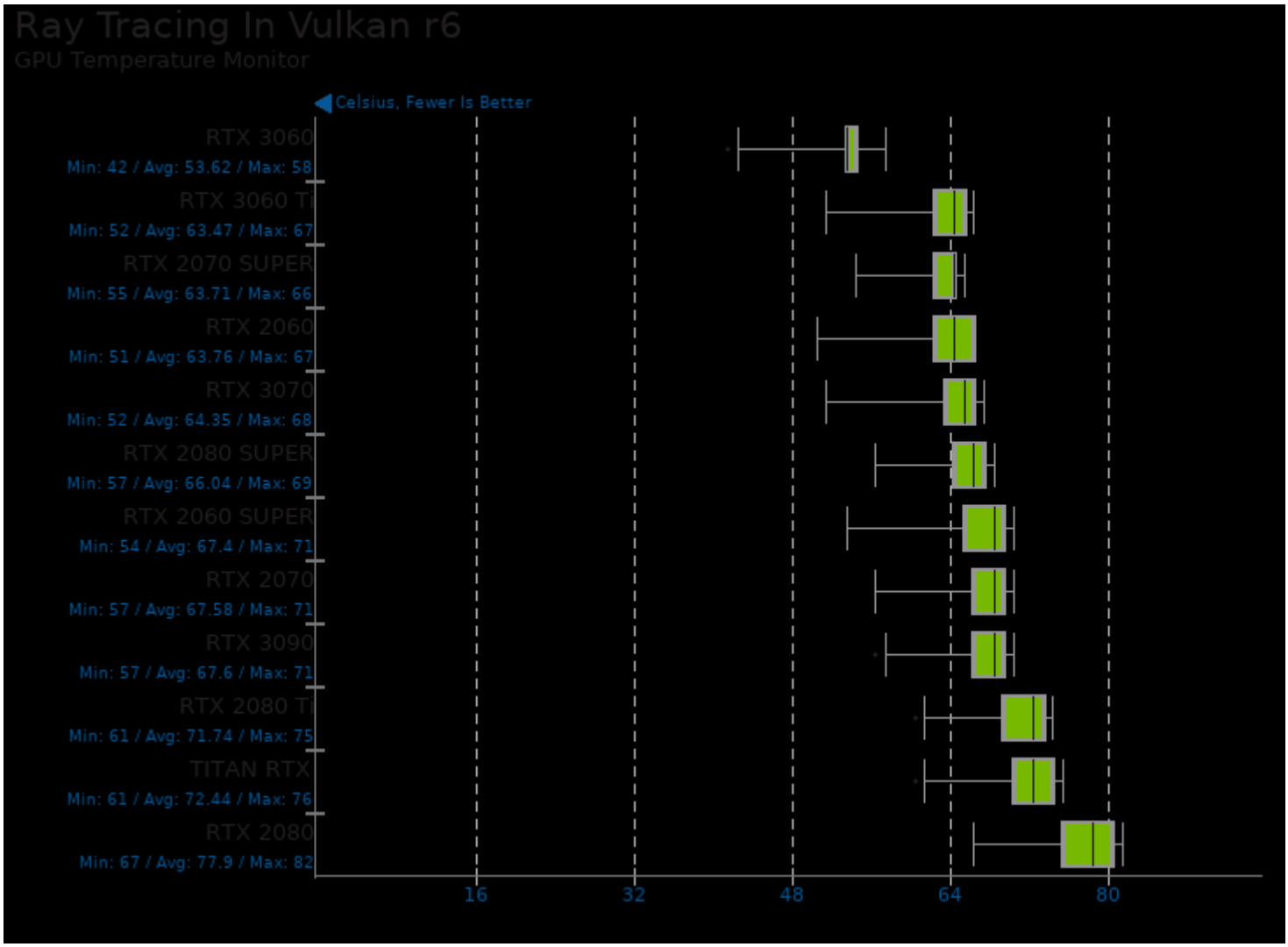

Ray Tracing In Vulkan r6
Resolution: 3840 x 2160 - Scene: Planets In One Weekend
FPS Per Watt, More Is Better
RTX 2080 T
0.080
RTX 3070
0.077
TITAN RTX
0.076
RTX 3060
0.073
RTX 3060 T
0.070
RTX 2080 SUPER
0.070
RTX 2070 SUPER
0.070
RTX 3090
0.069
RTX 2070
0.067
RTX 2080
0.065
RTX 2060
0.064
RTX 2060 SUPER
0.060
0.018
0.036
0.054
0.072
0.09


Ray Tracing In Vulkan r6
GPU Power Consumption Monitor
Watts, Fewer Is Better
RTX 3060
Min: 15.02 / Avg: 96.92 / Max: 110.84
RTX 2060
Min: 10.53 / Avg: 125.89 / Max: 147.74
RTX 3060 Ti
Min: 15.17 / Avg: 136 / Max: 157.42
RTX 2070
Min: 10.53 / Avg: 140.7 / Max: 164.44
RTX 2060 SUPER
Min: 10.64 / Avg: 143.46 / Max: 166.51
RTX 3070
Min: 9.91 / Avg: 153.3 / Max: 179.02
RTX 2070 SUPER
Min: 16.07 / Avg: 154.57 / Max: 178.58
RTX 2080 SUPER
Min: 10.39 / Avg: 177 / Max: 211.09
RTX 2080
Min: 18.37 / Avg: 182.97 / Max: 212.49
RTX 2080 Ti
Min: 8.8 / Avg: 226.37 / Max: 265.72
TITAN RTX
Min: 26.97 / Avg: 240.76 / Max: 283.46
RTX 3090
Min: 23.27 / Avg: 303.82 / Max: 346.54
60
120
180
240
300

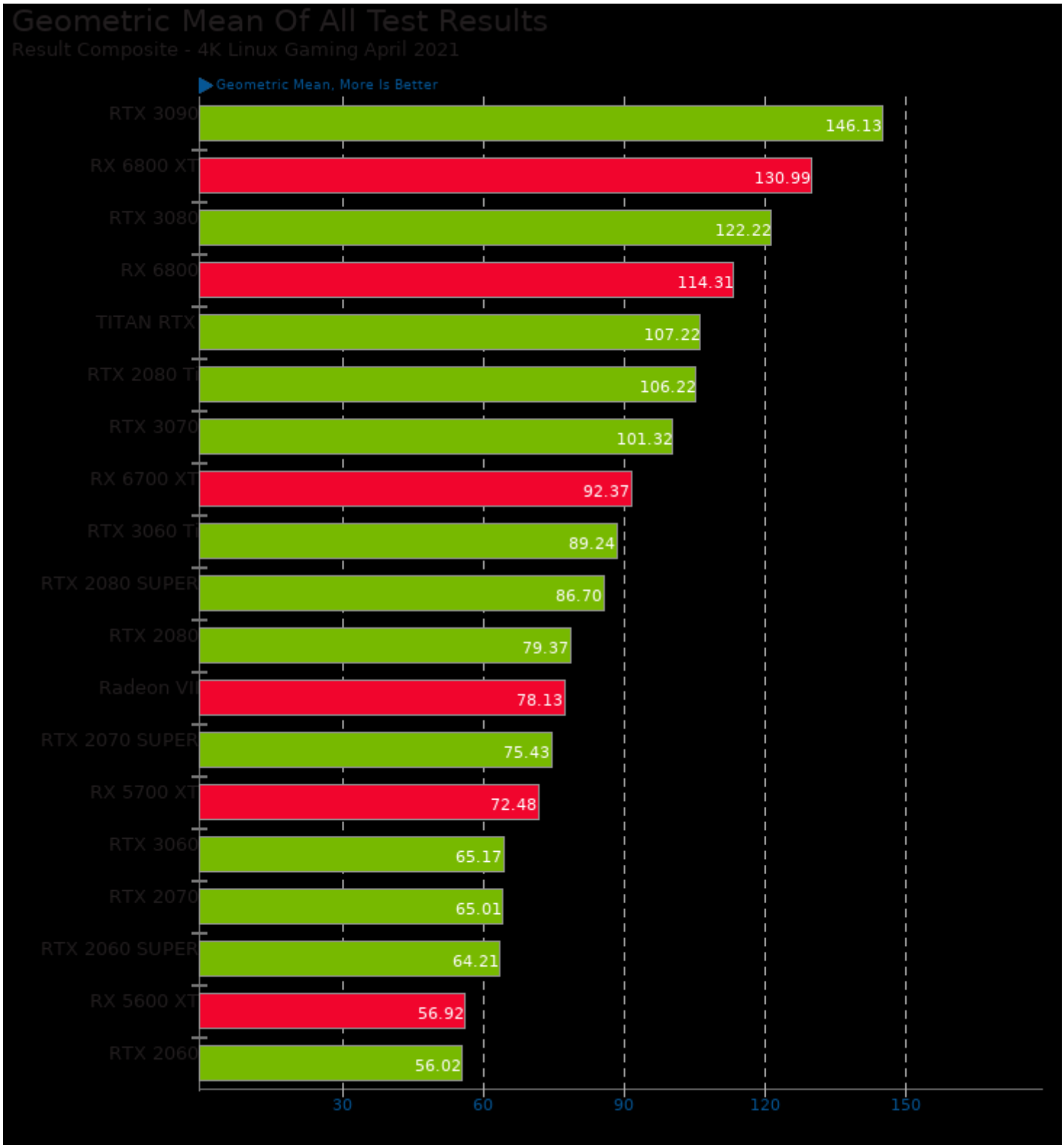

Ray Tracing In Vulkan r6
GPU Temperature Monitor
Celsius, Fewer Is Better
RTX 3060
Min: 43 / Avg: 53.93 / Max: 58
RTX 3060 Ti
Min: 53 / Avg: 63.83 / Max: 67
RTX 2060
Min: 51 / Avg: 63.99 / Max: 67
RTX 2070 SUPER
Min: 56 / Avg: 64.33 / Max: 67
RTX 3070
Min: 52 / Avg: 64.65 / Max: 68
RTX 2080 SUPER
Min: 57 / Avg: 66.18 / Max: 69
RTX 3090
Min: 58 / Avg: 67.79 / Max: 71
RTX 2060 SUPER
Min: 55 / Avg: 67.96 / Max: 72
RTX 2070
Min: 58 / Avg: 68.49 / Max: 72
RTX 2080 Ti
Min: 62 / Avg: 71.88 / Max: 75
TITAN RTX
Min: 62 / Avg: 72.3 / Max: 76
RTX 2080
Min: 66 / Avg: 78.66 / Max: 83
16
32
48
64
80


Ray Tracing In Vulkan r6
Resolution: 3840 x 2160 - Scene: Ray Tracing In One Weekend
FPS Per Watt, More Is Better
RTX 2080 T
0.080
RTX 3070
0.076
RTX 3060
0.073
TITAN RTX
0.073
RTX 3060 T
0.070
RTX 2080 SUPER
0.070
RTX 2070 SUPER
0.070
RTX 3090
0.068
RTX 2070
0.067
RTX 2080
0.064
RTX 2060
0.062
RTX 2060 SUPER
0.060
0.018
0.036
0.054
0.072
0.09

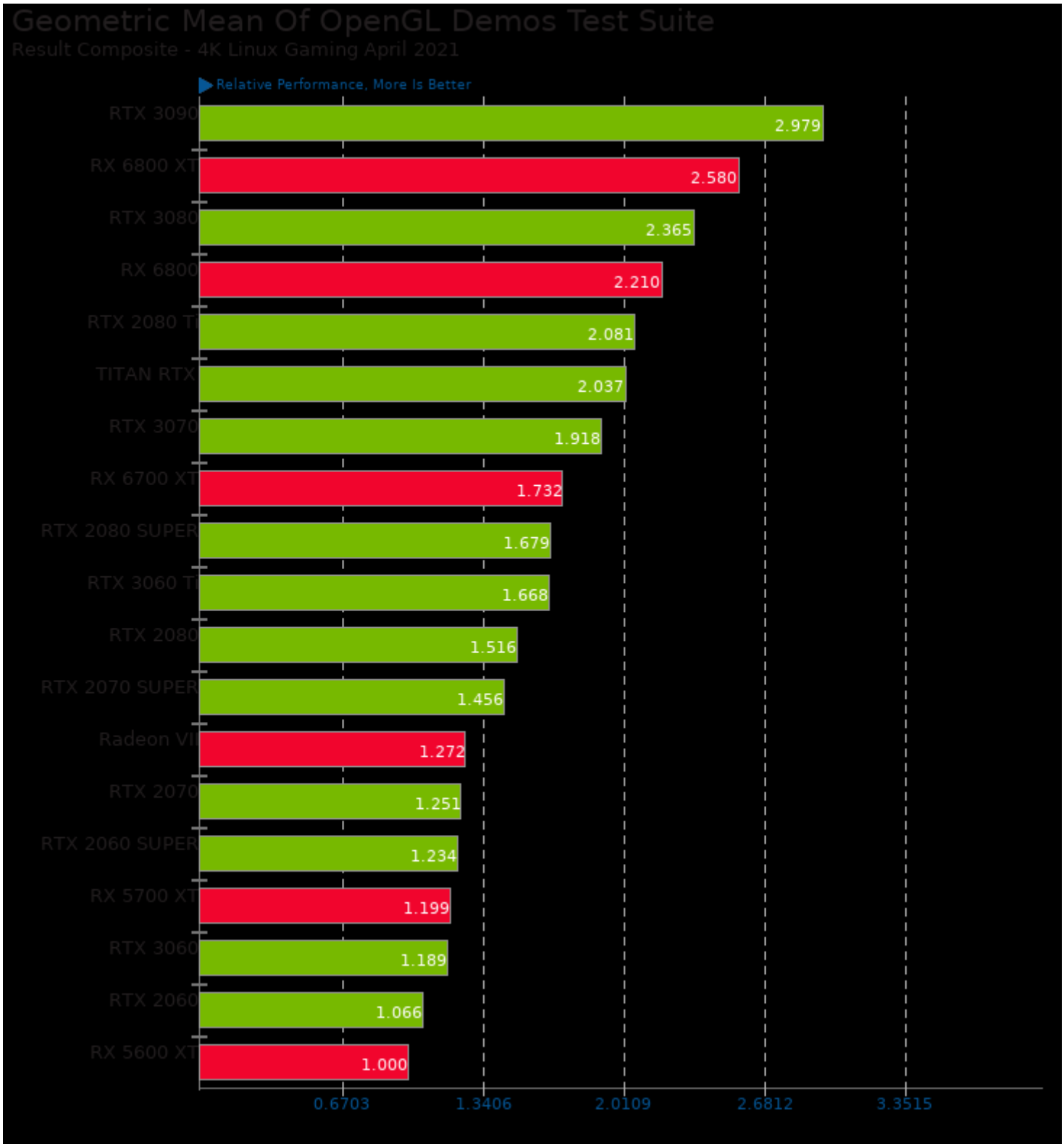

Ray Tracing In Vulkan r6
GPU Power Consumption Monitor
Watts, Fewer Is Better
RTX 3060
Min: 13.86 / Avg: 94.88 / Max: 109.18
RTX 2060
Min: 10.44 / Avg: 127.95 / Max: 149.32
RTX 3060 Ti
Min: 14.68 / Avg: 134.69 / Max: 155.1
RTX 2070
Min: 9.98 / Avg: 137.78 / Max: 159.71
RTX 2060 SUPER
Min: 10.69 / Avg: 142.68 / Max: 165.03
RTX 2070 SUPER
Min: 16.33 / Avg: 152.88 / Max: 176.93
RTX 3070
Min: 9.85 / Avg: 153.74 / Max: 176.92
RTX 2080 SUPER
Min: 10.29 / Avg: 176.84 / Max: 206.51
RTX 2080
Min: 18.95 / Avg: 183.84 / Max: 210.6
RTX 2080 Ti
Min: 9.03 / Avg: 228.28 / Max: 265.76
TITAN RTX
Min: 28.34 / Avg: 244.56 / Max: 284.13
RTX 3090
Min: 13.63 / Avg: 301.1 / Max: 346.56
60
120
180
240
300


Ray Tracing In Vulkan r6
GPU Temperature Monitor
Celsius, Fewer Is Better
RTX 3060
Min: 42 / Avg: 53.62 / Max: 58
RTX 3060 Ti
Min: 52 / Avg: 63.47 / Max: 67
RTX 2070 SUPER
Min: 55 / Avg: 63.71 / Max: 66
RTX 2060
Min: 51 / Avg: 63.76 / Max: 67
RTX 3070
Min: 52 / Avg: 64.35 / Max: 68
RTX 2080 SUPER
Min: 57 / Avg: 66.04 / Max: 69
RTX 2060 SUPER
Min: 54 / Avg: 67.4 / Max: 71
RTX 2070
Min: 57 / Avg: 67.58 / Max: 71
RTX 3090
Min: 57 / Avg: 67.6 / Max: 71
RTX 2080 Ti
Min: 61 / Avg: 71.74 / Max: 75
TITAN RTX
Min: 61 / Avg: 72.44 / Max: 76
RTX 2080
Min: 67 / Avg: 77.9 / Max: 82
16
32
48
64
80

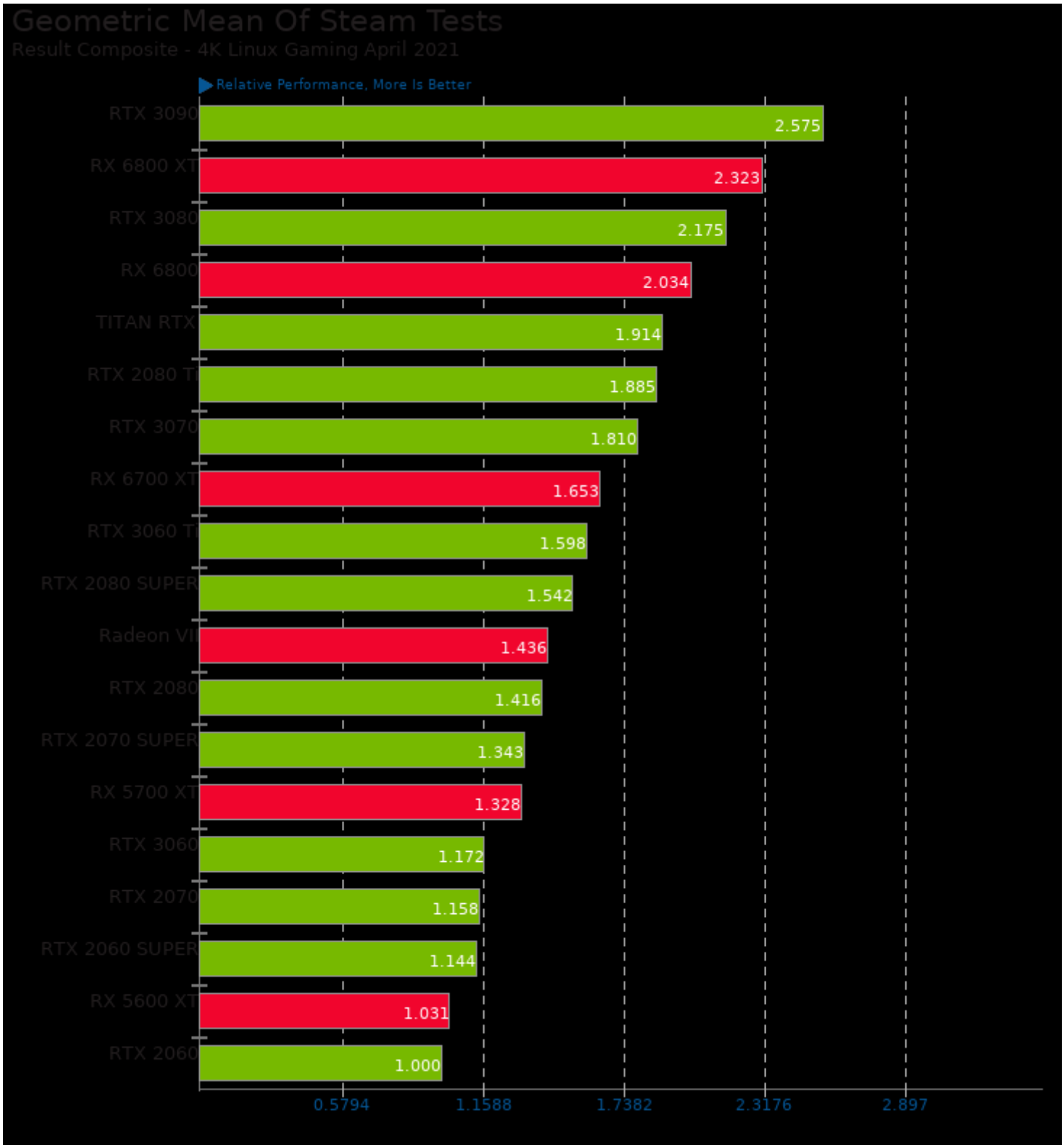
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These geometric means are based upon test groupings / test suites for this result file.

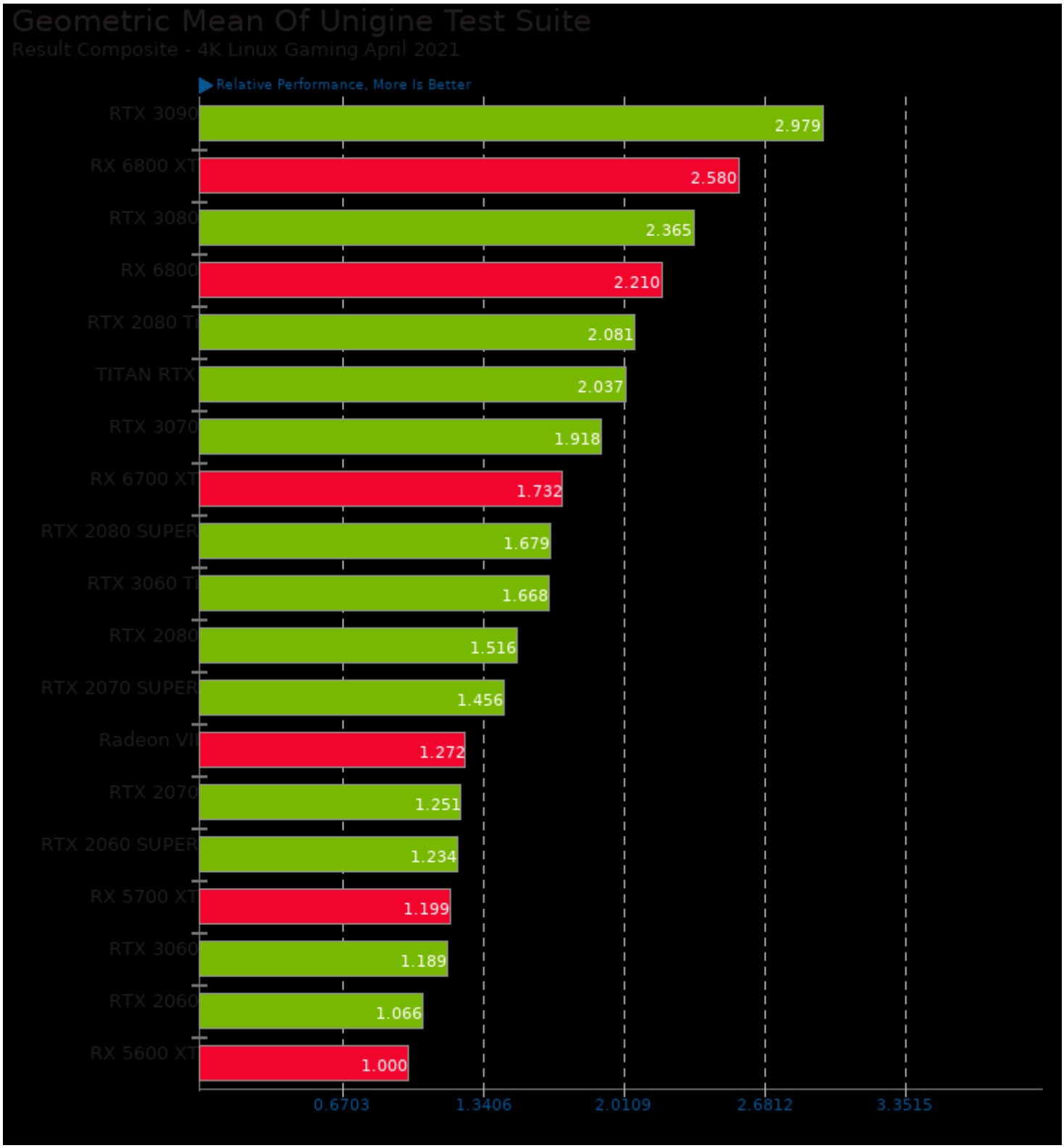


Geometric mean based upon tests: pts/unigine-heaven and pts/unigine-super



Geometric mean based upon tests: pts/batman-knight, pts/csgo, pts/dirt-rally2, pts/dow3, pts/f12017, pts/f12020, pts/hitman2, pts/shadowofthetombraider, pts/strange-brigade, pts/talos-principle and pts/twtk

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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 19:52.