

www.phoronix-test-suite.com

NVIDIA Compute Comparison

Benchmarks for a future article.

Automated Executive Summary

RTX 3080 had the most wins, coming in first place for 96% of the tests.

Based on the geometric mean of all complete results, the fastest (RTX 3080) was 5.251x the speed of the slowest (GTX 1060).

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

Blender (Blend File: Pabellon Barcelona - Compute: NVIDIA OptiX) at 16.467x
Blender (Blend File: Fishy Cat - Compute: NVIDIA OptiX) at 15.145x
Blender (Blend File: Classroom - Compute: NVIDIA OptiX) at 13.28x
clpeak (OpenCL Test: Integer Compute INT) at 11.885x
clpeak (OpenCL Test: Single-Precision Float) at 6.859x
OctaneBench (Total Score) at 6.64x
Geekbench (Test: GPU NVIDIA CUDA) at 6.187x
RedShift Demo at 6.186x
Blender (Blend File: Barbershop - Compute: NVIDIA OptiX) at 5.959x
LuxCoreRender OpenCL (Scene: DLSC) at 5.37x.

Test Systems:

RTX 3080

Processor: AMD Ryzen 9 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (2311 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: NVIDIA GeForce RTX 3080 10GB (1710/9501MHz), Audio: NVIDIA Device 1aef, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.04, Kernel: 5.4.0-54-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, Display Driver: NVIDIA 455.45.01, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.1.114, Vulkan: 1.2.142, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 3840x2160

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 - CPU Microcode: 0xa201009
OpenCL Notes: GPU Compute Cores: 8704
Python Notes: Python 2.7.18 + Python 3.8.5
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 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (2311 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: Zotac NVIDIA GeForce RTX 2080 8GB (1515/7000MHz), Audio: NVIDIA TU104 HD Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.04, Kernel: 5.4.0-54-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, Display Driver: NVIDIA 455.45.01, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.1.114, Vulkan: 1.2.142, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 3840x2160

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 - CPU Microcode: 0xa201009
OpenCL Notes: GPU Compute Cores: 2944
Python Notes: Python 2.7.18 + Python 3.8.5
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 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (2311 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: NVIDIA GeForce RTX 2080 SUPER 8GB (1650/7750MHz), Audio: NVIDIA TU104 HD Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.04, Kernel: 5.4.0-54-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, Display Driver: NVIDIA 455.45.01, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.1.114, Vulkan: 1.2.142, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 3840x2160

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 - CPU Microcode: 0xa201009
OpenCL Notes: GPU Compute Cores: 3072
Python Notes: Python 2.7.18 + Python 3.8.5
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 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (2311 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: NVIDIA GeForce RTX 2070 SUPER 8GB (1605/7000MHz), Audio: NVIDIA TU104 HD Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.04, Kernel: 5.4.0-54-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, Display Driver: NVIDIA 455.45.01, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.1.114, Vulkan: 1.2.142, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 3840x2160

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 - CPU Microcode: 0xa201009
OpenCL Notes: GPU Compute Cores: 2560
Python Notes: Python 2.7.18 + Python 3.8.5
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 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (2311 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: ASUS NVIDIA GeForce RTX 2070 8GB (1410/7000MHz), Audio: NVIDIA TU106 HD Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.04, Kernel: 5.4.0-54-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, Display Driver: NVIDIA 455.45.01, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.1.114, Vulkan: 1.2.142, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 3840x2160

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 - CPU Microcode: 0xa201009
OpenCL Notes: GPU Compute Cores: 2304
Python Notes: Python 2.7.18 + Python 3.8.5
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 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (2311 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: NVIDIA GeForce RTX 2080 Ti 11GB (1350/7000MHz), Audio: NVIDIA TU102 HD Audio, Monitor:

ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.04, Kernel: 5.4.0-54-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, Display Driver: NVIDIA 455.45.01, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.1.114, Vulkan: 1.2.142, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 3840x2160

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 - CPU Microcode: 0xa201009
OpenCL Notes: GPU Compute Cores: 4352
Python Notes: Python 2.7.18 + Python 3.8.5
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

Processor: AMD Ryzen 9 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (2311 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: NVIDIA GeForce RTX 2060 6GB (1365/7000MHz), Audio: NVIDIA TU106 HD Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.04, Kernel: 5.4.0-54-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, Display Driver: NVIDIA 455.45.01, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.1.114, Vulkan: 1.2.142, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 3840x2160

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 - CPU Microcode: 0xa201009
OpenCL Notes: GPU Compute Cores: 1920
Python Notes: Python 2.7.18 + Python 3.8.5
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

GTX 1660 Ti

Processor: AMD Ryzen 9 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (2311 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: eVGA NVIDIA GeForce GTX 1660 Ti 6GB (1500/6000MHz), Audio: NVIDIA TU116 HD Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.04, Kernel: 5.4.0-54-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, Display Driver: NVIDIA 455.45.01, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.1.114, Vulkan: 1.2.142, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 3840x2160

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 - CPU Microcode: 0xa201009
OpenCL Notes: GPU Compute Cores: 1536
Python Notes: Python 2.7.18 + Python 3.8.5
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 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (2311 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: NVIDIA GeForce RTX 2060 SUPER 8GB (1470/7000MHz), Audio: NVIDIA TU106 HD Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.04, Kernel: 5.4.0-54-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, Display Driver: NVIDIA 455.45.01, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.1.114, Vulkan: 1.2.142, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 3840x2160

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 - CPU Microcode: 0xa201009
OpenCL Notes: GPU Compute Cores: 2176
Python Notes: Python 2.7.18 + Python 3.8.5
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 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (2311 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: NVIDIA TITAN RTX 24GB (555/810MHz), Audio: NVIDIA TU102 HD Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.04, Kernel: 5.4.0-54-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, Display Driver: NVIDIA 455.45.01, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.1.114, Vulkan: 1.2.142, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 3840x2160

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 - CPU Microcode: 0xa201009
OpenCL Notes: GPU Compute Cores: 4608
Python Notes: Python 2.7.18 + Python 3.8.5
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

GTX 1060

Processor: AMD Ryzen 9 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (2311 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: NVIDIA GeForce GTX 1060 6GB (1506/4006MHz), Audio: NVIDIA GP106 HD Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.04, Kernel: 5.4.0-54-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, Display Driver: NVIDIA 455.45.01, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.1.114, Vulkan: 1.2.142, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 3840x2160

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 - CPU Microcode: 0xa201009
OpenCL Notes: GPU Compute Cores: 1280
Python Notes: Python 2.7.18 + Python 3.8.5
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

GTX 1660 SUPER

Processor: AMD Ryzen 9 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (2311 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: eVGA NVIDIA GeForce GTX 1660 SUPER 6GB (1530/7000MHz), Audio: NVIDIA TU116 HD Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.04, Kernel: 5.4.0-54-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, Display Driver: NVIDIA 455.45.01, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.1.114, Vulkan: 1.2.142, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 3840x2160

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 - CPU Microcode: 0xa201009
OpenCL Notes: GPU Compute Cores: 1408
Python Notes: Python 2.7.18 + Python 3.8.5
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 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (2311 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: NVIDIA GeForce RTX 3060 Ti 8GB (1665/7000MHz), Audio: NVIDIA Device 228b, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.04, Kernel: 5.4.0-54-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, Display Driver: NVIDIA 455.45.01, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.1.114, Vulkan: 1.2.142, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 3840x2160

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 - CPU Microcode: 0xa201009
OpenCL Notes: GPU Compute Cores: 4864
Python Notes: Python 2.7.18 + Python 3.8.5
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

NVIDIA Compute Comparison

	RTX 3080	RTX 2080	RTX 2080 SUPER	RTX 2070 SUPER	RTX 2070	RTX 2080 Ti	RTX 2060	GTX 1660 Ti	RTX 2060 SUPER	TITAN RTX	GTX 1060	GTX 1660 SUPER	RTX 3060 Ti
Blender - Barbershop - NVIDIA OptiX (sec)	458.51	974.80	917.27	1002	1804	902.94	1783	2732	1878	1003		2594	581.54
Normalized	100%	47.04%	49.99%	45.74%	25.42%	50.78%	25.71%	16.78%	24.42%	45.72%		17.68%	78.84%
Standard Deviation	0.3%	0.1%	0%	0.1%	0.2%	0.3%	0.4%	0.6%	0.3%	0.2%		0%	0.5%
RedShift Demo (sec)	172	342	325	352	373	247	479	833	402	256	1064	764	240
Normalized	100%	50.29%	52.92%	48.86%	46.11%	69.64%	35.91%	20.65%	42.79%	67.19%	16.17%	22.51%	71.67%
Standard Deviation					0.2%		0.2%	0.4%	0.1%		0.2%	0.1%	0.4%
LeelaChessZero - OpenCL (Nodes/s)	28389	15758	17915	14332	12723	23269	10249	7051	11284	21084	5925	7324	22842
Normalized	100%	55.51%	63.11%	50.48%	44.82%	81.96%	36.1%	24.84%	39.75%	74.27%	20.87%	25.8%	80.46%
Standard Deviation	0.6%	0.5%	0.8%	0.7%	0.8%	1%	1.4%	1.8%	0.5%	1.2%	1.4%	0.5%	0.4%
Blender - Pabellon Barcelona - NVIDIA OptiX (sec)	59.14	135.02	130.28	135.34	198.24	104.80	210.22	489.37	209.05	114.00	973.87	476.55	86.20
Normalized	100%	43.8%	45.39%	43.7%	29.83%	56.43%	28.13%	12.08%	28.29%	51.88%	6.07%	12.41%	68.61%
Standard Deviation	0.2%	0.1%	0.1%	0.1%	0.1%	0.3%	0.1%	0.1%	0.2%	1%	0%	0.2%	0.1%
Blender - Classroom - NVIDIA OptiX (sec)	41.29	87.26	82.60	90.51	147.16	73.91	149.31	281.98	154.25	82.31	548.35	270.19	55.95
Normalized	100%	47.32%	49.99%	45.62%	28.06%	55.87%	27.65%	14.64%	26.77%	50.16%	7.53%	15.28%	73.8%
Standard Deviation	0.3%	0.2%	0.2%	0.1%	0%	0.3%	0.4%	0.9%	0.3%	0.7%	0%	0.9%	2.4%
LuxCoreRender OpenCL - LuxCore Benchmark (M samples/sec)	7.26	3.48	3.61	3.57	3.51	4.60	2.76	1.96	3.26	4.42	1.45	2.20	5.79
Normalized	100%	47.93%	49.72%	49.17%	48.35%	63.36%	38.02%	27%	44.9%	60.88%	19.97%	30.3%	79.75%
Standard Deviation	3.5%	4.3%	0.4%	5.9%	0.5%	0.8%	0.8%	1.5%	1.1%	2%	6.3%	0.8%	6.5%
LuxCoreRender OpenCL - Food (M	3.54	1.79	1.88	1.78	1.27	2.11	1.17	0.99	1.17	1.99	0.63	1.05	2.80
Normalized	100%	50.56%	53.11%	50.28%	35.88%	59.6%	33.05%	27.97%	33.05%	56.21%	17.8%	29.66%	79.1%
Standard Deviation	6.3%	5.9%	1.3%	8%	0.2%	0.6%	1.4%	1.9%	2%	0.7%	7.6%	1.3%	7.6%
OctaneBench - Total Score (Score)	537.24 2047	259.16 2993	265.14 9965	258.47 2071	242.72 5356	349.41 2708	192.59 8086	124.73 7161	225.40 8822	350.66 2499	80.907 51	131.85 6678	378.71 3033
Normalized	100%	48.24%	49.35%	48.11%	45.18%	65.04%	35.85%	23.22%	41.96%	65.27%	15.06%	24.54%	70.49%

NVIDIA Compute Comparison

LuxCoreRender OpenCL - DLSC (M	**9.29**	4.20	4.34	4.29	4.19	5.65	3.31	2.37	3.96	5.46	**1.73**	2.60	7.13
Normalized	100%	45.21%	46.72%	46.18%	45.1%	60.82%	35.63%	25.51%	42.63%	58.77%	18.62%	27.99%	76.75%
Standard Deviation	5.7%	5%	0.7%	6.4%	0.1%	0.2%	0.6%	0.3%	0.3%	0.3%	6.4%	0.3%	6.7%
Blender - BMW27 - NVIDIA OptiX (sec)	**14.96**	29.53	26.39	26.41	31.96	19.83	37.35	83.09	33.87	21.26	**170.15**	78.26	18.06
Normalized	100%	50.66%	56.69%	56.65%	46.81%	75.44%	40.05%	18%	44.17%	70.37%	8.79%	19.12%	82.83%
Standard Deviation	67.6%	33%	0.1%	0%	0.1%	0.2%	0%	12.3%	0.3%	0.4%	6.6%	0.1%	0.2%
FAHBench (Ns/Day)	**306.7671**	242.5543	257.4767	227.7661	205.4939	300.8935	180.9695	129.4973	189.0783	270.6805	**101.2902**	136.0813	234.5598
Normalized	100%	79.07%	83.93%	74.25%	66.99%	98.09%	58.99%	42.21%	61.64%	88.24%	33.02%	44.36%	76.46%
Standard Deviation	0.2%	0.1%	0.2%	0.1%	0.3%	0.2%	0.2%	0.3%	0.3%	0.7%	0%	0.1%	0.1%
Blender - Fishy Cat - NVIDIA OptiX (sec)	**22.73**	45.98	43.57	48.84	58.17	33.09	68.22	168.18	63.22	35.12	**344.25**	165.55	37.24
Normalized	100%	49.43%	52.17%	46.54%	39.08%	68.69%	33.32%	13.52%	35.95%	64.72%	6.6%	13.73%	61.04%
Standard Deviation	0.4%	0.1%	0.1%	0%	0.1%	0.1%	0.1%	0.1%	0.4%	0.6%	0%	0.1%	0%
RealSR-NCNN - 4x - Yes (sec)	**35.720**	60.095	54.783	63.754	74.806	44.725	86.602	123.848	80.587	45.553	**144.628**	120.907	52.468
Normalized	100%	59.44%	65.2%	56.03%	47.75%	79.87%	41.25%	28.84%	44.32%	78.41%	24.7%	29.54%	68.08%
Standard Deviation	0.8%	0.9%	0.4%	0.5%	1%	0.6%	0.5%	0.2%	0.7%	0.7%	0.3%	0.2%	0.2%
Geekbench - GPU Vulkan (Score)	**158724**	98487	108359	96082	85125	132489	72689	59063	75750	128003	**37844**	60351	112321
Normalized	100%	62.05%	68.27%	60.53%	53.63%	83.47%	45.8%	37.21%	47.72%	80.65%	23.84%	38.02%	70.76%
Standard Deviation	3.1%	2%	3%	2.4%	0.9%	3.7%	2%	2.2%	0.8%	3.6%	1.5%	1.2%	3.2%
IndigoBench - OpenCL GPU - Bedroom (M samples/s)	**16.595**	7.711	7.884	7.677	7.394	10.913	5.534	4.360	6.865	10.588	**3.547**	4.662	11.394
Normalized	100%	46.47%	47.51%	46.26%	44.56%	65.76%	33.35%	26.27%	41.37%	63.8%	21.37%	28.09%	68.66%
Standard Deviation	0.3%	0.2%	0.1%	0.2%	0%	0.2%	0.1%	0%	0.2%	0.1%	0.1%	0.1%	0%
IndigoBench - OpenCL GPU - Supercar (M samples/s)	**43.589**	24.825	25.478	24.490	23.430	33.190	18.252	14.304	21.666	31.757	**10.282**	15.241	33.520
Normalized	100%	56.95%	58.45%	56.18%	53.75%	76.14%	41.87%	32.82%	49.71%	72.86%	23.59%	34.97%	76.9%
Standard Deviation	0.9%	0%	0.5%	0.1%	0.1%	0.7%	0.1%	0.1%	0.7%	0.7%	0.2%	0.4%	0.1%
Geekbench - GPU NVIDIA CUDA (Score)	**208331**	121856	128277	110450	99664	167858	83535	67003	90572	155867	**33671**	66387	136797
Normalized	100%	58.49%	61.57%	53.02%	47.84%	80.57%	40.1%	32.16%	43.48%	74.82%	16.16%	31.87%	65.66%
Standard Deviation	4.2%	0.9%	2.4%	0.8%	1.2%	1.3%	0.9%	0.3%	1.3%	4.2%	0.5%	1%	1.1%

NVIDIA Compute Comparison

LuxCoreRender OpenCL - R.C.a.P (M samples/sec)	**20.82**	8.95	9.03	9.86	10.98	12.08	7.83	**4.764166667**	10.45	12.13	5.34	5.54	16.84
Normalized	100%	42.99%	43.37%	47.36%	52.74%	58.02%	37.61%	22.88%	50.19%	58.26%	25.65%	26.61%	80.88%
Standard Deviation	8.5%	6.9%	1%	9.3%	1%	0.5%	0.8%	0.2%	0.6%	1.3%	7%	1%	11.8%
clpeak - D.P.D (GFLOPS)	514.40	343.49	373.04	306.51	267.76	**516.53**	229.29	173.67	245.51	498.14	**150.15**	170.63	302.82
Normalized	99.59%	66.5%	72.22%	59.34%	51.84%	100%	44.39%	33.62%	47.53%	96.44%	29.07%	33.03%	58.63%
Standard Deviation	0.5%	0.5%	0.1%	0.2%	0.5%	0.7%	0.2%	0.5%	0.3%	0.9%	0.3%	0.3%	0.3%
PlaidML - No - Inference - DenseNet 201 - OpenCL (FPS)	**243.50**	150.94	159.34	148.55	148.07	211.01	124.27	93.61	137.81	208.22	**78.97**	99.49	177.04
Normalized	100%	61.99%	65.44%	61.01%	60.81%	86.66%	51.03%	38.44%	56.6%	85.51%	32.43%	40.86%	72.71%
Standard Deviation	0.3%	0.3%	0.2%	0.1%	0.2%	0.2%	0.1%	0.2%	0.3%	0.2%	0%	0.1%	0.2%
VkFFT (Benchmark Score)	**49631**	28564	30720	27682	26600	37384	20883	17097	24975	36933	**12788**	18450	32065
Normalized	100%	57.55%	61.9%	55.78%	53.6%	75.32%	42.08%	34.45%	50.32%	74.42%	25.77%	37.17%	64.61%
Standard Deviation	0.6%	0.4%	0.3%	0.4%	0.1%	0.4%	0.2%	0.2%	0.4%	0.6%	0.1%	0.3%	0.1%
Geekbench - GPU OpenCL (Score)	**197267**	114773	124272	105899	93805	152583	80712	64871	87076	151148	**36798**	64680	132421
Normalized	100%	58.18%	63%	53.68%	47.55%	77.35%	40.92%	32.88%	44.14%	76.62%	18.65%	32.79%	67.13%
Standard Deviation	0.6%	0.3%	1.4%	0.9%	1.2%	0.3%	1.7%	1.1%	1.6%	2%	1%	1.5%	1.7%
RealSR-NCNN - 4x - No (sec)	**6.576**	9.611	9.031	10.206	11.537	7.743	12.936	17.733	12.377	8.009	**20.128**	17.214	8.633
Normalized	100%	68.42%	72.82%	64.43%	57%	84.93%	50.83%	37.08%	53.13%	82.11%	32.67%	38.2%	76.17%
Standard Deviation	0.5%	0.8%	0.7%	0.7%	0.2%	0.4%	0.2%	0.3%	0.3%	0.8%	0.1%	0.3%	0.6%
PlaidML - No - Inference - IMDB LSTM - OpenCL (FPS)	**975.56**	544.72	587.72	498.24	447.06	747.50	389.45	299.07	416.15	718.51	**226.15**	296.82	686.66
Normalized	100%	55.84%	60.24%	51.07%	45.83%	76.62%	39.92%	30.66%	42.66%	73.65%	23.18%	30.43%	70.39%
Standard Deviation	0.5%	0.2%	0.2%	0.4%	0.1%	0.2%	0.2%	0.2%	0.2%	0.6%	0.3%	0.2%	0.3%
PlaidML - Yes - Inference - Mobilenet - OpenCL (FPS)	**3725**	2340	2481	2297	2009	3227	1696	1352	1952	3284	**982.70**	1371	2439
Normalized	100%	62.81%	66.59%	61.66%	53.93%	86.63%	45.54%	36.29%	52.4%	88.16%	26.38%	36.8%	65.47%
Standard Deviation	1.4%	0.9%	0.8%	1.4%	0.5%	0.8%	4.7%	0.4%	1.4%	1.6%	0.3%	0.9%	0.2%
Waifu2x-NCNN Vulkan - 2x - 3 - Yes (sec)	**3.519**	4.582	4.368	4.769	5.211	3.835	5.792	7.243	5.553	4.124	**9.251**	7.060	4.236
Normalized	100%	76.8%	80.56%	73.79%	67.53%	91.76%	60.76%	48.58%	63.37%	85.33%	38.04%	49.84%	83.07%
Standard Deviation	2.4%	1.3%	1.3%	1.6%	1.1%	1.6%	1.3%	1%	1.4%	1.6%	0.9%	0.9%	2.1%

NVIDIA Compute Comparison

PlaidML - No - Inference - Mobilenet - OpenCL (FPS)	2996	1714	1832	1708	1580	2406	1283	985.97	1509	2395	778.99	1075	1876
Normalized	100%	57.22%	61.15%	57.01%	52.75%	80.32%	42.81%	32.91%	50.38%	79.95%	26%	35.89%	62.62%
Standard Deviation	1%	0.6%	0.5%	1.1%	0.5%	1%	0.7%	0.4%	0.6%	0.8%	0.5%	0.8%	0.4%
ArrayFire - C.G.O (ms)	1.627	2.094	1.917	2.076	2.094	1.678	2.671	3.228	2.198	1.756	5.023	2.670	2.094
Normalized	100%	77.7%	84.87%	78.37%	77.7%	96.96%	60.91%	50.4%	74.02%	92.65%	32.39%	60.94%	77.7%
Standard Deviation	1.6%	1.2%	1.8%	1.3%	0.3%	0.5%	1.1%	0.3%	0.5%	1.2%	0.9%	1.7%	0.4%
clpeak - I.C.I (GIOPS)	14574	9509	10455	8495	7134	13254	5248	4444	6754	13266	1226	4308	8291
Normalized	100%	65.25%	71.74%	58.29%	48.95%	90.94%	36.01%	30.49%	46.34%	91.02%	8.41%	29.56%	56.89%
Standard Deviation	3.7%	2.7%	3.6%	4.4%	4.4%	4%	3.4%	4.7%	4%	4.7%	4.6%	2.6%	3%
clpeak - S.P.F (GFLOPS)	28089	9118	10190	8537	7203	13338	5480	4448	6758	13605	4095	4543	16013
Normalized	100%	32.46%	36.28%	30.39%	25.65%	47.49%	19.51%	15.84%	24.06%	48.43%	14.58%	16.17%	57.01%
Standard Deviation	2.7%	2.8%	3.6%	3.9%	5%	4.7%	7.4%	3.9%	4.1%	3.7%	6.2%	2.3%	0.6%
Geekbench - GPU Vulkan (Score/Watt)	1503	1363	1486	1469	1608	1593	1275	1281	1117	1301	715.07	1127	1806
Normalized	83.21%	75.45%	82.28%	81.34%	89.05%	88.19%	70.59%	70.93%	61.82%	72.05%	39.59%	62.38%	100%
Geekbench - GPU NVIDIA CUDA (Score/Watt)	1916	1752	1816	1590	1524	1927	1314	1500	1422	1603	592.62	1208	2140
Normalized	89.54%	81.86%	84.85%	74.32%	71.2%	90.07%	61.41%	70.08%	66.45%	74.89%	27.69%	56.44%	100%
Geekbench - GPU OpenCL (Score/Watt)	1937	1613	1855	1659	1631	1962	1474	1731	1458	1558	766.73	1297	2278
Normalized	85%	70.81%	81.44%	72.81%	71.6%	86.13%	64.7%	75.98%	63.98%	68.37%	33.66%	56.93%	100%
IndigoBench - OpenCL GPU - Bedroom (M samples/s/Watt	0.07	0.05	0.06	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.07
Normalized	100%	71.43%	85.71%	71.43%	85.71%	71.43%	71.43%	71.43%	71.43%	71.43%	71.43%	71.43%	100%
IndigoBench - OpenCL GPU - Supercar (M samples/s/Watt	0.19	0.18	0.18	0.18	0.18	0.17	0.17	0.18	0.17	0.15	0.16	0.16	0.23
Normalized	82.61%	78.26%	78.26%	78.26%	78.26%	73.91%	73.91%	78.26%	73.91%	65.22%	69.57%	69.57%	100%
VkFFT (Benchmark Score/Watt)	329.04	253.77	281.33	264.03	286.99	287.99	235.12	241.67	250.53	261.32	188.54	227.18	328.58
Normalized	100%	77.12%	85.5%	80.24%	87.22%	87.52%	71.46%	73.45%	76.14%	79.42%	57.3%	69.04%	99.86%
LeelaChessZero - OpenCL (Nodes/s/Watt)	103.85	82.87	91.44	77.62	76.50	94.30	67.87	60.93	68.81	82.37	55.11	61.33	120.64
Normalized	86.08%	68.69%	75.8%	64.34%	63.41%	78.17%	56.26%	50.51%	57.04%	68.28%	45.68%	50.84%	100%

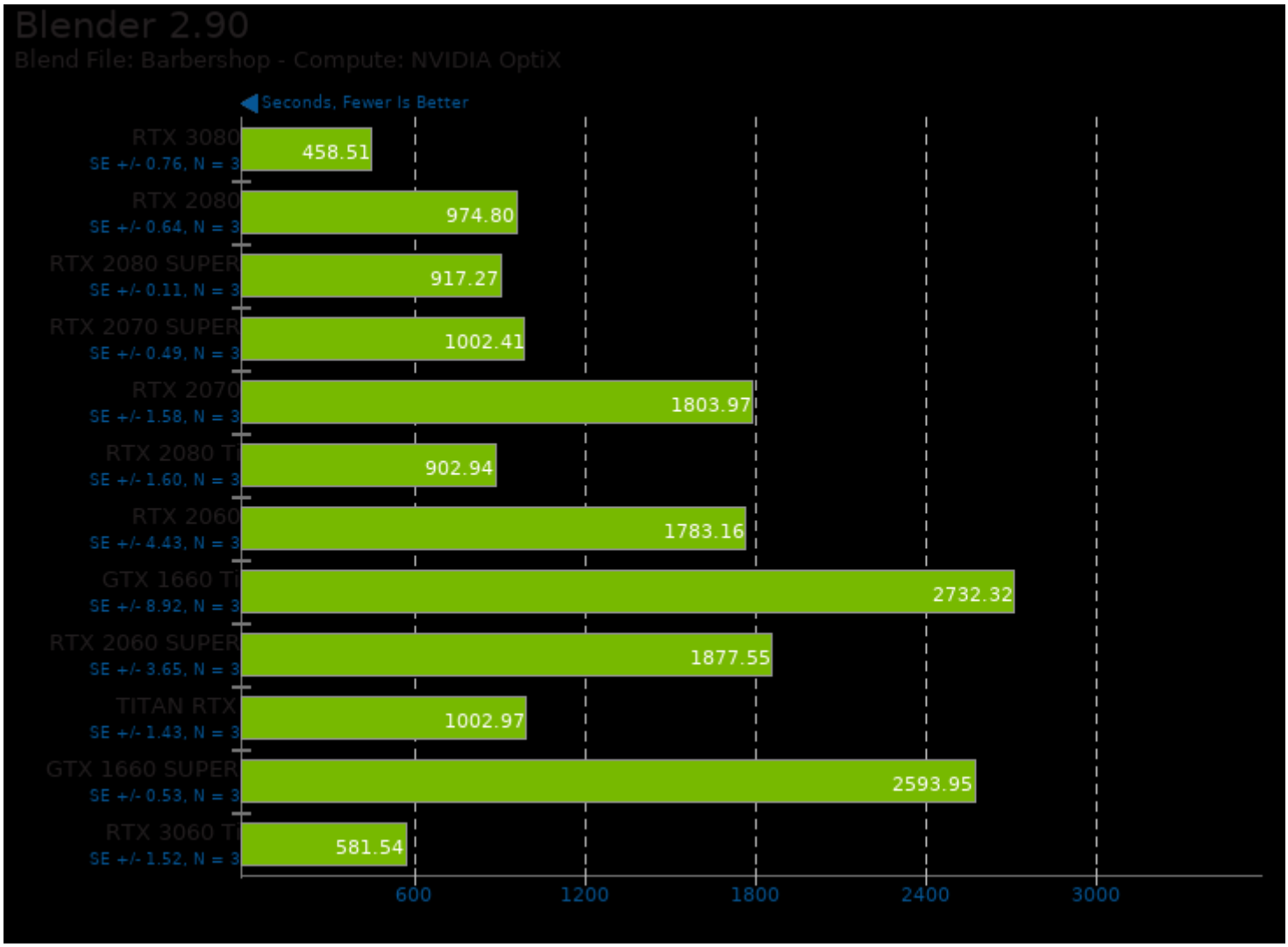
NVIDIA Compute Comparison

PlaidML - No - Inference - IMDB LSTM - OpenCL	8.30	6.18	7.04	6.03	6.12	7.71	5.10	5.14	4.99	6.56	**3.48**	4.78	**9.36**
Normalized	88.68%	66.03%	75.21%	64.42%	65.38%	82.37%	54.49%	54.91%	53.31%	70.09%	37.18%	51.07%	100%
PlaidML - No - Inference - DenseNet 201 - OpenCL (FPS/Watt)	1.94	1.64	2.09	1.46	1.55	1.65	1.49	**1.32**	1.37	1.53	1.49	1.74	**2.66**
Normalized	72.93%	61.65%	78.57%	54.89%	58.27%	62.03%	56.02%	49.62%	51.5%	57.52%	56.02%	65.41%	100%
PlaidML - No - Inference - Mobilenet - OpenCL (FPS/Watt)	29.90	24.69	28.11	25.09	25.24	29.90	21.49	20.91	23.51	26.40	**14.09**	19.70	**31.55**
Normalized	94.77%	78.26%	89.1%	79.52%	80%	94.77%	68.11%	66.28%	74.52%	83.68%	44.66%	62.44%	100%
PlaidML - Yes - Inference - Mobilenet - OpenCL (FPS/Watt)	43.22	36.24	43.27	36.78	41.22	**49.67**	33.14	33.03	34.95	41.53	**19.85**	28.53	45.66
Normalized	87.01%	72.96%	87.11%	74.05%	82.99%	100%	66.72%	66.5%	70.36%	83.61%	39.96%	57.44%	91.93%
clpeak - I.C.I (GIOPS/Watt)	116.90	127.83	**152.30**	119.43	120.15	147.86	103.54	112.27	99.10	118.27	**19.39**	96.51	128.32
Normalized	76.76%	83.93%	100%	78.42%	78.89%	97.08%	67.98%	73.72%	65.07%	77.66%	12.73%	63.37%	84.25%
clpeak - D.P.D (GFLOPS/Watt)	3.52	3.57	**4.29**	3.58	3.79	4.14	3.44	3.67	3.07	3.56	3.07	**2.99**	4.04
Normalized	82.05%	83.22%	100%	83.45%	88.34%	96.5%	80.19%	85.55%	71.56%	82.98%	71.56%	69.7%	94.17%
clpeak - S.P.F (GFLOPS/Watt)	309.31	152.55	179.85	144.93	157.05	158.64	131.53	142.17	124.64	132.66	**101.60**	117.45	**327.99**
Normalized	94.3%	46.51%	54.83%	44.19%	47.88%	48.37%	40.1%	43.35%	38%	40.45%	30.98%	35.81%	100%
LuxCoreRender OpenCL - Food (M samples/sec/Watt)	**0.02**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**
Normalized	100%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	100%
LuxCoreRender OpenCL - R.C.a.P (M samples/sec/Watt)	0.11	0.08	0.08	0.09	0.10	0.08	0.08	**0.07**	0.09	**0.07**	0.08	**0.07**	**0.15**
Normalized	73.33%	53.33%	53.33%	60%	66.67%	53.33%	53.33%	46.67%	60%	46.67%	53.33%	46.67%	100%

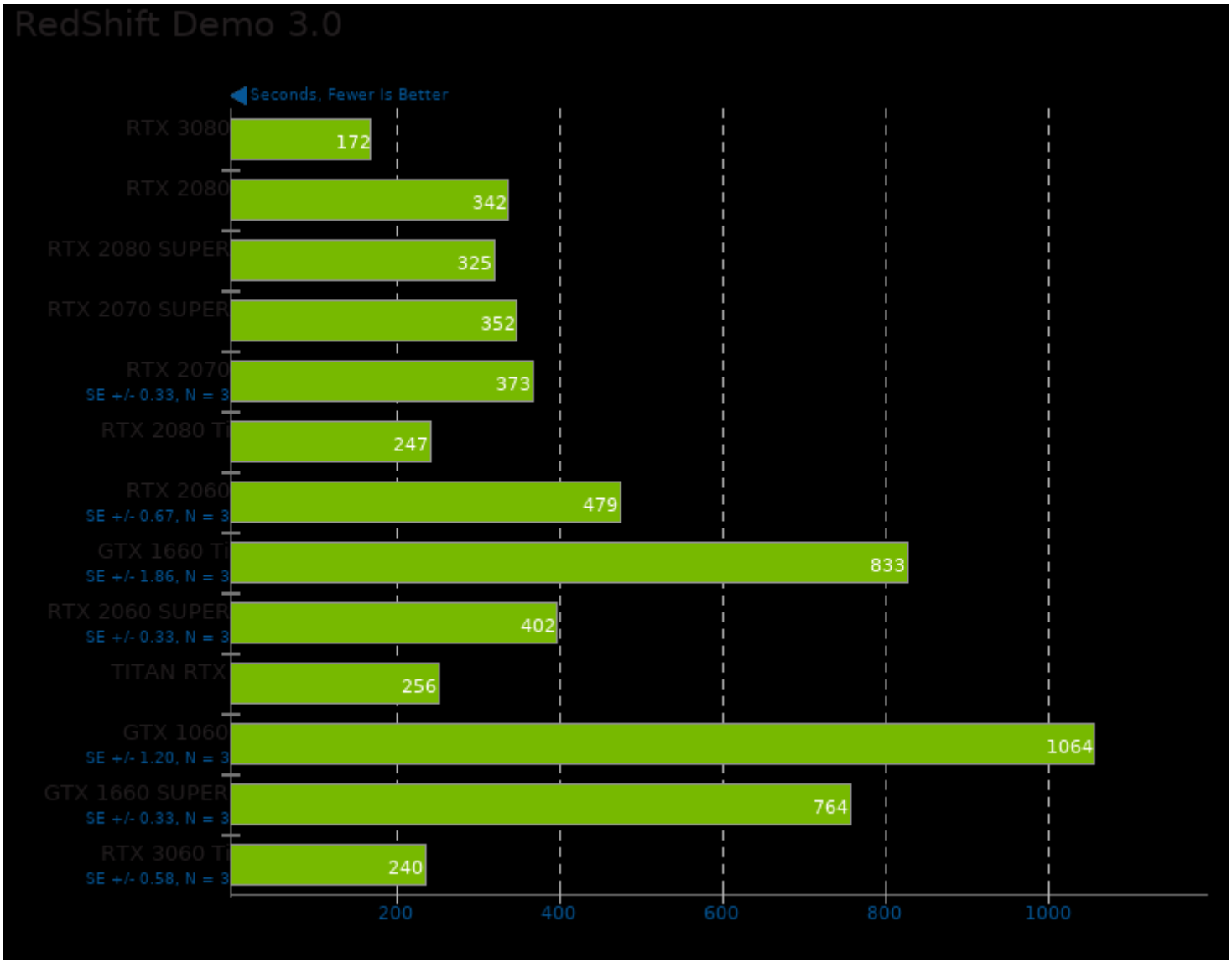
NVIDIA Compute Comparison

LuxCoreRender OpenCL - DLSC (M samples/sec/Watt)	**0.04**	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	**0.02**	0.03	**0.04**
Normalized	100%	75%	75%	75%	75%	75%	75%	75%	75%	75%	50%	75%	100%
LuxCoreRender OpenCL - LuxCore Benchmark (M samples/sec/Watt)	0.03	**0.02**	0.03	0.03	0.03	**0.02**	0.03	0.03	0.03	**0.02**	**0.02**	**0.02**	**0.04**
Normalized	75%	50%	75%	75%	75%	50%	75%	75%	75%	50%	50%	50%	100%
OctaneBench - Total Score (Score/Watt)	1.87	1.59	1.73	1.68	1.72	1.55	1.63	1.28	1.57	1.50	**1.06**	1.21	**2.28**
Normalized	82.02%	69.74%	75.88%	73.68%	75.44%	67.98%	71.49%	56.14%	68.86%	65.79%	46.49%	53.07%	100%
FAHBench (Ns/Day/Watt)	1.68	1.80	1.98	1.89	1.88	1.84	1.77	1.83	1.73	1.66	**1.51**	1.63	**2.10**
Normalized	80%	85.71%	94.29%	90%	89.52%	87.62%	84.29%	87.14%	82.38%	79.05%	71.9%	77.62%	100%

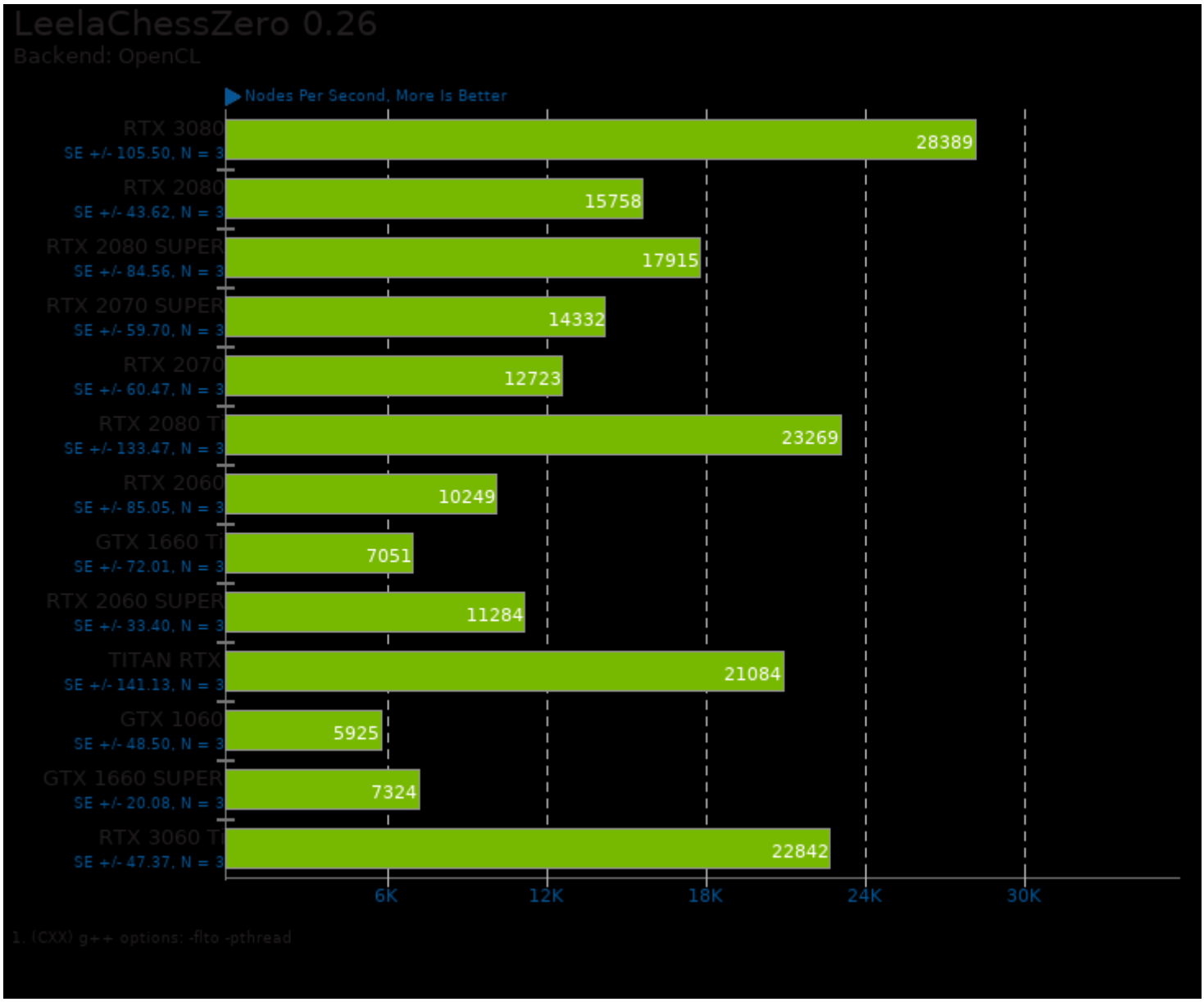
NVIDIA Compute Comparison



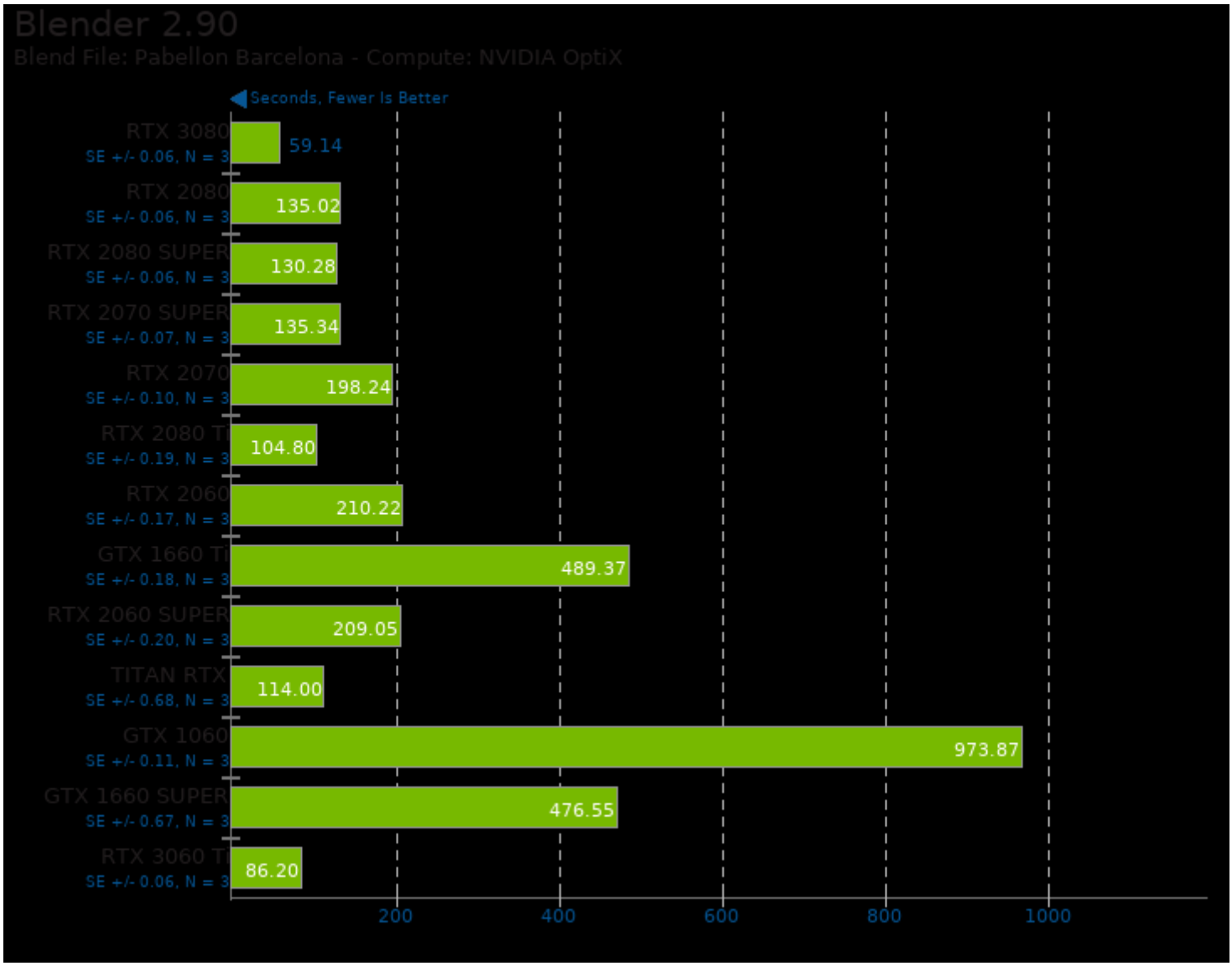
NVIDIA Compute Comparison



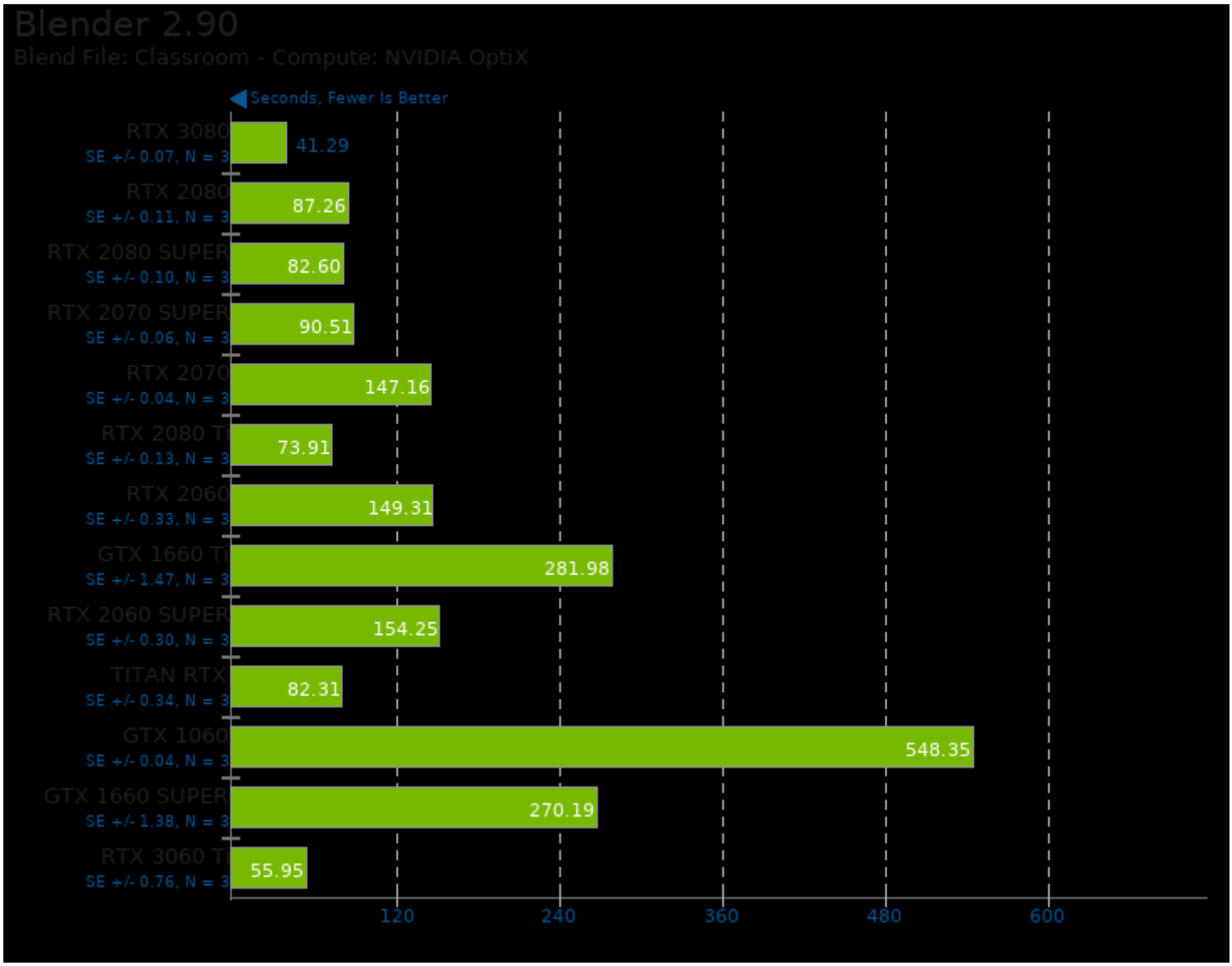
NVIDIA Compute Comparison



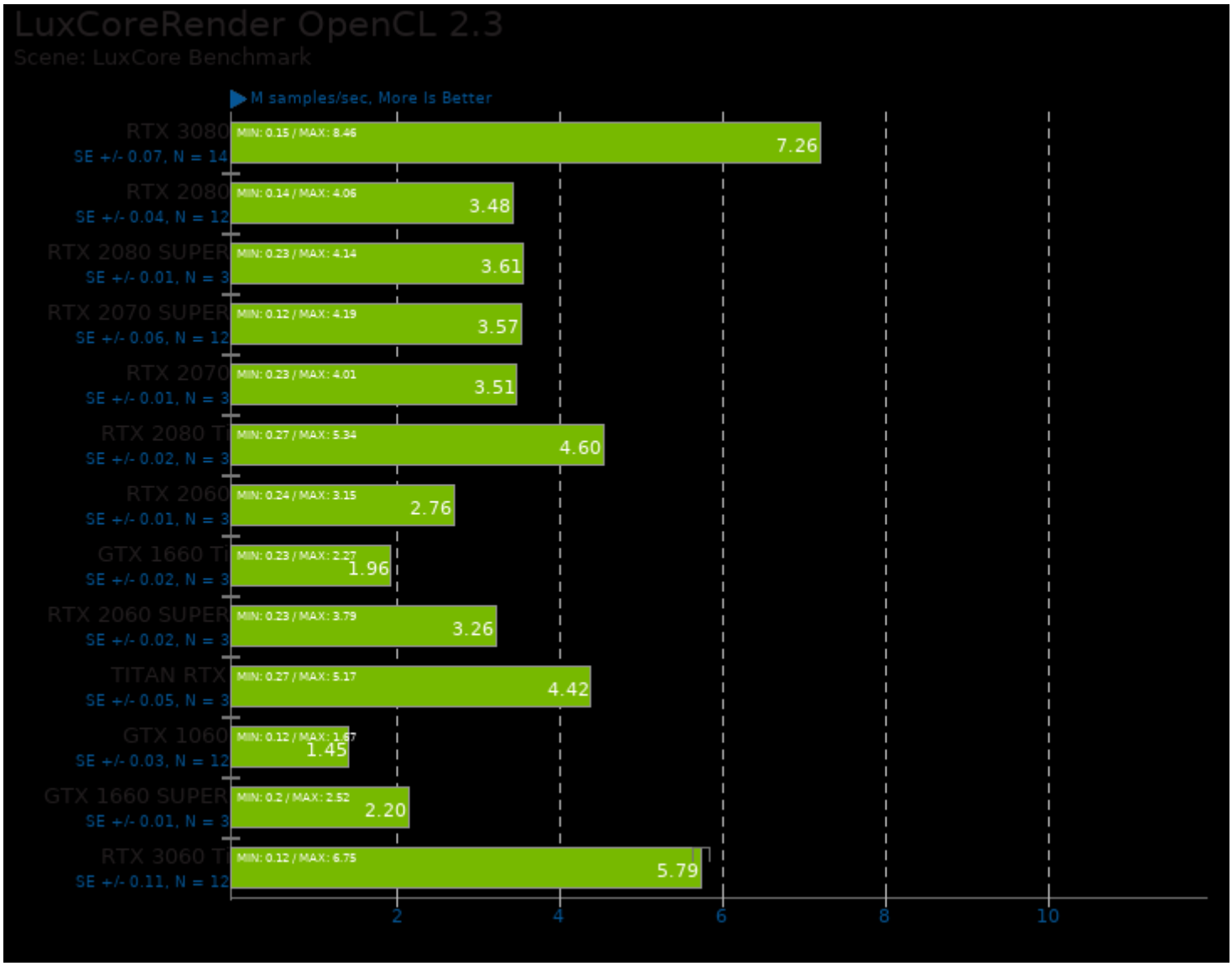
NVIDIA Compute Comparison



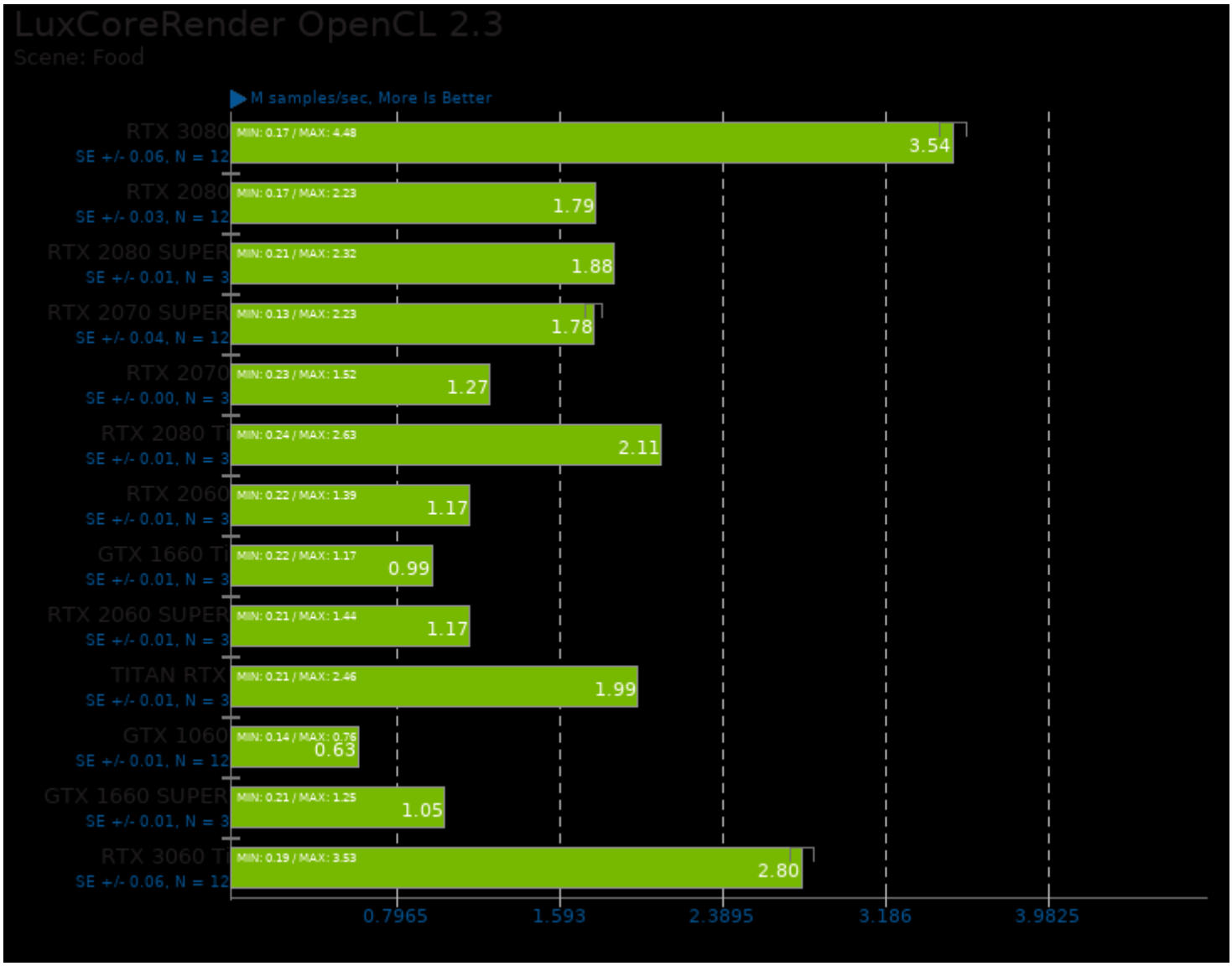
NVIDIA Compute Comparison



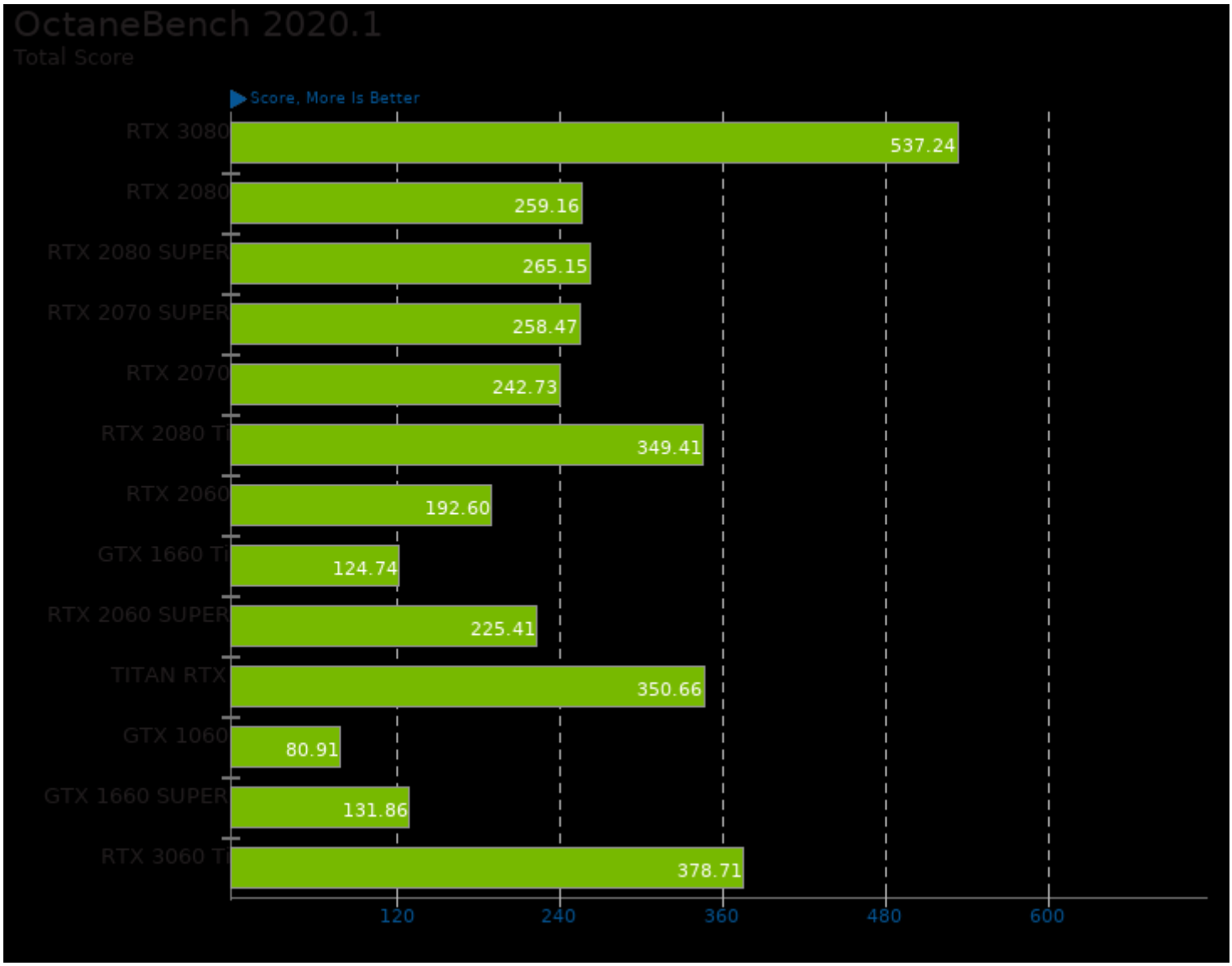
NVIDIA Compute Comparison



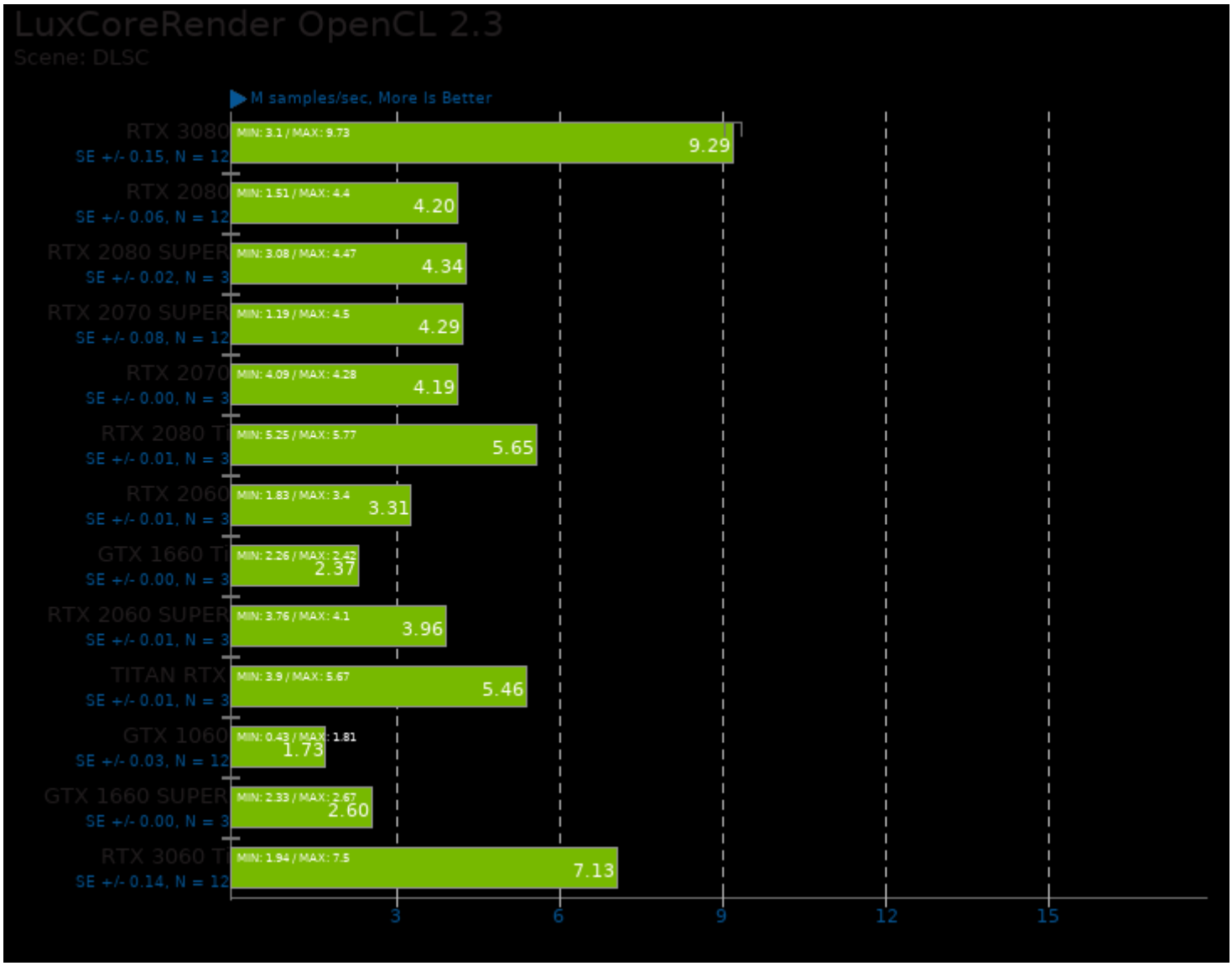
NVIDIA Compute Comparison



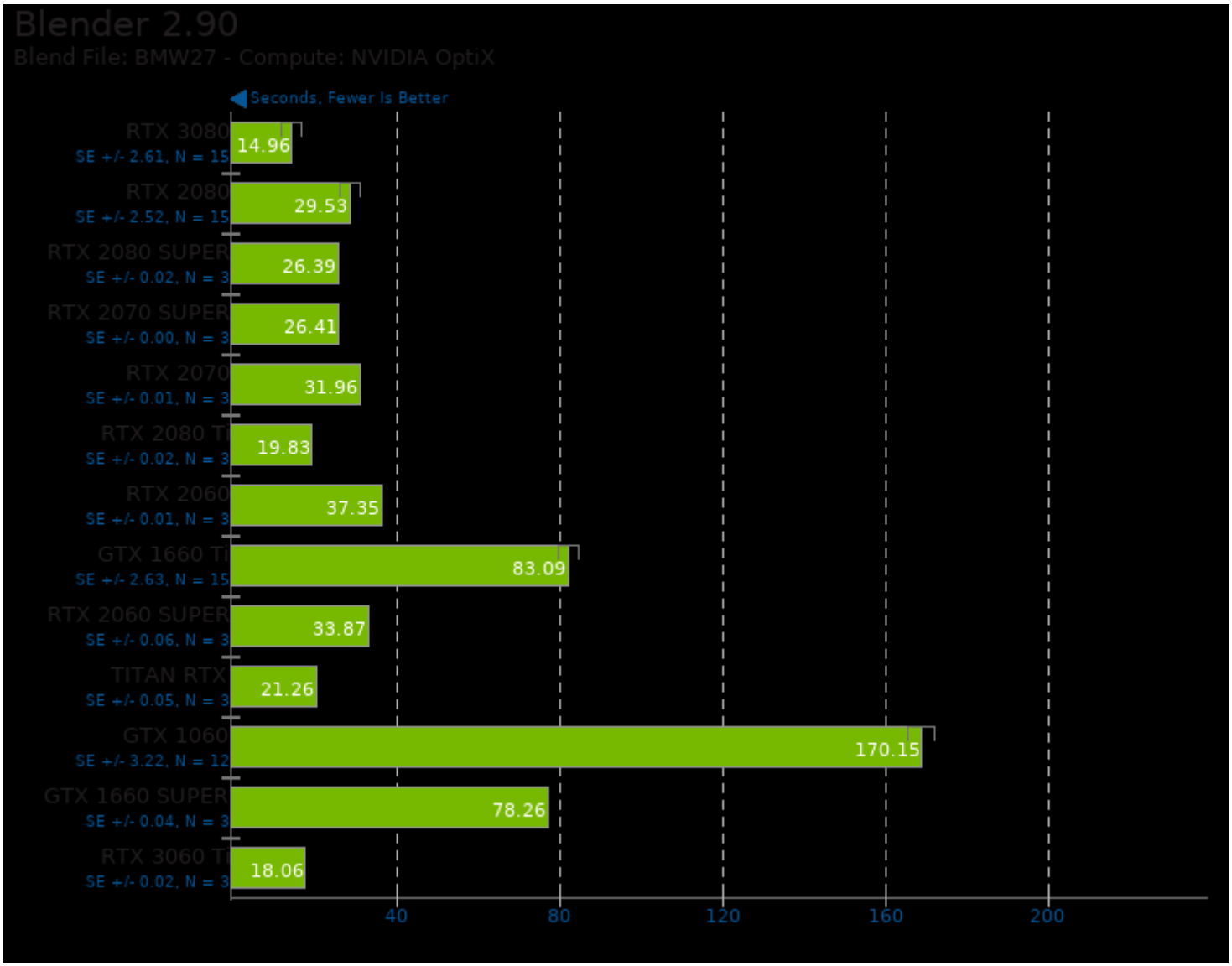
NVIDIA Compute Comparison



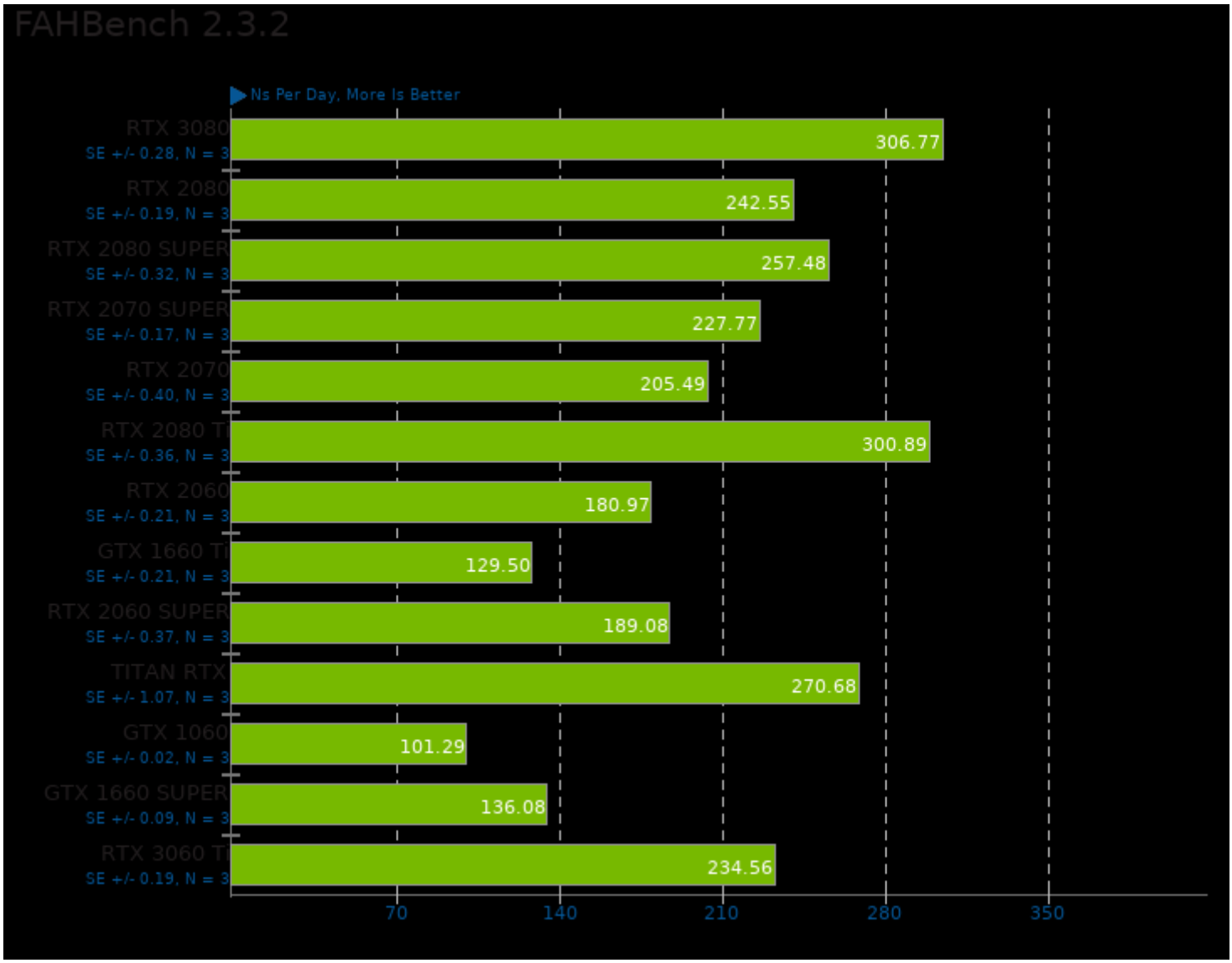
NVIDIA Compute Comparison



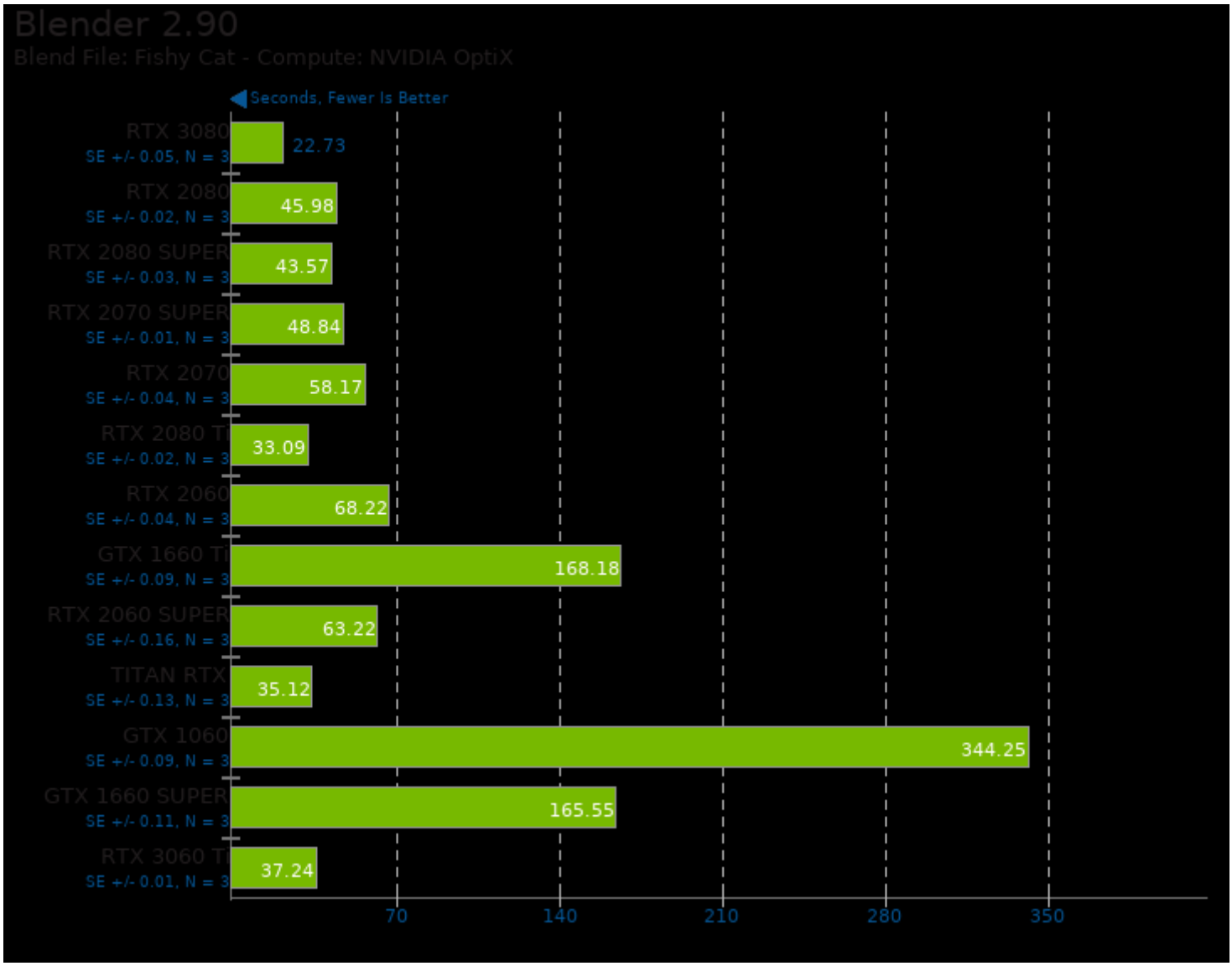
NVIDIA Compute Comparison



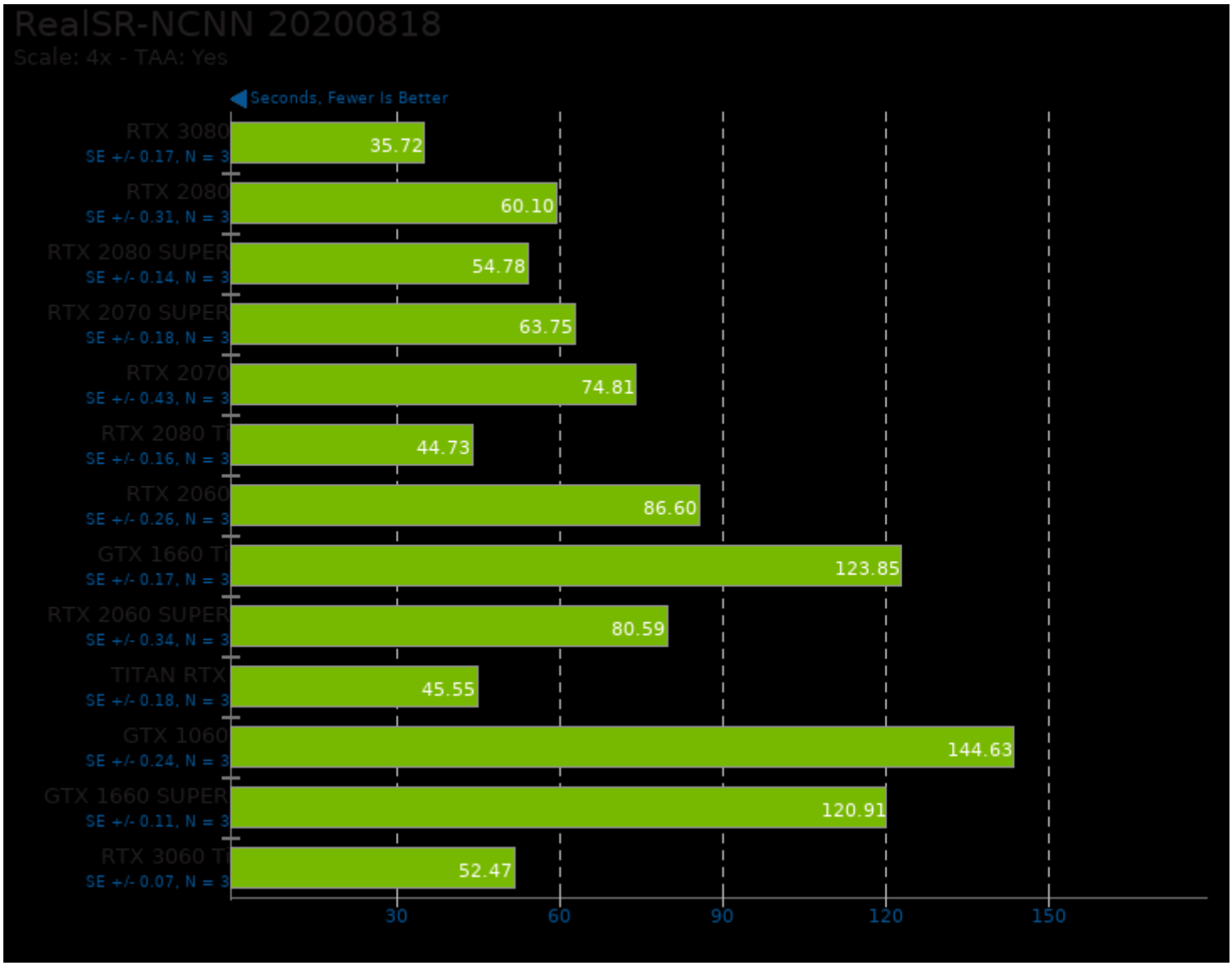
NVIDIA Compute Comparison



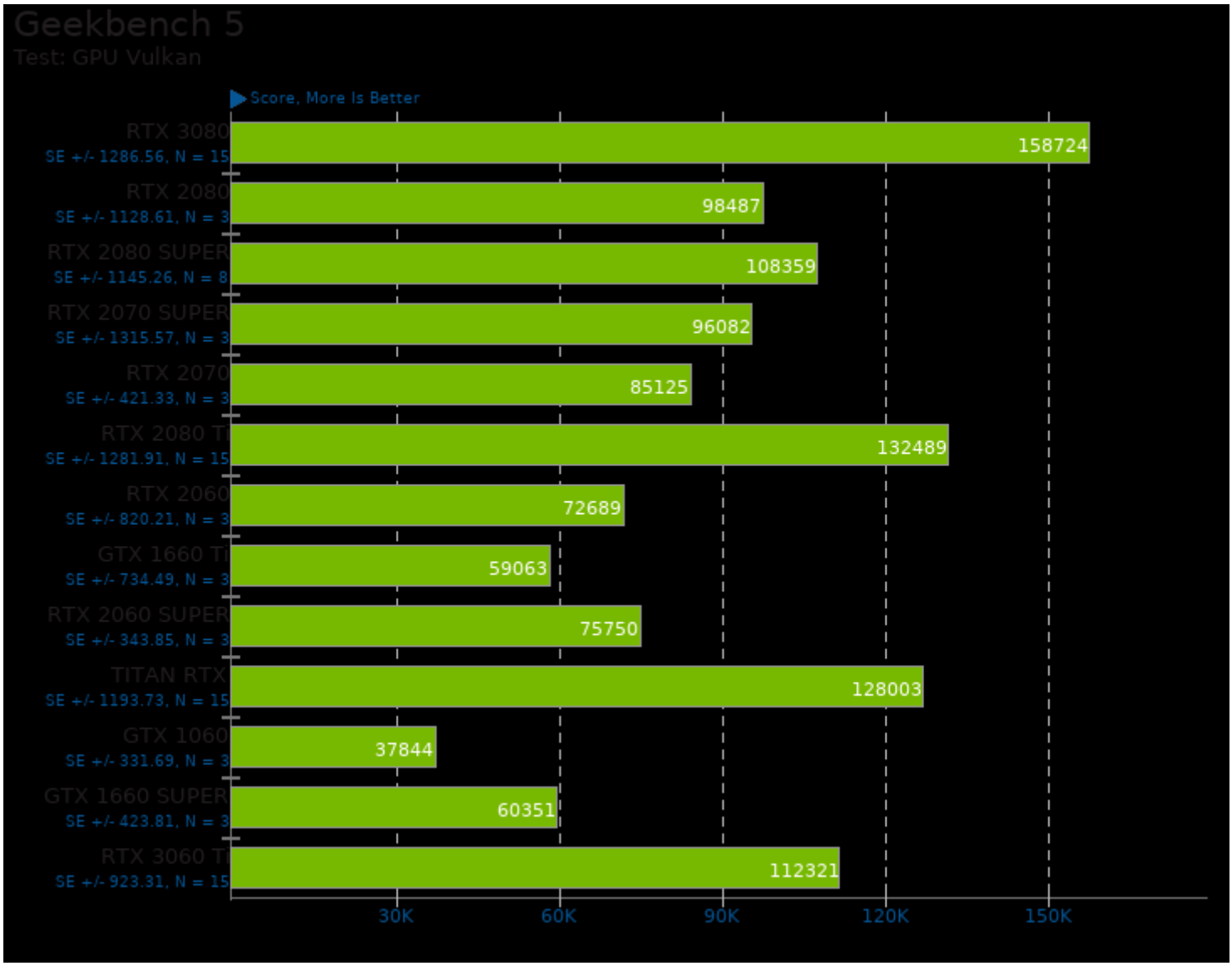
NVIDIA Compute Comparison



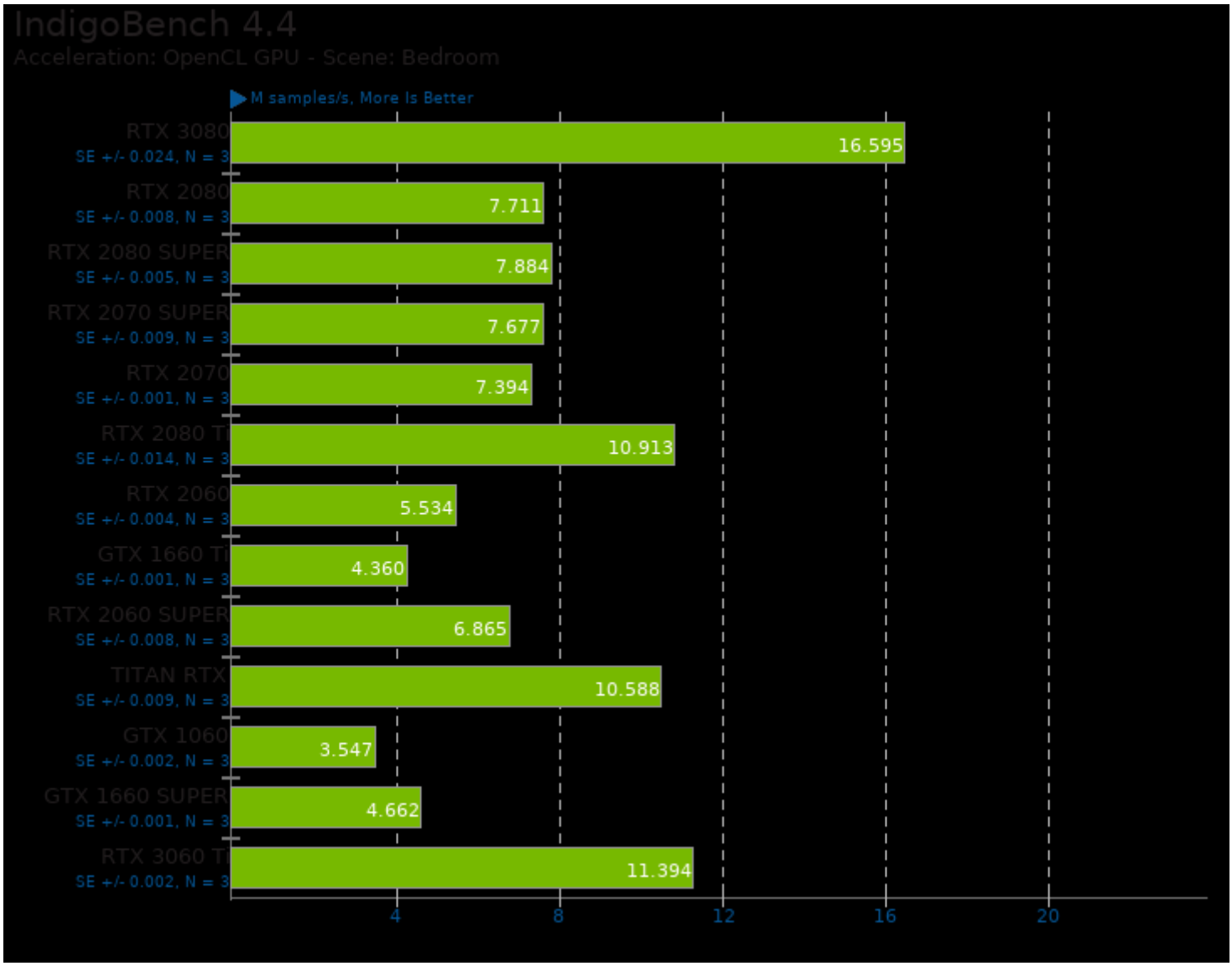
NVIDIA Compute Comparison



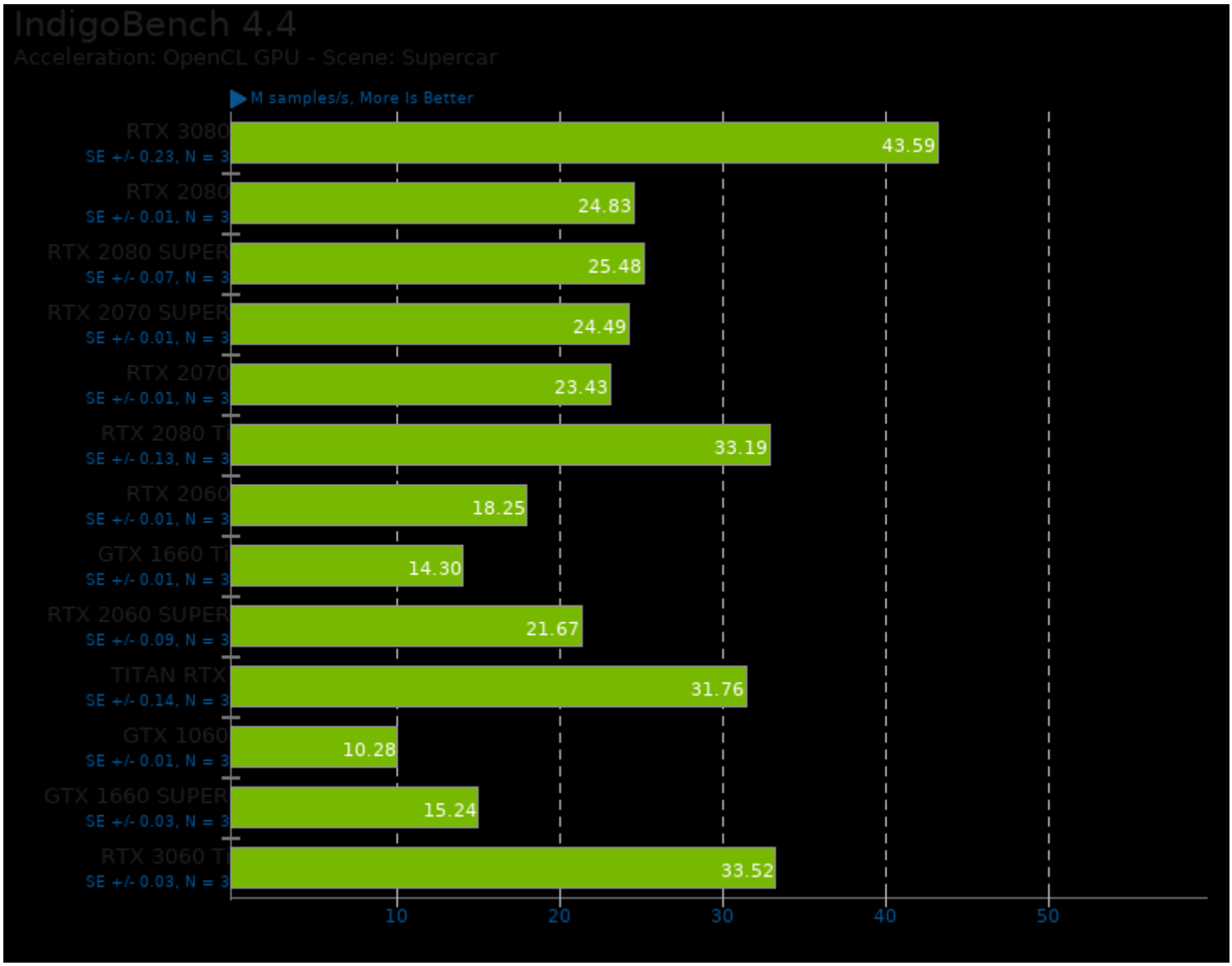
NVIDIA Compute Comparison



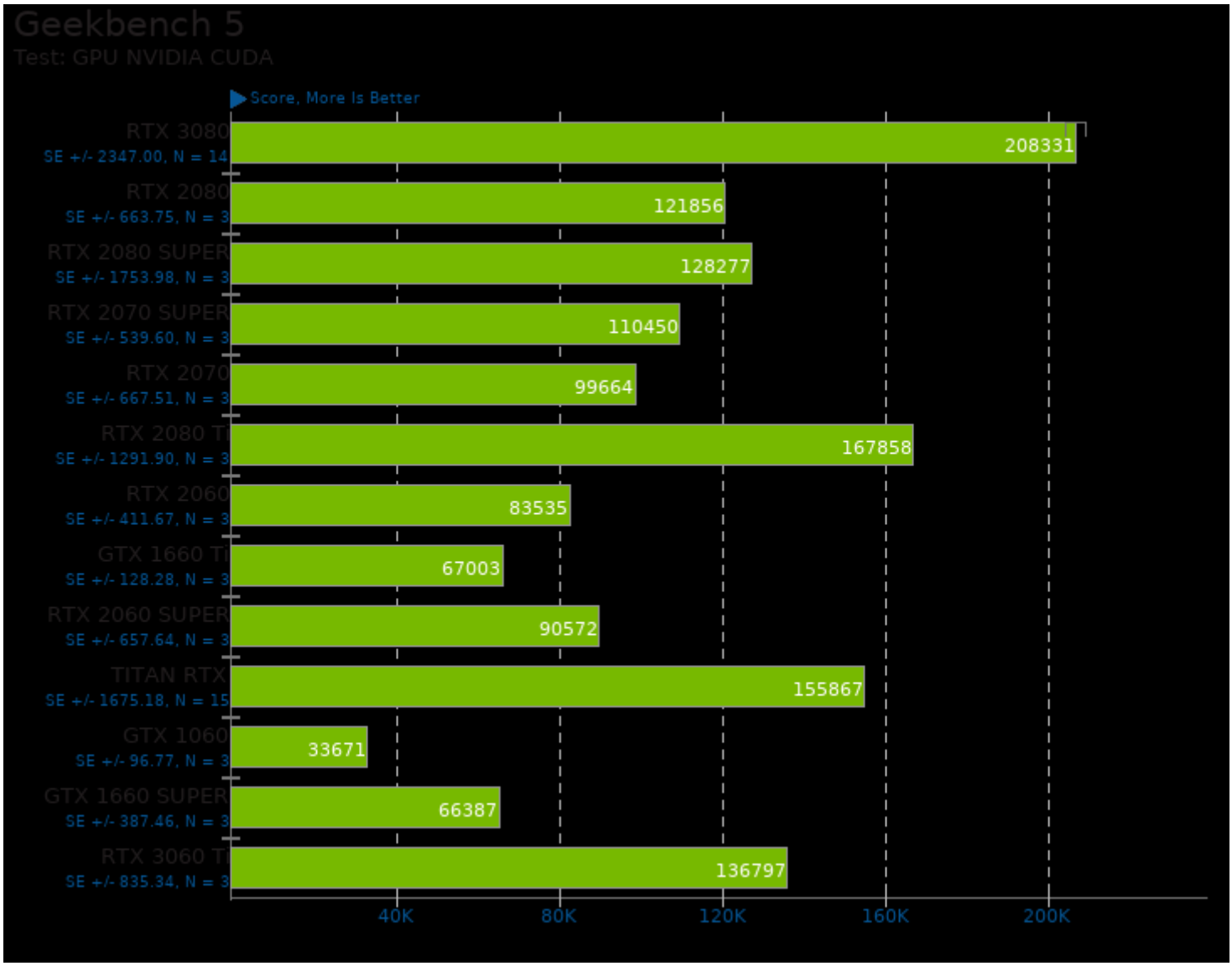
NVIDIA Compute Comparison



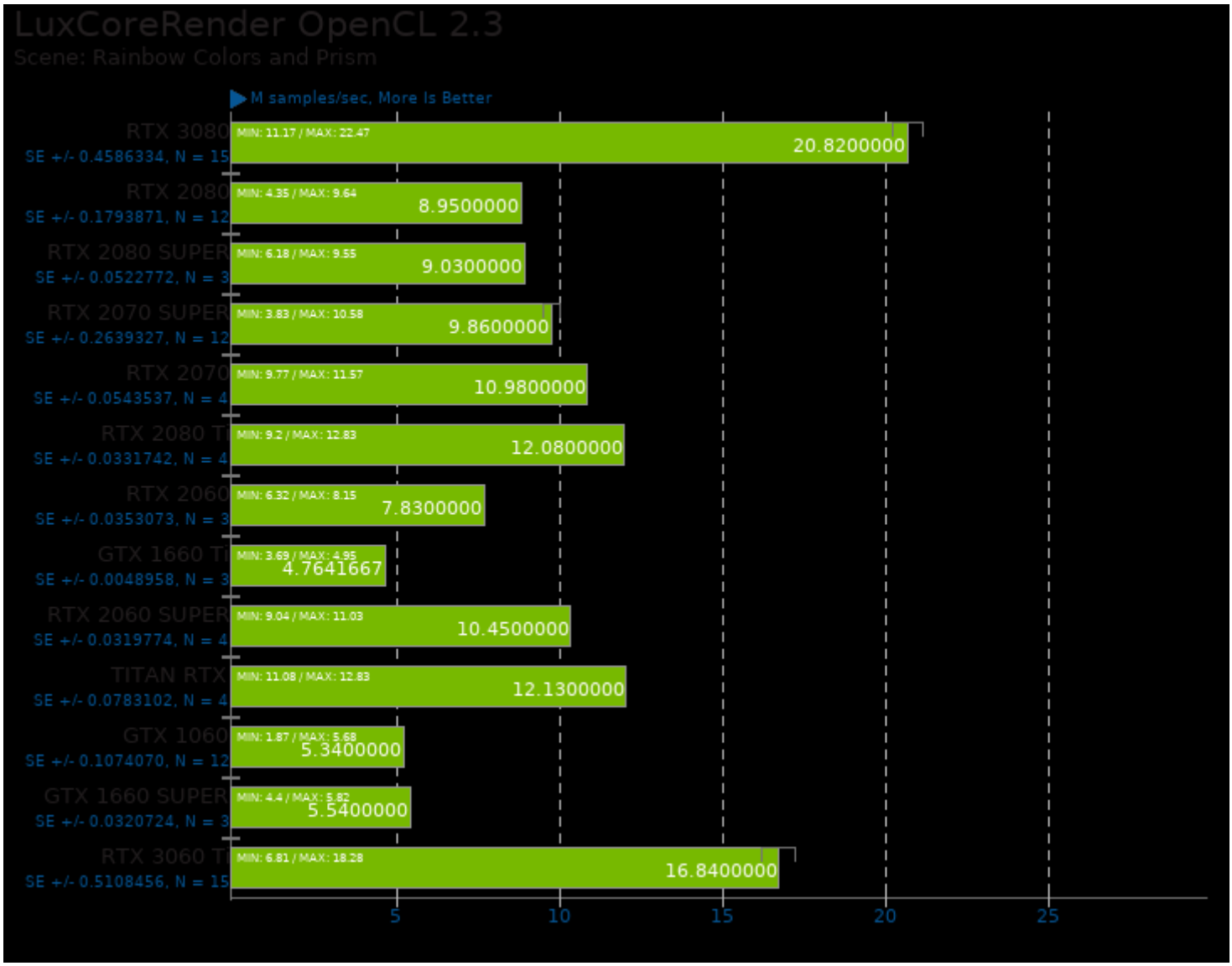
NVIDIA Compute Comparison



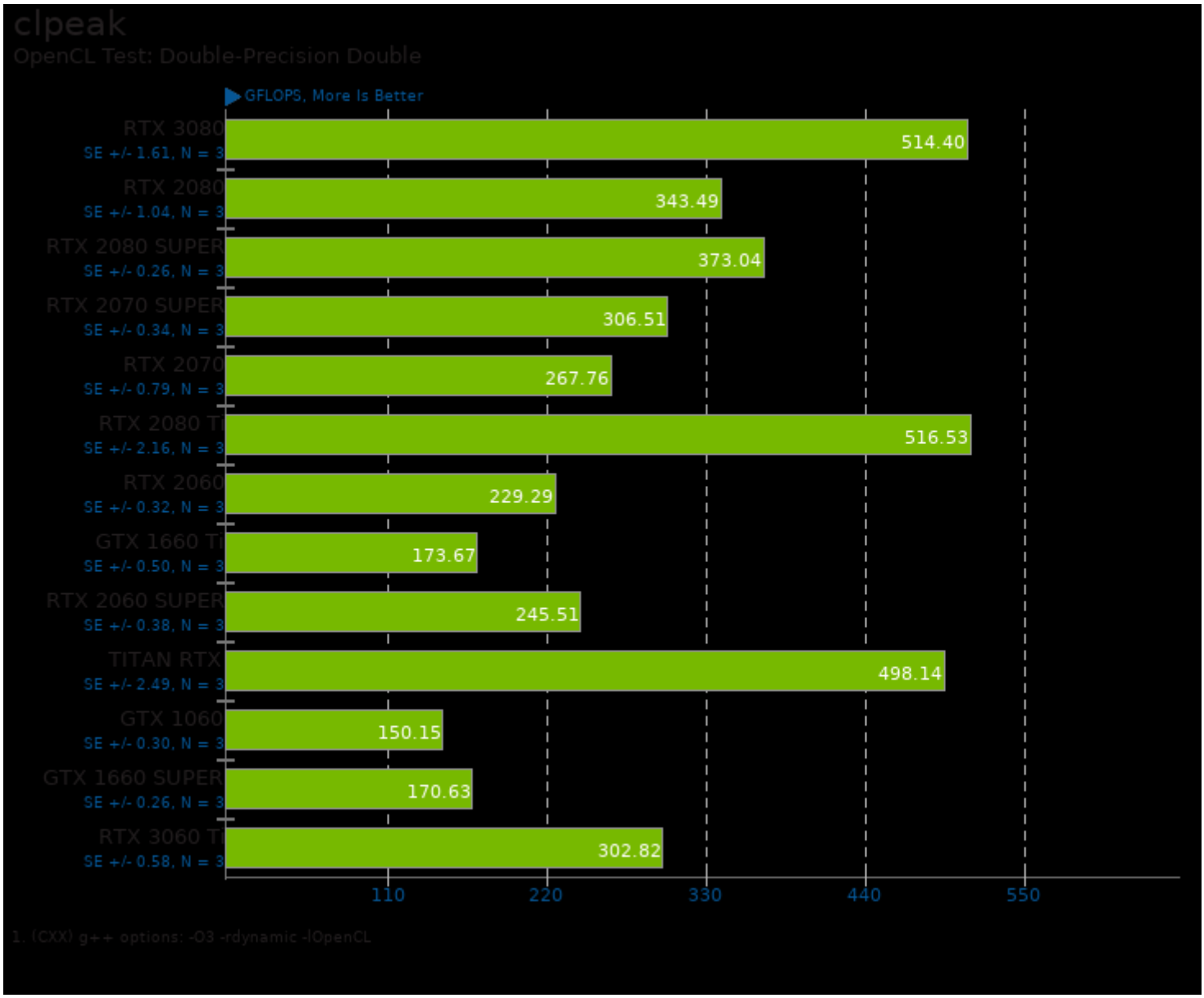
NVIDIA Compute Comparison



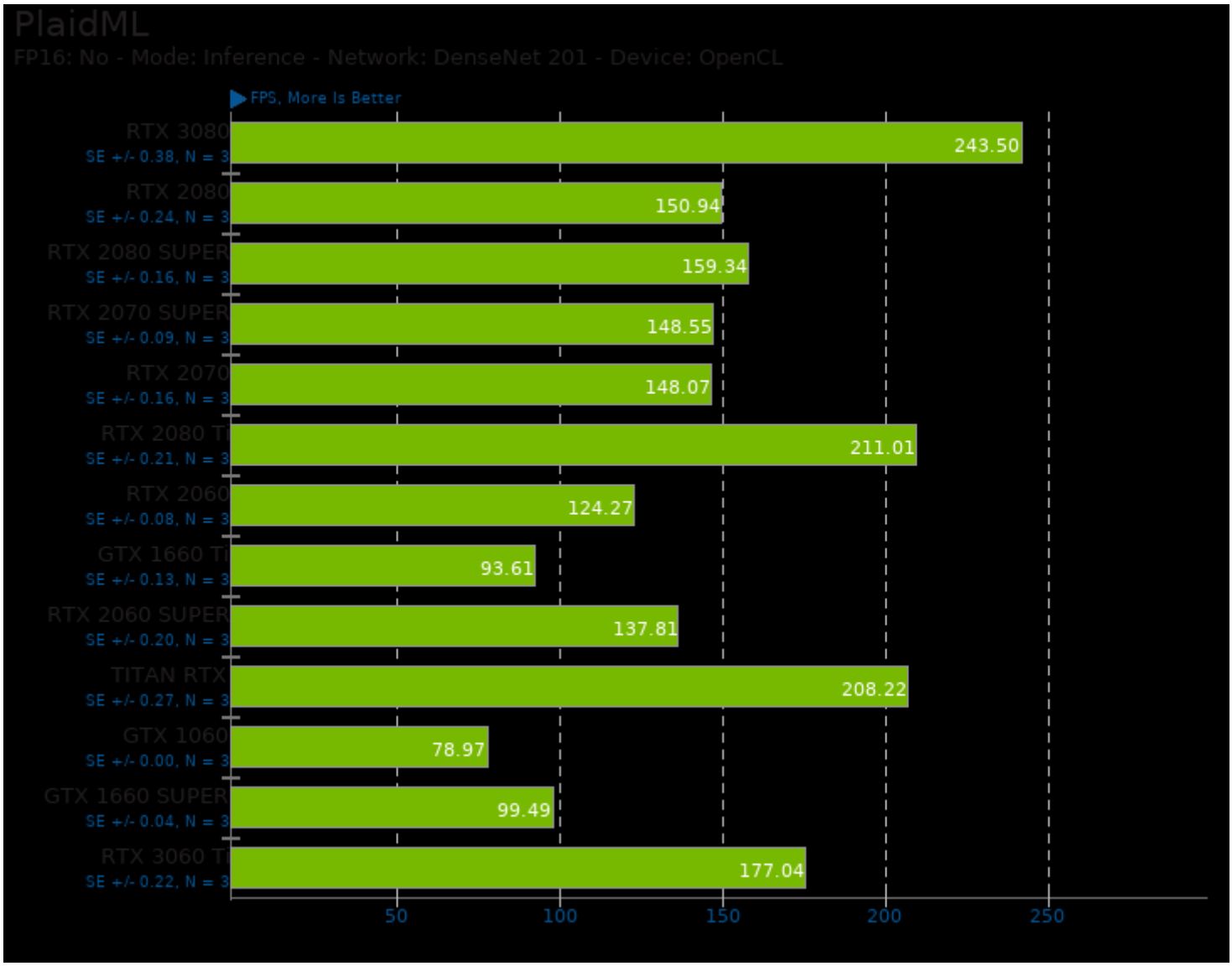
NVIDIA Compute Comparison



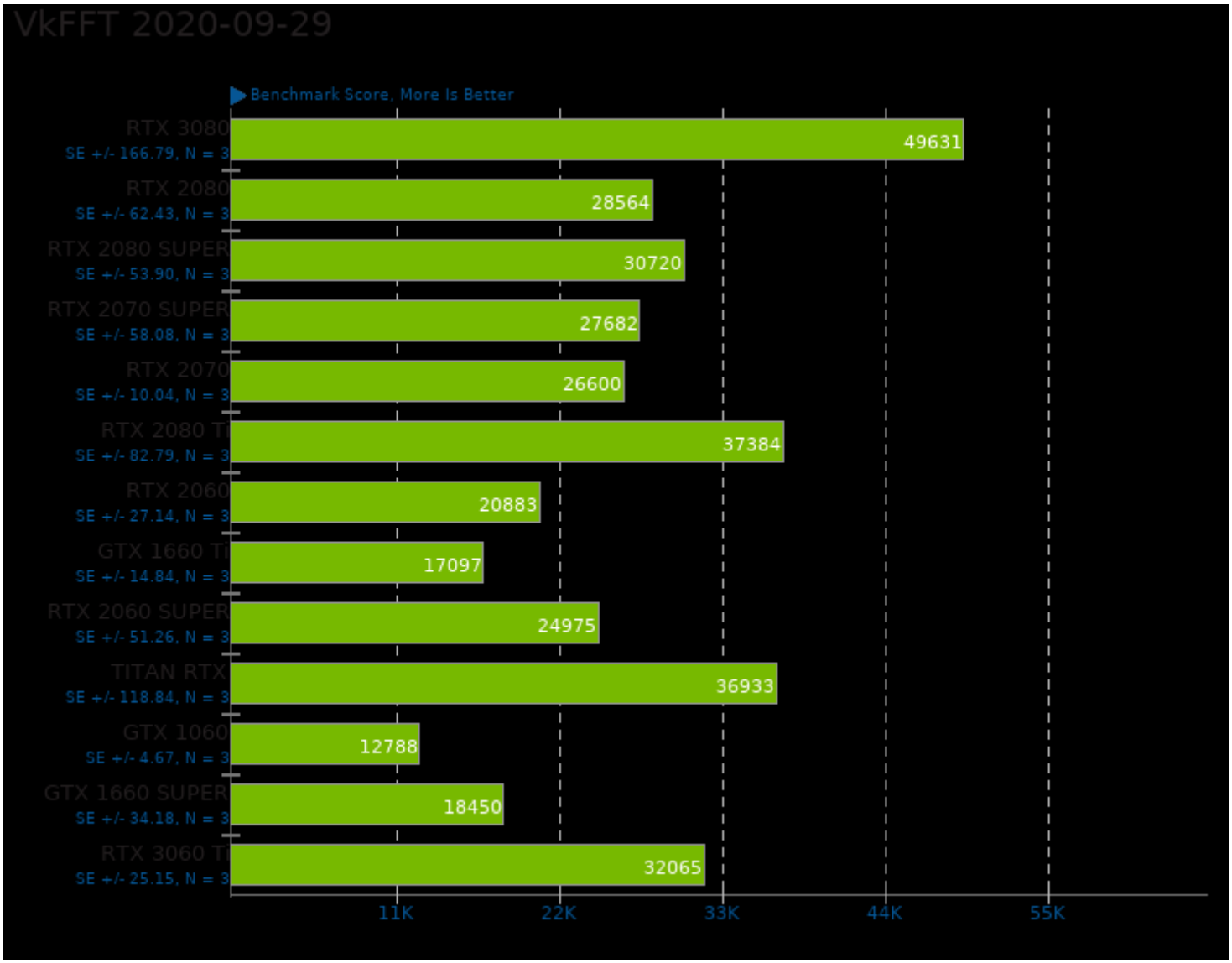
NVIDIA Compute Comparison



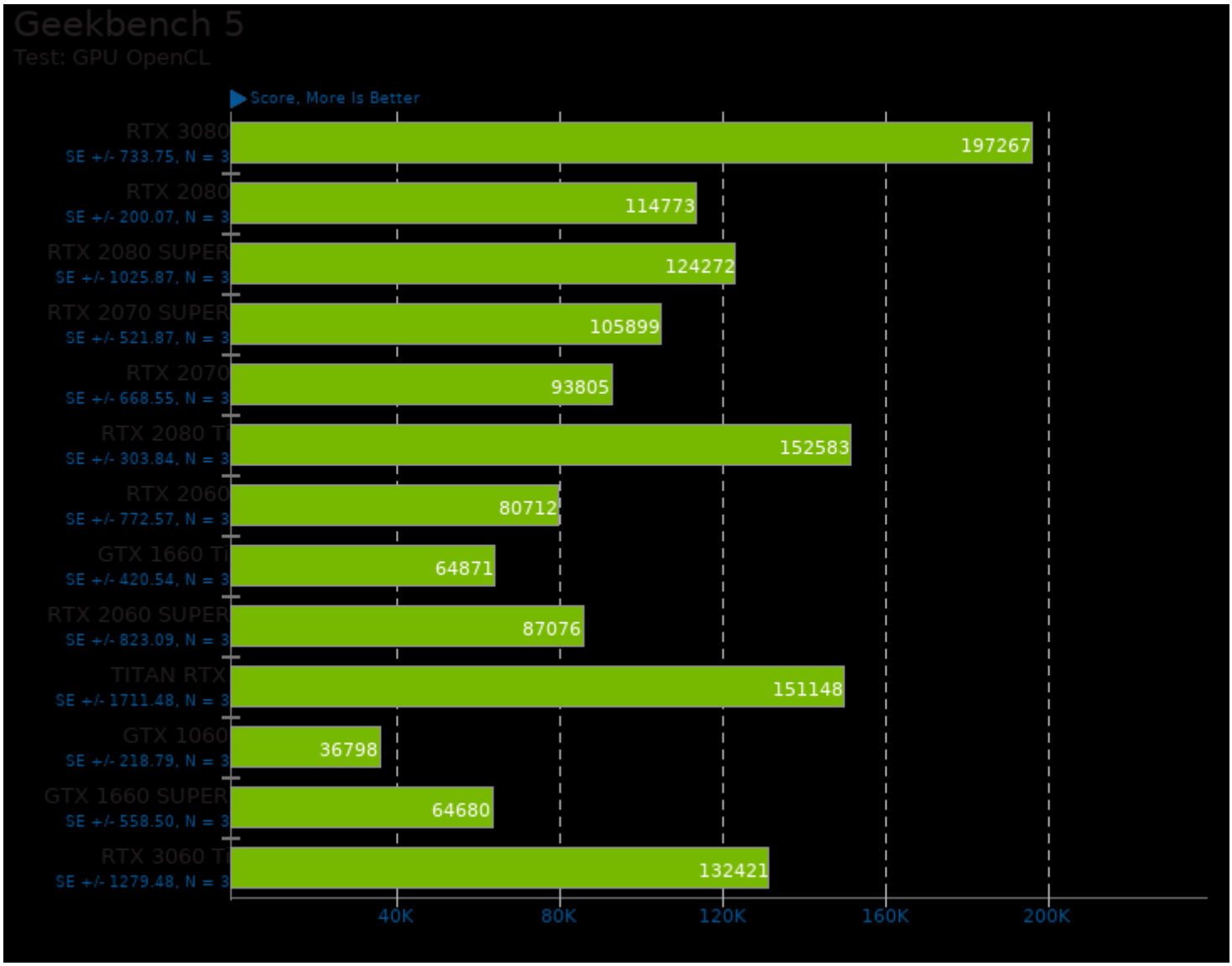
NVIDIA Compute Comparison



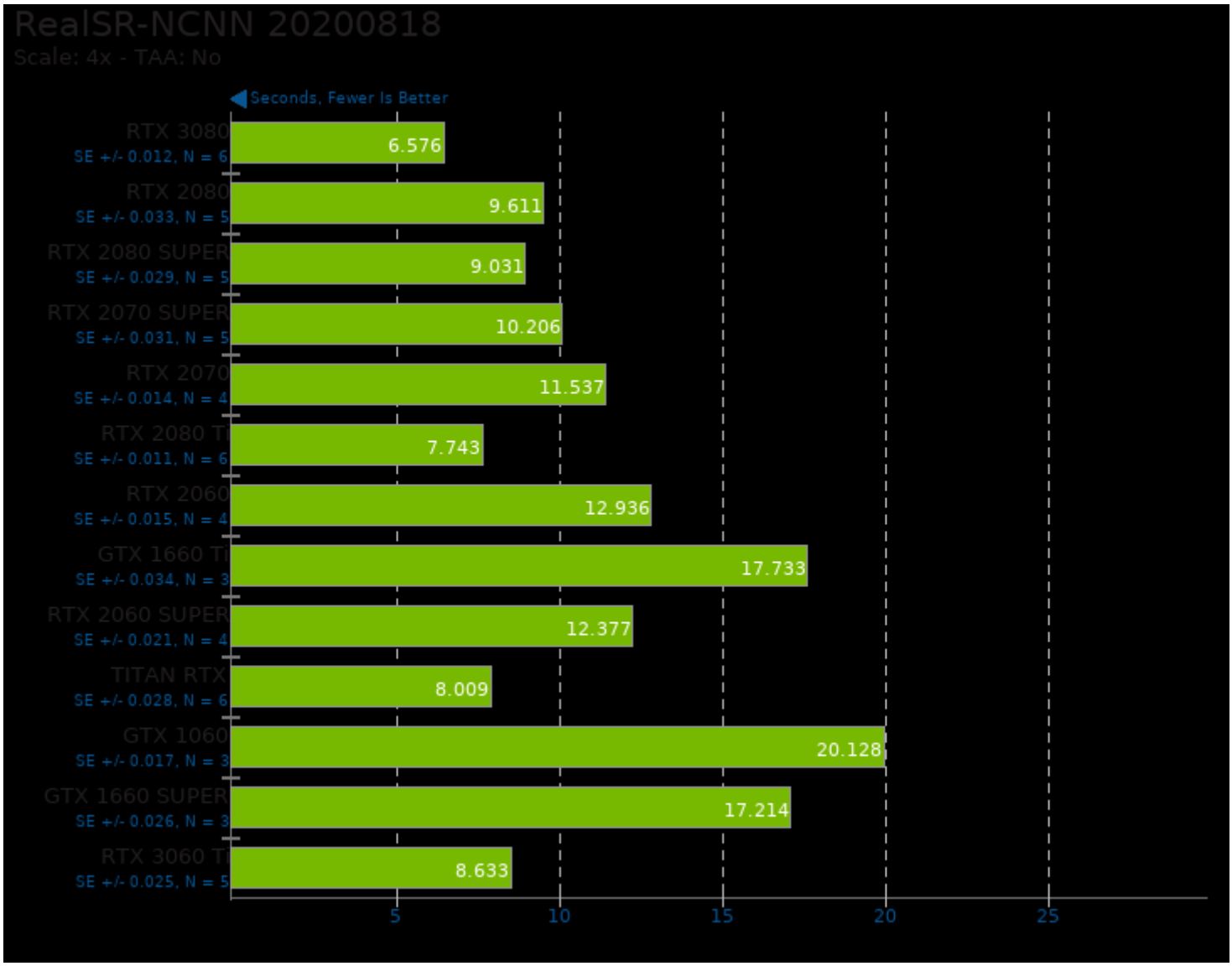
NVIDIA Compute Comparison



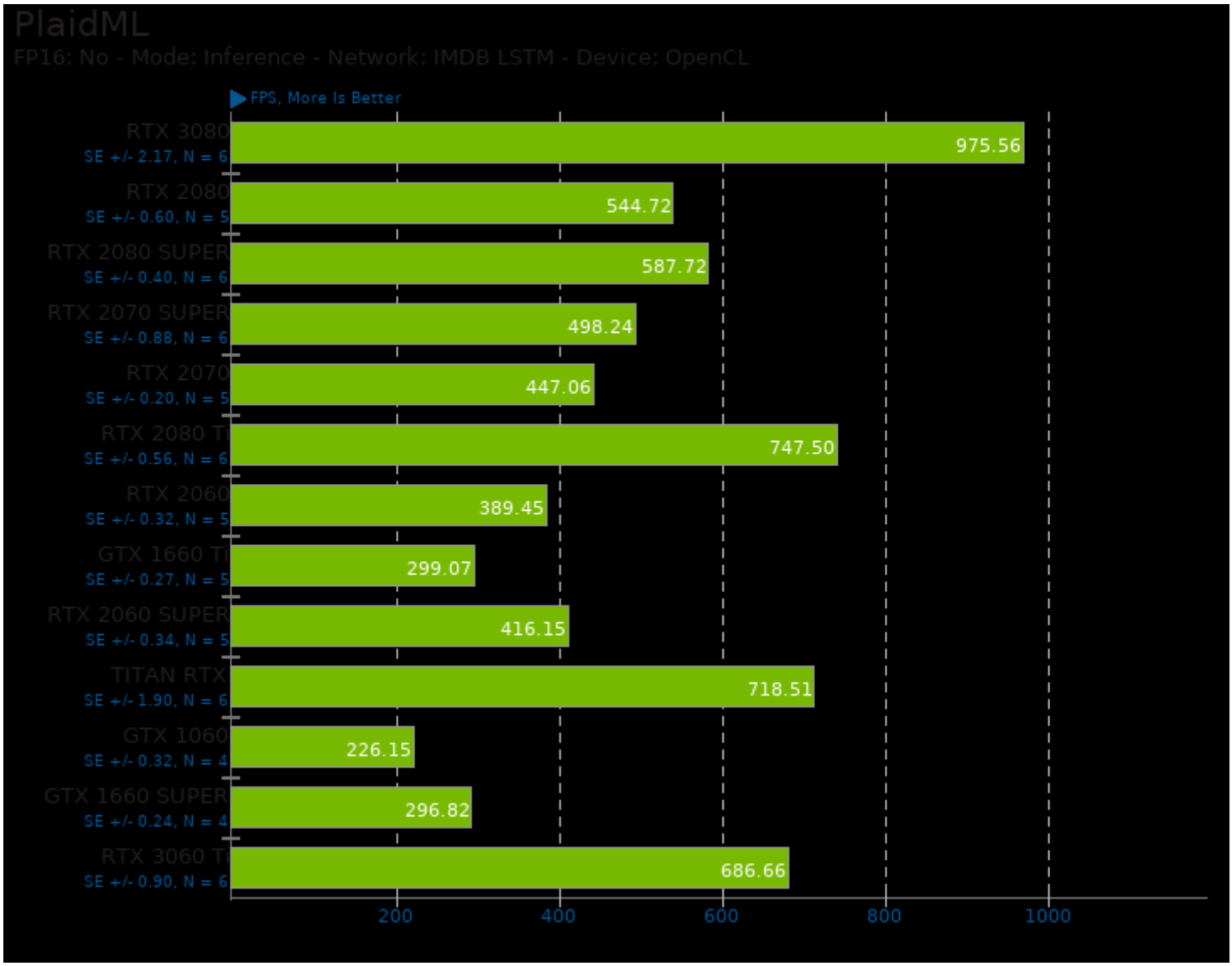
NVIDIA Compute Comparison



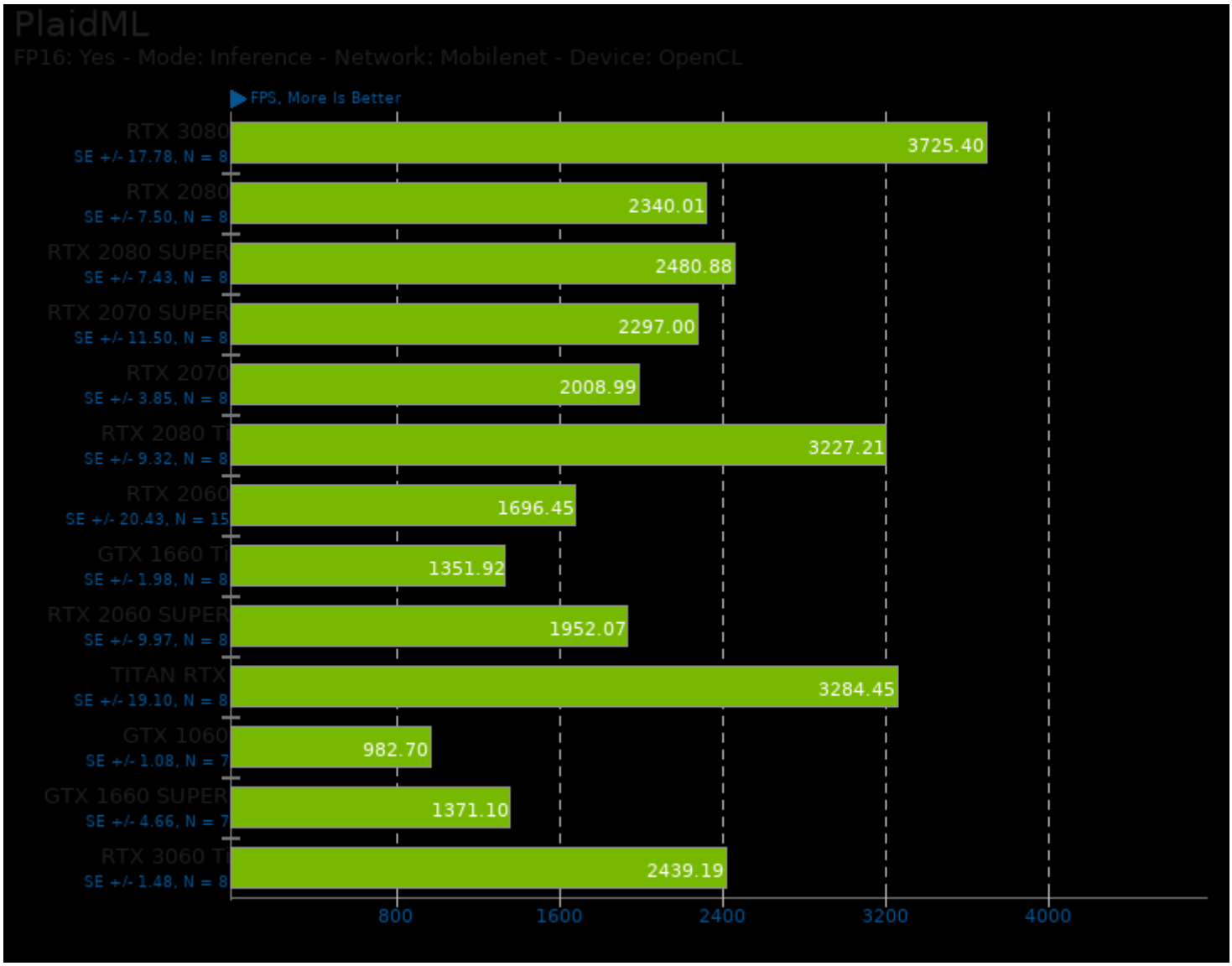
NVIDIA Compute Comparison



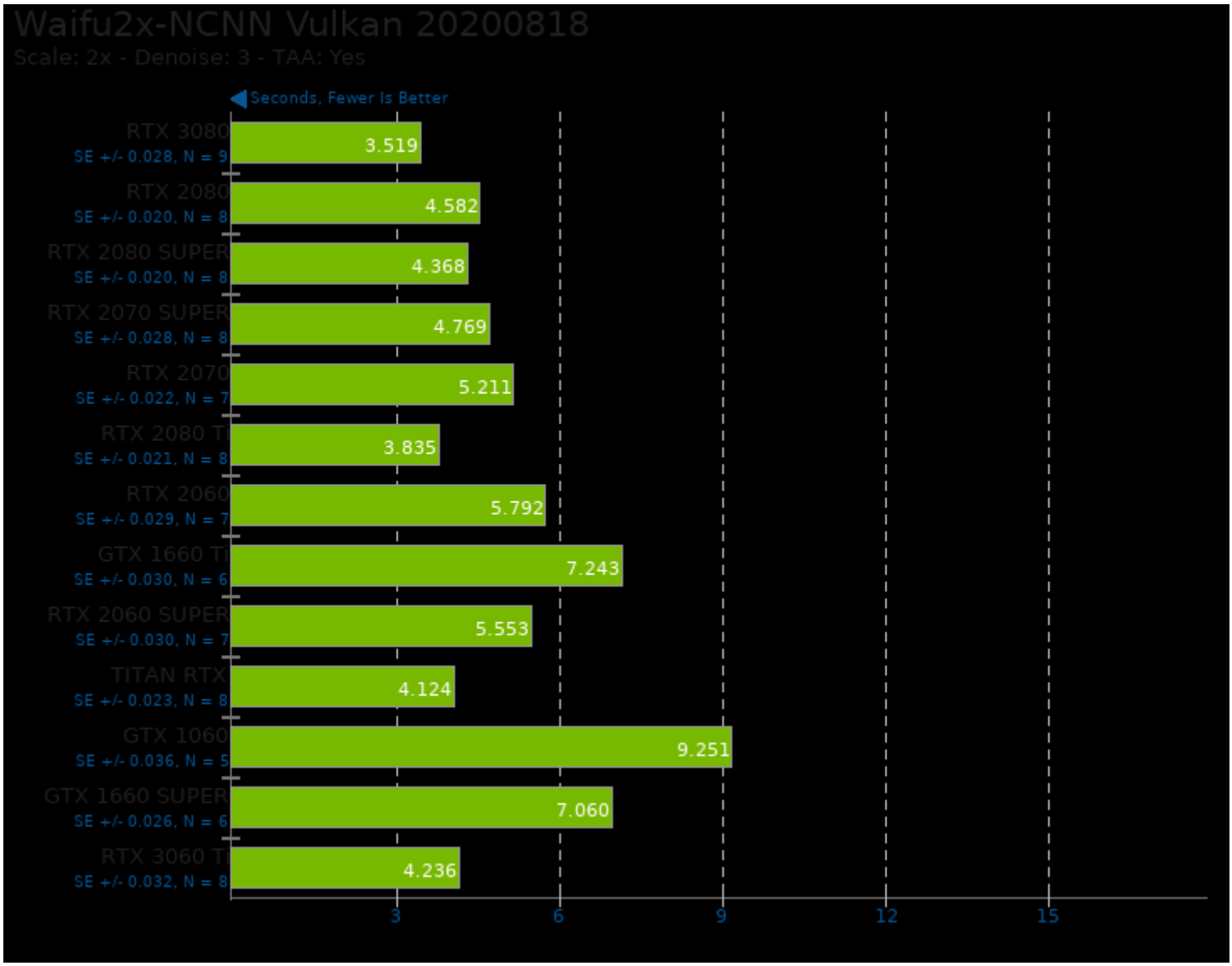
NVIDIA Compute Comparison



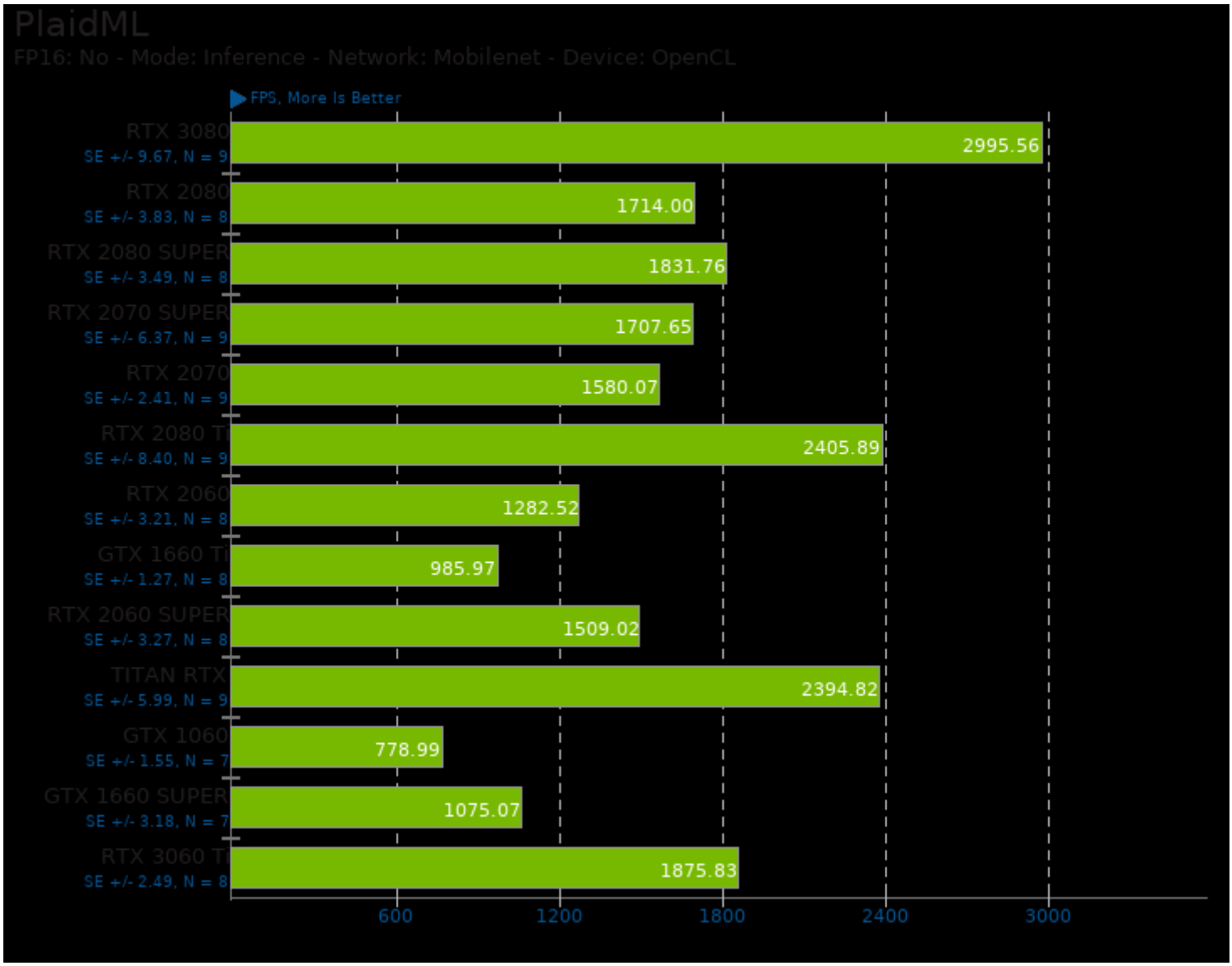
NVIDIA Compute Comparison



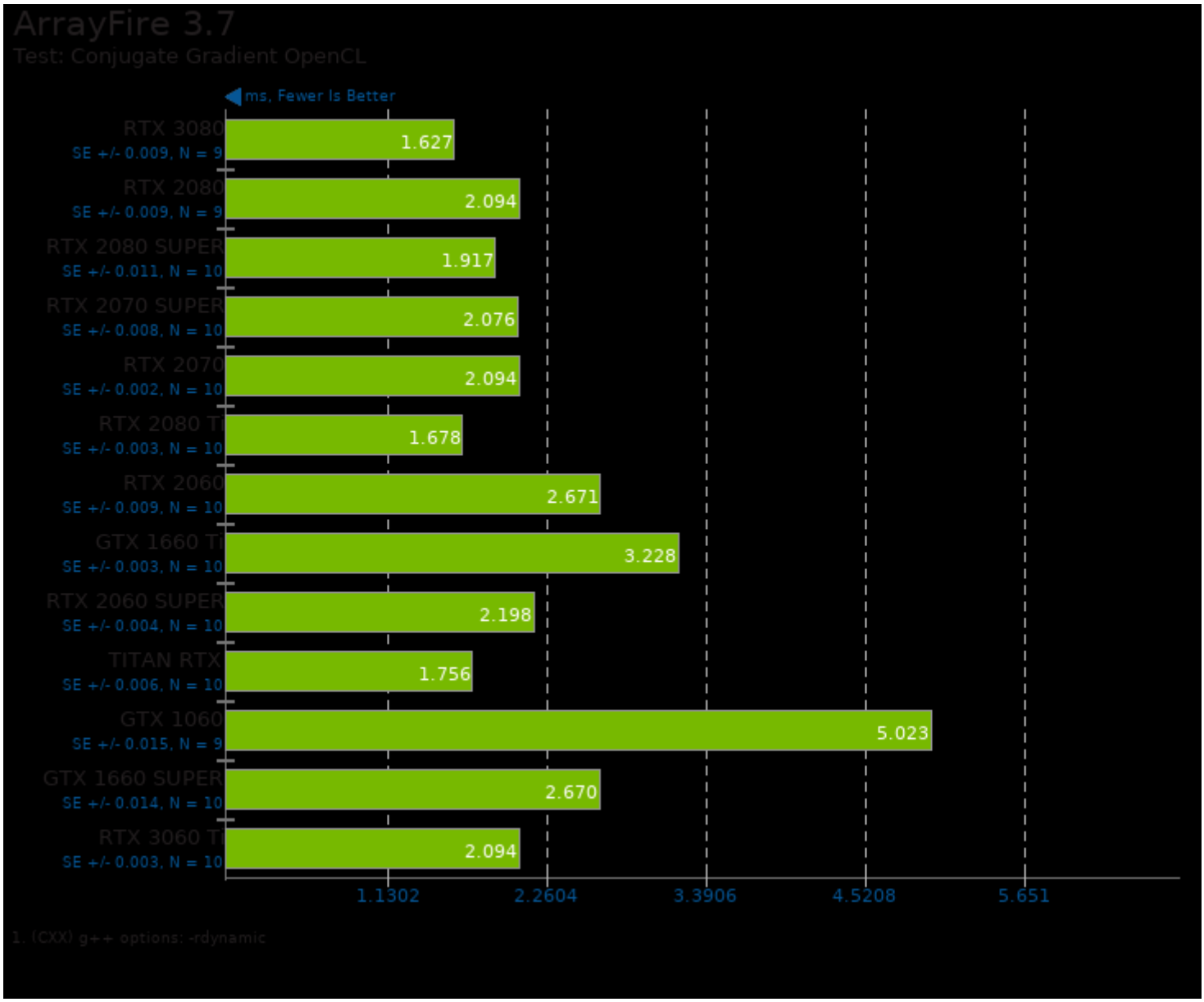
NVIDIA Compute Comparison



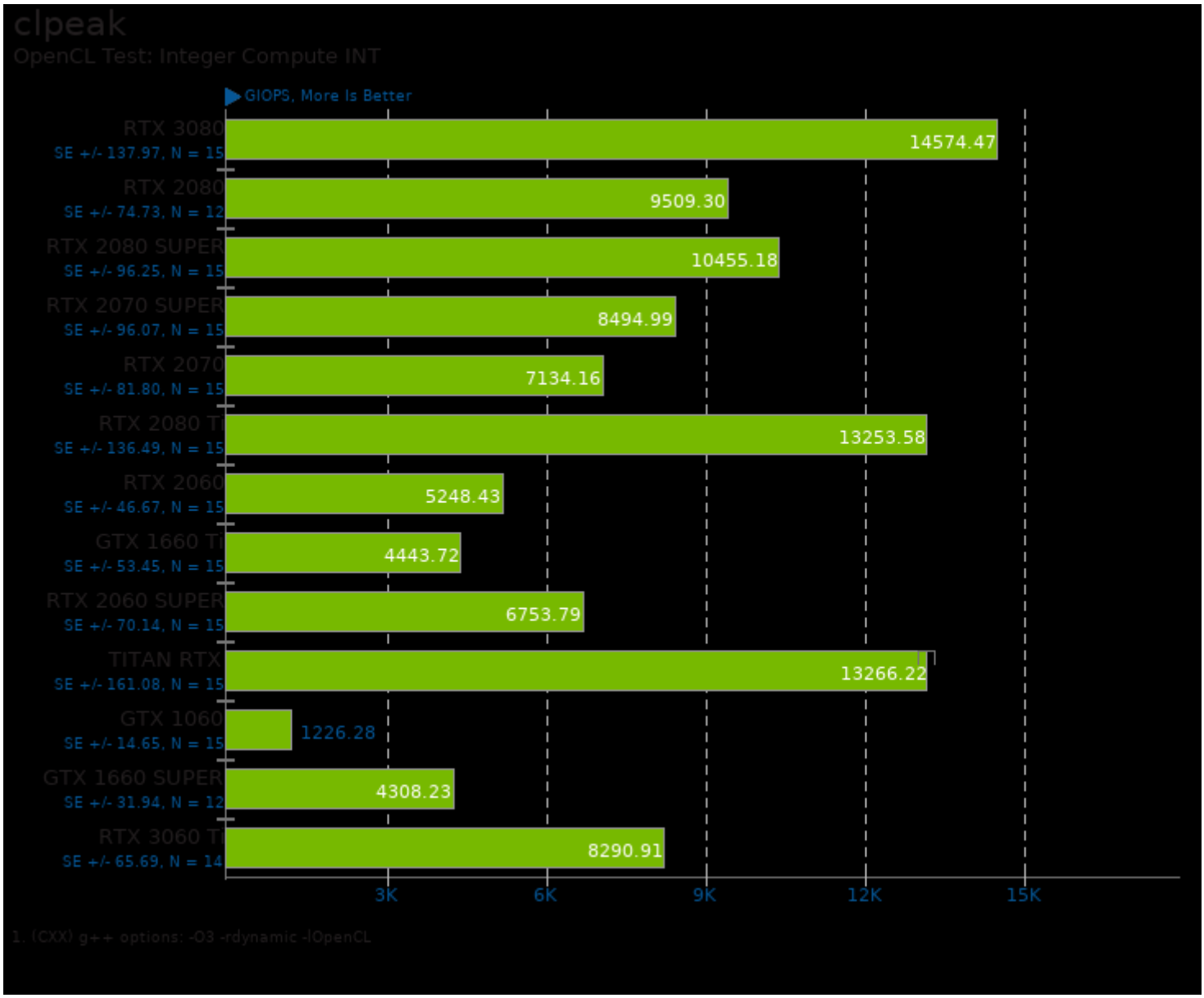
NVIDIA Compute Comparison



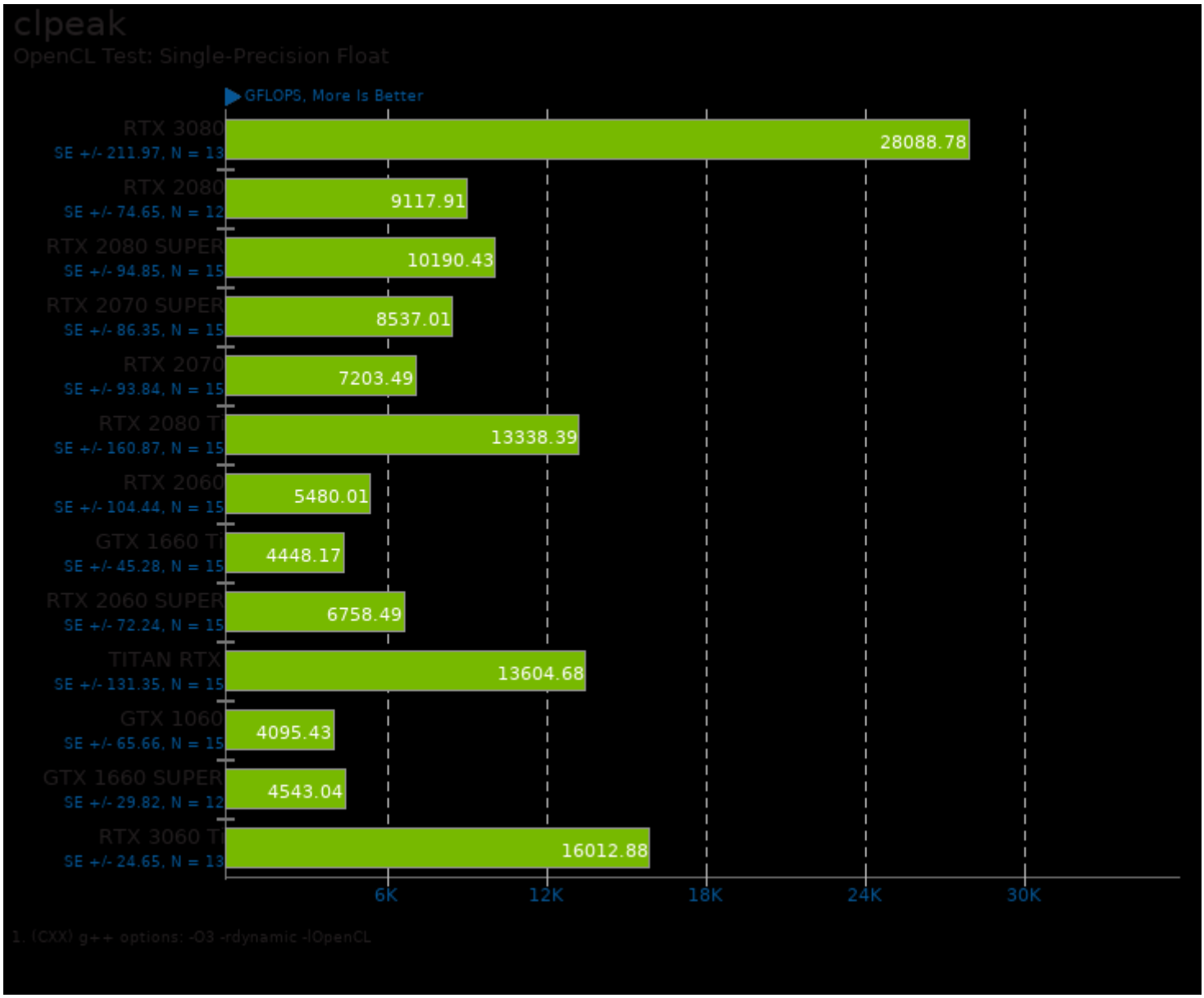
NVIDIA Compute Comparison



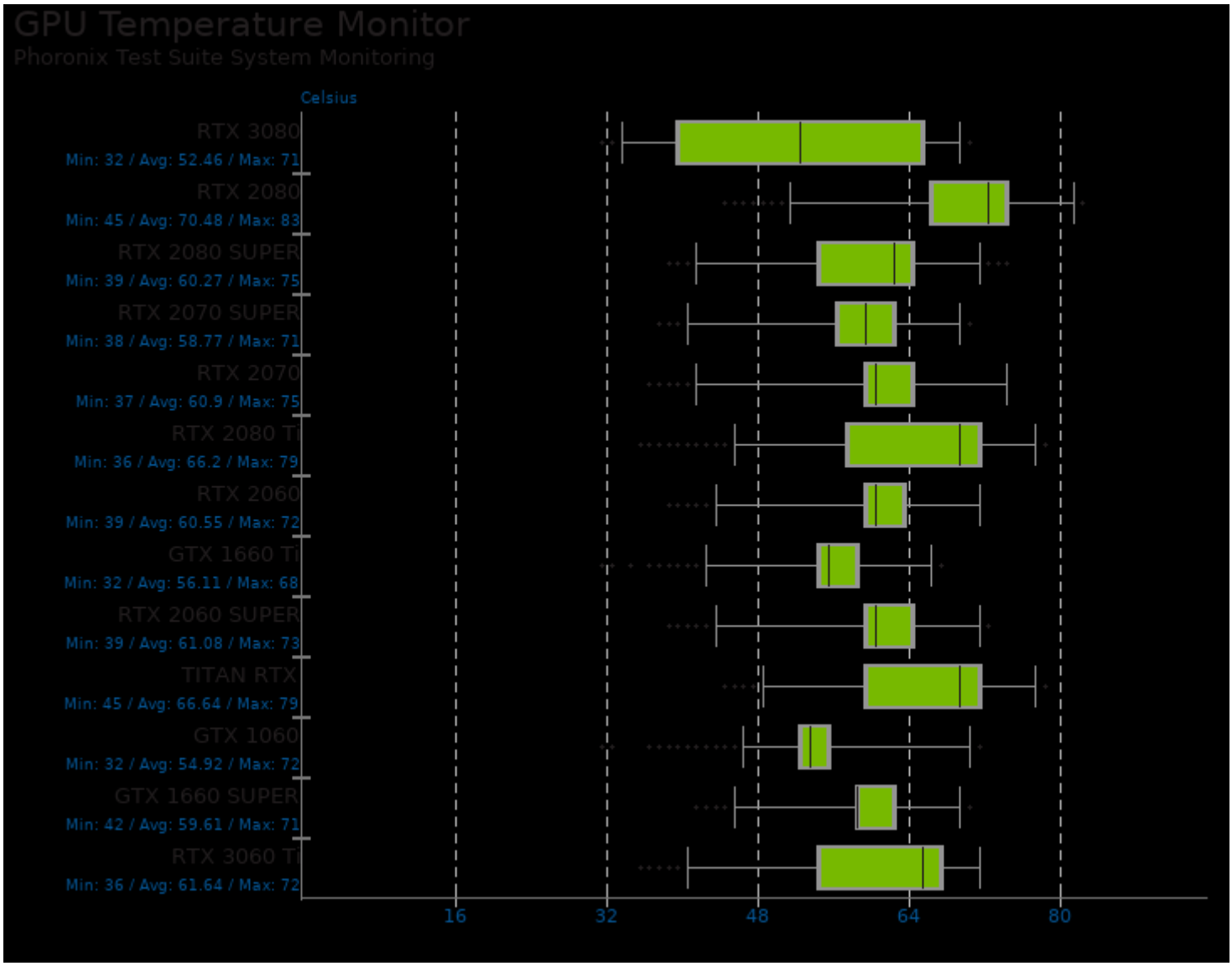
NVIDIA Compute Comparison



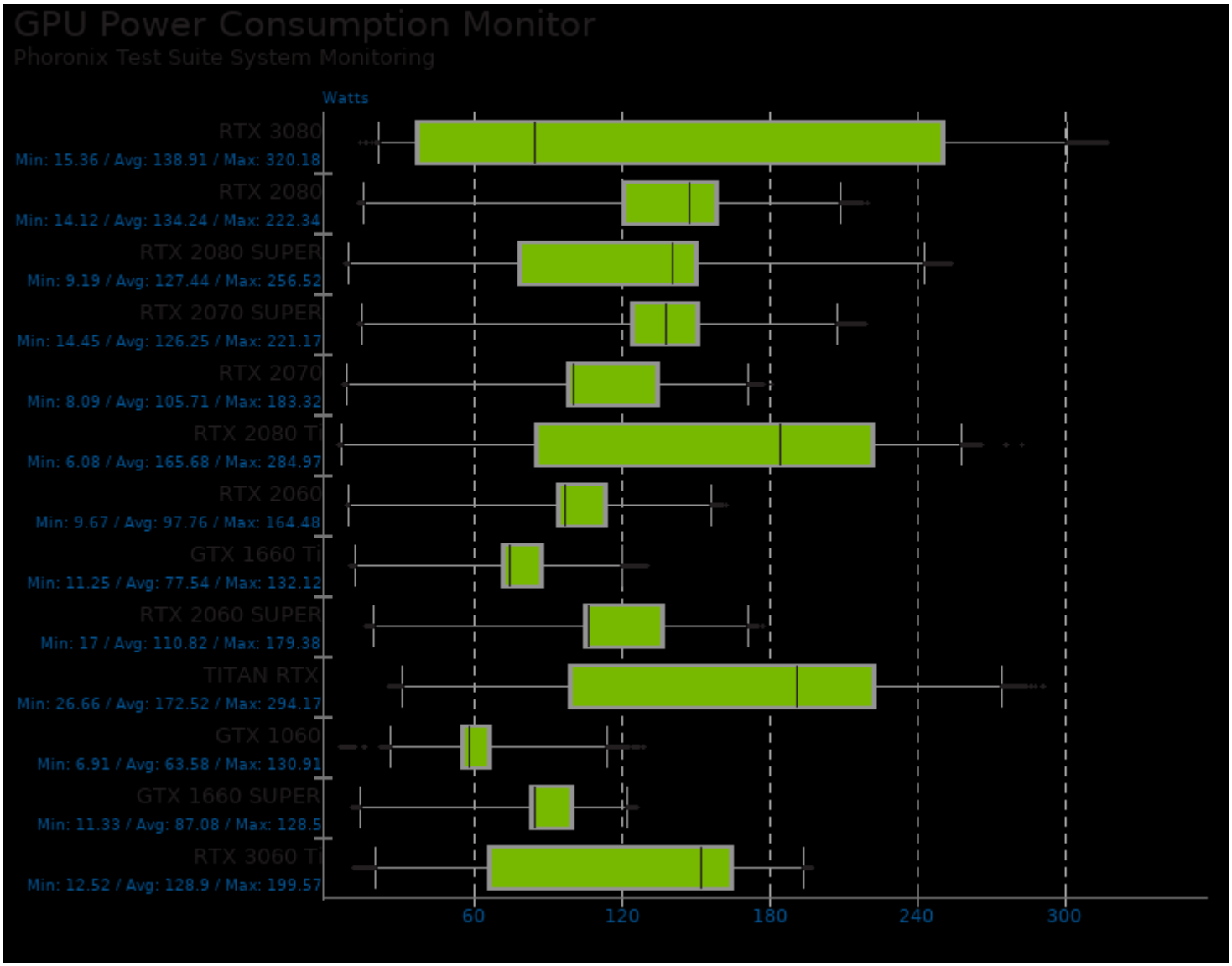
NVIDIA Compute Comparison



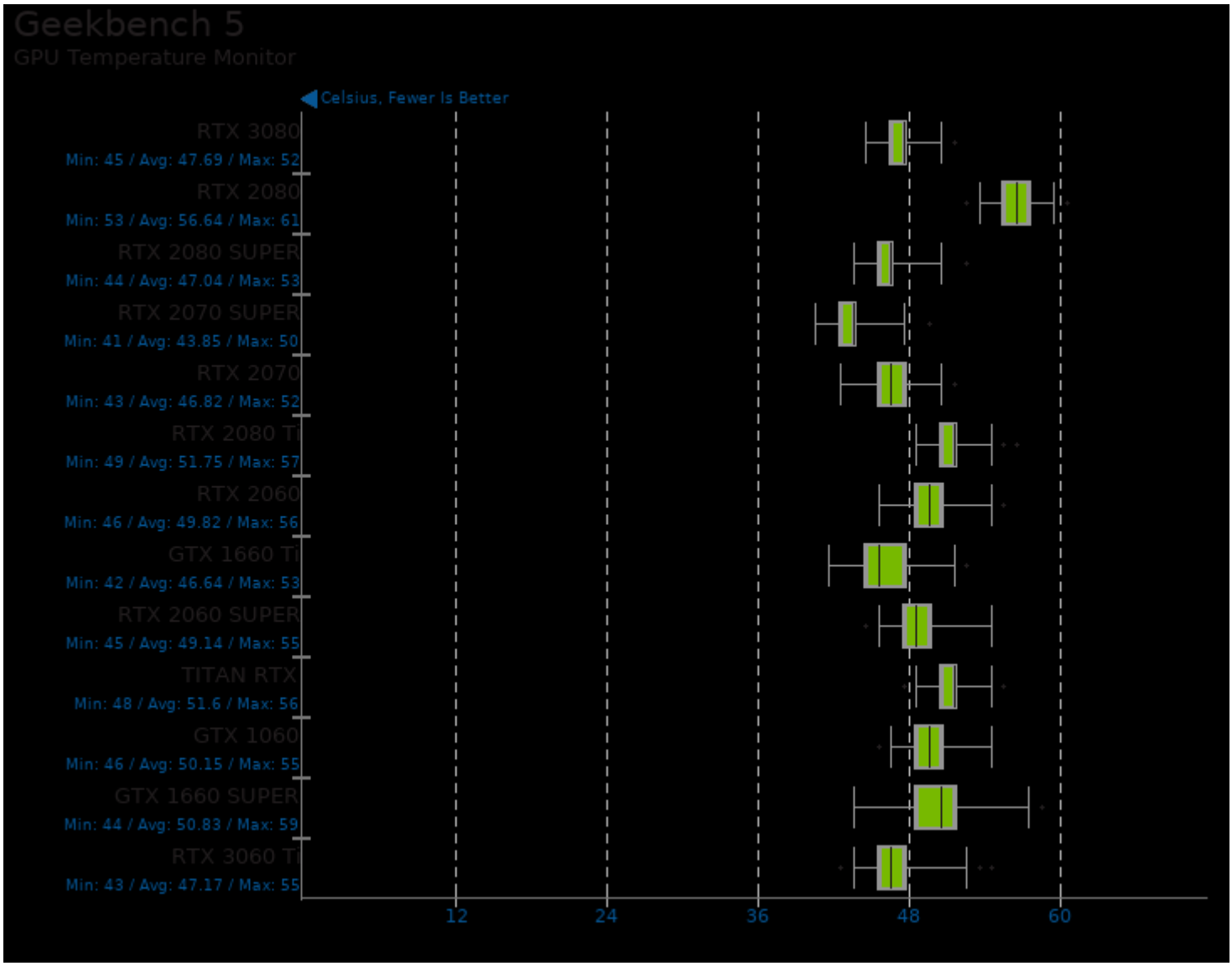
NVIDIA Compute Comparison



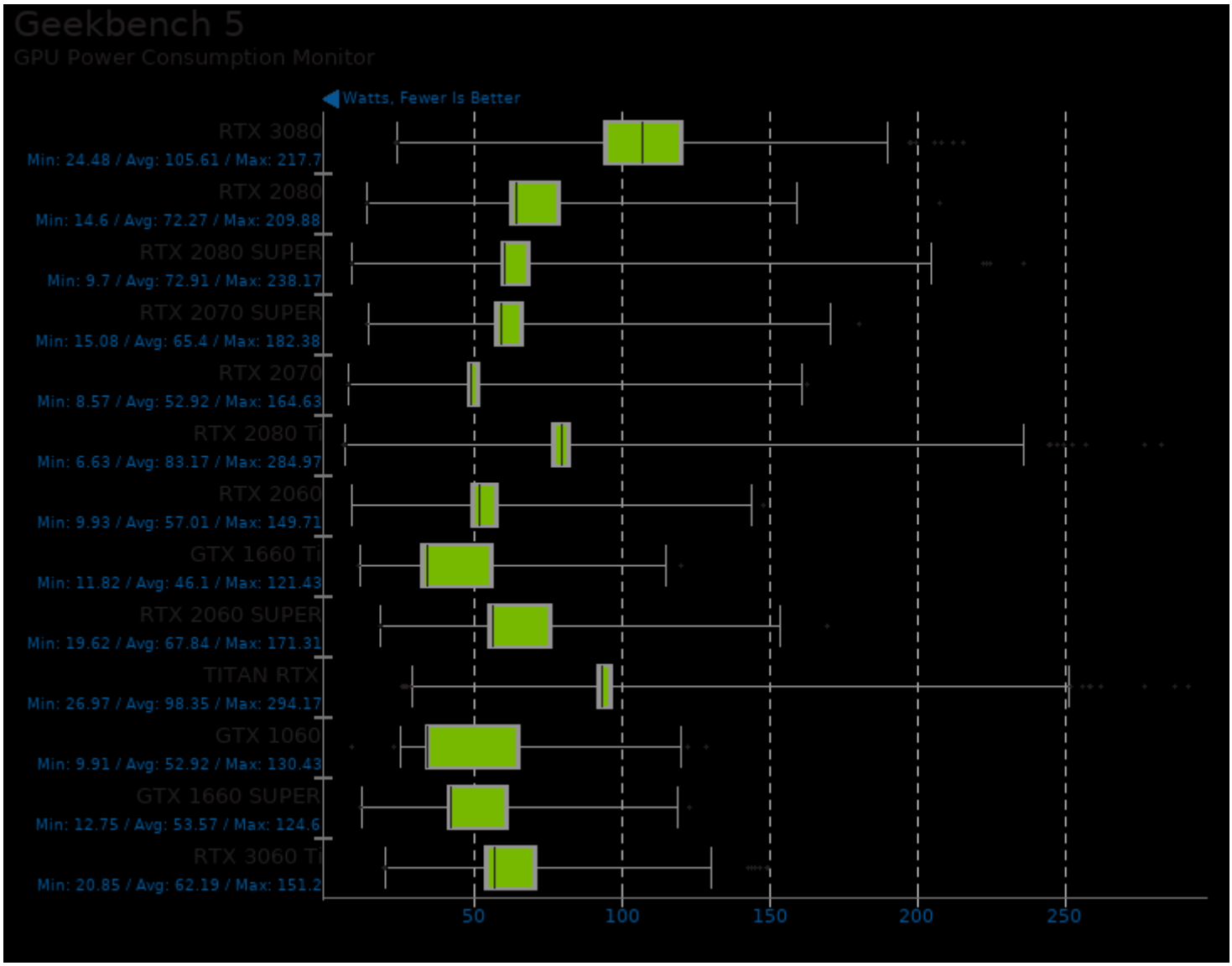
NVIDIA Compute Comparison



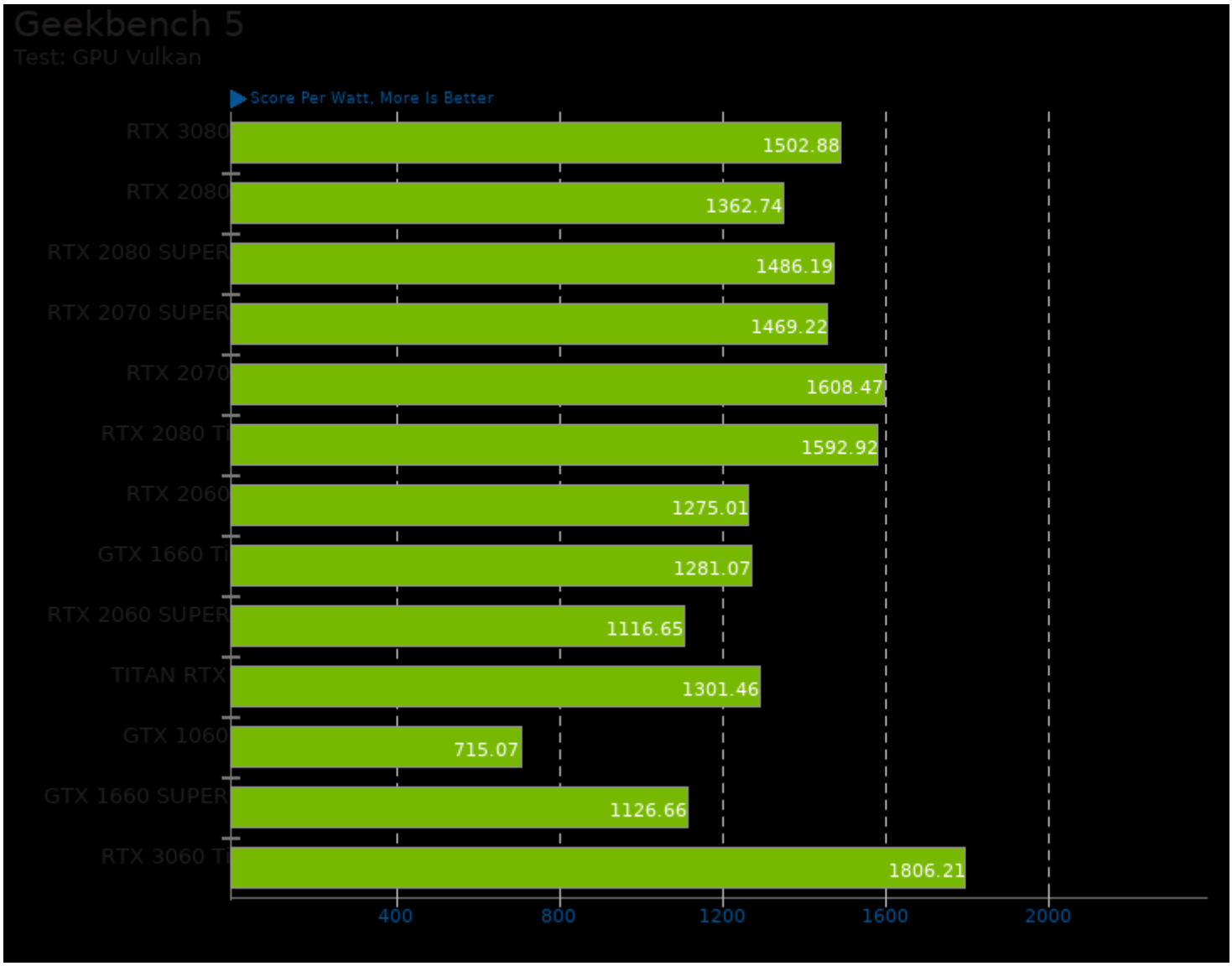
NVIDIA Compute Comparison



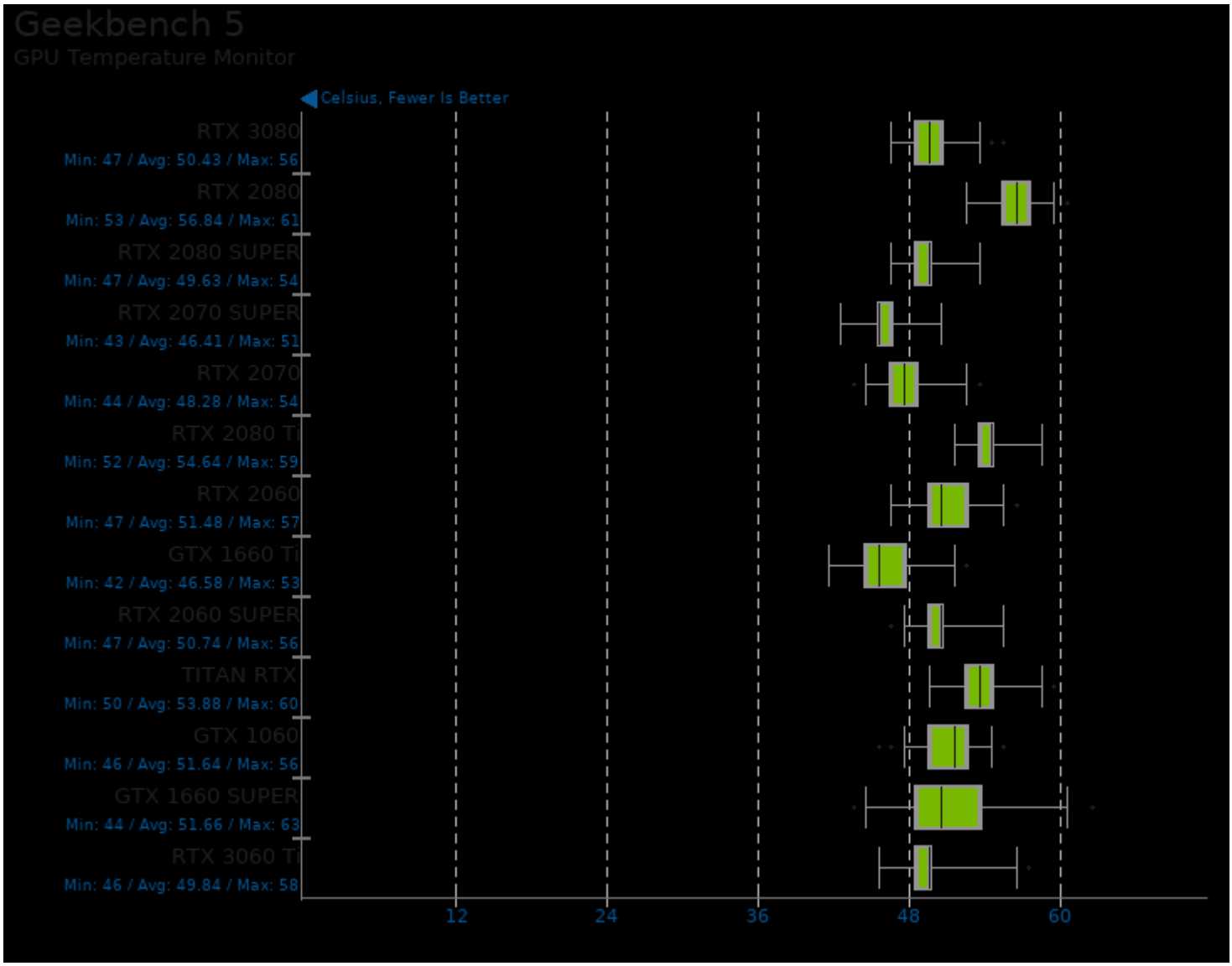
NVIDIA Compute Comparison



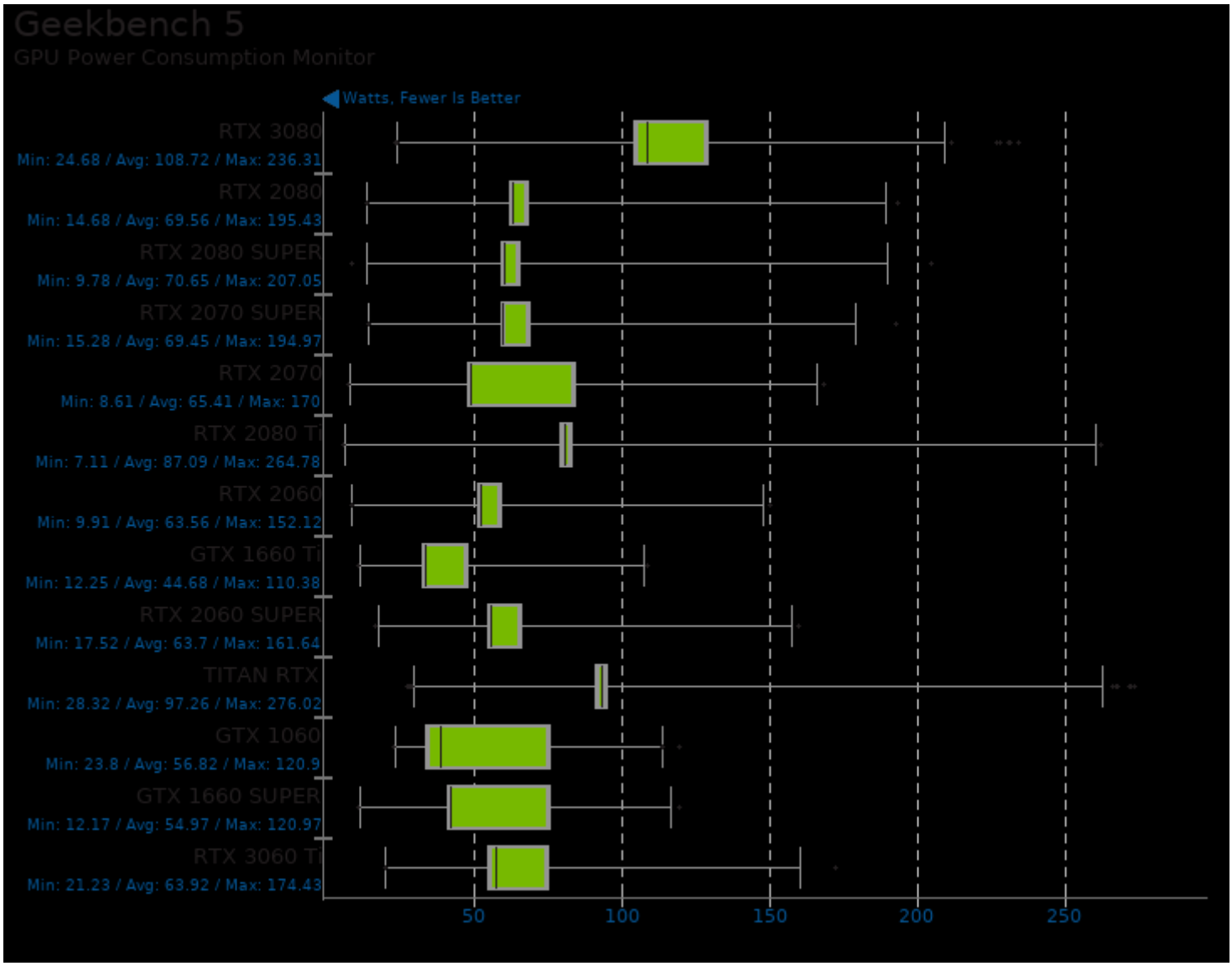
NVIDIA Compute Comparison



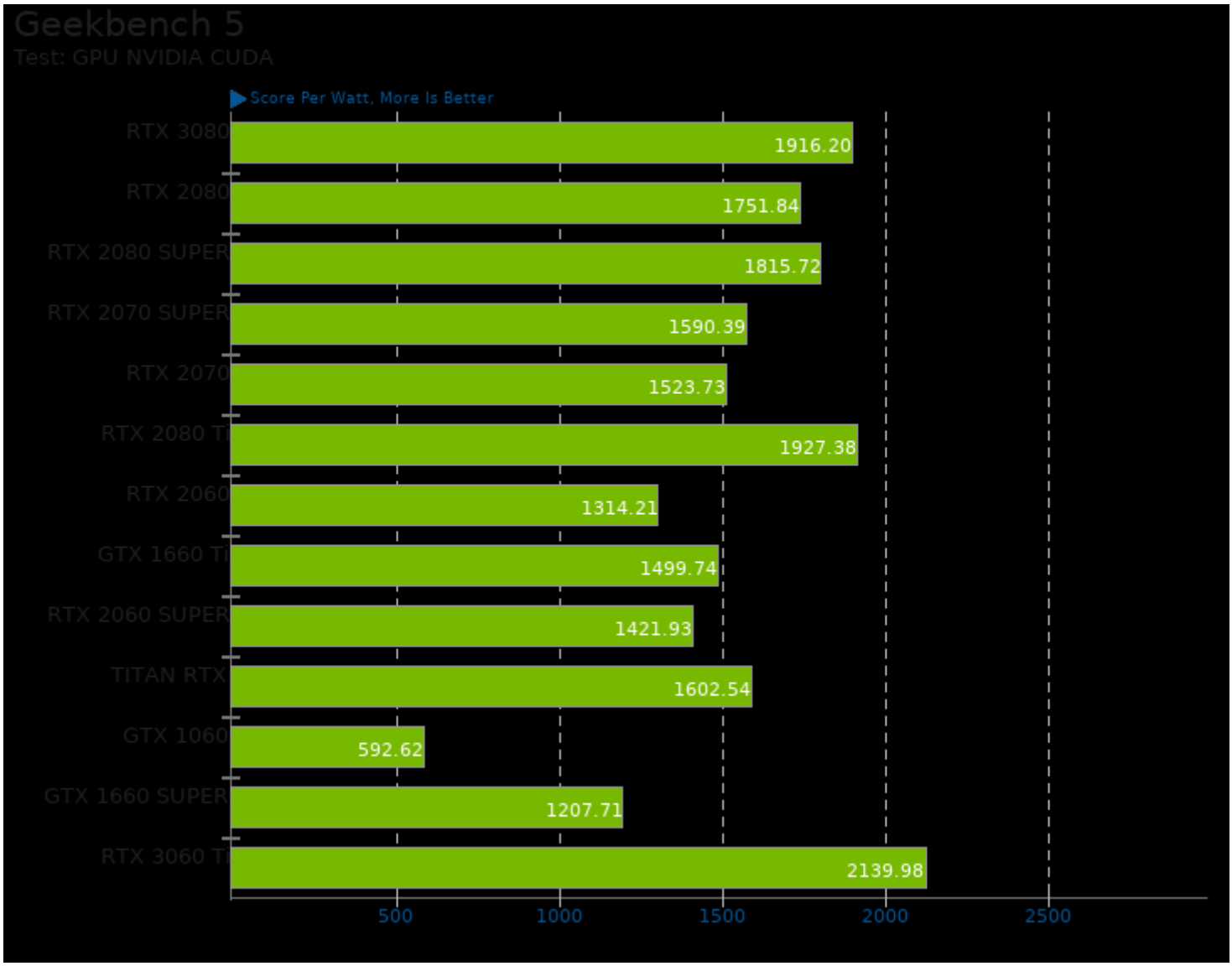
NVIDIA Compute Comparison



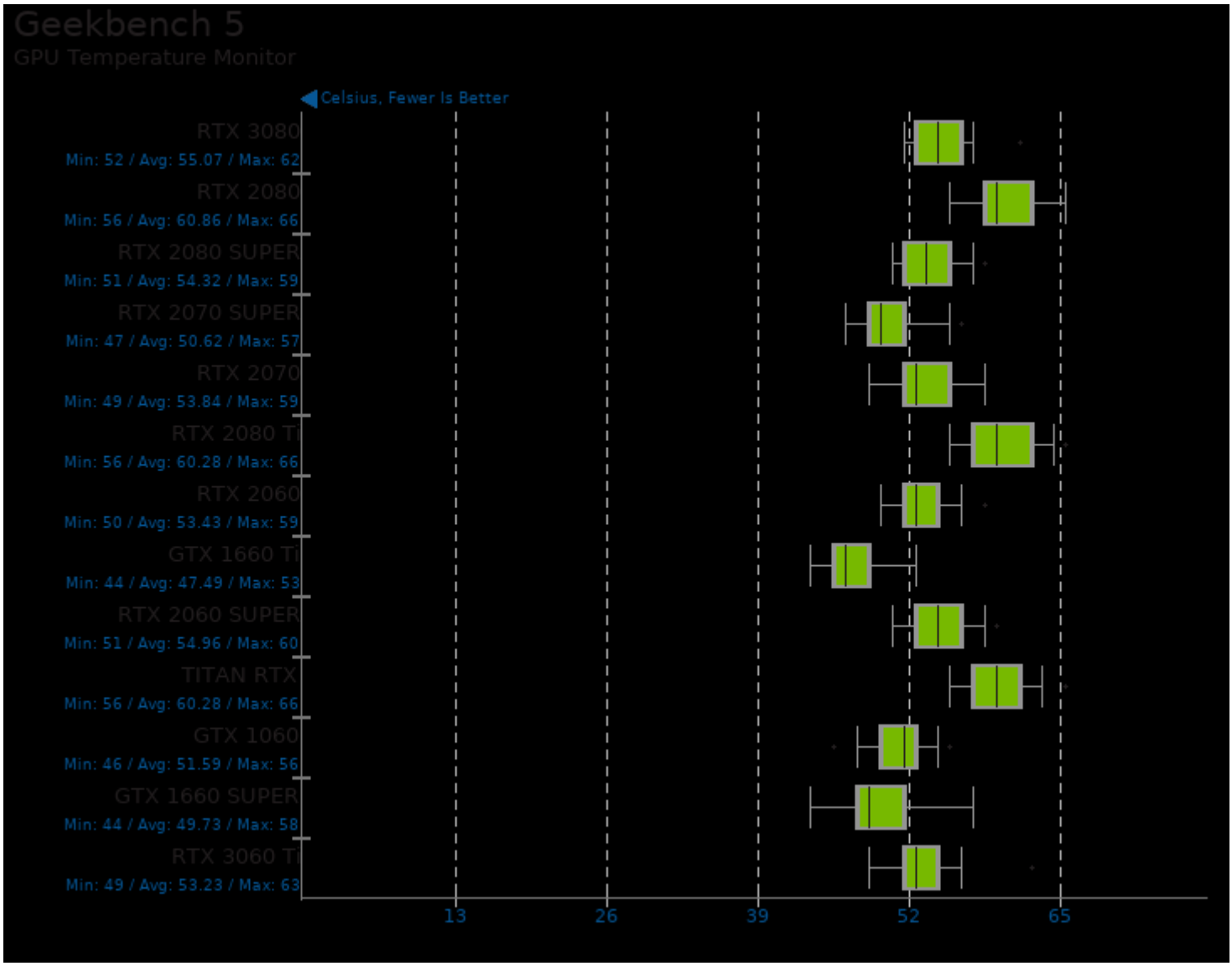
NVIDIA Compute Comparison



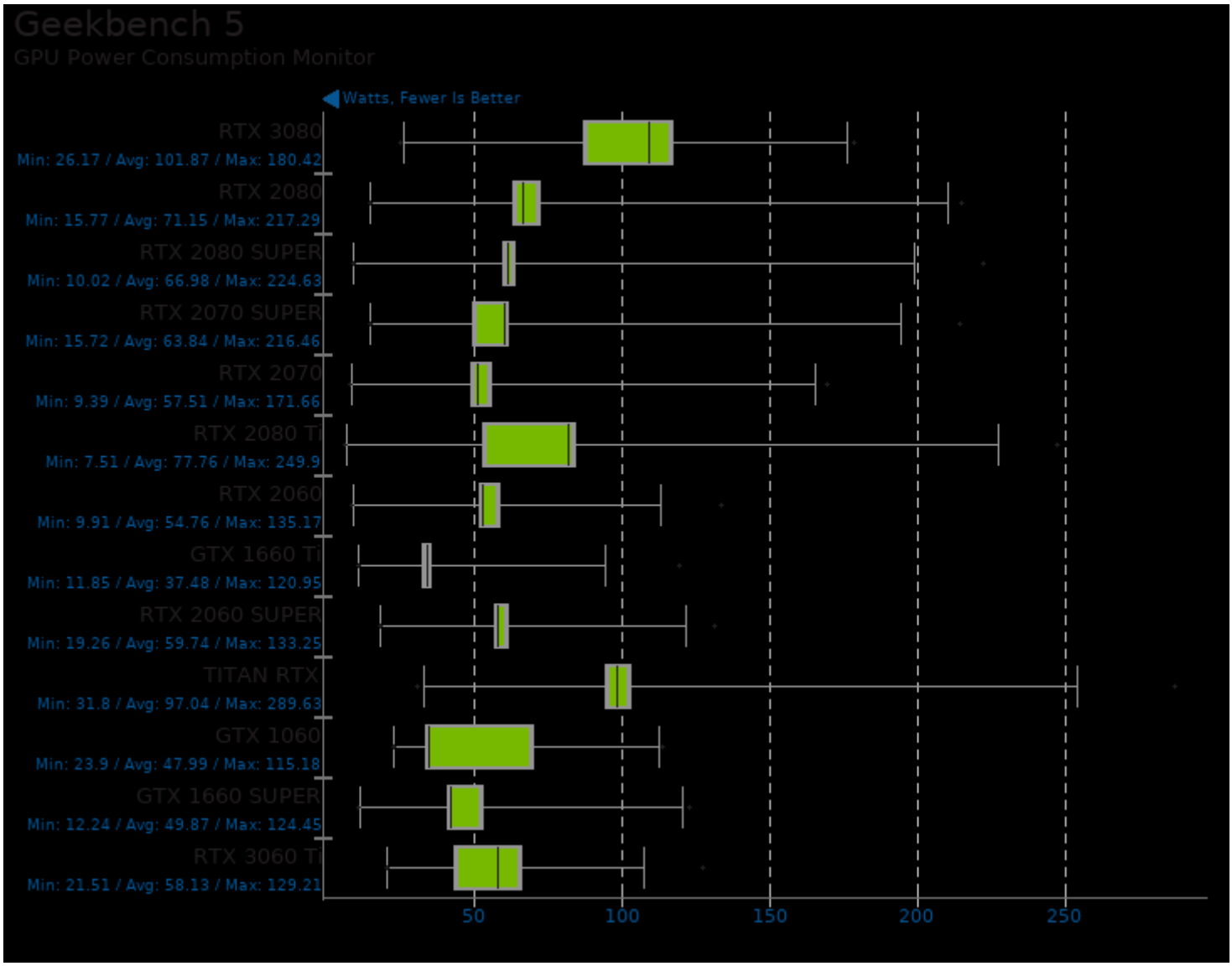
NVIDIA Compute Comparison



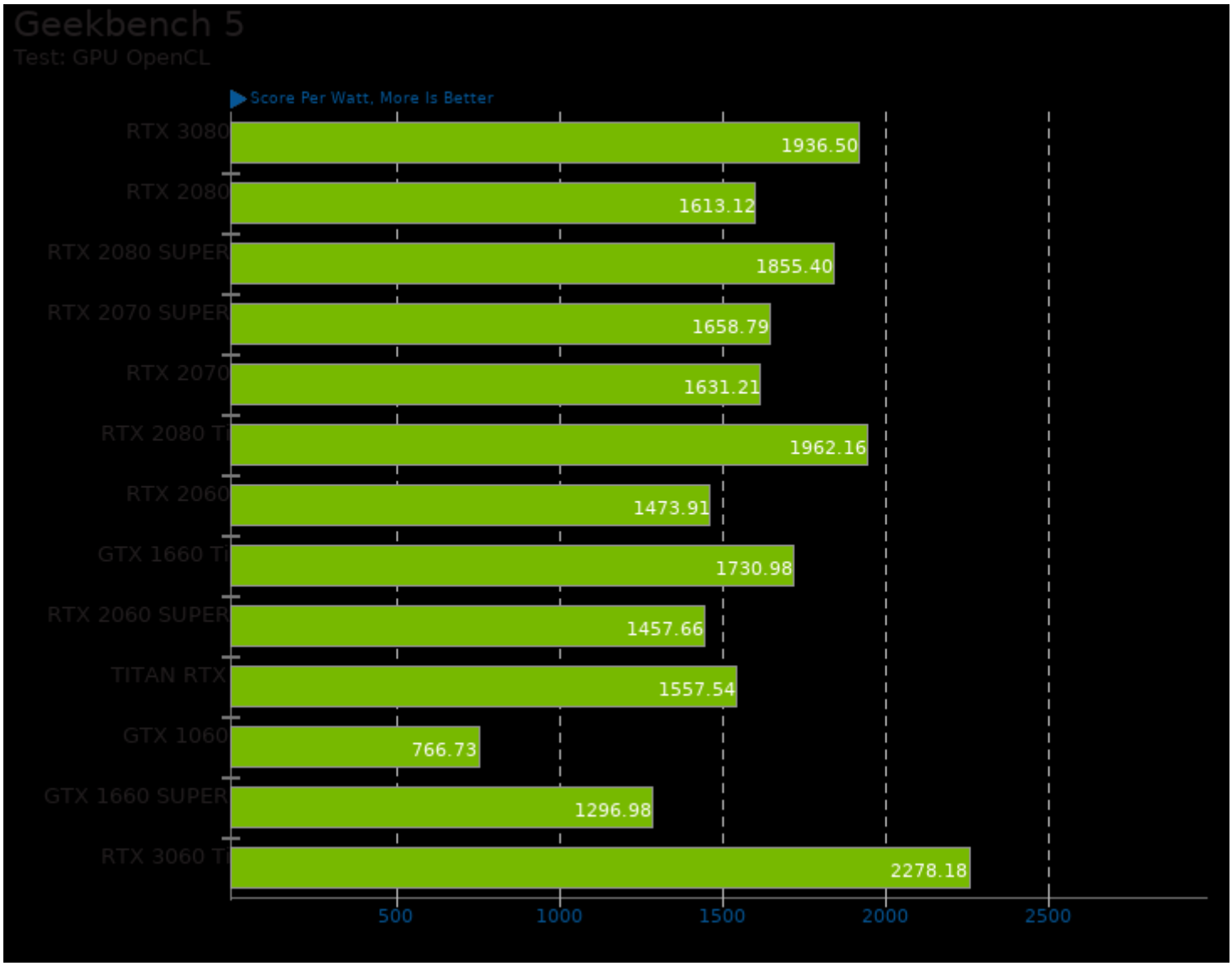
NVIDIA Compute Comparison



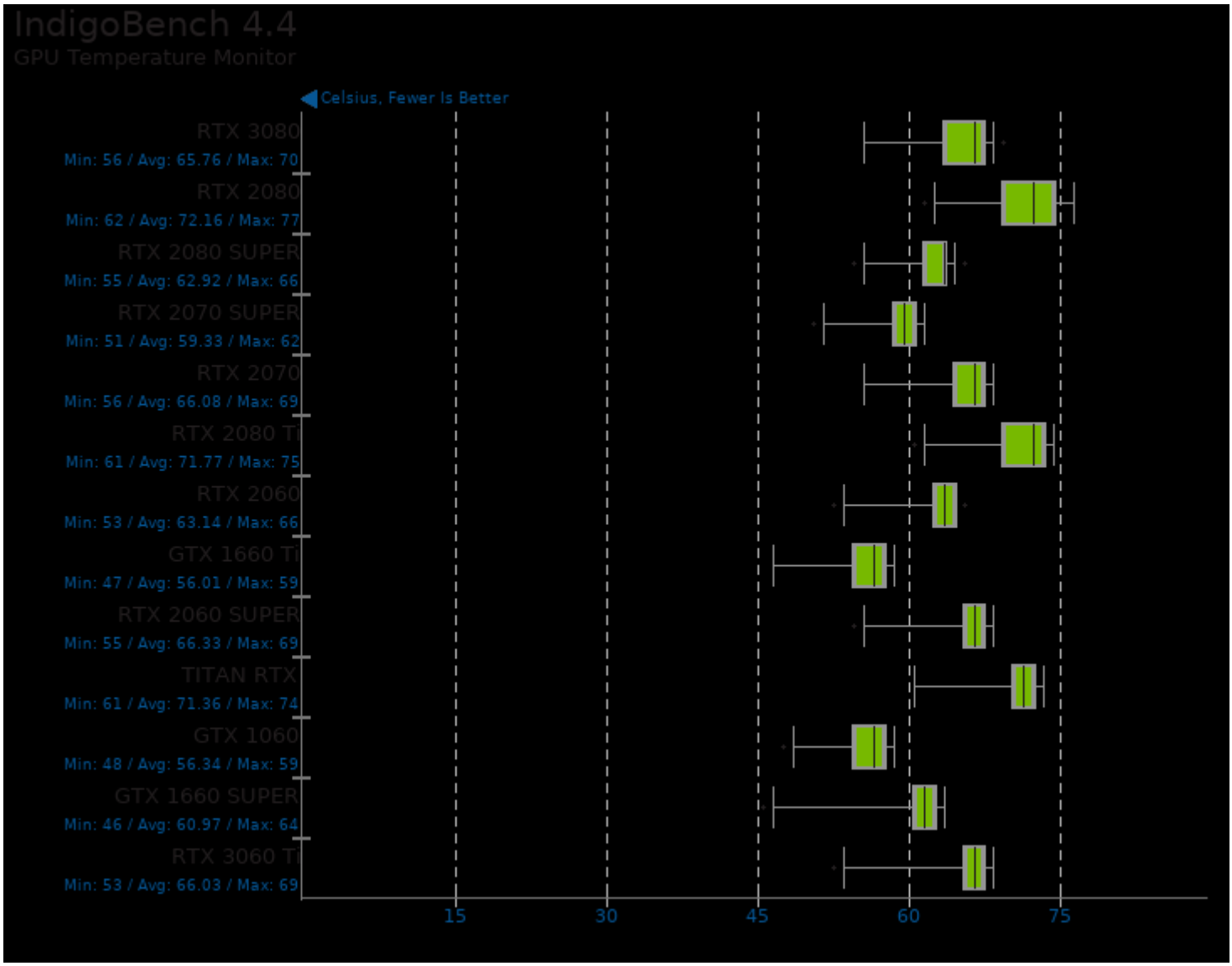
NVIDIA Compute Comparison



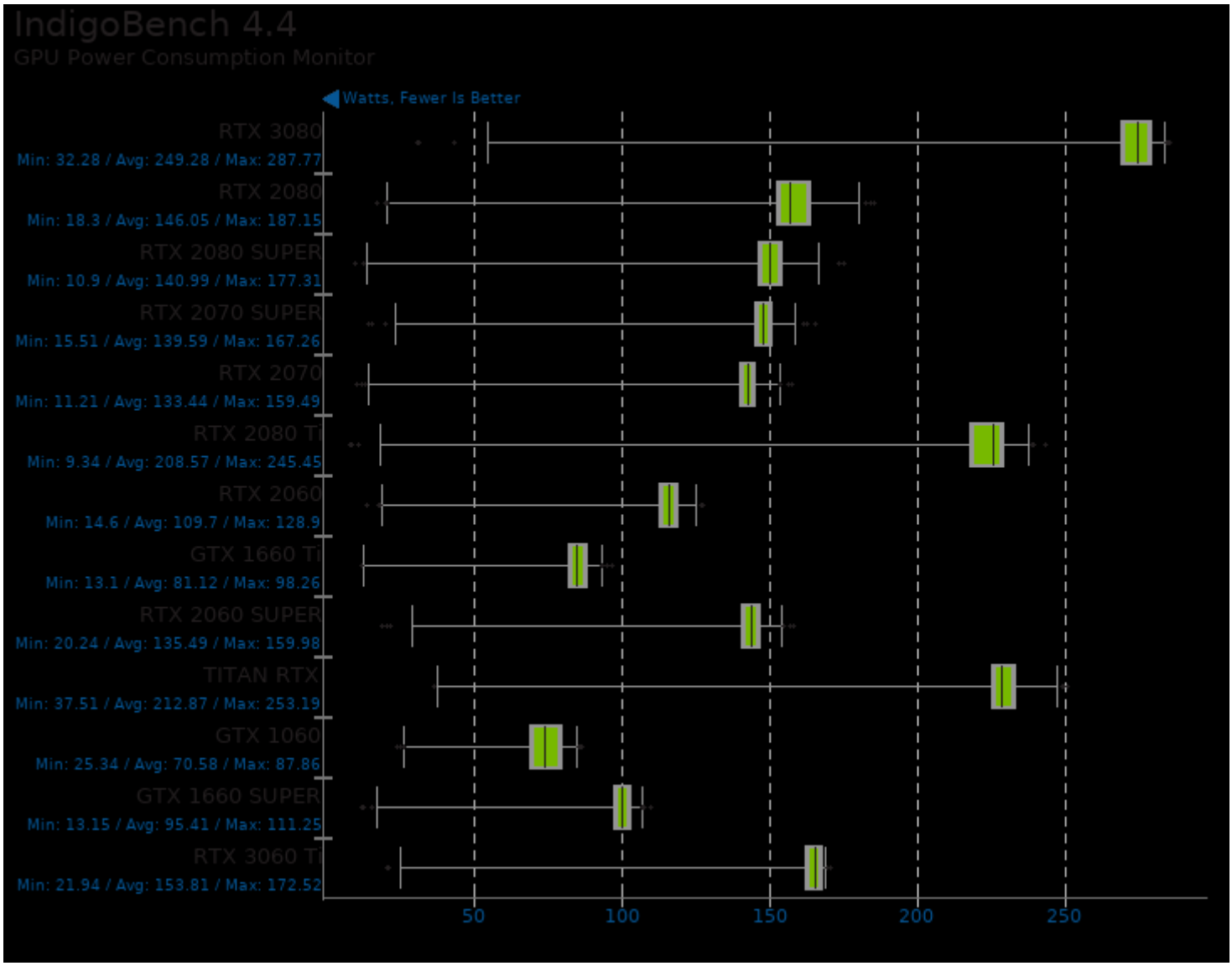
NVIDIA Compute Comparison



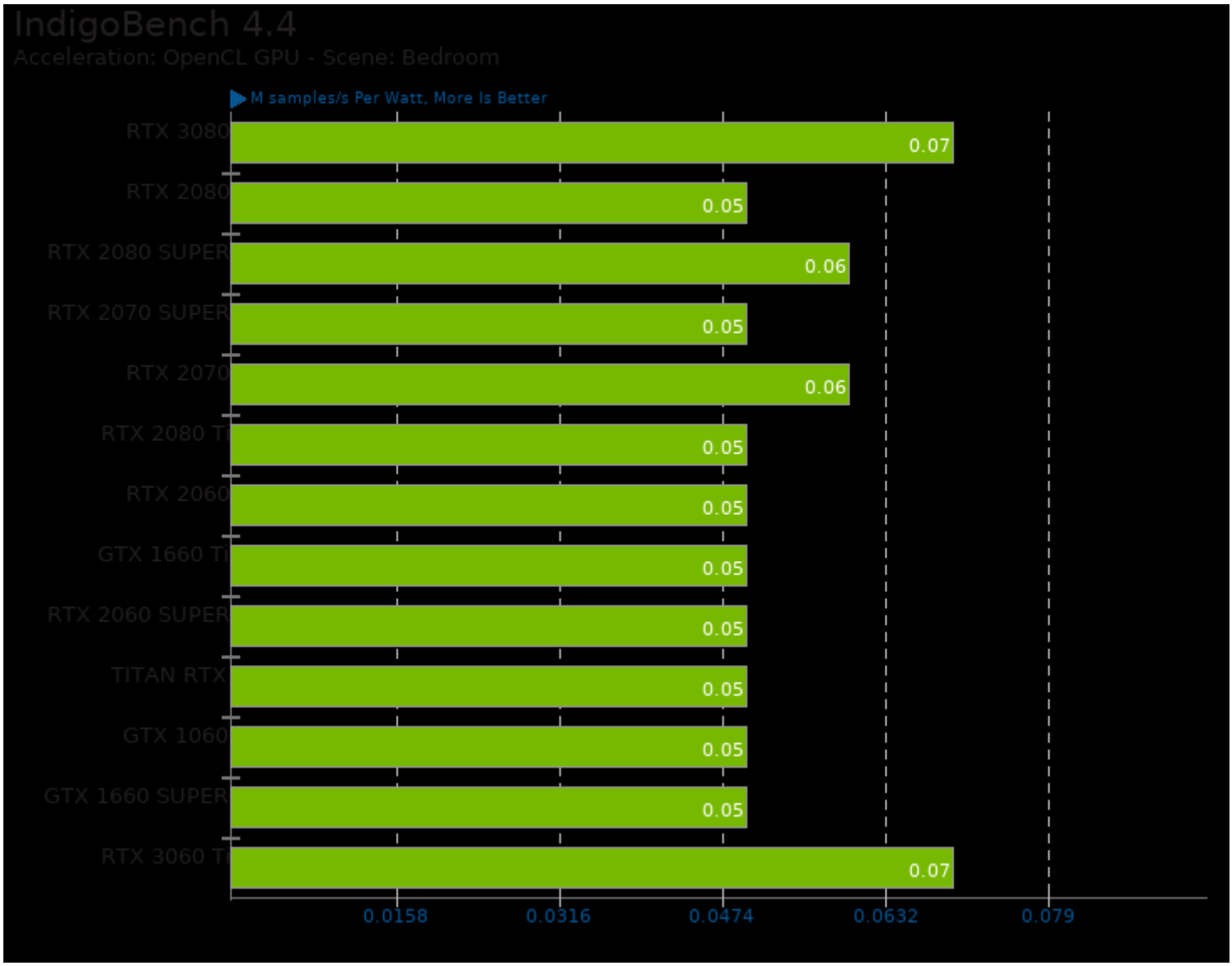
NVIDIA Compute Comparison



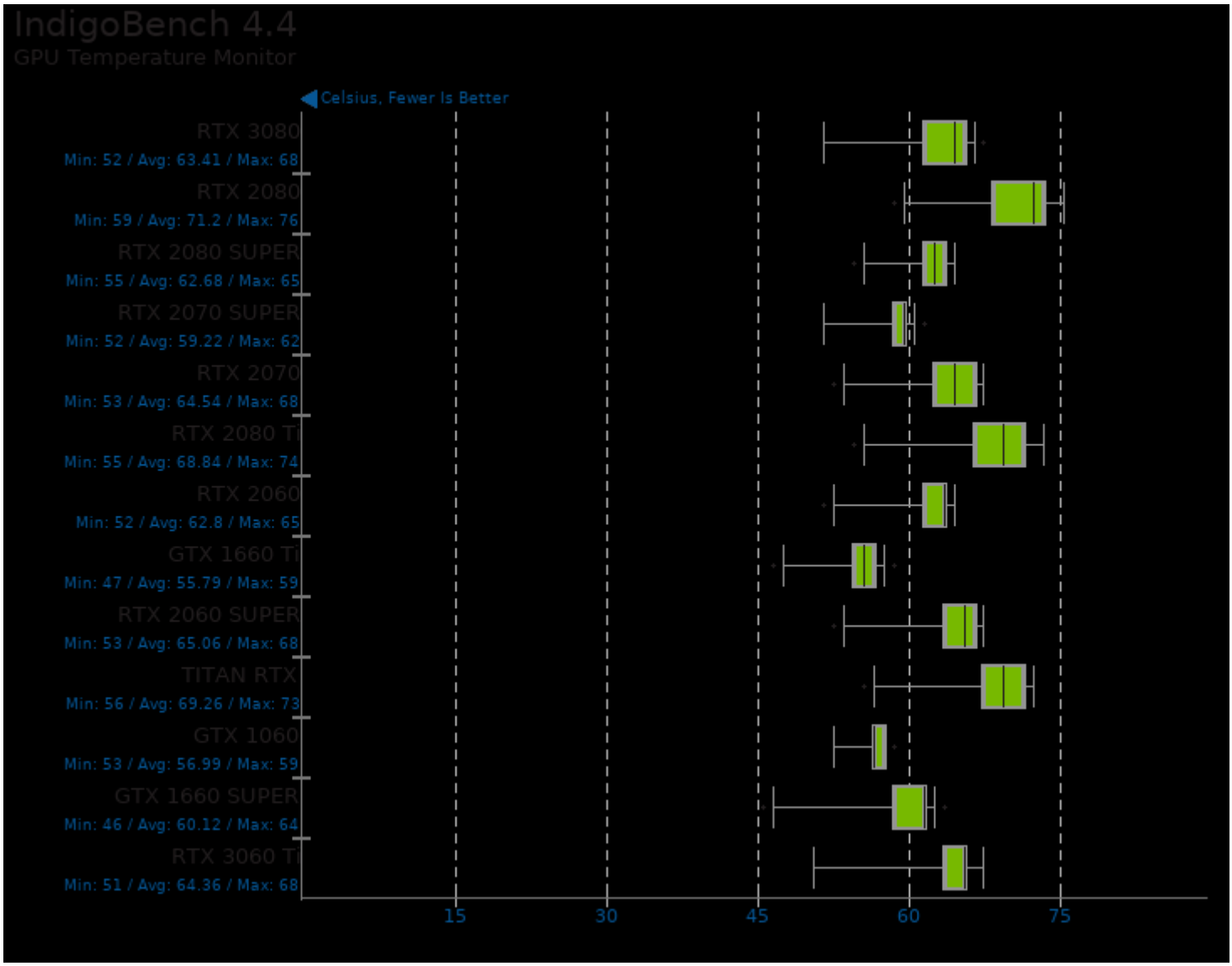
NVIDIA Compute Comparison



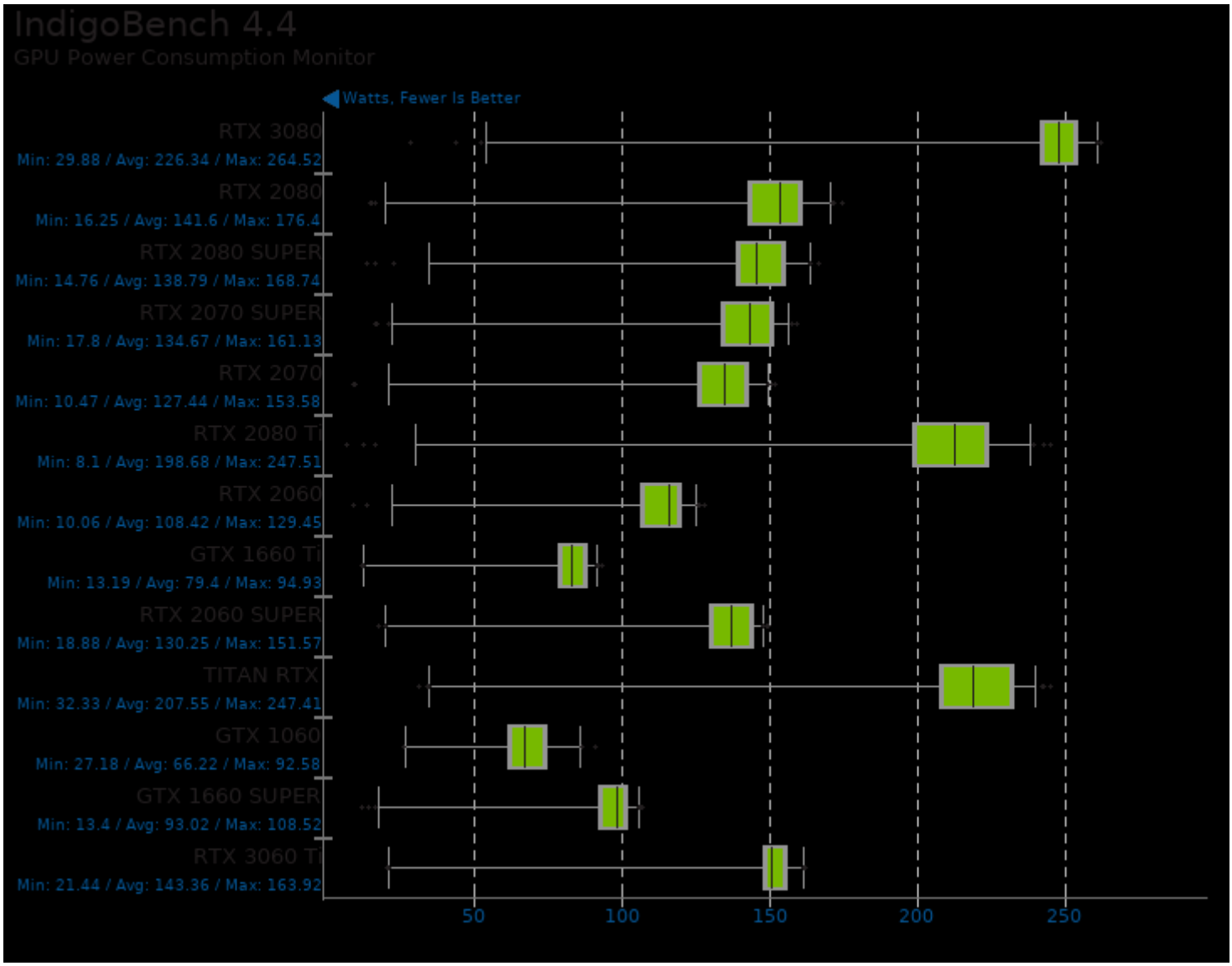
NVIDIA Compute Comparison



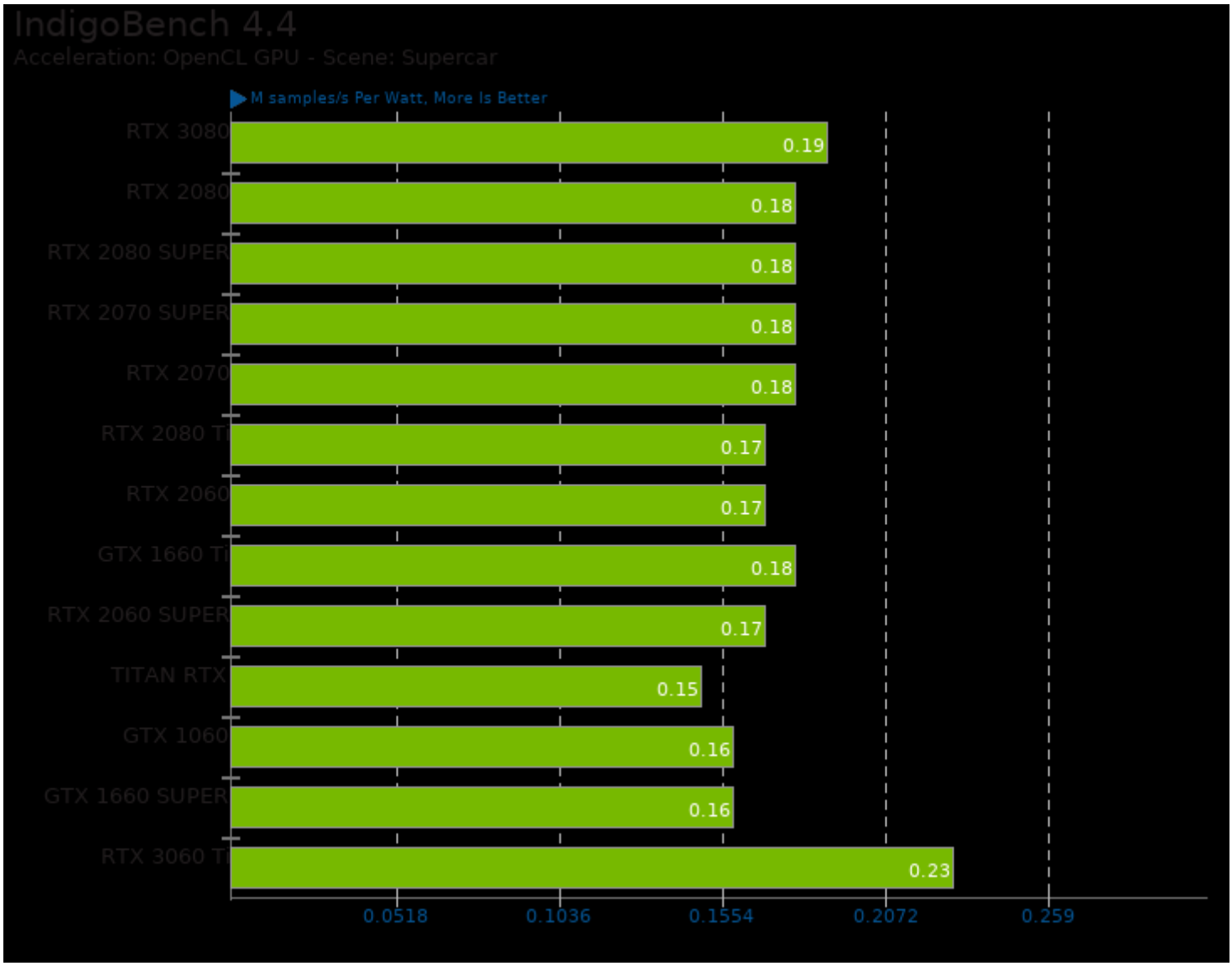
NVIDIA Compute Comparison



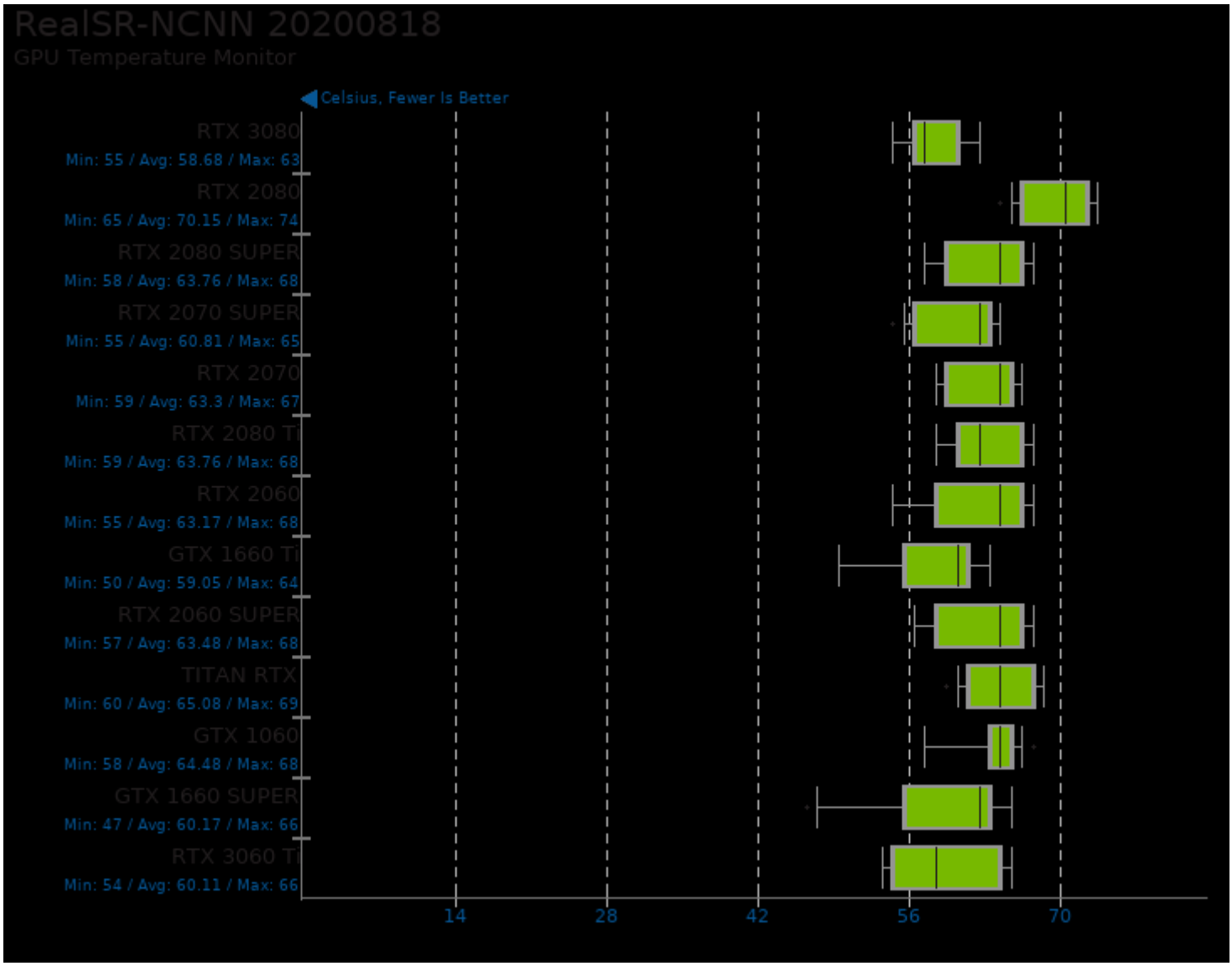
NVIDIA Compute Comparison



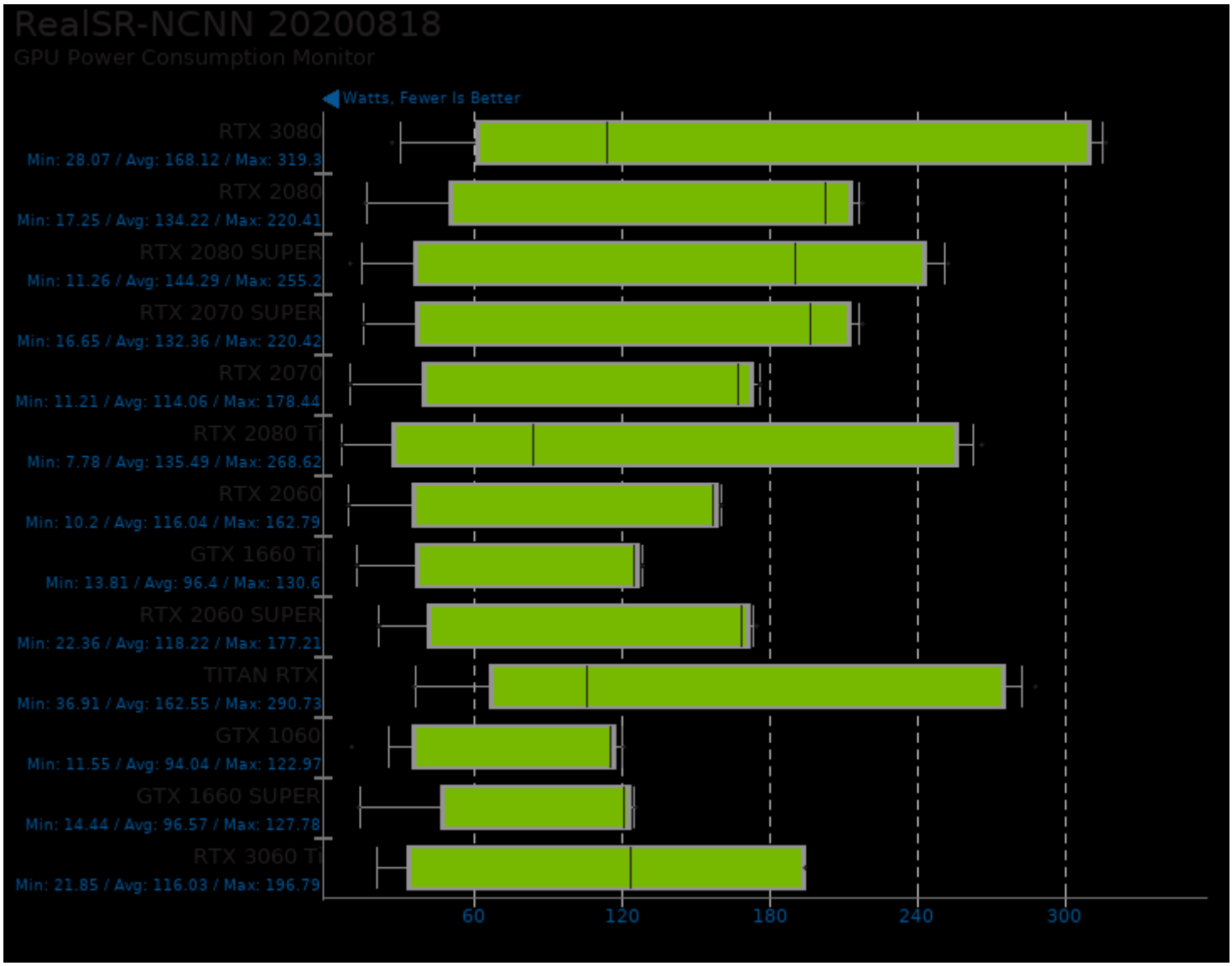
NVIDIA Compute Comparison



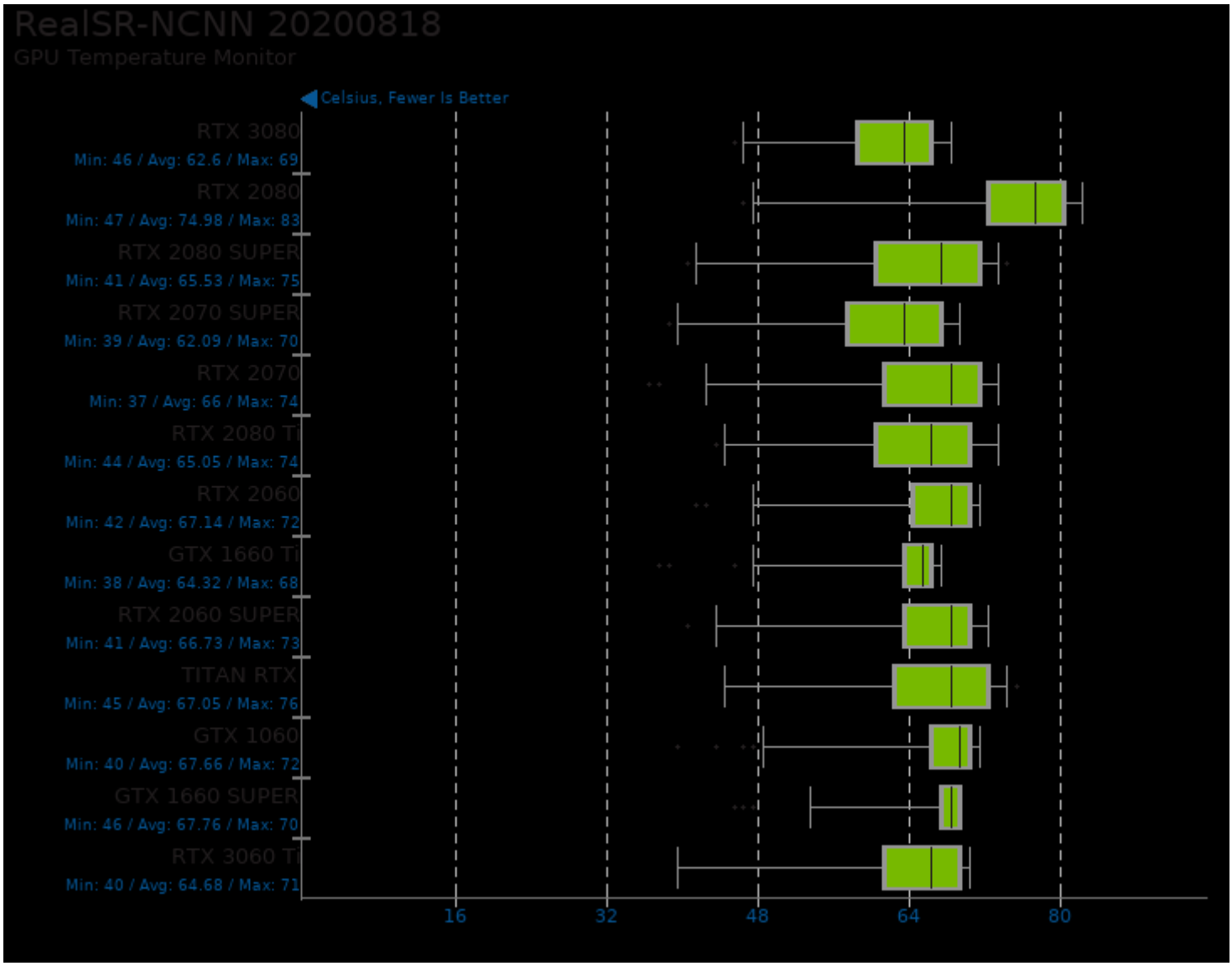
NVIDIA Compute Comparison



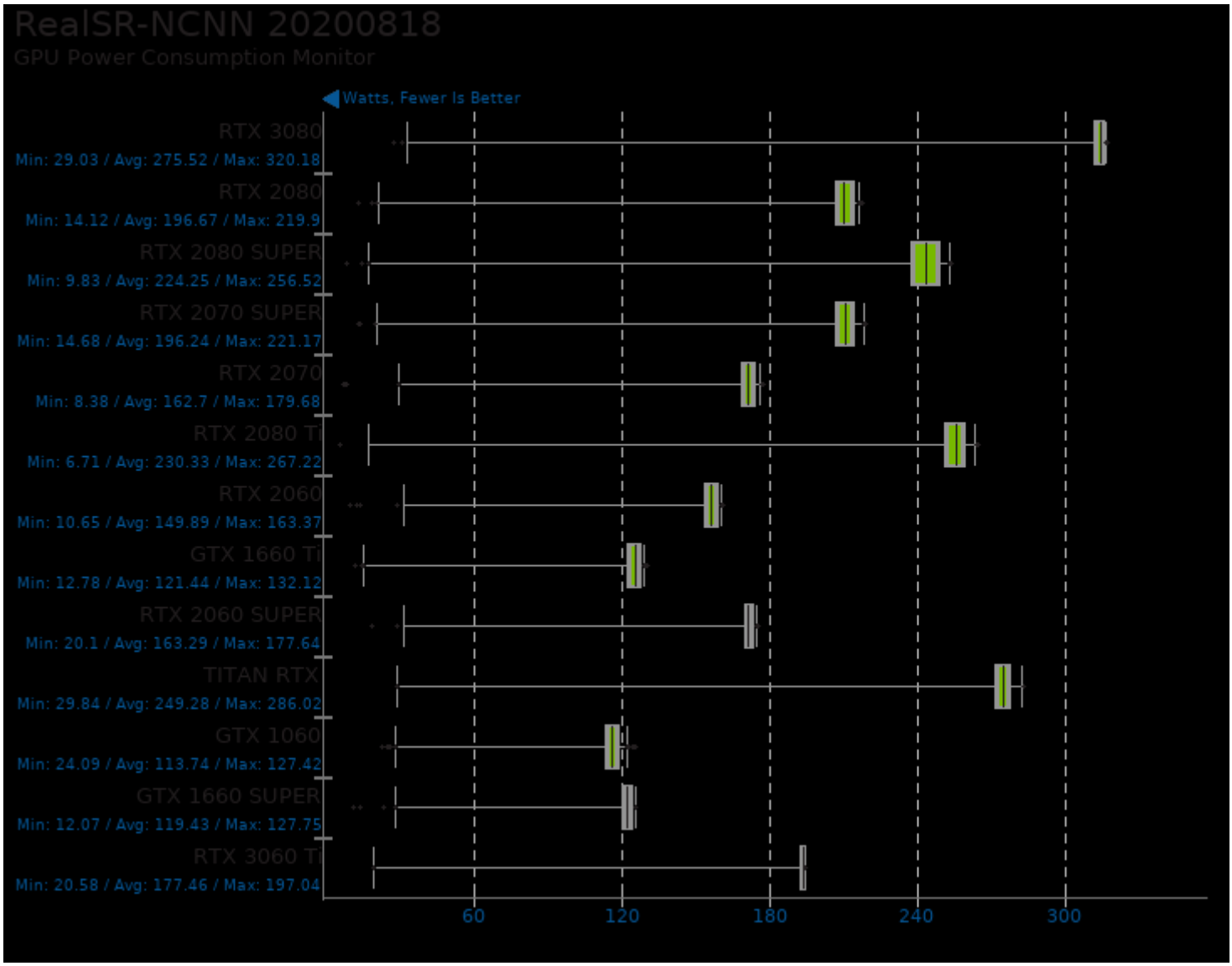
NVIDIA Compute Comparison



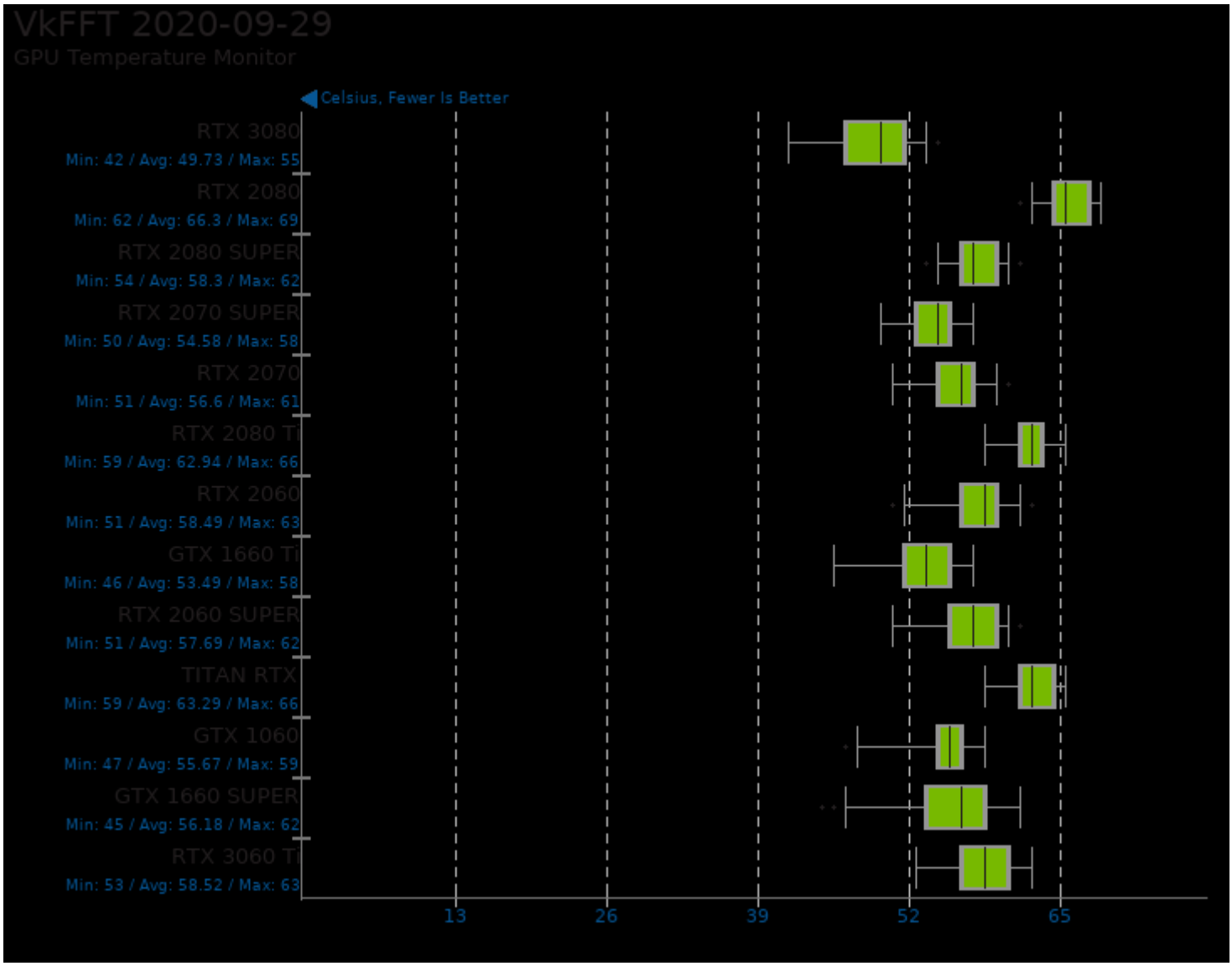
NVIDIA Compute Comparison



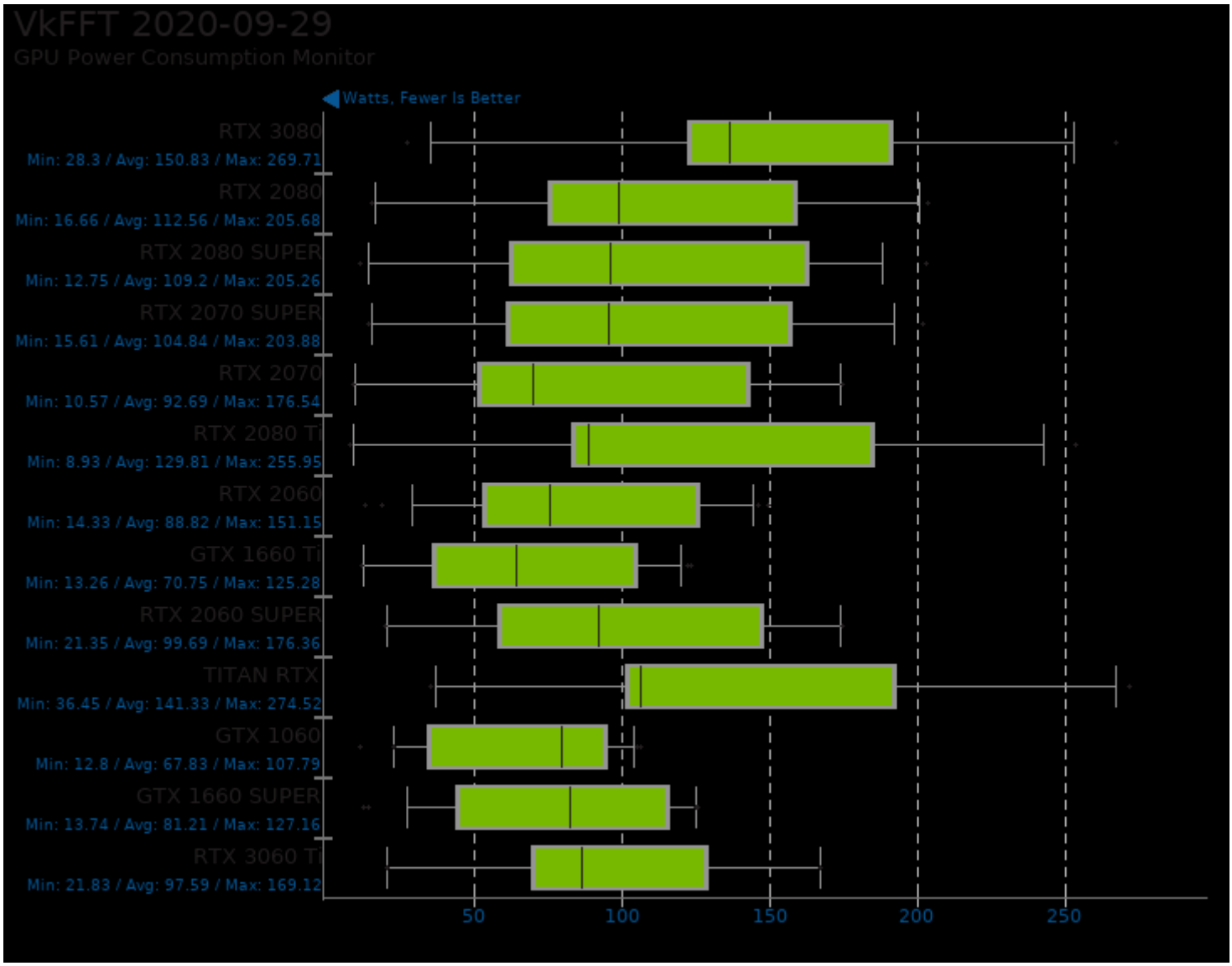
NVIDIA Compute Comparison



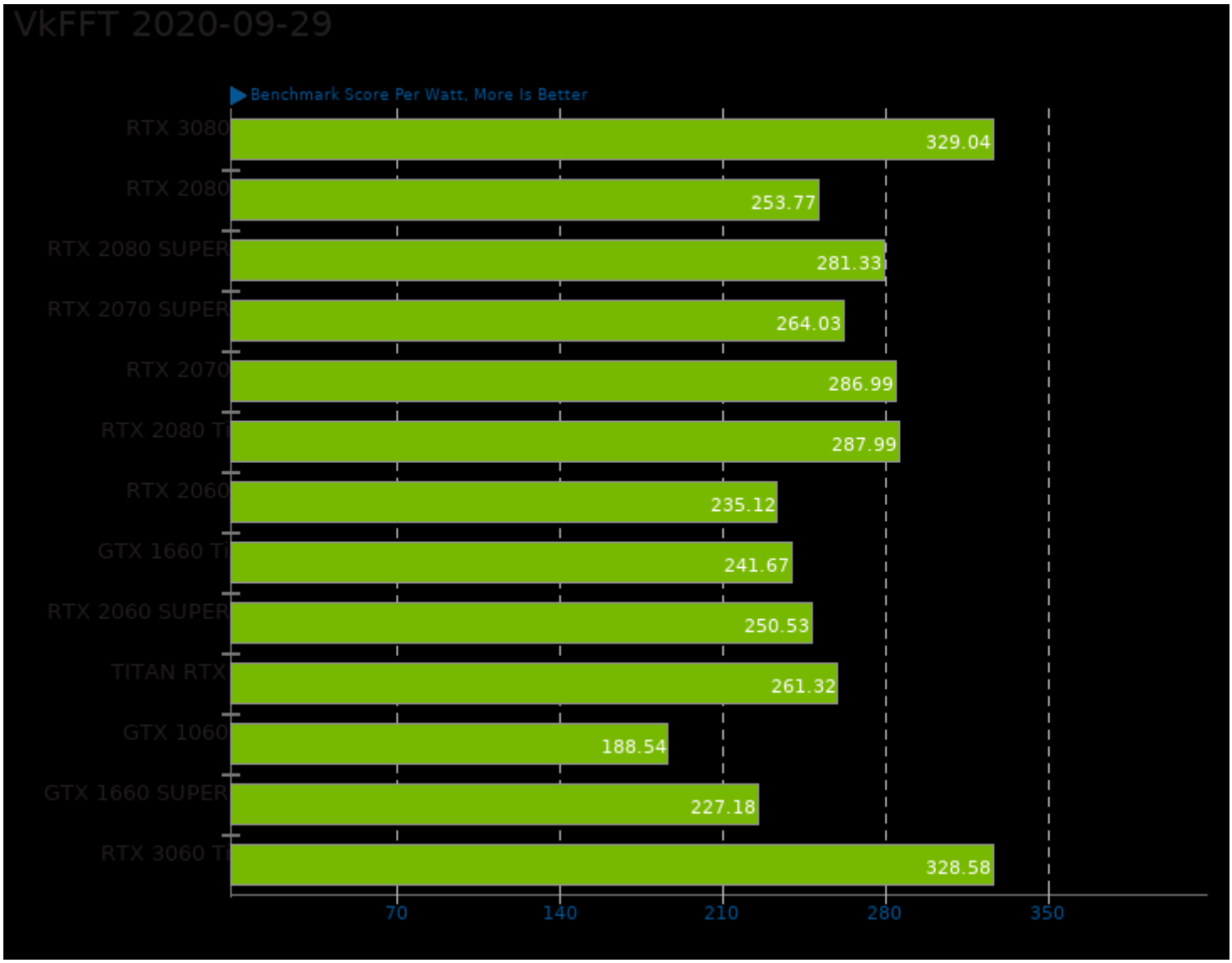
NVIDIA Compute Comparison



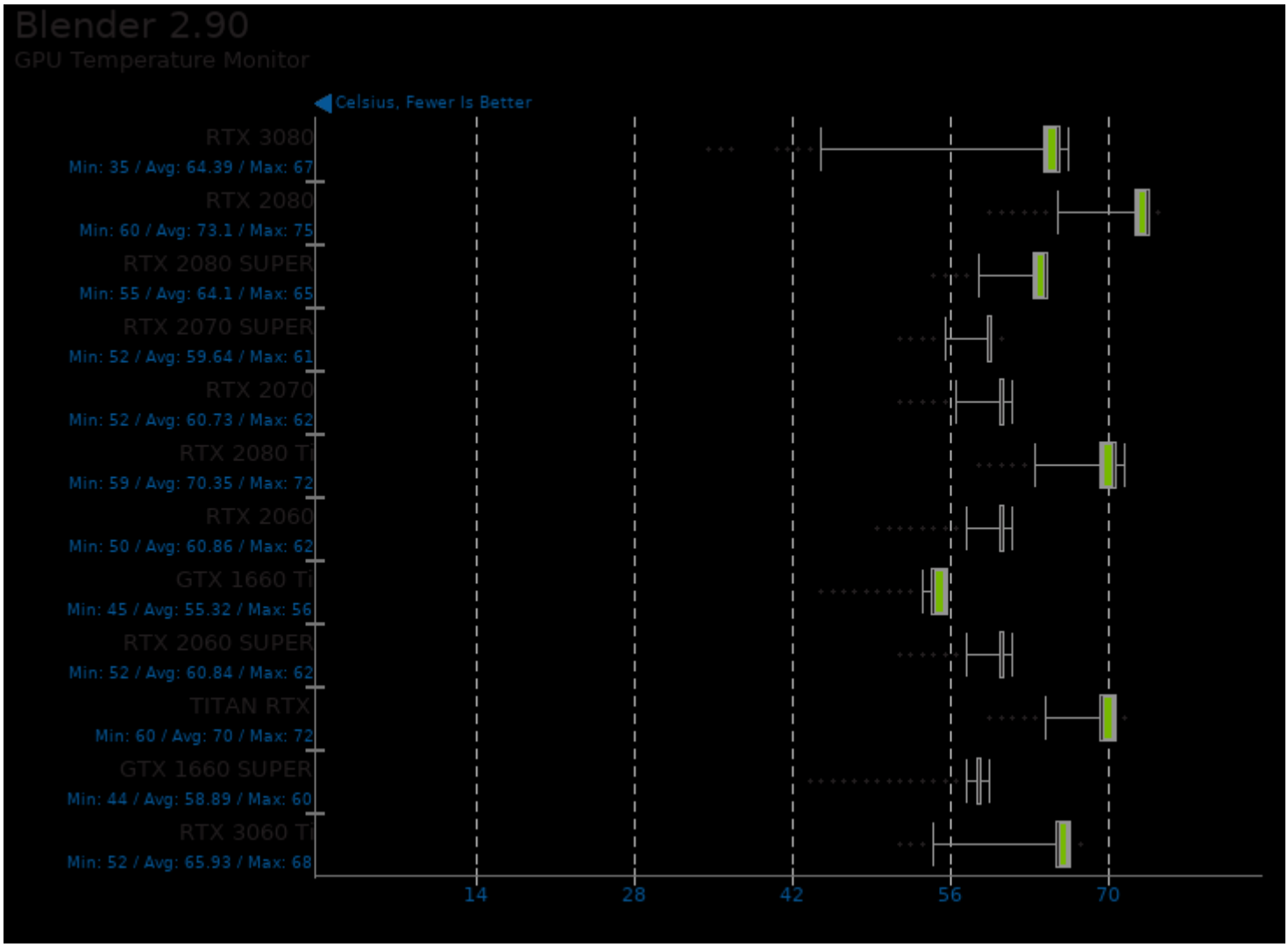
NVIDIA Compute Comparison



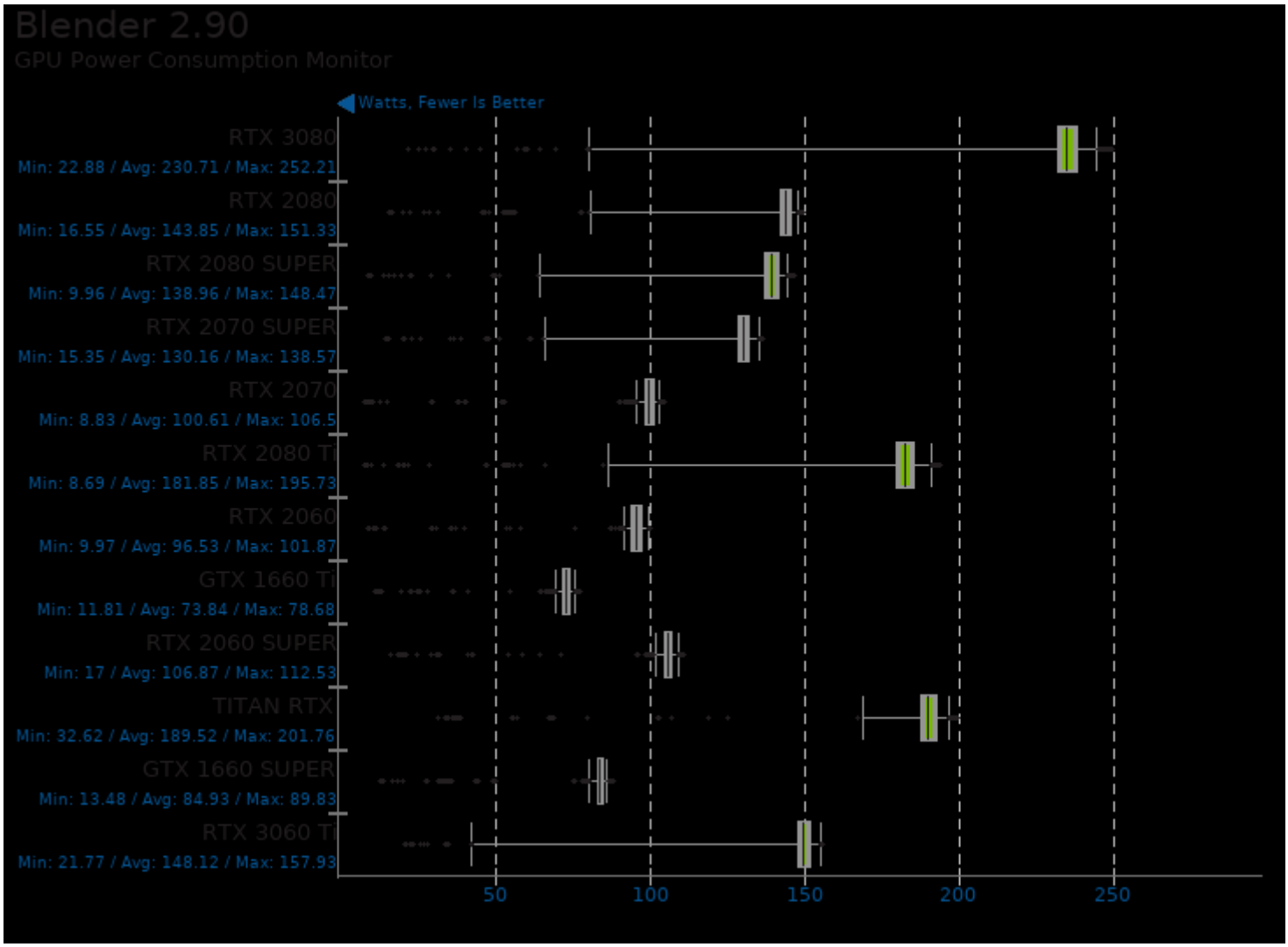
NVIDIA Compute Comparison



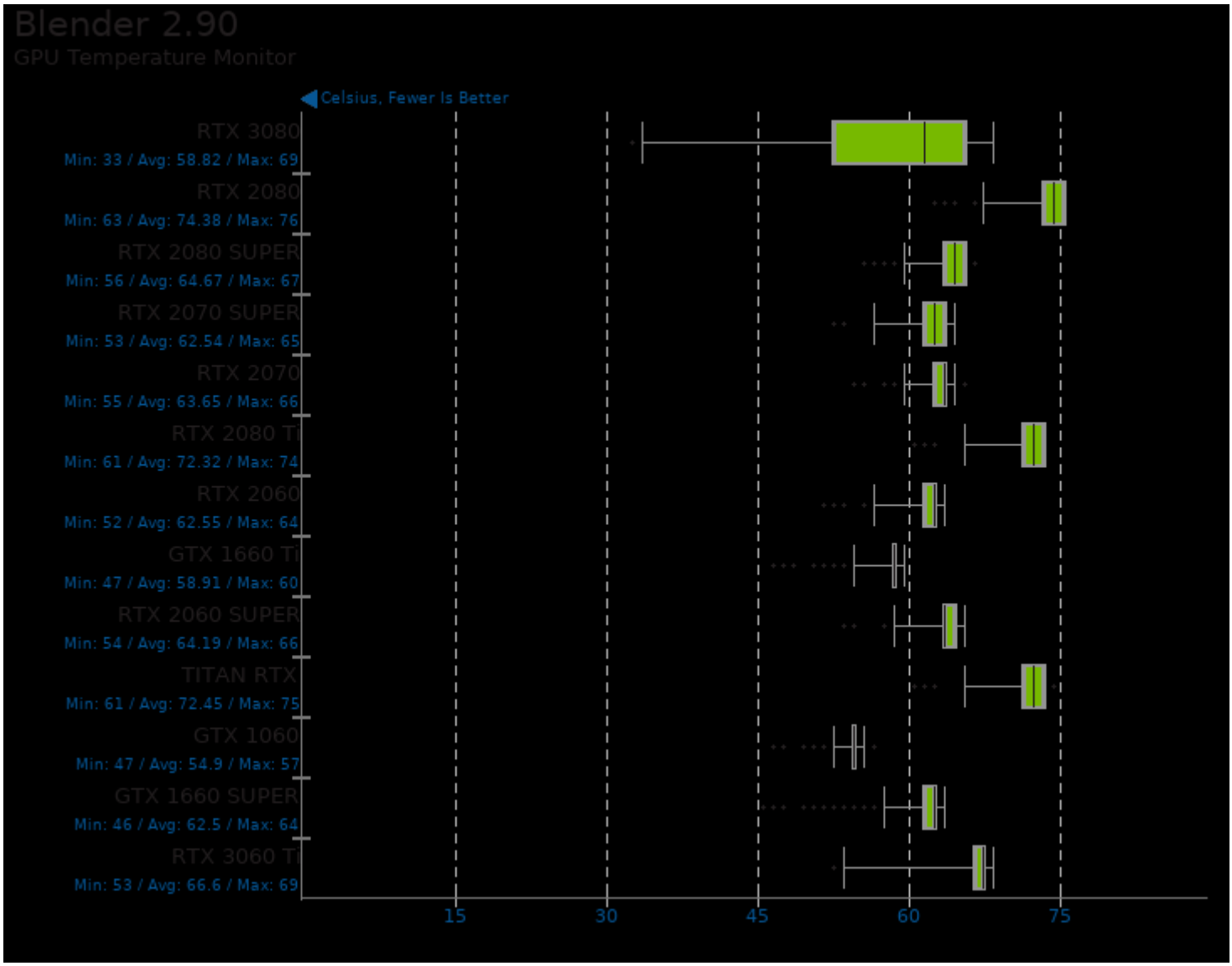
NVIDIA Compute Comparison



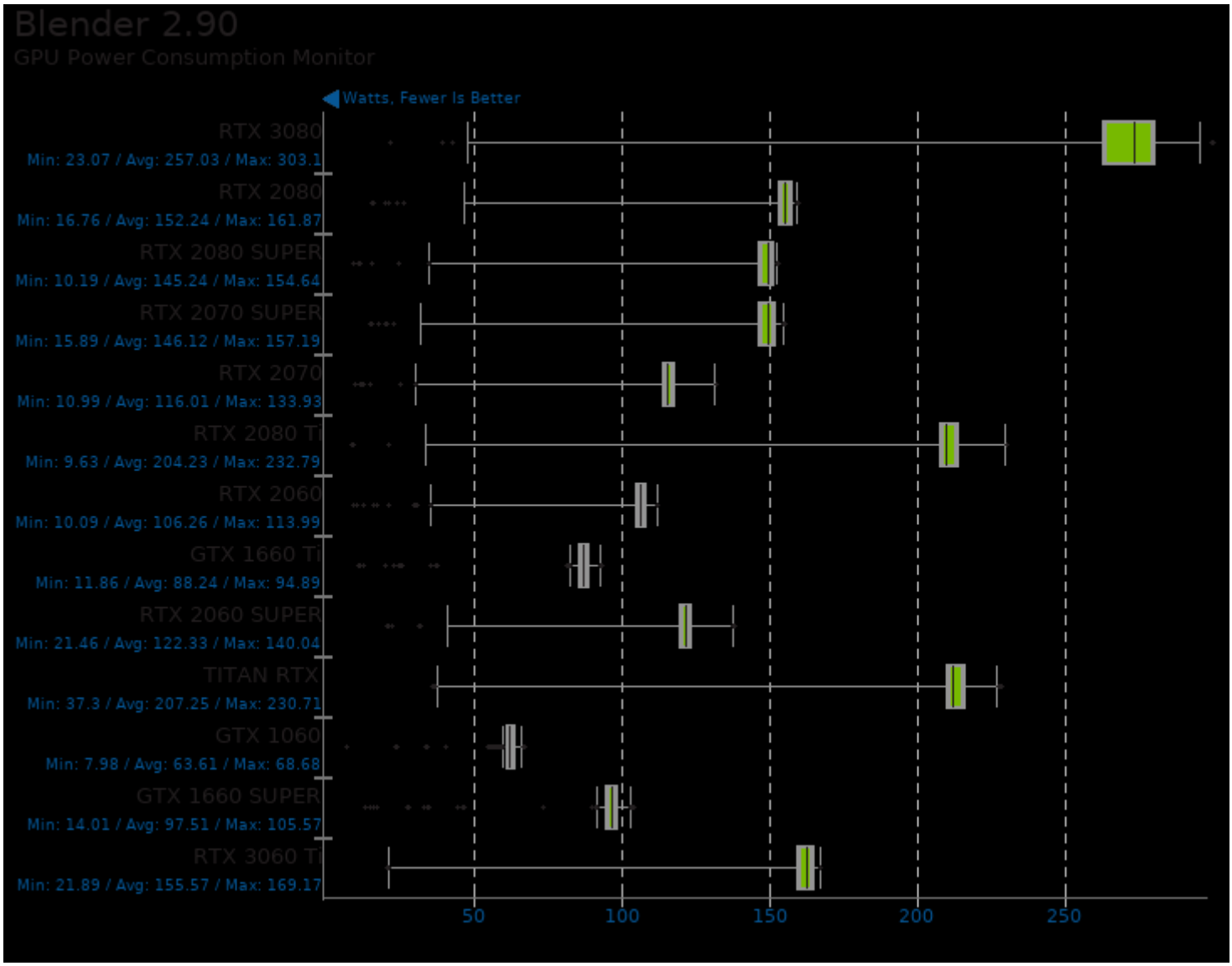
NVIDIA Compute Comparison



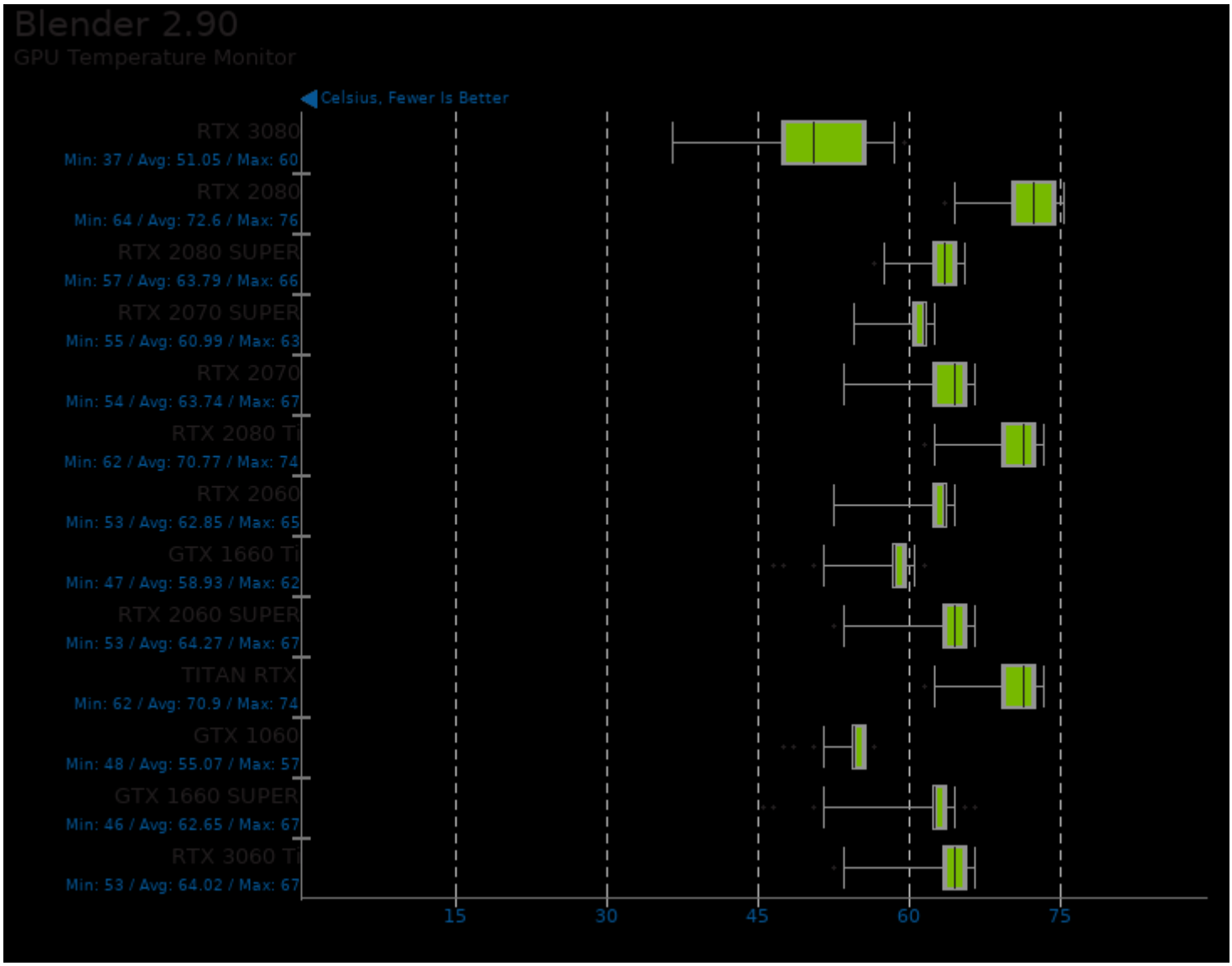
NVIDIA Compute Comparison



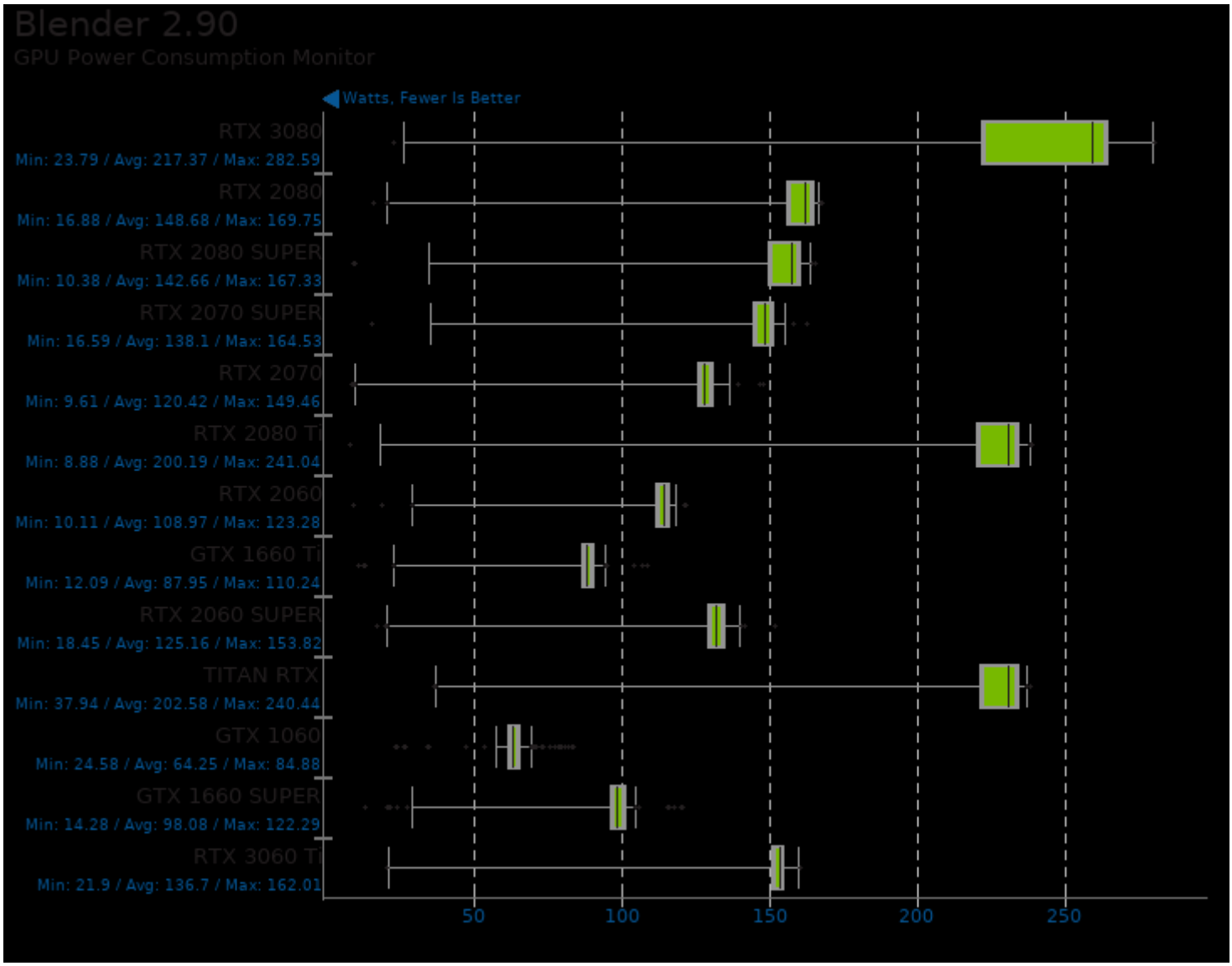
NVIDIA Compute Comparison



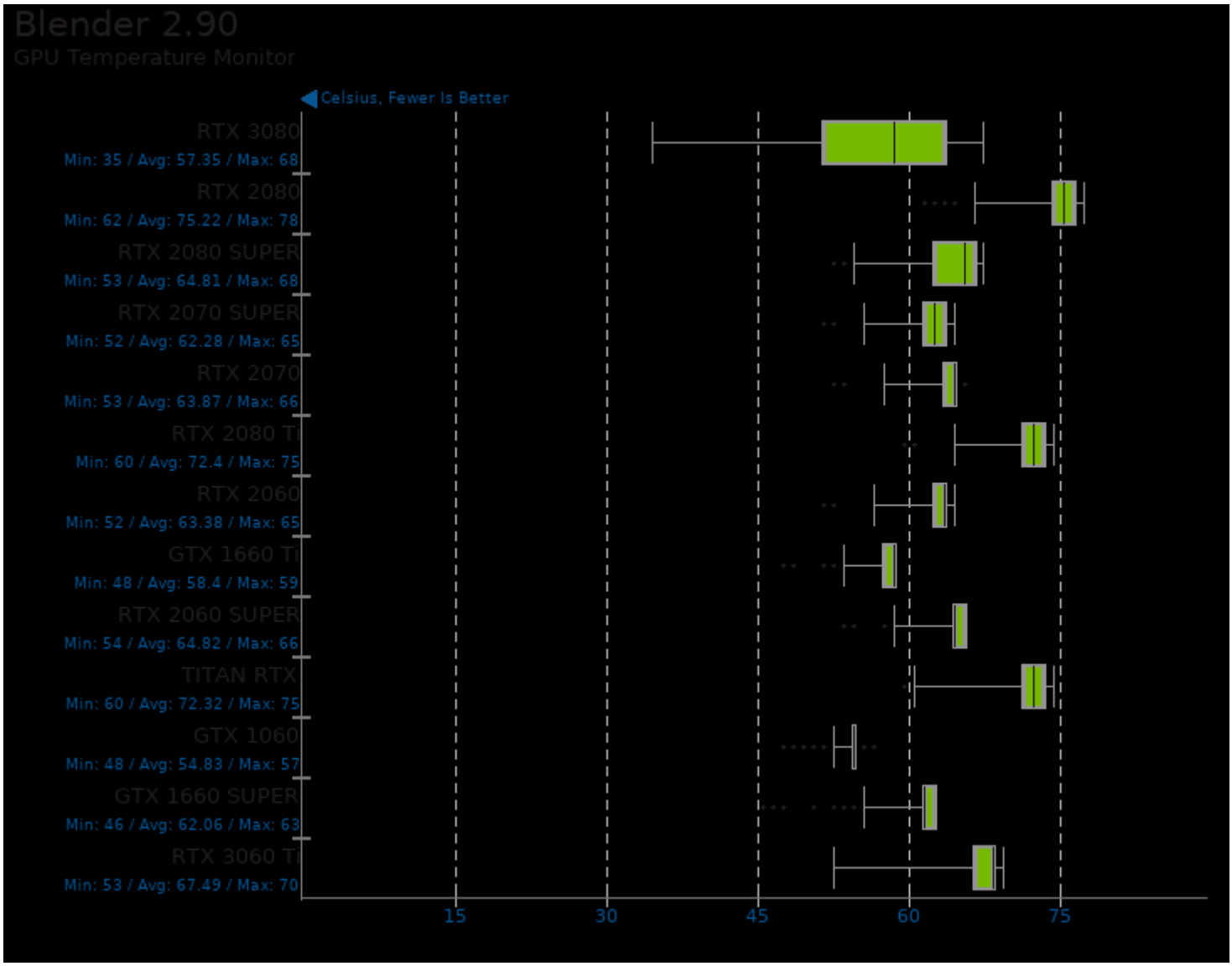
NVIDIA Compute Comparison



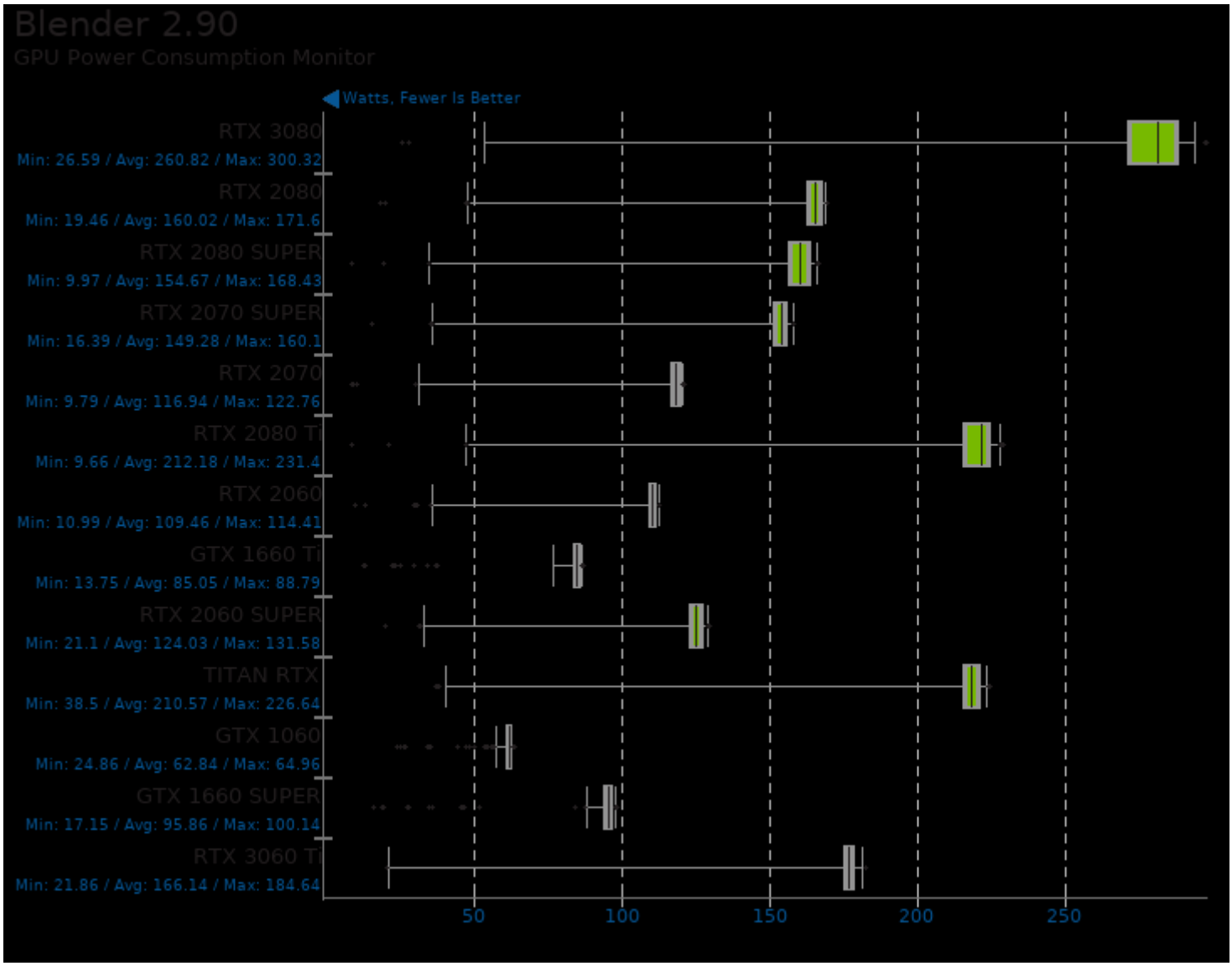
NVIDIA Compute Comparison



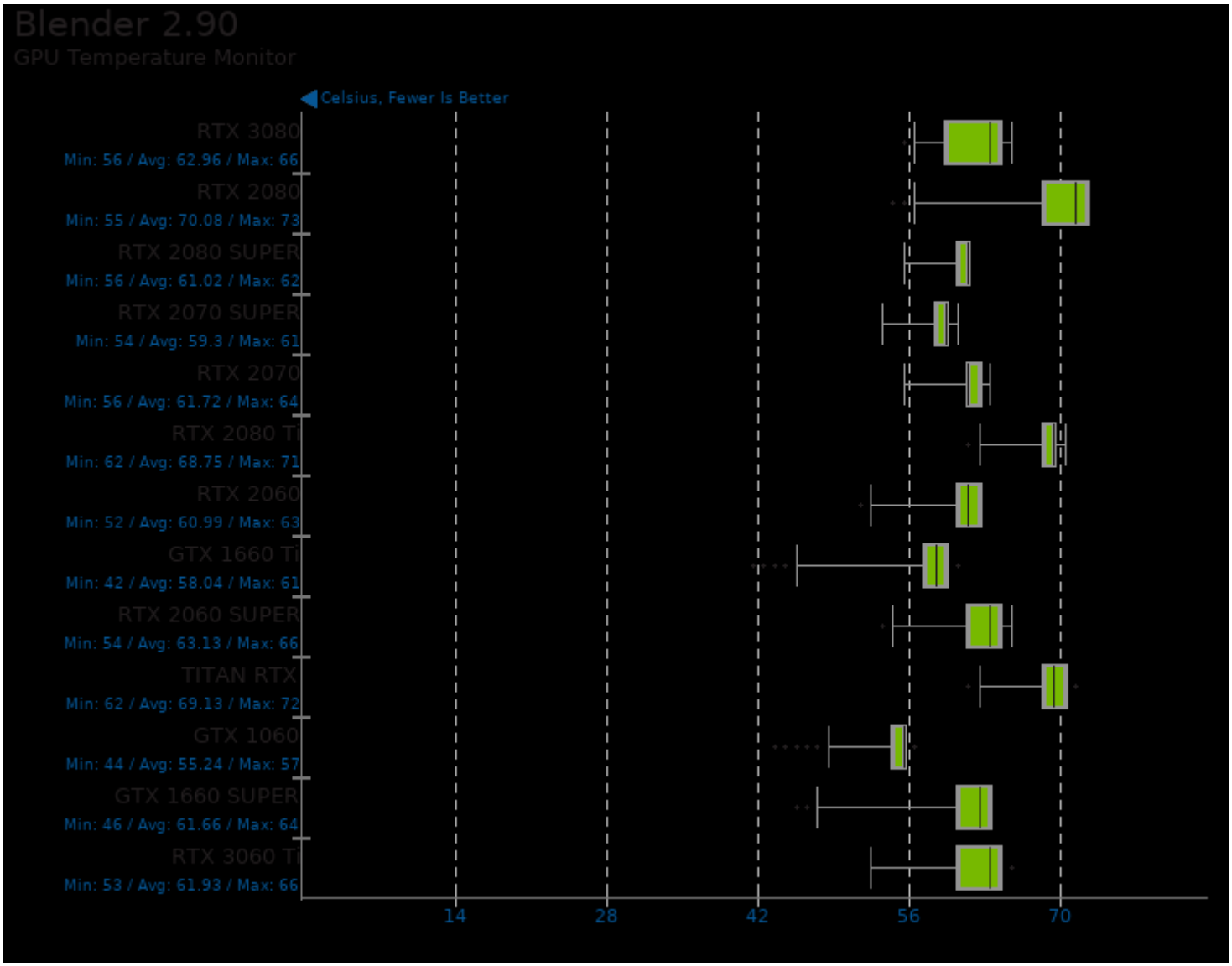
NVIDIA Compute Comparison



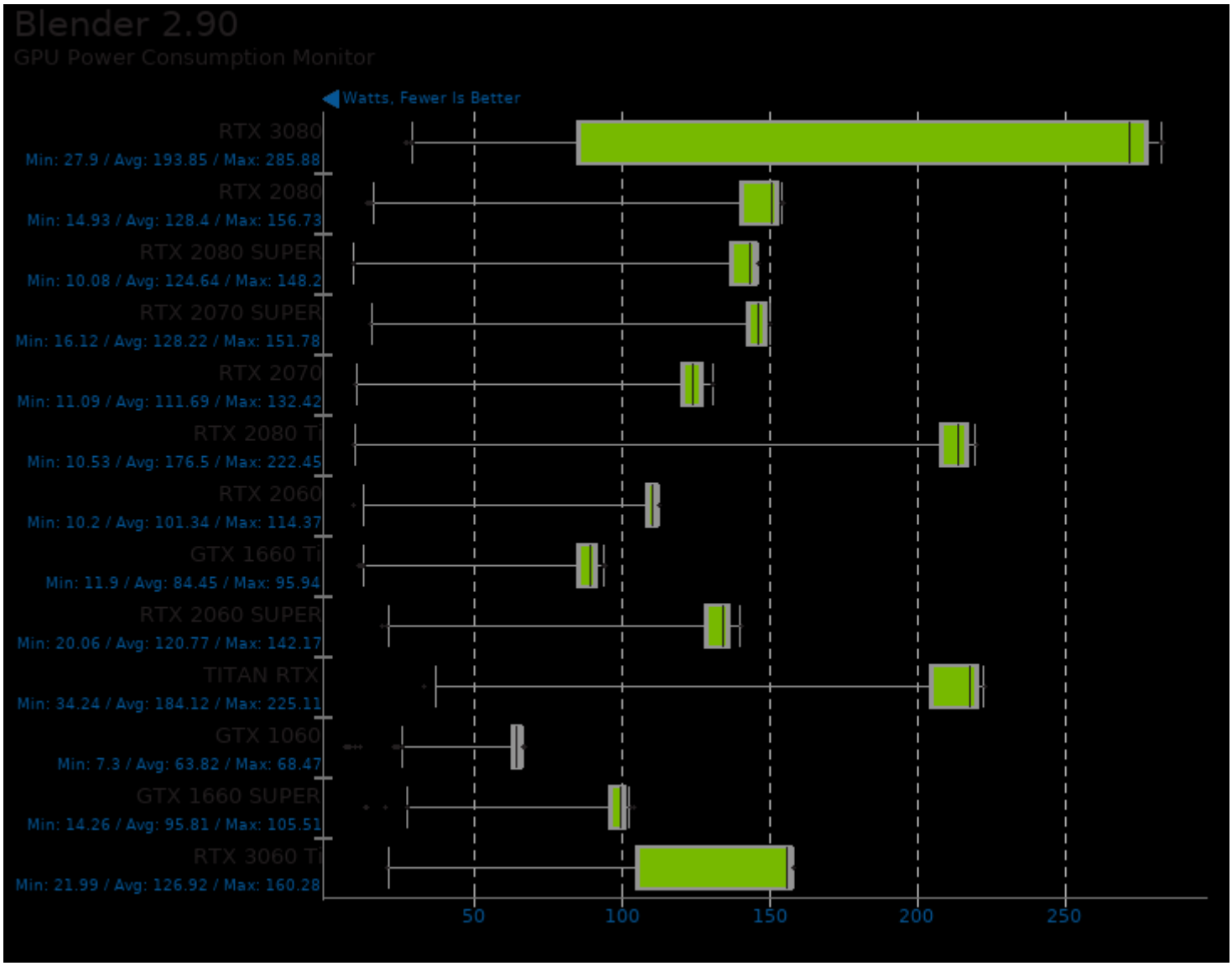
NVIDIA Compute Comparison



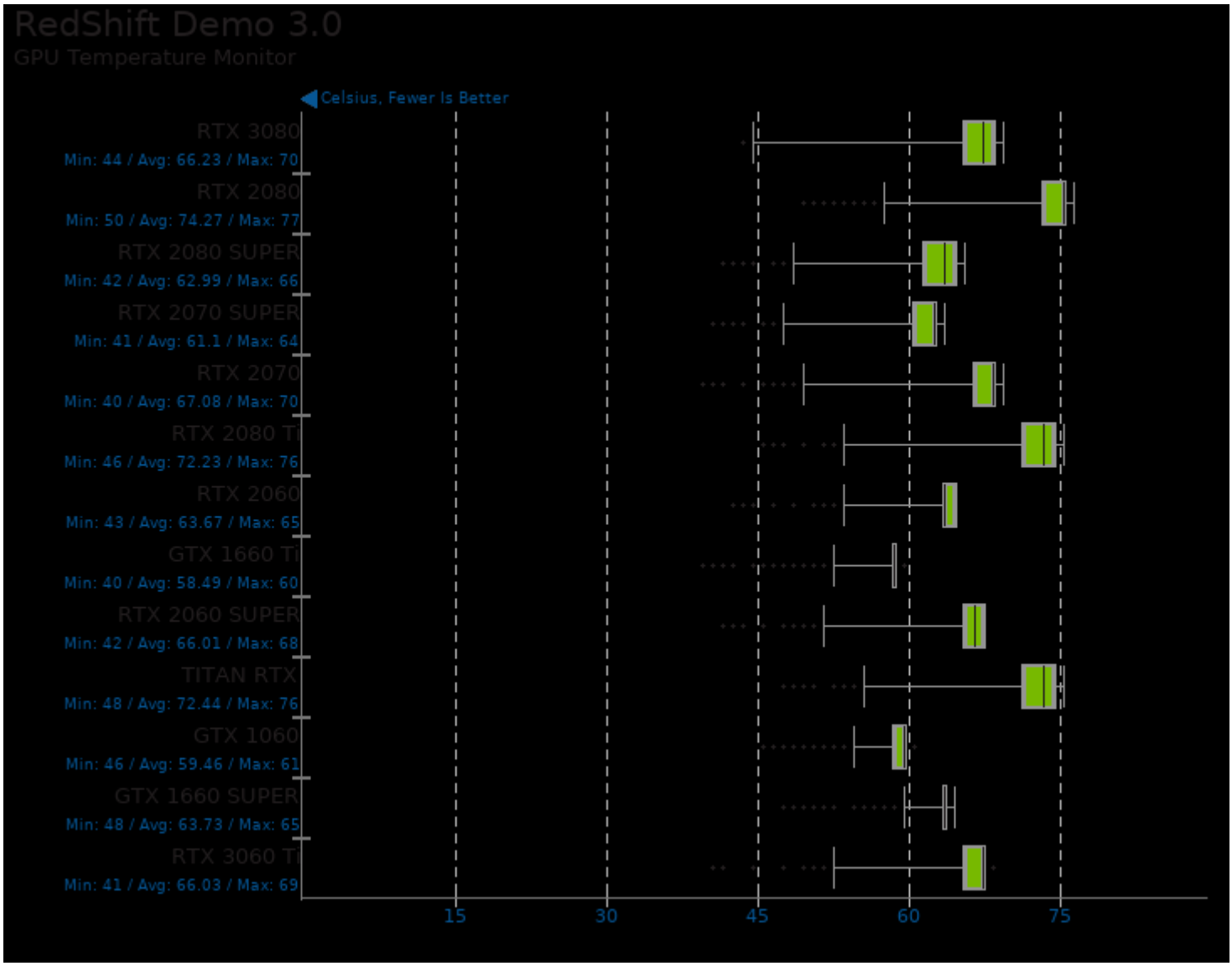
NVIDIA Compute Comparison



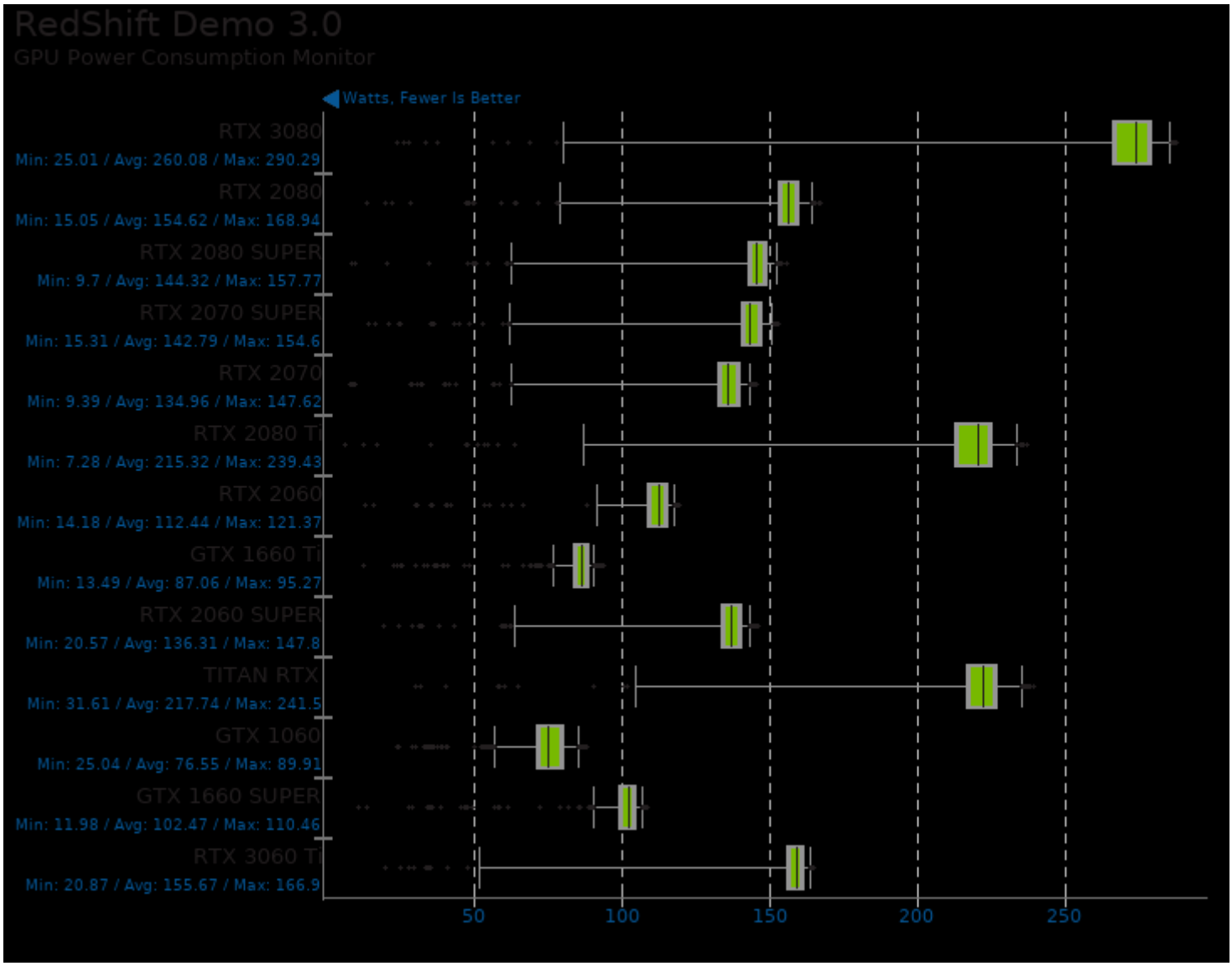
NVIDIA Compute Comparison



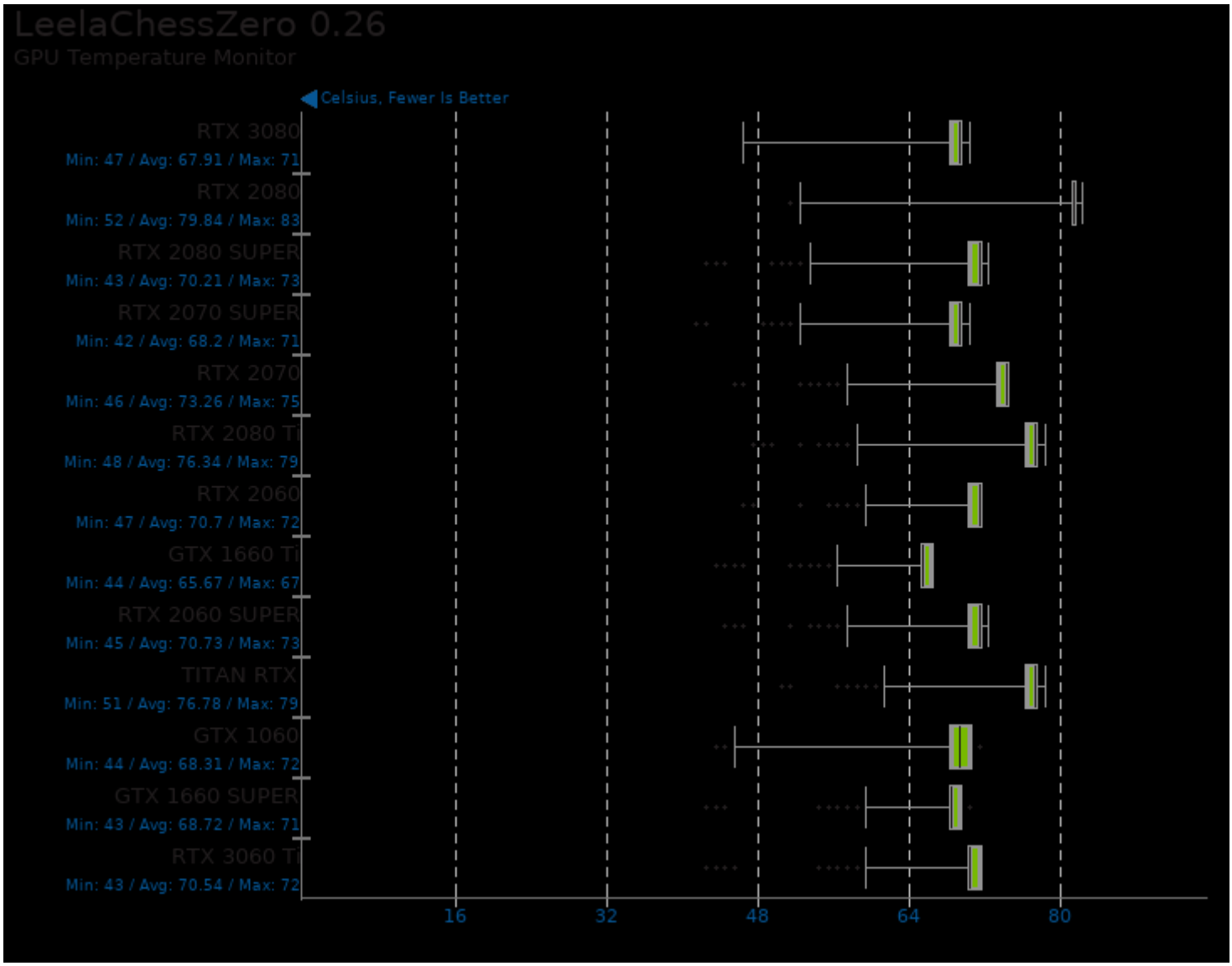
NVIDIA Compute Comparison



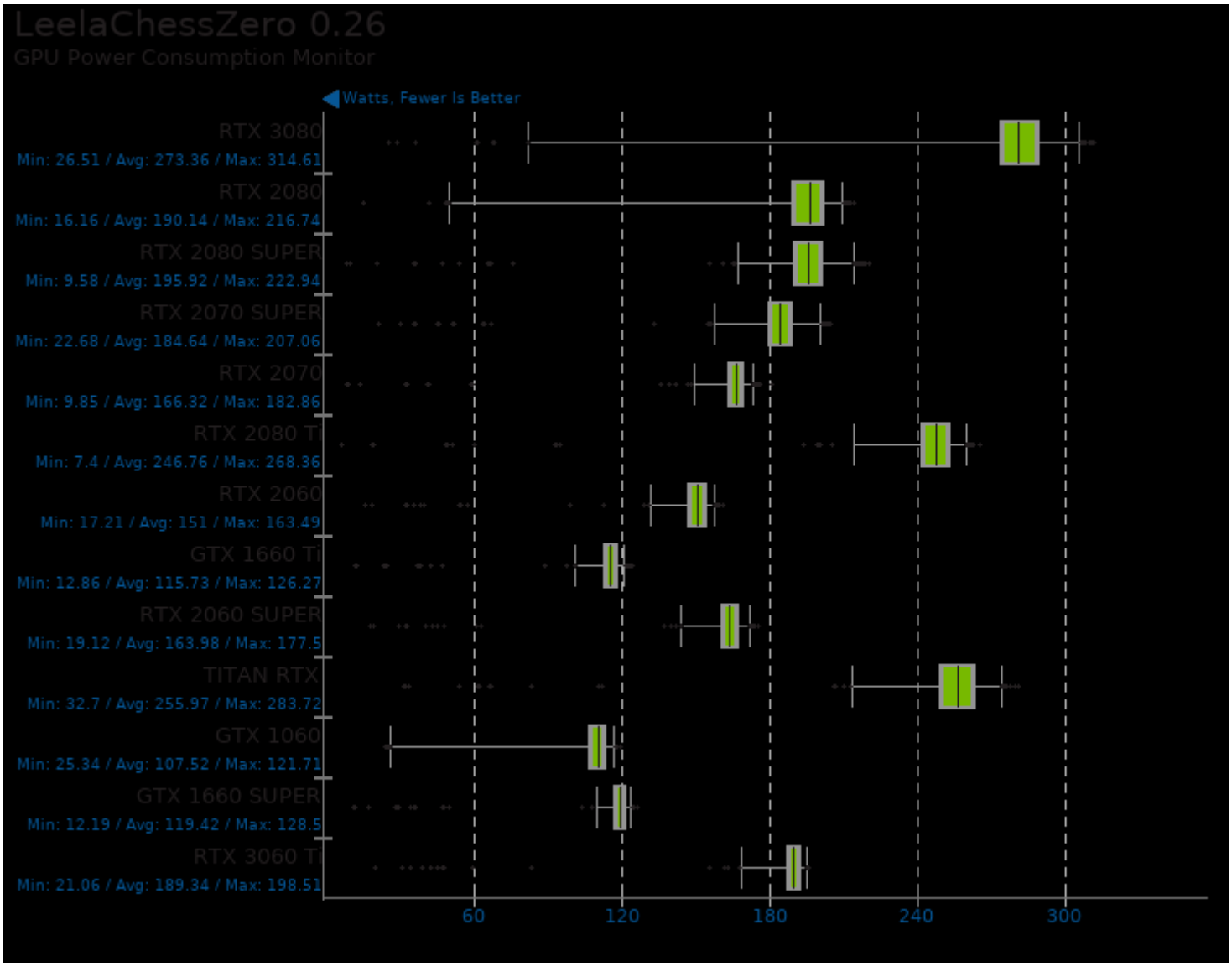
NVIDIA Compute Comparison



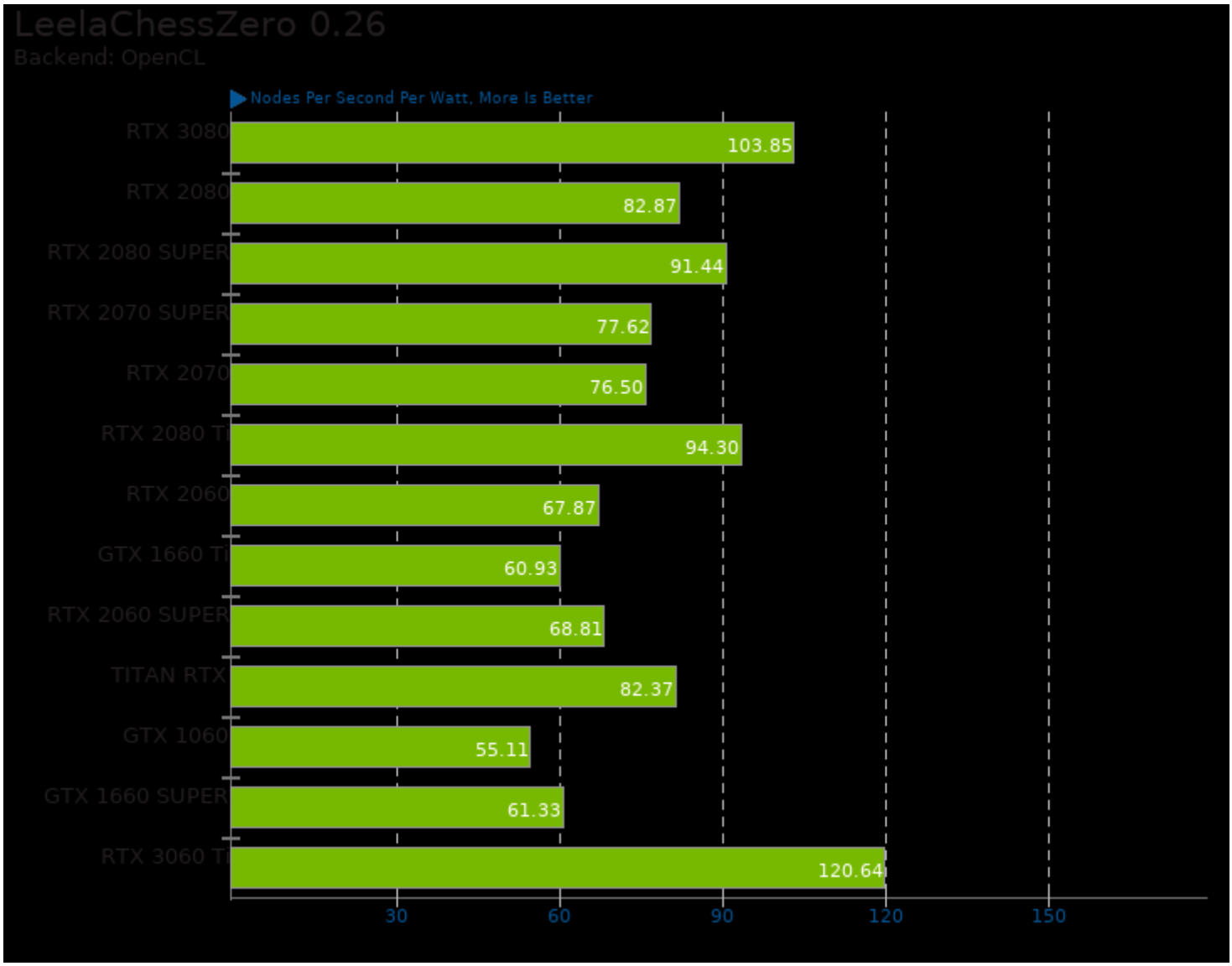
NVIDIA Compute Comparison



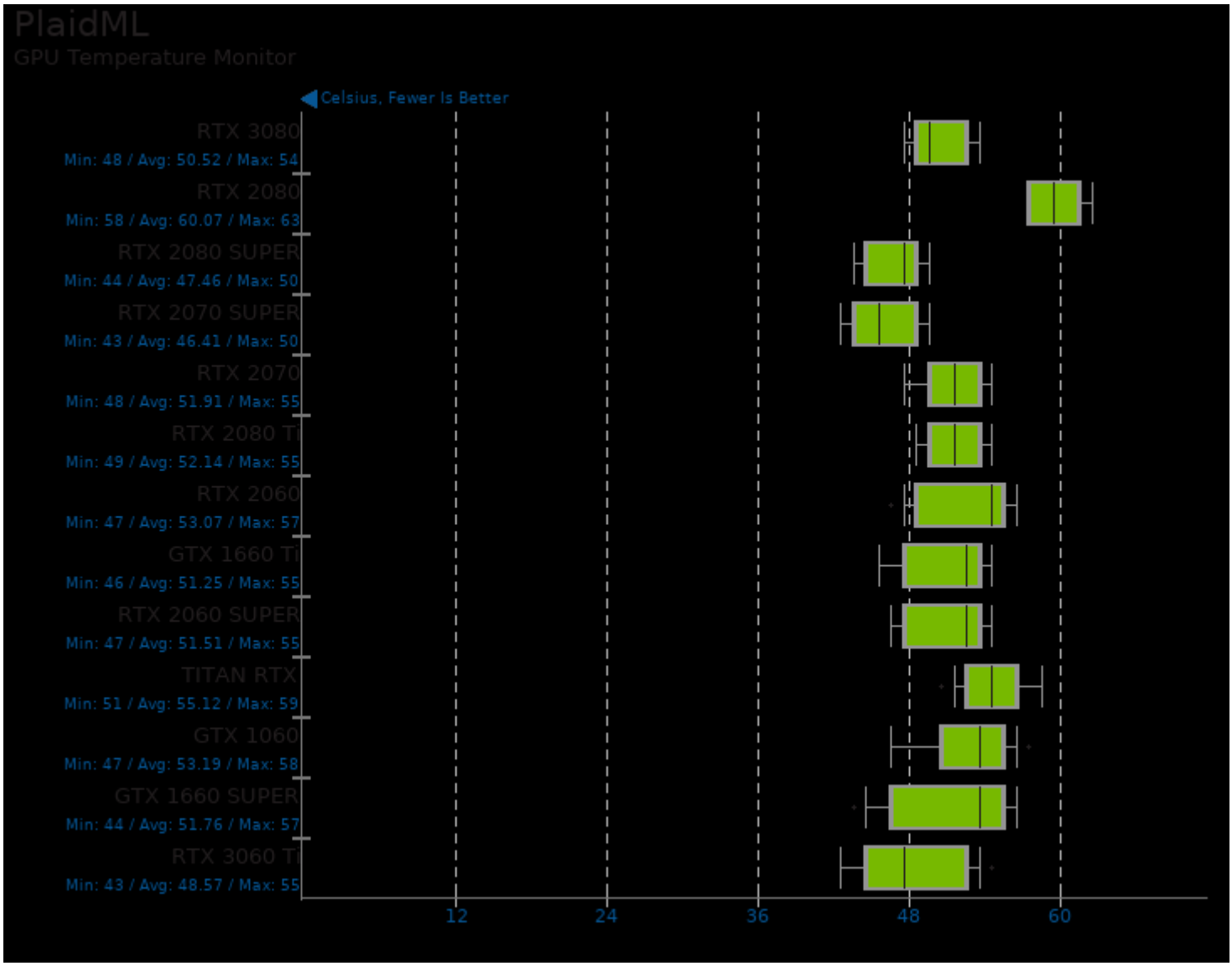
NVIDIA Compute Comparison



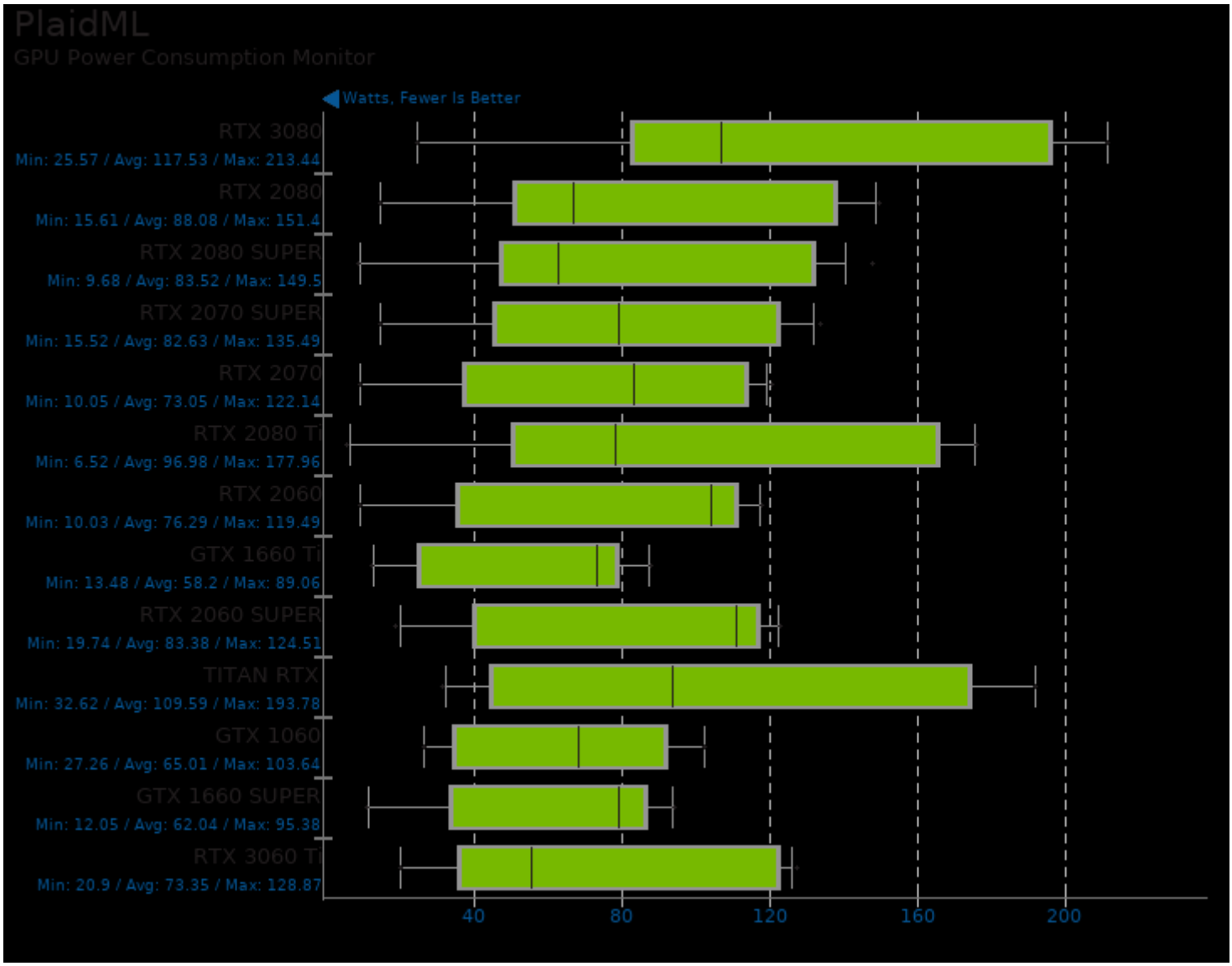
NVIDIA Compute Comparison



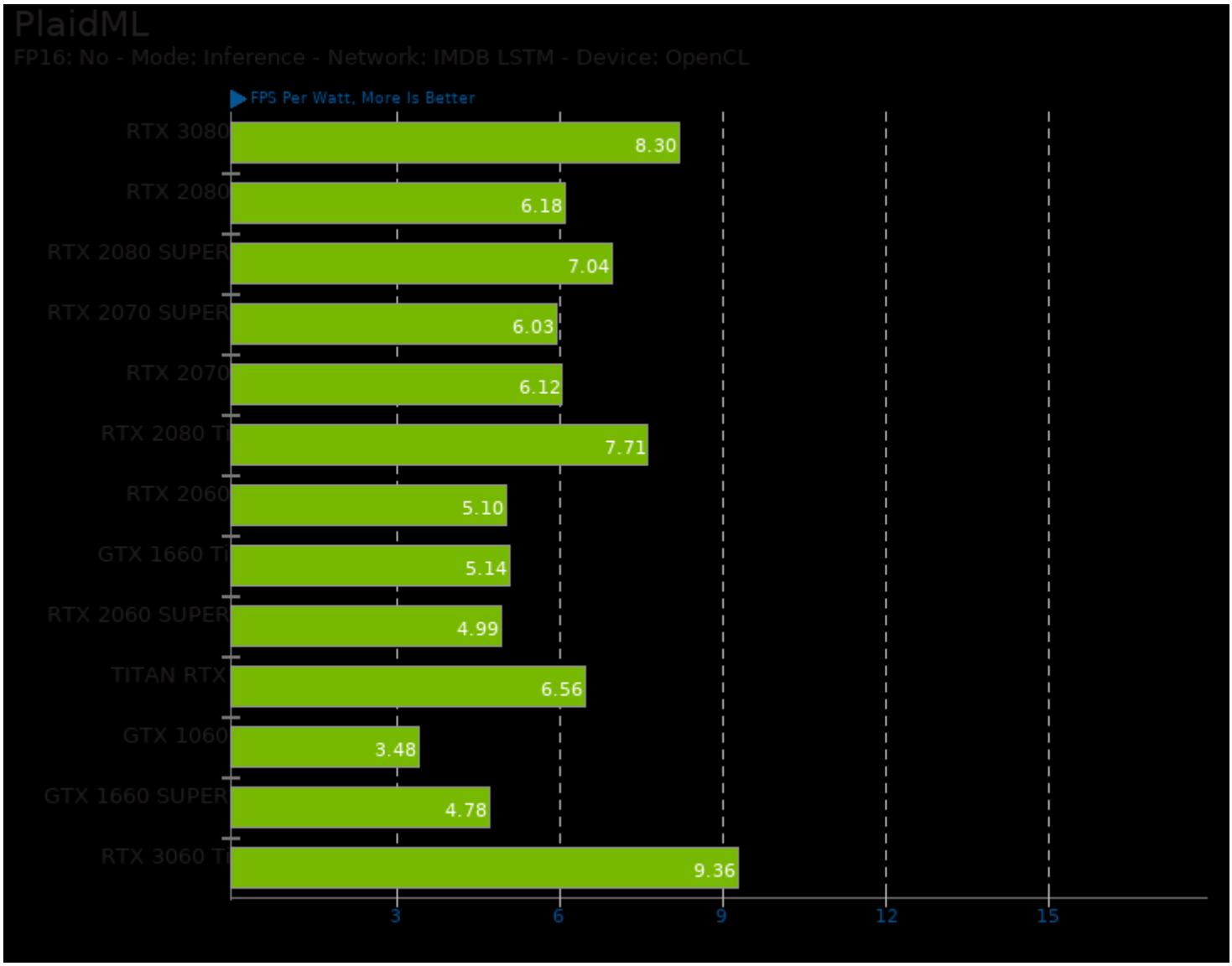
NVIDIA Compute Comparison



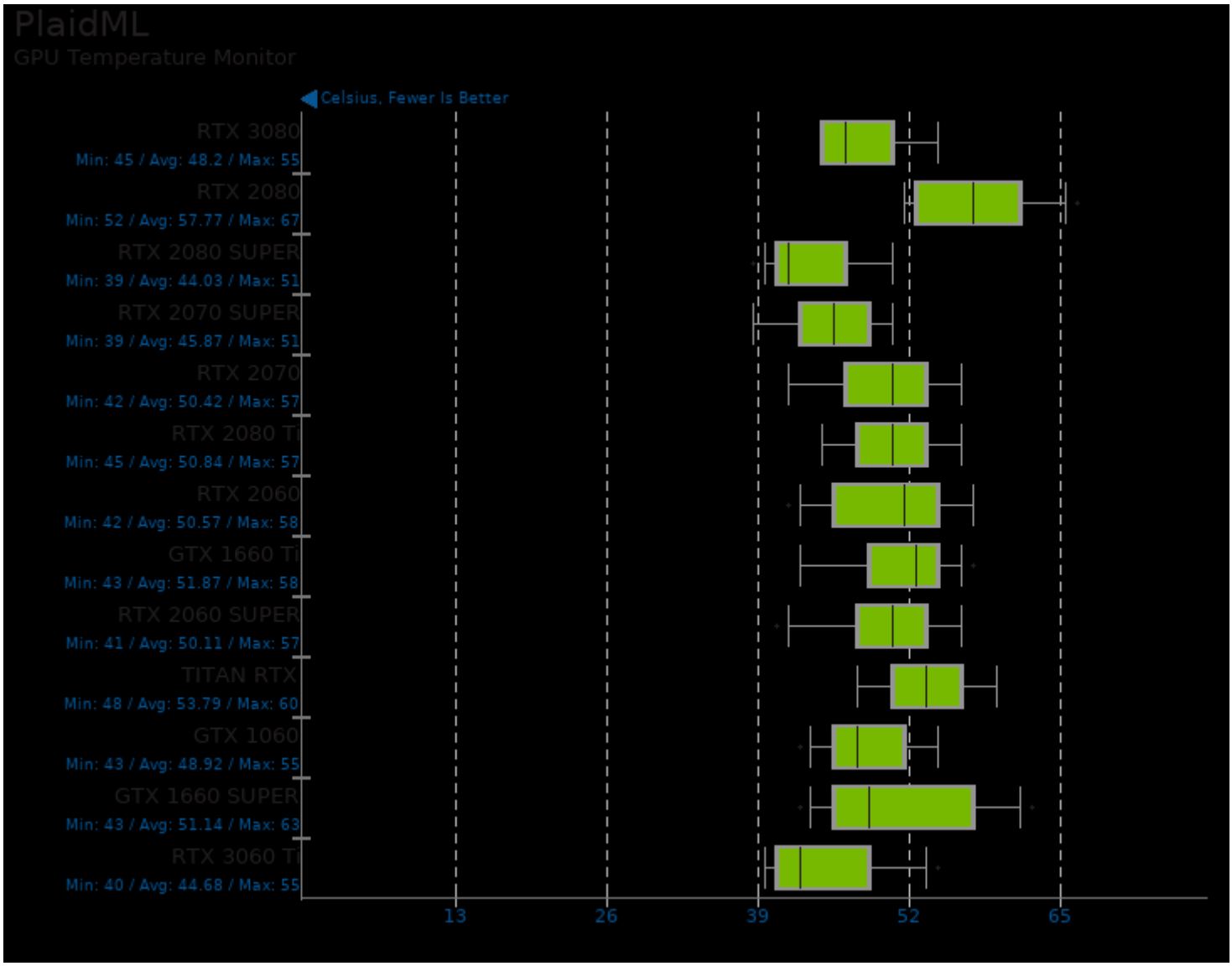
NVIDIA Compute Comparison



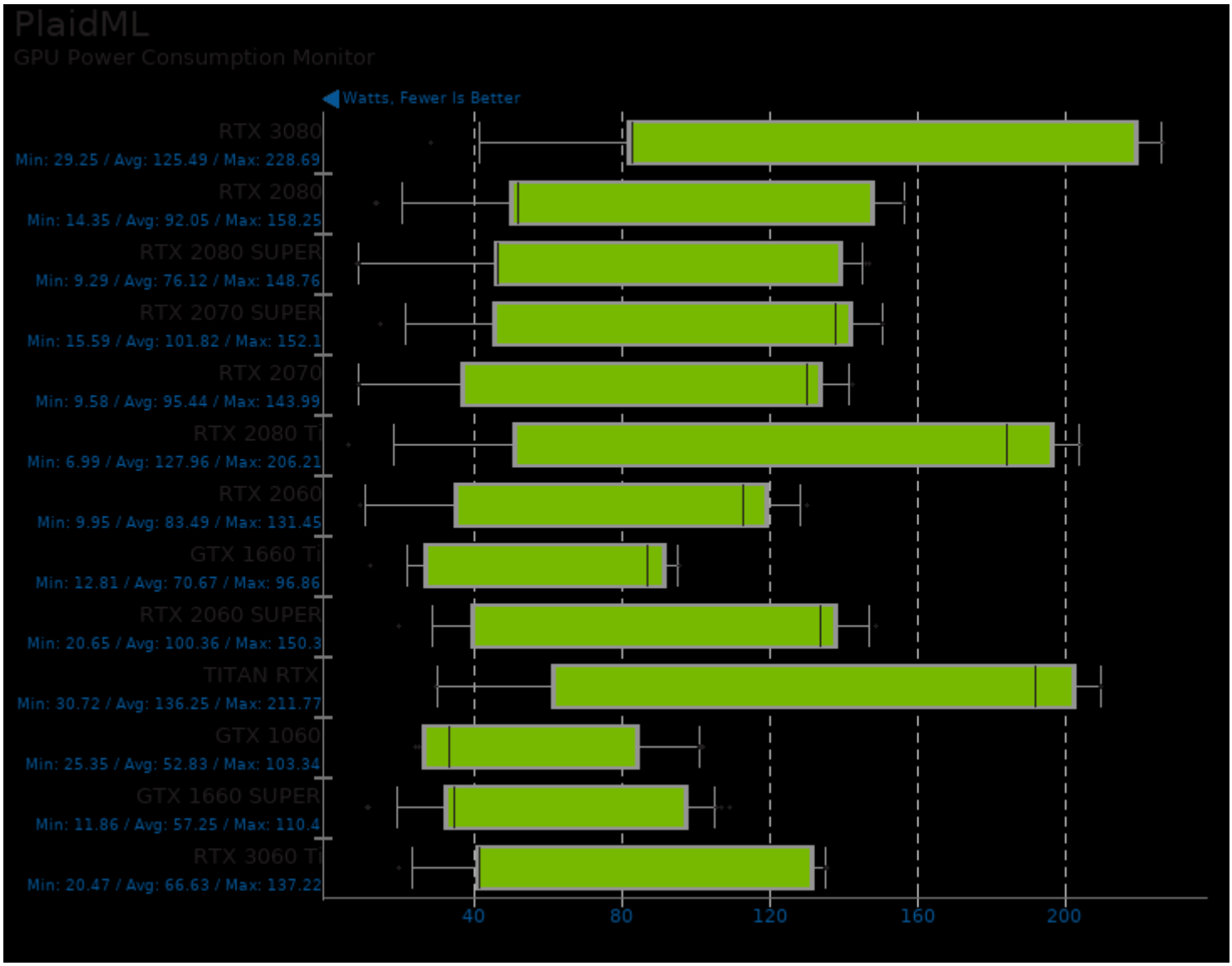
NVIDIA Compute Comparison



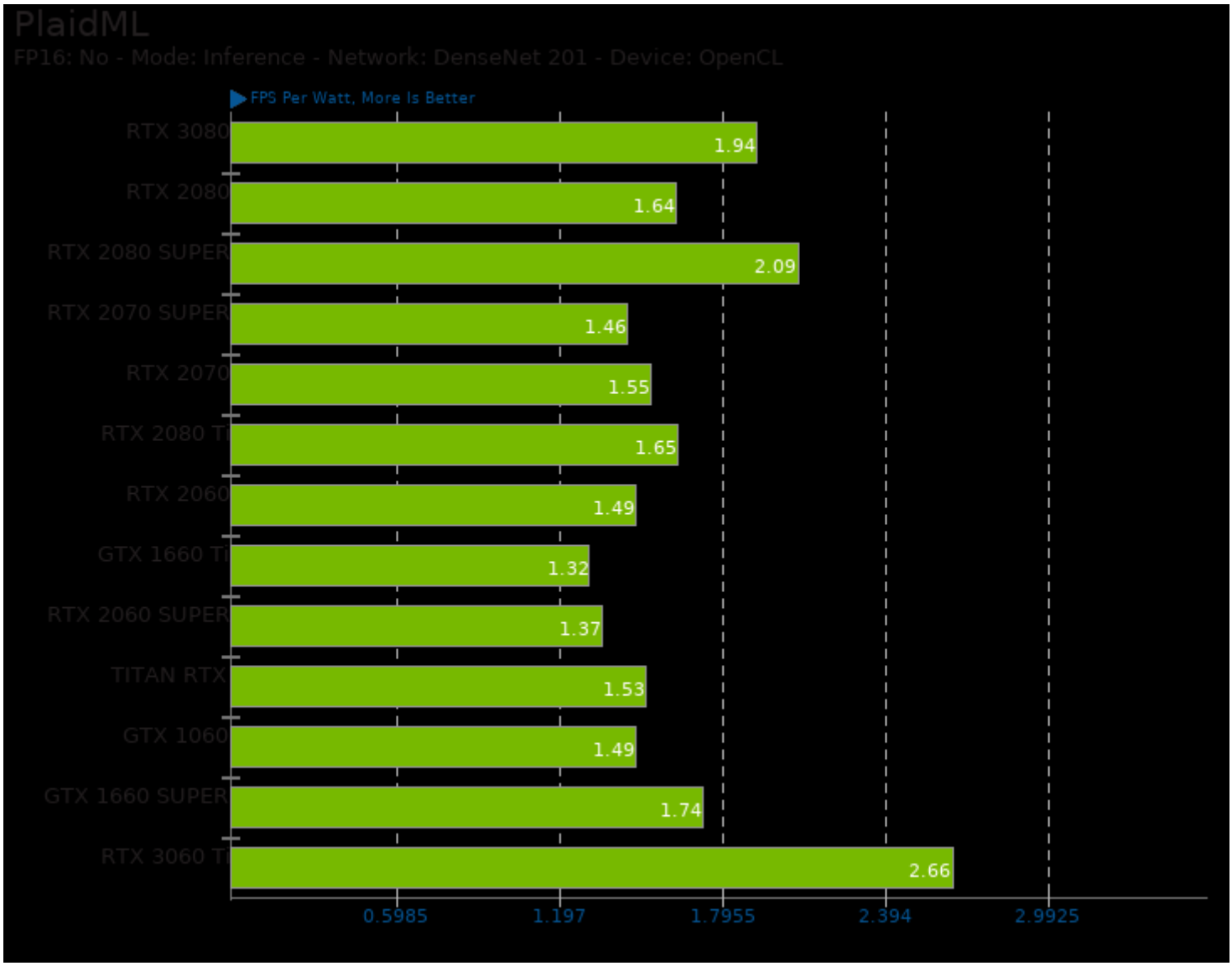
NVIDIA Compute Comparison



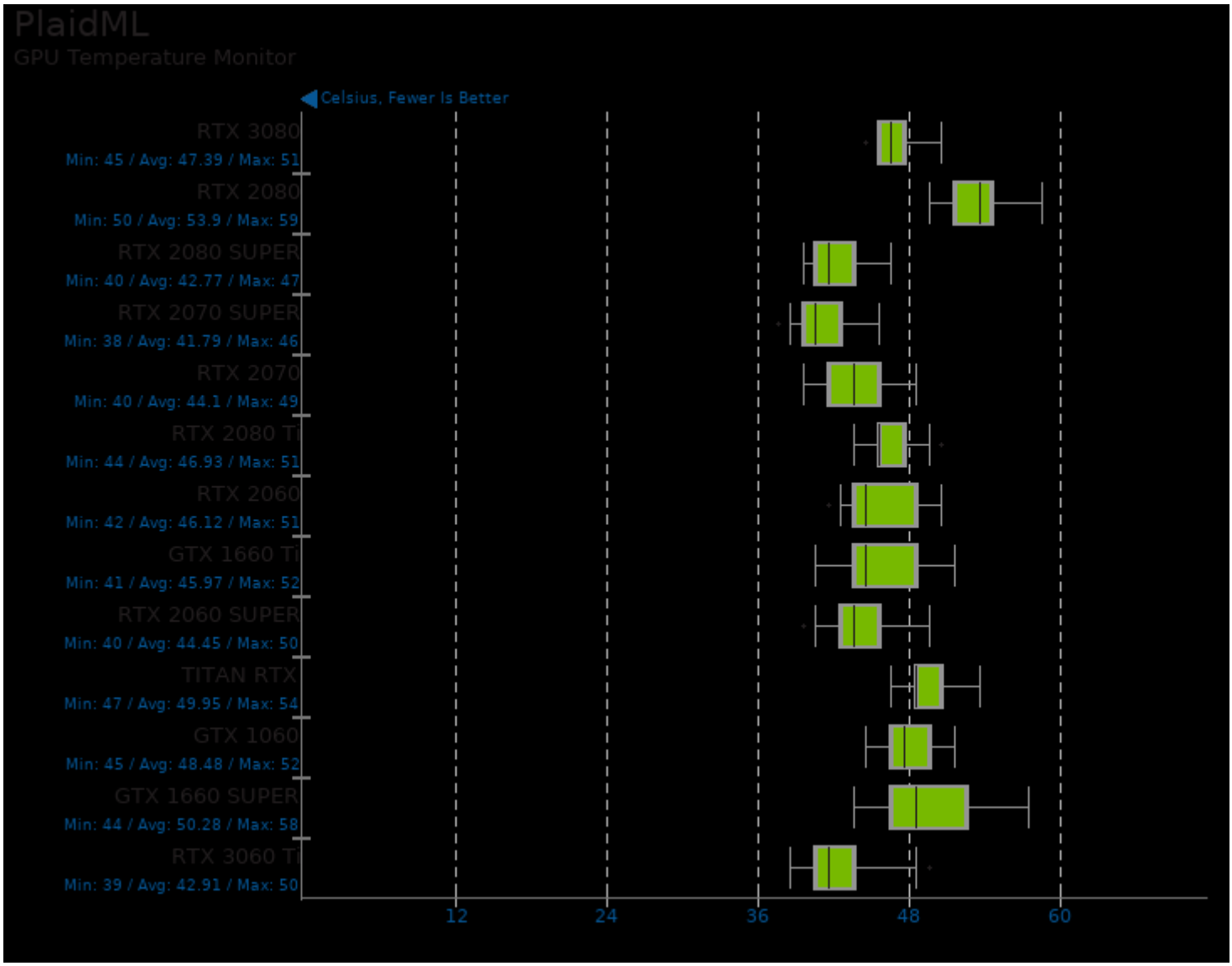
NVIDIA Compute Comparison



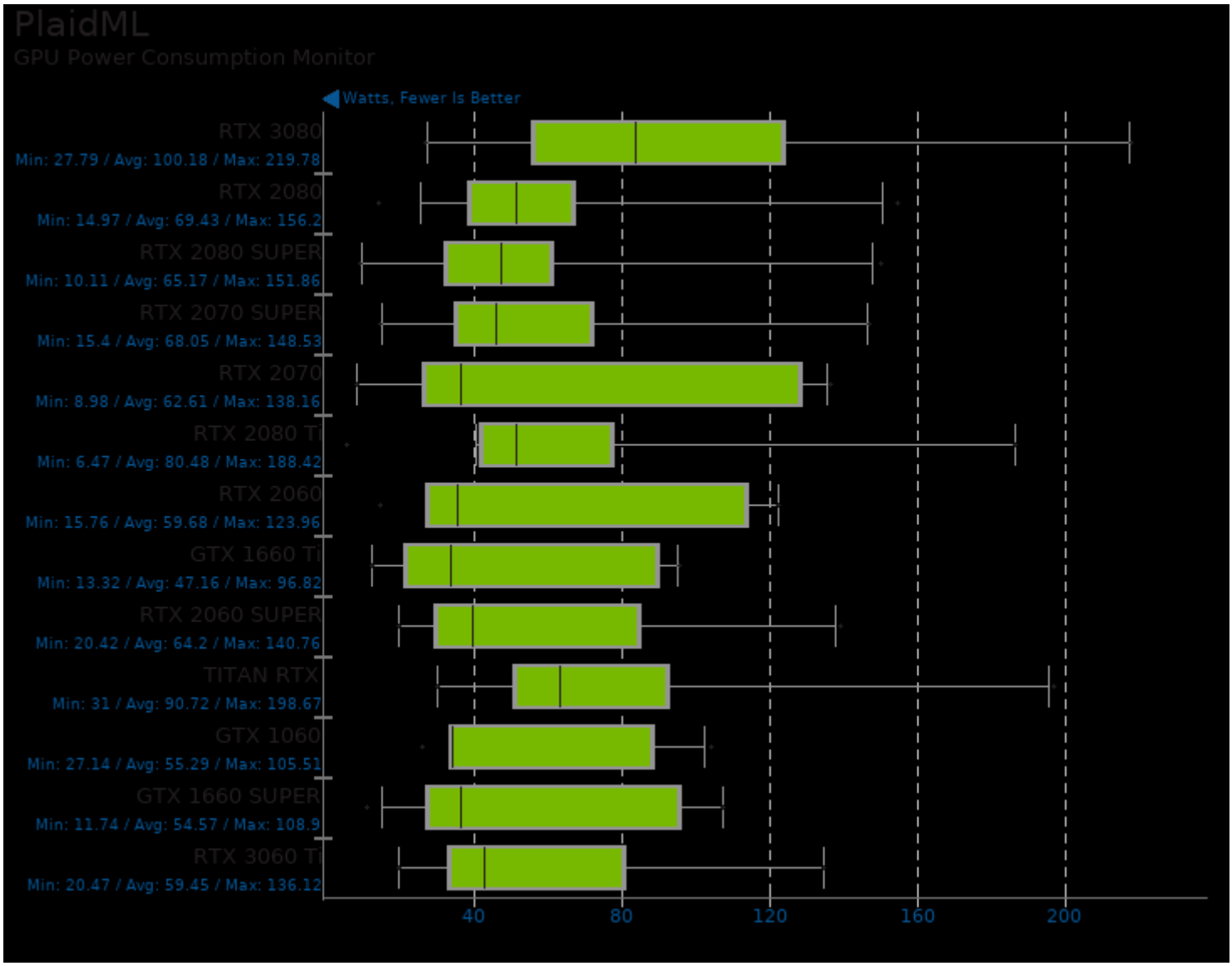
NVIDIA Compute Comparison



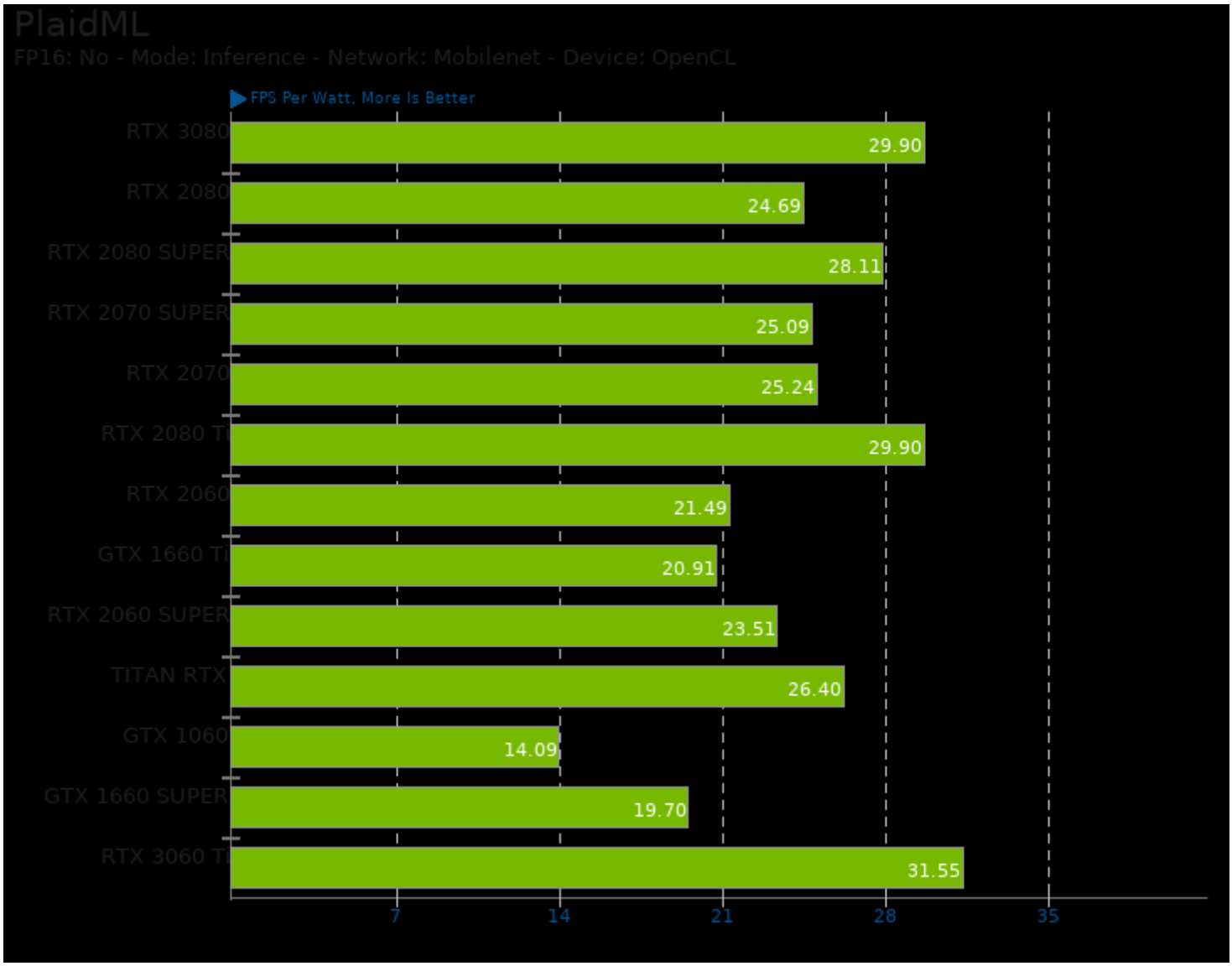
NVIDIA Compute Comparison



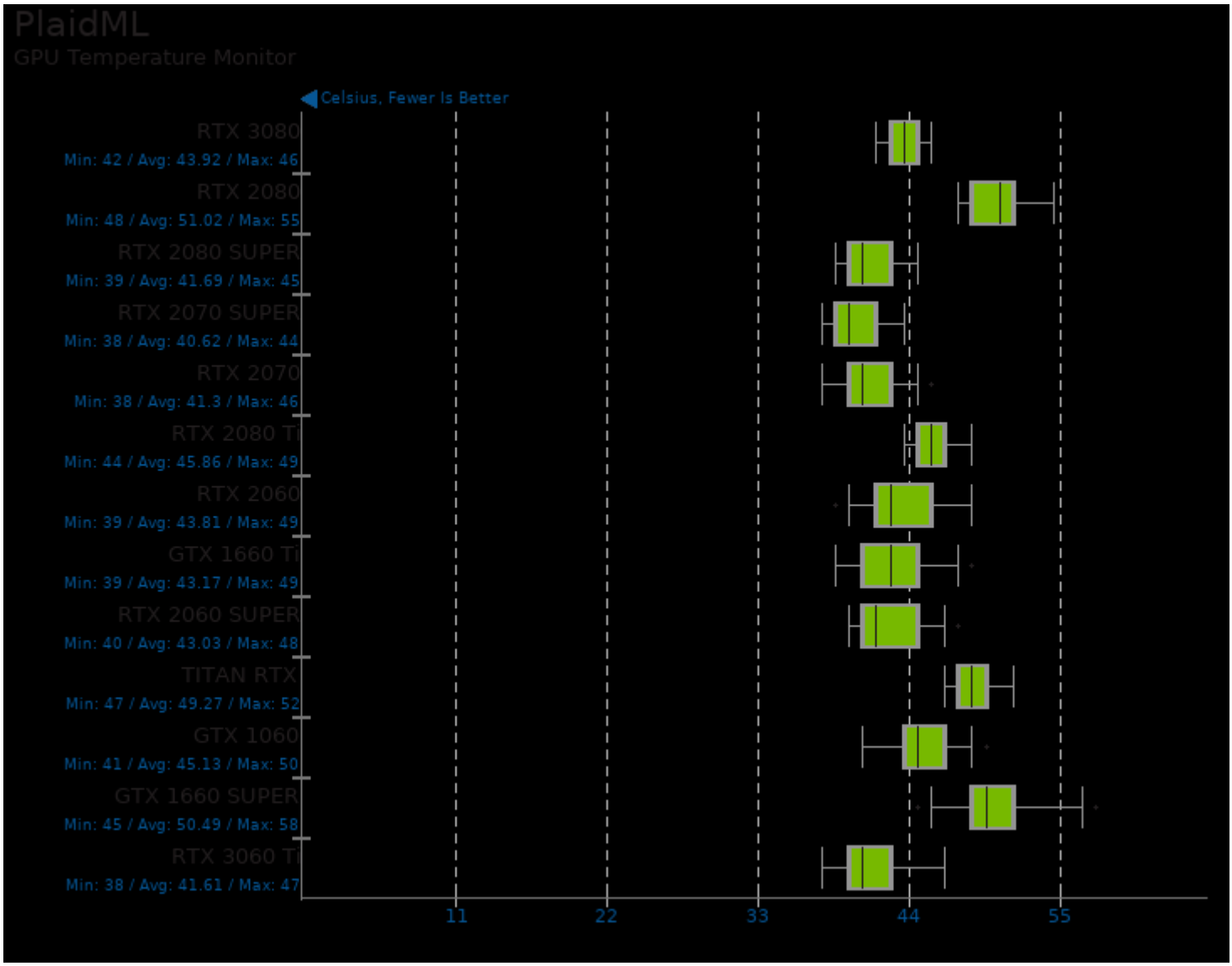
NVIDIA Compute Comparison



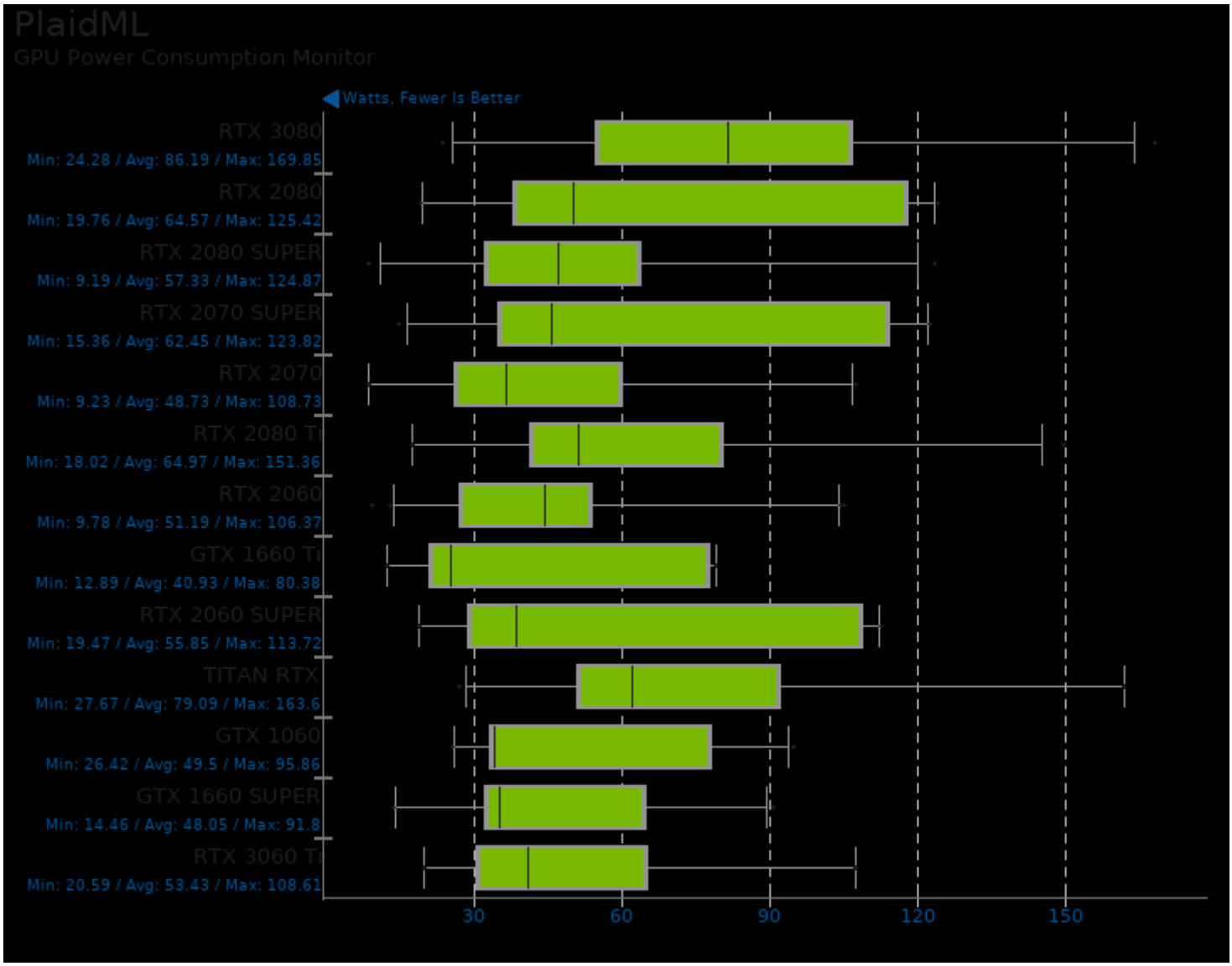
NVIDIA Compute Comparison



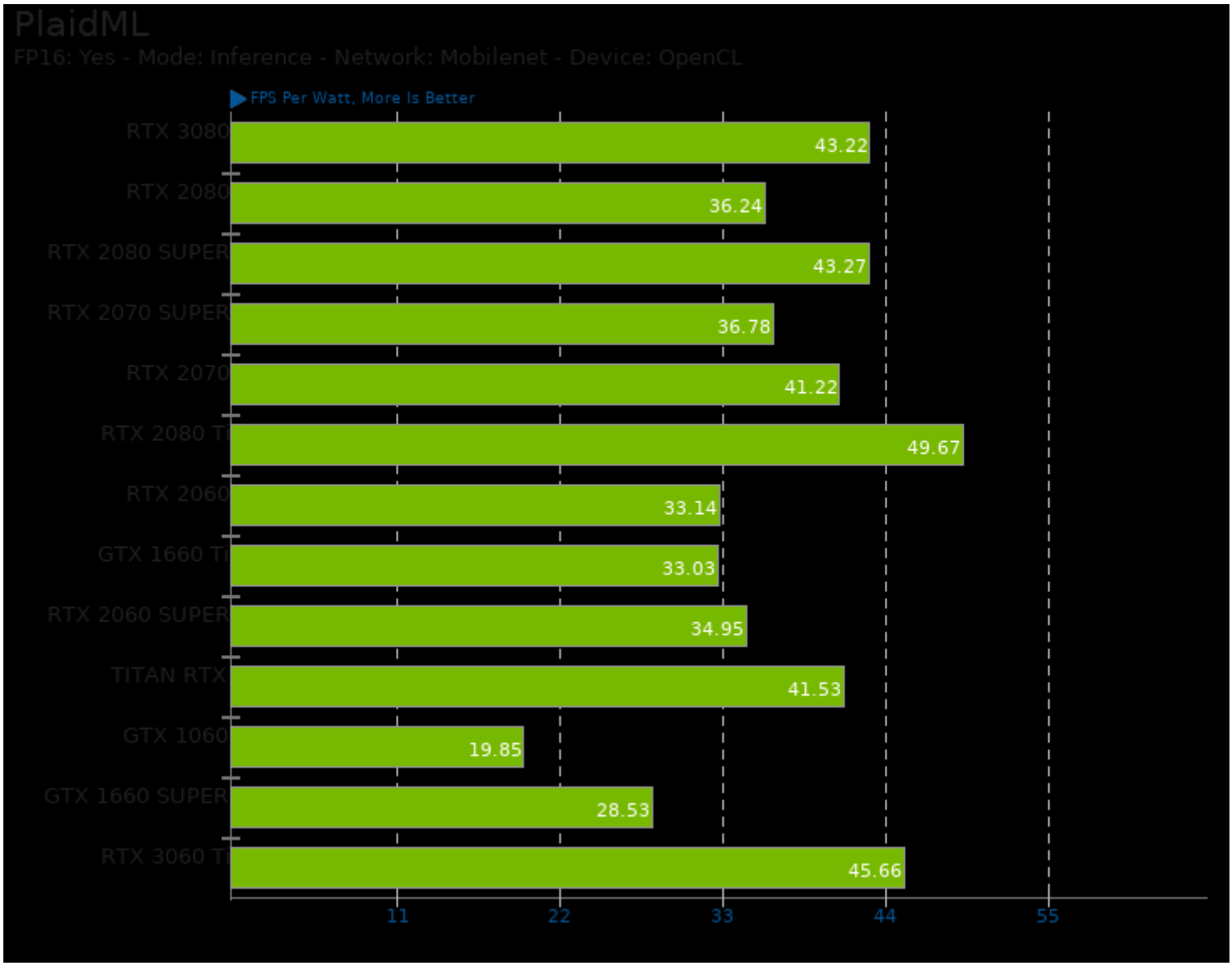
NVIDIA Compute Comparison



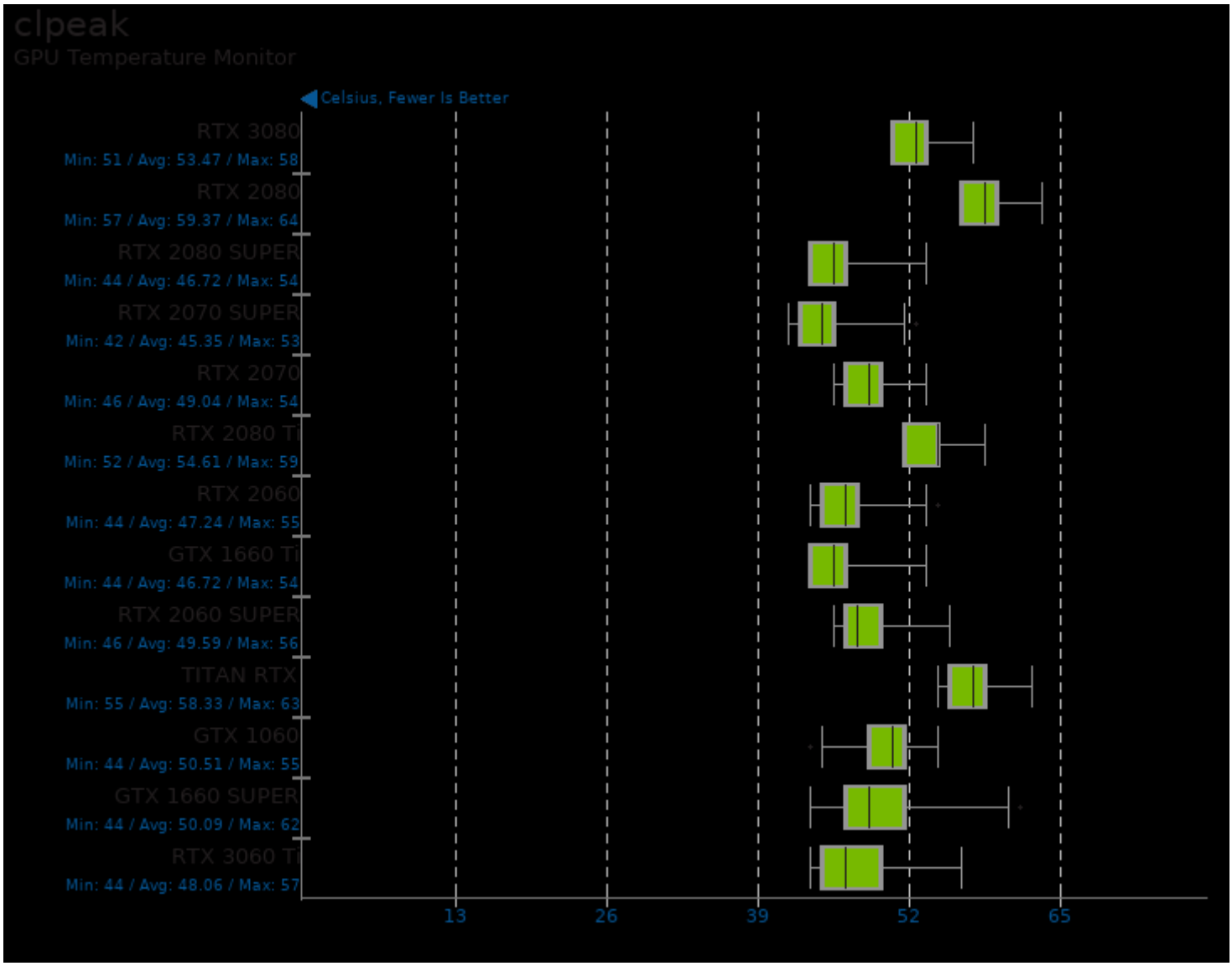
NVIDIA Compute Comparison



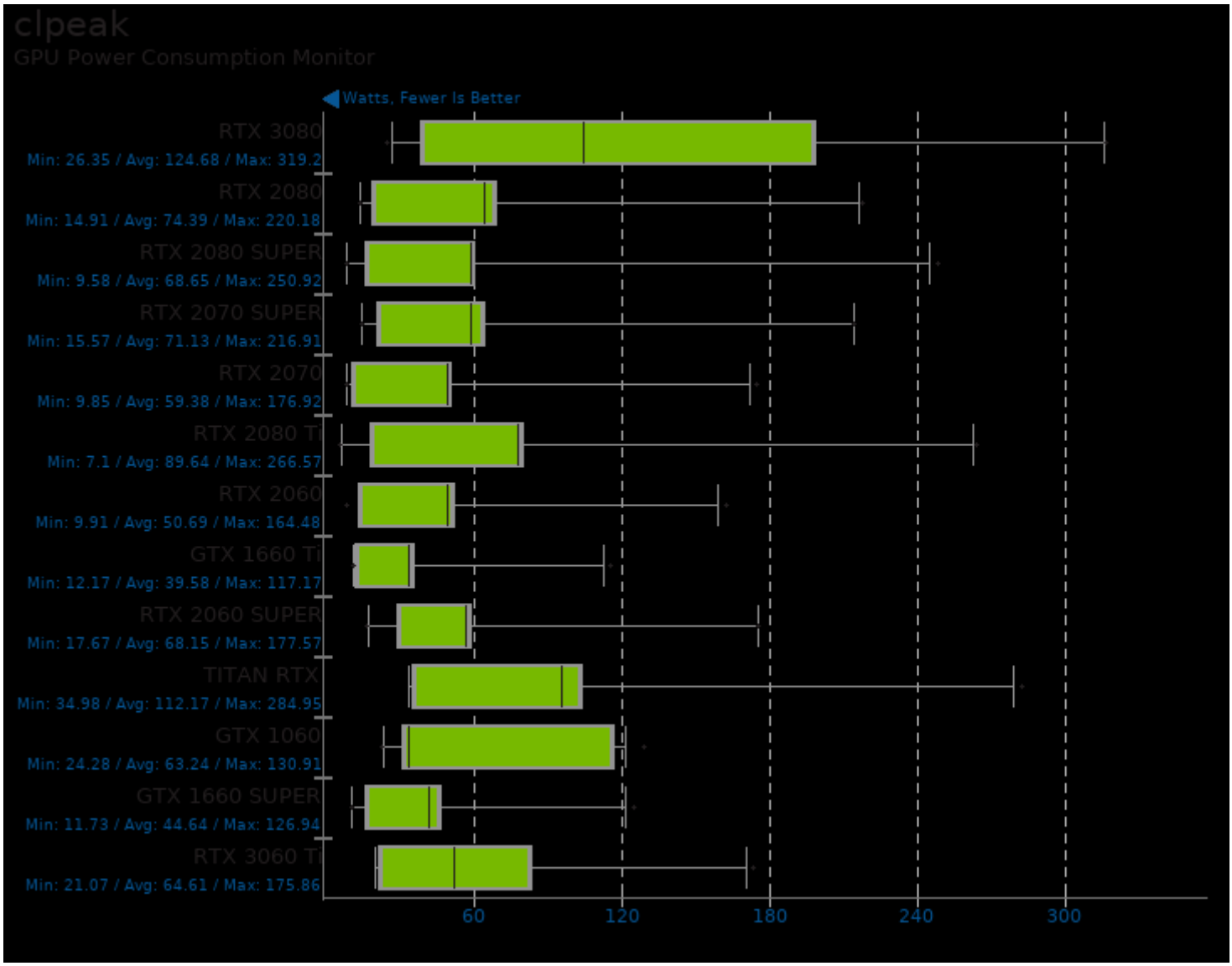
NVIDIA Compute Comparison



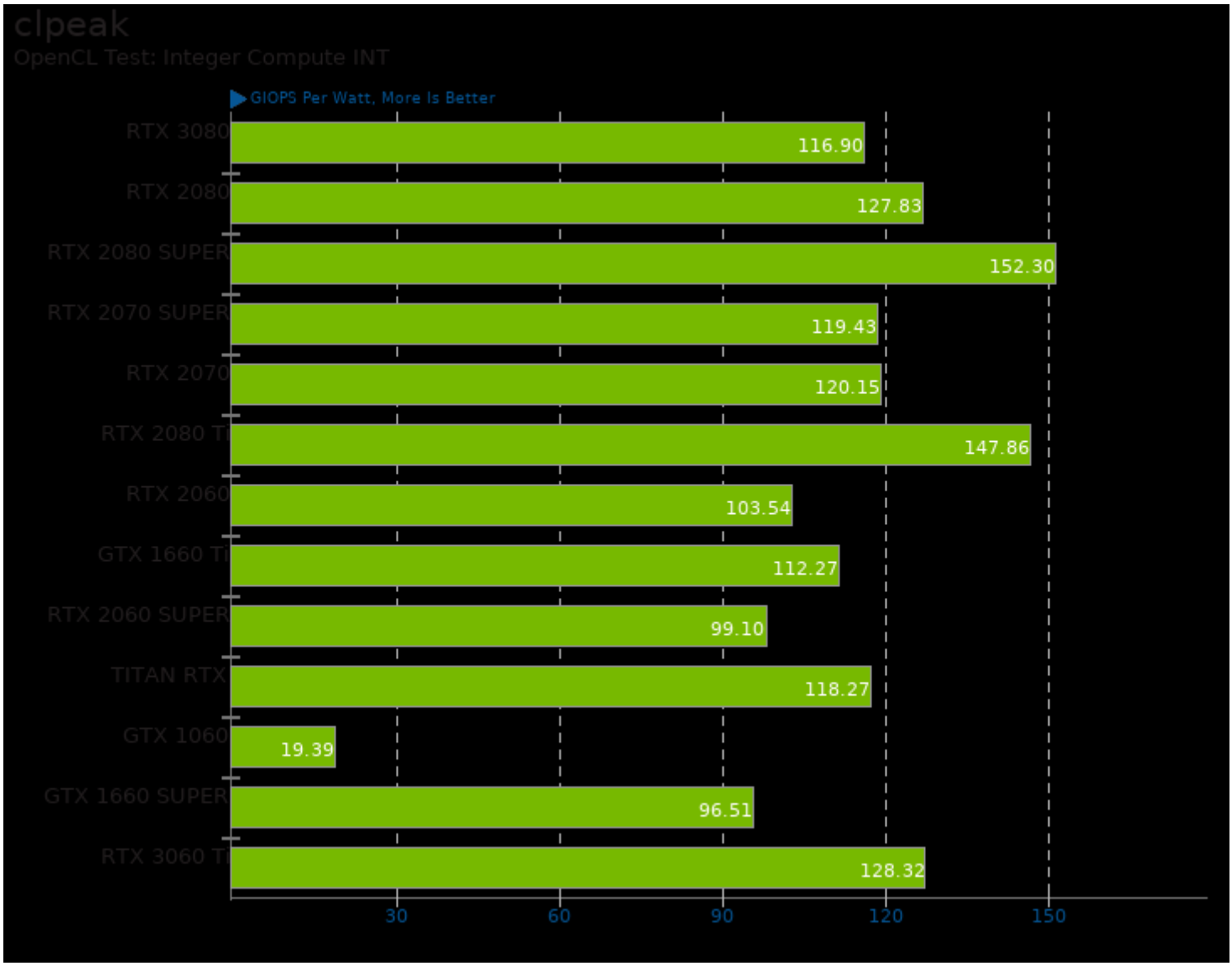
NVIDIA Compute Comparison



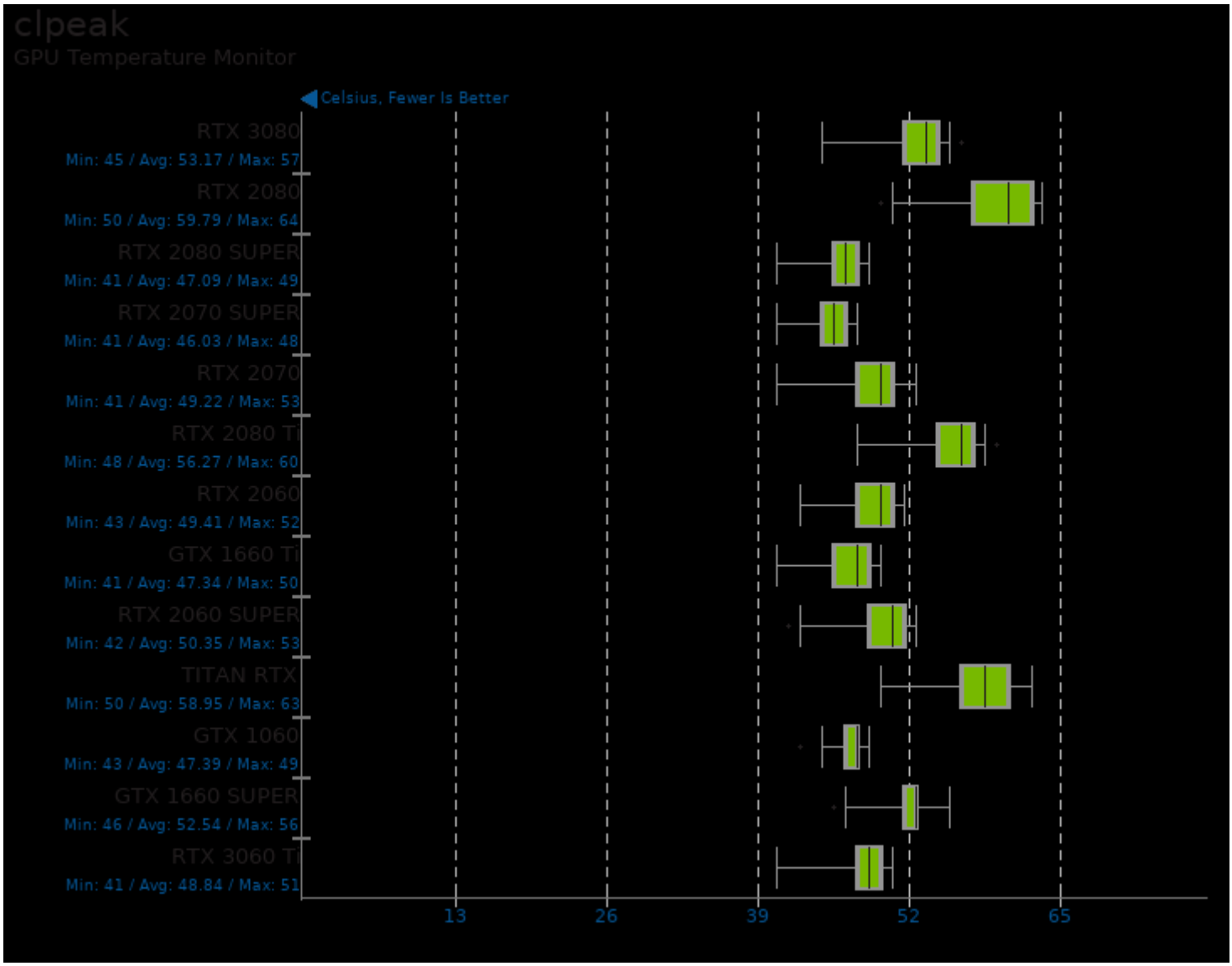
NVIDIA Compute Comparison



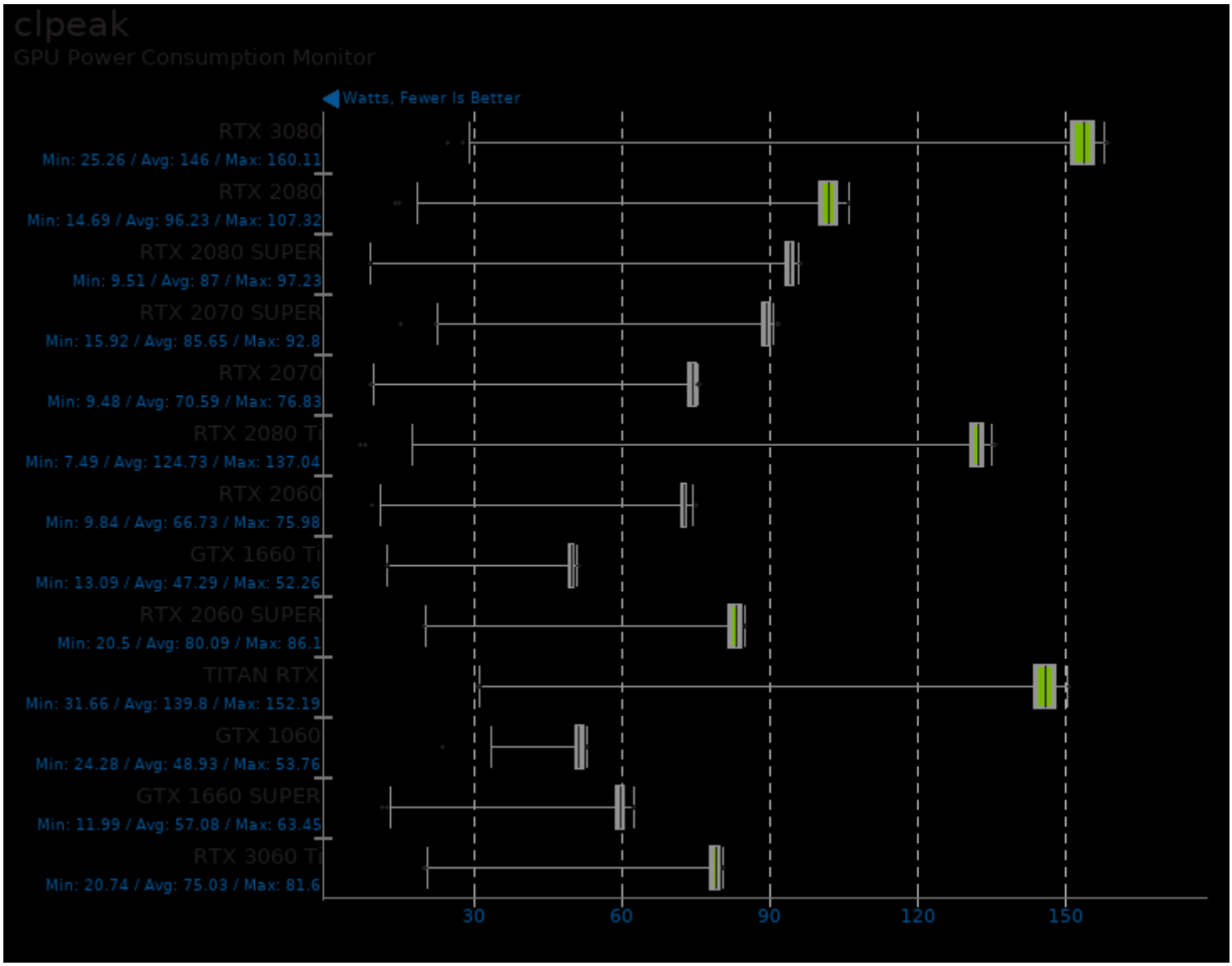
NVIDIA Compute Comparison



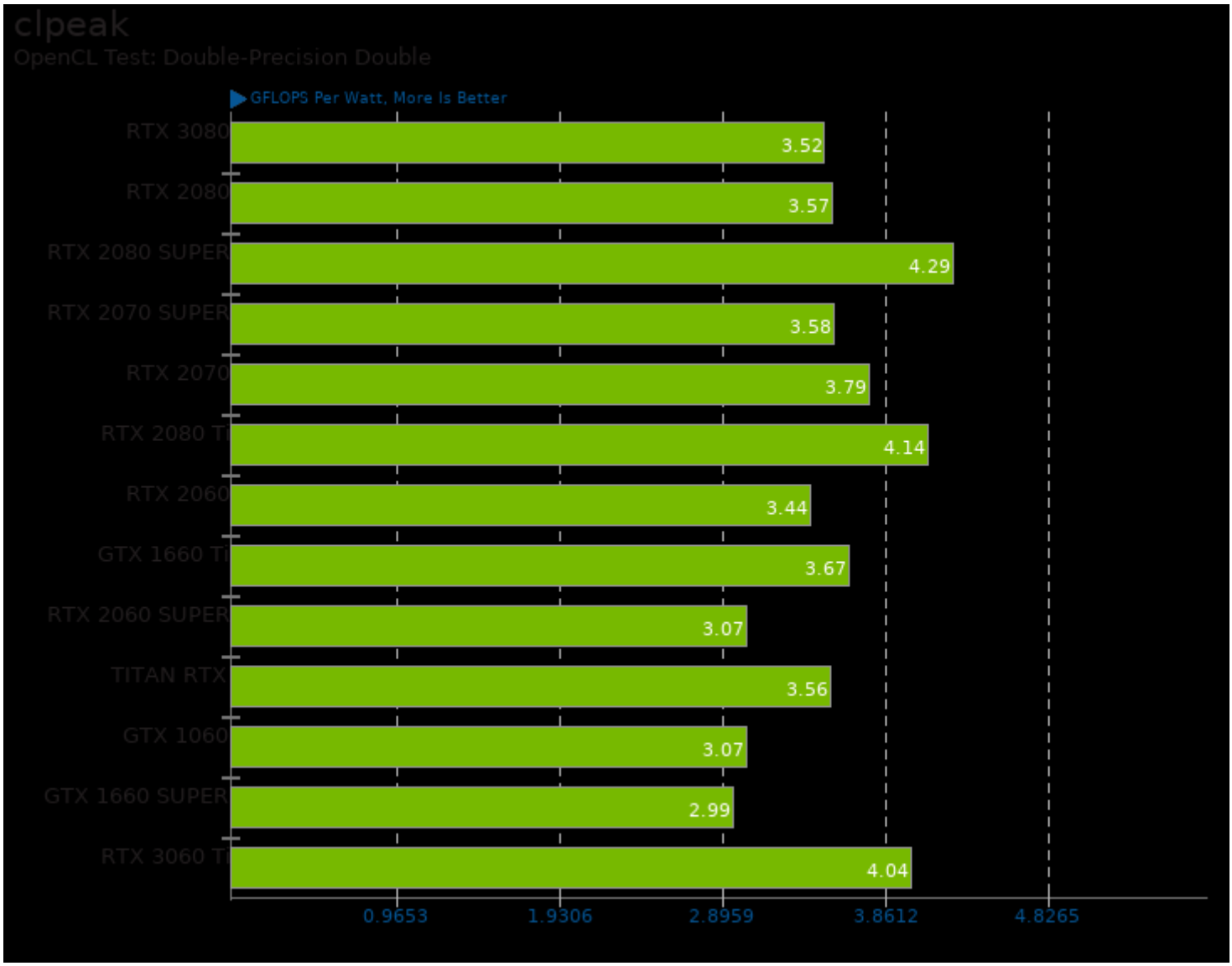
NVIDIA Compute Comparison



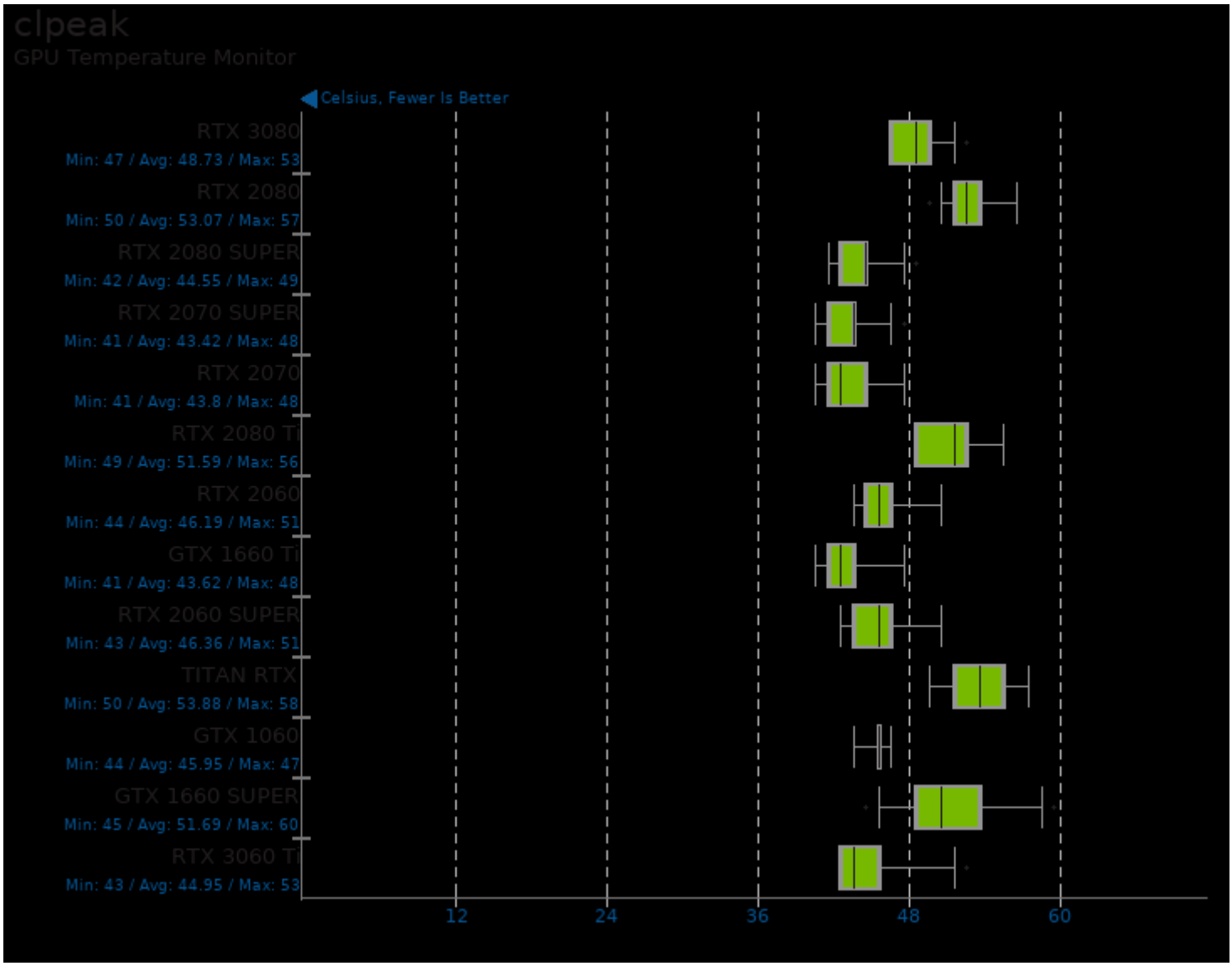
NVIDIA Compute Comparison



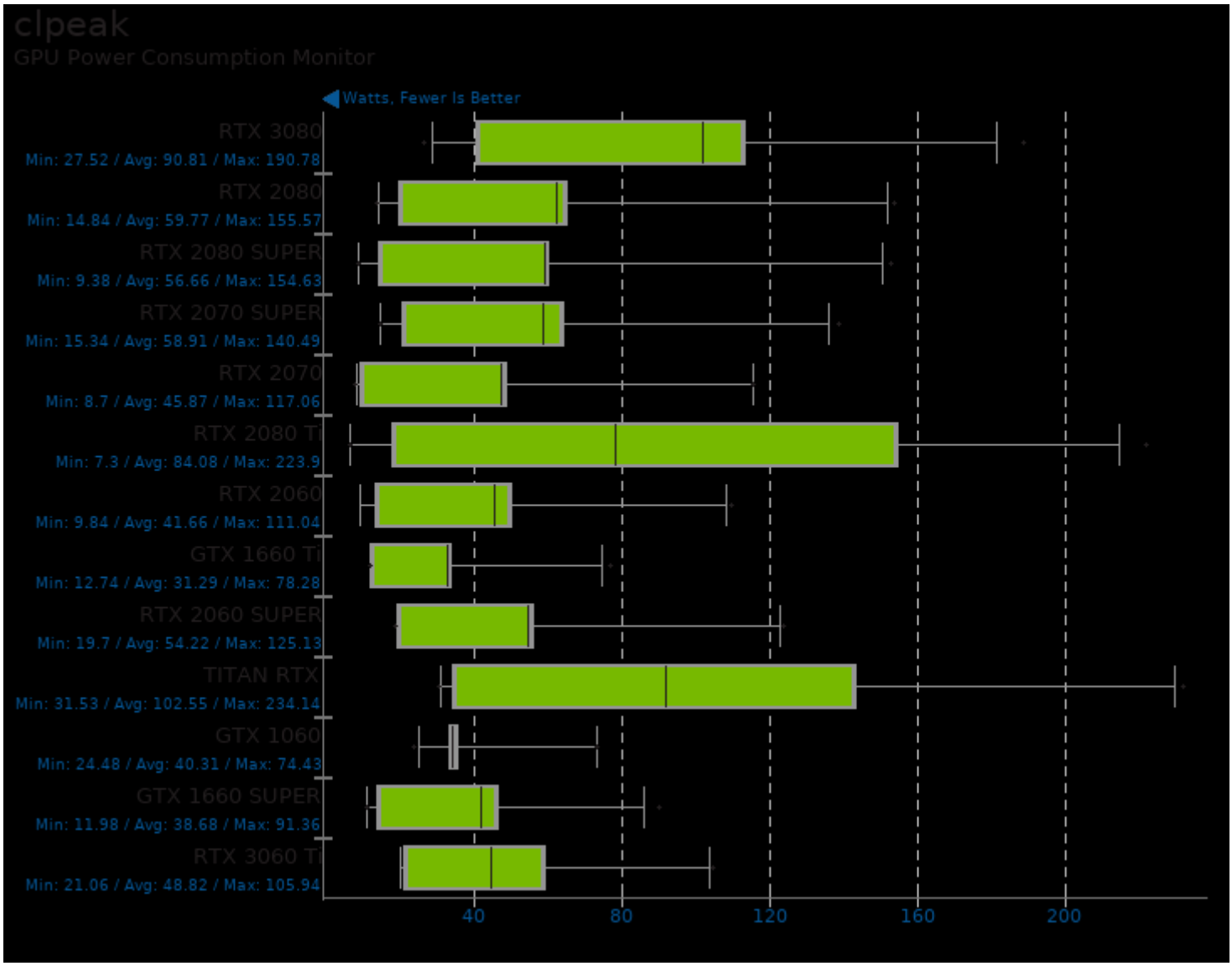
NVIDIA Compute Comparison



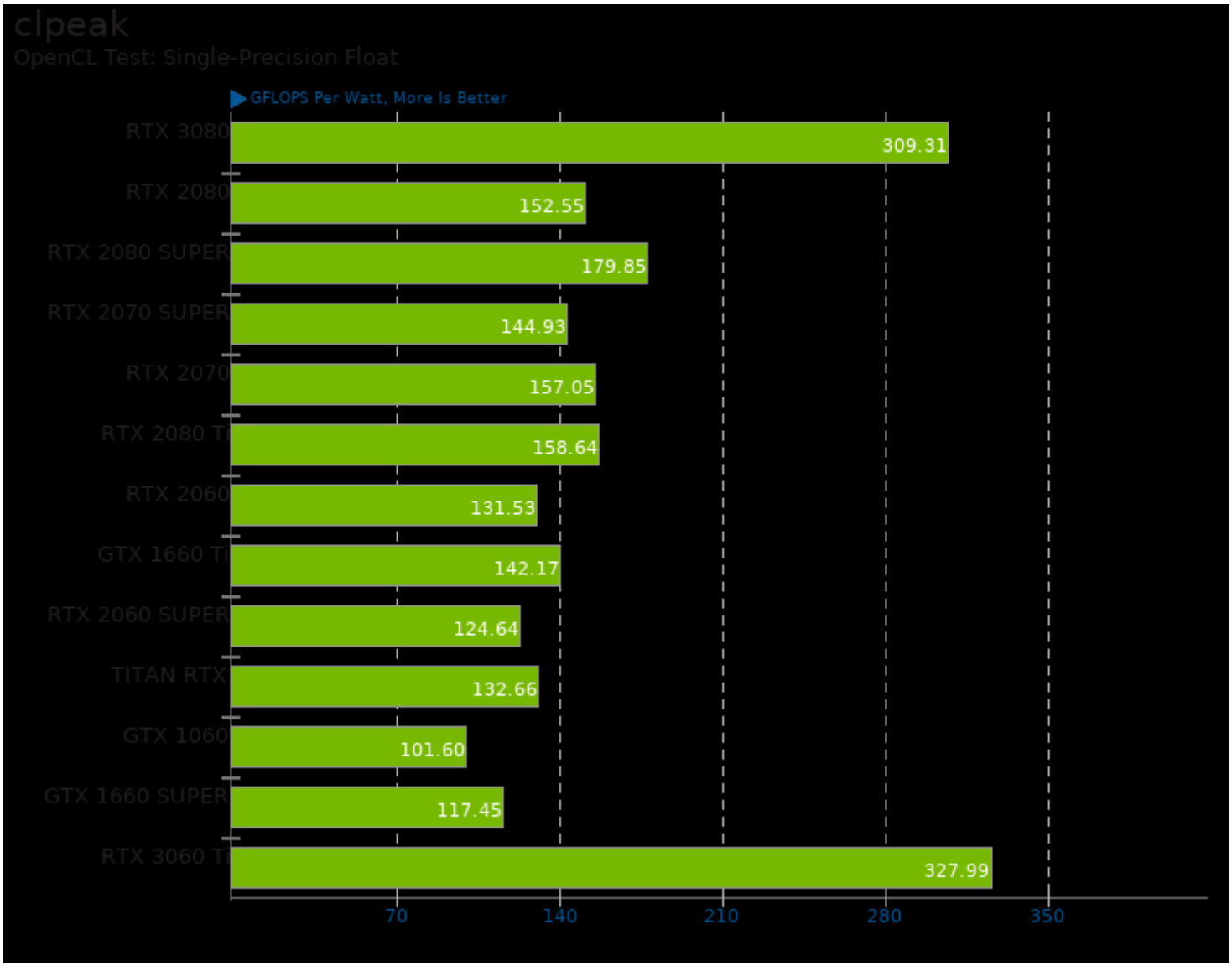
NVIDIA Compute Comparison



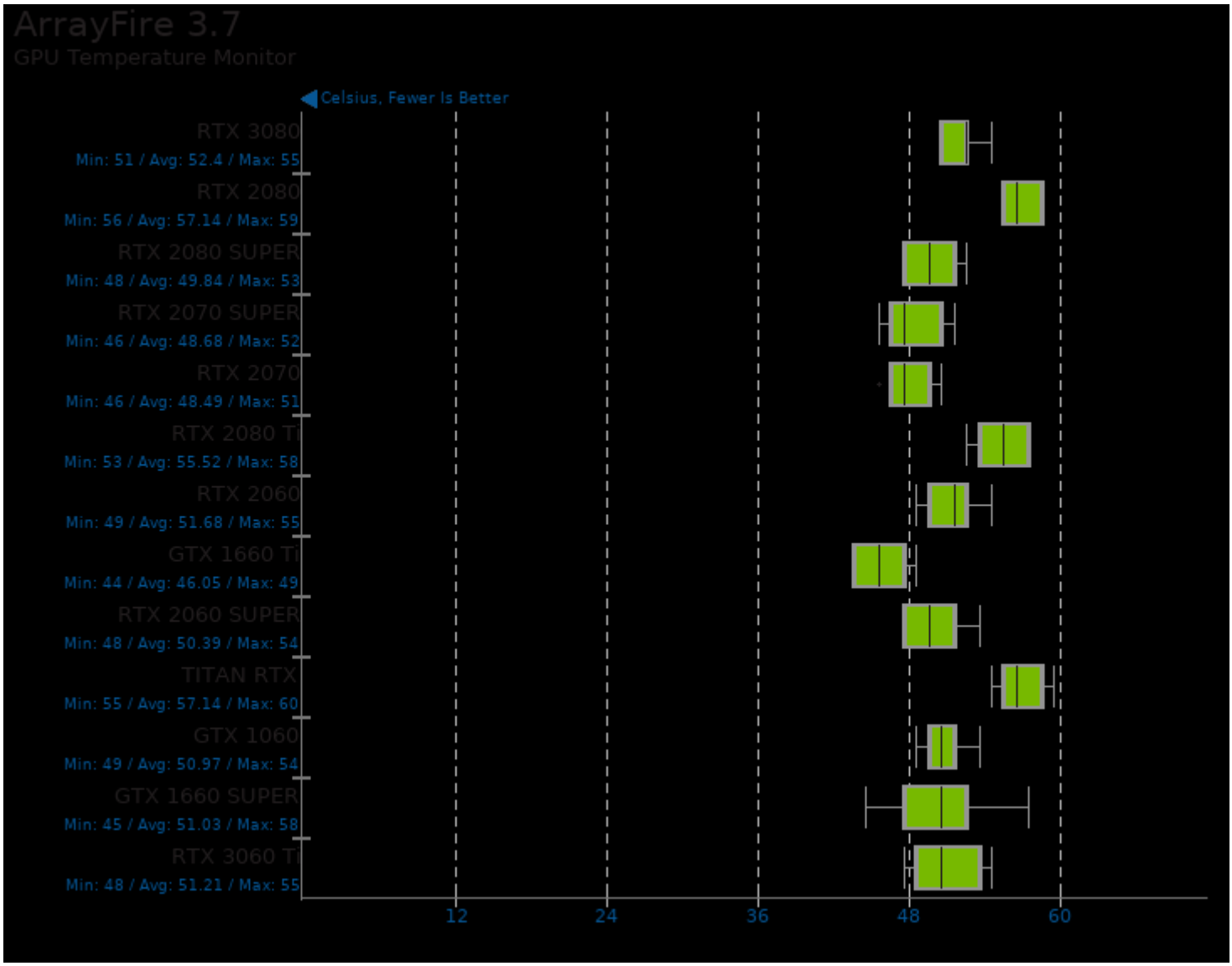
NVIDIA Compute Comparison



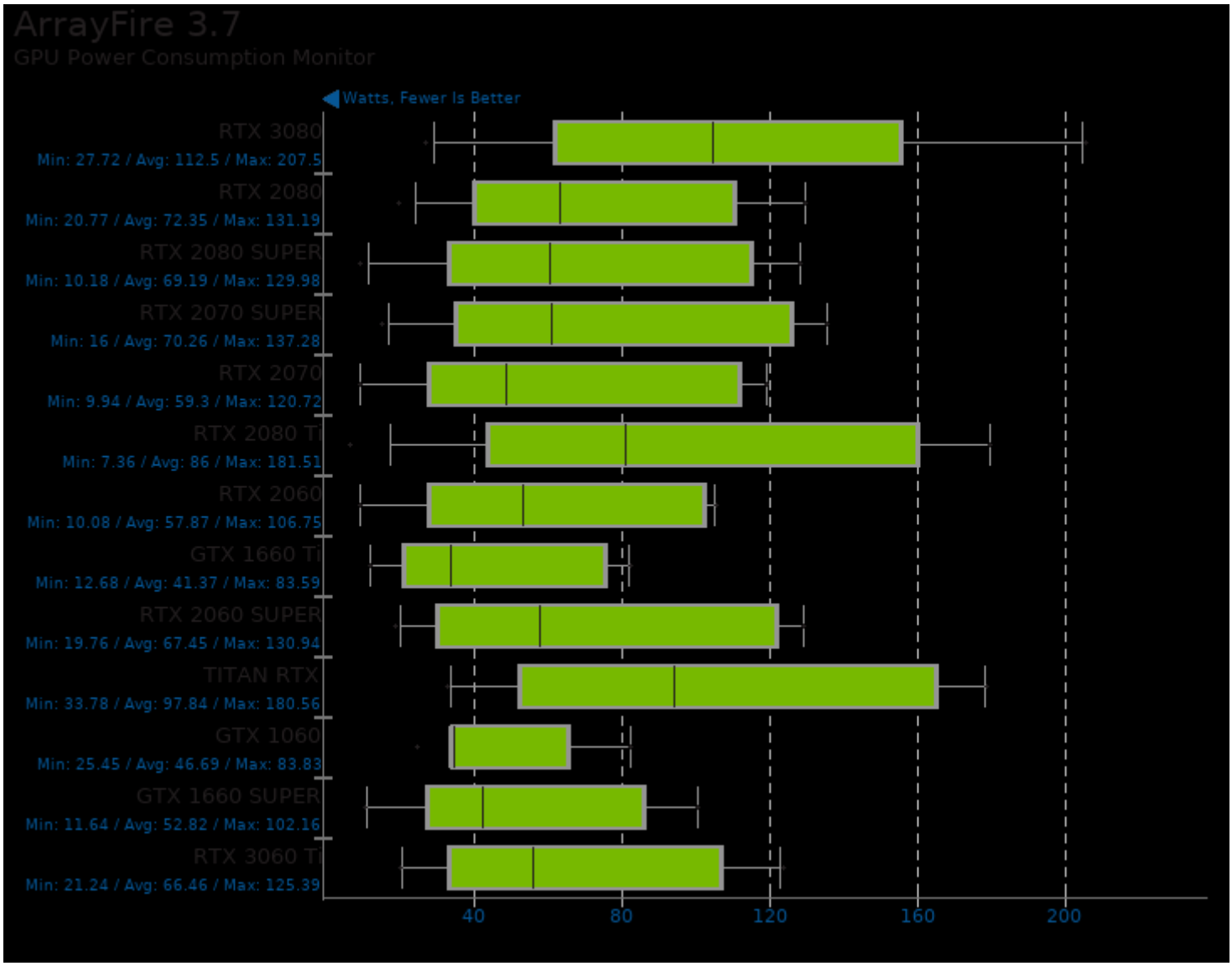
NVIDIA Compute Comparison



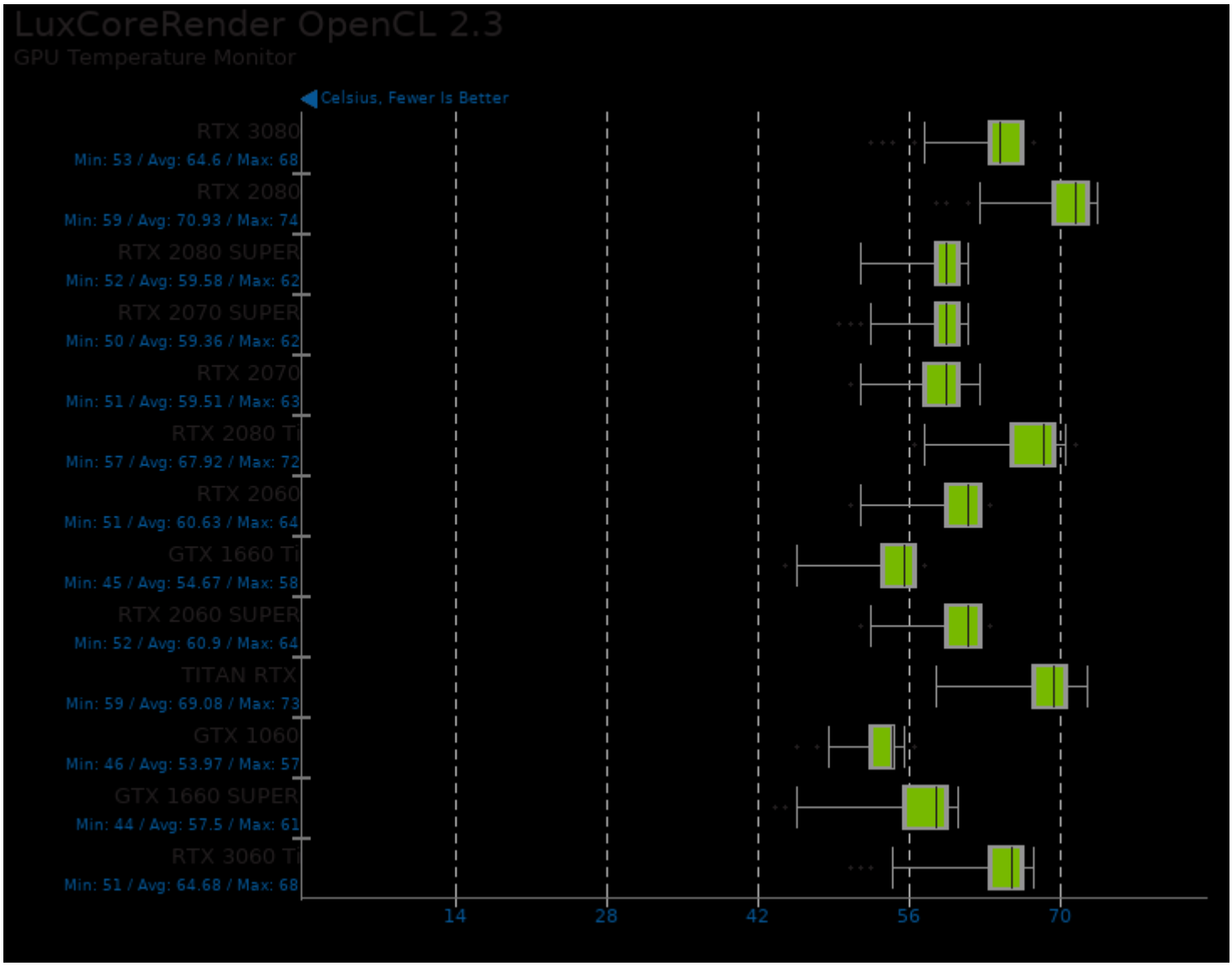
NVIDIA Compute Comparison



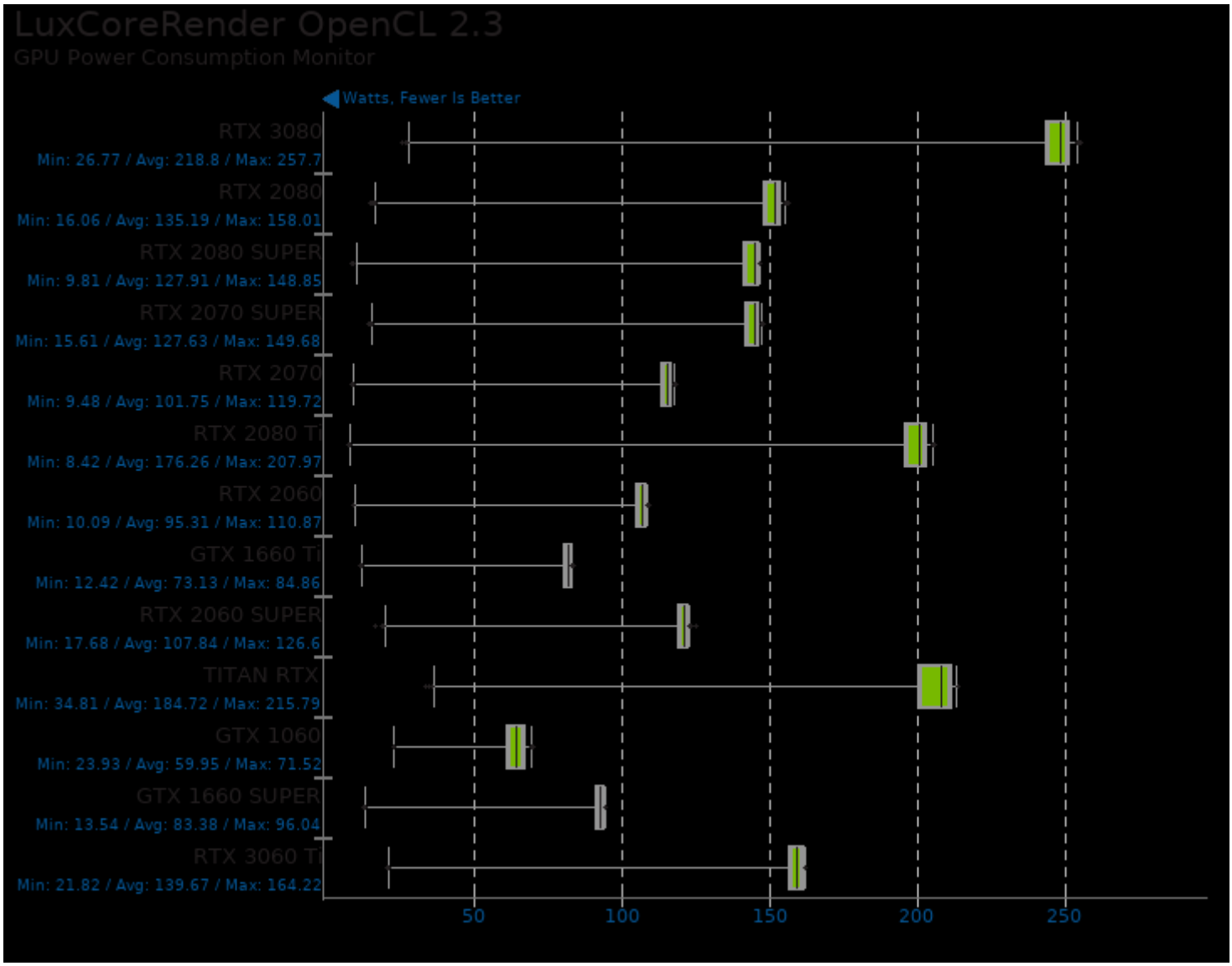
NVIDIA Compute Comparison



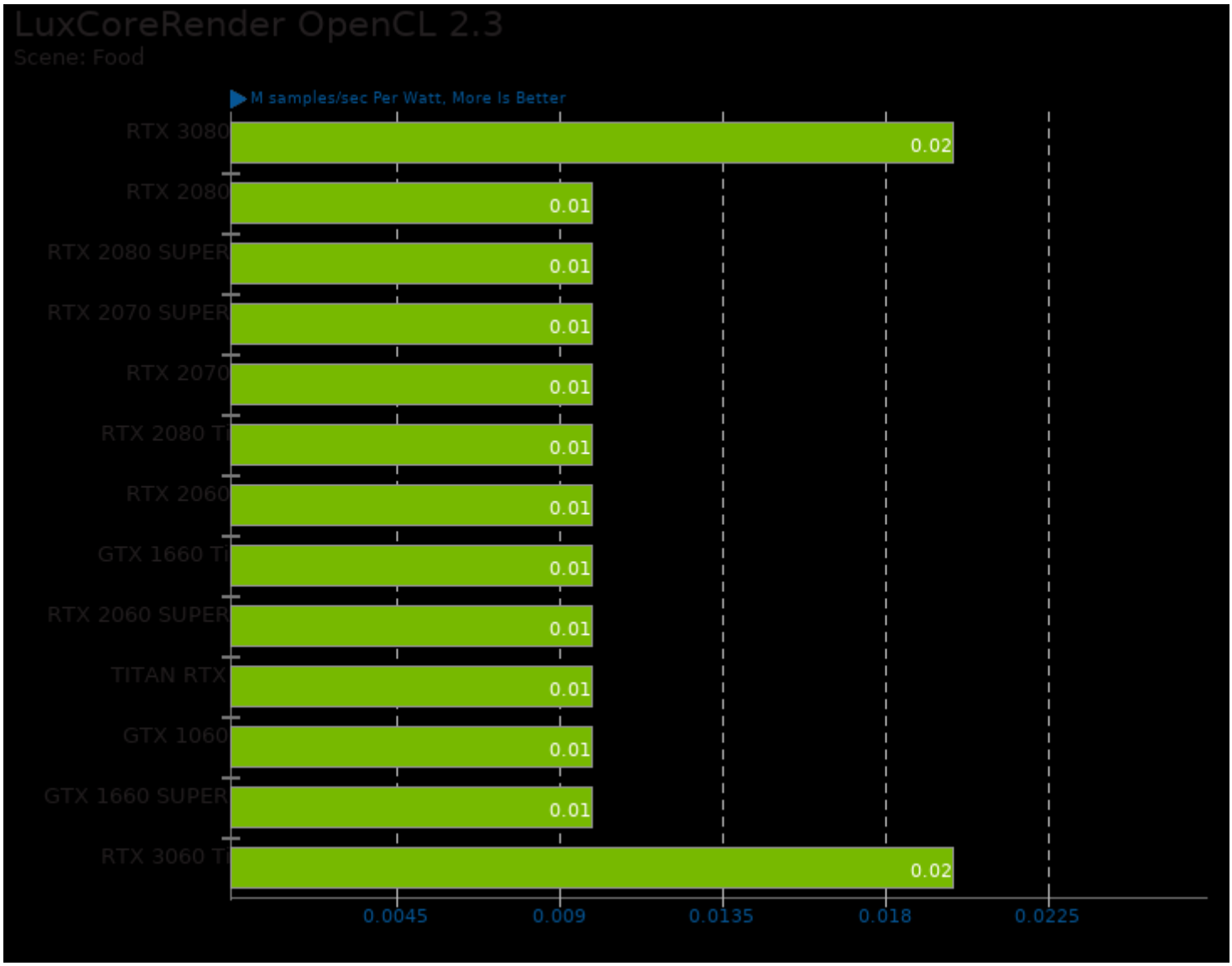
NVIDIA Compute Comparison



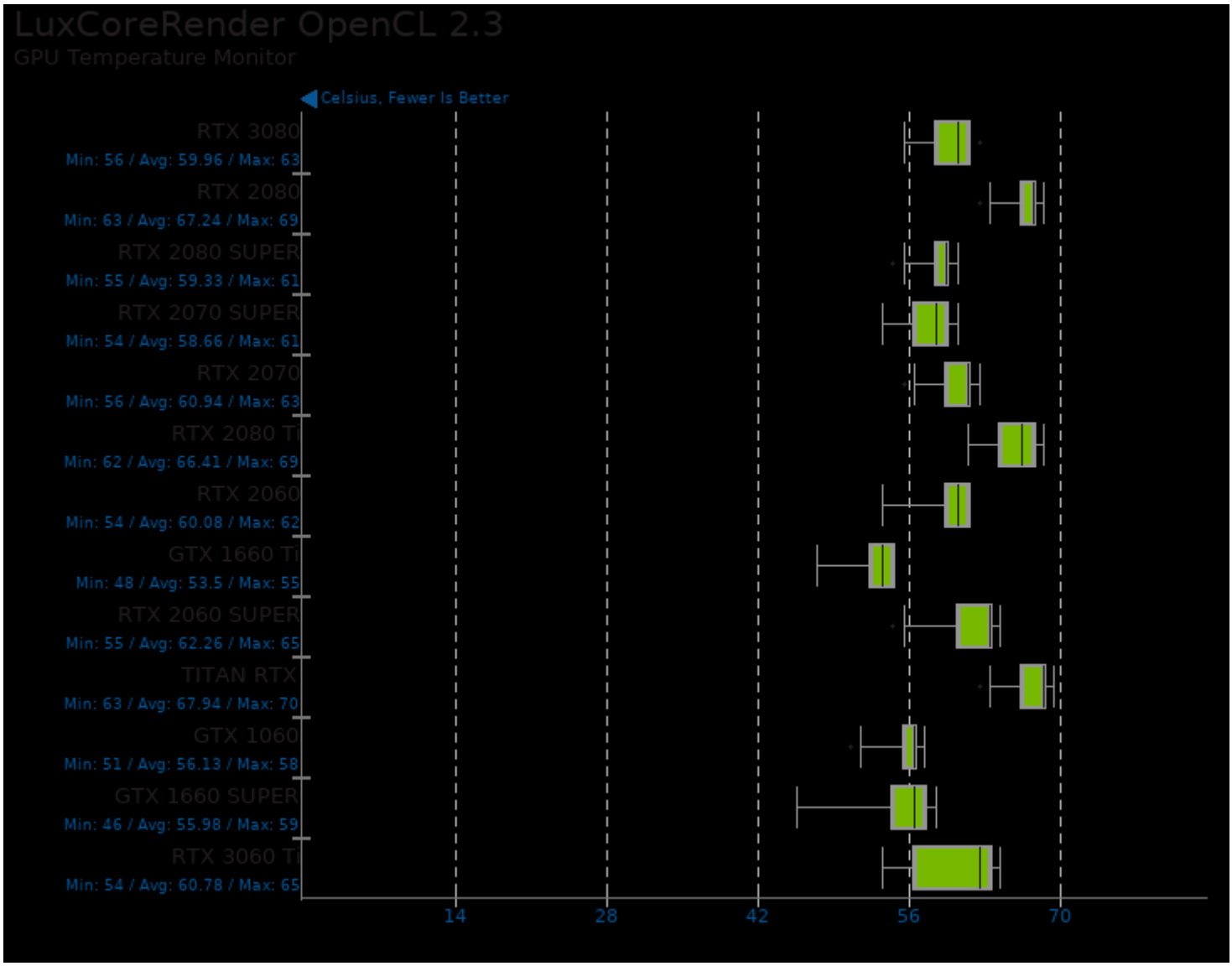
NVIDIA Compute Comparison



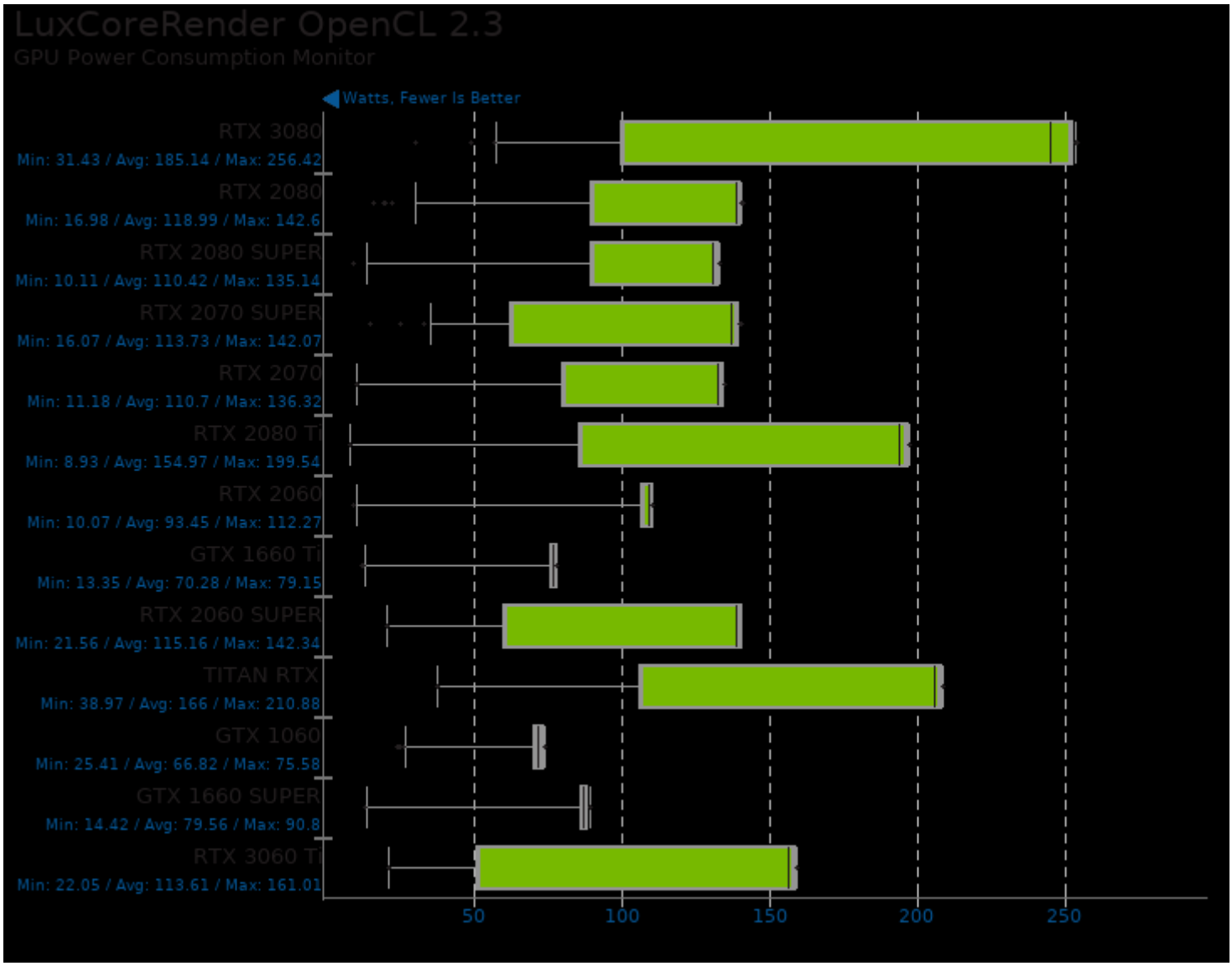
NVIDIA Compute Comparison



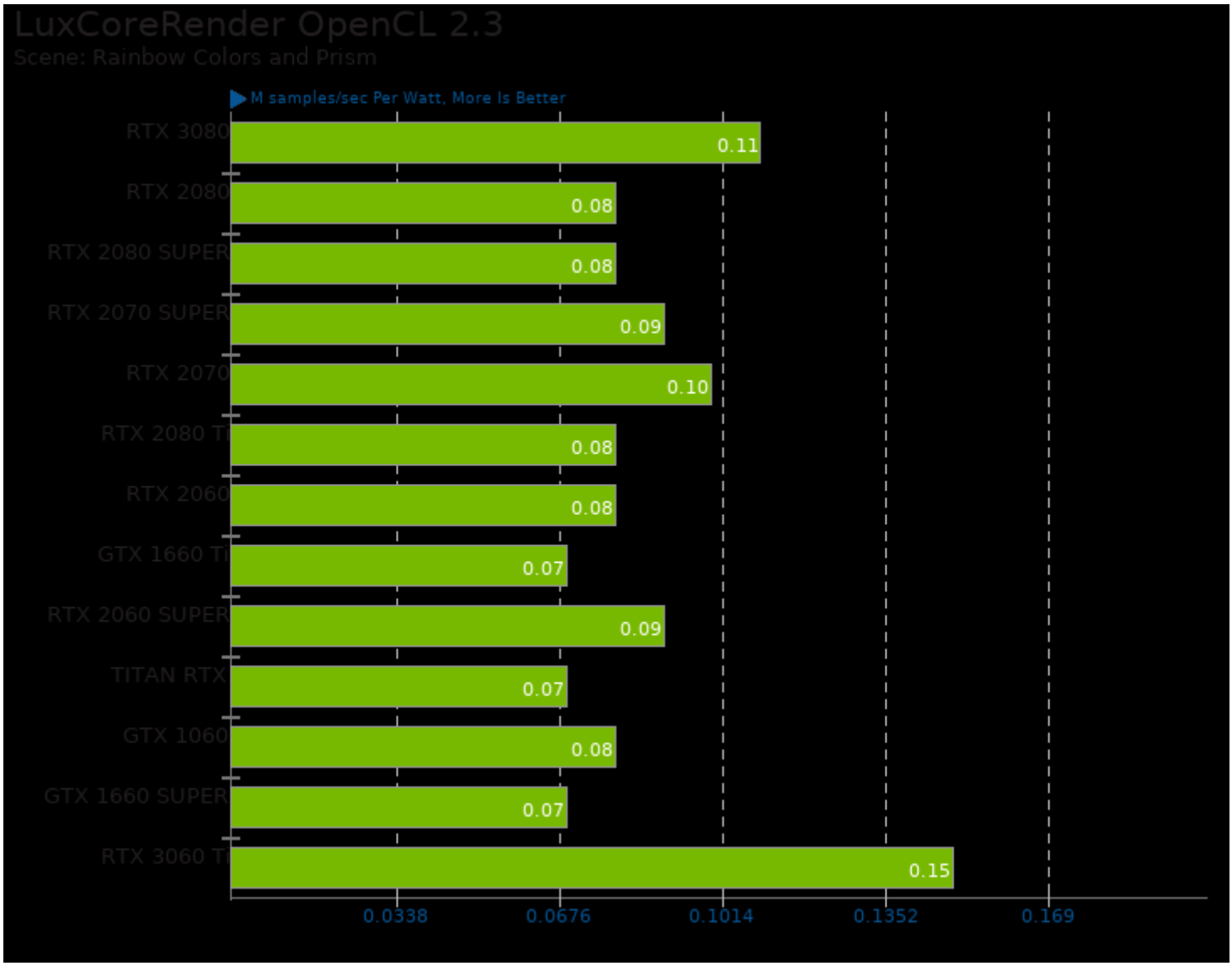
NVIDIA Compute Comparison



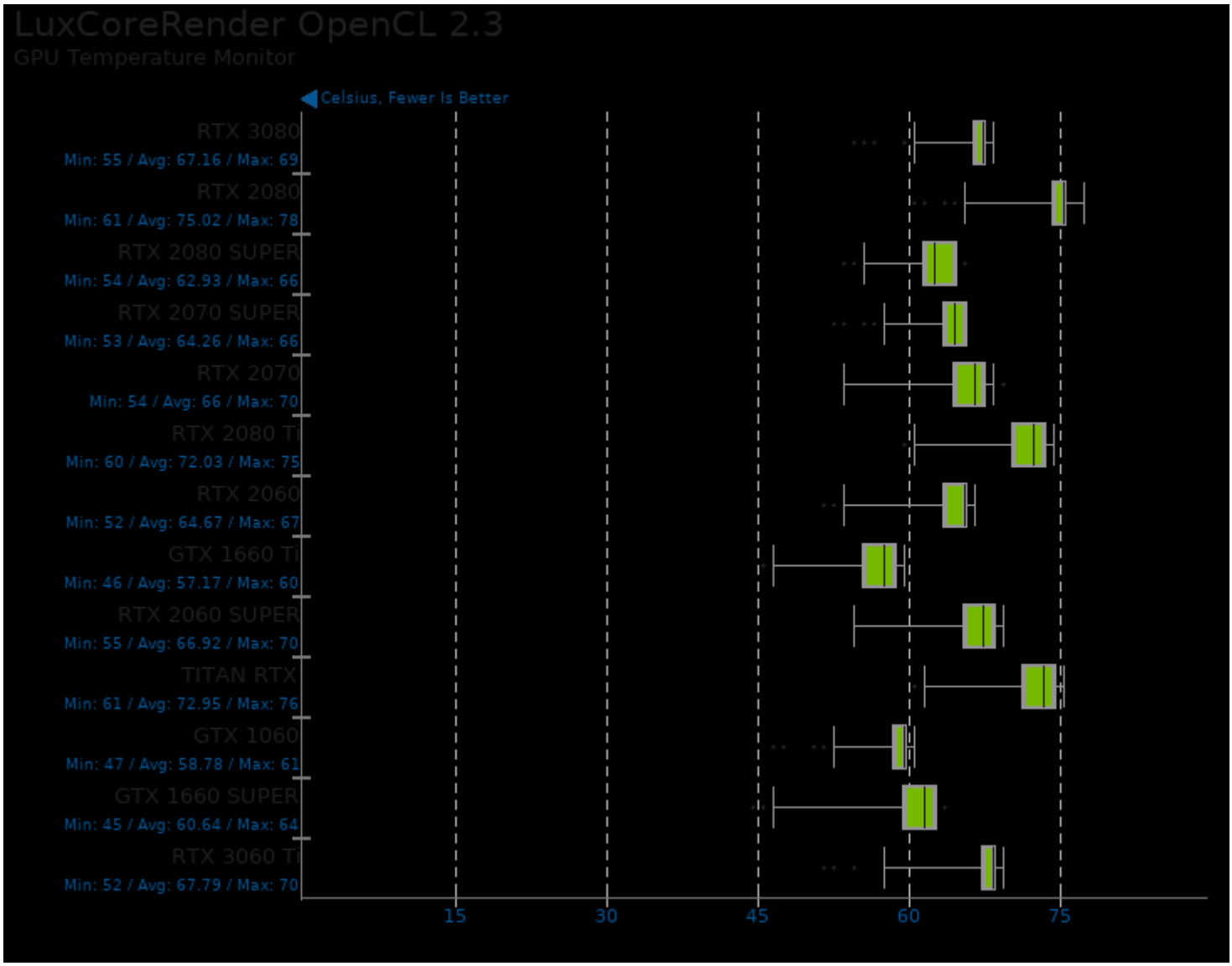
NVIDIA Compute Comparison



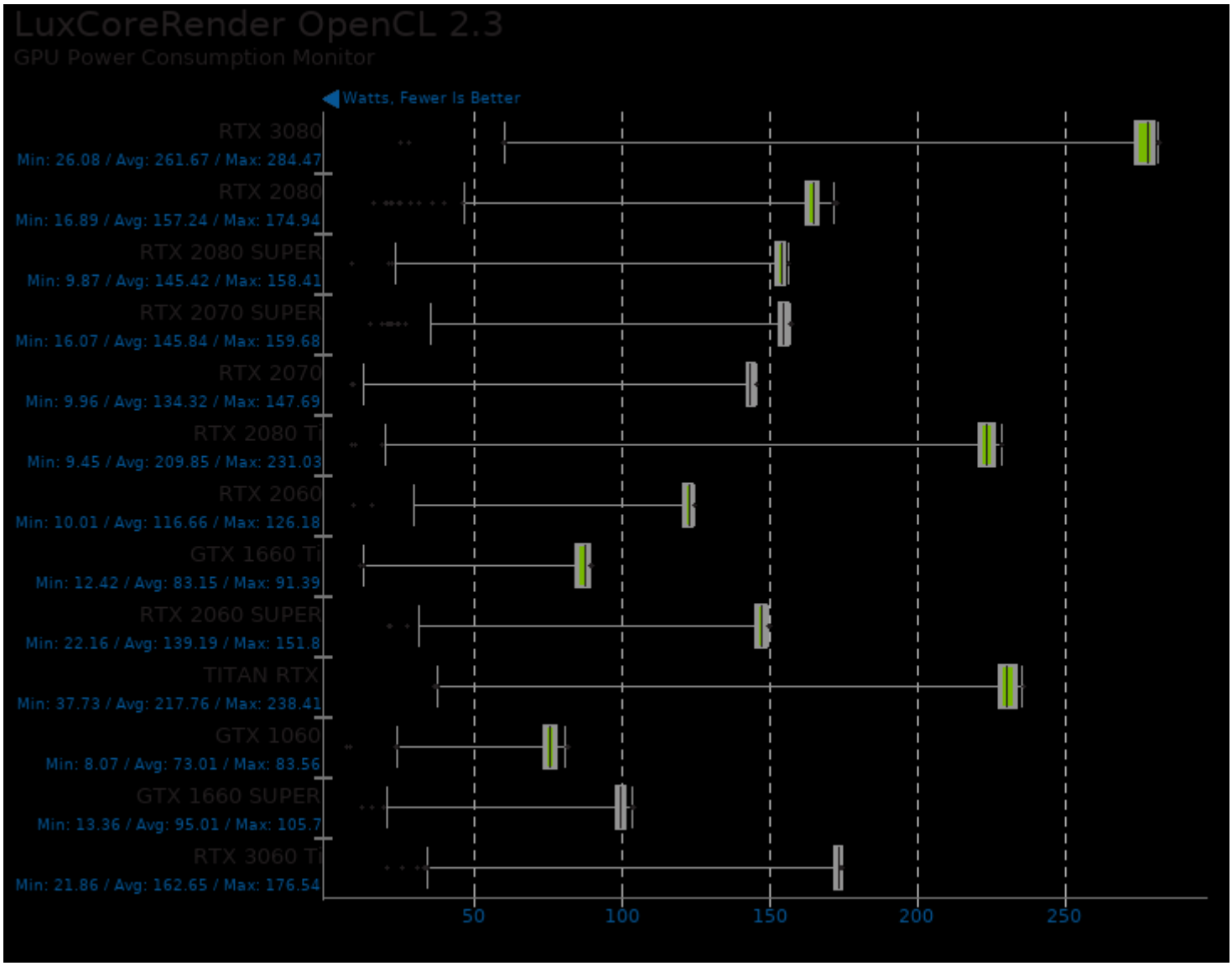
NVIDIA Compute Comparison



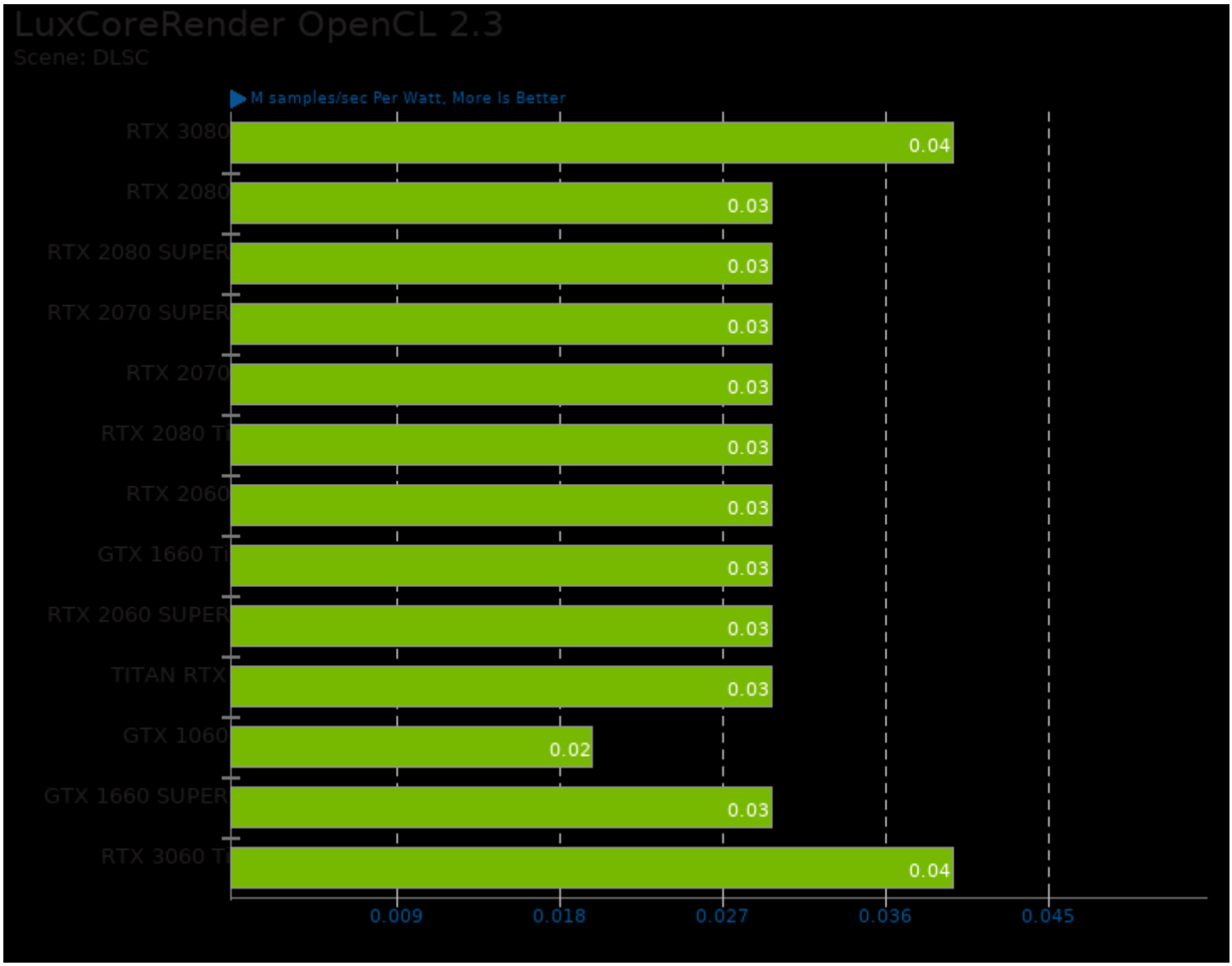
NVIDIA Compute Comparison



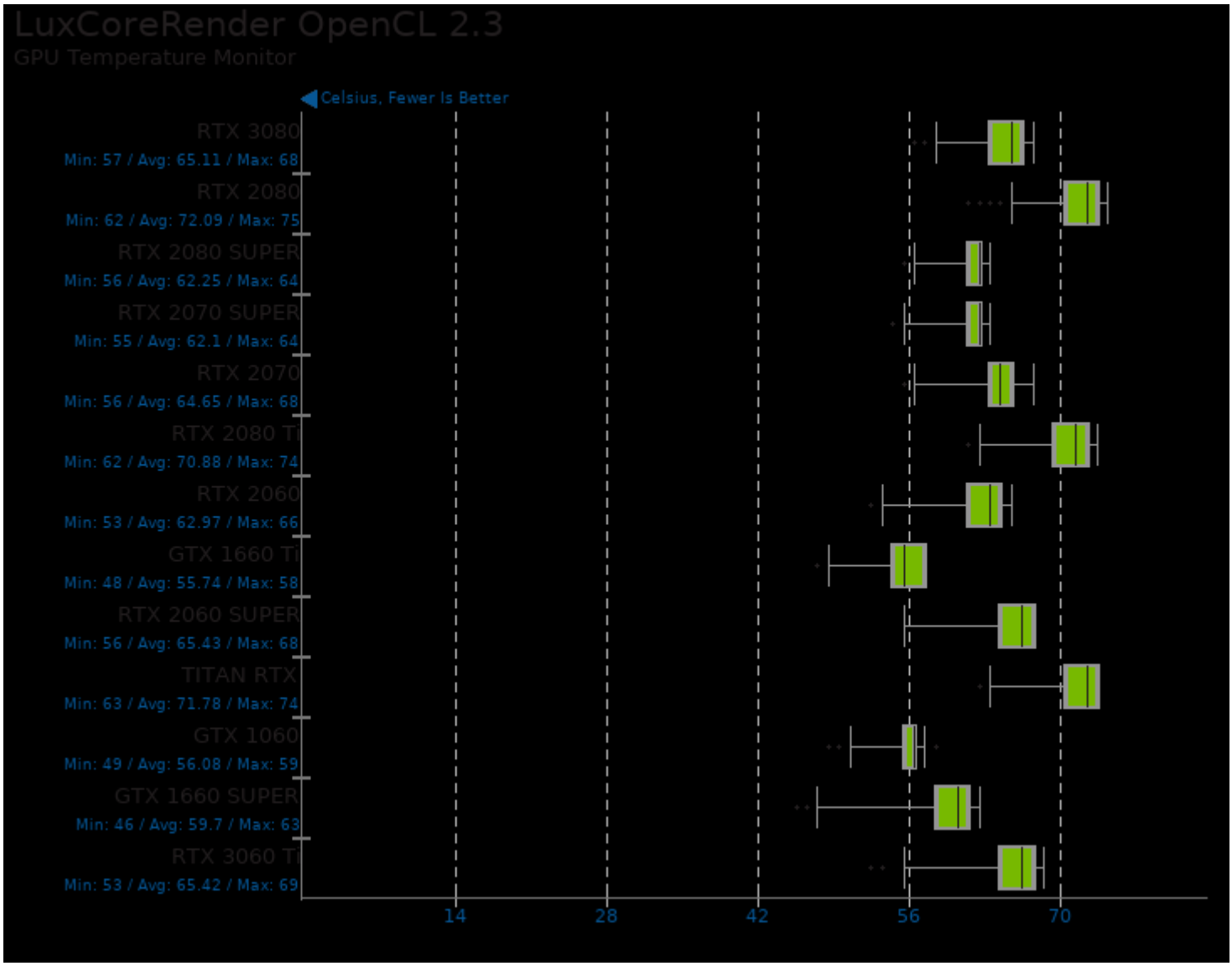
NVIDIA Compute Comparison



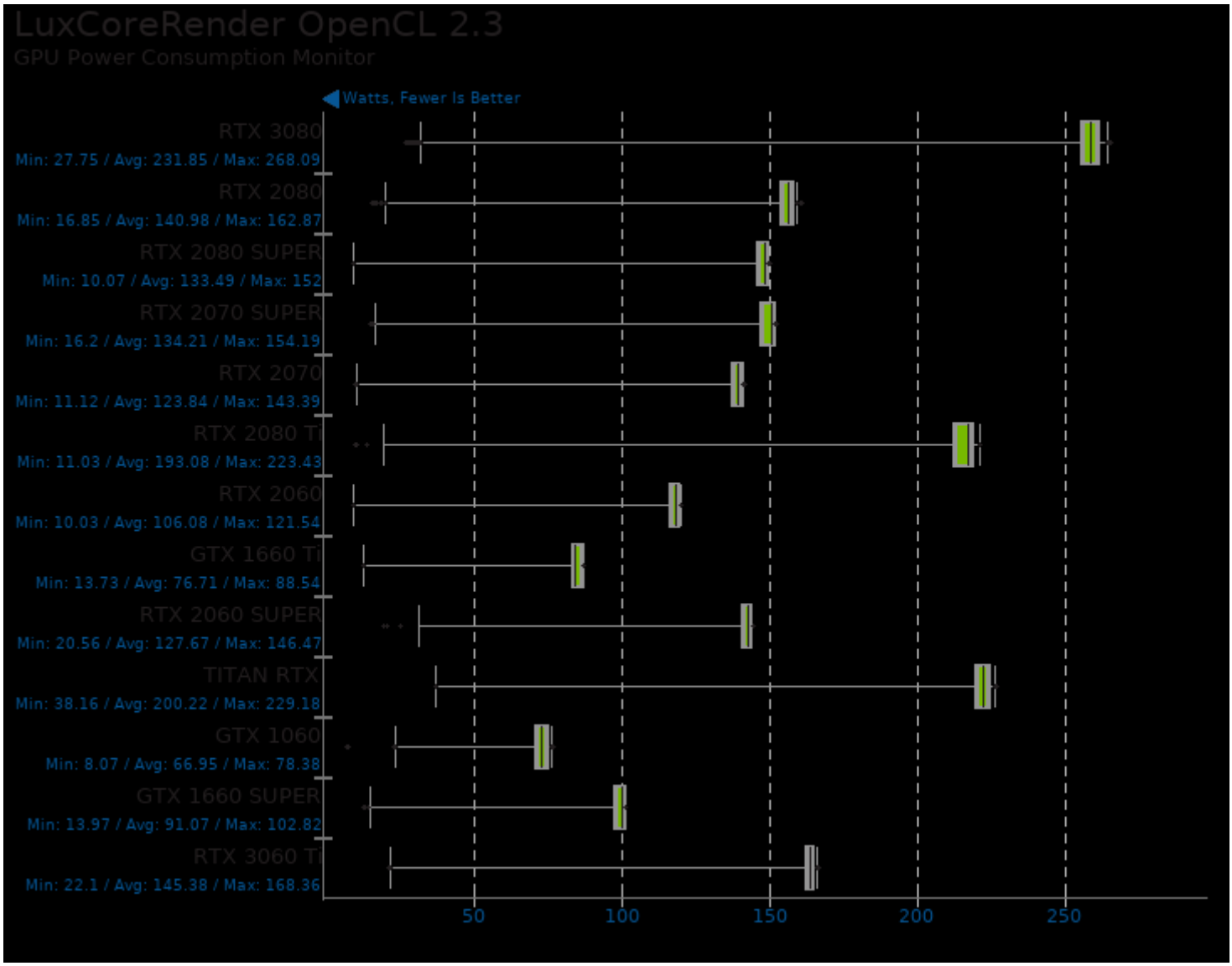
NVIDIA Compute Comparison



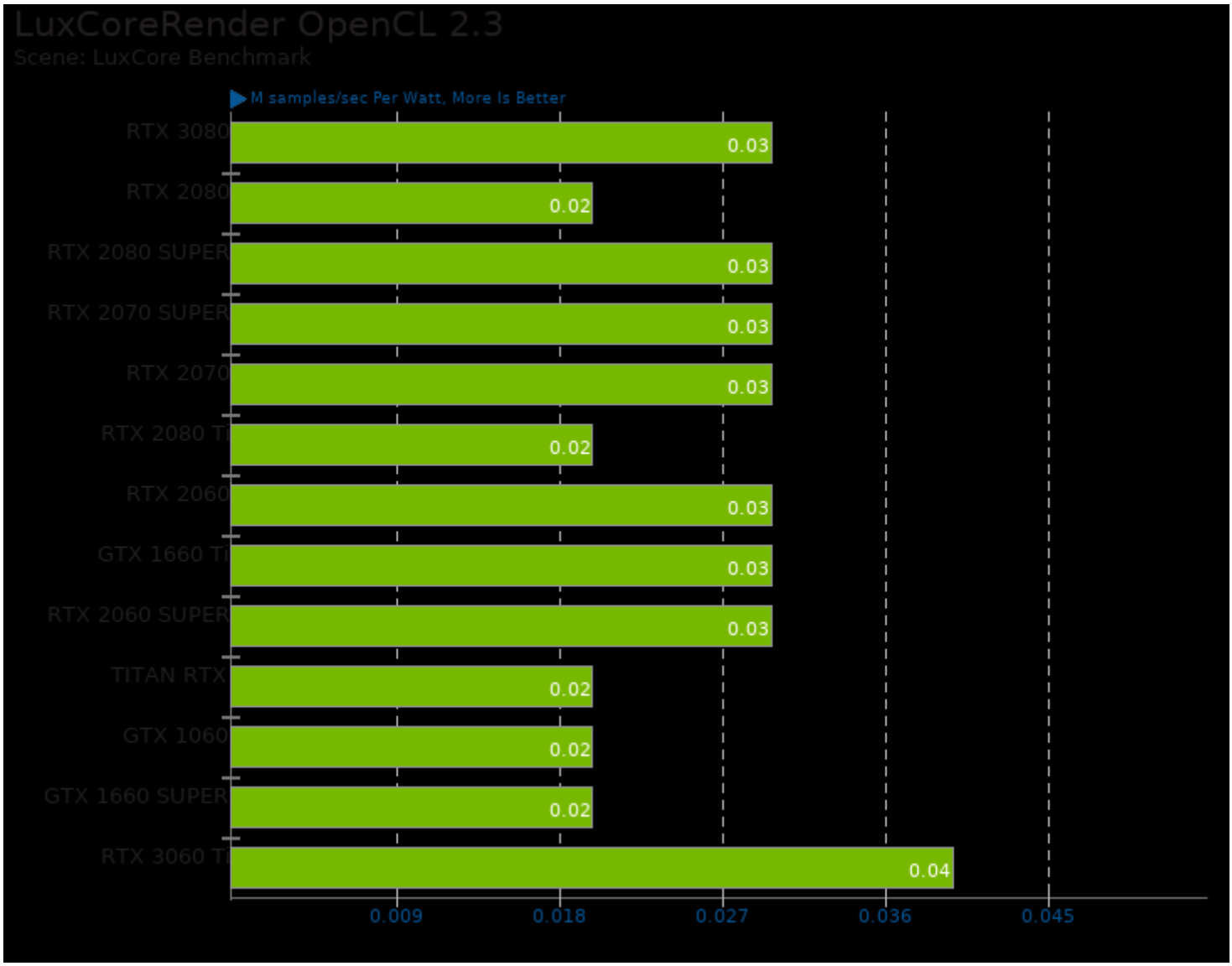
NVIDIA Compute Comparison



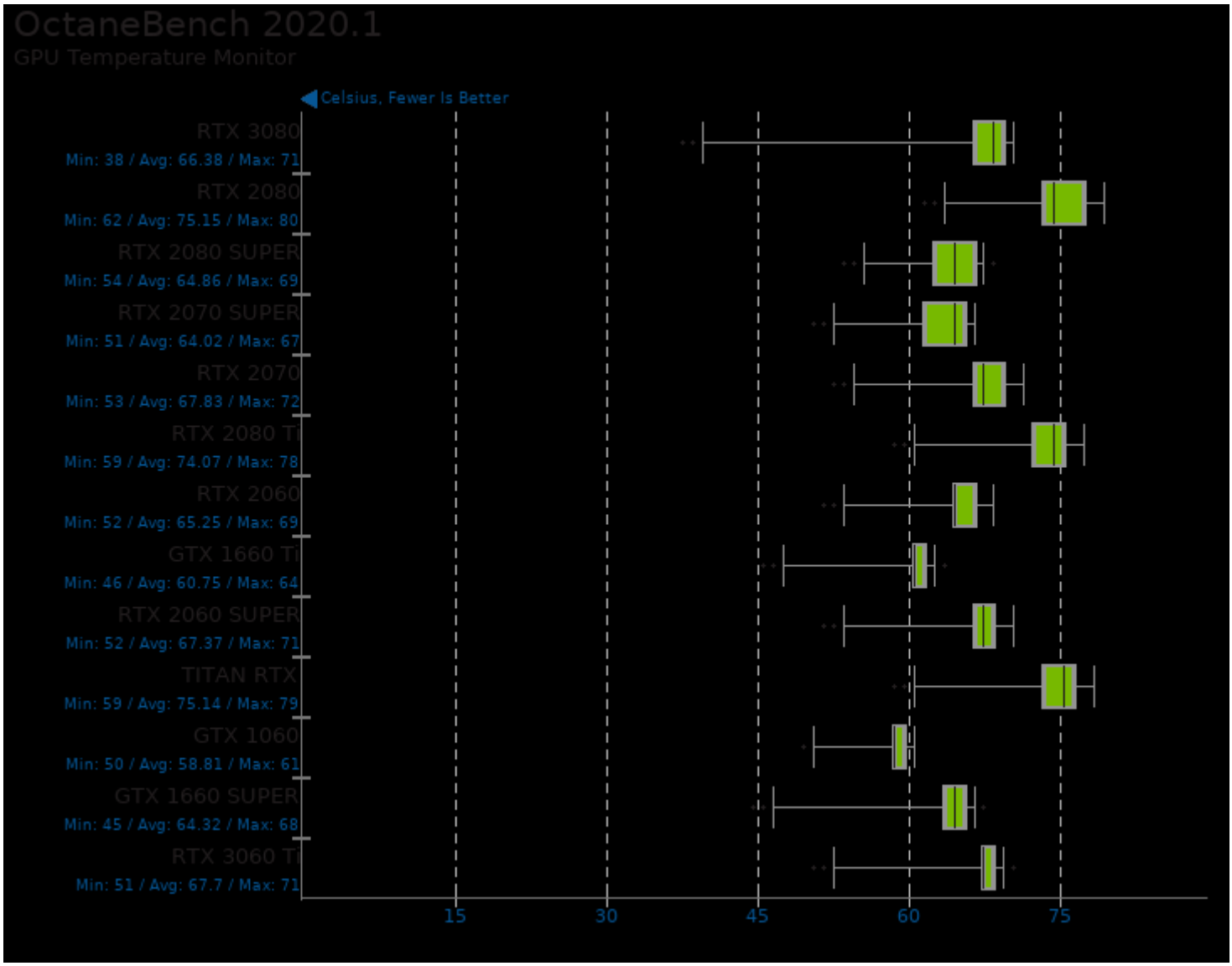
NVIDIA Compute Comparison



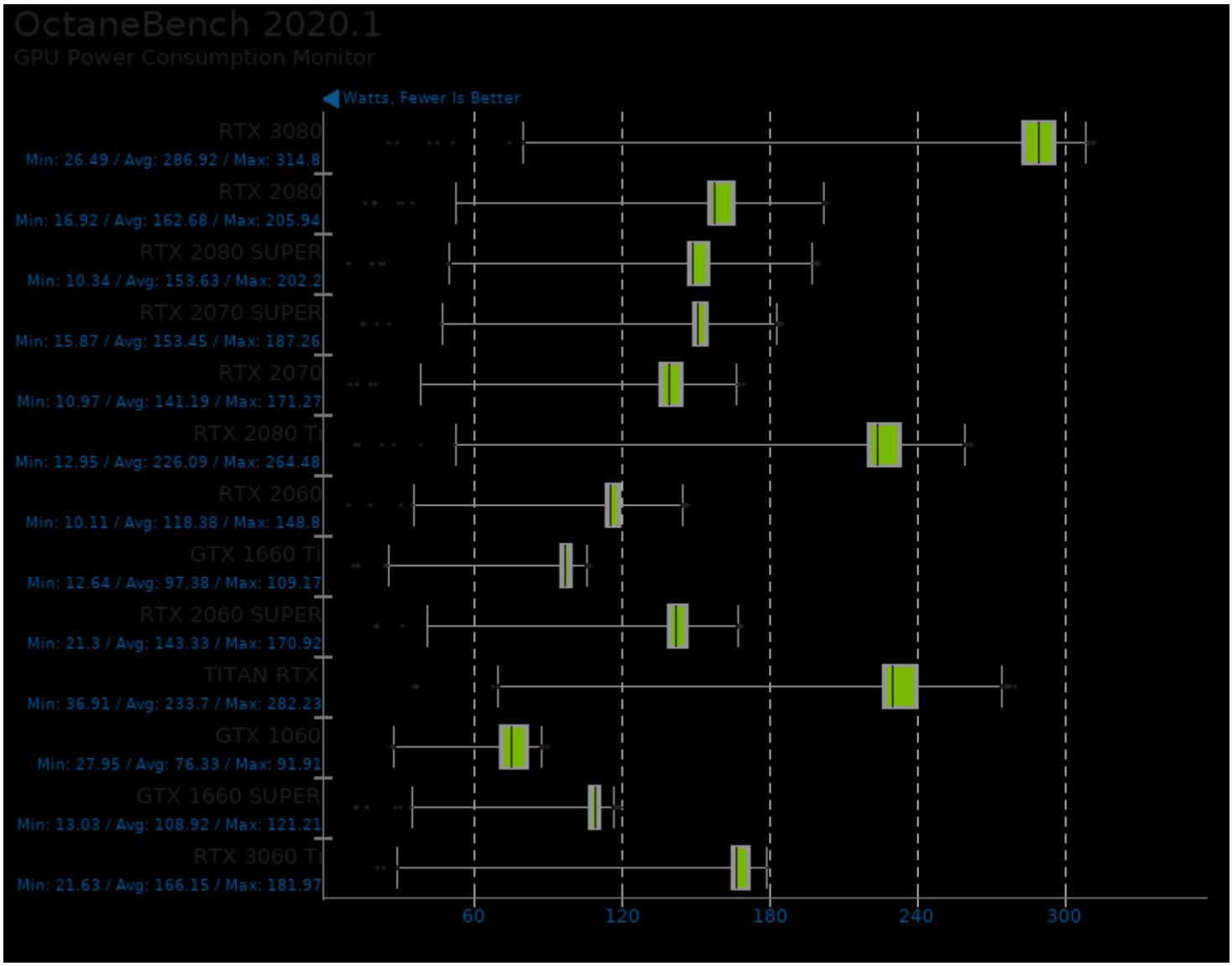
NVIDIA Compute Comparison



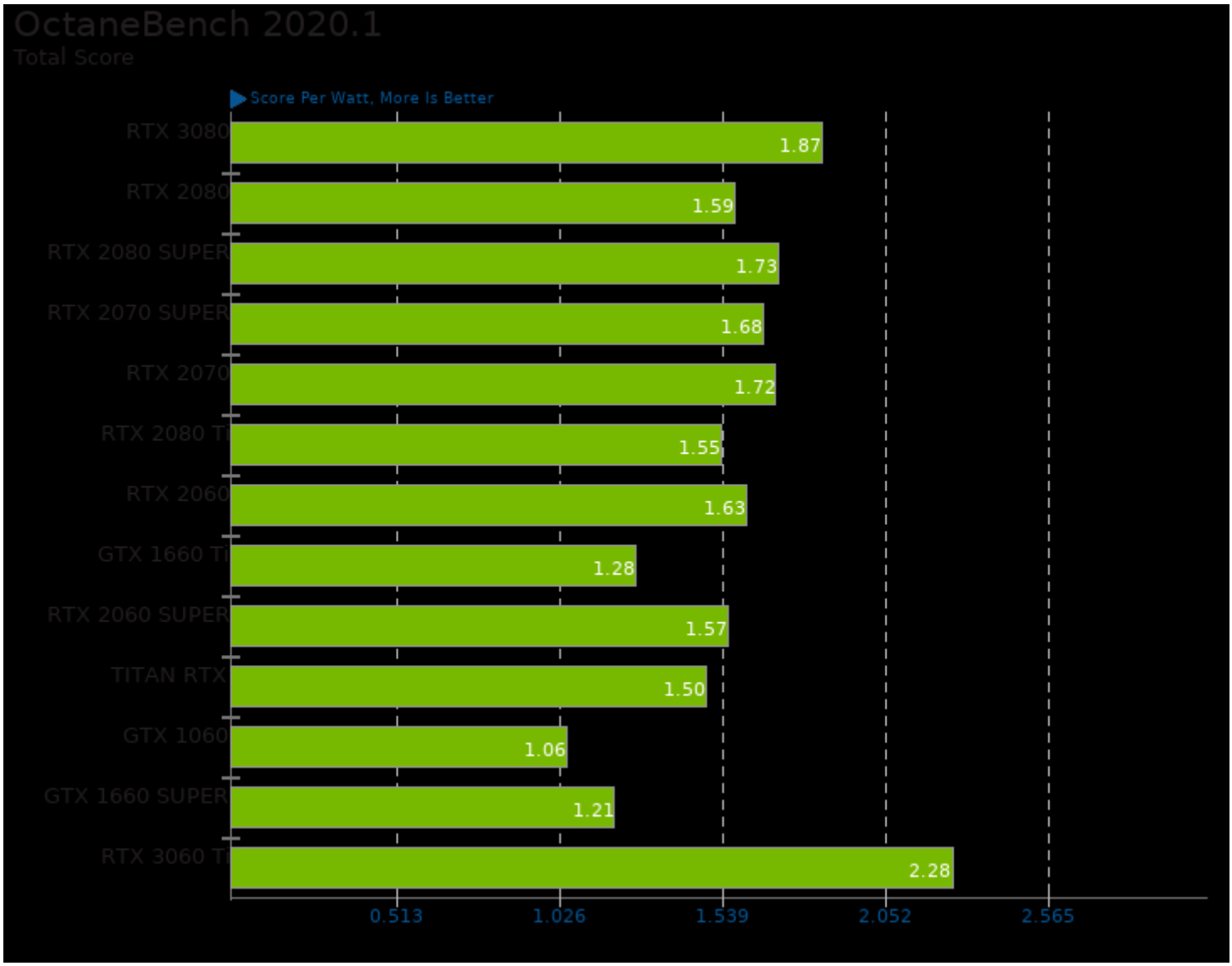
NVIDIA Compute Comparison



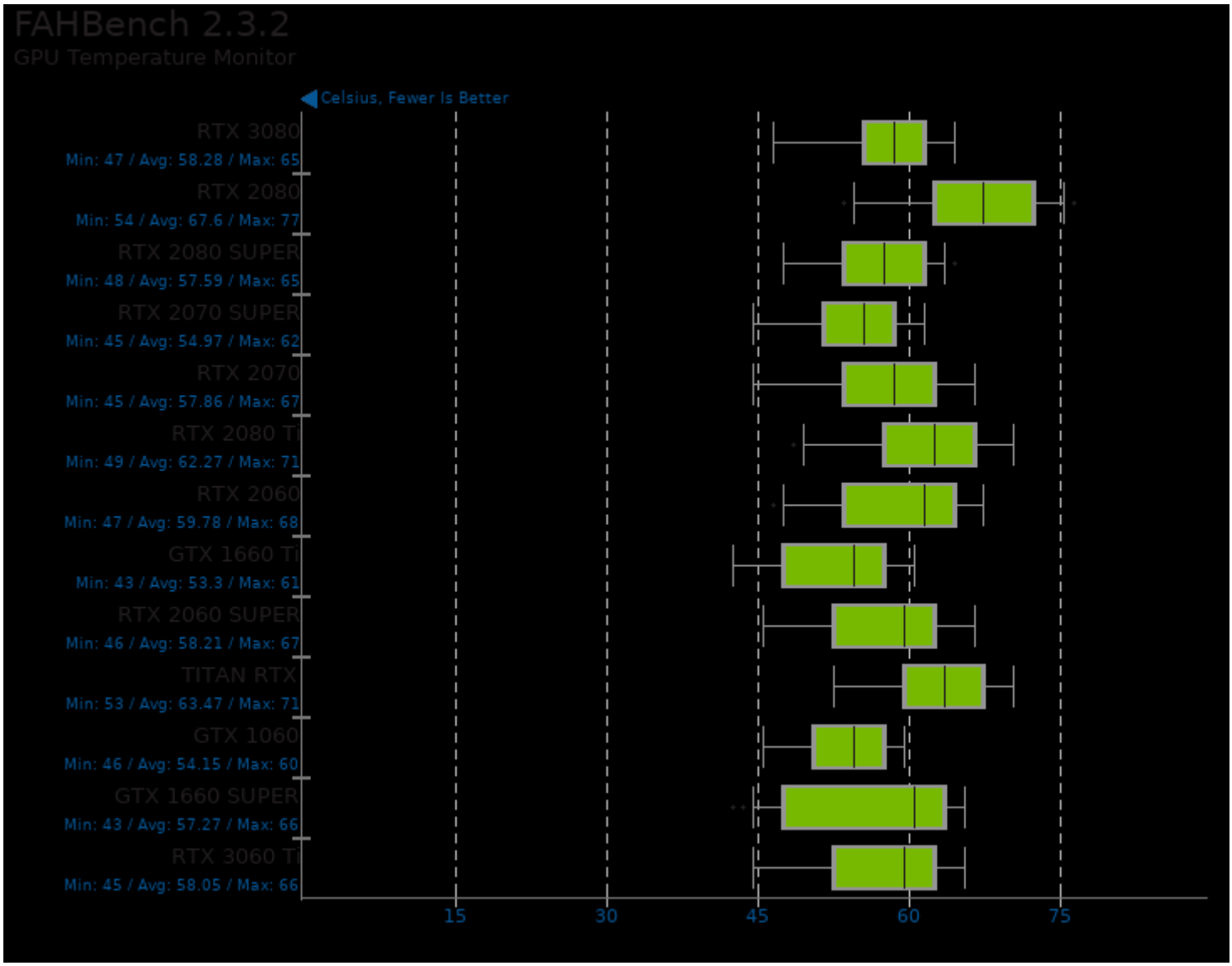
NVIDIA Compute Comparison



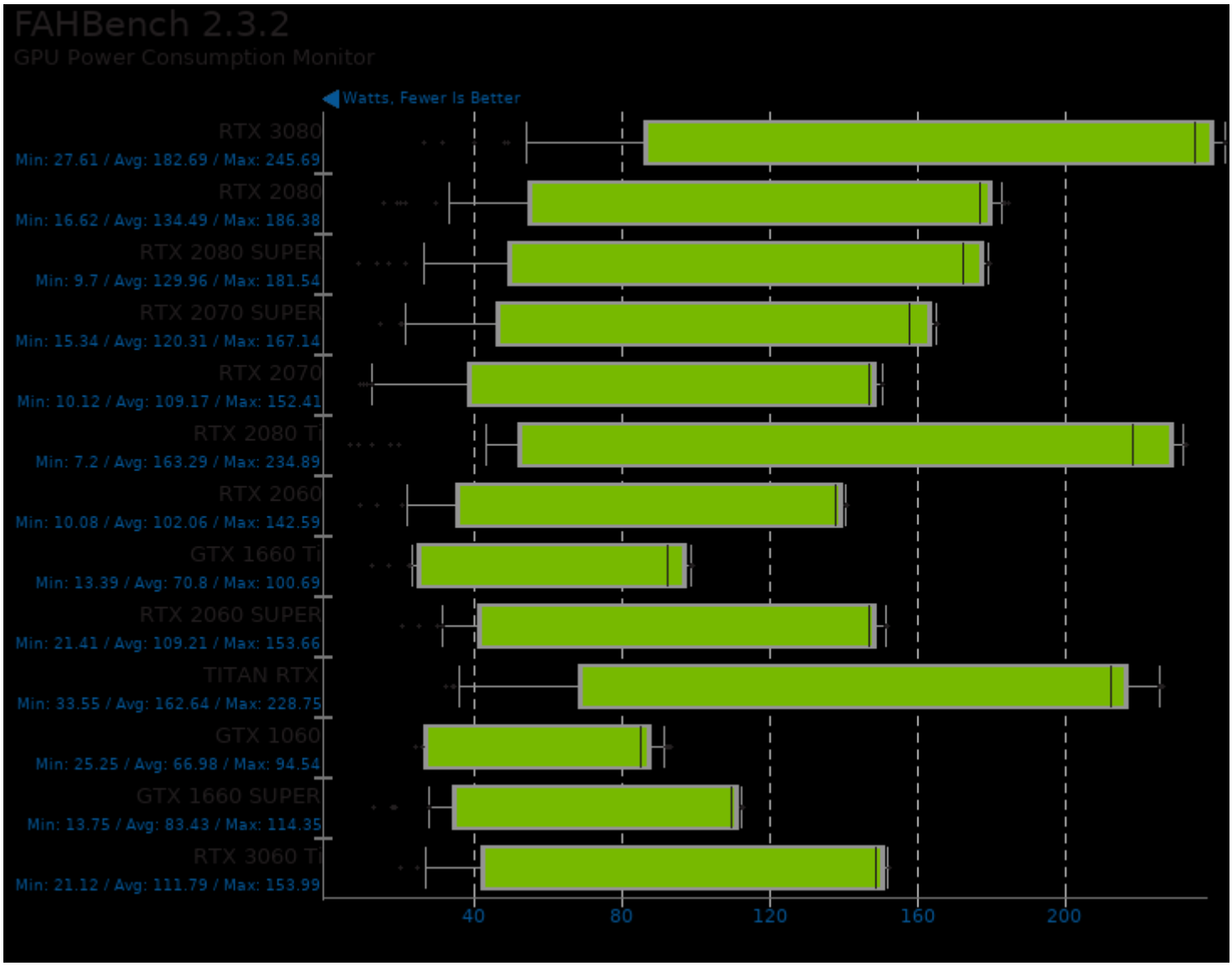
NVIDIA Compute Comparison



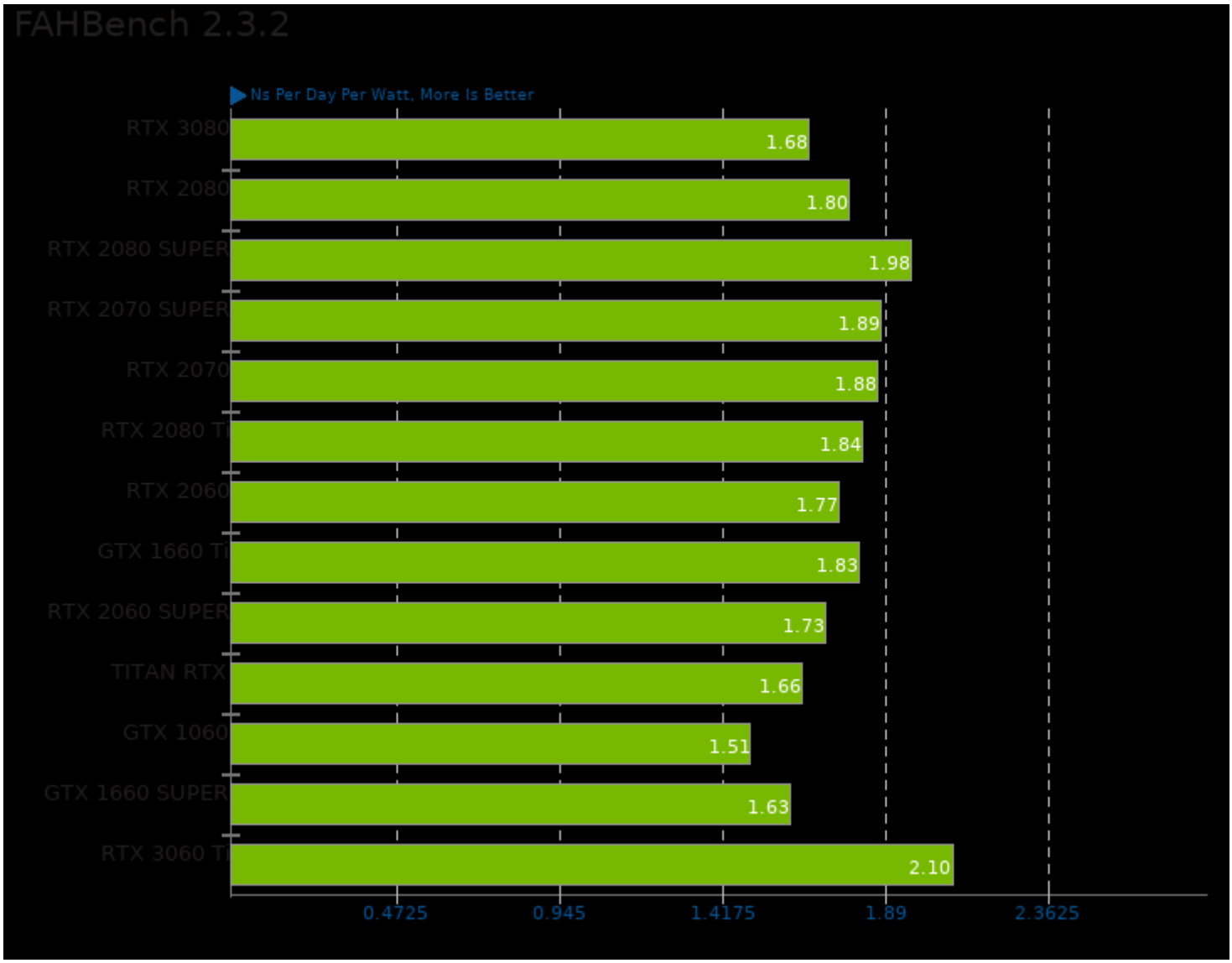
NVIDIA Compute Comparison



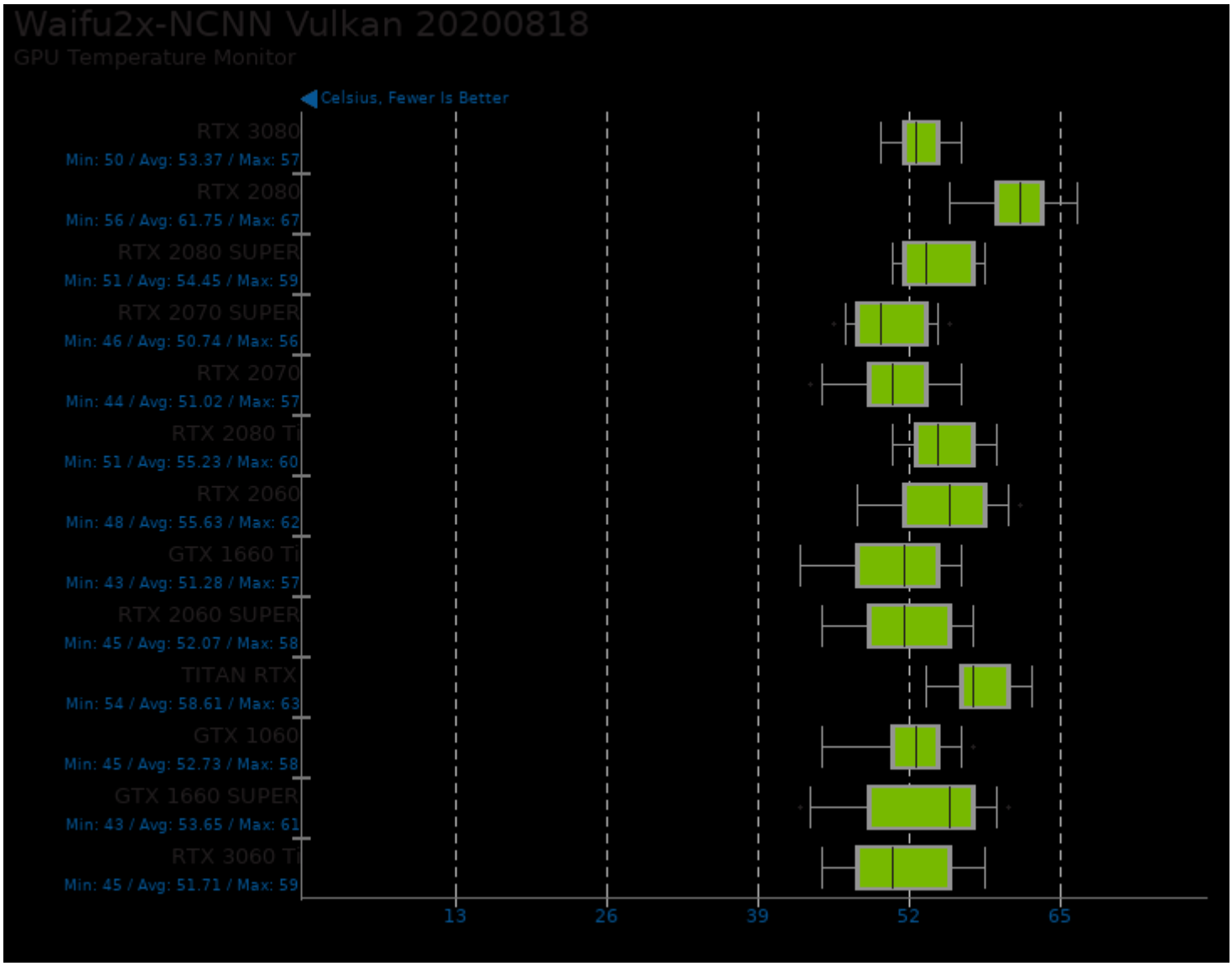
NVIDIA Compute Comparison



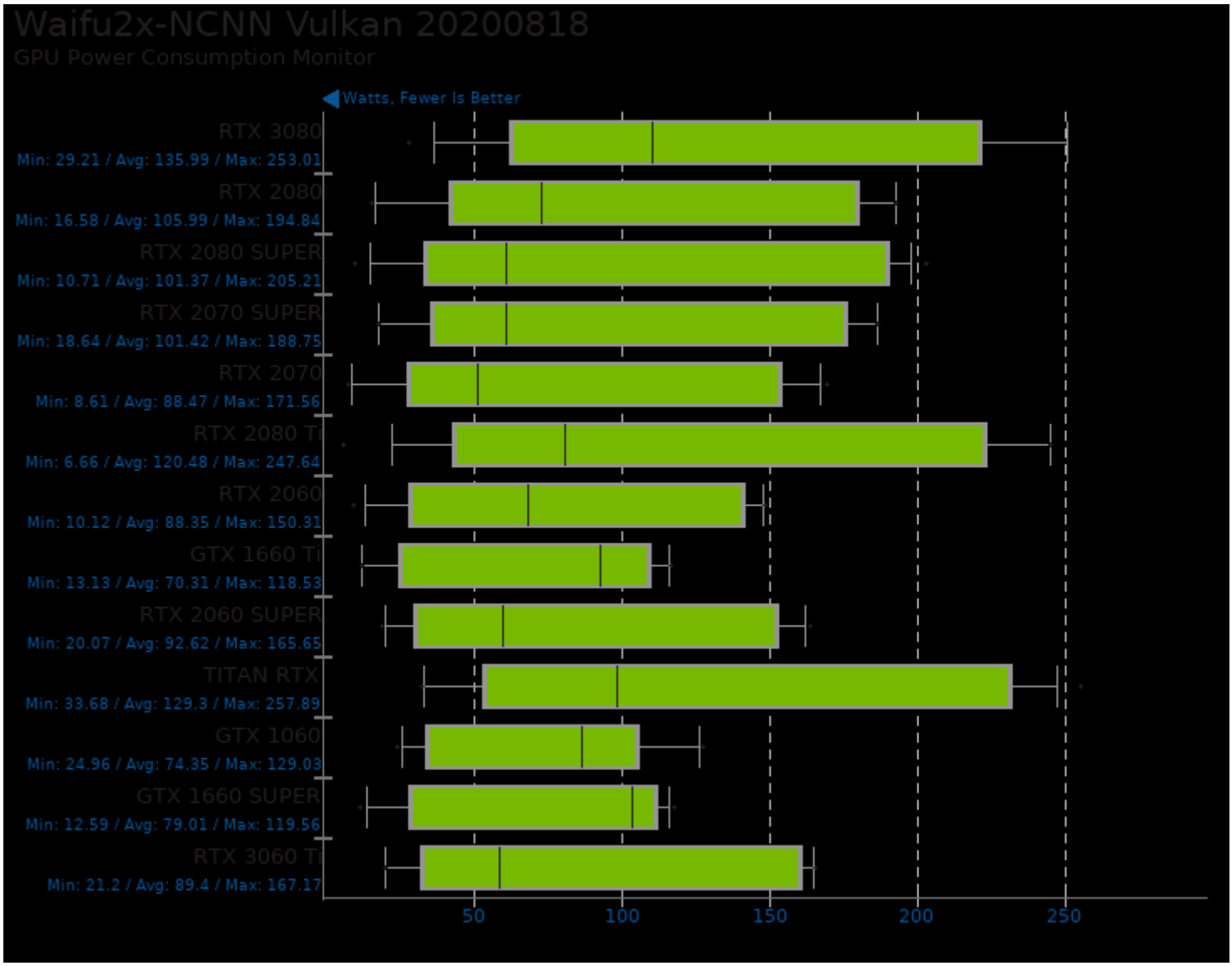
NVIDIA Compute Comparison



NVIDIA Compute Comparison

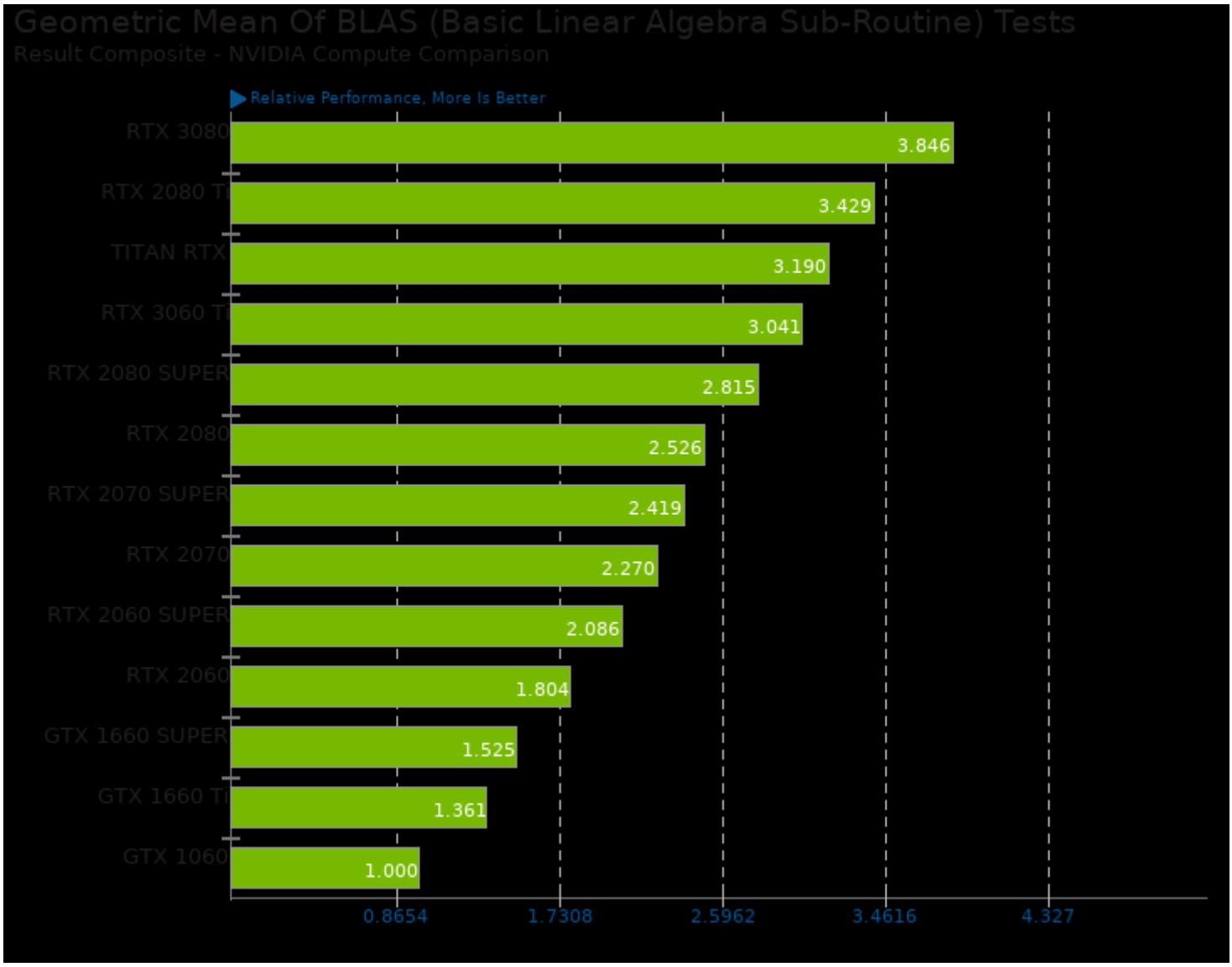


NVIDIA Compute Comparison



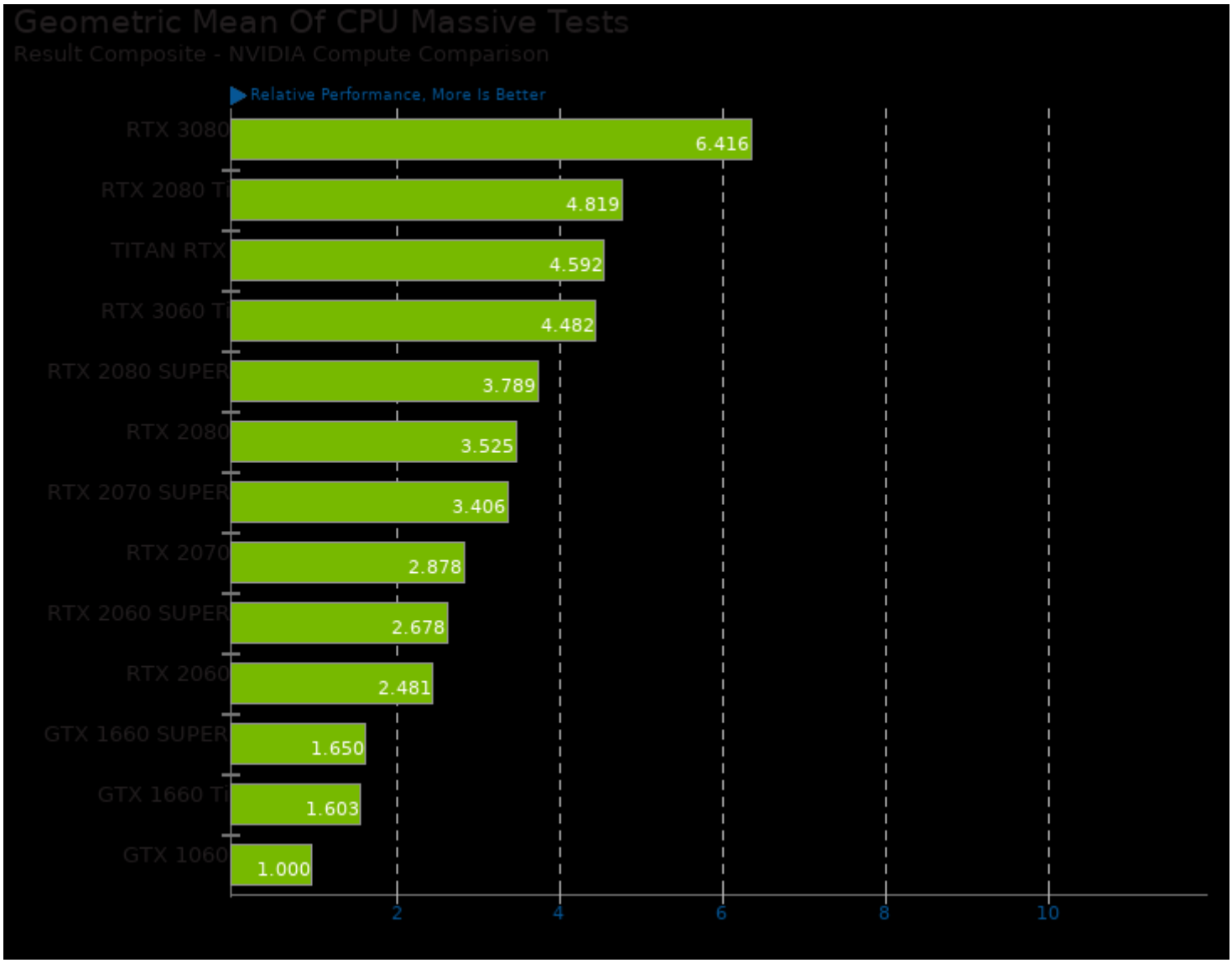
NVIDIA Compute Comparison

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



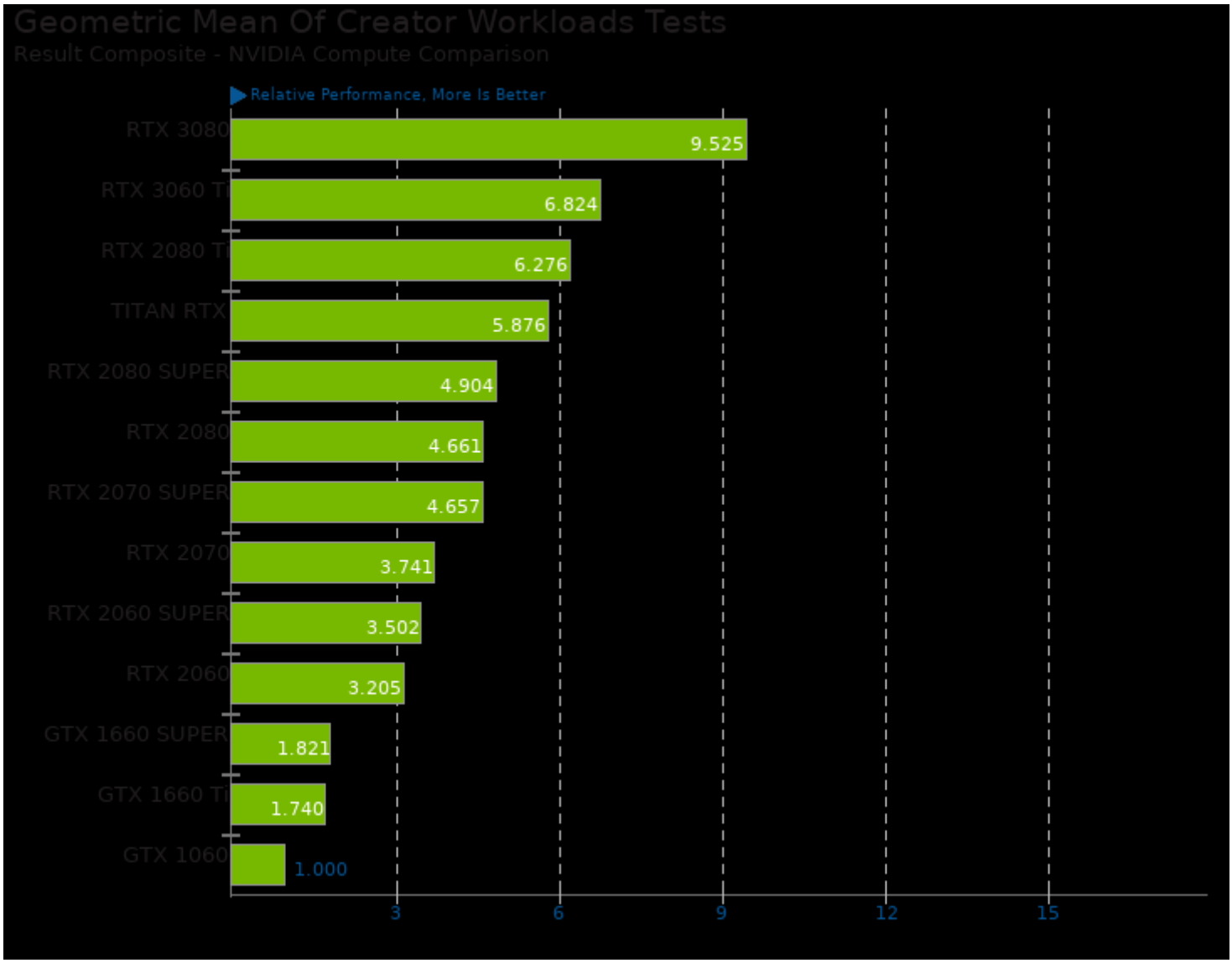
Geometric mean based upon tests: pts/lczero and pts/arrayfire

NVIDIA Compute Comparison

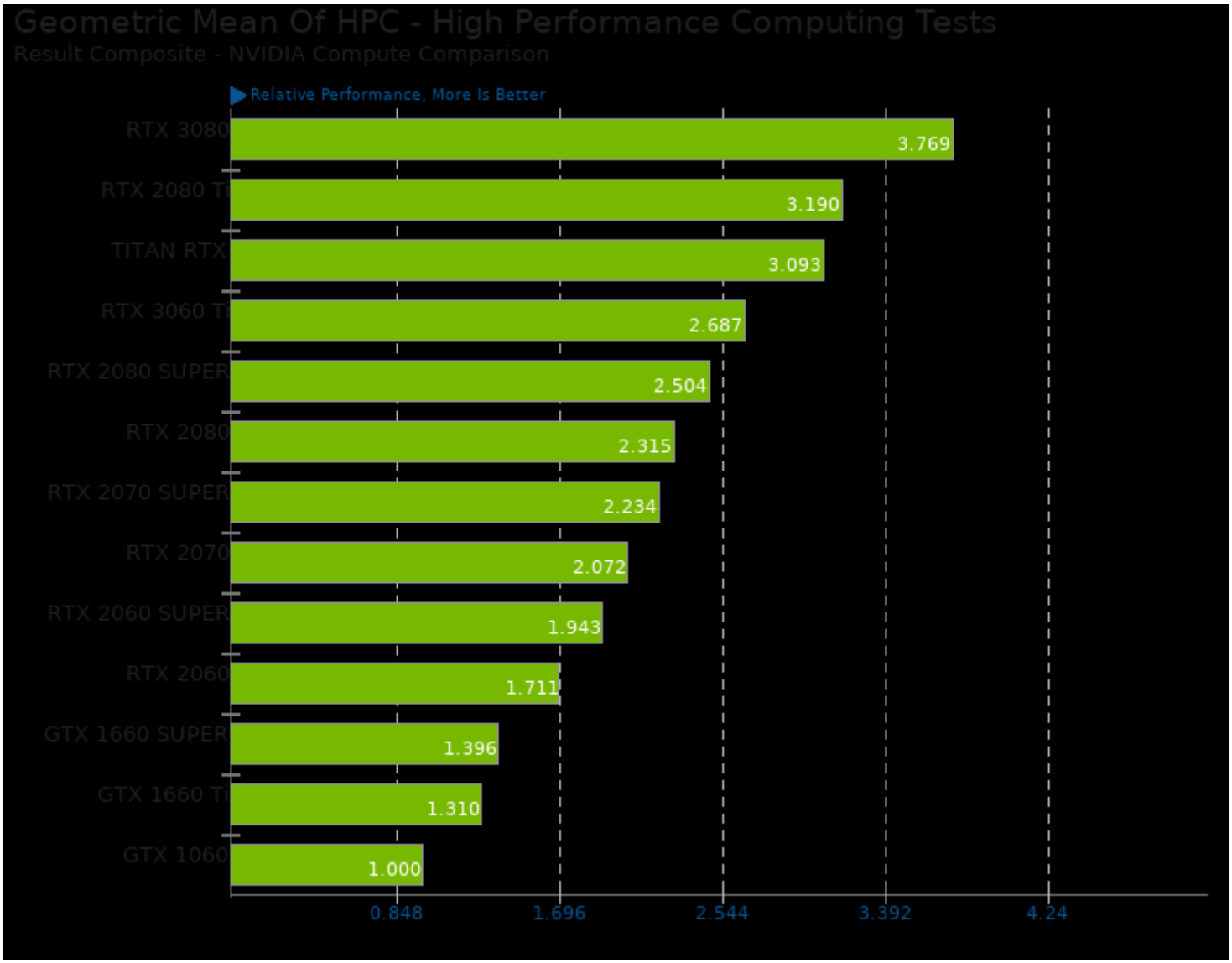


Geometric mean based upon tests: pts/geekbench, pts/lczero, pts/plaidml and pts/blender

NVIDIA Compute Comparison

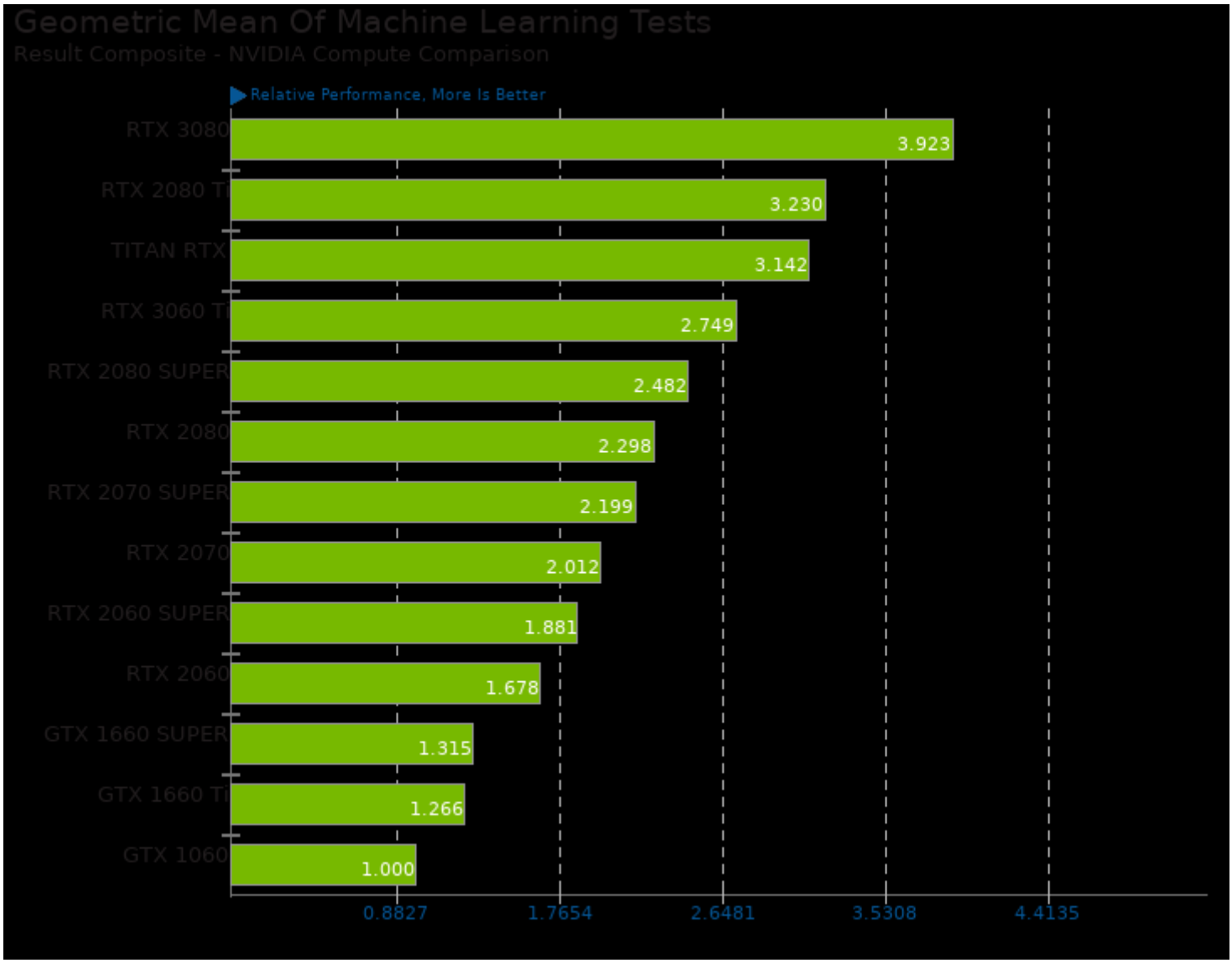


Geometric mean based upon tests: pts/blender and pts/indigobench



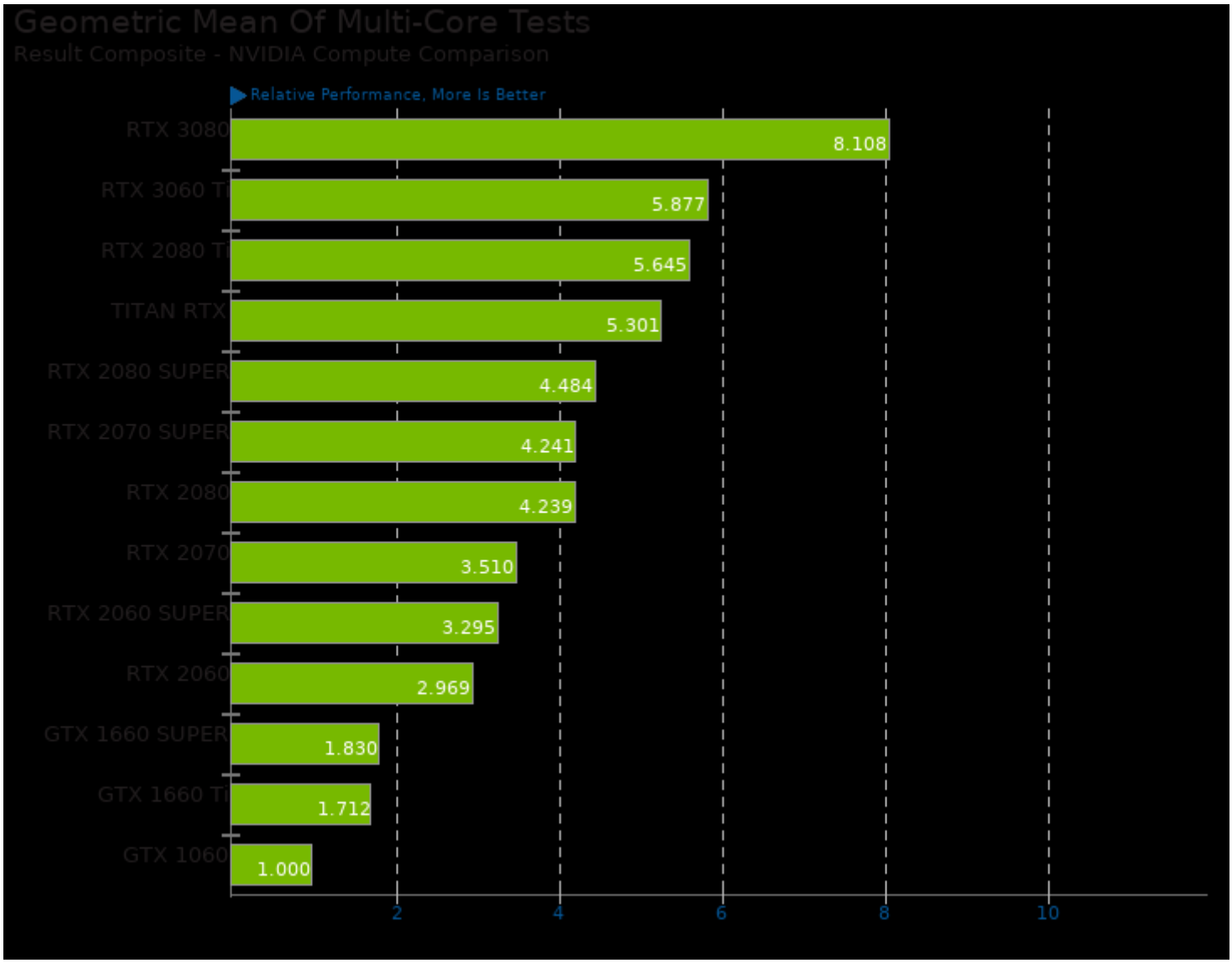
Geometric mean based upon tests: pts/arrayfire, pts/plaidml and pts/lczero

NVIDIA Compute Comparison



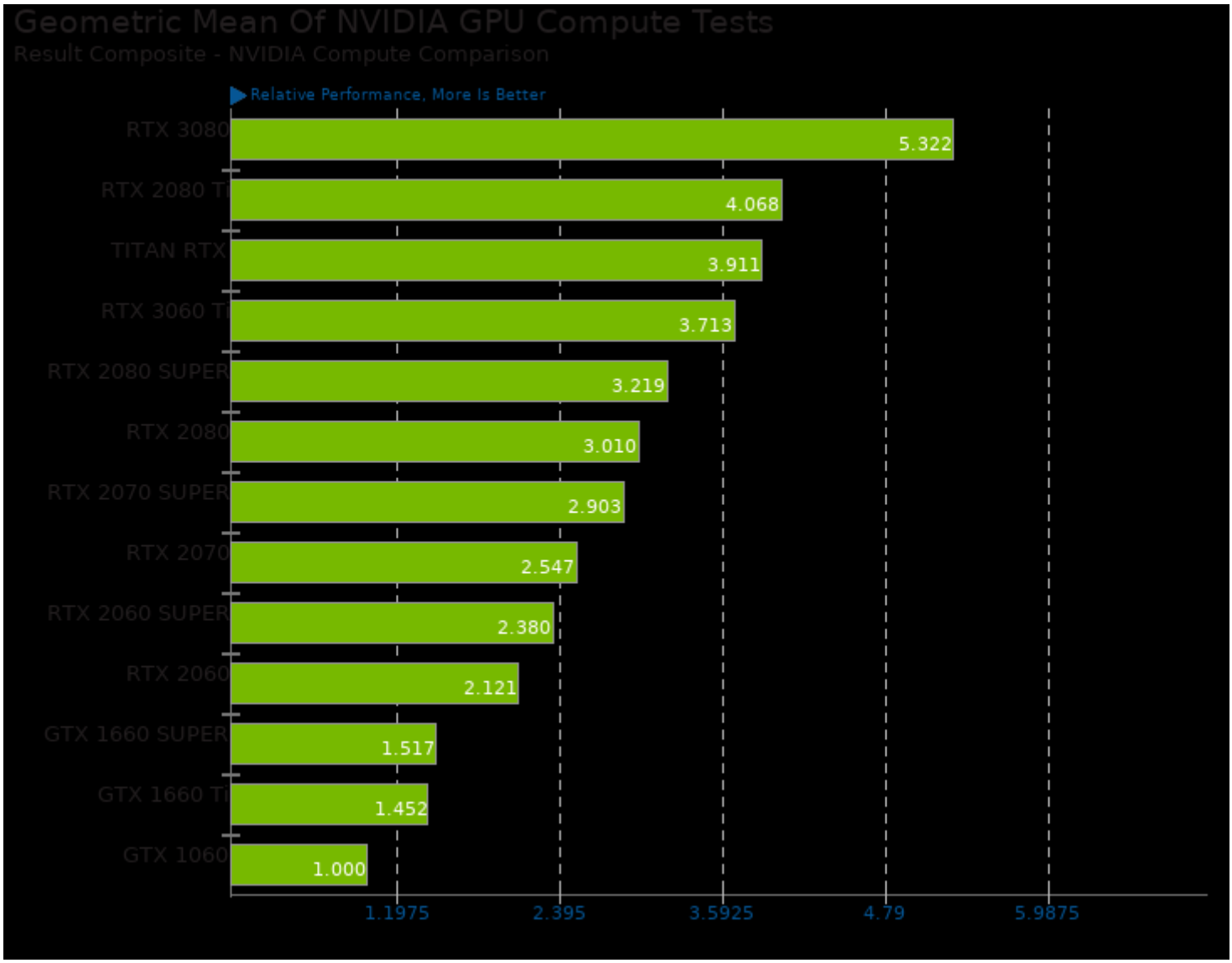
Geometric mean based upon tests: pts/plaidml and pts/lczero

NVIDIA Compute Comparison

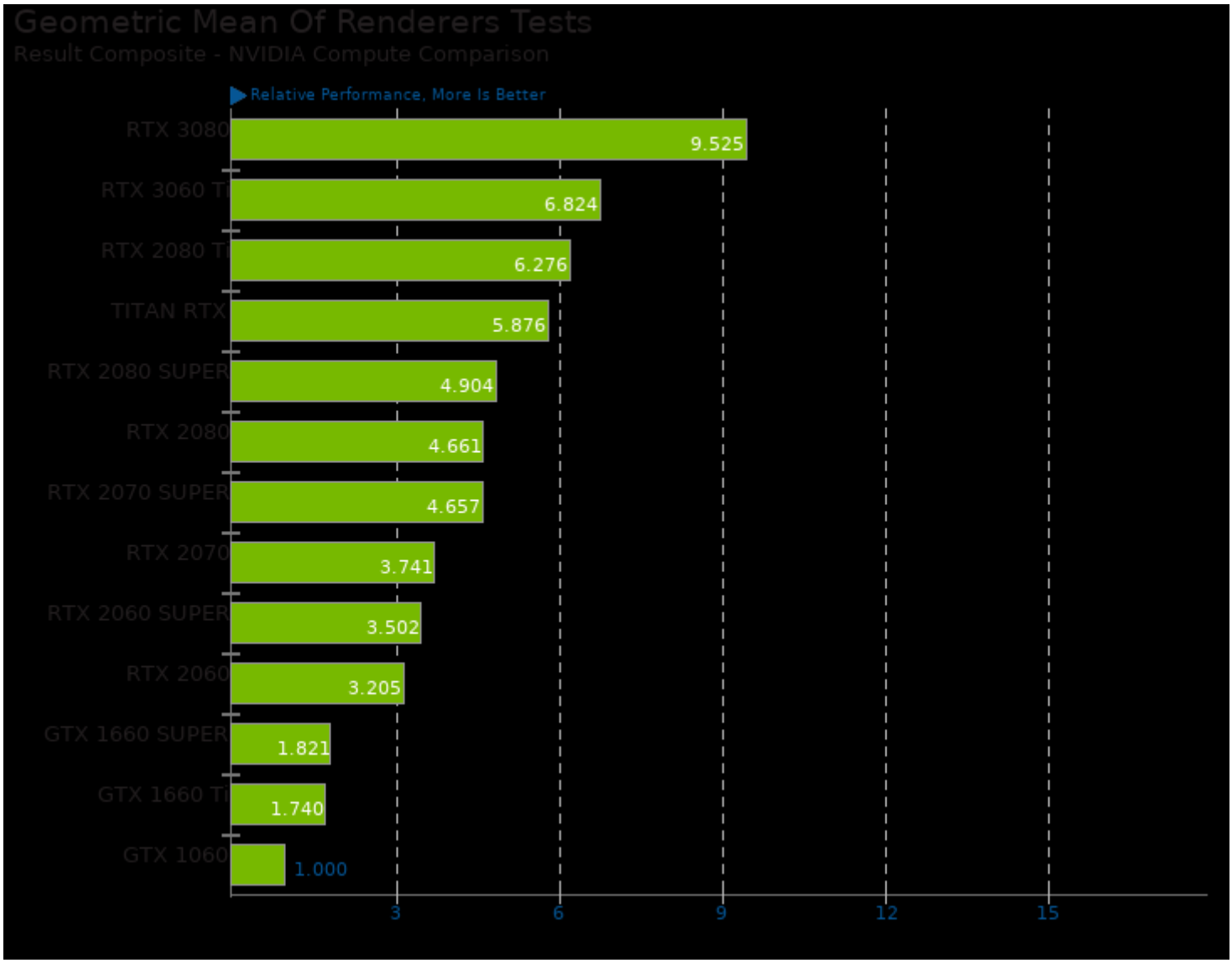


Geometric mean based upon tests: pts/blender, pts/arrayfire and pts/indigobench

NVIDIA Compute Comparison

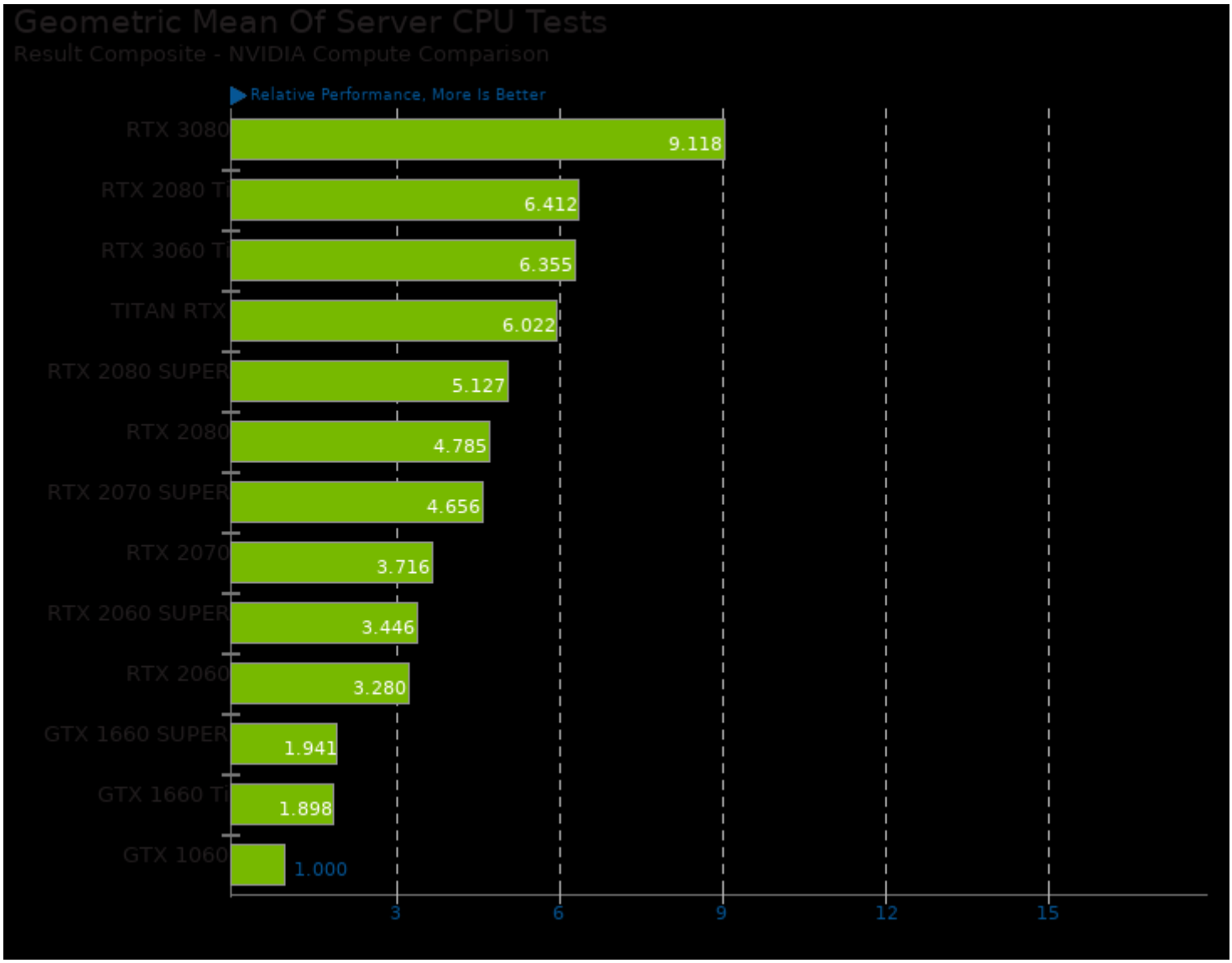


Geometric mean based upon tests: pts/fahbench, pts/octanebench, pts/arrayfire, pts/clpeak, pts/plaidml, pts/lczero, pts/redshift, pts/indigobench, pts/blender, pts/vkfft, pts/realsr-ncnn and pts/waifu2x-ncnn



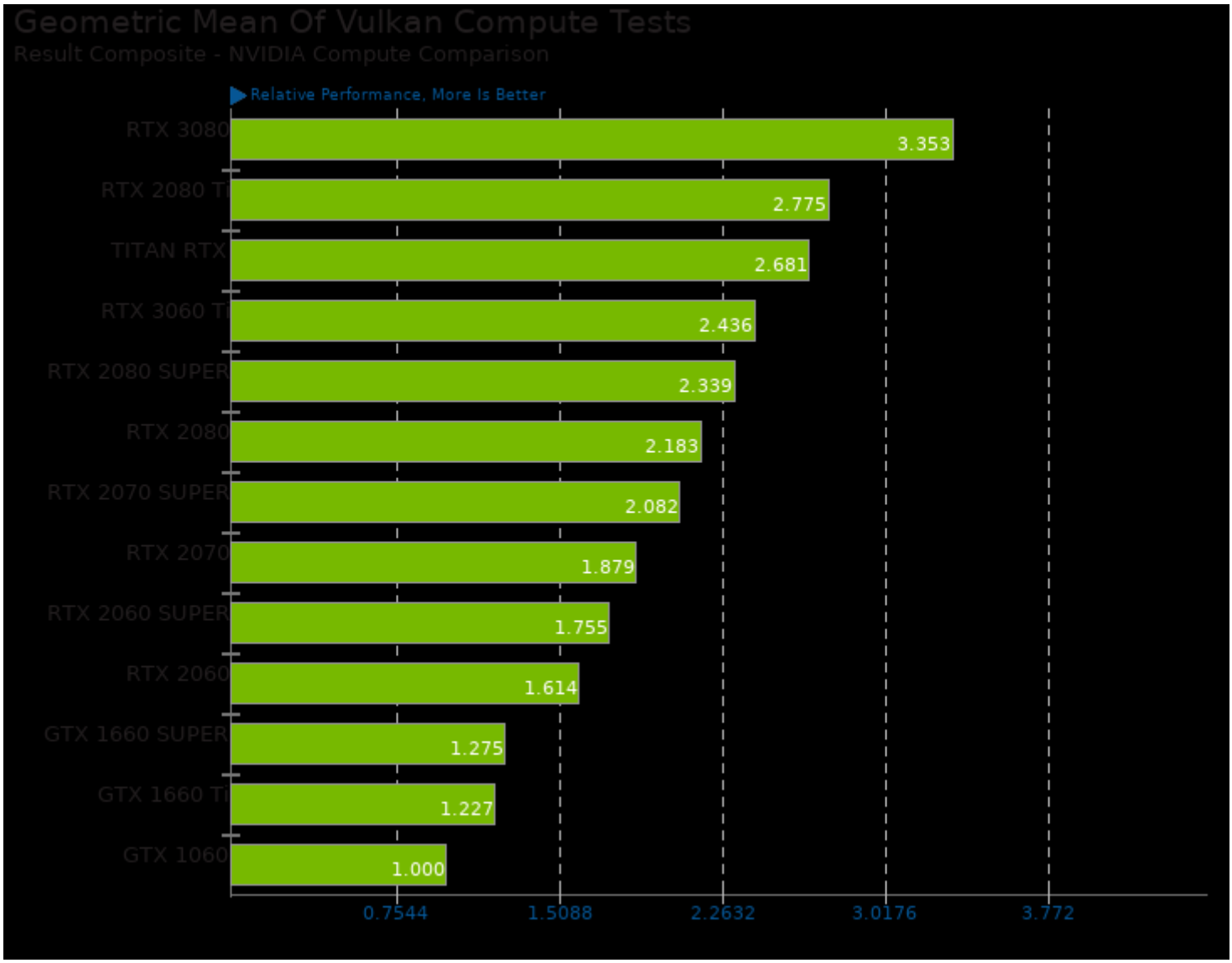
Geometric mean based upon tests: pts/blender and pts/indigobench

NVIDIA Compute Comparison



Geometric mean based upon tests: pts/blender and pts/geekbench

NVIDIA Compute Comparison



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

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 16:50.