www.phoronix-test-suite.com

OpenCL GTX 1660 Ti

OpenCL benchmarks for a future article on Phoronix.com

Automated Executive Summary

RTX 2070 had the most wins, coming in first place for 60% of the tests.

Based on the geometric mean of all complete results, the fastest (RTX 2070) was 3.517x the speed of the slowest (RX 560).

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

NAMD CUDA (System Power Consumption Monitor) at 8.704x
clpeak (System Power Consumption Monitor) at 8.172x
cl-mem (System Power Consumption Monitor) at 7.935x
cl-mem (System Power Consumption Monitor) at 7.16x
cl-mem (System Power Consumption Monitor) at 6.63x
clpeak (OpenCL Test: Double-Precision Double) at 6.058x
FAHBench (System Power Consumption Monitor) at 5.849x
cl-mem (Benchmark: Write) at 4.54x
cl-mem (Benchmark: Read) at 4.252x
clpeak (OpenCL Test: Global Memory Bandwidth) at 4.172x.

Test Systems:

RTX 2060

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASUS PRIME Z390-A (0802 BIOS), Chipset: Intel Cannon Lake PCH Shared SRAM, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB + 2000GB SABRENT, Graphics: NVIDIA GeForce RTX 2060 6GB (1365/7000MHz), Audio: Realtek ALC1220, Monitor: Acer B286HK, Network: Intel I219-V

OS: Ubuntu 18.10, Kernel: 5.0.0-999-generic (x86_64) 20190221, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, Display Driver: NVIDIA 418.43, OpenGL: 4.6.0, Vulkan: 1.1.95, Compiler: GCC 8.2.0, 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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate performance
OpenCL Notes: GPU Compute Cores: 1920
Security Notes: __user pointer sanitization + Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + SSB disabled via prctl and seccomp

GTX 1660 Ti

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASUS PRIME Z390-A (0802 BIOS), Chipset: Intel Cannon Lake PCH Shared SRAM, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB + 2000GB SABRENT, Graphics: eVGA NVIDIA GeForce GTX 1660 Ti 6GB (1500/6000MHz), Audio: Realtek ALC1220, Monitor: Acer B286HK, Network: Intel I219-V

OS: Ubuntu 18.10, Kernel: 5.0.0-999-generic (x86_64) 20190221, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, Display Driver: NVIDIA 418.43, OpenGL: 4.6.0, Vulkan: 1.1.95, Compiler: GCC 8.2.0, 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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate performance
OpenCL Notes: GPU Compute Cores: 1536
Security Notes: __user pointer sanitization + Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + SSB disabled via prctl and seccomp

GTX 1070 Ti

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASUS PRIME Z390-A (0802 BIOS), Chipset: Intel Cannon Lake PCH Shared SRAM, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB + 2000GB SABRENT, Graphics: Zotac NVIDIA GeForce GTX 1070 Ti 8GB (1607/4006MHz), Audio: Realtek ALC1220, Monitor: Acer B286HK, Network: Intel I219-V

OS: Ubuntu 18.10, Kernel: 5.0.0-999-generic (x86_64) 20190221, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, Display Driver: NVIDIA 418.43, OpenGL: 4.6.0, Vulkan: 1.1.95, Compiler: GCC 8.2.0, 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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v

Processor Notes: Scaling Governor: intel_pstate performance
OpenCL Notes: GPU Compute Cores: 2432
Security Notes: __user pointer sanitization + Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + SSB disabled via prctl and seccomp

GTX 1060

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASUS PRIME Z390-A (0802 BIOS), Chipset: Intel Cannon Lake PCH Shared SRAM, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB + 2000GB SABRENT, Graphics: NVIDIA GeForce GTX 1060 6GB (1506/4006MHz), Audio: Realtek ALC1220, Monitor: Acer B286HK, Network: Intel I219-V

OS: Ubuntu 18.10, Kernel: 5.0.0-999-generic (x86_64) 20190221, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, Display Driver: NVIDIA 418.43, OpenGL: 4.6.0, Vulkan: 1.1.95, Compiler: GCC 8.2.0, 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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate performance
OpenCL Notes: GPU Compute Cores: 1280
Security Notes: __user pointer sanitization + Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + SSB disabled via prctl and seccomp

RTX 2070

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASUS PRIME Z390-A (0802 BIOS), Chipset: Intel Cannon Lake PCH Shared SRAM, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB + 2000GB SABRENT, Graphics: ASUS NVIDIA GeForce RTX 2070 8GB (1410/7000MHz), Audio: Realtek ALC1220, Monitor: Acer B286HK, Network: Intel I219-V

OS: Ubuntu 18.10, Kernel: 5.0.0-999-generic (x86_64) 20190221, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, Display Driver: NVIDIA 418.43, OpenGL: 4.6.0, Vulkan: 1.1.95, Compiler: GCC 8.2.0, 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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate performance
OpenCL Notes: GPU Compute Cores: 2304
Security Notes: __user pointer sanitization + Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + SSB disabled via prctl and seccomp

GTX 1080

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASUS PRIME Z390-A (0802 BIOS), Chipset: Intel Cannon Lake PCH Shared SRAM, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB + 2000GB SABRENT, Graphics: NVIDIA GeForce GTX 1080 8GB (1607/5005MHz), Audio: Realtek ALC1220, Monitor: Acer B286HK, Network: Intel I219-V

OS: Ubuntu 18.10, Kernel: 5.0.0-999-generic (x86_64) 20190221, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, Display Driver: NVIDIA 418.43, OpenGL: 4.6.0, Vulkan: 1.1.95, Compiler: GCC 8.2.0, 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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate performance
OpenCL Notes: GPU Compute Cores: 2560
Security Notes: __user pointer sanitization + Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + SSB disabled via prctl and seccomp

GTX 980 Ti

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASUS PRIME Z390-A (0802 BIOS), Chipset: Intel Cannon Lake PCH Shared SRAM, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB + 2000GB SABRENT, Graphics: NVIDIA GeForce GTX 980 Ti 6GB (999/3505MHz), Audio: Realtek ALC1220, Monitor: Acer B286HK, Network: Intel I219-V

OS: Ubuntu 18.10, Kernel: 5.0.0-999-generic (x86_64) 20190221, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, Display Driver: NVIDIA 418.43, OpenGL: 4.6.0, Vulkan: 1.1.95, Compiler: GCC 8.2.0, 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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate performance
OpenCL Notes: GPU Compute Cores: 2816
Security Notes: __user pointer sanitization + Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + SSB disabled via prctl and seccomp

GTX 1070

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASUS PRIME Z390-A (0802 BIOS), Chipset: Intel Cannon Lake PCH Shared SRAM, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB + 2000GB SABRENT, Graphics: NVIDIA GeForce GTX 1070 8GB (1506/4006MHz), Audio: Realtek ALC1220, Monitor: Acer B286HK, Network: Intel I219-V

OS: Ubuntu 18.10, Kernel: 5.0.0-999-generic (x86_64) 20190221, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, Display Driver: NVIDIA 418.43, OpenGL: 4.6.0, Vulkan: 1.1.95, Compiler: GCC 8.2.0, 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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate performance
OpenCL Notes: GPU Compute Cores: 1920
Security Notes: __user pointer sanitization + Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + SSB disabled via prctl and seccomp

GTX 970

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASUS PRIME Z390-A (0802 BIOS), Chipset: Intel Cannon Lake PCH Shared SRAM, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB + 2000GB SABRENT, Graphics: eVGA NVIDIA GeForce GTX 970 4GB (1163/3505MHz), Audio: Realtek ALC1220, Monitor: Acer B286HK, Network: Intel I219-V

OS: Ubuntu 18.10, Kernel: 5.0.0-999-generic (x86_64) 20190221, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, Display Driver: NVIDIA 418.43, OpenGL: 4.6.0, Vulkan: 1.1.95, Compiler: GCC 8.2.0, 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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate performance
OpenCL Notes: GPU Compute Cores: 1664
Security Notes: __user pointer sanitization + Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + SSB disabled via prctl and seccomp

RX 590

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASUS PRIME Z390-A (0802 BIOS), Chipset: Intel Cannon Lake PCH Shared SRAM, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB + 2000GB SABRENT, Graphics: Sapphire AMD Radeon RX 470/480/570/570X/580/580X 8GB (1560/2100MHz), Audio: Realtek ALC1220, Monitor: Acer B286HK, Network: Intel I219-V

OS: Ubuntu 18.10, Kernel: 5.0.0-999-generic (x86_64) 20190221, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, OpenGL: 4.5 Mesa 19.1.0-devel padoka PPA (LLVM 9.0.0), OpenCL: OpenCL 2.1 AMD-APP (2814.0) + OpenCL 1.1 Mesa 19.1.0-devel (git-7ed5ffa158), Vulkan: 1.1.90, Compiler: GCC 8.2.0, 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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate performance
Security Notes: __user pointer sanitization + Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + SSB disabled via prctl and seccomp

RX Vega 64

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASUS PRIME Z390-A (0802 BIOS), Chipset: Intel Cannon Lake PCH Shared SRAM, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB + 2000GB SABRENT, Graphics: AMD Radeon RX 64 8GB (1630/945MHz), Audio: Realtek ALC1220, Monitor: Acer B286HK, Network: Intel I219-V

OS: Ubuntu 18.10, Kernel: 5.0.0-999-generic (x86_64) 20190221, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, OpenGL: 4.5 Mesa 19.1.0-devel padoka PPA (LLVM 9.0.0), OpenCL: OpenCL 2.1 AMD-APP (2814.0) + OpenCL 1.1 Mesa 19.1.0-devel (git-7ed5ffa158), Vulkan: 1.1.90, Compiler: GCC 8.2.0, 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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate performance
Security Notes: __user pointer sanitization + Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + SSB disabled via prctl and seccomp

RX Vega 56

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASUS PRIME Z390-A (0802 BIOS), Chipset: Intel Cannon Lake PCH Shared SRAM, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB + 2000GB SABRENT, Graphics: AMD Radeon RX 64 8GB (1590/800MHz), Audio: Realtek ALC1220, Monitor: Acer B286HK, Network: Intel I219-V

OS: Ubuntu 18.10, Kernel: 5.0.0-999-generic (x86_64) 20190221, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, OpenGL: 4.5 Mesa 19.1.0-devel padoka PPA (LLVM 9.0.0), OpenCL: OpenCL 2.1 AMD-APP (2814.0) + OpenCL 1.1 Mesa 19.1.0-devel (git-7ed5ffa158), Vulkan: 1.1.90, Compiler: GCC 8.2.0, 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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate performance
Security Notes: __user pointer sanitization + Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + SSB disabled via prctl and seccomp

R9 Fury

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASUS PRIME Z390-A (0802 BIOS), Chipset: Intel Cannon Lake PCH Shared SRAM, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB + 2000GB SABRENT, Graphics: Sapphire AMD Radeon R9 FURY / NANO 4GB (1000/500MHz), Audio: Realtek ALC1220, Monitor: Acer B286HK, Network: Intel I219-V

OS: Ubuntu 18.10, Kernel: 5.0.0-999-generic (x86_64) 20190221, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, OpenGL: 4.5 Mesa 19.1.0-devel padoka PPA (LLVM 9.0.0), OpenCL: OpenCL 2.1 AMD-APP (2814.0) + OpenCL 1.1 Mesa 19.1.0-devel (git-7ed5ffa158), Vulkan: 1.1.90, Compiler: GCC 8.2.0, 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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate performance
Security Notes: __user pointer sanitization + Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + SSB disabled via prctl and seccomp

RX 560

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASUS PRIME Z390-A (0802 BIOS), Chipset: Intel Cannon Lake PCH Shared SRAM, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB + 2000GB SABRENT, Graphics: Sapphire AMD Radeon RX 550 640SP / 560/560X 4GB (1300/1750MHz), Audio: Realtek ALC1220, Monitor: Acer B286HK, Network: Intel I219-V

OS: Ubuntu 18.10, Kernel: 5.0.0-999-generic (x86_64) 20190221, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, OpenGL: 4.5 Mesa 19.1.0-devel padoka PPA (LLVM 9.0.0), OpenCL: OpenCL 2.1 AMD-APP (2814.0) + OpenCL 1.1 Mesa 19.1.0-devel (git-7ed5ffa158), Vulkan: 1.1.90, Compiler: GCC 8.2.0, 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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate performance
Security Notes: __user pointer sanitization + Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + SSB disabled via prctl and seccomp

	RTX 2060	GTX 1660 Ti	GTX 1070 Ti	GTX 1060	RTX 2070	GTX 1080	GTX 980 Ti	GTX 1070	GTX 970	RX 590	RX Vega 64	RX Vega 56	R9 Fury	RX 560

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Chaos Group V-RAY - CUDA GPU (sec)	91.54	112.46	89.57	**128.84**	**61.83**	99.45	84.14	90.69	120.06					
Normalized	67.54%	54.98%	69.03%	47.99%	100%	62.17%	73.48%	68.18%	51.5%					
Standard	5.8%	0.1%	5.9%	0.1%	0.1%	0.1%	6.3%	0.2%	0.1%					
cl-mem - Read (GB/s)	295	250	205	153	392	228	265	205	144	184	**398**	345	113	**93.60**
Normalized	74.12%	62.81%	51.51%	38.44%	98.49%	57.29%	66.58%	51.51%	36.18%	46.23%	100%	86.68%	28.39%	23.52%
Standard	0.1%	0.1%	0%	0%	0.5%	0.2%	0%	0%	0.1%	1%	0%	0%	0.7%	0%
cl-mem - Read (GB/s/Watt)	2.36	2.23	1.88	1.40	**2.54**	1.46	1.52	1.67	1.12	1.25	1.64	**2.54**	**0.68**	1.12
Normalized	92.91%	87.8%	74.02%	55.12%	100%	57.48%	59.84%	65.75%	44.09%	49.21%	64.57%	100%	26.77%	44.09%
cl-mem - Write (GB/s)	246	210	195	140	314	215	242	191	129	185	**365**	303		**80.40**
Normalized	67.4%	57.53%	53.42%	38.36%	86.03%	58.9%	66.3%	52.33%	35.34%	50.68%	100%	83.01%		22.03%
Standard	0.4%	0.1%	0.1%	0%	0.5%	0.2%	0.1%	0.1%	0%	0%	5.1%	0.4%		0.1%
cl-mem - Write (GB/s/Watt)	1.71	1.85	1.79	1.28	**2.11**	1.55	1.21	1.55	1.07	1.22	1.81	1.96		**0.96**
Normalized	81.04%	87.68%	84.83%	60.66%	100%	73.46%	57.35%	73.46%	50.71%	57.82%	85.78%	92.89%		45.5%
cl-mem - Copy (GB/s)	245	213	188	139	**326**	209	218	187	125	193	222	202	205	**78.83**
Normalized	75.15%	65.34%	57.67%	42.64%	100%	64.11%	66.87%	57.36%	38.34%	59.2%	68.1%	61.96%	62.88%	24.18%
Standard	0.4%	0.2%	0.1%	0%	0.5%	0.3%	0%	0.1%	0%	0%	0.1%	0.2%	0.4%	0.1%
cl-mem - Copy (GB/s/Watt)	1.66	2.00	1.53	1.27	**3.53**	1.63	1.13	1.48	0.95	1.11	1.29	1.14	1.21	**0.93**
Normalized	47.03%	56.66%	43.34%	35.98%	100%	46.18%	32.01%	41.93%	26.91%	31.44%	36.54%	32.29%	34.28%	26.35%
clpeak - G.M.B (GBPS)	275	234	197	147	**364**	222	263	196	144	215	362	316		**87.24**
Normalized	75.55%	64.29%	54.12%	40.38%	100%	60.99%	72.25%	53.85%	39.56%	59.07%	99.45%	86.81%		23.97%
Standard	0.3%	0.3%	0%	0.1%	1.5%	0%	0.3%	0%	0%	0.9%	0%	0.1%		0%
clpeak - S.P.F (GFLOPS)	6717	5559	6771	3955	8061	7981	5588	6374	3936	7083	**12530**	10313	7090	**2601**
Normalized	53.61%	44.37%	54.04%	31.56%	64.33%	63.7%	44.6%	50.87%	31.41%	56.53%	100%	82.31%	56.58%	20.76%
Standard	19.3%	10%	0.6%	11.8%	11.8%	8.6%	0.4%	0.1%	0%	0.1%	0.4%	0.2%	0%	0%
clpeak - D.P.D (GFLOPS)	233	185	243	151	268	297	197	225	**138**	448	**836**	665	447	165
Normalized	27.87%	22.13%	29.07%	18.06%	32.06%	35.53%	23.56%	26.91%	16.51%	53.59%	100%	79.55%	53.47%	19.74%
Standard	0.4%	0.4%	0%	0%	0.8%	0.4%	0.2%	0%	0%	0%	0.3%	0.3%	0%	0%
clpeak - I.C.I (GIOPS)	6729	5586	2078	1248	**7874**	2404	1620	1684	1160	1428	2497	1945	1430	**526**
Normalized	85.46%	70.94%	26.39%	15.85%	100%	30.53%	20.57%	21.39%	14.73%	18.14%	31.71%	24.7%	18.16%	6.68%
Standard	11.1%	8.5%	0%	6.7%	9.4%	2.2%	1.2%	2.9%	0.7%	0.1%	0%	0%	0%	0%
clpeak - Kernel	3.68	**3.43**	3.61	3.56	3.60	3.74	4.33	3.58	4.08	4.68	6.95	**7.03**	5.66	5.22
Normalized	93.21%	100%	95.01%	96.35%	95.28%	91.71%	79.21%	95.81%	84.07%	73.29%	49.35%	48.79%	60.6%	65.71%
Standard	3.6%	2.8%	1.7%	0.9%	3.8%	3.9%	3.9%	0.6%	0.8%	0.8%	0.8%	0.9%	0.3%	1%
Darktable - Boat - OpenCL (sec)	2.49	2.95	2.99	3.76	**2.10**	2.92	3.32	2.94	**4.55**					
Normalized	84.34%	71.19%	70.23%	55.85%	100%	71.92%	63.25%	71.43%	46.15%					
Standard Deviation	3.3%	0.2%	1.7%	0.3%	2.8%	1.5%	3.8%	0.1%	0.1%					

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Darktable - Masskrug - OpenCL (sec)	3.91	4.01	3.98	4.09	**3.77**	4.02	4.16	3.93	**5.77**
Normalized	96.42%	94.01%	94.72%	92.18%	100%	93.78%	90.63%	95.93%	65.34%
Standard Deviation	0.4%	0.2%	0.6%	0.3%	0.8%	0.7%	0.6%	0.3%	0.2%
Darktable - Server Room - OpenCL (sec)	0.85	1.14	1.18	1.32	**0.77**	1.11	1.39	1.10	**3.13**
Normalized	90.59%	67.54%	65.25%	58.33%	100%	69.37%	55.4%	70%	24.6%
Standard Deviation	0.7%	0.2%	0%	0%	0.5%	0.4%	0.3%	0.4%	0.7%
Darktable - Server Rack - OpenCL (sec)	0.12	**0.11**	0.13	0.13	**0.11**	0.13	**0.17**	0.12	**0.17**
Normalized	91.67%	100%	84.62%	84.62%	100%	84.62%	64.71%	91.67%	64.71%
Standard Deviation	0.9%	0.5%	0.5%	5.4%	4.4%	1.6%	1.5%	4.5%	3.3%
FAHBench (Ns/Day)	181	139	137	101	**203**	153	114	139	**90.39**
Normalized	89.16%	68.47%	67.49%	49.75%	100%	75.37%	56.16%	68.47%	44.53%
Standard Deviation	0.3%	0%	0%	0.1%	0.4%	0%	0%	0.4%	0%
FAHBench (Ns/Day/Watt)	1.17	1.13	1.09	0.84	**1.26**	1.02	0.63	0.97	**0.62**
Normalized	92.86%	89.68%	86.51%	66.67%	100%	80.95%	50%	76.98%	49.21%
NAMD CUDA - ATPase Simulation - 327,506 Atoms	0.20595	0.23183	0.22280	0.31742	**0.19747**	0.20871	0.29297	0.23906	**0.36135**
Normalized	95.88%	85.18%	88.63%	62.21%	100%	94.61%	67.4%	82.6%	54.65%
Standard Deviation	2.3%	2.3%	0.9%	0.8%	1.3%	0.4%	3.5%	0.7%	0.5%

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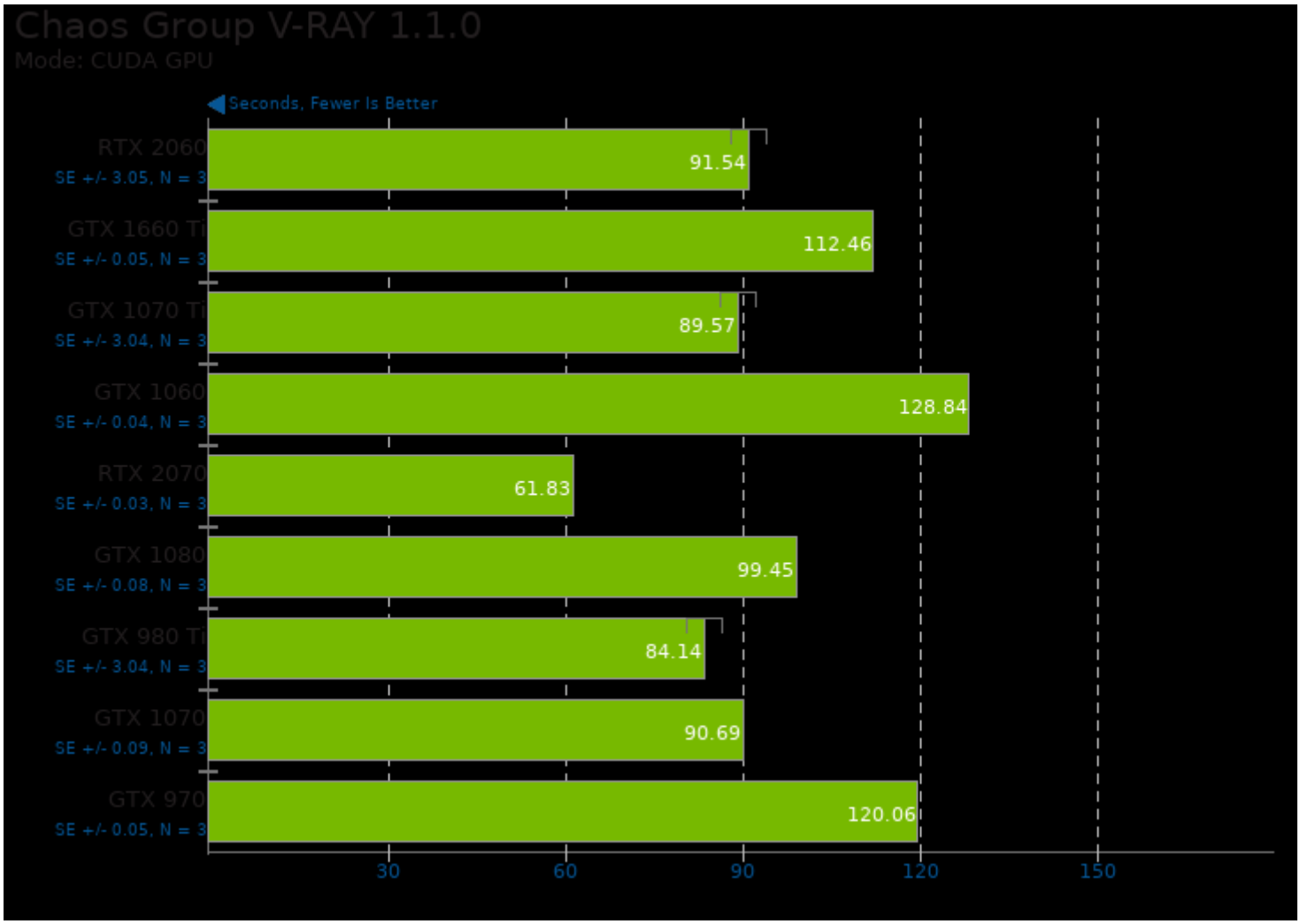

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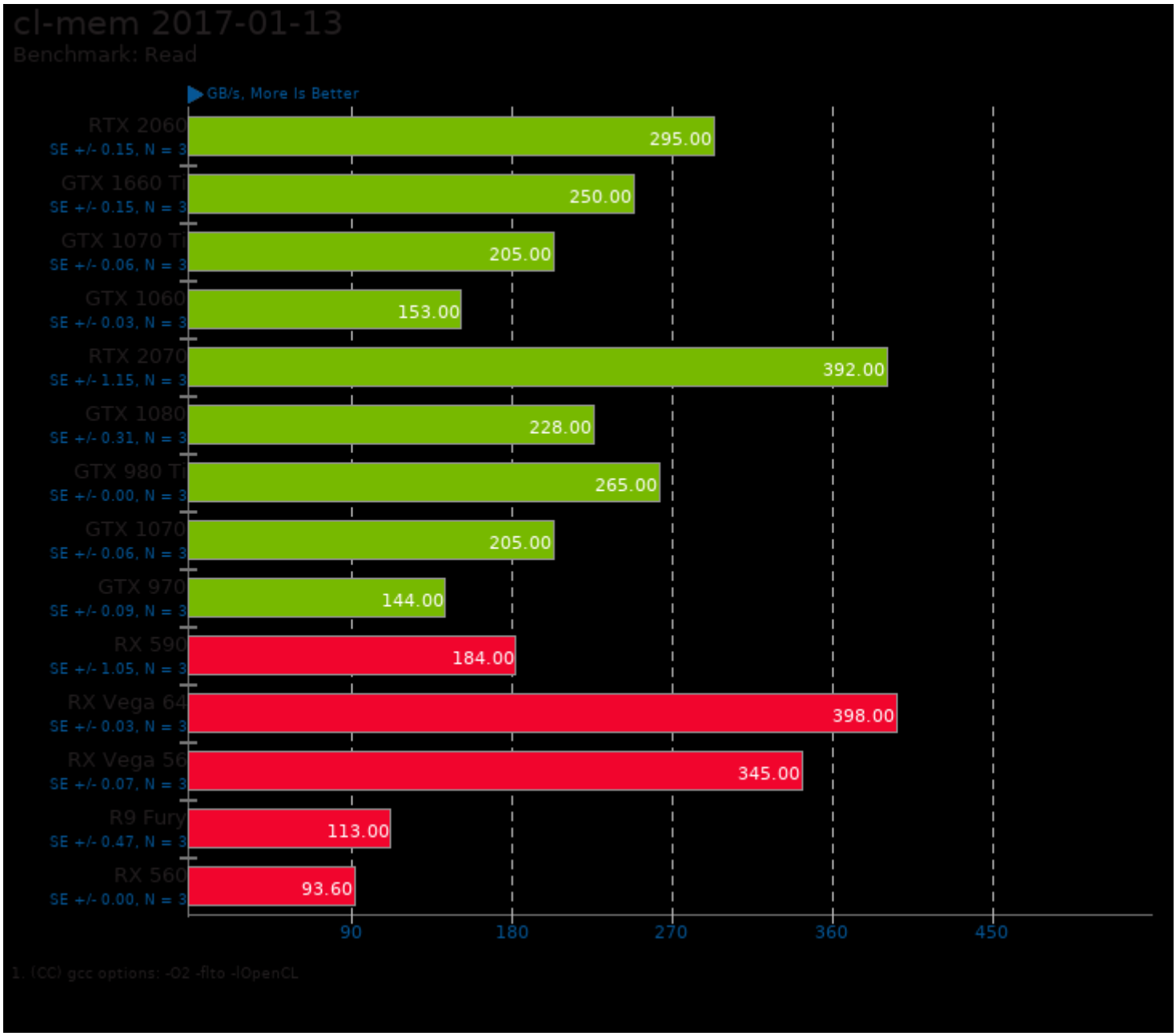

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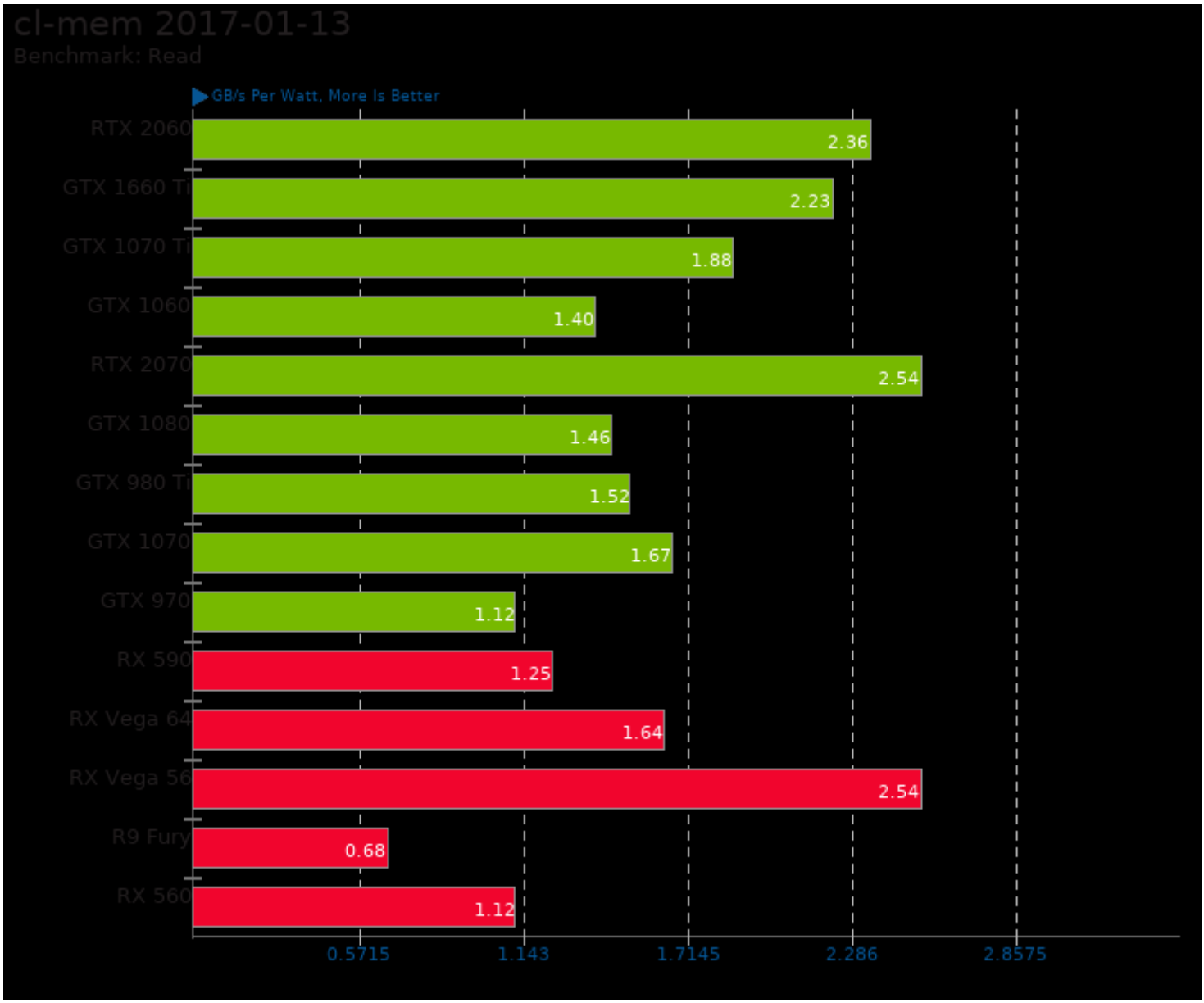

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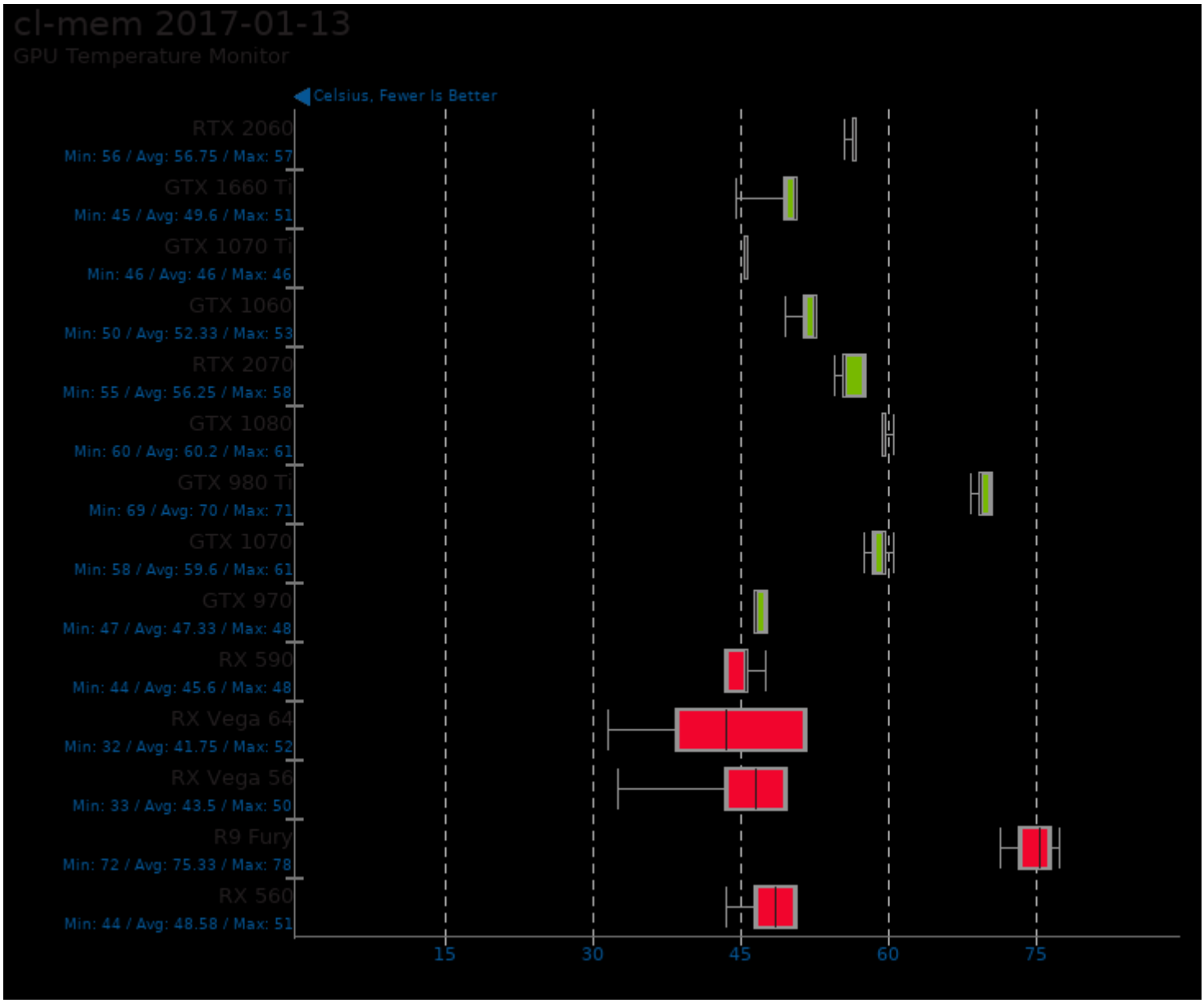

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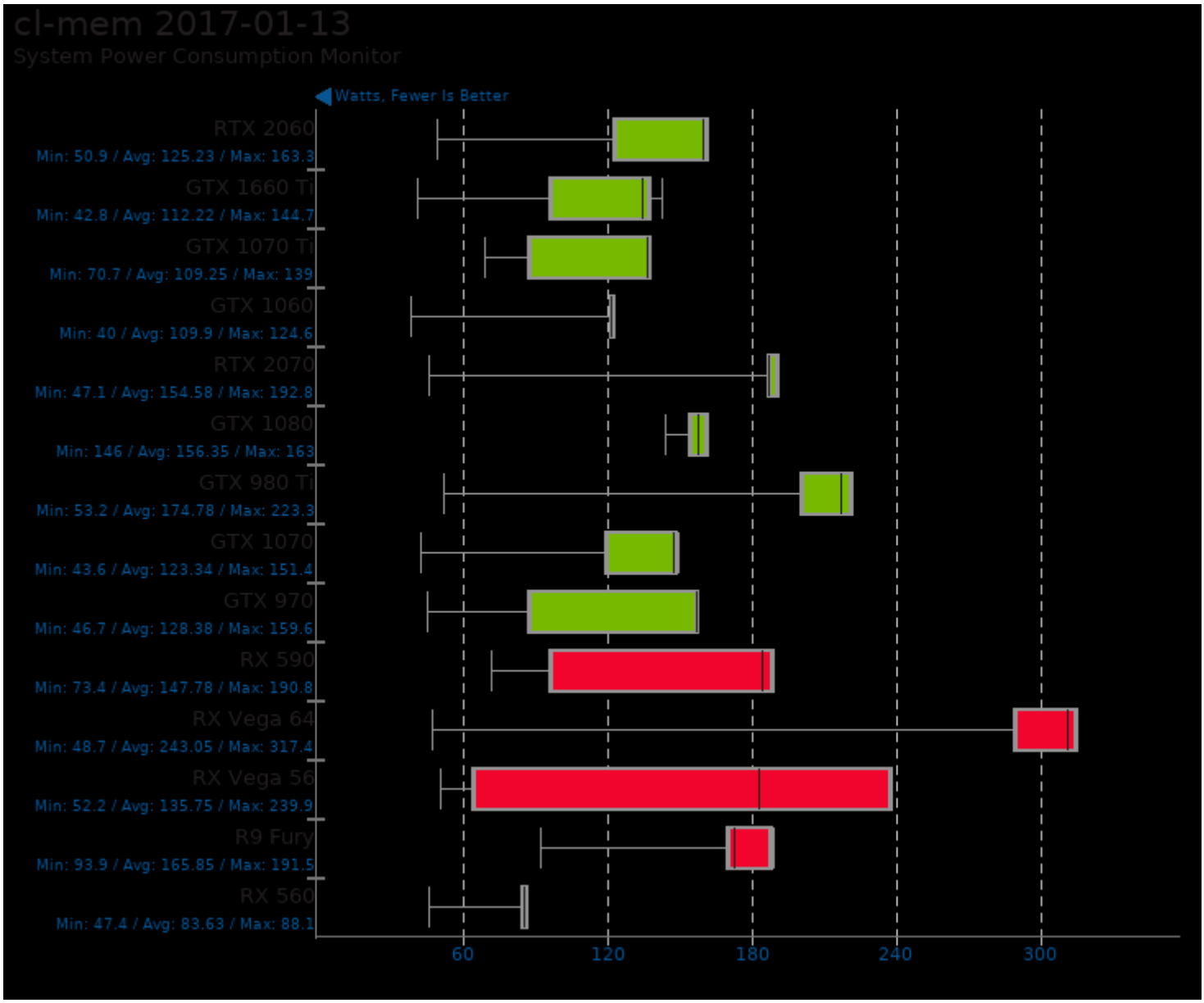

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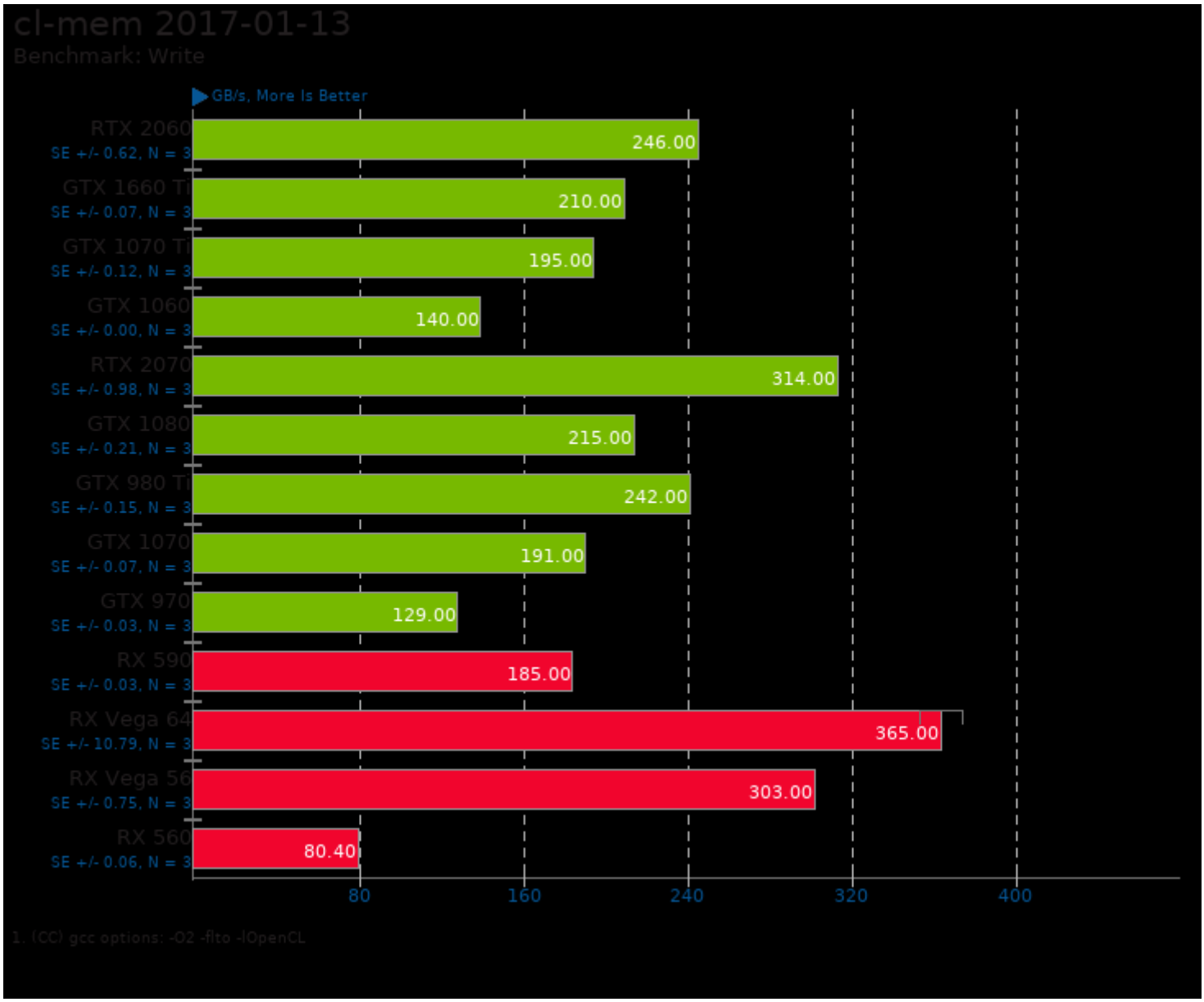

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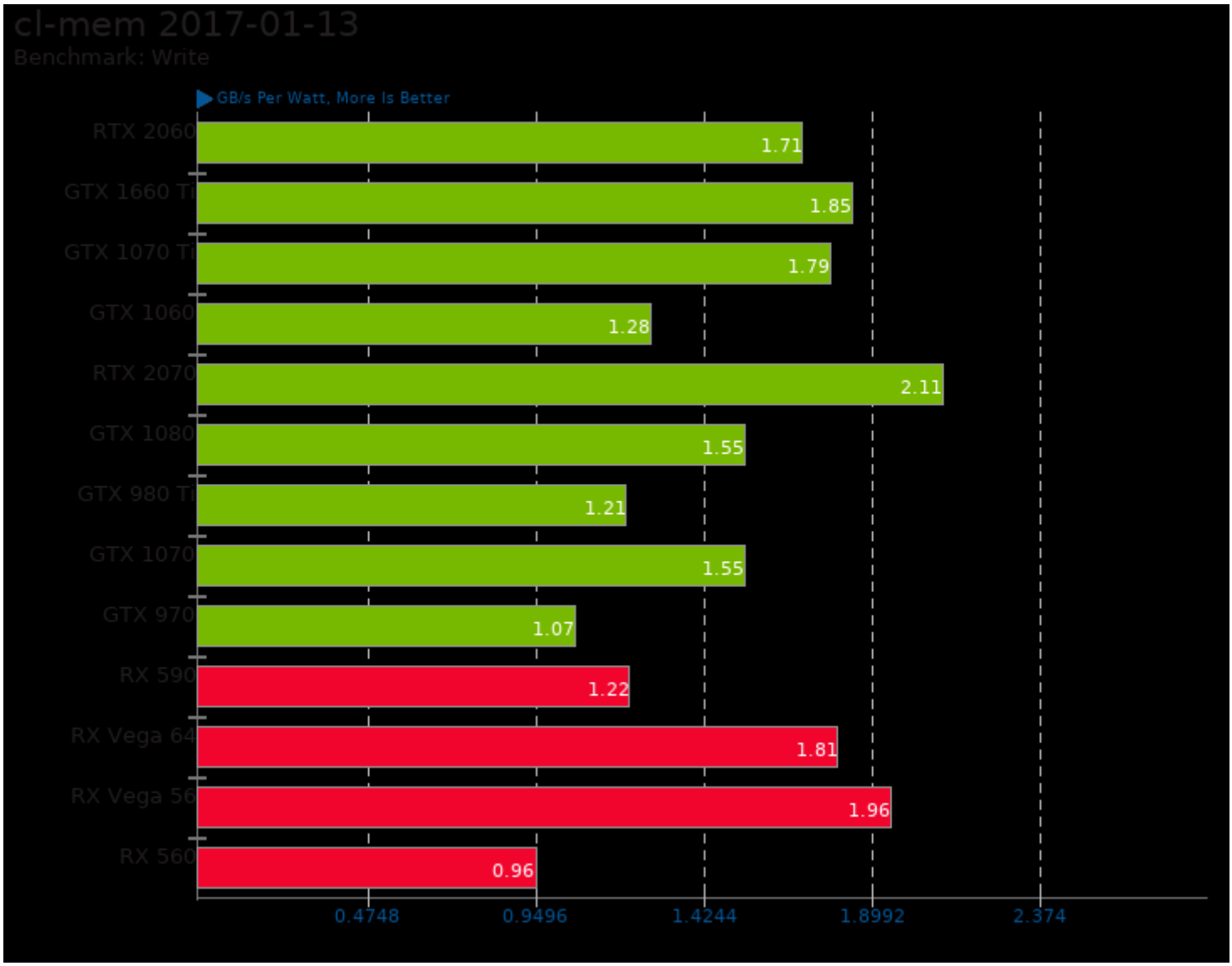

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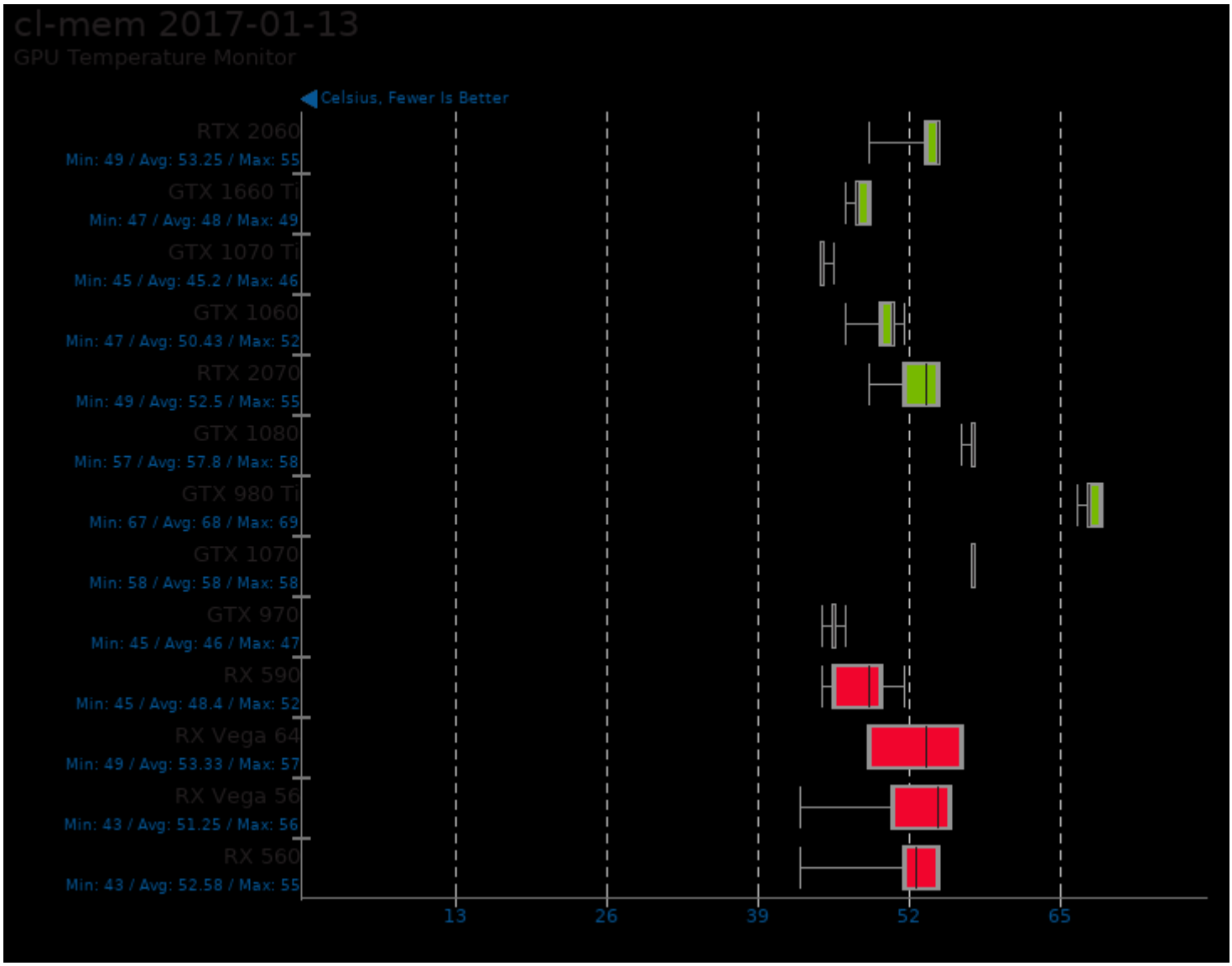

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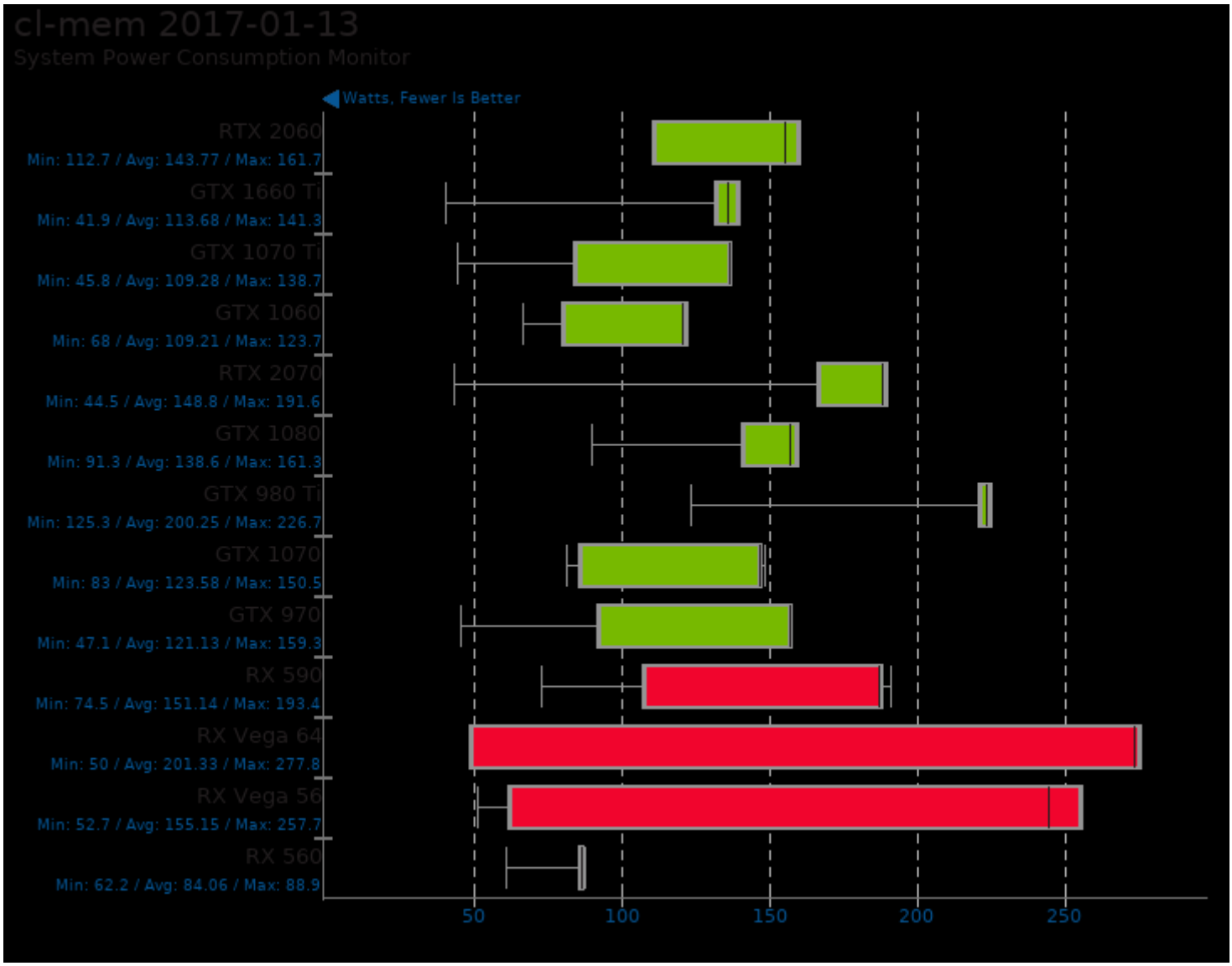

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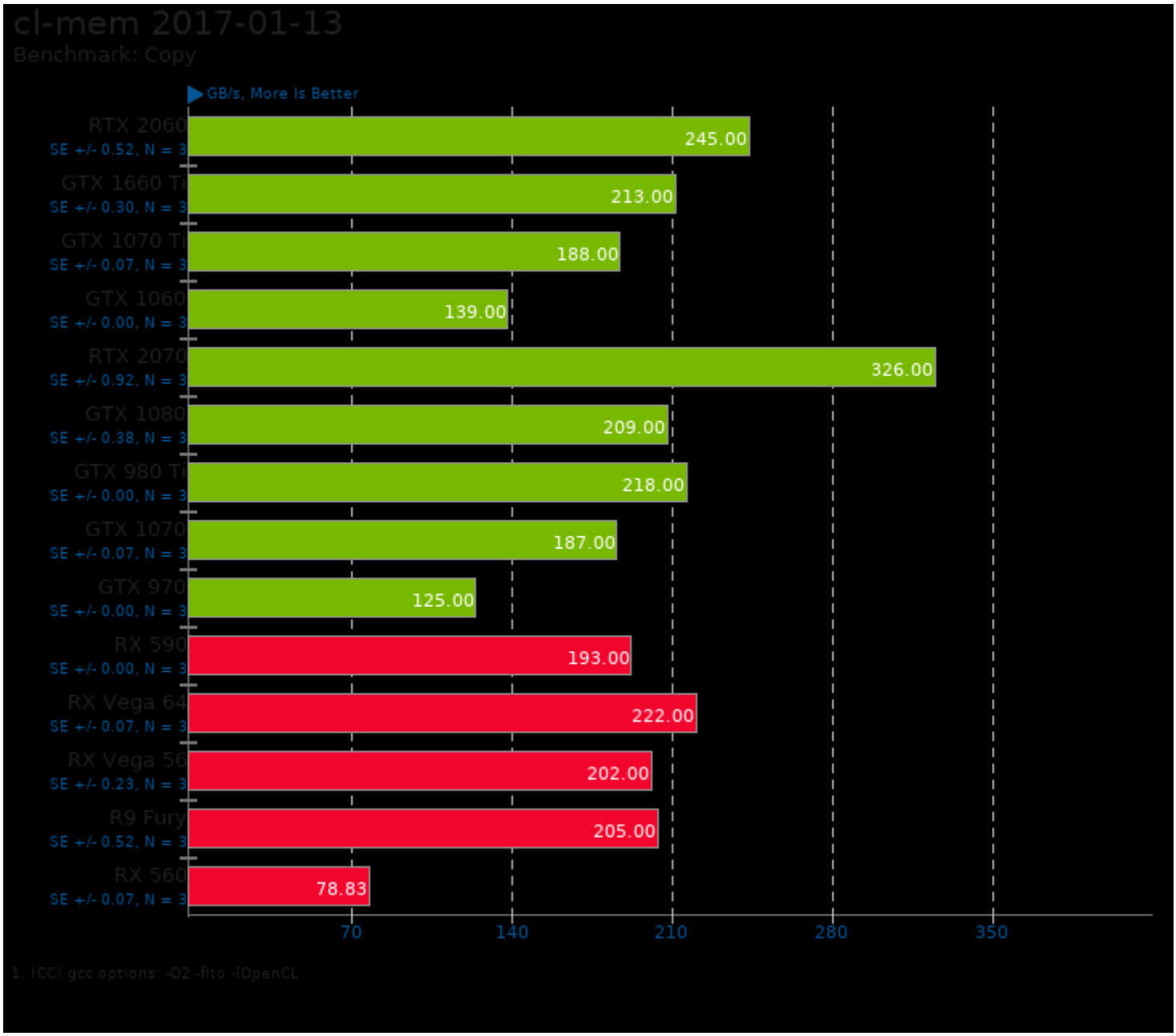

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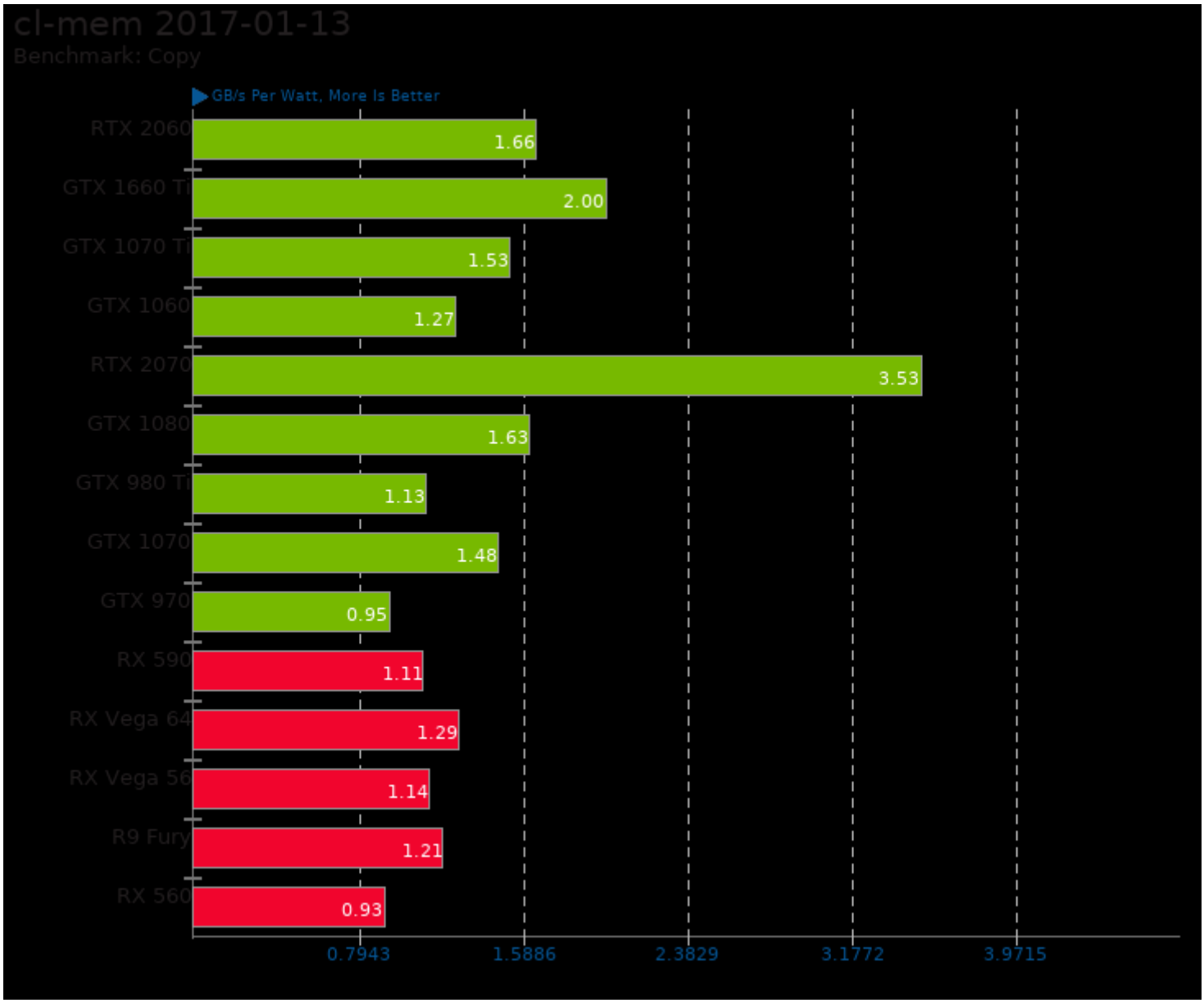

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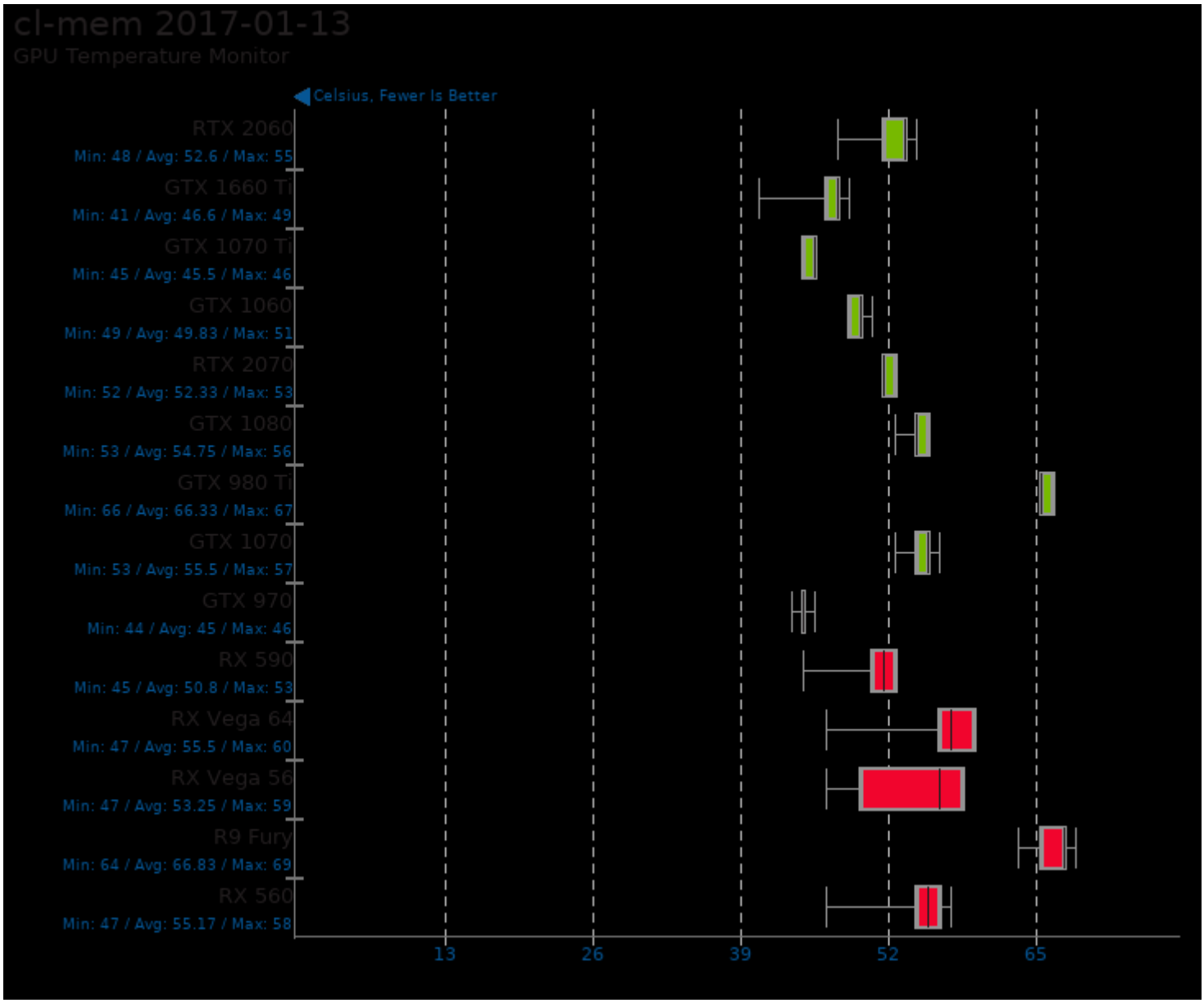

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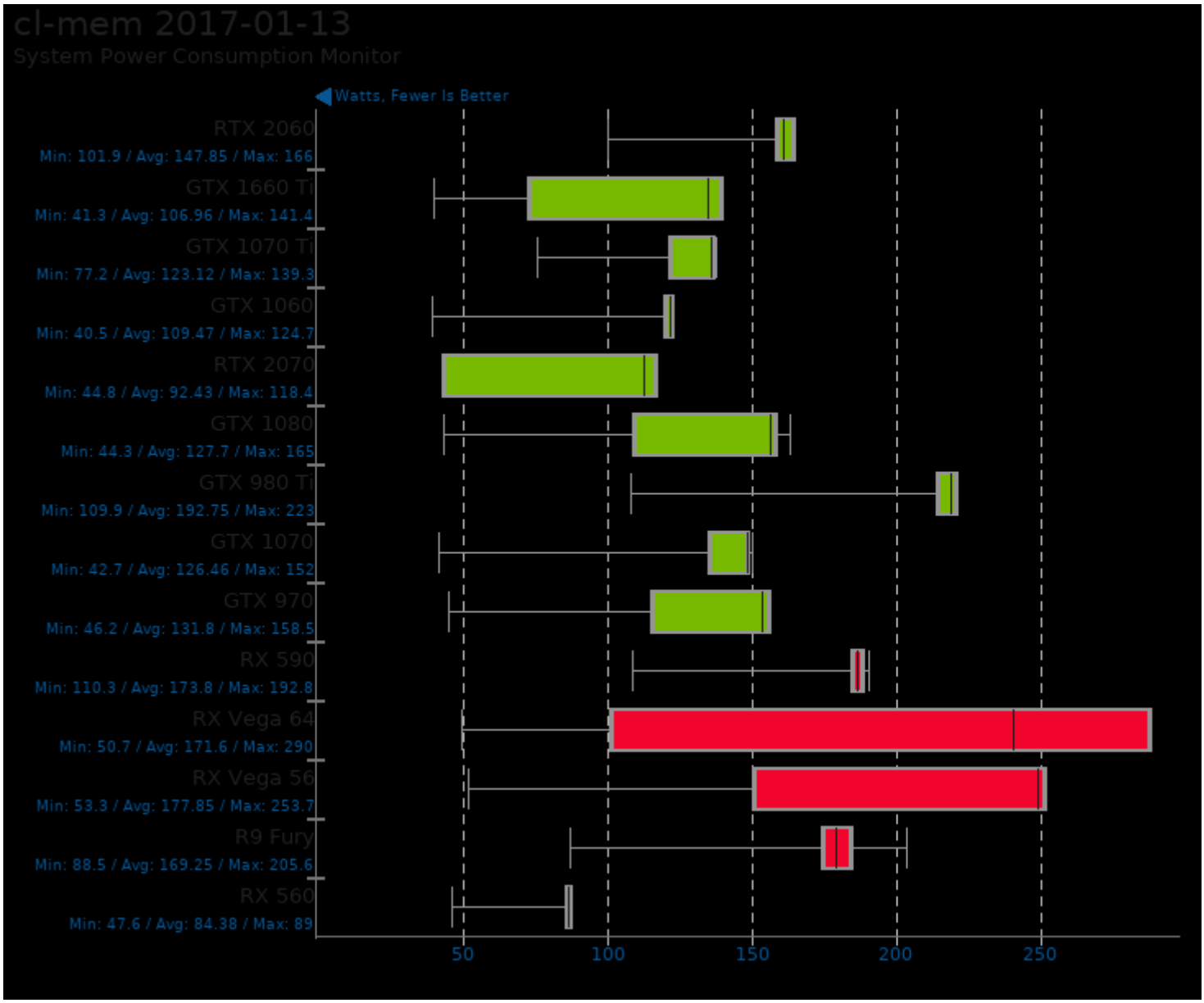

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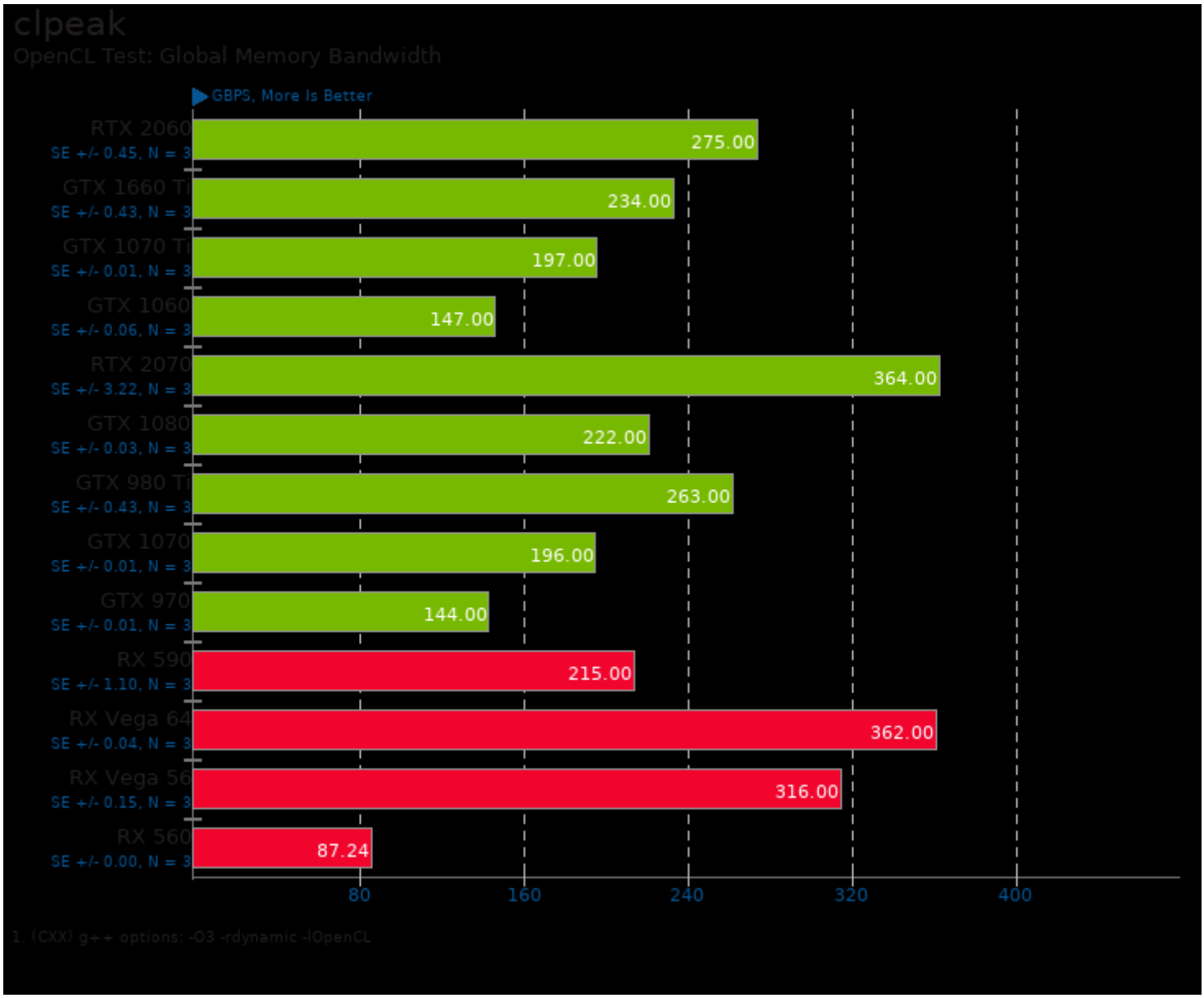

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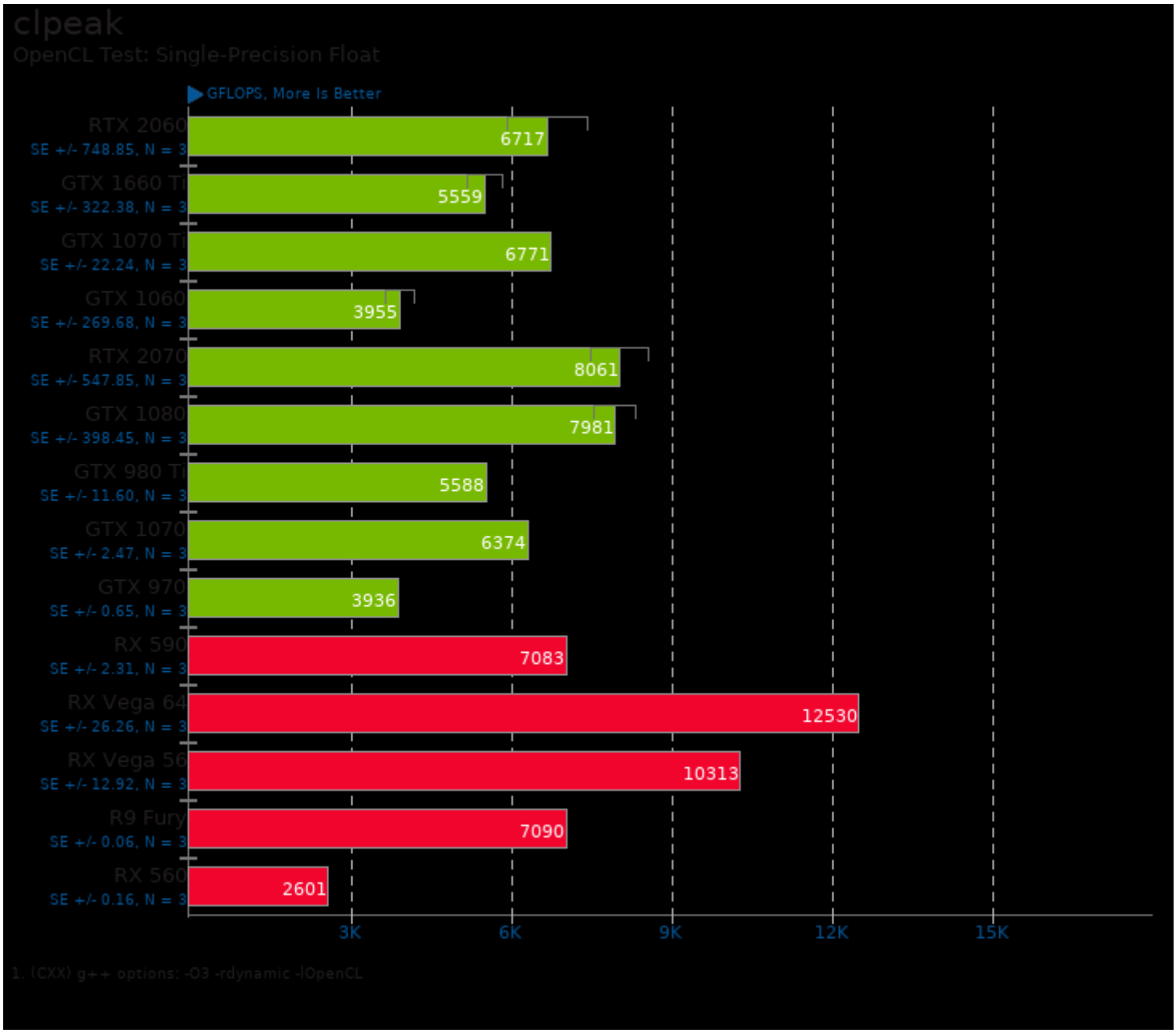

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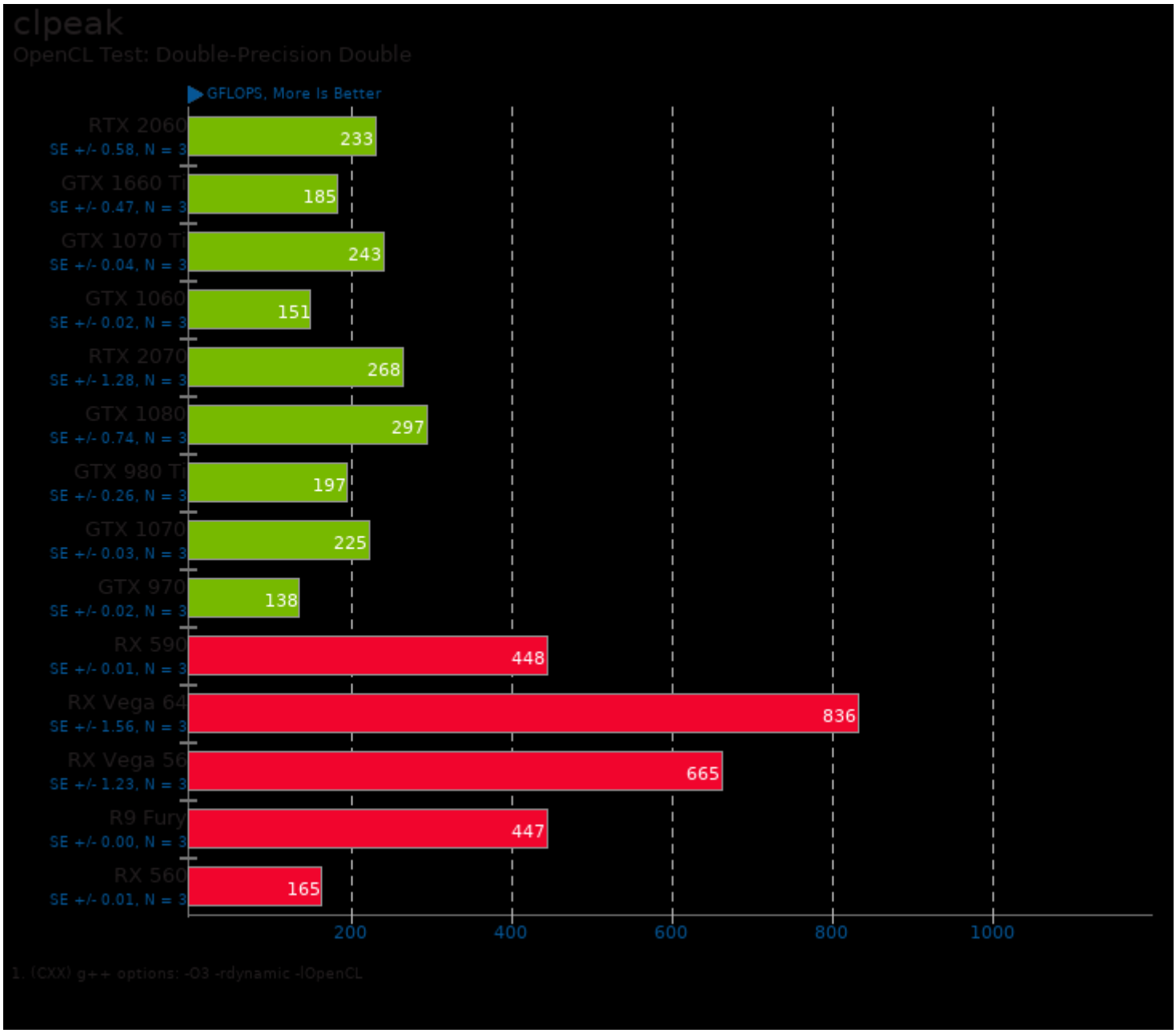

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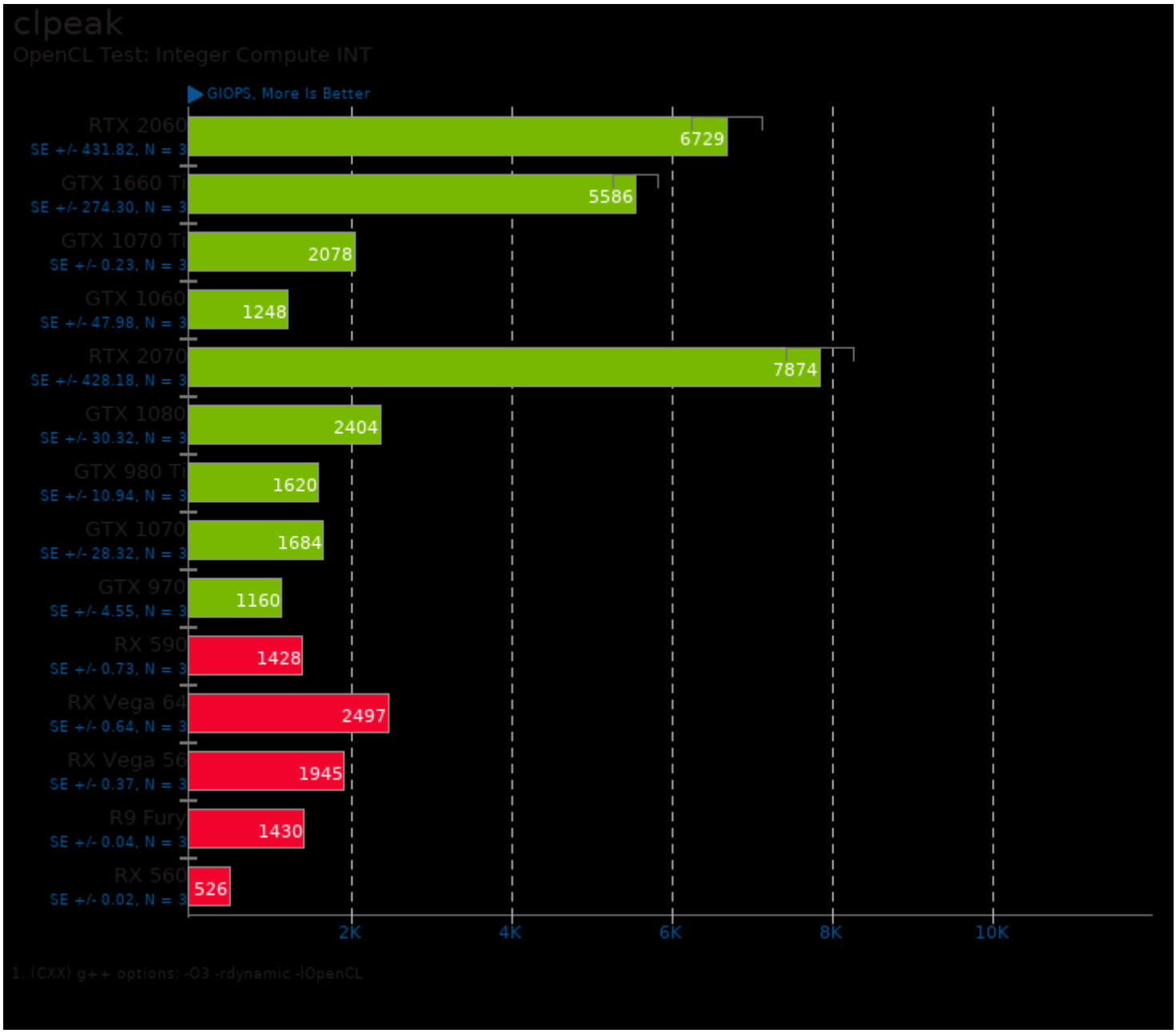

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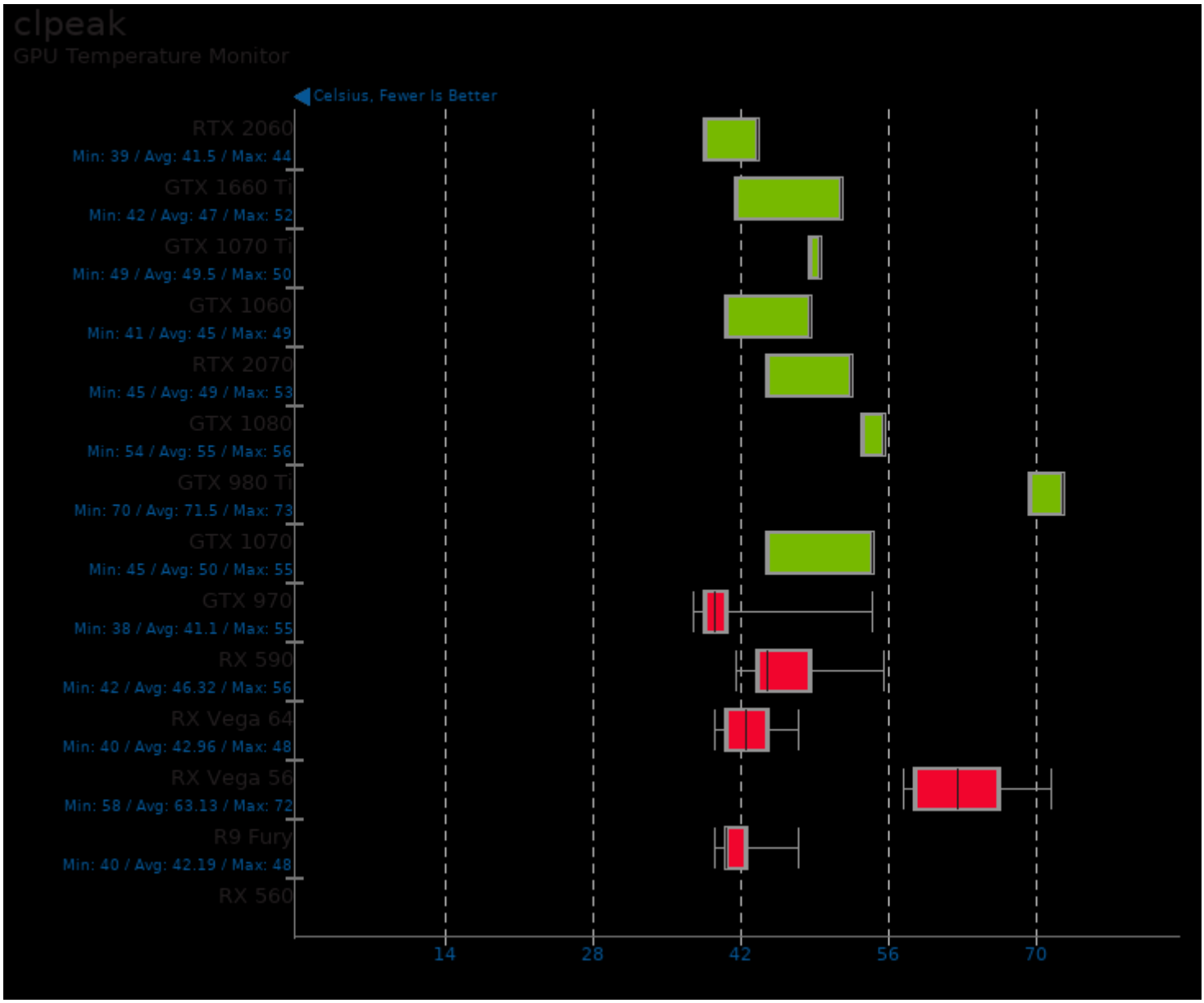

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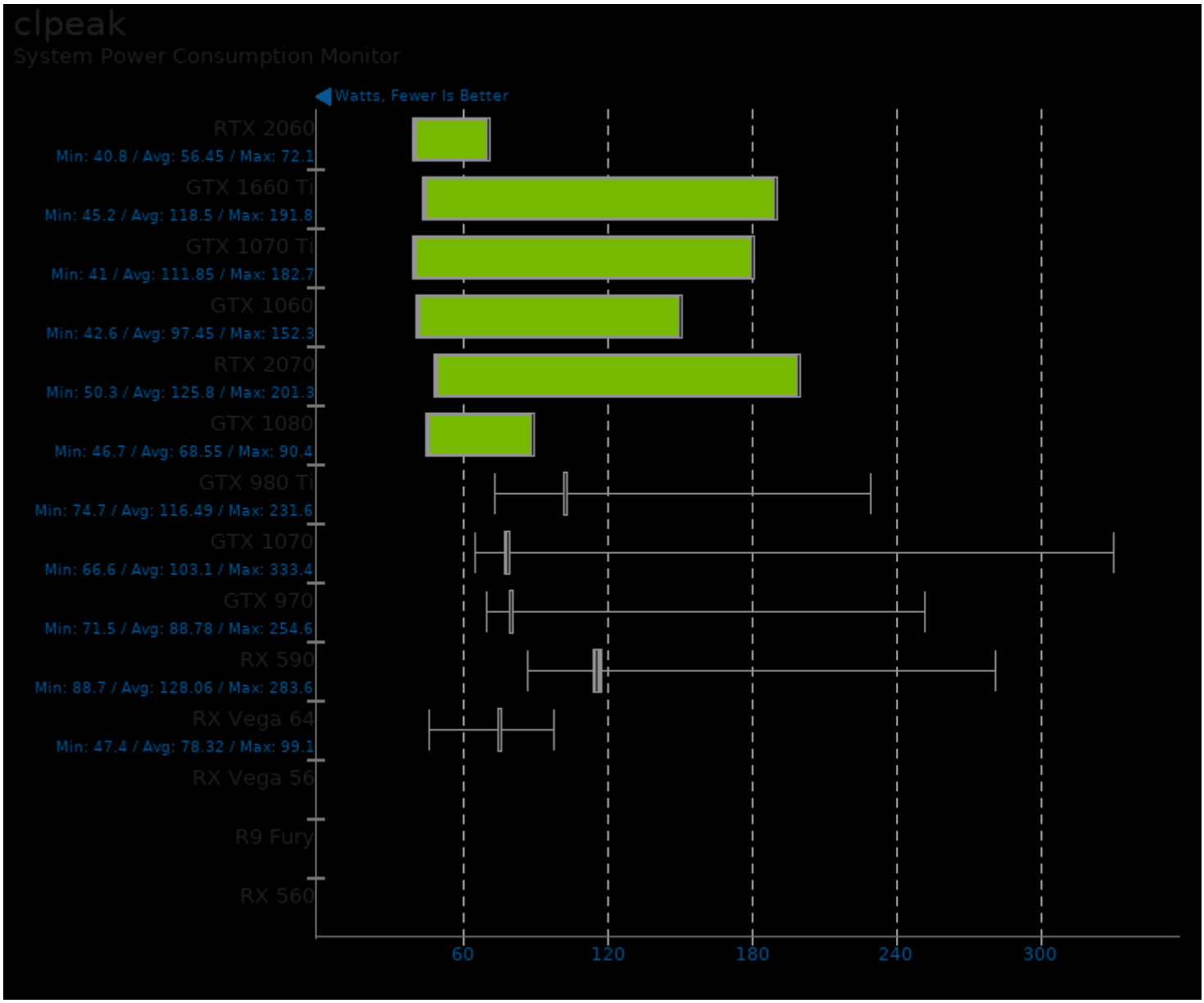

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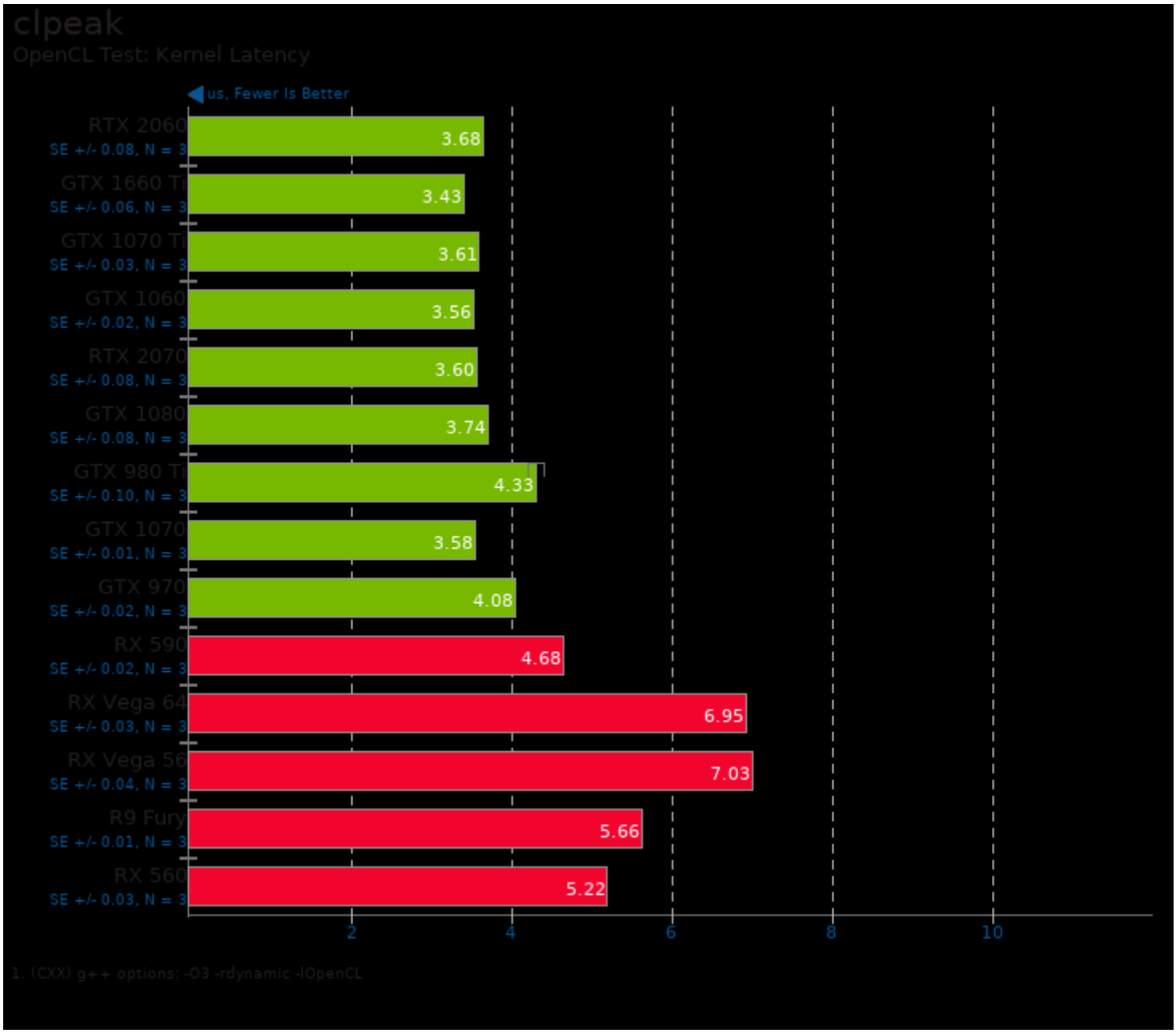

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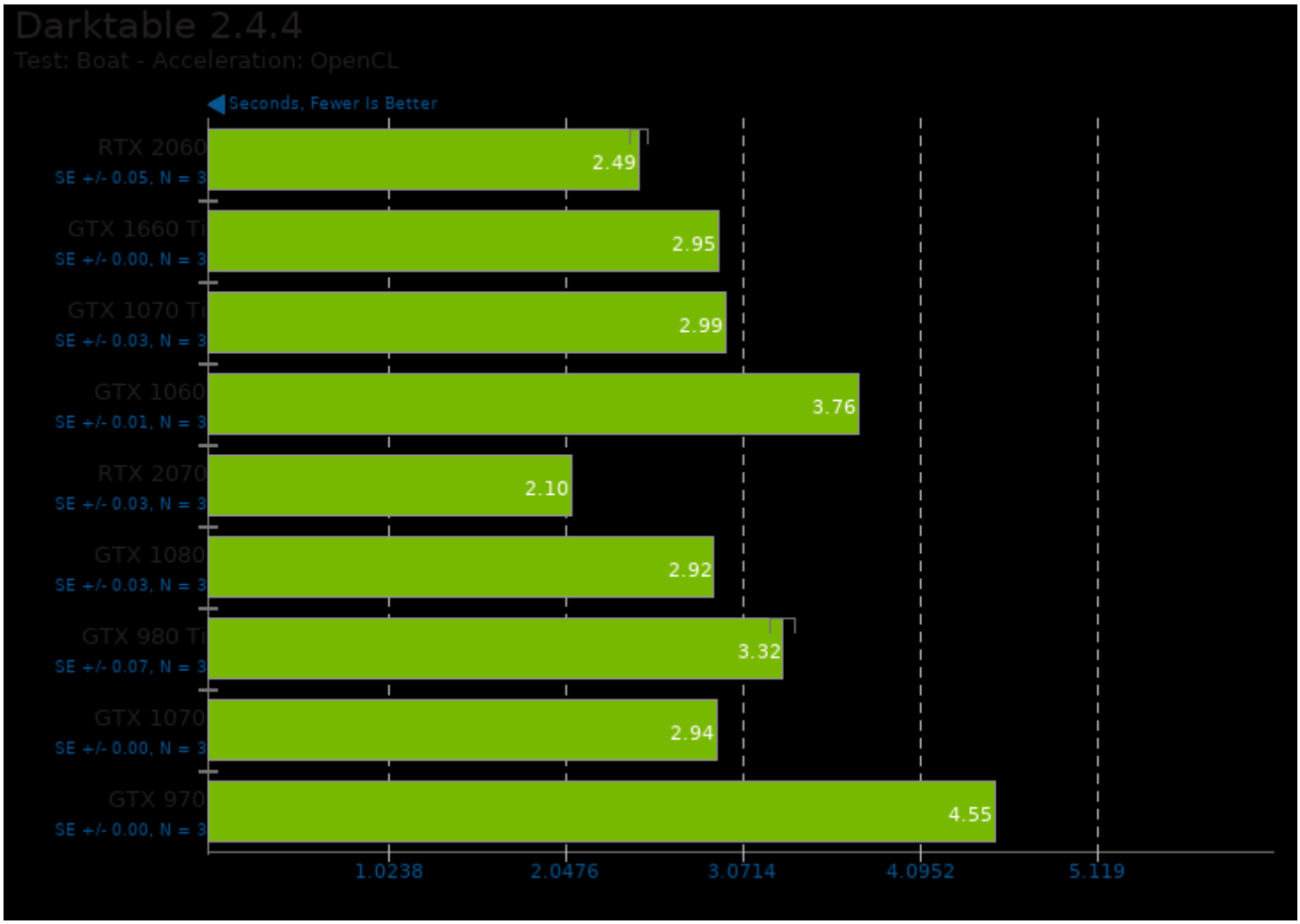

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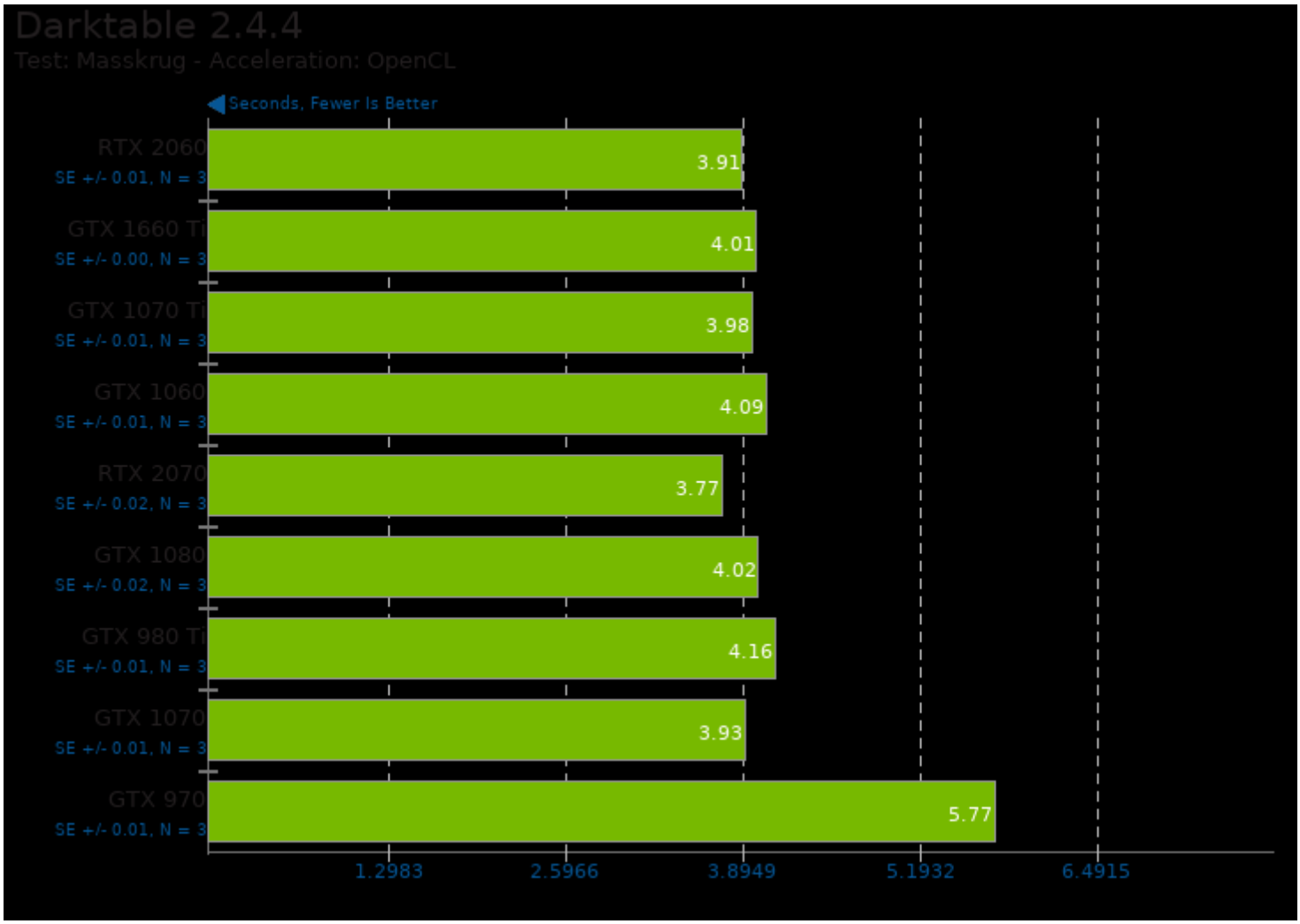

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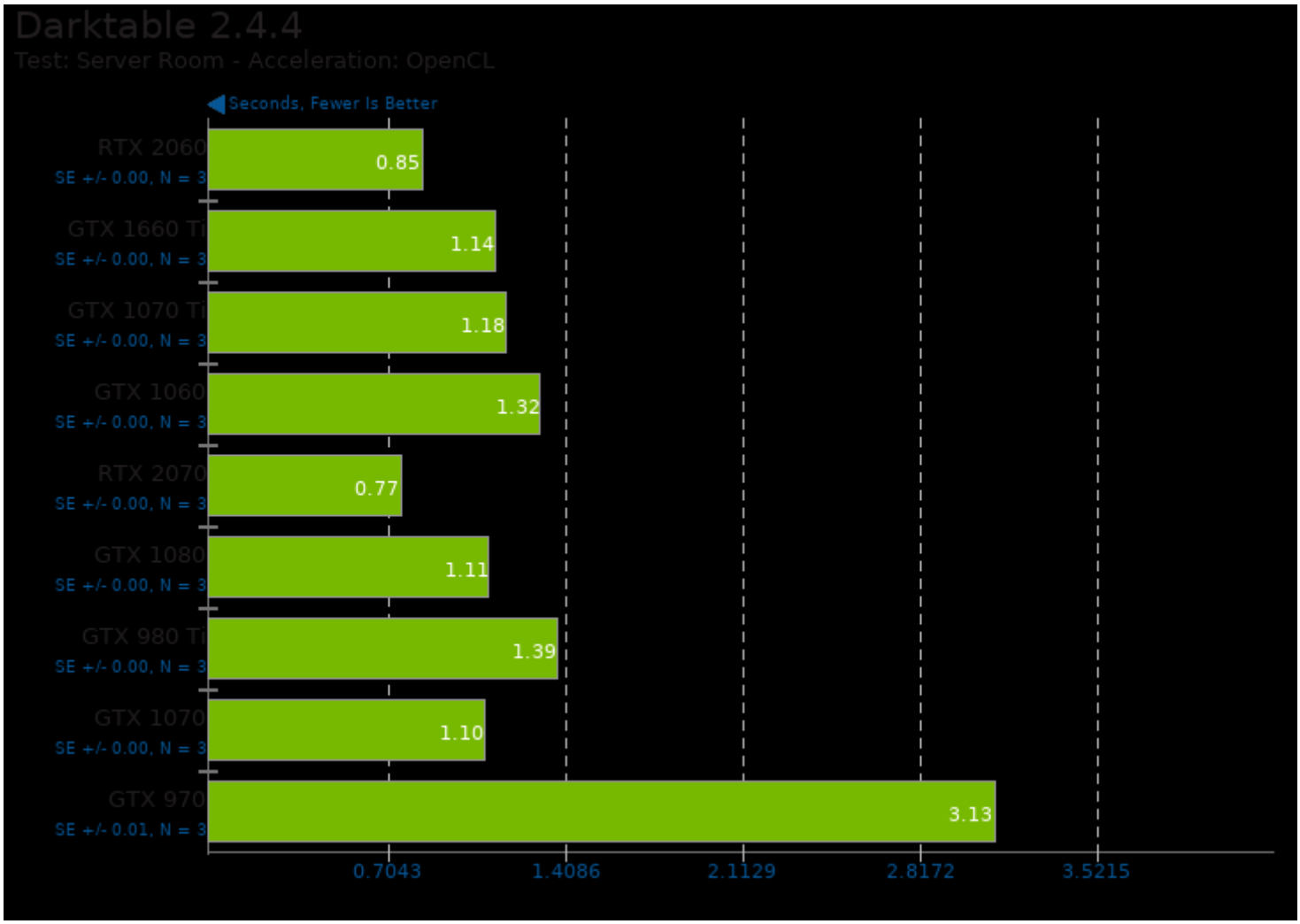

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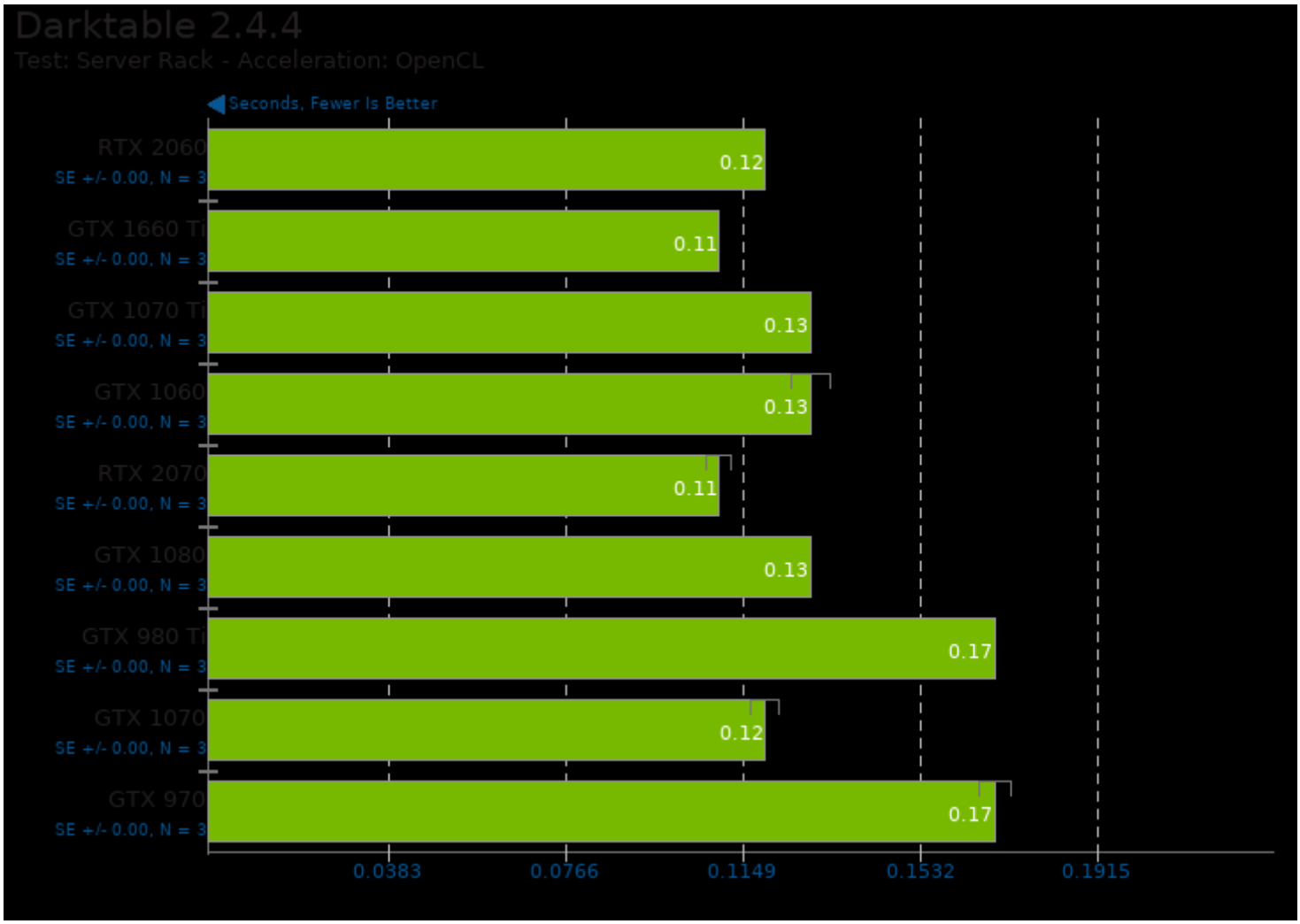

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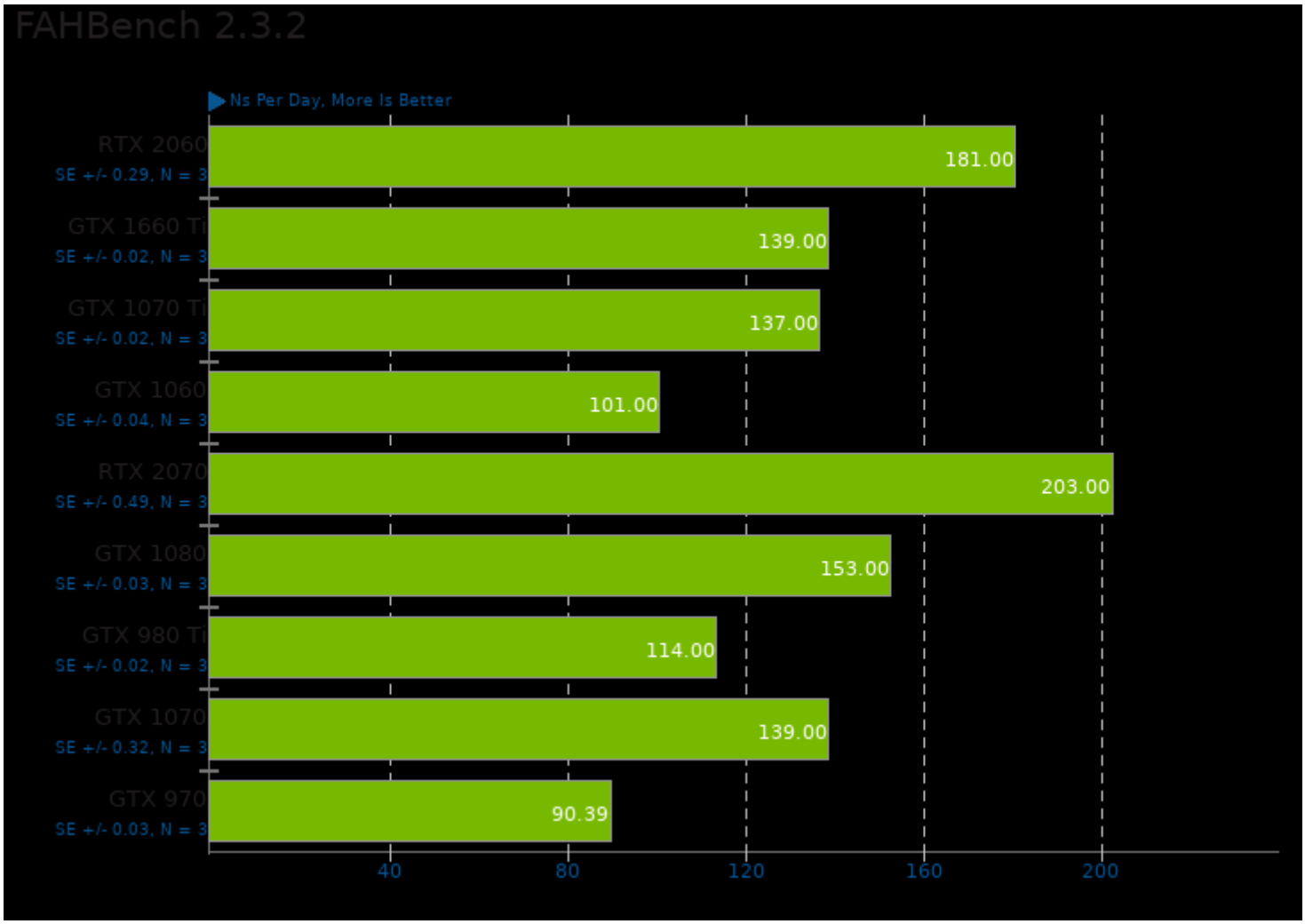

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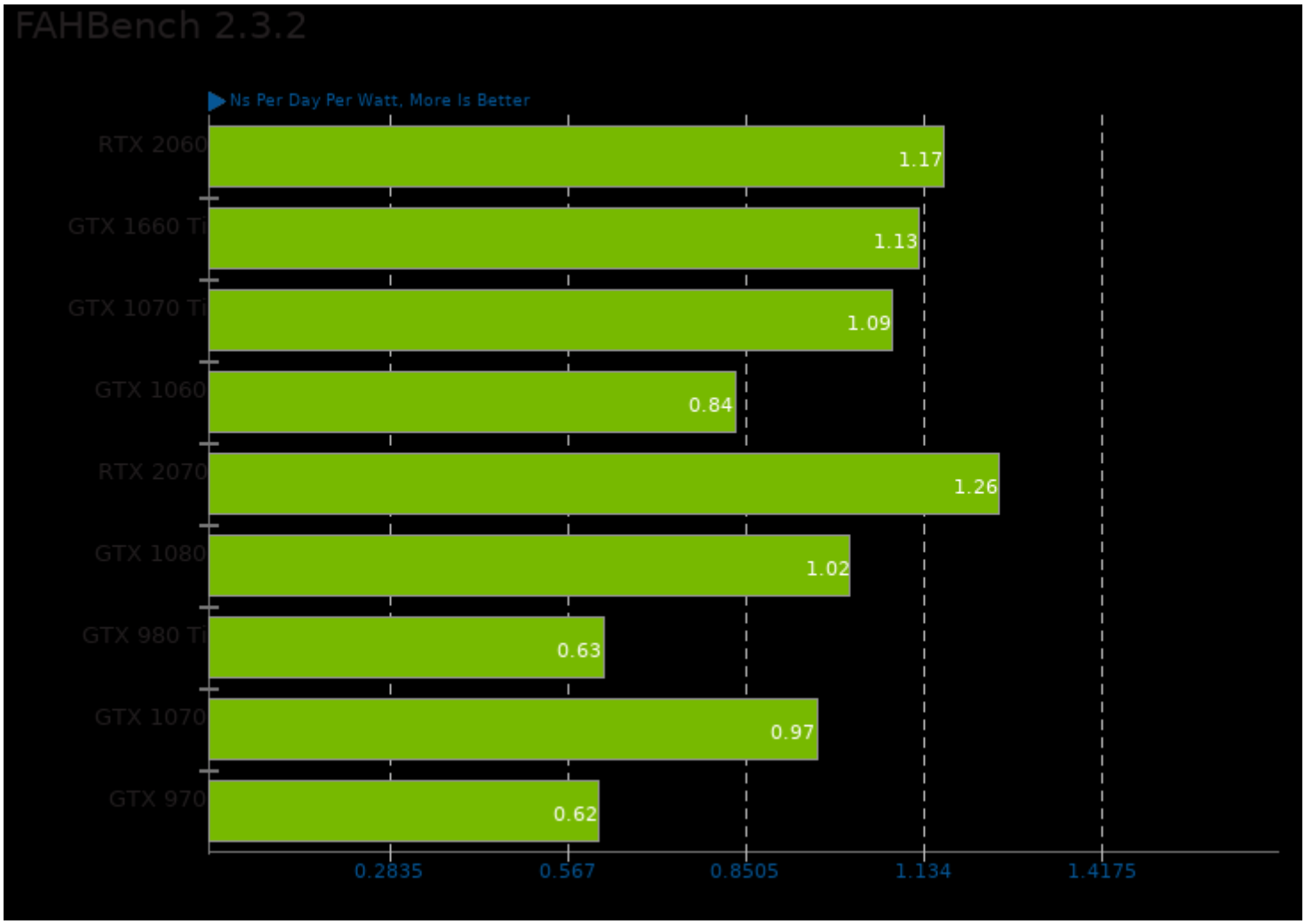

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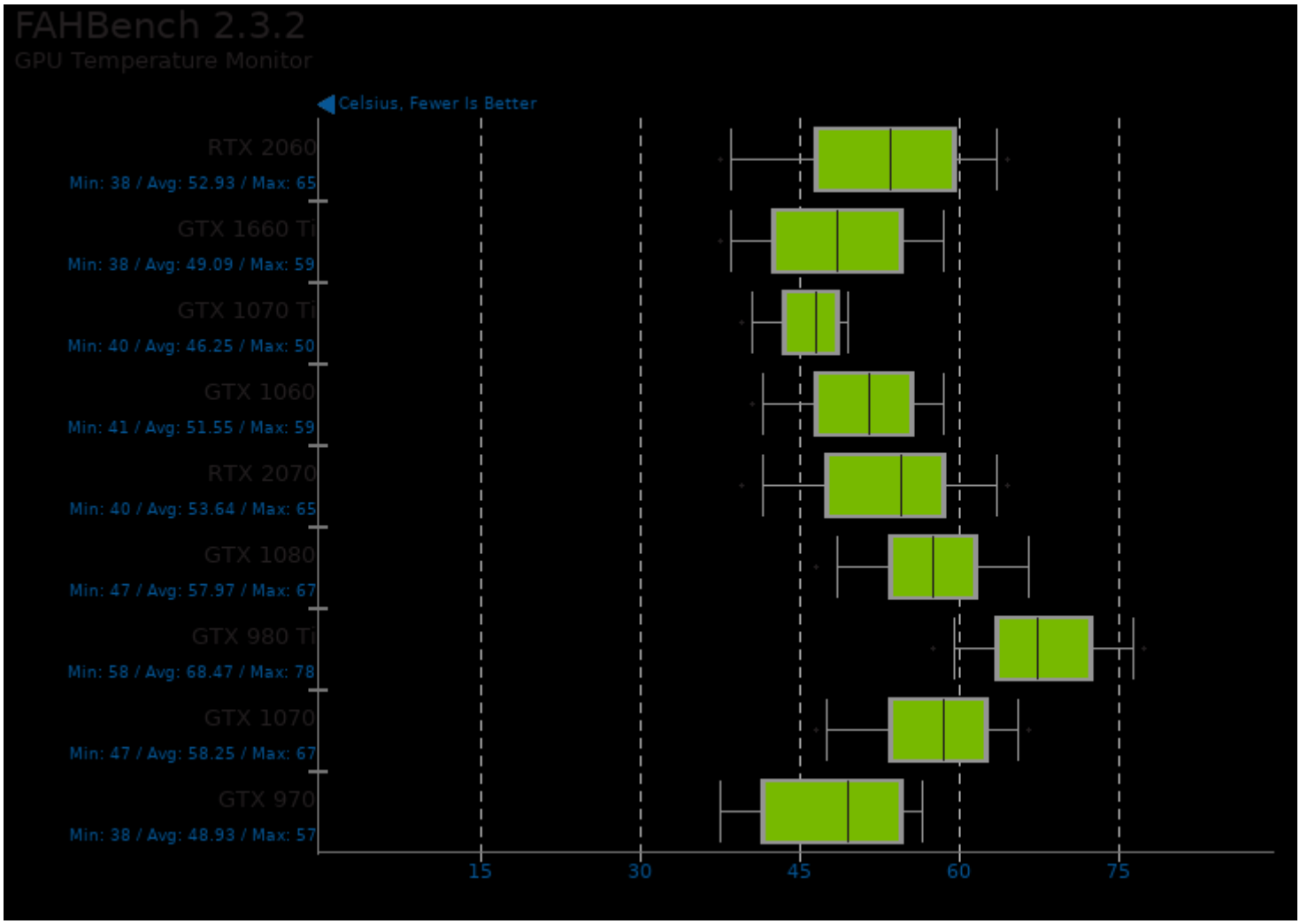

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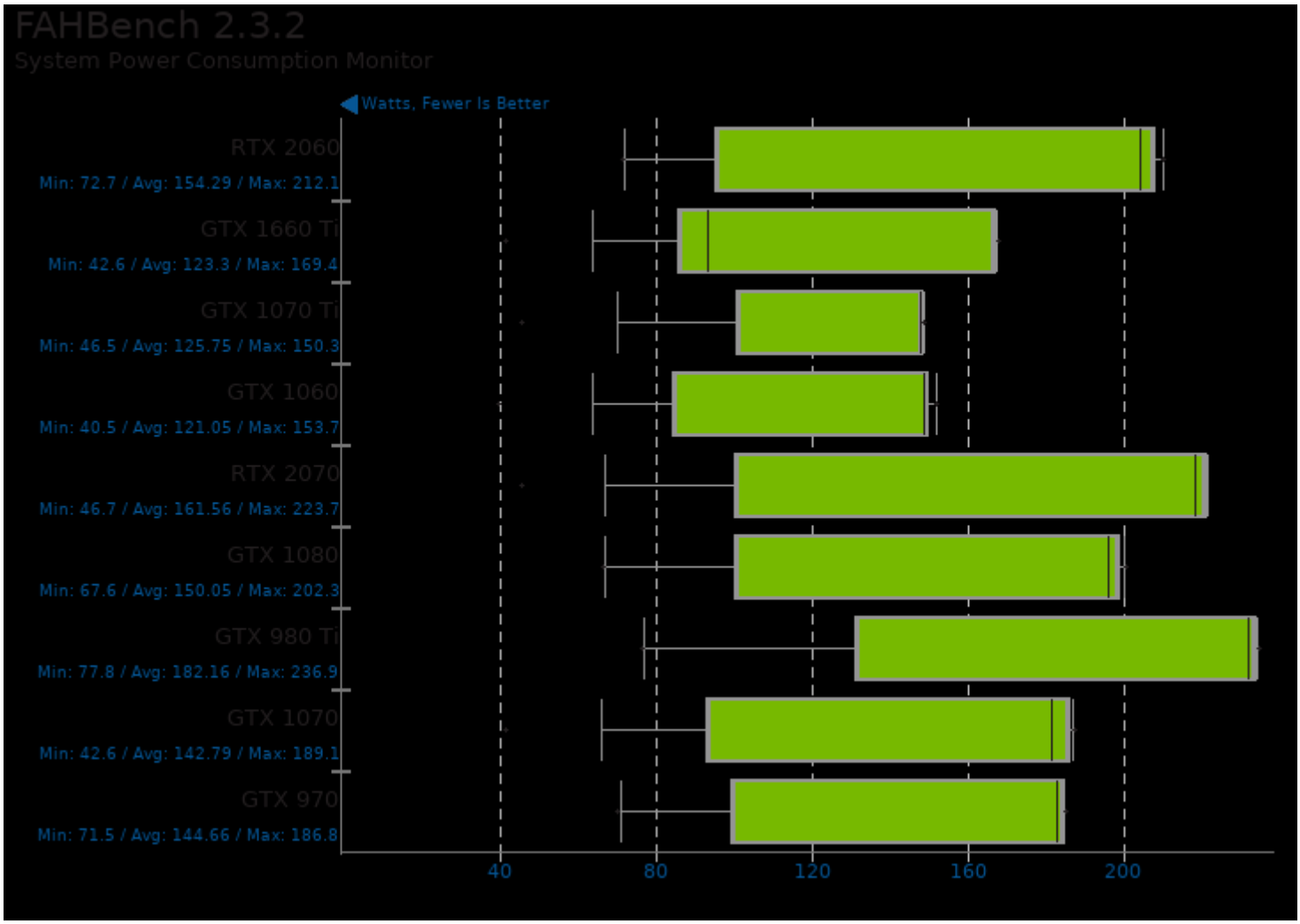
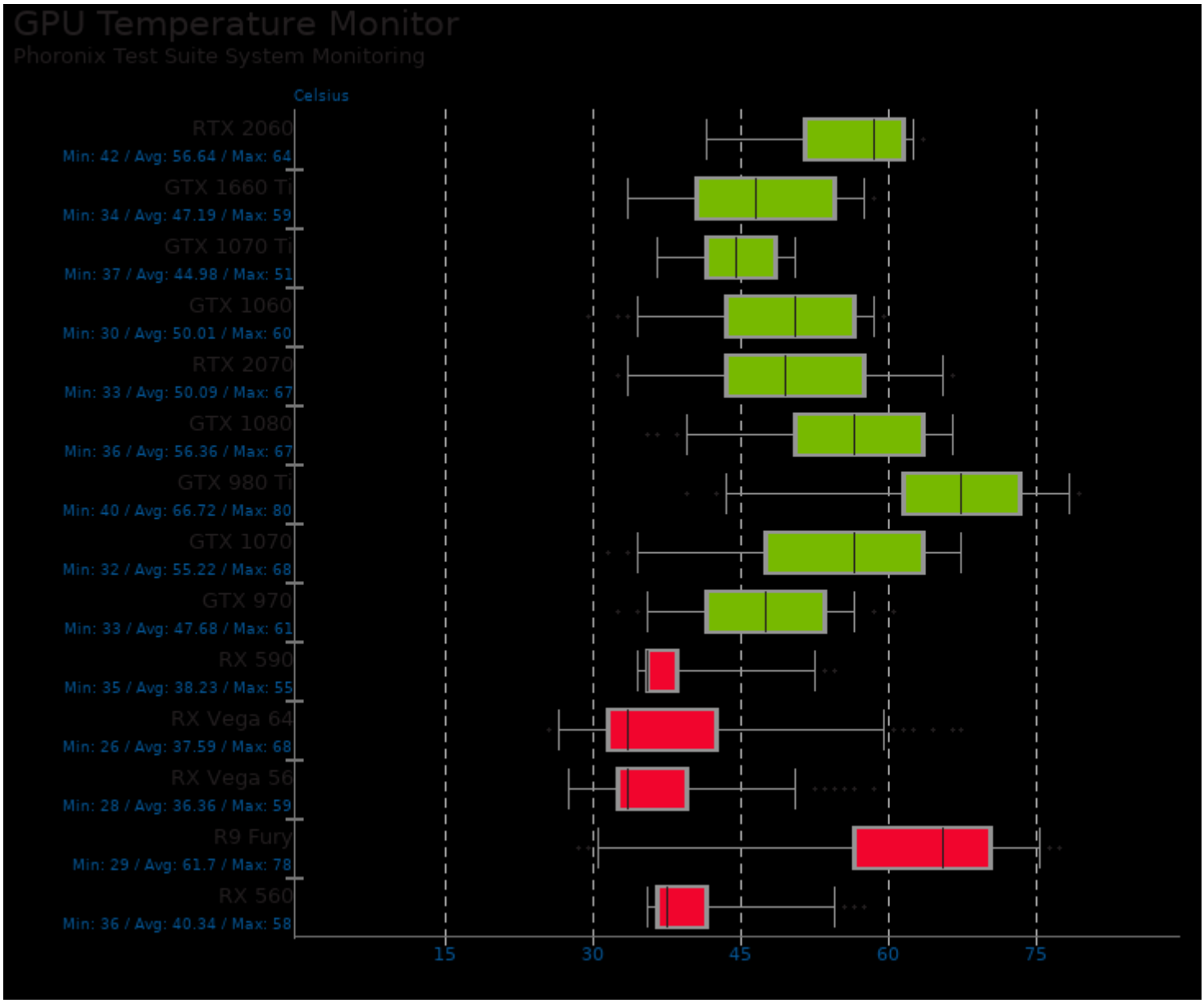
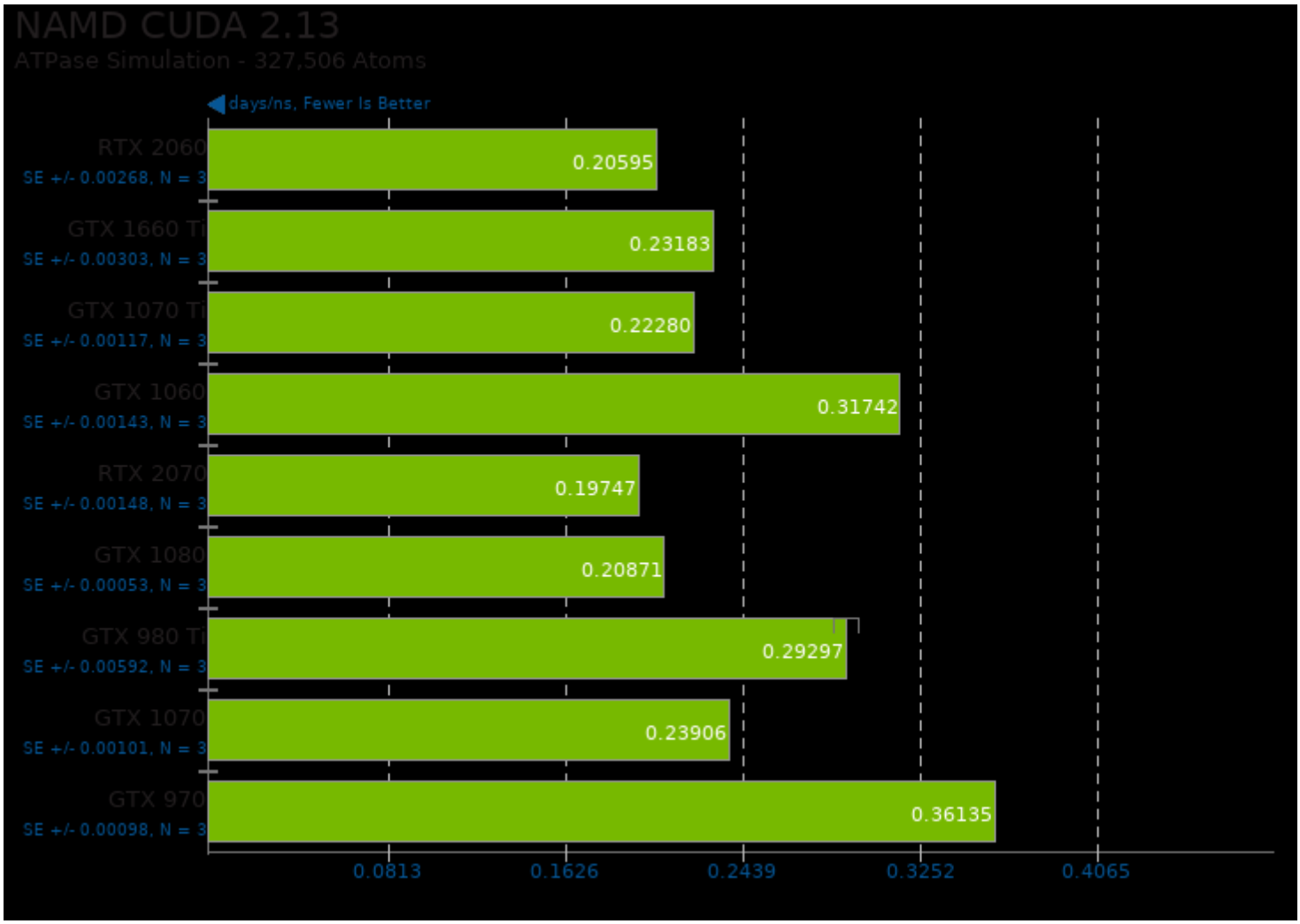
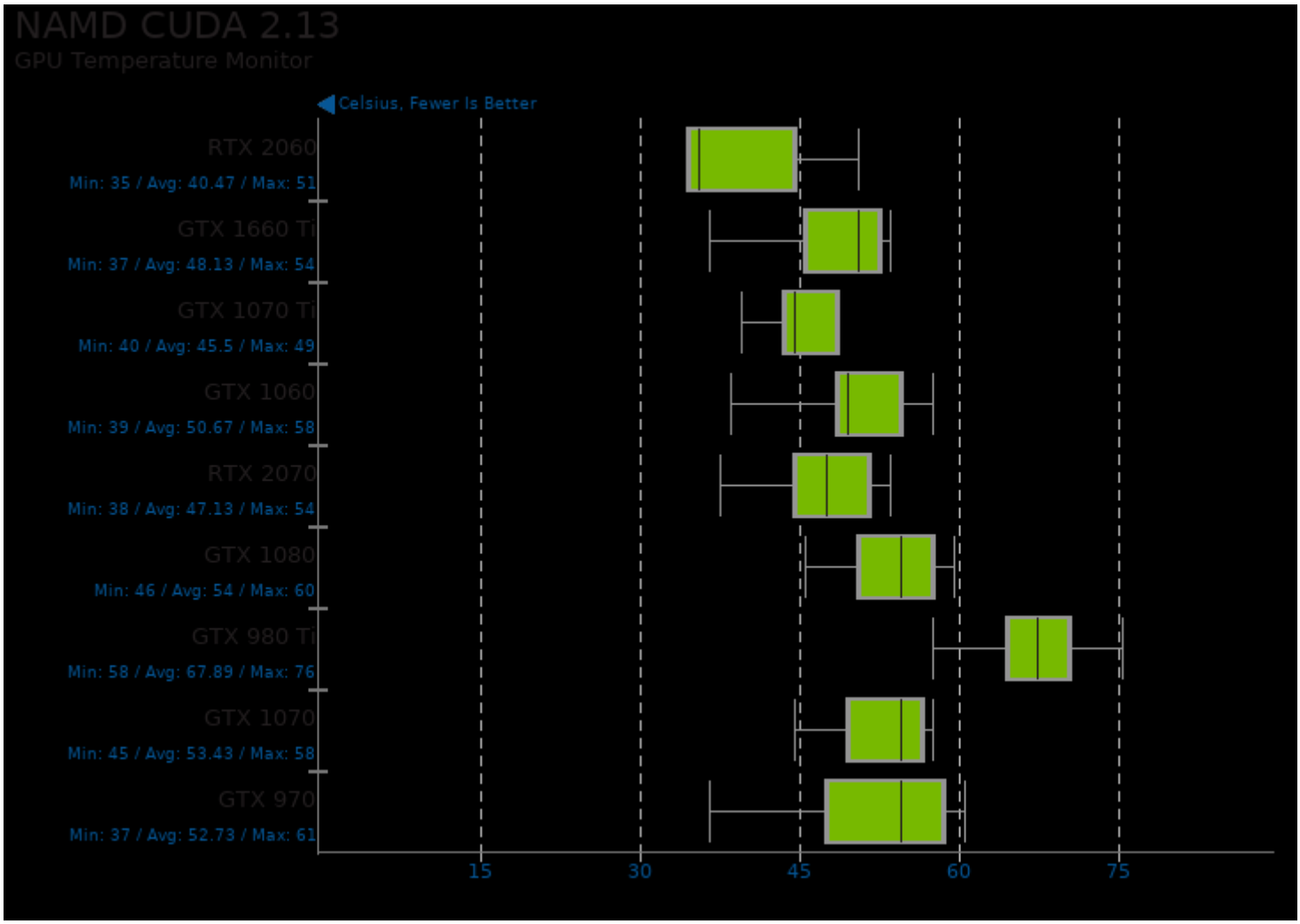


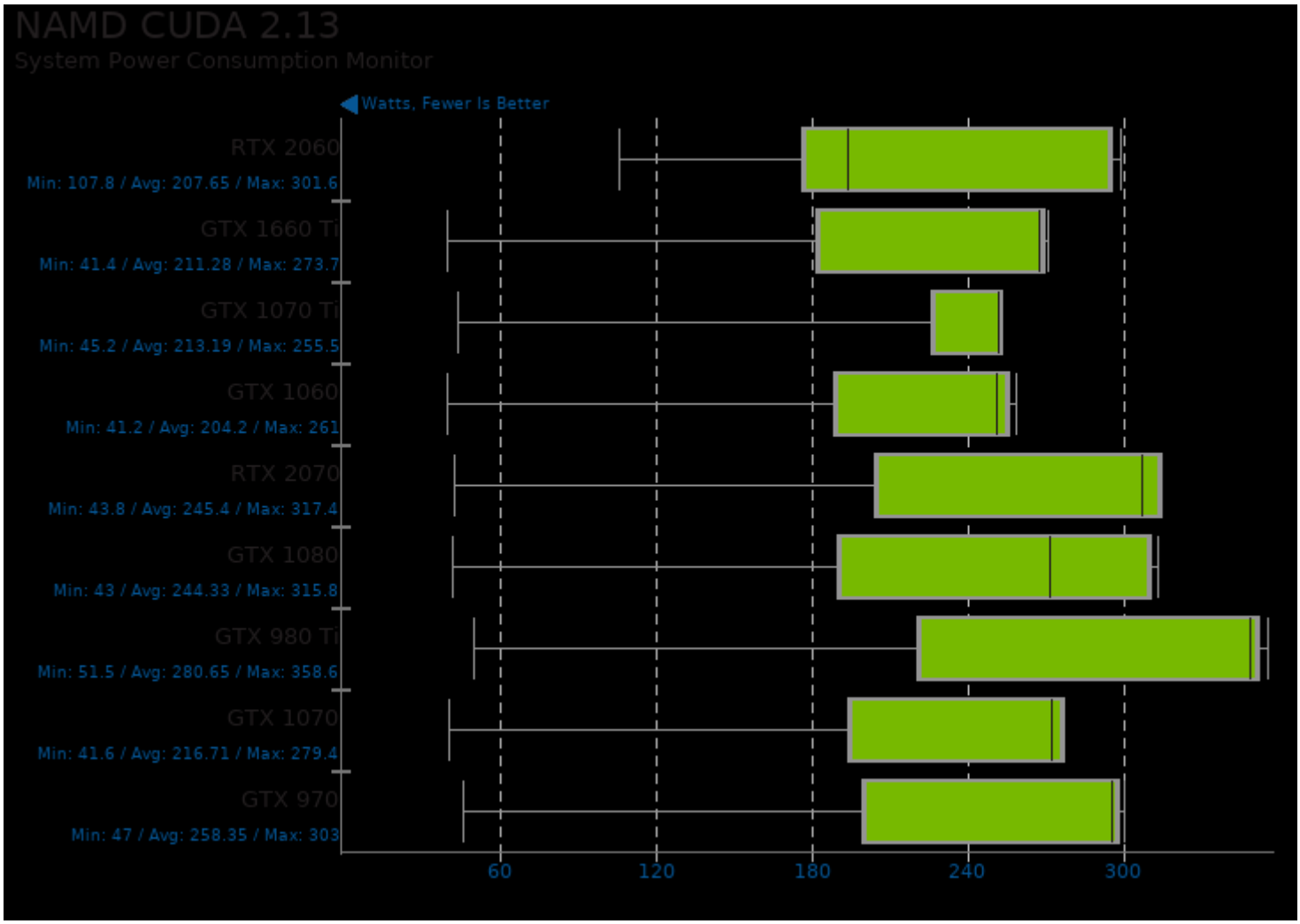
OpenCL GTX 1660 Ti



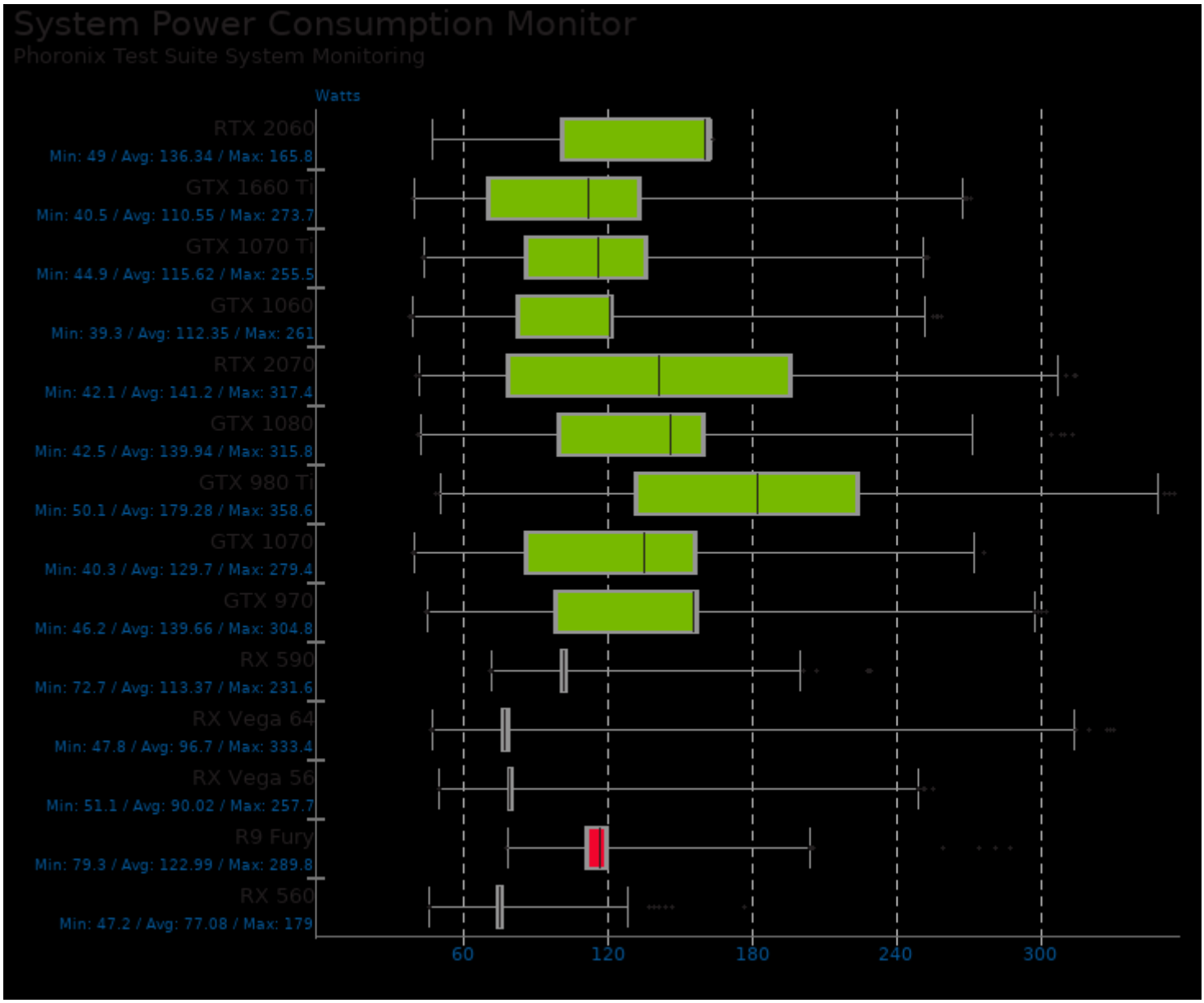
OpenCL GTX 1660 Ti



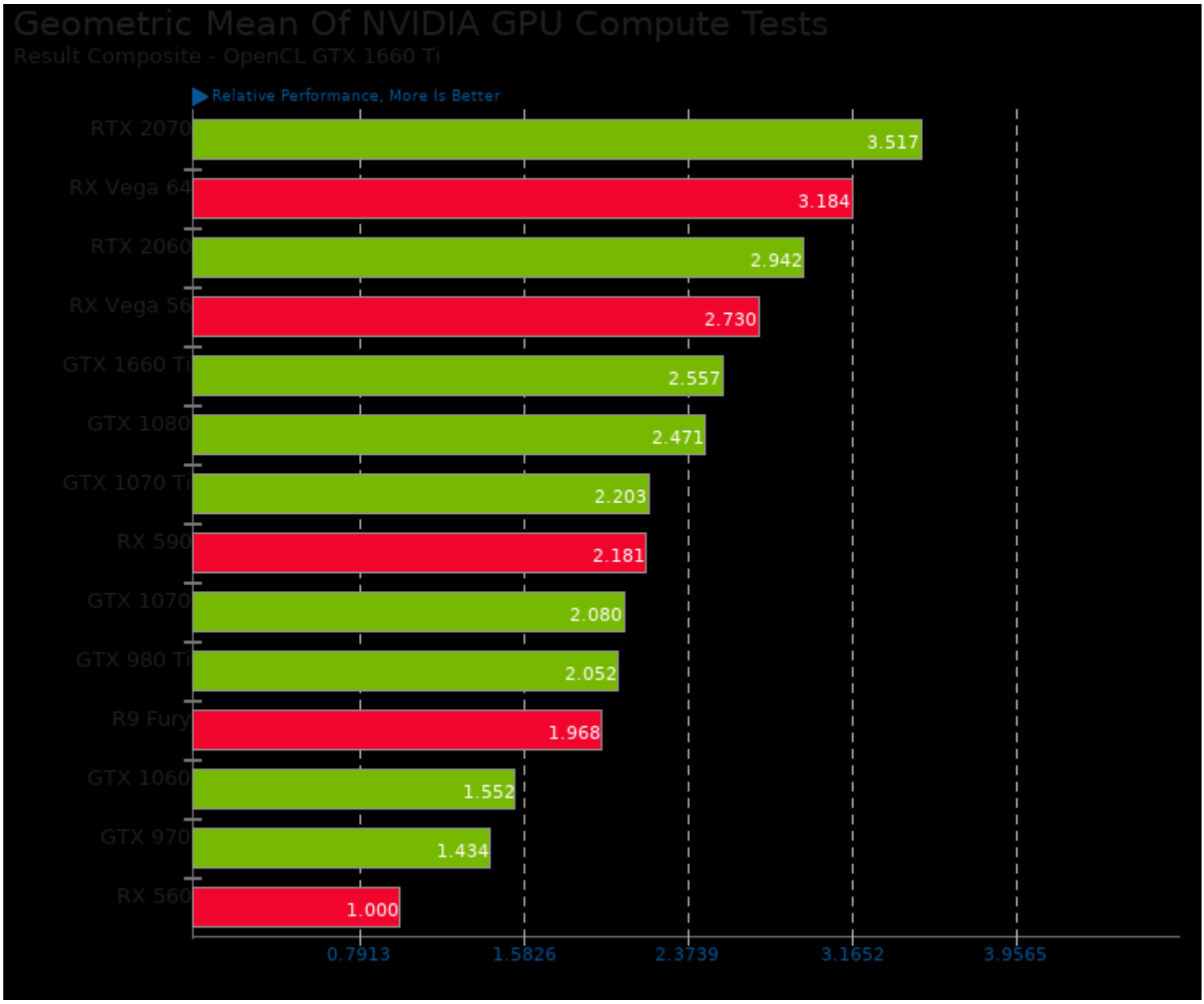

NAMD CUDA 2.13
GPU Temperature Monitor
Celsius, Fewer Is Better
RTX 2060
Min: 35 / Avg: 40.47 / Max: 51
GTX 1660 Ti
Min: 37 / Avg: 48.13 / Max: 54
GTX 1070 Ti
Min: 40 / Avg: 45.5 / Max: 49
GTX 1060
Min: 39 / Avg: 50.67 / Max: 58
RTX 2070
Min: 38 / Avg: 47.13 / Max: 54
GTX 1080
Min: 46 / Avg: 54 / Max: 60
GTX 980 Ti
Min: 58 / Avg: 67.89 / Max: 76
GTX 1070
Min: 45 / Avg: 53.43 / Max: 58
GTX 970
Min: 37 / Avg: 52.73 / Max: 61
15
30
45
60
75


NAMD CUDA 2.13
System Power Consumption Monitor
Watts, Fewer Is Better
RTX 2060
Min: 107.8 / Avg: 207.65 / Max: 301.6
GTX 1660 Ti
Min: 41.4 / Avg: 211.28 / Max: 273.7
GTX 1070 Ti
Min: 45.2 / Avg: 213.19 / Max: 255.5
GTX 1060
Min: 41.2 / Avg: 204.2 / Max: 261
RTX 2070
Min: 43.8 / Avg: 245.4 / Max: 317.4
GTX 1080
Min: 43 / Avg: 244.33 / Max: 315.8
GTX 980 Ti
Min: 51.5 / Avg: 280.65 / Max: 358.6
GTX 1070
Min: 41.6 / Avg: 216.71 / Max: 279.4
GTX 970
Min: 47 / Avg: 258.35 / Max: 303
60
120
180
240
300

OpenCL GTX 1660 Ti

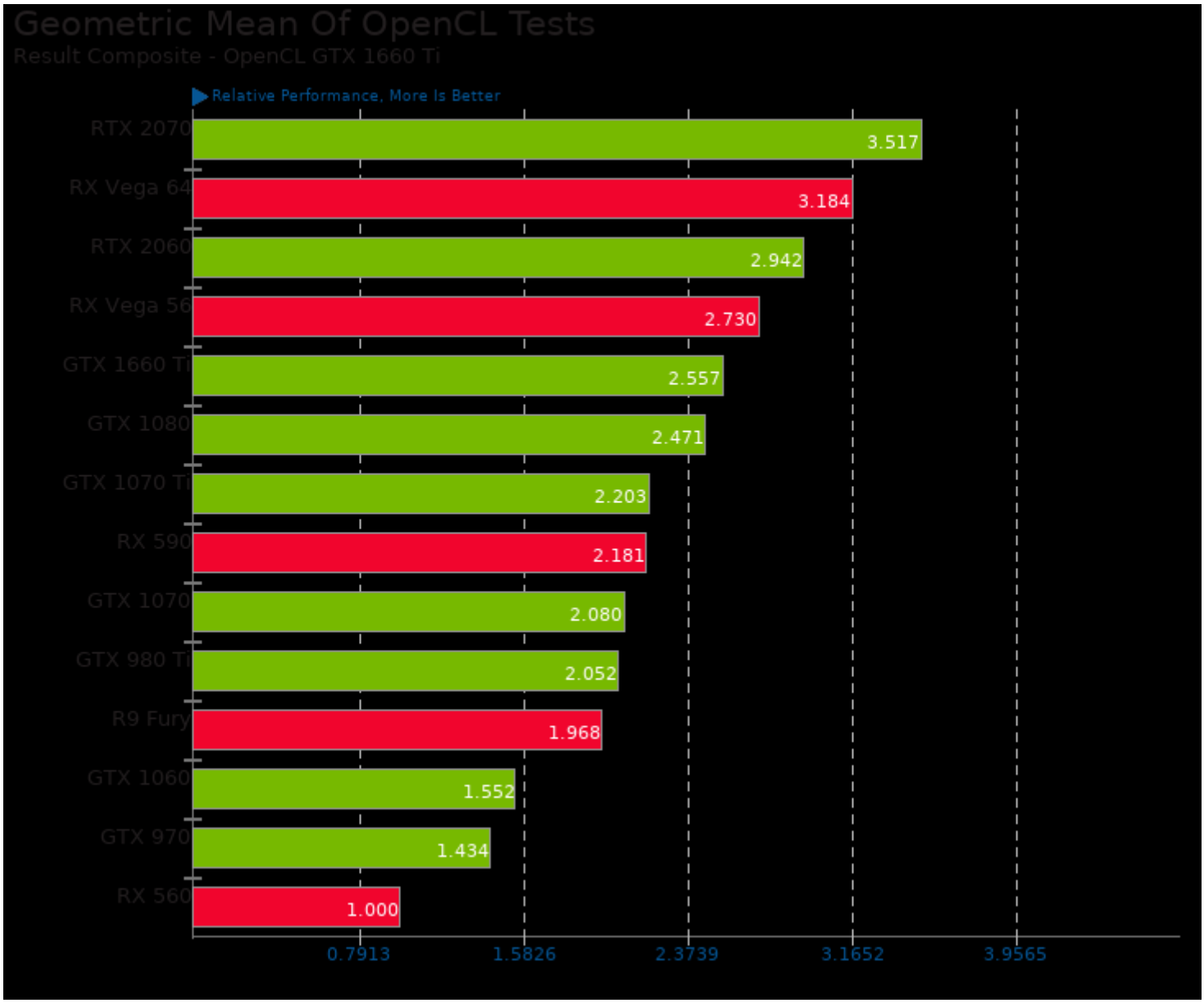


These geometric means are based upon test groupings / test suites for this result file.



Geometric mean based upon tests: pts/fahbench, pts/namd-cuda, pts/clpeak, pts/cl-mem and pts/v-ray

OpenCL GTX 1660 Ti



Geometric mean based upon tests: pts/cl-mem, pts/clpeak and system/darktable

This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 8 November 2024 17:55.