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:

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

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 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

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 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 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 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

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

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

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

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 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

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

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

OpenCL GTX 1660 Ti

clpeak - D.P.D (GFLOPS)	138	197	151	225	243	297	185	233	268	447	165	448	665	836
Normalized	16.51%	23.56%	18.06%	26.91%	29.07%	35.53%	22.13%	27.87%	32.06%	53.47%	19.74%	53.59%	79.55%	100%
Standard	0%	0.2%	0%	0%	0%	0.4%	0.4%	0.4%	0.8%	0%	0%	0%	0.3%	0.3%
cl-mem - Write (GB/s)	129	242	140	191	195	215	210	246	314		80.40	185	303	365
Normalized	35.34%	66.3%	38.36%	52.33%	53.42%	58.9%	57.53%	67.4%	86.03%		22.03%	50.68%	83.01%	100%
Standard	0%	0.1%	0%	0.1%	0.1%	0.2%	0.1%	0.4%	0.5%		0.1%	0%	0.4%	5.1%
cl-mem - Read (GB/s)	144	265	153	205	205	228	250	295	392	113	93.60	184	345	398
Normalized	36.18%	66.58%	38.44%	51.51%	51.51%	57.29%	62.81%	74.12%	98.49%	28.39%	23.52%	46.23%	86.68%	100%
Standard	0.1%	0%	0%	0%	0%	0.2%	0.1%	0.1%	0.5%	0.7%	0%	1%	0%	0%
clpeak - G.M.B (GBPS)	144	263	147	196	197	222	234	275	364		87.24	215	316	362
Normalized	39.56%	72.25%	40.38%	53.85%	54.12%	60.99%	64.29%	75.55%	100%		23.97%	59.07%	86.81%	99.45%
Standard	0%	0.3%	0.1%	0%	0%	0%	0.3%	0.3%	1.5%		0%	0.9%	0.1%	0%
cl-mem - Copy (GB/s)	125	218	139	187	188	209	213	245	326	205	78.83	193	202	222
Normalized	38.34%	66.87%	42.64%	57.36%	57.67%	64.11%	65.34%	75.15%	100%	62.88%	24.18%	59.2%	61.96%	68.1%
Standard	0%	0%	0%	0.1%	0.1%	0.3%	0.2%	0.4%	0.5%	0.4%	0.1%	0%	0.2%	0.1%
Darktable - Server Room - OpenCL (sec)	3.13	1.39	1.32	1.10	1.18	1.11	1.14	0.85	0.77					
Normalized	24.6%	55.4%	58.33%	70%	65.25%	69.37%	67.54%	90.59%	100%					
Standard	0.7%	0.3%	0%	0.4%	0%	0.4%	0.2%	0.7%	0.5%					
cl-mem - Copy (GB/s/Watt)	0.95	1.13	1.27	1.48	1.53	1.63	2.00	1.66	3.53	1.21	0.93	1.11	1.14	1.29
Normalized	26.91%	32.01%	35.98%	41.93%	43.34%	46.18%	56.66%	47.03%	100%	34.28%	26.35%	31.44%	32.29%	36.54%
cl-mem - Read (GB/s/Watt)	1.12	1.52	1.40	1.67	1.88	1.46	2.23	2.36	2.54	0.68	1.12	1.25	2.54	1.64
Normalized	44.09%	59.84%	55.12%	65.75%	74.02%	57.48%	87.8%	92.91%	100%	26.77%	44.09%	49.21%	100%	64.57%
FAHBench (Ns/Day)	90.39	114	101	139	137	153	139	181	203					
Normalized	44.53%	56.16%	49.75%	68.47%	67.49%	75.37%	68.47%	89.16%	100%					
Standard	0%	0%	0.1%	0.4%	0%	0%	0%	0.3%	0.4%					
cl-mem - Write (GB/s/Watt)	1.07	1.21	1.28	1.55	1.79	1.55	1.85	1.71	2.11		0.96	1.22	1.96	1.81
Normalized	50.71%	57.35%	60.66%	73.46%	84.83%	73.46%	87.68%	81.04%	100%		45.5%	57.82%	92.89%	85.78%
Darktable - Boat - OpenCL (sec)	4.55	3.32	3.76	2.94	2.99	2.92	2.95	2.49	2.10					
Normalized	46.15%	63.25%	55.85%	71.43%	70.23%	71.92%	71.19%	84.34%	100%					
Standard	0.1%	3.8%	0.3%	0.1%	1.7%	1.5%	0.2%	3.3%	2.8%					
Chaos Group V-RAY - CUDA GPU (sec)	120.06	84.14	128.84	90.69	89.57	99.45	112.46	91.54	61.83					
Normalized	51.5%	73.48%	47.99%	68.18%	69.03%	62.17%	54.98%	67.54%	100%					
Standard	0.1%	6.3%	0.1%	0.2%	5.9%	0.1%	0.1%	5.8%	0.1%					
clpeak - Kernel	4.08	4.33	3.56	3.58	3.61	3.74	3.43	3.68	3.60	5.66	5.22	4.68	7.03	6.95
Normalized	84.07%	79.21%	96.35%	95.81%	95.01%	91.71%	100%	93.21%	95.28%	60.6%	65.71%	73.29%	48.79%	49.35%
Standard Deviation	0.8%	3.9%	0.9%	0.6%	1.7%	3.9%	2.8%	3.6%	3.8%	0.3%	1%	0.8%	0.9%	0.8%

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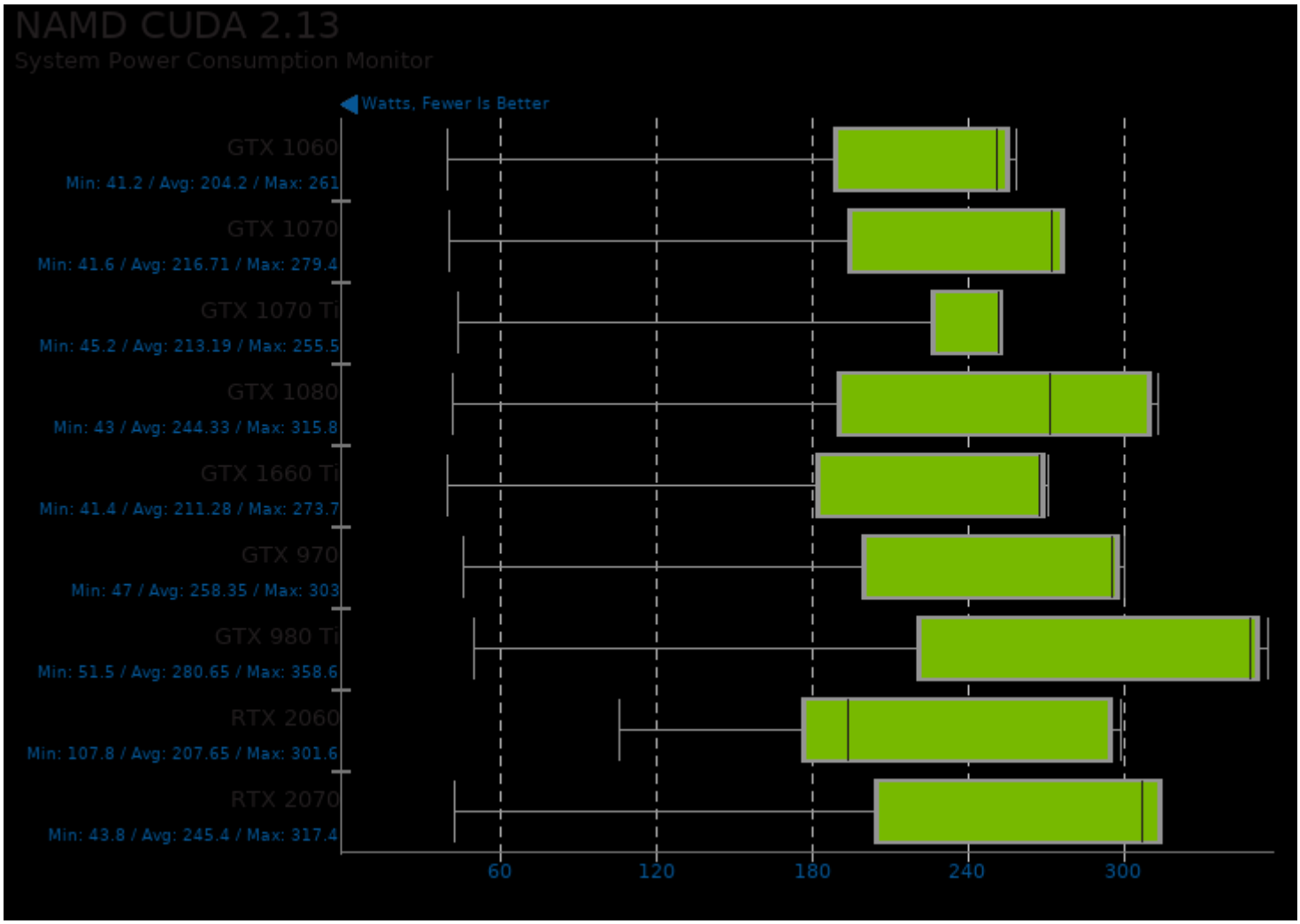
FAHBench (Ns/Day/Watt)	**0.62**	0.63	0.84	0.97	1.09	1.02	1.13	1.17	**1.26**					
Normalized	49.21%	50%	66.67%	76.98%	86.51%	80.95%	89.68%	92.86%	100%					
NAMD CUDA - ATPase Simulation - 327,506 Atoms	**0.36135**	0.2929 7	0.3174 2	0.2390 6	0.2228 0	0.2087 1	0.2318 3	0.2059 5	**0.19747**					
Normalized	54.65%	67.4%	62.21%	82.6%	88.63%	94.61%	85.18%	95.88%	100%					
Standard Deviation	0.5%	3.5%	0.8%	0.7%	0.9%	0.4%	2.3%	2.3%	1.3%					
Darktable - Server Rack - OpenCL (sec)	**0.17**	**0.17**	0.13	0.12	0.13	0.13	**0.11**	0.12	**0.11**					
Normalized	64.71%	64.71%	84.62%	91.67%	84.62%	84.62%	100%	91.67%	100%					
Standard Deviation	3.3%	1.5%	5.4%	4.5%	0.5%	1.6%	0.5%	0.9%	4.4%					
Darktable - Masskrug - OpenCL (sec)	**5.77**	4.16	4.09	3.93	3.98	4.02	4.01	3.91	**3.77**					
Normalized	65.34%	90.63%	92.18%	95.93%	94.72%	93.78%	94.01%	96.42%	100%					
Standard Deviation	0.2%	0.6%	0.3%	0.3%	0.6%	0.7%	0.2%	0.4%	0.8%					
clpeak - I.C.I (GIOPS)	1160	1620	1248	1684	2078	2404	5586	6729	**7874**	1430	**526**	1428	1945	2497
Normalized	14.73%	20.57%	15.85%	21.39%	26.39%	30.53%	70.94%	85.46%	100%	18.16%	6.68%	18.14%	24.7%	31.71%
Standard Deviation	0.7%	1.2%	6.7%	2.9%	0%	2.2%	8.5%	11.1%	9.4%	0%	0%	0.1%	0%	0%
clpeak - S.P.F (GFLOPS)	3936	5588	3955	6374	6771	7981	5559	6717	8061	7090	**2601**	7083	10313	**12530**
Normalized	31.41%	44.6%	31.56%	50.87%	54.04%	63.7%	44.37%	53.61%	64.33%	56.58%	20.76%	56.53%	82.31%	100%
Standard Deviation	0%	0.4%	11.8%	0.1%	0.6%	8.6%	10%	19.3%	11.8%	0%	0%	0.1%	0.2%	0.4%


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

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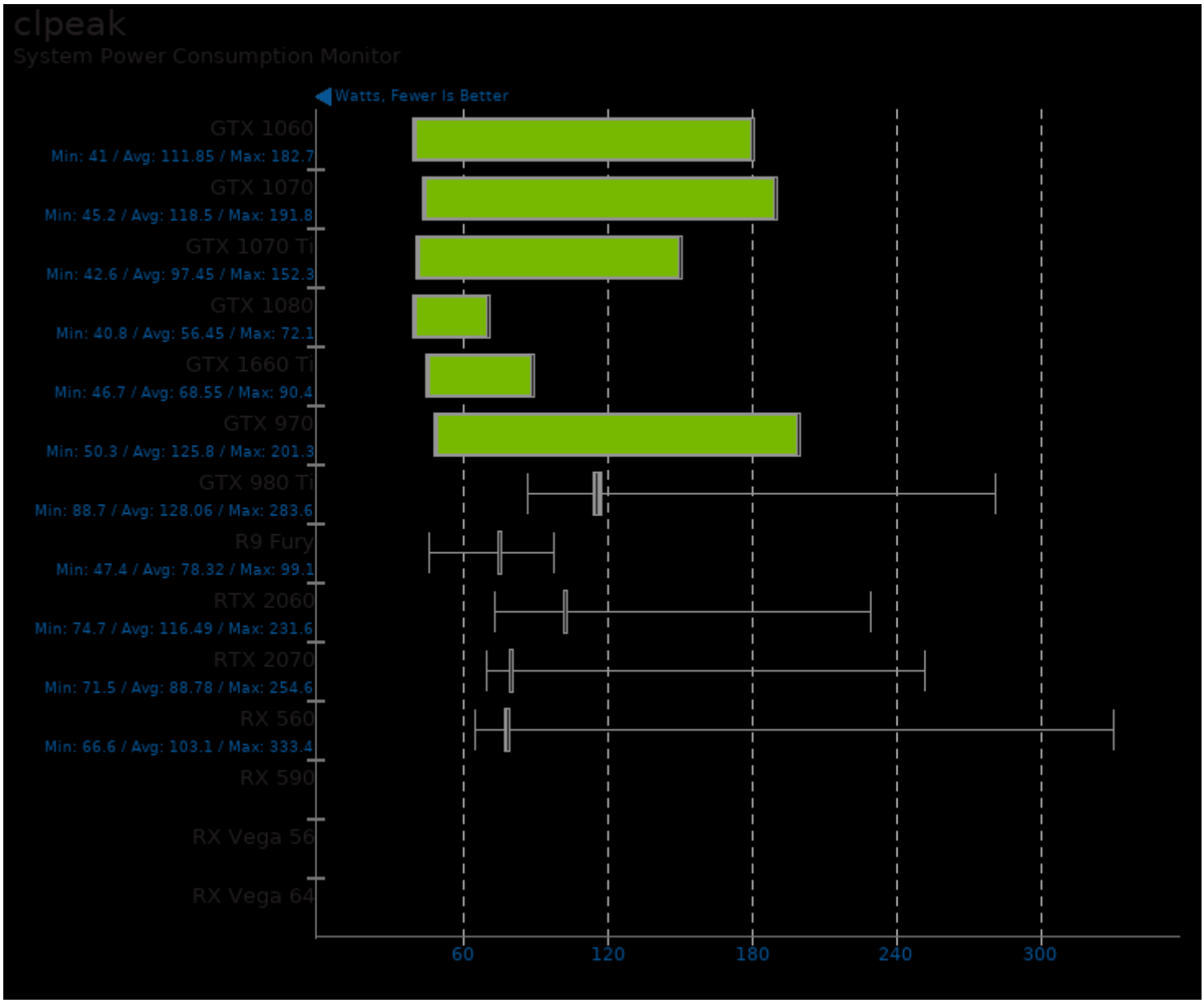
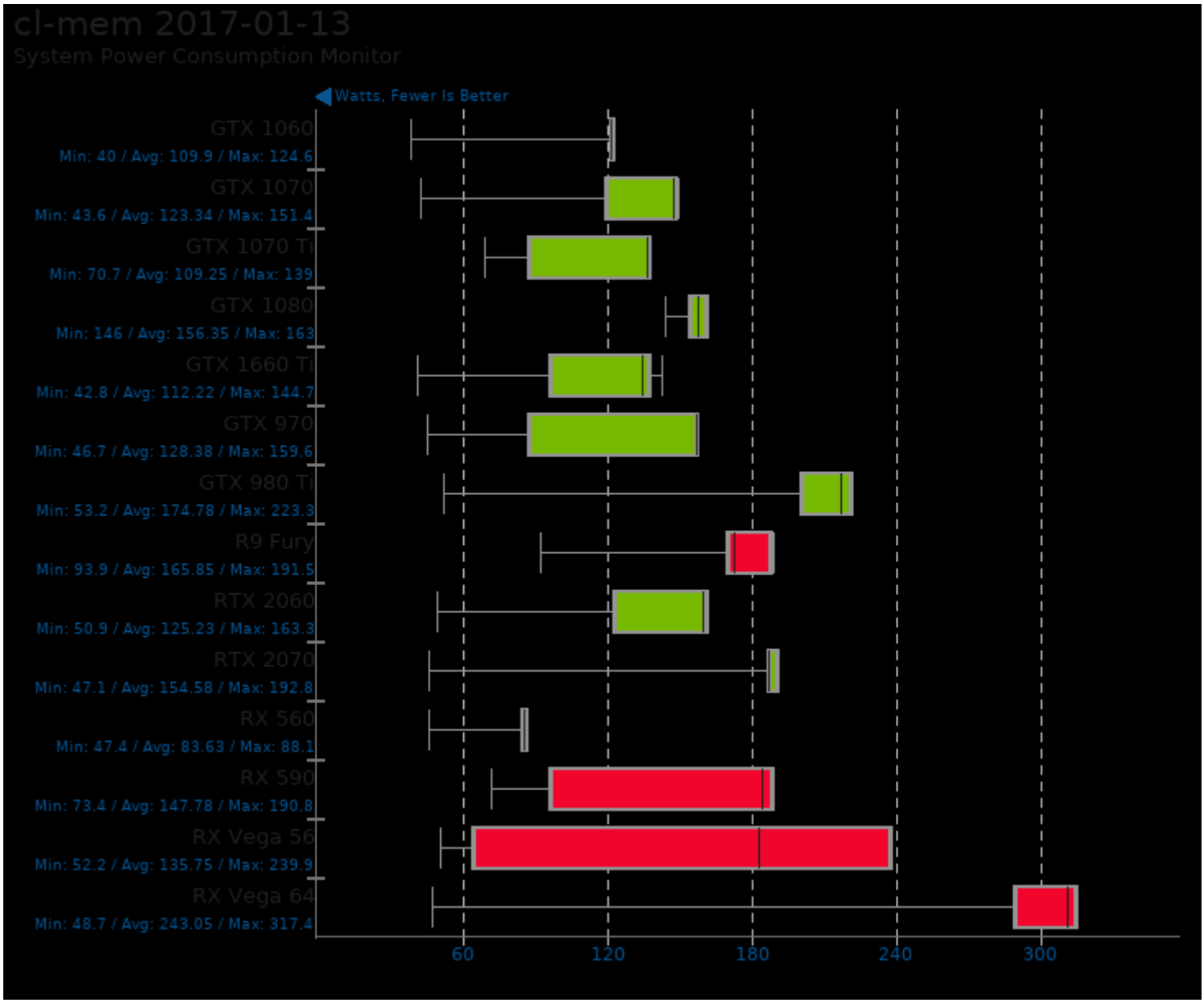
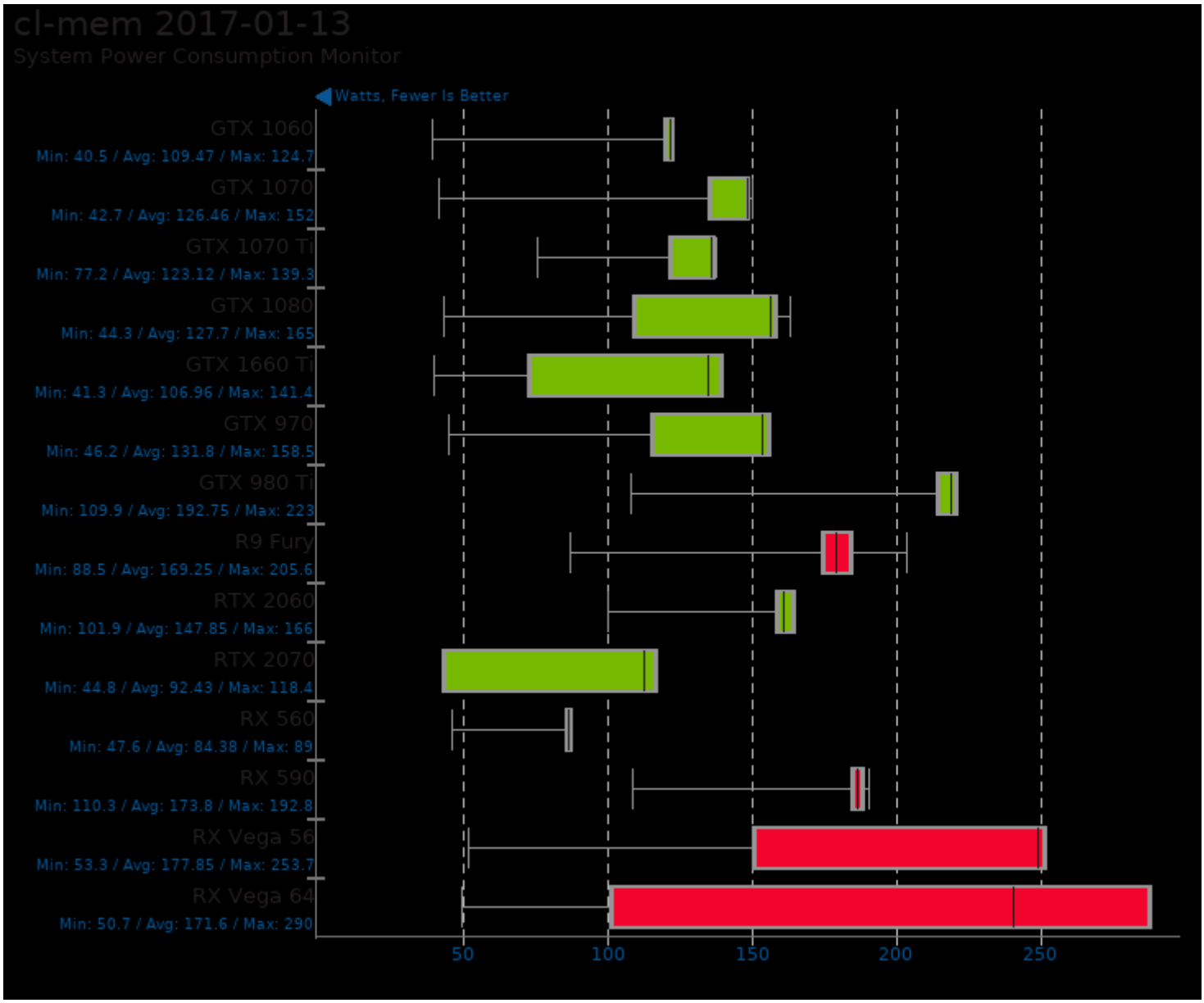


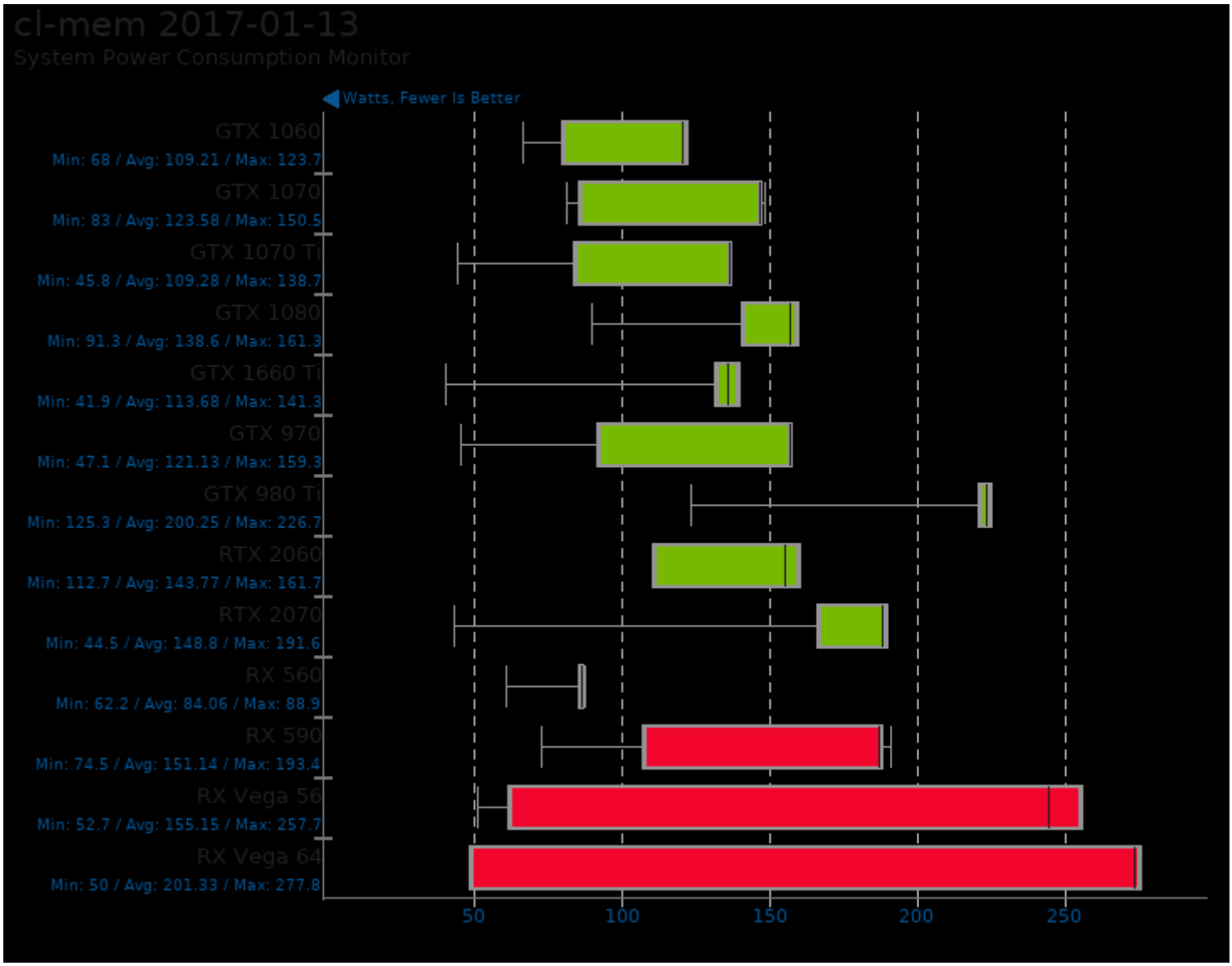
OpenCL GTX 1660 Ti



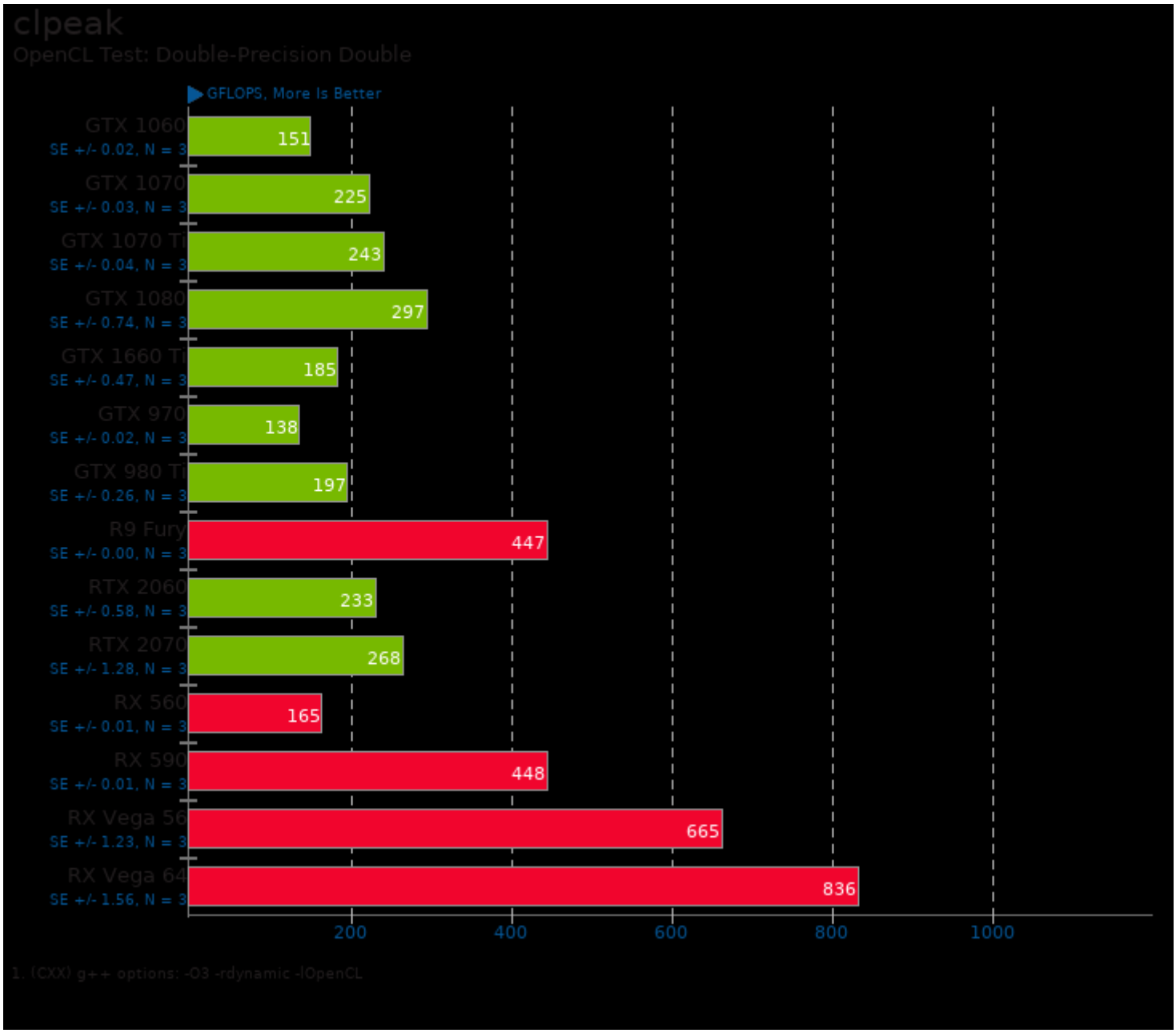
OpenCL GTX 1660 Ti



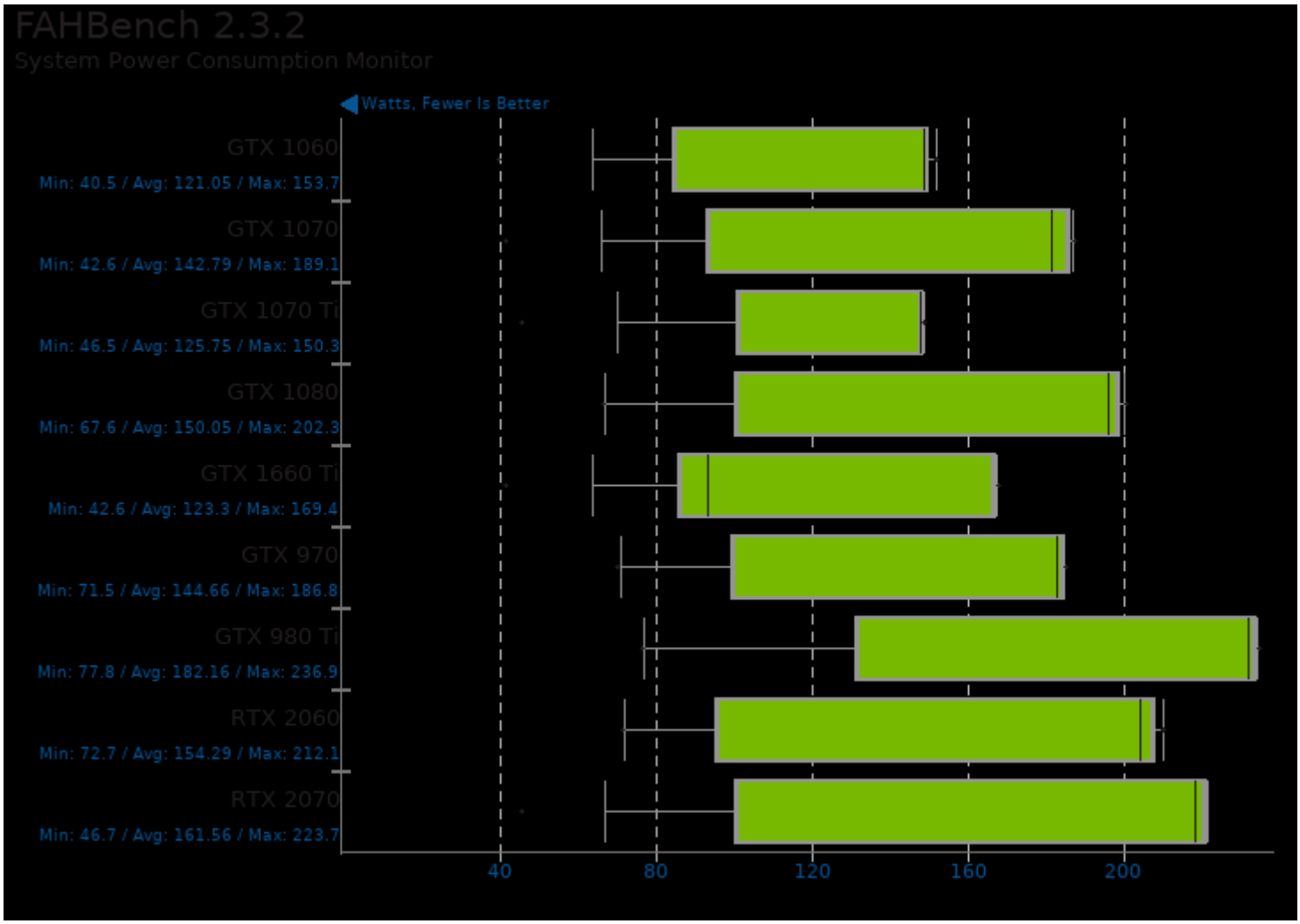
OpenCL GTX 1660 Ti



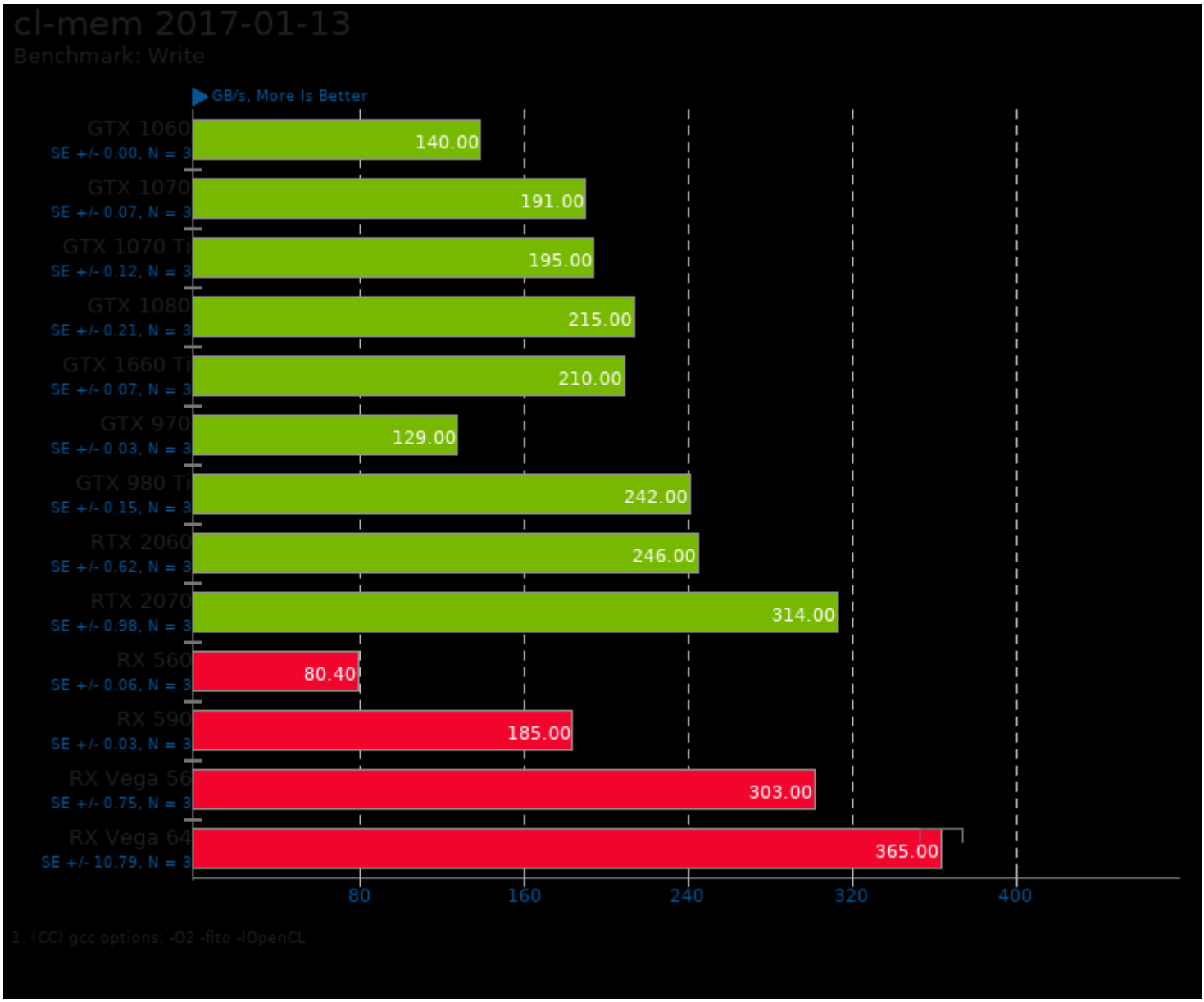
OpenCL GTX 1660 Ti



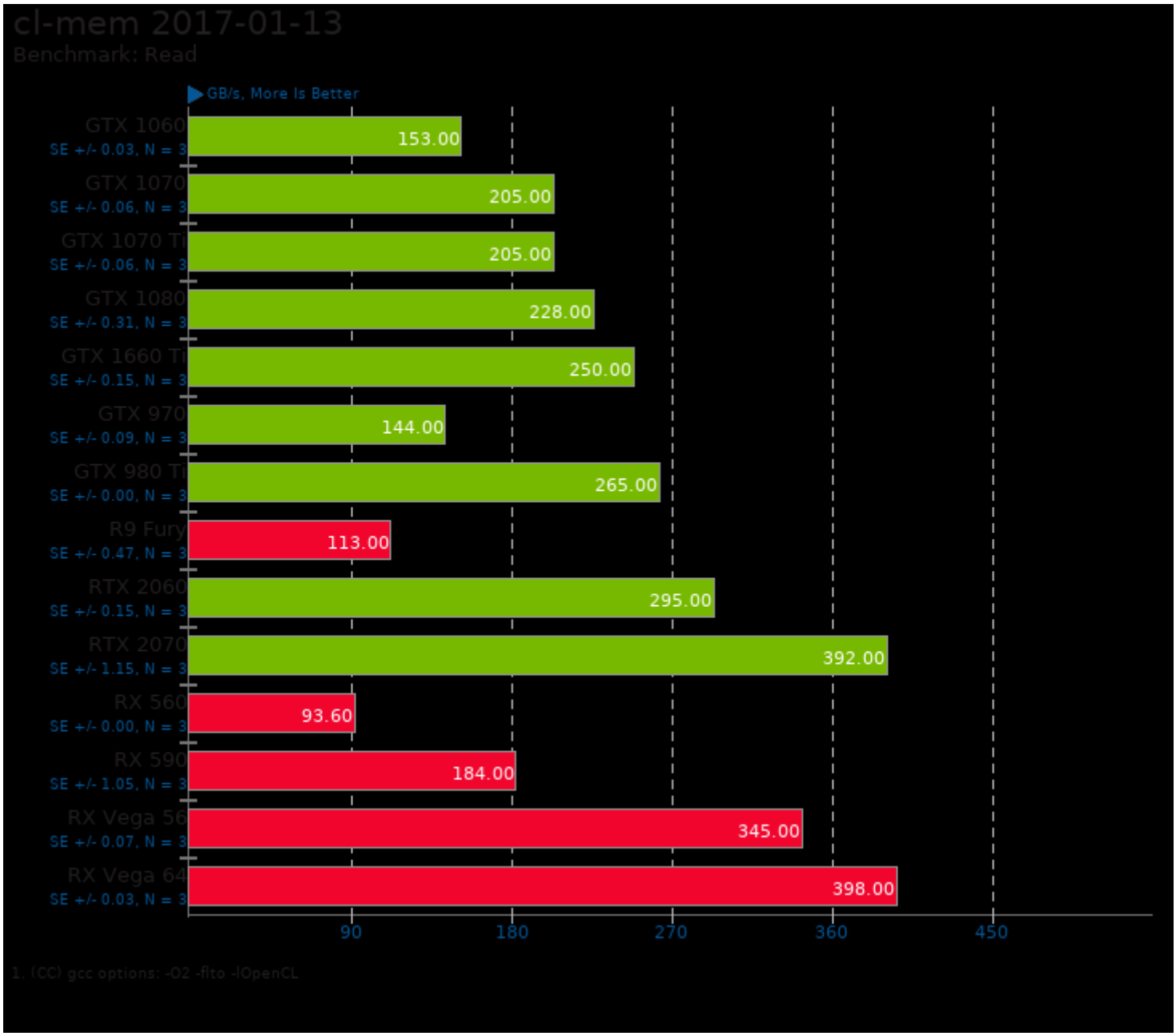
OpenCL GTX 1660 Ti



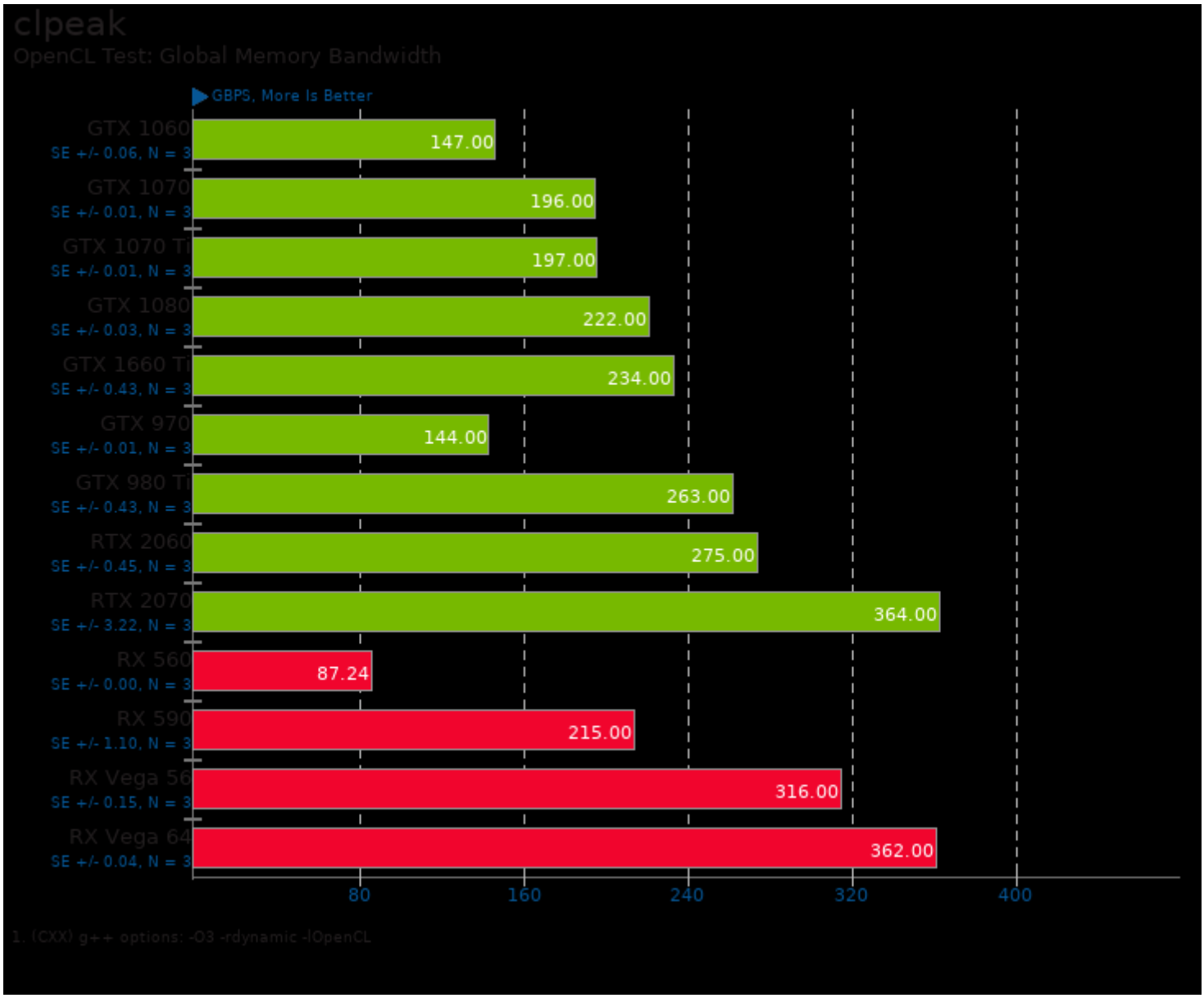
OpenCL GTX 1660 Ti



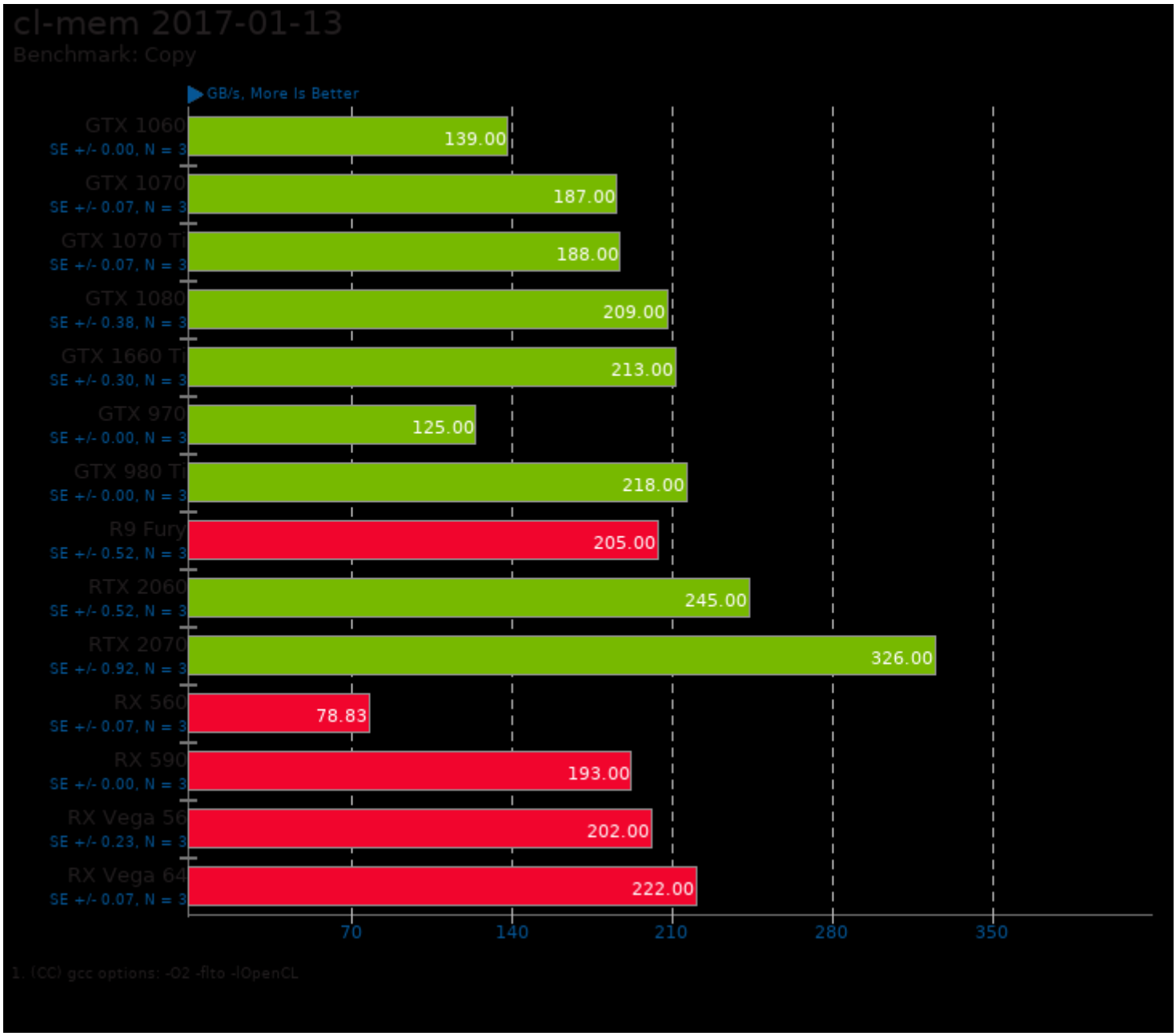
OpenCL GTX 1660 Ti



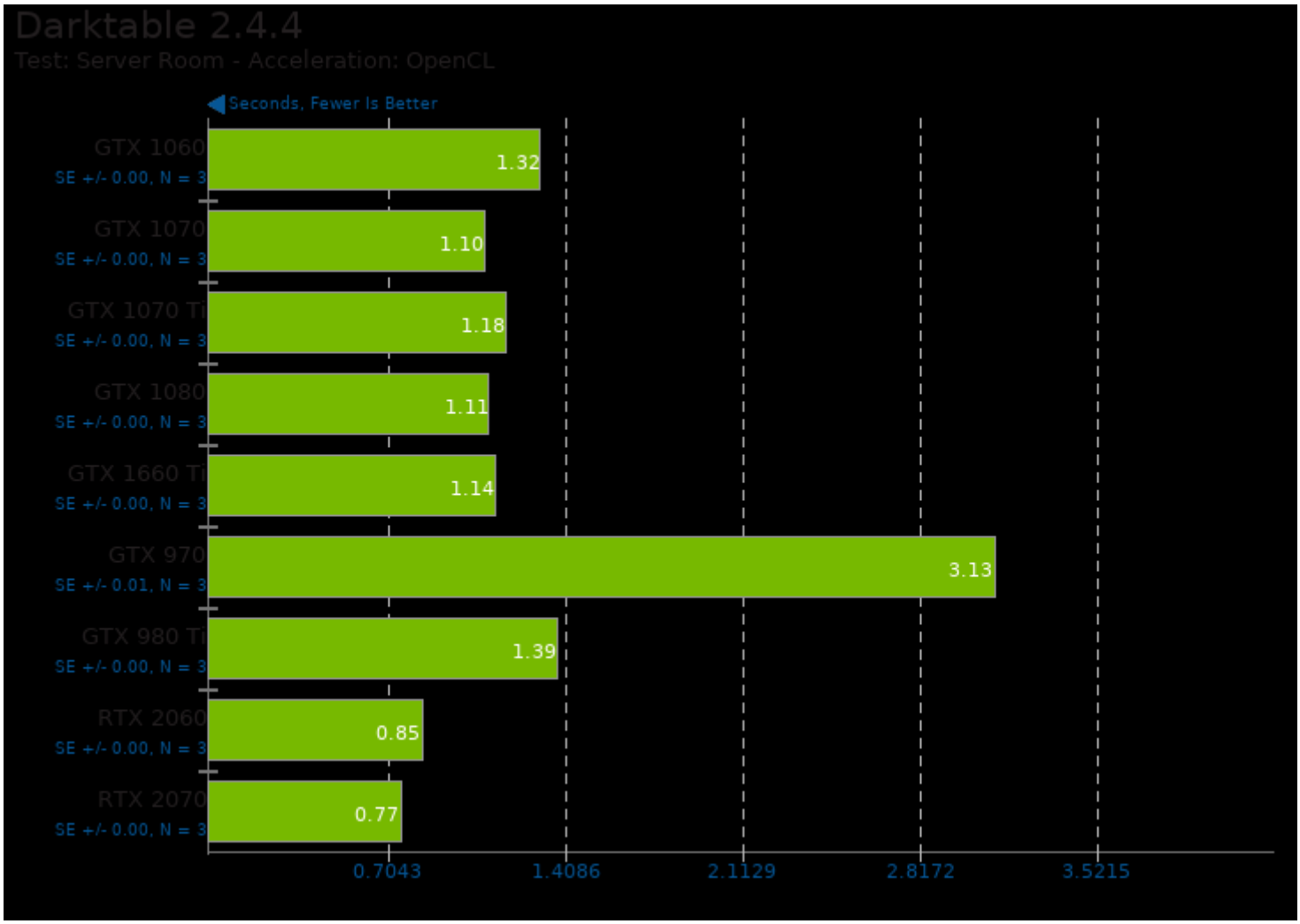
OpenCL GTX 1660 Ti



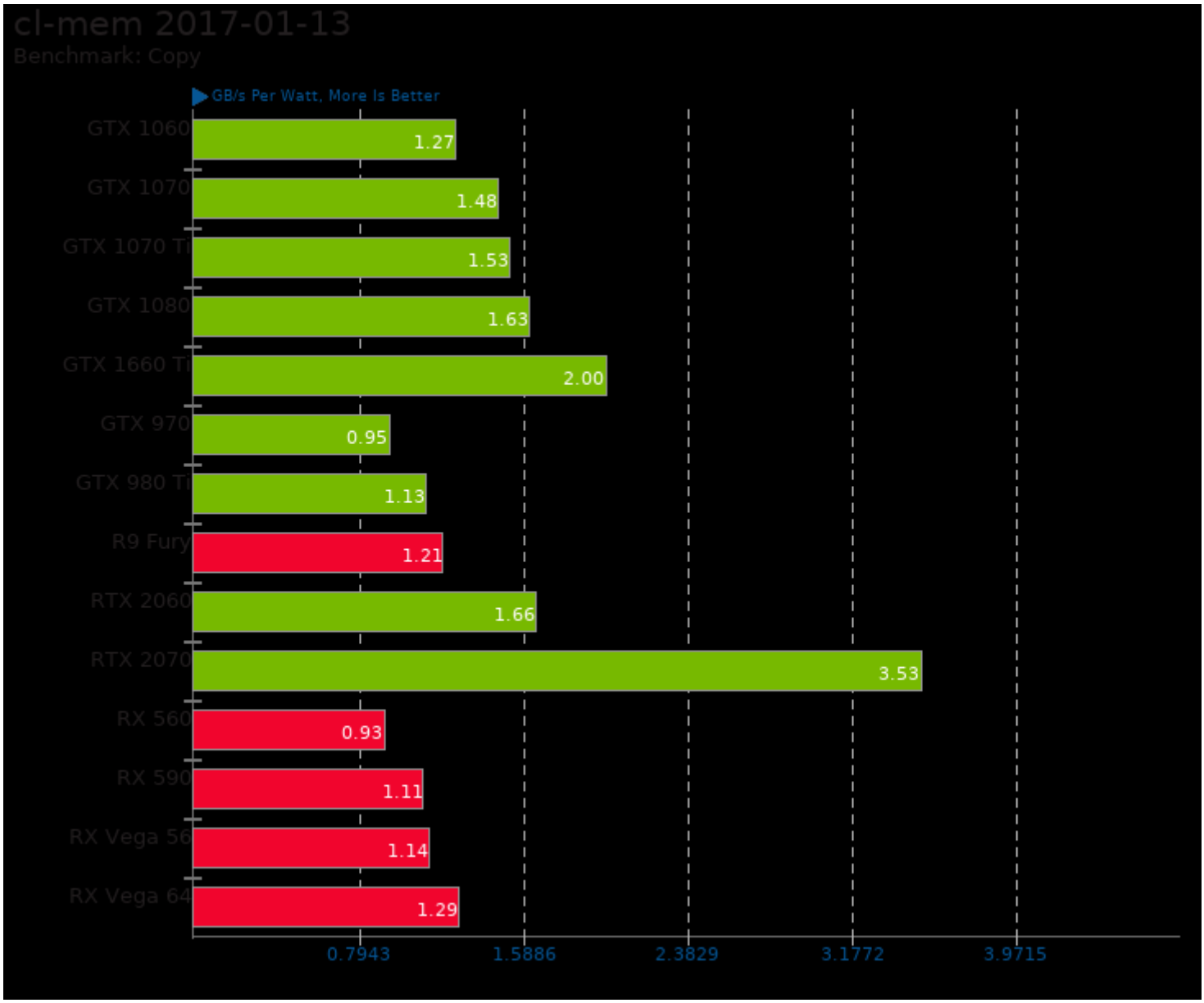
OpenCL GTX 1660 Ti



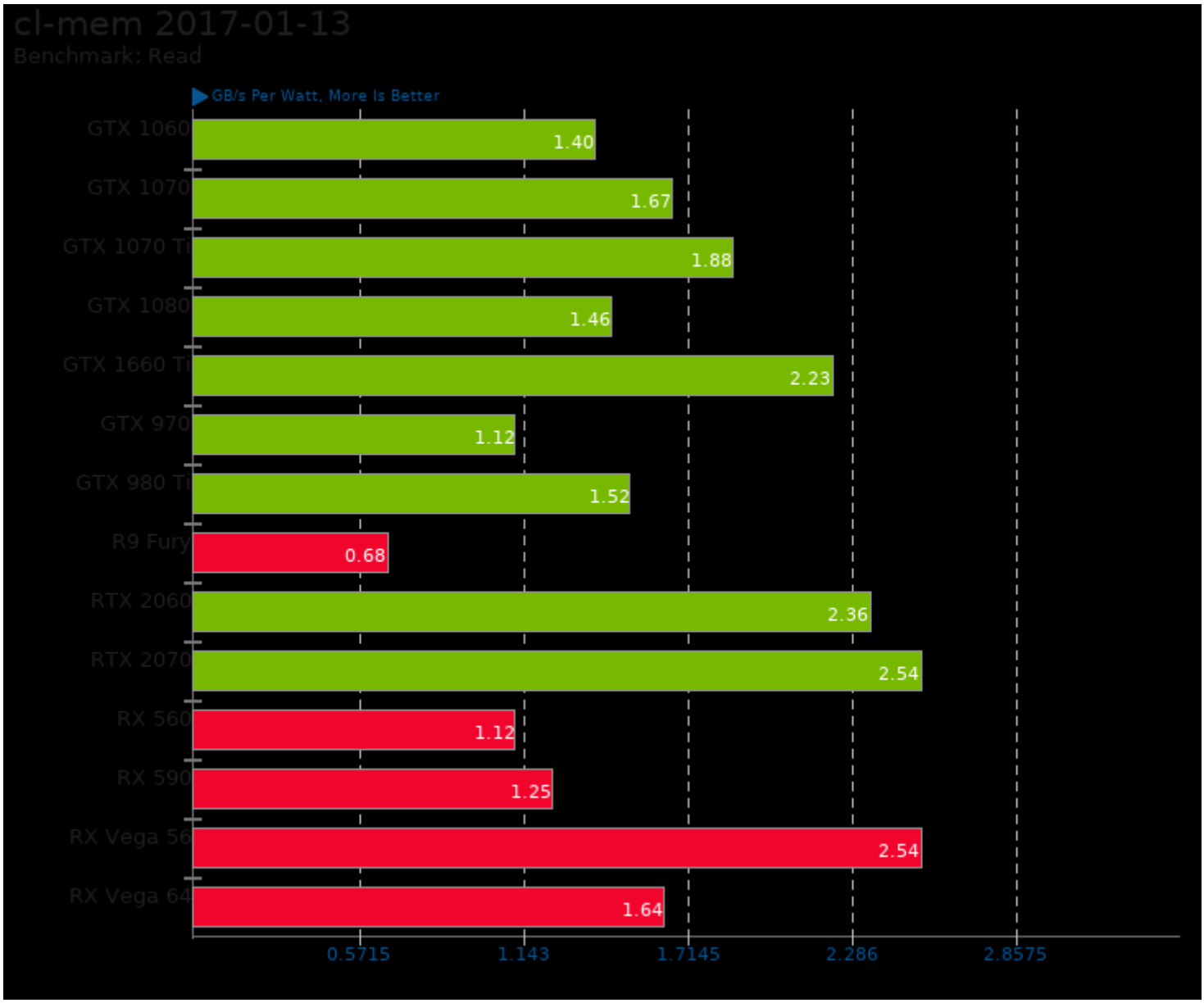
OpenCL GTX 1660 Ti



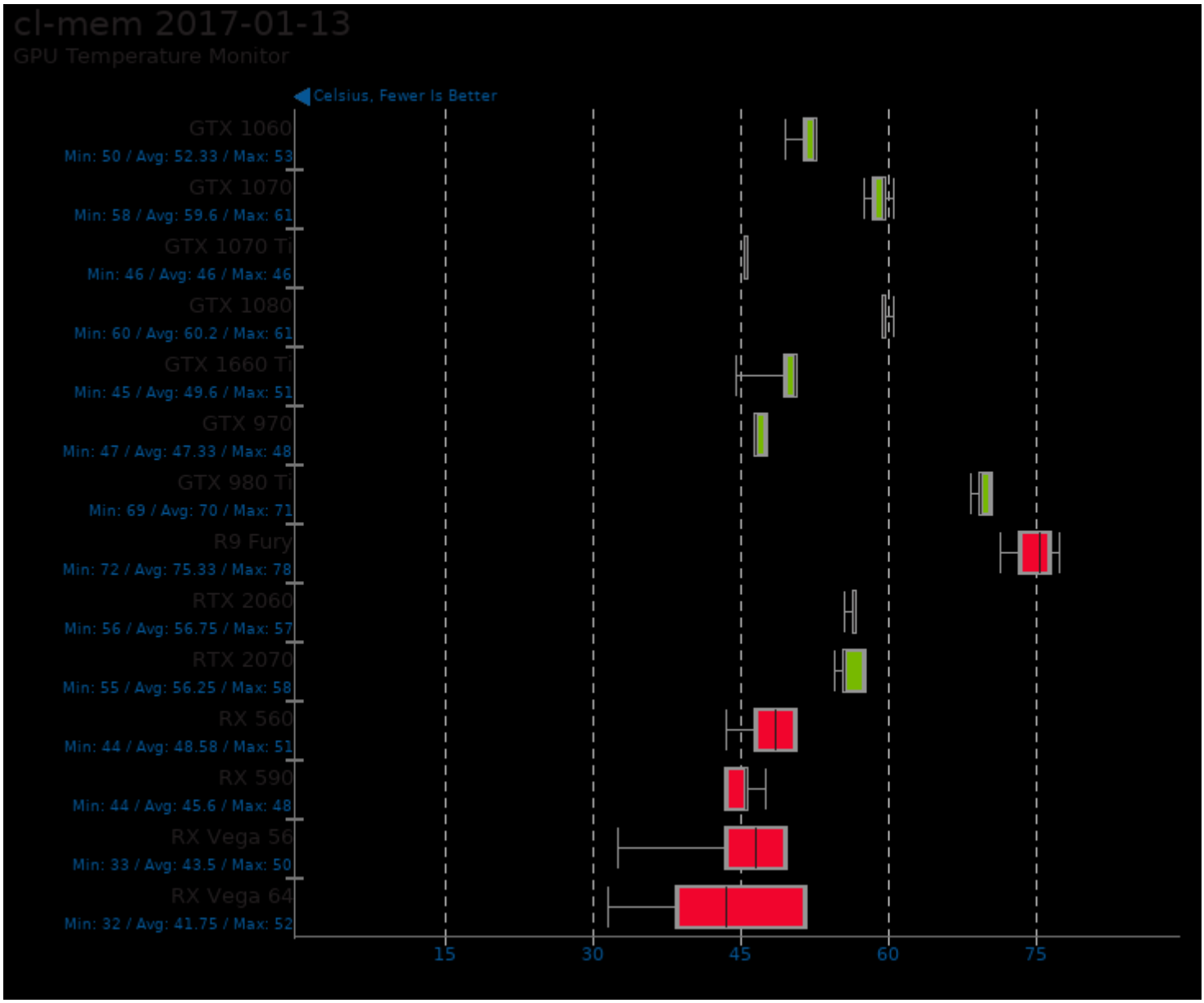
OpenCL GTX 1660 Ti



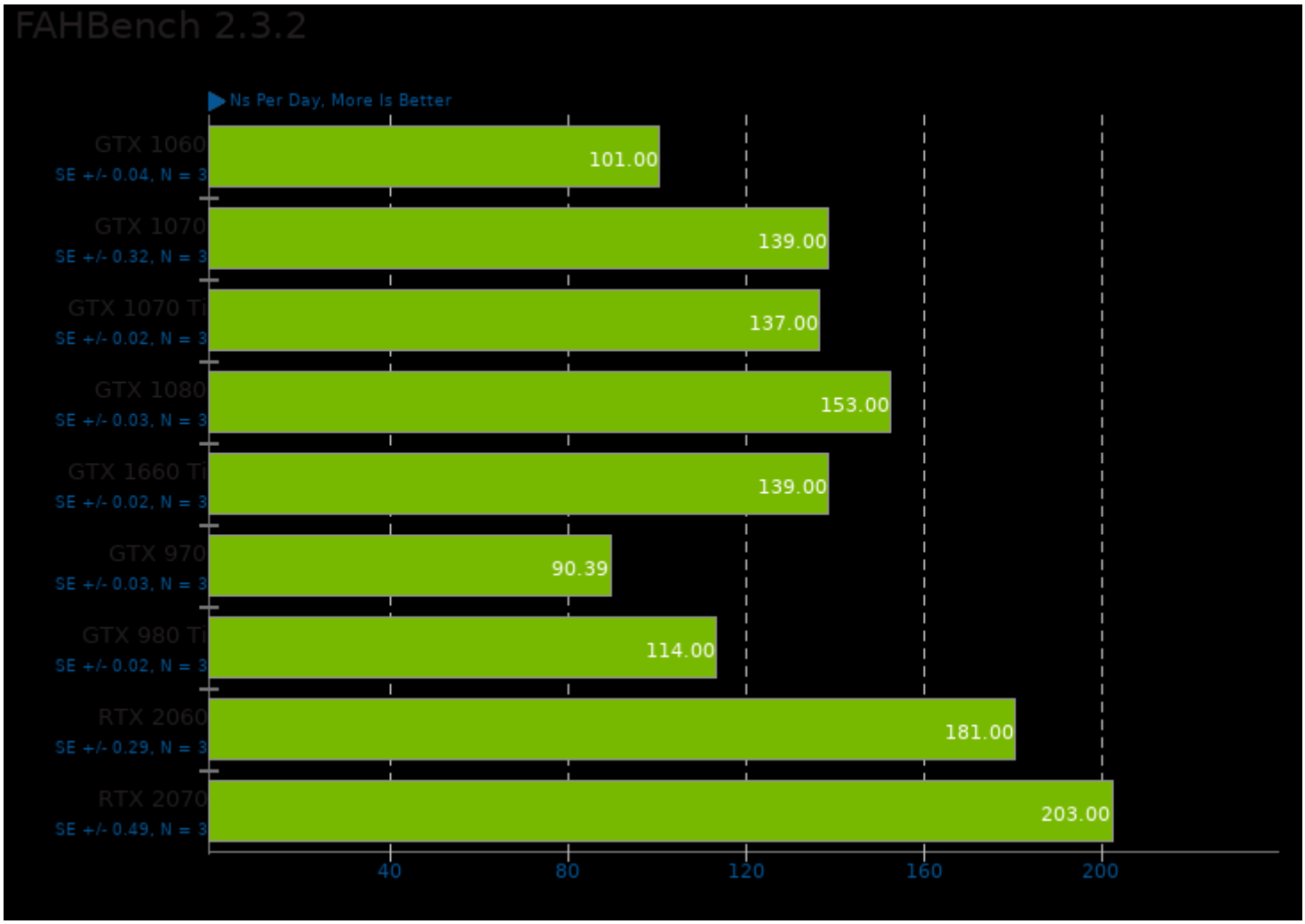
OpenCL GTX 1660 Ti



OpenCL GTX 1660 Ti



OpenCL GTX 1660 Ti



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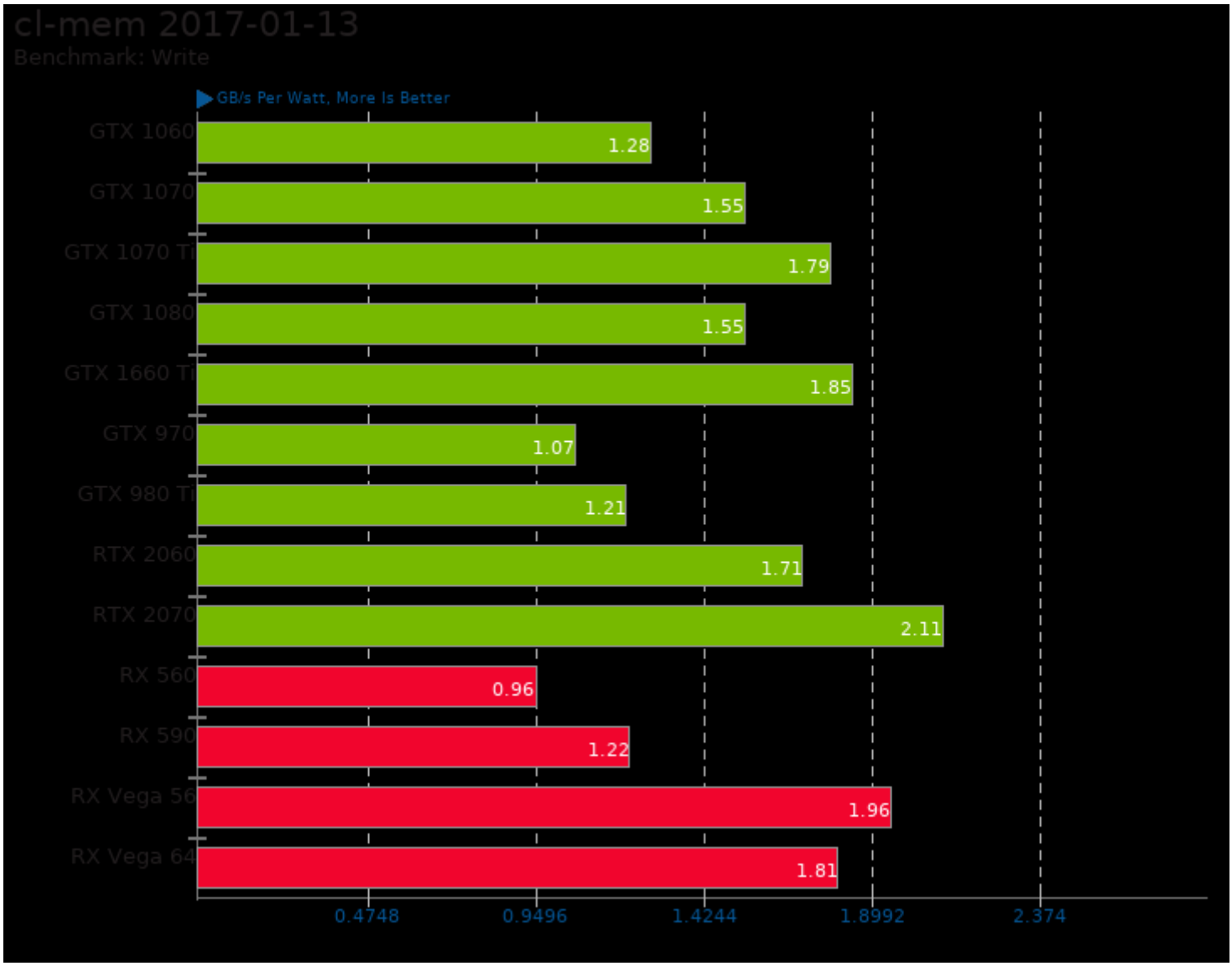
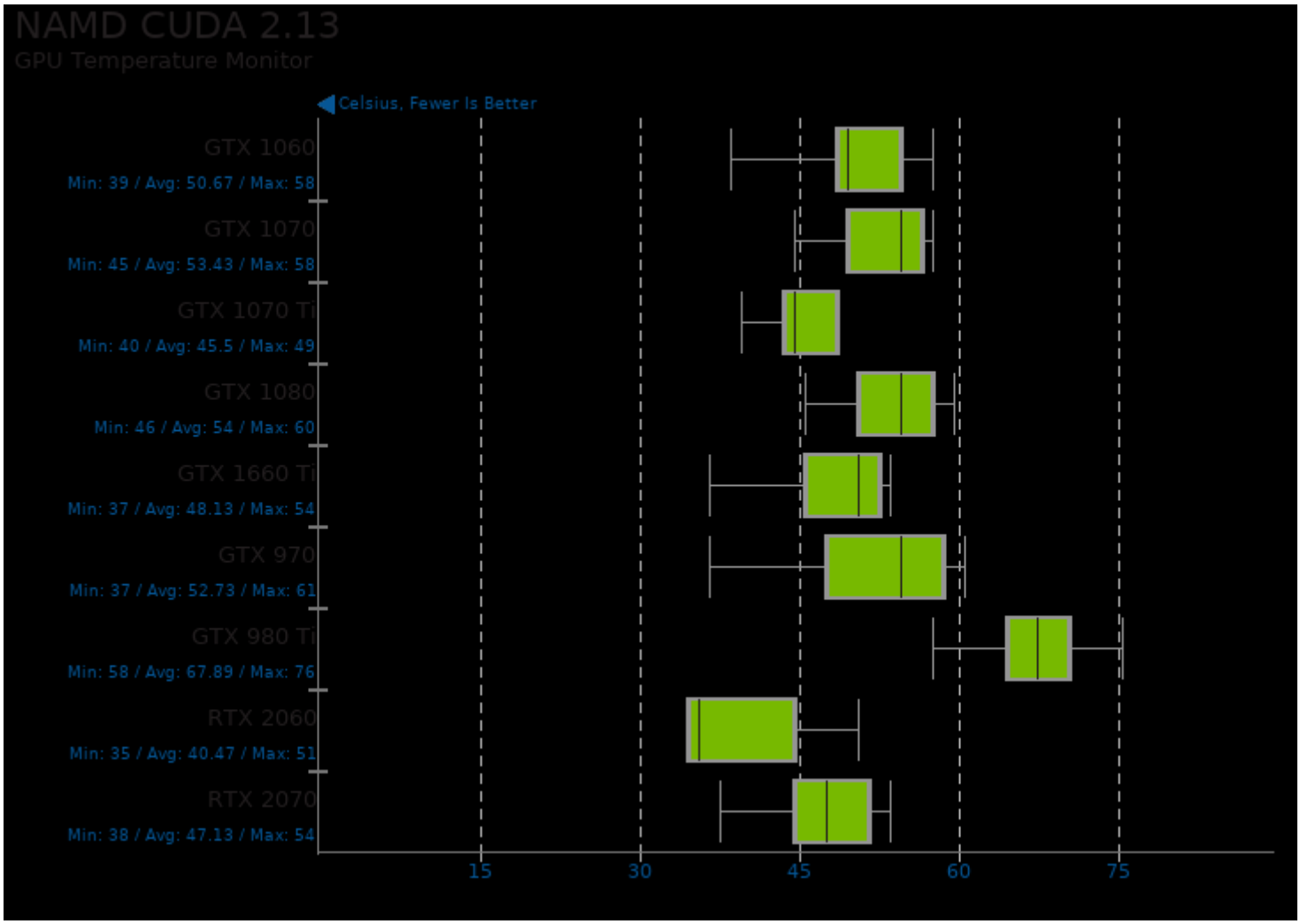
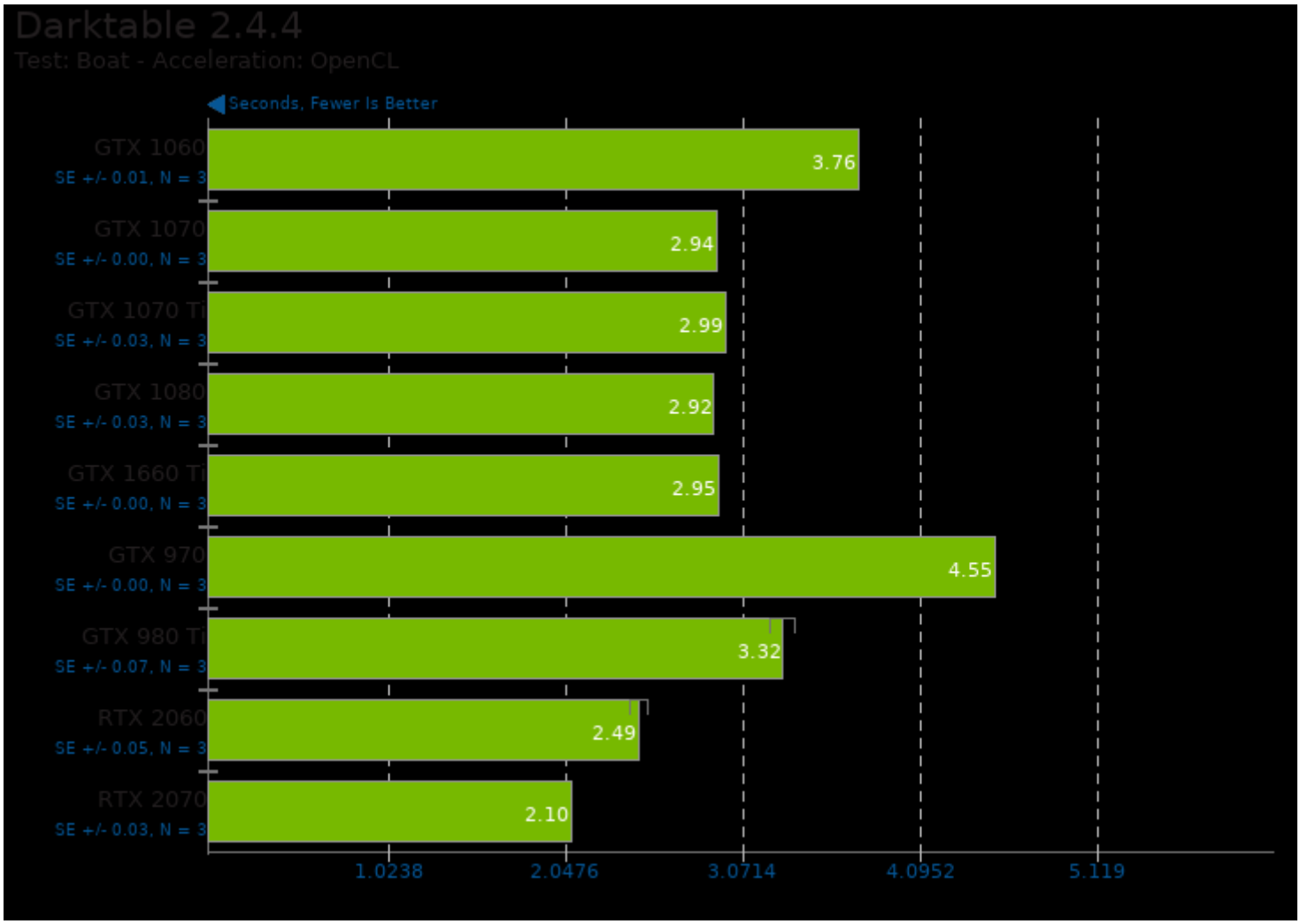


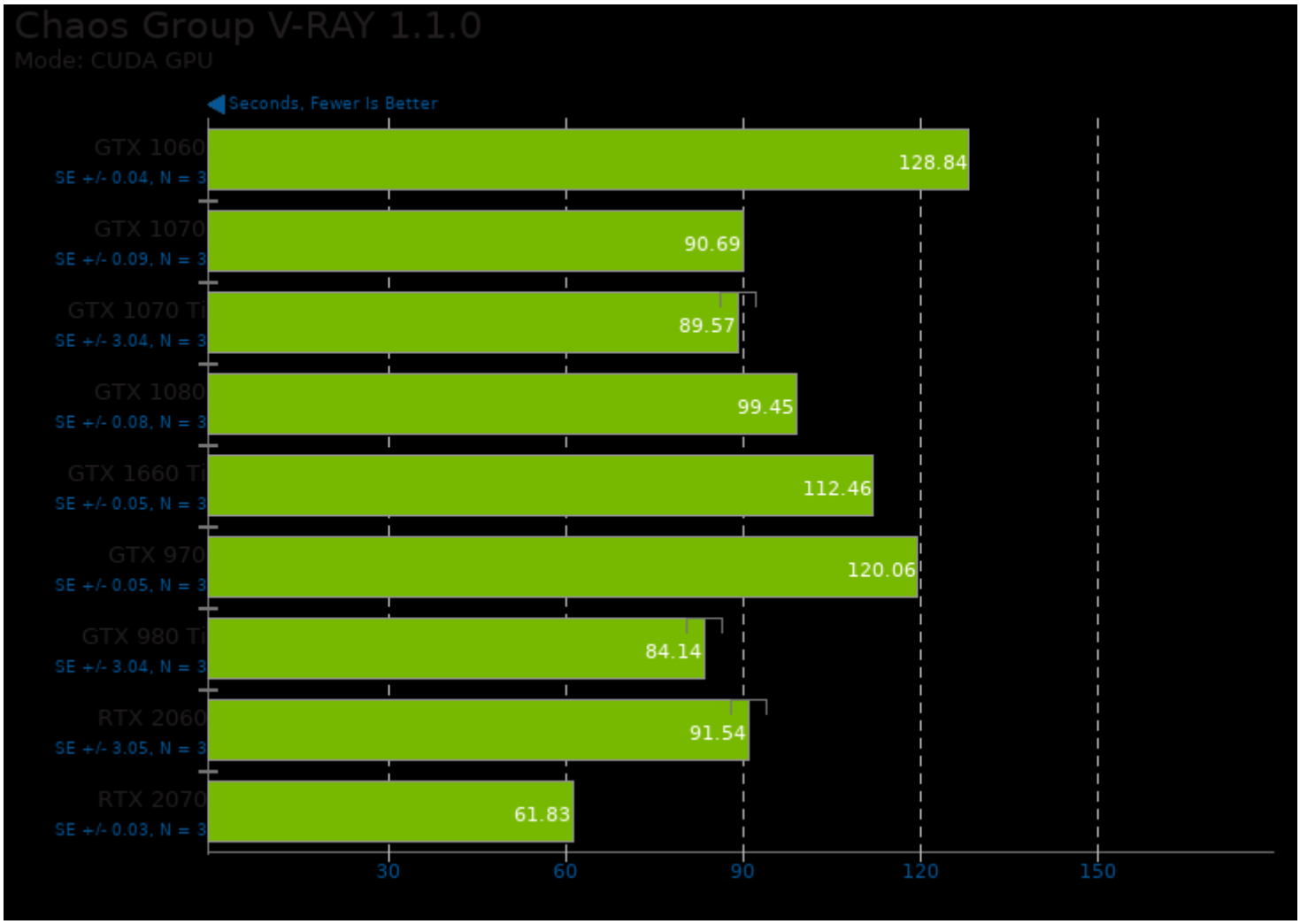
OpenCL GTX 1660 Ti



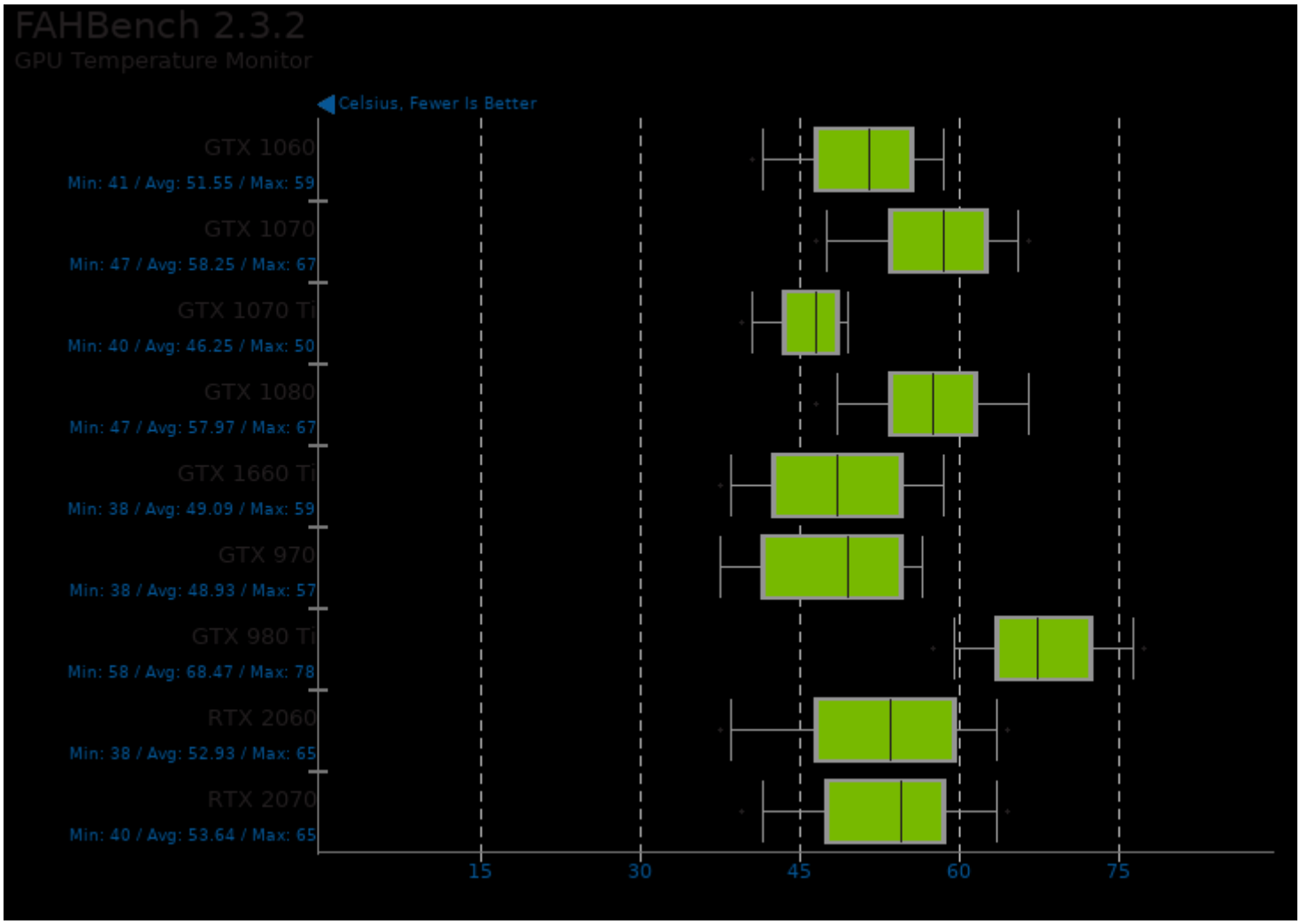
OpenCL GTX 1660 Ti



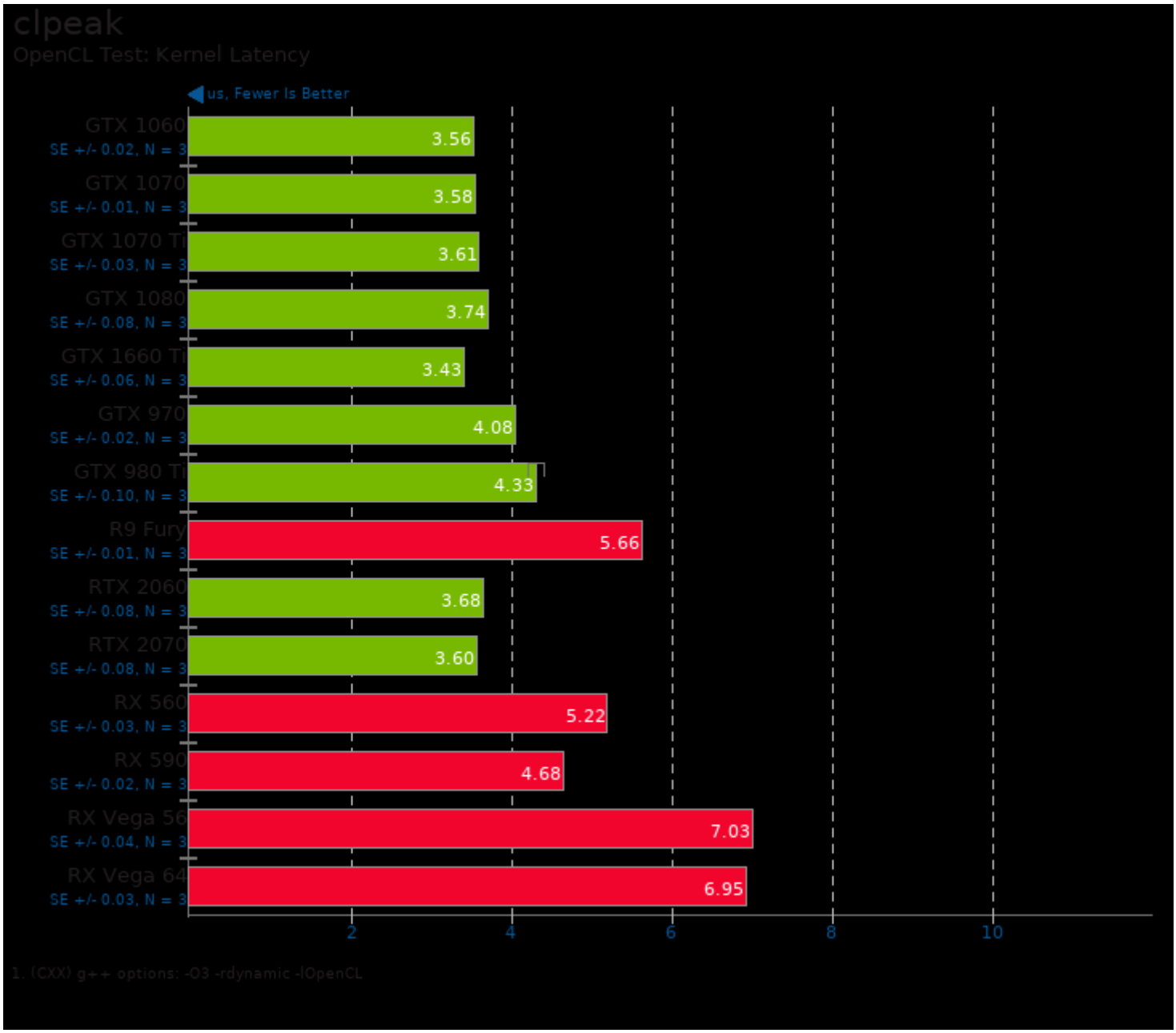
OpenCL GTX 1660 Ti



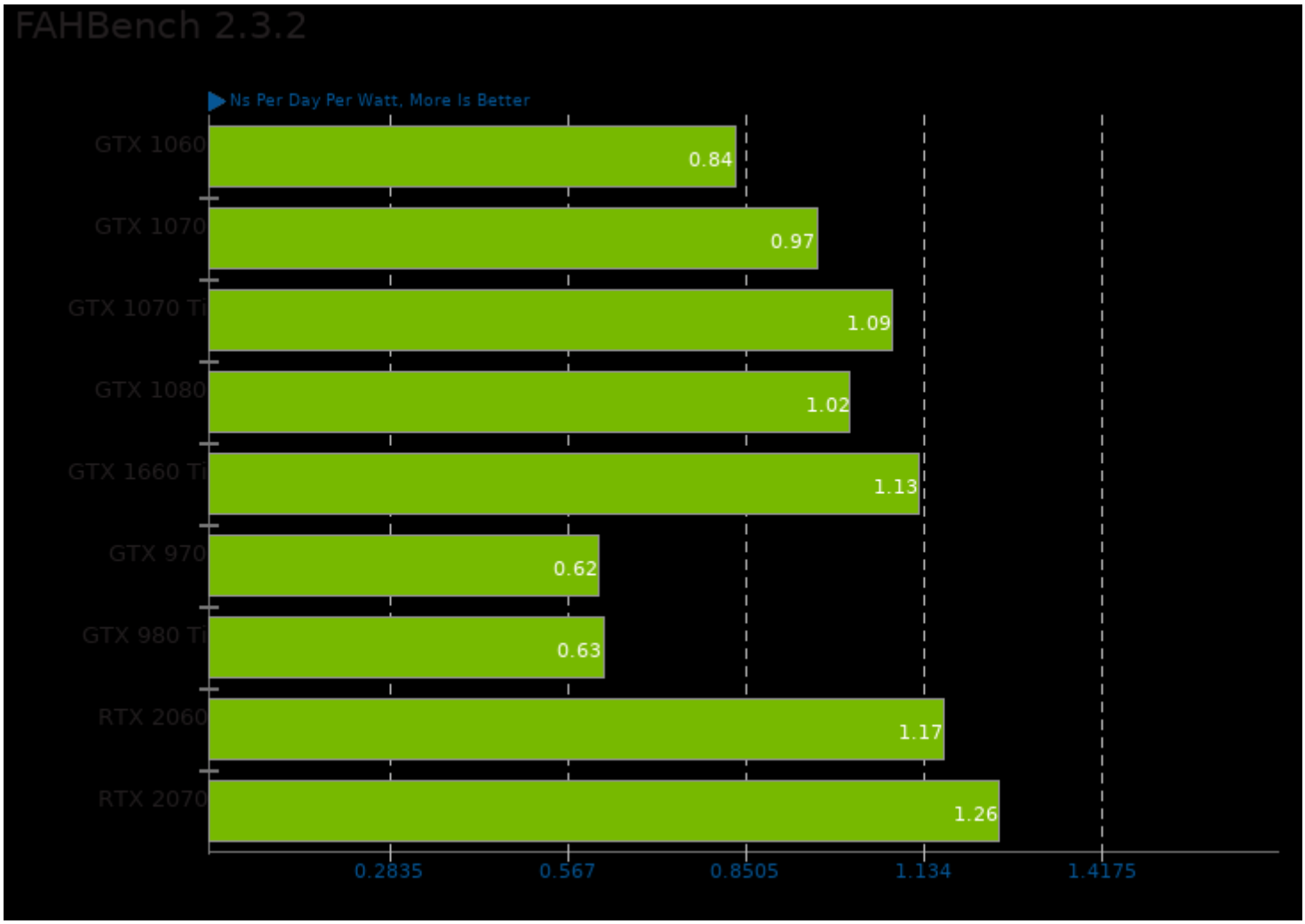
OpenCL GTX 1660 Ti



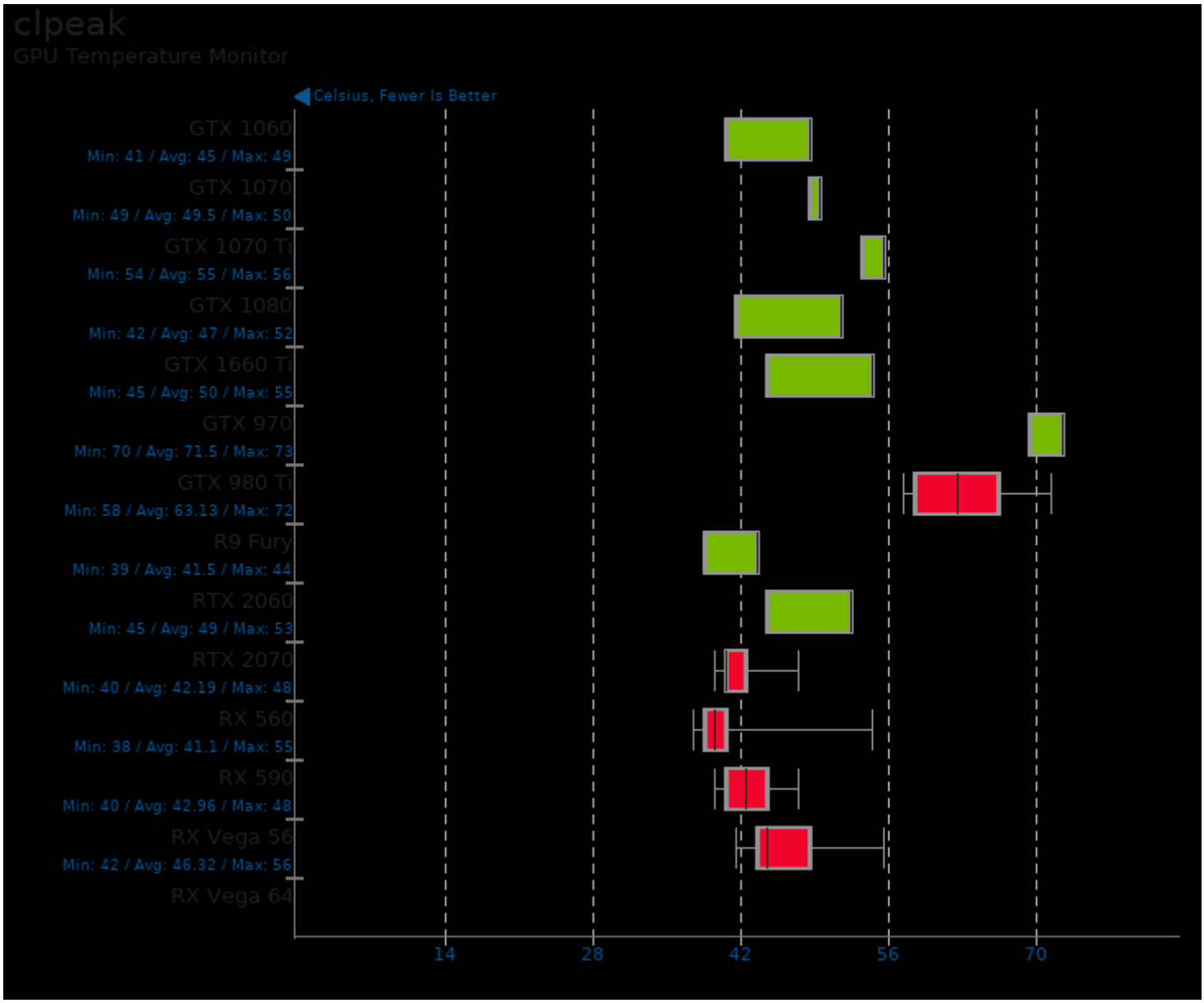
OpenCL GTX 1660 Ti



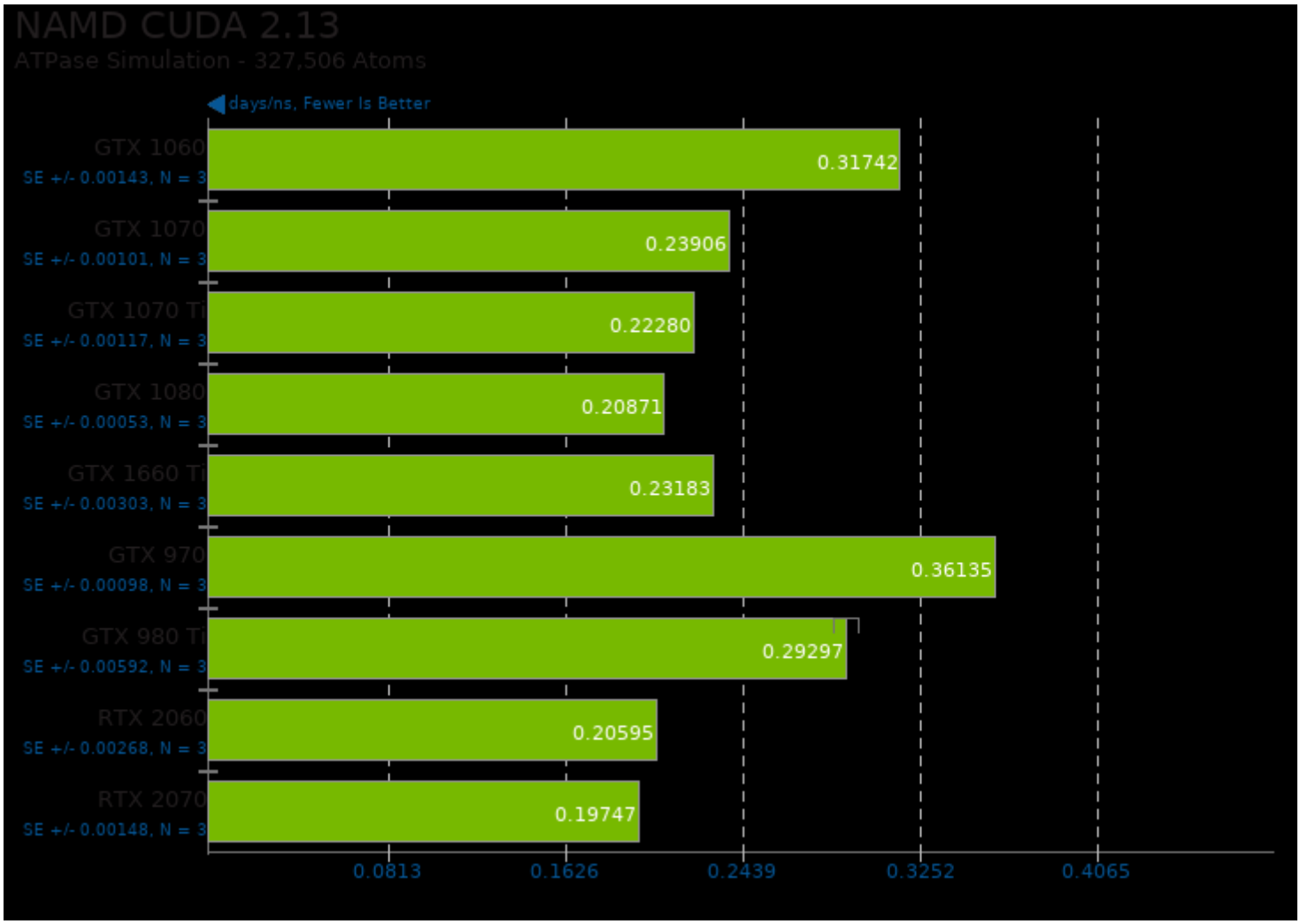
OpenCL GTX 1660 Ti



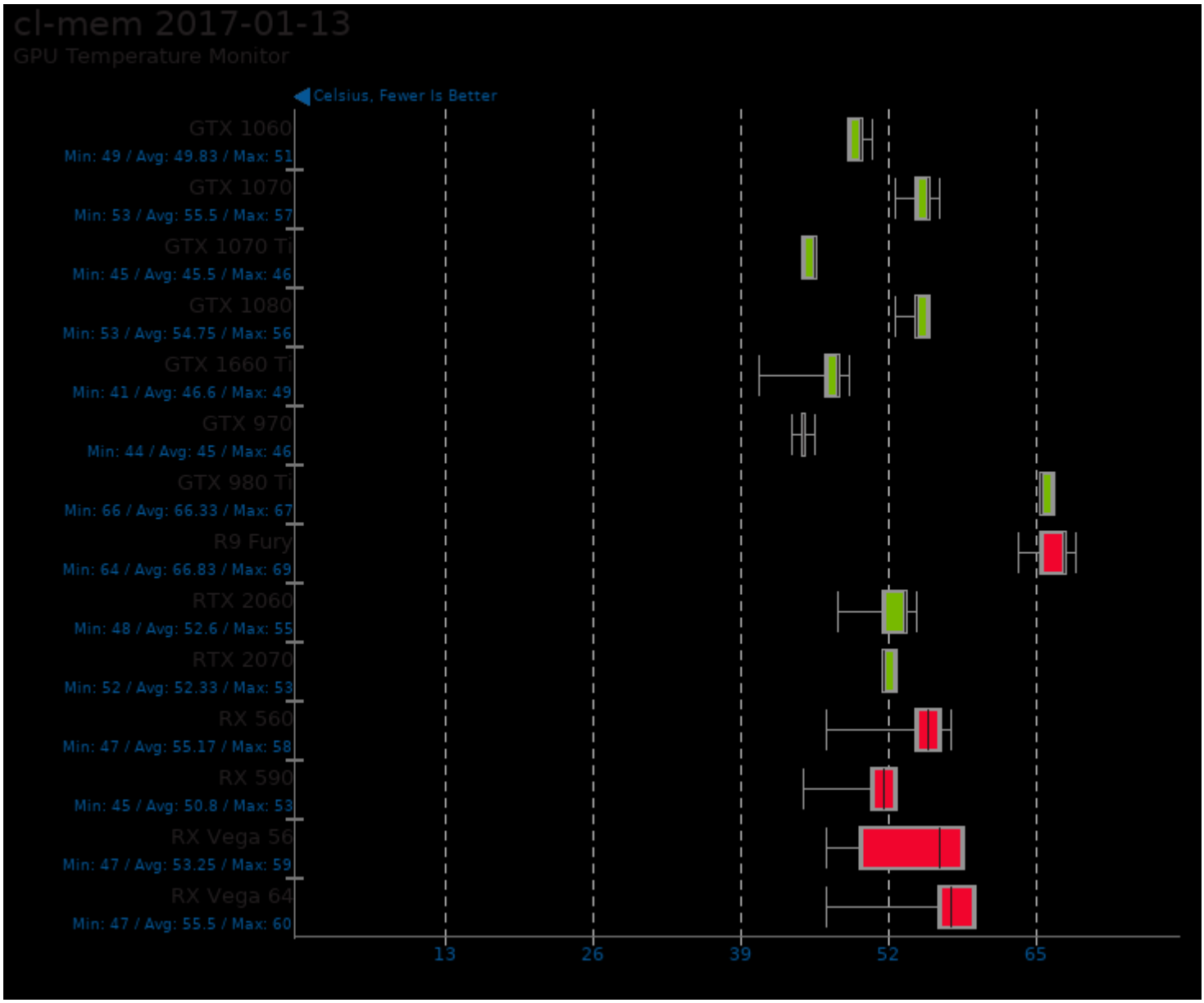
OpenCL GTX 1660 Ti



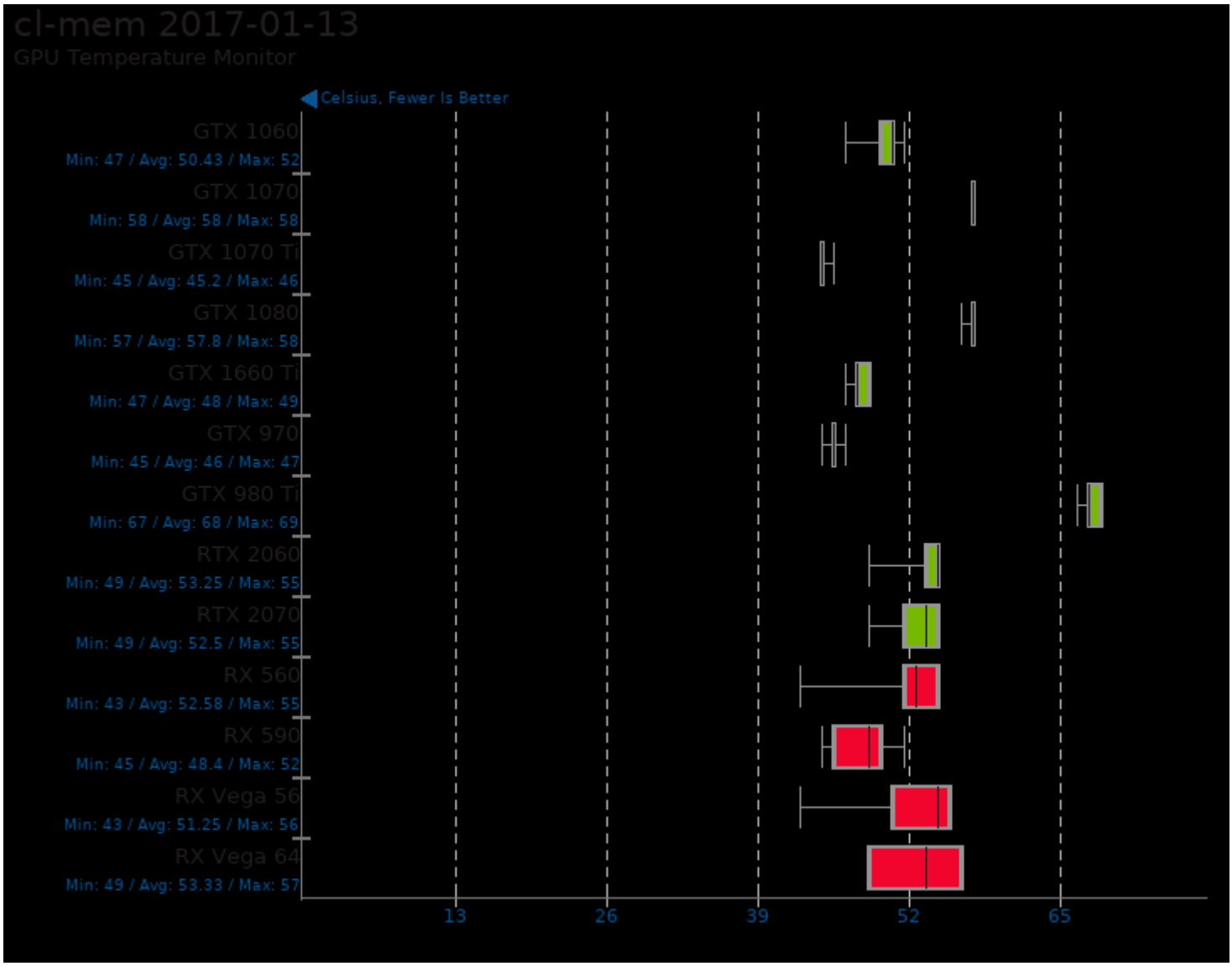
OpenCL GTX 1660 Ti



OpenCL GTX 1660 Ti



OpenCL GTX 1660 Ti



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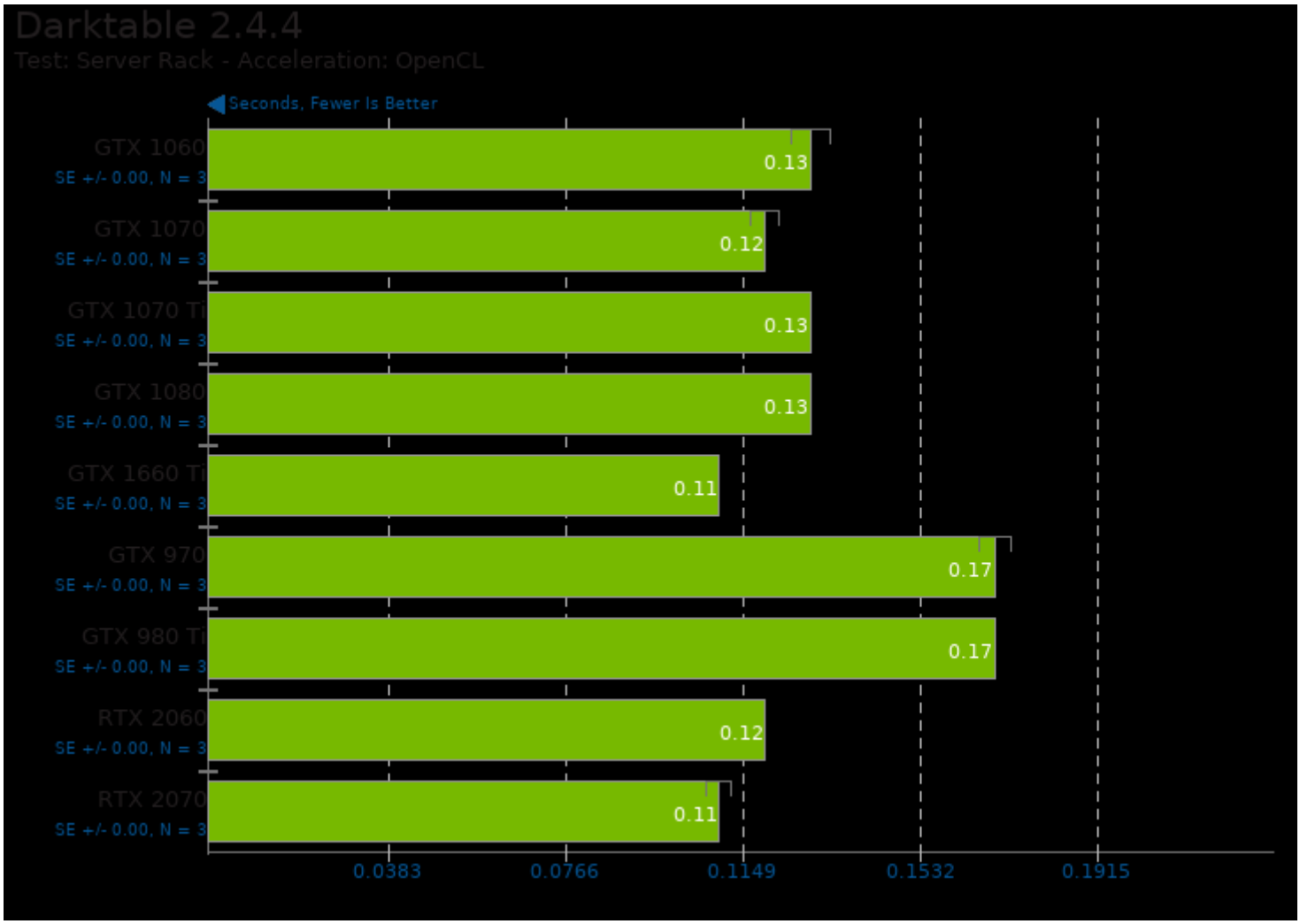
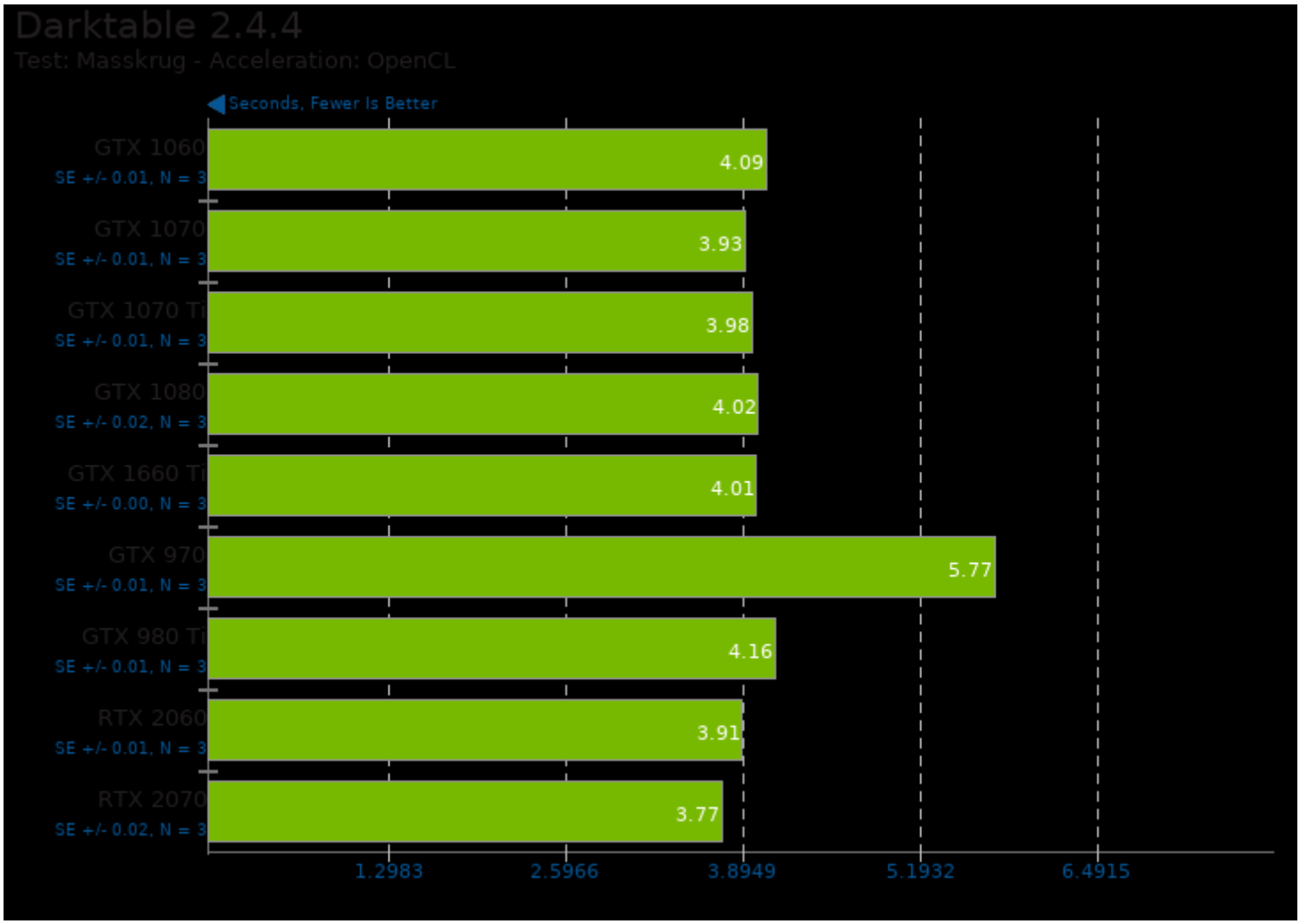
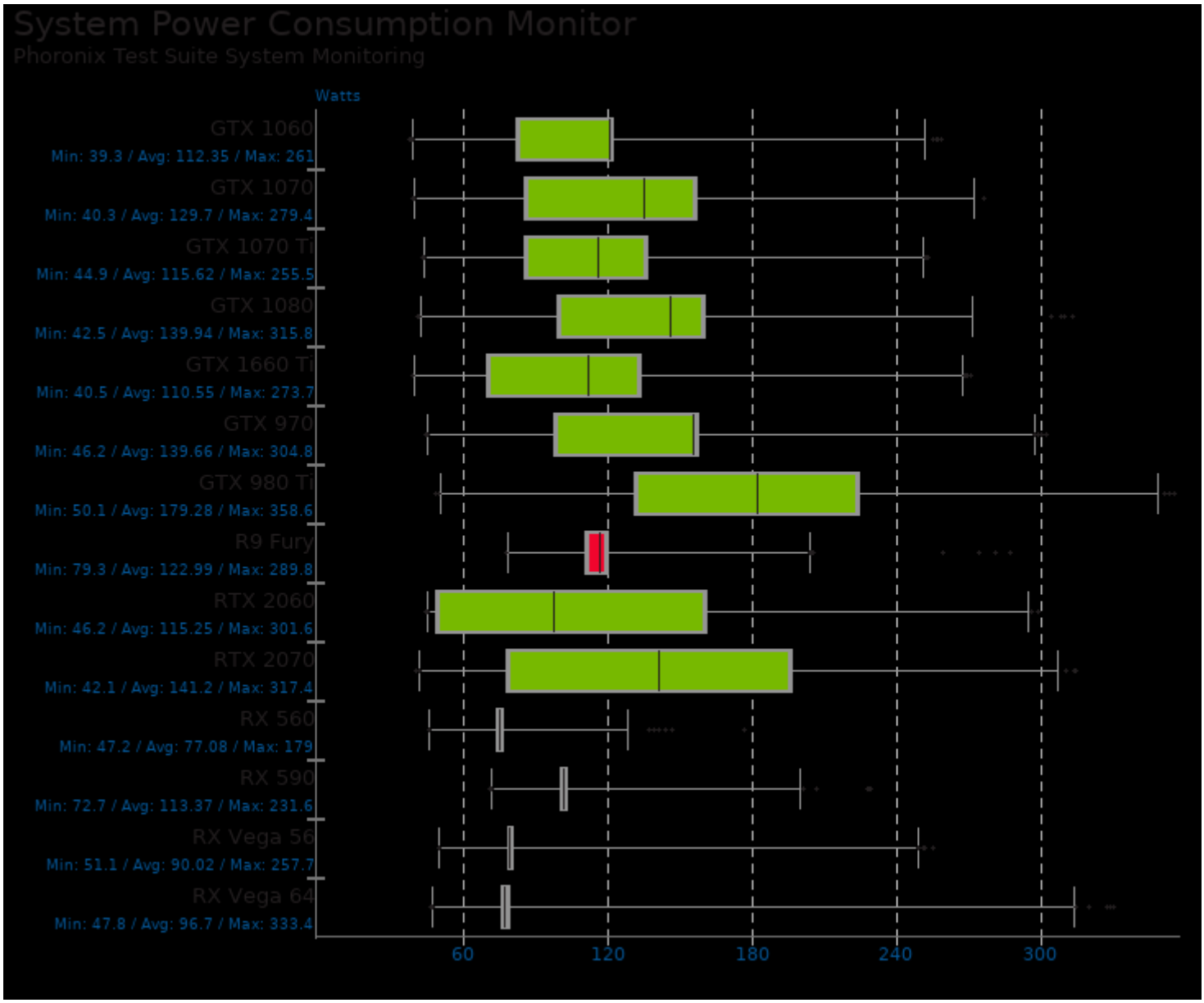


OpenCL GTX 1660 Ti



OpenCL GTX 1660 Ti



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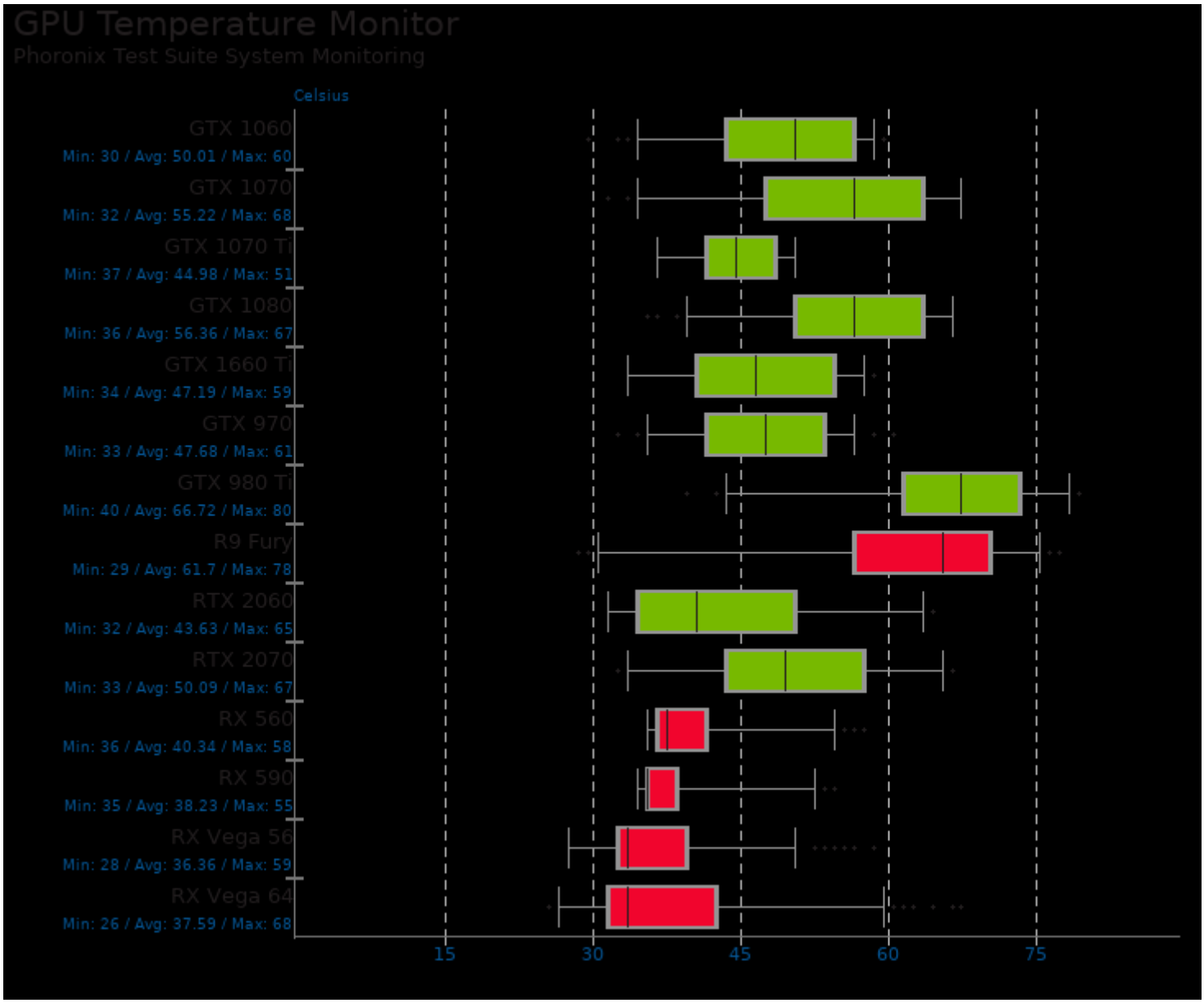

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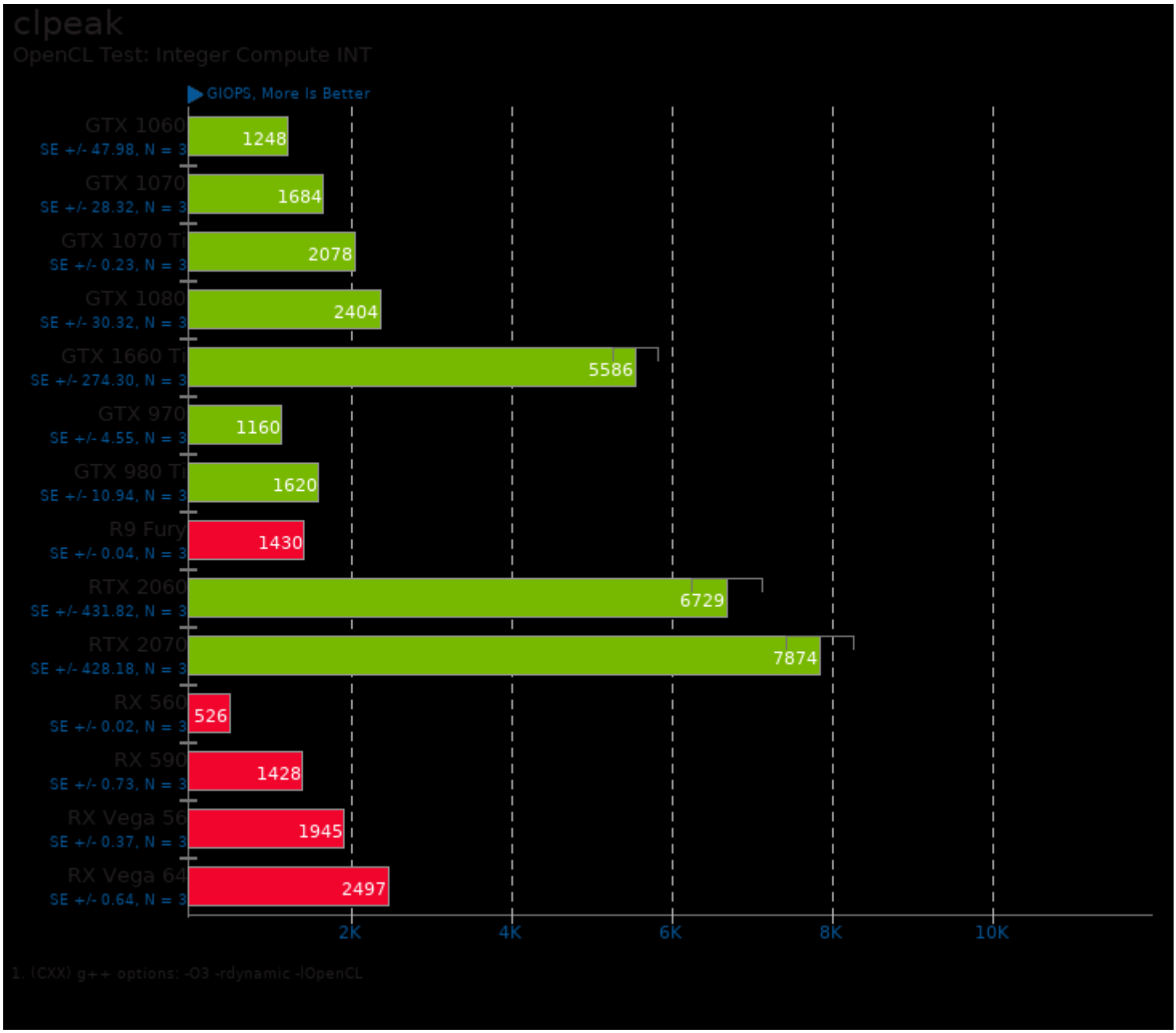

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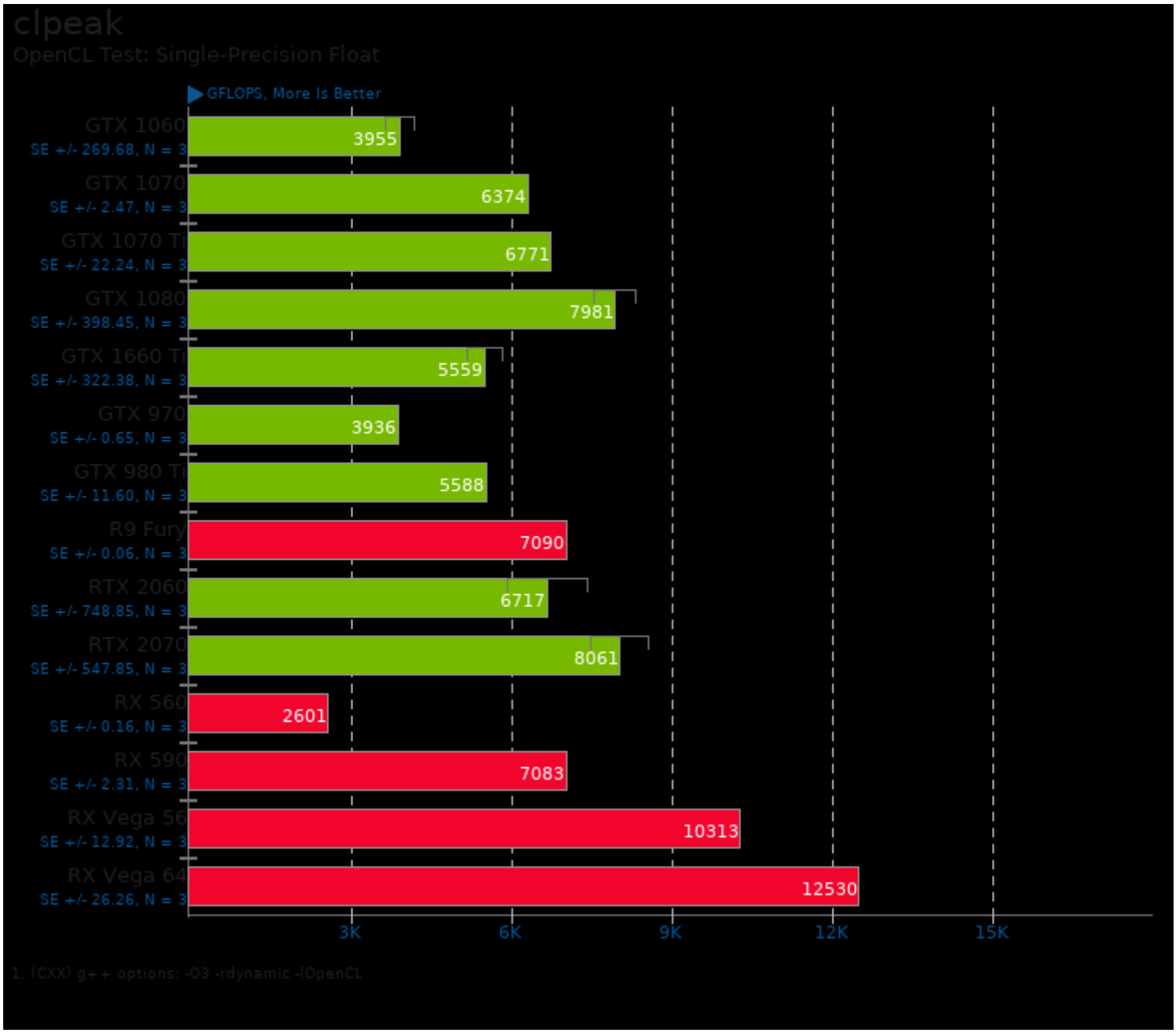
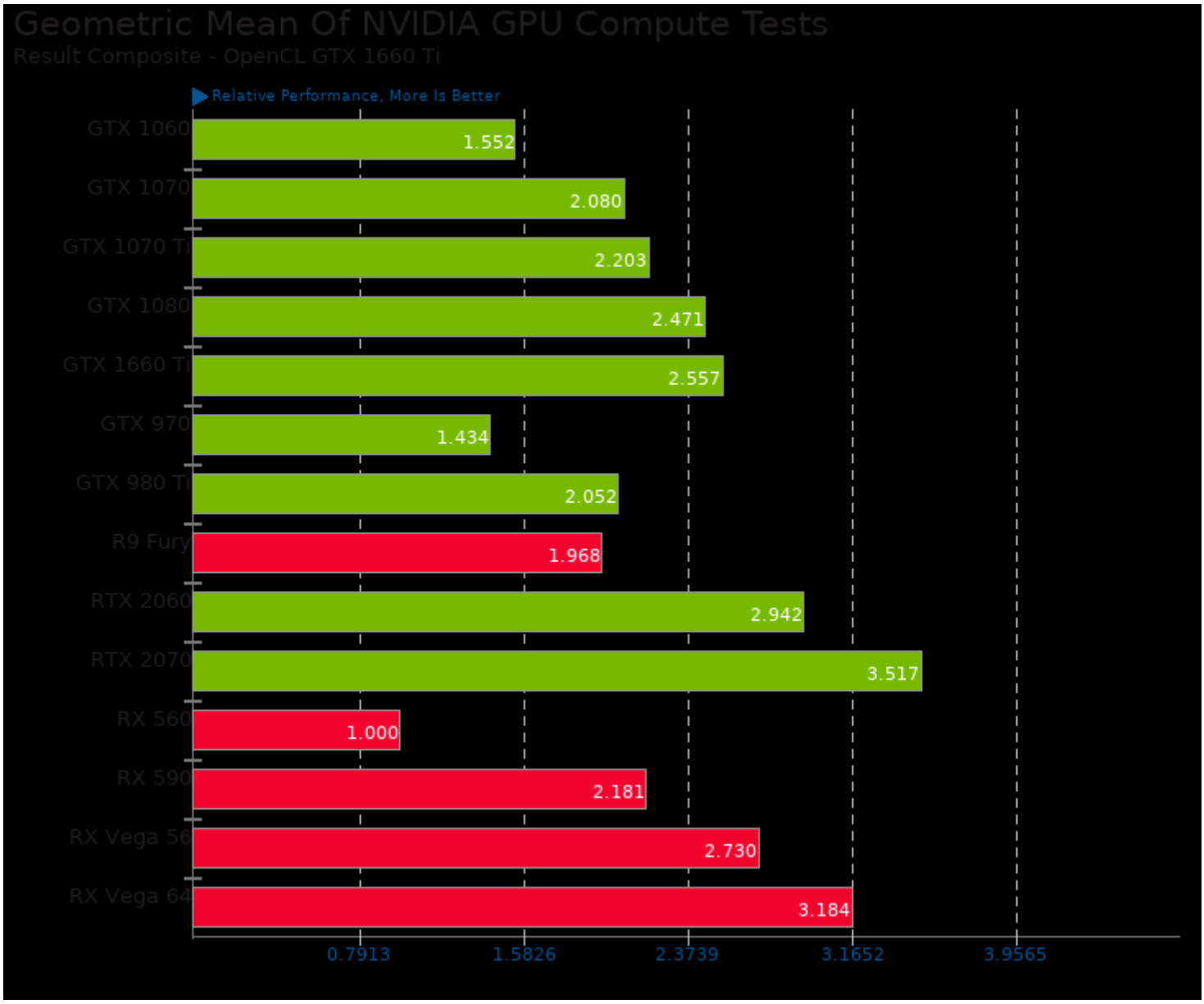


These geometric means are based upon test groupings / test suites for this result file.



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

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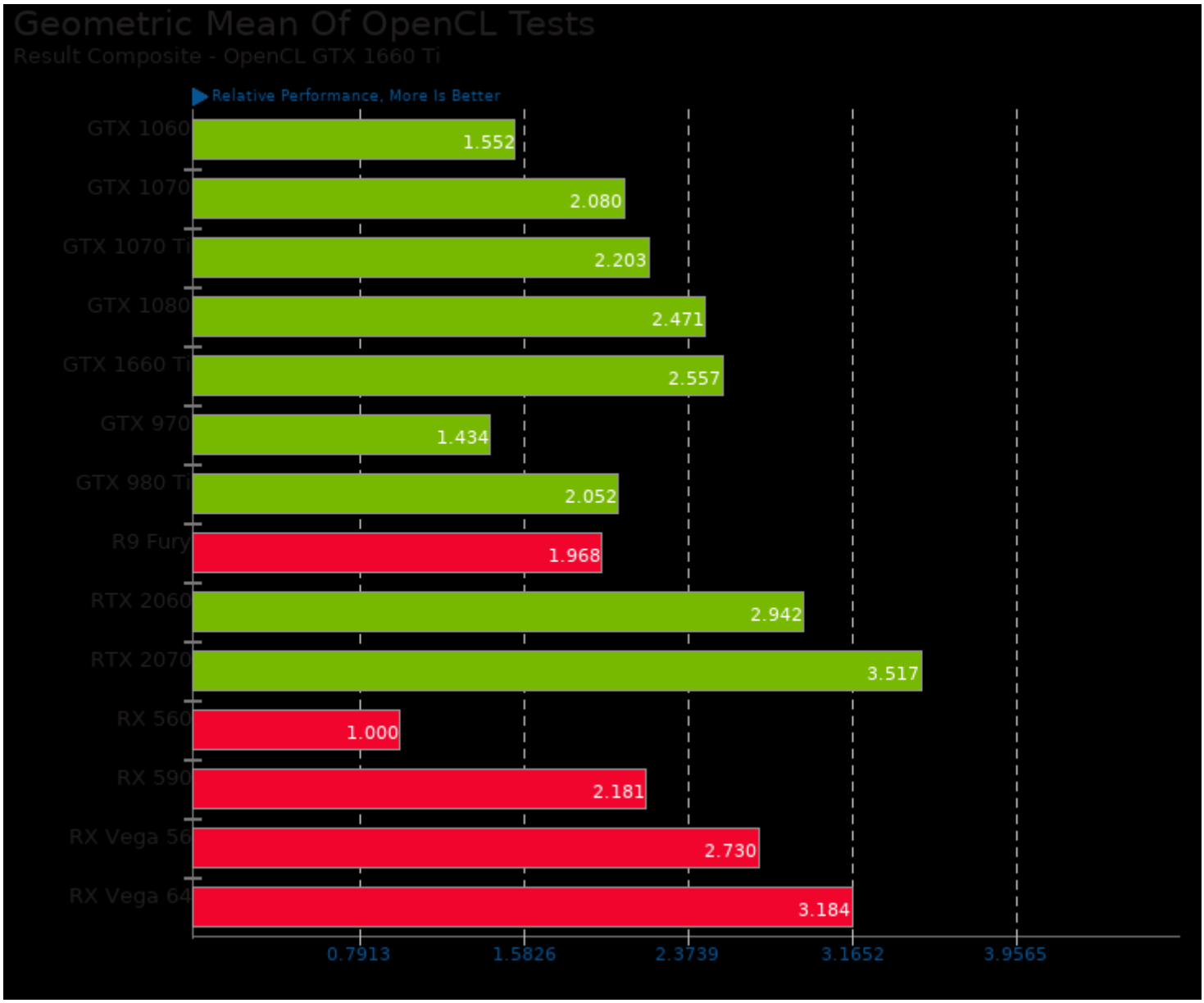

Geometric mean based upon tests: pts/cl-mem, pts/clpeak and system/darktable

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 16:31.