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21-Way Linux Intel/AMD/NVIDIA GPU Benchmarks

Benchmarking 21 graphics cards from AMD Radeon, NVIDIA GeForce, and integrated Intel HD Graphics Haswell hardware. Looking at open-source performance in this portion of the comparison. Benchmarks by Michael Larabel for a future article on Phoronix.com.

Automated Executive Summary

Radeon HD 6870 had the most wins, coming in first place for 72% of the tests.

Test Systems:

Intel HD Graphics 4600

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: Intel HD 4600 (1250MHz), Audio: Intel Haswell HDMI, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display

Driver: intel 2.99.906, OpenGL: 3.3 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa), Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: SNA

GeForce 9500GT

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: ECS NVIDIA GeForce 9500 GT 1024MB (400/399MHz), Audio: Realtek ALC1150, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: nouveau 1.0.10, OpenGL: 3.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: EXA

GeForce 9800GT

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: MSI NVIDIA GeForce 9800 GT 512MB (399/399MHz), Audio: Realtek ALC1150, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: nouveau 1.0.10, OpenGL: 3.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: EXA

GeForce 9800GTX

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: NVIDIA GeForce 9800 GTX / 9800 GTX+ 512MB (399/399MHz), Audio: Realtek ALC1150, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: nouveau 1.0.10, OpenGL: 3.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes

--enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: EXA

GeForce GT 220

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: XFX NVIDIA GeForce GT 220 1024MB (405/324MHz), Audio: NVIDIA GPU 0a HDMI/DP, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: nouveau 1.0.10, OpenGL: 3.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: EXA

GeForce GTX 460

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: ECS NVIDIA GeForce GTX 460 768MB (50/135MHz), Audio: Realtek ALC1150, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: nouveau 1.0.10, OpenGL: 3.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: EXA

GeForce GT 610

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: Zotac NVIDIA GeForce GT 610 1024MB (270/405MHz), Audio: Realtek ALC1150, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: nouveau 1.0.10, OpenGL: 3.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: EXA

GeForce GTX 650

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: MSI NVIDIA GeForce GTX 650 1024MB (324/324MHz), Audio: NVIDIA GPU 42 HDMI/DP, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: nouveau 1.0.10, OpenGL: 3.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: EXA

GeForce GTX 680

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: NVIDIA GeForce GTX 680 2048MB (324/324MHz), Audio: Realtek ALC1150, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: nouveau 1.0.10, OpenGL: 3.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: EXA

GeForce GTX 760

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: NVIDIA GeForce GTX 760 2048MB (405/324MHz), Audio: NVIDIA GPU 40 HDMI/DP, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: nouveau 1.0.10, OpenGL: 3.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: EXA

GeForce GTX 770

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: NVIDIA GeForce GTX 770 2048MB (405/324MHz), Audio: NVIDIA GPU 40 HDMI/DP, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: nouveau 1.0.10, OpenGL: 3.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: EXA

Radeon HD 4650

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: Sapphire AMD Radeon HD 4650 512MB, Audio: ATI R6xx HDMI, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: radeon 7.2.99, OpenGL: 3.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: EXA

Radeon HD 4830

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: Sapphire AMD Radeon HD 4830 512MB, Audio: Realtek ALC1150, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: radeon 7.2.99, OpenGL: 3.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: EXA

Radeon HD 4850

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: AMD Radeon HD 4850 512MB, Audio: ATI R6xx HDMI, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: radeon 7.2.99, OpenGL: 3.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object

--enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: EXA

Radeon HD 4870

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: AMD Radeon HD 4870 512MB, Audio: Realtek ALC1150, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: radeon 7.2.99, OpenGL: 3.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: EXA

Radeon HD 6450

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: HIS AMD Radeon HD 6450/7450/8450 1024MB, Audio: ATI R6xx HDMI, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: radeon 7.2.99, OpenGL: 3.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: EXA

Radeon HD 6870

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: Sapphire AMD Radeon HD 6870 1024MB, Audio: ATI R6xx HDMI, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: radeon 7.2.99, OpenGL: 3.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: EXA

Radeon HD 6950

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: Sapphire AMD Radeon HD 6950 2048MB, Audio: Realtek ALC1150, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: radeon 7.2.99, OpenGL: 3.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: EXA

Radeon HD 7850

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: ASUS AMD Radeon HD 7850 1024MB, Audio: Realtek ALC1150, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: radeon 7.2.99, OpenGL: 2.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: GLAMOR

Radeon HD 7950

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: XFX AMD Radeon HD 7950 3072MB, Audio: Realtek ALC1150, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: radeon 7.2.99, OpenGL: 2.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: GLAMOR

Radeon R9 270X

Processor: Intel Core i7-4770K @ 4.40GHz (8 Cores), Motherboard: ECS Z87H3-A2X EXTREME v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: Gigabyte AMD Radeon R9 270X 2048MB, Audio: ATI R6xx HDMI, Monitor: VA2431, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: radeon 7.2.99, OpenGL: 2.1 Mesa 10.1.0-devel (git-2d5f21b saucy-oibaf-ppa) Gallium 0.4, Compiler: GCC 4.8 + LLVM 3.4, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-ecj-jar=/usr/share/java/eclipse-ecj.jar --with-java-home=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64/jre --with-jvm-jar-dir=/usr/lib/jvm-exports/java-1.5.0-gcj-4.8-amd64 --with-jvm-root-dir=/usr/lib/jvm/java-1.5.0-gcj-4.8-amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Graphics Notes: GLAMOR

NVIDIA GeForce GTS 450 Rev. 2

Processor: Intel Pentium G3258 @ 3.20GHz (2 Cores), Motherboard: MSI H81M-P33 (MS-7817) v1.0, Chipset: Intel 4th Gen Core DRAM, Memory: 1 x 8192 MB DDR3-1600MHz, Disk: 500GB Western Digital WD5000AADS-6 + 500GB HD-PVRU2, Graphics: NVIDIA GeForce GTS 450 Rev. 2, Audio: Realtek ALC887-VD, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 14.04, Kernel: 4.2.0-34-generic (x86_64), Desktop: Unity 7.2.6, Display Server: X Server 1.17.2, Display Driver: nouveau 1.0.11, Compiler: GCC 4.8 + CUDA 7.5, File-System: jfs, Screen Resolution: 1680x1050

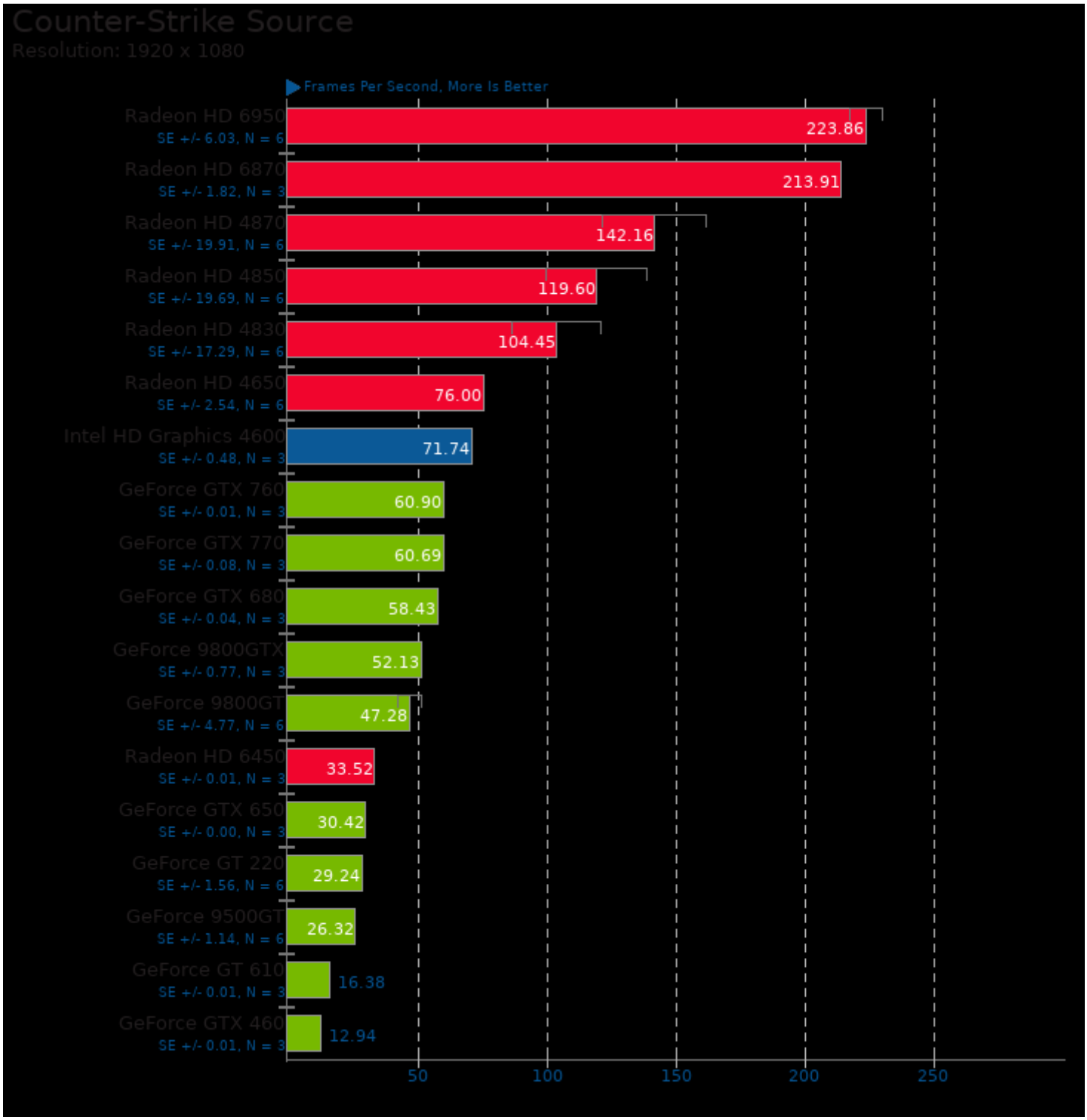
	Intel HD Graphics 4600	GeForce 9500GT	GeForce 9800GT	GeForce 9800GTX	GeForce GT 220	GeForce GTX 460	GeForce GT 610	GeForce GTX 650	GeForce GTX 680	GeForce GTX 760	GeForce GTX 770	Radeon HD 4650	Radeon HD 4830	Radeon HD 4850	Radeon HD 4870	Radeon HD 6450	Radeon HD 6870	Radeon HD 6950	Radeon HD 7850	Radeon HD 7950	Radeon R9 270X	NVIDIA GeForce GTS 450 Rev. 2
Counter-Strike Source - 1920 x 1080 (FPS)	71.74	26.32	47.28	52.13	29.24	**12.94**	16.38	30.42	58.43	60.90	60.69	76.00	104.45	119.60	142.16	33.52	213.91	**223.86**				
Normalized	32.05%	11.76%	21.12%	23.29%	13.06%	5.78%	7.32%	13.59%	26.10%	27.20%	27.11%	33.95%	46.66%	53.43%	63.51%	14.97%	95.56%	100%				
Standard Deviation	1.2%	10.7%	24.7%	2.6%	13.1%	0.1%	0.1%	0%	0.1%	0%	0.2%	8.2%	40.6%	40.3%	34.3%	0.1%	1.5%	6.6%				

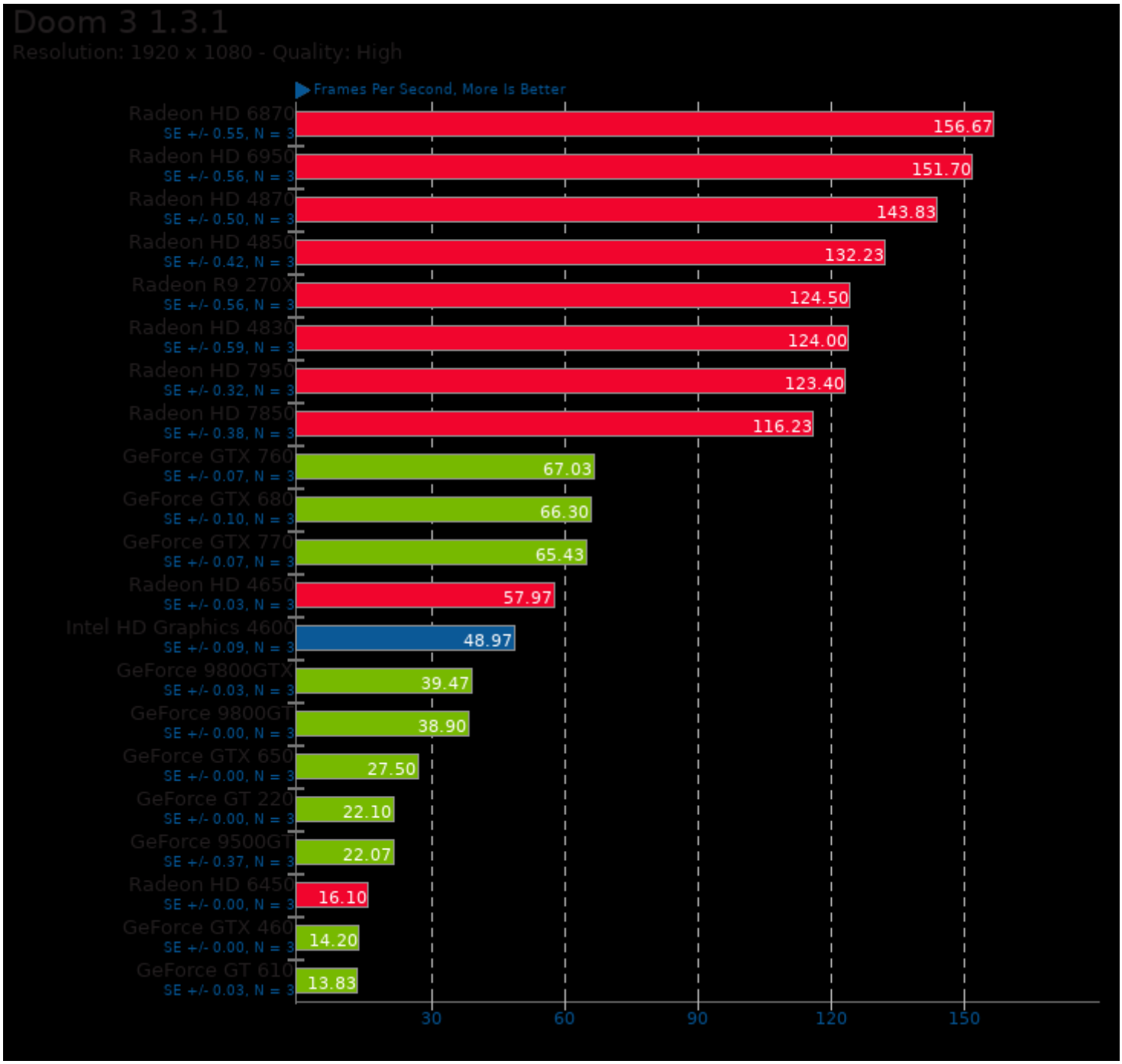
21-Way Linux Intel/AMD/NVIDIA GPU Benchmarks

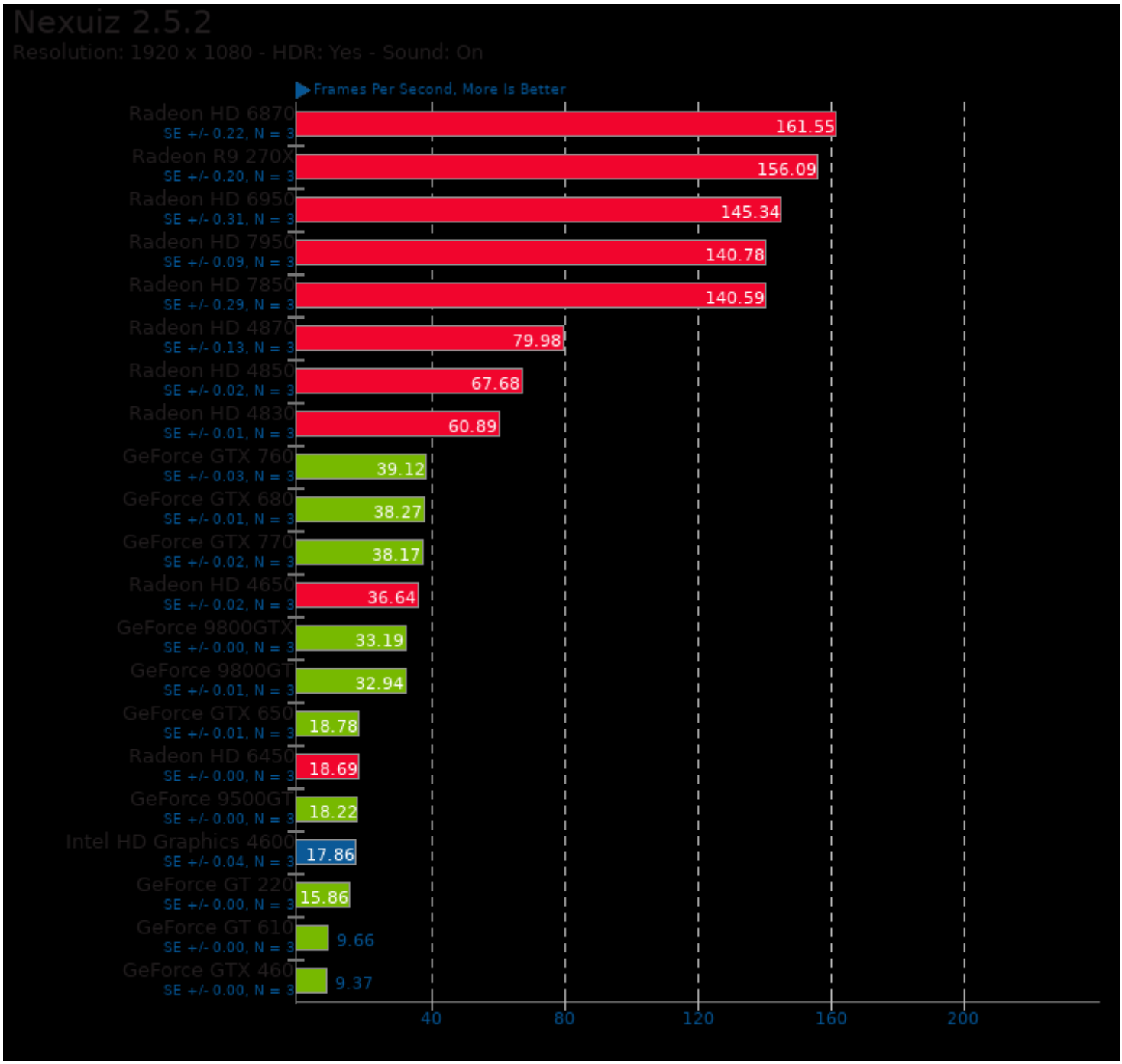
Doom 3 - 1920 x 1080 - High (FPS)	48.97	22.07	38.90	39.47	22.10	14.20	**13.83**	27.50	66.30	67.03	65.43	57.97	124.00	132.23	143.83	16.10	**156.67**	151.70	116.23	123.40	124.50
Normalized	31.26%	14.09%	24.83%	25.19%	14.11%	9.06%	8.83%	17.55%	42.32%	42.78%	41.76%	37%	79.15%	84.41%	91.88%	10.28%	100%	96.83%	74.19%	78.76%	79.47%
Standard Deviation	0.3%	2.9%	0%	0.1%	0%	0%	0.4%	0%	0.3%	0.2%	0.2%	0.1%	0.8%	0.5%	0.6%	0%	0.6%	0.6%	0.6%	0.5%	0.8%
Nexuiz - 1920 x 1080 - Yes - On (FPS)	17.86	18.22	32.94	33.19	15.86	**9.37**	9.66	18.78	38.27	39.12	38.17	36.64	60.89	67.68	79.98	18.69	**161.55**	145.34	140.59	140.78	156.09
Normalized	11.06%	11.28%	20.39%	20.54%	9.82%	5.8%	5.98%	11.62%	23.69%	24.21%	23.63%	22.68%	37.69%	41.89%	49.51%	11.57%	100%	89.97%	87.03%	87.13%	96.68%
Standard Deviation	0.4%	0%	0.1%	0%	0%	0%	0%	0.1%	0%	0.1%	0.1%	0.1%	0%	0%	0.3%	0%	0.2%	0.4%	0.4%	0.1%	0.2%
OpenArena - 1920 x 1080 (FPS)	24.80	22.80	54.40	57.30	27.20	**10.90**	12.33	25.97	70.23	68.50	72.07	39.33	67.30	72.40	83.63	15.80	**185.77**	116.80	159.93	180.77	177.13	25
Normalized	13.35%	12.27%	29.29%	30.84%	14.64%	5.87%	6.64%	13.98%	37.8%	36.87%	38.8%	21.17%	36.23%	38.98%	45.02%	8.51%	100%	62.88%	86.09%	97.31%	95.37%	13.4%
Standard Deviation	0%	0%	0%	0%	0%	0%	0.5%	0.2%	0.1%	0.1%	0.1%	0.1%	0%	0%	0.1%	0%	0.3%	0.1%	0.1%	0.2%	0.1%	0%
Prey - 1920 x 1080 (FPS)	22.70	19	39.43	40.90	21.50	10.60	**10.30**	21.80	55.13	53.57	53.77	47.20	87.07	95.97	112.70	16.90	**204.47**	168.10	134.93	152.80	153.73
Normalized	11.1%	9.29%	19.2%	20%	10.5%	5.18%	5.04%	10.6%	26.9%	26.2%	26.3%	23.0%	42.5%	46.9%	55.1%	8.27%	100%	82.2%	65.9%	74.7%	75.1%
Standard Deviation	0%	0%	0.1%	0%	0%	0%	0%	0%	0.1%	0.1%	0.3%	0%	0.1%	0.1%	0.1%	0%	0.4%	0.2%	0.2%	0.2%	0.1%
Reaction Quake 3 - 1920 x 1080 (FPS)	72.30	38.90	68.10	67.10	32.67	**17.10**	18	33	65.83	66.70	65.10	116.20	177.37	192.17	224.23	48.07	**442.80**	343.70	156.00	153.30	170.47
Normalized	16.33%	8.79%	15.38%	15.17%	7.38%	3.86%	4.07%	7.45%	14.8%	15.07%	14.71%	26.2%	40.07%	43.4%	50.68%	10.86%	100%	77.6%	35.2%	34.6%	38.5%
Standard Deviation	0.1%	0%	0%	0%	0.2%	0%	0%	0%	0.1%	0%	0%	0%	0%	0%	0.1%	0.1%	0.1%	0%	0.8%	0.5%	0.1%
Unigine Sanctuary - 1920 x 1080 (FPS)	13.43	4.30	11.68	12.49	7.08	3.55	**3.18**	9.44	22.68	22.97	24.23	8.74	25.07	30.58	36.35	8.13	76.16	**88.23**			
Normalized	15.22%	4.87%	13.24%	14.16%	8.02%	4.02%	3.6%	10.7%	25.7%	26.0%	27.4%	9.91%	28.4%	34.6%	41.2%	9.21%	86.3%	100%			
Standard Deviation	0%	0.2%	0%	0%	0.1%	0%	0%	0.1%	0%	0.1%	0%	0%	0%	0%	0%	0.1%	0%	0%			

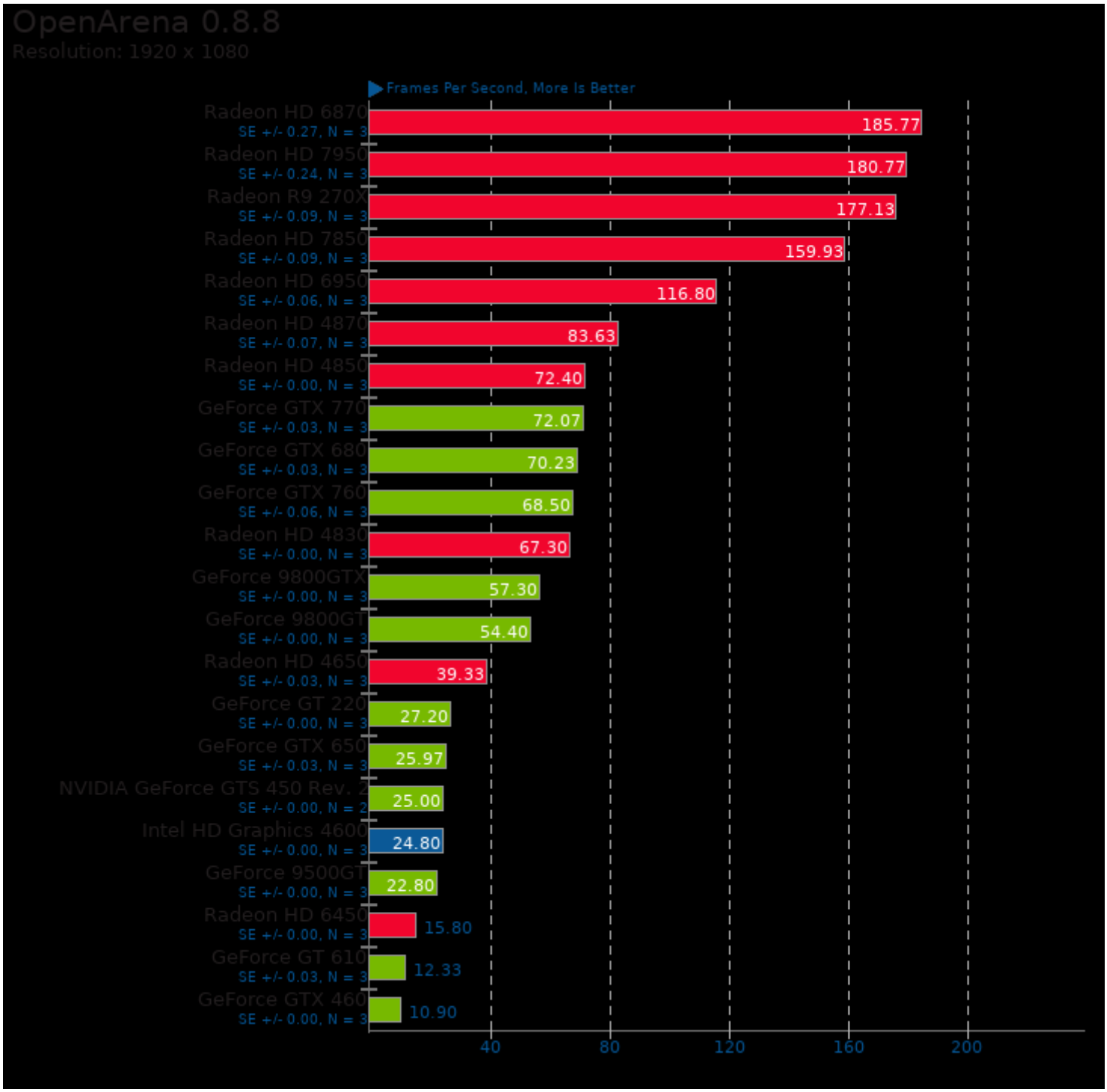
21-Way Linux Intel/AMD/NVIDIA GPU Benchmarks

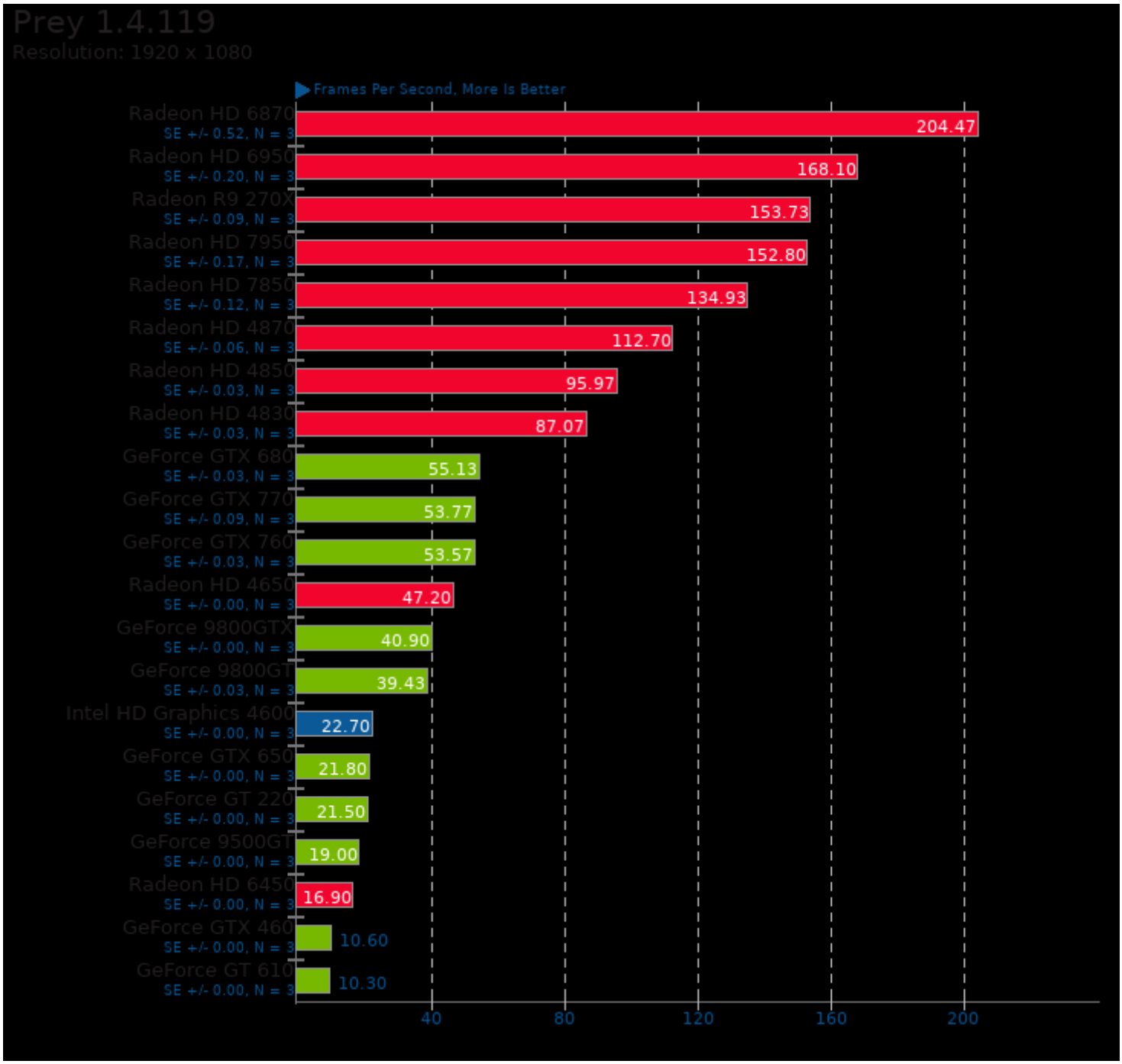
Unigine Tropics - 1920 x 1080 (FPS)	12.70	4.46	11.16	11.79	6.76	3.38	3.16	7.59	20.04	19.70	20.15	14.18	24.48	28.84	34.22	7.05	75.78	73.41		
Normalized	16.76%	5.89%	14.73%	15.56%	8.92%	4.46%	4.17%	10.02%	26.44%	26%	26.59%	18.71%	32.38%	38.06%	45.16%	9.39%	100%	96.87%		
Standard Deviation	0.1%	0%	0%	0%	0%	0.1%	0%	0%	0.1%	0%	0.4%	0%	0%	0%	0%	0%	0%	0%		
Xonotic - 1920 x 1080 - Low (FPS)	124.24	109.45	169.40	171.12	100.29	44.15	51.08	91.22	203.66	201.29	198.41	196.67	300.06	314.67	345.19	89.62	391.23	385.63	353.87	361.36	366.23
Normalized	31.76%	27.98%	43.34%	43.74%	25.63%	11.28%	13.06%	23.32%	52.06%	51.45%	50.71%	50.27%	76.77%	80.46%	88.23%	22.91%	100%	98.57%	90.41%	92.36%	93.68%
Standard Deviation	0.3%	0%	0%	0%	0%	0%	0%	0%	0%	0.1%	0.1%	0%	0.1%	0.3%	0.1%	0%	0.2%	0.3%	0.7%	0.5%	0.5%
Xonotic - 1920 x 1080 - High (FPS)	54.49	34.48	66.66	69.43	37.49	18.20	18.21	34.67	83.57	81.37	81.65	82.18	130.18	141.31	160.54	35.55	252.41	236.38	191.84	197.11	209.15
Normalized	21.59%	13.66%	26.41%	27.51%	14.85%	7.21%	7.21%	13.74%	33.11%	32.24%	32.35%	32.56%	51.57%	55.96%	63.66%	14.08%	100%	93.65%	76%	78.09%	82.86%
Standard Deviation	0.1%	0%	0.1%	0%	0%	0%	0%	0%	0.1%	0.1%	0.1%	0%	0.1%	0.2%	0%	0.1%	0.3%	0.2%	0.3%	0%	0.2%
Xonotic - 1920 x 1080 - Ultra (FPS)	45.46	13.49	34.71	37.53	20.48	13.49	12.44	28.19	72.40	70.07	72.46	49.72	88.06	99.83	114.98	24.96	178.32	199.86	217.69	220.79	227.30
Normalized	20%	5.93%	15.27%	16.51%	9.01%	5.93%	5.47%	12.41%	31.85%	30.83%	31.85%	21.87%	38.74%	43.92%	50.59%	10.98%	78.47%	87.93%	95.77%	97.14%	100%
Standard Deviation	0.3%	0%	0%	0%	0%	0%	0%	0%	0.1%	0.1%	0.1%	0%	0.1%	0.3%	0.1%	0%	0.1%	0.4%	0.2%	0.3%	0.1%

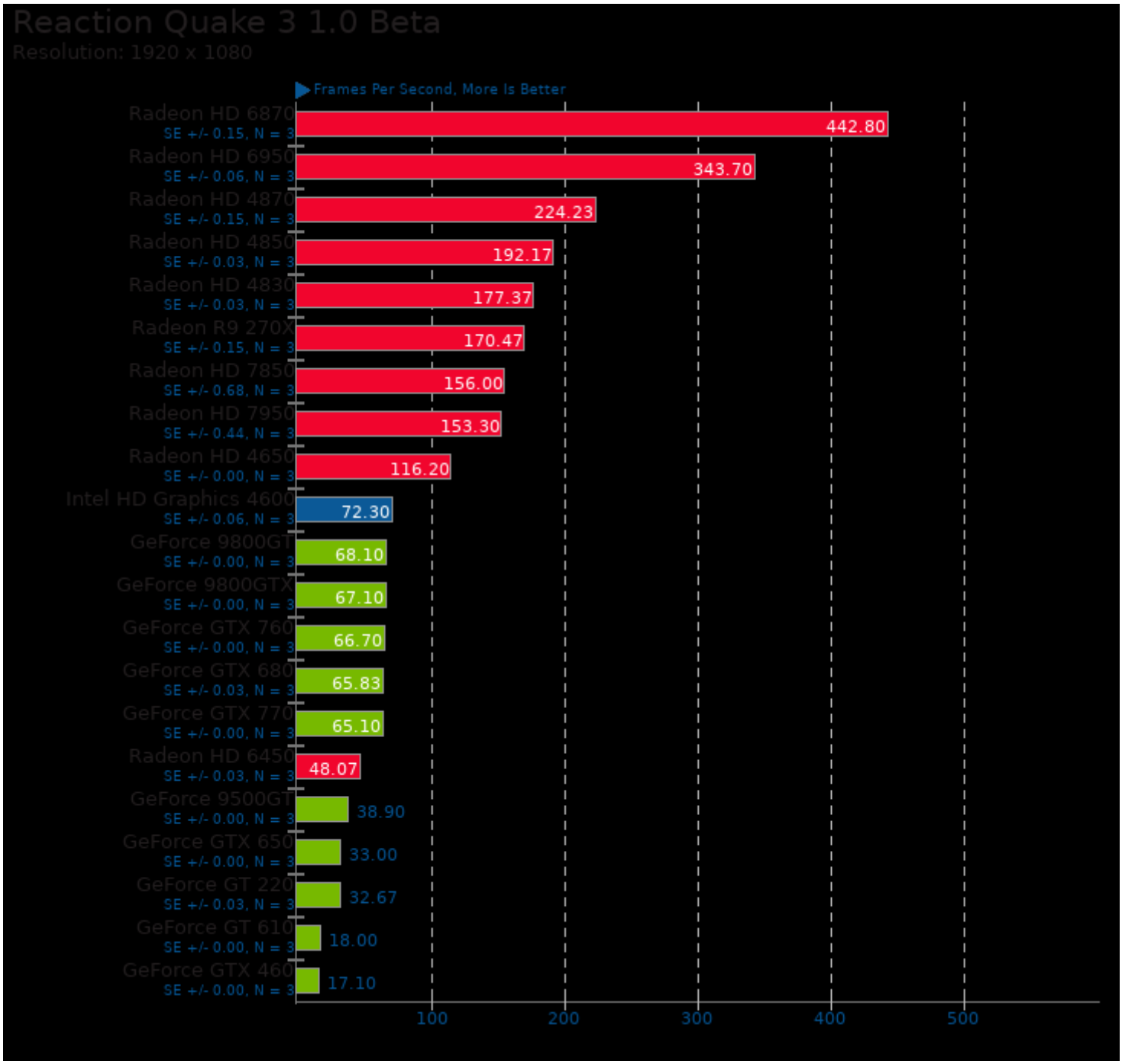

Counter-Strike Source
Resolution: 1920 x 1080
Frames Per Second, More Is Better
Radeon HD 6950
SE +/- 6.03, N = 6
223.86
Radeon HD 6870
SE +/- 1.82, N = 3
213.91
Radeon HD 4870
SE +/- 19.91, N = 6
142.16
Radeon HD 4850
SE +/- 19.69, N = 6
119.60
Radeon HD 4830
SE +/- 17.29, N = 6
104.45
Radeon HD 4650
SE +/- 2.54, N = 6
76.00
Intel HD Graphics 4600
SE +/- 0.48, N = 3
71.74
GeForce GTX 760
SE +/- 0.01, N = 3
60.90
GeForce GTX 770
SE +/- 0.08, N = 3
60.69
GeForce GTX 680
SE +/- 0.04, N = 3
58.43
GeForce 9800GTX
SE +/- 0.77, N = 3
52.13
GeForce 9800GT
SE +/- 4.77, N = 6
47.28
Radeon HD 6450
SE +/- 0.01, N = 3
33.52
GeForce GTX 650
SE +/- 0.00, N = 3
30.42
GeForce GT 220
SE +/- 1.56, N = 6
29.24
GeForce 9500GT
SE +/- 1.14, N = 6
26.32
GeForce GT 610
SE +/- 0.01, N = 3
16.38
GeForce GTX 460
SE +/- 0.01, N = 3
12.94
50
100
150
200
250

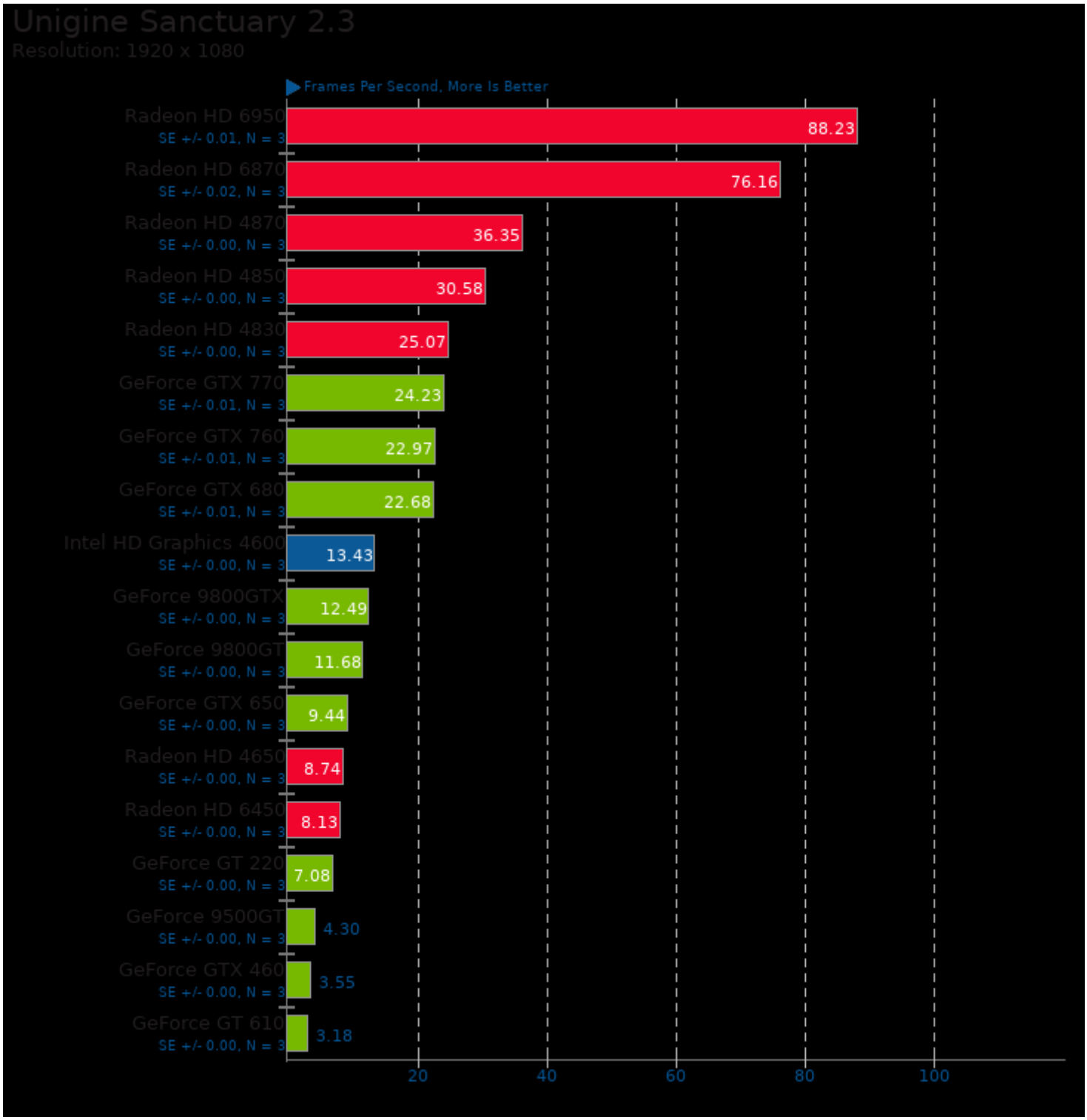

Doom 3 1.3.1
Resolution: 1920 x 1080 - Quality: High
Frames Per Second, More Is Better
Radeon HD 6870
SE +/- 0.55, N = 3
156.67
Radeon HD 6950
SE +/- 0.56, N = 3
151.70
Radeon HD 4870
SE +/- 0.50, N = 3
143.83
Radeon HD 4850
SE +/- 0.42, N = 3
132.23
Radeon R9 270X
SE +/- 0.56, N = 3
124.50
Radeon HD 4830
SE +/- 0.59, N = 3
124.00
Radeon HD 7950
SE +/- 0.32, N = 3
123.40
Radeon HD 7850
SE +/- 0.38, N = 3
116.23
GeForce GTX 760
SE +/- 0.07, N = 3
67.03
GeForce GTX 680
SE +/- 0.10, N = 3
66.30
GeForce GTX 770
SE +/- 0.07, N = 3
65.43
Radeon HD 4650
SE +/- 0.03, N = 3
57.97
Intel HD Graphics 4600
SE +/- 0.09, N = 3
48.97
GeForce 9800GTX
SE +/- 0.03, N = 3
39.47
GeForce 9800GT
SE +/- 0.00, N = 3
38.90
GeForce GTX 650
SE +/- 0.00, N = 3
27.50
GeForce GT 220
SE +/- 0.00, N = 3
22.10
GeForce 9500GT
SE +/- 0.37, N = 3
22.07
Radeon HD 6450
SE +/- 0.00, N = 3
16.10
GeForce GTX 460
SE +/- 0.00, N = 3
14.20
GeForce GT 610
SE +/- 0.03, N = 3
13.83
30
60
90
120
150

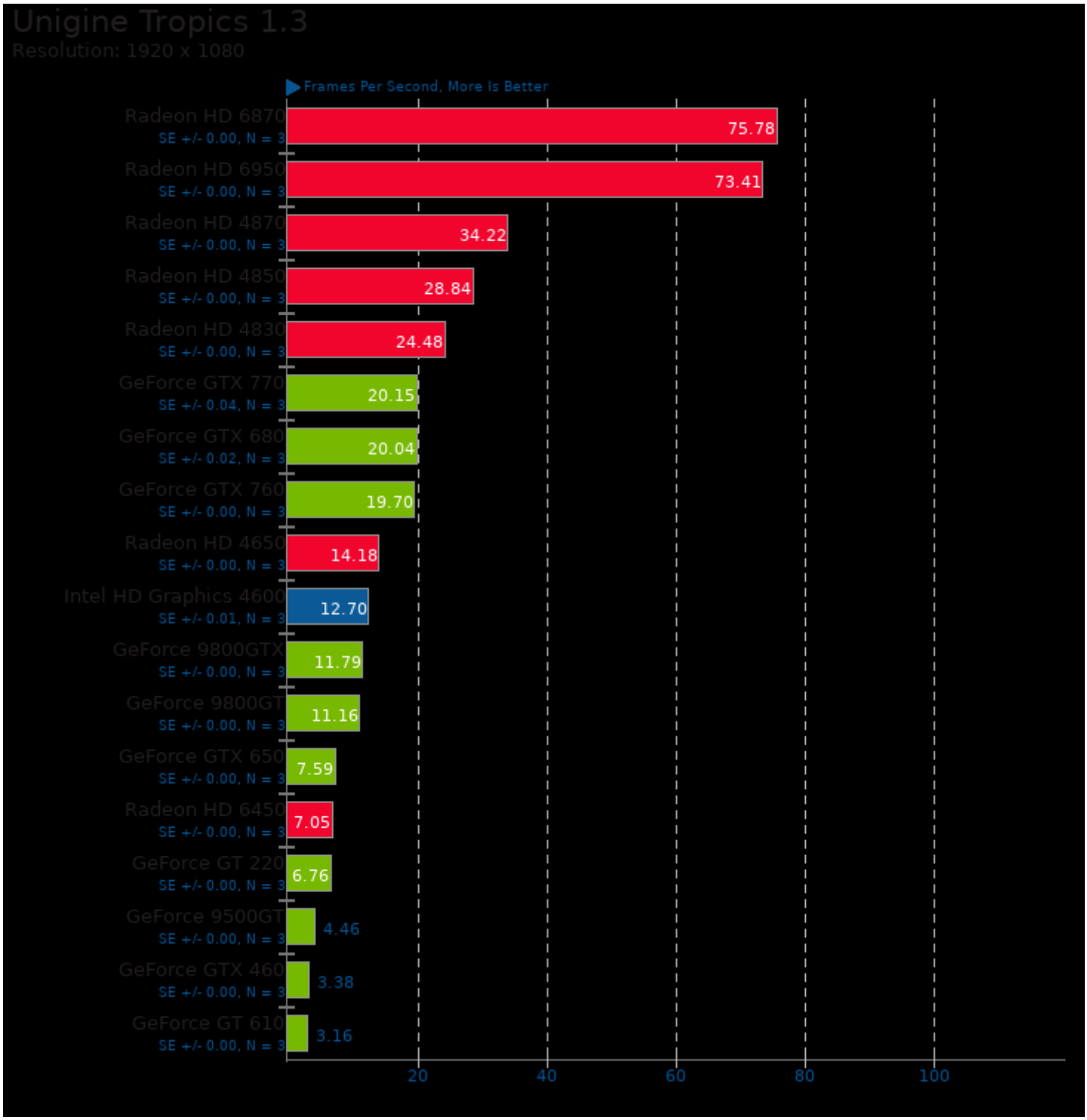

Nexuiz 2.5.2
Resolution: 1920 x 1080 - HDR: Yes - Sound: On
Frames Per Second, More Is Better
Radeon HD 6870
SE +/- 0.22, N = 3
161.55
Radeon R9 270X
SE +/- 0.20, N = 3
156.09
Radeon HD 6950
SE +/- 0.31, N = 3
145.34
Radeon HD 7950
SE +/- 0.09, N = 3
140.78
Radeon HD 7850
SE +/- 0.29, N = 3
140.59
Radeon HD 4870
SE +/- 0.13, N = 3
79.98
Radeon HD 4850
SE +/- 0.02, N = 3
67.68
Radeon HD 4830
SE +/- 0.01, N = 3
60.89
GeForce GTX 760
SE +/- 0.03, N = 3
39.12
GeForce GTX 680
SE +/- 0.01, N = 3
38.27
GeForce GTX 770
SE +/- 0.02, N = 3
38.17
Radeon HD 4650
SE +/- 0.02, N = 3
36.64
GeForce 9800GTX
SE +/- 0.00, N = 3
33.19
GeForce 9800GT
SE +/- 0.01, N = 3
32.94
GeForce GTX 650
SE +/- 0.01, N = 3
18.78
Radeon HD 6450
SE +/- 0.00, N = 3
18.69
GeForce 9500GT
SE +/- 0.00, N = 3
18.22
Intel HD Graphics 4600
SE +/- 0.04, N = 3
17.86
GeForce GT 220
SE +/- 0.00, N = 3
15.86
GeForce GT 610
SE +/- 0.00, N = 3
9.66
GeForce GTX 460
SE +/- 0.00, N = 3
9.37
40
80
120
160
200

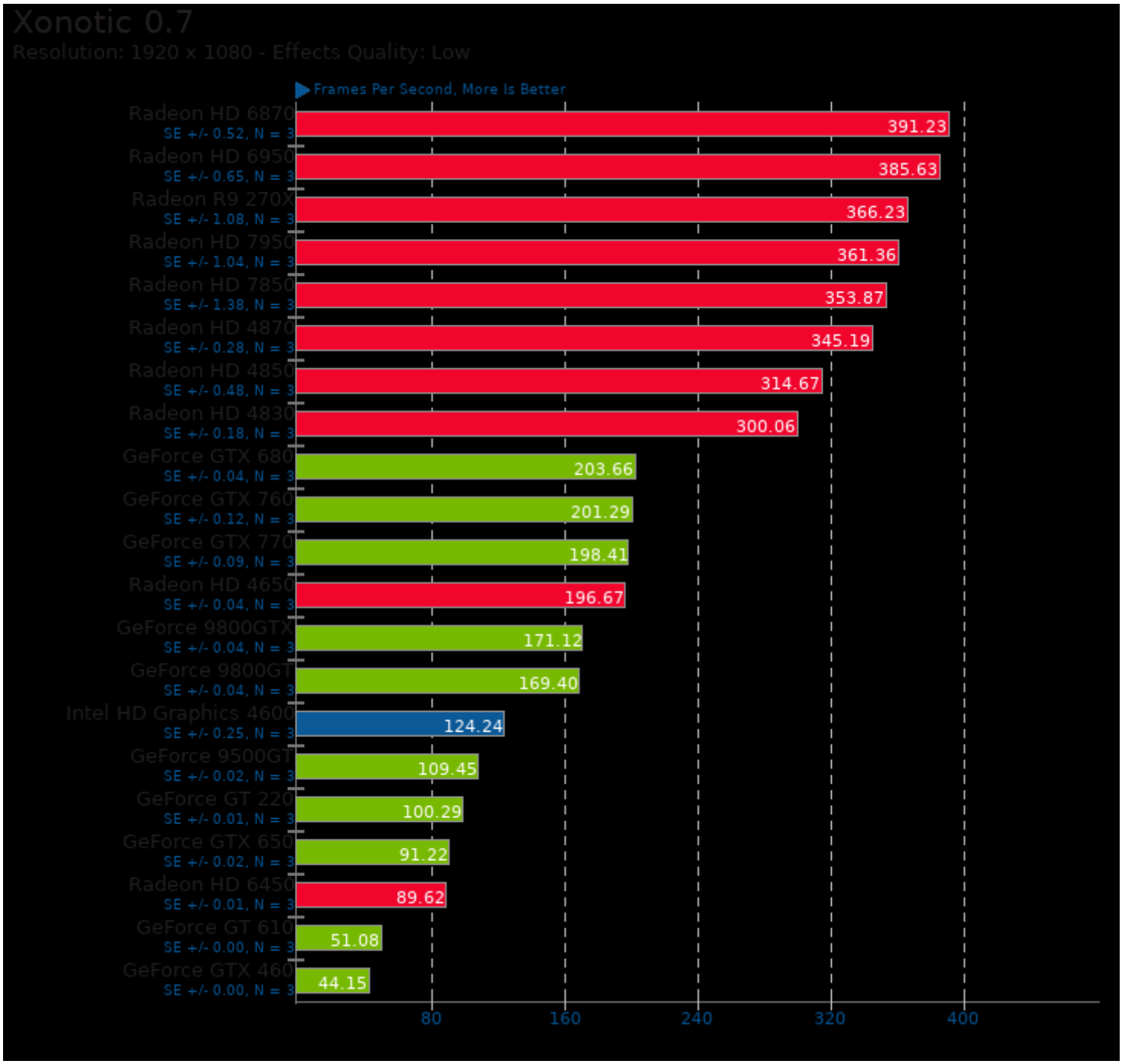

OpenArena 0.8.8
Resolution: 1920 x 1080
Frames Per Second, More Is Better
Radeon HD 6870
SE +/- 0.27, N = 3
185.77
Radeon HD 7950
SE +/- 0.24, N = 3
180.77
Radeon R9 270X
SE +/- 0.09, N = 3
177.13
Radeon HD 7850
SE +/- 0.09, N = 3
159.93
Radeon HD 6950
SE +/- 0.06, N = 3
116.80
Radeon HD 4870
SE +/- 0.07, N = 3
83.63
Radeon HD 4850
SE +/- 0.00, N = 3
72.40
GeForce GTX 770
SE +/- 0.03, N = 3
72.07
GeForce GTX 680
SE +/- 0.03, N = 3
70.23
GeForce GTX 760
SE +/- 0.06, N = 3
68.50
Radeon HD 4830
SE +/- 0.00, N = 3
67.30
GeForce 9800GTX
SE +/- 0.00, N = 3
57.30
GeForce 9800GT
SE +/- 0.00, N = 3
54.40
Radeon HD 4650
SE +/- 0.03, N = 3
39.33
GeForce GT 220
SE +/- 0.00, N = 3
27.20
GeForce GTX 650
SE +/- 0.03, N = 3
25.97
NVIDIA GeForce GTS 450 Rev. 2
SE +/- 0.00, N = 2
25.00
Intel HD Graphics 4600
SE +/- 0.00, N = 3
24.80
GeForce 9500GT
SE +/- 0.00, N = 3
22.80
Radeon HD 6450
SE +/- 0.00, N = 3
15.80
GeForce GT 610
SE +/- 0.03, N = 3
12.33
GeForce GTX 460
SE +/- 0.00, N = 3
10.90
40
80
120
160
200

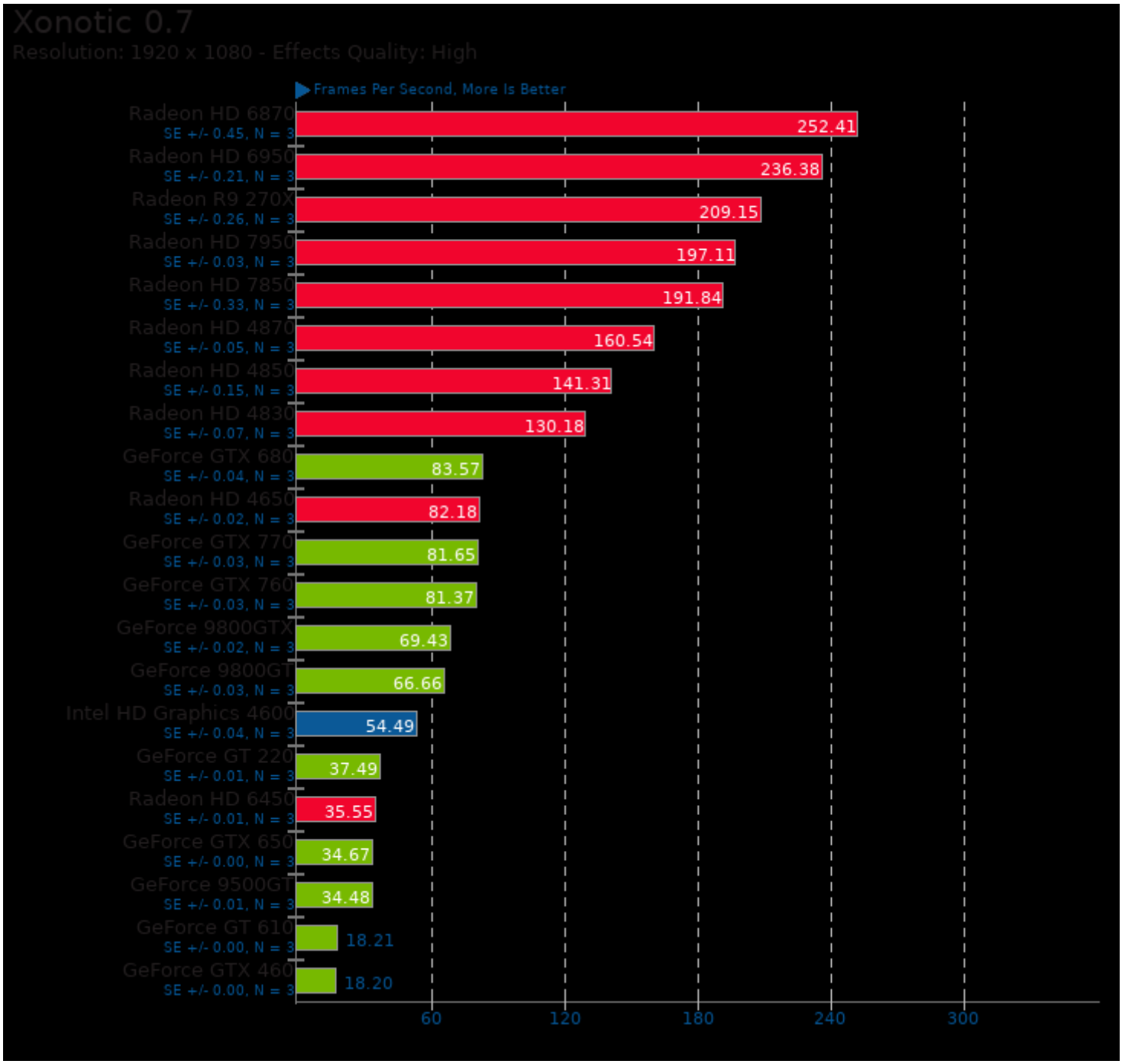

Prey 1.4.119
Resolution: 1920 x 1080
Frames Per Second, More Is Better
Radeon HD 6870
SE +/- 0.52, N = 3
204.47
Radeon HD 6950
SE +/- 0.20, N = 3
168.10
Radeon R9 270X
SE +/- 0.09, N = 3
153.73
Radeon HD 7950
SE +/- 0.17, N = 3
152.80
Radeon HD 7850
SE +/- 0.12, N = 3
134.93
Radeon HD 4870
SE +/- 0.06, N = 3
112.70
Radeon HD 4850
SE +/- 0.03, N = 3
95.97
Radeon HD 4830
SE +/- 0.03, N = 3
87.07
GeForce GTX 680
SE +/- 0.03, N = 3
55.13
GeForce GTX 770
SE +/- 0.09, N = 3
53.77
GeForce GTX 760
SE +/- 0.03, N = 3
53.57
Radeon HD 4650
SE +/- 0.00, N = 3
47.20
GeForce 9800GTX
SE +/- 0.00, N = 3
40.90
GeForce 9800GT
SE +/- 0.03, N = 3
39.43
Intel HD Graphics 4600
SE +/- 0.00, N = 3
22.70
GeForce GTX 650
SE +/- 0.00, N = 3
21.80
GeForce GT 220
SE +/- 0.00, N = 3
21.50
GeForce 9500GT
SE +/- 0.00, N = 3
19.00
Radeon HD 6450
SE +/- 0.00, N = 3
16.90
GeForce GTX 460
SE +/- 0.00, N = 3
10.60
GeForce GT 610
SE +/- 0.00, N = 3
10.30
40
80
120
160
200

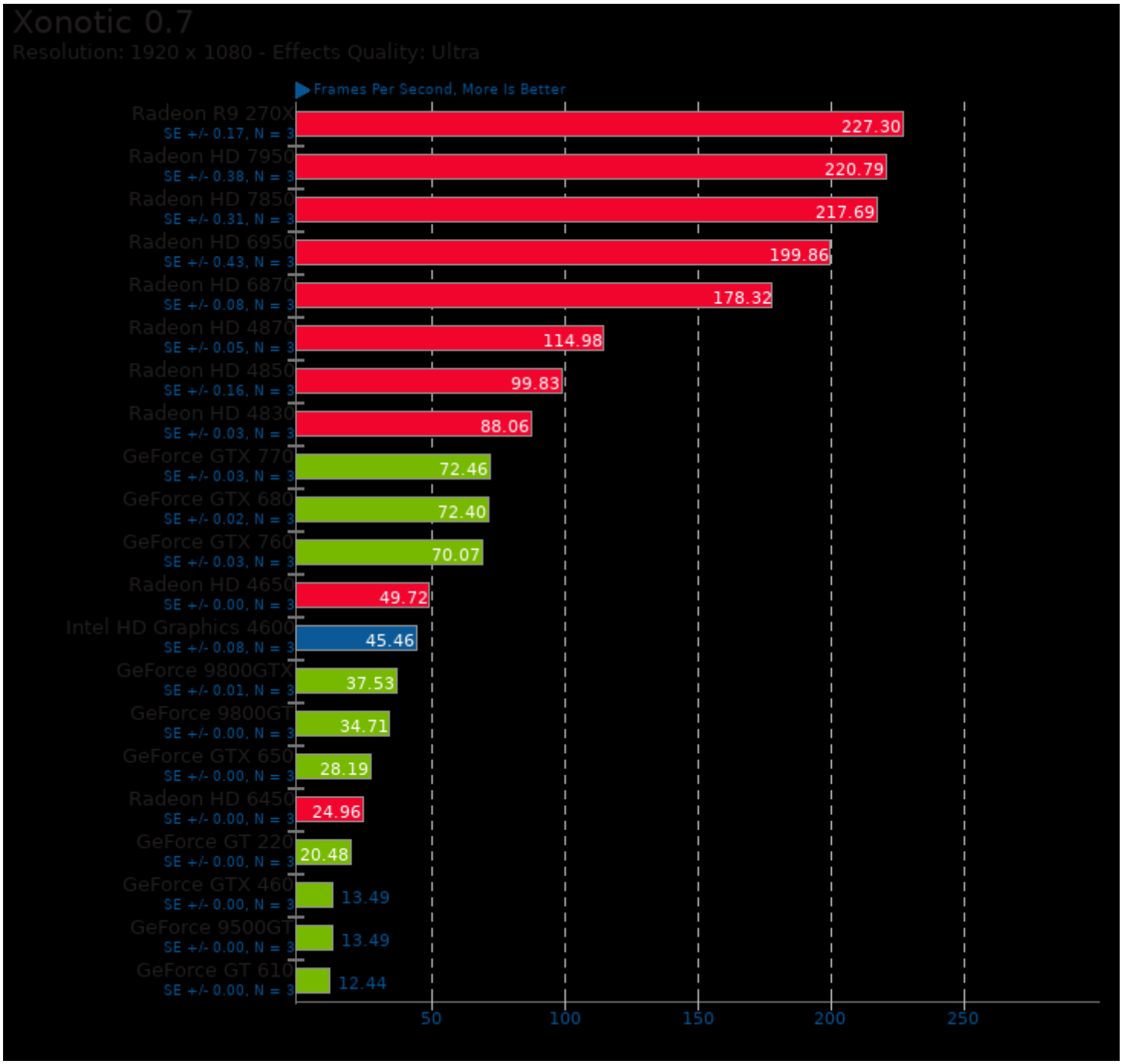

Reaction Quake 3 1.0 Beta
Resolution: 1920 x 1080
Frames Per Second, More Is Better
Radeon HD 6870
SE +/- 0.15, N = 3
442.80
Radeon HD 6950
SE +/- 0.06, N = 3
343.70
Radeon HD 4870
SE +/- 0.15, N = 3
224.23
Radeon HD 4850
SE +/- 0.03, N = 3
192.17
Radeon HD 4830
SE +/- 0.03, N = 3
177.37
Radeon R9 270X
SE +/- 0.15, N = 3
170.47
Radeon HD 7850
SE +/- 0.68, N = 3
156.00
Radeon HD 7950
SE +/- 0.44, N = 3
153.30
Radeon HD 4650
SE +/- 0.00, N = 3
116.20
Intel HD Graphics 4600
SE +/- 0.06, N = 3
72.30
GeForce 9800GT
SE +/- 0.00, N = 3
68.10
GeForce 9800GTX
SE +/- 0.00, N = 3
67.10
GeForce GTX 760
SE +/- 0.00, N = 3
66.70
GeForce GTX 680
SE +/- 0.03, N = 3
65.83
GeForce GTX 770
SE +/- 0.00, N = 3
65.10
Radeon HD 6450
SE +/- 0.03, N = 3
48.07
GeForce 9500GT
SE +/- 0.00, N = 3
38.90
GeForce GTX 650
SE +/- 0.00, N = 3
33.00
GeForce GT 220
SE +/- 0.03, N = 3
32.67
GeForce GT 610
SE +/- 0.00, N = 3
18.00
GeForce GTX 460
SE +/- 0.00, N = 3
17.10
100
200
300
400
500


Unigine Sanctuary 2.3
Resolution: 1920 x 1080
Frames Per Second, More Is Better
Radeon HD 6950
SE +/- 0.01, N = 3
88.23
Radeon HD 6870
SE +/- 0.02, N = 3
76.16
Radeon HD 4870
SE +/- 0.00, N = 3
36.35
Radeon HD 4850
SE +/- 0.00, N = 3
30.58
Radeon HD 4830
SE +/- 0.00, N = 3
25.07
GeForce GTX 770
SE +/- 0.01, N = 3
24.23
GeForce GTX 760
SE +/- 0.01, N = 3
22.97
GeForce GTX 680
SE +/- 0.01, N = 3
22.68
Intel HD Graphics 4600
SE +/- 0.00, N = 3
13.43
GeForce 9800GTX
SE +/- 0.00, N = 3
12.49
GeForce 9800GT
SE +/- 0.00, N = 3
11.68
GeForce GTX 650
SE +/- 0.00, N = 3
9.44
Radeon HD 4650
SE +/- 0.00, N = 3
8.74
Radeon HD 6450
SE +/- 0.00, N = 3
8.13
GeForce GT 220
SE +/- 0.00, N = 3
7.08
GeForce 9500GT
SE +/- 0.00, N = 3
4.30
GeForce GTX 460
SE +/- 0.00, N = 3
3.55
GeForce GT 610
SE +/- 0.00, N = 3
3.18
20
40
60
80
100


Unigine Tropics 1.3
Resolution: 1920 x 1080
Frames Per Second, More Is Better
Radeon HD 6870
SE +/- 0.00, N = 3
75.78
Radeon HD 6950
SE +/- 0.00, N = 3
73.41
Radeon HD 4870
SE +/- 0.00, N = 3
34.22
Radeon HD 4850
SE +/- 0.00, N = 3
28.84
Radeon HD 4830
SE +/- 0.00, N = 3
24.48
GeForce GTX 770
SE +/- 0.04, N = 3
20.15
GeForce GTX 680
SE +/- 0.02, N = 3
20.04
GeForce GTX 760
SE +/- 0.00, N = 3
19.70
Radeon HD 4650
SE +/- 0.00, N = 3
14.18
Intel HD Graphics 4600
SE +/- 0.01, N = 3
12.70
GeForce 9800GTX
SE +/- 0.00, N = 3
11.79
GeForce 9800GT
SE +/- 0.00, N = 3
11.16
GeForce GTX 650
SE +/- 0.00, N = 3
7.59
Radeon HD 6450
SE +/- 0.00, N = 3
7.05
GeForce GT 220
SE +/- 0.00, N = 3
6.76
GeForce 9500GT
SE +/- 0.00, N = 3
4.46
GeForce GTX 460
SE +/- 0.00, N = 3
3.38
GeForce GT 610
SE +/- 0.00, N = 3
3.16
20
40
60
80
100


Xonotic 0.7
Resolution: 1920 x 1080 - Effects Quality: Low
Frames Per Second, More Is Better
Radeon HD 6870
SE +/- 0.52, N = 3
391.23
Radeon HD 6950
SE +/- 0.65, N = 3
385.63
Radeon R9 270X
SE +/- 1.08, N = 3
366.23
Radeon HD 7950
SE +/- 1.04, N = 3
361.36
Radeon HD 7850
SE +/- 1.38, N = 3
353.87
Radeon HD 4870
SE +/- 0.28, N = 3
345.19
Radeon HD 4850
SE +/- 0.48, N = 3
314.67
Radeon HD 4830
SE +/- 0.18, N = 3
300.06
GeForce GTX 680
SE +/- 0.04, N = 3
203.66
GeForce GTX 760
SE +/- 0.12, N = 3
201.29
GeForce GTX 770
SE +/- 0.09, N = 3
198.41
Radeon HD 4650
SE +/- 0.04, N = 3
196.67
GeForce 9800GTX
SE +/- 0.04, N = 3
171.12
GeForce 9800GT
SE +/- 0.04, N = 3
169.40
Intel HD Graphics 4600
SE +/- 0.25, N = 3
124.24
GeForce 9500GT
SE +/- 0.02, N = 3
109.45
GeForce GT 220
SE +/- 0.01, N = 3
100.29
GeForce GTX 650
SE +/- 0.02, N = 3
91.22
Radeon HD 6450
SE +/- 0.01, N = 3
89.62
GeForce GT 610
SE +/- 0.00, N = 3
51.08
GeForce GTX 460
SE +/- 0.00, N = 3
44.15
80
160
240
320
400


Xonotic 0.7
Resolution: 1920 x 1080 - Effects Quality: High
Frames Per Second, More Is Better
Radeon HD 6870
SE +/- 0.45, N = 3
252.41
Radeon HD 6950
SE +/- 0.21, N = 3
236.38
Radeon R9 270X
SE +/- 0.26, N = 3
209.15
Radeon HD 7950
SE +/- 0.03, N = 3
197.11
Radeon HD 7850
SE +/- 0.33, N = 3
191.84
Radeon HD 4870
SE +/- 0.05, N = 3
160.54
Radeon HD 4850
SE +/- 0.15, N = 3
141.31
Radeon HD 4830
SE +/- 0.07, N = 3
130.18
GeForce GTX 680
SE +/- 0.04, N = 3
83.57
Radeon HD 4650
SE +/- 0.02, N = 3
82.18
GeForce GTX 770
SE +/- 0.03, N = 3
81.65
GeForce GTX 760
SE +/- 0.03, N = 3
81.37
GeForce 9800GTX
SE +/- 0.02, N = 3
69.43
GeForce 9800GT
SE +/- 0.03, N = 3
66.66
Intel HD Graphics 4600
SE +/- 0.04, N = 3
54.49
GeForce GT 220
SE +/- 0.01, N = 3
37.49
Radeon HD 6450
SE +/- 0.01, N = 3
35.55
GeForce GTX 650
SE +/- 0.00, N = 3
34.67
GeForce 9500GT
SE +/- 0.01, N = 3
34.48
GeForce GT 610
SE +/- 0.00, N = 3
18.21
GeForce GTX 460
SE +/- 0.00, N = 3
18.20
60
120
180
240
300



This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 10:09.