



2D Radeon Linux 4.5 Mesa 11.2-dev

Some modern open-source Radeon 2D benchmarks. Tests by Michael Larabel of Phoronix.

Automated Executive Summary

Radeon R7 370 had the most wins, coming in first place for 30% of the tests.

Based on the geometric mean of all complete results, the fastest (Radeon HD 6870) was 2.149x the speed of the slowest (Radeon R9 290). Radeon HD 6950 was 0.955x the speed of Radeon HD 6870, Radeon R7 370 was 0.895x the speed of Radeon HD 6950, Radeon HD 5830 was 0.957x the speed of Radeon R7 370, Radeon R9 285 was 0.749x the speed of Radeon HD 5830, Radeon R9 290 was 0.76x the speed of Radeon R9 285.

Test Systems:

Radeon HD 5830

Processor: Intel Core i7-5960X @ 3.50GHz (16 Cores), Motherboard: Gigabyte X99-UD4-CF, Chipset: Intel Xeon E7 v3/Xeon, Memory: 16384MB, Disk: 2 x 120GB SanDisk SDSSDA12 + 120GB Samsung SSD 850, Graphics: Sapphire

AMD Radeon HD 5830 1024MB, Audio: Realtek ALC1150, Monitor: DELL P2415Q, Network: Intel Connection

OS: Ubuntu 15.10, Kernel: 4.5.0-999-generic (x86_64) 20160206, Desktop: Unity, Display Server: X Server 1.17.2, Display Driver: radeon 7.6.99, OpenGL: 4.1 Mesa 11.2.0-devel (padoka PPA) Gallium 0.4, Compiler: GCC 5.2.1 20151010, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: amdgpu.powerplay=1

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-vtable-verify --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,ada,c++,java,go,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --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-default-libstdcxx-abi=new --with-multilib-list=m32,m64,mx32 --with-tune=generic -v

Processor Notes: Scaling Governor: intel_pstate performance

Graphics Notes: EXA

Radeon HD 6870

Processor: Intel Core i7-5960X @ 3.50GHz (16 Cores), Motherboard: Gigabyte X99-UD4-CF, Chipset: Intel Xeon E7 v3/Xeon, Memory: 16384MB, Disk: 2 x 120GB SanDisk SDSSDA12 + 120GB Samsung SSD 850, Graphics: Sapphire AMD Radeon HD 6870 1024MB, Audio: Realtek ALC1150, Monitor: DELL P2415Q, Network: Intel Connection

OS: Ubuntu 15.10, Kernel: 4.5.0-999-generic (x86_64) 20160206, Desktop: Unity, Display Server: X Server 1.17.2, Display Driver: radeon 7.6.99, OpenGL: 3.3 Mesa 11.2.0-devel (padoka PPA) Gallium 0.4, Compiler: GCC 5.2.1 20151010, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-vtable-verify --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,ada,c++,java,go,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --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-default-libstdcxx-abi=new --with-multilib-list=m32,m64,mx32 --with-tune=generic -v

Processor Notes: Scaling Governor: intel_pstate performance

Graphics Notes: EXA

Radeon HD 6950

Processor: Intel Core i7-5960X @ 3.50GHz (16 Cores), Motherboard: Gigabyte X99-UD4-CF, Chipset: Intel Xeon E7 v3/Xeon, Memory: 16384MB, Disk: 2 x 120GB SanDisk SDSSDA12 + 120GB Samsung SSD 850, Graphics: Sapphire AMD Radeon HD 6950 2048MB, Audio: Realtek ALC1150, Monitor: DELL P2415Q, Network: Intel Connection

OS: Ubuntu 15.10, Kernel: 4.5.0-999-generic (x86_64) 20160206, Desktop: Unity, Display Server: X Server 1.17.2, Display Driver: radeon 7.6.99, OpenGL: 4.1 Mesa 11.2.0-devel (padoka PPA) Gallium 0.4, Compiler: GCC 5.2.1 20151010, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: amdgpu.powerplay=1

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-vtable-verify --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,ada,c++,java,go,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --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-default-libstdcxx-abi=new --with-multilib-list=m32,m64,mx32 --with-tune=generic -v

Processor Notes: Scaling Governor: intel_pstate performance

Graphics Notes: EXA

Radeon R9 285

Processor: Intel Core i7-5960X @ 3.50GHz (16 Cores), Motherboard: Gigabyte X99-UD4-CF, Chipset: Intel Xeon E7 v3/Xeon, Memory: 16384MB, Disk: 2 x 120GB SanDisk SDSSDA12 + 120GB Samsung SSD 850, Graphics: XFX AMD Radeon R9 285/380 2048MB, Audio: Realtek ALC1150, Monitor: DELL P2415Q, Network: Intel Connection

OS: Ubuntu 15.10, Kernel: 4.5.0-999-generic (x86_64) 20160206, Desktop: Unity, Display Server: X Server 1.17.2,

Display Driver: amdgpu 1.0.99, OpenGL: 4.1 Mesa 11.2.0-devel (padoka PPA) Gallium 0.4, Compiler: GCC 5.2.1 20151010, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: amdgpu.powerplay=1

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-vtable-verify --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,ada,c++,java,go,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --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-default-libstdcxx-abi=new --with-multilib-list=m32,m64,mx32 --with-tune=generic -v

Processor Notes: Scaling Governor: intel_pstate performance

Graphics Notes: GLAMOR

Radeon R9 290

Processor: Intel Core i7-5960X @ 3.50GHz (16 Cores), Motherboard: Gigabyte X99-UD4-CF, Chipset: Intel Xeon E7 v3/Xeon, Memory: 16384MB, Disk: 2 x 120GB SanDisk SDSSDA12 + 120GB Samsung SSD 850, Graphics: XFX AMD Radeon R9 290 4096MB, Audio: Realtek ALC1150, Monitor: DELL P2415Q, Network: Intel Connection

OS: Ubuntu 15.10, Kernel: 4.5.0-999-generic (x86_64) 20160206, Desktop: Unity, Display Server: X Server 1.17.2, Display Driver: radeon 7.6.99, OpenGL: 4.1 Mesa 11.2.0-devel (padoka PPA) Gallium 0.4, Compiler: GCC 5.2.1 20151010, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-vtable-verify --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,ada,c++,java,go,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --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-default-libstdcxx-abi=new --with-multilib-list=m32,m64,mx32 --with-tune=generic -v

Processor Notes: Scaling Governor: intel_pstate performance

Graphics Notes: GLAMOR

Radeon R7 370

Processor: Intel Core i7-5960X @ 3.50GHz (16 Cores), Motherboard: Gigabyte X99-UD4-CF, Chipset: Intel Xeon E7 v3/Xeon, Memory: 16384MB, Disk: 2 x 120GB SanDisk SDSSDA12 + 120GB Samsung SSD 850, Graphics: MSI AMD Radeon R7 370 / R9 270/370 OEM 4096MB, Audio: Realtek ALC1150, Monitor: DELL P2415Q, Network: Intel Connection

OS: Ubuntu 15.10, Kernel: 4.5.0-999-generic (x86_64) 20160206, Desktop: Unity, Display Server: X Server 1.17.2, Display Driver: radeon 7.6.99, OpenGL: 4.1 Mesa 11.2.0-devel (padoka PPA) Gallium 0.4, Compiler: GCC 5.2.1 20151010, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: amdgpu.powerplay=1

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-vtable-verify --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,ada,c++,java,go,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --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-default-libstdcxx-abi=new --with-multilib-list=m32,m64,mx32 --with-tune=generic -v

Processor Notes: Scaling Governor: intel_pstate performance

Graphics Notes: GLAMOR

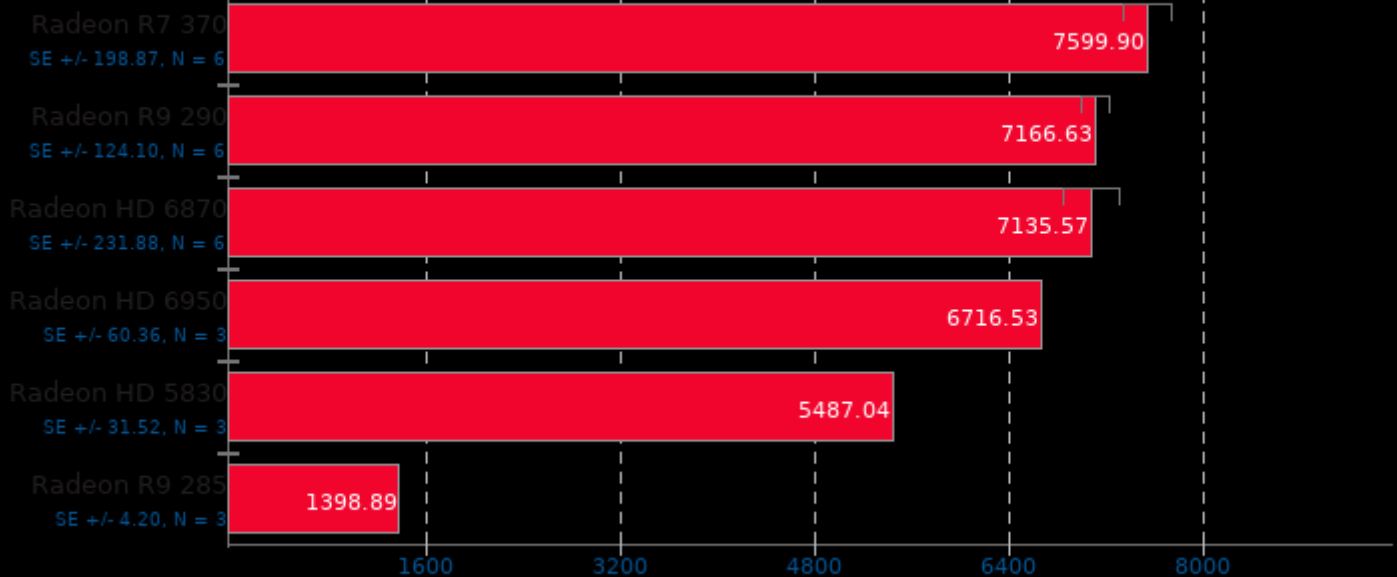
Radeon HD	Radeon HD	Radeon HD	Radeon R9	Radeon R9	Radeon R7
5830	6870	6950	285	290	370

QGears2 - OpenGL - Image Scaling (FPS)	5487	7136	6717	1399	7167	7600
Normalized	72.2%	93.89%	88.38%	18.41%	94.3%	100%
Standard Deviation	1%	8%	1.6%	0.5%	4.2%	6.4%
GtkPerf - GtkDrawingArea - Circles (sec)	60.92	57.88	59.17	93.04	149.30	133.67
Normalized	95.01%	100%	97.82%	62.21%	38.77%	43.3%
Standard Deviation	3%	3.1%	0.8%	3.6%	2.6%	2%
GtkPerf - Total Time (sec)	543.12	546.30	593.53	638.84	763.92	704.55
Normalized	100%	99.42%	91.51%	85.02%	71.1%	77.09%
Standard Deviation	0.4%	0.9%	0%	1.1%	2.1%	0.4%
QGears2 - OpenGL - Gears (FPS)	805.18	798.01	785.74	609.15	841.76	850.17
Normalized	94.71%	93.86%	92.42%	71.65%	99.01%	100%
Standard Deviation	1.4%	3.9%	8.6%	2.5%	1.2%	1.7%
QGears2 - OpenGL - Text (FPS)	347.47	359.72	367.50	369.78	360.19	370.16
Normalized	93.87%	97.18%	99.28%	99.9%	97.31%	100%
Standard Deviation	2.5%	0.7%	1.5%	0.1%	1.2%	0.2%
GtkPerf - GtkTextView - Add Text (sec)	307.35	304.80	306.97	307.70	305.11	304.41
Normalized	99.04%	99.87%	99.17%	98.93%	99.77%	100%
Standard Deviation	0.8%	0.3%	0.6%	0.4%	0.1%	0.1%
GtkPerf - GtkDrawingArea - Pixbufs (sec)	5.71	5.39	6.00	14.72	19.88	16.29
Normalized	94.4%	100%	89.83%	36.62%	27.11%	33.09%
Standard Deviation	9.1%	11.6%	6.3%	5.8%	15.6%	7.9%
GtkPerf - GtkTextView - Scroll (sec)	0.04	0.04	0.03	0.03	0.03	0.04
Normalized	75%	75%	100%	100%	100%	75%
Standard Deviation	14.1%	23.9%	15.5%	0%	0%	30.5%
GtkPerf - GtkComboBoxEntry (sec)	9.50	12.29	16.19	9.29	16.92	10.37
Normalized	97.79%	75.59%	57.38%	100%	54.91%	89.59%
Standard Deviation	55.5%	40.7%	40.8%	58.2%	29.2%	50%
GtkPerf - GtkToggleButton (sec)	0.16	0.17	0.14	0.15	15.63	0.18
Normalized	87.5%	82.35%	100%	93.33%	0.9%	77.78%
Standard Deviation	9.3%	3.5%	7.2%	5.8%	13.1%	21.3%
GtkPerf - GtkRadioButton	1.89	0.20	0.22	1.20	3.09	0.22
Normalized	10.58%	100%	90.91%	16.67%	6.47%	90.91%
Standard Deviation	214.4%	9.1%	8.1%	198.5%	143.9%	7.6%
GtkPerf - GtkCheckButton (sec)	0.16	0.13	0.17	1.12	0.17	0.17
Normalized	81.25%	100%	76.47%	11.61%	76.47%	76.47%
Standard Deviation	10.9%	0%	7.3%	208.7%	0%	7.3%
GtkPerf - GtkComboBox	24.21	22.26	26.33	15.06	19.28	17.32
Normalized	62.21%	67.65%	57.2%	100%	78.11%	86.95%
Standard Deviation	15.6%	17.8%	15.7%	28.4%	30.5%	24.8%

QGears2

Rendering: OpenGL - Test: Image Scaling

► Frames Per Second, More Is Better

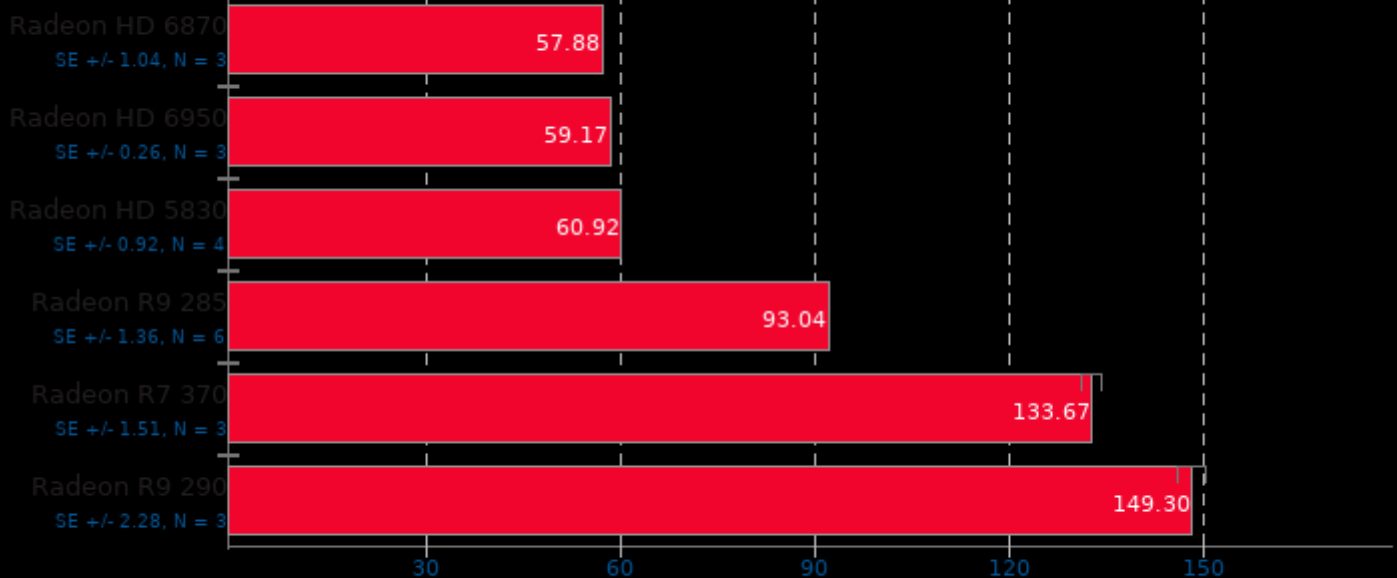


1. (CXX) g++ options: -m64 -lQtOpenGL -lQtGui -lQtCore -lGL -lpthread

GtkPerf 0.40

GTK Widget: GtkDrawingArea - Circles

◄ Seconds, Fewer Is Better

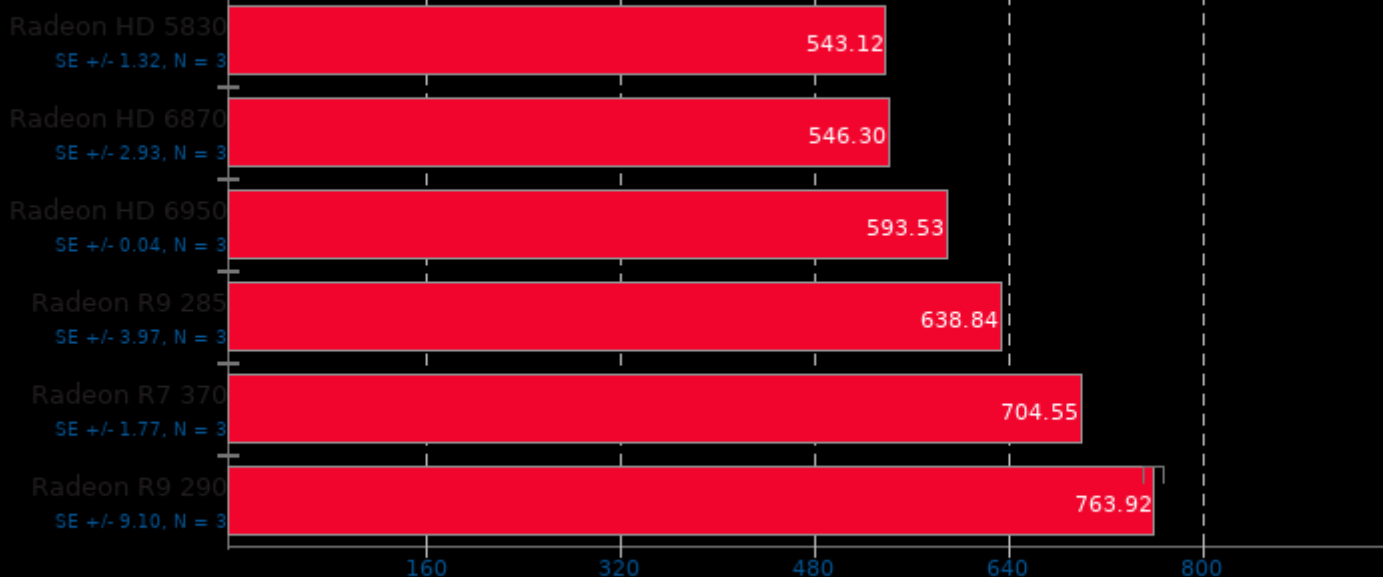


1. (CC) gcc options: -lgtk-x11-2.0 -latk-1.0 -lgio-2.0 -lpangoft2-1.0 -lfontconfig -lgdk-x11-2.0 -lpangocairo-1.0 -lpango-1.0 -lcairo -lgdk_pixbuf-2.0 -lgobject

GtkPerf 0.40

GTK Widget: Total Time

◀ Seconds, Fewer Is Better

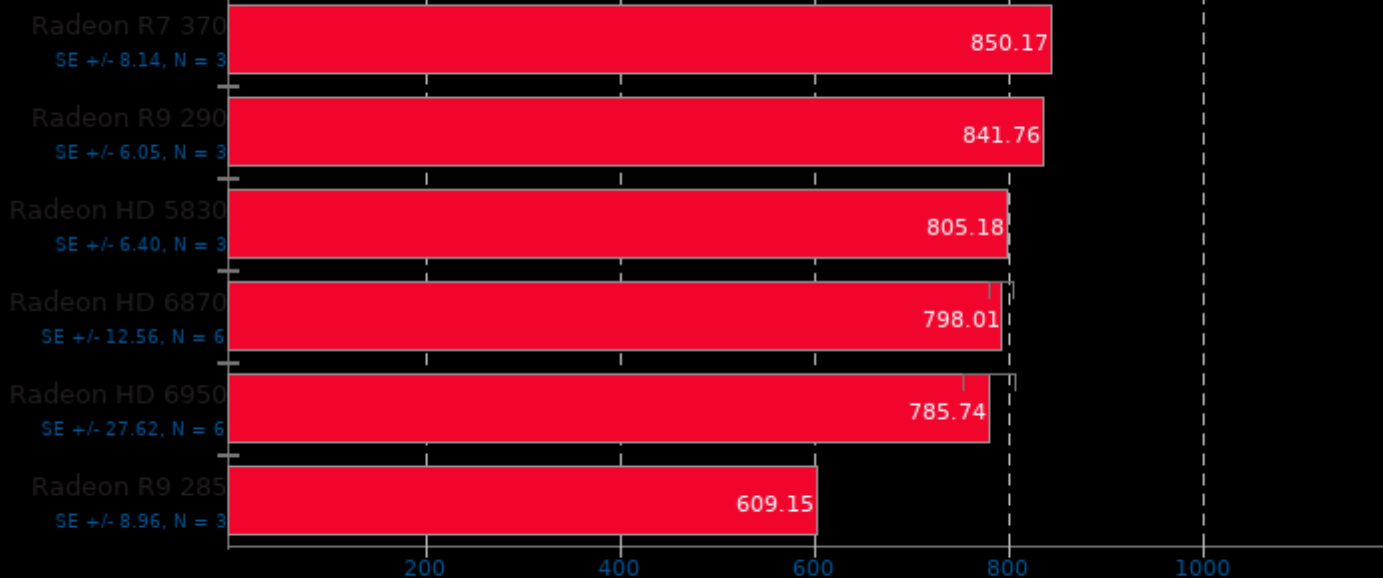


1. (CC) gcc options: -lgtk-x11-2.0 -latk-1.0 -lgio-2.0 -lpangocairo-1.0 -lpango-1.0 -lcairo -lgdk_pixbuf-2.0 -lgobject

QGears2

Rendering: OpenGL - Test: Gears

▶ Frames Per Second, More Is Better



1. (CXX) g++ options: -m64 -lQtOpenGL -lQtGui -lQtCore -lGL -lpthread

QGears2

Rendering: OpenGL - Test: Text

► Frames Per Second, More Is Better

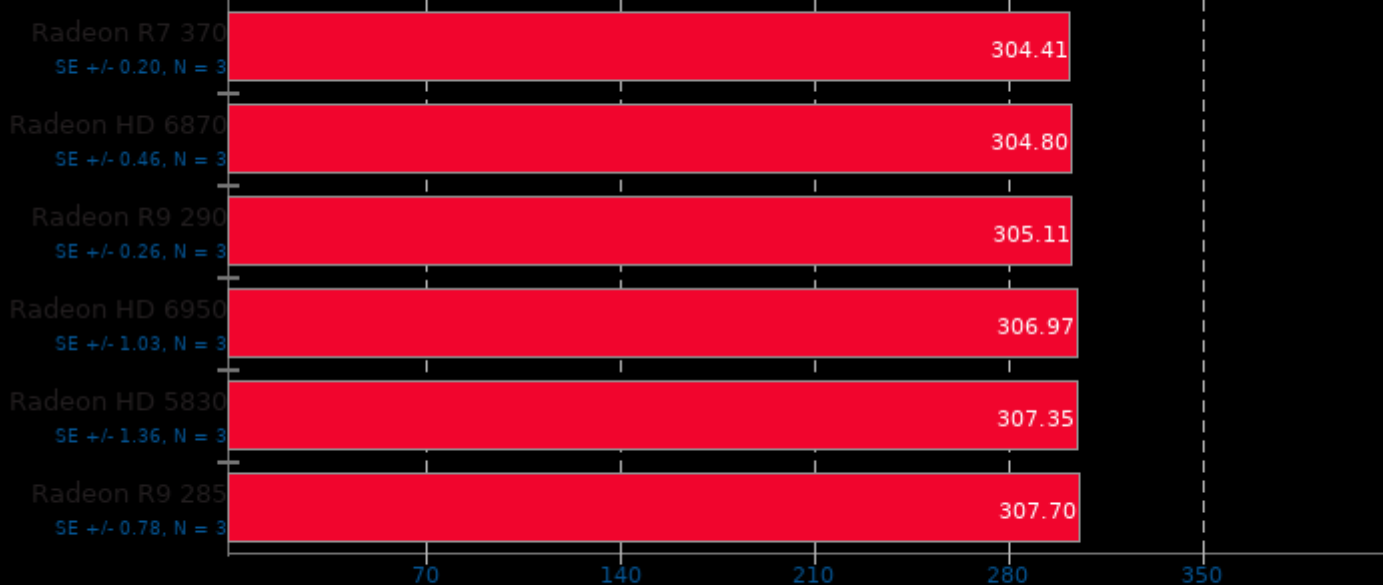


1. (CXX) g++ options: -m64 -lQtOpenGL -lQtGui -lQtCore -lGL -lpthread

GtkPerf 0.40

GTK Widget: GtkTextView - Add Text

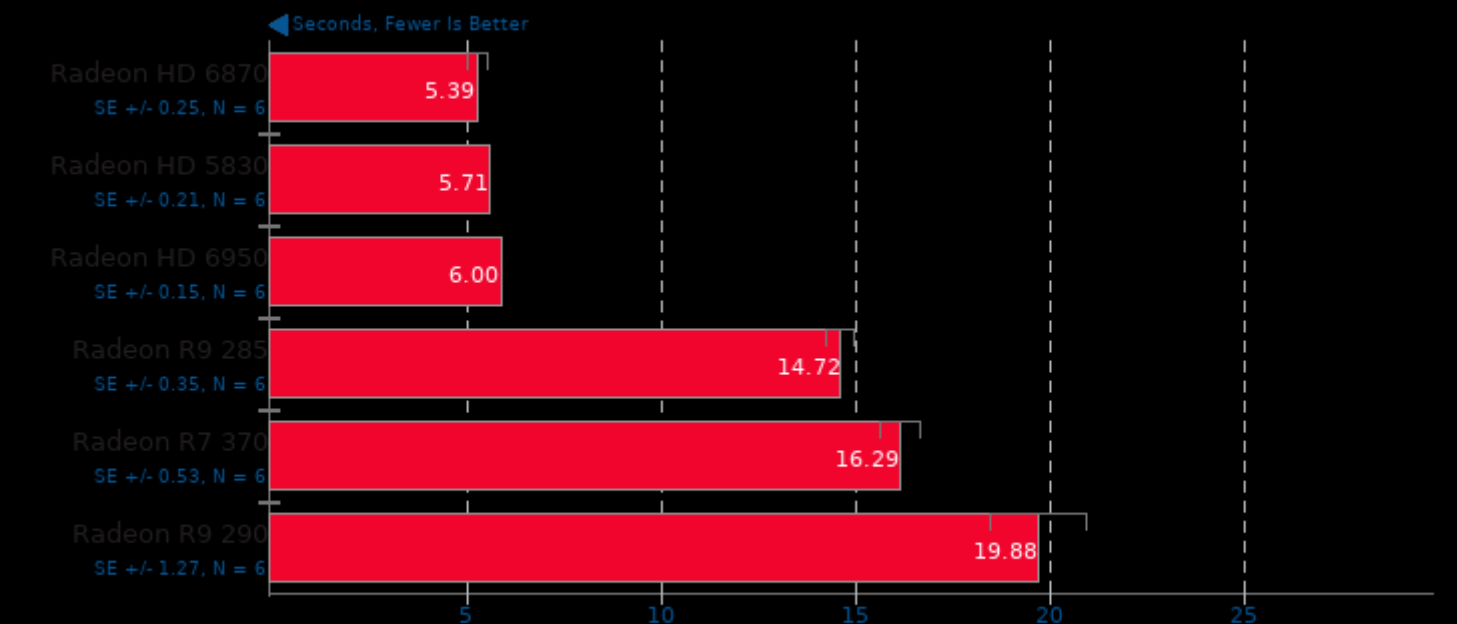
◄ Seconds, Fewer Is Better



1. (CC) gcc options: -lgtk-x11-2.0 -latk-1.0 -lgio-2.0 -lpangoft2-1.0 -lfontconfig -lgdk-x11-2.0 -lpangocairo-1.0 -lpango-1.0 -lcairo -lgdk_pixbuf-2.0 -lgobject

GtkPerf 0.40

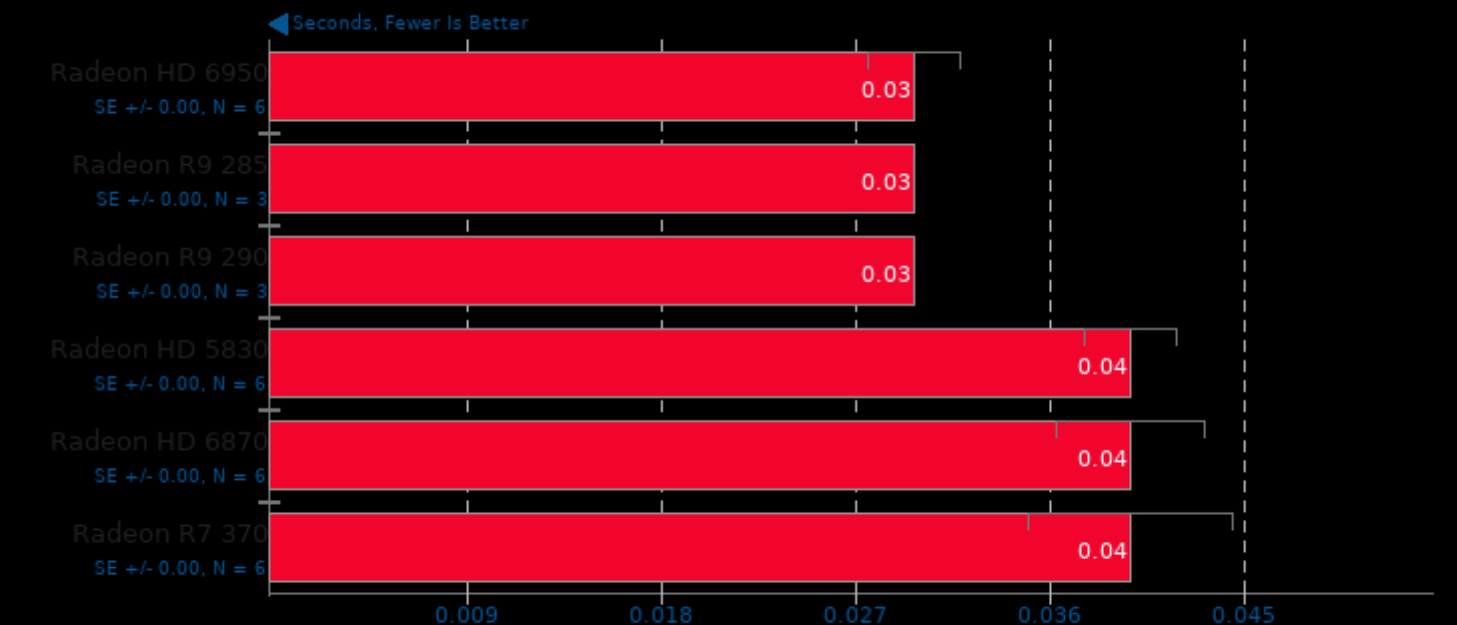
GTK Widget: GtkDrawingArea - Pixbufs



1. (CC) gcc options: -lgtk-x11-2.0 -latk-1.0 -lgio-2.0 -lpangoft2-1.0 -lfontconfig -lgdk-x11-2.0 -lpangocairo-1.0 -lpango-1.0 -lcairo -lgdk_pixbuf-2.0 -lgobject

GtkPerf 0.40

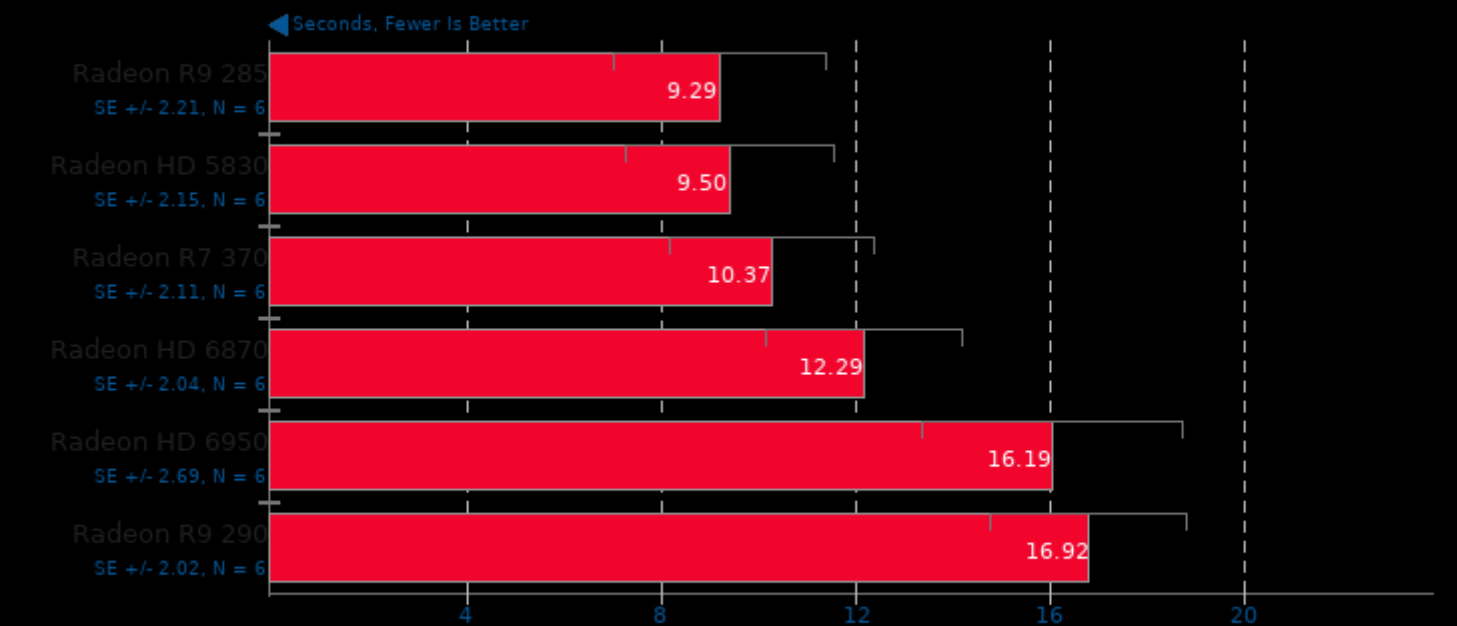
GTK Widget: GtkTextView - Scroll



1. (CC) gcc options: -lgtk-x11-2.0 -latk-1.0 -lgio-2.0 -lpangoft2-1.0 -lfontconfig -lgdk-x11-2.0 -lpangocairo-1.0 -lpango-1.0 -lcairo -lgdk_pixbuf-2.0 -lgobject

GtkPerf 0.40

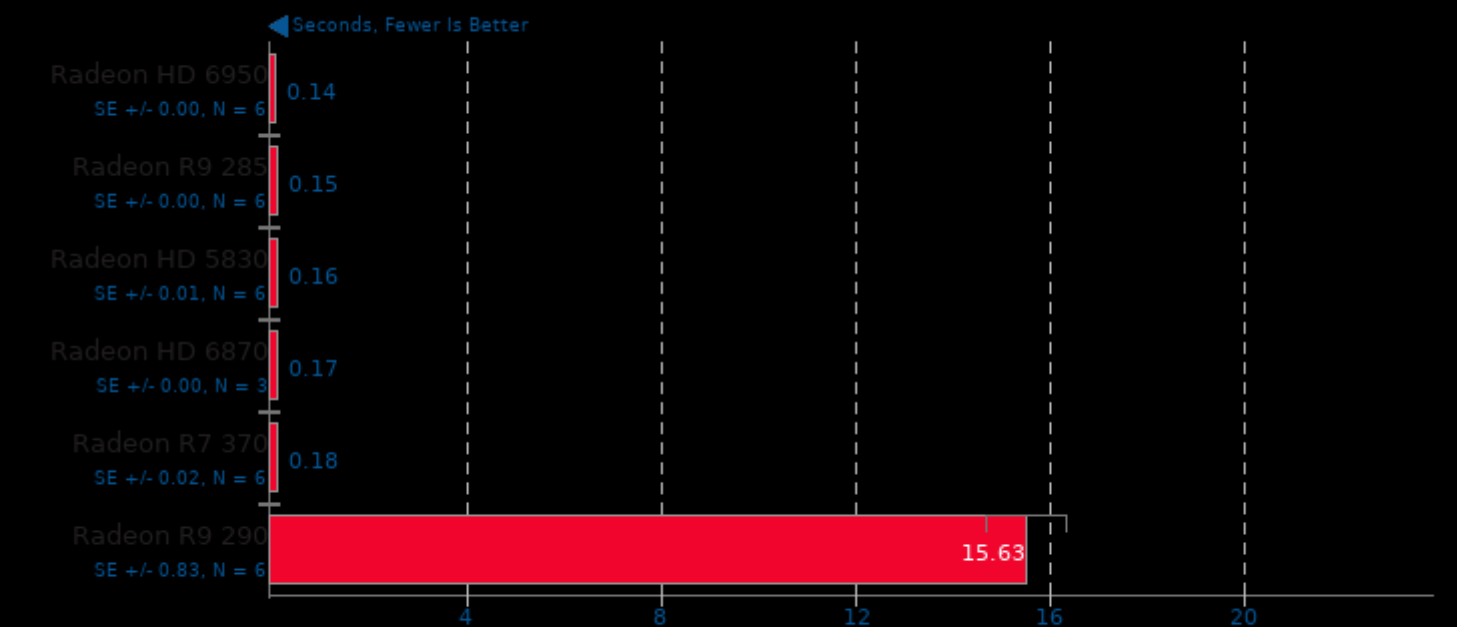
GTK Widget: GtkComboBoxEntry



1. (CC) gcc options: -lgtk-x11-2.0 -latk-1.0 -lgio-2.0 -lpangoft2-1.0 -lfontconfig -lgdk-x11-2.0 -lpangocairo-1.0 -lpango-1.0 -lcairo -lgdk_pixbuf-2.0 -lgobject

GtkPerf 0.40

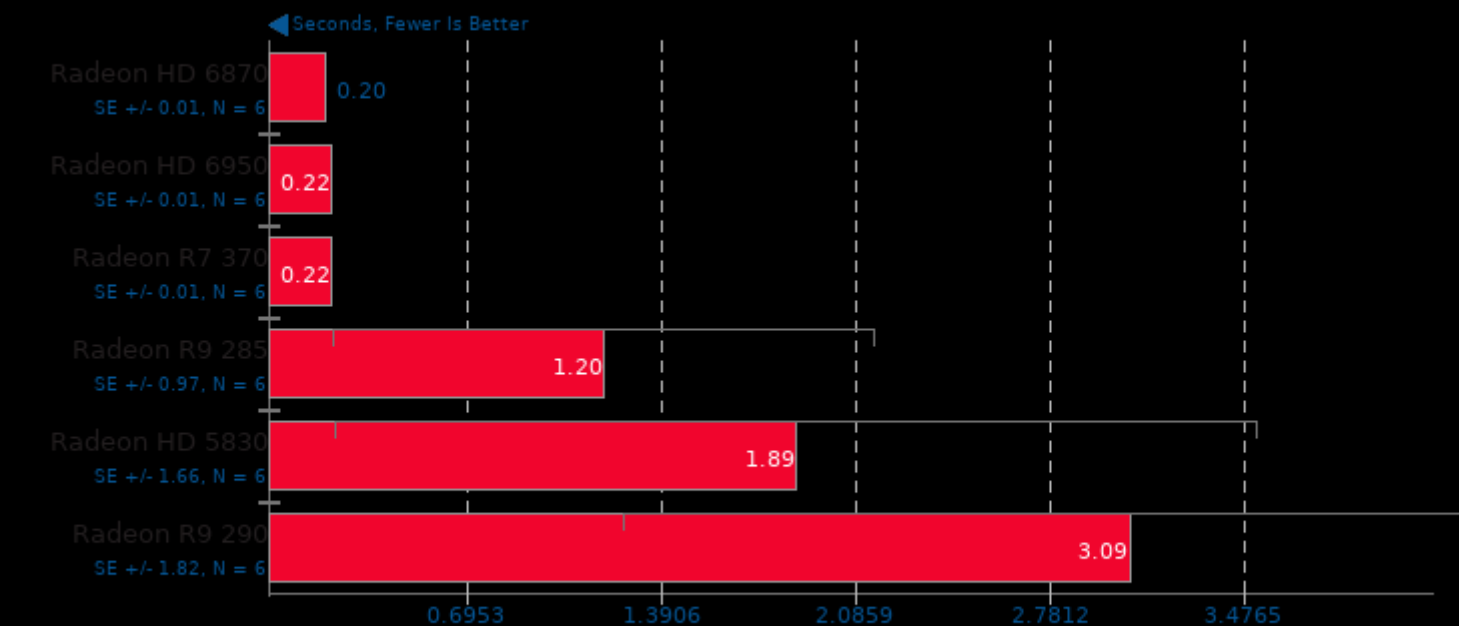
GTK Widget: GtkToggleButton



1. (CC) gcc options: -lgtk-x11-2.0 -latk-1.0 -lgio-2.0 -lpangoft2-1.0 -lfontconfig -lgdk-x11-2.0 -lpangocairo-1.0 -lpango-1.0 -lcairo -lgdk_pixbuf-2.0 -lgobject

GtkPerf 0.40

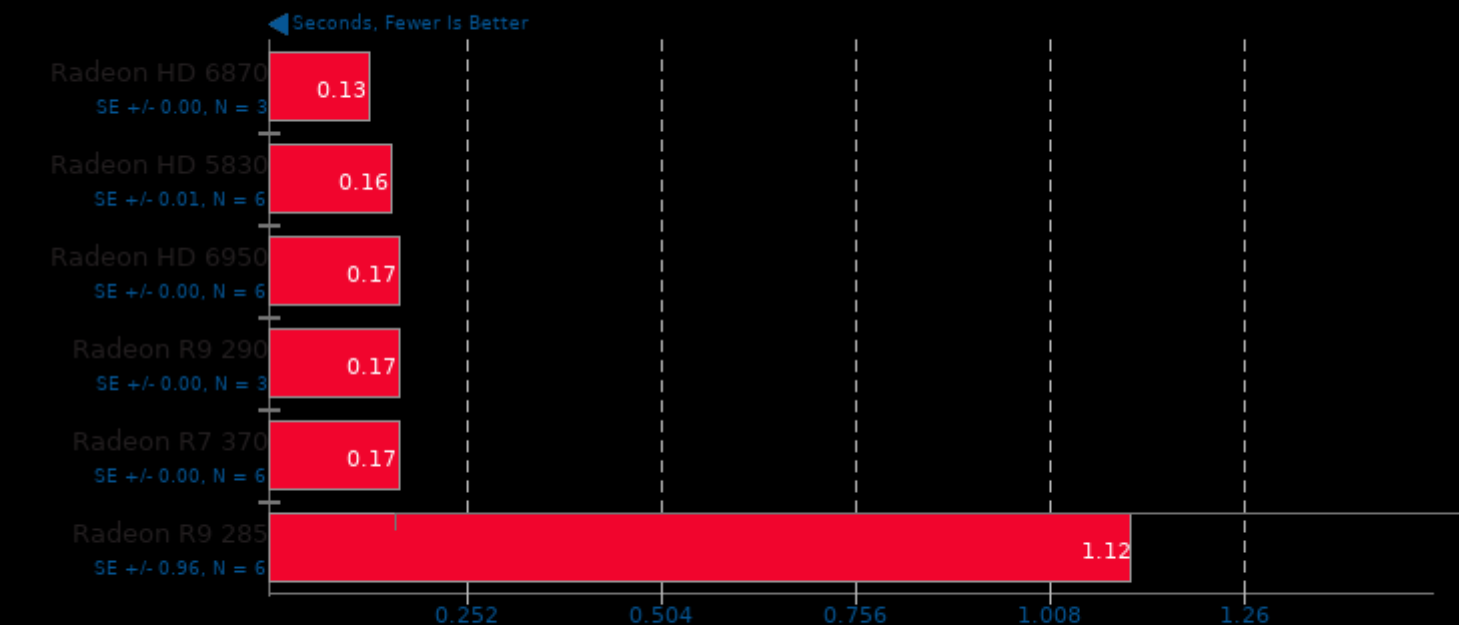
GTK Widget: GtkRadioButton



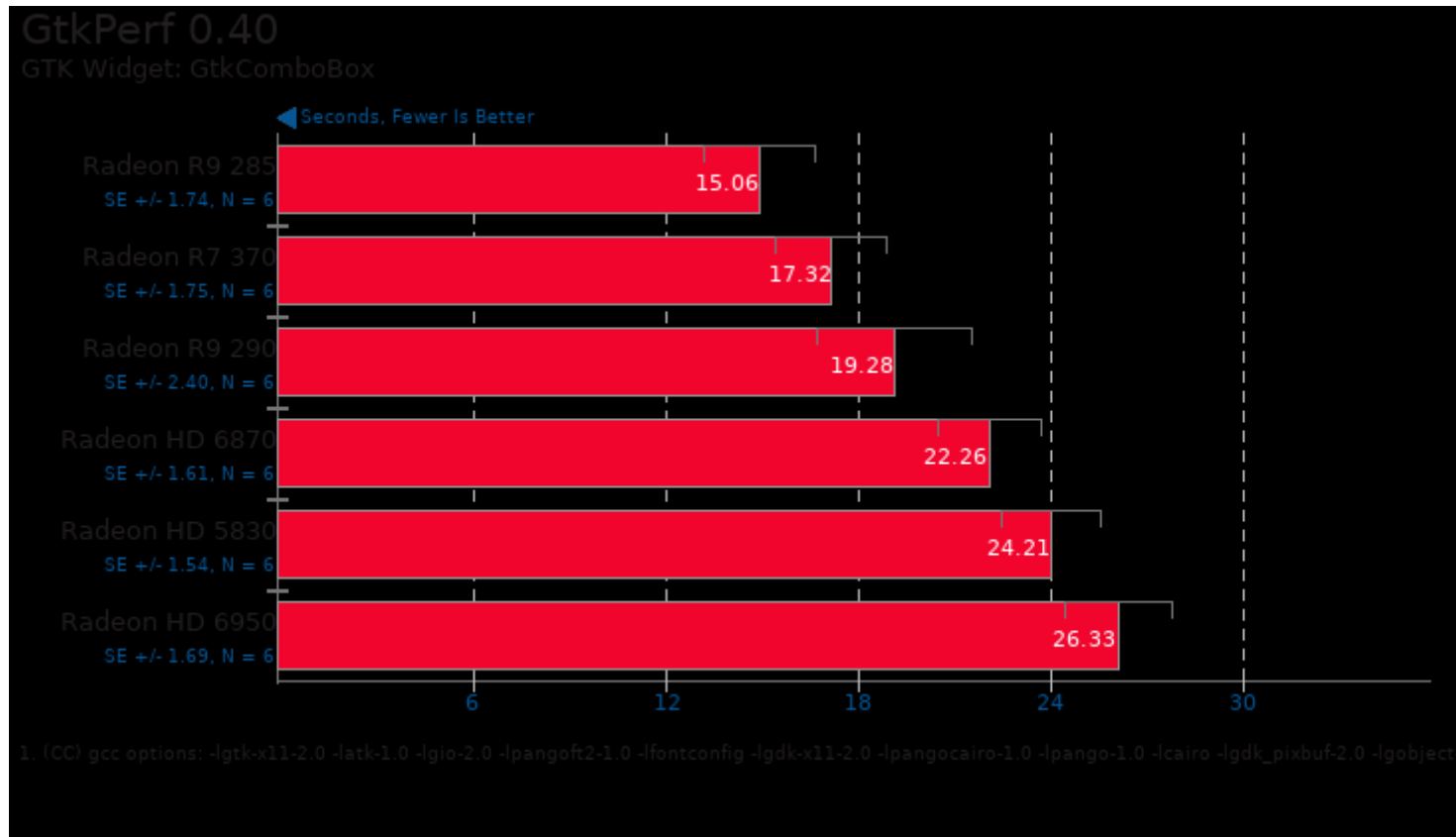
1. (CC) gcc options: -lgtk-x11-2.0 -latk-1.0 -lgio-2.0 -lpangoft2-1.0 -lfontconfig -lgdk-x11-2.0 -lpangocairo-1.0 -lpango-1.0 -lcairo -lgdk_pixbuf-2.0 -lgobject

GtkPerf 0.40

GTK Widget: GtkCheckBox



1. (CC) gcc options: -lgtk-x11-2.0 -latk-1.0 -lgio-2.0 -lpangoft2-1.0 -lfontconfig -lgdk-x11-2.0 -lpangocairo-1.0 -lpango-1.0 -lcairo -lgdk_pixbuf-2.0 -lgobject



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