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FirePro Benchmarking

Workstation OpenGL benchmarks plus a few games ran across a number of different ATI/AMD FirePro graphics cards on the Catalyst Linux driver.

Automated Executive Summary

FirePro V7800 had the most wins, coming in first place for 87% of the tests.

Based on the geometric mean of all complete results, the fastest (FirePro V7800) was 8.361x the speed of the slowest (FirePro V5800 Free). FirePro V5800 was 0.883x the speed of FirePro V7800, FirePro V4800 was 0.955x the speed of FirePro V5800, FirePro V3800 was 0.717x the speed of FirePro V4800, Quadro 3450 was 0.707x the speed of FirePro V3800, QuadroFX4600-nouv was 0.436x the speed of Quadro 3450, FirePro V5800 Free was 0.642x the speed of QuadroFX4600-nouv.

Test Systems:

FirePro V3800

Processor: Intel Core i5-2500K @ 3.30GHz (4 Cores), Motherboard: Intel BLH6710H.86A.0075.2010.1112.1844, Chipset: Intel Sandy Bridge, Memory: 2048MB, Disk: 60GB OCZ-VERTEX2, Graphics: ATI FirePro 3800 (FireGL) 512MB (650/900MHz), Audio: Realtek ALC892, Monitor: SyncMaster

OS: Ubuntu 10.10, Kernel: 2.6.35-25-generic (x86_64), Desktop: GNOME 2.32.0, Display Server: X Server 1.9.2.901 (1.9.3 RC 1), Display Driver: fglrx 8.83.6, OpenGL: 4.1.10599, Compiler: GCC 4.4.5, File-System: ext4, Screen Resolution: 2560x1600

System Notes: Compiz was running on this system. Intel SpeedStep was enabled.

FirePro V4800

Processor: Intel Core i5-2500K @ 3.30GHz (4 Cores), Motherboard: Intel BLH6710H.86A.0075.2010.1112.1844, Chipset: Intel Sandy Bridge, Memory: 2048MB, Disk: 60GB OCZ-VERTEX2, Graphics: ATI FirePro V4800 (FireGL) 1024MB (775/900MHz), Audio: Realtek ALC892, Monitor: SyncMaster

OS: Ubuntu 10.10, Kernel: 2.6.35-25-generic (x86_64), Desktop: GNOME 2.32.0, Display Server: X Server 1.9.2.901 (1.9.3 RC 1), Display Driver: fglrx 8.83.6, OpenGL: 4.1.10599, Compiler: GCC 4.4.5, File-System: ext4, Screen Resolution: 2560x1600

System Notes: Compiz was running on this system. Intel SpeedStep was enabled.

FirePro V5800

Processor: Intel Core i5-2500K @ 3.30GHz (4 Cores), Motherboard: Intel BLH6710H.86A.0075.2010.1112.1844, Chipset: Intel Sandy Bridge, Memory: 2048MB, Disk: 60GB OCZ-VERTEX2, Graphics: ATI FirePro V5800 (FireGL) 1024MB (690/1000MHz), Audio: Realtek ALC892, Monitor: SyncMaster

OS: Ubuntu 10.10, Kernel: 2.6.35-25-generic (x86_64), Desktop: GNOME 2.32.0, Display Server: X Server 1.9.2.901 (1.9.3 RC 1), Display Driver: fglrx 8.83.6, OpenGL: 4.1.10599, Compiler: GCC 4.4.5, File-System: ext4, Screen Resolution: 2560x1600

System Notes: Compiz was running on this system. Intel SpeedStep was enabled.

FirePro V7800

Processor: Intel Core i5-2500K @ 3.30GHz (4 Cores), Motherboard: Intel BLH6710H.86A.0075.2010.1112.1844, Chipset: Intel Sandy Bridge, Memory: 2048MB, Disk: 60GB OCZ-VERTEX2, Graphics: ATI FirePro V7800 (FireGL) 2048MB (700/1000MHz), Audio: Realtek ALC892, Monitor: SyncMaster

OS: Ubuntu 10.10, Kernel: 2.6.35-25-generic (x86_64), Desktop: GNOME 2.32.0, Display Server: X Server 1.9.2.901 (1.9.3 RC 1), Display Driver: fglrx 8.83.6, OpenGL: 4.1.10599, Compiler: GCC 4.4.5, File-System: ext4, Screen Resolution: 2560x1600

System Notes: Compiz was running on this system. Intel SpeedStep was enabled.

Quadro 3450

Processor: 2 x Intel Xeon @ 3.60GHz (4 Cores), Motherboard: IBM MSI-9151 Boards, Chipset: Intel E7525 MCH + ICH5/ICH5R, Memory: 4096MB, Disk: 73GB VPR073W3-ETS10FN, Graphics: NVIDIA Quadro FX 3450/4000 SDI 256MB (425/1000MHz)

OS: Debian 6.0.1, Kernel: 2.6.32-5-amd64 (x86_64), Desktop: GNOME 2.30.2, Display Server: X Server 1.7.7, Display Driver: NVIDIA 195.36.31, OpenGL: 2.1.2 NVIDIA 195.36.31, Compiler: GCC 4.4.5 + Sun C 5.11 Linux_i386 2010/08/13, File-System: ext3, Screen Resolution: 1920x1080

System Notes: .

QuadroFX4600-nouv

Processor: 2 x Intel Xeon E5645 @ 2.40GHz (12 Cores), Motherboard: HP 0B54h, Chipset: Intel 5520 I/O + ICH10R, Memory: 24576MB, Disk: 2 x 500GB Seagate ST3500320NS, Graphics: NVIDIA Quadro FX 4600 768MB, Audio: Realtek ALC262, Monitor: VX2260WM, Network: Broadcom Limited NetXtreme BCM5764M Gigabit PCIe + Qualcomm Atheros AR9462 Wireless

OS: Debian 9.1, Kernel: 4.9.0-3-amd64 (x86_64), Display Driver: nouveau 1.0.13, OpenGL: 3.3 Mesa 13.0.6 Gallium 0.4, Compiler: GCC 6.3.0 20170516, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-vtable-verify --enable-checking=release --enable-clocale=gnu --enable-default-pie --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=auto --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-arch-directory=amd64 --with-default-libstdcxx-abi=new --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Graphics Notes: EXA

FirePro V5800 Free

Processor: 2 x Intel Xeon E5645 @ 2.40GHz (12 Cores), Motherboard: HP 0B54h, Chipset: Intel 5520 I/O + ICH10R, Memory: 24576MB, Disk: 2 x 500GB Seagate ST3500320NS, Graphics: AMD FirePro V5800 1024MB, Audio: Realtek ALC262, Monitor: VX2260WM, Network: Broadcom Limited NetXtreme BCM5764M Gigabit PCIe + Qualcomm Atheros AR9462 Wireless

OS: Debian 9.1, Kernel: 4.9.0-3-amd64 (x86_64), Display Driver: modesetting 1.19.2, OpenGL: 3.3 Mesa 13.0.6 Gallium 0.4 (LLVM 3.9.1), Compiler: GCC 6.3.0 20170516, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-vtable-verify --enable-checking=release --enable-clocale=gnu --enable-default-pie --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=auto --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-arch-directory=amd64 --with-default-libstdcxx-abi=new --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Graphics Notes: EXA

	FirePro V3800	FirePro V4800	FirePro V5800	FirePro V7800	Quadro 3450	QuadroFX4600-nouv	FirePro V5800 Free
SPECViewPerf 10 - 2560 x 1600 - proe-04 (Weighted Geometric Mean)	31.14	46.51	46.79	**46.93**	24.67	**5.87**	
Normalized	66.35%	99.11%	99.7%	100%	52.57%	12.51%	
Standard Deviation	0.1%	0.1%	0.3%	1.4%	0.1%	2%	

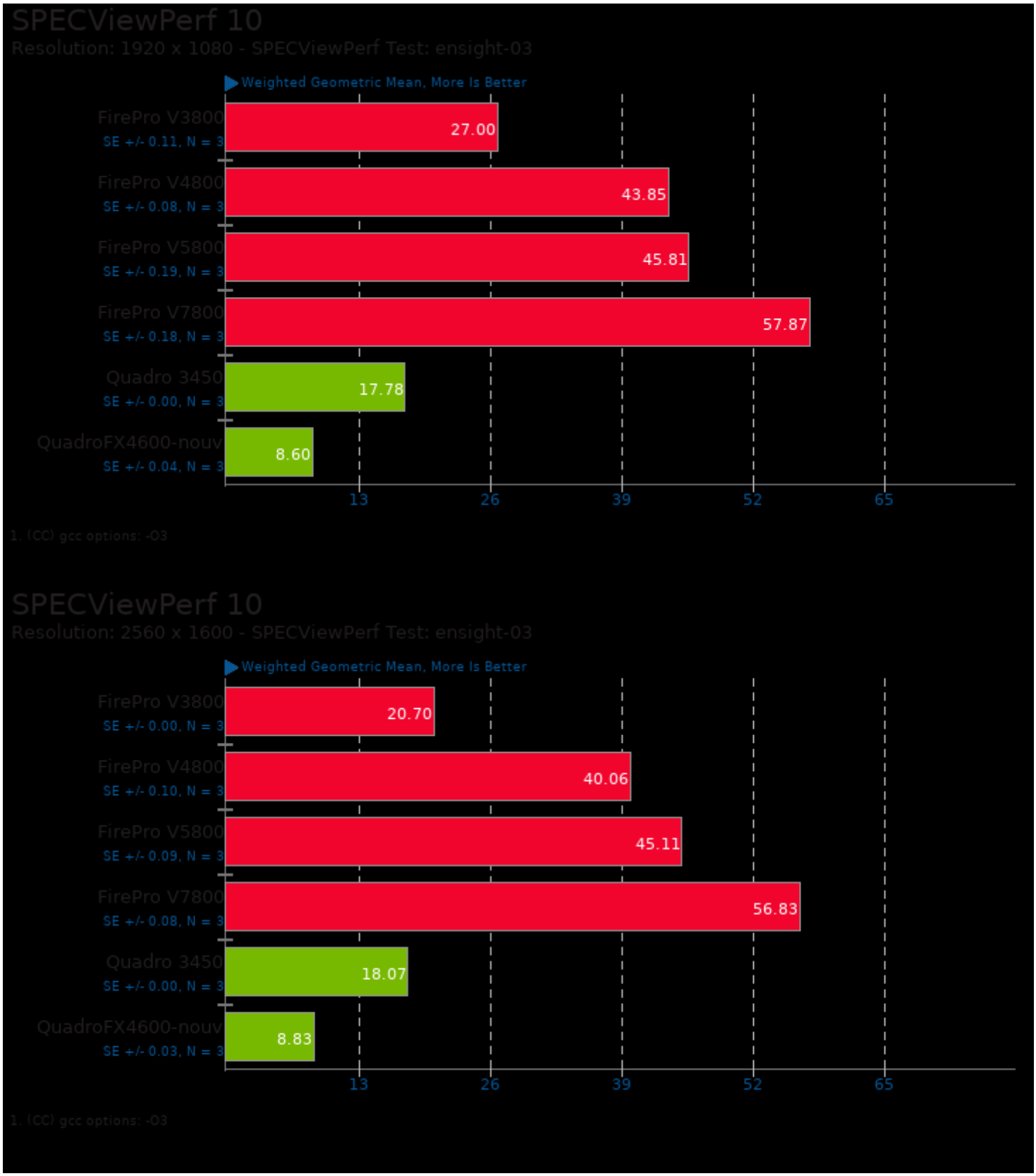
FirePro Benchmarking

SPECViewPerf 10 - 1920 x 1080 - proe-04 (Weighted Geometric Mean)	38.64	46.66	46.12	**46.74**	25.04	**5.90**	
Normalized	82.67%	99.83%	98.67%	100%	53.57%	12.62%	
Standard Deviation	0.2%	0.3%	0.3%	1%	0.7%	0.8%	
SPECViewPerf 10 - 1920 x 1080 - ensight-03 (Weighted Geometric	27.00	43.85	45.81	**57.87**	17.78	**8.60**	
Normalized	46.66%	75.77%	79.16%	100%	30.72%	14.86%	
Standard Deviation	0.7%	0.3%	0.7%	0.5%	0%	0.7%	
SPECViewPerf 10 - 2560 x 1600 - ensight-03 (Weighted Geometric	20.70	40.06	45.11	**56.83**	18.07	**8.83**	
Normalized	36.42%	70.49%	79.38%	100%	31.8%	15.54%	
Standard Deviation	0%	0.4%	0.3%	0.2%	0%	0.5%	
SPECViewPerf 10 - 2560 x 1600 - sw-01 (Weighted Geometric Mean)	42.01	75.25	76.43	**79.20**	35.78	**13.28**	
Normalized	53.04%	95.01%	96.5%	100%	45.18%	16.77%	
Standard Deviation	0%	0.7%	0.1%	0.9%	0.1%	0.5%	
SPECViewPerf 10 - 1920 x 1080 - sw-01 (Weighted Geometric Mean)	60.59	75.79	75.64	**79.69**	35.90	**13.41**	
Normalized	76.03%	95.11%	94.92%	100%	45.05%	16.83%	
Standard Deviation	0.2%	0.5%	0.2%	0.2%	0%	0.8%	
Unigine Tropics - 1920 x 1080 (FPS)	**15.99**	29.60	46.64	**81.82**			
Normalized	19.54%	36.18%	57%	100%			
Standard Deviation	0%	0%	0%	0%			
SPECViewPerf 10 - 1920 x 1080 - 3dsmax-04 (Weighted Geometric	40.72	43.60	**44.43**	43.72	20.47	**8.96**	9.07
Normalized	91.65%	98.13%	100%	98.4%	46.07%	20.17%	20.41%
Standard Deviation	0.1%	0.2%	0.2%	1%	0.2%	1.7%	0.3%
SPECViewPerf 10 - 2560 x 1600 - 3dsmax-04 (Weighted Geometric	33.97	43.36	**44.02**	44.01	20.42	9.34	**8.97**
Normalized	77.17%	98.5%	100%	99.98%	46.39%	21.22%	20.38%
Standard Deviation	0.1%	0.2%	0.2%	0.4%	0.9%	0.6%	1.7%
OpenArena - 2560 x 1600 (FPS)	**75.80**	182.17	232.53	**361.37**	178.77	228.53	113.73
Normalized	20.98%	50.41%	64.35%	100%	49.47%	63.24%	31.47%
Standard Deviation	0%	0.4%	0.2%	0.5%	5.3%	1%	0.1%
Unigine Heaven - 1920 x 1080 (FPS)	5.75	11.58	16.06	**24.88**	**1.35**		
Normalized	23.11%	46.54%	64.55%	100%	5.43%		
Standard Deviation	0.1%	0%	0.1%	0.1%	0.7%		
SPECViewPerf 10 - 2560 x 1600 - catia-02 (Weighted Geometric Mean)	34.44	46.70	46.94	**47.56**	26.72	6.00	**2.67**
Normalized	72.41%	98.19%	98.7%	100%	56.18%	12.62%	5.61%
Standard Deviation	0.1%	0.1%	0.3%	0.1%	0.1%	1.9%	0.8%

FirePro Benchmarking

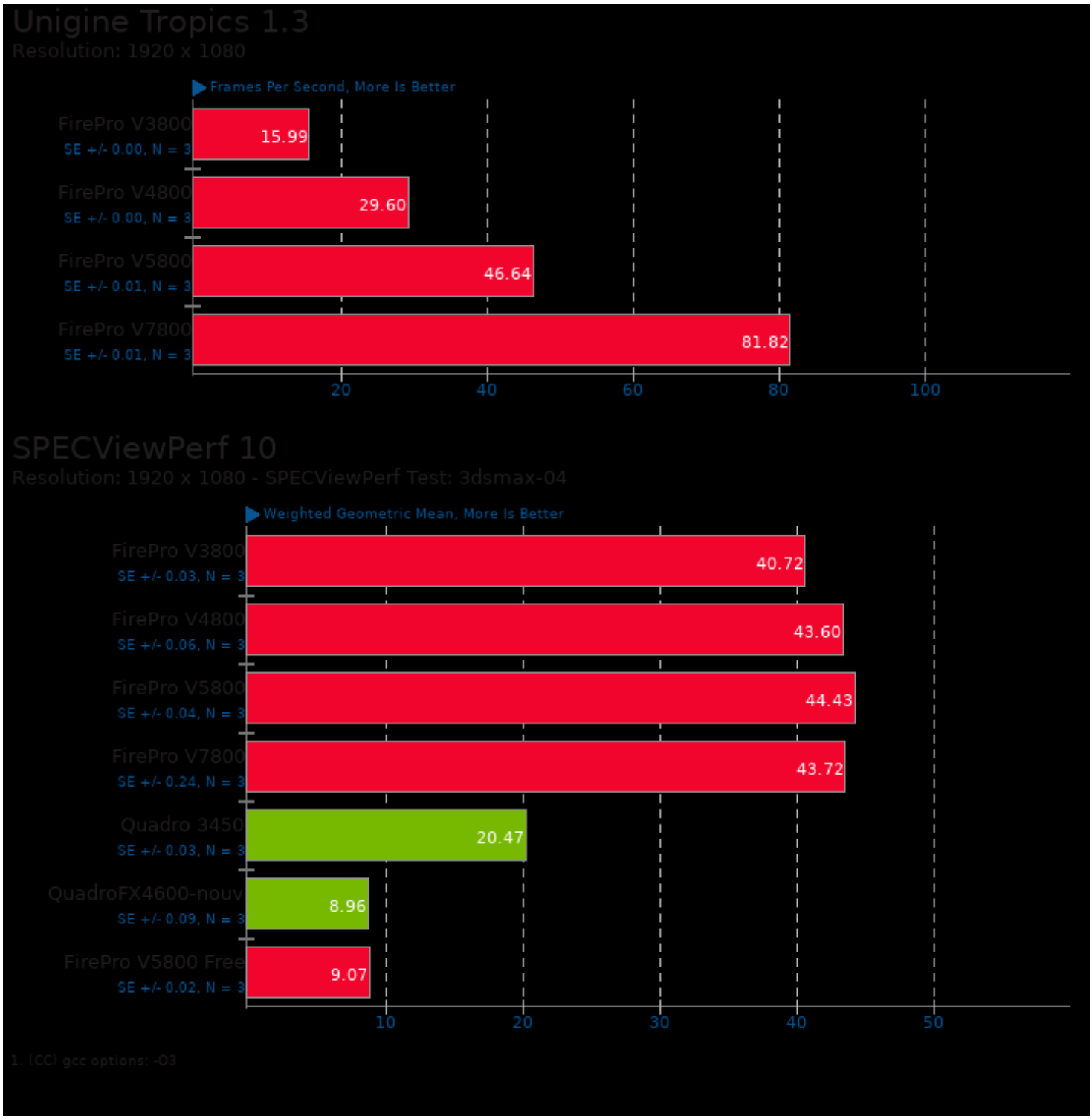
SPECViewPerf 10 - 1920 x 1080 - catia-02 (Weighted Geometric Mean)	41.98	47.05	47.08	**47.46**	26.49	6.13	**2.78**
Normalized	88.45%	99.14%	99.2%	100%	55.82%	12.92%	5.86%
Standard Deviation	0.3%	0.1%	0.3%	0.4%	0.5%	2%	7.5%
SPECViewPerf 10 - 1920 x 1080 - tcvis-01 (Weighted Geometric Mean)	21.52	31.75	31.48	**42.43**	7.69	3.95	**2.84**
Normalized	50.72%	74.83%	74.19%	100%	18.12%	9.31%	6.69%
Standard Deviation	0.1%	0.2%		0.5%		3.1%	0.7%
SPECViewPerf 10 - 2560 x 1600 - tcvis-01 (Weighted Geometric Mean)	18.04	30.15		**41.67**		4.00	**2.83**
Normalized	43.29%	72.35%		100%		9.6%	6.79%
Standard Deviation	0.1%	0.1%		0.4%		3.1%	0.4%
Warsow - 2560 x 1600 (FPS)	**64.77**	137.43	190.08	**259.13**			
Normalized	25%	53.04%	73.35%	100%			
Standard Deviation	55.1%	0.2%	18.1%	0.4%			


SPECViewPerf 10
Resolution: 2560 x 1600 - SPECViewPerf Test: proe-04
Weighted Geometric Mean, More Is Better
FirePro V3800
SE +/- 0.02, N = 3
31.14
FirePro V4800
SE +/- 0.03, N = 3
46.51
FirePro V5800
SE +/- 0.08, N = 3
46.79
FirePro V7800
SE +/- 0.37, N = 3
46.93
Quadro 3450
SE +/- 0.02, N = 3
24.67
QuadroFX4600-nouv
SE +/- 0.07, N = 3
5.87
11
22
33
44
55
1. (CC) gcc options: -O3
SPECViewPerf 10
Resolution: 1920 x 1080 - SPECViewPerf Test: proe-04
Weighted Geometric Mean, More Is Better
FirePro V3800
SE +/- 0.04, N = 3
38.64
FirePro V4800
SE +/- 0.09, N = 3
46.66
FirePro V5800
SE +/- 0.08, N = 3
46.12
FirePro V7800
SE +/- 0.28, N = 3
46.74
Quadro 3450
SE +/- 0.10, N = 3
25.04
QuadroFX4600-nouv
SE +/- 0.03, N = 3
5.90
11
22
33
44
55
1. (CC) gcc options: -O3


SPECViewPerf 10
Resolution: 1920 x 1080 - SPECViewPerf Test: ensight-03
Weighted Geometric Mean, More Is Better
FirePro V3800
SE +/- 0.11, N = 3
27.00
FirePro V4800
SE +/- 0.08, N = 3
43.85
FirePro V5800
SE +/- 0.19, N = 3
45.81
FirePro V7800
SE +/- 0.18, N = 3
57.87
Quadro 3450
SE +/- 0.00, N = 3
17.78
QuadroFX4600-nouv
SE +/- 0.04, N = 3
8.60
13
26
39
52
65
1. (CC) gcc options: -O3
SPECViewPerf 10
Resolution: 2560 x 1600 - SPECViewPerf Test: ensight-03
Weighted Geometric Mean, More Is Better
FirePro V3800
SE +/- 0.00, N = 3
20.70
FirePro V4800
SE +/- 0.10, N = 3
40.06
FirePro V5800
SE +/- 0.09, N = 3
45.11
FirePro V7800
SE +/- 0.08, N = 3
56.83
Quadro 3450
SE +/- 0.00, N = 3
18.07
QuadroFX4600-nouv
SE +/- 0.03, N = 3
8.83
13
26
39
52
65
1. (CC) gcc options: -O3

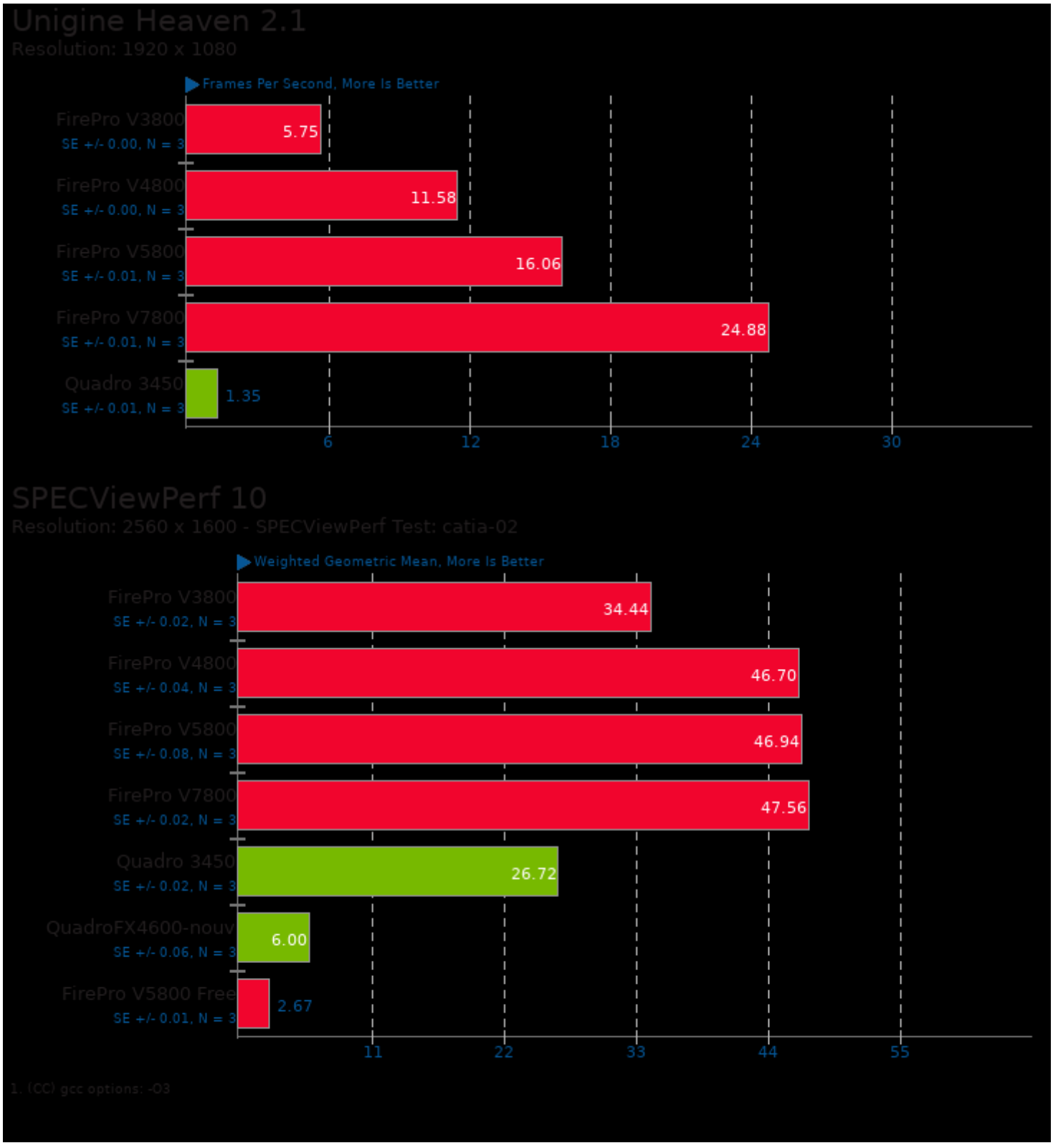

SPECViewPerf 10
Resolution: 2560 x 1600 - SPECViewPerf Test: sw-01
Weighted Geometric Mean, More Is Better
FirePro V3800
SE +/- 0.01, N = 3
42.01
FirePro V4800
SE +/- 0.30, N = 3
75.25
FirePro V5800
SE +/- 0.04, N = 3
76.43
FirePro V7800
SE +/- 0.42, N = 3
79.20
Quadro 3450
SE +/- 0.02, N = 3
35.78
QuadroFX4600-nouv
SE +/- 0.04, N = 3
13.28
20
40
60
80
100
1. (CC) gcc options: -O3
SPECViewPerf 10
Resolution: 1920 x 1080 - SPECViewPerf Test: sw-01
Weighted Geometric Mean, More Is Better
FirePro V3800
SE +/- 0.07, N = 3
60.59
FirePro V4800
SE +/- 0.22, N = 3
75.79
FirePro V5800
SE +/- 0.07, N = 3
75.64
FirePro V7800
SE +/- 0.10, N = 3
79.69
Quadro 3450
SE +/- 0.01, N = 3
35.90
QuadroFX4600-nouv
SE +/- 0.06, N = 3
13.41
20
40
60
80
100
1. (CC) gcc options: -O3

FirePro Benchmarking

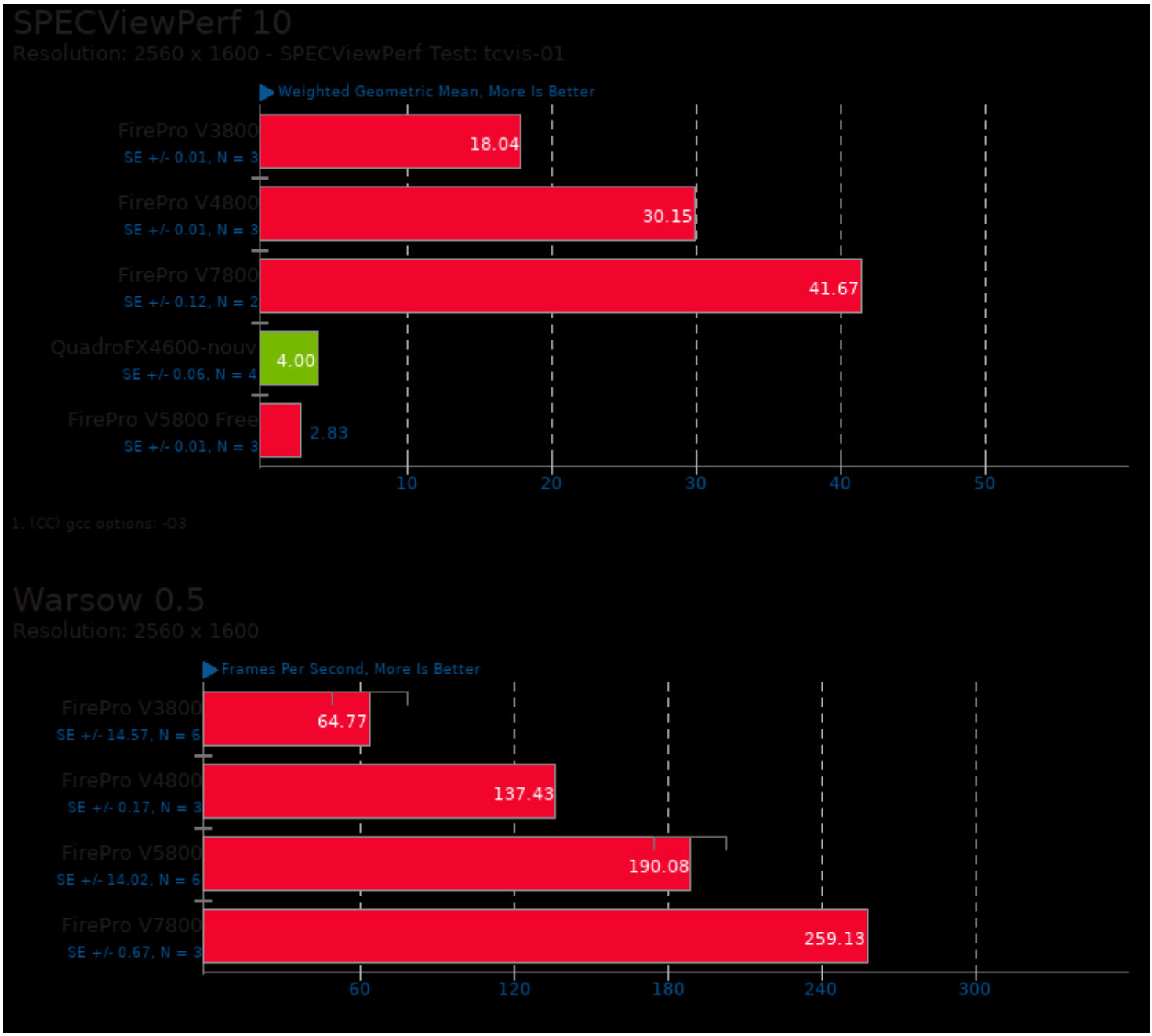



SPECViewPerf 10
Resolution: 2560 x 1600 - SPECViewPerf Test: 3dsmax-04
Weighted Geometric Mean, More Is Better
FirePro V3800
SE +/- 0.01, N = 3
33.97
FirePro V4800
SE +/- 0.06, N = 3
43.36
FirePro V5800
SE +/- 0.05, N = 3
44.02
FirePro V7800
SE +/- 0.10, N = 3
44.01
Quadro 3450
SE +/- 0.11, N = 3
20.42
QuadroFX4600-nouv
SE +/- 0.03, N = 3
9.34
FirePro V5800 Free
SE +/- 0.09, N = 3
8.97
10
20
30
40
50
1. (CC) gcc options: -O3
OpenArena 0.8.5
Resolution: 2560 x 1600
Frames Per Second, More Is Better
FirePro V3800
SE +/- 0.00, N = 3
75.80
FirePro V4800
SE +/- 0.38, N = 3
182.17
FirePro V5800
SE +/- 0.22, N = 3
232.53
FirePro V7800
SE +/- 1.08, N = 3
361.37
Quadro 3450
SE +/- 3.90, N = 6
178.77
QuadroFX4600-nouv
SE +/- 1.34, N = 3
228.53
FirePro V5800 Free
SE +/- 0.03, N = 3
113.73
80
160
240
320
400

FirePro Benchmarking




SPECViewPerf 10
Resolution: 1920 x 1080 - SPECViewPerf Test: catia-02
Weighted Geometric Mean, More Is Better
FirePro V3800
SE +/- 0.08, N = 3
41.98
FirePro V4800
SE +/- 0.04, N = 3
47.05
FirePro V5800
SE +/- 0.08, N = 3
47.08
FirePro V7800
SE +/- 0.11, N = 3
47.46
Quadro 3450
SE +/- 0.07, N = 3
26.49
QuadroFX4600-nouv
SE +/- 0.07, N = 3
6.13
FirePro V5800 Free
SE +/- 0.09, N = 6
2.78
11
22
33
44
55
1. (CC) gcc options: -O3
SPECViewPerf 10
Resolution: 1920 x 1080 - SPECViewPerf Test: tcvis-01
Weighted Geometric Mean, More Is Better
FirePro V3800
SE +/- 0.01, N = 3
21.52
FirePro V4800
SE +/- 0.05, N = 2
31.75
FirePro V5800
31.48
FirePro V7800
SE +/- 0.13, N = 3
42.43
Quadro 3450
7.69
QuadroFX4600-nouv
SE +/- 0.07, N = 3
3.95
FirePro V5800 Free
SE +/- 0.01, N = 3
2.84
10
20
30
40
50
1. (CC) gcc options: -O3



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