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Blender 3.4 AMD HIP

AMD Ryzen 9 7950X 16-Core testing with a ASUS ROG CROSSHAIR X670E HERO (0805 BIOS) and AMD Radeon VII 16GB on Ubuntu 22.04 via the Phoronix Test Suite.

Automated Executive Summary

RX 7900 XTX had the most wins, coming in first place for 80% of the tests.

Based on the geometric mean of all complete results, the fastest (RX 7900 XTX) was 3.831x the speed of the slowest (RX 5700 XT). RX 7900 XT was 0.905x the speed of RX 7900 XTX, RX 6800 XT was 0.679x the speed of RX 7900 XT, RX 6800 was 0.805x the speed of RX 6800 XT, Radeon VII was 0.565x the speed of RX 6800, RX 5700 XT was 0.933x the speed of Radeon VII.

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

Blender (Blend File: Fishy Cat - Compute: Radeon HIP) at 5.822x

Blender (Blend File: Barbershop - Compute: Radeon HIP) at 4.145x

Blender (Blend File: Classroom - Compute: Radeon HIP) at 3.759x

Blender (Blend File: BMW27 - Compute: Radeon HIP) at 3.327x

Blender (Blend File: Pabellon Barcelona - Compute: Radeon HIP) at 2.271x

GPU Temperature Monitor (Phoronix Test Suite System Monitoring) at -1x

GPU Power Consumption Monitor (Phoronix Test Suite System Monitoring) at -1x

Blender (GPU Temperature Monitor) at -1x

Blender (GPU Temperature Monitor) at -1x

Blender (GPU Temperature Monitor) at -1x.

Test Systems:

RX 7900 XTX

Processor: AMD Ryzen 9 7950X 16-Core @ 5.88GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR X670E HERO (0805 BIOS), Chipset: AMD Device 14d8, Memory: 32GB, Disk: Western Digital WD_BLACK SN850X 1000GB + 2000GB, Graphics: AMD Radeon RX 7900 XTX 24GB (3220/1249MHz), Audio: AMD Device ab30, Monitor: ASUS MG28U, Network: Intel I225-V + Intel Wi-Fi 6 AX210/AX211/AX411

OS: Ubuntu 22.04, Kernel: 5.15.0-56-generic (x86_64), Desktop: GNOME Shell 42.5, Display Server: X Server 1.21.1.3 + Wayland, OpenGL: 4.6 Mesa 22.3.0-devel (LLVM 15.0.3 DRM 3.49), OpenCL: OpenCL 2.1 AMD-APP (3513.0), Vulkan: 1.3.232, Compiler: GCC 11.3.0, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: madvise

Processor Notes: Scaling Governor: amd-pstate performance (Boost: Enabled) - CPU Microcode: 0xa601203

Security Notes: itlb_multihit: Not affected + I1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + rebleed: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Retpolines IBPB: conditional IBRS_FW STIBP: always-on RSB filling PBRSB-elBRS: Not affected + srbds: Not affected + tsx_async_abort: Not affected

RX 7900 XT

Processor: AMD Ryzen 9 7950X 16-Core @ 5.88GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR X670E HERO (0805 BIOS), Chipset: AMD Device 14d8, Memory: 32GB, Disk: Western Digital WD_BLACK SN850X 1000GB + 2000GB, Graphics: AMD Radeon RX 7900 XT 20GB (3125/1249MHz), Audio: AMD Device ab30, Monitor: ASUS MG28U, Network: Intel I225-V + Intel Wi-Fi 6 AX210/AX211/AX411

OS: Ubuntu 22.04, Kernel: 5.15.0-56-generic (x86_64), Desktop: GNOME Shell 42.5, Display Server: X Server 1.21.1.3 + Wayland, OpenGL: 4.6 Mesa 22.3.0-devel (LLVM 15.0.3 DRM 3.49), OpenCL: OpenCL 2.1 AMD-APP (3513.0), Vulkan: 1.3.232, Compiler: GCC 11.3.0, File-System: ext4, Screen Resolution: 3840x2160

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RX 6800 XT

Processor: AMD Ryzen 9 7950X 16-Core @ 5.88GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR X670E HERO (0805 BIOS), Chipset: AMD Device 14d8, Memory: 32GB, Disk: Western Digital WD_BLACK SN850X 1000GB + 2000GB, Graphics: AMD Radeon RX 6800 XT 16GB (2575/1000MHz), Audio: AMD Navi 21 HDMI Audio, Monitor: ASUS MG28U, Network: Intel I225-V + Intel Wi-Fi 6 AX210/AX211/AX411

OS: Ubuntu 22.04, Kernel: 5.15.0-56-generic (x86_64), Desktop: GNOME Shell 42.5, Display Server: X Server 1.21.1.3 + Wayland, OpenGL: 4.6 Mesa 22.3.0-devel (LLVM 15.0.3 DRM 3.49), OpenCL: OpenCL 2.1 AMD-APP (3513.0),

Vulkan: 1.3.232, Compiler: GCC 11.3.0, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: madvise

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RX 6800

Processor: AMD Ryzen 9 7950X 16-Core @ 5.88GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR X670E HERO (0805 BIOS), Chipset: AMD Device 14d8, Memory: 32GB, Disk: Western Digital WD_BLACK SN850X 1000GB + 2000GB, Graphics: AMD Radeon RX 6800 16GB (2475/1000MHz), Audio: AMD Navi 21 HDMI Audio, Monitor: ASUS MG28U, Network: Intel I225-V + Intel Wi-Fi 6 AX210/AX211/AX411

OS: Ubuntu 22.04, Kernel: 5.15.0-56-generic (x86_64), Desktop: GNOME Shell 42.5, Display Server: X Server 1.21.1.3 + Wayland, OpenGL: 4.6 Mesa 22.3.0-devel (LLVM 15.0.3 DRM 3.49), OpenCL: OpenCL 2.1 AMD-APP (3513.0), Vulkan: 1.3.232, Compiler: GCC 11.3.0, File-System: ext4, Screen Resolution: 3840x2160

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RX 5700 XT

Processor: AMD Ryzen 9 7950X 16-Core @ 5.88GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR X670E HERO (0805 BIOS), Chipset: AMD Device 14d8, Memory: 32GB, Disk: Western Digital WD_BLACK SN850X 1000GB + 2000GB, Graphics: AMD Radeon RX 5700 XT 8GB (2100/875MHz), Audio: AMD Navi 10 HDMI Audio, Monitor: ASUS MG28U, Network: Intel I225-V + Intel Wi-Fi 6 AX210/AX211/AX411

OS: Ubuntu 22.04, Kernel: 5.15.0-56-generic (x86_64), Desktop: GNOME Shell 42.5, Display Server: X Server 1.21.1.3 + Wayland, OpenGL: 4.6 Mesa 22.3.0-devel (LLVM 15.0.3 DRM 3.49), OpenCL: OpenCL 2.1 AMD-APP (3513.0), Vulkan: 1.3.232, Compiler: GCC 11.3.0, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: madvise

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Radeon VII

Processor: AMD Ryzen 9 7950X 16-Core @ 5.88GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR X670E HERO (0805 BIOS), Chipset: AMD Device 14d8, Memory: 32GB, Disk: Western Digital WD_BLACK SN850X 1000GB + 2000GB, Graphics: AMD Radeon VII 16GB (1801/1000MHz), Audio: AMD Vega 20 HDMI Audio, Monitor: ASUS MG28U, Network: Intel I225-V + Intel Wi-Fi 6 AX210/AX211/AX411

OS: Ubuntu 22.04, Kernel: 5.15.0-56-generic (x86_64), Desktop: GNOME Shell 42.5, Display Server: X Server 1.21.1.3 + Wayland, OpenGL: 4.6 Mesa 22.3.0-devel (LLVM 15.0.3 DRM 3.49), OpenCL: OpenCL 2.1 AMD-APP (3513.0), Vulkan: 1.3.232, Compiler: GCC 11.3.0, File-System: ext4, Screen Resolution: 3840x2160

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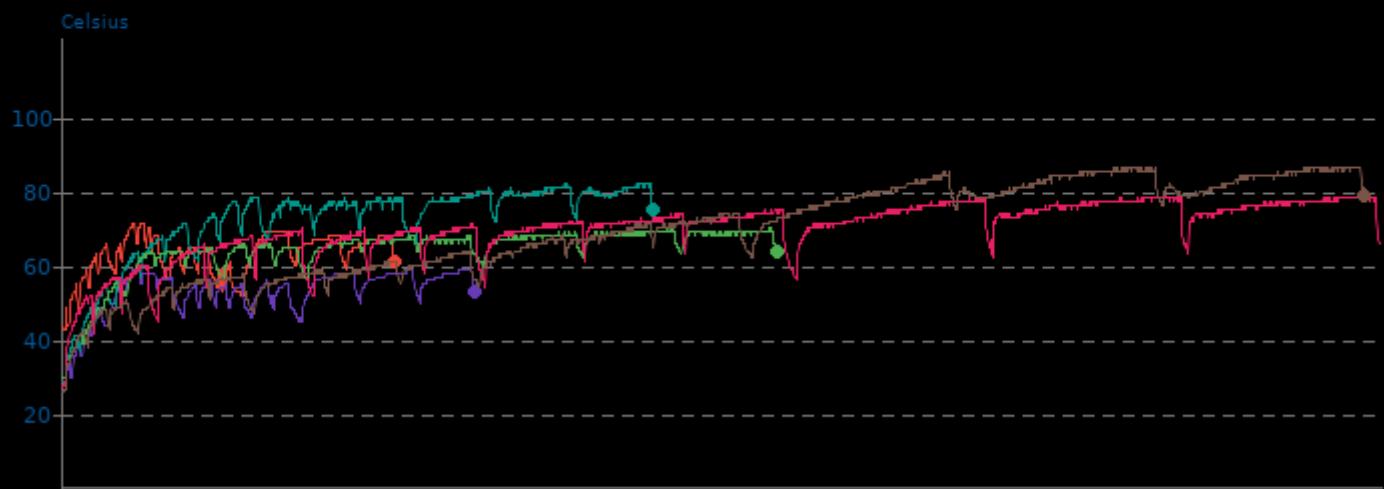
Blender 3.4 AMD HIP

	RX 7900 XTX	RX 7900 XT	RX 6800 XT	RX 6800	RX 5700 XT	Radeon VII
Blender - BMW27 - Radeon HIP (sec)	14.42	14.42	22.71	28.95	47.98	36.13
Normalized	100%	100%	63.5%	49.81%	30.05%	39.91%
Standard Deviation	0.7%	0.2%	0.2%	0%	0.1%	0.1%
Blender - Classroom - Radeon HIP (sec)	22.84	26.20	40.46	49.86	85.85	61.69
Normalized	100%	87.18%	56.45%	45.81%	26.6%	37.02%
Standard Deviation	0%	0.2%	0.1%	0.1%	0%	0%
Blender - Fishy Cat - Radeon HIP (sec)	22.30	25.20	35.28	43.26	97.50	129.83
Normalized	100%	88.49%	63.21%	51.55%	22.87%	17.18%
Standard Deviation	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
Blender - Pabellon			79.18	97.22	179.83	155.88
Barcelona - Radeon HIP			100%	81.44%	44.03%	50.8%
Normalized			0%	0.1%	0%	0%
Blender - Barbershop - Radeon HIP (sec)	89.76	103.04	142.24	175.67	353.68	372.03
Normalized	100%	87.11%	63.1%	51.1%	25.38%	24.13%
Standard Deviation	0.2%	0.1%	0.1%	0.1%	0%	0.6%

GPU Temperature Monitor

Phoronix Test Suite System Monitoring

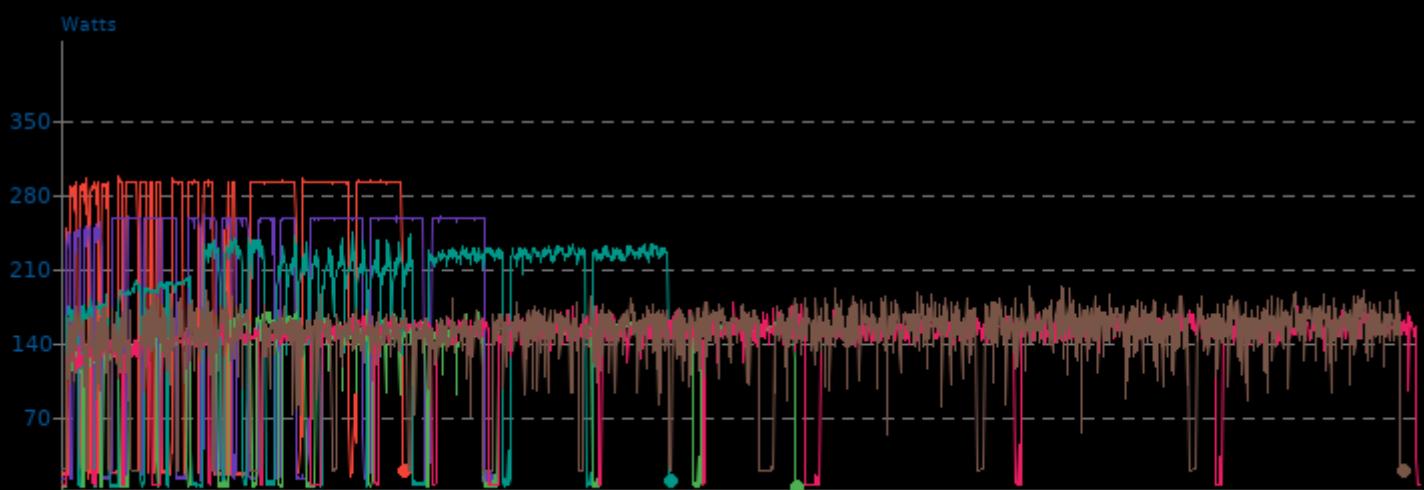
	Min	Avg	Max
RX 7900 XTX	43.0	62.9	71.0
RX 7900 XT	26.0	52.9	60.0
RX 6800 XT	29.0	72.0	82.0
RX 6800	30.0	64.0	70.0
RX 5700 XT	28.0	70.0	79.0
Radeon VII	26.0	69.8	86.0



GPU Power Consumption Monitor

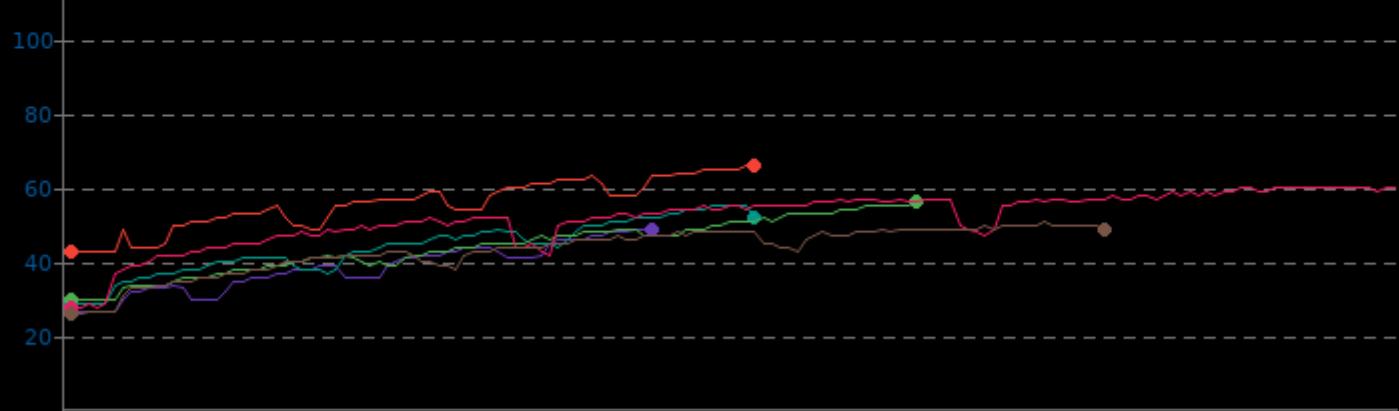
Phoronix Test Suite System Monitoring

	Min	Avg	Max
RX 7900 XTX	13.0	209.9	296.0
RX 7900 XT	11.0	198.0	261.0
RX 6800 XT	5.0	179.7	243.0
RX 6800	5.0	130.8	170.0
RX 5700 XT	7.0	140.6	178.0
Radeon VII	21.0	143.4	194.0



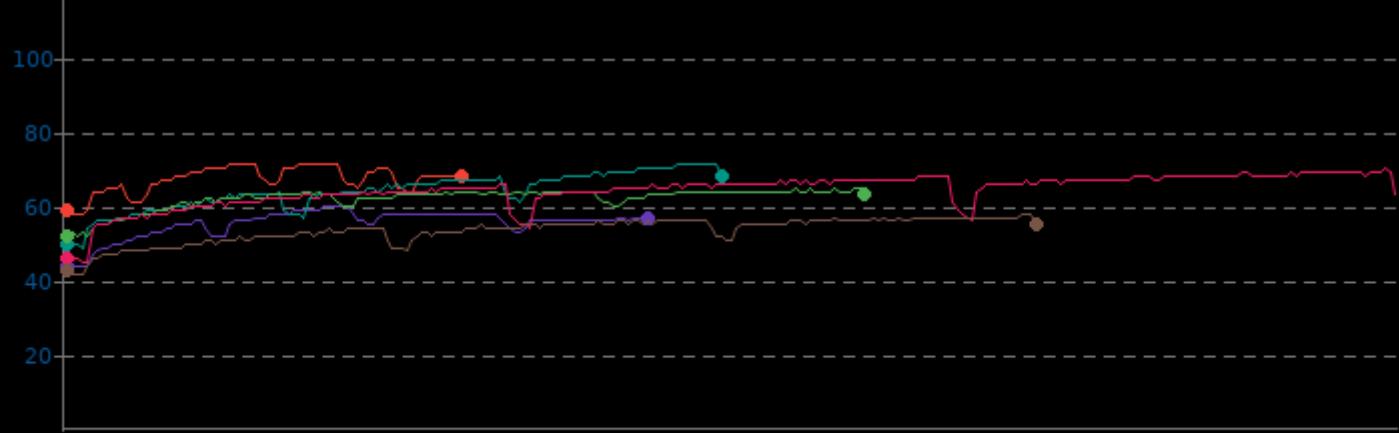
Blender 3.4 GPU Temperature Monitor

	Min	Avg	Max	RX 5700 XT	28.0	52.0	60.0
RX 7900 XTX	43.0	55.6	66.0				
RX 7900 XT	27.0	38.4	49.0				
RX 6800 XT	29.0	44.0	55.0				
RX 6800	30.0	44.1	56.0				
▼ Celsius, Fewer Is Better							



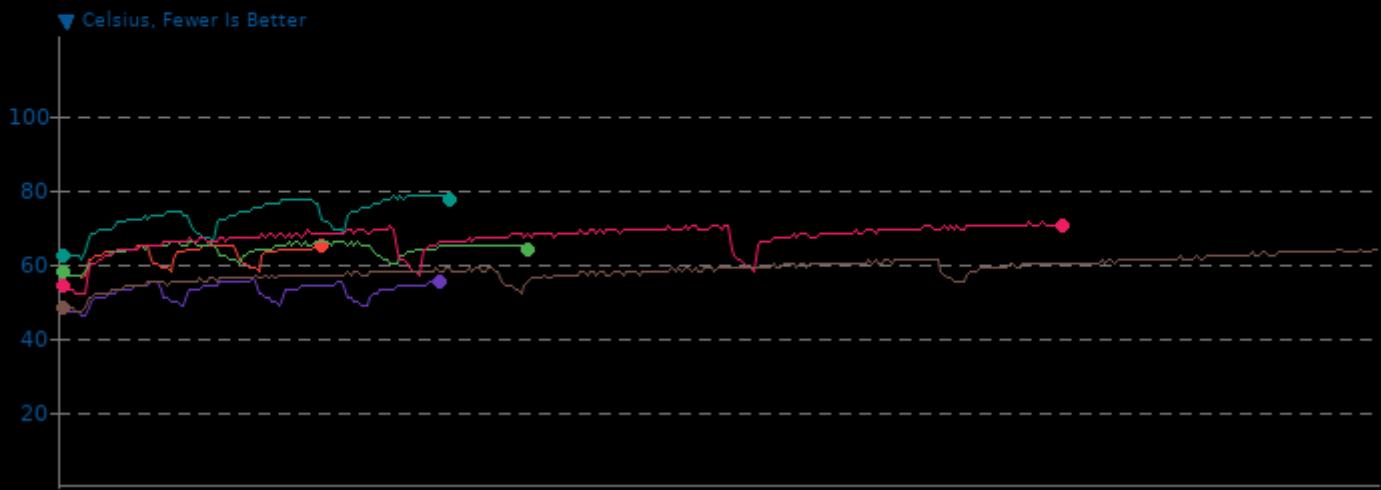
Blender 3.4 GPU Temperature Monitor

	Min	Avg	Max	RX 5700 XT	45.0	64.4	70.0
RX 7900 XTX	58.0	67.2	71.0				
RX 7900 XT	44.0	55.4	60.0				
RX 6800 XT	49.0	64.0	71.0				
RX 6800	52.0	62.1	65.0				
▼ Celsius, Fewer Is Better							



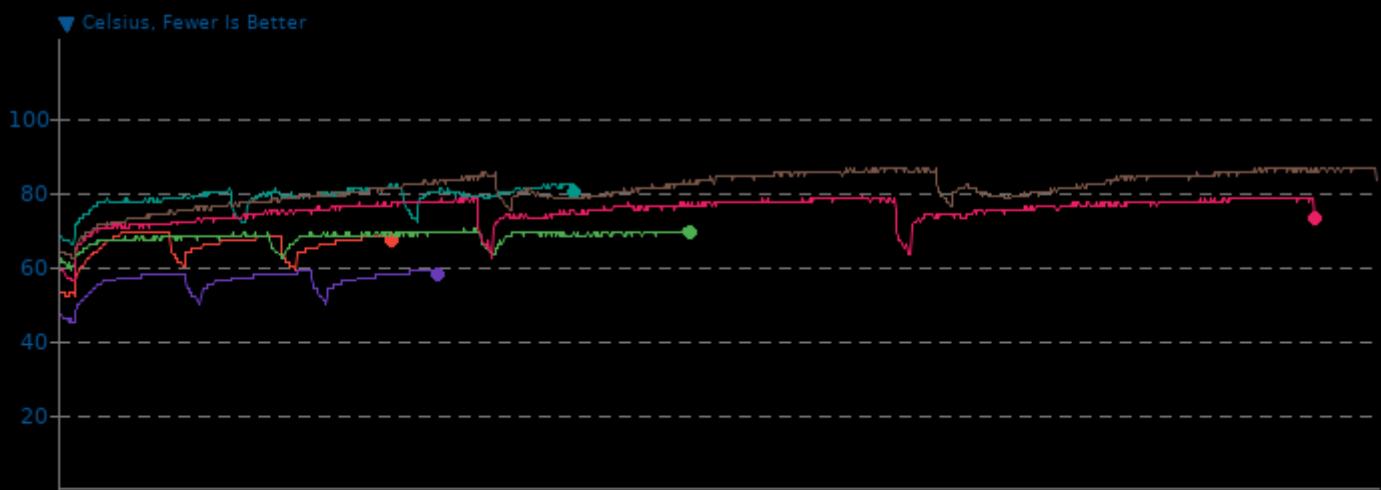
Blender 3.4 GPU Temperature Monitor

	Min	Avg	Max
RX 7900 XTX	56.0	62.4	65.0
RX 7900 XT	46.0	52.5	56.0
RX 6800 XT	61.0	72.9	78.0
RX 6800	57.0	63.7	66.0
RX 5700 XT	52.0	67.0	71.0
Radeon VII	47.0	58.4	64.0



Blender 3.4 GPU Temperature Monitor

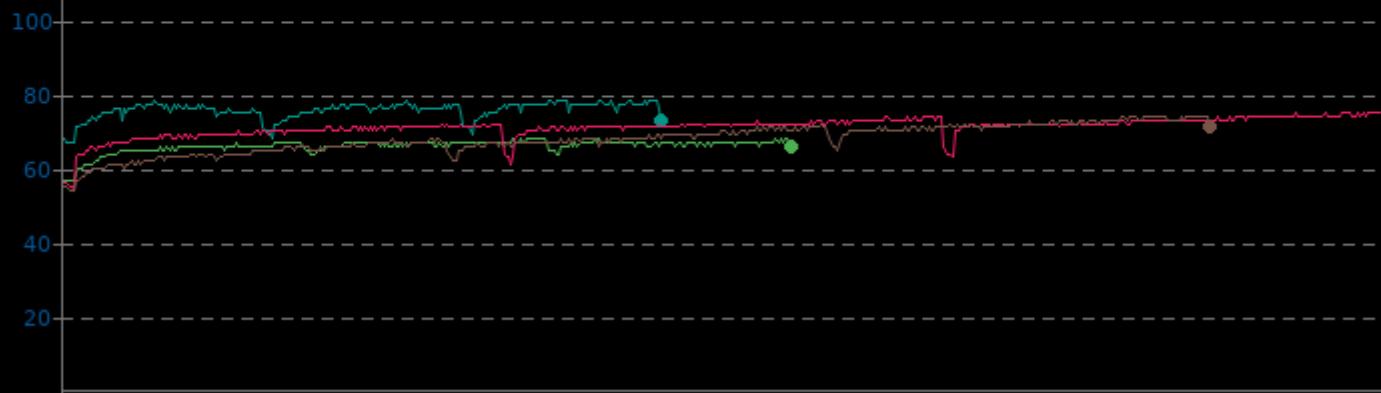
	Min	Avg	Max
RX 7900 XTX	52.0	65.5	69.0
RX 7900 XT	45.0	56.1	59.0
RX 6800 XT	66.0	78.5	82.0
RX 6800	59.0	67.8	70.0
RX 5700 XT	56.0	74.9	79.0
Radeon VII	62.0	80.9	86.0



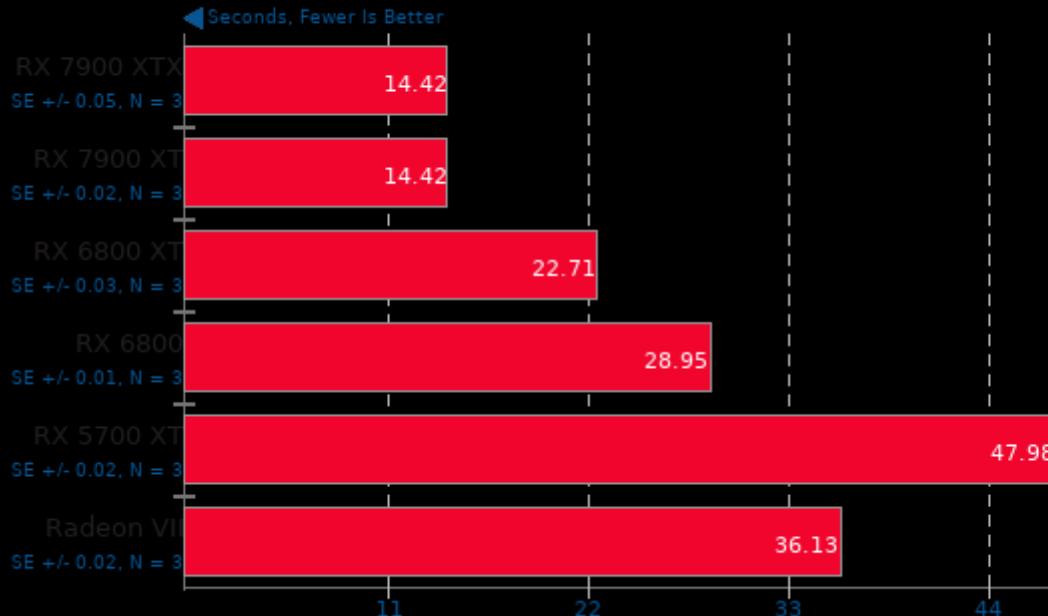
Blender 3.4 GPU Temperature Monitor

	Min	Avg	Max
RX 6800 XT	67.0	75.6	78.0
RX 6800	57.0	66.1	68.0
RX 5700 XT	54.0	71.1	75.0
Radeon VII	54.0	68.0	74.0

▼ Celsius, Fewer Is Better

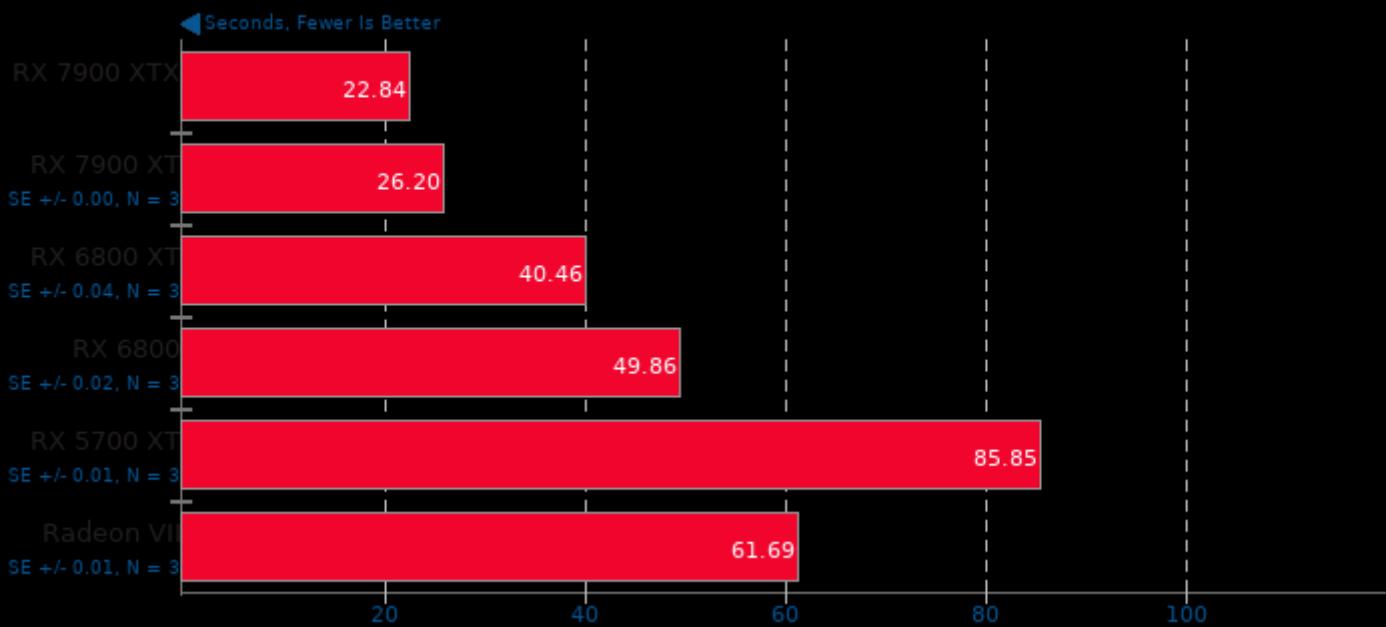


Blender 3.4 Blend File: BMW27 - Compute: Radeon HIP



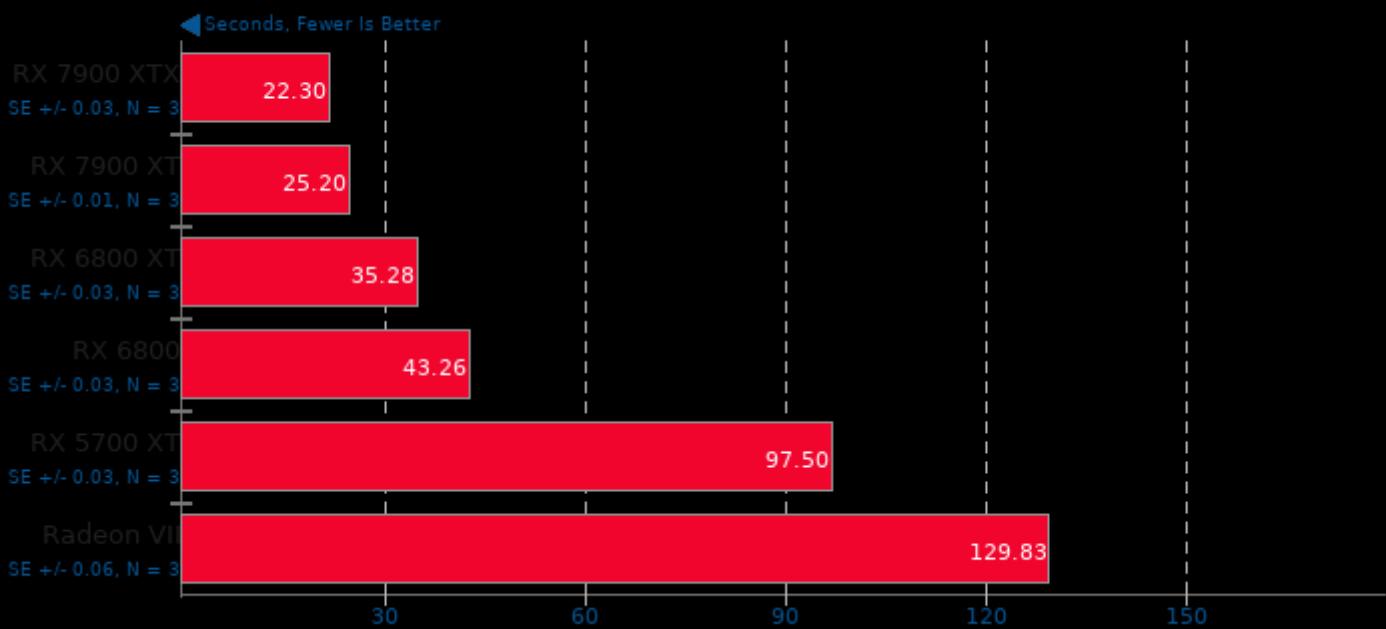
Blender 3.4

Blend File: Classroom - Compute: Radeon HIP



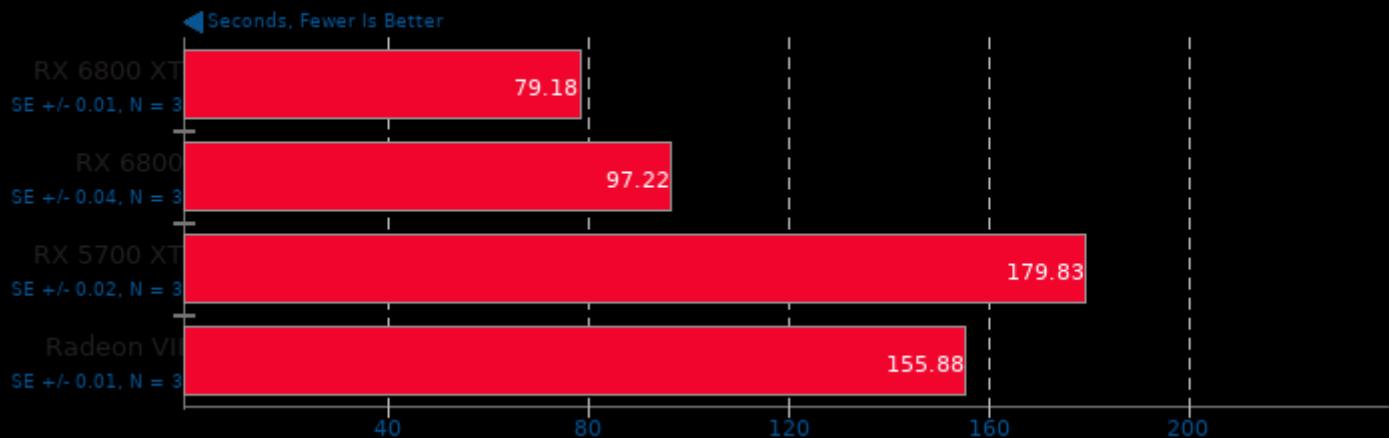
Blender 3.4

Blend File: Fishy Cat - Compute: Radeon HIP



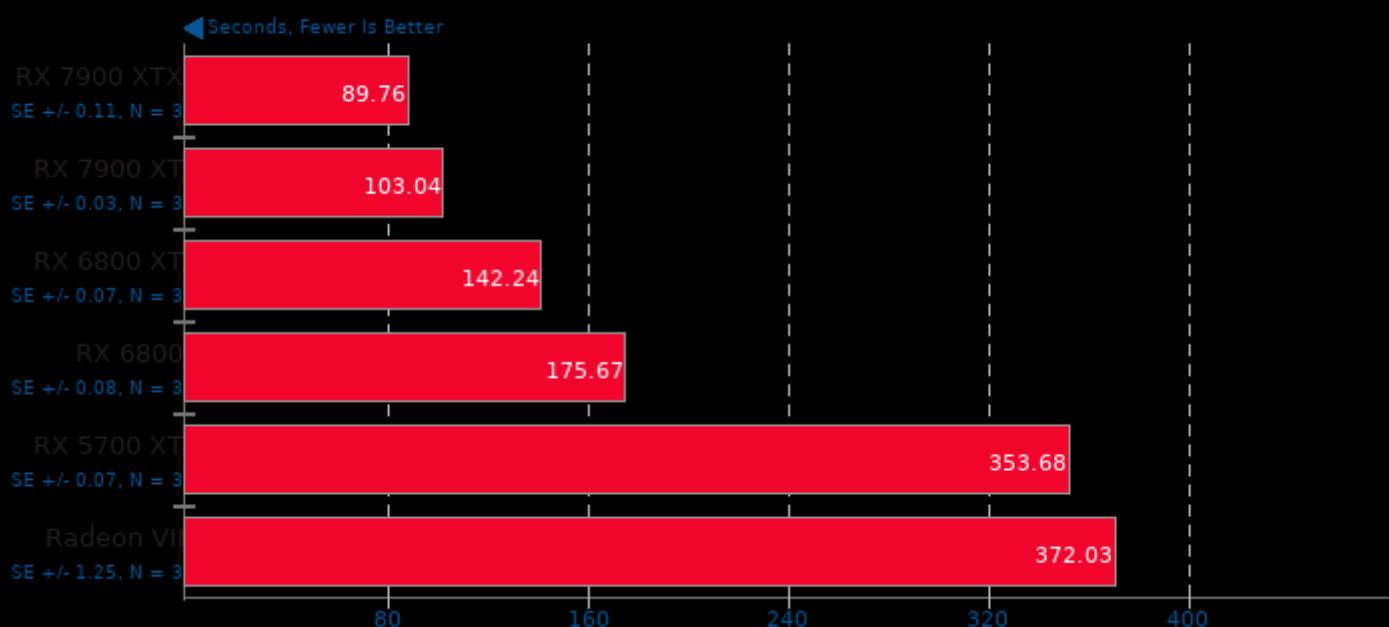
Blender 3.4

Blend File: Pabellon Barcelona - Compute: Radeon HIP



Blender 3.4

Blend File: Barbershop - Compute: Radeon HIP



Blender 3.4

GPU Power Consumption Monitor

	Min	Avg	Max
RX 7900 XTX	13.0	198.3	294.0
RX 7900 XT	11.0	172.4	254.0
RX 6800 XT	5.0	134.7	185.0
RX 6800	5.0	107.2	137.0
RX 5700 XT	7.0	120.2	150.0
Radeon VII	21.0	125.5	183.0

▼ Watts, Fewer Is Better



Blender 3.4

GPU Power Consumption Monitor

	Min	Avg	Max
RX 7900 XTX	15.0	214.4	296.0
RX 7900 XT	14.0	218.1	258.0
RX 6800 XT	6.0	172.1	202.0
RX 6800	5.0	128.7	145.0
RX 5700 XT	7.0	136.7	159.0
Radeon VII	21.0	142.3	190.0

▼ Watts, Fewer Is Better

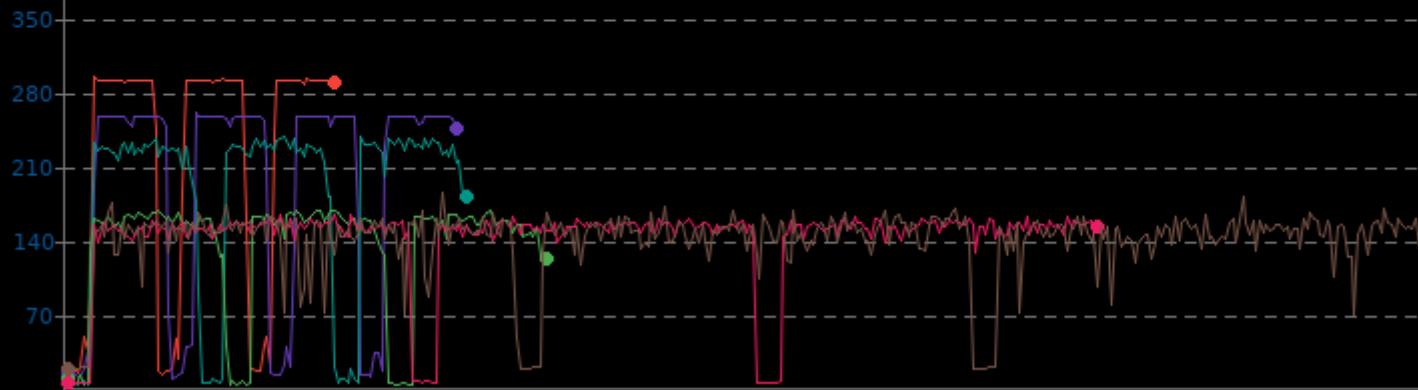


Blender 3.4

GPU Power Consumption Monitor

	Min	Avg	Max
RX 7900 XTX	15.0	214.5	294.0
RX 7900 XT	12.0	192.5	261.0
RX 6800 XT	6.0	182.6	239.0
RX 6800	5.0	133.7	169.0
RX 5700 XT	7.0	141.8	165.0
Radeon VII	21.0	140.4	185.0

▼ Watts, Fewer Is Better



Blender 3.4

GPU Power Consumption Monitor

	Min	Avg	Max
RX 7900 XTX	15.0	255.8	294.0
RX 7900 XT	11.0	228.8	259.0
RX 6800 XT	6.0	204.6	233.0
RX 6800	5.0	144.2	161.0
RX 5700 XT	7.0	148.4	175.0
Radeon VII	21.0	150.7	194.0

▼ Watts, Fewer Is Better





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