

www.phoronix-test-suite.com

Blender 3.4 AMD HIP Radeon RX 7900 Series

Benchmarks by Michael Larabel of Blender 3.4 with new AMD Radeon RX 7900 XT/XTX on Linux with HIP back-end.

Automated Executive Summary

RX 7900 XTX had the most wins, coming in first place for 60% 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
Blender (GPU Power Consumption Monitor) at -1x
Blender (GPU Temperature Monitor) at -1x
Blender (GPU Power Consumption Monitor) at -1x

Blender (GPU Temperature Monitor) at -1x
Blender (GPU Power Consumption Monitor) at -1x.

Test Systems:

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

Kernel Notes: Transparent Huge Pages: madvise
Processor Notes: Scaling Governor: amd-pstate performance (Boost: Enabled) - CPU Microcode: 0xa601203
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + retbleed: 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-eIBRS: Not affected + srbds: Not affected + tsx_async_abort: Not affected

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
Processor Notes: Scaling Governor: amd-pstate performance (Boost: Enabled) - CPU Microcode: 0xa601203
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + retbleed: 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-eIBRS: Not affected + srbds: Not affected + tsx_async_abort: Not affected

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

Kernel Notes: Transparent Huge Pages: madvise
Processor Notes: Scaling Governor: amd-pstate performance (Boost: Enabled) - CPU Microcode: 0xa601203
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + retbleed: 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-eIBRS: Not affected + srbds: Not affected + tsx_async_abort: Not affected

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
Processor Notes: Scaling Governor: amd-pstate performance (Boost: Enabled) - CPU Microcode: 0xa601203
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + retbleed: 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-eIBRS: 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

Kernel Notes: Transparent Huge Pages: madvise
Processor Notes: Scaling Governor: amd-pstate performance (Boost: Enabled) - CPU Microcode: 0xa601203
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + retbleed: 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-eIBRS: Not affected + srbds: Not affected + tsx_async_abort: Not affected

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

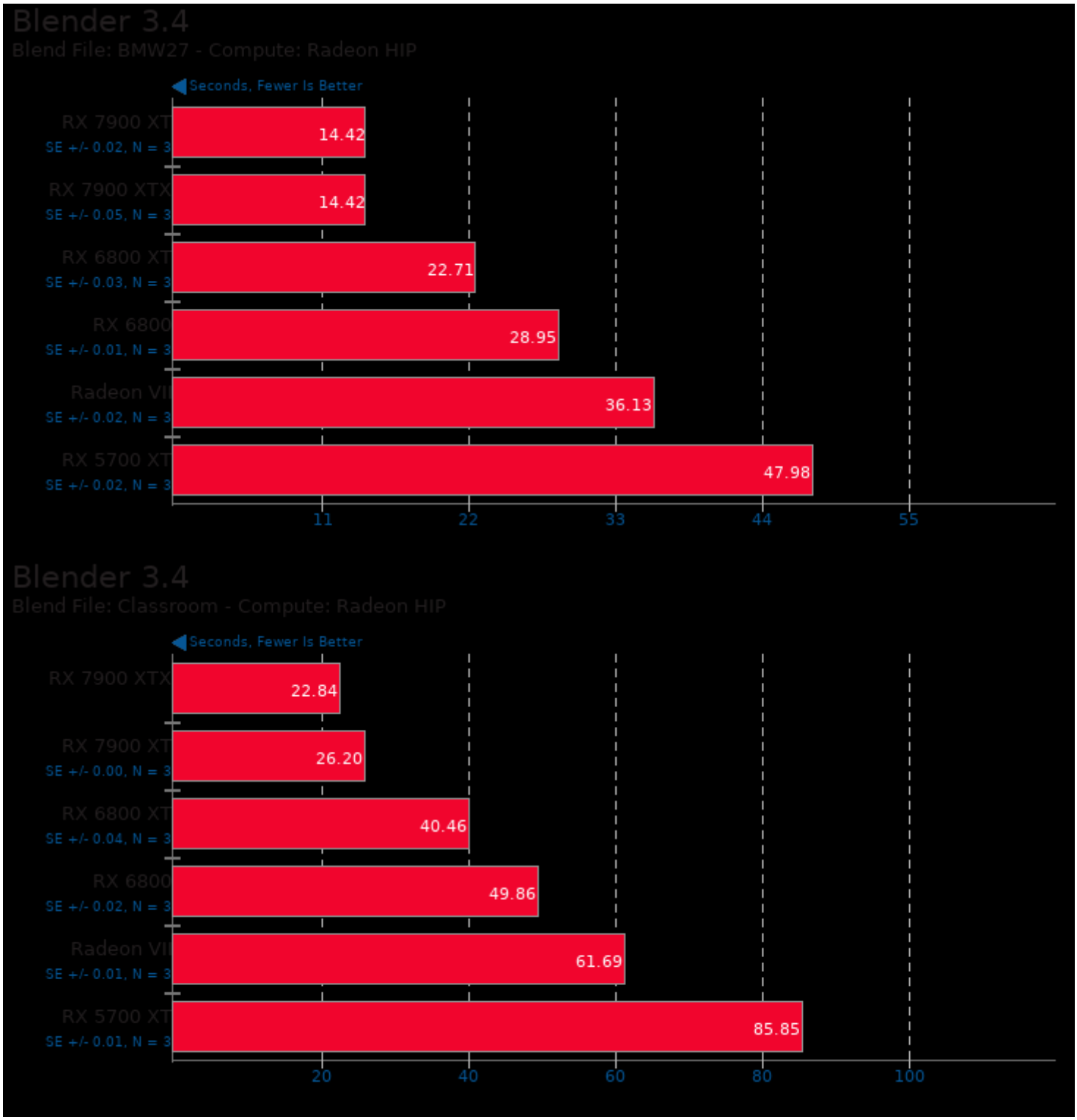
OS: Ubuntu 22.04, Kernel: 5.15.0-56-generic (x86_64), Desktop: GNOME Shell 42.5, Display Server: X Server 1.21.1.3 + Wayland, OpenGL: 4.6 Mesa 22.3.0-devel (LLVM 15.0.3 DRM 3.49), OpenCL: OpenCL 2.1 AMD-APP (3513.0), Vulkan: 1.3.232, Compiler: GCC 11.3.0, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: madvise
Processor Notes: Scaling Governor: amd-pstate performance (Boost: Enabled) - CPU Microcode: 0xa601203
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + retbleed: 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-eIBRS: Not affected + srbds: Not affected + tsx_async_abort: Not affected

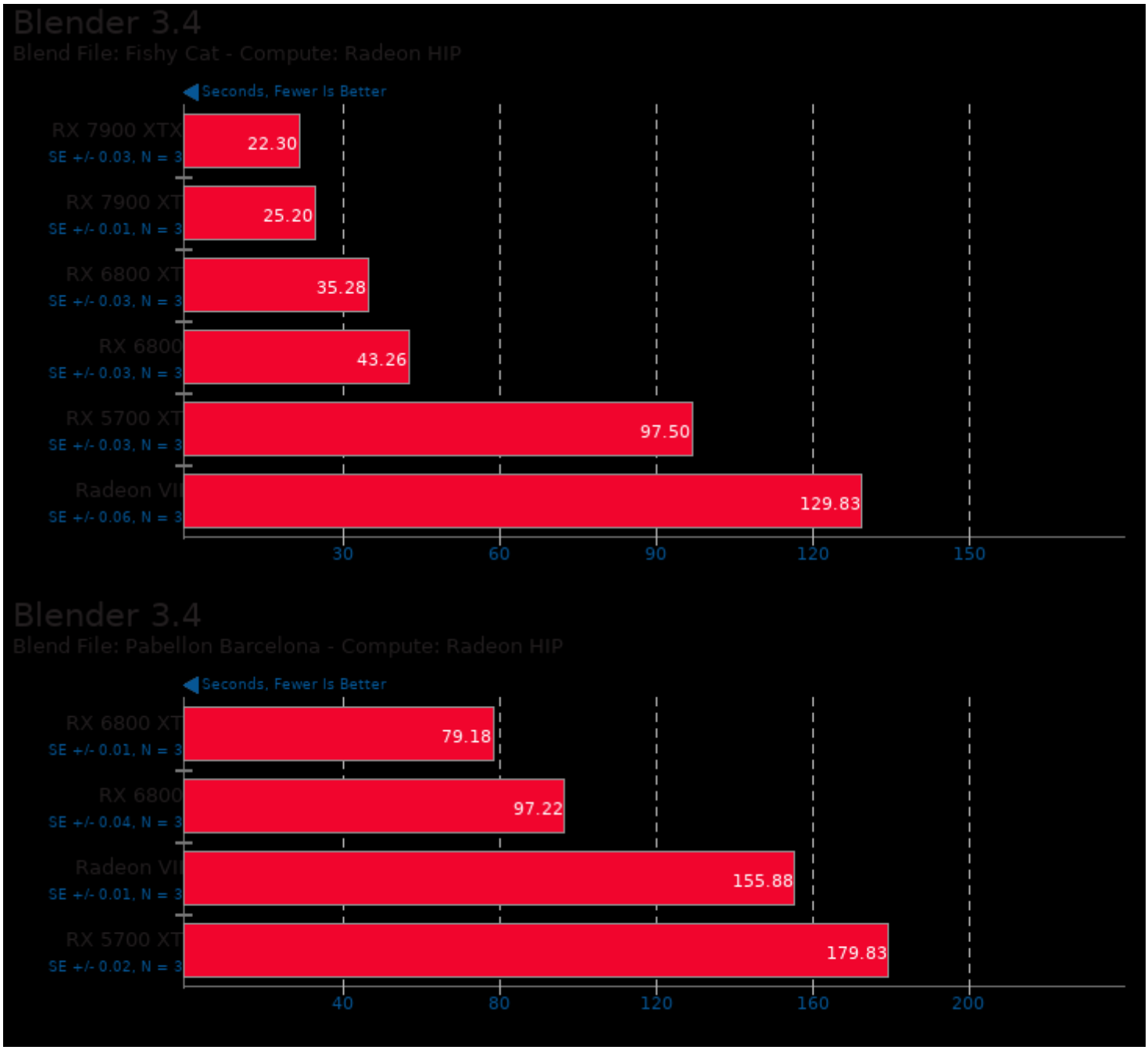
Blender 3.4 AMD HIP Radeon RX 7900 Series

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

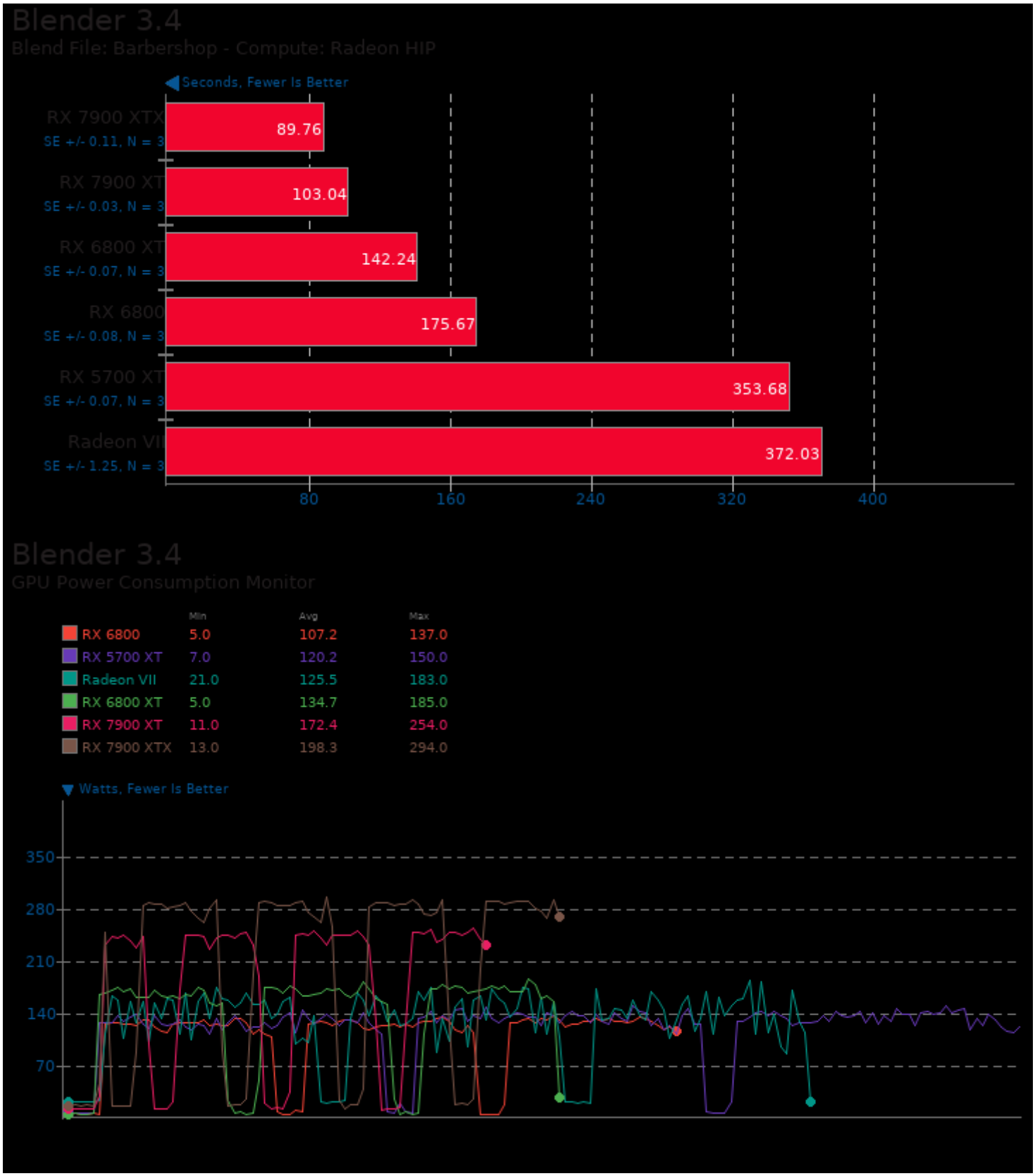
Blender 3.4 AMD HIP Radeon RX 7900 Series



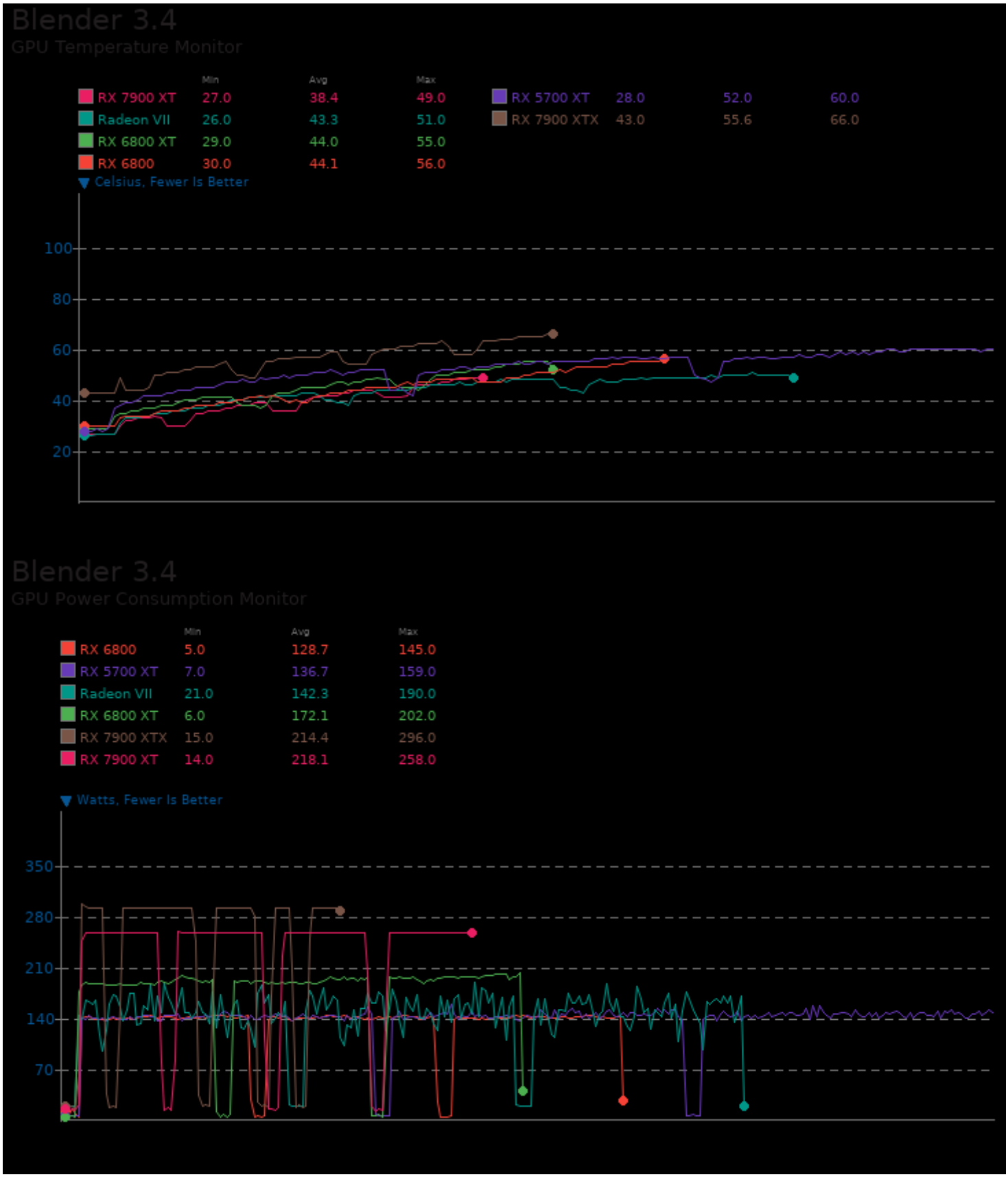
Blender 3.4 AMD HIP Radeon RX 7900 Series



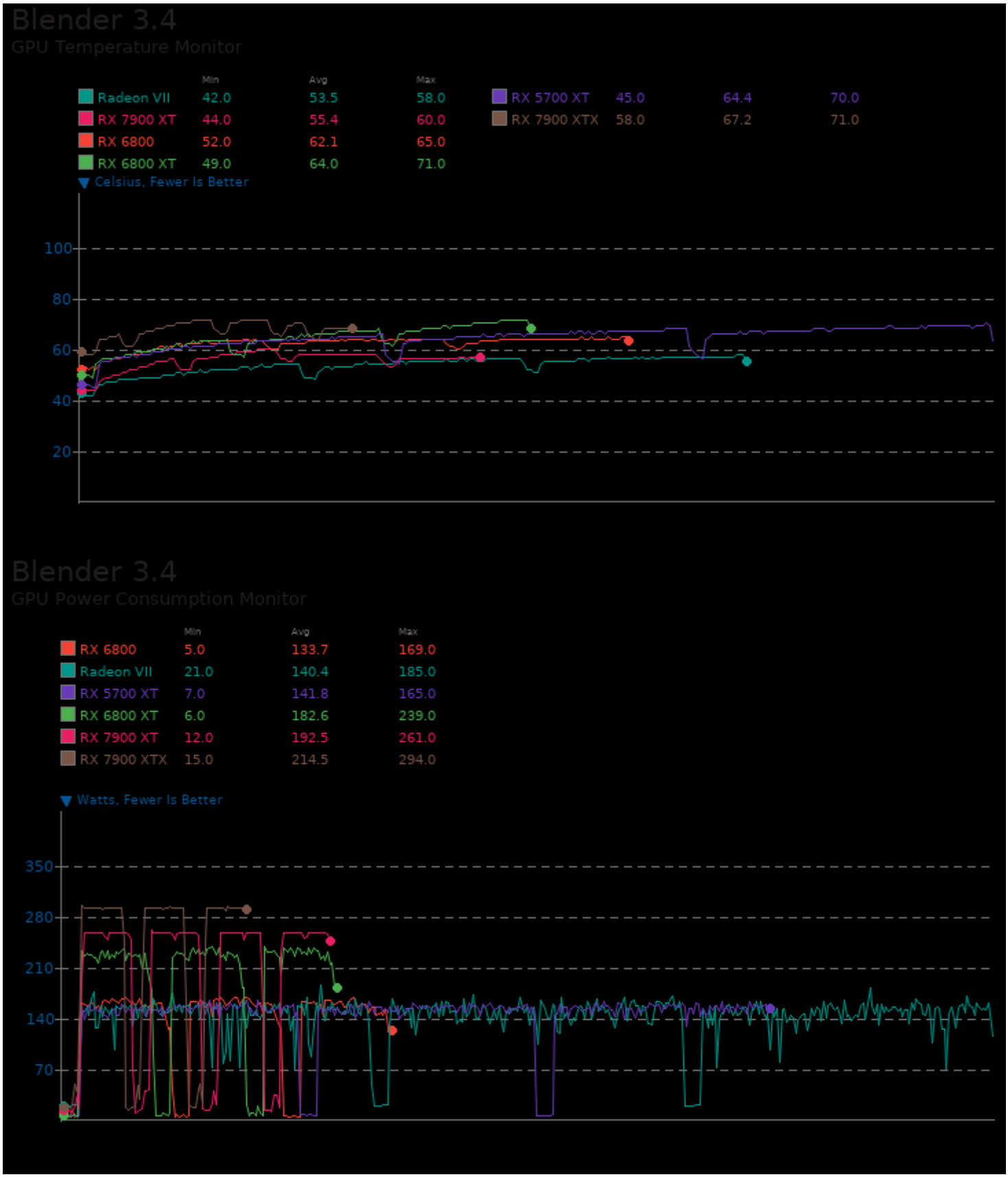
Blender 3.4 AMD HIP Radeon RX 7900 Series



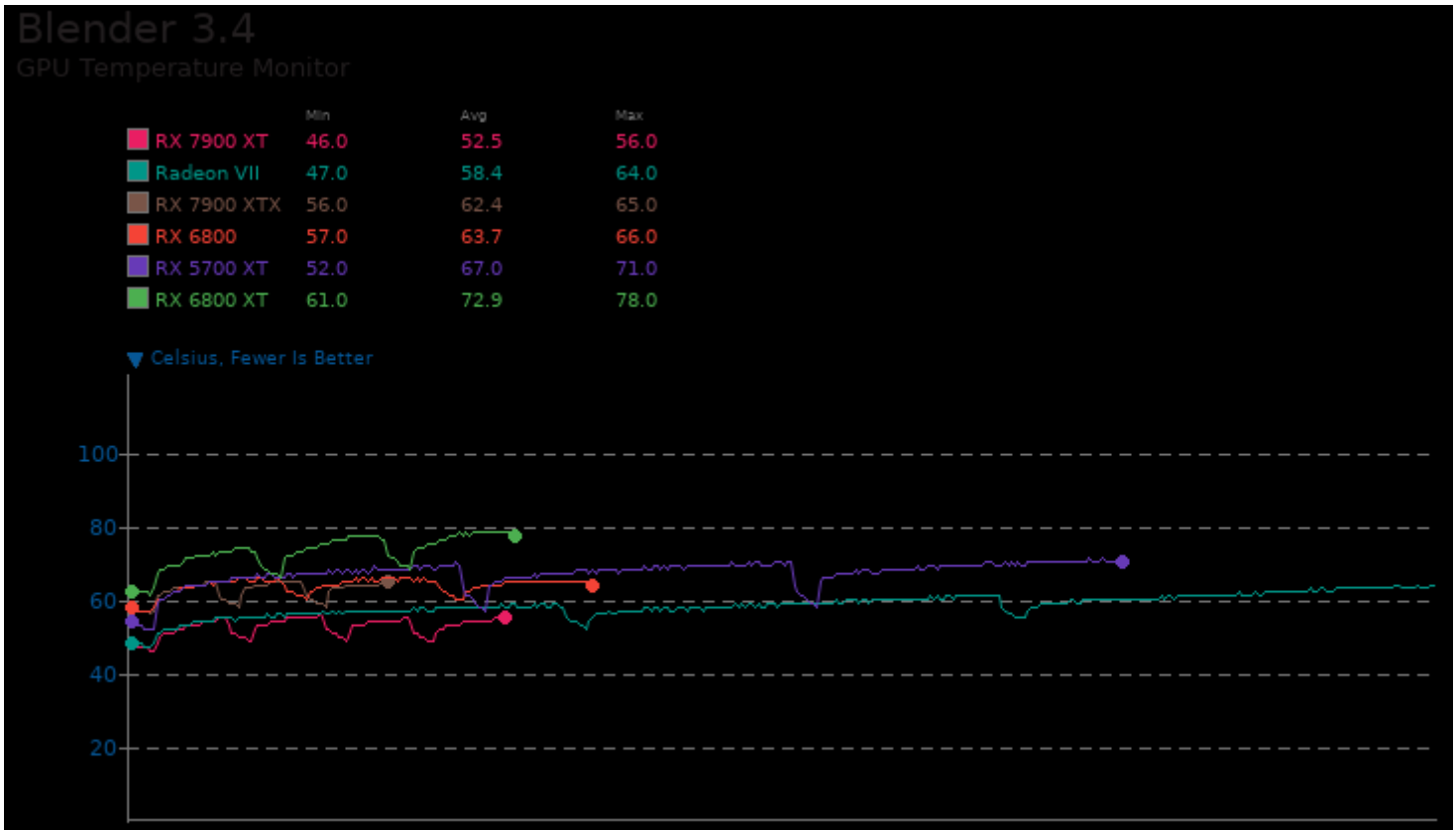
Blender 3.4 AMD HIP Radeon RX 7900 Series



Blender 3.4 AMD HIP Radeon RX 7900 Series

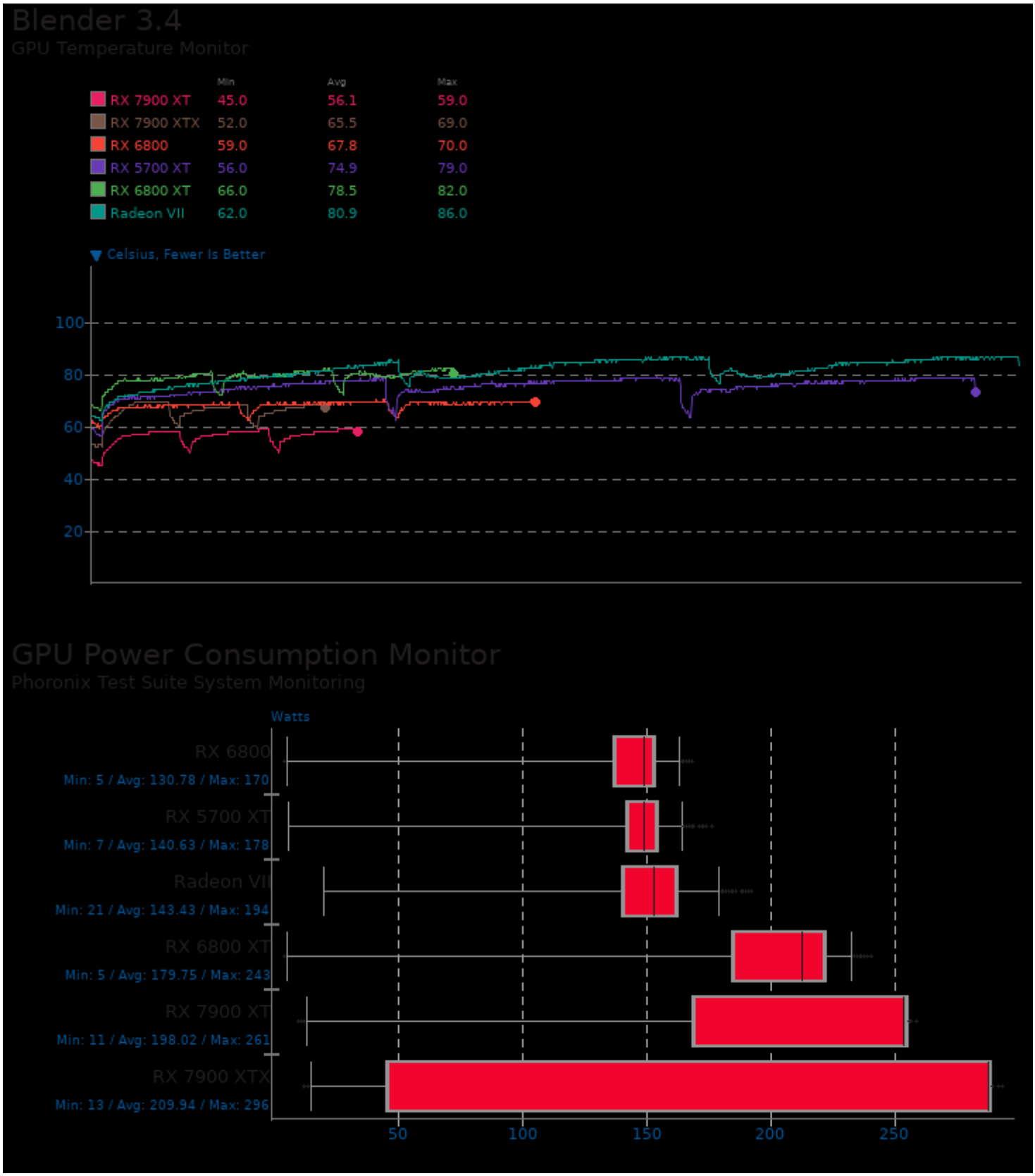


Blender 3.4 AMD HIP Radeon RX 7900 Series

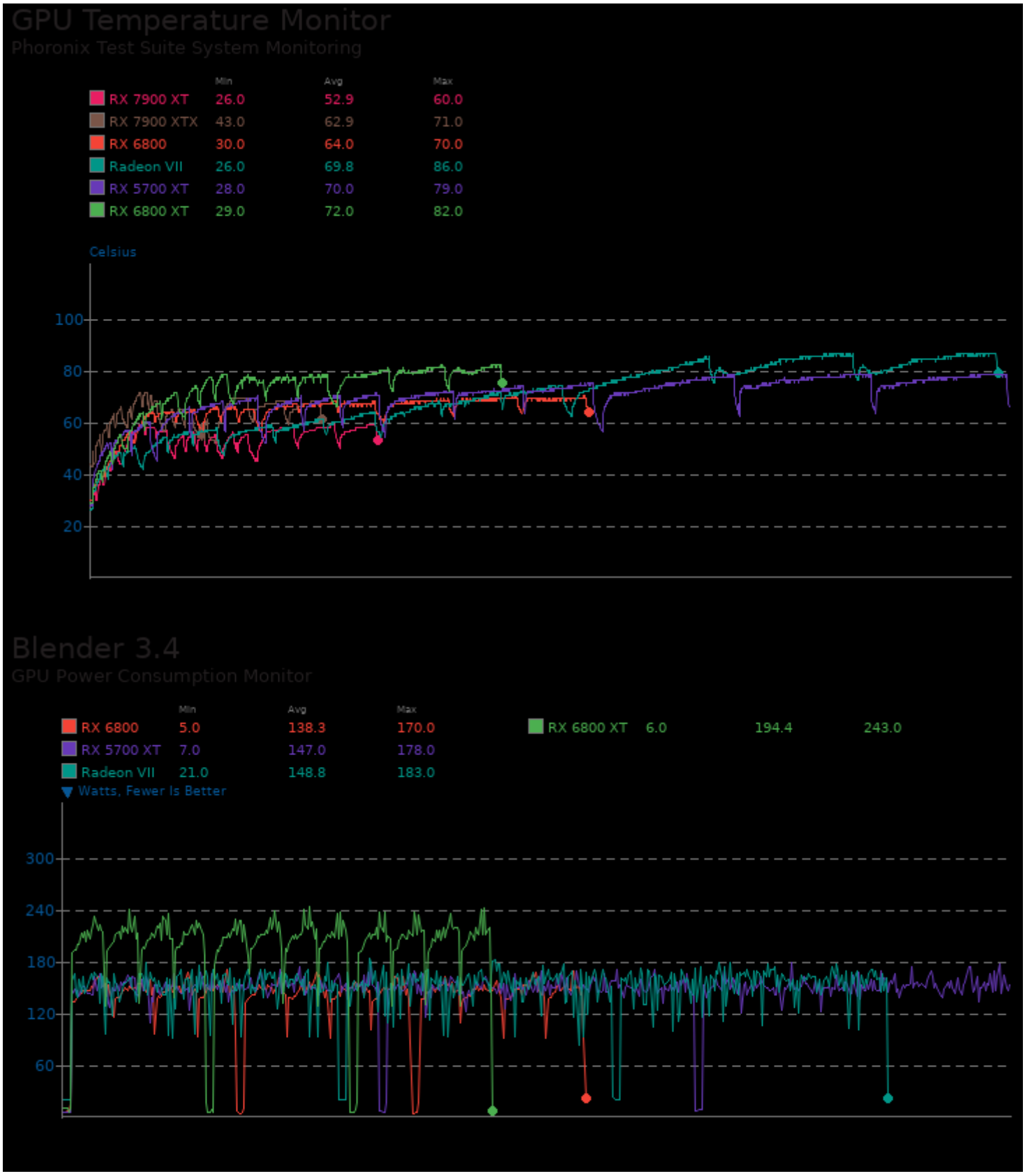




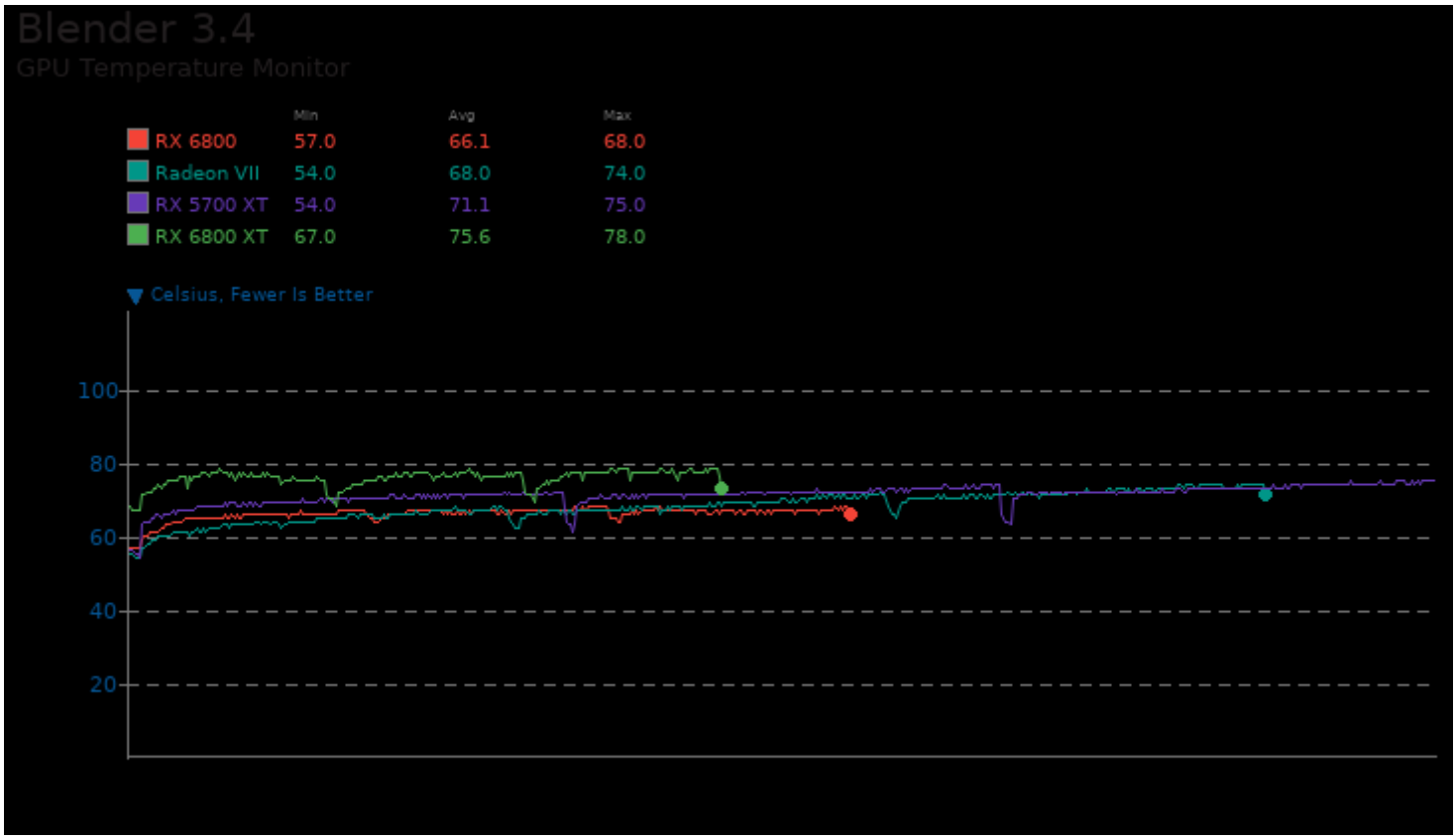
Blender 3.4 AMD HIP Radeon RX 7900 Series



Blender 3.4 AMD HIP Radeon RX 7900 Series



Blender 3.4 AMD HIP Radeon RX 7900 Series



This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 03:00.