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Radeon RX 480 Compared To Past Per Watt

Radeon RX 480 Polaris to Radeon HD 4850/4870 performance-per-Watt comparison! Tests with latest open-source driver on Ubuntu 16.04 base. Tests by Michael Larabel for a future article on Phoronix.

Automated Executive Summary

Radeon RX 480 had the most wins, coming in first place for 75% of the tests.

Based on the geometric mean of all complete results, the fastest (Radeon RX 480) was 4.062x the speed of the slowest (Radeon HD 4850). Radeon R9 285 was 0.863x the speed of Radeon RX 480, Radeon HD 7950 was 0.992x the speed of Radeon R9 285, Radeon HD 6950 was 0.773x the speed of Radeon HD 7950, Radeon HD 6870 was 0.977x the speed of Radeon HD 6950, Radeon HD 5830 was 0.795x the speed of Radeon HD 6870, Radeon HD 4870 was 0.566x the speed of Radeon HD 5830, Radeon HD 4850 was 0.846x the speed of Radeon HD 4870.

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

Unigine Heaven (Resolution: 1280 x 1024 - Mode: Fullscreen) at 17.175x
Unigine Heaven (Resolution: 1280 x 1024 - Mode: Fullscreen) at 11.25x
GpuTest (Test: Furmark - Resolution: 1920 x 1080 - Mode: Fullscreen) at 7.902x
Portal (Resolution: 1920 x 1080) at 6.833x
GpuTest (Test: Furmark - Resolution: 1920 x 1080 - Mode: Fullscreen) at 6.609x
Counter-Strike: Global Offensive (Resolution: 1920 x 1080) at 6.391x

Tesseract (Resolution: 1920 x 1080) at 5.933x
Tesseract (Resolution: 1920 x 1080) at 5.868x
Counter-Strike: Global Offensive (Resolution: 1920 x 1080) at 5.101x
GpuTest (Test: Triangle - Resolution: 1920 x 1080 - Mode: Fullscreen) at 5.088x.

Test Systems:

Radeon RX 480

Processor: Intel Xeon E3-1280 v5 @ 4.00GHz (8 Cores), Motherboard: MSI C236A WORKSTATION (MS-7998) v1.0, Chipset: Intel Sky Lake, Memory: 16384MB, Disk: Samsung SSD 950 PRO 256GB, Graphics: AMD Radeon RX 480 8192MB, Audio: Realtek ALC1150, Monitor: Acer B286HK, Network: Intel Connection

OS: Ubuntu 16.04, Kernel: 4.7.0-rc2-polaris-test (x86_64) 20160625, Desktop: Unity 7.4.0, Display Server: X Server 1.18.3, Display Driver: amdgpu 1.1.99, OpenGL: 4.3 Mesa 12.1.0-devel- padoka PPA (git-6b0ac95) Gallium 0.4, Compiler: GCC 5.3.1 20160413, File-System: ext4, Screen Resolution: 1920x1080

Processor Notes: Scaling Governor: intel_pstate performance
Graphics Notes: GLAMOR

Radeon R9 285

Processor: Intel Xeon E3-1280 v5 @ 4.00GHz (8 Cores), Motherboard: MSI C236A WORKSTATION (MS-7998) v1.0, Chipset: Intel Sky Lake, Memory: 16384MB, Disk: Samsung SSD 950 PRO 256GB, Graphics: XFX AMD Radeon R9 285/380 2048MB, Audio: Realtek ALC1150, Monitor: Acer B286HK, Network: Intel Connection

OS: Ubuntu 16.04, Kernel: 4.7.0-rc2-polaris-test (x86_64) 20160625, Desktop: Unity 7.4.0, Display Server: X Server 1.18.3, Display Driver: modesetting 1.18.3, OpenGL: 4.3 Mesa 12.1.0-devel- padoka PPA (git-6b0ac95) Gallium 0.4, Compiler: GCC 5.3.1 20160413, File-System: ext4, Screen Resolution: 1920x1080

Processor Notes: Scaling Governor: intel_pstate performance
Graphics Notes: GLAMOR

Radeon HD 7950

Processor: Intel Xeon E3-1280 v5 @ 4.00GHz (8 Cores), Motherboard: MSI C236A WORKSTATION (MS-7998) v1.0, Chipset: Intel Sky Lake, Memory: 16384MB, Disk: Samsung SSD 950 PRO 256GB, Graphics: XFX AMD Radeon HD 7950/8950 OEM / R9 280 3072MB, Audio: Realtek ALC1150, Monitor: Acer B286HK, Network: Intel Connection

OS: Ubuntu 16.04, Kernel: 4.7.0-rc2-polaris-test (x86_64) 20160625, Desktop: Unity 7.4.0, Display Server: X Server 1.18.3, Display Driver: modesetting 1.18.3, OpenGL: 4.3 Mesa 12.1.0-devel- padoka PPA (git-6b0ac95) Gallium 0.4, Compiler: GCC 5.3.1 20160413, File-System: ext4, Screen Resolution: 1920x1080

Processor Notes: Scaling Governor: intel_pstate performance
Graphics Notes: GLAMOR

Radeon HD 6950

Processor: Intel Xeon E3-1280 v5 @ 4.00GHz (8 Cores), Motherboard: MSI C236A WORKSTATION (MS-7998) v1.0, Chipset: Intel Sky Lake, Memory: 16384MB, Disk: Samsung SSD 950 PRO 256GB, Graphics: Sapphire AMD Radeon HD 6950 2048MB, Audio: Realtek ALC1150, Monitor: Acer B286HK, Network: Intel Connection

OS: Ubuntu 16.04, Kernel: 4.7.0-rc2-polaris-test (x86_64) 20160625, Desktop: Unity 7.4.0, Display Server: X Server 1.18.3, Display Driver: modesetting 1.18.3, OpenGL: 4.1 Mesa 12.1.0-devel- padoka PPA (git-6b0ac95) Gallium 0.4, Compiler: GCC 5.3.1 20160413, File-System: ext4, Screen Resolution: 1920x1080

Processor Notes: Scaling Governor: intel_pstate performance
Graphics Notes: EXA

Radeon HD 6870

Processor: Intel Xeon E3-1280 v5 @ 4.00GHz (8 Cores), Motherboard: MSI C236A WORKSTATION (MS-7998) v1.0, Chipset: Intel Sky Lake, Memory: 16384MB, Disk: Samsung SSD 950 PRO 256GB, Graphics: Sapphire AMD Radeon HD 6870 1024MB, Audio: Realtek ALC1150, Monitor: Acer B286HK, Network: Intel Connection

OS: Ubuntu 16.04, Kernel: 4.7.0-rc2-polaris-test (x86_64) 20160625, Desktop: Unity 7.4.0, Display Server: X Server 1.18.3, Display Driver: modesetting 1.18.3, OpenGL: 3.3 Mesa 12.1.0-devel- padoka PPA (git-6b0ac95) Gallium 0.4, Compiler: GCC 5.3.1 20160413, File-System: ext4, Screen Resolution: 1920x1080

Processor Notes: Scaling Governor: intel_pstate performance
Graphics Notes: EXA

Radeon HD 5830

Processor: Intel Xeon E3-1280 v5 @ 4.00GHz (8 Cores), Motherboard: MSI C236A WORKSTATION (MS-7998) v1.0, Chipset: Intel Sky Lake, Memory: 16384MB, Disk: Samsung SSD 950 PRO 256GB, Graphics: Sapphire AMD Radeon HD 5830 1024MB, Audio: Realtek ALC1150, Monitor: Acer B286HK, Network: Intel Connection

OS: Ubuntu 16.04, Kernel: 4.7.0-rc2-polaris-test (x86_64) 20160625, Desktop: Unity 7.4.0, Display Server: X Server 1.18.3, Display Driver: modesetting 1.18.3, OpenGL: 4.1 Mesa 12.1.0-devel- padoka PPA (git-6b0ac95) Gallium 0.4, Compiler: GCC 5.3.1 20160413, File-System: ext4, Screen Resolution: 1920x1080

Processor Notes: Scaling Governor: intel_pstate performance
Graphics Notes: EXA

Radeon HD 4870

Processor: Intel Xeon E3-1280 v5 @ 4.00GHz (8 Cores), Motherboard: MSI C236A WORKSTATION (MS-7998) v1.0, Chipset: Intel Sky Lake, Memory: 16384MB, Disk: Samsung SSD 950 PRO 256GB, Graphics: AMD Radeon HD 4870 512MB, Audio: Realtek ALC1150, Monitor: Acer B286HK, Network: Intel Connection

OS: Ubuntu 16.04, Kernel: 4.7.0-rc2-polaris-test (x86_64) 20160625, Desktop: Unity 7.4.0, Display Server: X Server 1.18.3, Display Driver: modesetting 1.18.3, OpenGL: 3.3 Mesa 12.1.0-devel- padoka PPA (git-6b0ac95) Gallium 0.4, Compiler: GCC 5.3.1 20160413, File-System: ext4, Screen Resolution: 1920x1080

Processor Notes: Scaling Governor: intel_pstate performance
Graphics Notes: EXA

Radeon HD 4850

Processor: Intel Xeon E3-1280 v5 @ 4.00GHz (8 Cores), Motherboard: MSI C236A WORKSTATION (MS-7998) v1.0,

Radeon RX 480 Compared To Past Per Watt

Chipset: Intel Sky Lake, Memory: 16384MB, Disk: Samsung SSD 950 PRO 256GB, Graphics: AMD Radeon HD 4850 512MB, Audio: Realtek ALC1150, Monitor: Acer B286HK, Network: Intel Connection

OS: Ubuntu 16.04, Kernel: 4.7.0-rc2-polaris-test (x86_64) 20160625, Desktop: Unity 7.4.0, Display Server: X Server 1.18.3, Display Driver: modesetting 1.18.3, OpenGL: 3.3 Mesa 12.1.0-devel- padoka PPA (git-6b0ac95) Gallium 0.4, Compiler: GCC 5.3.1 20160413, File-System: ext4, Screen Resolution: 1920x1080

Processor Notes: Scaling Governor: intel_pstate performance
Graphics Notes: EXA

	Radeon RX 480	Radeon R9 285	Radeon HD 7950	Radeon HD 6950	Radeon HD 6870	Radeon HD 5830	Radeon HD 4870	Radeon HD 4850
Counter-Strike: Global Offensive - 1920 x 1080 (FPS)	**153.23**	150.47	133.21	115.66	98.16	80.04	35.66	**30.04**
Normalized	100%	98.2%	86.93%	75.48%	64.06%	52.24%	23.27%	19.6%
Standard Deviation	0.9%	0.4%	0.1%	0.1%	0.3%	0.1%	0%	0.1%
Counter-Strike: Global Offensive - 1920 x 1080 (FPS/Watt)	**1.47**	1.32	1.10	0.85	0.78	0.62	**0.23**	0.25
Normalized	100%	89.8%	74.83%	57.82%	53.06%	42.18%	15.65%	17.01%
Team Fortress 2 - 1920 x 1080 (FPS)	116.77	**119.03**	118.22	109.91	109.32	109.18	90.76	**79.29**
Normalized	98.1%	100%	99.32%	92.34%	91.84%	91.72%	76.25%	66.61%
Standard Deviation	0.6%	0.8%	1.3%	0.5%	0.4%	0.2%	0.6%	1.4%
Team Fortress 2 - 1920 x 1080 (FPS/Watt)	**1.49**	**1.49**	1.21	1.16	1.27	1.09	**0.58**	0.64
Normalized	100%	100%	81.21%	77.85%	85.23%	73.15%	38.93%	42.95%
Dota 2 - 1920 x 1080 - OpenGL (FPS)	**88.53**	85.10	87.40	70.43	54.43	43.33	23.30	**19.20**
Normalized	100%	96.13%	98.72%	79.55%	61.48%	48.94%	26.32%	21.69%
Standard Deviation	0.6%	1.7%	1.3%	0.2%	0.1%	0.1%	0.4%	0.5%
Dota 2 - 1920 x 1080 - OpenGL (FPS/Watt)	**0.72**	0.60	0.56	0.44	0.43	0.33	**0.15**	**0.15**
Normalized	100%	83.33%	77.78%	61.11%	59.72%	45.83%	20.83%	20.83%
Insurgency - 1920 x 1080 (FPS)	149.13	146.97	**150.28**	148.27	139.88	122.94	65.49	**55.86**
Normalized	99.23%	97.8%	100%	98.66%	93.08%	81.81%	43.58%	37.17%
Standard Deviation	0.4%	0.4%	0.5%	0.9%	0.3%	0.3%	1.2%	1.4%
Insurgency - 1920 x 1080 (FPS/Watt)	**1.39**	1.16	1.14	1.00	1.00	0.87	**0.39**	0.43
Normalized	100%	83.45%	82.01%	71.94%	71.94%	62.59%	28.06%	30.94%
Portal - 1920 x 1080 (FPS)	**619.65**	532.99	447.99	330.08	308.42	243.17	150.20	**127.55**
Normalized	100%	86.01%	72.3%	53.27%	49.77%	39.24%	24.24%	20.58%
Standard Deviation	9.2%	0.3%	0.2%	0.3%	0.9%	0.3%	0.2%	0.1%

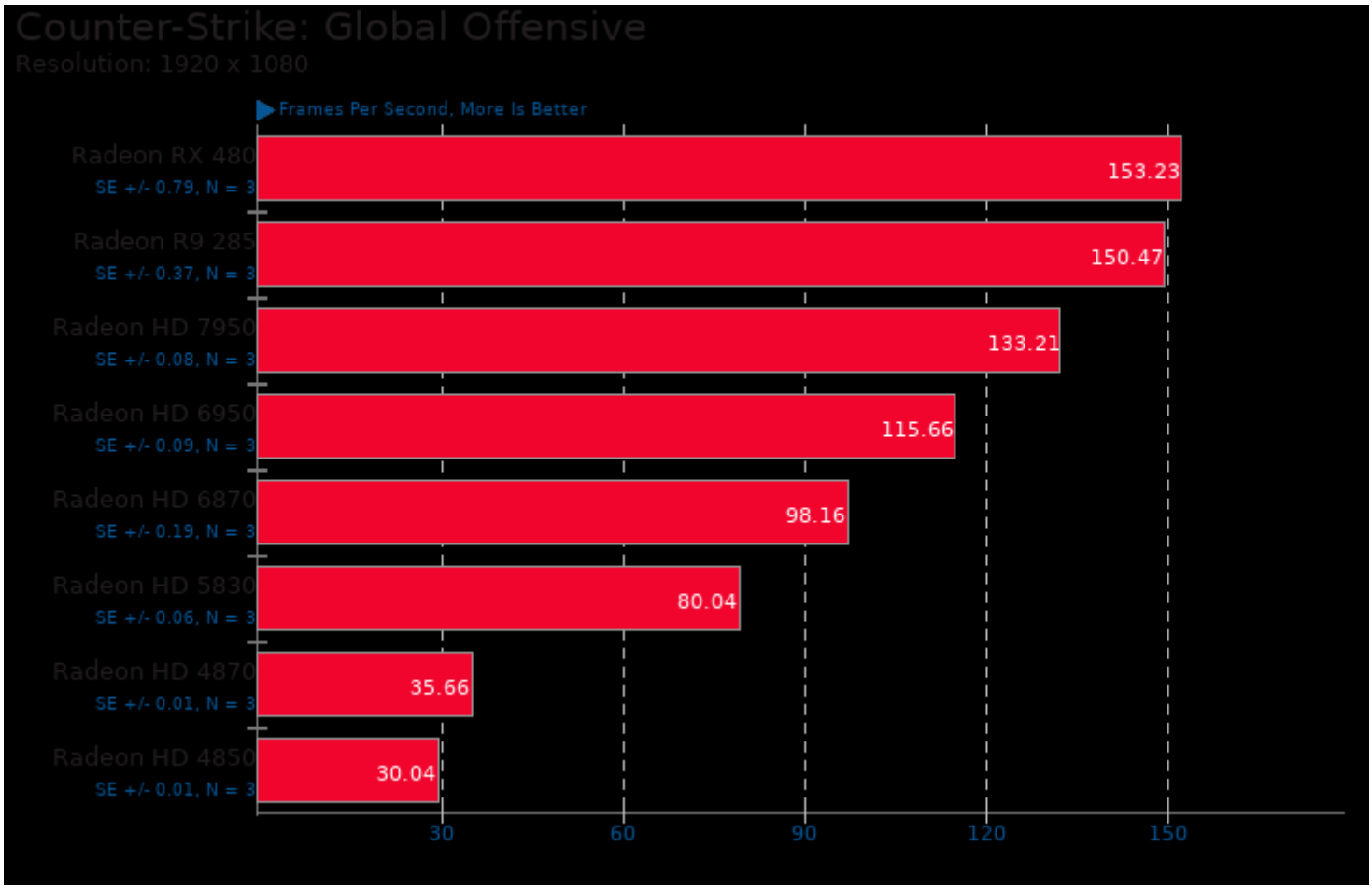
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Portal - 1920 x 1080 (FPS/Watt)	**6.15**	4.54	3.84	2.47	2.55	1.86	**0.90**	0.96
Normalized	100%	73.82%	62.44%	40.16%	41.46%	30.24%	14.63%	15.61%
Metro 2033 Redux - P.T.S.v.4.0 (FPS)	**77.16**	74.89	68.47	58.73		**44.76**		
Normalized	100%	97.06%	88.74%	76.11%		58.01%		
Standard Deviation	1.8%	1.6%	2%	0.6%		0.3%		
Metro 2033 Redux - P.T.S.v.4.0 (FPS/Watt)	**0.69**	0.57	0.52	0.41		**0.32**		
Normalized	100%	82.61%	75.36%	59.42%		46.38%		
Metro: Last Light Redux - P.T.S.v.4.0	**91.15**	89.39	83.66	54.91		**39.49**		
Normalized	100%	98.07%	91.78%	60.24%		43.32%		
Standard Deviation	0.3%	0.1%	0.7%	0.3%		0.6%		
Metro: Last Light Redux - P.T.S.v.4.0	**0.62**	0.48	0.48	0.31		**0.25**		
Normalized	100%	77.42%	77.42%	50%		40.32%		
Xonotic - 1920 x 1080 - Ultimate (FPS)	155.69	165.38	**173.99**	142.28	113.47	97.35	63.47	**54.82**
Normalized	89.48%	95.05%	100%	81.77%	65.22%	55.95%	36.48%	31.51%
Standard Deviation	0.1%	0.6%	0.3%	0.2%	0.2%	0.4%	0.3%	0.1%
Xonotic - 1920 x 1080 - Ultimate (FPS/Watt)	**1.39**	1.15	1.22	0.87	0.80	0.70	**0.39**	0.43
Normalized	100%	82.73%	87.77%	62.59%	57.55%	50.36%	28.06%	30.94%
Tesseract - 1920 x 1080 (FPS)	**242.93**	154.59	189.85	161.95	142.35	107.00	48.51	**41.40**
Normalized	100%	63.64%	78.15%	66.67%	58.6%	44.05%	19.97%	17.04%
Standard Deviation	1%	1.8%	0.1%	2.2%	0.5%	1.4%	1.6%	0.4%
Tesseract - 1920 x 1080 (FPS/Watt)	**1.78**	1.08	1.40	1.04	1.08	0.82	**0.30**	0.33
Normalized	100%	60.67%	78.65%	58.43%	60.67%	46.07%	16.85%	18.54%
GpuTest - Furmark - 1920 x 1080 - Fullscreen (Points)	**5468**	4275	3014	2102	1879	1555	814	**692**
Normalized	100%	78.18%	55.12%	38.44%	34.36%	28.44%	14.89%	12.66%
Standard Deviation	0.4%	0%	4.8%	0%	0%	0%	0%	0%
GpuTest - Furmark - 1920 x 1080 - Fullscreen	**28.22**	17.40	15.17	9.81	9.69	8.95	**4.27**	4.72
Normalized	100%	61.66%	53.76%	34.76%	34.34%	31.72%	15.13%	16.73%
GpuTest - Triangle - 1920 x 1080 - Fullscreen (Points)	**610426**	375076	492138	211375	475672	252018	148903	**119965**
Normalized	100%	61.44%	80.62%	34.63%	77.92%	41.29%	24.39%	19.65%
Standard Deviation	0.3%	0%	0%	0.1%	0.5%	0%	0%	0%
GpuTest - Triangle - 1920 x 1080 - Fullscreen	**3958**		3497	1521	3228	1833	932.46	**839.55**
Normalized	100%		88.37%	38.43%	81.56%	46.33%	23.56%	21.21%

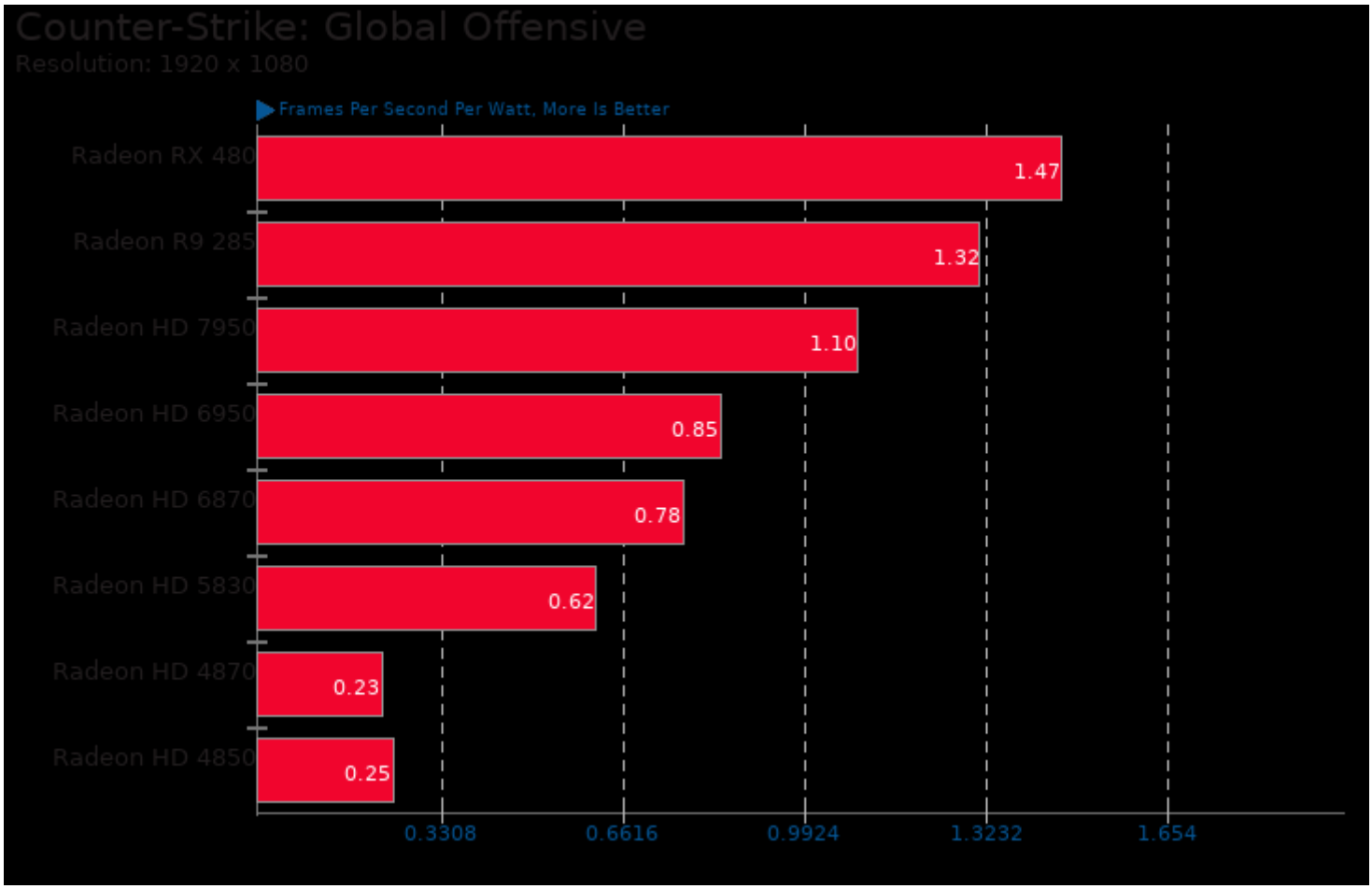
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Unigine Heaven - 1280 x 1024 - Fullscreen	**88.28**	65.56	54.31	16.71	11.57	**5.14**	11.59
Normalized	100%	74.26%	61.52%	18.93%	13.11%	5.82%	13.13%
Standard Deviation	0.2%	0%	0.2%			0.5%	
Unigine Heaven - 1280 x 1024 - Fullscreen (FPS/Watt)	**0.45**	0.34	0.32	0.12	0.09	**0.04**	0.09
Normalized	100%	75.56%	71.11%	26.67%	20%	8.89%	20%
Unigine Valley - 1280 x 1024 - Fullscreen (FPS)	**89.63**	**69.59**					
Normalized	100%	77.64%					
Standard Deviation	0.5%	0.1%					
Unigine Valley - 1280 x 1024 - Fullscreen (FPS/Watt)	**0.47**	**0.35**					
Normalized	100%	74.47%					

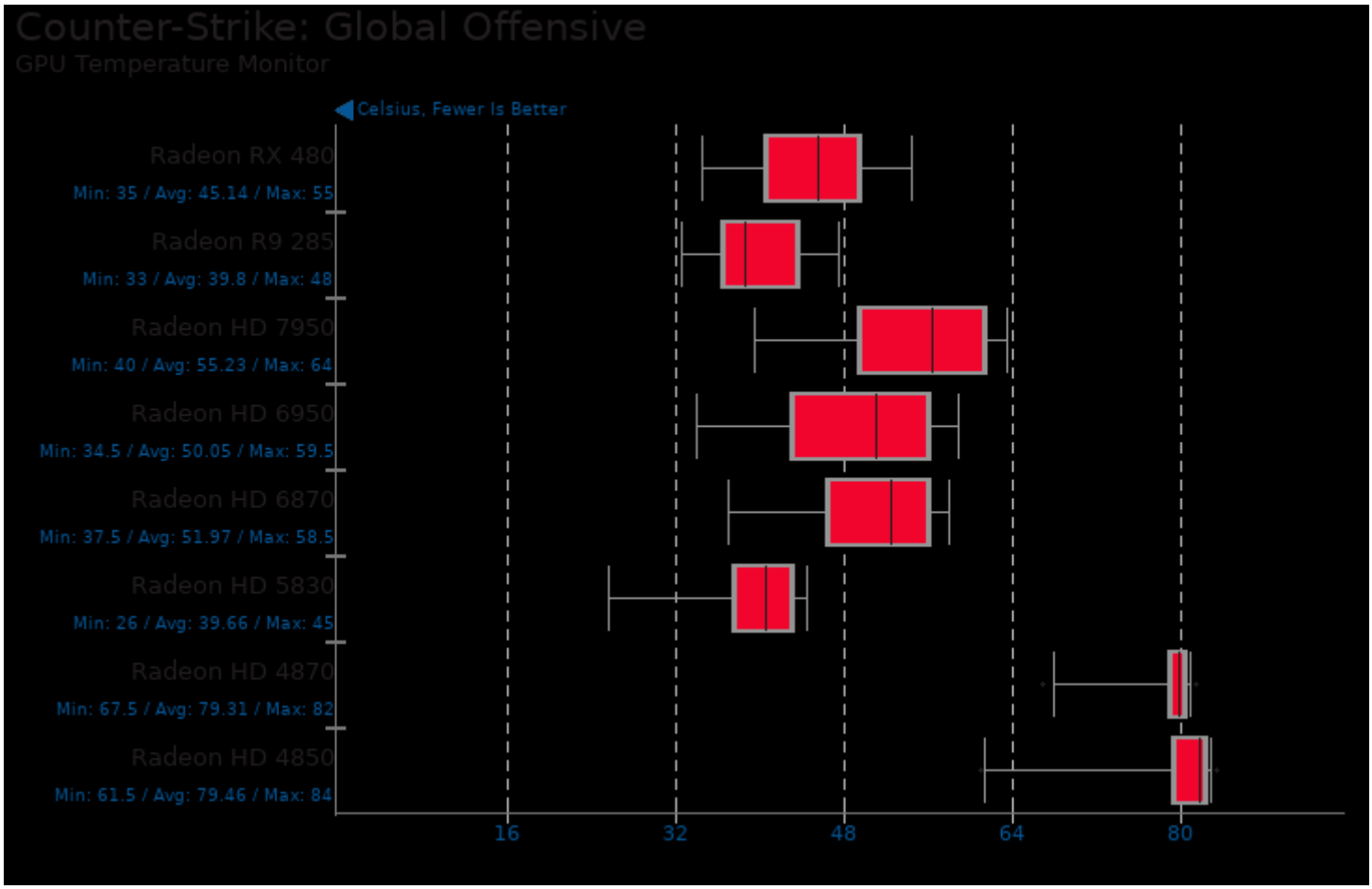
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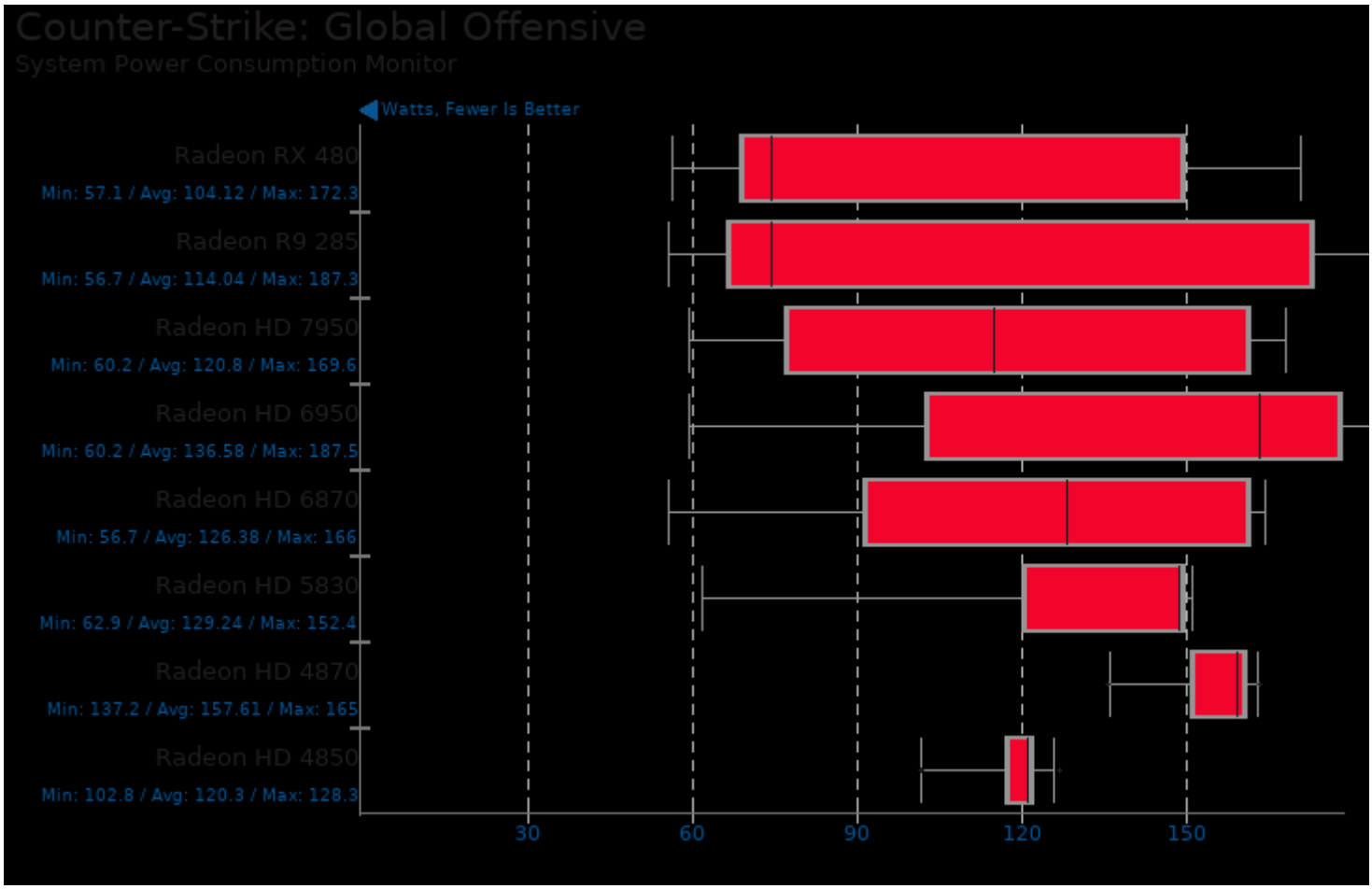
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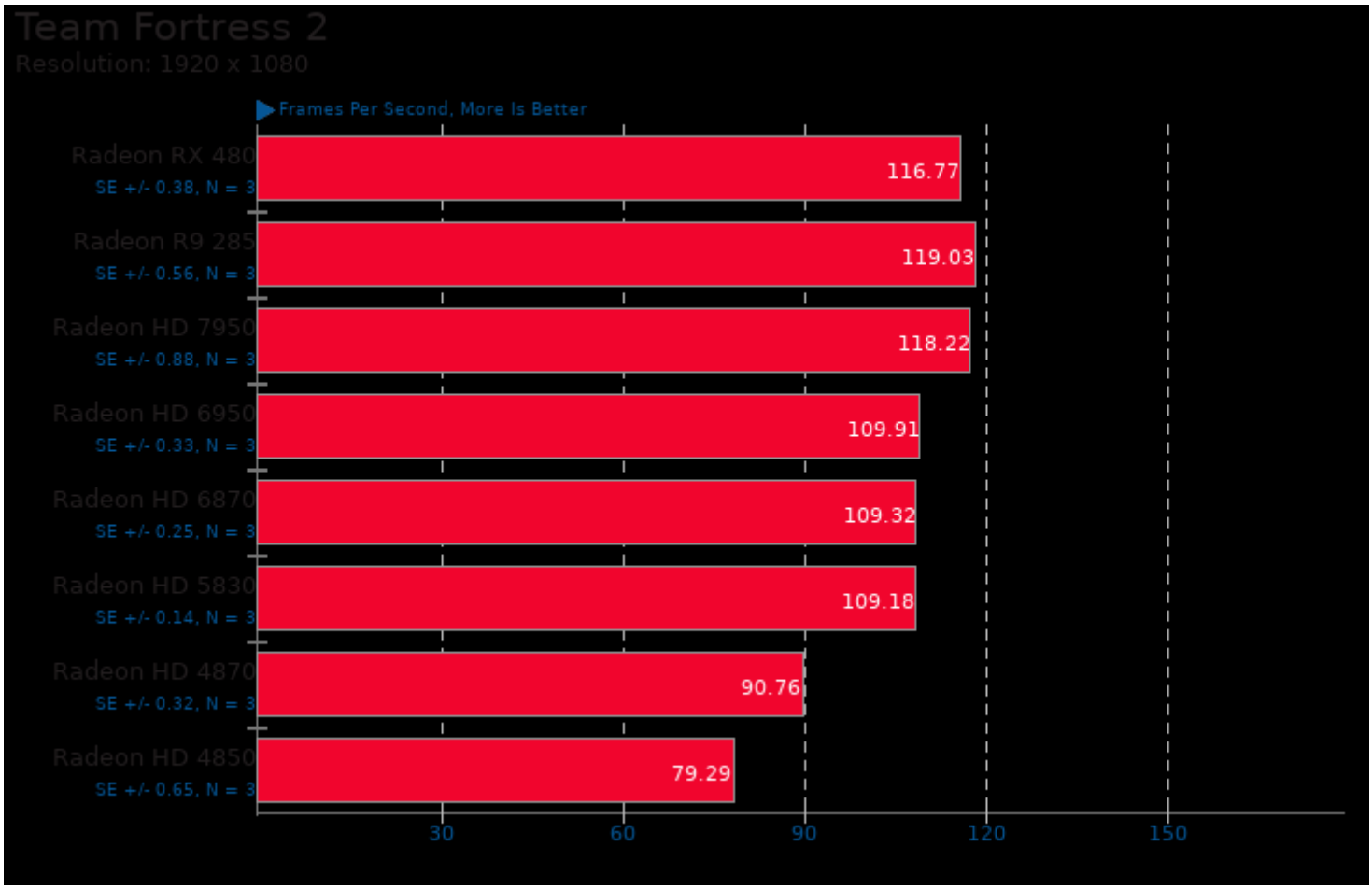
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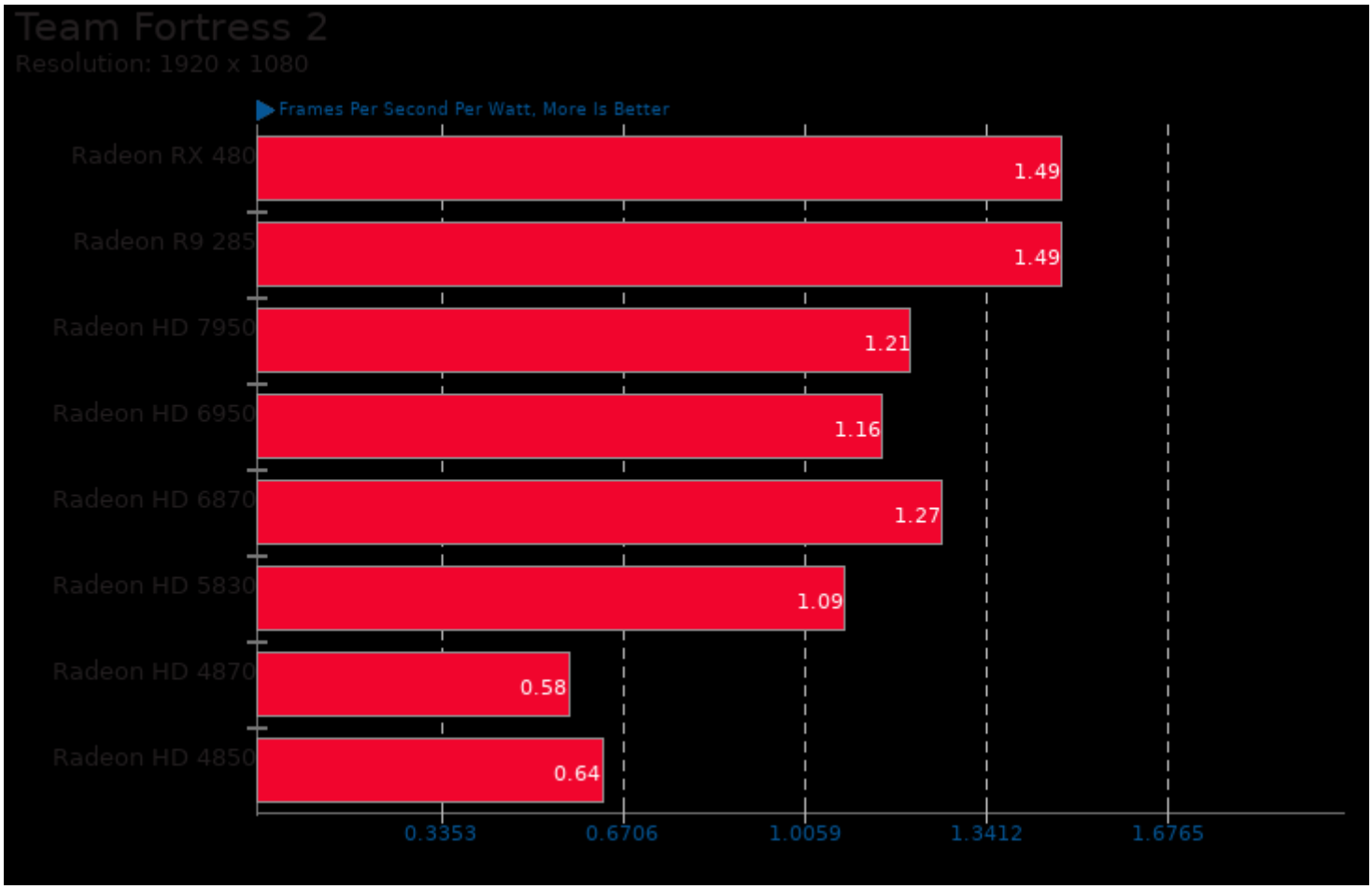
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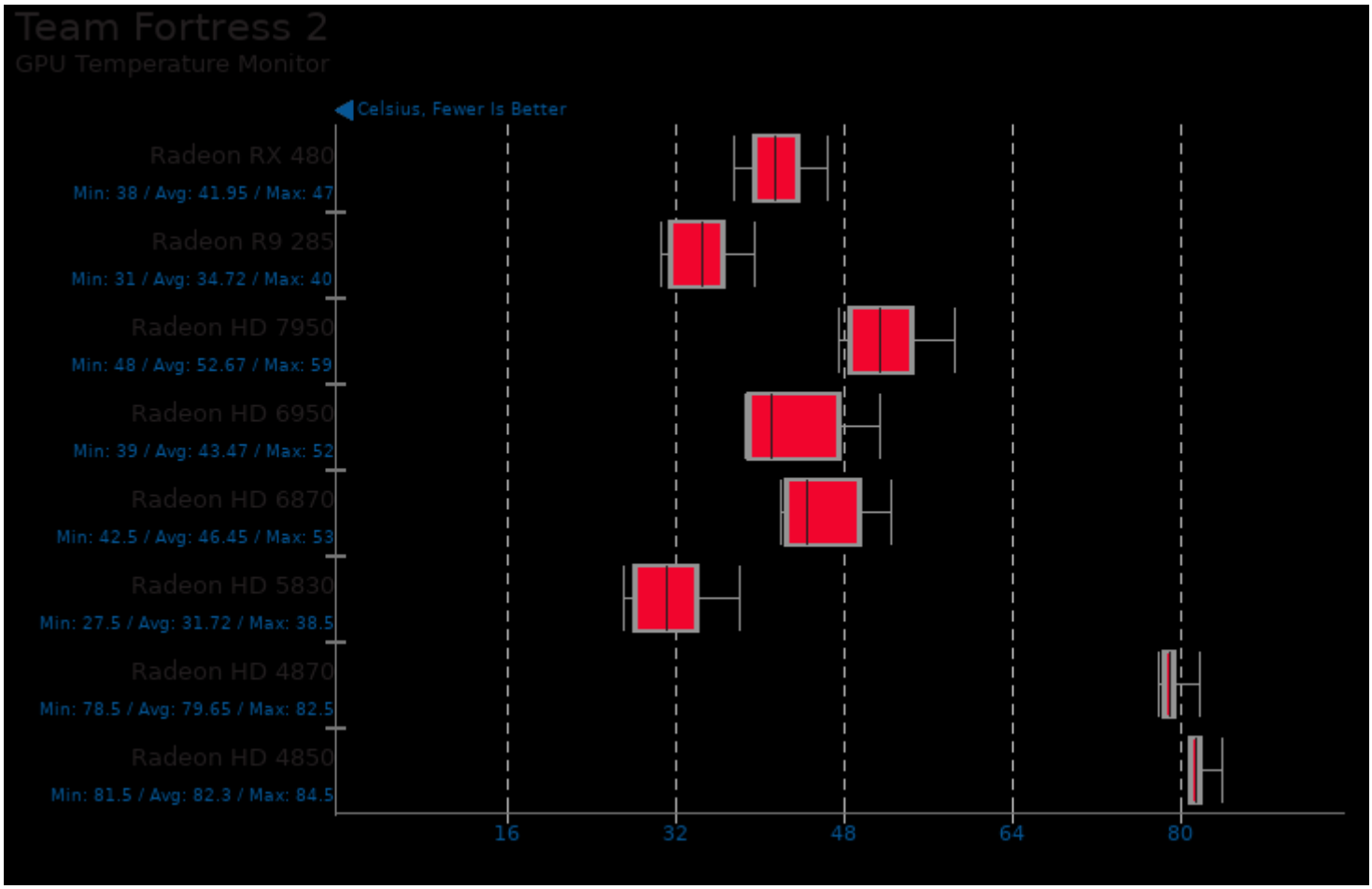
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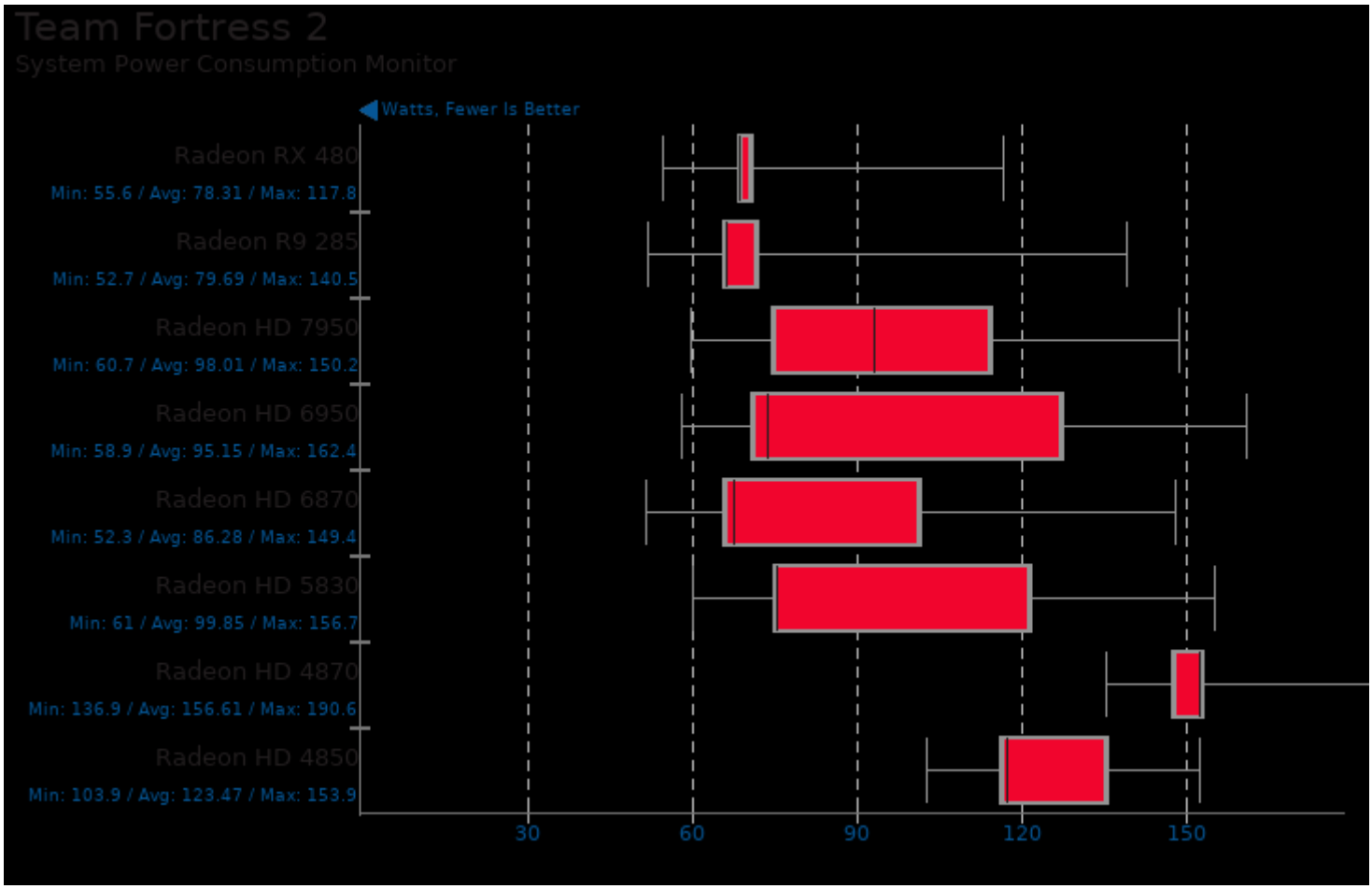
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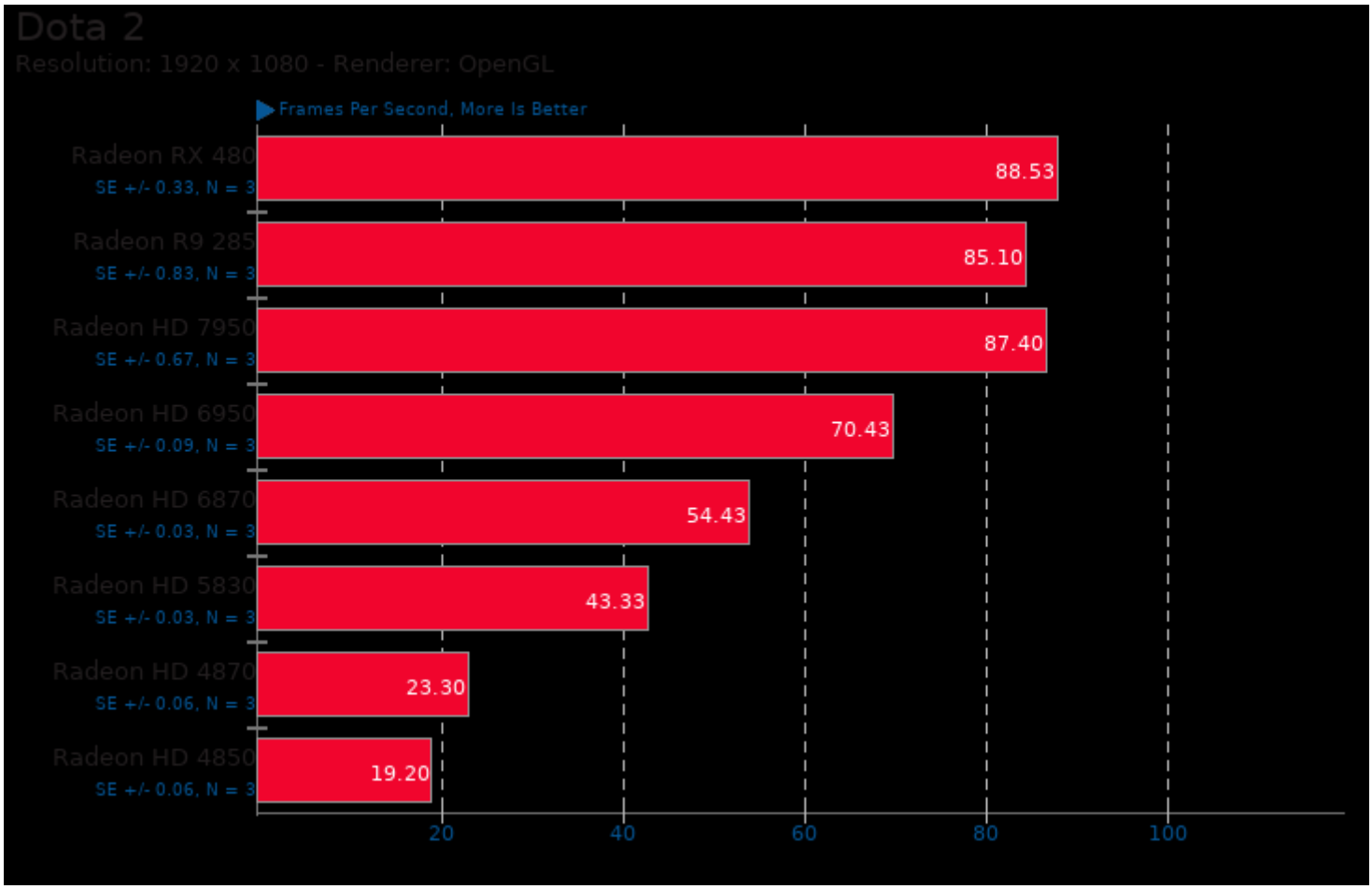
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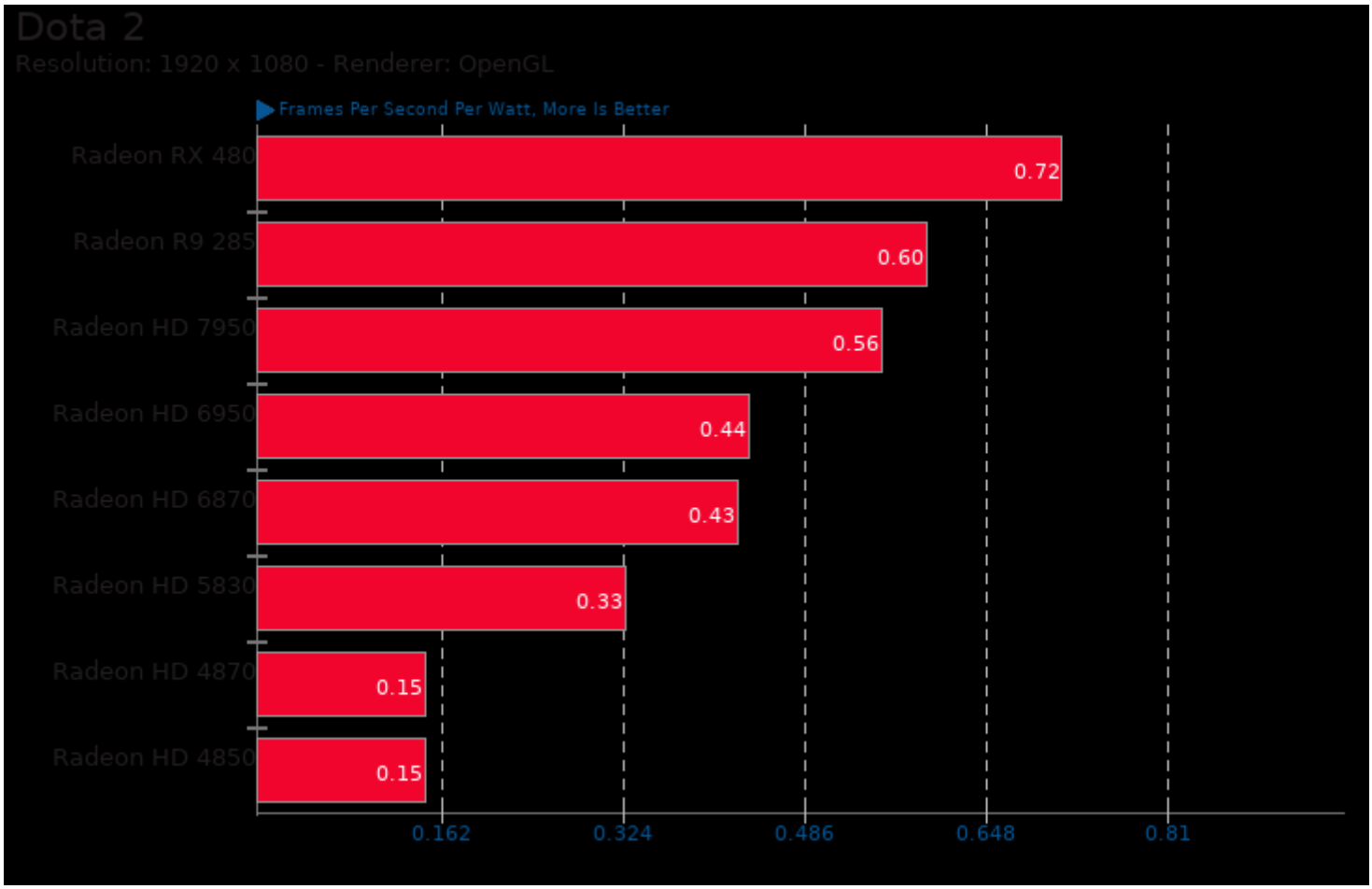
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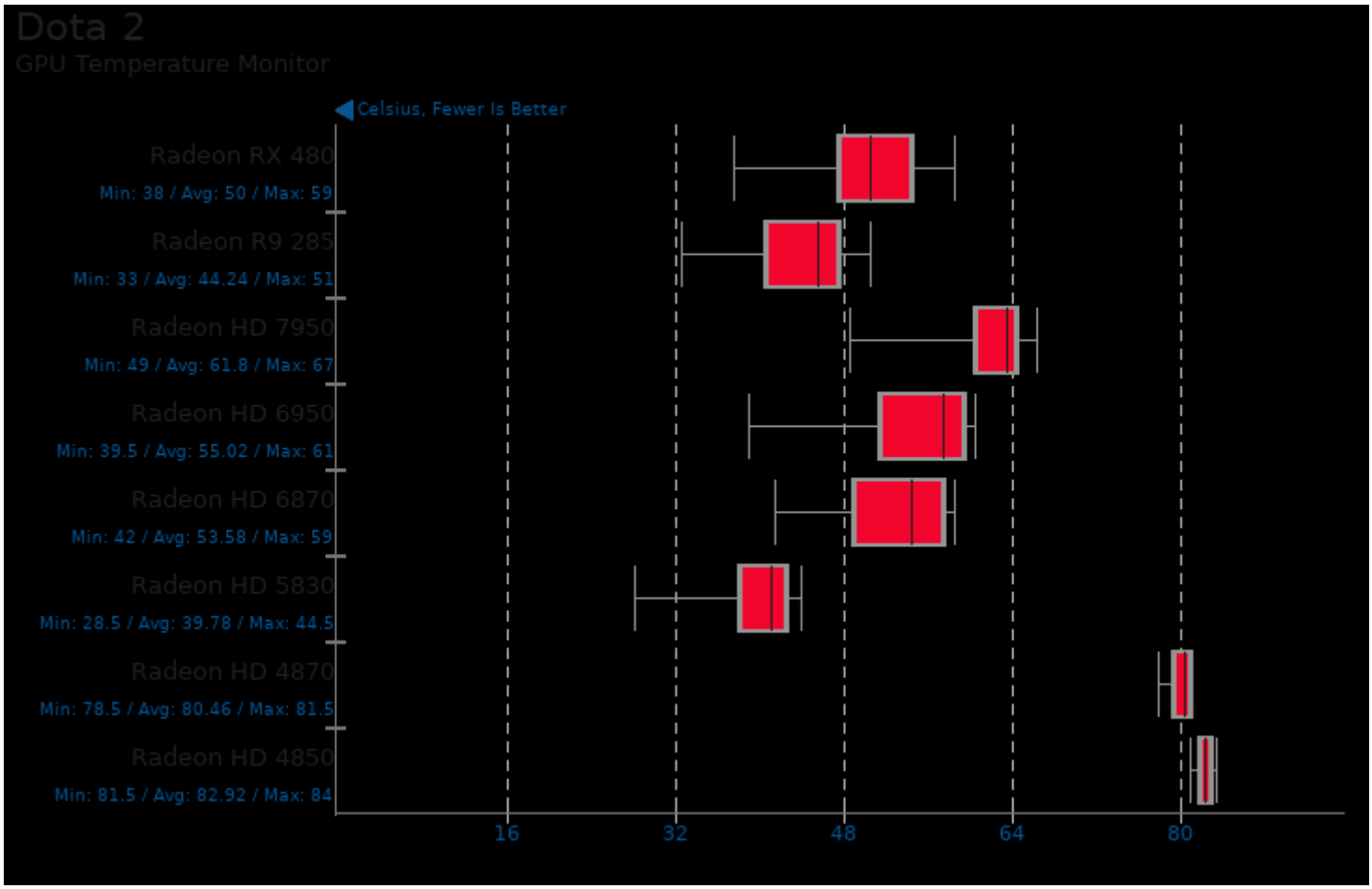
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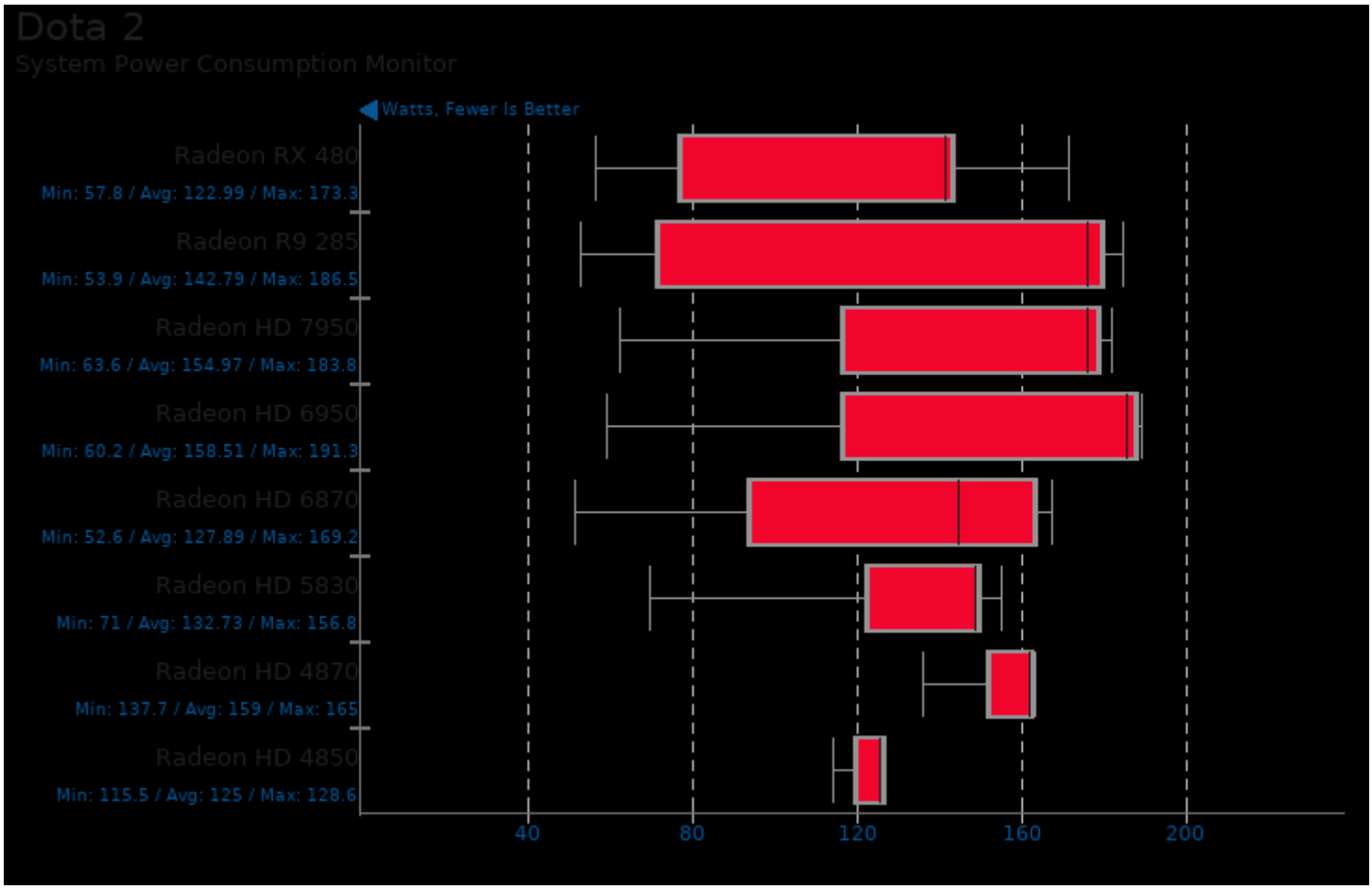
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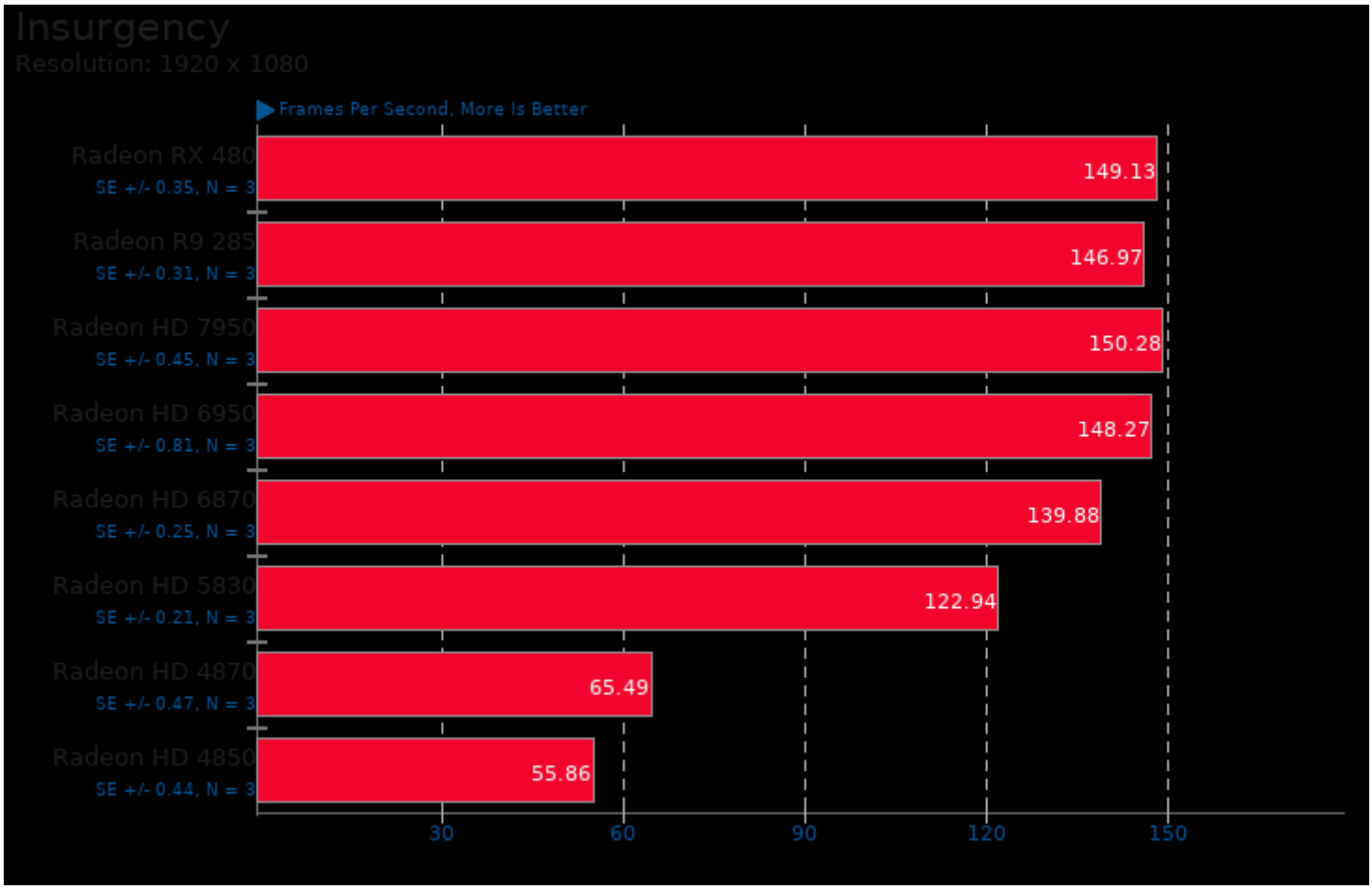
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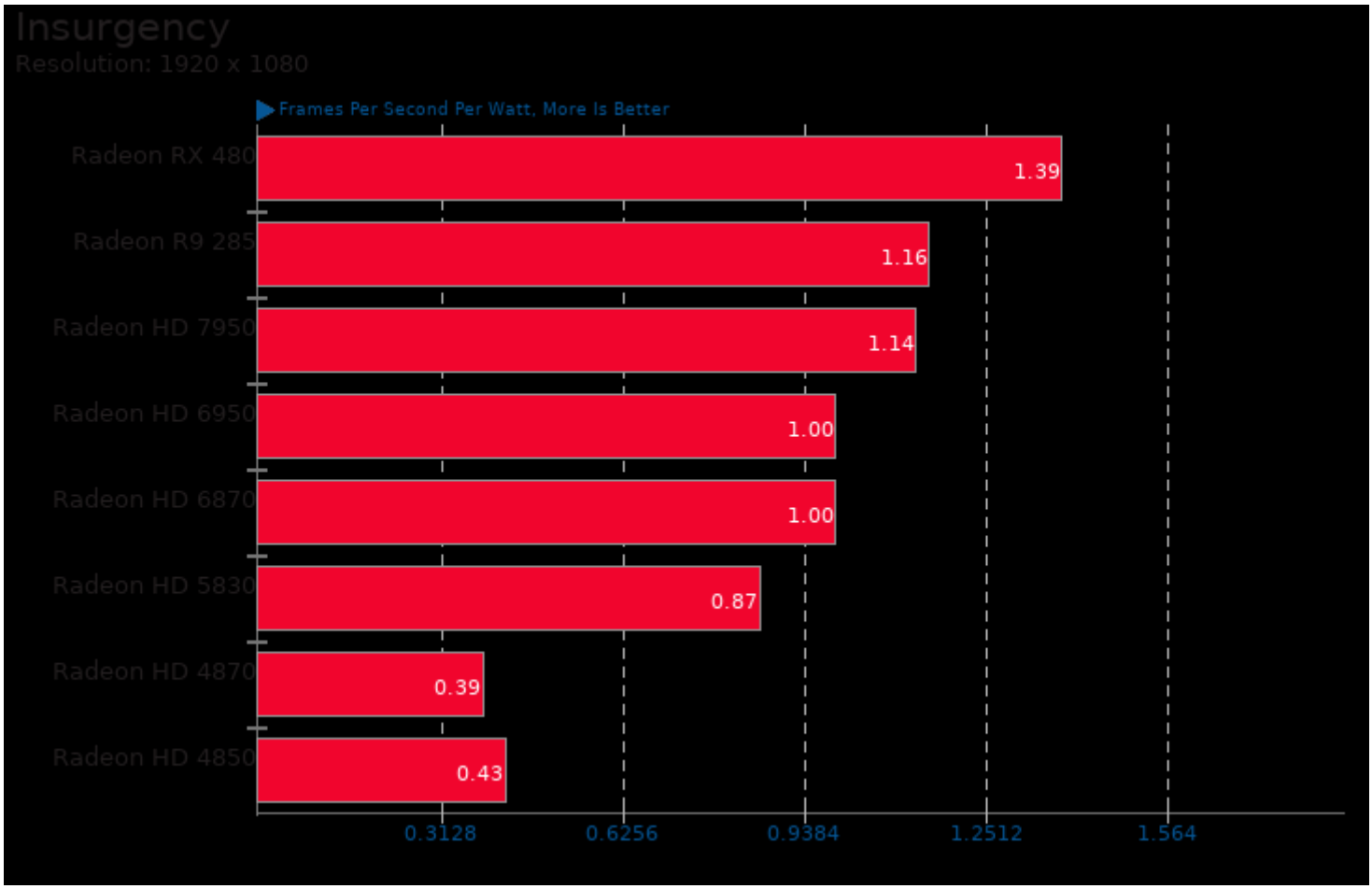
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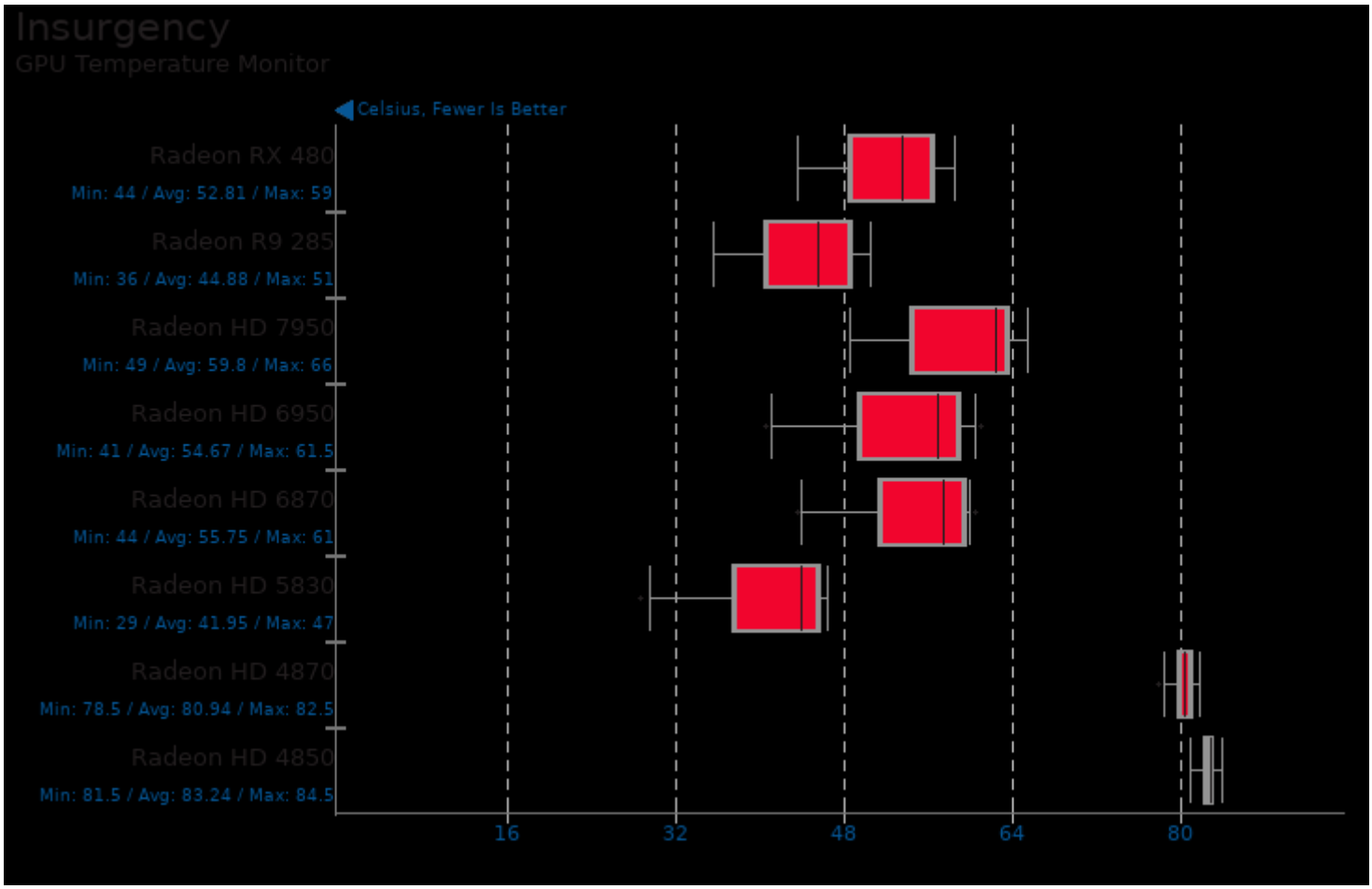
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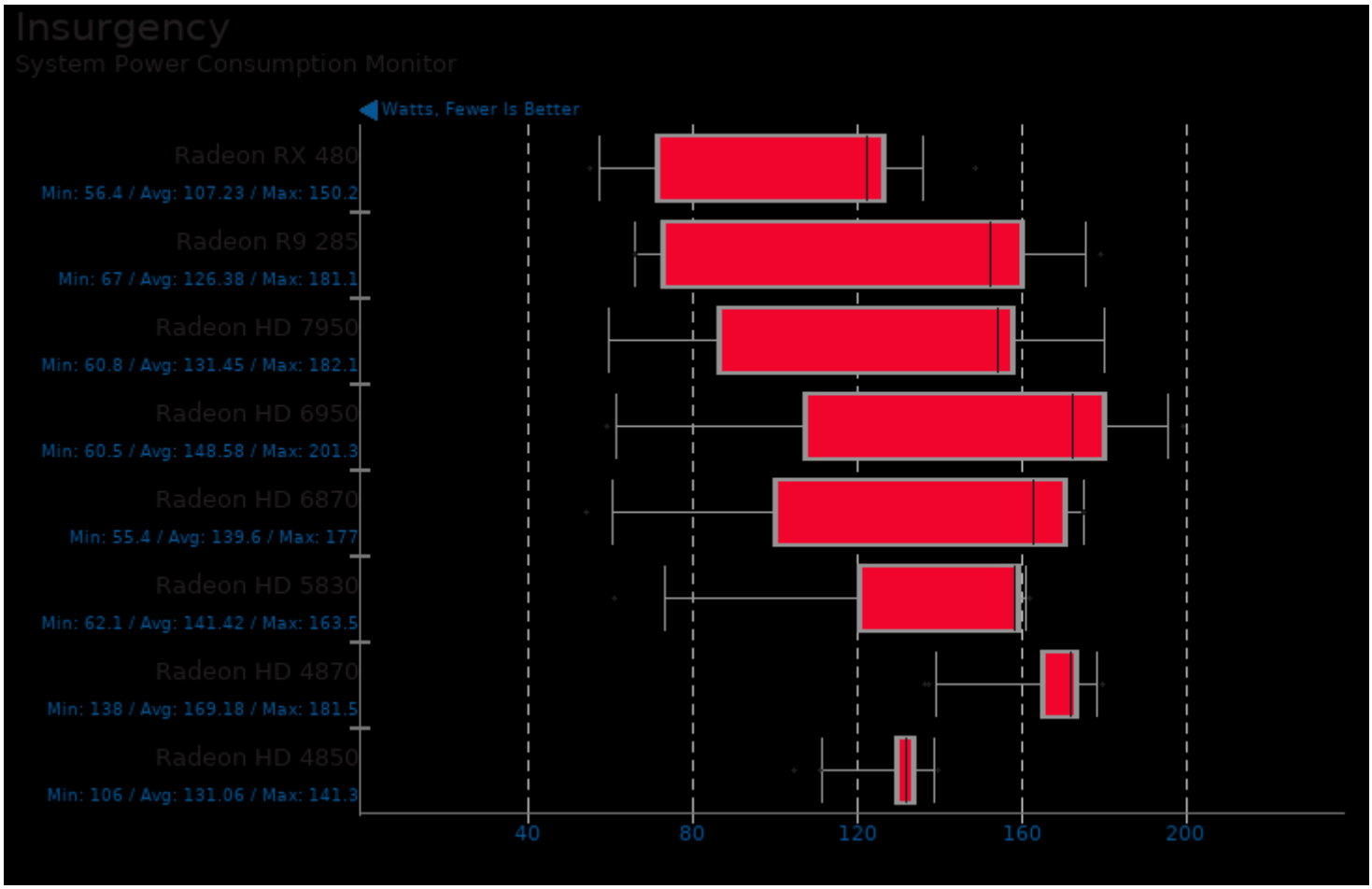
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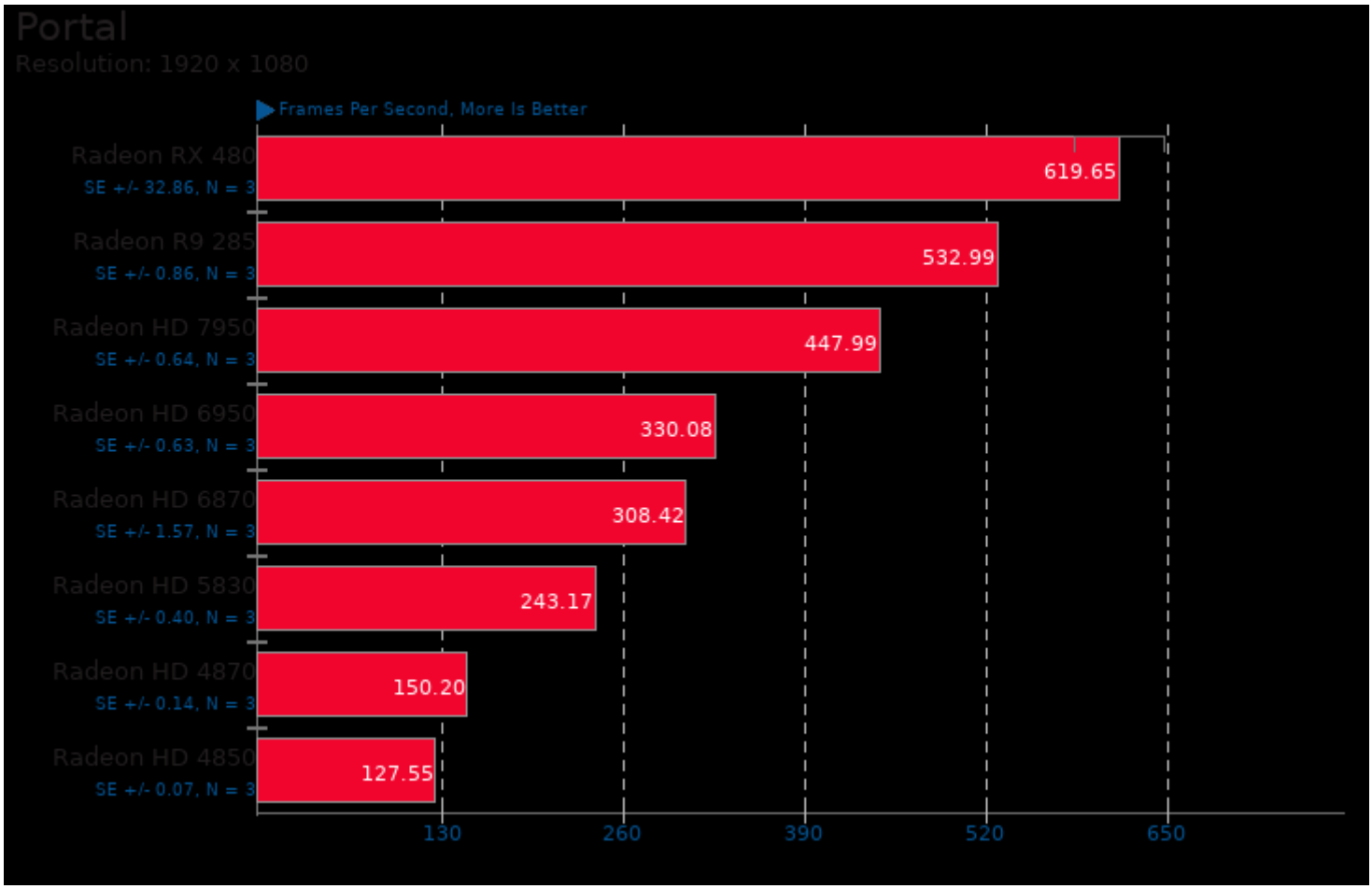
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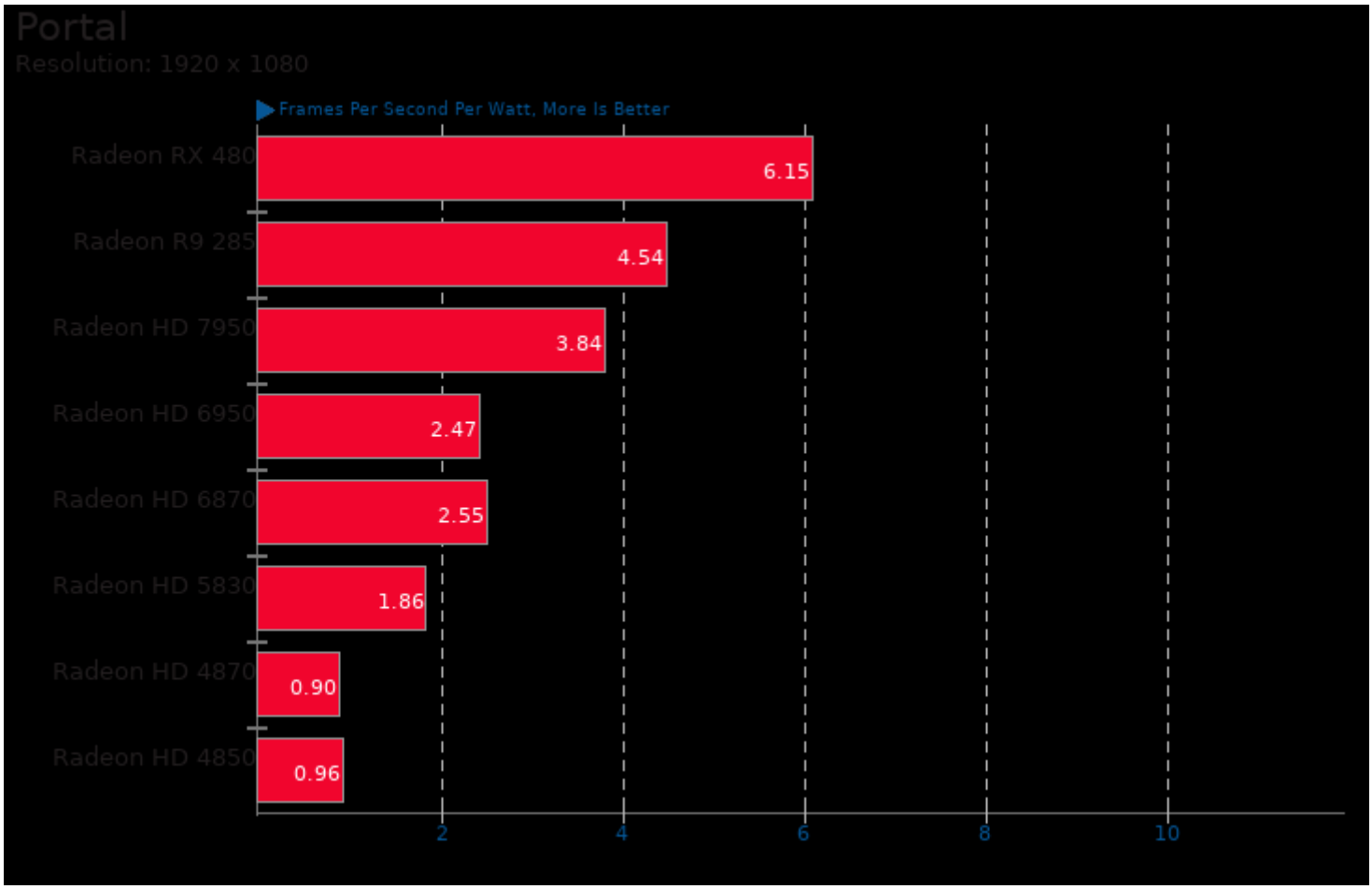
Radeon RX 480 Compared To Past Per Watt



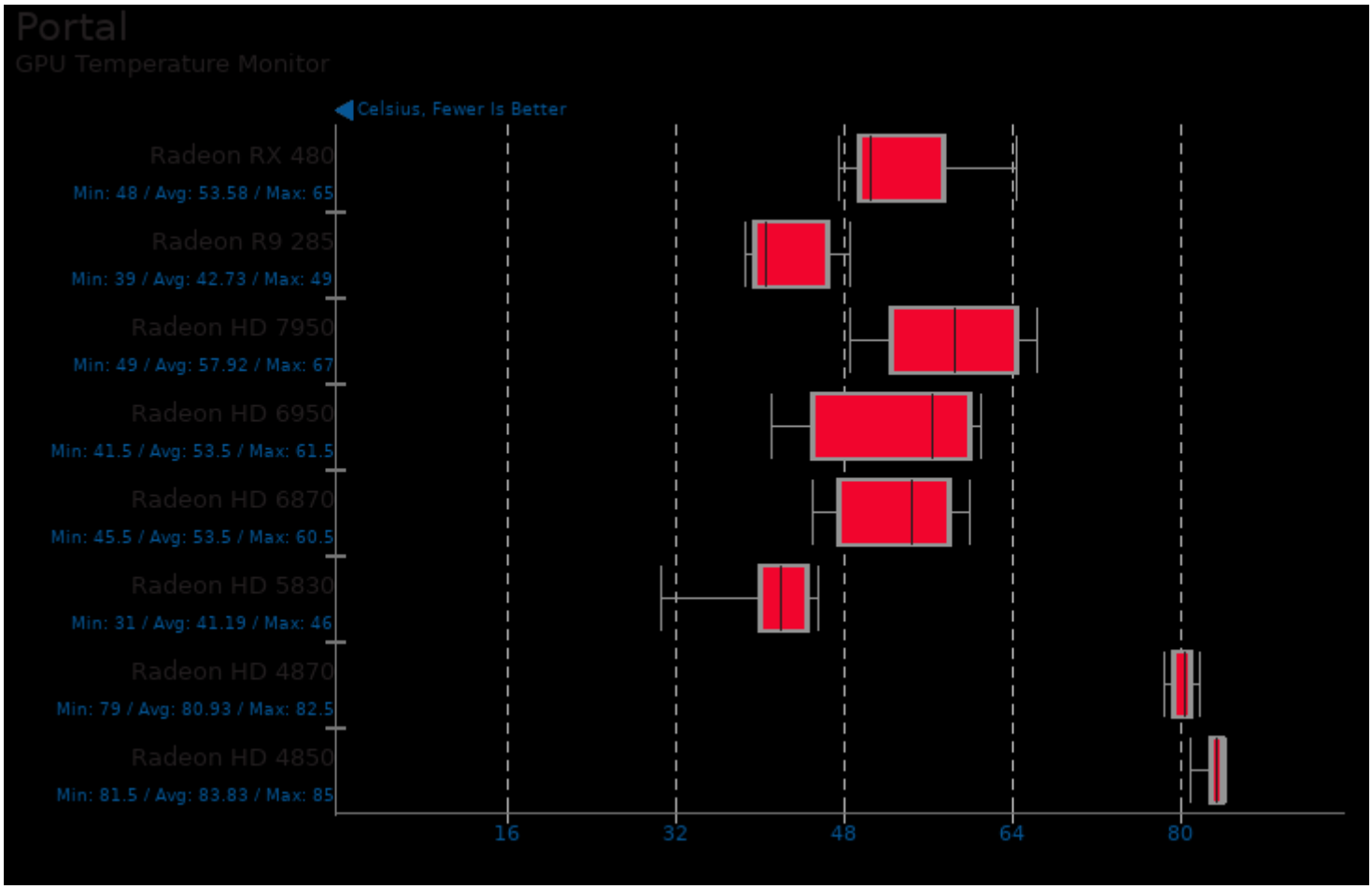
Radeon RX 480 Compared To Past Per Watt



Radeon RX 480 Compared To Past Per Watt



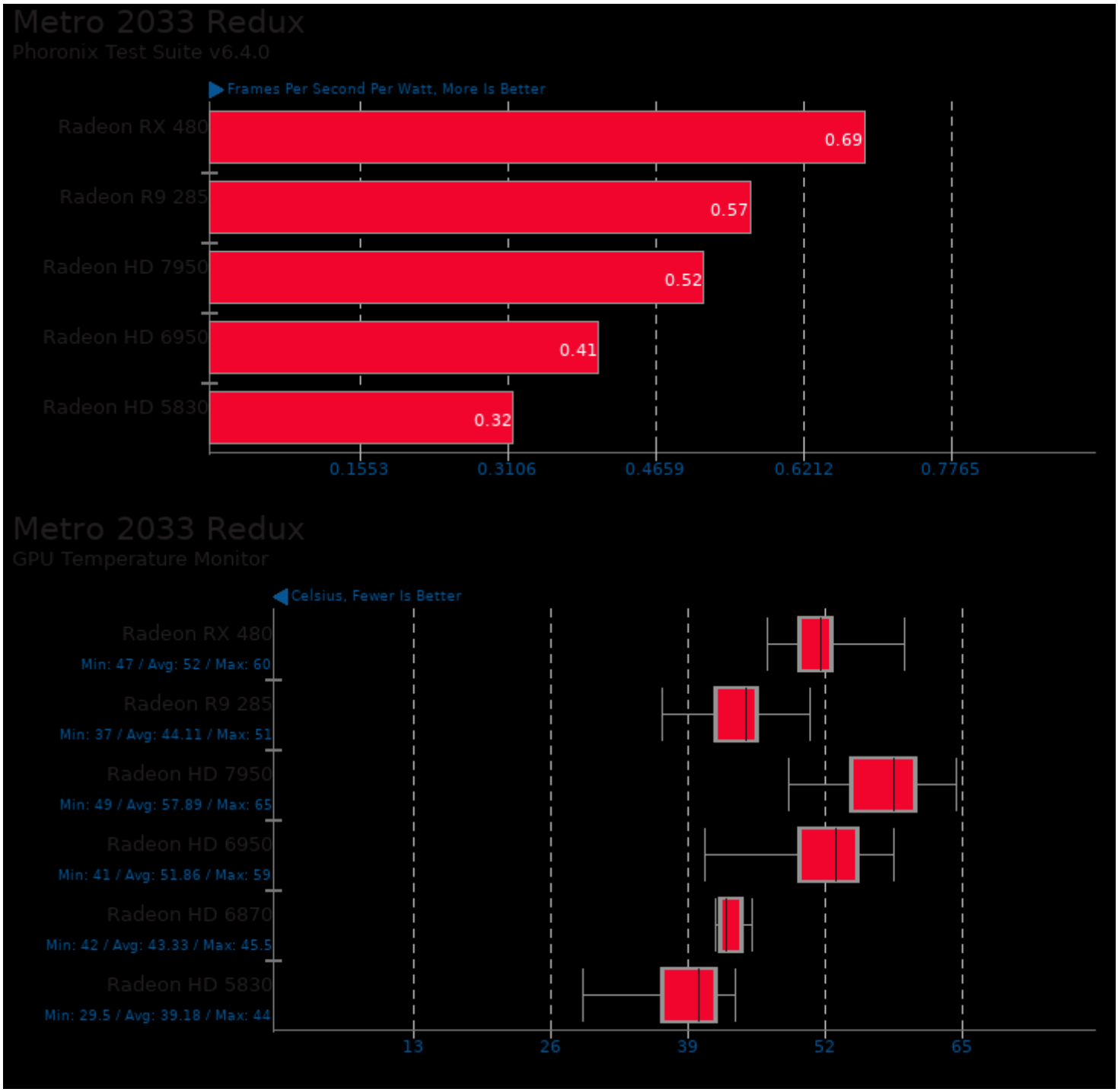
Radeon RX 480 Compared To Past Per Watt



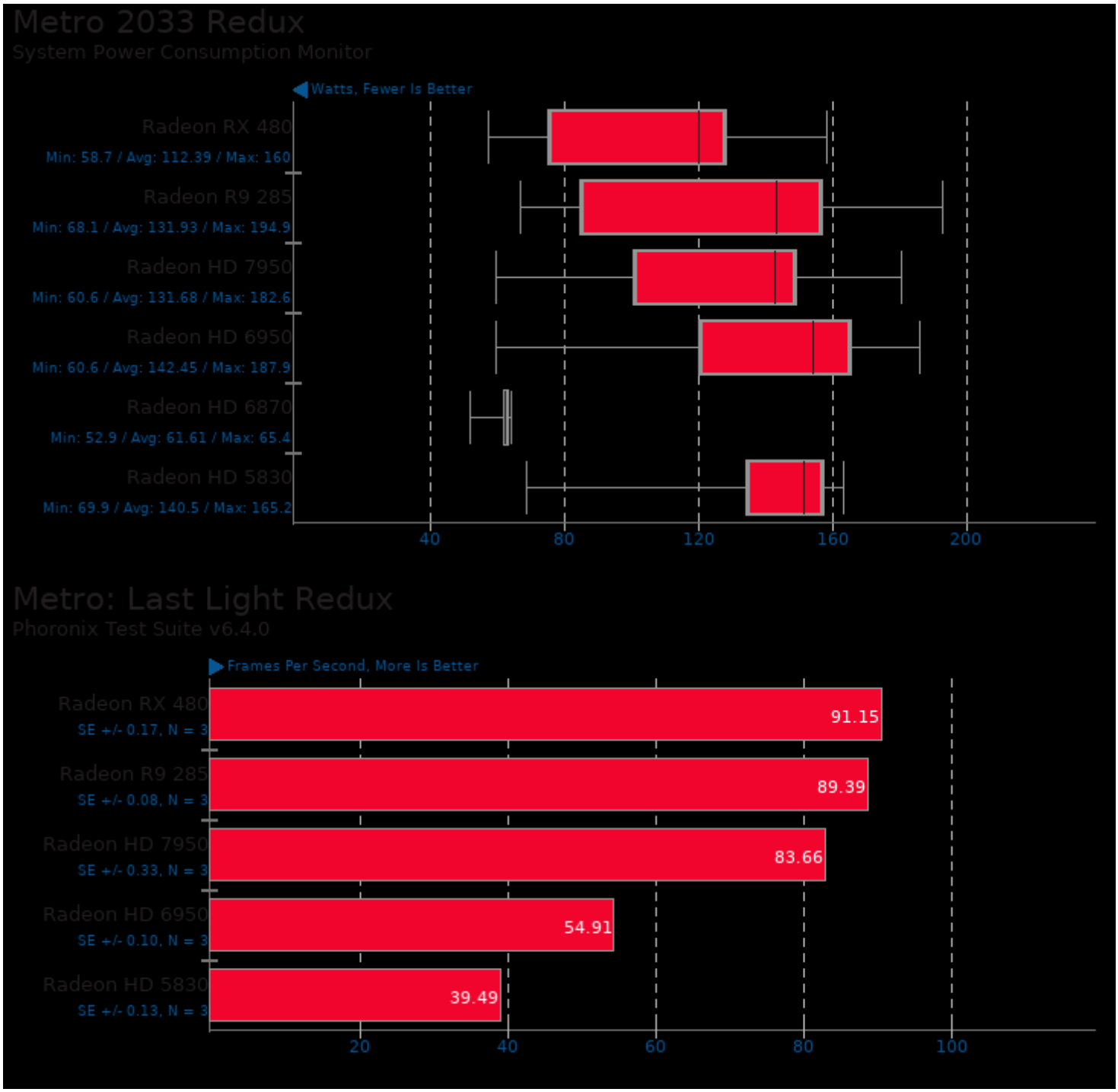
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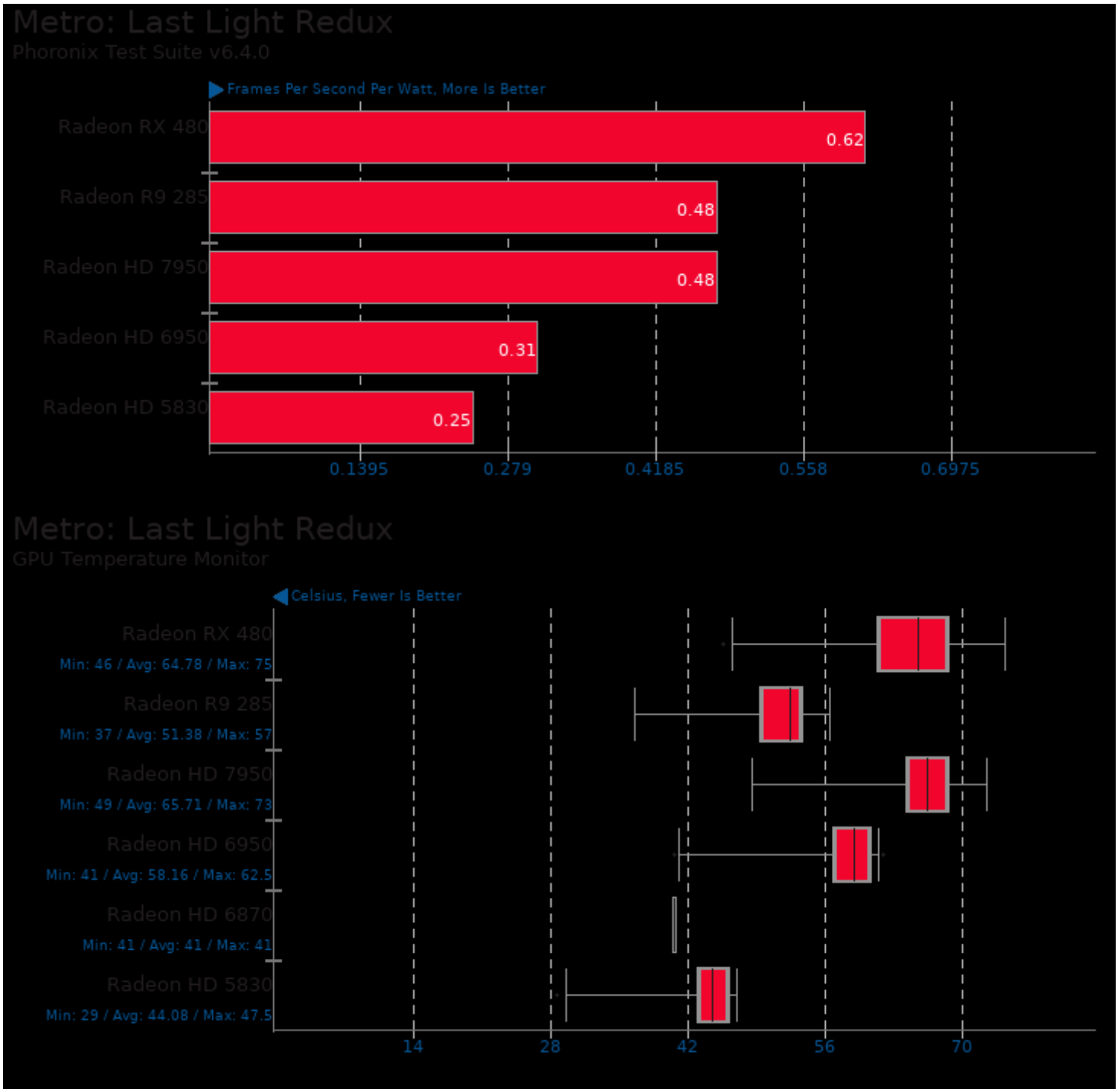
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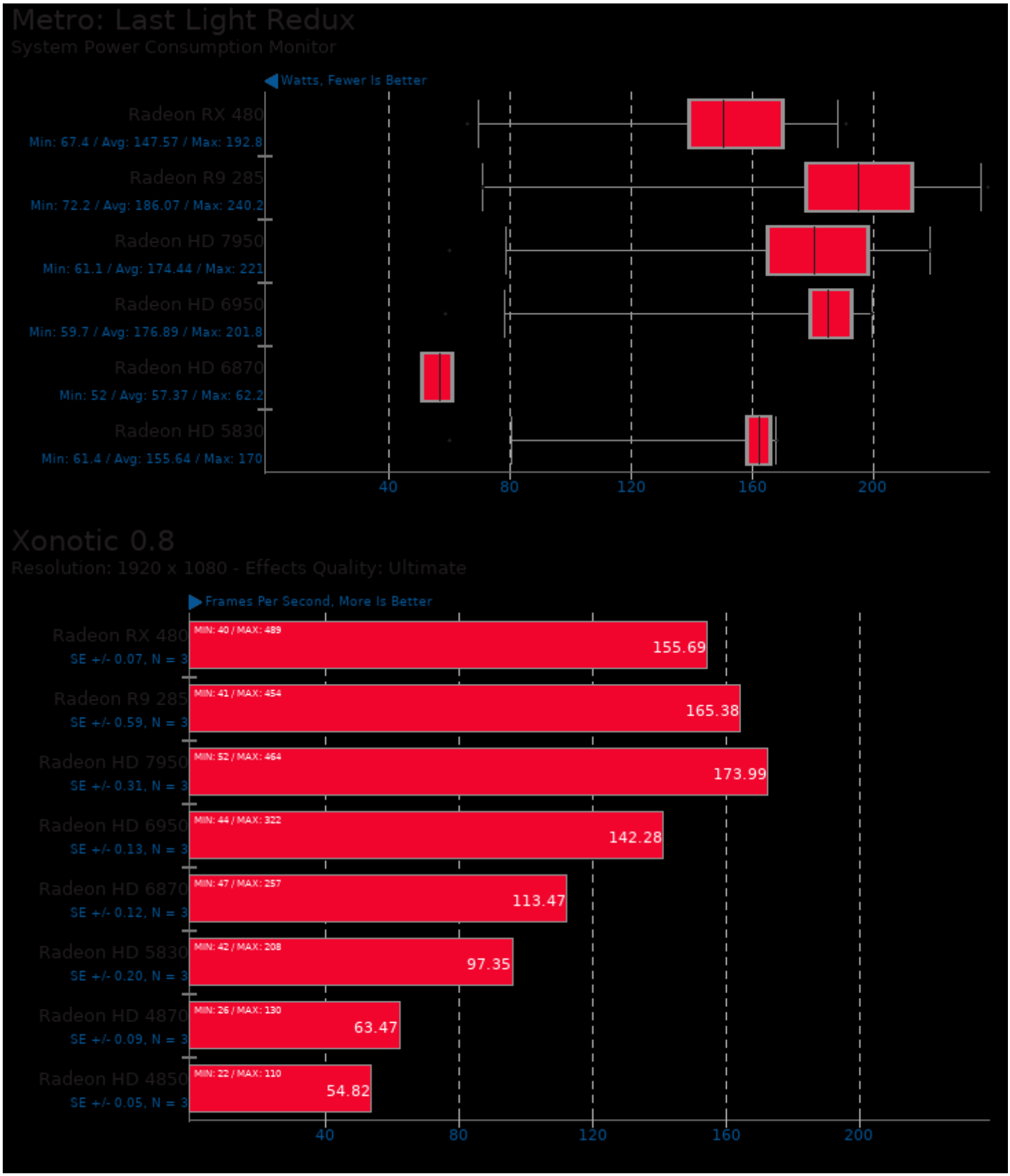
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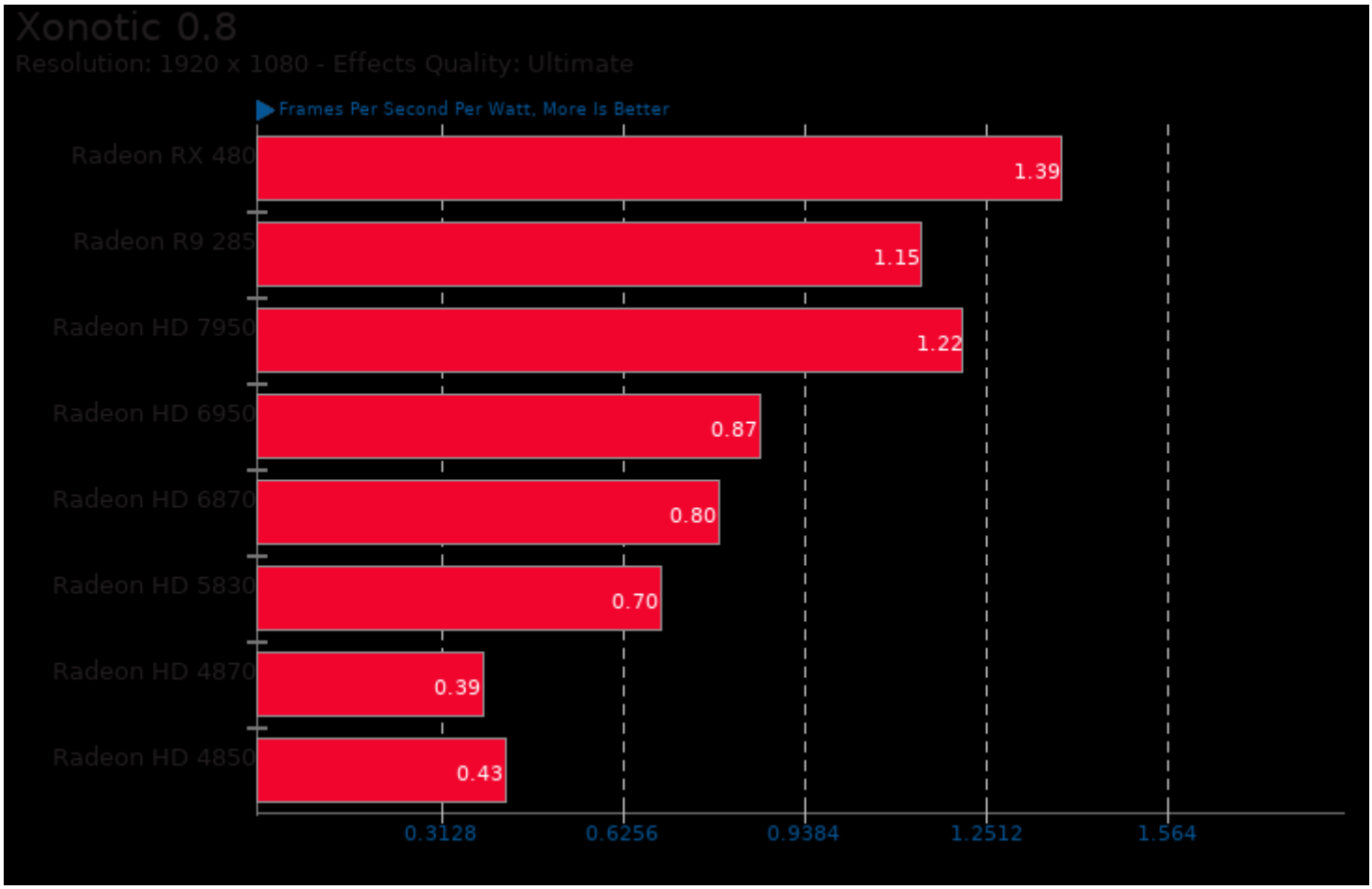
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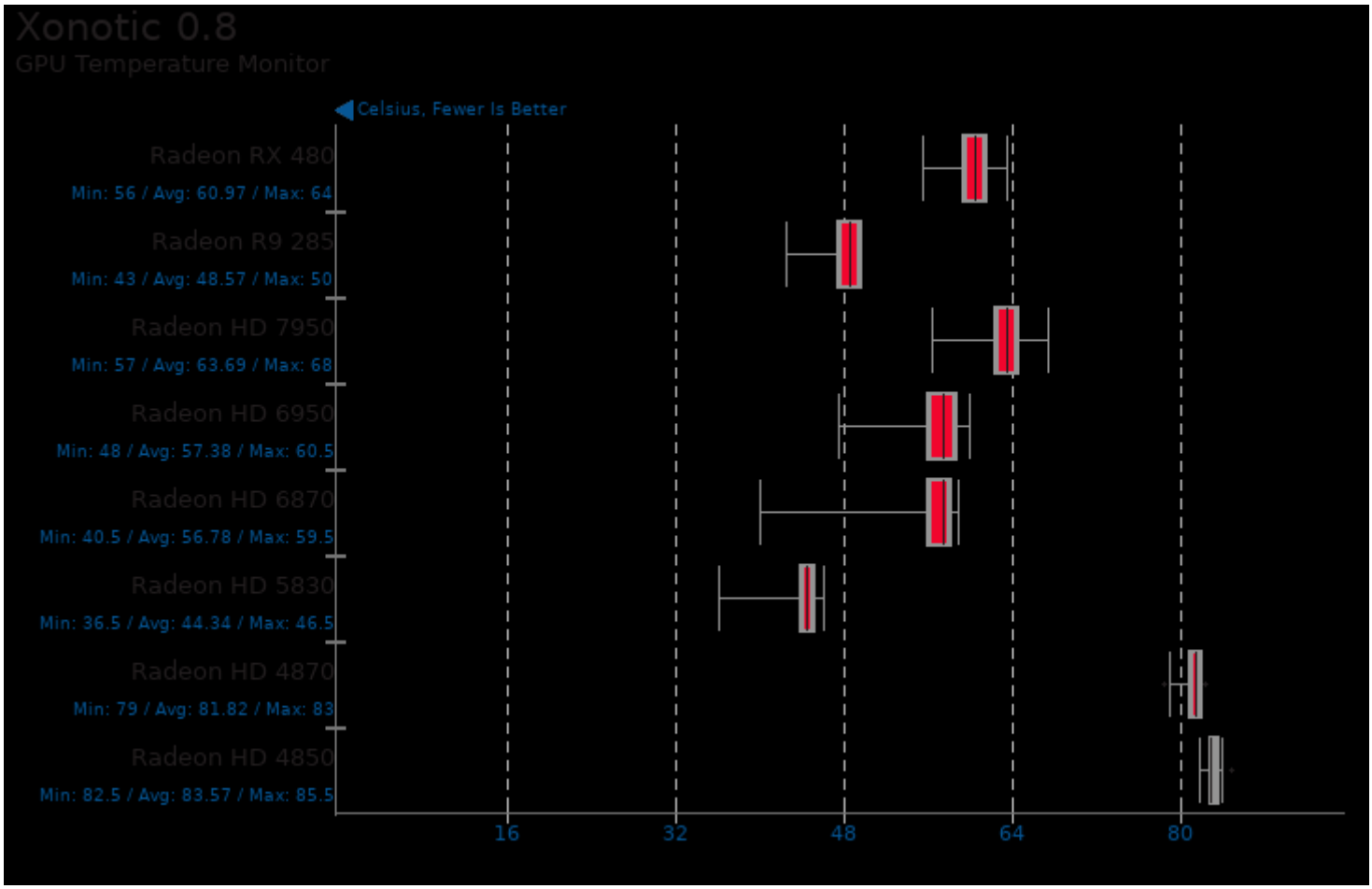
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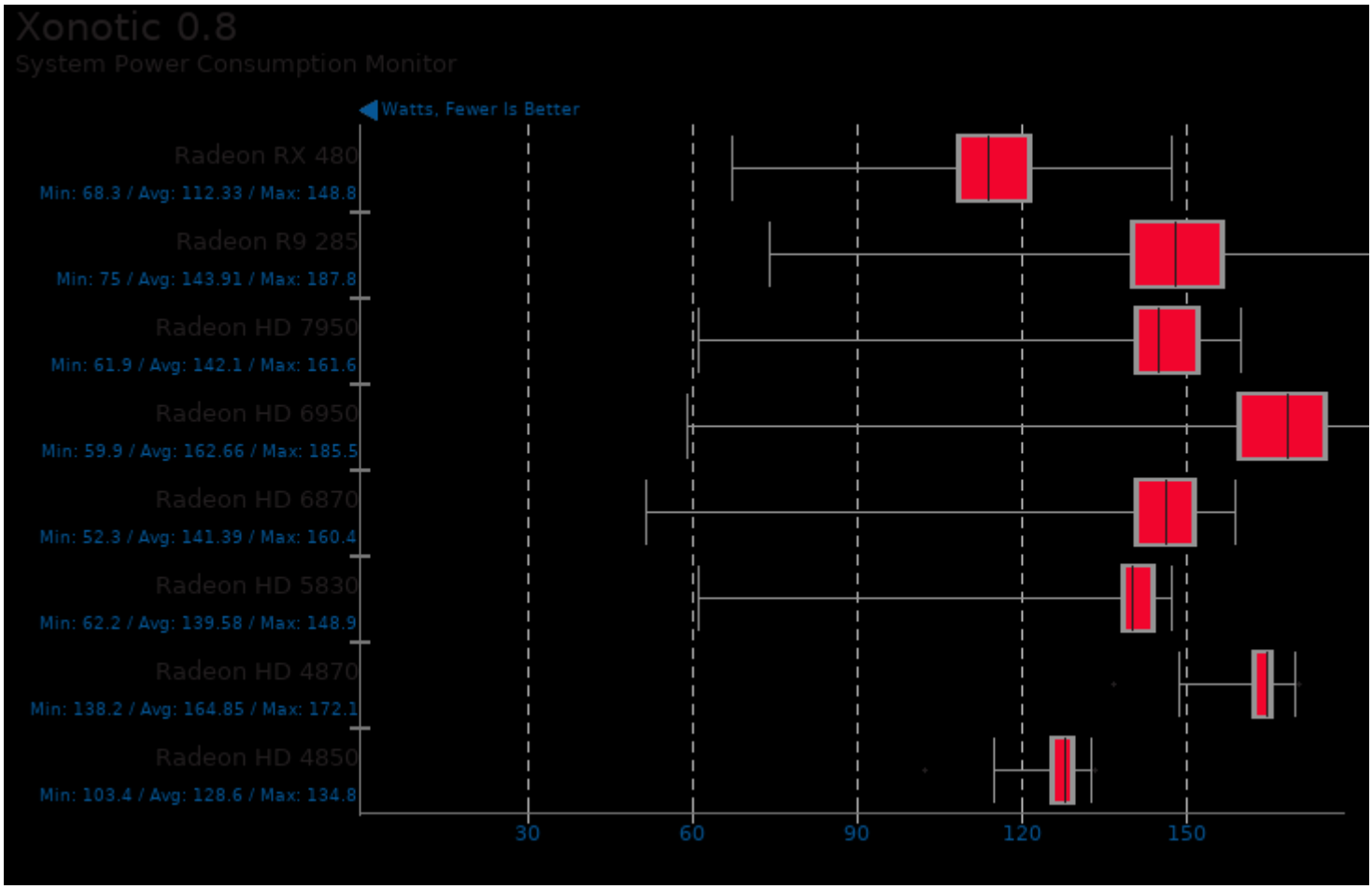
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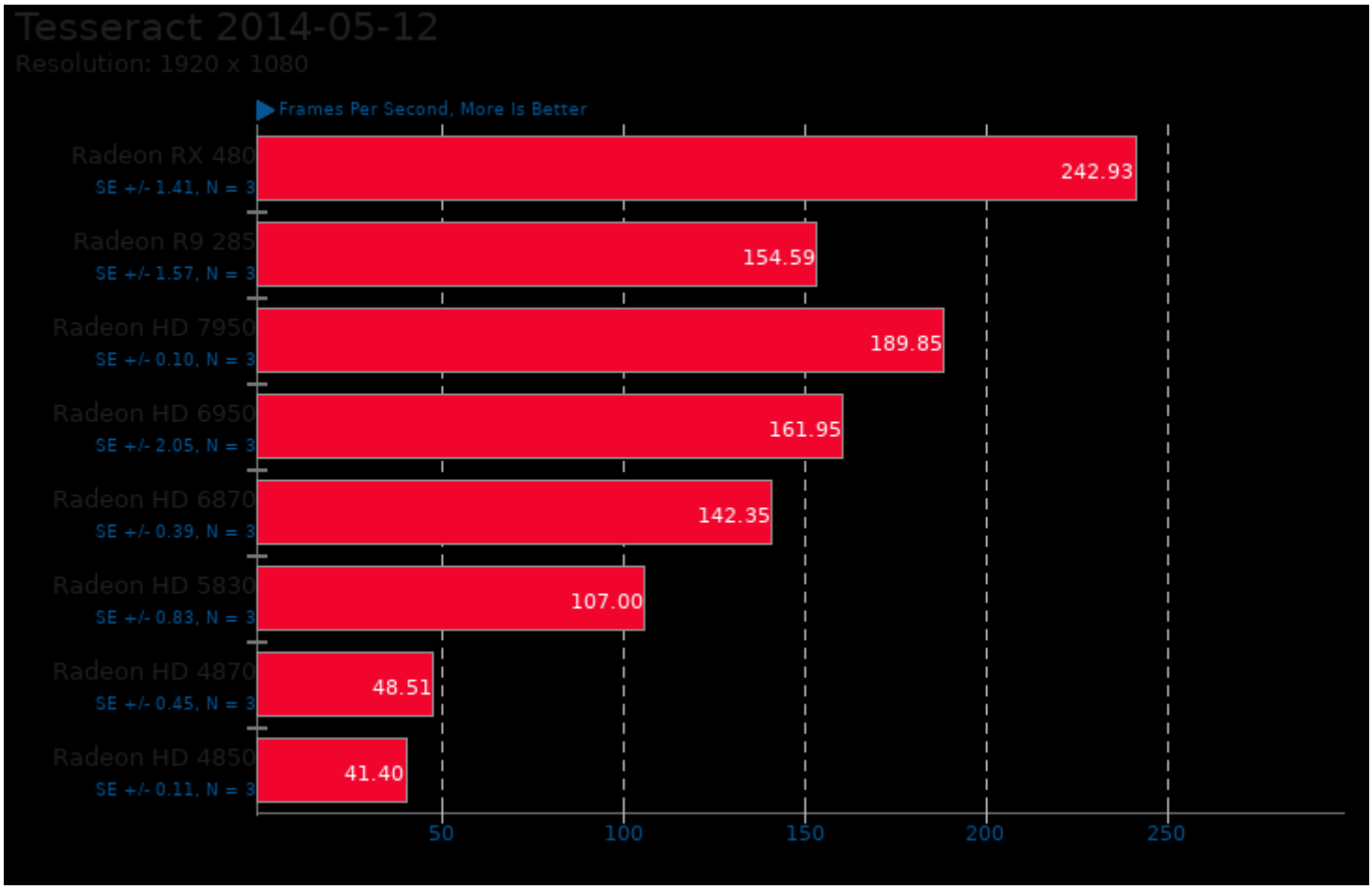
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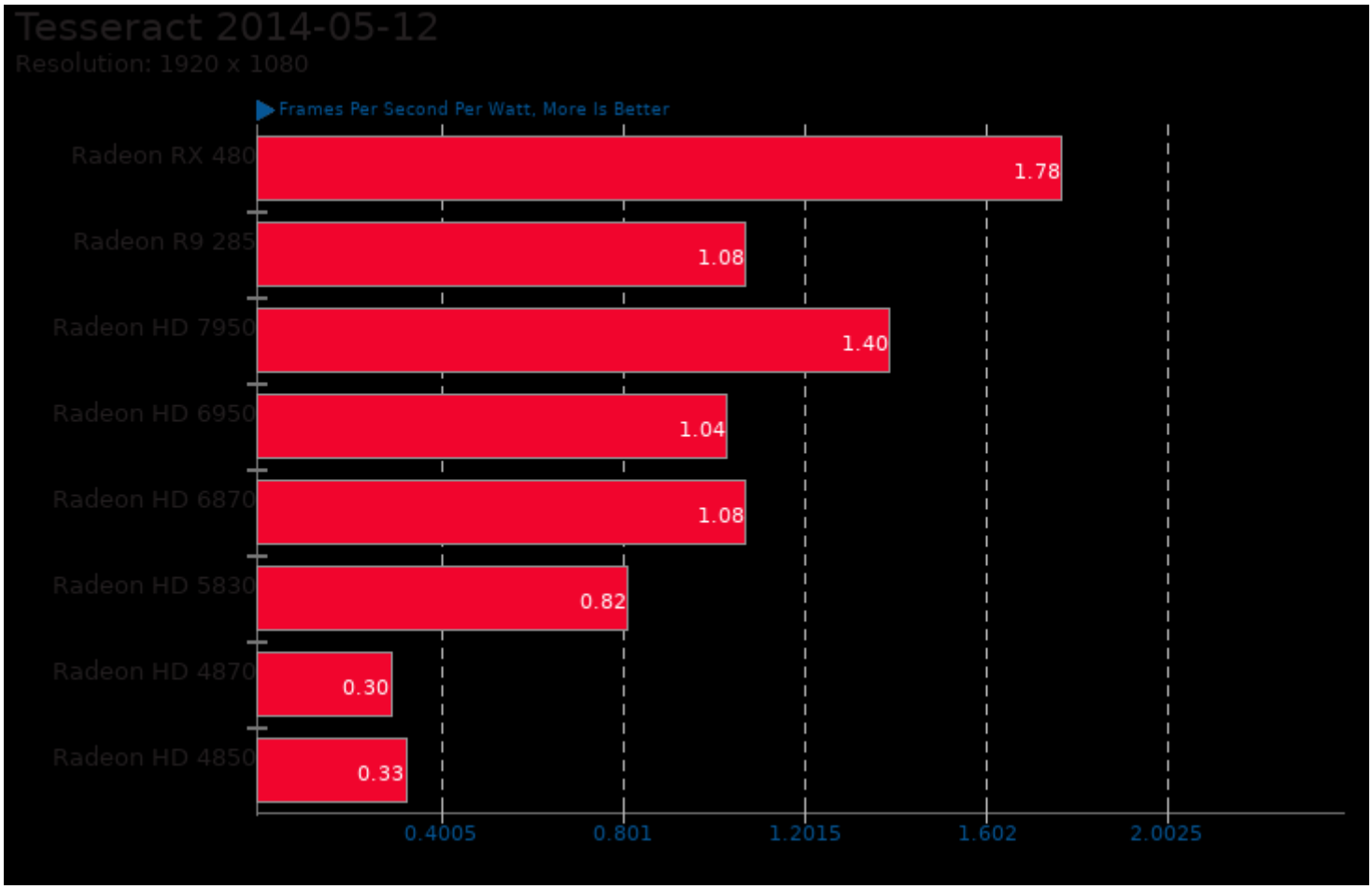
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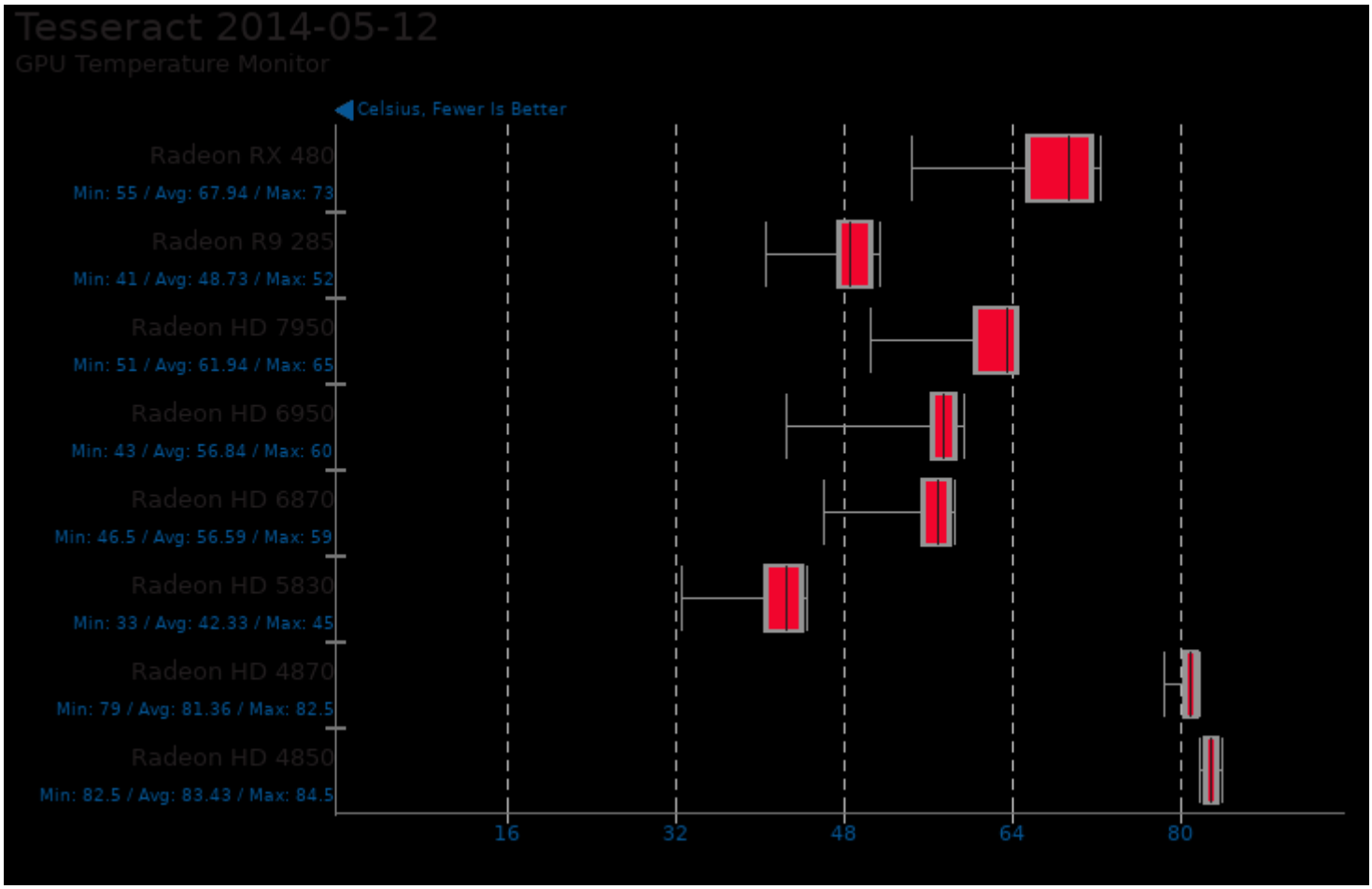
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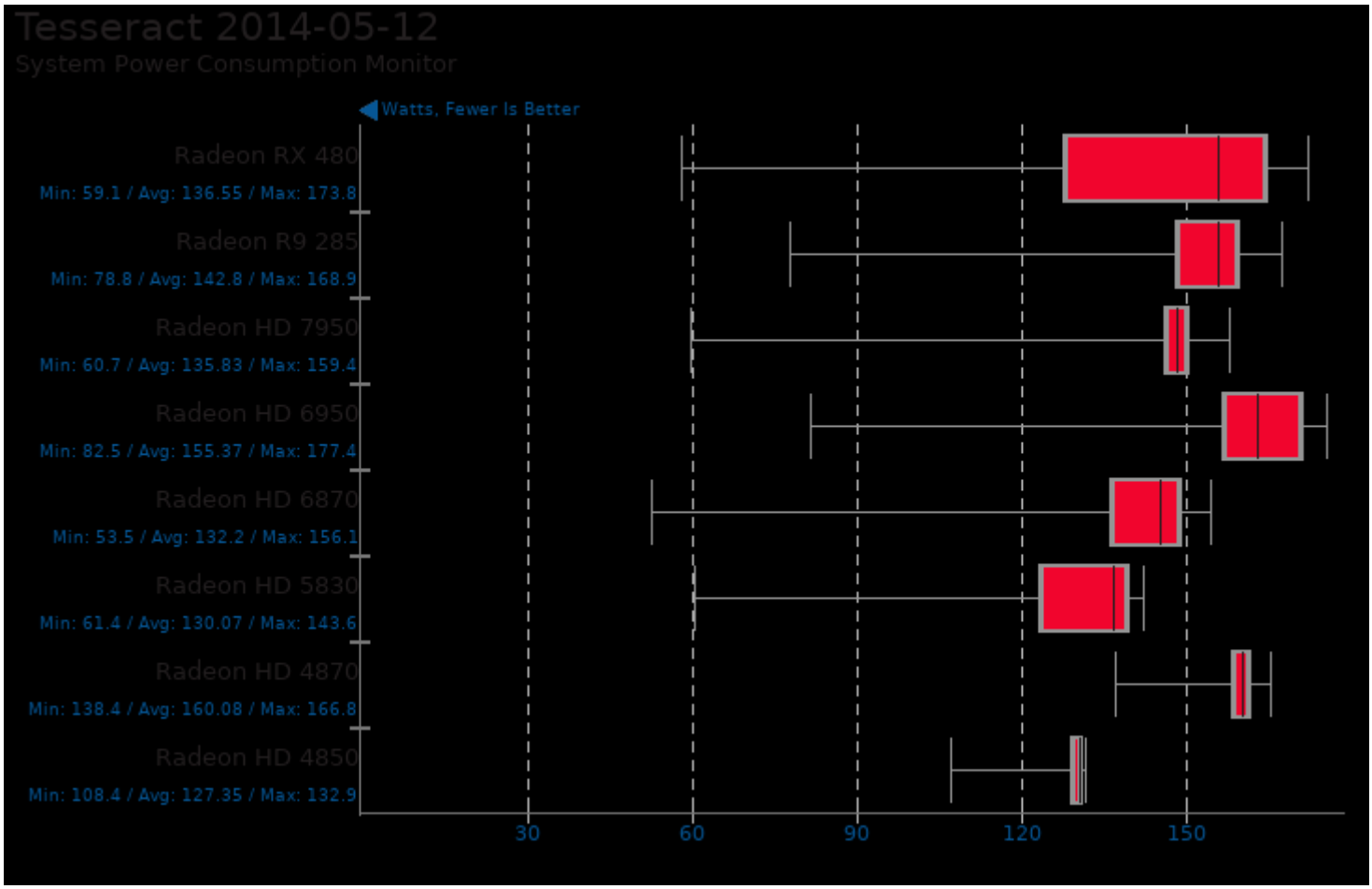
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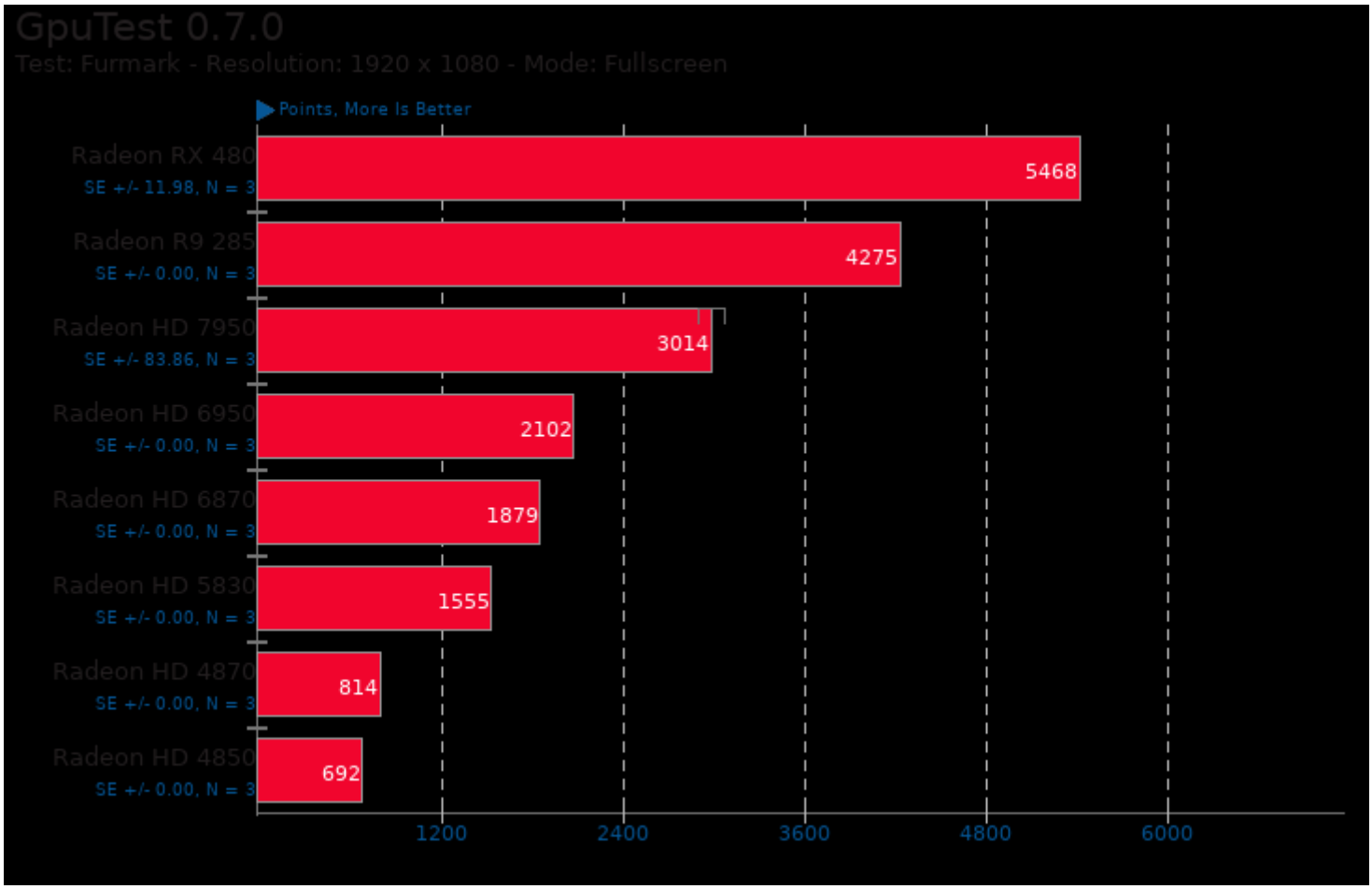
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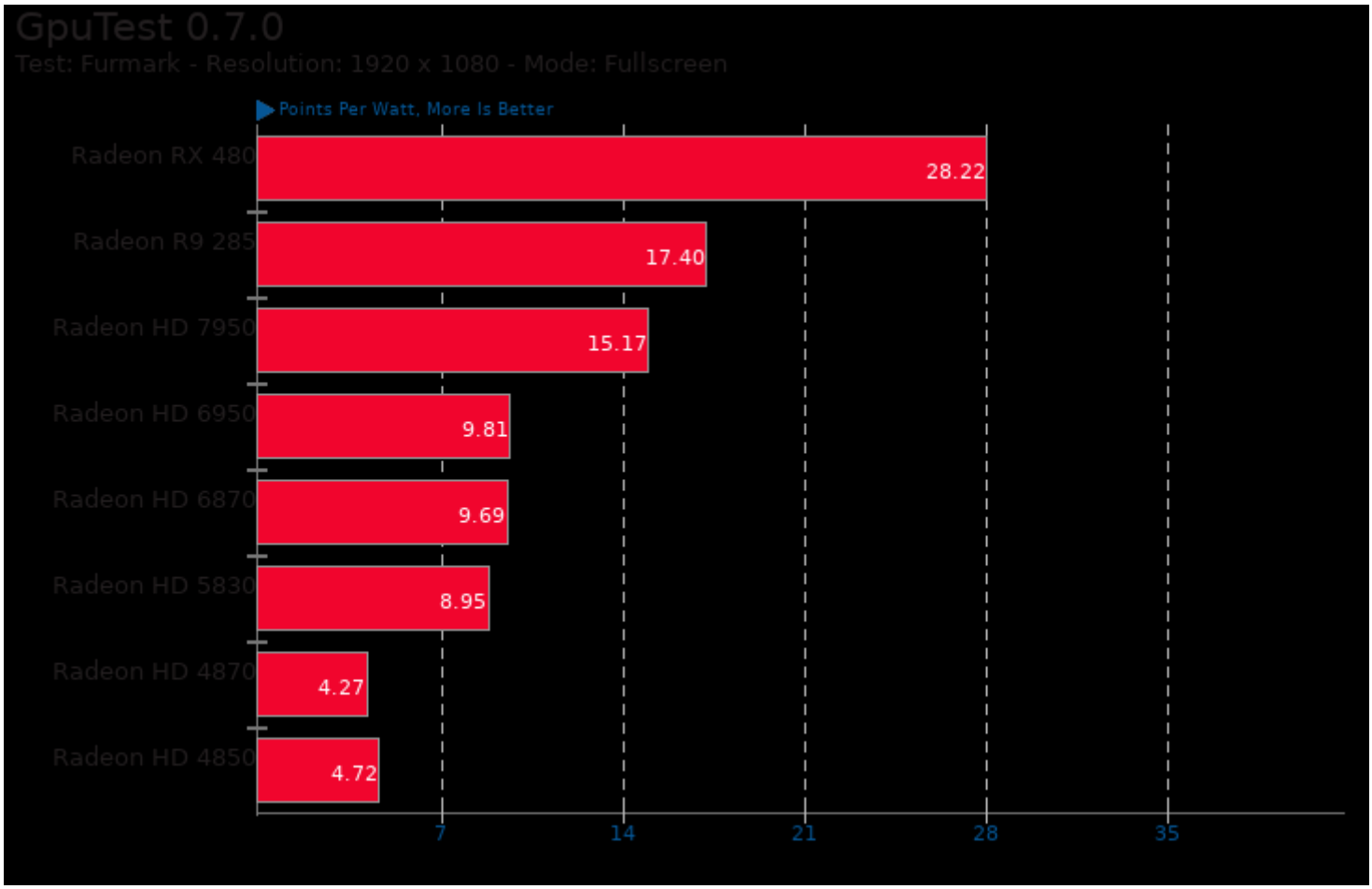
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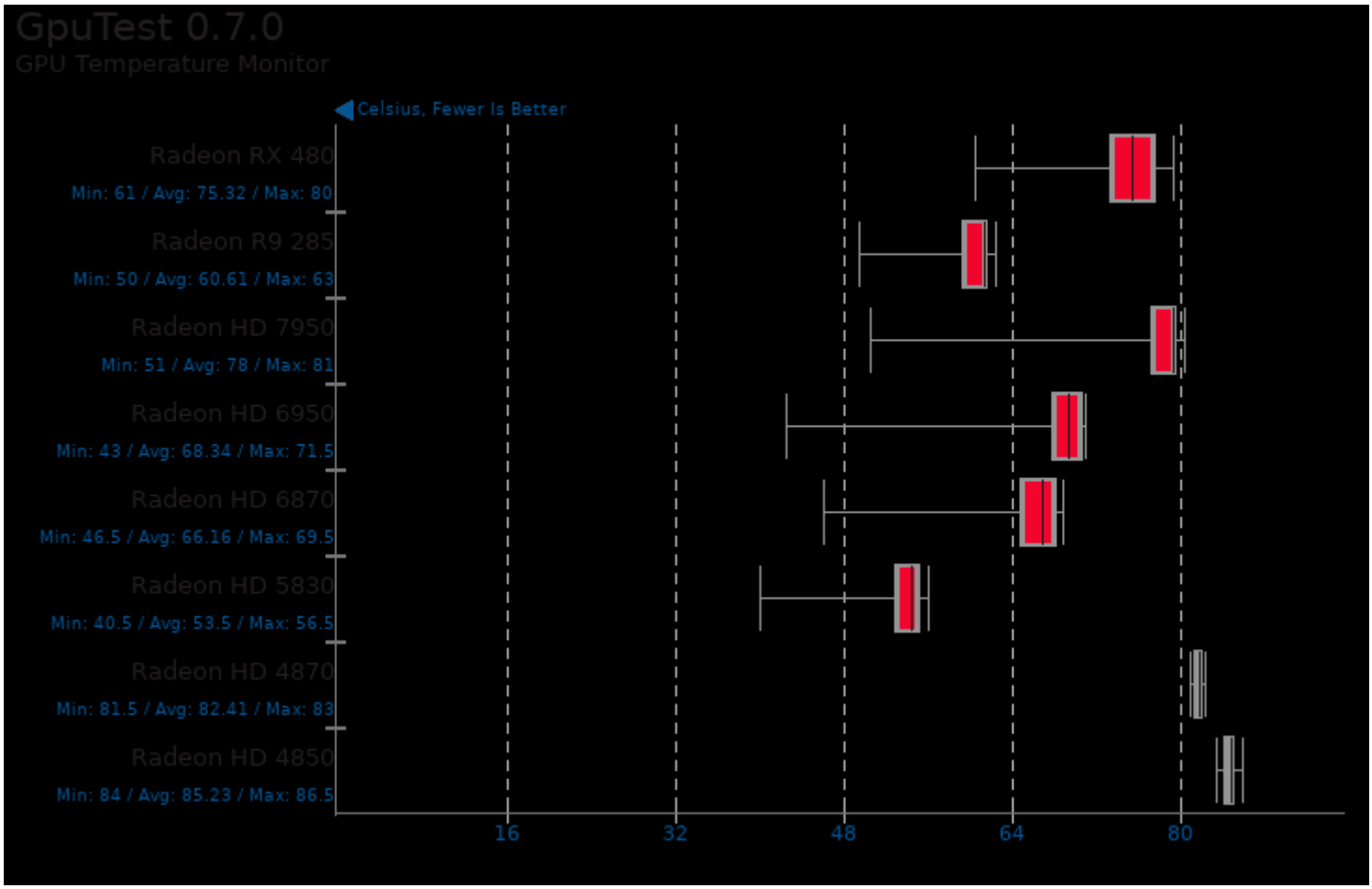
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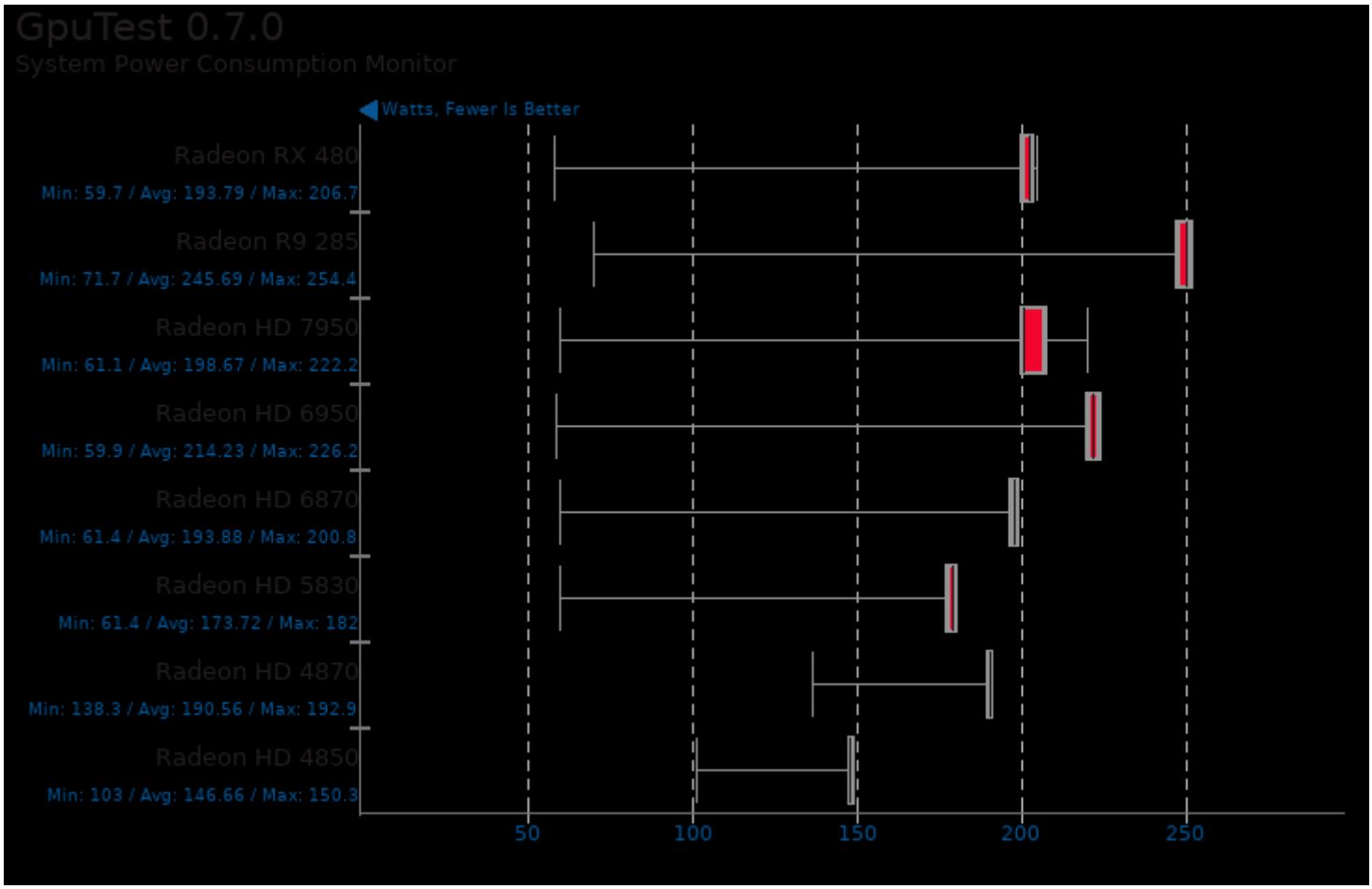
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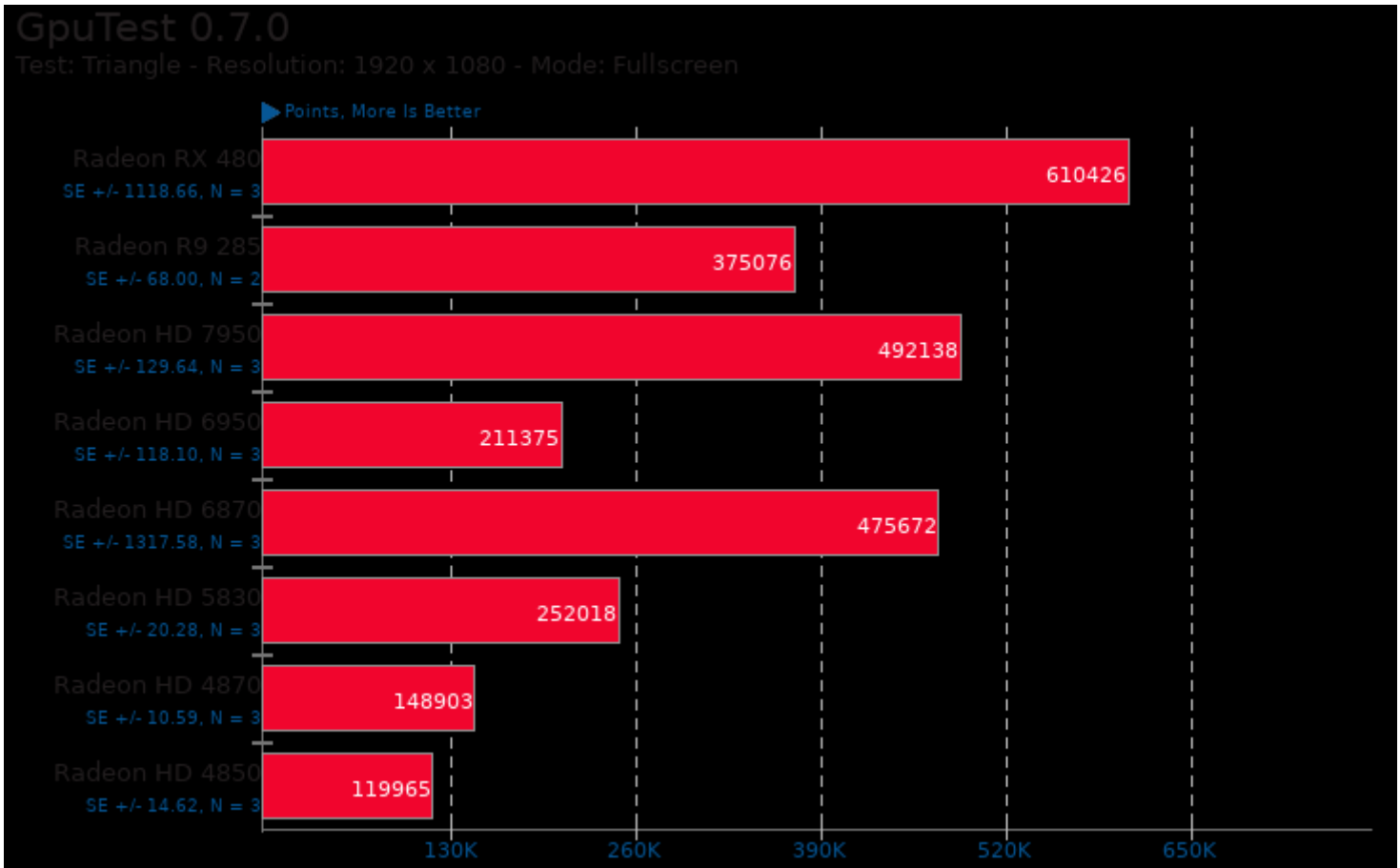
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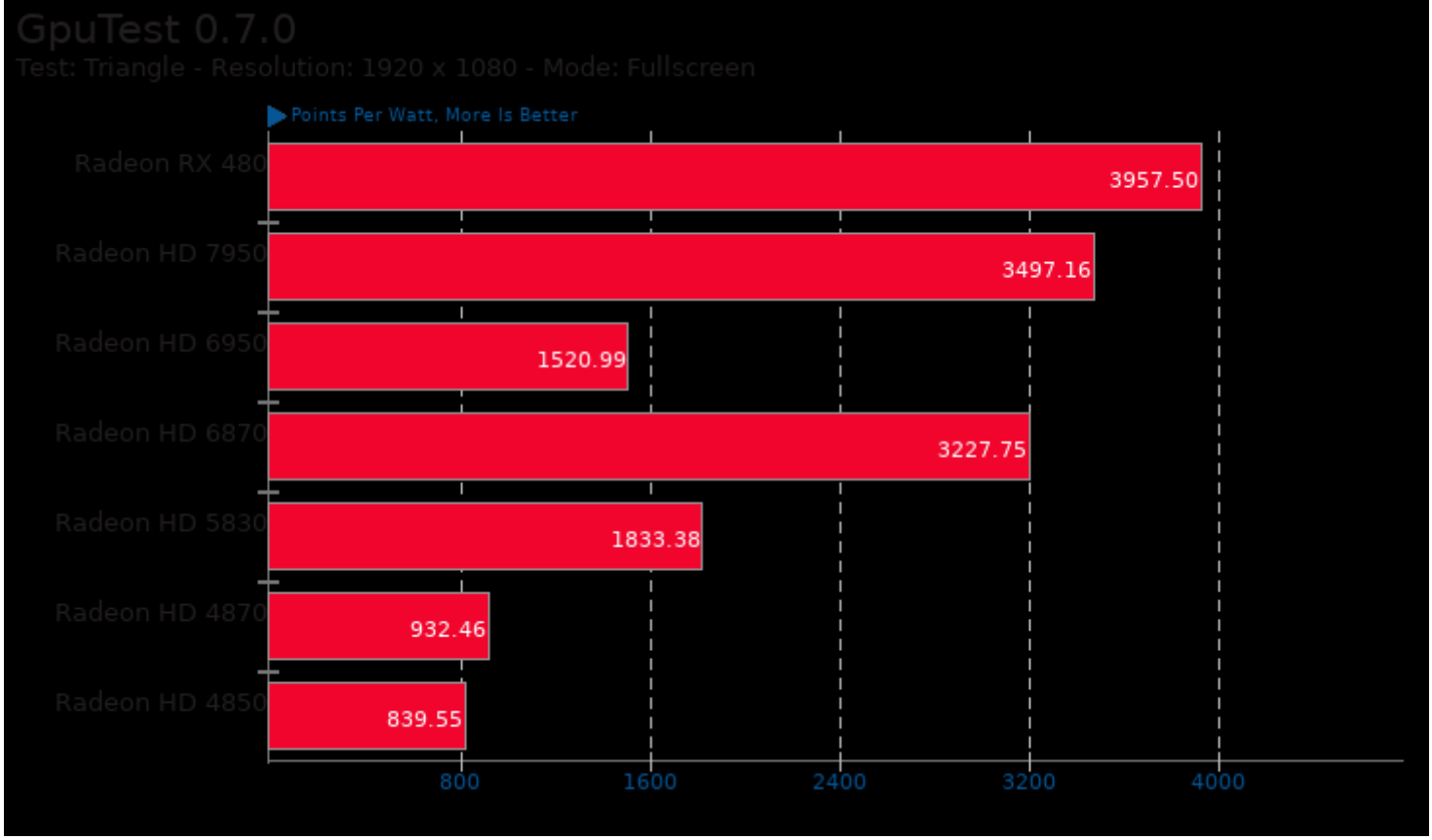


Radeon RX 480 Compared To Past Per Watt

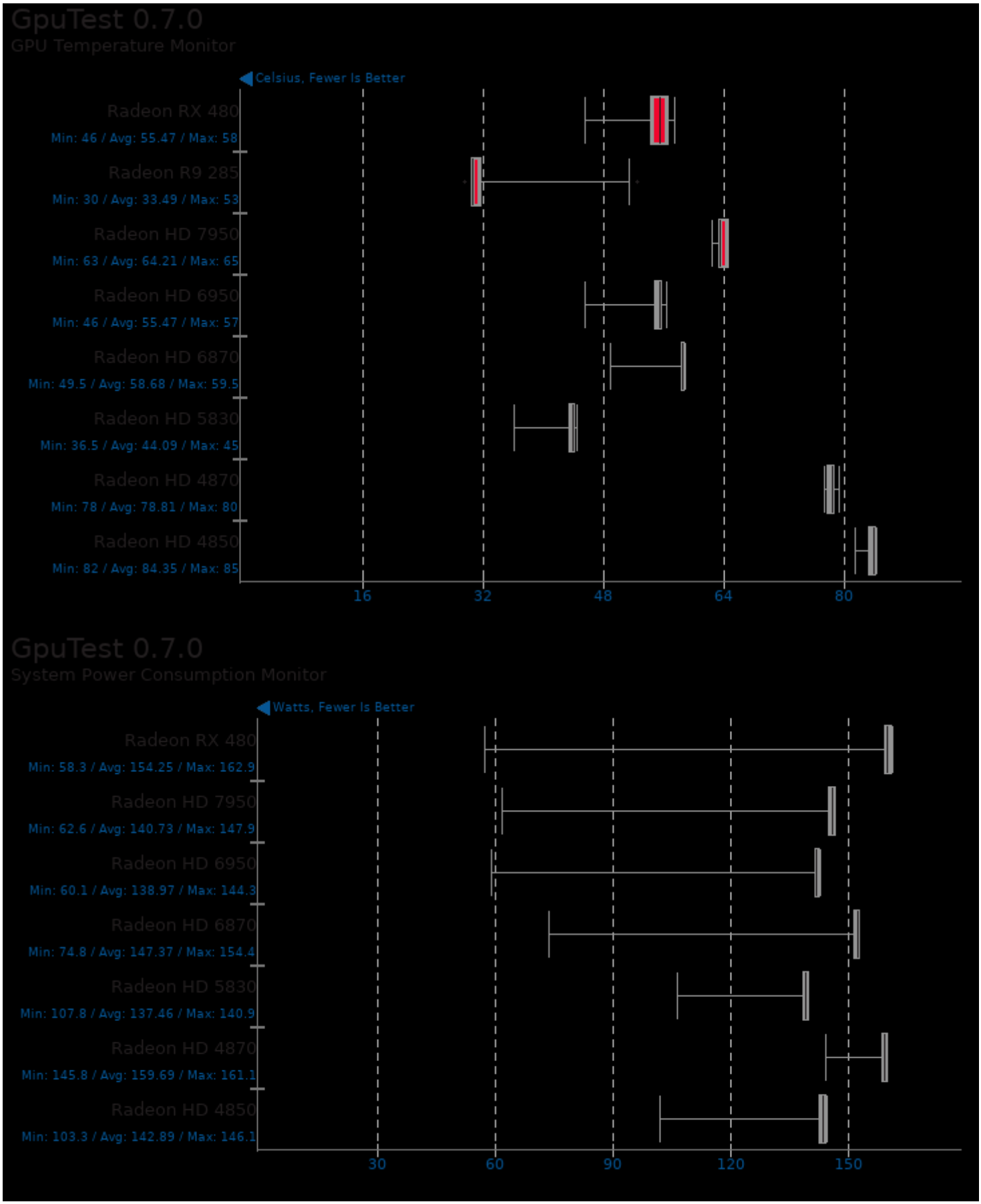


Radeon RX 480 Compared To Past Per Watt

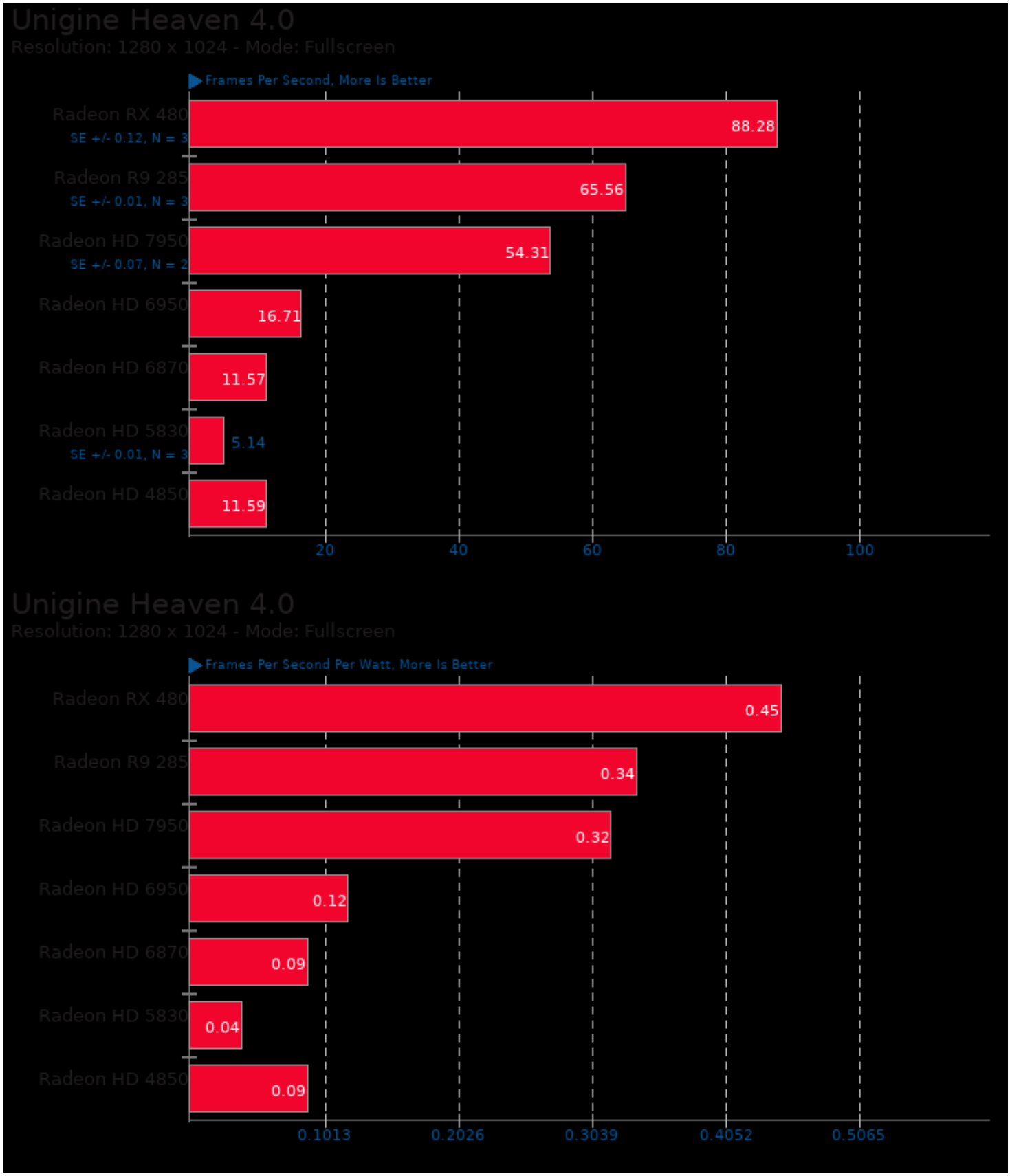




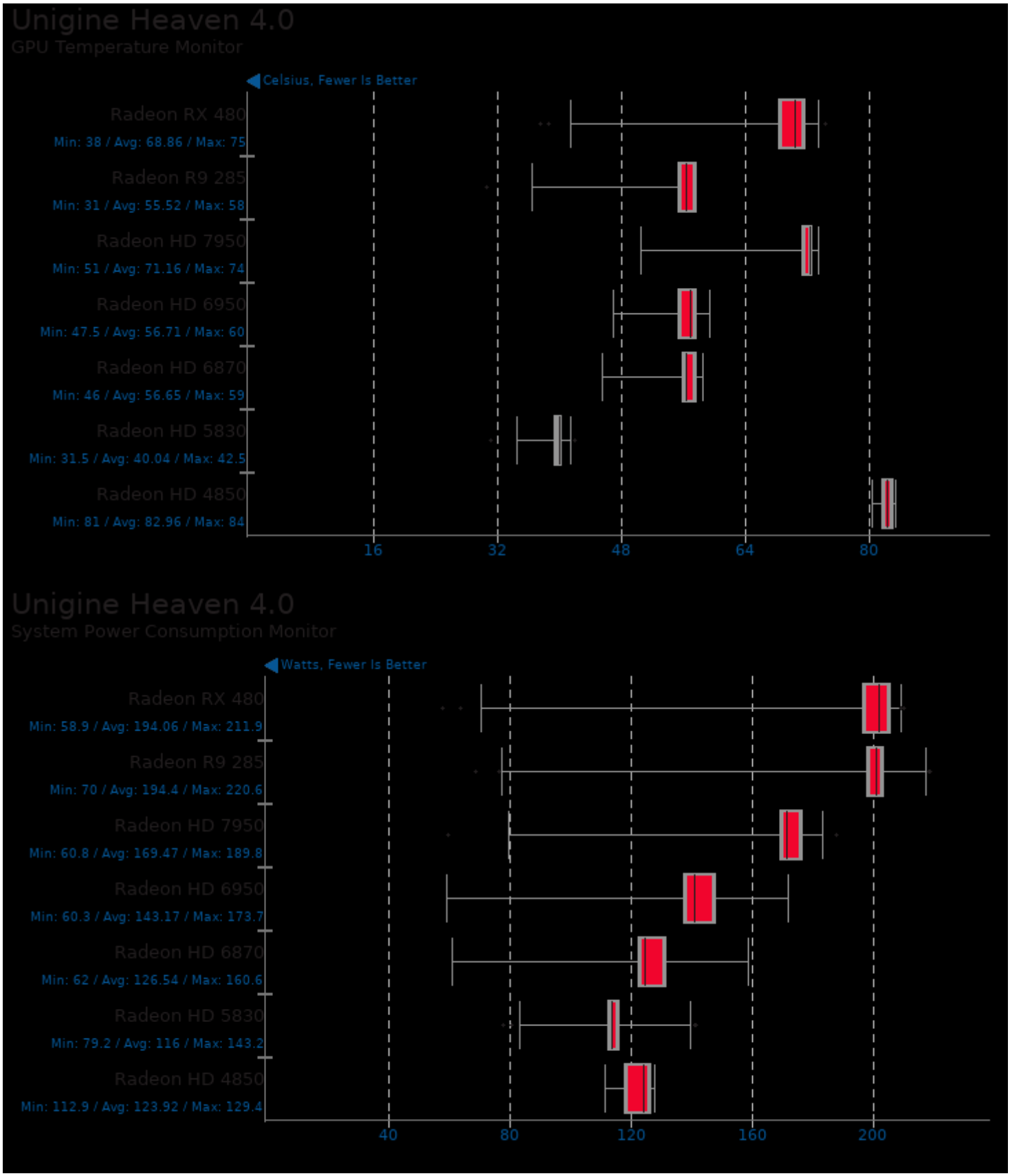
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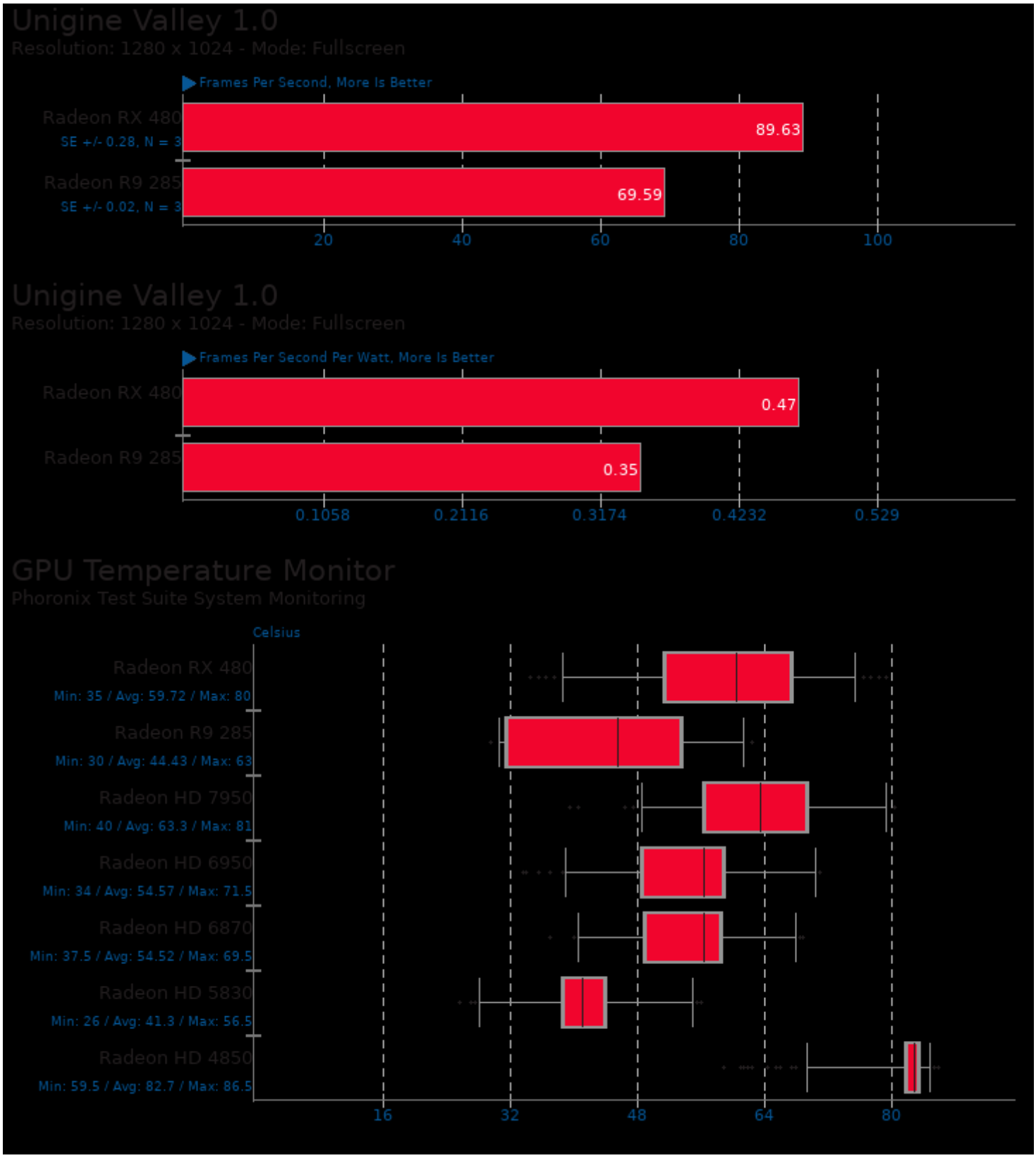
Radeon RX 480 Compared To Past Per Watt



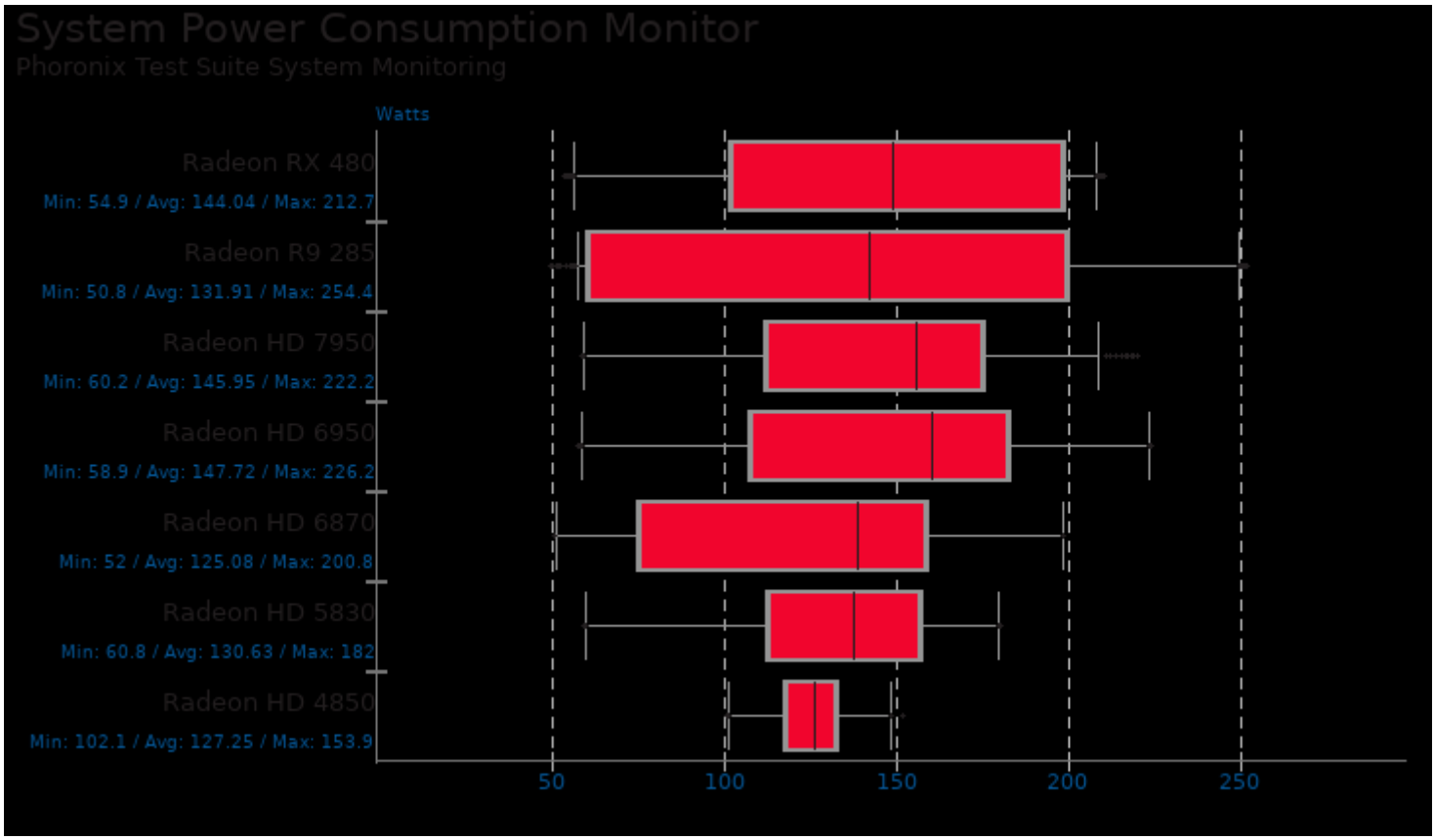
Radeon RX 480 Compared To Past Per Watt



Radeon RX 480 Compared To Past Per Watt

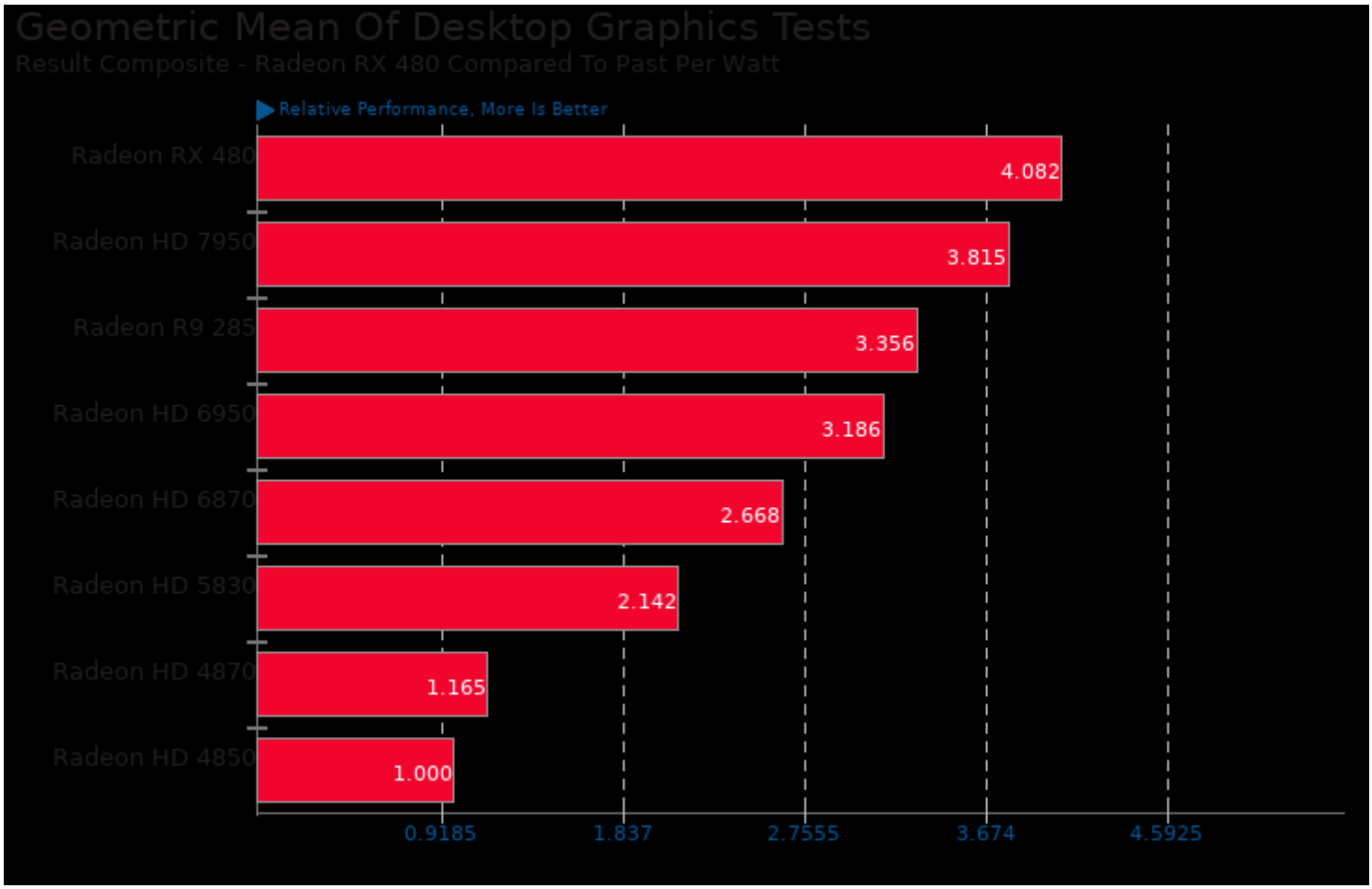


Radeon RX 480 Compared To Past Per Watt



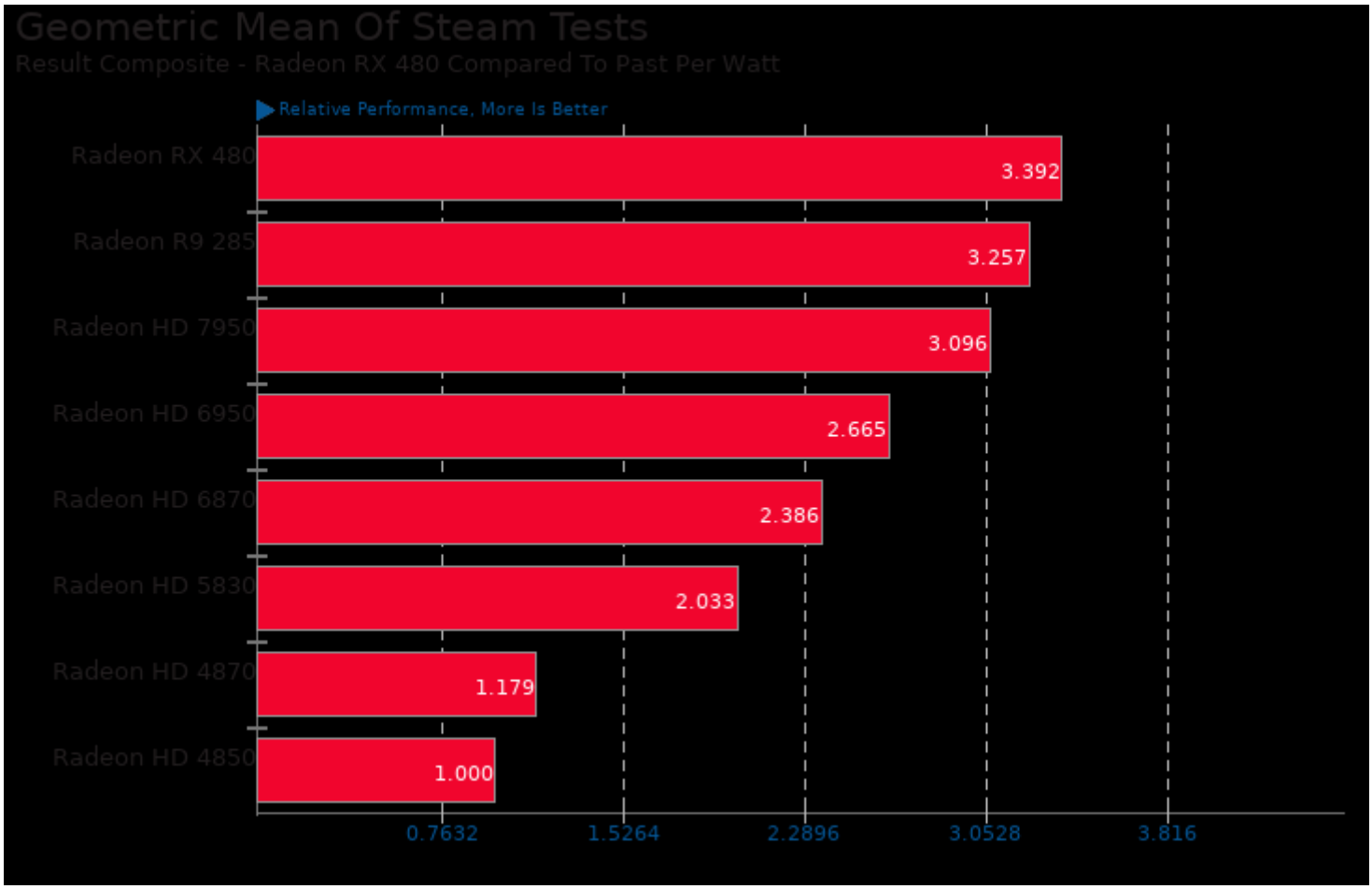
Radeon RX 480 Compared To Past Per Watt

These geometric means are based upon test groupings / test suites for this result file.



Geometric mean based upon tests: pts/xonotic, pts/tesseract, pts/unigine-valley and pts/unigine-heaven

Radeon RX 480 Compared To Past Per Watt



Geometric mean based upon tests: pts/csgo, pts/dota2, pts/insurgency, pts/metro2033-redux, pts/metroll-redux, pts/portal and pts/tf2

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 13:28.