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Ryzen 9 3900X + RX 5700 XT August 2019 vs. EOY2019

Radeon RX 5700 XT Linux benchmarks at EOY 2019 by Michael Larabel.

Automated Executive Summary

EOY 2019 had the most wins, coming in first place for 88% of the tests.

Based on the geometric mean of all complete results, the fastest (EOY 2019) was 1.048x the speed of the slowest (August 2019).

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

Counter-Strike: Global Offensive (Resolution: 2560 x 1440 - Total Frame Time) at 1618.168x
A Total War Saga: THRONES OF BRITANNIA (Resolution: 2560 x 1440 - Graphics Preset: Ultra - Total Frame Time) at 33.116x
Total War: Three Kingdoms (Resolution: 2560 x 1440 - Graphics Preset: Ultra - Scenario: Battle Benchmark - Total Frame Time) at 27.65x
HITMAN 2 (Resolution: 2560 x 1440 - Quality Level: Ultra - Total Frame Time) at 27.288x
HITMAN (Resolution: 2560 x 1440 - Quality Level: Ultra - Total Frame Time) at 17.657x
Total War: Three Kingdoms (Resolution: 2560 x 1440 - Graphics Preset: Medium - Scenario: Battle Benchmark - Total Frame Time) at 15.194x
Total War: WARHAMMER II (Resolution: 2560 x 1440 - Graphics Preset: High - Scenario: Skaven Battle - Total Frame

Time) at 12.447x
Total War: WARHAMMER II (Resolution: 2560 x 1440 - Graphics Preset: High - Scenario: Fallen Gates Battle - Total Frame Time) at 8.885x
HITMAN 2 (Resolution: 2560 x 1440 - Quality Level: Medium - Total Frame Time) at 7.619x
Unigine Superposition (Resolution: 2560 x 1440 - Mode: Fullscreen - Quality: High - Renderer: OpenGL) at 1.142x.

Test Systems:

August 2019

Processor: AMD Ryzen 9 3900X 12-Core @ 3.80GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (0803 BIOS), Chipset: AMD Starship/Matisse, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB + 2000GB SABRENT, Graphics: AMD Navi 10 8GB, Audio: AMD Navi 10 HDMI Audio, Monitor: Acer B286HK, Network: Realtek Device 8125 + Intel I211 + Intel Device 2723

OS: Ubuntu 19.04, Kernel: 5.3.0-999-generic (x86_64) 20190819, Desktop: GNOME Shell 3.32.2, Display Server: X Server 1.20.4, OpenGL: 4.5 Mesa 19.2.0-devel (git-7c56a68 2019-08-20 disco-oibaf-ppa) (LLVM 9.0.0), Vulkan: 1.1.107, Compiler: GCC 8.3.0 + LLVM 9.0.0, File-System: ext4, Screen Resolution: 3840x2160

Processor Notes: Scaling Governor: acpi-cpufreq performance
Security Notes: l1tf: Not affected + mds: Not affected + meltdown: 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 Full AMD retpoline IBPB: conditional STIBP: always-on RSB filling

EOY 2019

Processor: AMD Ryzen 9 3900X 12-Core @ 3.80GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (1001 BIOS), Chipset: AMD Starship/Matisse, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB + 2000GB SABRENT, Graphics: AMD Navi 10 8GB, Audio: AMD Navi 10 HDMI Audio, Monitor: Acer B286HK, Network: Realtek Device 8125 + Intel I211 + Intel Device 2723

OS: Ubuntu 19.10, Kernel: 5.5.0-999-generic (x86_64) 20191228, Desktop: GNOME Shell 3.34.1, Display Server: X Server 1.20.5, Display Driver: amdgpu 19.0.1, OpenGL: 4.6 Mesa 20.0.0-devel (git-b0203b5 2019-12-29 eoan-oibaf-ppa) (LLVM 9.0.1), Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 3840x2160

Processor Notes: Scaling Governor: acpi-cpufreq performance - CPU Microcode: 0x8701013
Graphics Notes: GLAMOR
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: 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 Full AMD retpoline IBPB: conditional STIBP: always-on RSB filling + tsx_async_abort: Not affected

	August 2019	EOY 2019
Unigine Heaven - 2560 x 1440 - Fullscreen - OpenGL (FPS)	138.57	144.066
Normalized	96.19%	100%

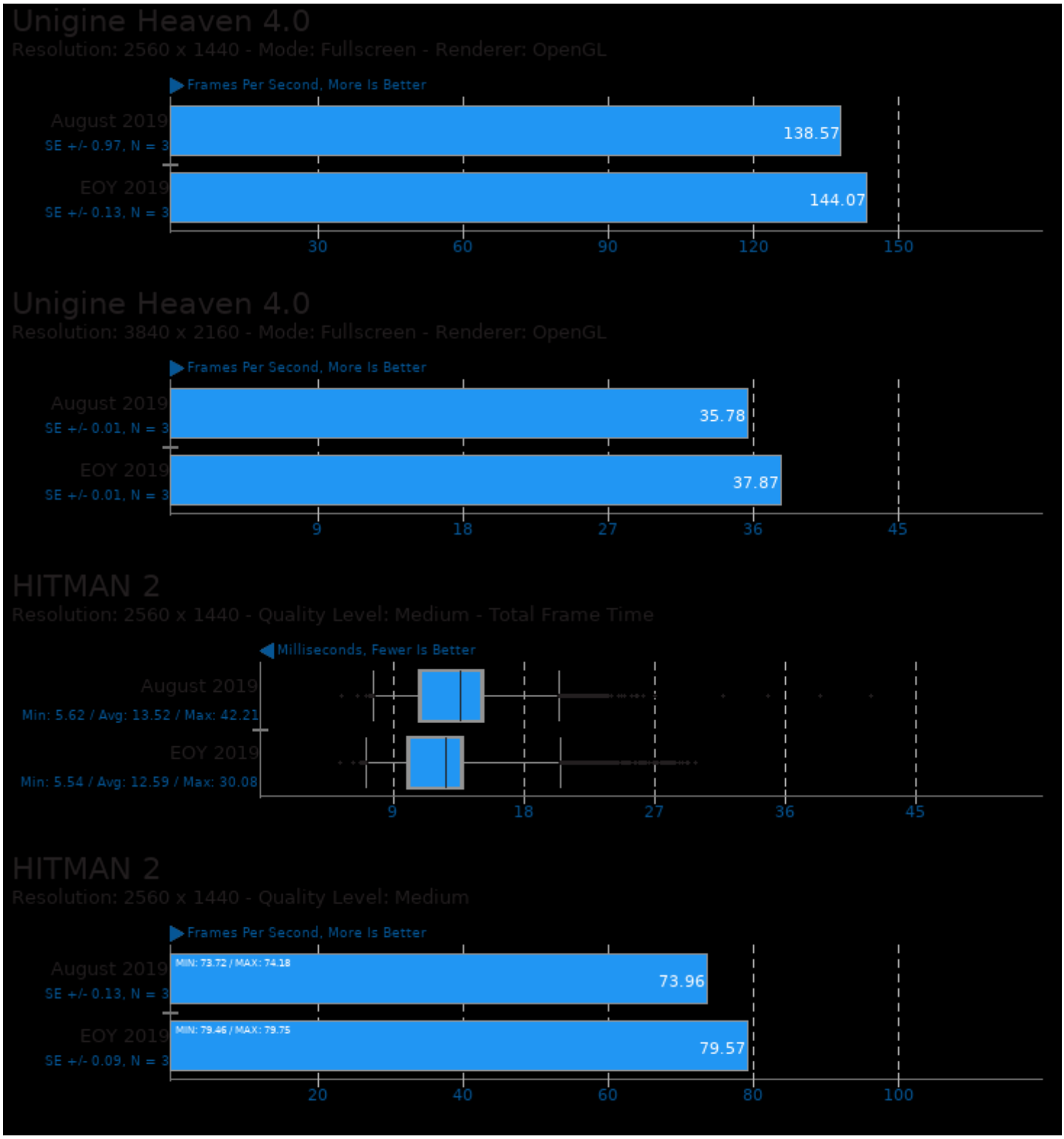
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Standard Deviation	1.2%	0.2%
Unigine Heaven - 3840 x 2160 - Fullscreen - OpenGL (FPS)	**35.78**	**37.8743**
Normalized	94.47%	100%
Standard Deviation	0%	0%
HITMAN 2 - 2560 x 1440 - Medium (FPS)	**73.96**	**79.57**
Normalized	92.95%	100%
Standard Deviation	0.3%	0.2%
HITMAN 2 - 2560 x 1440 - Ultra (FPS)	**68.63**	**74.04**
Normalized	92.69%	100%
Standard Deviation	0.2%	0.1%
Unigine Superposition - 2560 x 1440 - Fullscreen - High - OpenGL (FPS)	**66.90**	**76.4**
Normalized	87.57%	100%
Standard Deviation	0.4%	0.2%
Unigine Superposition - 3840 x 2160 - Fullscreen - High - OpenGL (FPS)	**22.17**	**24.2**
Normalized	91.61%	100%
Standard Deviation	0.3%	0%
HITMAN - 2560 x 1440 - Ultra (FPS)	**84.47**	**84.28**
Normalized	100%	99.78%
Standard Deviation	0.2%	0.4%
A Total War Saga: THRONES OF BRITANNIA - 2560 x 1440 - Ultra (FPS)	**65.10**	**68.3**
Normalized	95.31%	100%
Standard Deviation	1%	1%
Total War: Three Kingdoms - 2560 x 1440 - Medium - Battle Benchmark (FPS)	**78.37**	**82.3**
Normalized	95.22%	100%
Standard Deviation	0.1%	0.6%
Total War: Three Kingdoms - 2560 x 1440 - Ultra - Battle Benchmark (FPS)	**41.30**	**43.7**
Normalized	94.51%	100%
Standard Deviation	0.2%	0.3%
Total War: WARHAMMER II - 2560 x 1440 - High - Skaven Battle (FPS)	**87.40**	**85.8**
Normalized	100%	98.17%
Standard Deviation	2.7%	0.4%
SuperTuxKart - 2560 x 1440 - Fullscreen - Ultimate - 4 - Candela City (FPS)	**198.47**	**210.859370**
Normalized	94.12%	100%
Standard Deviation	0.8%	2.8%
Strange Brigade - 2560 x 1440 - Medium (FPS)	**139.23**	**141.5**
Normalized	98.4%	100%
Standard Deviation	0.2%	0.4%
Strange Brigade - 2560 x 1440 - Ultra (FPS)	**123.13**	**125.9**
Normalized	97.8%	100%
Standard Deviation	0.4%	0.1%
Strange Brigade - 3840 x 2160 - Medium (FPS)	**84.63**	**86.0**
Normalized	98.41%	100%
Standard Deviation	0.3%	0.4%
Strange Brigade - 3840 x 2160 - Ultra (FPS)	**76.00**	**78.0**
Normalized	97.44%	100%
Standard Deviation	0.1%	0.3%

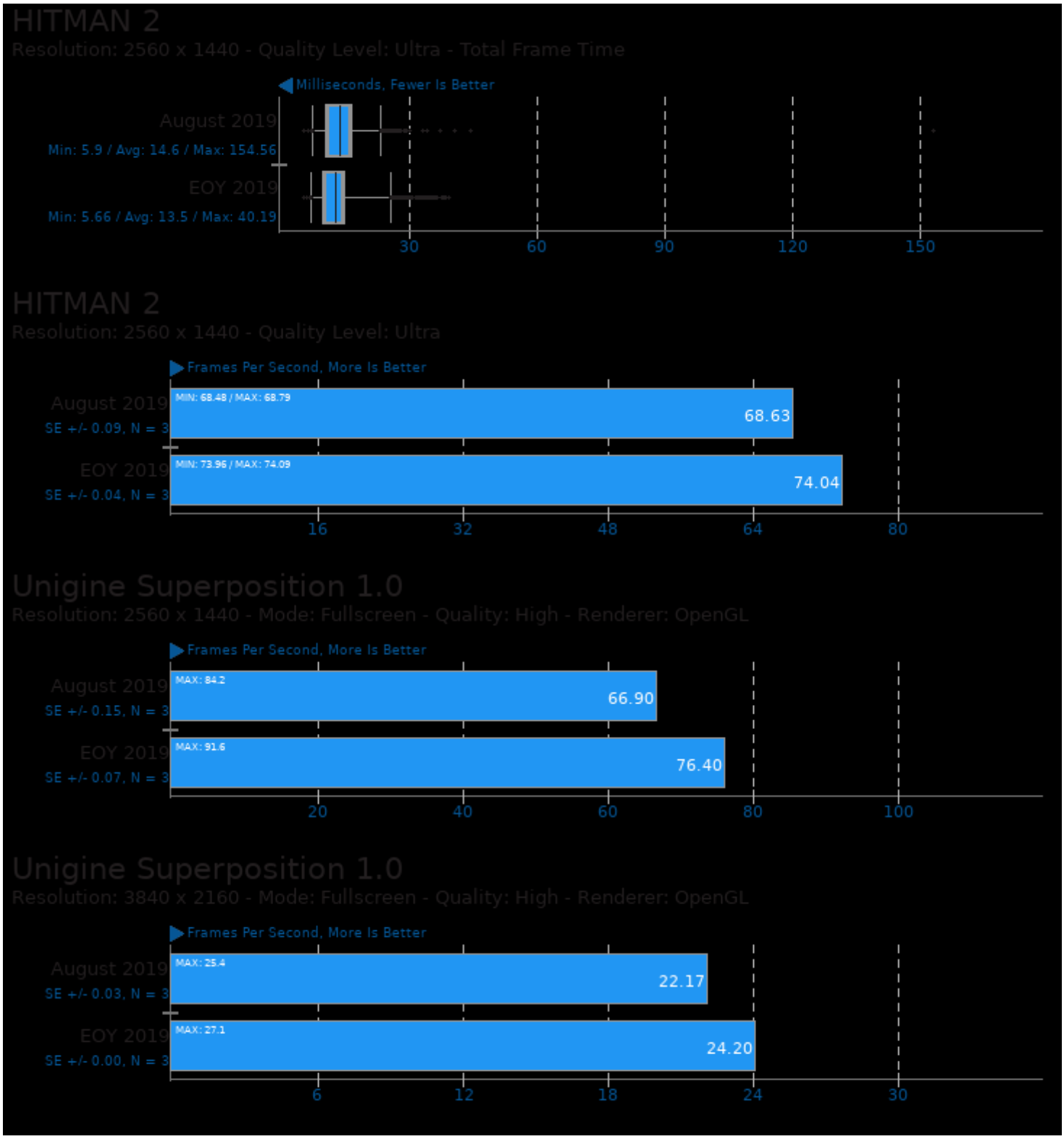
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Total War: WARHAMMER II - 2560 x 1440 - High - F.G.B (FPS)	**74.70**	**71.2**
Normalized	100%	95.31%
Standard Deviation	0.2%	0.1%
SuperTuxKart - 2560 x 1440 - Fullscreen - Ultimate - 4 - Cocoa Temple (FPS)	**181.25**	**190.094734**
Normalized	95.35%	100%
Standard Deviation	0.9%	2.9%
SuperTuxKart - 3840 x 2160 - Fullscreen - Ultimate - 4 - Candela City (FPS)	**68.73**	**74.755814**
Normalized	91.94%	100%
Standard Deviation	0.3%	0.7%
SuperTuxKart - 3840 x 2160 - Fullscreen - Ultimate - 4 - Cocoa Temple (FPS)	**64.24**	**70.218175**
Normalized	91.49%	100%
Standard Deviation	1.2%	0.9%
Counter-Strike: Global Offensive - 2560 x 1440 (FPS)	**275.33**	**276.7**
Normalized	99.5%	100%
Standard Deviation	1.9%	0.6%
Dota 2 - 3840 x 2160 - Vulkan (FPS)	**123.27**	**131.3**
Normalized	93.88%	100%
Standard Deviation	0.3%	4.2%
Dota 2 - 3840 x 2160 - OpenGL (FPS)	**127.73**	**134.5**
Normalized	94.97%	100%
Standard Deviation	0.4%	2.9%
Xonotic - 3840 x 2160 - Ultimate (FPS)	**293.37**	**312.3099938**
Normalized	93.94%	100%
Standard Deviation	0.2%	0.6%
Xonotic - 3840 x 2160 - Ultra (FPS)	**357.73**	**392.7024508**
Normalized	91.09%	100%
Standard Deviation	0.7%	1.4%
Tesseract - 3840 x 2160 (FPS)	**396.76**	**410.0981**
Normalized	96.75%	100%
Standard Deviation	1.1%	1.7%

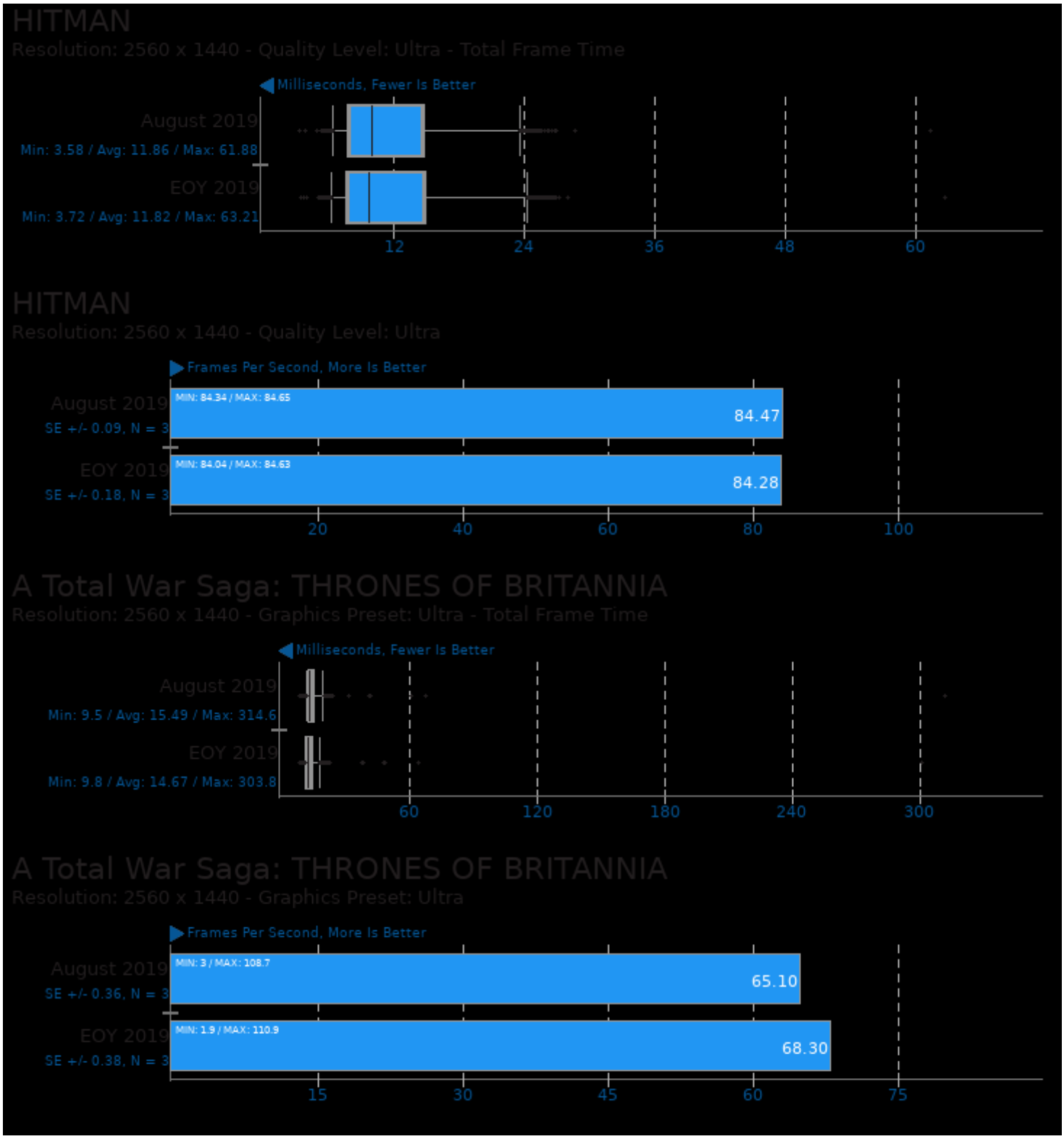
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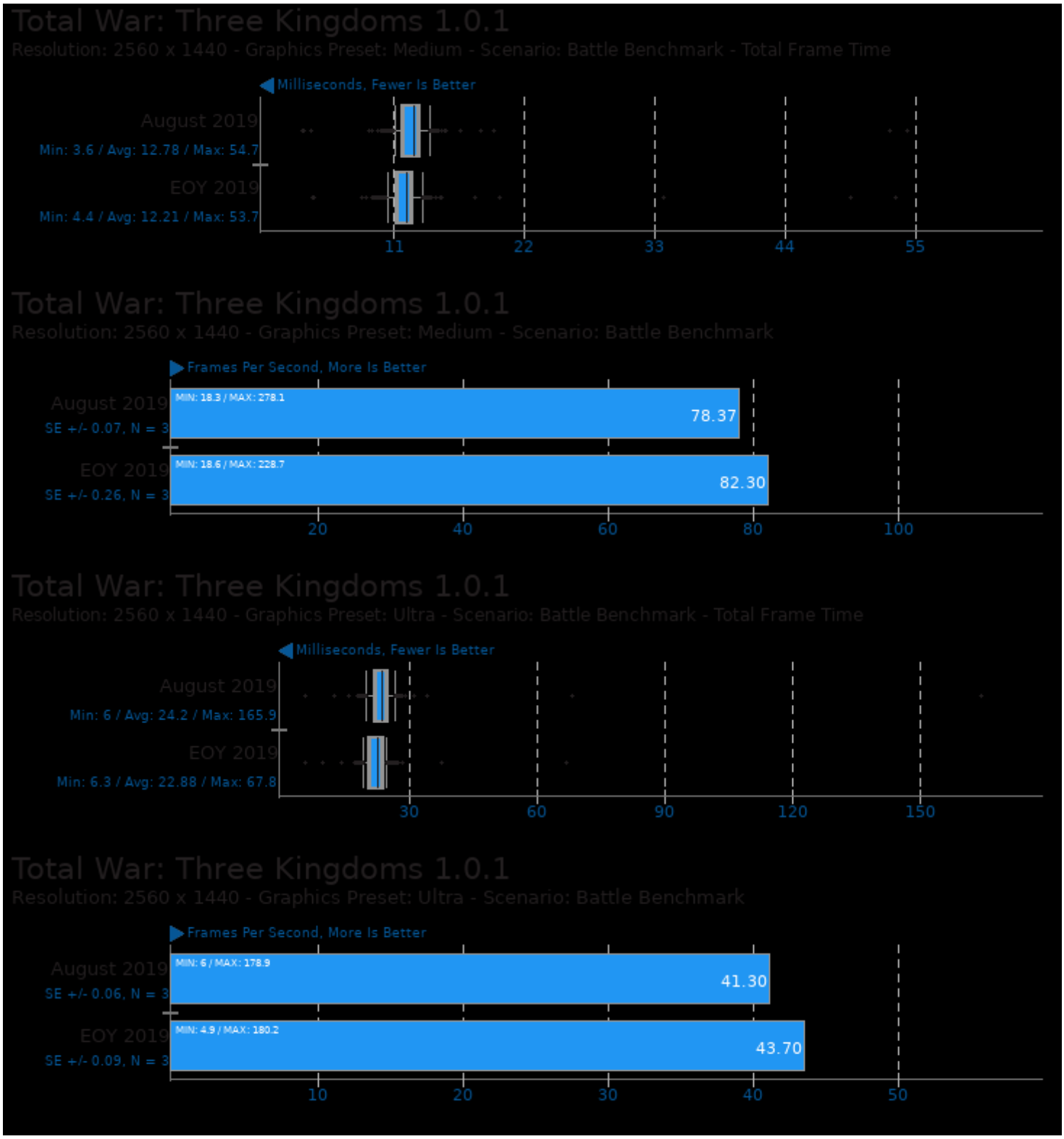
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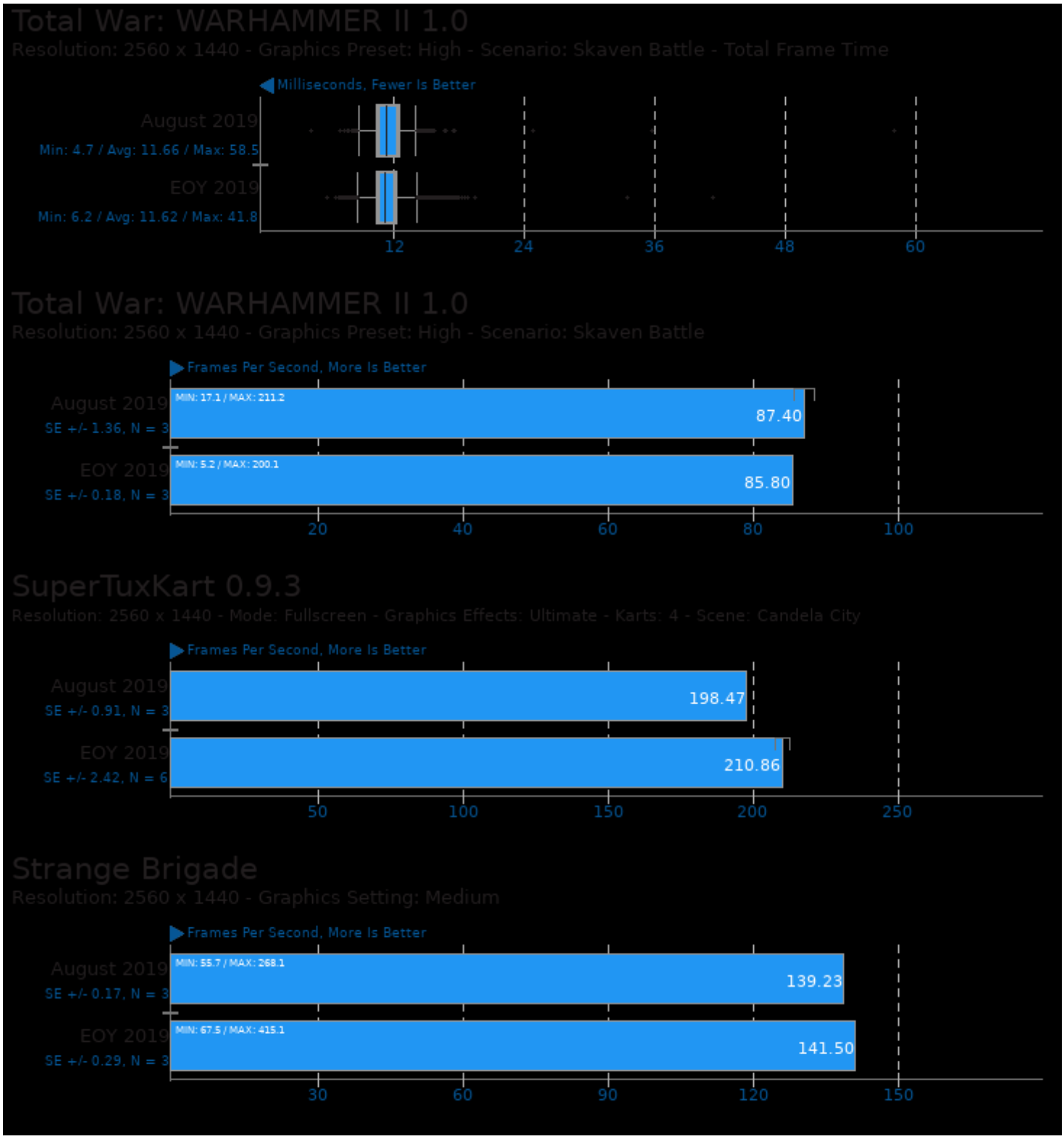
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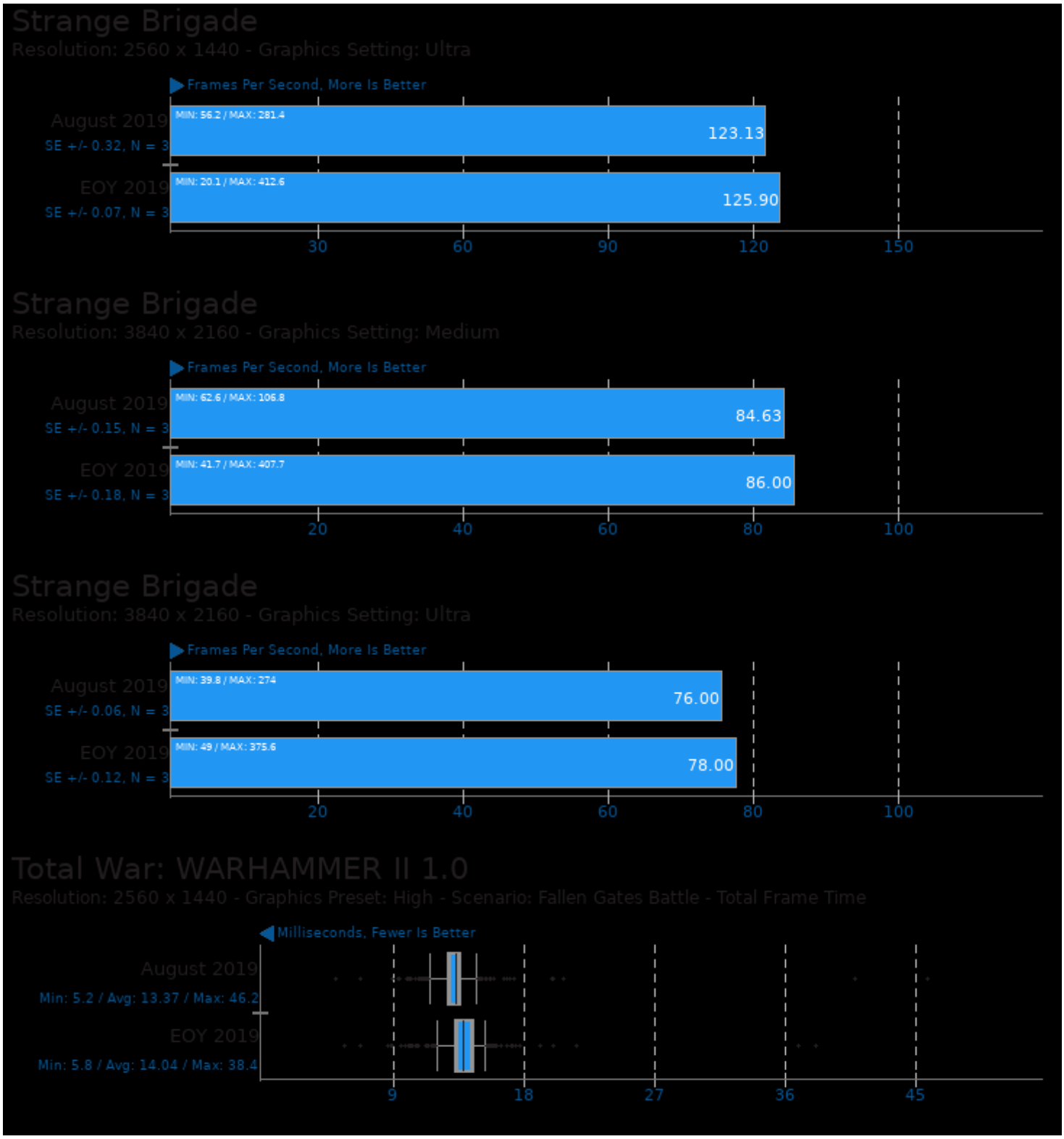
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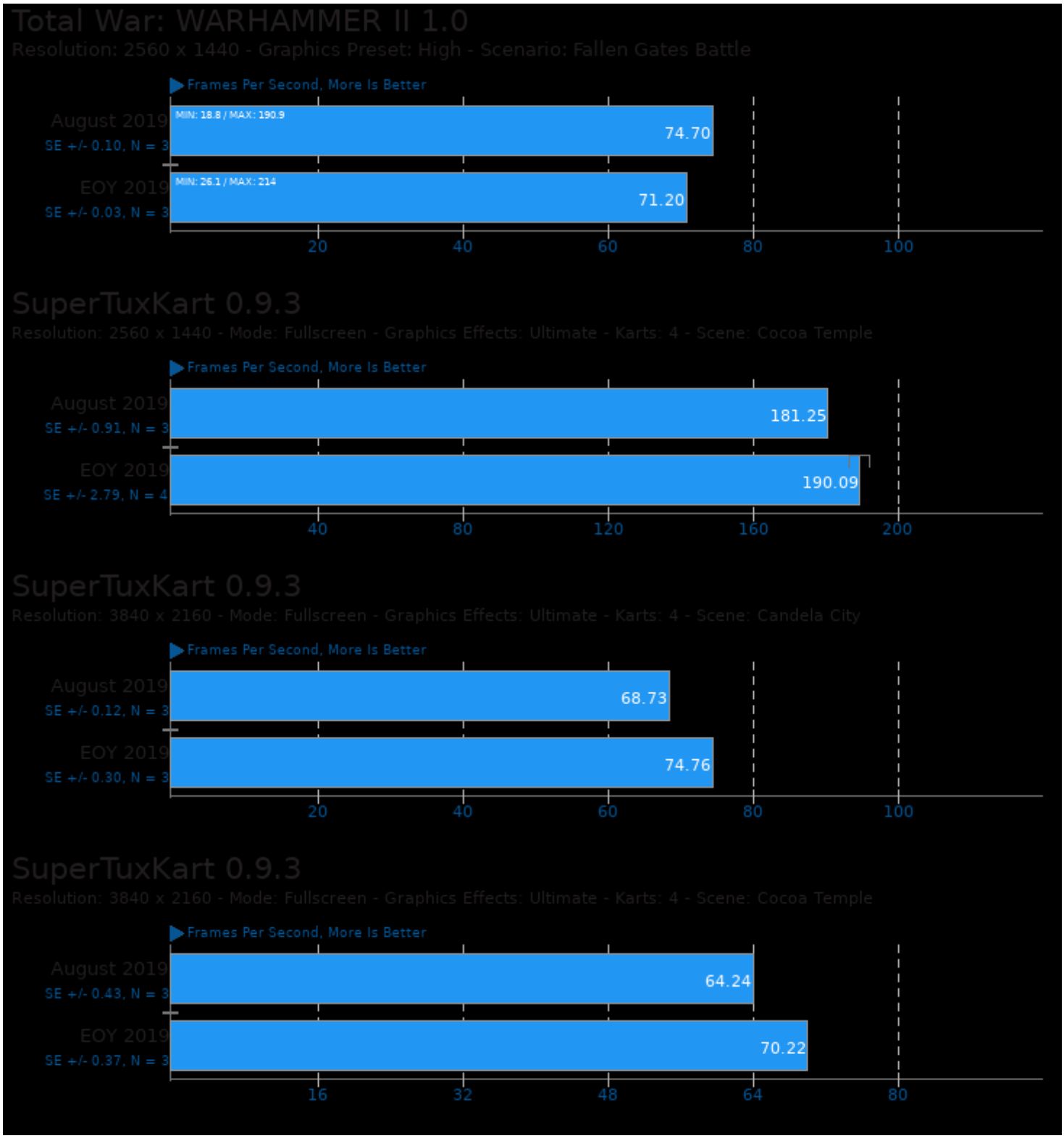
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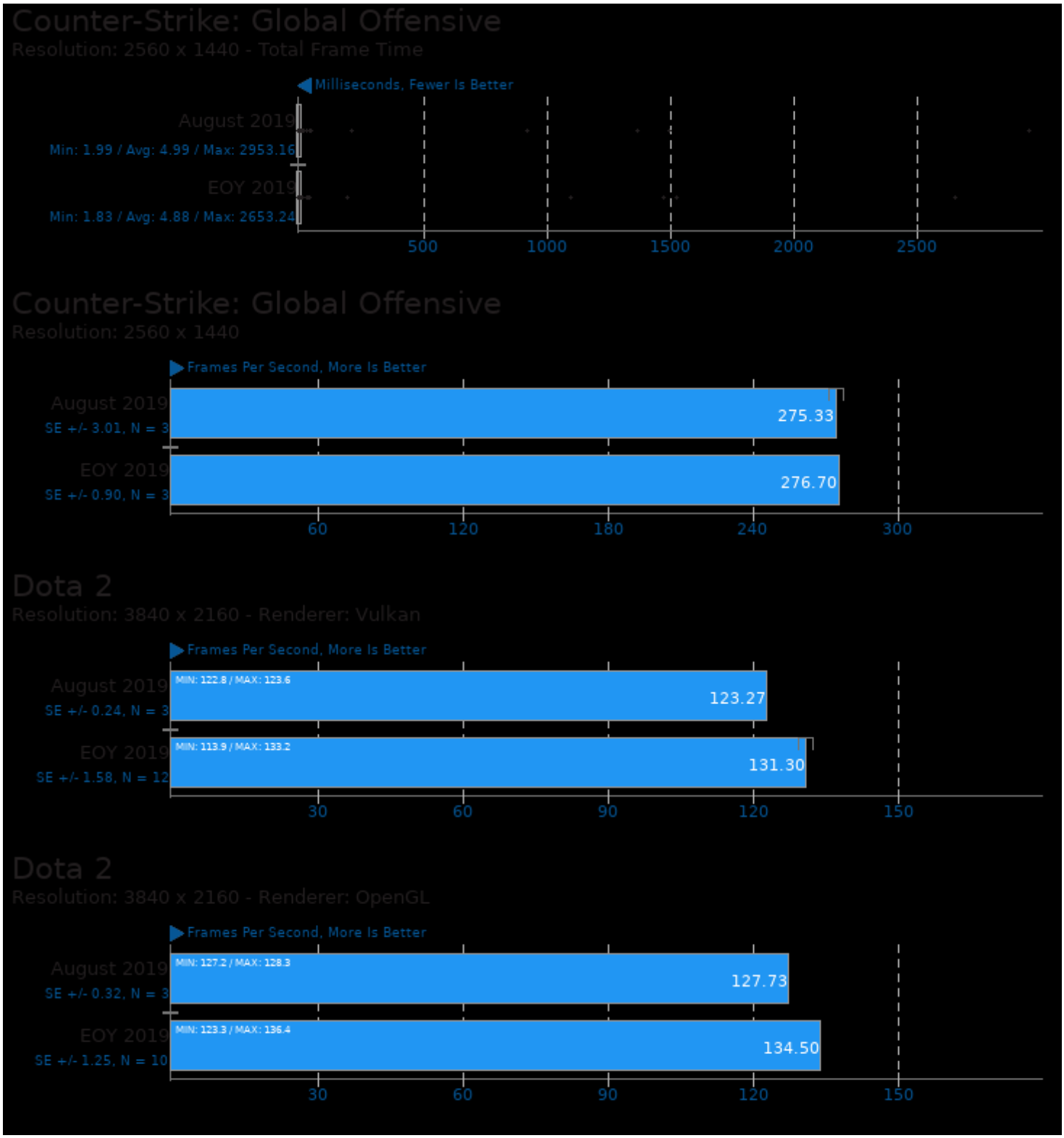
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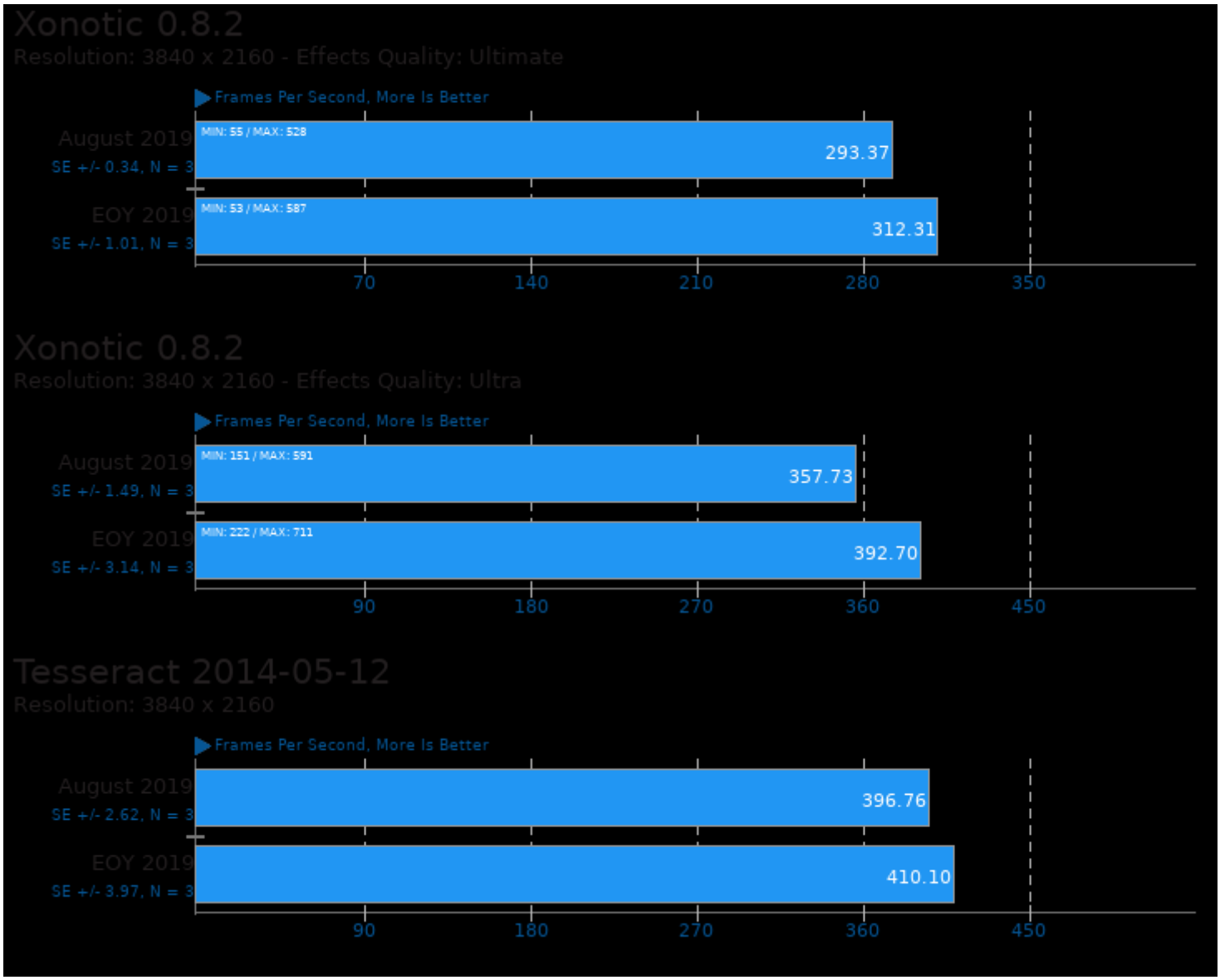
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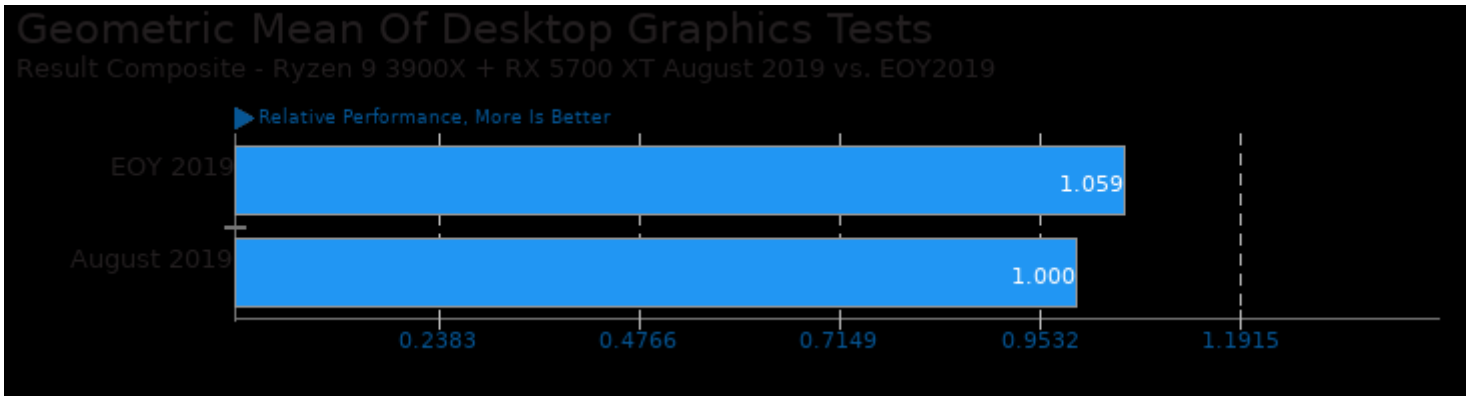


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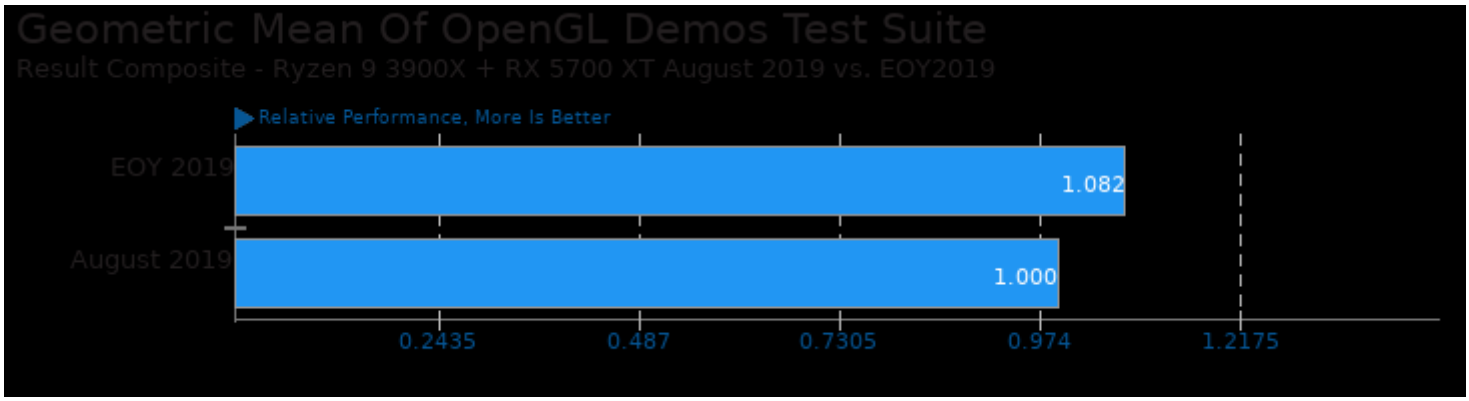


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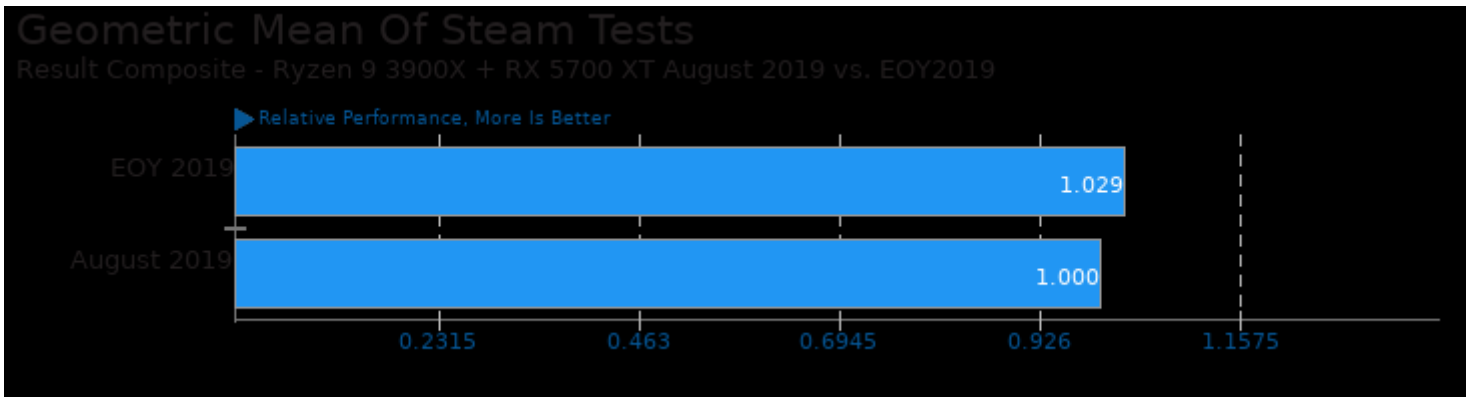
These geometric means are based upon test groupings / test suites for this result file.



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

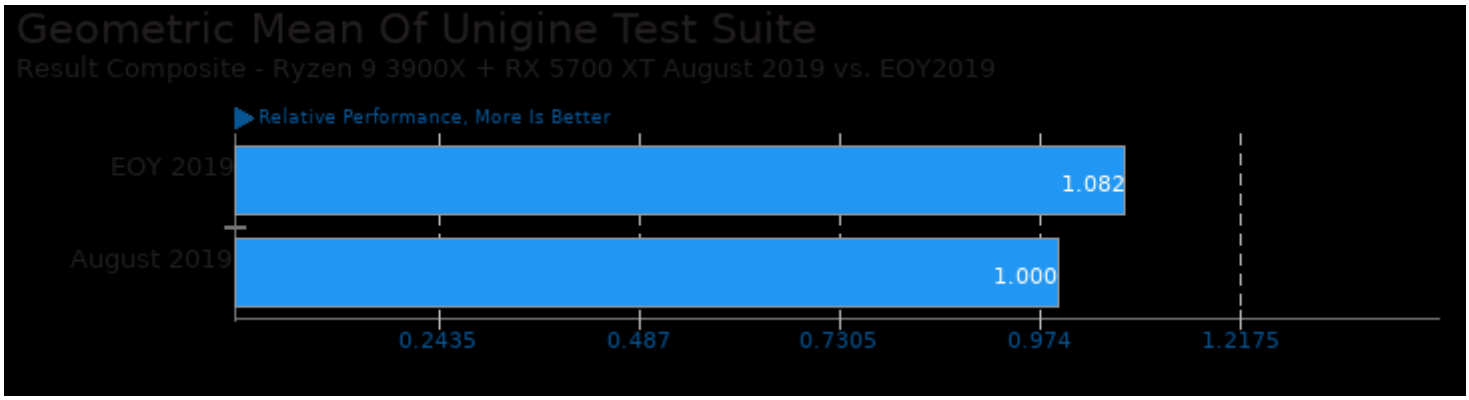


Geometric mean based upon tests: pts/unigine-heaven and pts/unigine-super



Geometric mean based upon tests: pts/csgo, pts/dota2, pts/hitman, pts/hitman2, pts/strange-brigade, pts/thronesofbritannia, pts/twtk and pts/tww2

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Geometric mean based upon tests: pts/unigine-heaven and pts/unigine-super

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