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NVIDIA Nouveau 1080p 2015 Linux

End of year 2015 NVIDIA vs. Nouveau Linux graphics driver benchmarking. Tests by Michael Larabel for a future article.

Automated Executive Summary

NVIDIA 358.16: GTX 780 Ti had the most wins, coming in first place for 88% of the tests.

Based on the geometric mean of all complete results, the fastest (NVIDIA 358.16: GTX 780 Ti) was 11.949x the speed of the slowest (Nouveau: GTX 750 Ti). NVIDIA 358.16: GTX 760 was 0.932x the speed of NVIDIA 358.16: GTX 680, NVIDIA 358.16: GTX 780 Ti was 1.252x the speed of NVIDIA 358.16: GTX 760, NVIDIA 358.16: GTX 650 was 0.41x the speed of NVIDIA 358.16: GTX 780 Ti, NVIDIA 358.16: GTX 750 Ti was 1.546x the speed of NVIDIA 358.16: GTX 650, Nouveau: GTX 680 was 0.969x the speed of NVIDIA 358.16: GTX 750 Ti, Nouveau: GTX 780 Ti was 0.688x the speed of Nouveau: GTX 680, Nouveau: GTX 760 was 1.302x the speed of Nouveau: GTX 780 Ti, Nouveau: GTX 650 was 0.558x the speed of Nouveau: GTX 760, Nouveau: GTX 750 Ti was 0.273x the speed of Nouveau: GTX 650.

Test Systems:

NVIDIA 358.16: GTX 680

Processor: Intel Core i7-5960X @ 3.50GHz (16 Cores), Motherboard: Gigabyte X99-UD4-CF, Chipset: Intel Xeon E7 v3/Xeon, Memory: 16384MB, Disk: 120GB Samsung SSD 850, Graphics: NVIDIA GeForce GTX 680 2048MB (1006/3004MHz), Audio: Realtek ALC1150, Network: Intel Connection

OS: Ubuntu 15.10, Kernel: 4.2.0-22-generic (x86_64), Desktop: Unity, Display Server: X Server 1.17.2, Display Driver: NVIDIA 358.16, OpenGL: 4.4.0, File-System: ext4, Screen Resolution: 1920x1080

Processor Notes: Scaling Governor: intel_pstate powersave

NVIDIA 358.16: GTX 760

Processor: Intel Core i7-5960X @ 3.50GHz (16 Cores), Motherboard: Gigabyte X99-UD4-CF, Chipset: Intel Xeon E7 v3/Xeon, Memory: 16384MB, Disk: 120GB Samsung SSD 850, Graphics: NVIDIA GeForce GTX 760 2048MB (980/3004MHz), Audio: Realtek ALC1150, Network: Intel Connection

OS: Ubuntu 15.10, Kernel: 4.2.0-22-generic (x86_64), Desktop: Unity, Display Server: X Server 1.17.2, Display Driver: NVIDIA 358.16, OpenGL: 4.4.0, File-System: ext4, Screen Resolution: 1920x1080

Processor Notes: Scaling Governor: intel_pstate powersave

NVIDIA 358.16: GTX 780 Ti

Processor: Intel Core i7-5960X @ 3.50GHz (16 Cores), Motherboard: Gigabyte X99-UD4-CF, Chipset: Intel Xeon E7 v3/Xeon, Memory: 16384MB, Disk: 120GB Samsung SSD 850, Graphics: NVIDIA GeForce GTX 780 Ti 3072MB (875/3500MHz), Audio: Realtek ALC1150, Network: Intel Connection

OS: Ubuntu 15.10, Kernel: 4.2.0-22-generic (x86_64), Desktop: Unity, Display Server: X Server 1.17.2, Display Driver: NVIDIA 358.16, OpenGL: 4.4.0, File-System: ext4, Screen Resolution: 1920x1080

Processor Notes: Scaling Governor: intel_pstate powersave

NVIDIA 358.16: GTX 650

Processor: Intel Core i7-5960X @ 3.50GHz (16 Cores), Motherboard: Gigabyte X99-UD4-CF, Chipset: Intel Xeon E7 v3/Xeon, Memory: 16384MB, Disk: 120GB Samsung SSD 850, Graphics: MSI NVIDIA GeForce GTX 650 1024MB (1084/2500MHz), Audio: Realtek ALC1150, Network: Intel Connection

OS: Ubuntu 15.10, Kernel: 4.2.0-22-generic (x86_64), Desktop: Unity, Display Server: X Server 1.17.2, Display Driver: NVIDIA 358.16, OpenGL: 4.4.0, File-System: ext4, Screen Resolution: 1920x1080

Processor Notes: Scaling Governor: intel_pstate powersave

NVIDIA 358.16: GTX 750 Ti

Processor: Intel Core i7-5960X @ 3.50GHz (16 Cores), Motherboard: Gigabyte X99-UD4-CF, Chipset: Intel Xeon E7 v3/Xeon, Memory: 16384MB, Disk: 120GB Samsung SSD 850, Graphics: NVIDIA GeForce GTX 750 Ti 2048MB (1019/2700MHz), Audio: Realtek ALC1150, Network: Intel Connection

OS: Ubuntu 15.10, Kernel: 4.2.0-22-generic (x86_64), Desktop: Unity, Display Server: X Server 1.17.2, Display Driver: NVIDIA 358.16, OpenGL: 4.4.0, File-System: ext4, Screen Resolution: 1920x1080

Processor Notes: Scaling Governor: intel_pstate powersave

Nouveau: GTX 680

Processor: Intel Core i7-5960X @ 3.50GHz (16 Cores), Motherboard: Gigabyte X99-UD4-CF, Chipset: Intel Xeon E7 v3/Xeon, Memory: 16384MB, Disk: 120GB Samsung SSD 850, Graphics: NVIDIA GeForce GTX 680 2048MB (1202/6008MHz), Audio: Realtek ALC1150, Network: Intel Connection

OS: Ubuntu 15.10, Kernel: 4.3.0-040300-generic (x86_64), Desktop: Unity, Display Server: X Server 1.17.2, Display Driver: nouveau 1.0.12, OpenGL: 4.1 Mesa 11.2.0-devel (padoka PPA) Gallium 0.4, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: nouveau.pstate=1
Processor Notes: Scaling Governor: intel_pstate powersave
Graphics Notes: EXA

Nouveau: GTX 780 Ti

Processor: Intel Core i7-5960X @ 3.50GHz (16 Cores), Motherboard: Gigabyte X99-UD4-CF, Chipset: Intel Xeon E7 v3/Xeon, Memory: 16384MB, Disk: 120GB Samsung SSD 850, Graphics: NVIDIA GeForce GTX 780 Ti 3072MB (1202/7000MHz), Audio: Realtek ALC1150, Network: Intel Connection

OS: Ubuntu 15.10, Kernel: 4.3.0-040300-generic (x86_64), Desktop: Unity, Display Server: X Server 1.17.2, Display Driver: nouveau 1.0.12, OpenGL: 4.1 Mesa 11.2.0-devel (padoka PPA) Gallium 0.4, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: nouveau.pstate=1
Processor Notes: Scaling Governor: intel_pstate powersave
Graphics Notes: EXA

Nouveau: GTX 760

Processor: Intel Core i7-5960X @ 3.50GHz (16 Cores), Motherboard: Gigabyte X99-UD4-CF, Chipset: Intel Xeon E7 v3/Xeon, Memory: 16384MB, Disk: 120GB Samsung SSD 850, Graphics: NVIDIA GeForce GTX 760 2048MB (1202/6008MHz), Audio: Realtek ALC1150, Network: Intel Connection

OS: Ubuntu 15.10, Kernel: 4.3.0-040300-generic (x86_64), Desktop: Unity, Display Server: X Server 1.17.2, Display Driver: nouveau 1.0.12, OpenGL: 4.1 Mesa 11.2.0-devel (padoka PPA) Gallium 0.4, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: nouveau.pstate=1
Processor Notes: Scaling Governor: intel_pstate powersave
Graphics Notes: EXA

Nouveau: GTX 650

Processor: Intel Core i7-5960X @ 3.50GHz (16 Cores), Motherboard: Gigabyte X99-UD4-CF, Chipset: Intel Xeon E7 v3/Xeon, Memory: 16384MB, Disk: 120GB Samsung SSD 850, Graphics: MSI NVIDIA GeForce GTX 650 1024MB (1084/5000MHz), Audio: Realtek ALC1150, Network: Intel Connection

OS: Ubuntu 15.10, Kernel: 4.3.0-040300-generic (x86_64), Desktop: Unity, Display Server: X Server 1.17.2, Display Driver: nouveau 1.0.12, OpenGL: 4.1 Mesa 11.2.0-devel (padoka PPA) Gallium 0.4, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: nouveau.pstate=1

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

Nouveau: GTX 750 Ti

Processor: Intel Core i7-5960X @ 3.50GHz (16 Cores), Motherboard: Gigabyte X99-UD4-CF, Chipset: Intel Xeon E7 v3/Xeon, Memory: 16384MB, Disk: 120GB Samsung SSD 850, Graphics: NVIDIA GeForce GTX 750 Ti 2048MB (405/810MHz), Audio: Realtek ALC1150, Network: Intel Connection

OS: Ubuntu 15.10, Kernel: 4.3.0-040300-generic (x86_64), Desktop: Unity, Display Server: X Server 1.17.2, Display Driver: nouveau 1.0.12, OpenGL: 3.3 Mesa 11.2.0-devel (padoka PPA) Gallium 0.4, File-System: ext4, Screen Resolution: 1920x1080

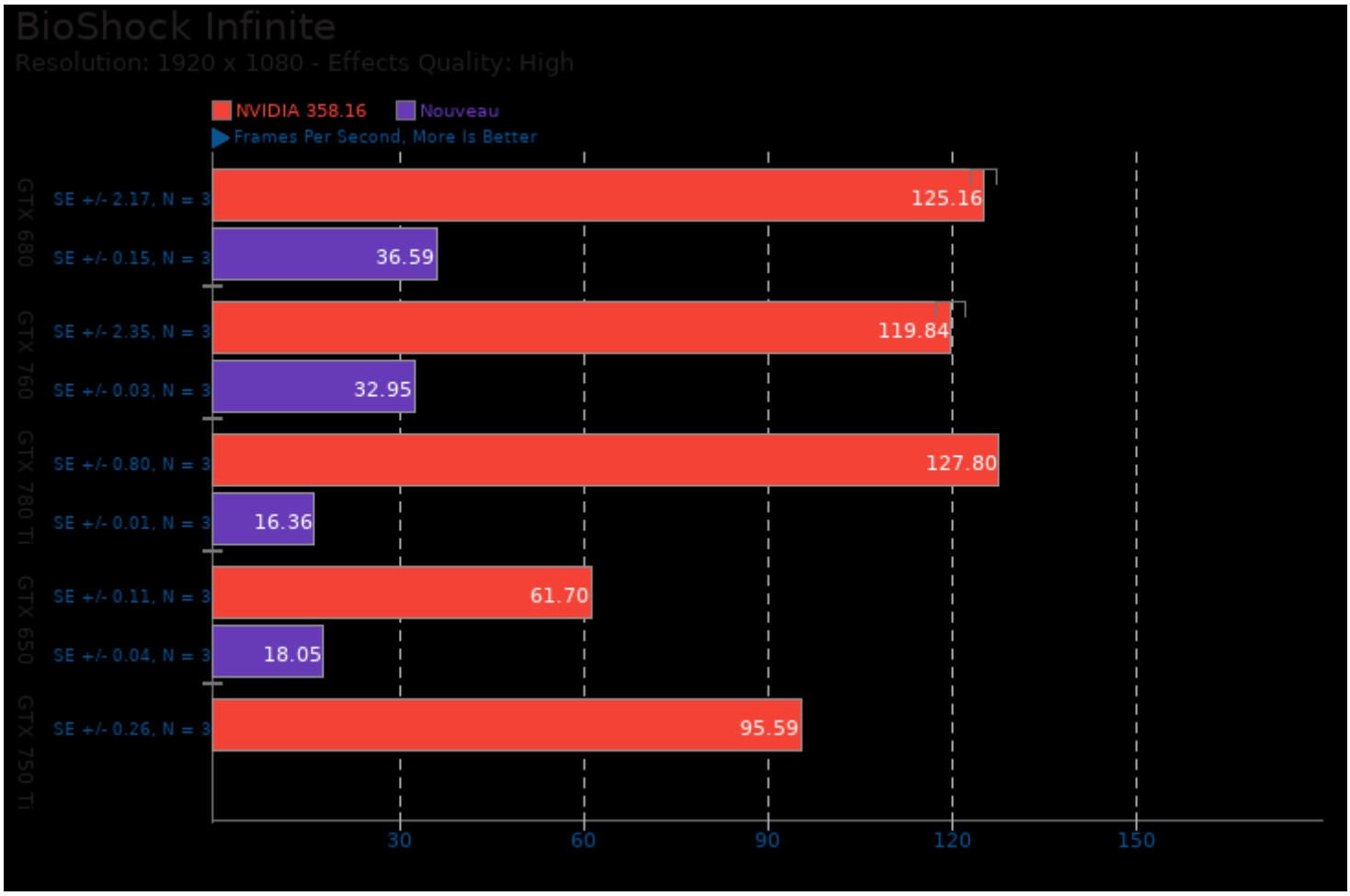
Kernel Notes: nouveau.pstate=1
Processor Notes: Scaling Governor: intel_pstate powersave

	NVIDIA 358.16: GTX 680	NVIDIA 358.16: GTX 760	NVIDIA 358.16: GTX 780 Ti	NVIDIA 358.16: GTX 650	NVIDIA 358.16: GTX 750 Ti	Nouveau: GTX 680	Nouveau: GTX 780 Ti	Nouveau: GTX 760	Nouveau: GTX 650	Nouveau: GTX 750 Ti
BioShock Infinite - 1920 x 1080 - High (FPS)	125.16	119.84	**127.80**	61.70	95.59	36.59	**16.36**	32.95	18.05	
Normalized	97.93%	93.77%	100%	48.28%	74.8%	28.63%	12.8%	25.78%	14.12%	
Standard Deviation	3%	3.4%	1.1%	0.3%	0.5%	0.7%	0.1%	0.2%	0.4%	
DiRT Showdown - 1920 x 1080 - High - 2x MSAA (FPS)	123.61	115.00	**125.40**	45.82	81.04	14.51	**13.75**	14.62	14.48	
Normalized	98.57%	91.71%	100%	36.54%	64.63%	11.57%	10.96%	11.66%	11.55%	
Standard Deviation	0.5%	0.4%	0.7%	0.1%	0.1%	2.1%	0.2%	0.7%	0.2%	
Metro 2033 Redux - P.T.S.v.2.0 (FPS)	133.77	130.27	**135.38**	**55.89**	97.32					
Normalized	98.81%	96.23%	100%	41.28%	71.89%					
Standard Deviation	1.8%	0.4%	0.6%	0.2%	0.7%					
Metro: Last Light Redux - P.T.S.v.2.0 (FPS)	130.04	120.55	**153.56**	**44.34**	85.53					
Normalized	84.68%	78.5%	100%	28.87%	55.7%					
Standard Deviation	0.7%	0.6%	2.6%	0.1%	0.2%					
OpenArena - 1920 x 1080 (FPS)	344.57	320.17	**392.33**	126.77	250.87	188.33	141.07	167.10	98.43	**31.13**
Normalized	87.83%	81.61%	100%	32.31%	63.94%	48%	35.96%	42.59%	25.09%	7.93%
Standard Deviation	0.9%	0.6%	0.9%	0%	1%	2%	1.1%	0.2%	0.2%	0.4%
Tesseract - 1920 x 1080 (FPS)	224.19	214.35	**267.75**	122.99	180.92	192.44	126.68	182.34	91.46	**22.78**
Normalized	83.73%	80.06%	100%	45.93%	67.57%	71.87%	47.31%	68.1%	34.16%	8.51%
Standard Deviation	2.8%	1.4%	1.3%	0.6%	1.3%	2.4%	0.8%	2.3%	0.4%	0.5%

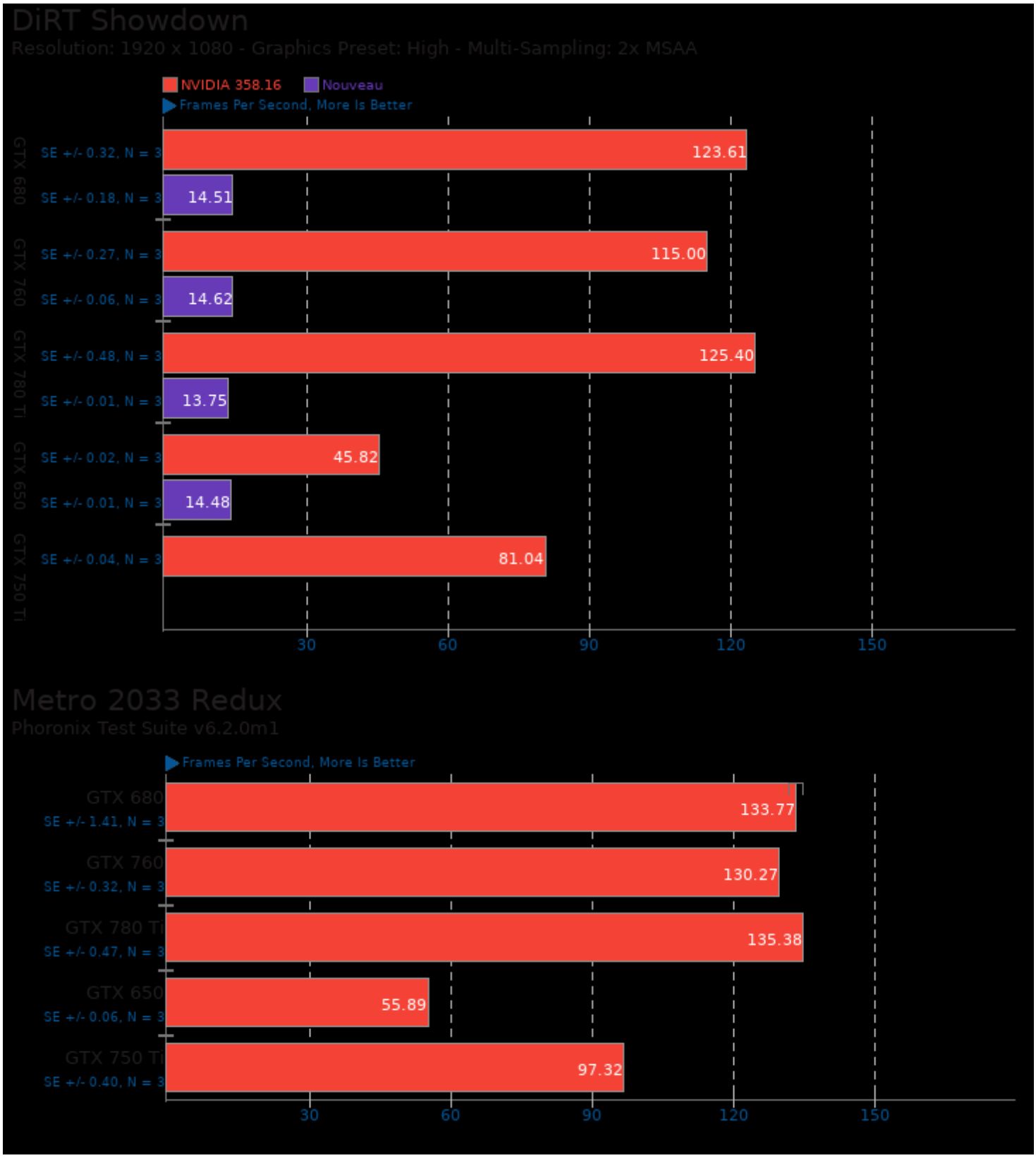
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Team Fortress 2 - 1920 x 1080 (FPS)	**109.80**	108.33	105.95	91.50	104.31	92.56	91.00	101.35	80.72	**21.59**
Normalized	100%	98.66%	96.49%	83.33%	95%	84.3%	82.88%	92.3%	73.52%	19.66%
Standard Deviation	6.4%	6.3%	7.3%	4.2%	6.5%	25%	7.4%	5.2%	8.5%	1%
Unigine Valley - 1920 x 1080 - Fullscreen (FPS)	64.70	55.76	**91.43**	20.13	34.63	43.15	19.91	30.14	12.42	**3.26**
Normalized	70.76%	60.99%	100%	22.02%	37.88%	47.19%	21.78%	32.97%	13.58%	3.57%
Standard Deviation	0.1%	0.4%	0.6%	0.1%	0.1%	0.4%	0.1%	0.2%	0%	0.1%
Xonotic - 1920 x 1080 - Ultimate (FPS)	223.37	216.21	**231.21**	110.43	147.94	74.61	95.98	113.86	**67.33**	
Normalized	96.61%	93.51%	100%	47.76%	63.99%	32.27%	41.51%	49.25%	29.12%	
Standard Deviation	1.3%	1.5%	1.4%	0.4%	0.4%	1.3%	0.8%	2.1%	0.2%	

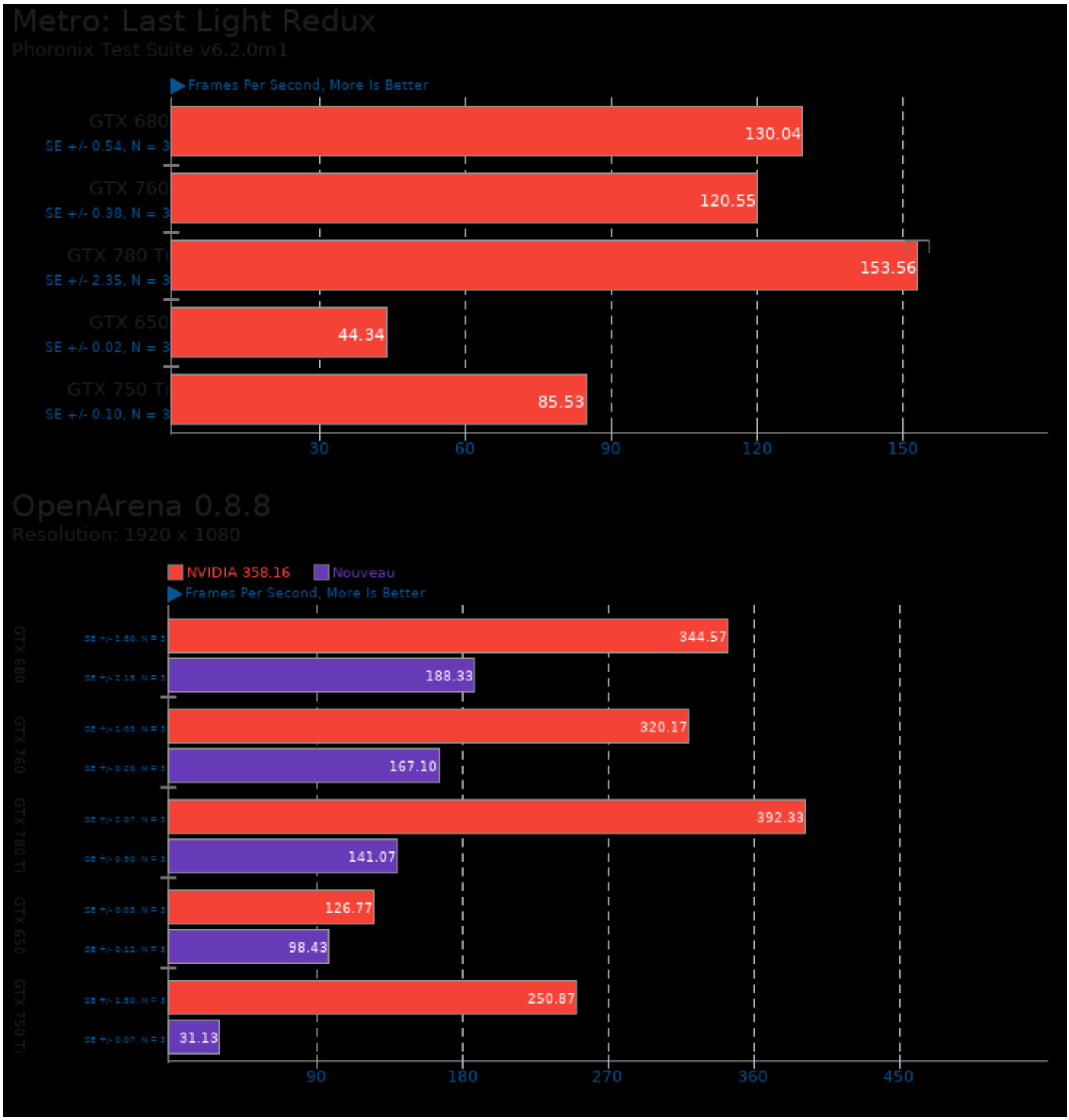
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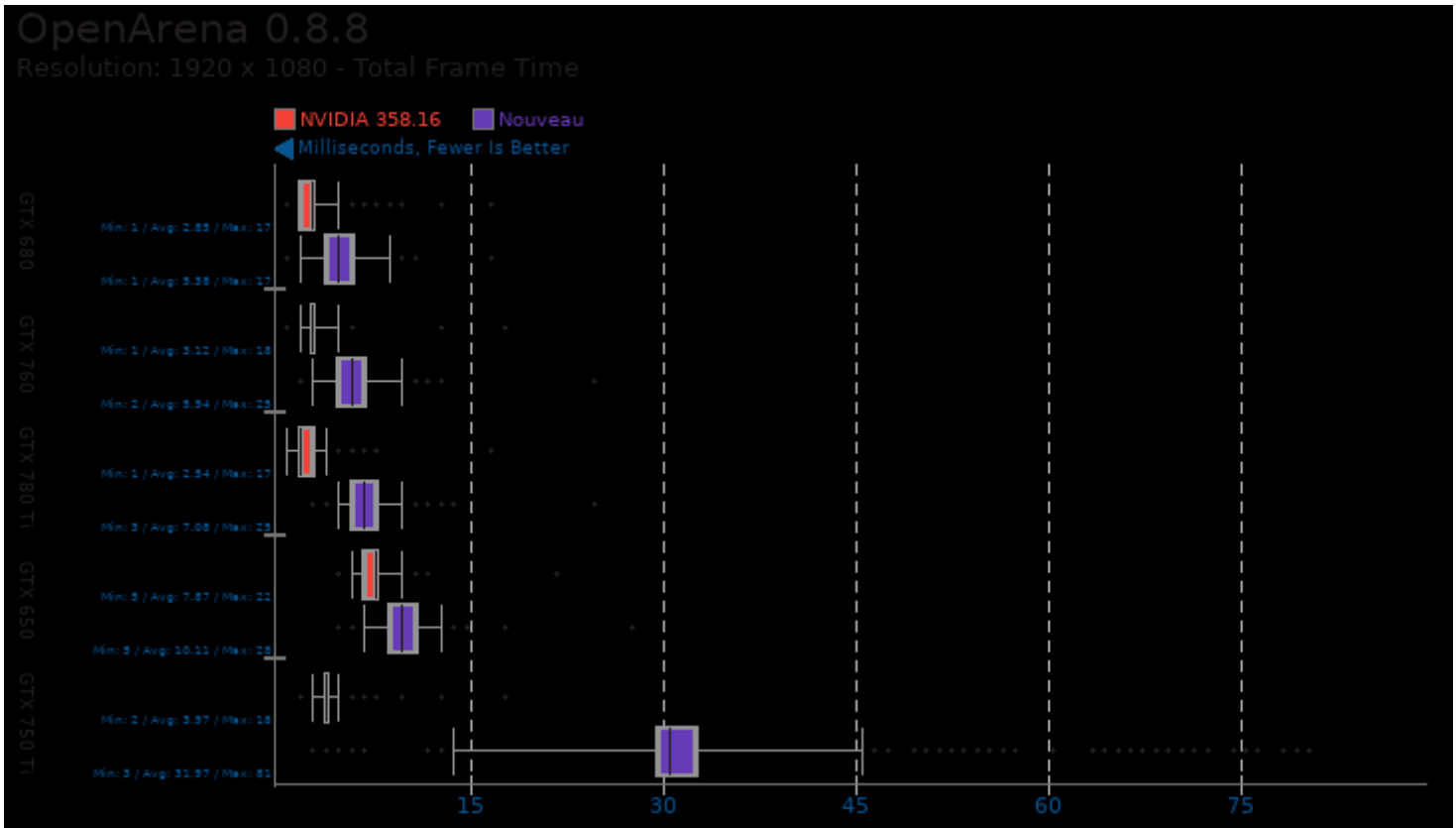
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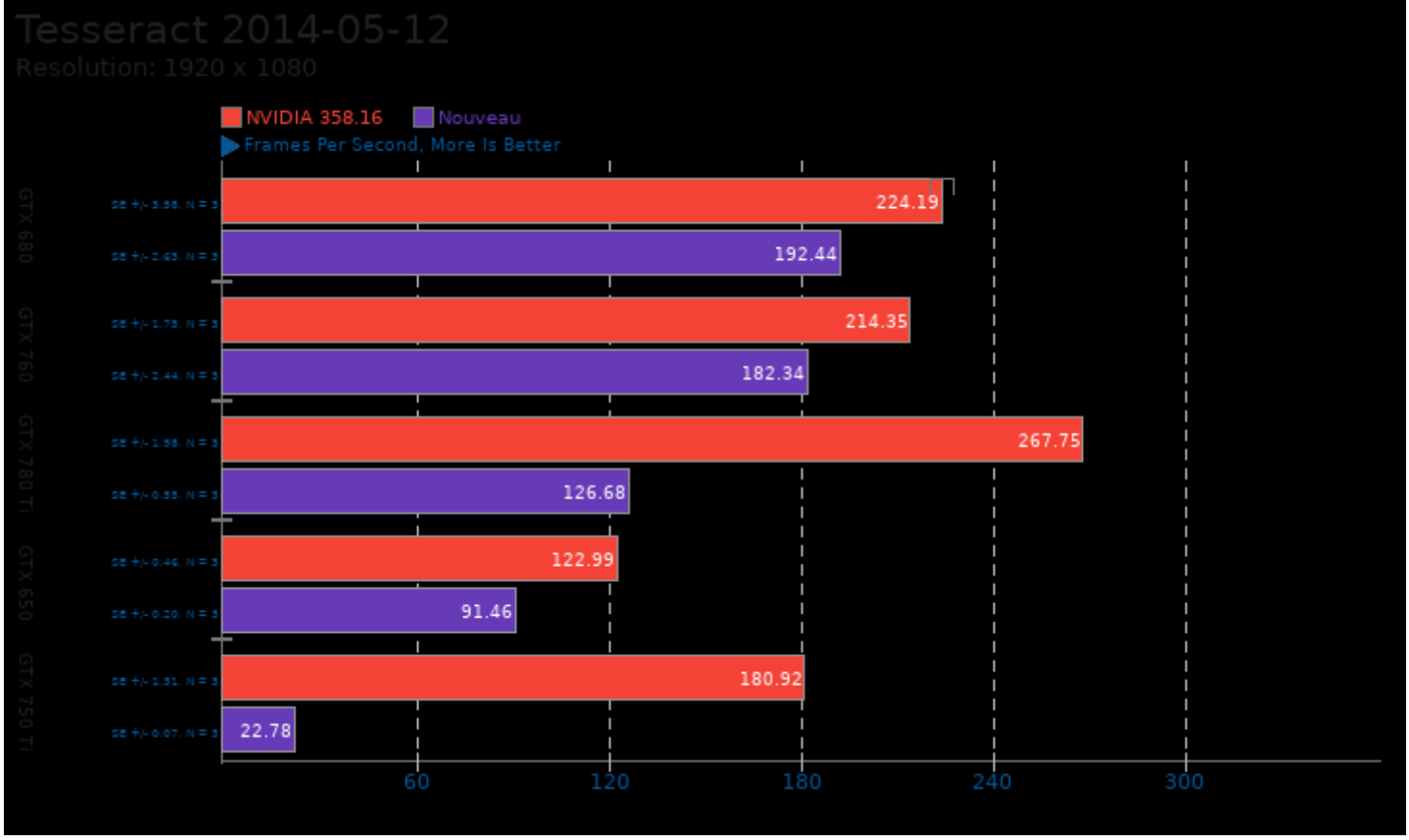


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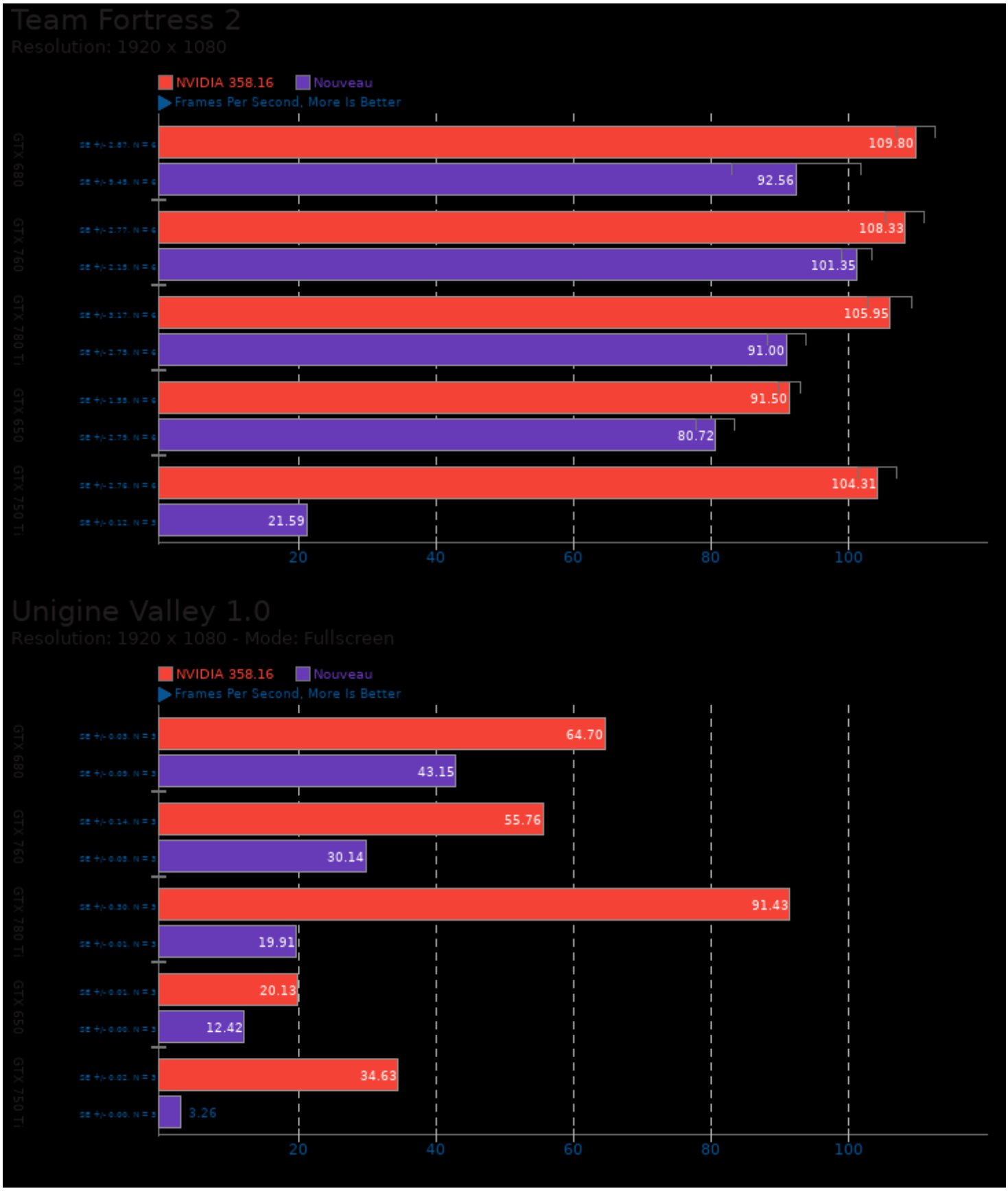


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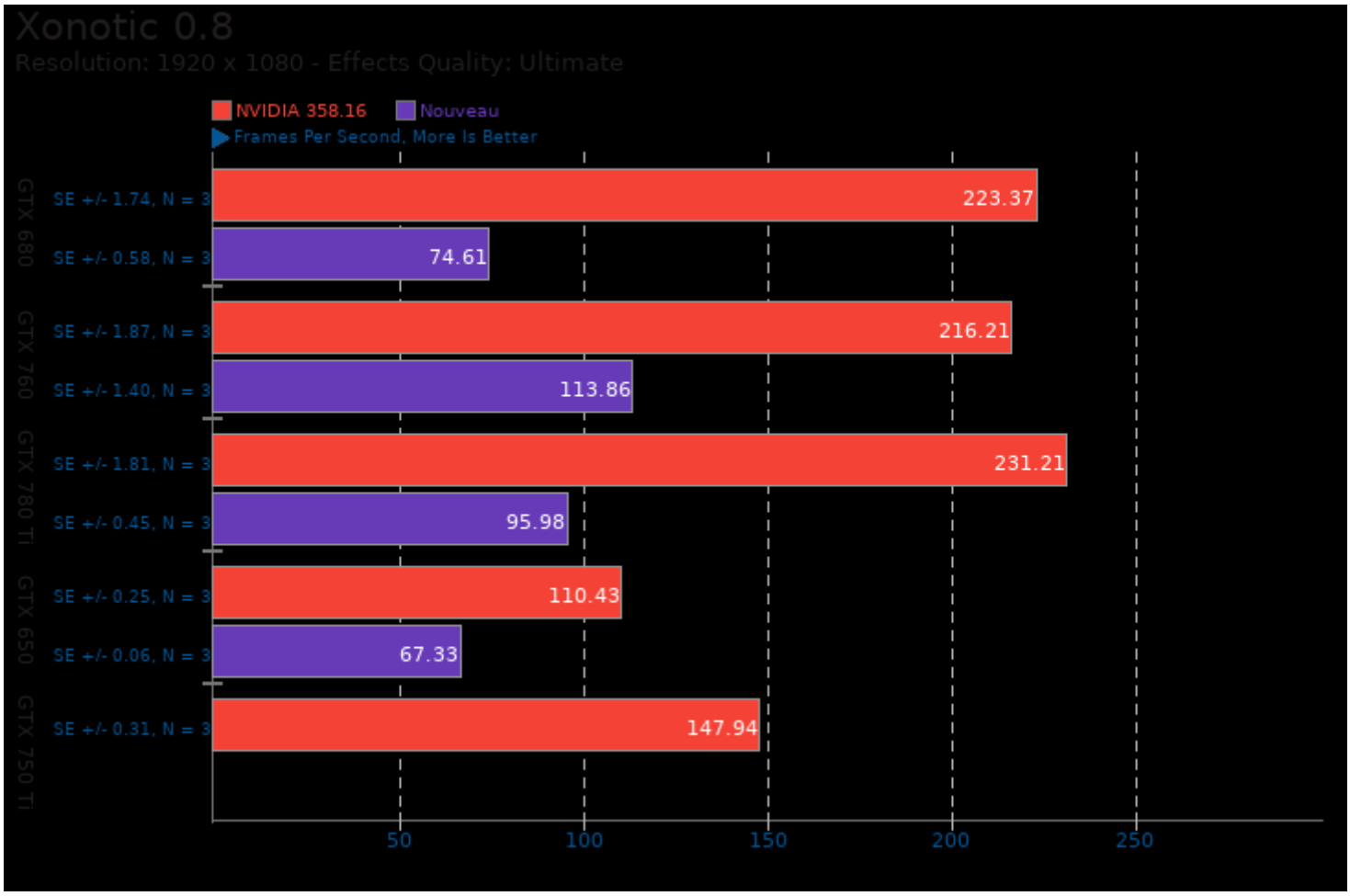




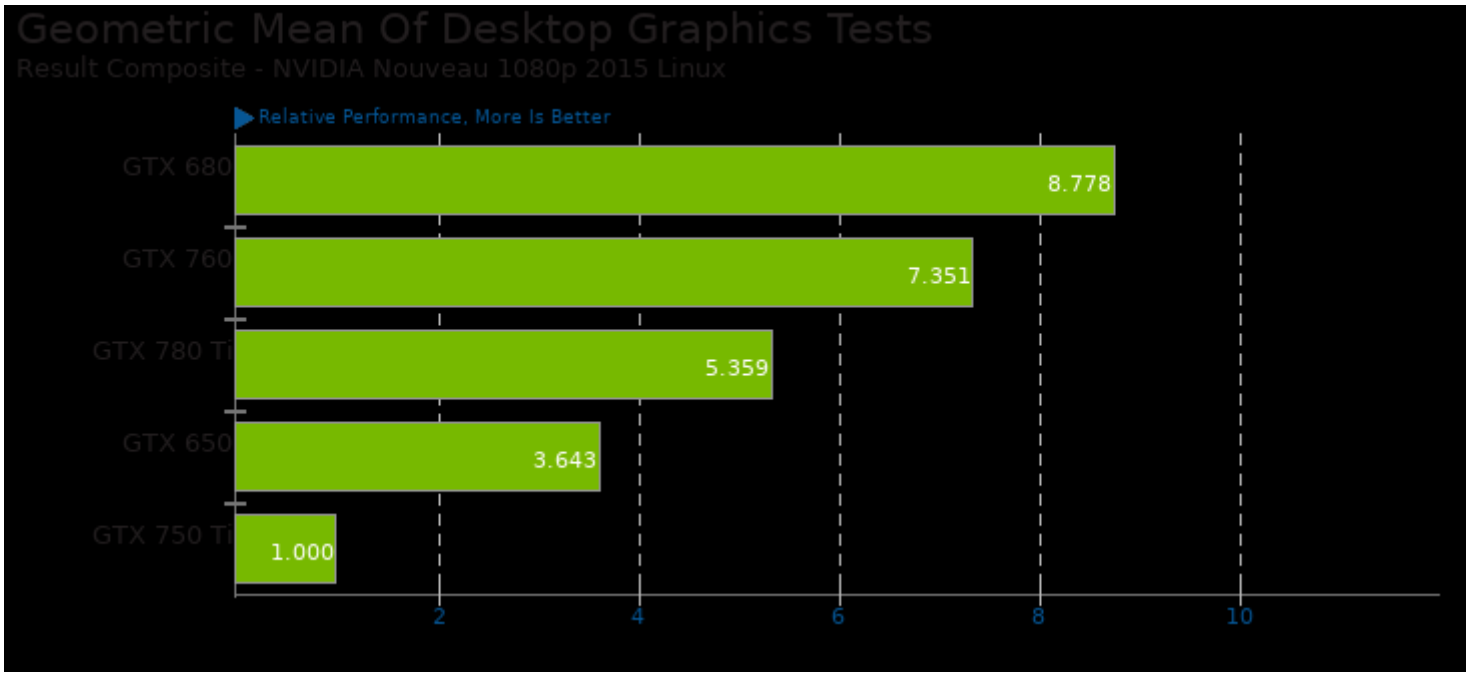
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These geometric means are based upon test groupings / test suites for this result file.



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

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