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# Mesa 8.0 Radeon Gallium3D R300/R600

Testing of Mesa 8.0-devel with the Gallium3D R600 and R300 Radeon drivers across several generations of hardware. Using the Linux 3.2 kernel and xf86-video-ati DDX. Testing with swap buffers wait disabled but otherwise usual Phoronix testing for a future article by Michael Larabel.

**Automated Executive Summary**

*Radeon HD 6950: Catalyst had the most wins, coming in first place for 70% of the tests.*

*Based on the geometric mean of all complete results, the fastest (Radeon HD 6950: Catalyst) was 5.284x the speed of the slowest (Radeon X1800XL: Mesa 7.11).*

## Test Systems:

### Radeon HD 6950: Mesa 7.11

Processor: Intel Core i7-3960X @ 3.20GHz (12 Cores), Motherboard: Intel DX79SI, Chipset: Intel Sandy DMI2, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: AMD Radeon 6900 2048MB (800/1250MHz), Audio: Realtek

ALC892, Monitor: DELL P2210H, Network: Intel 82579LM Gigabit Connection

OS: Ubuntu 11.10, Kernel: 3.2.0-030200-generic (x86_64), Desktop: Unity 4.22.0, Display Server: X Server 1.10.4, Display Driver: radeon 6.14.99, OpenGL: 2.1 Mesa 7.11 (git-de8f22a) Gallium 0.4, Compiler: GCC 4.6.1 + llvm 2.9 (Ubuntu 2.9+dfsg-3ubuntu2), File-System: ext4, Screen Resolution: 1920x1080

System Notes: Compiz was running on this system.

## Radeon HD 5750: Mesa 7.11

Processor: Intel Core i7-3960X @ 3.20GHz (12 Cores), Motherboard: Intel DX79SI, Chipset: Intel Sandy DMI2, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: AMD Radeon HD 5750 1024MB (700/1150MHz), Audio: Realtek ALC892, Monitor: DELL P2210H, Network: Intel 82579LM Gigabit Connection

OS: Ubuntu 11.10, Kernel: 3.2.0-030200-generic (x86_64), Desktop: Unity 4.22.0, Display Server: X Server 1.10.4, Display Driver: radeon 6.14.99, OpenGL: 2.1 Mesa 7.11 (git-de8f22a) Gallium 0.4, Compiler: GCC 4.6.1 + llvm 2.9 (Ubuntu 2.9+dfsg-3ubuntu2), File-System: ext4, Screen Resolution: 1920x1080

System Notes: Compiz was running on this system.

## Radeon HD 4670: Mesa 7.11

Processor: Intel Core i7-3960X @ 3.20GHz (12 Cores), Motherboard: Intel DX79SI, Chipset: Intel Sandy DMI2, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: AMD Radeon HD 4670 512MB (750/1100MHz), Audio: Realtek ALC892, Monitor: DELL P2210H, Network: Intel 82579LM Gigabit Connection

OS: Ubuntu 11.10, Kernel: 3.2.0-030200-generic (x86_64), Desktop: Unity 4.22.0, Display Server: X Server 1.10.4, Display Driver: radeon 6.14.99, OpenGL: 2.1 Mesa 7.11 (git-de8f22a) Gallium 0.4, Compiler: GCC 4.6.1 + llvm 2.9 (Ubuntu 2.9+dfsg-3ubuntu2), File-System: ext4, Screen Resolution: 1920x1080

## Radeon HD 3850: Mesa 7.11

Processor: Intel Core i7-3960X @ 3.20GHz (12 Cores), Motherboard: Intel DX79SI, Chipset: Intel Sandy DMI2, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: AMD Radeon HD 3850 256MB (730/950MHz), Audio: Realtek ALC892, Monitor: DELL P2210H, Network: Intel 82579LM Gigabit Connection

OS: Ubuntu 11.10, Kernel: 3.2.0-030200-generic (x86_64), Desktop: Unity 4.22.0, Display Server: X Server 1.10.4, Display Driver: radeon 6.14.99, OpenGL: 2.1 Mesa 7.11 (git-de8f22a) Gallium 0.4, Compiler: GCC 4.6.1 + llvm 2.9 (Ubuntu 2.9+dfsg-3ubuntu2), File-System: ext4, Screen Resolution: 1920x1080

System Notes: Compiz was running on this system.

## Radeon X1800XL: Mesa 7.11

Processor: Intel Core i7-3960X @ 3.20GHz (12 Cores), Motherboard: Intel DX79SI, Chipset: Intel Sandy DMI2, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: AMD Radeon X1800 256MB, Audio: Realtek ALC892, Monitor: DELL P2210H, Network: Intel 82579LM Gigabit Connection

OS: Ubuntu 11.10, Kernel: 3.2.0-030200-generic (x86_64), Desktop: Unity 4.22.0, Display Server: X Server 1.10.4, Display Driver: radeon 6.14.99, OpenGL: 2.1 Mesa 7.11 (git-de8f22a) Gallium 0.4, Compiler: GCC 4.6.1 + llvm 2.9

(Ubuntu 2.9+dfsg-3ubuntu2), File-System: ext4, Screen Resolution: 1920x1080

System Notes: Compiz was running on this system.

## Radeon HD 6950: Mesa 8.0-devel

Processor: Intel Core i7-3960X @ 3.20GHz (12 Cores), Motherboard: Intel DX79SI, Chipset: Intel Sandy DMI2, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: AMD Radeon 6900 2048MB (800/1250MHz), Audio: Realtek ALC892, Monitor: DELL P2210H, Network: Intel 82579LM Gigabit Connection

OS: Ubuntu 11.10, Kernel: 3.2.0-030200-generic (x86_64), Desktop: Unity 4.22.0, Display Server: X Server 1.10.4, Display Driver: radeon 6.14.99, OpenGL: 2.1 Mesa 8.0-devel (git-57665cb) Gallium 0.4, Compiler: GCC 4.6.1 + llvm 2.9 (Ubuntu 2.9+dfsg-3ubuntu2), File-System: ext4, Screen Resolution: 1920x1080

System Notes: Compiz was running on this system.

## Radeon HD 5750: Mesa 8.0-devel

Processor: Intel Core i7-3960X @ 3.20GHz (12 Cores), Motherboard: Intel DX79SI, Chipset: Intel Sandy DMI2, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: AMD Radeon HD 5750 1024MB (700/1150MHz), Audio: Realtek ALC892, Monitor: DELL P2210H, Network: Intel 82579LM Gigabit Connection

OS: Ubuntu 11.10, Kernel: 3.2.0-030200-generic (x86_64), Desktop: Unity 4.22.0, Display Server: X Server 1.10.4, Display Driver: radeon 6.14.99, OpenGL: 2.1 Mesa 8.0-devel (git-57665cb) Gallium 0.4, Compiler: GCC 4.6.1 + llvm 2.9 (Ubuntu 2.9+dfsg-3ubuntu2), File-System: ext4, Screen Resolution: 1920x1080

System Notes: Compiz was running on this system.

## Radeon HD 4670: Mesa 8.0-devel

Processor: Intel Core i7-3960X @ 3.20GHz (12 Cores), Motherboard: Intel DX79SI, Chipset: Intel Sandy DMI2, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: AMD Radeon HD 4670 512MB (750/1100MHz), Audio: Realtek ALC892, Monitor: DELL P2210H, Network: Intel 82579LM Gigabit Connection

OS: Ubuntu 11.10, Kernel: 3.2.0-030200-generic (x86_64), Desktop: Unity 4.22.0, Display Server: X Server 1.10.4, Display Driver: radeon 6.14.99, OpenGL: 2.1 Mesa 8.0-devel (git-57665cb) Gallium 0.4, Compiler: GCC 4.6.1 + llvm 2.9 (Ubuntu 2.9+dfsg-3ubuntu2), File-System: ext4, Screen Resolution: 1920x1080

System Notes: Compiz was running on this system.

## Radeon HD 3850: Mesa 8.0-devel

Processor: Intel Core i7-3960X @ 3.20GHz (12 Cores), Motherboard: Intel DX79SI, Chipset: Intel Sandy DMI2, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: AMD Radeon HD 3850 256MB (730/950MHz), Audio: Realtek ALC892, Monitor: DELL P2210H, Network: Intel 82579LM Gigabit Connection

OS: Ubuntu 11.10, Kernel: 3.2.0-030200-generic (x86_64), Desktop: Unity 4.22.0, Display Server: X Server 1.10.4, Display Driver: radeon 6.14.99, OpenGL: 2.1 Mesa 8.0-devel (git-57665cb) Gallium 0.4, Compiler: GCC 4.6.1 + llvm 2.9 (Ubuntu 2.9+dfsg-3ubuntu2), File-System: ext4, Screen Resolution: 1920x1080

System Notes: Compiz was running on this system.

## Radeon X1800XL: Mesa 8.0-devel

Processor: Intel Core i7-3960X @ 3.20GHz (12 Cores), Motherboard: Intel DX79SI, Chipset: Intel Sandy DMI2, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: AMD Radeon X1800 256MB, Audio: Realtek ALC892, Monitor: DELL P2210H, Network: Intel 82579LM Gigabit Connection

OS: Ubuntu 11.10, Kernel: 3.2.0-030200-generic (x86_64), Desktop: Unity 4.22.0, Display Server: X Server 1.10.4, Display Driver: radeon 6.14.99, OpenGL: 2.1 Mesa 8.0-devel (git-57665cb) Gallium 0.4, Compiler: GCC 4.6.1 + llvm 2.9 (Ubuntu 2.9+dfsg-3ubuntu2), File-System: ext4, Screen Resolution: 1920x1080

System Notes: Compiz was running on this system.

## Radeon HD 6950: Catalyst

Processor: Intel Core i7-3960X @ 3.20GHz (12 Cores), Motherboard: Intel DX79SI, Chipset: Intel Sandy DMI2, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: AMD Radeon HD 6900 2048MB (800/1250MHz), Audio: Realtek ALC892, Monitor: DELL P2210H, Network: Intel 82579LM Gigabit Connection

OS: Ubuntu 11.10, Kernel: 3.2.0-030200-generic (x86_64), Desktop: Unity 4.22.0, Display Server: X Server 1.10.4, Display Driver: fglrx 8.94.5, OpenGL: 4.2.11461, Compiler: GCC 4.6.1 + llvm 2.9 (Ubuntu 2.9+dfsg-3ubuntu2), File-System: ext4, Screen Resolution: 1920x1080

System Notes: Compiz was running on this system.

## Radeon HD 5750: Catalyst

Processor: Intel Core i7-3960X @ 3.20GHz (12 Cores), Motherboard: Intel DX79SI, Chipset: Intel Sandy DMI2, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: ATI Radeon HD 5700 1024MB (700/1150MHz), Audio: Realtek ALC892, Monitor: DELL P2210H, Network: Intel 82579LM Gigabit Connection

OS: Ubuntu 11.10, Kernel: 3.2.0-030200-generic (x86_64), Desktop: Unity 4.22.0, Display Server: X Server 1.10.4, Display Driver: fglrx 8.94.5, OpenGL: 4.2.11461, Compiler: GCC 4.6.1 + llvm 2.9 (Ubuntu 2.9+dfsg-3ubuntu2), File-System: ext4, Screen Resolution: 1920x1080

System Notes: Compiz was running on this system.

## Radeon HD 3850: Catalyst

Processor: Intel Core i7-3960X @ 3.20GHz (12 Cores), Motherboard: Intel DX79SI, Chipset: Intel Sandy DMI2, Memory: 16384MB, Disk: 240GB OCZ VERTEX3, Graphics: ATI Radeon HD 3850 256MB (750/950MHz), Audio: Realtek ALC892, Monitor: DELL P2210H, Network: Intel 82579LM Gigabit Connection

OS: Ubuntu 11.10, Kernel: 3.2.0-030200-generic (x86_64), Desktop: Unity 4.22.0, Display Server: X Server 1.10.4, Display Driver: fglrx 8.94.5, OpenGL: 3.3.11461, Compiler: GCC 4.6.1 + llvm 2.9 (Ubuntu 2.9+dfsg-3ubuntu2), File-System: ext4, Screen Resolution: 1920x1080

System Notes: Compiz was running on this system.

Phoronix Test Suite

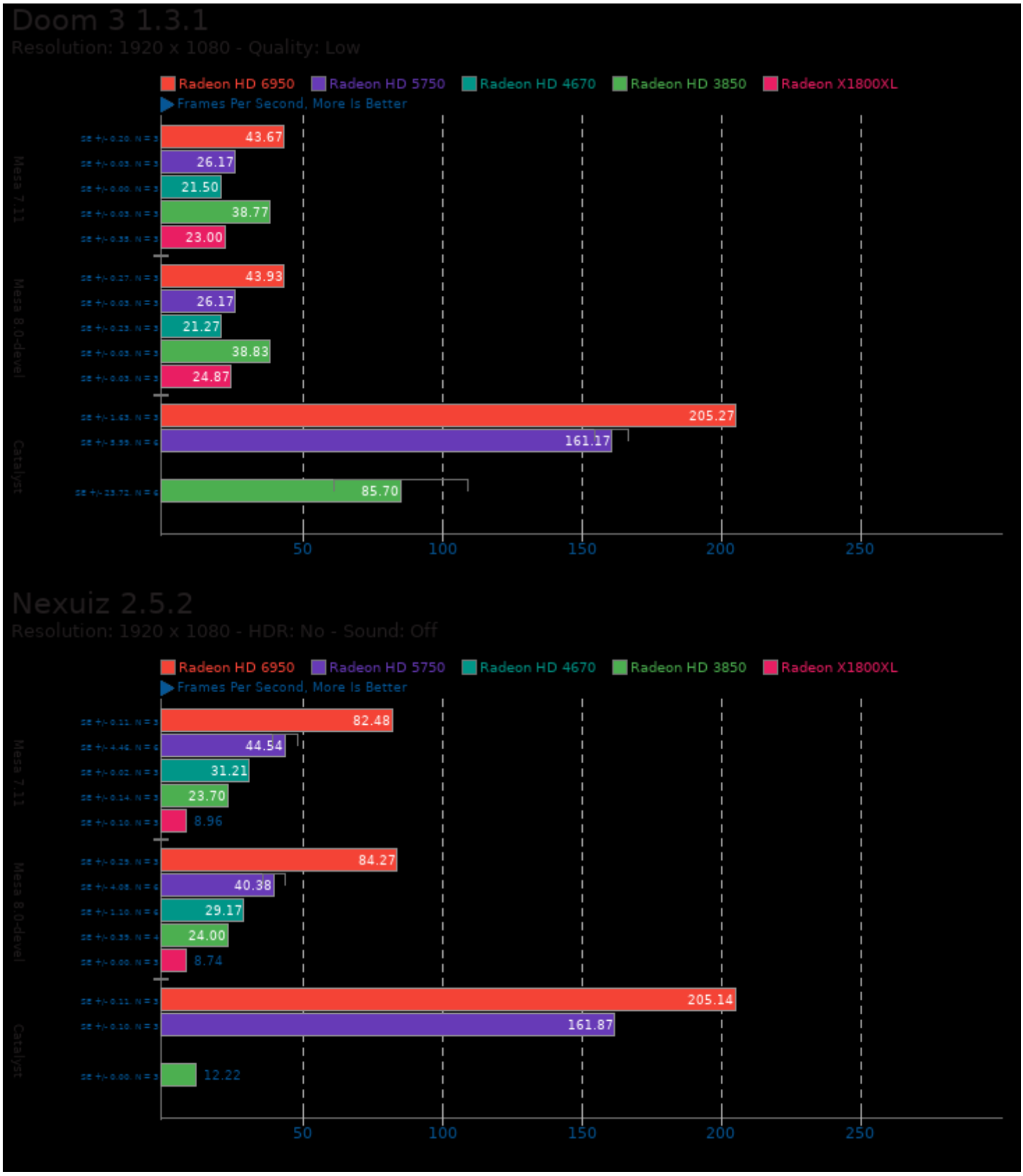
# Mesa 8.0 Radeon Gallium3D R300/R600

| | Radeon HD 6950: Mesa 7.11 | Radeon HD 5750: Mesa 7.11 | Radeon HD 4670: Mesa 7.11 | Radeon HD 3850: Mesa 7.11 | Radeon X1800 XL: Mesa 7.11 | Radeon HD 6950: Mesa 8.0-devel | Radeon HD 5750: Mesa 8.0-devel | Radeon HD 4670: Mesa 8.0-devel | Radeon HD 3850: Mesa 8.0-devel | Radeon X1800 XL: Mesa 8.0-devel | Radeon HD 6950: Catalyst | Radeon HD 5750: Catalyst | Radeon HD 3850: Catalyst |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Doom 3 - 1920 x 1080 - Low (FPS)** | 43.67 | 26.17 | 21.50 | 38.77 | 23.00 | 43.93 | 26.17 | 21.27 | 38.83 | 24.87 | 205.27 | 161.17 | 85.70 |
| **Normalized** | 21.27% | 12.75% | 10.47% | 18.89% | 11.2% | 21.4% | 12.75% | 10.36% | 18.92% | 12.12% | 100% | 78.52% | 41.75% |
| **Standard Deviation** | 0.8% | 0.2% | 0% | 0.1% | 2.6% | 1.1% | 0.2% | 1.9% | 0.1% | 0.2% | 1.4% | 9.1% | 67.8% |
| **Nexuiz - 1920 x 1080 - No - Off (FPS)** | 82.48 | 44.54 | 31.21 | 23.70 | 8.96 | 84.27 | 40.38 | 29.17 | 24.00 | 8.74 | 205.14 | 161.87 | 12.22 |
| **Normalized** | 40.21% | 21.71% | 15.21% | 11.55% | 4.37% | 41.08% | 19.68% | 14.22% | 11.7% | 4.26% | 100% | 78.91% | 5.96% |
| **Standard Deviation** | 0.2% | 24.5% | 0.1% | 1% | 2% | 0.6% | 24.8% | 9.3% | 3.2% | 0.1% | 0.1% | 0.1% | 0% |
| **Warsow - 1920 x 1080 (FPS)** | 24.03 | 22.37 | 19.70 | 24.63 | 12.20 | 24.63 | 22.40 | 20.00 | 25.93 | 12.00 | 268.57 | 209.77 | 48.30 |
| **Normalized** | 8.95% | 8.33% | 7.34% | 9.17% | 4.54% | 9.17% | 8.34% | 7.45% | 9.65% | 4.47% | 100% | 78.11% | 17.98% |
| **Standard Deviation** | 0.2% | 0.3% | 0% | 0.2% | 0% | 0.2% | 0.4% | 0.5% | 0.2% | 0.8% | 1.1% | 0.1% | 0.2% |
| **VDrift - 1920 x 1080 (FPS)** | 60.03 | 36.10 | 15.56 | 44.84 | 20.19 | 93.61 | 54.04 | 30.55 | 19.14 | 20.67 | | | |
| **Normalized** | 64.13% | 38.56% | 16.62% | 47.9% | 21.57% | 100% | 57.73% | 32.64% | 20.45% | 22.08% | | | |
| **Standard Deviation** | 64.8% | 53% | 0.2% | 50% | 1.9% | 0% | 0% | 56.1% | 0.2% | 2.1% | | | |
| **Lightsmark - 1920 x 1080 (FPS)** | 57.27 | 50.34 | 39.40 | 51.37 | 20.51 | | 68.40 | 34.71 | 53.27 | 35.36 | 349.59 | 139.43 | 64.25 |
| **Normalized** | 16.38% | 14.4% | 11.27% | 14.69% | 5.87% | | 19.57% | 9.93% | 15.24% | 10.11% | 100% | 39.88% | 18.38% |
| **Standard Deviation** | 20.5% | 0.7% | 0.8% | 5.6% | 0.2% | | 5.2% | 0.7% | 8.5% | 3.4% | 0.2% | 0.2% | 0.8% |
| **OpenArena - 1920 x 1080 (FPS)** | 59.33 | 102.00 | 122.00 | 138.57 | 90.37 | 154.43 | 103.13 | 95.17 | 152.90 | 90.33 | 364.60 | 344.90 | 321.07 |
| **Normalized** | 16.27% | 27.98% | 33.46% | 38.01% | 24.79% | 42.36% | 28.29% | 26.1% | 41.94% | 24.78% | 100% | 94.6% | 88.06% |
| **Standard Deviation** | 0.2% | 0.2% | 0.2% | 0.2% | 0.3% | 0.2% | 0.1% | 0.2% | 0.2% | 0.5% | 0.7% | 0.5% | 0.3% |
| **World of Padman - 1920 x 1080 (FPS)** | 73.20 | 111.10 | 68.50 | 140.77 | 85.33 | 150.23 | 112.67 | 96.80 | 74.60 | 85.13 | 285.90 | 286.93 | 278.87 |
| **Normalized** | 25.51% | 38.72% | 23.87% | 49.06% | 29.74% | 52.36% | 39.27% | 33.74% | 26% | 29.67% | 99.64% | 100% | 97.19% |
| **Standard Deviation** | 0% | 0.1% | 51.9% | 0.6% | 0.3% | 0.4% | 0.3% | 0.3% | 70.3% | 0.1% | 0.5% | 0.1% | 0.4% |
| **Doom 3 - 800 x 600 - Low (FPS)** | 68.50 | 80.77 | 71.23 | 81.37 | 74.70 | 84.60 | 80.50 | 71.50 | 81.50 | 74.90 | 206.87 | 158.20 | 173.30 |
| **Normalized** | 33.11% | 39.04% | 34.43% | 39.33% | 36.11% | 40.9% | 38.91% | 34.56% | 39.4% | 36.21% | 100% | 76.47% | 83.77% |
| **Standard Deviation** | 0.4% | 0.4% | 0.5% | 0.5% | 0.3% | 0.5% | 0.4% | 0.4% | 0.1% | 0.2% | 0.1% | 0.1% | 1.7% |
| **Nexuiz - 800 x 600 - No - Off (FPS)** | 98.66 | 152.48 | 102.43 | 107.10 | 82.24 | 209.16 | 155.14 | 103.34 | 107.40 | 83.16 | 212.18 | 209.41 | 182.16 |
| **Normalized** | 46.5% | 71.86% | 48.28% | 50.48% | 38.76% | 98.58% | 73.12% | 48.7% | 50.62% | 39.19% | 100% | 98.69% | 85.85% |
| **Standard Deviation** | 0.1% | 0.1% | 0.2% | 0.2% | 0% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 1.4% | 0.3% | 0.1% |

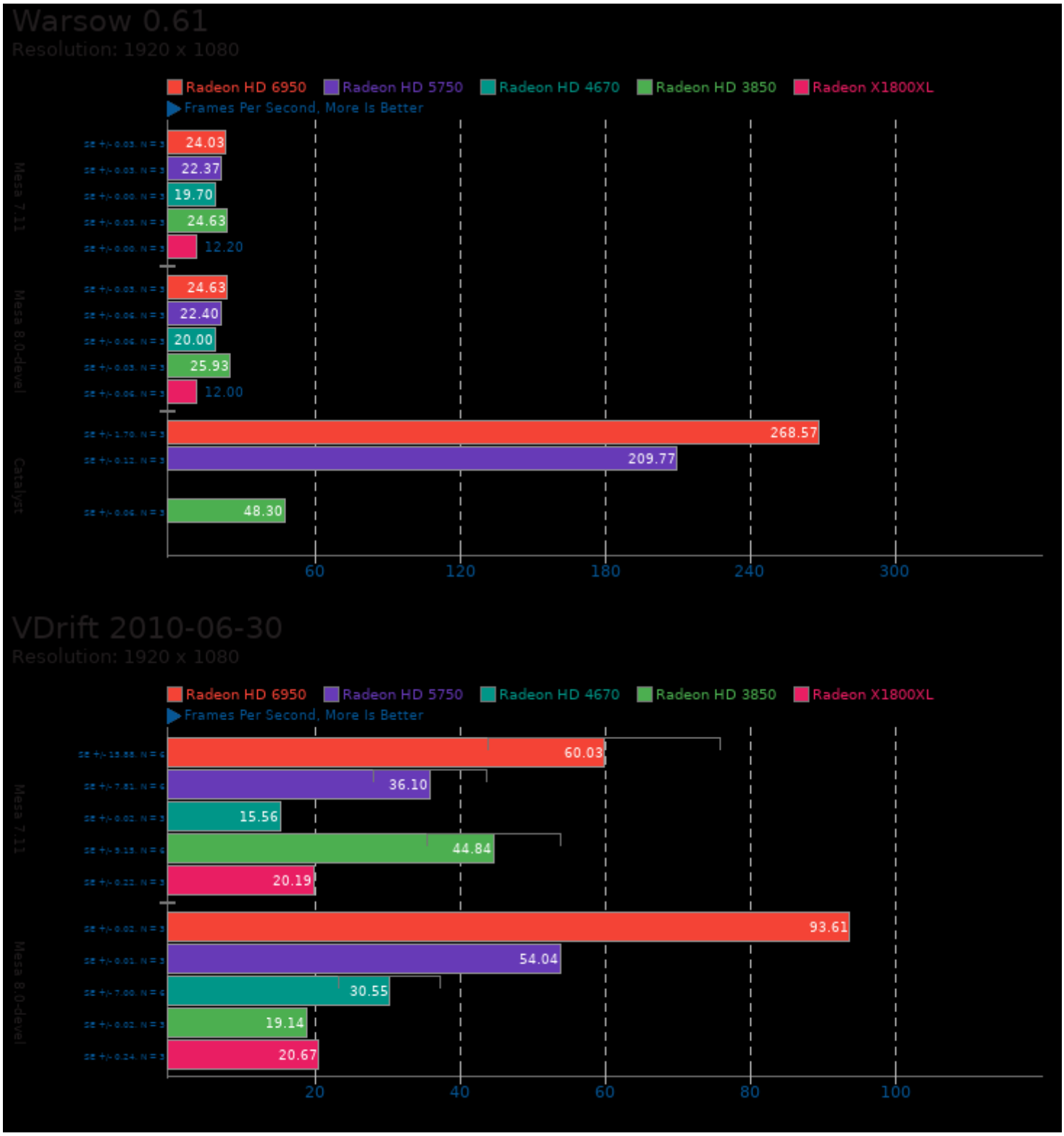
# Mesa 8.0 Radeon Gallium3D R300/R600

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **OpenArena - 800 x 600 (FPS)** | 220.83 | 315.70 | 274.63 | 305.40 | 259.43 | 349.47 | 311.87 | 273.03 | 300.13 | 258.20 | 362.77 | 367.00 | 289.90 |
| **Normalized** | 60.17% | 86.02% | 74.83% | 83.22% | 70.69% | 95.22% | 84.98% | 74.4% | 81.78% | 70.35% | 98.85% | 100% | 78.99% |
| **Standard Deviation** | 0.4% | 0.2% | 0.9% | 0.6% | 0.1% | 0.4% | 0.1% | 0.2% | 0.8% | 0.6% | 0.6% | 0.9% | 48.5% |

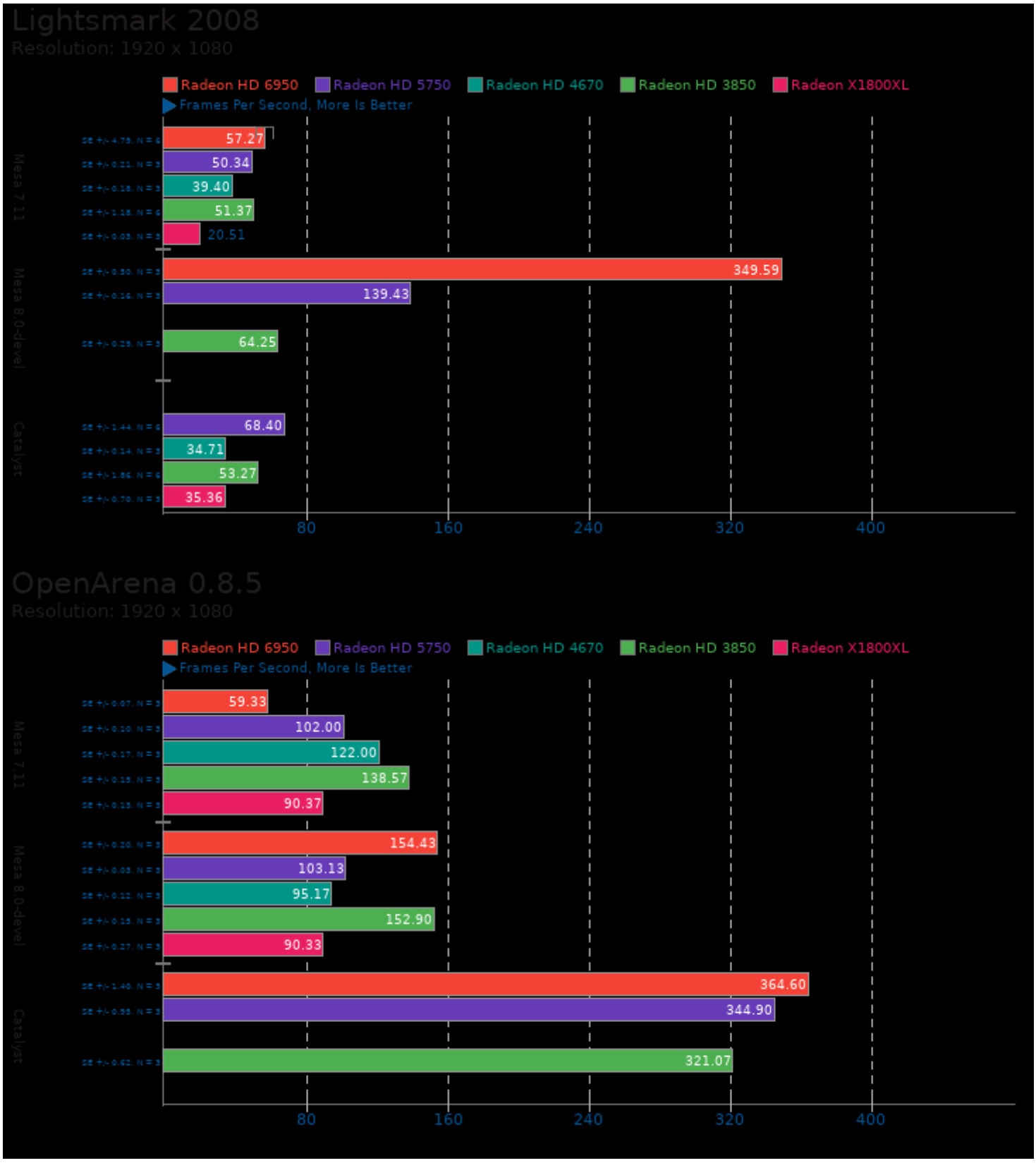
# Mesa 8.0 Radeon Gallium3D R300/R600



# Mesa 8.0 Radeon Gallium3D R300/R600

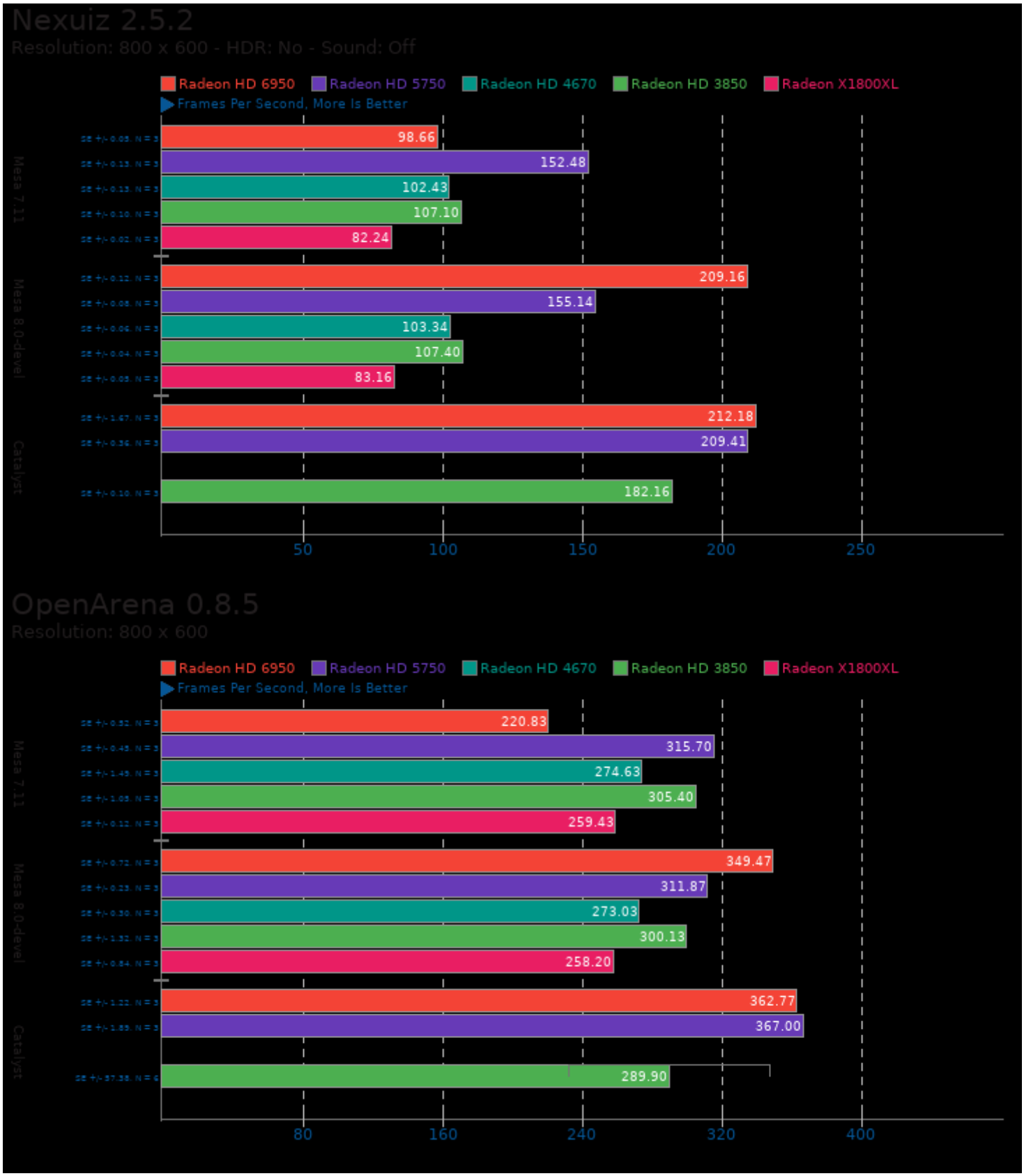


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