www.phoronix-test-suite.com

# OpenCL CUDA NVIDIA GPGPU Linux Tests

Running pts/shoc-1.0.0, pts/askap-1.0.0, pts/cuda-mini-nbody-1.0.0, pts/juliagpu-1.3.0, pts/mandelbulbgpu-1.3.0 via the Phoronix Test Suite.

**Automated Executive Summary**

*GeForce GTX Titan Xp Oct-Swappiness 100 had the most wins, coming in first place for 44% of the tests.*

*Based on the geometric mean of all complete results, the fastest (GeForce GTX Titan Xp Oct-Off) was 5.886x the speed of the slowest (GeForce GTX 750).*

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

*SHOC Scalable HeterOgeneous Computing (Target: CUDA - Benchmark: MD5 Hash) at 14.824x*
*SHOC Scalable HeterOgeneous Computing (Target: OpenCL - Benchmark: MD5 Hash) at 14.776x*
*CUDA Mini-Nbody (Test: Flush Denormals To Zero) at 9.087x*
*CUDA Mini-Nbody (Test: SOA Data Layout) at 8.978x*
*CUDA Mini-Nbody (Test: Original) at 8.935x*
*CUDA Mini-Nbody (Test: Cache Blocking) at 8.636x*
*CUDA Mini-Nbody (Test: Loop Unrolling) at 7.508x*
*SHOC Scalable HeterOgeneous Computing (Target: OpenCL - Benchmark: Texture Read Bandwidth) at 5.199x*
*SHOC Scalable HeterOgeneous Computing (Target: OpenCL - Benchmark: FFT SP) at 5.125x*

*ASKAP tConvolveCuda (Processing: Degridding) at 4.88x.*

# Test Systems:

## GeForce GTX 950

Processor: Intel Core i5-6600K @ 3.50GHz (4 Cores), Motherboard: MSI Z170A GAMING PRO (MS-7984) v1.0, Chipset: Intel Device 191f, Memory: 16384MB, Disk: 256GB TS256GSSD370S, Graphics: eVGA NVIDIA GeForce GTX 950 2048MB (135/405MHz), Audio: Intel Device a170, Network: Intel Device 15b8

OS: Ubuntu 14.04, Kernel: 3.19.0-33-generic (x86_64), Desktop: Unity 7.2.5, Display Server: X Server 1.17.1, Display Driver: NVIDIA 352.39, OpenGL: 4.3.0, Compiler: GCC 4.8.4 + Clang 3.4-1ubuntu3 + CUDA 7.5, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-libmudflap --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq performance
OpenCL Notes: GPU Compute Cores: 768
System Notes: GPU Compute Cores: 768.

## GeForce GTX 980 Ti

Processor: Intel Core i5-6600K @ 3.50GHz (4 Cores), Motherboard: MSI Z170A GAMING PRO (MS-7984) v1.0, Chipset: Intel Device 191f, Memory: 16384MB, Disk: 256GB TS256GSSD370S, Graphics: NVIDIA GeForce GTX 980 Ti 6144MB (999/3505MHz), Audio: Intel Device a170, Network: Intel Device 15b8

OS: Ubuntu 14.04, Kernel: 3.19.0-33-generic (x86_64), Desktop: Unity 7.2.5, Display Server: X Server 1.17.1, Display Driver: NVIDIA 352.39, OpenGL: 4.3.0, Compiler: GCC 4.8.4 + Clang 3.4-1ubuntu3 + CUDA 7.5, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-libmudflap --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq performance
OpenCL Notes: GPU Compute Cores: 2816
System Notes: GPU Compute Cores: 2816.

## GeForce GTX 970

Processor: Intel Core i5-6600K @ 3.50GHz (4 Cores), Motherboard: MSI Z170A GAMING PRO (MS-7984) v1.0, Chipset: Intel Device 191f, Memory: 16384MB, Disk: 256GB TS256GSSD370S, Graphics: eVGA NVIDIA GeForce GTX 970 4096MB (1163/3505MHz), Audio: Intel Device a170, Network: Intel Device 15b8

OS: Ubuntu 14.04, Kernel: 3.19.0-33-generic (x86_64), Desktop: Unity 7.2.5, Display Server: X Server 1.17.1, Display Driver: NVIDIA 352.39, OpenGL: 4.3.0, Compiler: GCC 4.8.4 + Clang 3.4-1ubuntu3 + CUDA 7.5, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-libmudflap --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug

--enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq performance
OpenCL Notes: GPU Compute Cores: 1664
System Notes: GPU Compute Cores: 1664.

## GeForce GTX 980

Processor: Intel Core i5-6600K @ 3.50GHz (4 Cores), Motherboard: MSI Z170A GAMING PRO (MS-7984) v1.0, Chipset: Intel Device 191f, Memory: 16384MB, Disk: 256GB TS256GSSD370S, Graphics: NVIDIA GeForce GTX 980 4096MB (1126/3505MHz), Audio: Intel Device a170, Network: Intel Device 15b8

OS: Ubuntu 14.04, Kernel: 3.19.0-33-generic (x86_64), Desktop: Unity 7.2.5, Display Server: X Server 1.17.1, Display Driver: NVIDIA 352.39, OpenGL: 4.3.0, Compiler: GCC 4.8.4 + Clang 3.4-1ubuntu3 + CUDA 7.5, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-libmudflap --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq performance
OpenCL Notes: GPU Compute Cores: 2048
System Notes: GPU Compute Cores: 2048.

## GeForce GTX 960

Processor: Intel Core i5-6600K @ 3.50GHz (4 Cores), Motherboard: MSI Z170A GAMING PRO (MS-7984) v1.0, Chipset: Intel Device 191f, Memory: 16384MB, Disk: 256GB TS256GSSD370S, Graphics: eVGA NVIDIA GeForce GTX 960 2048MB (1277/3505MHz), Audio: Intel Device a170, Network: Intel Device 15b8

OS: Ubuntu 14.04, Kernel: 3.19.0-33-generic (x86_64), Desktop: Unity 7.2.5, Display Server: X Server 1.17.1, Display Driver: NVIDIA 352.39, OpenGL: 4.3.0, Compiler: GCC 4.8.4 + Clang 3.4-1ubuntu3 + CUDA 7.5, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-libmudflap --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq performance
OpenCL Notes: GPU Compute Cores: 1024
System Notes: GPU Compute Cores: 1024.

## GeForce GTX TITAN X

Processor: Intel Core i5-6600K @ 3.50GHz (4 Cores), Motherboard: MSI Z170A GAMING PRO (MS-7984) v1.0, Chipset: Intel Device 191f, Memory: 16384MB, Disk: 256GB TS256GSSD370S, Graphics: NVIDIA GeForce GTX TITAN X 12288MB (1001/3505MHz), Audio: Intel Device a170, Network: Intel Device 15b8

OS: Ubuntu 14.04, Kernel: 3.19.0-33-generic (x86_64), Desktop: Unity 7.2.5, Display Server: X Server 1.17.1, Display Driver: NVIDIA 352.39, OpenGL: 4.3.0, Compiler: GCC 4.8.4 + Clang 3.4-1ubuntu3 + CUDA 7.5, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-libmudflap --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq performance
OpenCL Notes: GPU Compute Cores: 3072
System Notes: GPU Compute Cores: 3072.

## GeForce GTX 780 Ti

Processor: Intel Core i5-6600K @ 3.50GHz (4 Cores), Motherboard: MSI Z170A GAMING PRO (MS-7984) v1.0, Chipset: Intel Device 191f, Memory: 16384MB, Disk: 256GB TS256GSSD370S, Graphics: NVIDIA GeForce GTX 780 Ti 3072MB (875/3500MHz), Audio: Intel Device a170, Network: Intel Device 15b8

OS: Ubuntu 14.04, Kernel: 3.19.0-33-generic (x86_64), Desktop: Unity 7.2.5, Display Server: X Server 1.17.1, Display Driver: NVIDIA 352.39, OpenGL: 4.3.0, Compiler: GCC 4.8.4 + Clang 3.4-1ubuntu3 + CUDA 7.5, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-libmudflap --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq performance
OpenCL Notes: GPU Compute Cores: 2880
System Notes: GPU Compute Cores: 2880.

## GeForce GTX 680

Processor: Intel Core i5-6600K @ 3.50GHz (4 Cores), Motherboard: MSI Z170A GAMING PRO (MS-7984) v1.0, Chipset: Intel Device 191f, Memory: 16384MB, Disk: 256GB TS256GSSD370S, Graphics: NVIDIA GeForce GTX 680 2048MB (1006/3004MHz), Audio: Intel Device a170, Network: Intel Device 15b8

OS: Ubuntu 14.04, Kernel: 3.19.0-33-generic (x86_64), Desktop: Unity 7.2.5, Display Server: X Server 1.17.1, Display Driver: NVIDIA 352.39, OpenGL: 4.3.0, Compiler: GCC 4.8.4 + Clang 3.4-1ubuntu3 + CUDA 7.5, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-libmudflap --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq performance
OpenCL Notes: GPU Compute Cores: 1536
System Notes: GPU Compute Cores: 1536.

## GeForce GTX 750

Processor: Intel Core i5-6600K @ 3.50GHz (4 Cores), Motherboard: MSI Z170A GAMING PRO (MS-7984) v1.0, Chipset: Intel Device 191f, Memory: 16384MB, Disk: 256GB TS256GSSD370S, Graphics: eVGA NVIDIA GeForce GTX 750 1024MB (1019/2505MHz), Audio: Intel Device a170, Network: Intel Device 15b8

OS: Ubuntu 14.04, Kernel: 3.19.0-33-generic (x86_64), Desktop: Unity 7.2.5, Display Server: X Server 1.17.1, Display Driver: NVIDIA 352.39, OpenGL: 4.3.0, Compiler: GCC 4.8.4 + Clang 3.4-1ubuntu3 + CUDA 7.5, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-libmudflap --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq performance
OpenCL Notes: GPU Compute Cores: 512
System Notes: GPU Compute Cores: 512.

## GeForce GTX 760

Processor: Intel Core i5-6600K @ 3.50GHz (4 Cores), Motherboard: MSI Z170A GAMING PRO (MS-7984) v1.0, Chipset: Intel Device 191f, Memory: 16384MB, Disk: 256GB TS256GSSD370S, Graphics: NVIDIA GeForce GTX 760 2048MB (980/3004MHz), Audio: Intel Device a170, Network: Intel Device 15b8

OS: Ubuntu 14.04, Kernel: 3.19.0-33-generic (x86_64), Desktop: Unity 7.2.5, Display Server: X Server 1.17.1, Display Driver: NVIDIA 352.39, OpenGL: 4.3.0, Compiler: GCC 4.8.4 + Clang 3.4-1ubuntu3 + CUDA 7.5, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-libmudflap --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq performance
OpenCL Notes: GPU Compute Cores: 1152
System Notes: GPU Compute Cores: 1152.

## GeForce GTX Titan Xp Oct-Off

Processor: Intel Core i9-7920X @ 4.40GHz (24 Cores), Motherboard: ASUS WS X299 SAGE, Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 64512MB, Disk: 10001GB Western Digital WD101KRYZ-01, Graphics: TITAN Xp 12288MB (139/405MHz), Audio: Realtek ALC1220, Network: Intel Connection

OS: Ubuntu 18.04, Kernel: 4.15.0-42-generic (x86_64), Desktop: GNOME Shell 3.28.3, Display Driver: NVIDIA 410.48, OpenGL: 4.6.0, Compiler: CUDA 9.1, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate powersave
OpenCL Notes: GPU Compute Cores: 3840
System Notes: GPU Compute Cores: 3840.

## GeForce GTX Titan Xp Oct-Swappiness 100

Processor: Intel Core i9-7920X @ 4.40GHz (24 Cores), Motherboard: ASUS WS X299 SAGE, Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 64512MB, Disk: 10001GB Western Digital WD101KRYZ-01, Graphics: TITAN Xp 12288MB (1468/5702MHz), Audio: Realtek ALC1220, Network: Intel Connection

OS: Ubuntu 18.04, Kernel: 4.15.0-42-generic (x86_64), Desktop: GNOME Shell 3.28.3, Display Driver: NVIDIA 410.48, OpenGL: 4.6.0, Compiler: CUDA 9.1, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate powersave
OpenCL Notes: GPU Compute Cores: 3840
System Notes: GPU Compute Cores: 3840.

# OpenCL CUDA NVIDIA GPGPU Linux Tests

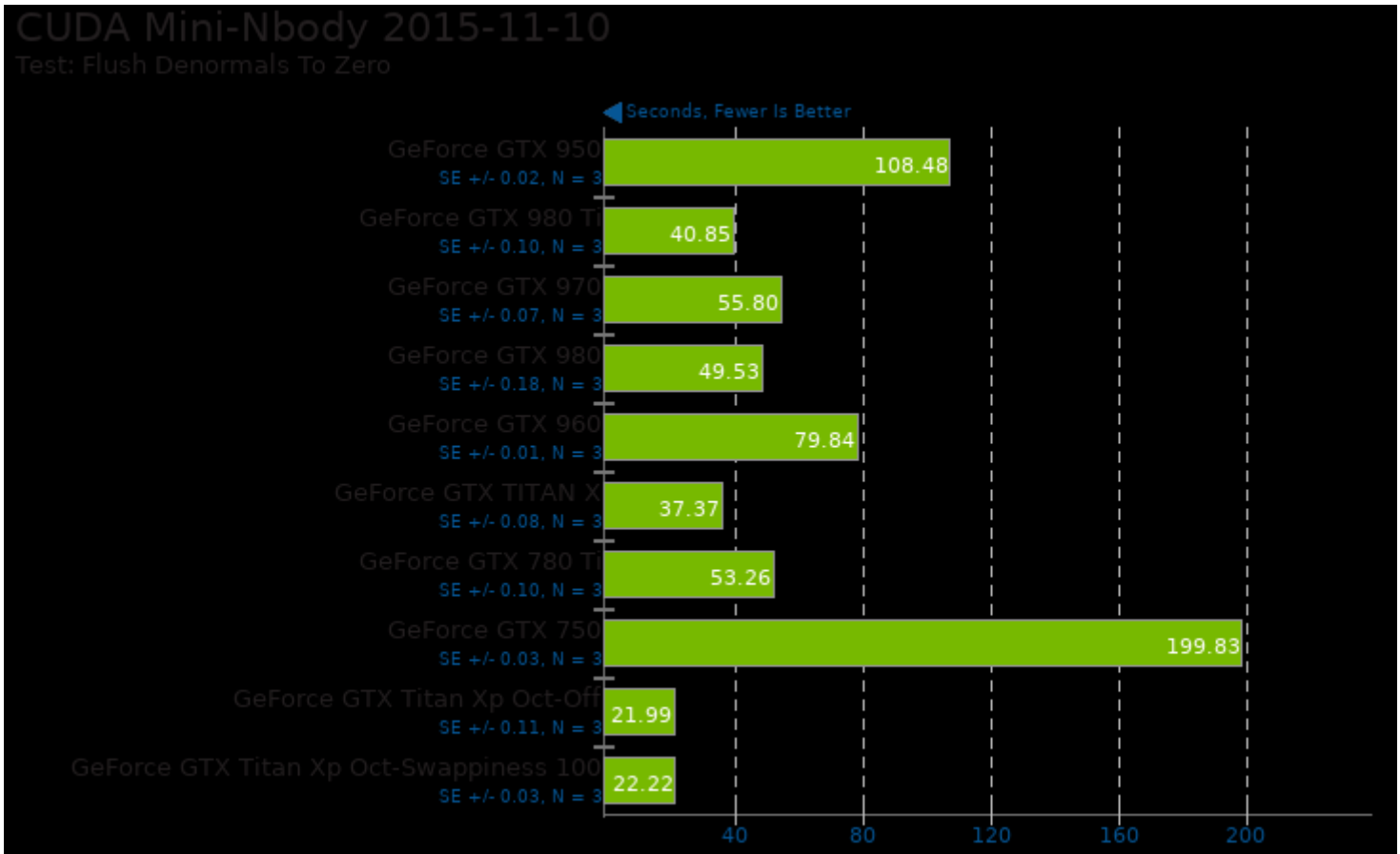
| | GeForce GTX 950 | GeForce GTX 980 Ti | GeForce GTX 970 | GeForce GTX 980 | GeForce GTX 960 | GeForce GTX TITAN X | GeForce GTX 780 Ti | GeForce GTX 680 | GeForce GTX 750 | GeForce GTX 760 | GeForce GTX Titan Xp Oct-Off | GeForce GTX Titan Xp Oct-Swappines |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CUDA Mini-Nbody -** | 108.48 | 40.85 | 55.80 | 49.53 | 79.84 | 37.37 | 53.26 | | **199.83** | | **21.99** | 22.22 |
| **Normalized** | 20.27% | 53.83% | 39.41% | 44.4% | 27.54% | 58.84% | 41.29% | | 11% | | 100% | 98.96% |
| **Standard Deviation** | 0% | 0.4% | 0.2% | 0.6% | 0% | 0.4% | 0.3% | | 0% | | 0.9% | 0.2% |
| **CUDA Mini-Nbody - SOA Data Layout** | 108.50 | 40.94 | 55.87 | 50.15 | 79.97 | 37.43 | 54.39 | | **199.95** | | 22.34 | **22.27** |
| **Normalized** | 20.53% | 54.4% | 39.86% | 44.41% | 27.85% | 59.5% | 40.95% | | 11.14% | | 99.69% | 100% |
| **Standard Deviation** | 0% | 0.5% | 0.2% | 0.7% | 0.2% | 0.9% | 0.5% | | 0% | | 0.7% | 0.4% |
| **CUDA Mini-Nbody -** | 105.30 | 34.58 | 54.32 | 45.38 | 82.01 | 32.37 | 61.03 | | **180.66** | | 20.40 | **20.22** |
| **Normalized** | 19.2% | 58.47% | 37.22% | 44.56% | 24.66% | 62.47% | 33.13% | | 11.19% | | 99.12% | 100% |
| **Standard Deviation** | 0.4% | 2.8% | 0.4% | 0.4% | 0.9% | 1.9% | 1.4% | | 0% | | 1% | 0.9% |
| **CUDA Mini-Nbody - Cache Blocking** | 49.89 | 19.77 | 28.53 | 25.13 | 37.08 | 18.65 | 29.99 | | **98.19** | | 11.49 | **11.37** |
| **Normalized** | 22.79% | 57.51% | 39.85% | 45.24% | 30.66% | 60.97% | 37.91% | | 11.58% | | 98.96% | 100% |
| **Standard Deviation** | 0.1% | 1.8% | 0% | 0.4% | 0.1% | 0.9% | 1.6% | | 0% | | 0.5% | 0.3% |
| **CUDA Mini-Nbody - Loop Unrolling** | 47.54 | 18.46 | 26.42 | 23.88 | 35.35 | 17.59 | 27.05 | | **89.34** | | 12.02 | **11.90** |
| **Normalized** | 25.03% | 64.46% | 45.04% | 49.83% | 33.66% | 67.65% | 43.99% | | 13.32% | | 99% | 100% |
| **Standard Deviation** | 0.1% | 1.4% | 0.1% | 1.5% | 0.2% | 2.5% | 0.3% | | 0.1% | | 1.5% | 0.4% |
| **SHOC Scalable HeterOgeneous Computing - OpenCL - T.R.B (GB/s)** | 239.19 | 345.55 | 283.36 | 332.60 | 269.98 | 354.09 | 286.62 | 242.16 | **121.14** | 170.26 | 626.12 | **629.83** |
| **Normalized** | 37.98% | 54.86% | 44.99% | 52.81% | 42.87% | 56.22% | 45.51% | 38.45% | 19.23% | 27.03% | 99.41% | 100% |
| **Standard Deviation** | 0.5% | 0.1% | 0% | 0.1% | 0.4% | 0.8% | 0% | 0.7% | 0.3% | 0.3% | 0.4% | 0.2% |
| **SHOC Scalable HeterOgeneous Computing - OpenCL - FFT SP (GFLOPS)** | 63.22 | 170.36 | 117.23 | 140.12 | 62.78 | 173.89 | 126.71 | 74.97 | **54.69** | 78.44 | **280.29** | 279.72 |
| **Normalized** | 22.56% | 60.78% | 41.82% | 49.99% | 22.4% | 62.04% | 45.21% | 26.75% | 19.51% | 27.99% | 100% | 99.8% |
| **Standard Deviation** | 0.2% | 0.7% | 0.8% | 1.6% | 3.3% | 0.2% | 0.3% | 2% | 0.3% | 0.7% | 1.1% | 1.1% |

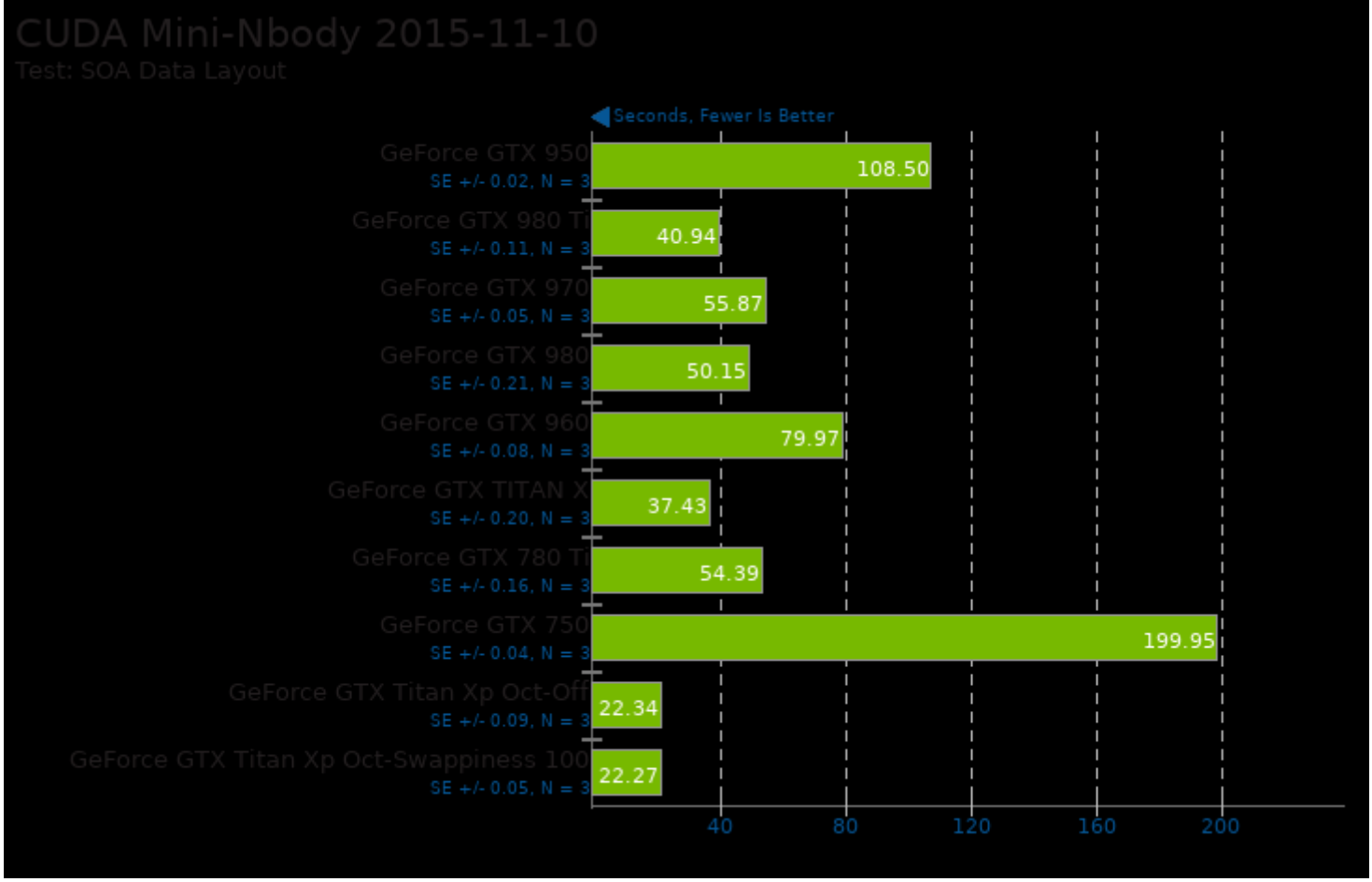
# OpenCL CUDA NVIDIA GPGPU Linux Tests

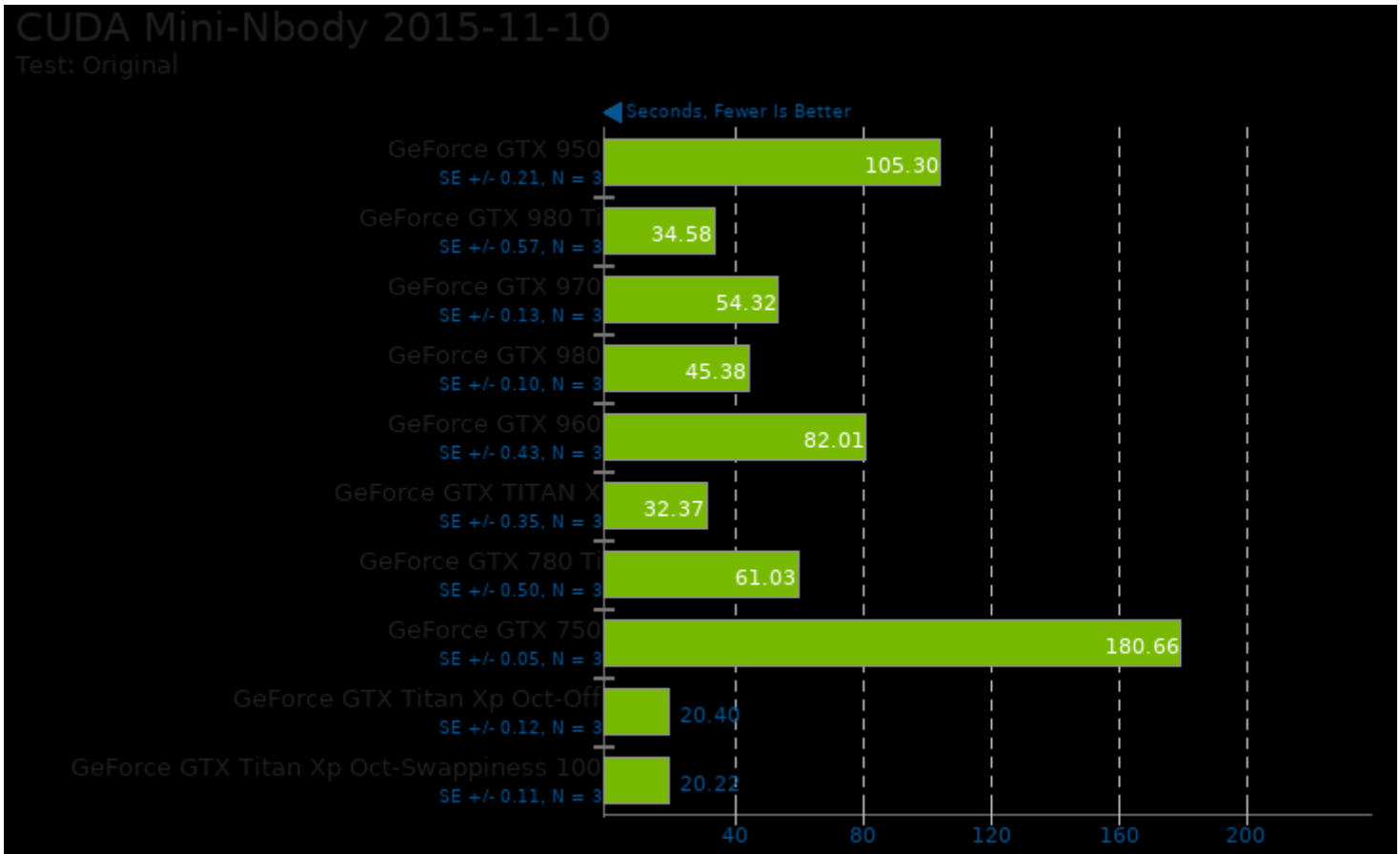
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ASKAP tConvolveCuda - Degridding (Million Grid Points/sec)** | 5706 | 17381 | 9509 | 11094 | **5290** | 17381 | | | | | **25819** | 25012 |
| **Normalized** | 22.1% | 67.32% | 36.83% | 42.97% | 20.49% | 67.32% | | | | | 100% | 96.87% |
| **Standard Deviation** | 1.2% | 3.7% | 0% | 0% | 1.1% | 3.7% | | | | | 5.4% | 5.6% |
| **MandelbulbGPU - GPU (Samples/sec)** | 37156071 | 71656709 | 58811317 | 63616559 | 44953399 | 75614774 | 47400002 | 31636513 | **20060276** | 25392139 | **87713632** | 86921286 |
| **Normalized** | 42.36% | 81.69% | 67.05% | 72.53% | 51.25% | 86.21% | 54.04% | 36.07% | 22.87% | 28.95% | 100% | 99.1% |
| **Standard Deviation** | 0.1% | 0.4% | 0.3% | 0.4% | 0.3% | 0.4% | 0.2% | 0.2% | 0.1% | 0.2% | 0.4% | 1.9% |
| **ASKAP tConvolveCuda - Gridding (Million Grid Points/sec)** | 3399 | 8321 | 5325 | 6051 | **3145** | 8459 | | | | | 13465 | **13546** |
| **Normalized** | 25.09% | 61.42% | 39.31% | 44.67% | 23.22% | 62.44% | | | | | 99.4% | 100% |
| **Standard Deviation** | 0.7% | 0% | 0% | 0% | 0.7% | 3.1% | | | | | 6.1% | 3% |
| **JuliaGPU - GPU (Samples/sec)** | 64913683 | 12797805 0 | 10414491 7 | 11383060 4 | 80042042 | 13603792 1 | 78839770 | 48074789 | **36136874** | 38310651 | 14921867 3 | **14933552 4** |
| **Normalized** | 43.47% | 85.7% | 69.74% | 76.22% | 53.6% | 91.1% | 52.79% | 32.19% | 24.2% | 25.65% | 99.92% | 100% |
| **Standard Deviation** | 0.2% | 0.6% | 0.1% | 0.3% | 0.3% | 0.4% | 0.6% | 0.2% | 0.1% | 0.1% | 0.4% | 0.6% |
| **LuxMark - GPU - Hotel (Score)** | 769 | 1855 | 1346 | 1492 | 897 | **1906** | 992 | 577 | | **463** | | |
| **Normalized** | 40.35% | 97.32% | 70.62% | 78.28% | 47.06% | 100% | 52.05% | 30.27% | | 24.29% | | |
| **Standard Deviation** | 0% | 0% | 0% | 0.1% | 0.1% | 0% | 0% | 0.6% | | 0.1% | | |
| **SHOC Scalable HeterOgeneous Computing - CUDA - FFT SP (GFLOPS)** | 172.28 | 311.46 | 263.14 | 289.63 | 212.43 | 324.09 | | | **113.64** | | **458.71** | 450.23 |
| **Normalized** | 37.56% | 67.9% | 57.37% | 63.14% | 46.31% | 70.65% | | | 24.77% | | 100% | 98.15% |
| **Standard Deviation** | 0.5% | 0.2% | 1.6% | 1.8% | 1.2% | 0.6% | | | 1.1% | | 0.4% | 1.5% |
| **LuxMark - GPU - Luxball HDR (Score)** | 5313 | 13802 | 9737 | 10713 | 5474 | **14081** | 9639 | 4554 | **3491** | 4253 | | |
| **Normalized** | 37.73% | 98.02% | 69.15% | 76.08% | 38.88% | 100% | 68.45% | 32.34% | 24.79% | 30.2% | | |
| **Standard Deviation** | 0.5% | 0.6% | 0.4% | 0% | 0% | 0.1% | 0.6% | 0.5% | 0.6% | 0.1% | | |
| **SHOC Scalable HeterOgeneous Computing - CUDA - T.R.B (GB/s)** | 326.23 | 348.92 | 325.16 | 336.48 | 351.31 | 356.52 | | | **158.42** | | 623.58 | **635.35** |
| **Normalized** | 51.35% | 54.92% | 51.18% | 52.96% | 55.29% | 56.11% | | | 24.93% | | 98.15% | 100% |
| **Standard Deviation** | 0.4% | 0.6% | 0.1% | 0.6% | 0.1% | 0.1% | | | 0.5% | | 3.2% | 0.6% |
| **LuxMark - GPU - Microphone (Score)** | 2423 | 6268 | 4458 | 4776 | 2460 | **6360** | 4302 | 2127 | | **1941** | | |
| **Normalized** | 38.1% | 98.55% | 70.09% | 75.09% | 38.68% | 100% | 67.64% | 33.44% | | 30.52% | | |
| **Standard Deviation** | 0.3% | 0.5% | 0.3% | 0% | 0.1% | 0.1% | 0.5% | 0.2% | | 0.1% | | |

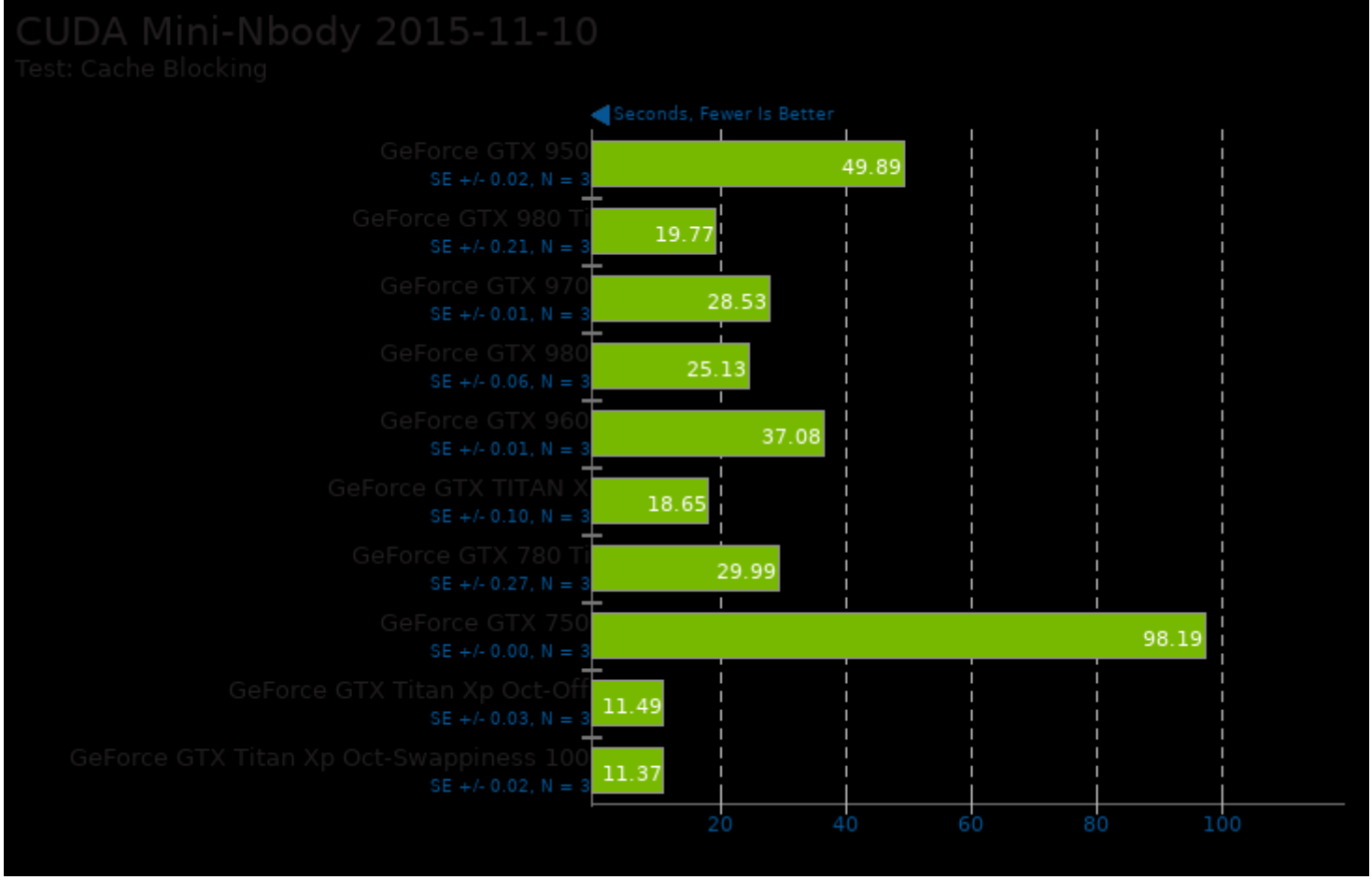
# OpenCL CUDA NVIDIA GPGPU Linux Tests

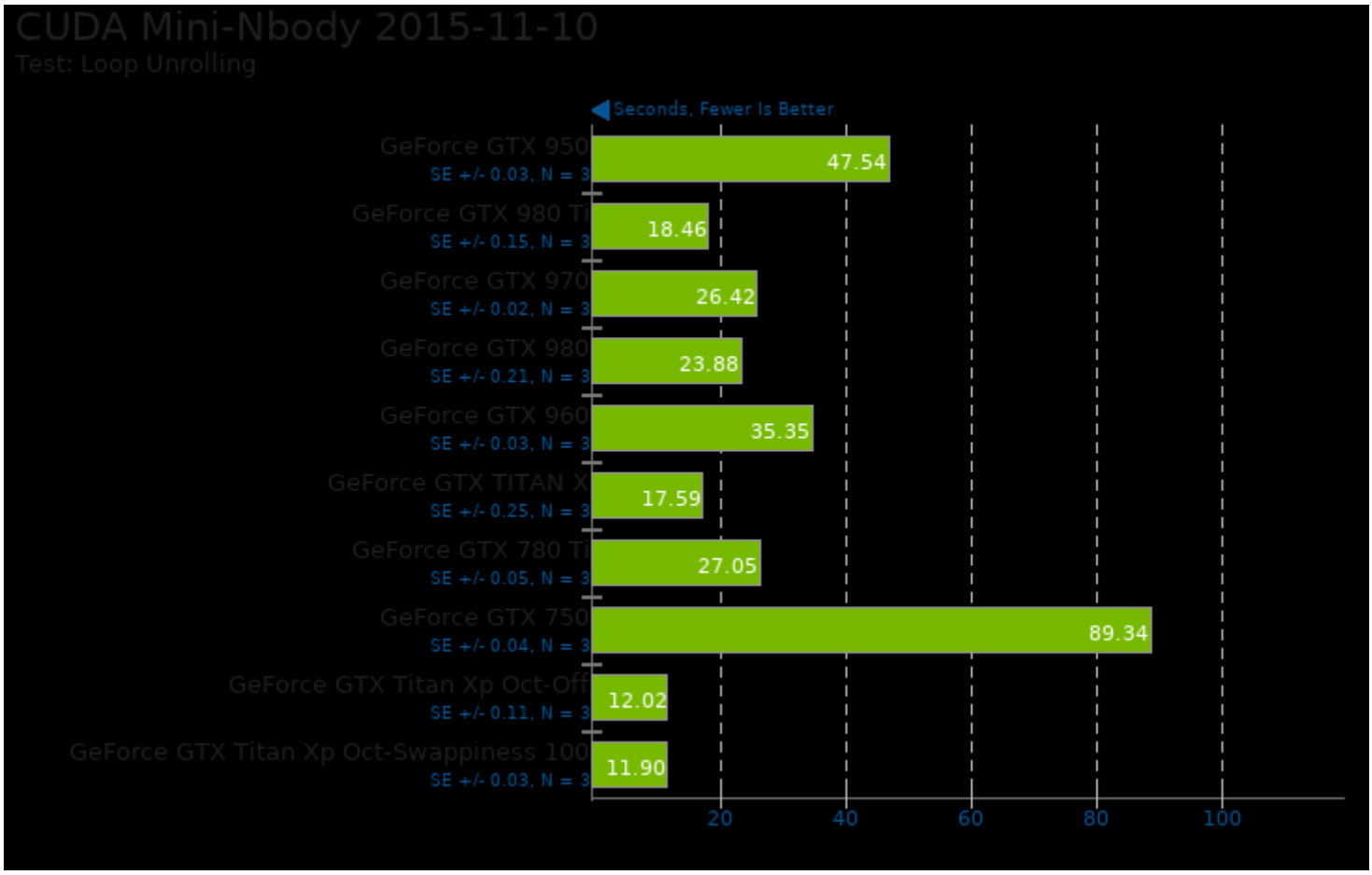
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SHOC Scalable HeterOgeneous Computing - CUDA - MD5 Hash (GHash/s)** | 2.36 | 6.81 | 4.79 | 5.70 | 3.38 | 7.42 | | | **1.08** | | **16.01** | **16.01** |
| **Normalized** | 14.74% | 42.54% | 29.92% | 35.6% | 21.11% | 46.35% | | | 6.75% | | 100% | 100% |
| **Standard Deviation** | 0.2% | 0% | 0.1% | 0% | 0.1% | 0% | | | 0% | | 0% | 0% |
| **SHOC Scalable HeterOgeneous Computing - OpenCL - MD5 Hash (GHash/s)** | 2.34 | 6.79 | 4.77 | 5.68 | 3.36 | 7.41 | 3.78 | 1.91 | **1.07** | 1.40 | **15.81** | **15.81** |
| **Normalized** | 14.8% | 42.95% | 30.17% | 35.93% | 21.25% | 46.87% | 23.91% | 12.08% | 6.77% | 8.86% | 100% | 100% |
| **Standard Deviation** | 0.1% | 0.1% | 0% | 0% | 0.1% | 0.1% | 0.1% | 0.1% | 0% | 0% | 0.1% | 0.1% |

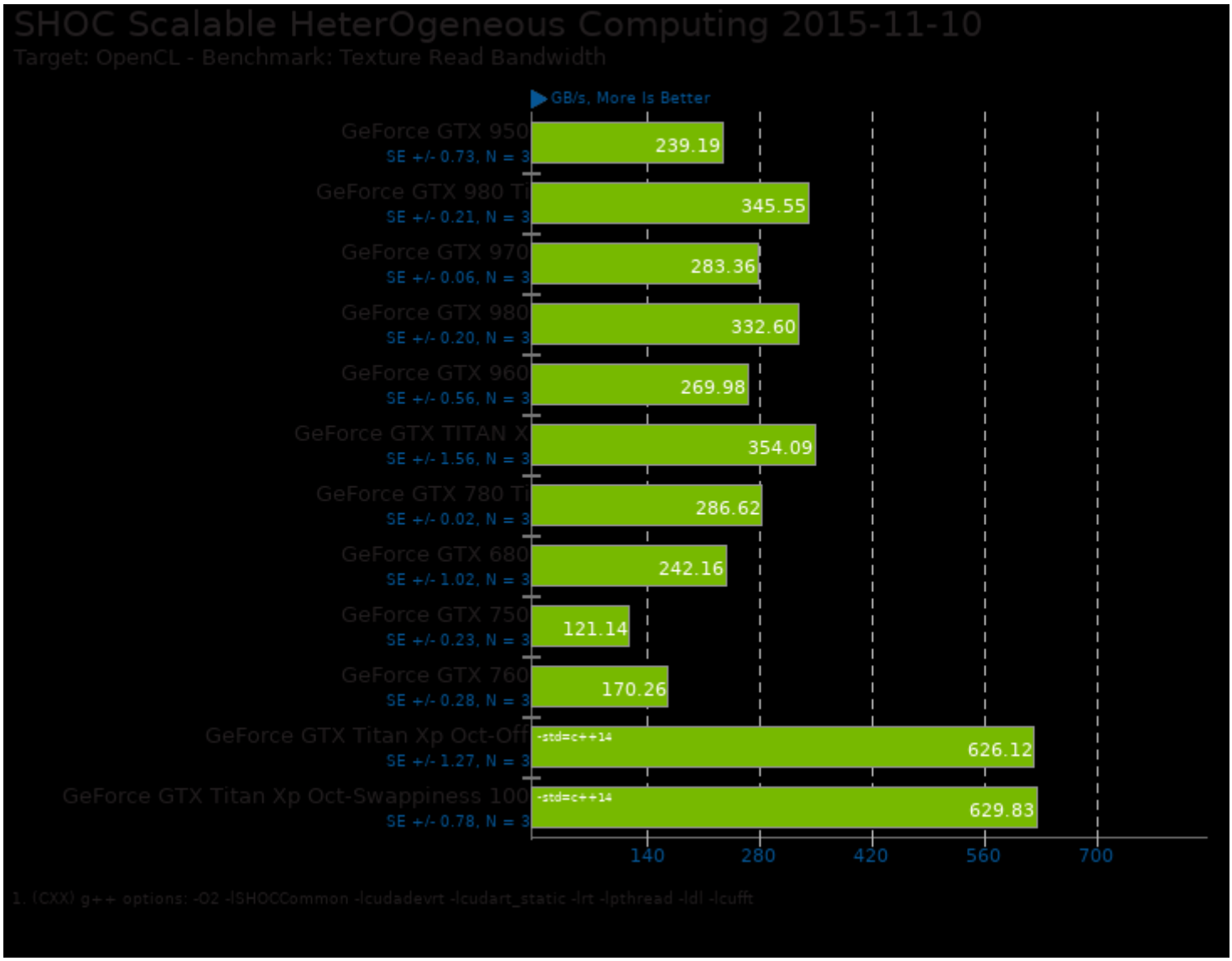

CUDA Mini-Nbody 2015-11-10
Test: Flush Denormals To Zero
Seconds, Fewer Is Better
GeForce GTX 950
SE +/- 0.02, N = 3
108.48
GeForce GTX 980 Ti
SE +/- 0.10, N = 3
40.85
GeForce GTX 970
SE +/- 0.07, N = 3
55.80
GeForce GTX 980
SE +/- 0.18, N = 3
49.53
GeForce GTX 960
SE +/- 0.01, N = 3
79.84
GeForce GTX TITAN X
SE +/- 0.08, N = 3
37.37
GeForce GTX 780 Ti
SE +/- 0.10, N = 3
53.26
GeForce GTX 750
SE +/- 0.03, N = 3
199.83
GeForce GTX Titan Xp Oct-Off
SE +/- 0.11, N = 3
21.99
GeForce GTX Titan Xp Oct-Swappiness 100
SE +/- 0.03, N = 3
22.22
40
80
120
160
200

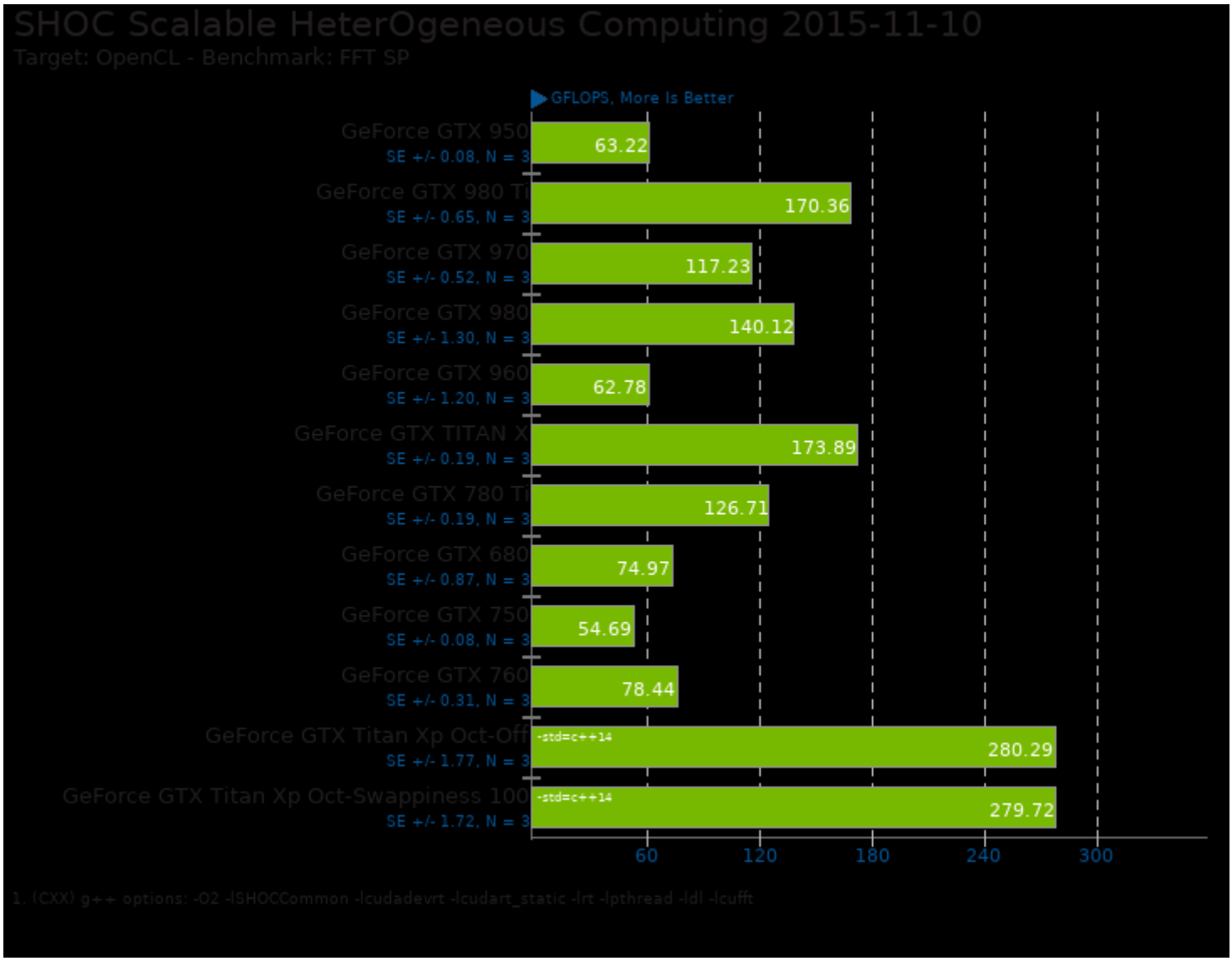

CUDA Mini-Nbody 2015-11-10
Test: SOA Data Layout
Seconds, Fewer Is Better
GeForce GTX 950
SE +/- 0.02, N = 3
108.50
GeForce GTX 980 Ti
SE +/- 0.11, N = 3
40.94
GeForce GTX 970
SE +/- 0.05, N = 3
55.87
GeForce GTX 980
SE +/- 0.21, N = 3
50.15
GeForce GTX 960
SE +/- 0.08, N = 3
79.97
GeForce GTX TITAN X
SE +/- 0.20, N = 3
37.43
GeForce GTX 780 Ti
SE +/- 0.16, N = 3
54.39
GeForce GTX 750
SE +/- 0.04, N = 3
199.95
GeForce GTX Titan Xp Oct-Off
SE +/- 0.09, N = 3
22.34
GeForce GTX Titan Xp Oct-Swappiness 100
SE +/- 0.05, N = 3
22.27
40
80
120
160
200

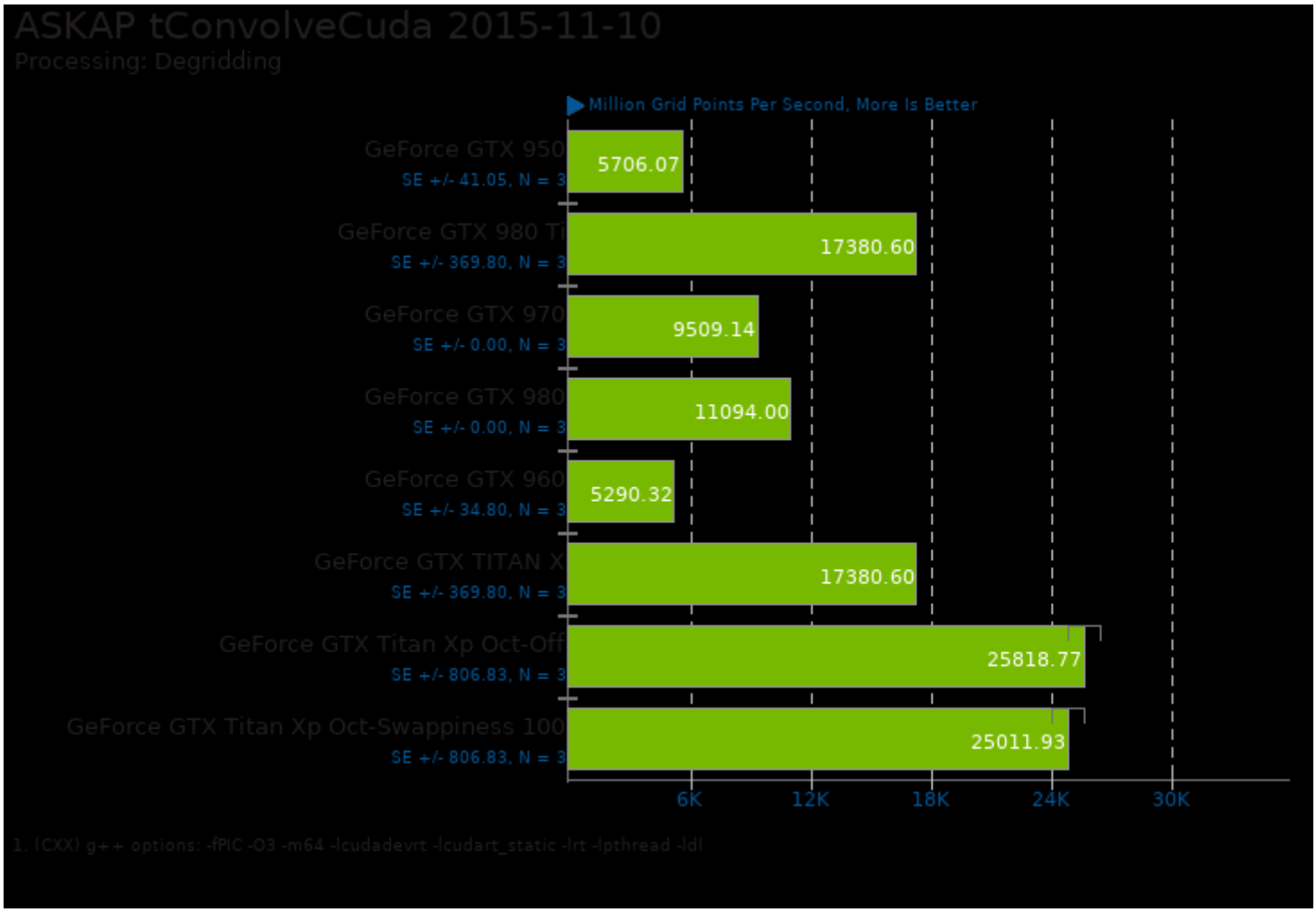

CUDA Mini-Nbody 2015-11-10
Test: Original
Seconds, Fewer Is Better
GeForce GTX 950
SE +/- 0.21, N = 3
105.30
GeForce GTX 980 Ti
SE +/- 0.57, N = 3
34.58
GeForce GTX 970
SE +/- 0.13, N = 3
54.32
GeForce GTX 980
SE +/- 0.10, N = 3
45.38
GeForce GTX 960
SE +/- 0.43, N = 3
82.01
GeForce GTX TITAN X
SE +/- 0.35, N = 3
32.37
GeForce GTX 780 Ti
SE +/- 0.50, N = 3
61.03
GeForce GTX 750
SE +/- 0.05, N = 3
180.66
GeForce GTX Titan Xp Oct-Off
SE +/- 0.12, N = 3
20.40
GeForce GTX Titan Xp Oct-Swappiness 100
SE +/- 0.11, N = 3
20.22
40
80
120
160
200

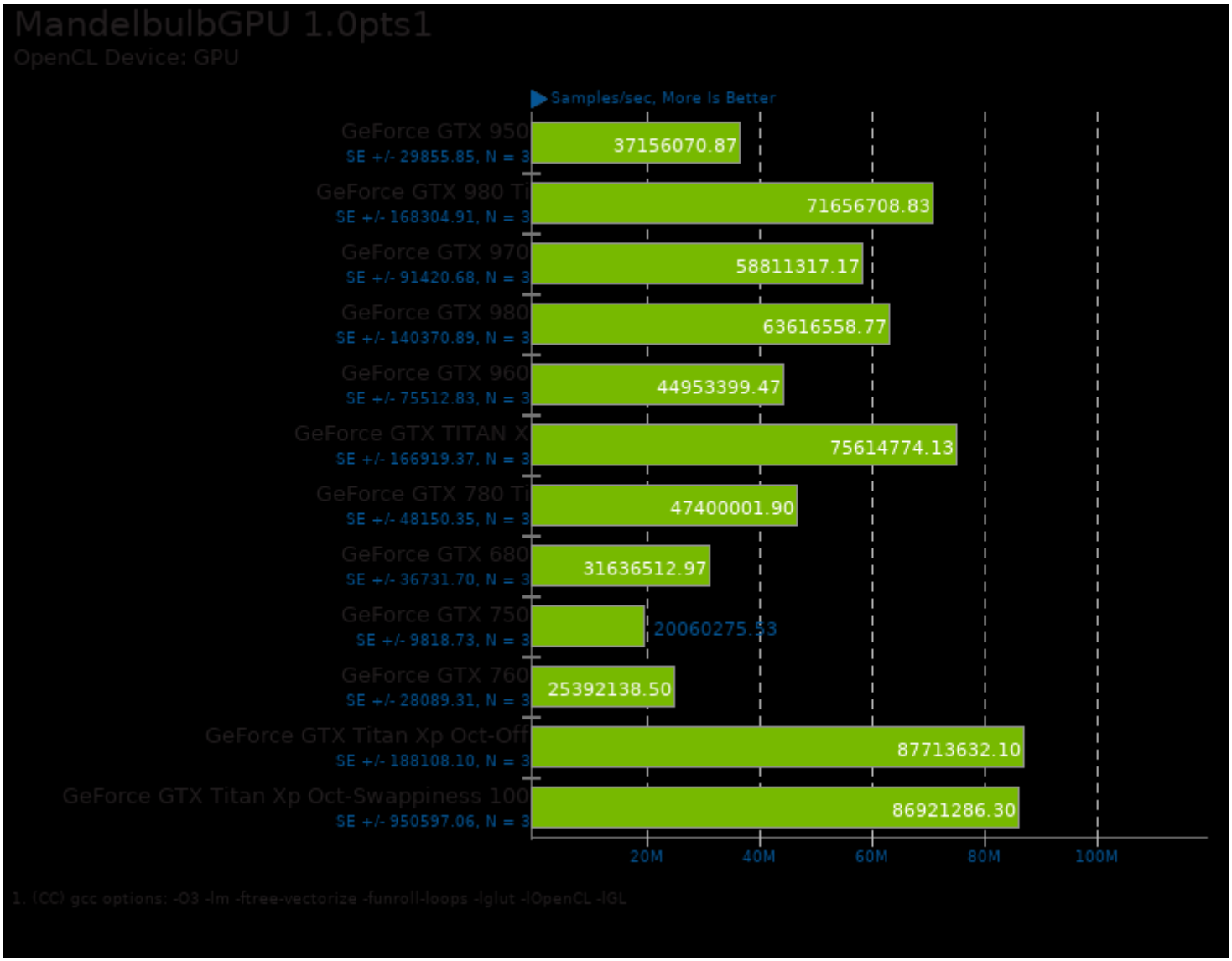

CUDA Mini-Nbody 2015-11-10
Test: Cache Blocking
Seconds, Fewer Is Better
GeForce GTX 950
SE +/- 0.02, N = 3
49.89
GeForce GTX 980 Ti
SE +/- 0.21, N = 3
19.77
GeForce GTX 970
SE +/- 0.01, N = 3
28.53
GeForce GTX 980
SE +/- 0.06, N = 3
25.13
GeForce GTX 960
SE +/- 0.01, N = 3
37.08
GeForce GTX TITAN X
SE +/- 0.10, N = 3
18.65
GeForce GTX 780 Ti
SE +/- 0.27, N = 3
29.99
GeForce GTX 750
SE +/- 0.00, N = 3
98.19
GeForce GTX Titan Xp Oct-Off
SE +/- 0.03, N = 3
11.49
GeForce GTX Titan Xp Oct-Swappiness 100
SE +/- 0.02, N = 3
11.37
20
40
60
80
100

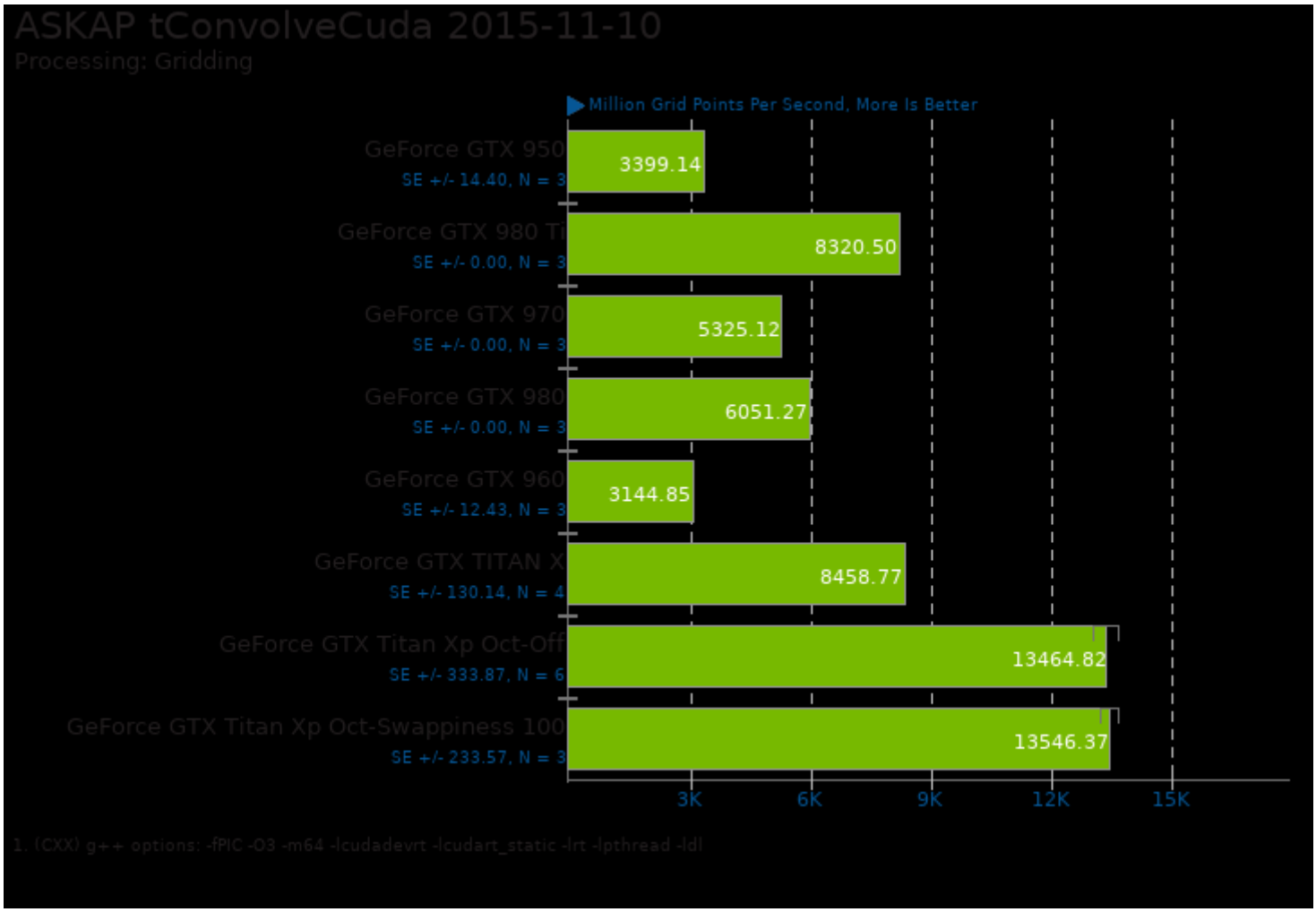

CUDA Mini-Nbody 2015-11-10
Test: Loop Unrolling
Seconds, Fewer Is Better
GeForce GTX 950
SE +/- 0.03, N = 3
47.54
GeForce GTX 980 Ti
SE +/- 0.15, N = 3
18.46
GeForce GTX 970
SE +/- 0.02, N = 3
26.42
GeForce GTX 980
SE +/- 0.21, N = 3
23.88
GeForce GTX 960
SE +/- 0.03, N = 3
35.35
GeForce GTX TITAN X
SE +/- 0.25, N = 3
17.59
GeForce GTX 780 Ti
SE +/- 0.05, N = 3
27.05
GeForce GTX 750
SE +/- 0.04, N = 3
89.34
GeForce GTX Titan Xp Oct-Off
SE +/- 0.11, N = 3
12.02
GeForce GTX Titan Xp Oct-Swappiness 100
SE +/- 0.03, N = 3
11.90
20
40
60
80
100

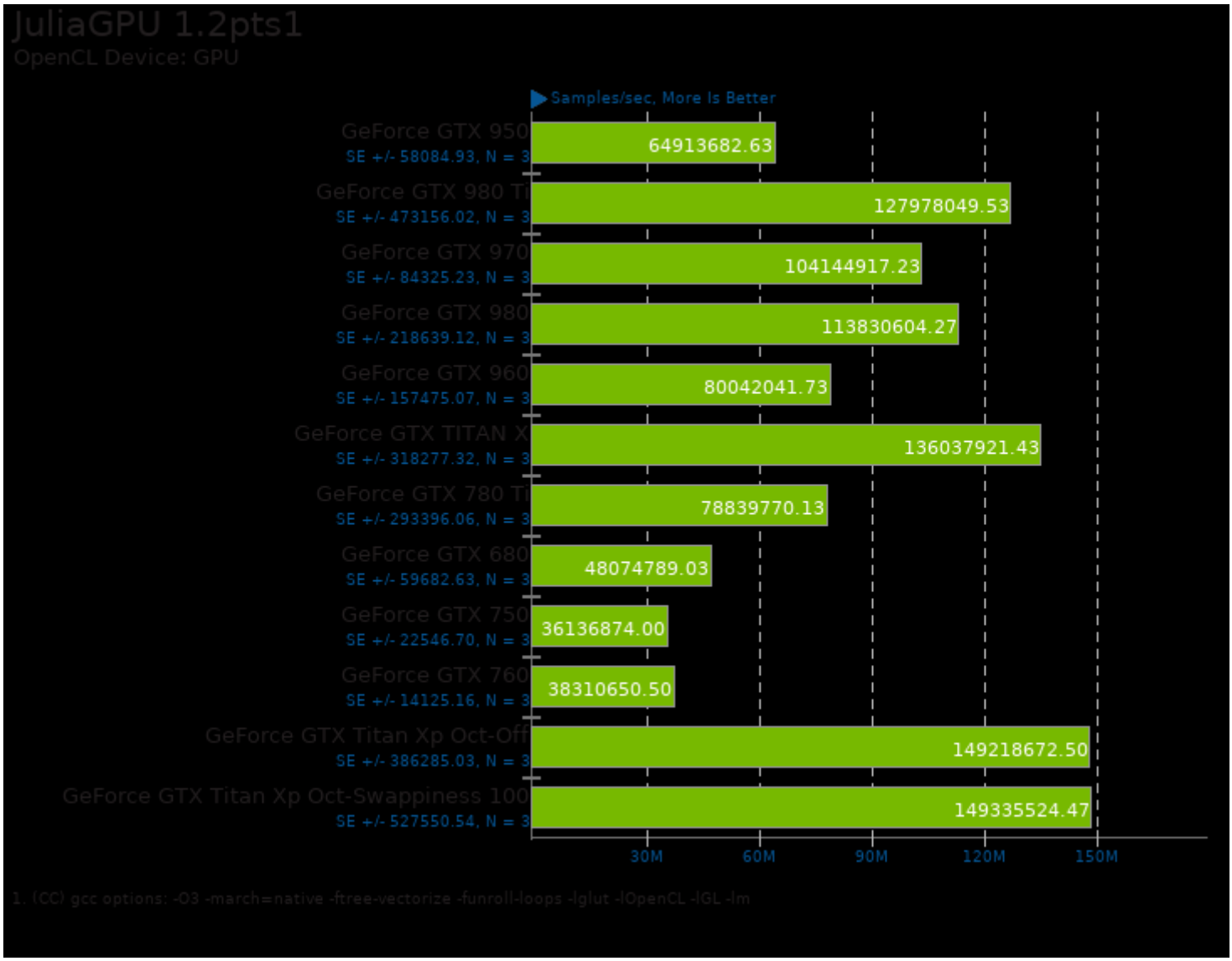

SHOC Scalable HeterOgeneous Computing 2015-11-10
Target: OpenCL - Benchmark: Texture Read Bandwidth
GB/s, More Is Better
GeForce GTX 950
SE +/- 0.73, N = 3
239.19
GeForce GTX 980 Ti
SE +/- 0.21, N = 3
345.55
GeForce GTX 970
SE +/- 0.06, N = 3
283.36
GeForce GTX 980
SE +/- 0.20, N = 3
332.60
GeForce GTX 960
SE +/- 0.56, N = 3
269.98
GeForce GTX TITAN X
SE +/- 1.56, N = 3
354.09
GeForce GTX 780 Ti
SE +/- 0.02, N = 3
286.62
GeForce GTX 680
SE +/- 1.02, N = 3
242.16
GeForce GTX 750
SE +/- 0.23, N = 3
121.14
GeForce GTX 760
SE +/- 0.28, N = 3
170.26
GeForce GTX Titan Xp Oct-Off
SE +/- 1.27, N = 3
-std=c++14
626.12
GeForce GTX Titan Xp Oct-Swappiness 100
SE +/- 0.78, N = 3
-std=c++14
629.83
140
280
420
560
700
1. (CXX) g++ options: -O2 -lSHOCCommon -lcudadevrt -lcudart_static -lrt -lpthread -ldl -lcufft

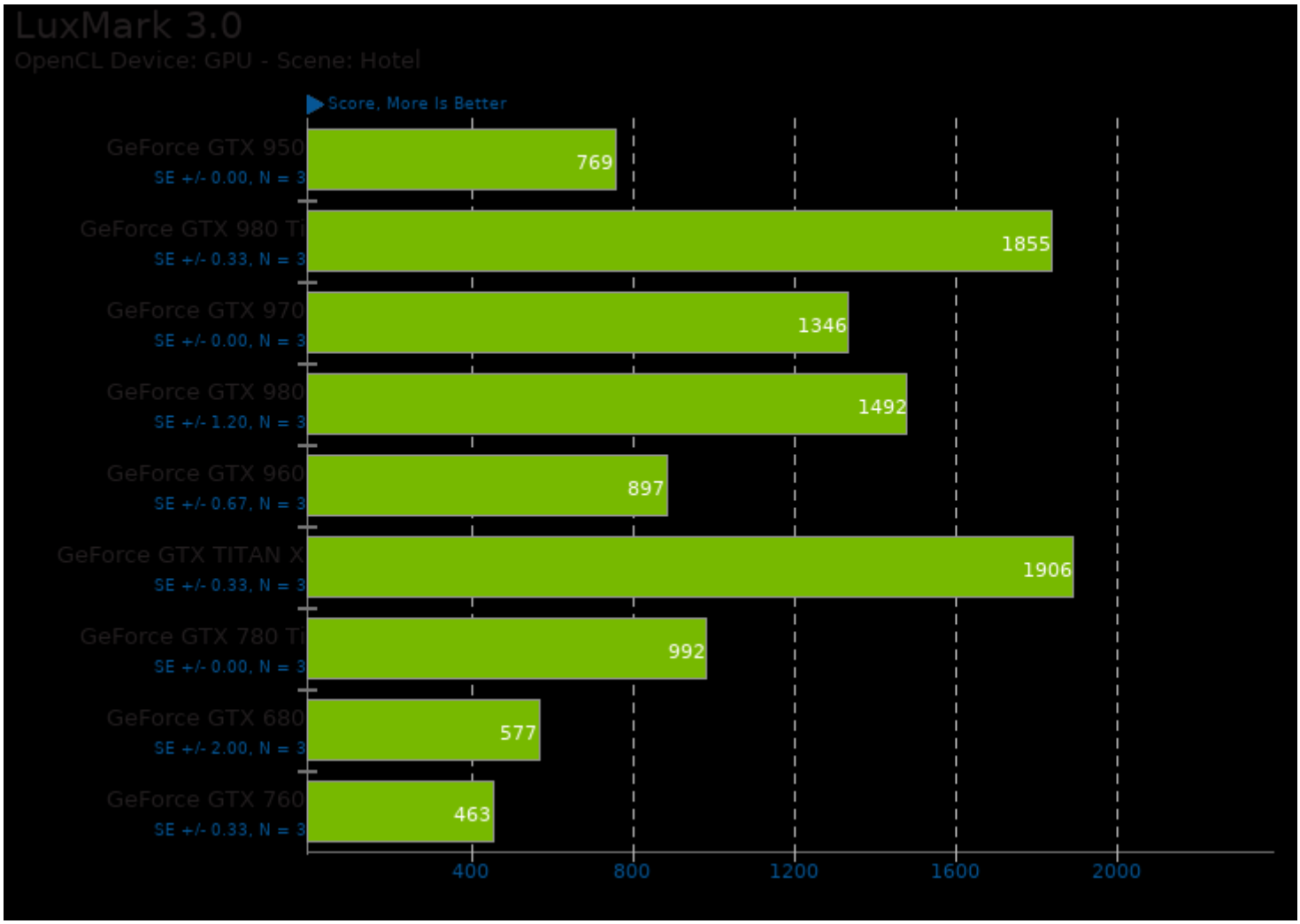

SHOC Scalable HeterOgeneous Computing 2015-11-10
Target: OpenCL - Benchmark: FFT SP
GFLOPS, More Is Better
GeForce GTX 950
SE +/- 0.08, N = 3
63.22
GeForce GTX 980 Ti
SE +/- 0.65, N = 3
170.36
GeForce GTX 970
SE +/- 0.52, N = 3
117.23
GeForce GTX 980
SE +/- 1.30, N = 3
140.12
GeForce GTX 960
SE +/- 1.20, N = 3
62.78
GeForce GTX TITAN X
SE +/- 0.19, N = 3
173.89
GeForce GTX 780 Ti
SE +/- 0.19, N = 3
126.71
GeForce GTX 680
SE +/- 0.87, N = 3
74.97
GeForce GTX 750
SE +/- 0.08, N = 3
54.69
GeForce GTX 760
SE +/- 0.31, N = 3
78.44
GeForce GTX Titan Xp Oct-Off
SE +/- 1.77, N = 3
-std=c++14
280.29
GeForce GTX Titan Xp Oct-Swappiness 100
SE +/- 1.72, N = 3
-std=c++14
279.72
60
120
180
240
300
1. (CXX) g++ options: -O2 -lSHOCCommon -lcudadevrt -lcudart_static -lrt -lpthread -ldl -lcufft

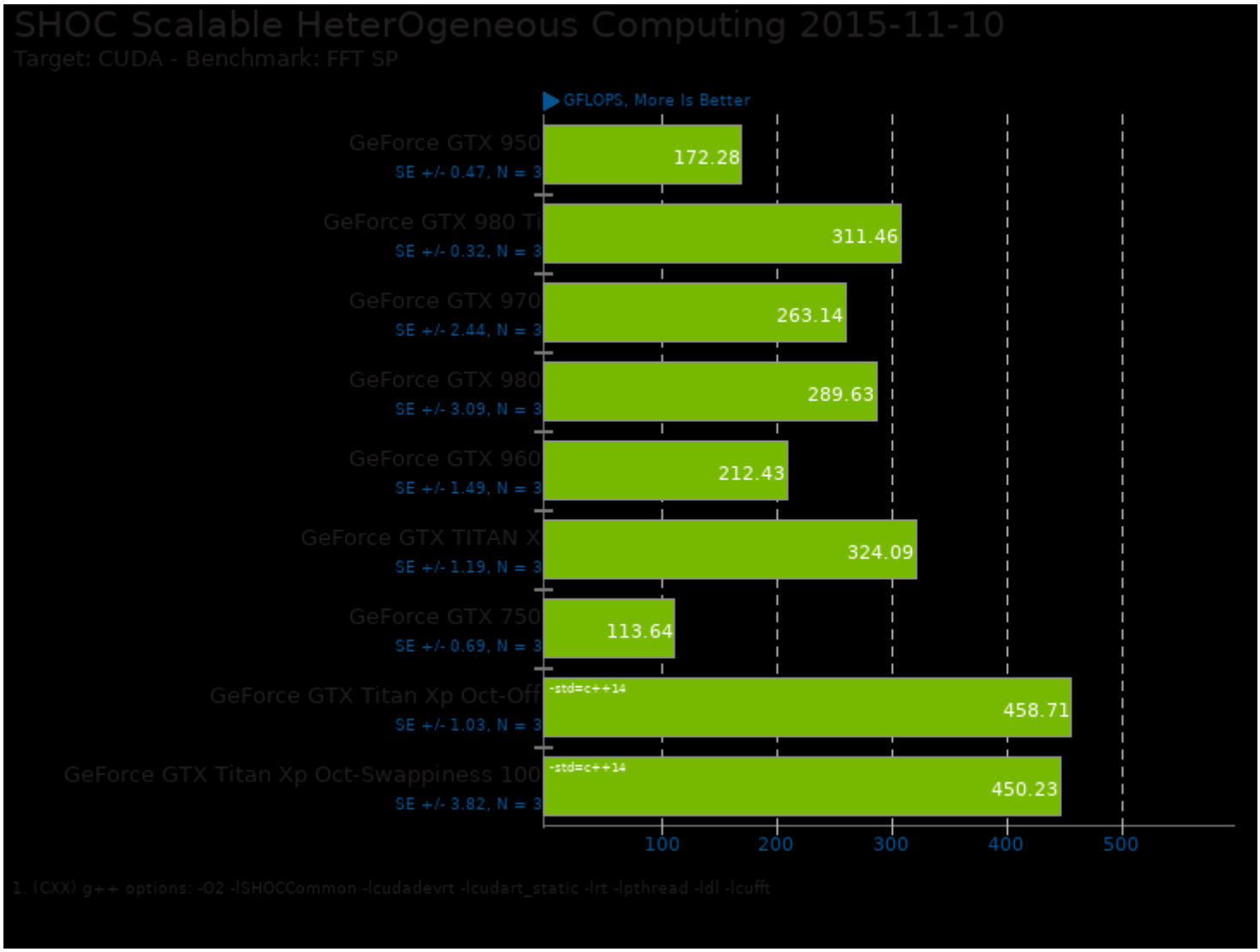

ASKAP tConvolveCuda 2015-11-10
Processing: Degridding
Million Grid Points Per Second, More Is Better
GeForce GTX 950
SE +/- 41.05, N = 3
5706.07
GeForce GTX 980 Ti
SE +/- 369.80, N = 3
17380.60
GeForce GTX 970
SE +/- 0.00, N = 3
9509.14
GeForce GTX 980
SE +/- 0.00, N = 3
11094.00
GeForce GTX 960
SE +/- 34.80, N = 3
5290.32
GeForce GTX TITAN X
SE +/- 369.80, N = 3
17380.60
GeForce GTX Titan Xp Oct-Off
SE +/- 806.83, N = 3
25818.77
GeForce GTX Titan Xp Oct-Swappiness 100
SE +/- 806.83, N = 3
25011.93
6K
12K
18K
24K
30K
1. (CXX) g++ options: -fPIC -O3 -m64 -lcudadevrt -lcudart_static -lrt -lpthread -ldl

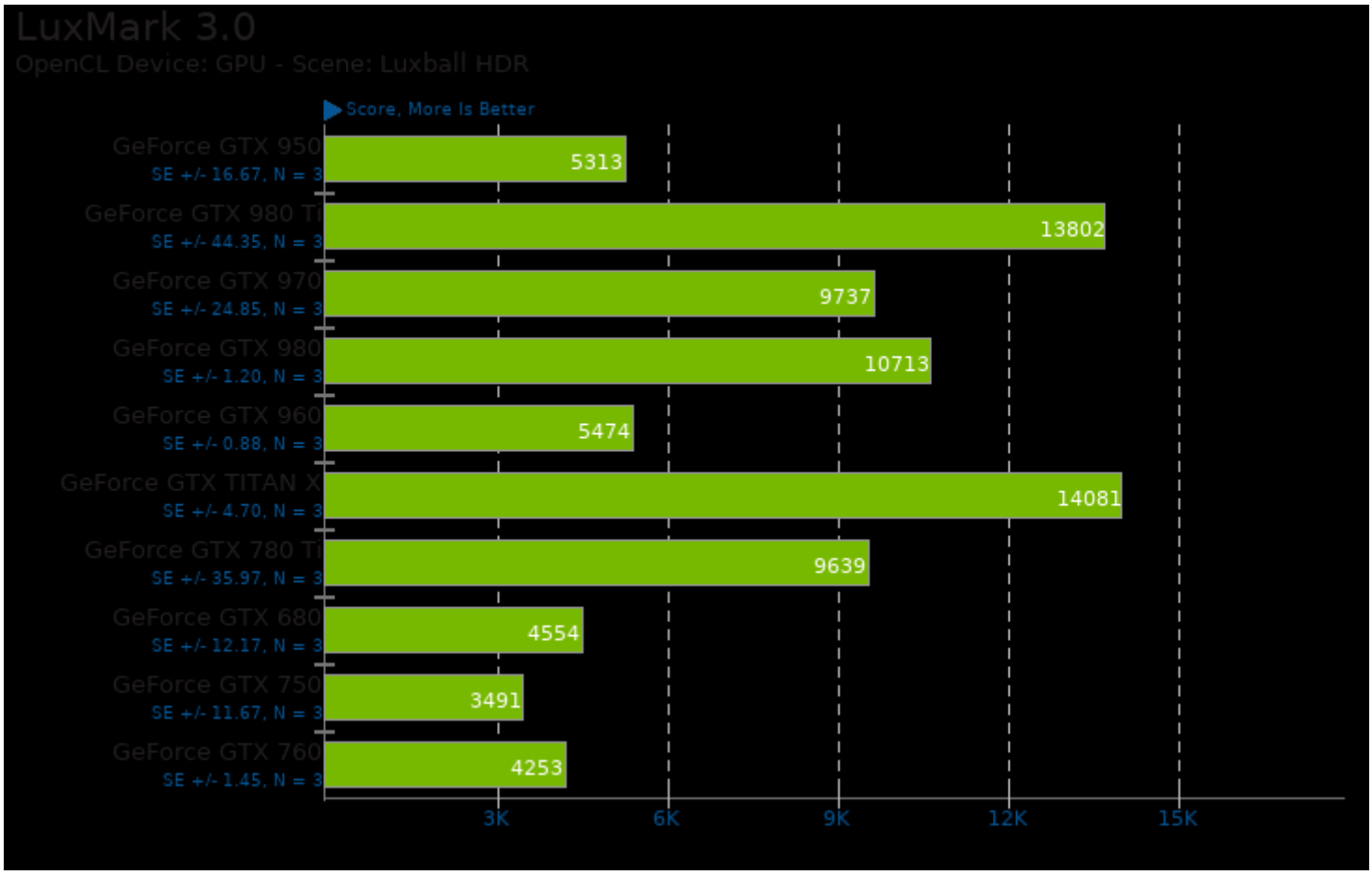

MandelbulbGPU 1.0pts1
OpenCL Device: GPU
Samples/sec, More Is Better
GeForce GTX 950
SE +/- 29855.85, N = 3
37156070.87
GeForce GTX 980 Ti
SE +/- 168304.91, N = 3
71656708.83
GeForce GTX 970
SE +/- 91420.68, N = 3
58811317.17
GeForce GTX 980
SE +/- 140370.89, N = 3
63616558.77
GeForce GTX 960
SE +/- 75512.83, N = 3
44953399.47
GeForce GTX TITAN X
SE +/- 166919.37, N = 3
75614774.13
GeForce GTX 780 Ti
SE +/- 48150.35, N = 3
47400001.90
GeForce GTX 680
SE +/- 36731.70, N = 3
31636512.97
GeForce GTX 750
SE +/- 9818.73, N = 3
20060275.53
GeForce GTX 760
SE +/- 28089.31, N = 3
25392138.50
GeForce GTX Titan Xp Oct-Off
SE +/- 188108.10, N = 3
87713632.10
GeForce GTX Titan Xp Oct-Swappiness 100
SE +/- 950597.06, N = 3
86921286.30
20M
40M
60M
80M
100M
1. (CC) gcc options: -O3 -lm -ftree-vectorize -funroll-loops -lglut -lOpenCL -lGL

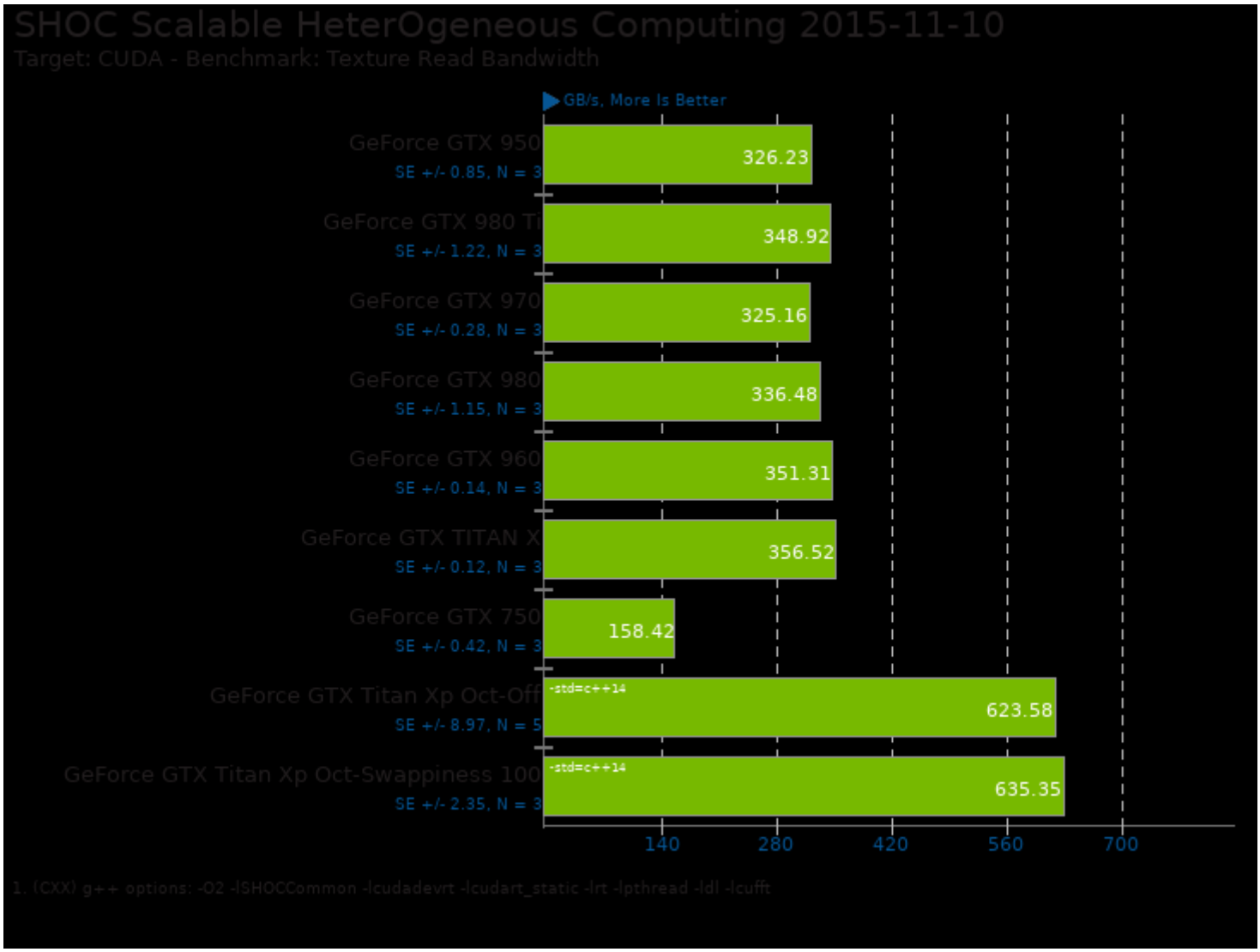

ASKAP tConvolveCuda 2015-11-10
Processing: Gridding
Million Grid Points Per Second, More Is Better
GeForce GTX 950
SE +/- 14.40, N = 3
3399.14
GeForce GTX 980 Ti
SE +/- 0.00, N = 3
8320.50
GeForce GTX 970
SE +/- 0.00, N = 3
5325.12
GeForce GTX 980
SE +/- 0.00, N = 3
6051.27
GeForce GTX 960
SE +/- 12.43, N = 3
3144.85
GeForce GTX TITAN X
SE +/- 130.14, N = 4
8458.77
GeForce GTX Titan Xp Oct-Off
SE +/- 333.87, N = 6
13464.82
GeForce GTX Titan Xp Oct-Swappiness 100
SE +/- 233.57, N = 3
13546.37
3K
6K
9K
12K
15K
1. (CXX) g++ options: -fPIC -O3 -m64 -lcudadevrt -lcudart_static -lrt -lpthread -ldl

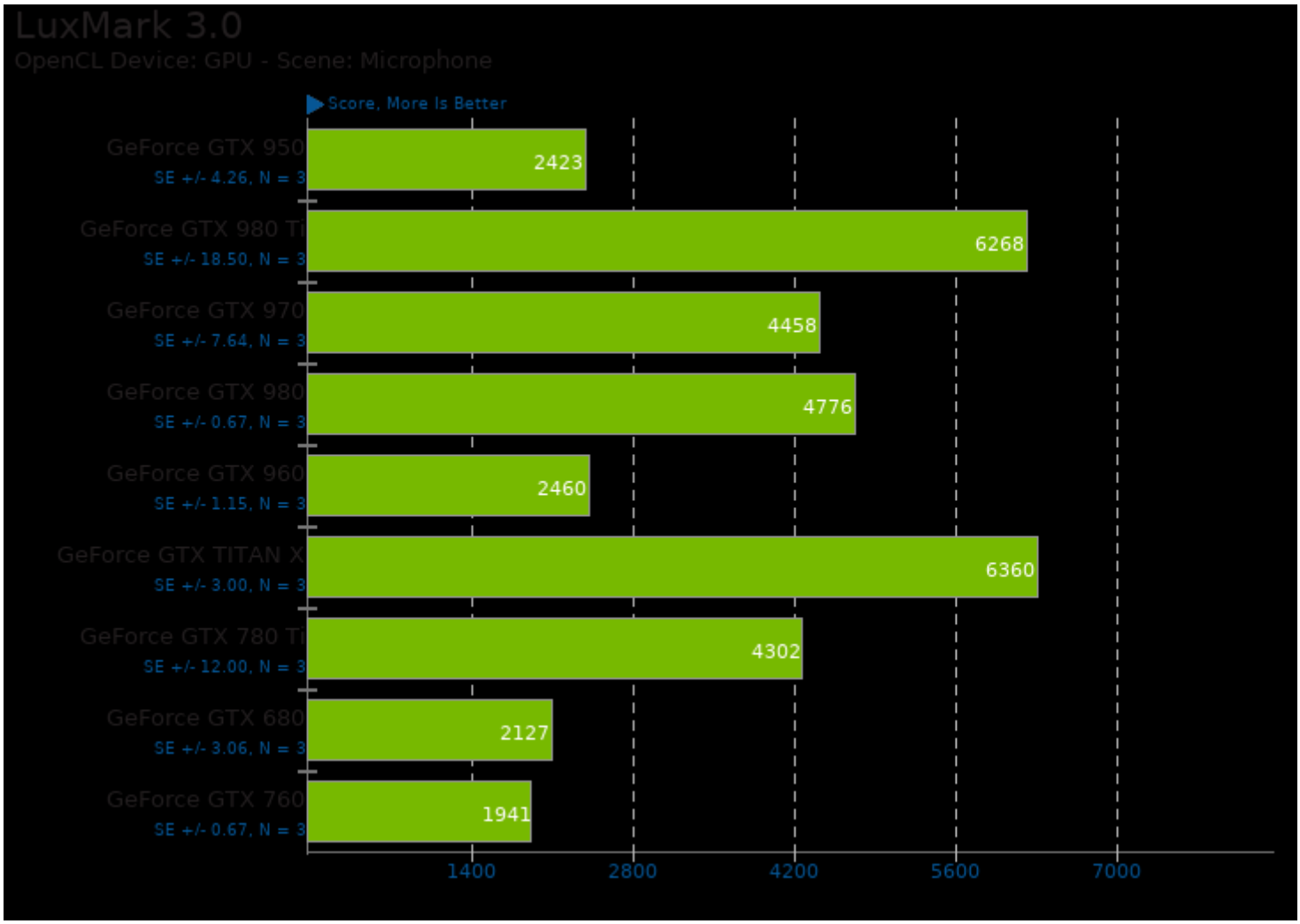

JuliaGPU 1.2pts1
OpenCL Device: GPU
Samples/sec, More Is Better
GeForce GTX 950
SE +/- 58084.93, N = 3
64913682.63
GeForce GTX 980 Ti
SE +/- 473156.02, N = 3
127978049.53
GeForce GTX 970
SE +/- 84325.23, N = 3
104144917.23
GeForce GTX 980
SE +/- 218639.12, N = 3
113830604.27
GeForce GTX 960
SE +/- 157475.07, N = 3
80042041.73
GeForce GTX TITAN X
SE +/- 318277.32, N = 3
136037921.43
GeForce GTX 780 Ti
SE +/- 293396.06, N = 3
78839770.13
GeForce GTX 680
SE +/- 59682.63, N = 3
48074789.03
GeForce GTX 750
SE +/- 22546.70, N = 3
36136874.00
GeForce GTX 760
SE +/- 14125.16, N = 3
38310650.50
GeForce GTX Titan Xp Oct-Off
SE +/- 386285.03, N = 3
149218672.50
GeForce GTX Titan Xp Oct-Swappiness 100
SE +/- 527550.54, N = 3
149335524.47
30M
60M
90M
120M
150M
1. (CC) gcc options: -O3 -march=native -ftree-vectorize -funroll-loops -lglut -lOpenCL -lGL -lm

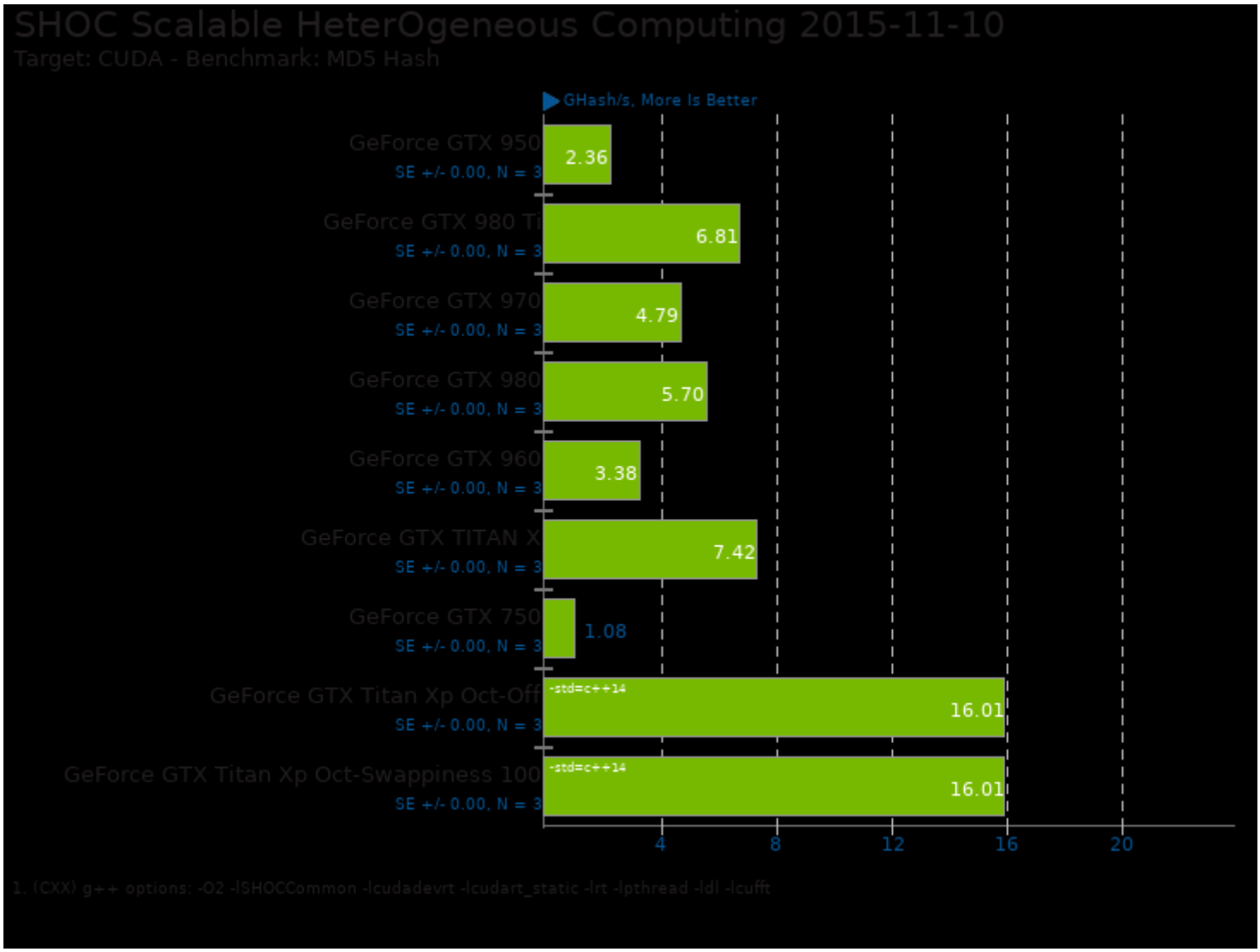

LuxMark 3.0
OpenCL Device: GPU - Scene: Hotel
Score, More Is Better
GeForce GTX 950
SE +/- 0.00, N = 3
769
GeForce GTX 980 Ti
SE +/- 0.33, N = 3
1855
GeForce GTX 970
SE +/- 0.00, N = 3
1346
GeForce GTX 980
SE +/- 1.20, N = 3
1492
GeForce GTX 960
SE +/- 0.67, N = 3
897
GeForce GTX TITAN X
SE +/- 0.33, N = 3
1906
GeForce GTX 780 Ti
SE +/- 0.00, N = 3
992
GeForce GTX 680
SE +/- 2.00, N = 3
577
GeForce GTX 760
SE +/- 0.33, N = 3
463
400
800
1200
1600
2000

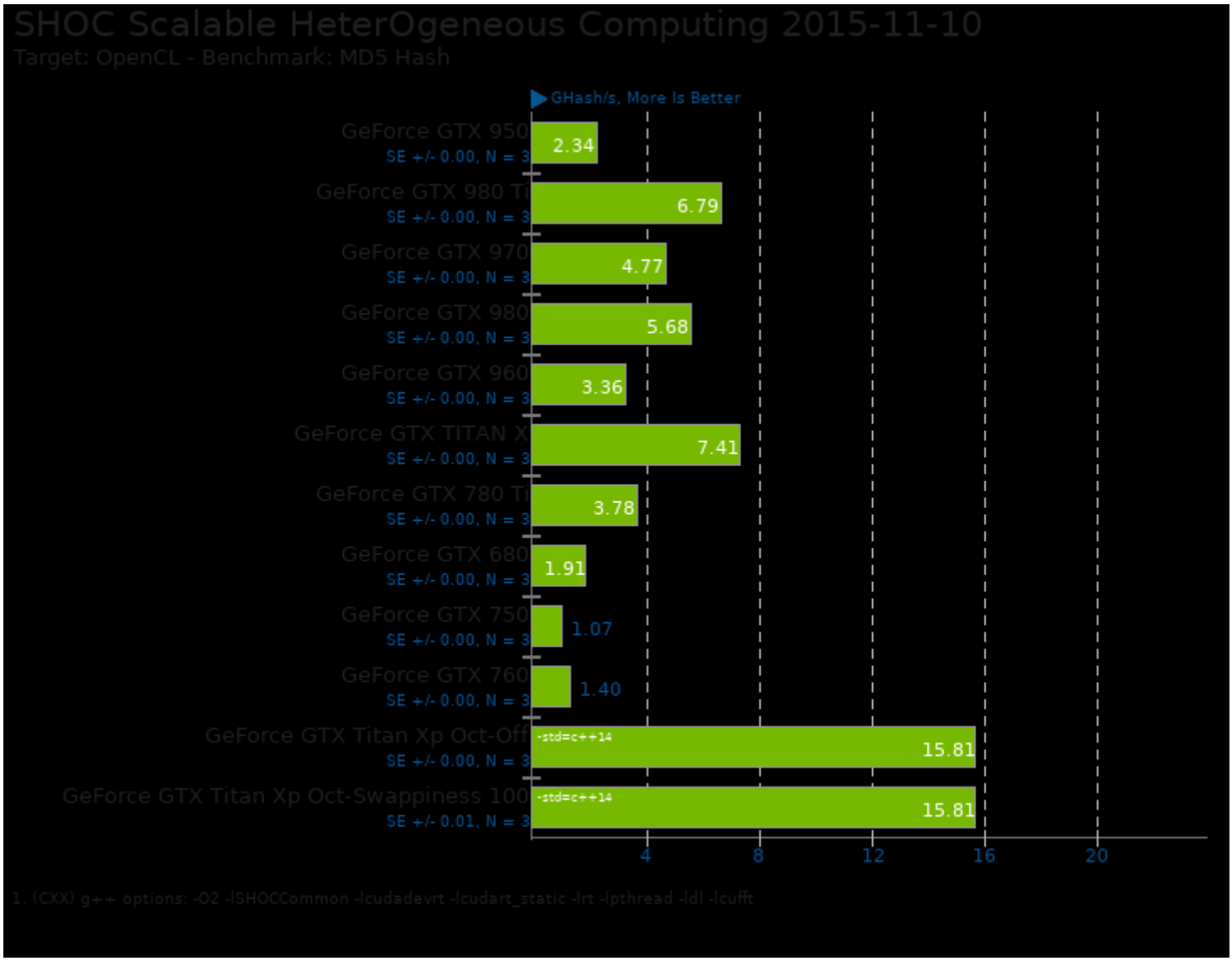

SHOC Scalable HeterOgeneous Computing 2015-11-10
Target: CUDA - Benchmark: FFT SP
GFLOPS, More Is Better
GeForce GTX 950
SE +/- 0.47, N = 3
172.28
GeForce GTX 980 Ti
SE +/- 0.32, N = 3
311.46
GeForce GTX 970
SE +/- 2.44, N = 3
263.14
GeForce GTX 980
SE +/- 3.09, N = 3
289.63
GeForce GTX 960
SE +/- 1.49, N = 3
212.43
GeForce GTX TITAN X
SE +/- 1.19, N = 3
324.09
GeForce GTX 750
SE +/- 0.69, N = 3
113.64
GeForce GTX Titan Xp Oct-Off
SE +/- 1.03, N = 3
-std=c++14
458.71
GeForce GTX Titan Xp Oct-Swappiness 100
SE +/- 3.82, N = 3
-std=c++14
450.23
100
200
300
400
500
1. (CXX) g++ options: -O2 -lSHOCCommon -lcudadevrt -lcudart_static -lrt -lpthread -ldl -lcufft


LuxMark 3.0
OpenCL Device: GPU - Scene: Luxball HDR
Score, More Is Better
GeForce GTX 950
SE +/- 16.67, N = 3
5313
GeForce GTX 980 Ti
SE +/- 44.35, N = 3
13802
GeForce GTX 970
SE +/- 24.85, N = 3
9737
GeForce GTX 980
SE +/- 1.20, N = 3
10713
GeForce GTX 960
SE +/- 0.88, N = 3
5474
GeForce GTX TITAN X
SE +/- 4.70, N = 3
14081
GeForce GTX 780 Ti
SE +/- 35.97, N = 3
9639
GeForce GTX 680
SE +/- 12.17, N = 3
4554
GeForce GTX 750
SE +/- 11.67, N = 3
3491
GeForce GTX 760
SE +/- 1.45, N = 3
4253
3K
6K
9K
12K
15K

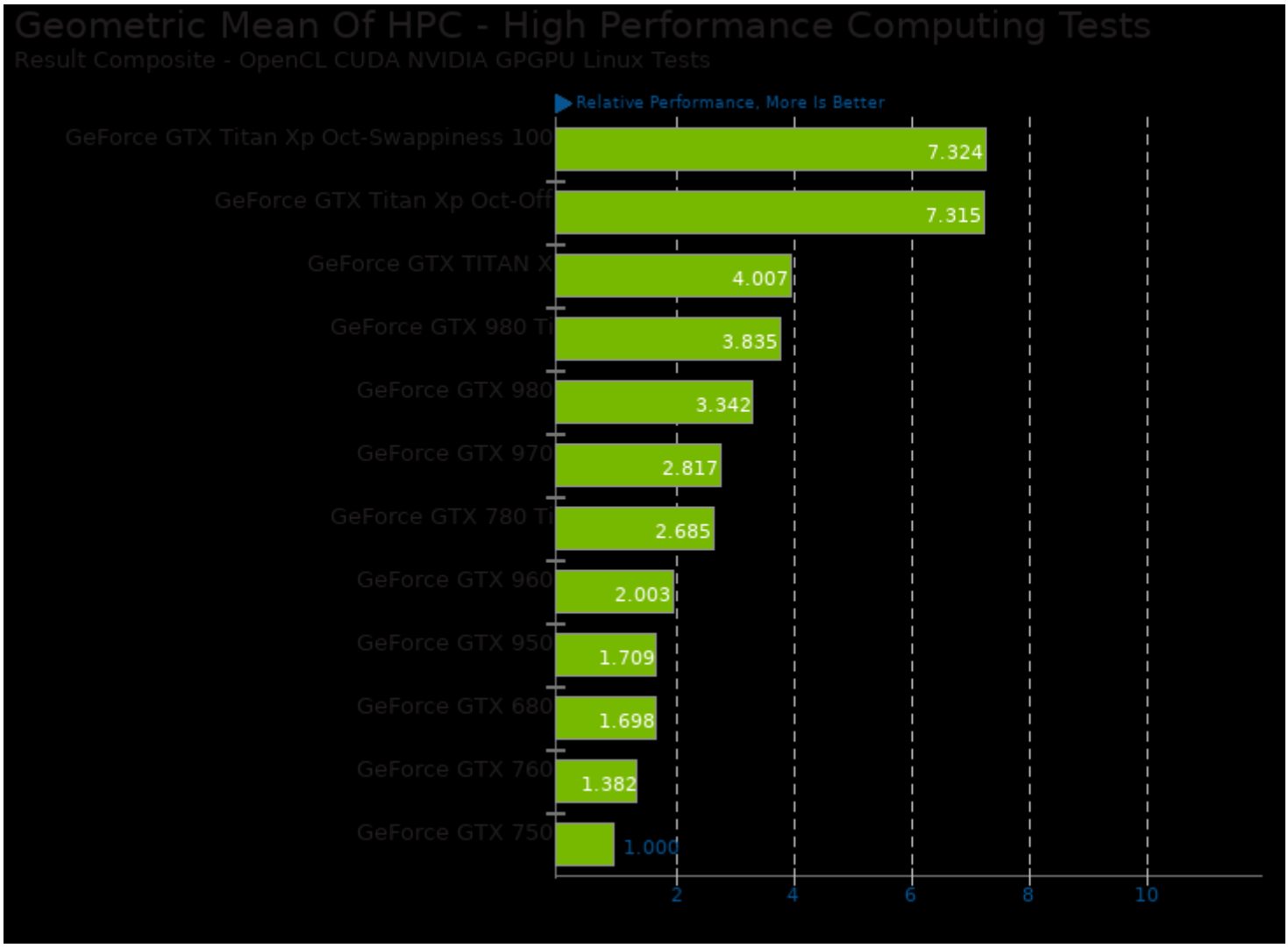

SHOC Scalable HeterOgeneous Computing 2015-11-10
Target: CUDA - Benchmark: Texture Read Bandwidth
GB/s, More Is Better
GeForce GTX 950
SE +/- 0.85, N = 3
326.23
GeForce GTX 980 Ti
SE +/- 1.22, N = 3
348.92
GeForce GTX 970
SE +/- 0.28, N = 3
325.16
GeForce GTX 980
SE +/- 1.15, N = 3
336.48
GeForce GTX 960
SE +/- 0.14, N = 3
351.31
GeForce GTX TITAN X
SE +/- 0.12, N = 3
356.52
GeForce GTX 750
SE +/- 0.42, N = 3
158.42
GeForce GTX Titan Xp Oct-Off
SE +/- 8.97, N = 5
-std=c++14
623.58
GeForce GTX Titan Xp Oct-Swappiness 100
SE +/- 2.35, N = 3
-std=c++14
635.35
140
280
420
560
700
1. (CXX) g++ options: -O2 -lSHOCCommon -lcudadevrt -lcudart_static -lrt -lpthread -ldl -lcufft


LuxMark 3.0
OpenCL Device: GPU - Scene: Microphone
Score, More Is Better
GeForce GTX 950
SE +/- 4.26, N = 3
2423
GeForce GTX 980 Ti
SE +/- 18.50, N = 3
6268
GeForce GTX 970
SE +/- 7.64, N = 3
4458
GeForce GTX 980
SE +/- 0.67, N = 3
4776
GeForce GTX 960
SE +/- 1.15, N = 3
2460
GeForce GTX TITAN X
SE +/- 3.00, N = 3
6360
GeForce GTX 780 Ti
SE +/- 12.00, N = 3
4302
GeForce GTX 680
SE +/- 3.06, N = 3
2127
GeForce GTX 760
SE +/- 0.67, N = 3
1941
1400
2800
4200
5600
7000

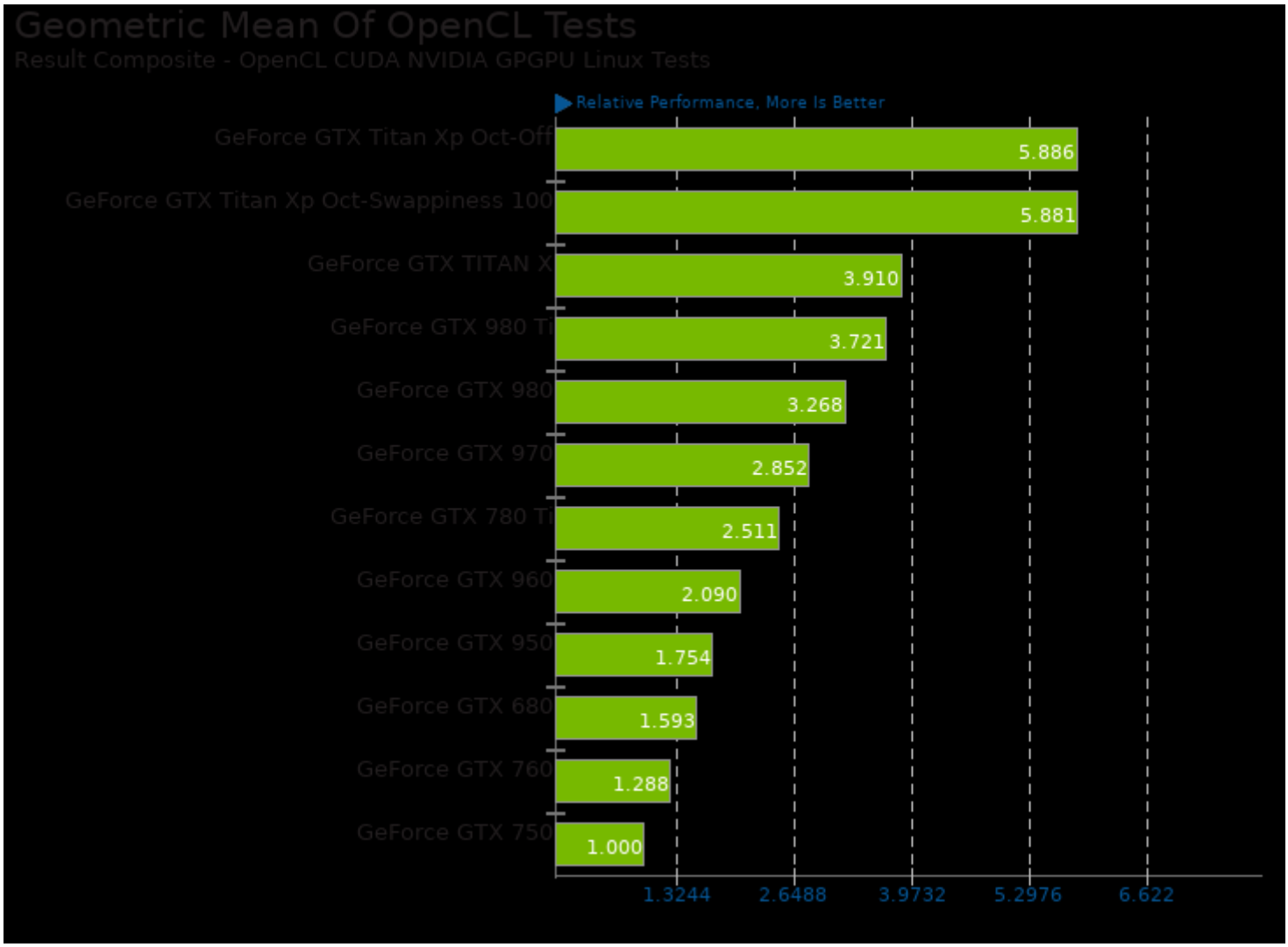

SHOC Scalable HeterOgeneous Computing 2015-11-10
Target: CUDA - Benchmark: MD5 Hash
GHash/s, More Is Better
GeForce GTX 950
SE +/- 0.00, N = 3
2.36
GeForce GTX 980 Ti
SE +/- 0.00, N = 3
6.81
GeForce GTX 970
SE +/- 0.00, N = 3
4.79
GeForce GTX 980
SE +/- 0.00, N = 3
5.70
GeForce GTX 960
SE +/- 0.00, N = 3
3.38
GeForce GTX TITAN X
SE +/- 0.00, N = 3
7.42
GeForce GTX 750
SE +/- 0.00, N = 3
1.08
GeForce GTX Titan Xp Oct-Off
SE +/- 0.00, N = 3
-std=c++14
16.01
GeForce GTX Titan Xp Oct-Swappiness 100
SE +/- 0.00, N = 3
-std=c++14
16.01
4
8
12
16
20
1. (CXX) g++ options: -O2 -lSHOCCommon -lcudadevrt -lcudart_static -lrt -lpthread -ldl -lcufft


SHOC Scalable HeterOgeneous Computing 2015-11-10
Target: OpenCL - Benchmark: MD5 Hash
GHash/s, More Is Better
GeForce GTX 950
SE +/- 0.00, N = 3
2.34
GeForce GTX 980 Ti
SE +/- 0.00, N = 3
6.79
GeForce GTX 970
SE +/- 0.00, N = 3
4.77
GeForce GTX 980
SE +/- 0.00, N = 3
5.68
GeForce GTX 960
SE +/- 0.00, N = 3
3.36
GeForce GTX TITAN X
SE +/- 0.00, N = 3
7.41
GeForce GTX 780 Ti
SE +/- 0.00, N = 3
3.78
GeForce GTX 680
SE +/- 0.00, N = 3
1.91
GeForce GTX 750
SE +/- 0.00, N = 3
1.07
GeForce GTX 760
SE +/- 0.00, N = 3
1.40
GeForce GTX Titan Xp Oct-Off
SE +/- 0.00, N = 3
-std=c++14
15.81
GeForce GTX Titan Xp Oct-Swappiness 100
SE +/- 0.01, N = 3
-std=c++14
15.81
4
8
12
16
20
1. (CXX) g++ options: -O2 -lSHOCCommon -lcudadevrt -lcudart_static -lrt -lpthread -ldl -lcufft

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




Geometric mean based upon tests: pts/askap and pts/shoc




Geometric mean based upon tests: pts/juliagpu, pts/mandelbulbgpu, pts/luxmark and pts/shoc

*This file was automatically generated via the Phoronix Test Suite benchmarking software on Saturday, 21 December 2024 22:00.*