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Xavier_720_32_3_1

ARMv8 rev 0 testing with a Jetson-AGX and NVIDIA Tegra Xavier on Ubuntu 18.04 via the Phoronix Test Suite.

Automated Executive Summary

SSD_760P Run2 had the most wins, coming in first place for 50% of the tests.

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

Flexible IO Tester (Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory) at 99x
Flexible IO Tester (Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory) at 70x
Flexible IO Tester (Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory) at 45.684x
Flexible IO Tester (Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory) at 30.211x
Flexible IO Tester (Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory) at 14.326x
Flexible IO Tester (Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory) at 14.312x
Flexible IO Tester (Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk

Target: Default Test Directory) at 13.276x
Flexible IO Tester (Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory) at 13.249x
Stress-NG (Test: Vector Math) at 1.102x
Stress-NG (Test: Glibc C String Functions) at 1.075x.

Test Systems:

eMMC

Processor: ARMv8 rev 0 @ 2.27GHz (8 Cores), Motherboard: Jetson-AGX, Memory: 16GB, Disk: 62GB Ultra USB 3.0 + 31GB HBG4a2, Graphics: NVIDIA TEGRA, Monitor: PHL 247E6, Network: 2 x Intel I210

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: Unity 7.5.0, Display Server: X Server 1.19.6, Display Driver: NVIDIA 1.0.0, Vulkan: 1.1.85, Compiler: GCC 7.5.0 + CUDA 10.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only -v
Disk Notes: CFQ / data=ordered,relatime,rw
Processor Notes: Scaling Governor: tegra_cpufreq schedutil

USB3.0 Innodisk

Processor: ARMv8 rev 0 @ 2.27GHz (8 Cores), Motherboard: Jetson-AGX, Memory: 16GB, Disk: 62GB Ultra USB 3.0 + 31GB HBG4a2, Graphics: NVIDIA TEGRA, Monitor: PHL 247E6, Network: 2 x Intel I210

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: Unity 7.5.0, Display Server: X Server 1.19.6, Display Driver: NVIDIA 1.0.0, OpenGL: 4.6.0, Vulkan: 1.1.85, Compiler: GCC 7.5.0 + CUDA 10.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only -v
Disk Notes: CFQ / data=ordered,relatime,rw
Processor Notes: Scaling Governor: tegra_cpufreq schedutil

USB3.0 Innodisk run 2

USB2.0 Innodisk

SD Card Innodisk

Processor: ARMv8 rev 0 @ 2.27GHz (8 Cores), Motherboard: Jetson-AGX, Memory: 16GB, Disk: 16GB USB Drive 3ME + 31GB HBG4a2, Graphics: NVIDIA Tegra Xavier, Monitor: PHL 247E6, Network: 2 x Intel I210

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: Unity 7.5.0, Display Server: X Server 1.19.6, Display

Driver: NVIDIA 32.3.1, OpenGL: 4.6.0, Vulkan: 1.1.85, Compiler: GCC 7.5.0 + CUDA 10.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only -v
Disk Notes: CFQ / data=ordered,relatime,rw
Processor Notes: Scaling Governor: tegra_cpufreq schedutil

mSATA Innodisk

Processor: ARMv8 rev 0 @ 2.27GHz (8 Cores), Motherboard: Jetson-AGX, Memory: 16GB, Disk: 63GB M.2 (S80) 3MG2-P + 8GB USB Drive 2SE + 62GB Ultra USB 3.0 + 31GB HBG4a2 + 15GB i-TF, Graphics: NVIDIA Tegra Xavier, Monitor: PHL 247E6, Network: 2 x Intel I210

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: Unity 7.5.0, Display Server: X Server 1.19.6, Display Driver: NVIDIA 32.3.1, OpenGL: 4.6.0, Vulkan: 1.1.85, Compiler: GCC 7.5.0 + CUDA 10.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only -v
Disk Notes: CFQ / data=ordered,relatime,rw
Processor Notes: Scaling Governor: tegra_cpufreq schedutil

SSD_760P

Processor: ARMv8 rev 0 @ 2.27GHz (8 Cores), Motherboard: Jetson-AGX, Memory: 16GB, Disk: 256GB INTEL SSDPEKKW256G8 + 62GB Ultra USB 3.0 + 8GB USB Drive 2SE + 31GB HBG4a2 + 15GB i-TF, Graphics: NVIDIA Tegra Xavier, Monitor: PHL 247E6, Network: 2 x Intel I210

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: Unity 7.5.0, Display Server: X Server 1.19.6, Display Driver: NVIDIA 32.3.1, OpenGL: 4.6.0, Vulkan: 1.1.85, Compiler: GCC 7.5.0 + CUDA 10.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only -v
Disk Notes: none / data=ordered,relatime,rw
Processor Notes: Scaling Governor: tegra_cpufreq schedutil

SSD_760P Run2

CPU Stress

Processor: ARMv8 rev 0 @ 2.27GHz (8 Cores), Motherboard: Jetson-AGX, Memory: 16GB, Disk: 256GB INTEL SSDPEKKW256G8 + 8GB USB Drive 2SE + 31GB HBG4a2 + 15GB i-TF, Graphics: NVIDIA Tegra Xavier, Monitor: PHL 247E6, Network: 2 x Intel I210

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: Unity 7.5.0, Display Server: X Server 1.19.6, Display Driver: NVIDIA 32.3.1, OpenGL: 4.6.0, Vulkan: 1.1.85, Compiler: GCC 7.5.0 + CUDA 10.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++

--enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only -v
Processor Notes: Scaling Governor: tegra_cpufreq schedutil

CPU Stress run

LPDDR4

Graphics Test

CPU-7ZIP

CUDA Test

TTSIOD

Processor: ARMv8 rev 0 @ 2.27GHz (8 Cores), Motherboard: Jetson-AGX, Memory: 16GB, Disk: 256GB INTEL SSDPEKKW256G8 + 31GB HBG4a2 + 15GB i-TF, Graphics: NVIDIA Tegra Xavier, Monitor: 23MP65, Network: 2 x Intel I210

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: Unity 7.5.0, Display Server: X Server 1.19.6, Display Driver: NVIDIA 32.3.1, OpenGL: 4.6.0, Vulkan: 1.1.85, Compiler: GCC 7.5.0 + CUDA 10.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only -v
Processor Notes: Scaling Governor: tegra_cpufreq schedutil

TYPE C /digifusion

TYPE C /digifusion run2

TYPE C /digifusion run3

TYPE C /digifusion run4

Processor: ARMv8 rev 0 @ 2.27GHz (8 Cores), Motherboard: Jetson-AGX, Memory: 16GB, Disk: 256GB Generic + 31GB HBG4a2 + 15GB i-TF, Graphics: NVIDIA Tegra Xavier, Monitor: 23MP65, Network: 2 x Intel I210

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: Unity 7.5.0, Display Server: X Server 1.19.6, Display Driver: NVIDIA 32.3.1, OpenGL: 4.6.0, Vulkan: 1.1.85, Compiler: GCC 7.5.0 + CUDA 10.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only -v
Disk Notes: CFQ / data=ordered,relatime,rw
Processor Notes: Scaling Governor: tegra_cpufreq schedutil

SSD_PX2569M9P

Processor: ARMv8 rev 0 @ 2.27GHz (8 Cores), Motherboard: Jetson-AGX, Memory: 16GB, Disk: 256GB PLEXTOR

PX-256M9PeGN + 31GB HBG4a2 + 15GB i-TF, Graphics: NVIDIA Tegra Xavier, Monitor: 23MP65, Network: 2 x Intel I210

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: Unity 7.5.0, Display Server: X Server 1.19.6, Display Driver: NVIDIA 32.3.1, OpenGL: 4.6.0, Vulkan: 1.1.85, Compiler: GCC 7.5.0 + CUDA 10.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only -v
Disk Notes: none / data=ordered,relatime,rw
Processor Notes: Scaling Governor: tegra_cpufreq schedutil

TYPE C /digifusion run5

Processor: ARMv8 rev 0 @ 2.27GHz (8 Cores), Motherboard: Jetson-AGX, Memory: 16GB, Disk: 256GB PLEXTOR PX-256M9PeGN + 256GB Generic + 31GB HBG4a2 + 15GB i-TF, Graphics: NVIDIA Tegra Xavier, Monitor: PHL 247E6, Network: 2 x Intel I210

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: Unity 7.5.0, Display Server: X Server 1.19.6, Display Driver: NVIDIA 32.3.1, OpenGL: 4.6.0, Vulkan: 1.1.85, Compiler: GCC 7.5.0 + CUDA 10.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only -v
Disk Notes: none / data=ordered,relatime,rw
Processor Notes: Scaling Governor: tegra_cpufreq schedutil

m.2 digifusion to USB A

Processor: ARMv8 rev 0 @ 2.27GHz (8 Cores), Motherboard: Jetson-AGX, Memory: 16GB, Disk: 256GB Generic + 31GB HBG4a2 + 15GB i-TF, Graphics: NVIDIA Tegra Xavier, Monitor: PHL 247E6, Network: 2 x Intel I210

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: Unity 7.5.0, Display Server: X Server 1.19.6, Display Driver: NVIDIA 32.3.1, OpenGL: 4.6.0, Vulkan: 1.1.85, Compiler: GCC 7.5.0 + CUDA 10.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only -v
Disk Notes: CFQ / data=ordered,relatime,rw
Processor Notes: Scaling Governor: tegra_cpufreq schedutil

MICRO AB USB 2.0

Processor: ARMv8 rev 0 @ 2.27GHz (8 Cores), Motherboard: Jetson-AGX, Memory: 16GB, Disk: 8GB USB Drive 2SE + 31GB HBG4a2 + 15GB i-TF, Graphics: NVIDIA Tegra Xavier, Monitor: PHL 247E6, Network: 2 x Intel I210

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: Unity 7.5.0, Display Server: X Server 1.19.6, Display Driver: NVIDIA 32.3.1, OpenGL: 4.6.0, Vulkan: 1.1.85, Compiler: GCC 7.5.0 + CUDA 10.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++

--enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only -v
Disk Notes: CFQ / data=ordered,relatime,rw
Processor Notes: Scaling Governor: tegra_cpufreq schedutil

TYPE C /digifusion run6

Processor: ARMv8 rev 0 @ 2.27GHz (8 Cores), Motherboard: Jetson-AGX, Memory: 16GB, Disk: 256GB INTEL SSDPEKKW256G8 + 31GB HBG4a2 + 15GB i-TF, Graphics: NVIDIA Tegra Xavier, Monitor: PHL 247E6, Network: 2 x Intel I210

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: Unity 7.5.0, Display Server: X Server 1.19.6, Display Driver: NVIDIA 32.3.1, OpenGL: 4.6.0, Vulkan: 1.1.85, Compiler: GCC 7.5.0 + CUDA 10.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only -v
Disk Notes: none / data=ordered,relatime,rw
Processor Notes: Scaling Governor: tegra_cpufreq schedutil

TYPE C /digifusion 760P SSD

Processor: ARMv8 rev 0 @ 2.27GHz (8 Cores), Motherboard: Jetson-AGX, Memory: 16GB, Disk: 256GB Generic + 31GB HBG4a2 + 15GB i-TF, Graphics: NVIDIA Tegra Xavier, Monitor: PHL 247E6, Network: 2 x Intel I210

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: Unity 7.5.0, Display Server: X Server 1.19.6, Display Driver: NVIDIA 32.3.1, OpenGL: 4.6.0, Vulkan: 1.1.85, Compiler: GCC 7.5.0 + CUDA 10.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only -v
Disk Notes: CFQ / data=ordered,relatime,rw
Processor Notes: Scaling Governor: tegra_cpufreq schedutil

Xavier_720_32_3_1

	eMMC	USB3.0 Innodisk	USB3.0 Innodisk run 2	USB2.0 Innodisk	SD Card Innodisk	mSATA Innodisk	SSD_760P	SSD_760P Run2	CPU Stress	CPU Stress run	LPDDR4	Graphics Test	CPU-7ZIP	CUDA Test	TTSIOD	TYPEC /dig ifusion	TYPEC /dig ifusion run2	TYPEC /dig ifusion run3	TYPEC /dig ifusion run4	SSD_PX2569M9P	TYPEC /dig ifusion run5	m.2 digifusion to USBA	MICRO ABUSB 2.0	TYPEC /dig ifusion run6	TYPEC /dig ifusion 760PSSD
TTSIOD 3D Renderer - P.R.W.S.S.M (FPS)															14										
Standard Deviation															5.8 %										
Stress-NG - G.Q.D.S (Bogo Ops/s)									51.02	44.63					49										
Normalized									100 %	87.48 %															
Standard Deviation									15.3 %	13.2 %															
7-Zip Compression - C.S.T (MIPS)													20136												
Standard Deviation													3%												
GLmark 2 - 1024 x 768 (Score)												4672													
GLmark 2 - 1280 x 1024 (Score)												3364													

GLmark 2 - 800 x 600 (Score)	57		
	92		
GLmark 2 - 1920 x 1080 (Score)	26		
	36		
Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 1MB (IOPS)			33
			5
Standard Deviation			41.6 %
Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 1MB (MB/s)			33
			8
Standard Deviation			41.3 %
CUDA Mini-Nbody - Original ((NBody^2)/s)		46.	
		91	
		8	
Standard Deviation		0.1 %	

CUDA Mini-Nbody - SOA Data Layout ((NBody^2)/s)			47.88.5
Standard Deviation			0.1%
Stress-NG - Matrix Math (Bogo Ops/s)	**14882**	**11249**	
Normalized	100%	75.5%	
Standard Deviation	17.9%	1.5%	
CUDA Mini-Nbody - Loop Unrolling ((NBody^2)/s)			54.802
Standard Deviation			0%
CUDA Mini-Nbody - F.D.T.Z ((NBody^2)/s)			55.126
Standard Deviation			0.1%
Stress-NG - G.C.S.F (Bogo Ops/s)	**16916**	**15739**	
Normalized	100%	93.0%	
Standard Deviation	2.9%	2.2%	

Xavier_720_32_3_1

CUDA Mini-Nbody - Cache Blocking ((NBod									55.61										
Standard Deviation									0%										
Stress-NG - CPU Stress (Bogo Ops/s)							76 8.27	75 4.26											
Normalized							100%	98.1%											
Standard Deviation							2.9%	2.9%											
Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 8MB (IOPS)	13	2	2	3	5	9	140			13	19	12 4	52	3	11 7				
Normalized	9.29%	1.43%	1.43%	2.14%	3.57%	6.43%	100%			9.29%	13.57%	88.57%	37.14%	2.14%	83.57%				
Standard Deviation	4.3%						2.2%				56.7%				4.7%				

Xavier_720_32_3_1

Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 8MB (MB/s)	13 6	38. 6	**38. 0**	48. 9	66. 5	10 3	**11 48**				13 6	18 0	10 21	44 1	49. 9	97 1
Normalized	11.8	3.36	3.31	4.26	5.79	8.97	100				11.8	15.6	88.9	38.4	4.35	84.5
Standard Deviation	5% 0.7 %	% 2.4 %	% 2.8 %	% 0.9 %	% 0.2 %	%	% 2%				5% 0.9 %	8% 49%	4% 0.1 %	1%	% 0.3 %	8% 4.6 %
Flexible IO Tester - Seq Read - Linux AIO - No - Yes - 4KB (IOPS)	24 59 3	22 83 3	22 93 3	70 99	13 70 0	49 83 3	**93 96 7**						85 85 0	34 16 7	**70 78**	
Normalized	26.1	24.3	24.4	7.55	14.5	53.0	100						91.3	36.3	7.53	
Standard Deviation	7% 26.1 %	% 0.3 %	1% 1.3 %	% 0.6 %	8% 4.4 %	3% 0.8 %	% 1.8 %						6% 2.8 %	6% 0.2 %	% 1.4 %	

Xavier_720_32_3_1

Flexible IO Tester - Seq Read - Linux AIO - No - Yes - 4KB (MB/s)	96.3	89.3	89.6	**27.7**	54.8	19.4	**36.7**			33.6	13.4	**27.7**
Normalized	26.24%	24.3%	24.4%	7.55%	14.9%	52.8%	100%			91.5%	36.5%	7.55%
Standard Deviation	25.8%	0.1%	1.2%	0.6%	0.3%	0.8%	1.7%			2.9%	0.4%	1.4%
Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 4KB (IOPS)	20.7	62.26	62.84	63.44	**55.69**	21.90	**79.78**			75.40	34.66	64.24
Normalized	25.4%	7.82%	7.88%	7.95%	6.98%	27.45%	100%			94.5%	43.4%	8.05%
Standard Deviation	0.3%	2.9%	0.6%	1.9%	1.4%		2.9%			0.2%	0.4%	0.9%

Xavier_720_32_3_1

Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 4KB (MB/s)	79.0	24.4	24.6	24.8	21.8	85.5	312						295	136	25.1
Normalized	25.3%	7.82%	7.88%	7.95%	6.99%	27.4%	100%						94.5%	43.9%	8.04%
Standard Deviation	1.1%	2.9%	0.6%	2.1%	1.6%	0.1%	2.9%								1.1%
Stress-NG - Vector Math (Bogo Ops/s)								1274	1156						
Normalized								100%	90.7%						
Standard Deviation								2.8%	0.2%						
Stress-NG - Bsearch (Bogo Ops/s)								1947	1866						
Normalized								100%	95.8%						
Standard Deviation								0.9%	2.8%						

Xavier_720_32_3_1

Flexible IO Tester - Seq Read - Linux AIO - No - Yes - 8MB (IOPS)																		
	33	12	12	3	9	49	27	12	12	12	29	12	53	3	90	12		
							1	2	2	2	7	2				2		
Normalized	11.1%	4.04%	4.04%	1.01%	3.03%	16.5%	91.2%	41.0%	41.0%	41.0%	100%	41.0%	17.8%	1.01%	30.3%	41.0%		
Standard Deviation							2.7%				0.4%							

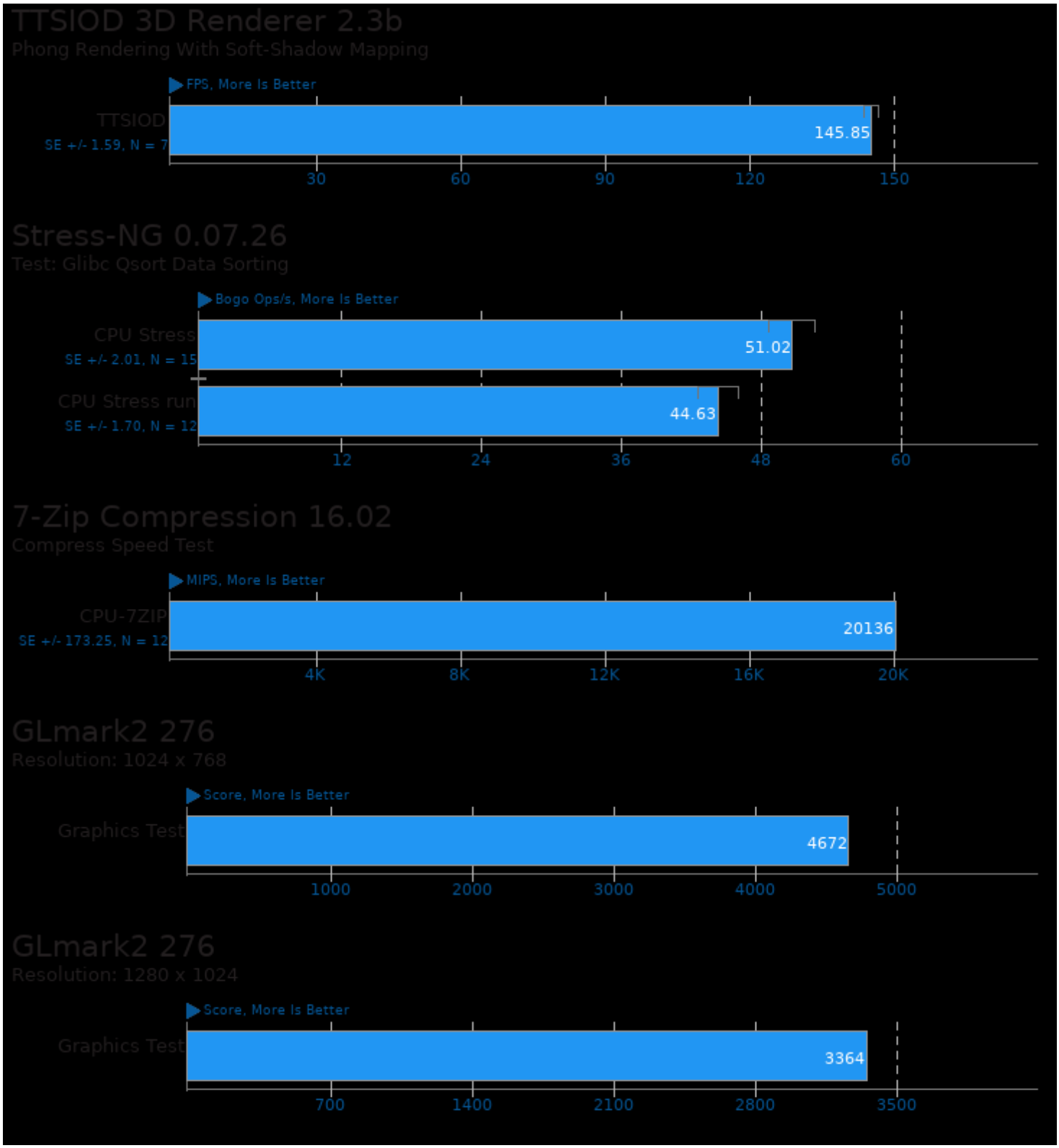
Flexible IO Tester - Seq Read - Linux AIO - No - Yes - 8MB (MB/s)																		
	29	12	12	52.	10	42	21	10	10	10	24	10	45	53.	74	10		
	3	0	0	6	2	5	93	06	05	05	03	08	2	1	6	07		
Normalized	12.1	4.99	4.99	2.19	4.24	17.6	91.2	41.8	41.8	41.8	100	41.9	18.8	2.21	31.0	41.9		
	9%	%	%	%	%	9%	6%	6%	2%	2%	%	5%	1%	%	4%	1%		
Standard Deviation				0.5%	0.6%		2.6%	0.1%	0.2%		0.5%			0.3%	0.9%			

Xavier_720_32_3_1

| | | |

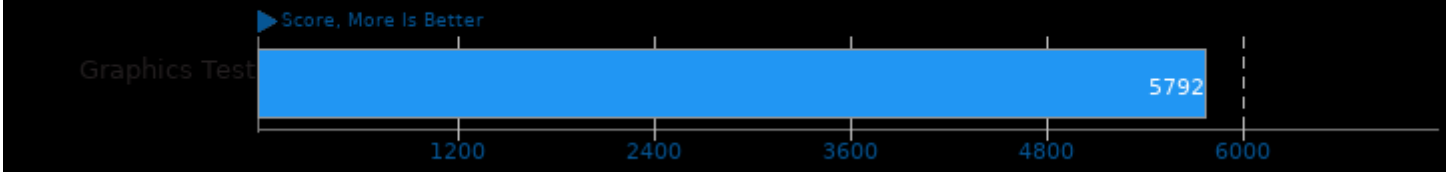
Xavier_720_32_3_1

Stream	67
- Copy	11
(MB/s)	0
Standard	0.4
Deviation	%
Stream	59
- Add	81
(MB/s)	2
Standard	0.3
Deviation	%
Stream	60
- Triad	12
(MB/s)	3
Standard	0.2
Deviation	%
Stream	67
- Scale	04
(MB/s)	3
Standard	1%
Deviation	


TTSIOD 3D Renderer 2.3b
Phong Rendering With Soft-Shadow Mapping
FPS, More Is Better
TTSIOD
SE +/- 1.59, N = 7
145.85
30
60
90
120
150
Stress-NG 0.07.26
Test: Glibc Qsort Data Sorting
Bogo Ops/s, More Is Better
CPU Stress
SE +/- 2.01, N = 15
51.02
CPU Stress run
SE +/- 1.70, N = 12
44.63
12
24
36
48
60
7-Zip Compression 16.02
Compress Speed Test
MIPS, More Is Better
CPU-7ZIP
SE +/- 173.25, N = 12
20136
4K
8K
12K
16K
20K
GLmark2 276
Resolution: 1024 x 768
Score, More Is Better
Graphics Test
4672
1000
2000
3000
4000
5000
GLmark2 276
Resolution: 1280 x 1024
Score, More Is Better
Graphics Test
3364
700
1400
2100
2800
3500

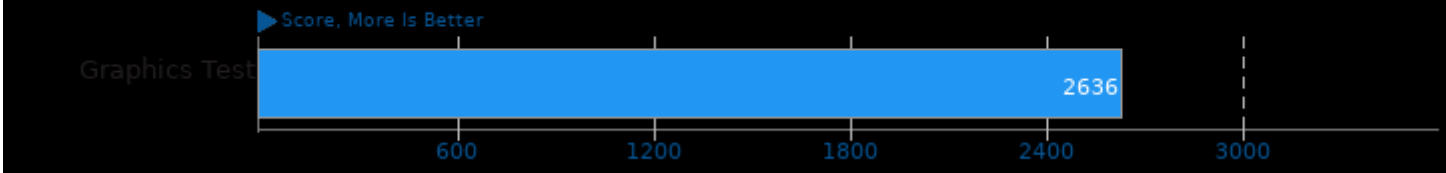
GLmark2 276

Resolution: 800 x 600



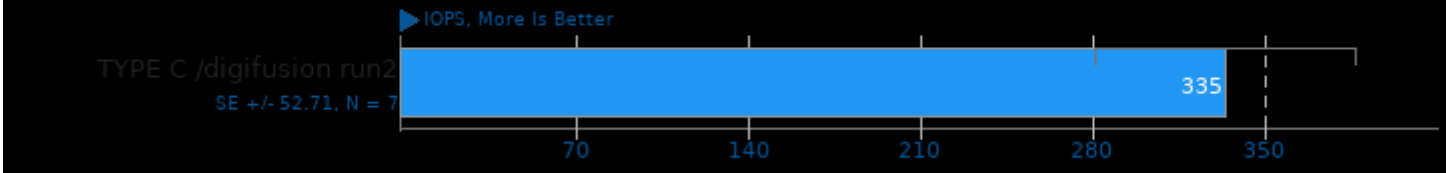
GLmark2 276

Resolution: 1920 x 1080



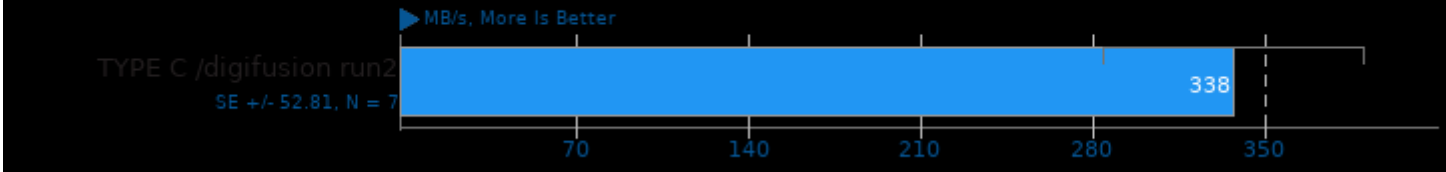
Flexible IO Tester 3.18

Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 1MB - Disk Target: Default Test Directory



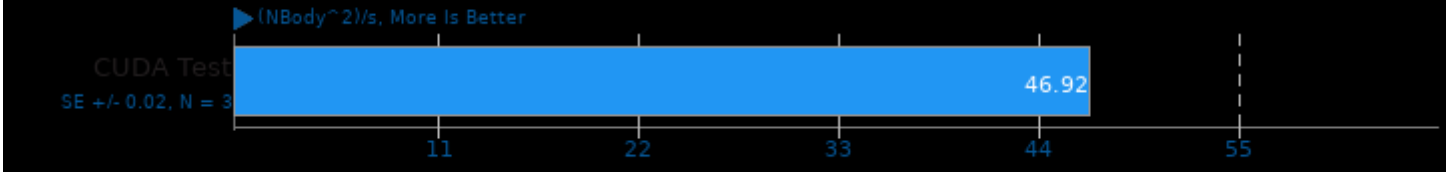
Flexible IO Tester 3.18

Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 1MB - Disk Target: Default Test Directory



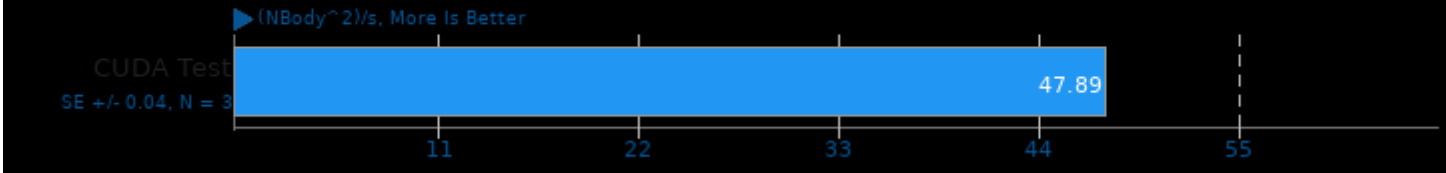
CUDA Mini-Nbody 2015-11-10

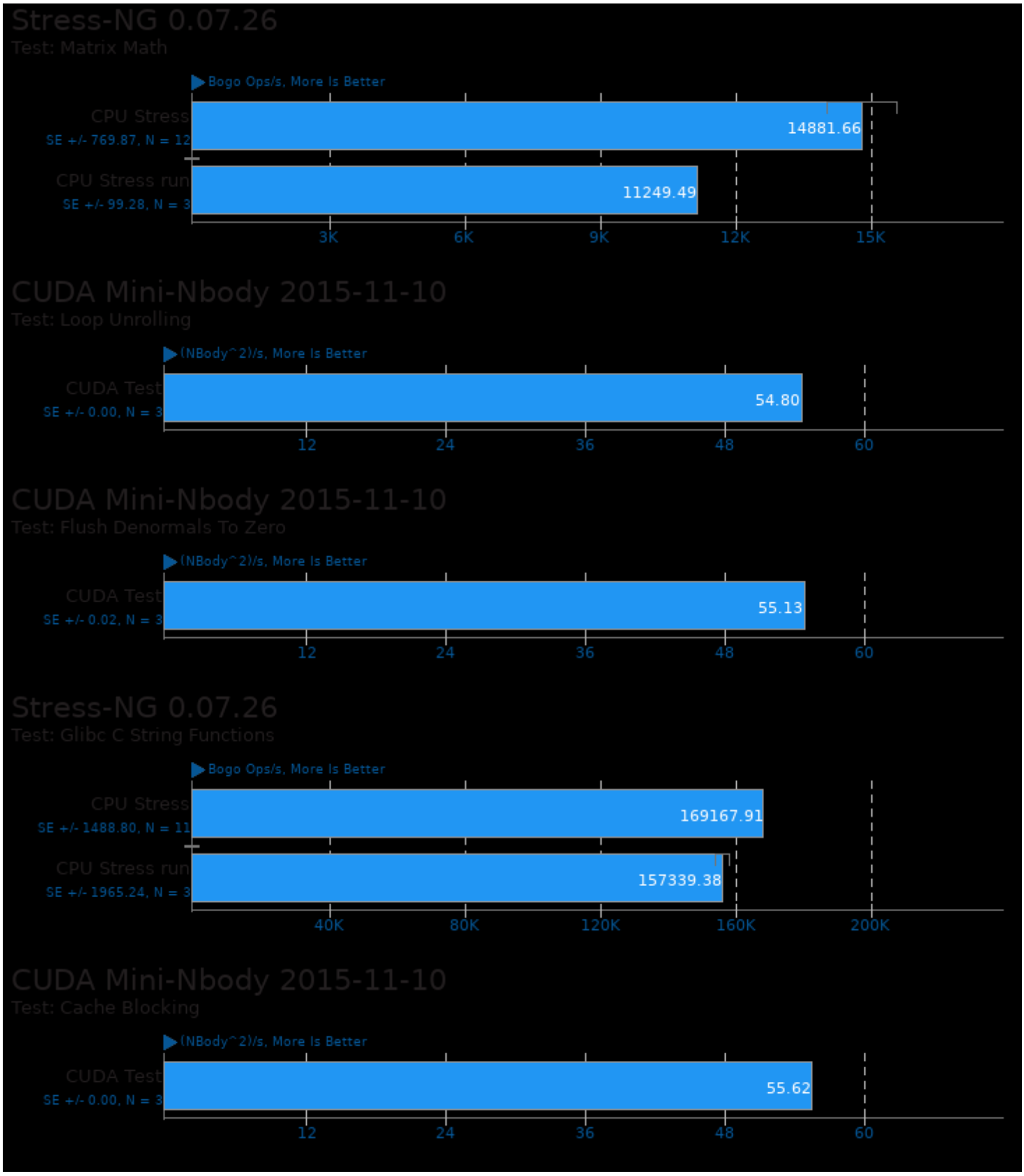
Test: Original

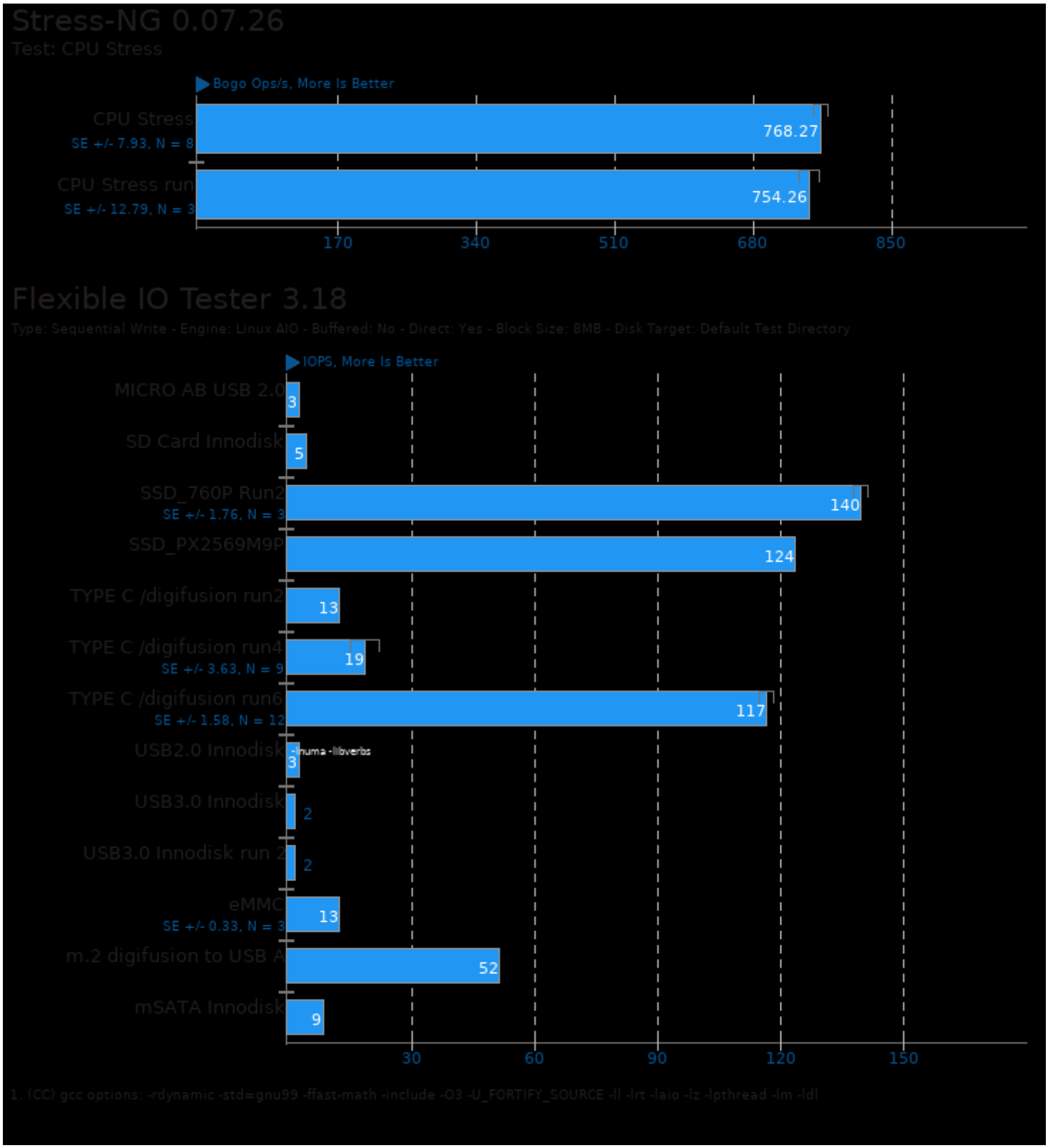


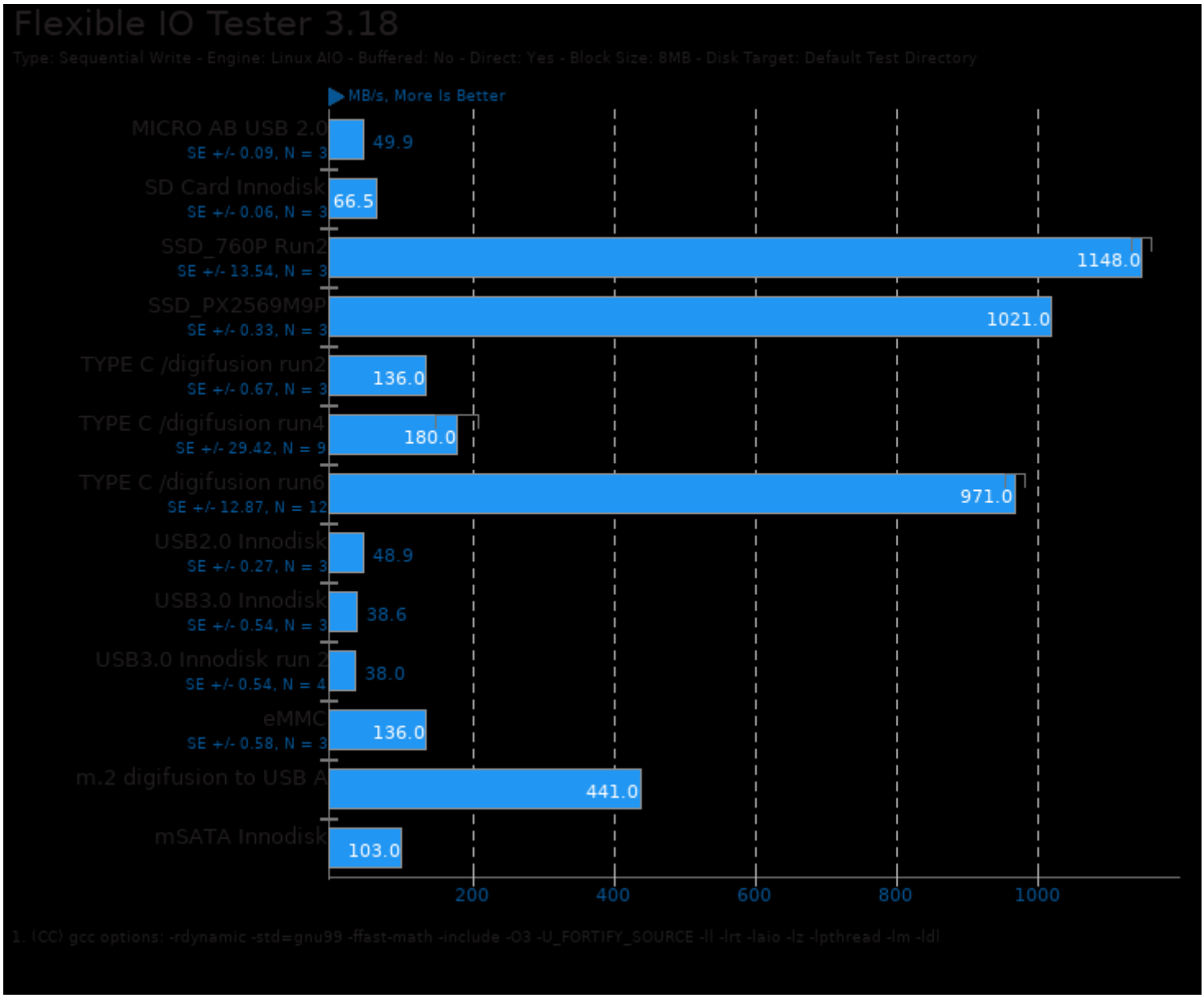
CUDA Mini-Nbody 2015-11-10

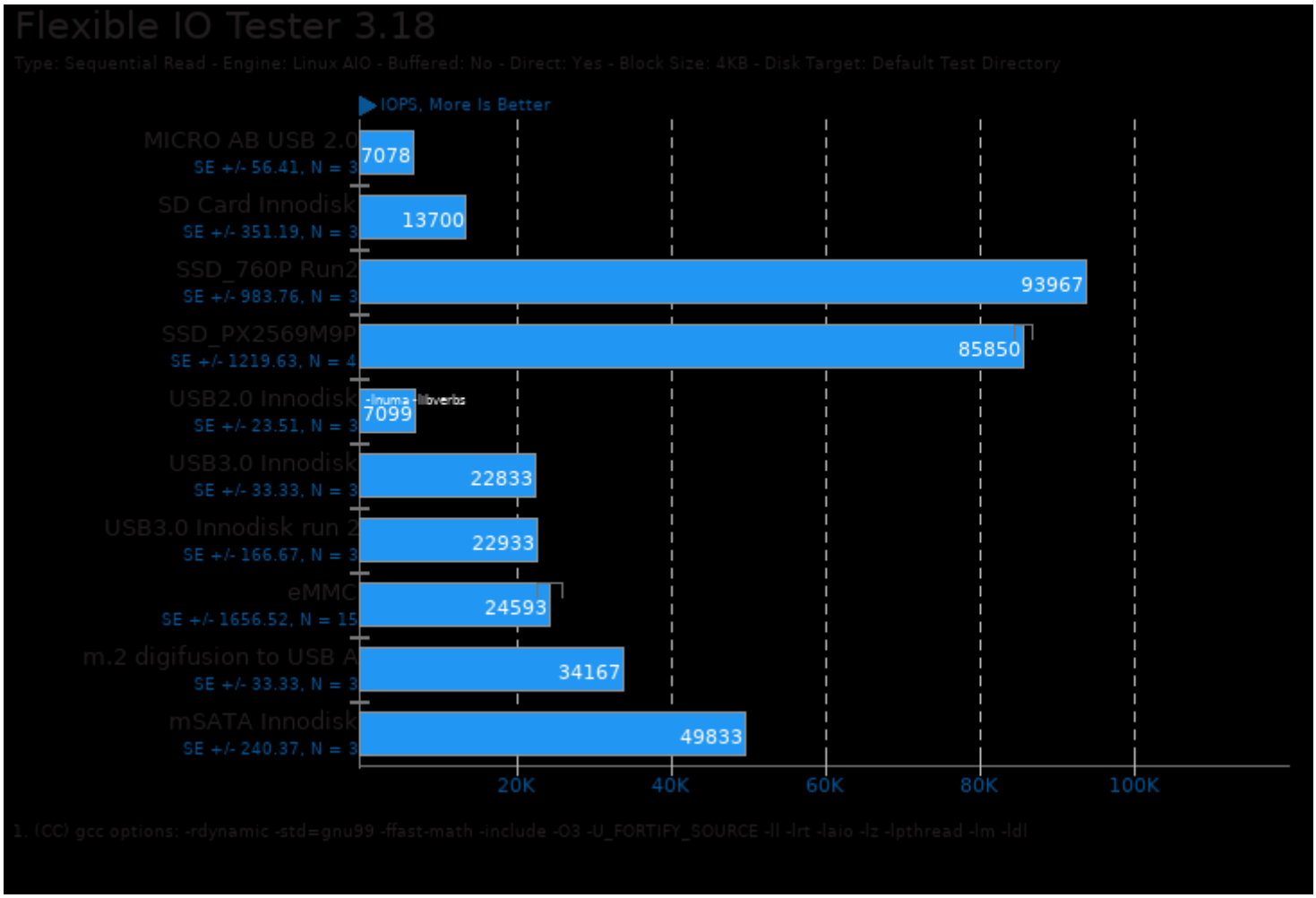
Test: SOA Data Layout

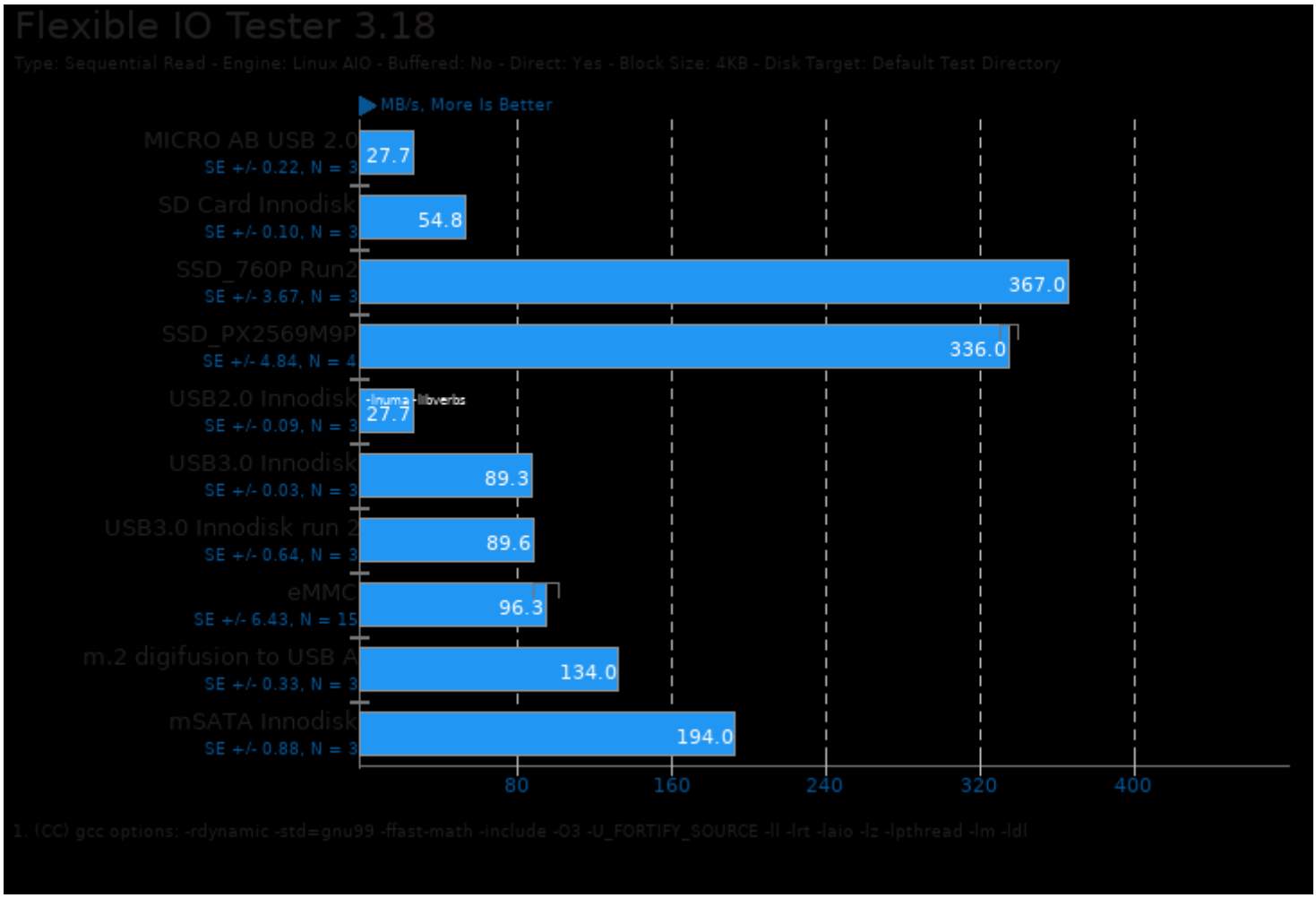


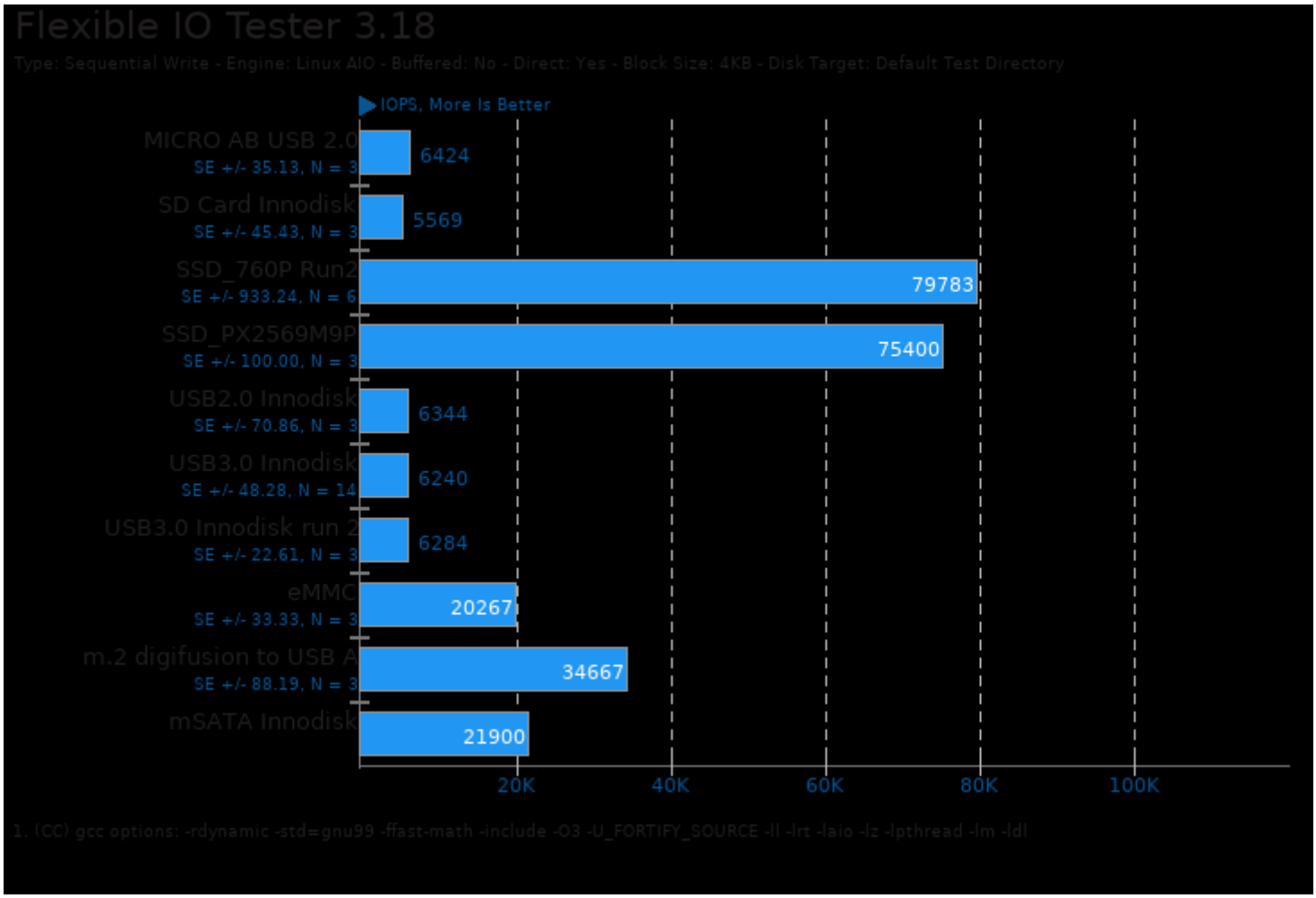

Stress-NG 0.07.26
Test: Matrix Math
Bogo Ops/s, More Is Better
CPU Stress
SE +/- 769.87, N = 12
14881.66
CPU Stress run
SE +/- 99.28, N = 3
11249.49
3K
6K
9K
12K
15K
CUDA Mini-Nbody 2015-11-10
Test: Loop Unrolling
(NBody^2)/s, More Is Better
CUDA Test
SE +/- 0.00, N = 3
54.80
12
24
36
48
60
CUDA Mini-Nbody 2015-11-10
Test: Flush Denormals To Zero
(NBody^2)/s, More Is Better
CUDA Test
SE +/- 0.02, N = 3
55.13
12
24
36
48
60
Stress-NG 0.07.26
Test: Glibc C String Functions
Bogo Ops/s, More Is Better
CPU Stress
SE +/- 1488.80, N = 11
169167.91
CPU Stress run
SE +/- 1965.24, N = 3
157339.38
40K
80K
120K
160K
200K
CUDA Mini-Nbody 2015-11-10
Test: Cache Blocking
(NBody^2)/s, More Is Better
CUDA Test
SE +/- 0.00, N = 3
55.62
12
24
36
48
60

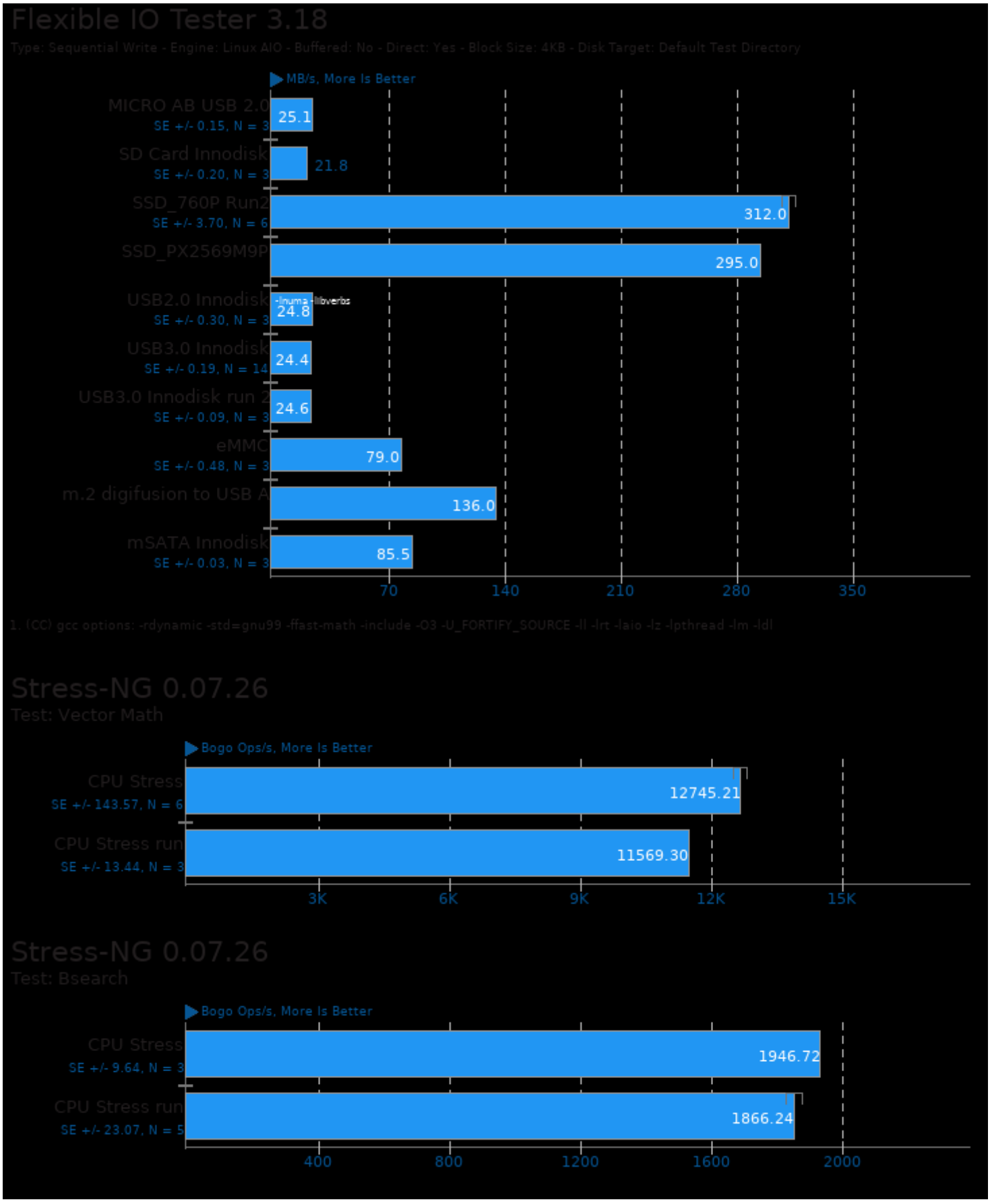

Stress-NG 0.07.26
Test: CPU Stress
Bogo Ops/s, More Is Better
CPU Stress
SE +/- 7.93, N = 8
768.27
CPU Stress run
SE +/- 12.79, N = 3
754.26
170
340
510
680
850
Flexible IO Tester 3.18
Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory
IOPS, More Is Better
MICRO AB USB 2.0
3
SD Card Innodisk
5
SSD_760P Run2
SE +/- 1.76, N = 3
140
SSD_PX2569M9P
124
TYPE C /digifusion run2
13
TYPE C /digifusion run4
SE +/- 3.63, N = 9
19
TYPE C /digifusion run6
SE +/- 1.58, N = 12
117
USB2.0 Innodisk
-lnuma -libverbs
3
USB3.0 Innodisk
2
USB3.0 Innodisk run 2
2
eMMC
SE +/- 0.33, N = 3
13
m.2 digifusion to USB A
52
mSATA Innodisk
9
30
60
90
120
150
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -ll -lrt -laio -lz -lpthread -lm -ldl

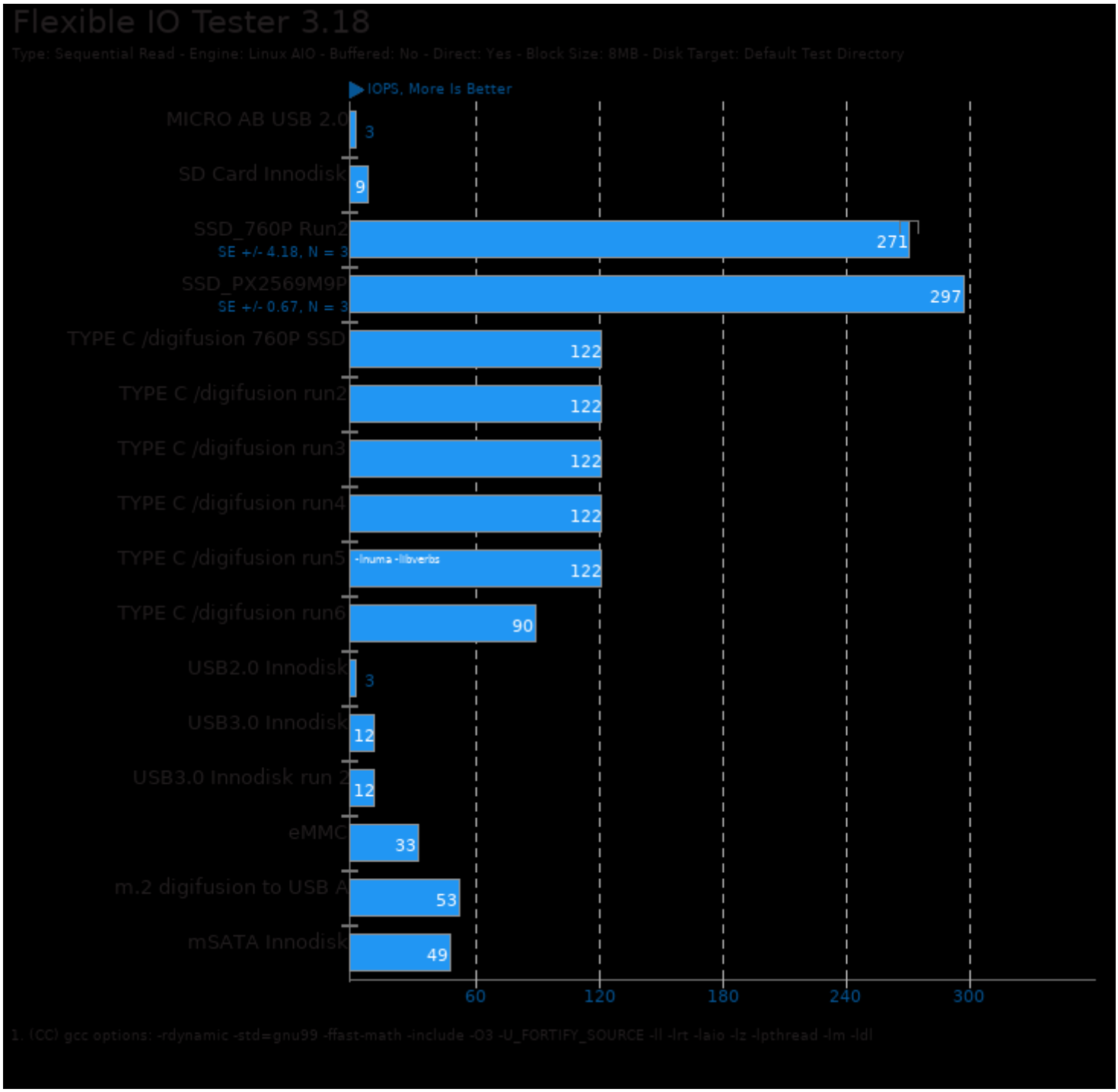

Flexible IO Tester 3.18
Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory
MB/s, More Is Better
MICRO AB USB 2.0
SE +/- 0.09, N = 3
49.9
SD Card Innodisk
SE +/- 0.06, N = 3
66.5
SSD_760P Run2
SE +/- 13.54, N = 3
1148.0
SSD_PX2569M9P
SE +/- 0.33, N = 3
1021.0
TYPE C /digifusion run2
SE +/- 0.67, N = 3
136.0
TYPE C /digifusion run4
SE +/- 29.42, N = 9
180.0
TYPE C /digifusion run6
SE +/- 12.87, N = 12
971.0
USB2.0 Innodisk
SE +/- 0.27, N = 3
48.9
USB3.0 Innodisk
SE +/- 0.54, N = 3
38.6
USB3.0 Innodisk run 2
SE +/- 0.54, N = 4
38.0
eMMC
SE +/- 0.58, N = 3
136.0
m.2 digifusion to USB A
441.0
mSATA Innodisk
103.0
200
400
600
800
1000
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -ll -lrt -laio -lz -lpthread -lm -ldl

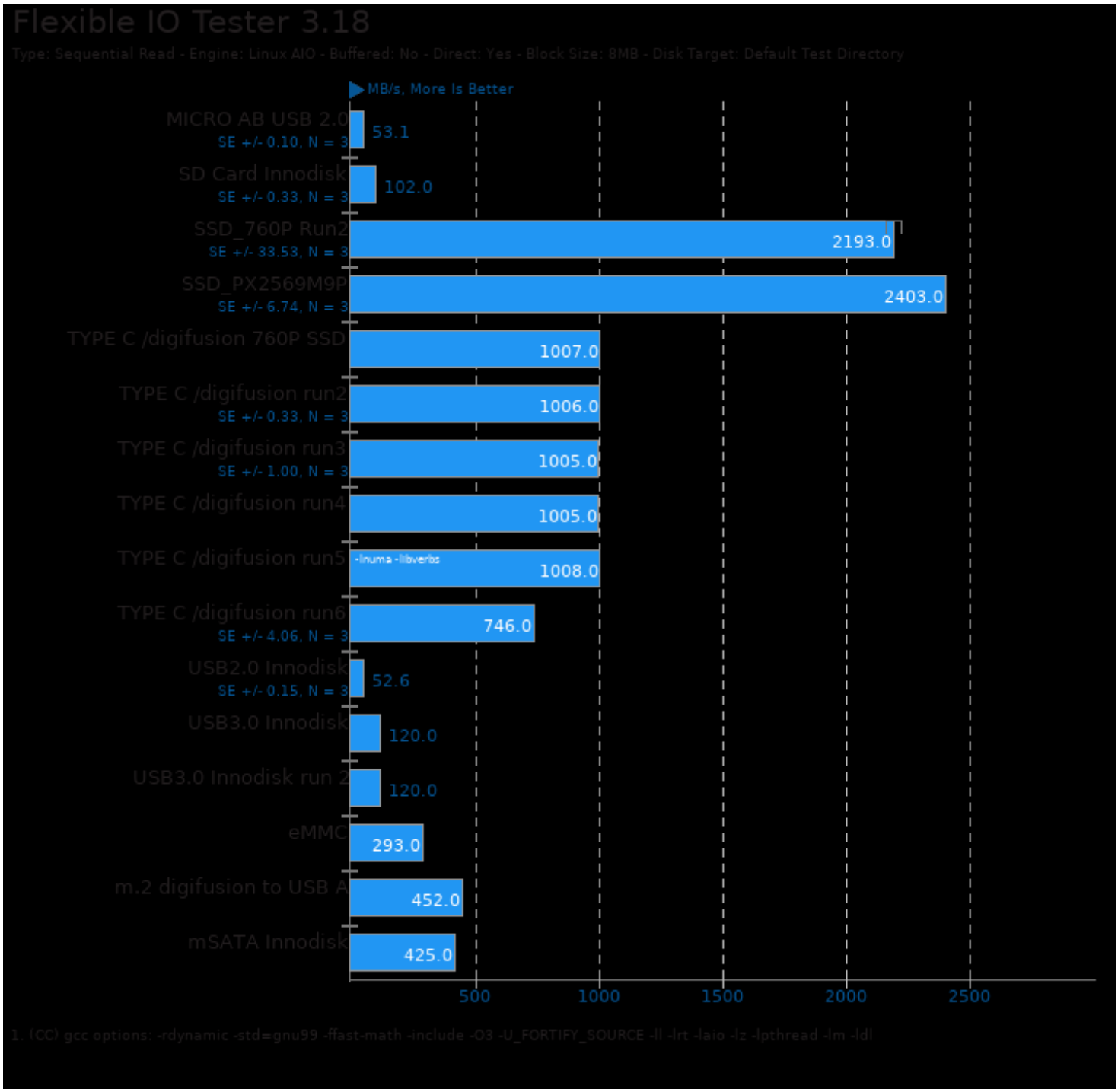

Flexible IO Tester 3.18
Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
IOPS, More Is Better
MICRO AB USB 2.0
SE +/- 56.41, N = 3
7078
SD Card Innodisk
SE +/- 351.19, N = 3
13700
SSD_760P Run2
SE +/- 983.76, N = 3
93967
SSD_PX2569M9P
SE +/- 1219.63, N = 4
85850
USB2.0 Innodisk
SE +/- 23.51, N = 3
7099
-lnuma -libverbs
USB3.0 Innodisk
SE +/- 33.33, N = 3
22833
USB3.0 Innodisk run 2
SE +/- 166.67, N = 3
22933
eMMC
SE +/- 1656.52, N = 15
24593
m.2 digifusion to USB A
SE +/- 33.33, N = 3
34167
mSATA Innodisk
SE +/- 240.37, N = 3
49833
20K
40K
60K
80K
100K
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -ll -lrt -laio -lz -lpthread -lm -ldl


Flexible IO Tester 3.18
Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
MB/s, More Is Better
MICRO AB USB 2.0
SE +/- 0.22, N = 3
27.7
SD Card Innodisk
SE +/- 0.10, N = 3
54.8
SSD_760P Run2
SE +/- 3.67, N = 3
367.0
SSD_PX2569M9P
SE +/- 4.84, N = 4
336.0
USB2.0 Innodisk
SE +/- 0.09, N = 3
-lnuma -libverbs
27.7
USB3.0 Innodisk
SE +/- 0.03, N = 3
89.3
USB3.0 Innodisk run 2
SE +/- 0.64, N = 3
89.6
eMMC
SE +/- 6.43, N = 15
96.3
m.2 digifusion to USB A
SE +/- 0.33, N = 3
134.0
mSATA Innodisk
SE +/- 0.88, N = 3
194.0
80
160
240
320
400
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -ll -lrt -laio -lz -lpthread -lm -ldl


Flexible IO Tester 3.18
Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
IOPS, More Is Better
MICRO AB USB 2.0
SE +/- 35.13, N = 3
6424
SD Card Innodisk
SE +/- 45.43, N = 3
5569
SSD_760P Run2
SE +/- 933.24, N = 6
79783
SSD_PX2569M9P
SE +/- 100.00, N = 3
75400
USB2.0 Innodisk
SE +/- 70.86, N = 3
6344
USB3.0 Innodisk
SE +/- 48.28, N = 14
6240
USB3.0 Innodisk run 2
SE +/- 22.61, N = 3
6284
eMMC
SE +/- 33.33, N = 3
20267
m.2 digifusion to USB A
SE +/- 88.19, N = 3
34667
mSATA Innodisk
21900
20K
40K
60K
80K
100K
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -ll -lrt -laio -lz -lpthread -lm -ldl

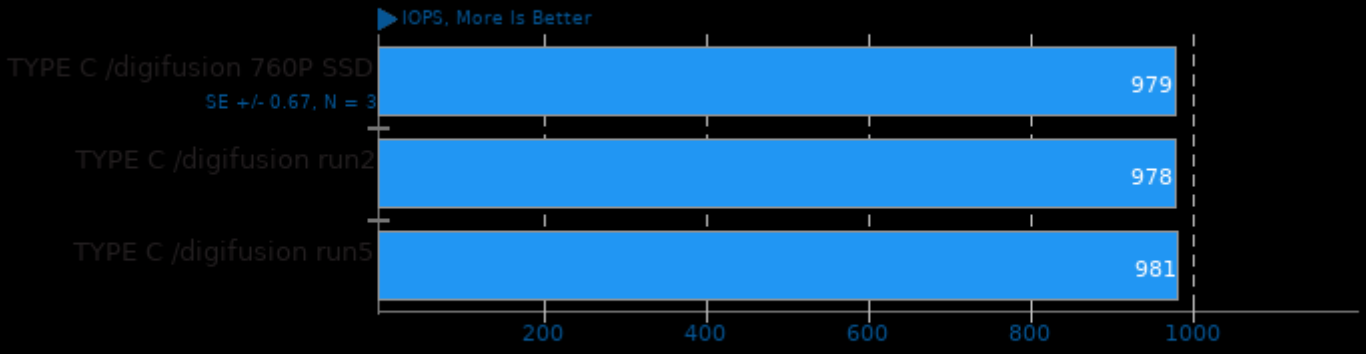

Flexible IO Tester 3.18
Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
MB/s, More Is Better
MICRO AB USB 2.0
SE +/- 0.15, N = 3
25.1
SD Card Innodisk
SE +/- 0.20, N = 3
21.8
SSD_760P Run2
SE +/- 3.70, N = 6
312.0
SSD_PX2569M9P
295.0
USB2.0 Innodisk
SE +/- 0.30, N = 3
24.8
USB3.0 Innodisk
SE +/- 0.19, N = 14
24.4
USB3.0 Innodisk run 2
SE +/- 0.09, N = 3
24.6
eMMC
SE +/- 0.48, N = 3
79.0
m.2 digifusion to USB A
136.0
mSATA Innodisk
SE +/- 0.03, N = 3
85.5
70
140
210
280
350
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -ll -lrt -laio -lz -lpthread -lm -ldl
Stress-NG 0.07.26
Test: Vector Math
Bogo Ops/s, More Is Better
CPU Stress
SE +/- 143.57, N = 6
12745.21
CPU Stress run
SE +/- 13.44, N = 3
11569.30
3K
6K
9K
12K
15K
Stress-NG 0.07.26
Test: Bsearch
Bogo Ops/s, More Is Better
CPU Stress
SE +/- 9.64, N = 3
1946.72
CPU Stress run
SE +/- 23.07, N = 5
1866.24
400
800
1200
1600
2000


Flexible IO Tester 3.18
Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory
IOPS, More Is Better
MICRO AB USB 2.0
3
SD Card Innodisk
9
SSD_760P Run2
SE +/- 4.18, N = 3
271
SSD_PX2569M9P
SE +/- 0.67, N = 3
297
TYPE C /digifusion 760P SSD
122
TYPE C /digifusion run2
122
TYPE C /digifusion run3
122
TYPE C /digifusion run4
122
TYPE C /digifusion run5
-lnuma -libverbs
122
TYPE C /digifusion run6
90
USB2.0 Innodisk
3
USB3.0 Innodisk
12
USB3.0 Innodisk run 2
12
eMMC
33
m.2 digifusion to USB A
53
mSATA Innodisk
49
60
120
180
240
300
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -ll -lrt -laio -lz -lpthread -lm -ldl


Flexible IO Tester 3.18
Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory
MB/s, More Is Better
MICRO AB USB 2.0
SE +/- 0.10, N = 3
53.1
SD Card Innodisk
SE +/- 0.33, N = 3
102.0
SSD_760P Run2
SE +/- 33.53, N = 3
2193.0
SSD_PX2569M9P
SE +/- 6.74, N = 3
2403.0
TYPE C /digifusion 760P SSD
1007.0
TYPE C /digifusion run2
SE +/- 0.33, N = 3
1006.0
TYPE C /digifusion run3
SE +/- 1.00, N = 3
1005.0
TYPE C /digifusion run4
1005.0
TYPE C /digifusion run5
-lnuma -libverbs
1008.0
TYPE C /digifusion run6
SE +/- 4.06, N = 3
746.0
USB2.0 Innodisk
SE +/- 0.15, N = 3
52.6
USB3.0 Innodisk
120.0
USB3.0 Innodisk run 2
120.0
eMMC
293.0
m.2 digifusion to USB A
452.0
mSATA Innodisk
425.0
500
1000
1500
2000
2500
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -ll -lrt -laio -lz -lpthread -lm -ldl

Flexible IO Tester 3.18

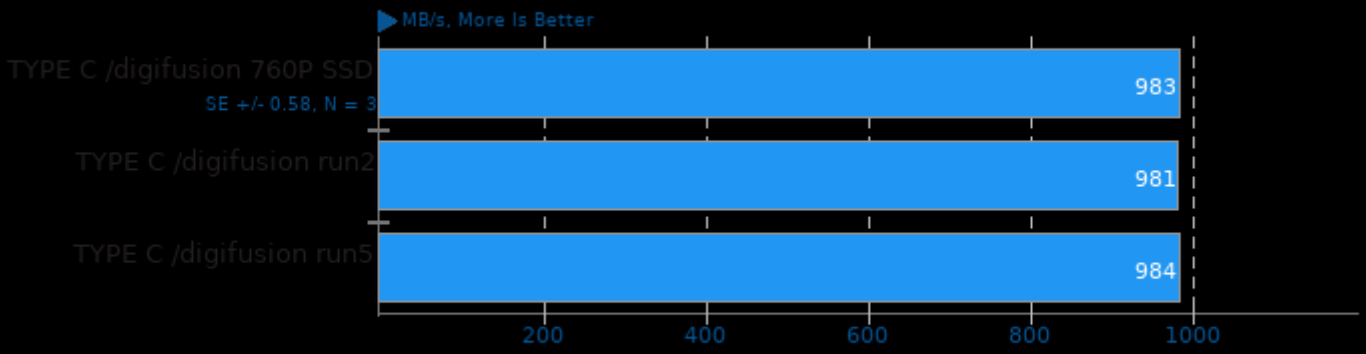
Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 1MB - Disk Target: Default Test Directory



1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -ll -lnuma -libverbs -lrt -laio -lz -lpthread -lm -ldl

Flexible IO Tester 3.18

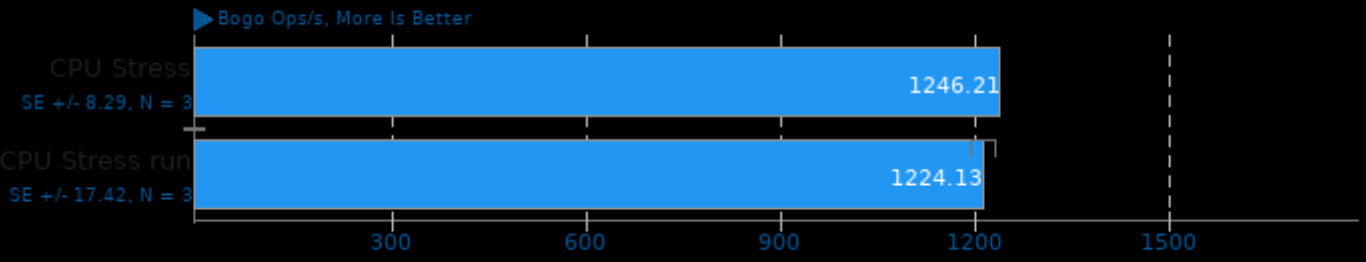
Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 1MB - Disk Target: Default Test Directory

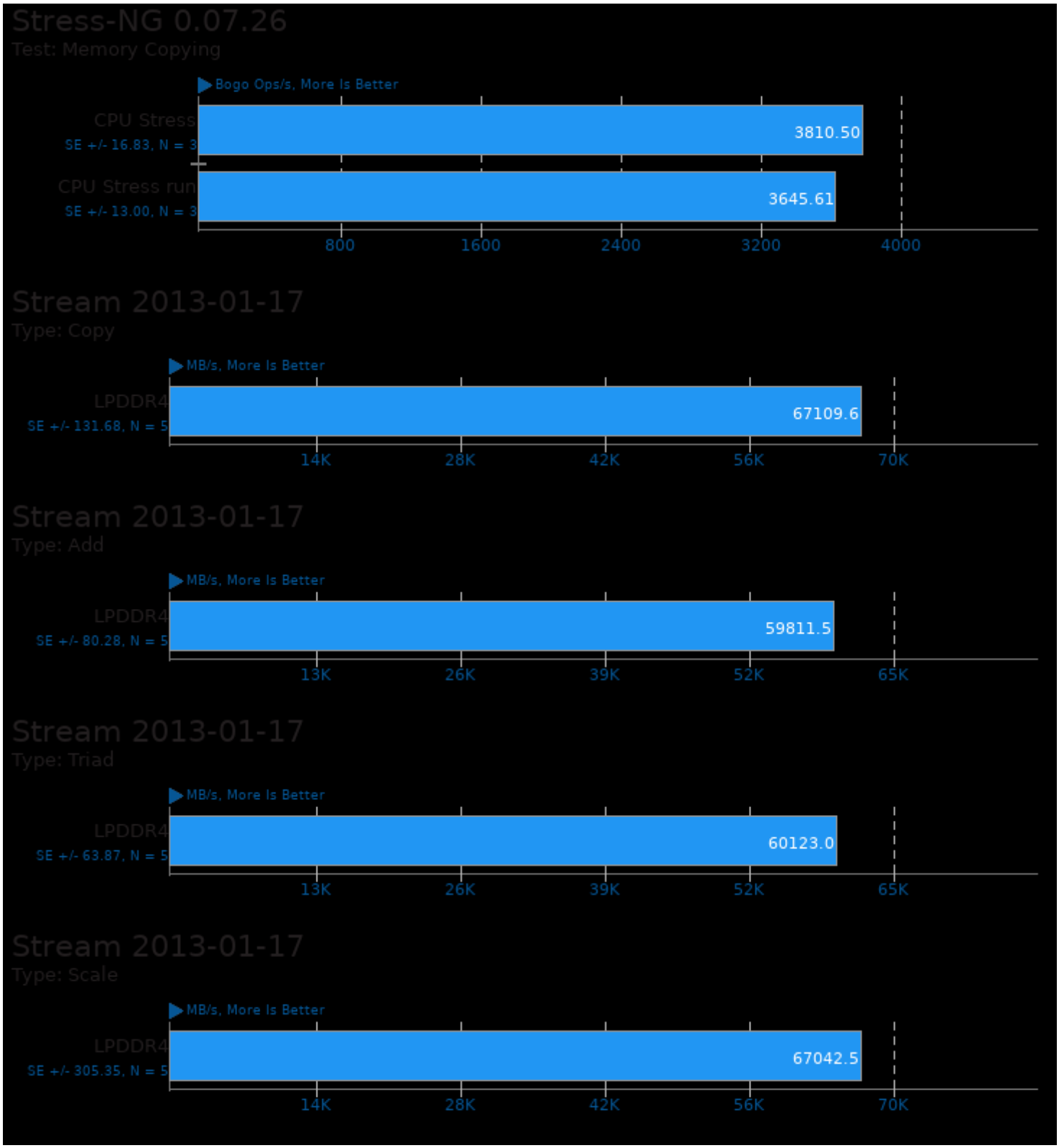


1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -ll -lnuma -libverbs -lrt -laio -lz -lpthread -lm -ldl

Stress-NG 0.07.26

Test: Crypto





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