www.phoronix-test-suite.com

JS-E02_AX720_R32_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

Digifusion M.2 SSD had the most wins, coming in first place for 50% of the tests.

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

USB2.0 Innodisk

SD Card 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 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 + 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

Digifusion M.2 SSD

Micro AB USB2.0_inno

Type C Digifusion

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: 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 run 2

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

Type C DIGFAST

Type C DIGFAST run 2

Processor: ARMv8 rev 0 @ 2.27GHz (8 Cores), Motherboard: Jetson-AGX, Memory: 16GB, Disk: 256GB PLEXTOR PX-256M9PeGN + 256GB Tech + 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 USB3.0

CPU Stress

CPU Stress run

Processor: ARMv8 rev 0 @ 2.27GHz (8 Cores), Motherboard: Jetson-AGX, Memory: 16GB, Disk: 256GB PLEXTOR PX-256M9PeGN + 62GB Dual Drive + 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

JS-E02_AX720_R32_3_1

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

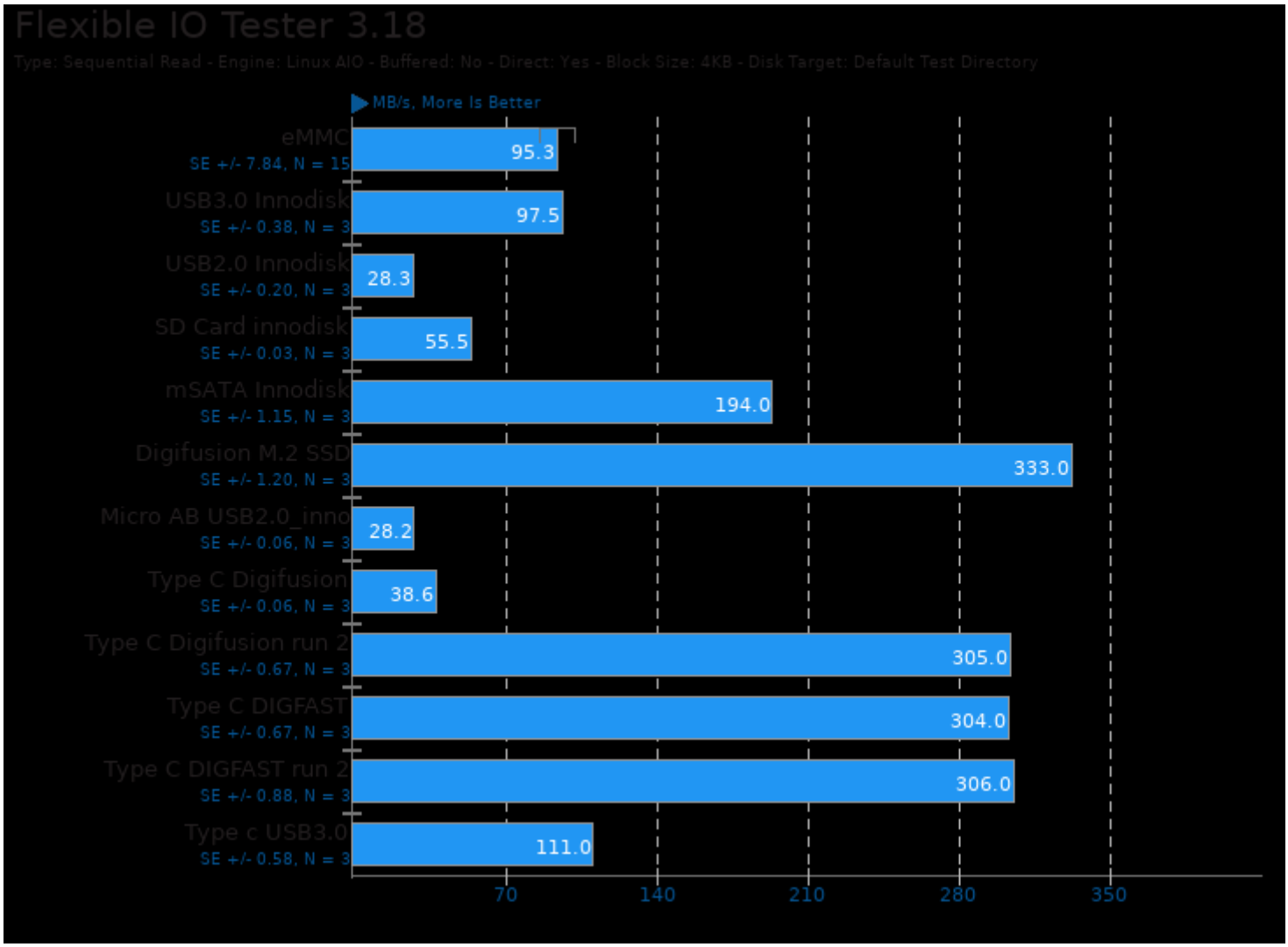
	eMMC	USB3.0 Innodisk	USB2.0 Innodisk	SD Card innodisk	mSATA Innodisk	Digifusion M.2 SSD	Micro AB USB2.0_inno	Type C Digifusion	Type C Digifusion run 2	Type C DIGFAST	Type C DIGFAST run 2	Type c USB3.0	CPU Stress	CPU Stress run
Flexible IO Tester - Seq Read - Linux AIO - No - Yes - 4KB (MB/s)	95.3	97.5	28.3	55.5	194	**333**	**28.2**	38.6	305	304	306	111		
Normalized	28.62%	29.28%	8.5%	16.67%	58.26%	100%	8.47%	11.59%	91.59%	91.29%	91.89%	33.33%		
Standard	31.9%	0.7%	1.2%	0.1%	1%	0.6%	0.4%	0.3%	0.4%	0.4%	0.5%	0.9%		
Flexible IO Tester - Seq Read - Linux AIO - No - Yes - 4KB (IOPS)	24340	24967	7242	14200	49733	**85333**	**7217**	9878	78100	77533	78200	28367		
Normalized	28.52%	29.26%	8.49%	16.64%	58.28%	100%	8.46%	11.58%	91.52%	90.86%	91.64%	33.24%		
Standard	32%	0.6%	1.1%		0.8%	0.6%	0.4%	0.2%	0.5%	0.7%	0.5%	0.7%		
Flexible IO Tester - Seq Read - Linux AIO - No - Yes - 8MB (MB/s)	306	121	53.3	102	427	**1739**	**52.6**	63.3	822	818	818	169		
Normalized	17.6%	6.96%	3.06%	5.87%	24.55%	100%	3.02%	3.64%	47.27%	47.04%	47.04%	9.72%		
Standard			0.1%			0.8%	1.3%	0.2%	0.1%	0.1%	0.1%			
Flexible IO Tester - Seq Read - Linux AIO - No - Yes - 8MB (IOPS)	35	12	**3**	9	50	**214**	**3**	4	99	99	99	18		
Normalized	16.36%	5.61%	1.4%	4.21%	23.36%	100%	1.4%	1.87%	46.26%	46.26%	46.26%	8.41%		
Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 4KB (MB/s)	81.2	24.7	25.0	21.9	85.5	268	25.1	39.0	**0.621**	280	**281**	21.6		
Normalized	28.9%	8.79%	8.9%	7.79%	30.43%	95.37%	8.93%	13.88%	0.22%	99.64%	100%	7.69%		
Standard Deviation	0.2%	0.4%	1.2%	1.3%	0.1%	2.1%	1.1%	0.1%	59.4%			11.6%		

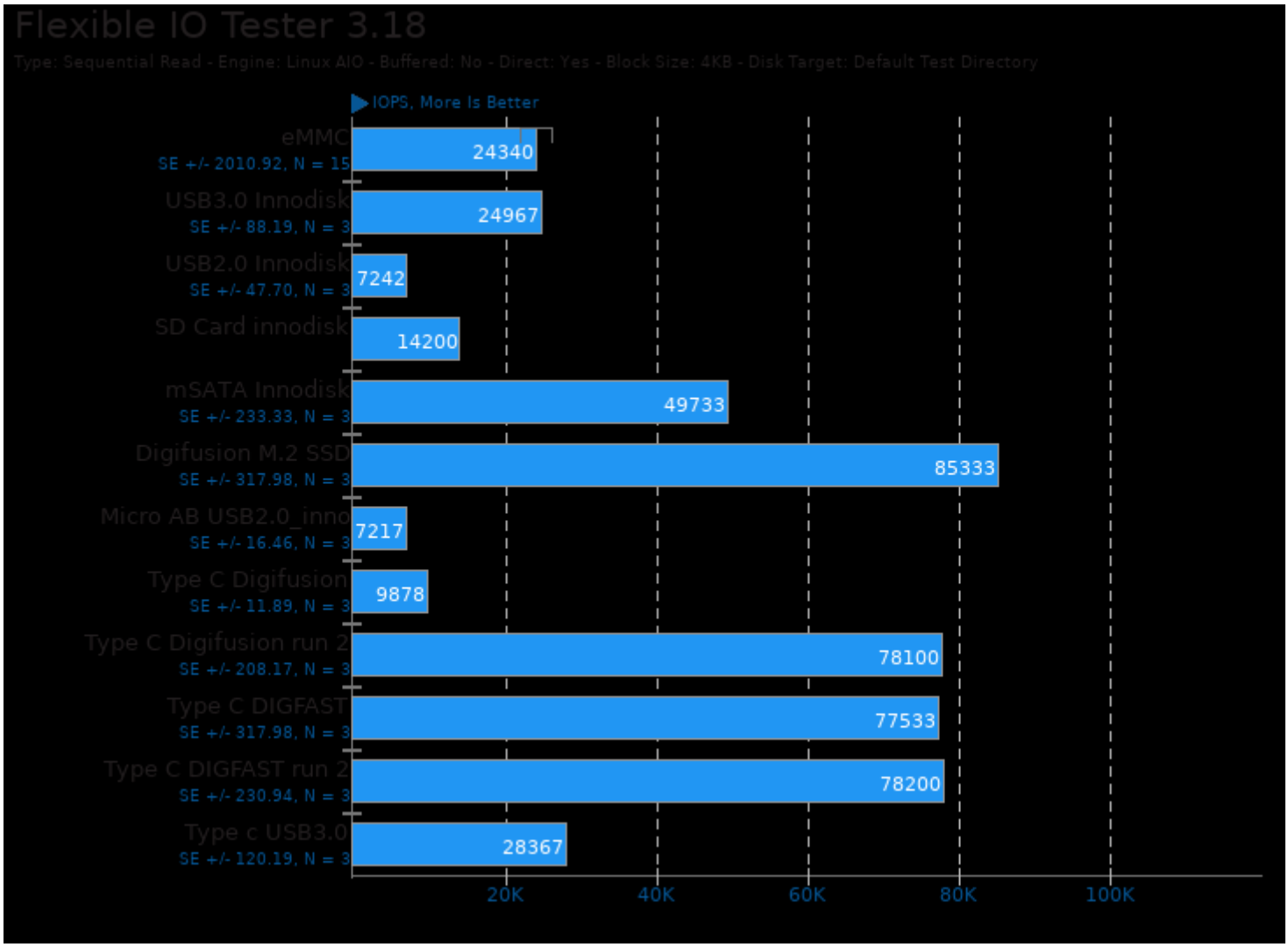
JS-E02_AX720_R32_3_1

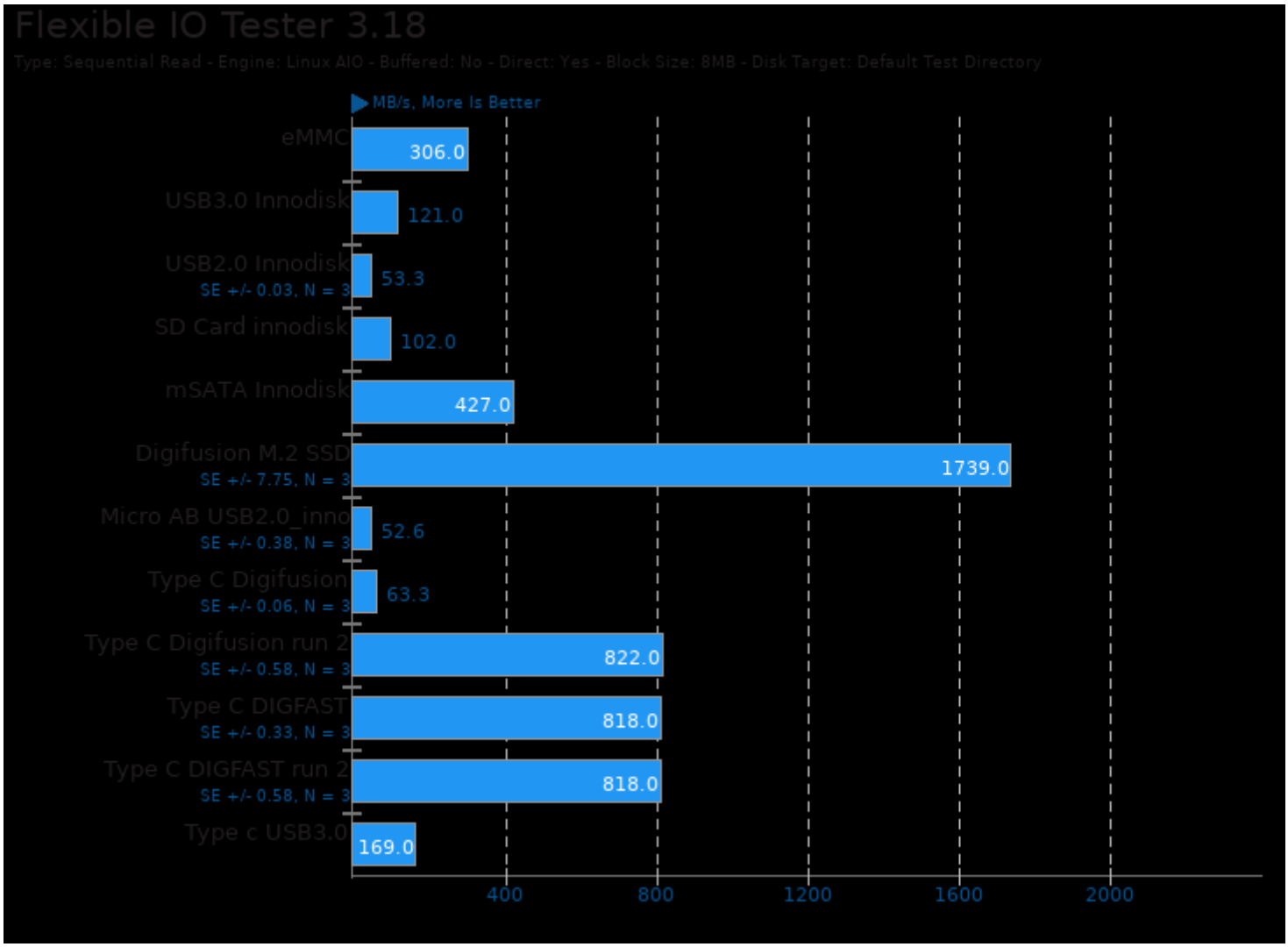
Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 4KB (IOPS)	20767	6320	6399	5594	21867	68300	6432	9990	**152**	71700	**72067**	5566		
Normalized	28.82%	8.77%	8.88%	7.76%	30.34%	94.77%	8.93%	13.86%	0.21%	99.49%	100%	7.72%		
Standard	0.3%	0.4%	1.2%	1.4%	0.3%	3%	1.2%	0.1%	60.6%	0.1%	0.2%	11.3%		
Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 8MB (MB/s)	135	39.0	49.3	66.3	103	281	49.3	63.7	**8.880**	300	**301**	56.1		
Normalized	44.85%	12.96%	16.38%	22.03%	34.22%	93.36%	16.38%	21.16%	2.95%	99.67%	100%	18.64%		
Standard	0.9%	1.9%	0.7%	0.1%		0.7%	1.1%	0.1%	27.2%		1.3%	2.1%		
Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 8MB (IOPS)	13	**2**	3	5	9	32	3	4		**34**	**34**	4		
Normalized	38.24%	5.88%	8.82%	14.71%	26.47%	94.12%	8.82%	11.76%		100%	100%	11.76%		
Standard	4.3%					1.8%					1.7%			
Stress-NG - Forking (Bogo Ops/s)													**7153**	**7051**
Normalized													100%	98.56%
Standard													0.5%	0.4%
Stress-NG - CPU Stress (Bogo Ops/s)													**886.60**	**901.27**
Normalized													98.37%	100%
Standard													2.9%	0.1%
Stress-NG - Crypto (Bogo Ops/s)														1212
Standard														1.7%
Stress-NG - Matrix Math (Bogo Ops/s)														14012
Standard														0.3%
Stress-NG - Vector Math (Bogo Ops/s)														52180
Standard														0%
Stress-NG - Memory Copying (Bogo Ops/s)														3251
Standard Deviation														0.3%

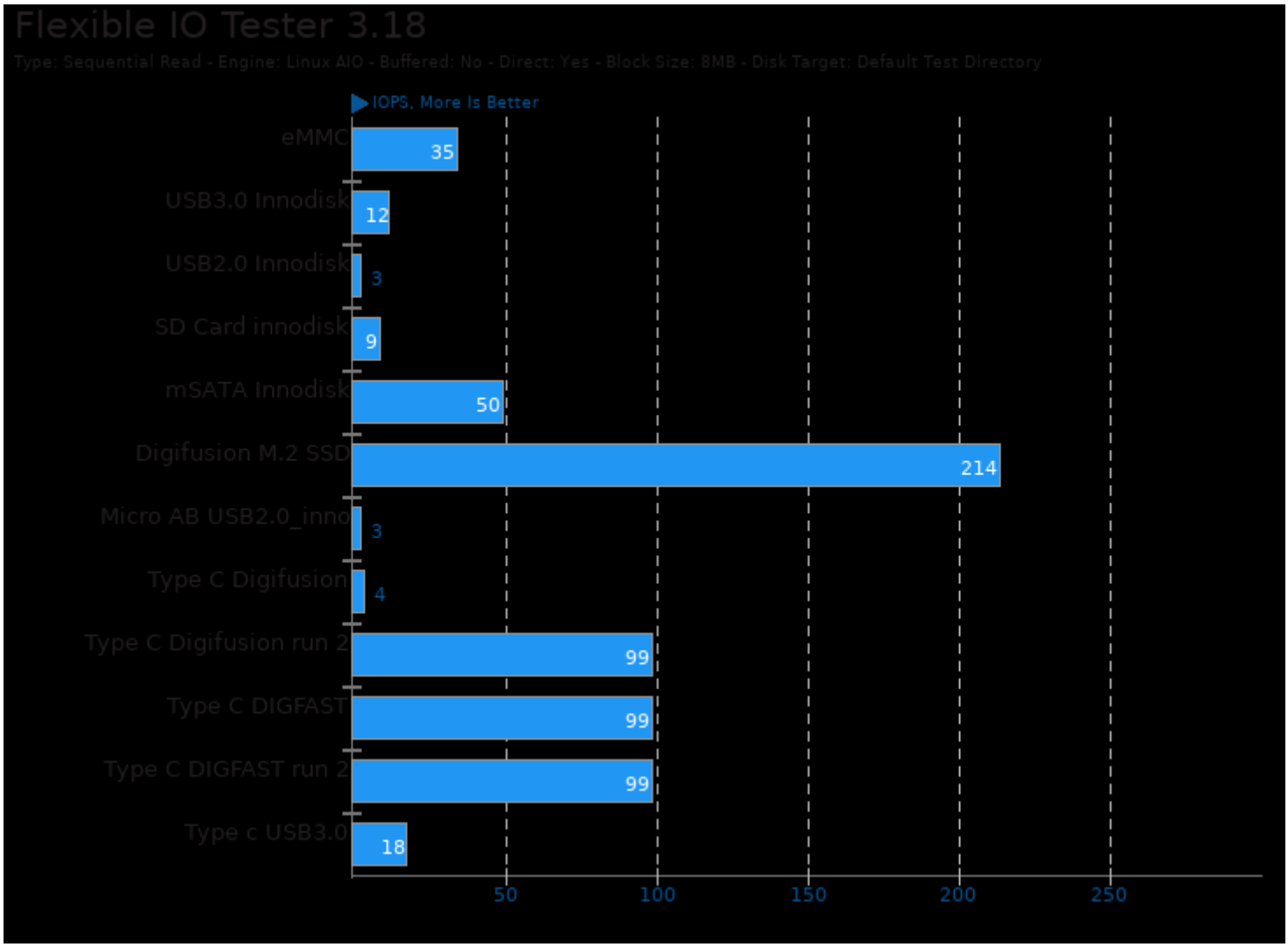
JS-E02_AX720_R32_3_1

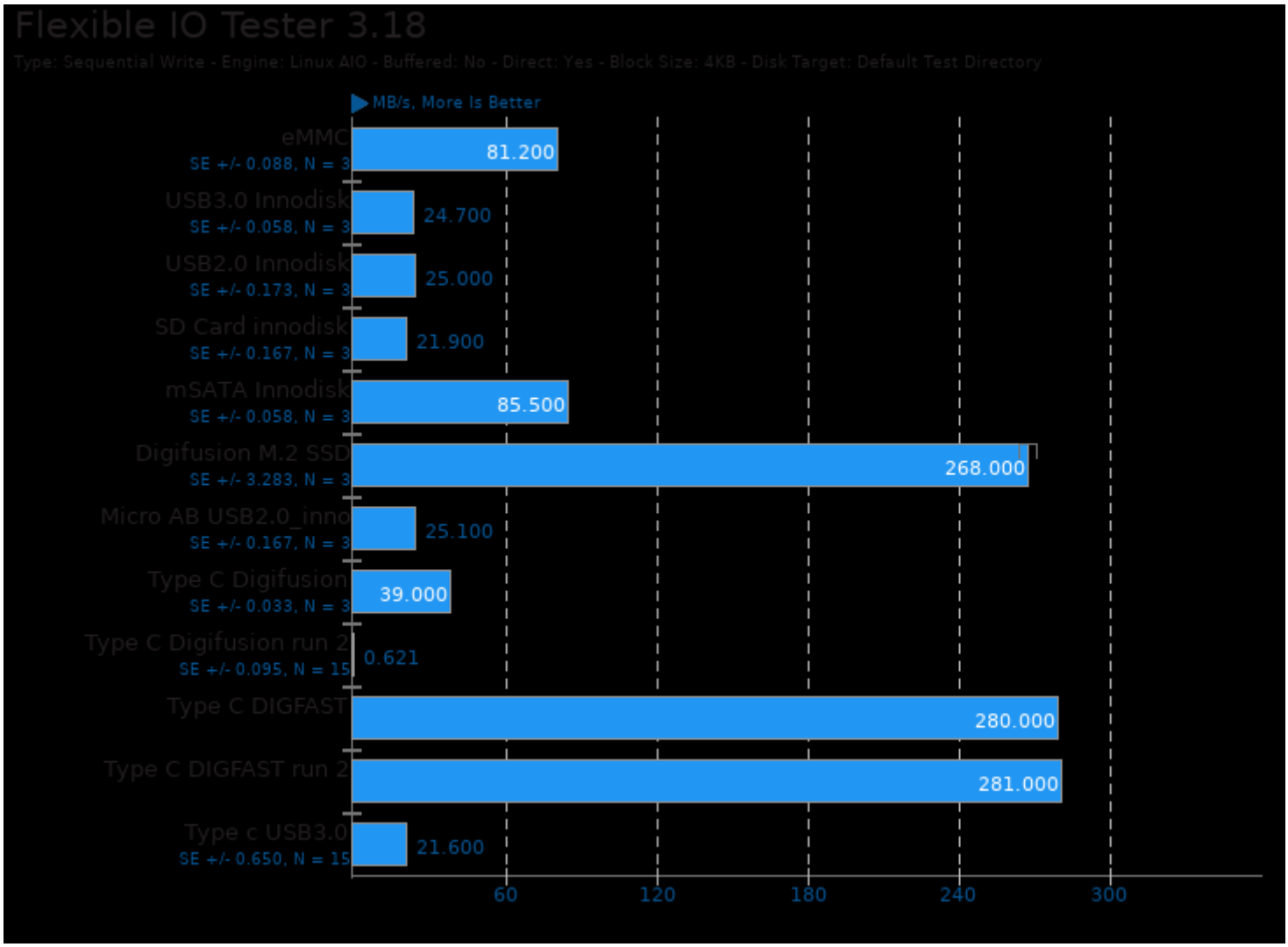
Stress-NG - G.C.S.F (Bogo Ops/s)	22672
	1
Standard Deviation	1.4%
Stress-NG - G.Q.D.S (Bogo Ops/s)	48.63
Standard Deviation	16.8%

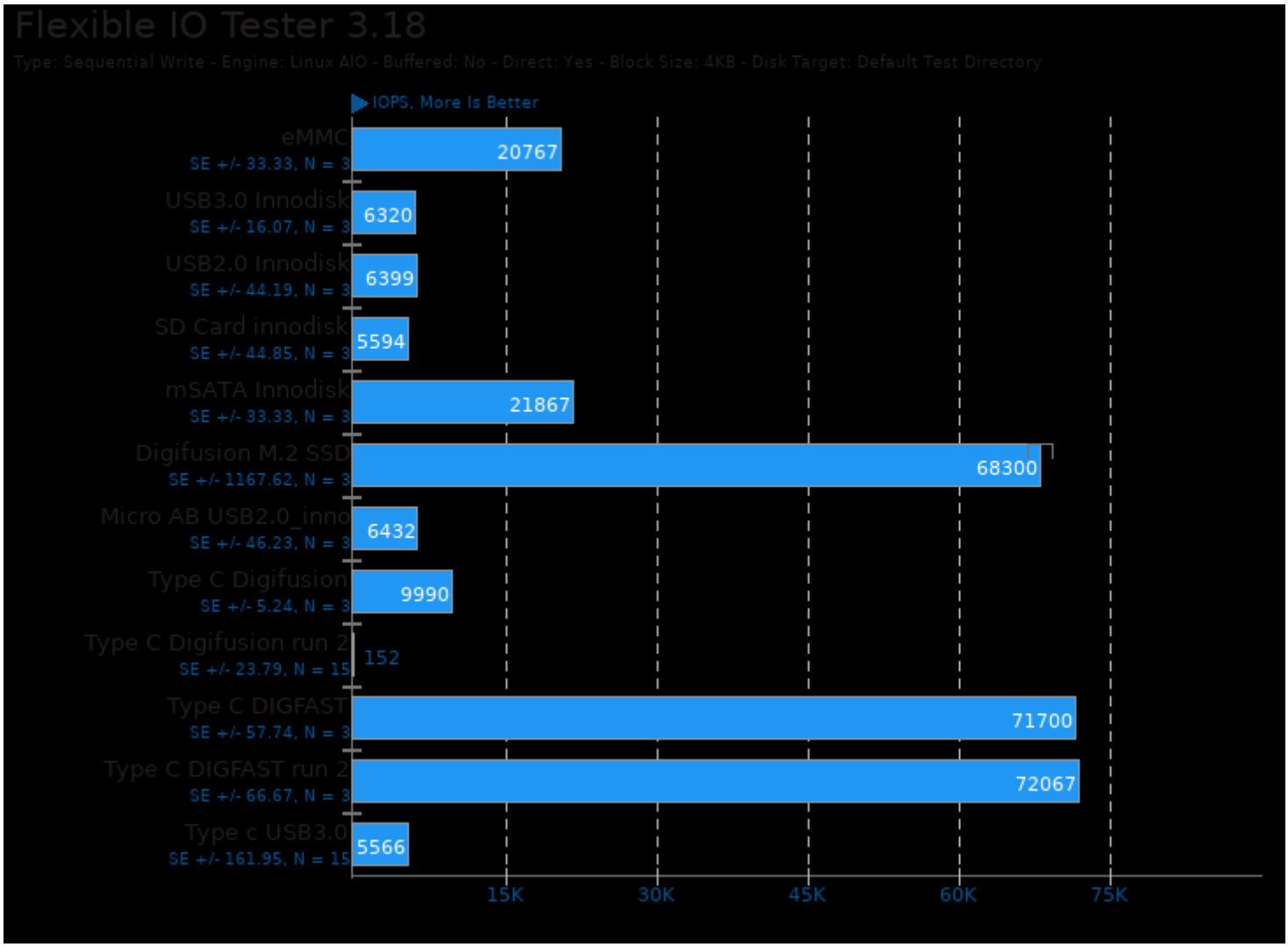

Flexible IO Tester 3.18
Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
MB/s, More Is Better
eMMC
SE +/- 7.84, N = 15
95.3
USB3.0 Innodisk
SE +/- 0.38, N = 3
97.5
USB2.0 Innodisk
SE +/- 0.20, N = 3
28.3
SD Card innodisk
SE +/- 0.03, N = 3
55.5
mSATA Innodisk
SE +/- 1.15, N = 3
194.0
Digifusion M.2 SSD
SE +/- 1.20, N = 3
333.0
Micro AB USB2.0_inno
SE +/- 0.06, N = 3
28.2
Type C Digifusion
SE +/- 0.06, N = 3
38.6
Type C Digifusion run 2
SE +/- 0.67, N = 3
305.0
Type C DIGFAST
SE +/- 0.67, N = 3
304.0
Type C DIGFAST run 2
SE +/- 0.88, N = 3
306.0
Type c USB3.0
SE +/- 0.58, N = 3
111.0
70
140
210
280
350

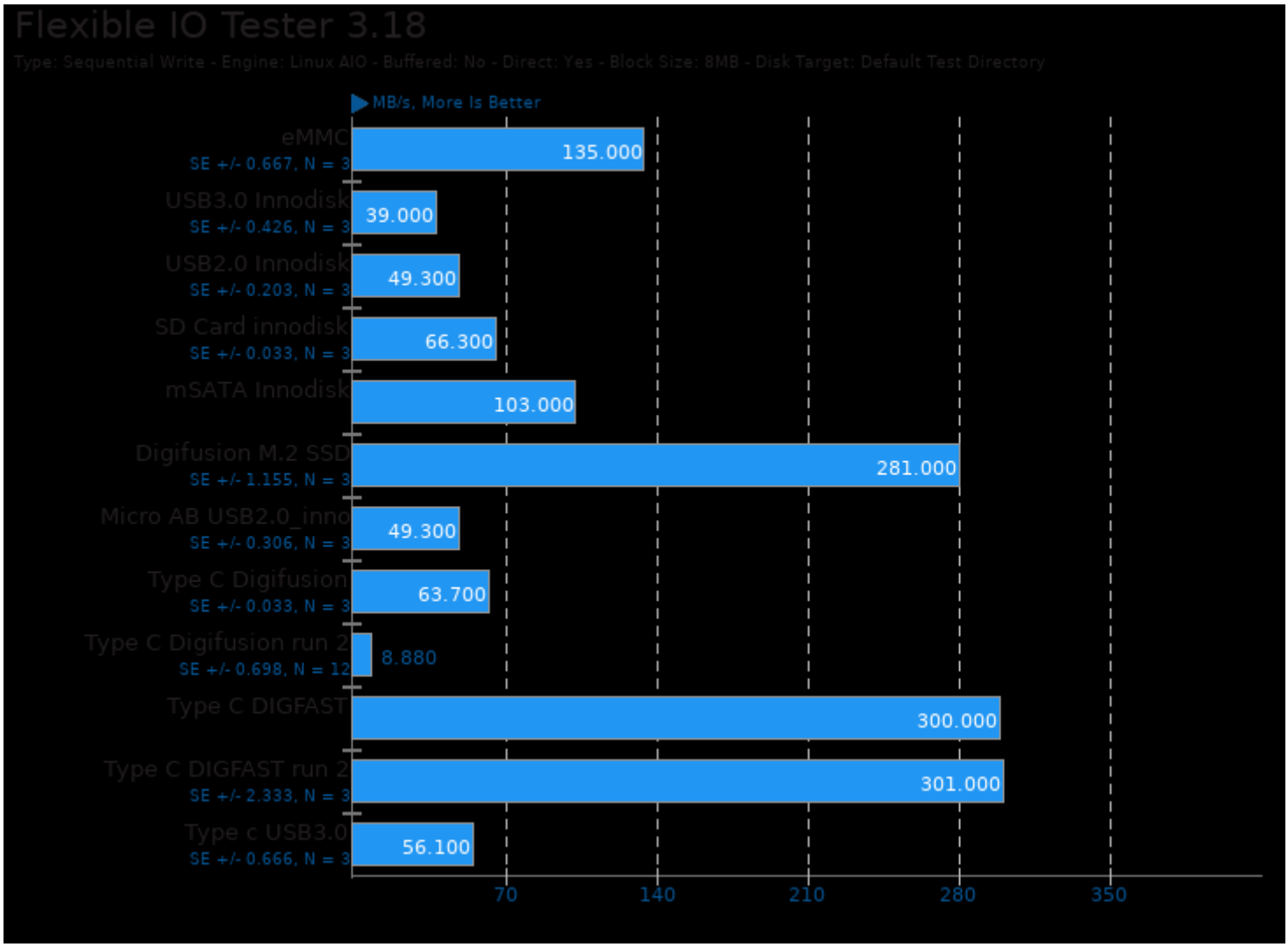

Flexible IO Tester 3.18
Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
IOPS, More Is Better
eMMC
SE +/- 2010.92, N = 15
24340
USB3.0 Innodisk
SE +/- 88.19, N = 3
24967
USB2.0 Innodisk
SE +/- 47.70, N = 3
7242
SD Card innodisk
14200
mSATA Innodisk
SE +/- 233.33, N = 3
49733
Digifusion M.2 SSD
SE +/- 317.98, N = 3
85333
Micro AB USB2.0_inno
SE +/- 16.46, N = 3
7217
Type C Digifusion
SE +/- 11.89, N = 3
9878
Type C Digifusion run 2
SE +/- 208.17, N = 3
78100
Type C DIGFAST
SE +/- 317.98, N = 3
77533
Type C DIGFAST run 2
SE +/- 230.94, N = 3
78200
Type c USB3.0
SE +/- 120.19, N = 3
28367
20K
40K
60K
80K
100K

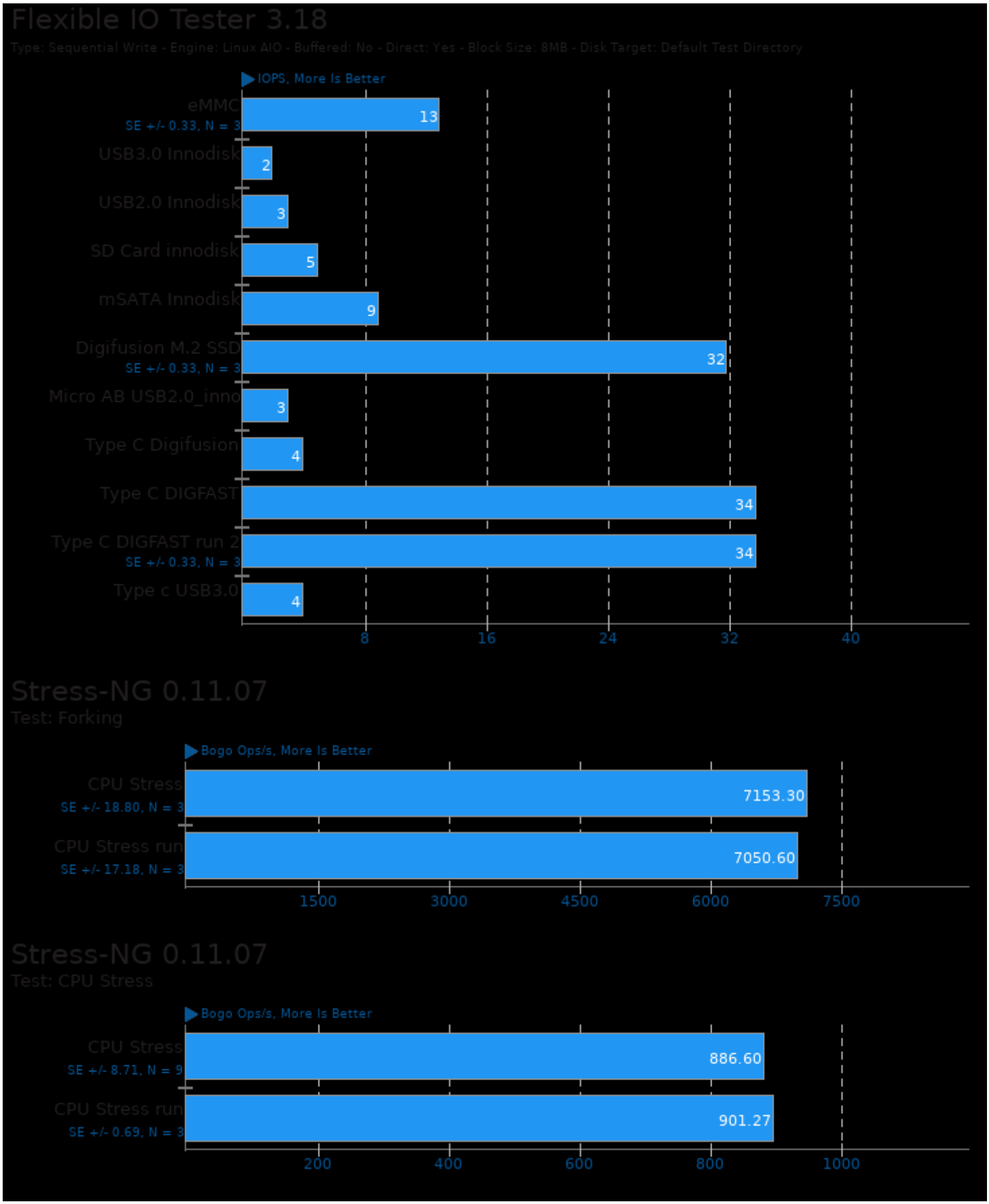

Flexible IO Tester 3.18
Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory
MB/s, More Is Better
eMMC
306.0
USB3.0 Innodisk
121.0
USB2.0 Innodisk
SE +/- 0.03, N = 3
53.3
SD Card innodisk
102.0
mSATA Innodisk
427.0
Digifusion M.2 SSD
SE +/- 7.75, N = 3
1739.0
Micro AB USB2.0_inno
SE +/- 0.38, N = 3
52.6
Type C Digifusion
SE +/- 0.06, N = 3
63.3
Type C Digifusion run 2
SE +/- 0.58, N = 3
822.0
Type C DIGFAST
SE +/- 0.33, N = 3
818.0
Type C DIGFAST run 2
SE +/- 0.58, N = 3
818.0
Type c USB3.0
169.0
400
800
1200
1600
2000

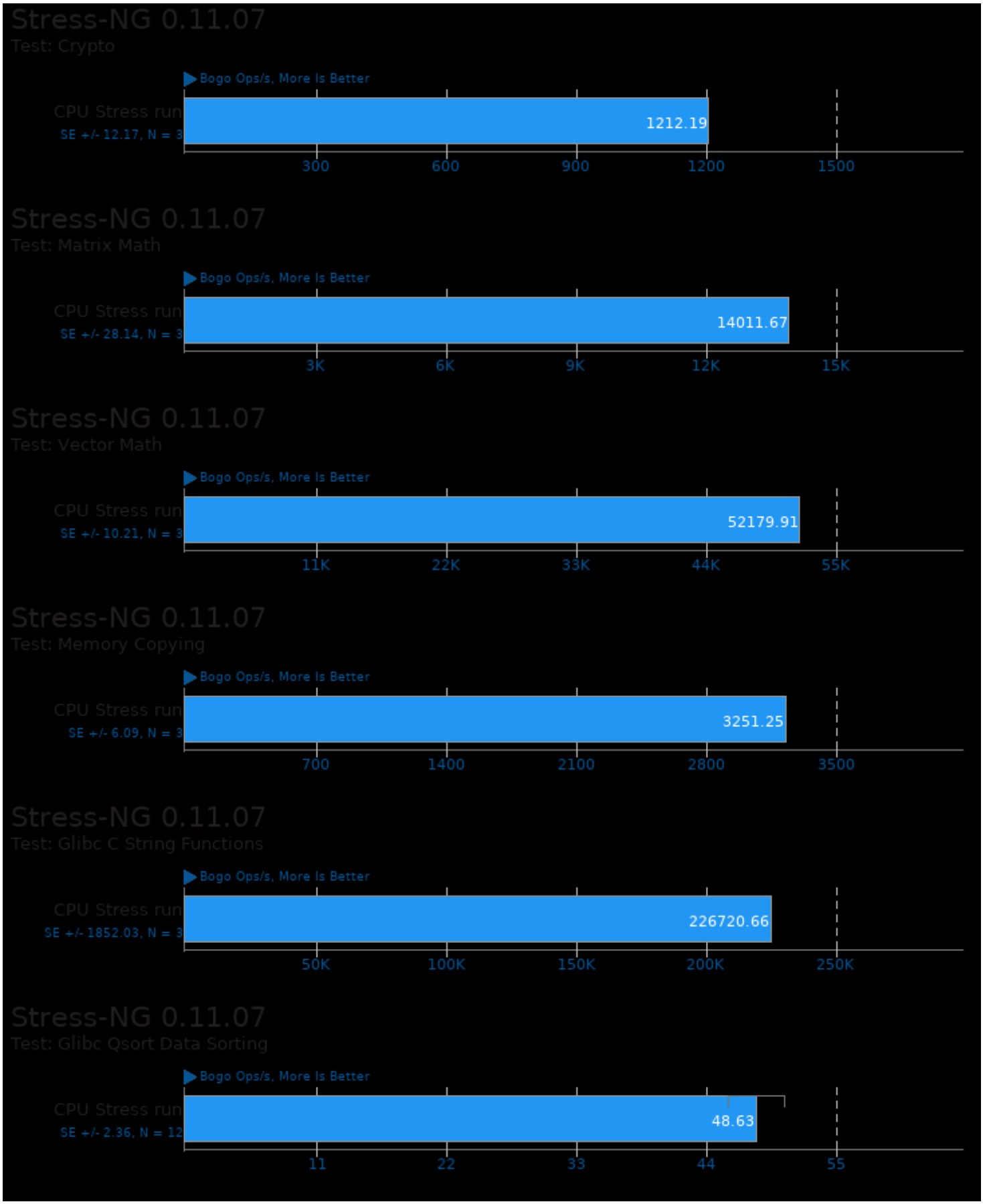

Flexible IO Tester 3.18
Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory
IOPS, More Is Better
eMMC
35
USB3.0 Innodisk
12
USB2.0 Innodisk
3
SD Card innodisk
9
mSATA Innodisk
50
Digifusion M.2 SSD
214
Micro AB USB2.0_inno
3
Type C Digifusion
4
Type C Digifusion run 2
99
Type C DIGFAST
99
Type C DIGFAST run 2
99
Type c USB3.0
18
50
100
150
200
250


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
eMMC
SE +/- 0.088, N = 3
81.200
USB3.0 Innodisk
SE +/- 0.058, N = 3
24.700
USB2.0 Innodisk
SE +/- 0.173, N = 3
25.000
SD Card innodisk
SE +/- 0.167, N = 3
21.900
mSATA Innodisk
SE +/- 0.058, N = 3
85.500
Digifusion M.2 SSD
SE +/- 3.283, N = 3
268.000
Micro AB USB2.0_inno
SE +/- 0.167, N = 3
25.100
Type C Digifusion
SE +/- 0.033, N = 3
39.000
Type C Digifusion run 2
SE +/- 0.095, N = 15
0.621
Type C DIGFAST
280.000
Type C DIGFAST run 2
281.000
Type c USB3.0
SE +/- 0.650, N = 15
21.600
60
120
180
240
300


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
eMMC
SE +/- 33.33, N = 3
20767
USB3.0 Innodisk
SE +/- 16.07, N = 3
6320
USB2.0 Innodisk
SE +/- 44.19, N = 3
6399
SD Card innodisk
SE +/- 44.85, N = 3
5594
mSATA Innodisk
SE +/- 33.33, N = 3
21867
Digifusion M.2 SSD
SE +/- 1167.62, N = 3
68300
Micro AB USB2.0_inno
SE +/- 46.23, N = 3
6432
Type C Digifusion
SE +/- 5.24, N = 3
9990
Type C Digifusion run 2
SE +/- 23.79, N = 15
152
Type C DIGFAST
SE +/- 57.74, N = 3
71700
Type C DIGFAST run 2
SE +/- 66.67, N = 3
72067
Type c USB3.0
SE +/- 161.95, N = 15
5566
15K
30K
45K
60K
75K


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
eMMC
SE +/- 0.667, N = 3
135.000
USB3.0 Innodisk
SE +/- 0.426, N = 3
39.000
USB2.0 Innodisk
SE +/- 0.203, N = 3
49.300
SD Card innodisk
SE +/- 0.033, N = 3
66.300
mSATA Innodisk
103.000
Digifusion M.2 SSD
SE +/- 1.155, N = 3
281.000
Micro AB USB2.0_inno
SE +/- 0.306, N = 3
49.300
Type C Digifusion
SE +/- 0.033, N = 3
63.700
Type C Digifusion run 2
SE +/- 0.698, N = 12
8.880
Type C DIGFAST
300.000
Type C DIGFAST run 2
SE +/- 2.333, N = 3
301.000
Type c USB3.0
SE +/- 0.666, N = 3
56.100
70
140
210
280
350


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
eMMC
SE +/- 0.33, N = 3
13
USB3.0 Innodisk
2
USB2.0 Innodisk
3
SD Card innodisk
5
mSATA Innodisk
9
Digifusion M.2 SSD
SE +/- 0.33, N = 3
32
Micro AB USB2.0_inno
3
Type C Digifusion
4
Type C DIGFAST
34
Type C DIGFAST run 2
SE +/- 0.33, N = 3
34
Type c USB3.0
4
8
16
24
32
40
Stress-NG 0.11.07
Test: Forking
Bogo Ops/s, More Is Better
CPU Stress
SE +/- 18.80, N = 3
7153.30
CPU Stress run
SE +/- 17.18, N = 3
7050.60
1500
3000
4500
6000
7500
Stress-NG 0.11.07
Test: CPU Stress
Bogo Ops/s, More Is Better
CPU Stress
SE +/- 8.71, N = 9
886.60
CPU Stress run
SE +/- 0.69, N = 3
901.27
200
400
600
800
1000



This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024

05:59.