Phoronix Test Suite

www.phoronix-test-suite.com

Jetson Nano Monitor

ARMv8 rev 1 testing with a jetson-nano and NVIDIA Tegra X1 on Ubuntu 18.04 via the Phoronix Test Suite.

Automated Executive Summary

Stock had the most wins, coming in first place for 71% of the tests.

Based on the geometric mean of all complete results, the fastest (Fan Attached) was 1.006x the speed of the slowest (Stock).

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

LeelaChessZero (System Temperature Monitor) at 2x
LeelaChessZero (CPU Temperature Monitor) at 1.946x
LeelaChessZero (CPU Temperature Monitor) at 1.932x
LeelaChessZero (System Temperature Monitor) at 1.924x
NVIDIA TensorRT Inference (System Temperature Monitor) at 1.825x
NVIDIA TensorRT Inference (CPU Temperature Monitor) at 1.787x
Primesieve (CPU Temperature Monitor) at 1.75x
Primesieve (System Temperature Monitor) at 1.746x
asmFish (CPU Temperature Monitor) at 1.732x
asmFish (System Temperature Monitor) at 1.729x.

Test Systems:

Stock

Processor: ARMv8 rev 1 @ 1.43GHz (4 Cores), Motherboard: jetson-nano, Memory: 4096MB, Disk: 32GB GB1QT, Graphics: NVIDIA TEGRA, Monitor: VE228, Network: Realtek RTL8111/8168/8411

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 7.3.0 + CUDA 10.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --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

Fan Attached

Processor: ARMv8 rev 1 @ 1.43GHz (4 Cores), Motherboard: jetson-nano, Memory: 4096MB, Disk: 32GB GB1QT, Graphics: NVIDIA Tegra X1, Monitor: VE228, Network: Realtek RTL8111/8168/8411

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 32.1.0, OpenGL: 4.6.0, Vulkan: 1.1.85, Compiler: GCC 7.3.0 + CUDA 10.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --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

	Stock	Fan Attached
Java 2D Microbenchmark - Image Rendering	**900732**	**901666**
Normalized	99.9%	100%
Standard Deviation	0.4%	0.1%
GLmark2 - 1920 x 1080 (Score)	**641**	**638**
Normalized	100%	99.53%
LeelaChessZero - BLAS (Nodes/s)	**15.55**	**15.40**
Normalized	100%	99.04%
Standard Deviation	0.6%	0.2%
LeelaChessZero - CUDA + cuDNN (Nodes/s)	140	140
Standard Deviation	0.9%	0.6%
NVIDIA TensorRT Inference - AlexNet - FP16 - 8 - Disabled (Images/sec)	134	134
Standard Deviation	6.5%	1.5%
NVIDIA TensorRT Inference - AlexNet - FP16 - 32 - Disabled (Images/sec)	**203**	**204**
Normalized	99.51%	100%
Standard Deviation	0.7%	1.7%

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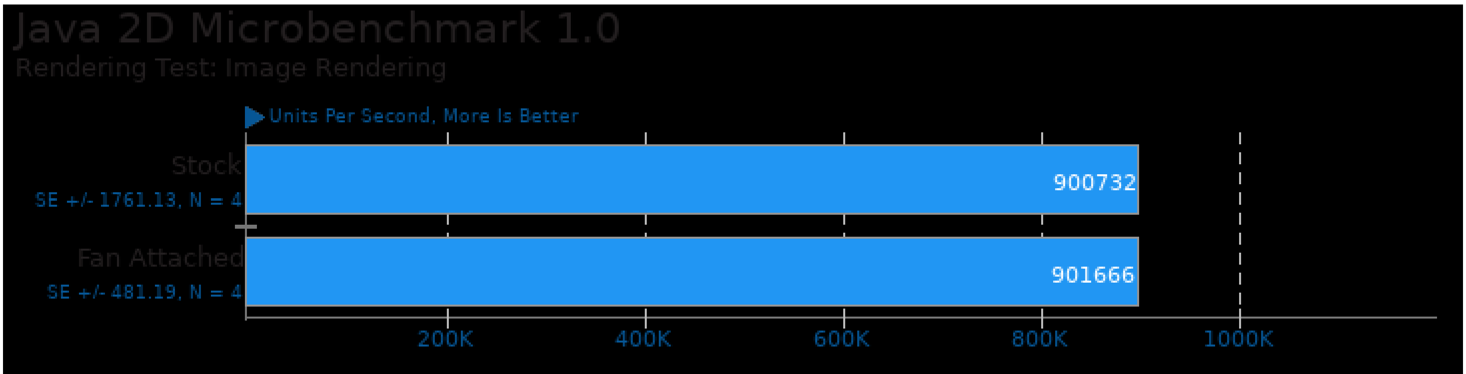
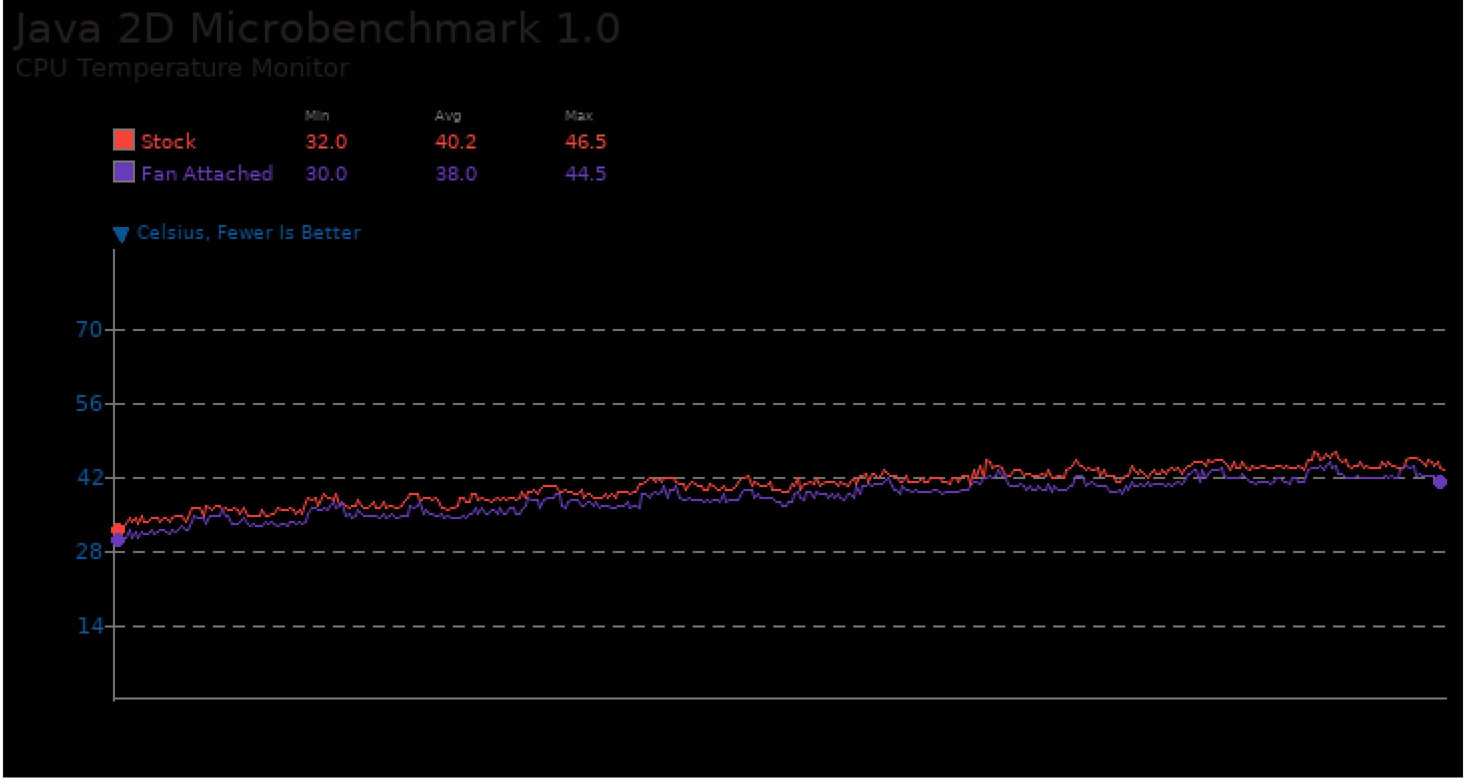
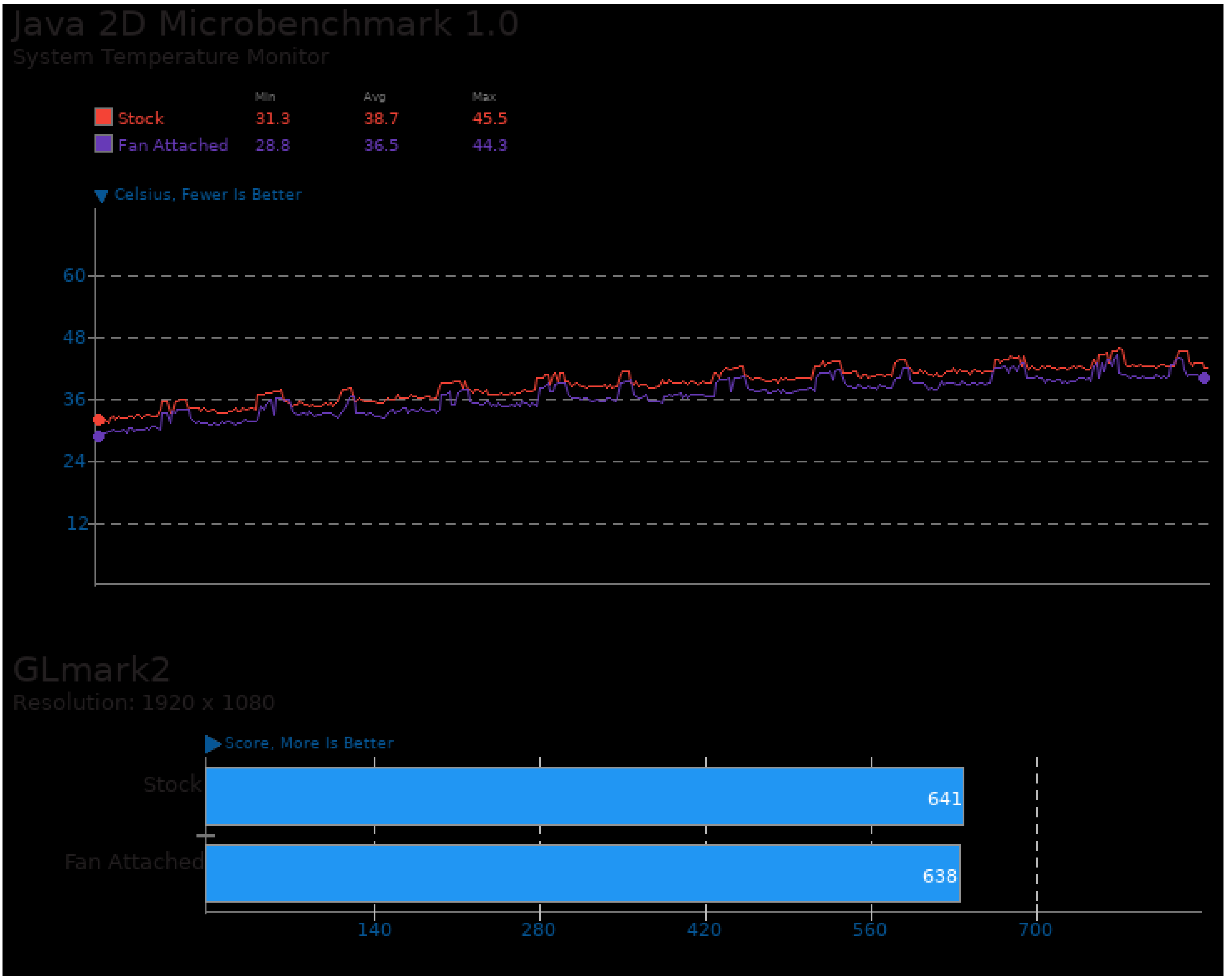
NVIDIA TensorRT Inference - ResNet50 - FP16 - 8 - Disabled (Images/sec)	**42.87**	**42.73**
Normalized	100%	99.67%
Standard Deviation	1.2%	1.5%
NVIDIA TensorRT Inference - ResNet50 - FP16 - 32 - Disabled (Images/sec)	**46.49**	**46.30**
Normalized	100%	99.59%
Standard Deviation	0.2%	0.5%
TTSIOD 3D Renderer - P.R.W.S.S.M (FPS)	**40.94**	**40.77**
Normalized	100%	99.58%
Standard Deviation	0.7%	0.4%
C-Ray - Total Time - 4.1.R.P.P (sec)	**1036**	**1076**
Normalized	100%	96.28%
Standard Deviation	13.4%	24.7%
Primesieve - 1.P.N.G (sec)	**501**	**458**
Normalized	91.42%	100%
Standard Deviation	11%	5.7%
asmFish - 1.H.M.2.D (Nodes/s)	**2321895**	**2455347**
Normalized	94.56%	100%
Standard Deviation	2.1%	2.1%
FLAC Audio Encoding - WAV To FLAC (sec)	108	108
Standard Deviation	2.8%	3.1%
LAME MP3 Encoding - WAV To MP3 (sec)	144	144
Standard Deviation	0.1%	0.4%


Java 2D Microbenchmark 1.0
Rendering Test: Image Rendering
Units Per Second, More Is Better
Stock
SE +/- 1761.13, N = 4
900732
Fan Attached
SE +/- 481.19, N = 4
901666
200K
400K
600K
800K
1000K


Java 2D Microbenchmark 1.0
CPU Temperature Monitor
Min
Avg
Max
Stock 32.0 40.2 46.5
Fan Attached 30.0 38.0 44.5
Celsius, Fewer Is Better
70
56
42
28
14


Java 2D Microbenchmark 1.0
System Temperature Monitor
Min
Avg
Max
Stock 31.3 38.7 45.5
Fan Attached 28.8 36.5 44.3
Celsius, Fewer Is Better
60
48
36
24
12
GLmark2
Resolution: 1920 x 1080
Score, More Is Better
Stock
641
Fan Attached
638
140
280
420
560
700

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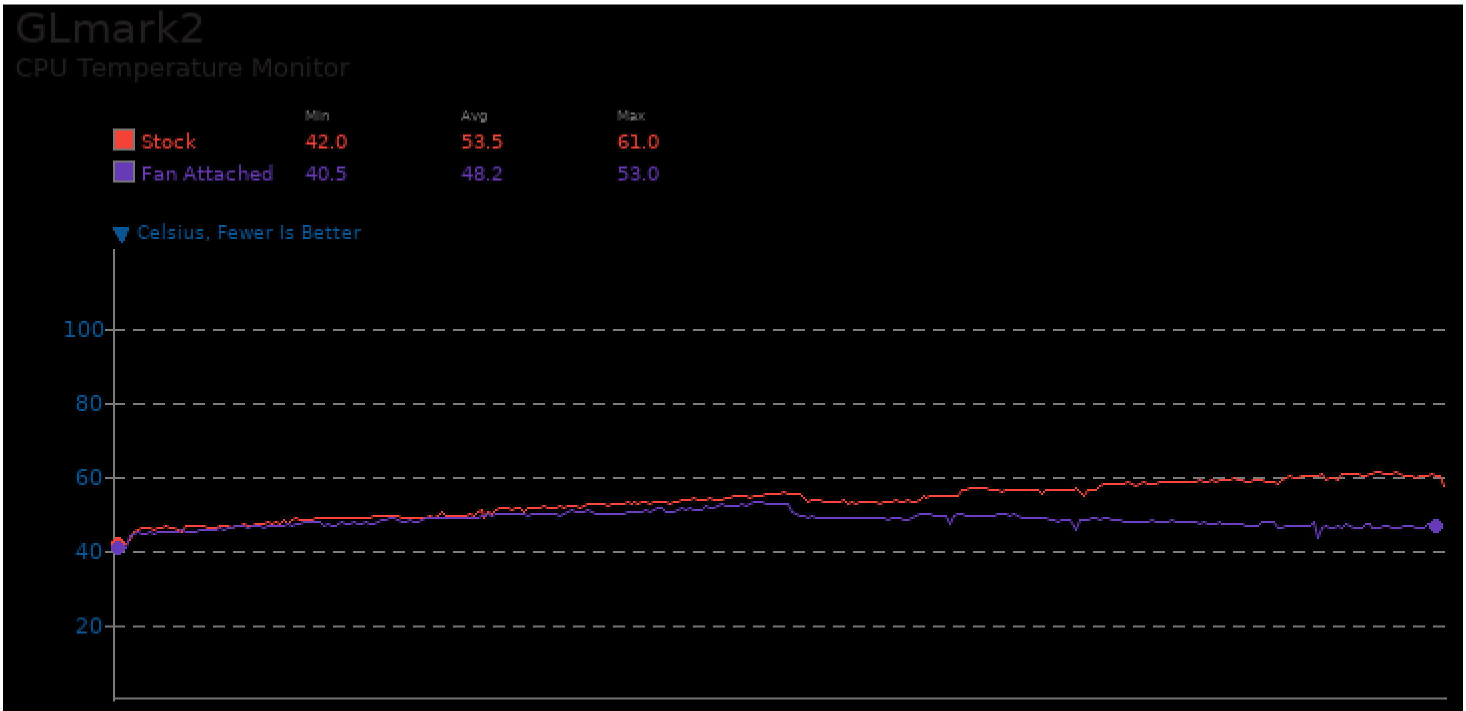
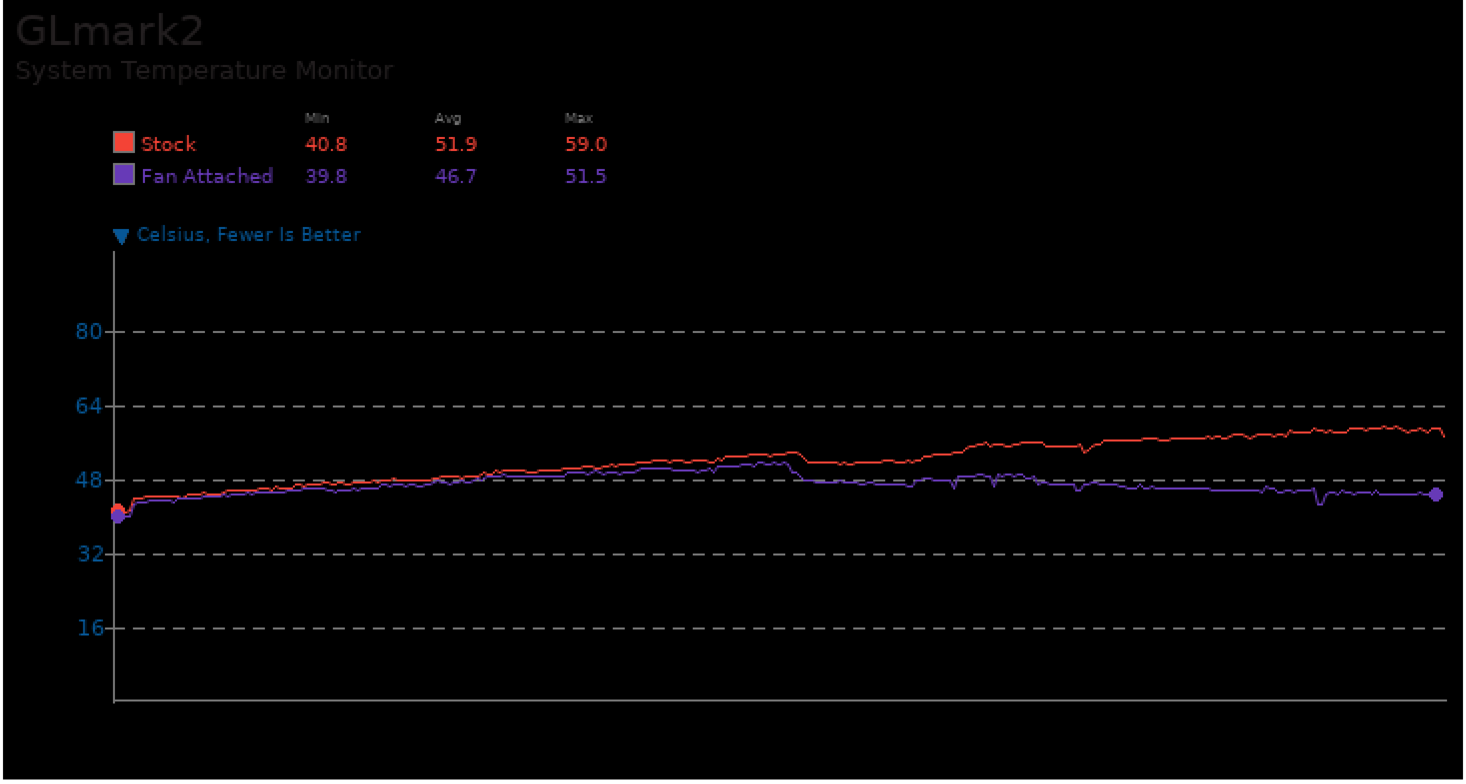
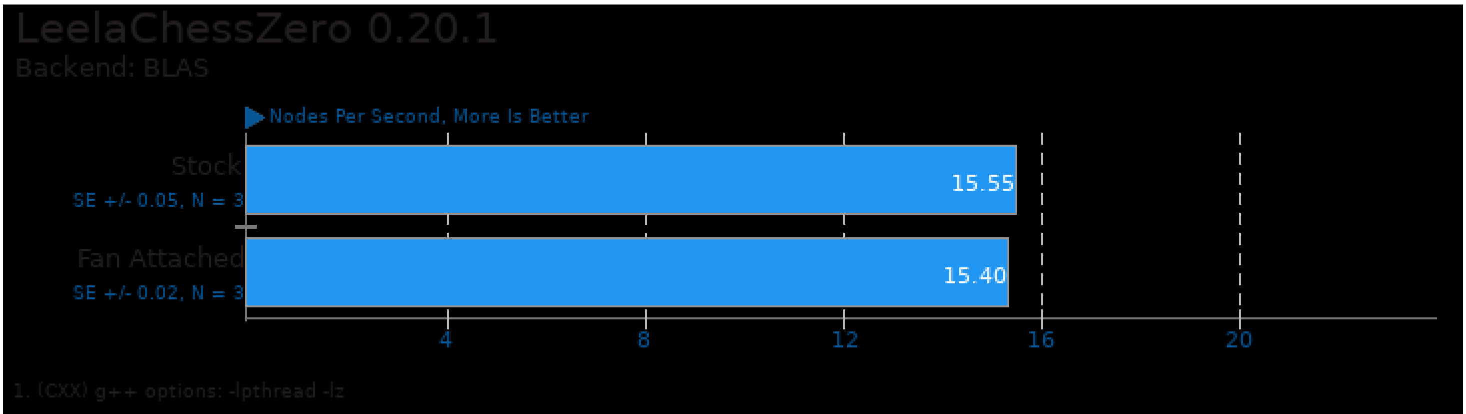
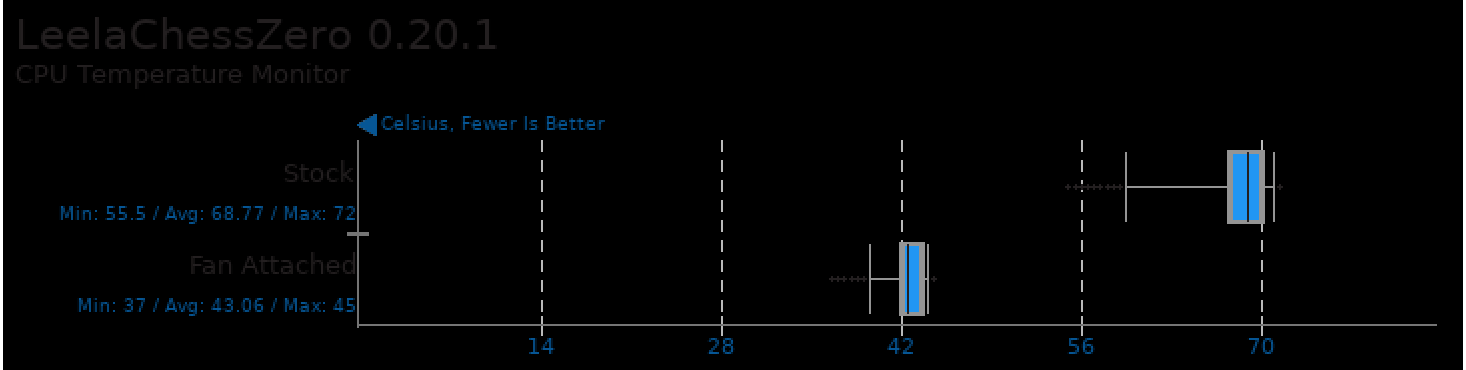
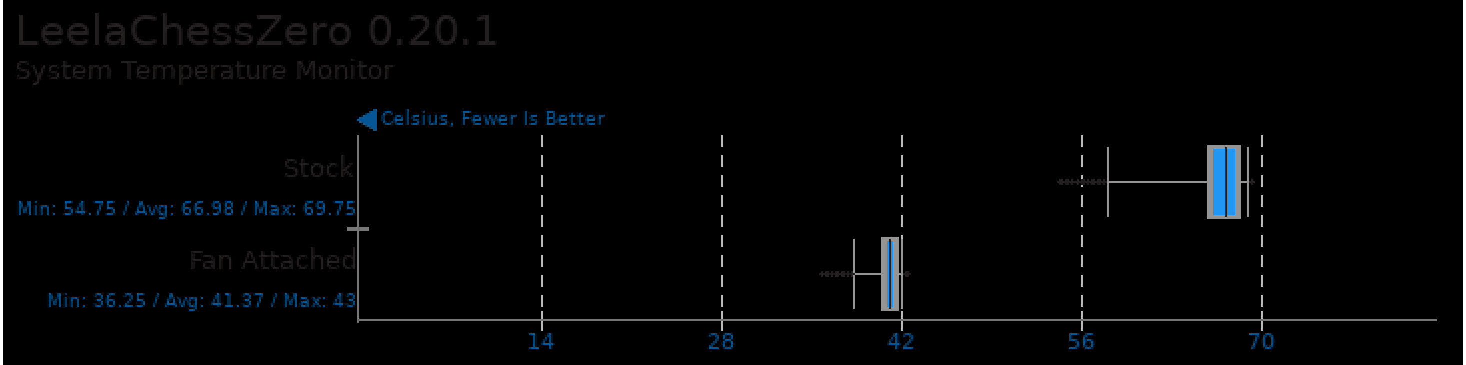
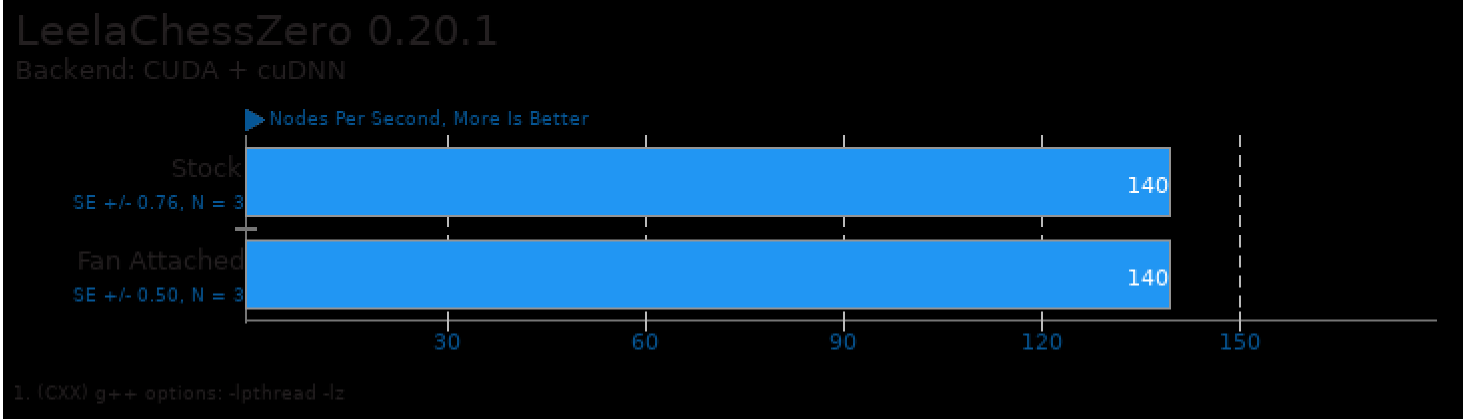





LeelaChessZero 0.20.1
Backend: BLAS
Nodes Per Second, More Is Better
Stock
SE +/- 0.05, N = 3
15.55
Fan Attached
SE +/- 0.02, N = 3
15.40
4
8
12
16
20
1. (CXX) g++ options: -lpthread -lz


LeelaChessZero 0.20.1
CPU Temperature Monitor
Celsius, Fewer Is Better
Stock
Min: 55.5 / Avg: 68.77 / Max: 72
Fan Attached
Min: 37 / Avg: 43.06 / Max: 45
14
28
42
56
70


LeelaChessZero 0.20.1
System Temperature Monitor
Celsius, Fewer Is Better
Stock
Min: 54.75 / Avg: 66.98 / Max: 69.75
Fan Attached
Min: 36.25 / Avg: 41.37 / Max: 43
14
28
42
56
70


LeelaChessZero 0.20.1
Backend: CUDA + cuDNN
Nodes Per Second, More Is Better
Stock
SE +/- 0.76, N = 3
140
Fan Attached
SE +/- 0.50, N = 3
140
30
60
90
120
150
1. (CXX) g++ options: -lpthread -lz

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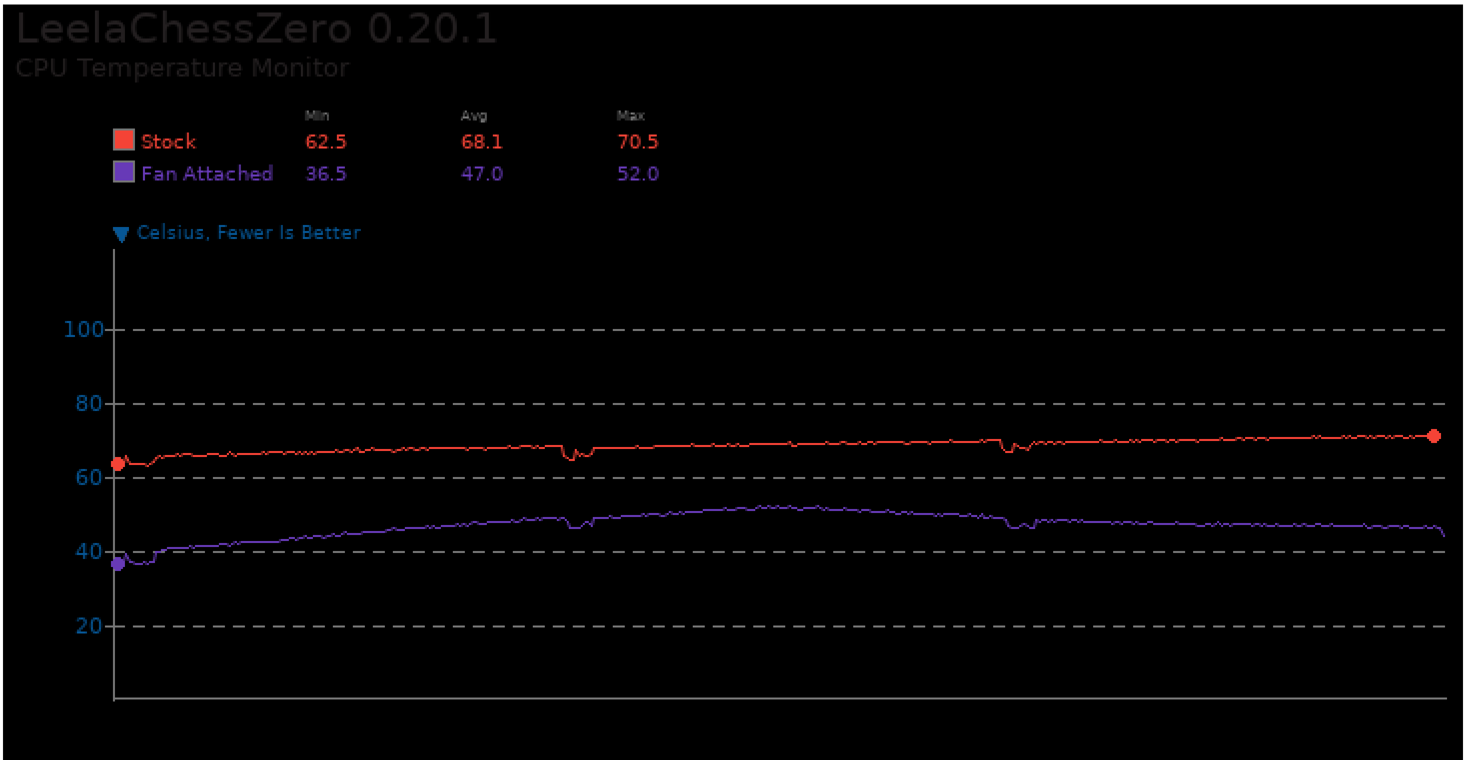
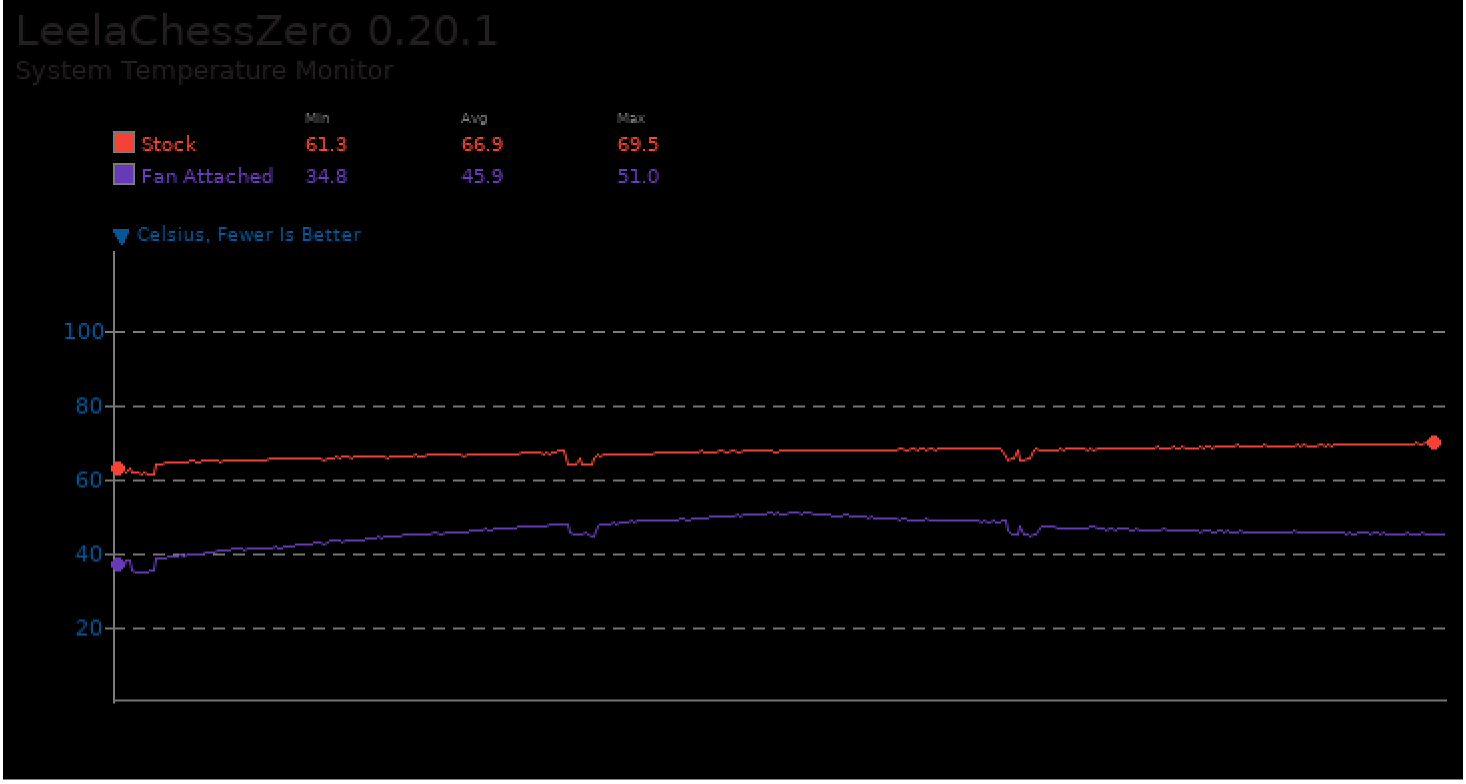
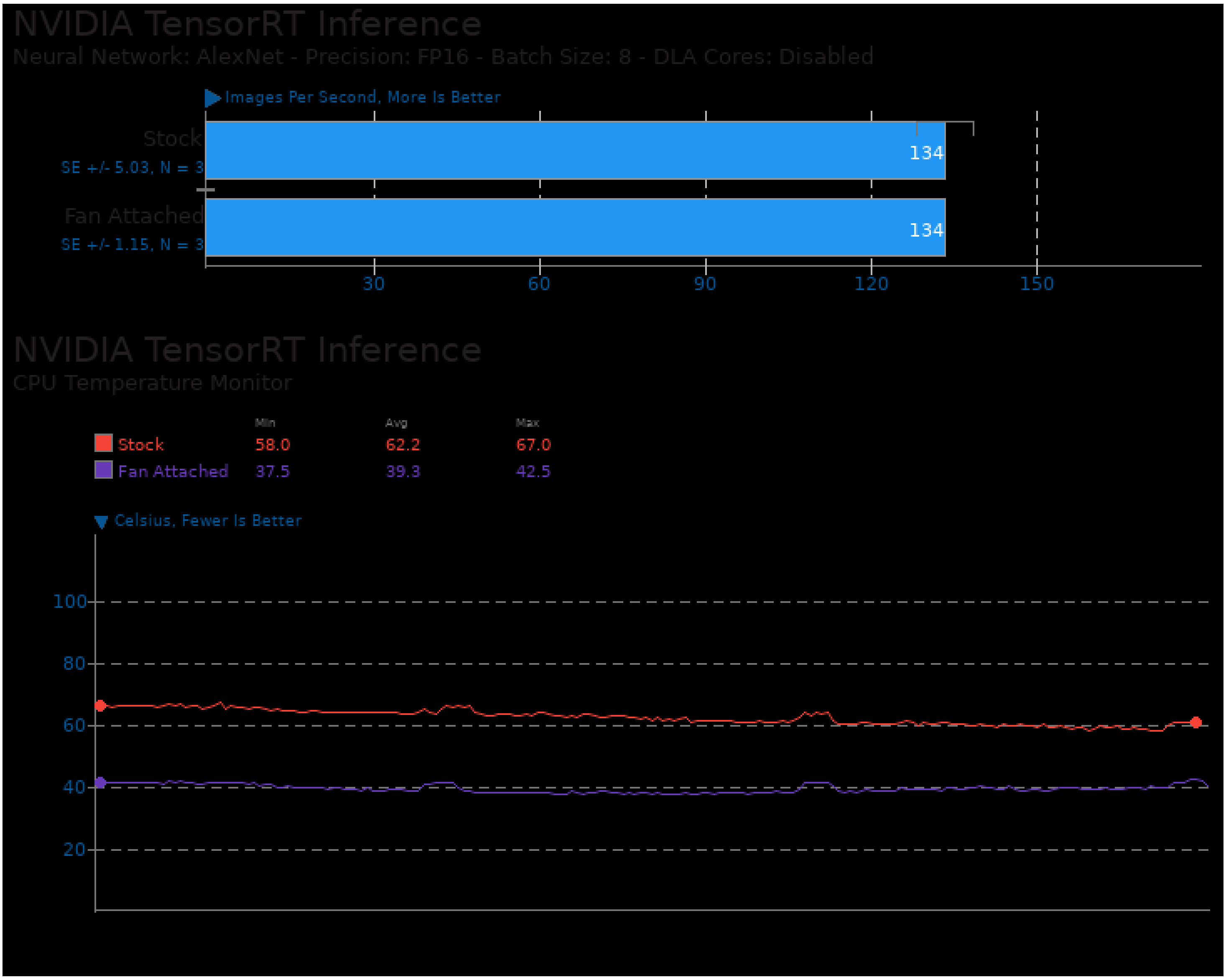
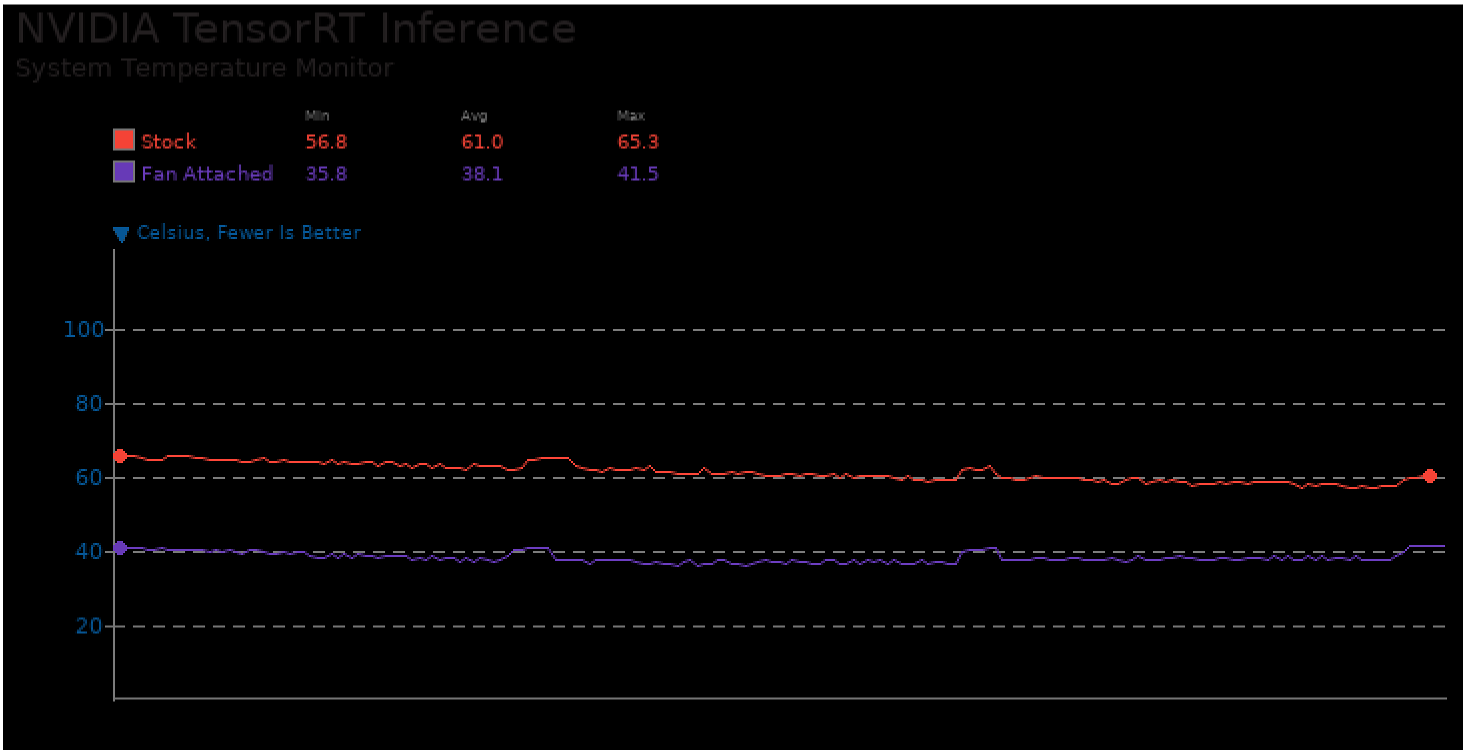
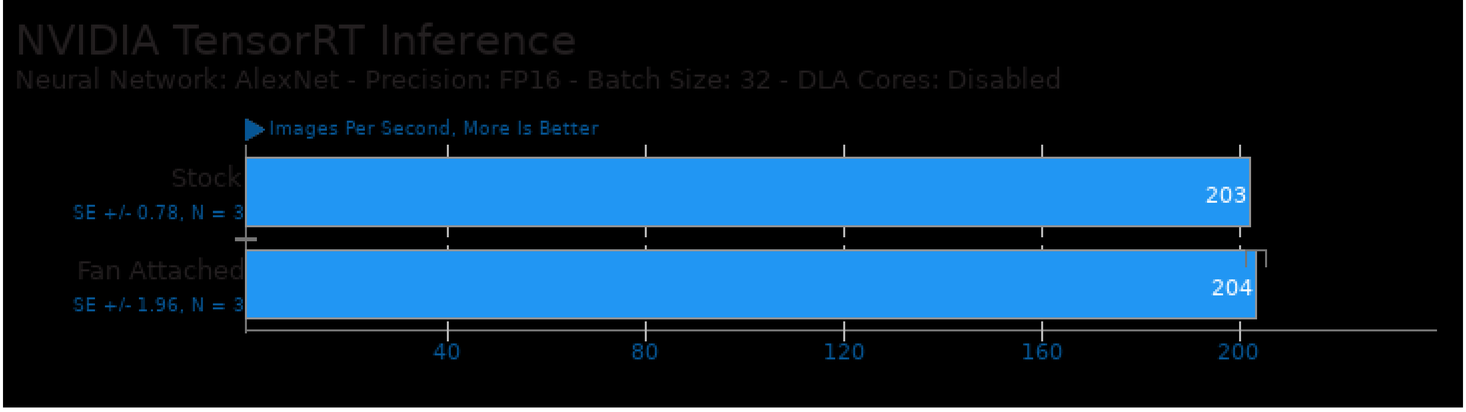
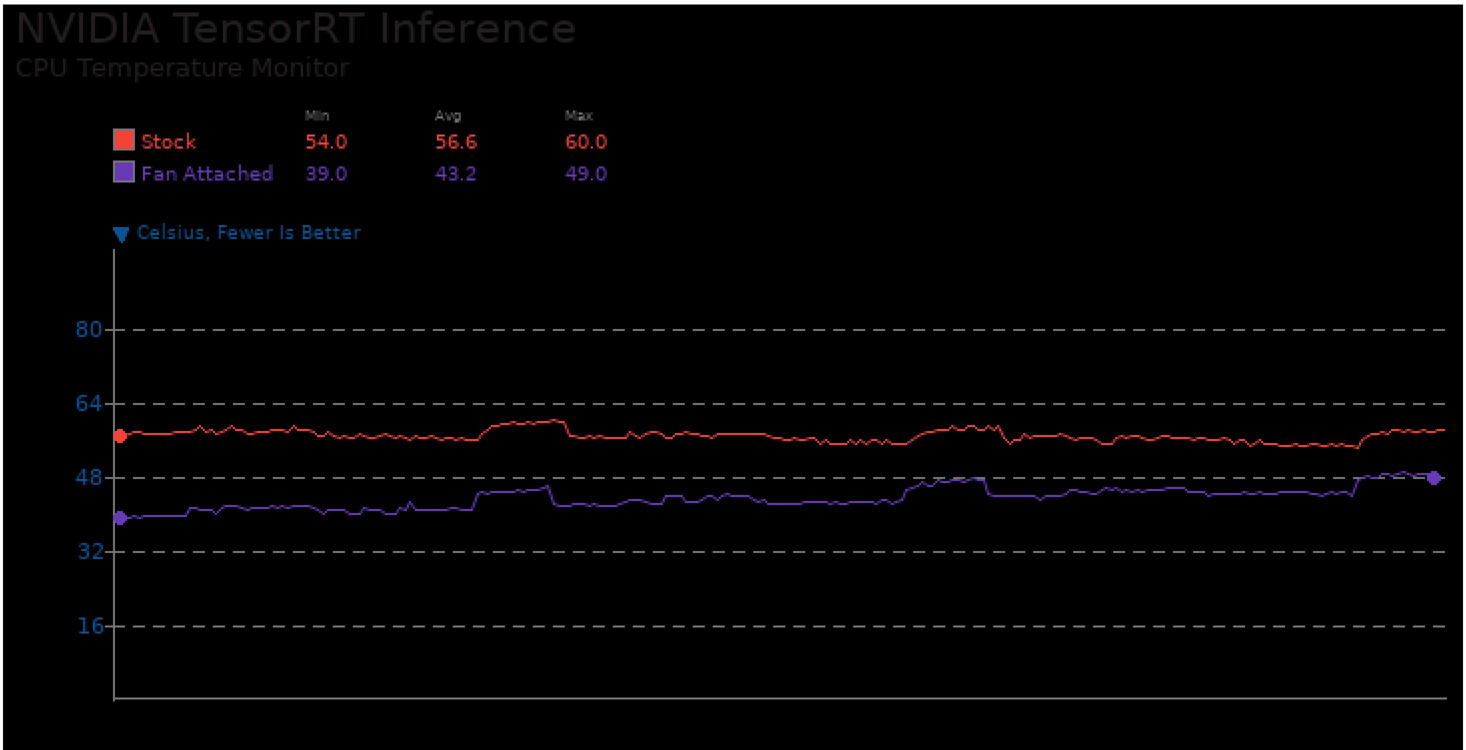


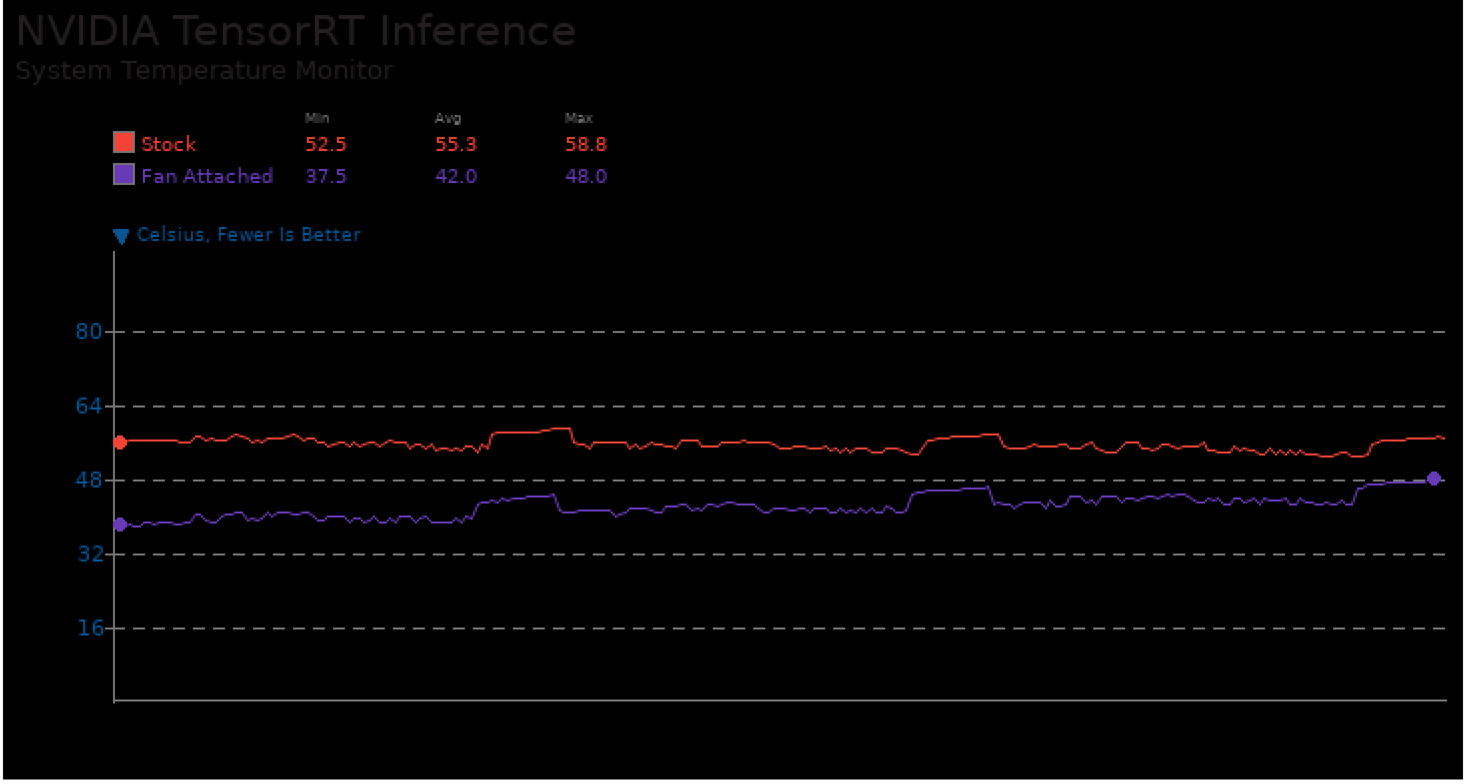


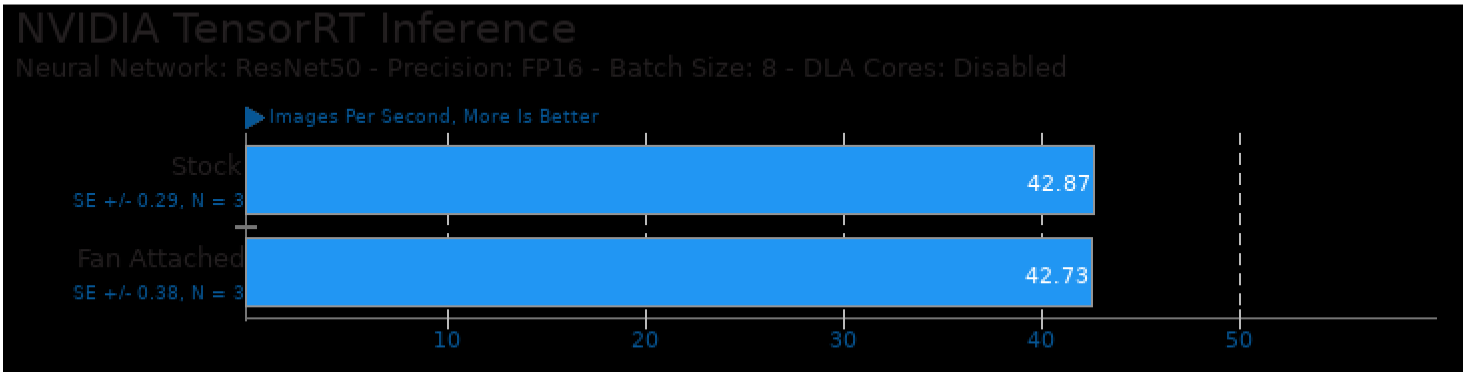

NVIDIA TensorRT Inference
Neural Network: AlexNet - Precision: FP16 - Batch Size: 8 - DLA Cores: Disabled
Images Per Second, More Is Better
Stock
SE +/- 5.03, N = 3
134
Fan Attached
SE +/- 1.15, N = 3
134
30
60
90
120
150
NVIDIA TensorRT Inference
CPU Temperature Monitor
Min
Avg
Max
Stock
58.0
62.2
67.0
Fan Attached
37.5
39.3
42.5
Celsius, Fewer Is Better
100
80
60
40
20

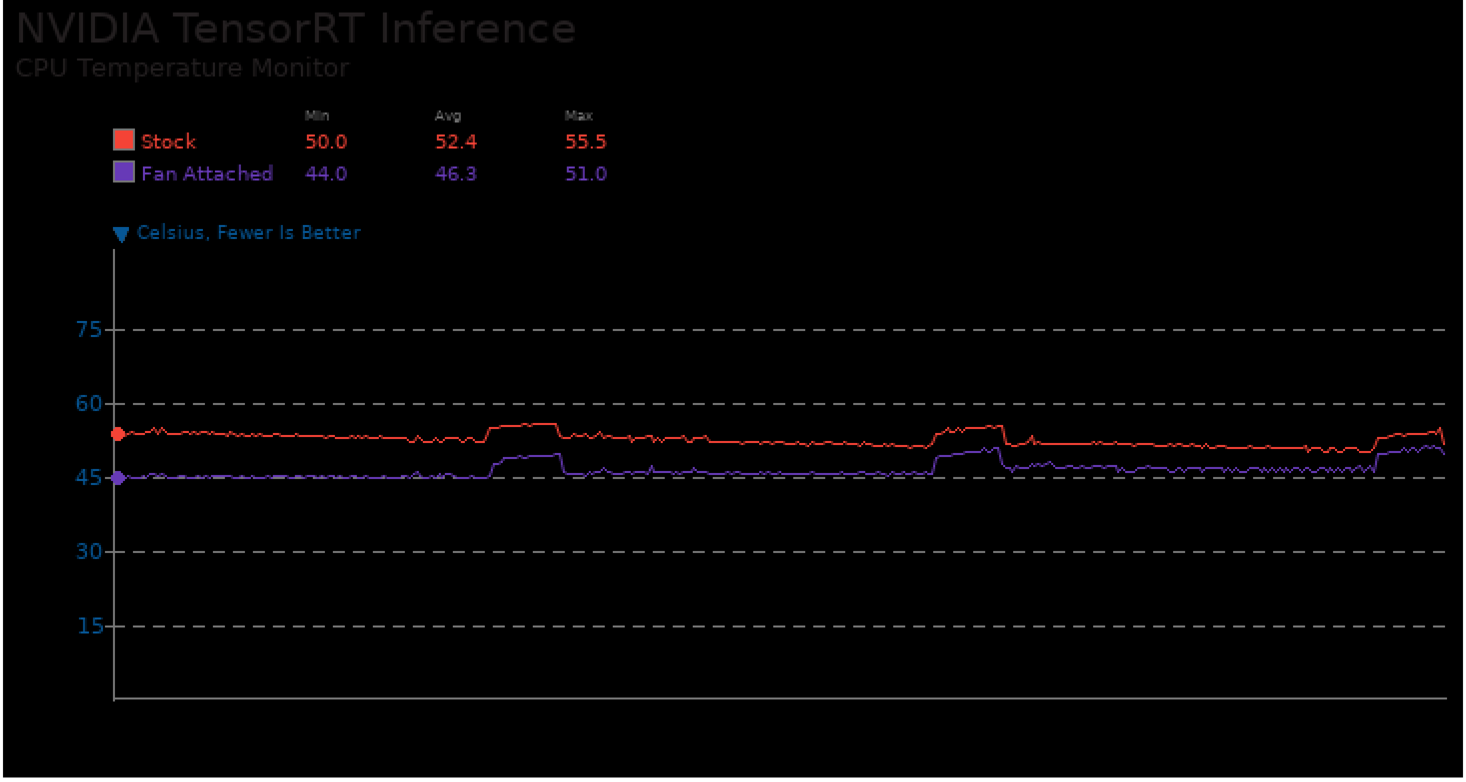

NVIDIA TensorRT Inference
System Temperature Monitor
Min
Avg
Max
Stock 56.8 61.0 65.3
Fan Attached 35.8 38.1 41.5
Celsius, Fewer Is Better
100
80
60
40
20


NVIDIA TensorRT Inference
Neural Network: AlexNet - Precision: FP16 - Batch Size: 32 - DLA Cores: Disabled
Images Per Second, More Is Better
Stock
SE +/- 0.78, N = 3
203
Fan Attached
SE +/- 1.96, N = 3
204
40
80
120
160
200


NVIDIA TensorRT Inference
CPU Temperature Monitor
Min Avg Max
Stock 54.0 56.6 60.0
Fan Attached 39.0 43.2 49.0
Celsius, Fewer Is Better
80
64
48
32
16


NVIDIA TensorRT Inference
System Temperature Monitor
Min Avg Max
Stock 52.5 55.3 58.8
Fan Attached 37.5 42.0 48.0
Celsius, Fewer Is Better
80
64
48
32
16


NVIDIA TensorRT Inference
Neural Network: ResNet50 - Precision: FP16 - Batch Size: 8 - DLA Cores: Disabled
Images Per Second, More Is Better
Stock
SE +/- 0.29, N = 3
42.87
Fan Attached
SE +/- 0.38, N = 3
42.73
10
20
30
40
50


NVIDIA TensorRT Inference
CPU Temperature Monitor
Min
Avg
Max
Stock
50.0
52.4
55.5
Fan Attached
44.0
46.3
51.0
Celsius, Fewer Is Better
75
60
45
30
15

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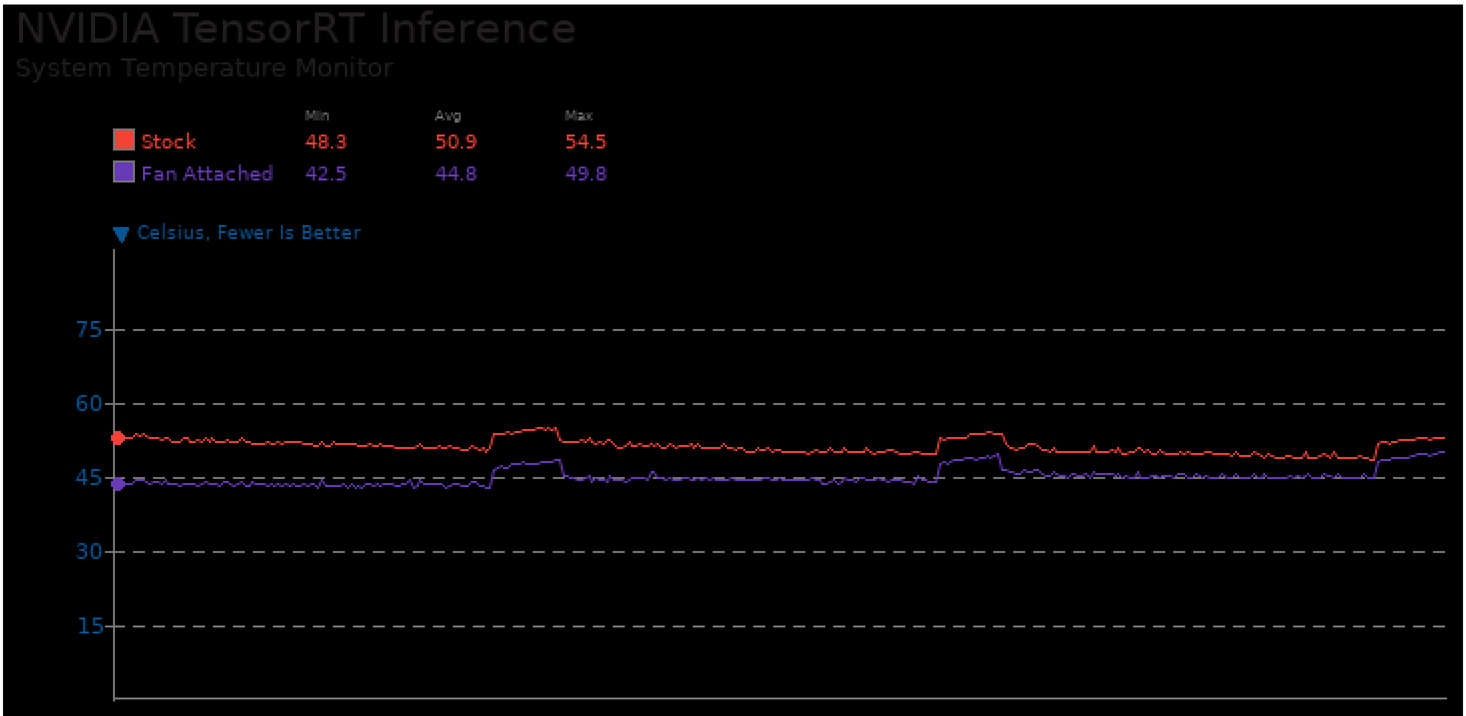
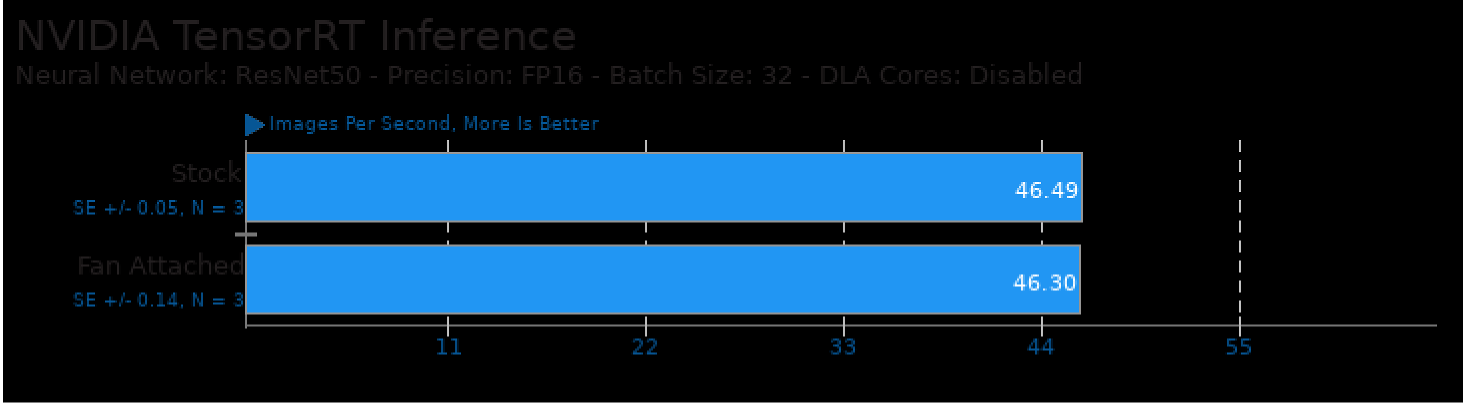
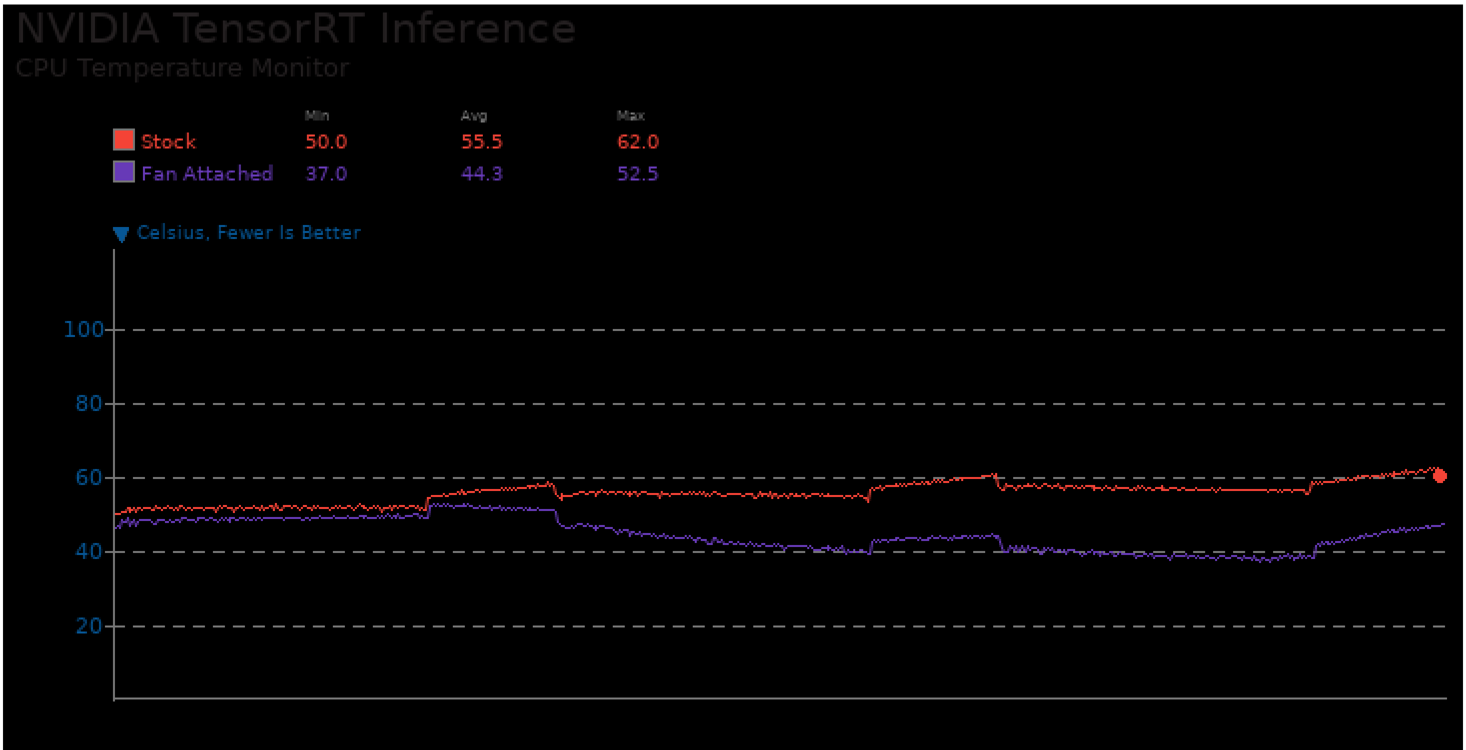
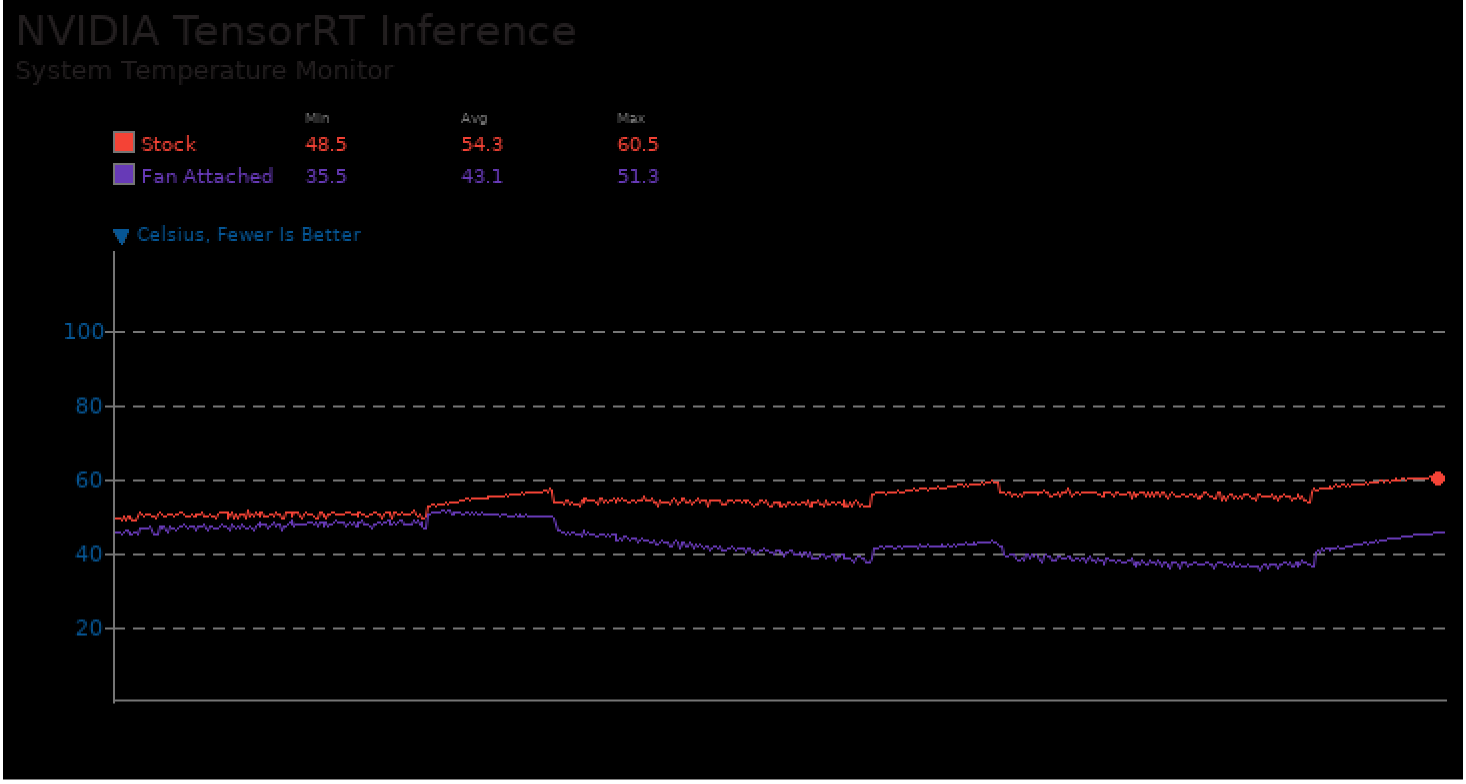
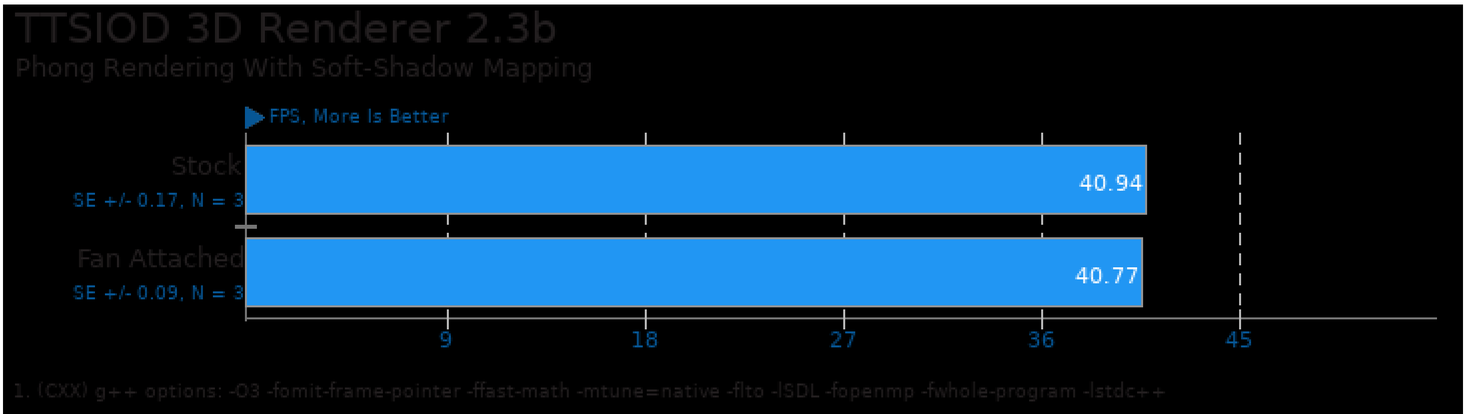
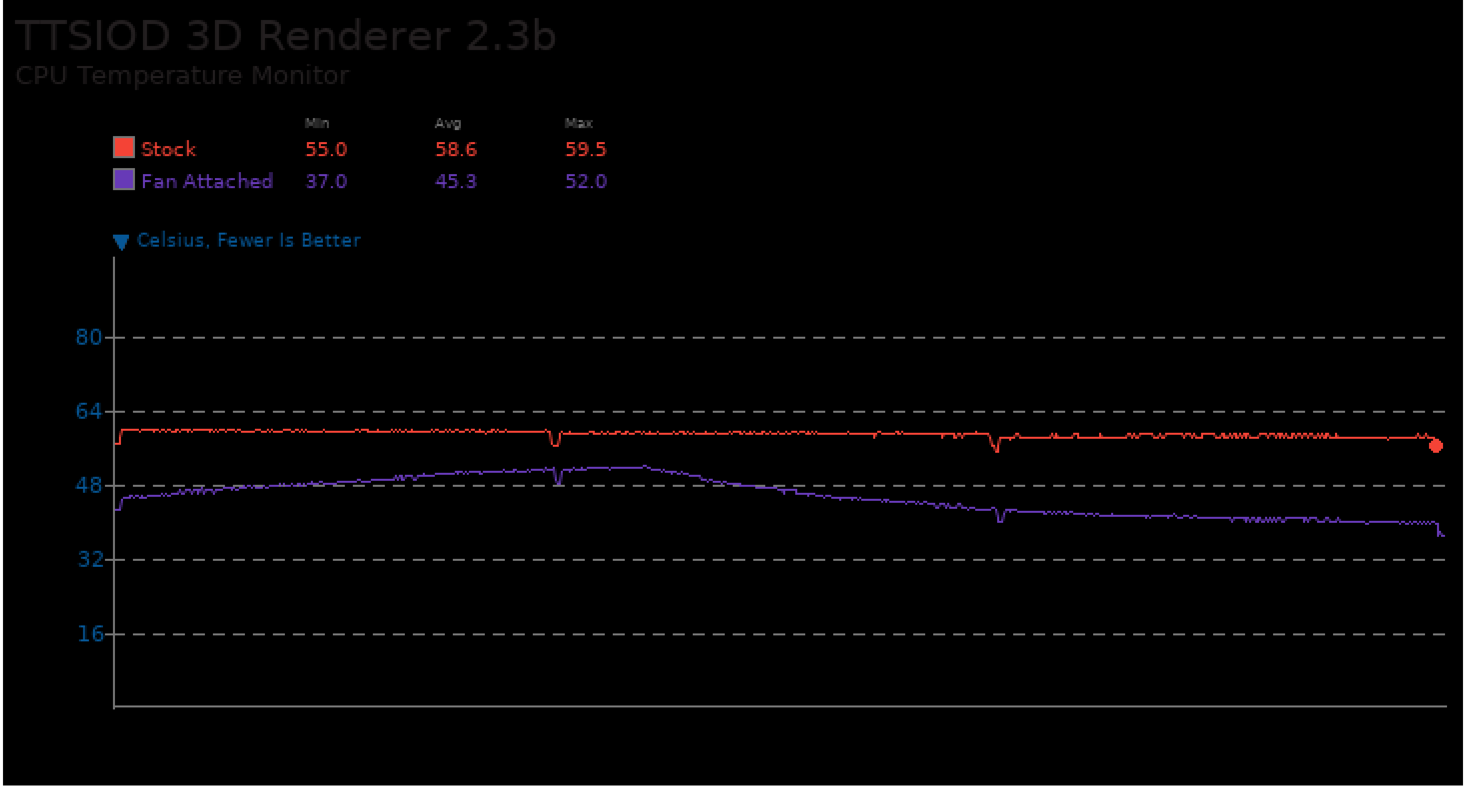





NVIDIA TensorRT Inference
CPU Temperature Monitor
Min
Avg
Max
Stock 50.0 55.5 62.0
Fan Attached 37.0 44.3 52.5
Celsius, Fewer Is Better
100
80
60
40
20

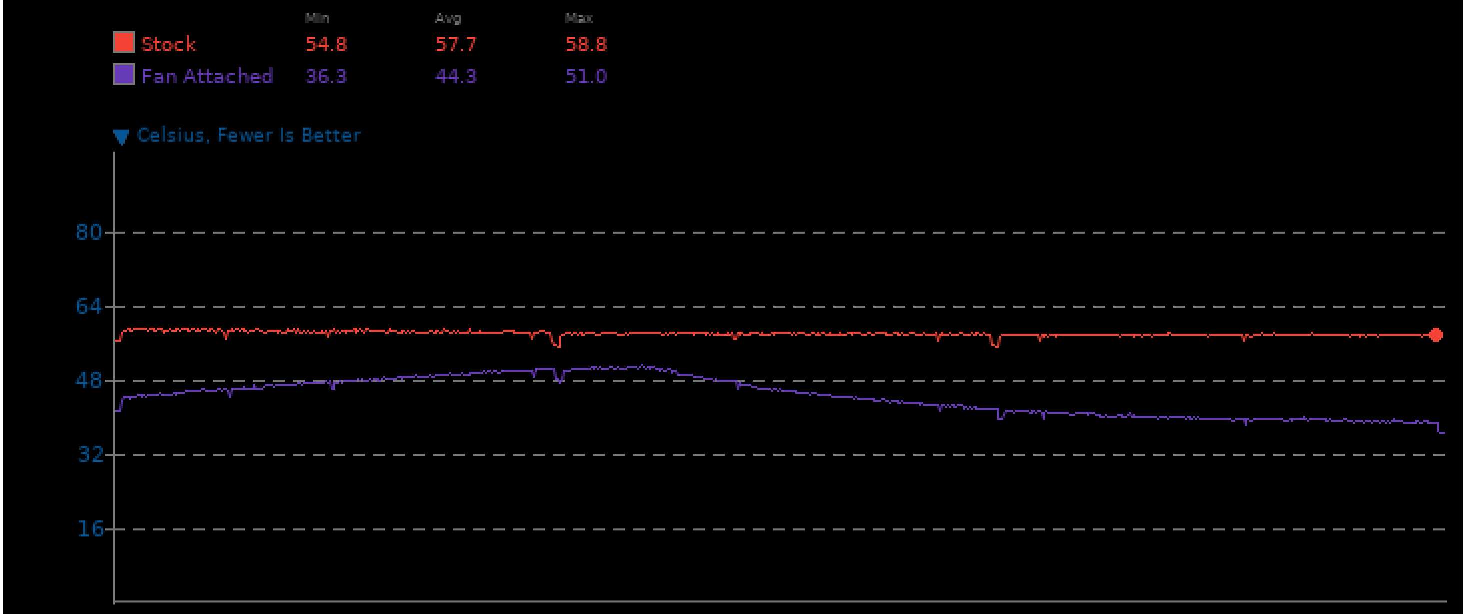

NVIDIA TensorRT Inference
System Temperature Monitor
Min
Avg
Max
Stock 48.5 54.3 60.5
Fan Attached 35.5 43.1 51.3
Celsius, Fewer Is Better
100
80
60
40
20


TTSIOD 3D Renderer 2.3b
Phong Rendering With Soft-Shadow Mapping
FPS, More Is Better
Stock
SE +/- 0.17, N = 3
40.94
Fan Attached
SE +/- 0.09, N = 3
40.77
9
18
27
36
45
1. (CXX) g++ options: -O3 -fomit-frame-pointer -ffast-math -mtune=native -flto -lSDL -fopenmp -fwhole-program -lstdc++


TTSIOD 3D Renderer 2.3b
CPU Temperature Monitor
Min
Avg
Max
Stock 55.0 58.6 59.5
Fan Attached 37.0 45.3 52.0
Celsius, Fewer Is Better
80
64
48
32
16

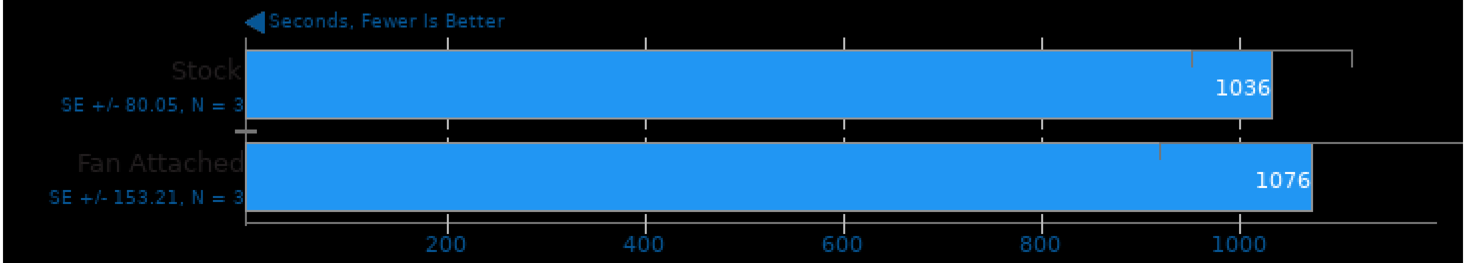
TTSIOD 3D Renderer 2.3b

System Temperature Monitor



C-Ray 1.1

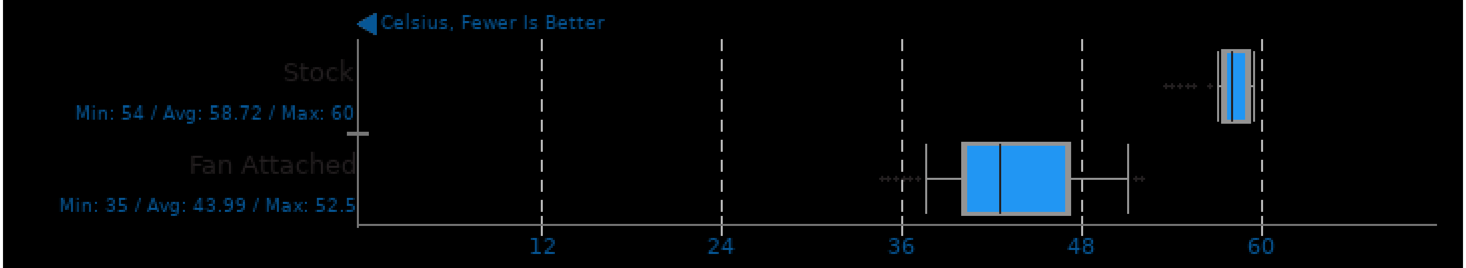
Total Time - 4K, 16 Rays Per Pixel



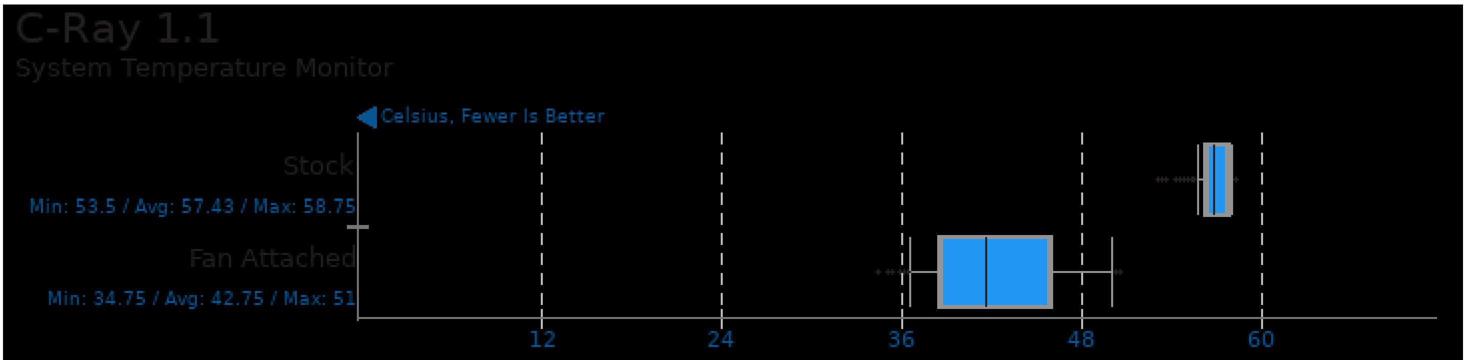
1. (CC) gcc options: -lm -lpthread -O3

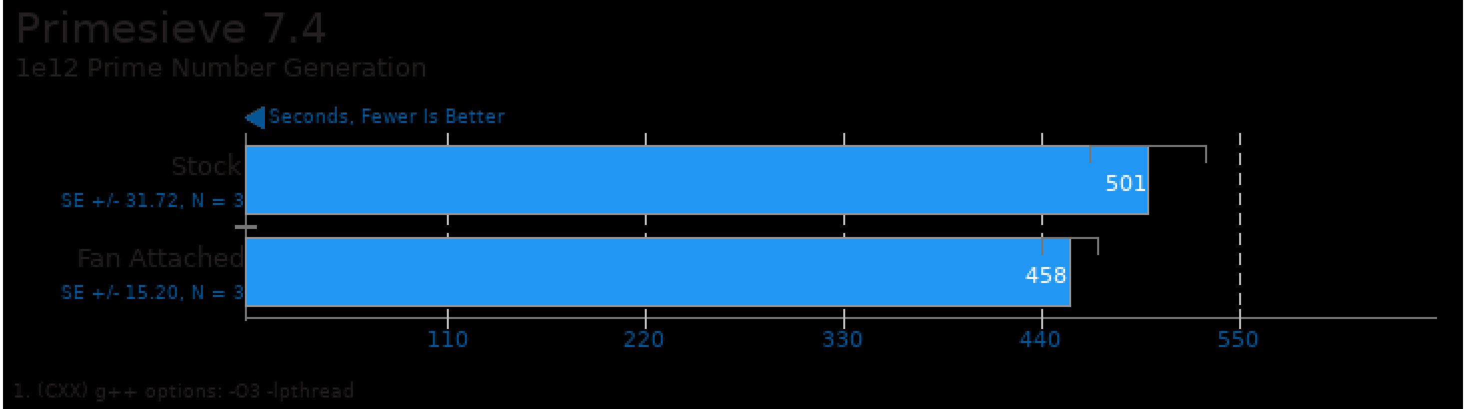
C-Ray 1.1

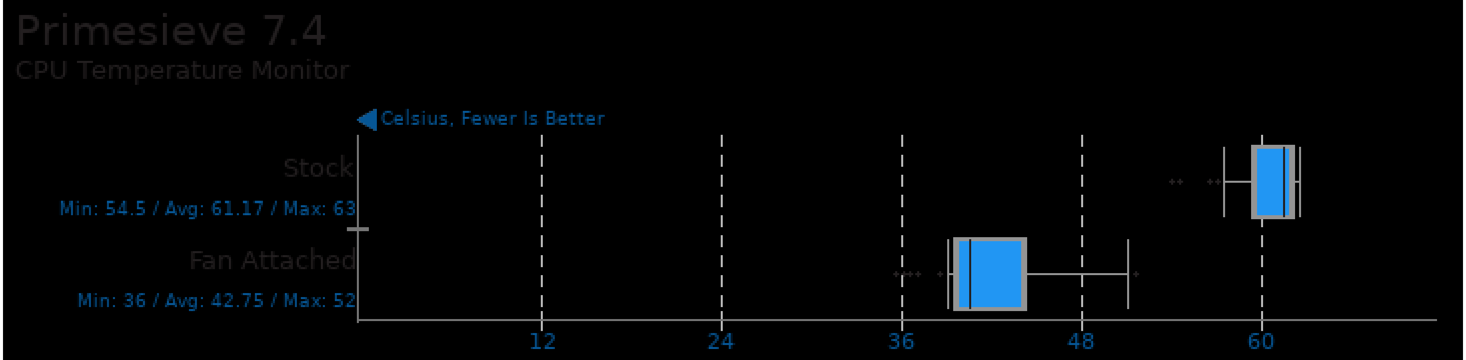
CPU Temperature Monitor

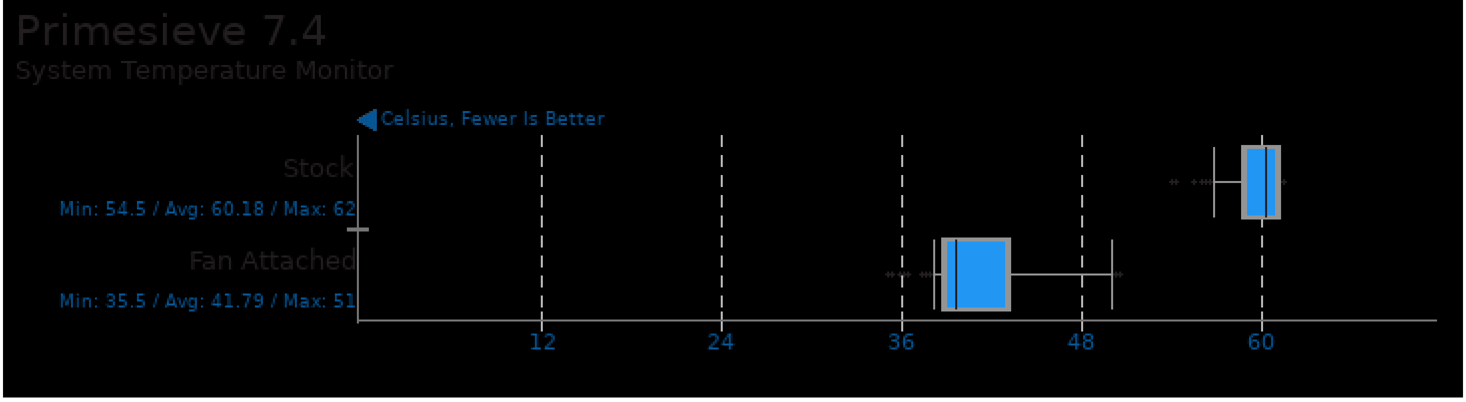


Jetson Nano Monitor

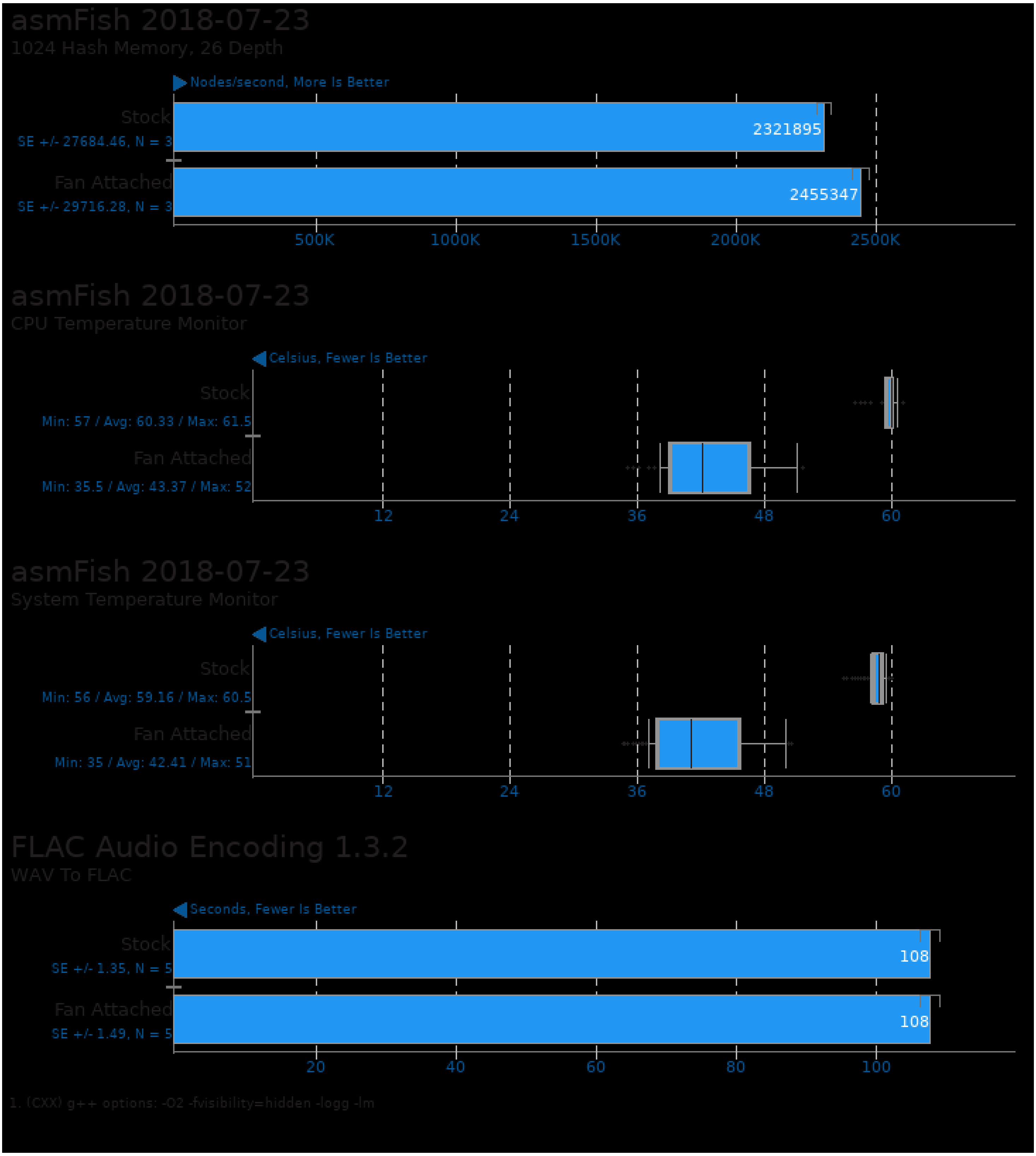


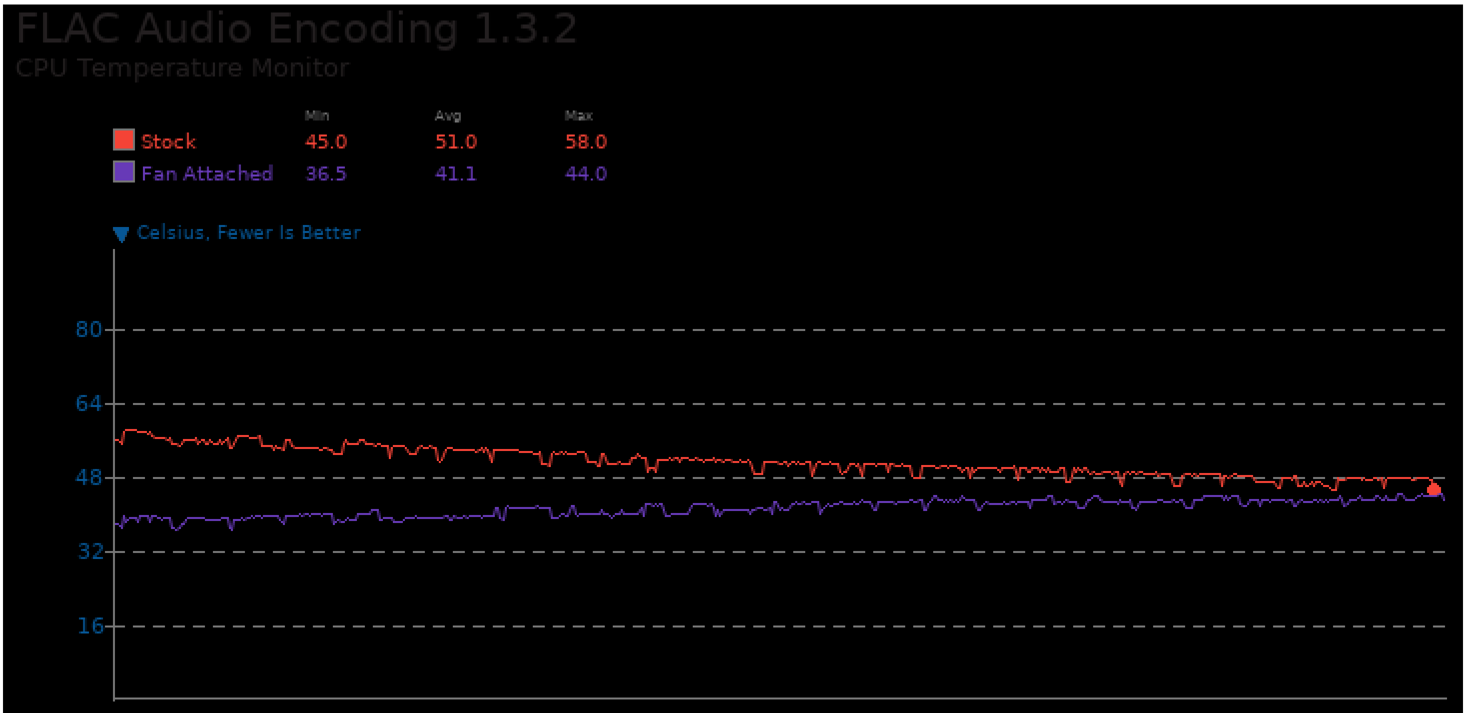


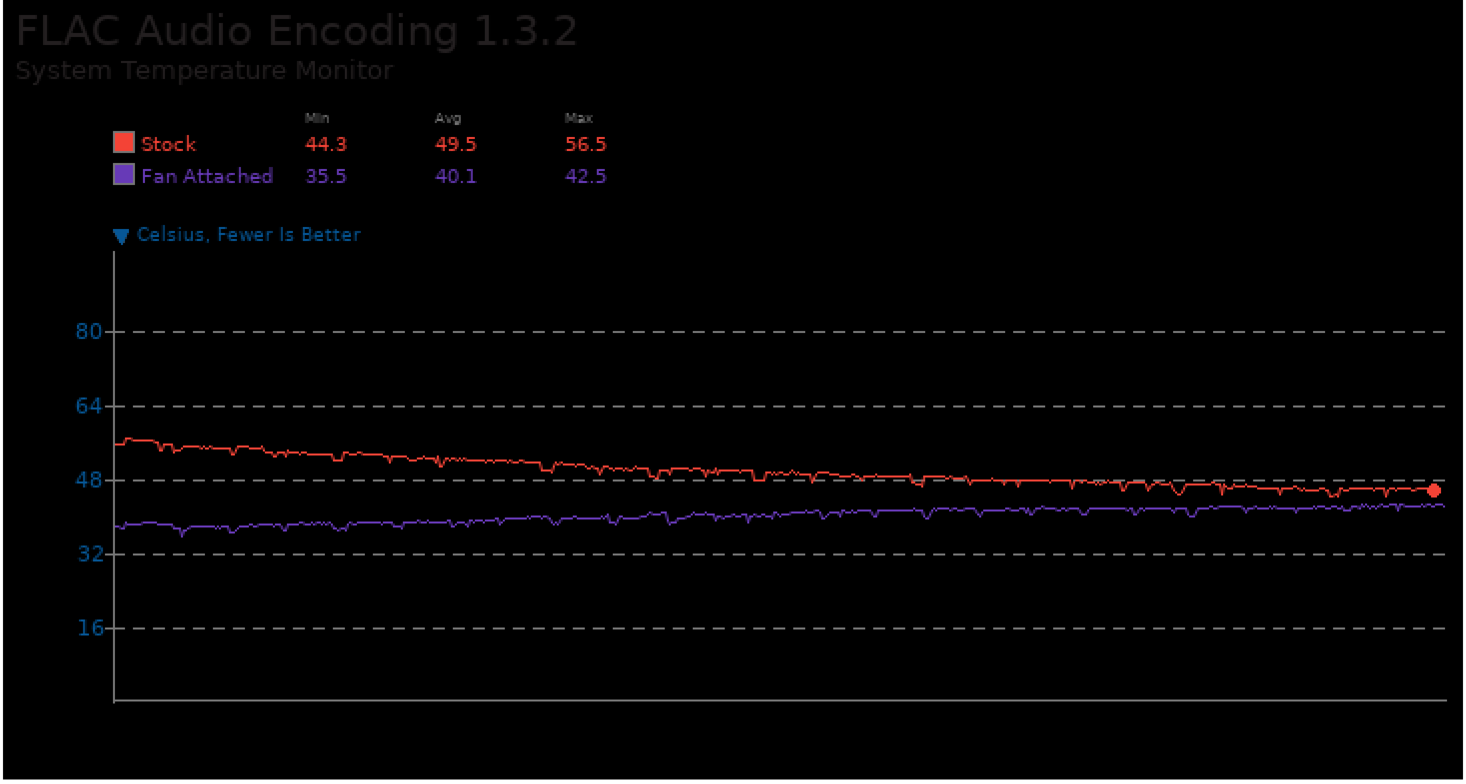


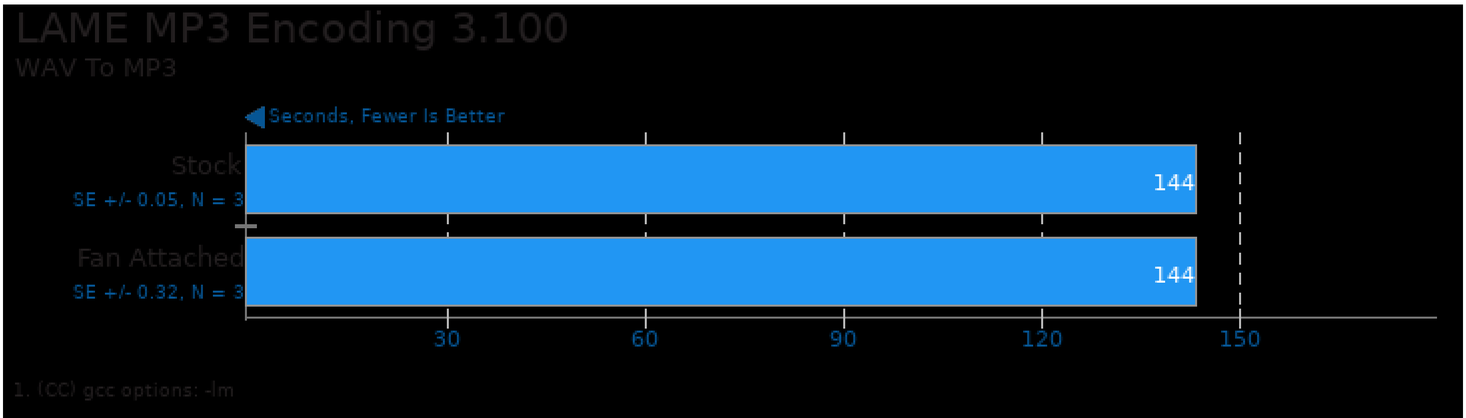


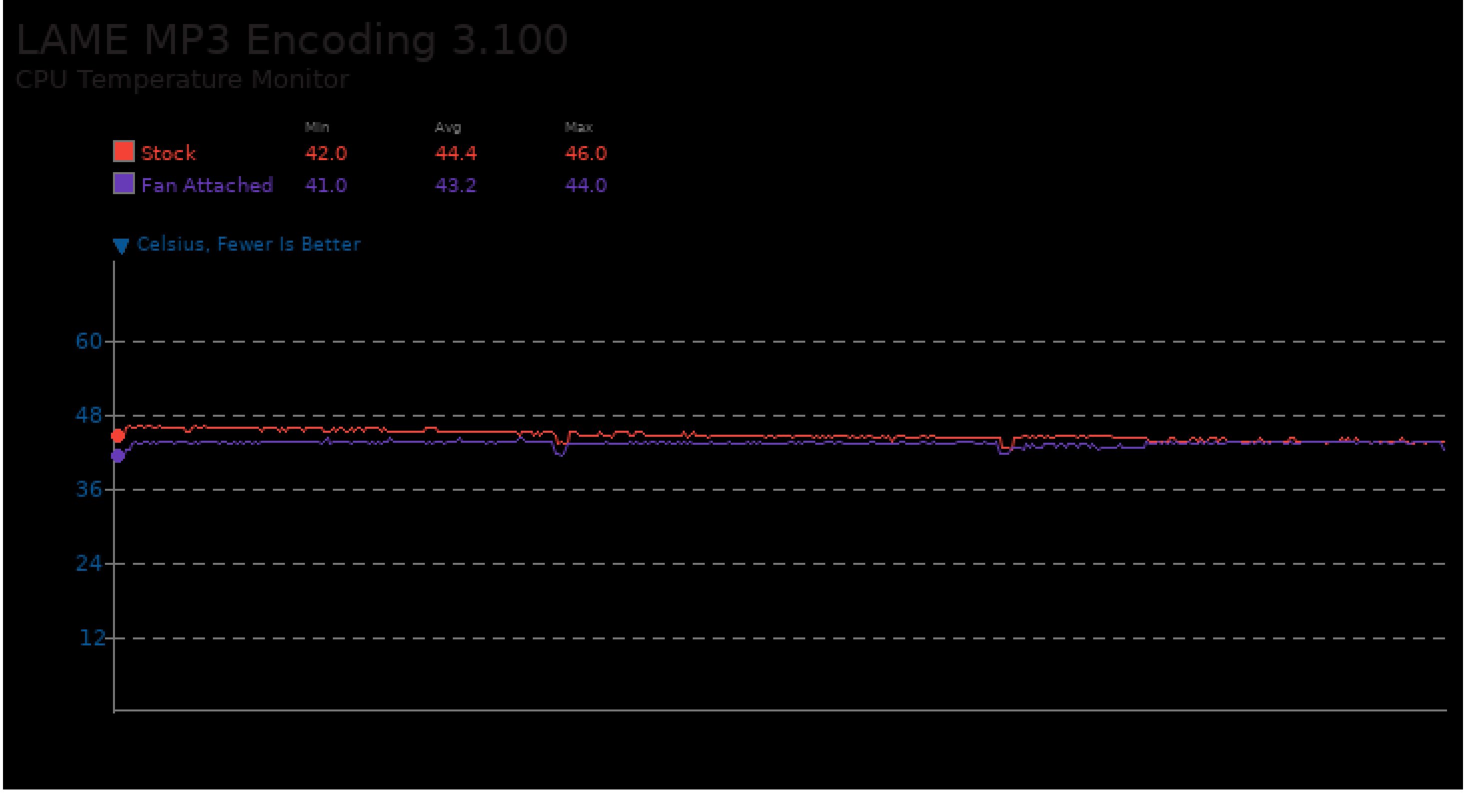
Jetson Nano Monitor

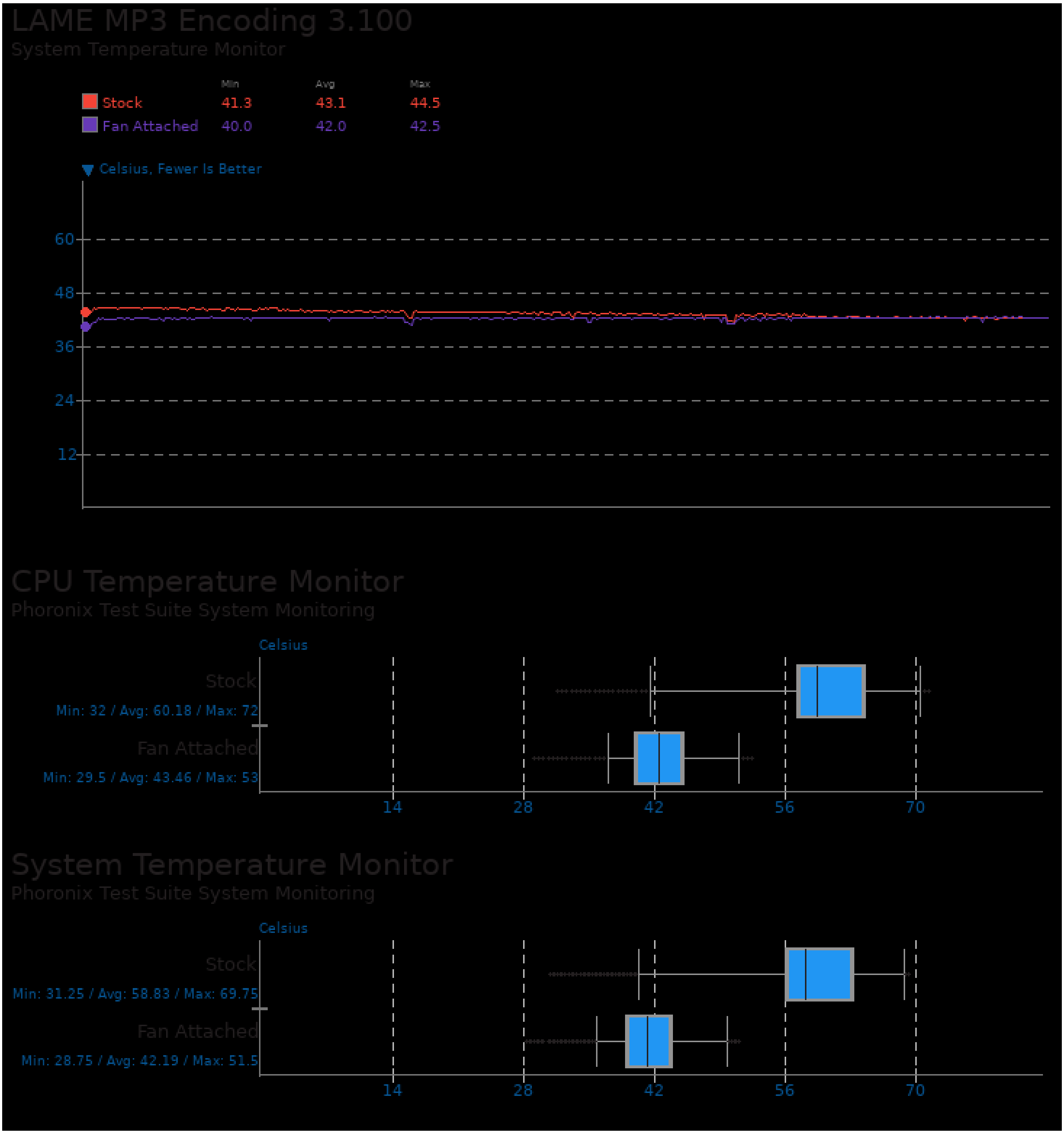



FLAC Audio Encoding 1.3.2
CPU Temperature Monitor
Min Avg Max
Stock 45.0 51.0 58.0
Fan Attached 36.5 41.1 44.0
Celsius, Fewer Is Better
80
64
48
32
16

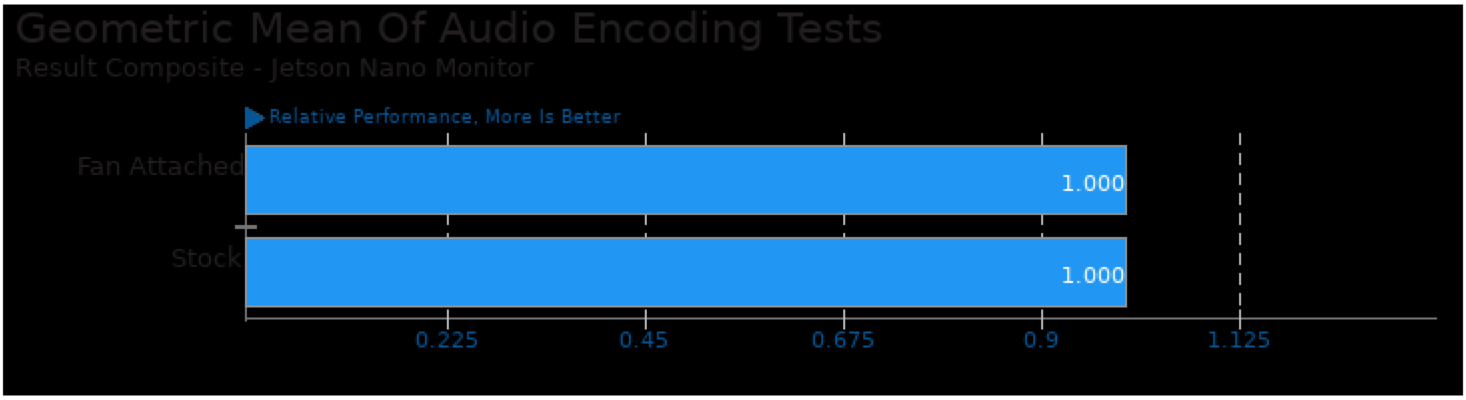

FLAC Audio Encoding 1.3.2
System Temperature Monitor
Min Avg Max
Stock 44.3 49.5 56.5
Fan Attached 35.5 40.1 42.5
Celsius, Fewer Is Better
80
64
48
32
16


LAME MP3 Encoding 3.100
WAV To MP3
Seconds, Fewer Is Better
Stock
SE +/- 0.05, N = 3
144
Fan Attached
SE +/- 0.32, N = 3
144
30
60
90
120
150
1. (CC) gcc options: -lm

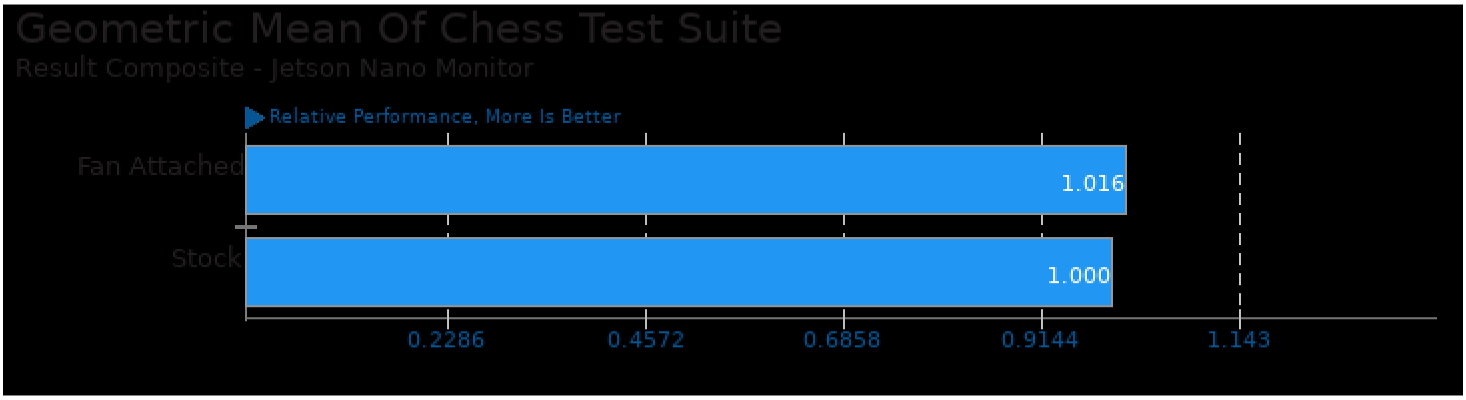

LAME MP3 Encoding 3.100
CPU Temperature Monitor
Min
Avg
Max
Stock 42.0 44.4 46.0
Fan Attached 41.0 43.2 44.0
Celsius, Fewer Is Better
60
48
36
24
12


LAME MP3 Encoding 3.100
System Temperature Monitor
Min Avg Max
Stock 41.3 43.1 44.5
Fan Attached 40.0 42.0 42.5
Celsius, Fewer Is Better
60
48
36
24
12
CPU Temperature Monitor
Phoronix Test Suite System Monitoring
Celsius
Stock
Min: 32 / Avg: 60.18 / Max: 72
Fan Attached
Min: 29.5 / Avg: 43.46 / Max: 53
14 28 42 56 70
System Temperature Monitor
Phoronix Test Suite System Monitoring
Celsius
Stock
Min: 31.25 / Avg: 58.83 / Max: 69.75
Fan Attached
Min: 28.75 / Avg: 42.19 / Max: 51.5
14 28 42 56 70

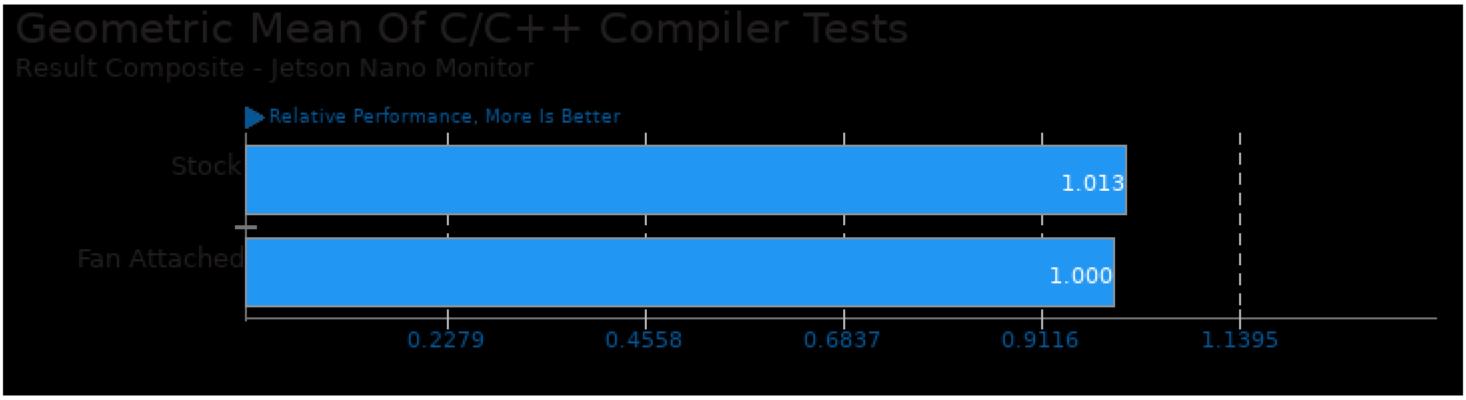
These geometric means are based upon test groupings / test suites for this result file.



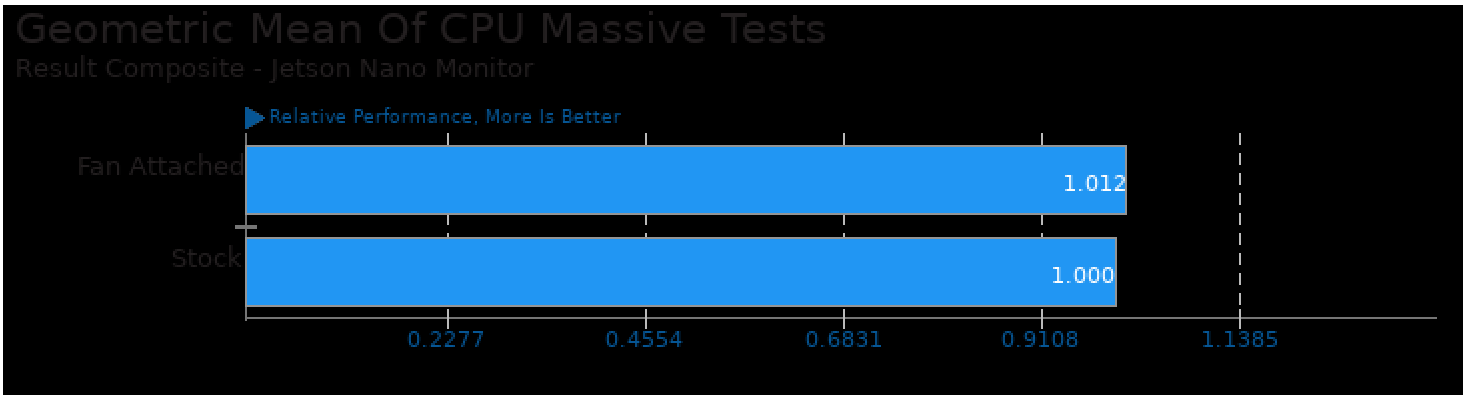
Geometric mean based upon tests: pts/encode-mp3 and pts/encode-flac



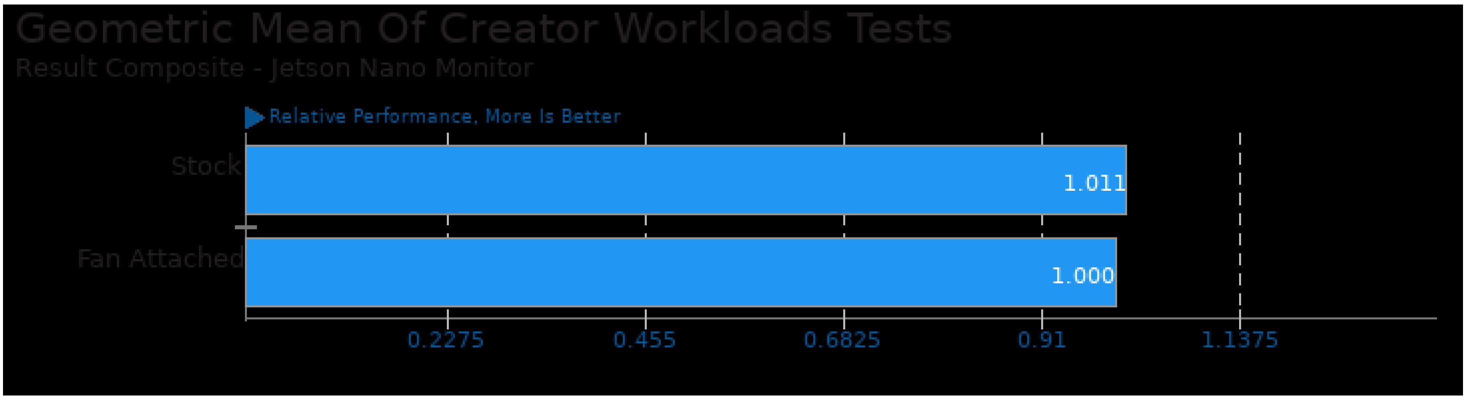
Geometric mean based upon tests: pts/lczero and pts/asmfish



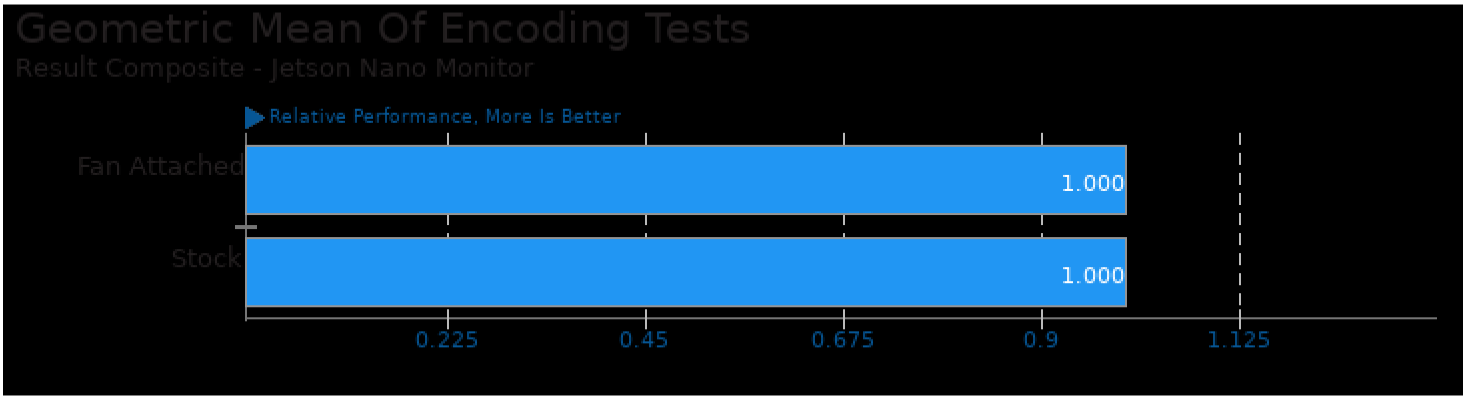
Geometric mean based upon tests: pts/c-ray, pts/encode-mp3 and pts/encode-flac



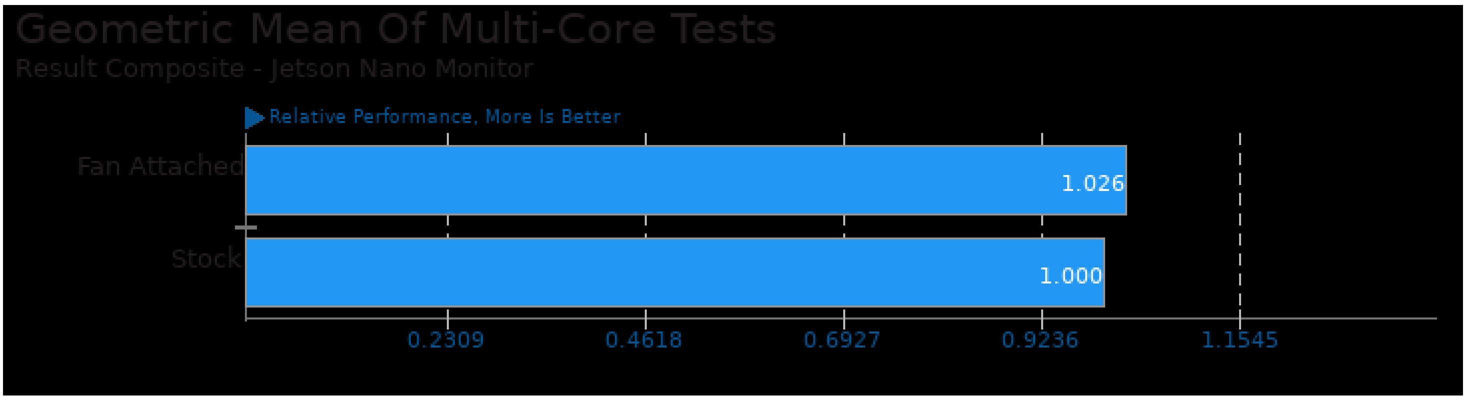
Geometric mean based upon tests: pts/asmfish, pts/c-ray, pts/encode-flac, pts/encode-mp3, pts/lczero, pts/primesieve and pts/ttsiod-renderer



Geometric mean based upon tests: pts/c-ray, pts/ttsiod-renderer, pts/encode-mp3 and pts/encode-flac

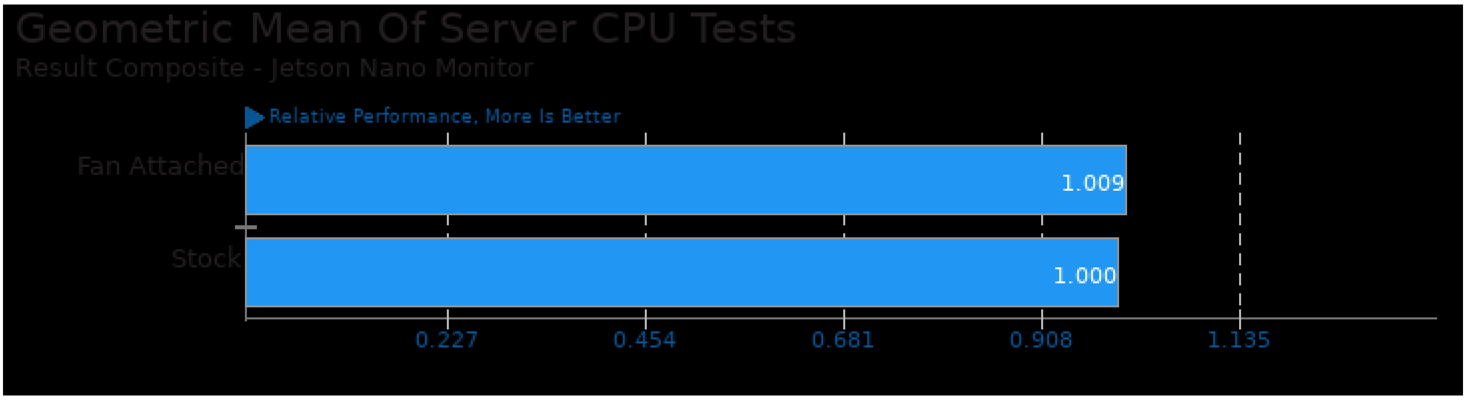


Geometric mean based upon tests: pts/encode-mp3 and pts/encode-flac

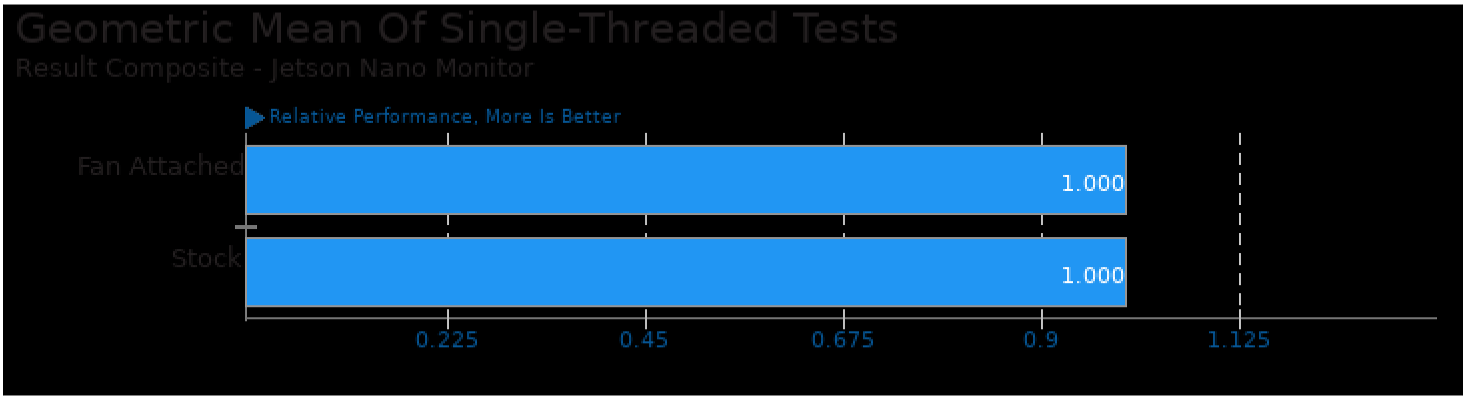


Geometric mean based upon tests: pts/c-ray, pts/primesieve, pts/asmfish and pts/ttsiod-renderer

Geometric mean based upon tests: pts/c-ray and pts/ttsiod-renderer



Geometric mean based upon tests: pts/asmfish and pts/c-ray



Geometric mean based upon tests: pts/encode-flac and pts/encode-mp3

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 14:25.