www.phoronix-test-suite.com

Jetson TX2 CUDA CPU Monitor

Testing for a future article on Phoronix.

Automated Executive Summary

Jetson TX2 Max-P had the most wins, coming in first place for 63% of the tests.

Based on the geometric mean of all complete results, the fastest (Jetson TX2 Max-Q) was 1.229x the speed of the slowest (Jetson TX1). Jetson TX2 Max-P was 0.88x the speed of Jetson TX2 Max-Q and Jetson TX1 was 0.924x the speed of Jetson TX2 Max-P.

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

CUDA Mini-Nbody (GPU Power Consumption Monitor) at 44.928x
SHOC Scalable HeterOgeneous Computing (GPU Power Consumption Monitor) at 39.954x
Caffe (GPU Power Consumption Monitor) at 27.967x
SHOC Scalable HeterOgeneous Computing (GPU Power Consumption Monitor) at 22.993x
Caffe (GPU Power Consumption Monitor) at 20.98x
SHOC Scalable HeterOgeneous Computing (GPU Power Consumption Monitor) at 12.993x
CUDA Mini-Nbody (CPU Power Consumption Monitor) at 11.484x
SHOC Scalable HeterOgeneous Computing (GPU Power Consumption Monitor) at 10.497x
SHOC Scalable HeterOgeneous Computing (CPU Power Consumption Monitor) at 7x

Caffe (CPU Power Consumption Monitor) at 6.987x.

Test Systems:

Jetson TX1

Processor: ARMv8 rev 1 @ 1.73GHz (4 Cores), Motherboard: jetson_tx1, Memory: 4096MB, Disk: 16GB 016G32, Graphics: NVIDIA Tegra X1 (nvgpu)/

OS: Ubuntu 16.04, Kernel: 3.10.96-tegra (aarch64), Desktop: Unity 7.4.0, Display Server: X Server 1.18.3, Display Driver: NVIDIA 24.2.1, OpenGL: 4.5.0, Vulkan: 1.0.8, Compiler: GCC 5.4.0 20160609 + CUDA 8.0, File-System: ext4, Screen Resolution: 3840x2160

Environment Notes: __GL_PERFMON_MODE=1
Compiler Notes: --build=aarch64-linux-gnu --disable-browser-plugin --disable-libquadmath --disable-werror --enable-checking=release --enable-clocale=gnu --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,ada,c++,java,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 --target=aarch64-linux-gnu --with-arch-directory=aarch64 --with-default-libstdcxx-abi=new -v
Processor Notes: Scaling Governor: tegra interactive

Jetson TX2 Max-Q

Jetson TX2 Max-P

Processor: ARMv8 rev 3 @ 1.27GHz (6 Cores), Motherboard: quill, Memory: 8192MB, Disk: 31GB 032G34, Graphics: GP10B (nvgpu)/

OS: Ubuntu 16.04, Kernel: 4.4.15-tegra (aarch64), Desktop: Unity 7.4.0, Display Server: X Server 1.18.3, Display Driver: NVIDIA 27.1.0, OpenGL: 4.5.0, Vulkan: 1.0.8, Compiler: GCC 5.4.0 20160609 + CUDA 8.0, File-System: ext4, Screen Resolution: 3840x2160

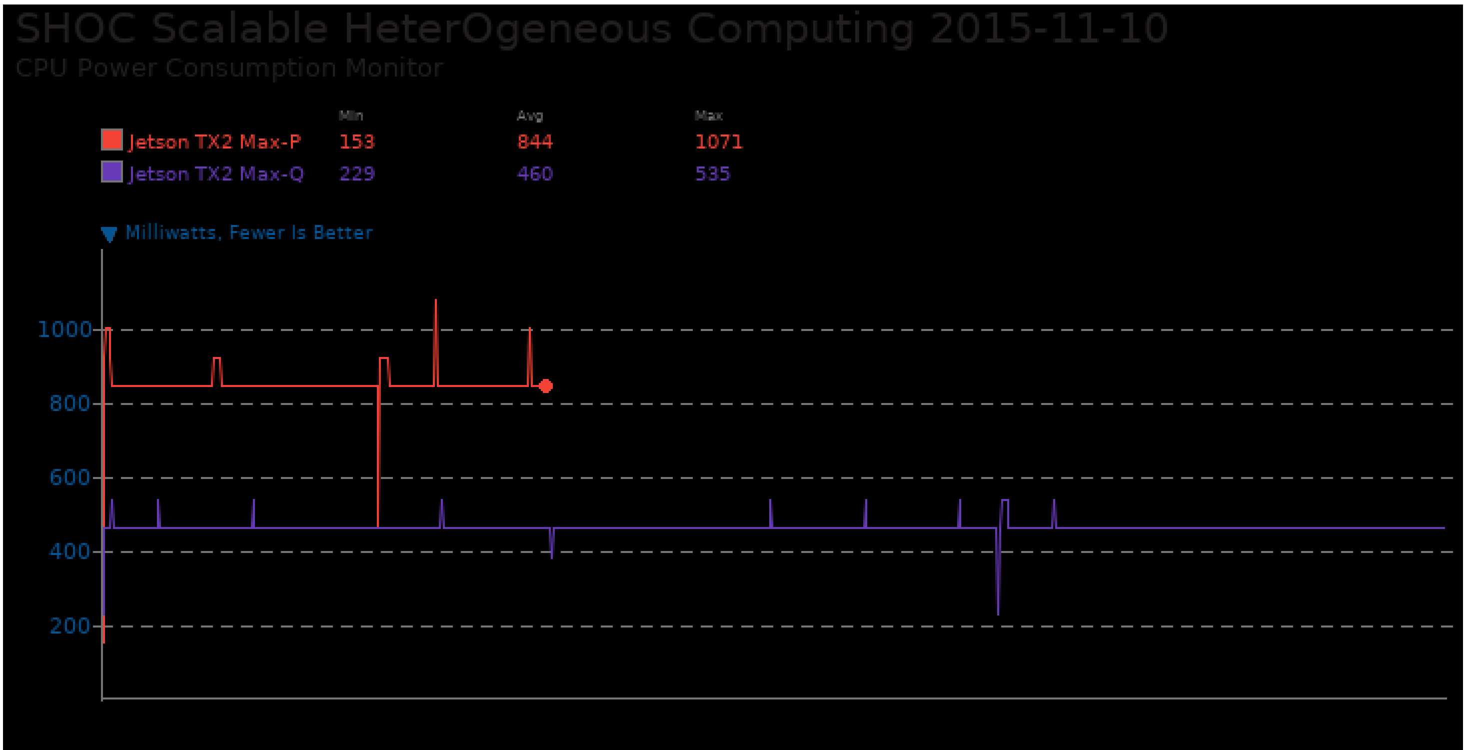
Compiler Notes: --build=aarch64-linux-gnu --disable-browser-plugin --disable-libquadmath --disable-werror --enable-checking=release --enable-clocale=gnu --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,ada,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --target=aarch64-linux-gnu --with-arch-directory=aarch64 --with-default-libstdcxx-abi=new -v
Processor Notes: Scaling Governor: tegra_cpufreq schedutil

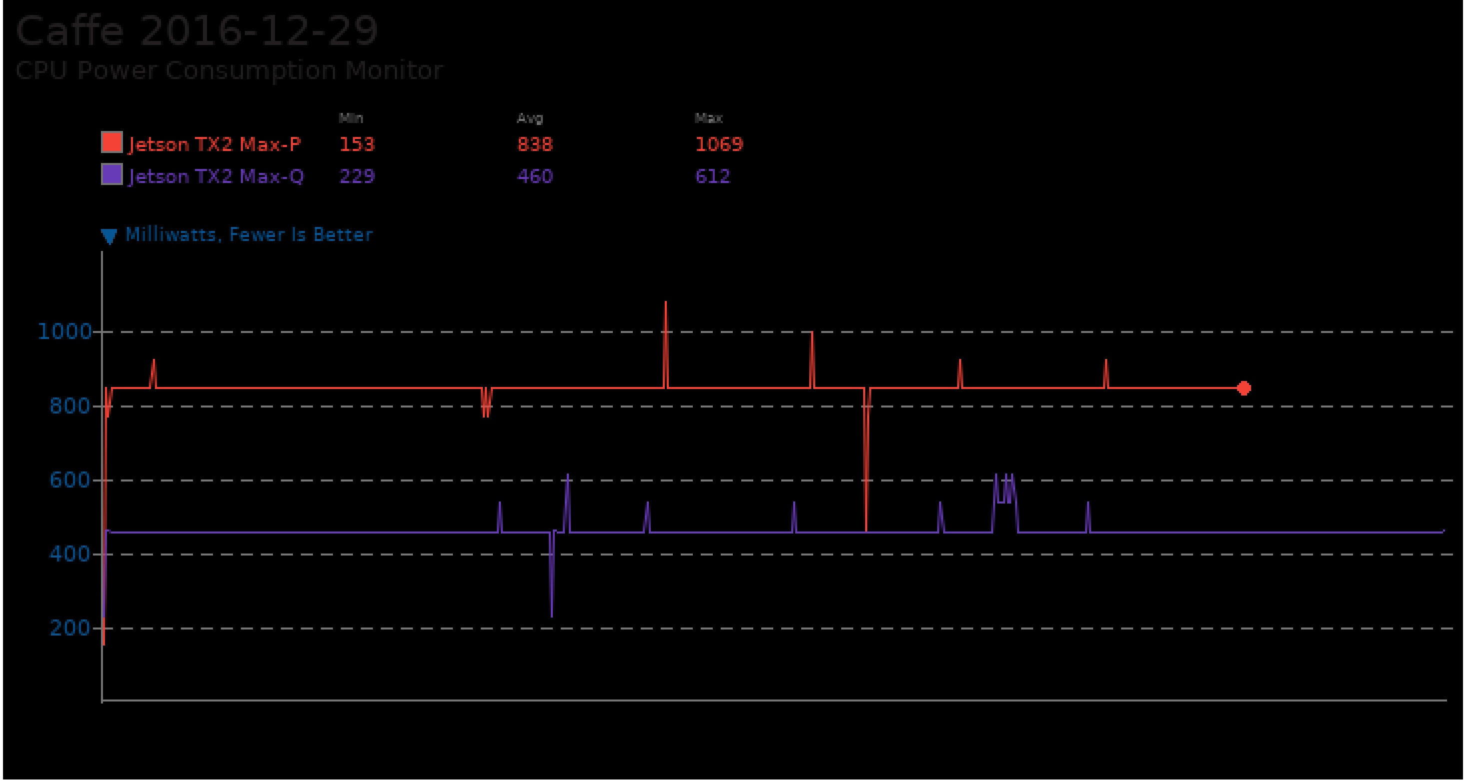
	Jetson TX1	Jetson TX2 Max-Q	Jetson TX2 Max-P
SHOC Scalable HeterOgeneous Computing - CUDA - FFT SP (GFLOPS)	51.20	**59.64**	**9.80**
Normalized	85.85%	100%	16.43%
Standard Deviation	0.8%	0%	0%
SHOC Scalable HeterOgeneous Computing - CUDA - Bus Speed Download (GB/s)	**9.51**	**15.37**	15.15
Normalized	61.87%	100%	98.57%
Standard Deviation	0.1%	0.6%	1.2%

Jetson TX2 CUDA CPU Monitor

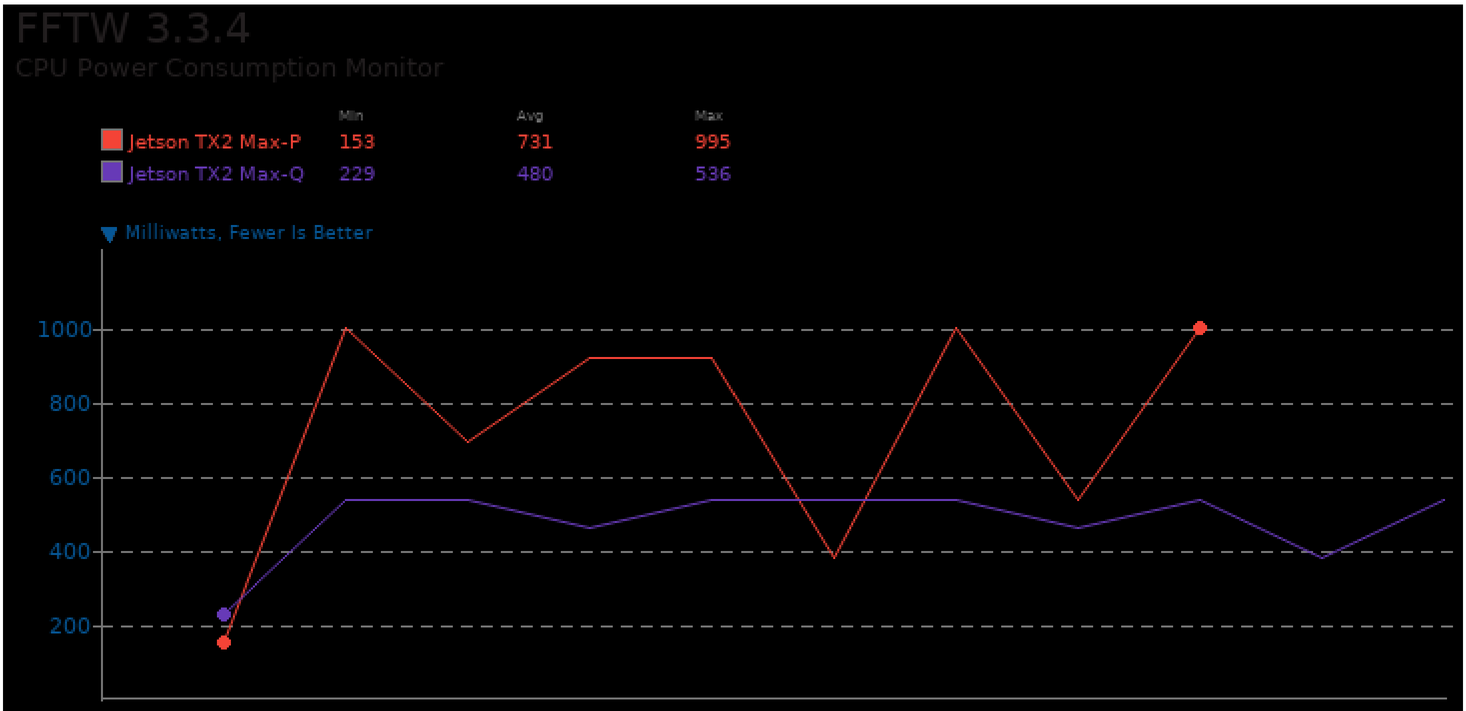
SHOC Scalable HeterOgeneous Computing - CUDA - Bus Speed Readback (GB/s)	**9.83**	**15.54**	15.26
Normalized	63.26%	100%	98.2%
Standard Deviation	0.2%	0.8%	0.3%
SHOC Scalable HeterOgeneous Computing - CUDA - T.R.B (GB/s)	**44.28**	52.46	**69.32**
Normalized	63.88%	75.68%	100%
Standard Deviation	3.5%	4.5%	5.8%
FFTW - Stock - 2D FFT Size 128 (Mflops)	1544	**1156**	**1567**
Normalized	98.52%	73.79%	100%
Standard Deviation	1.7%	0.9%	2.8%
Caffe - CUDA Googlenet (ms)	**437081**	378644	**322535**
Normalized	73.79%	85.18%	100%
Standard Deviation	1%	0.1%	0.1%
Caffe - CUDA AlexNet (ms)	**205601**	179178	**155001**
Normalized	75.39%	86.51%	100%
Standard Deviation	1.4%	0.1%	0.1%
SHOC Scalable HeterOgeneous Computing - CUDA - Max SP Flops (GFLOPS)	481.79	**429.53**	**559.08**
Normalized	86.18%	76.83%	100%
Standard Deviation	0.1%	0%	0.4%
SHOC Scalable HeterOgeneous Computing - CUDA - MD5 Hash (GHash/s)	0.75	**0.67**	**0.87**
Normalized	86.21%	77.01%	100%
Standard Deviation	0%	0%	0%
CUDA Mini-Nbody - Original (sec)	546.26	**548.31**	**528.00**
Normalized	96.66%	96.3%	100%
Standard Deviation	2.2%	0.1%	0.8%
SHOC Scalable HeterOgeneous Computing - CUDA - Triad (GB/s)	**2.75**	**9.60**	3.46
Normalized	28.65%	100%	36.04%
Standard Deviation	10.8%	0.3%	29.5%

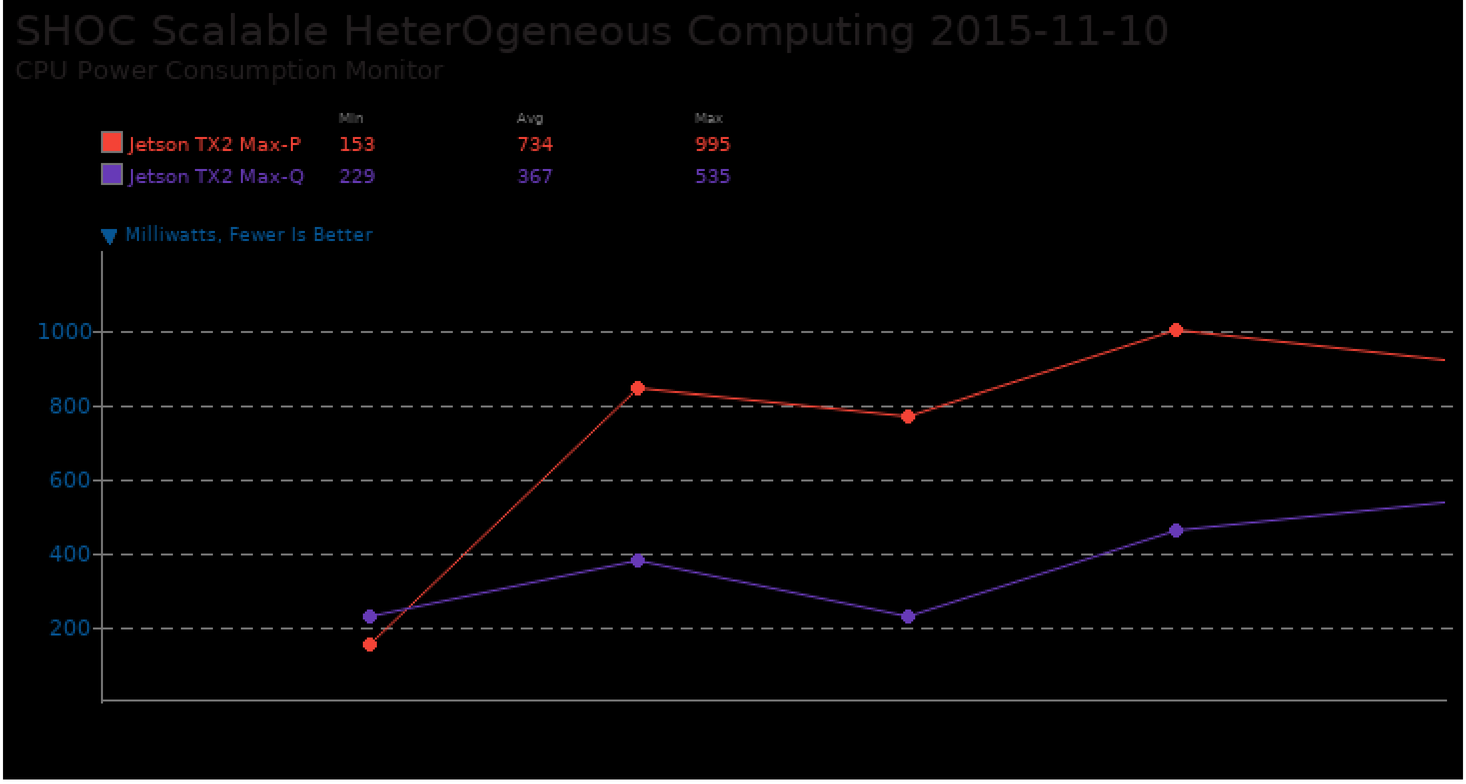
Jetson TX2 CUDA CPU Monitor

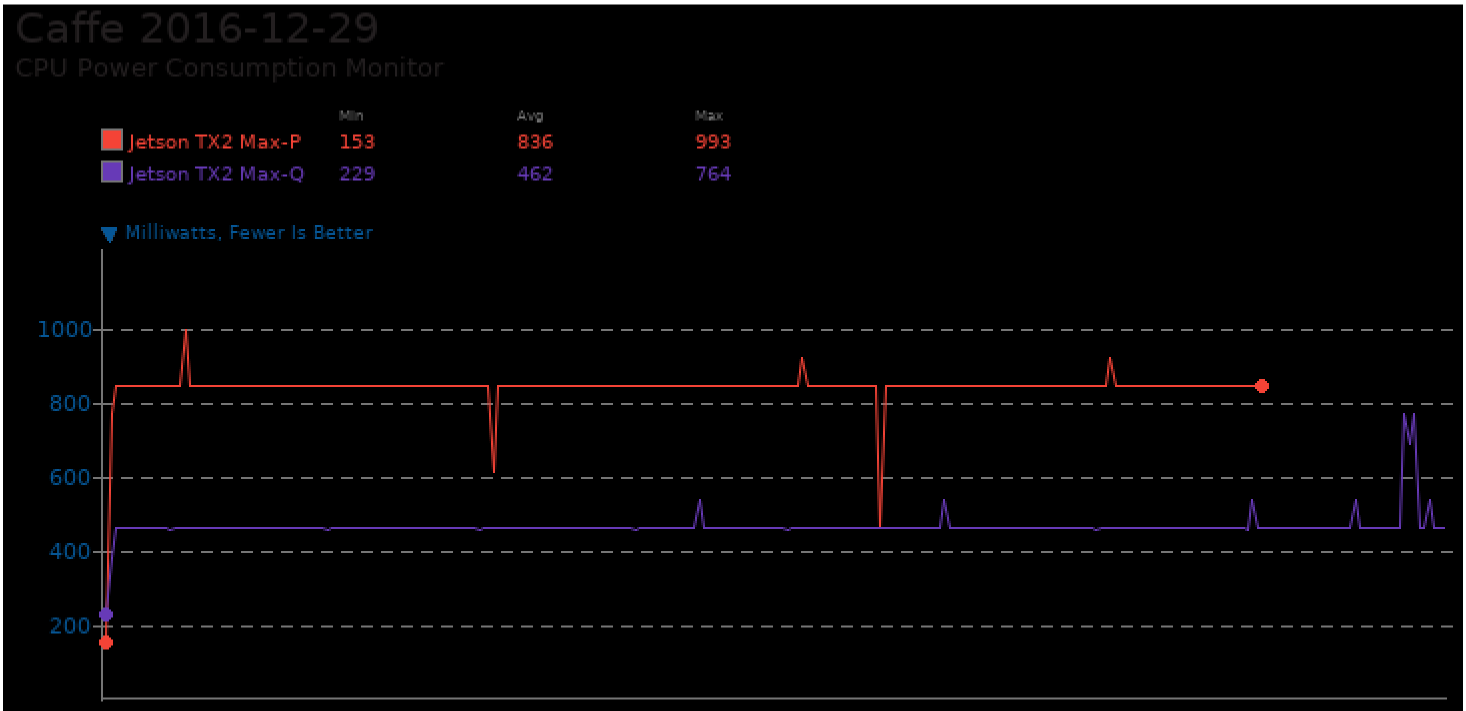


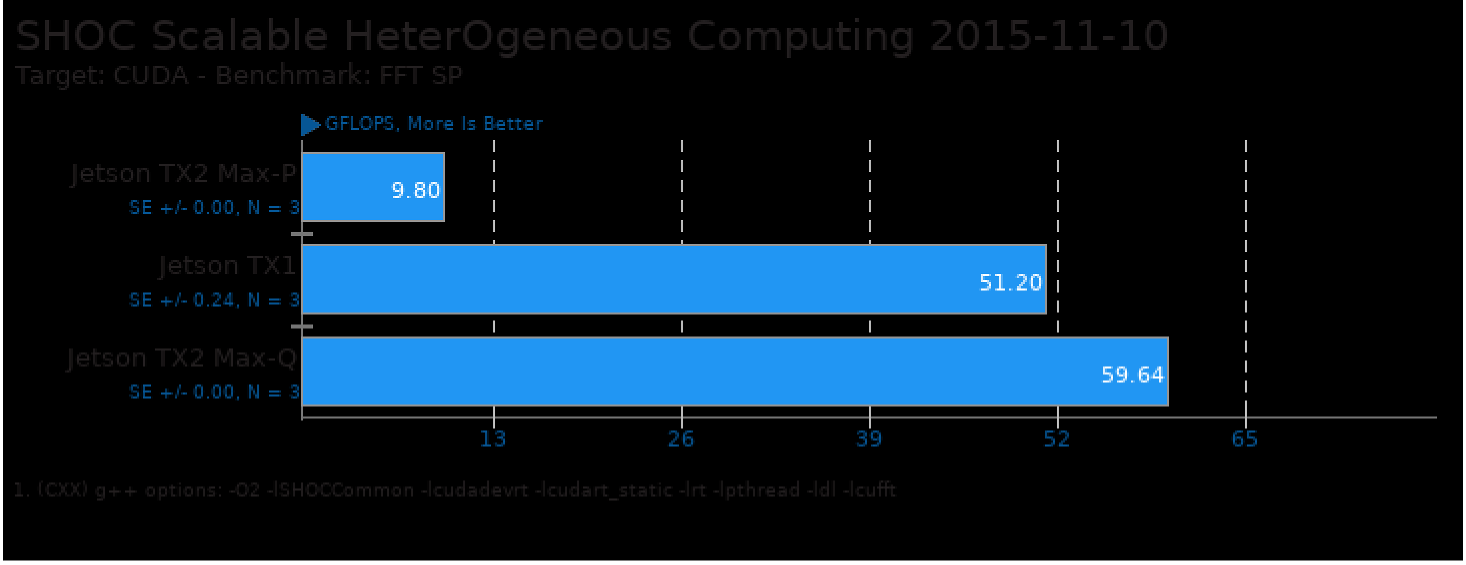


Jetson TX2 CUDA CPU Monitor

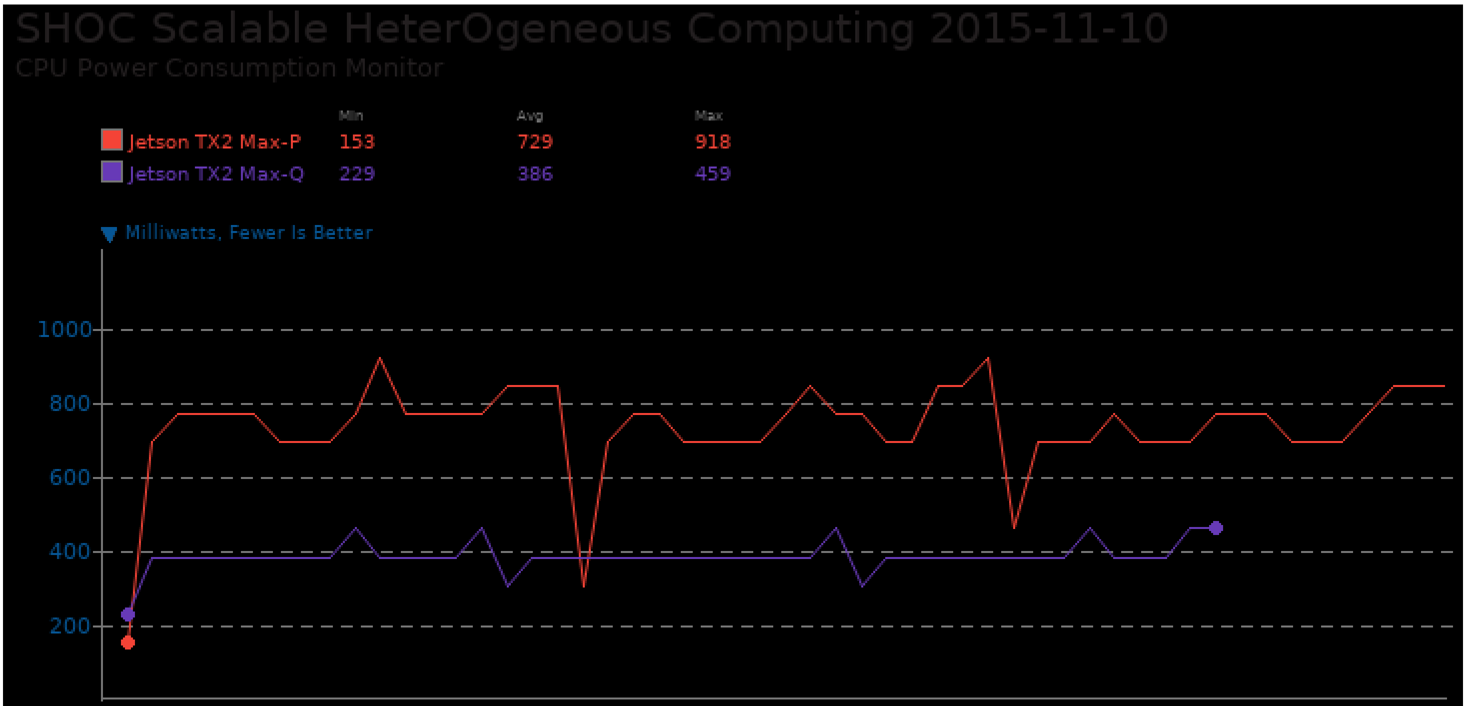


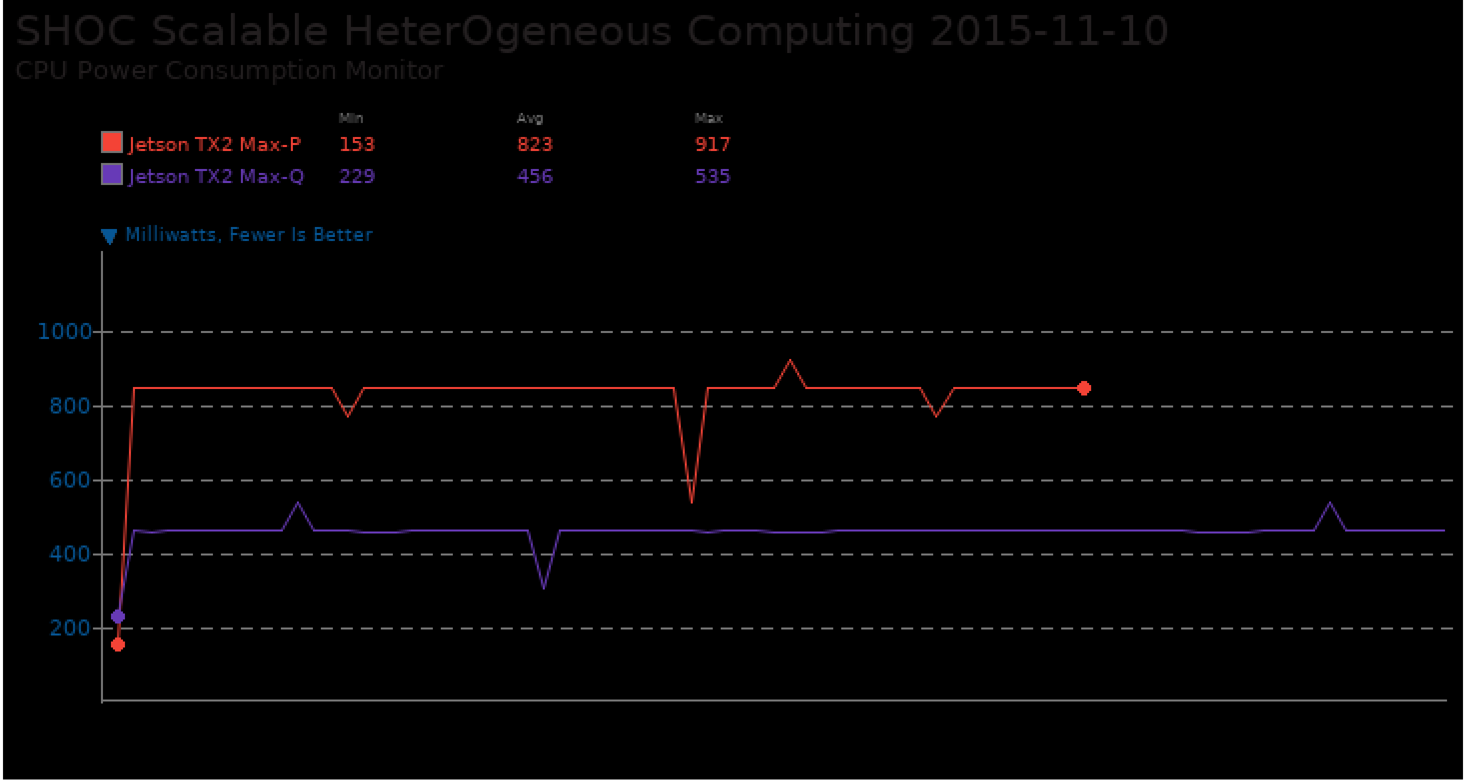


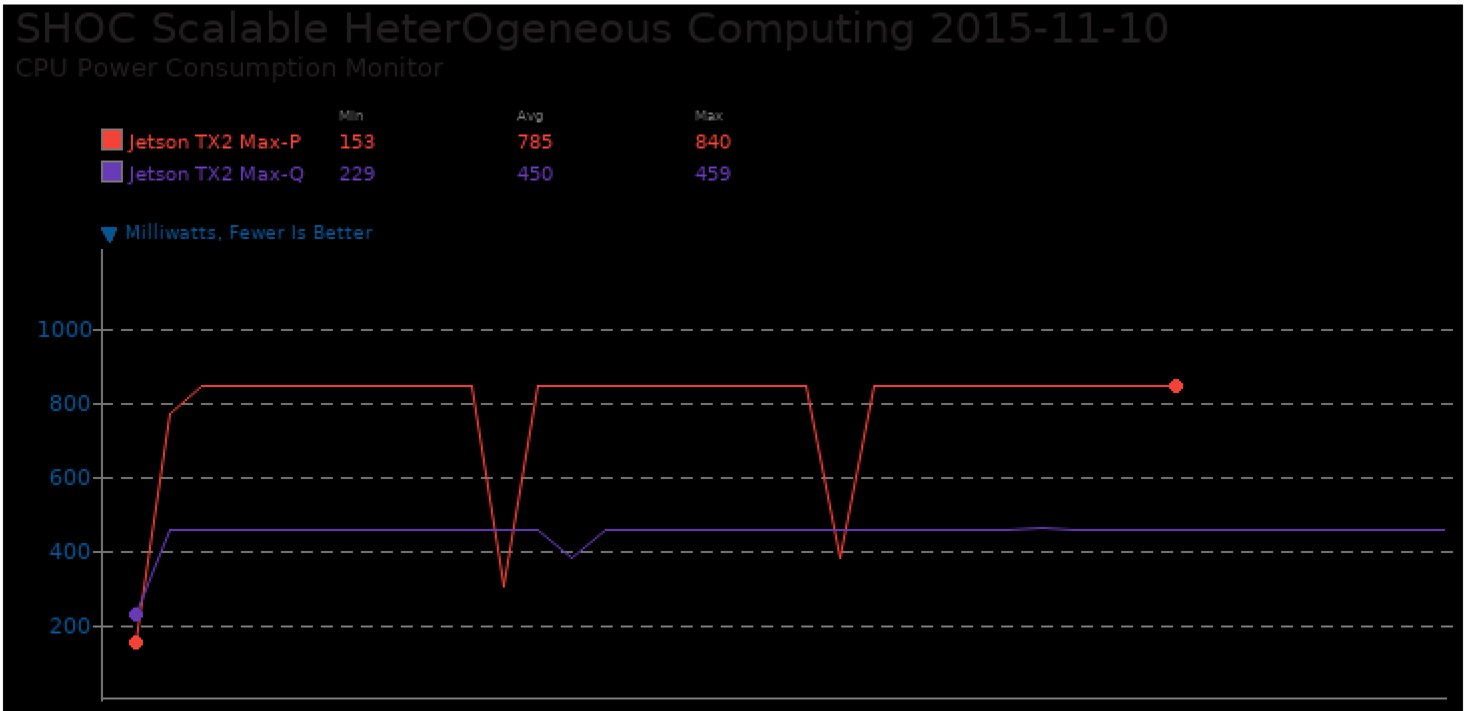

Caffe 2016-12-29
CPU Power Consumption Monitor
Min
Avg
Max
Jetson TX2 Max-P 153 836 993
Jetson TX2 Max-Q 229 462 764
Milliwatts, Fewer Is Better
1000
800
600
400
200


SHOC Scalable HeterOgeneous Computing 2015-11-10
Target: CUDA - Benchmark: FFT SP
GFLOPS, More Is Better
Jetson TX2 Max-P
SE +/- 0.00, N = 3
9.80
Jetson TX1
SE +/- 0.24, N = 3
51.20
Jetson TX2 Max-Q
SE +/- 0.00, N = 3
59.64
13
26
39
52
65
1. (CXX) g++ options: -O2 -lSHOCCommon -lcudadevrt -lcudart_static -lrt -lpthread -ldl -lcufft

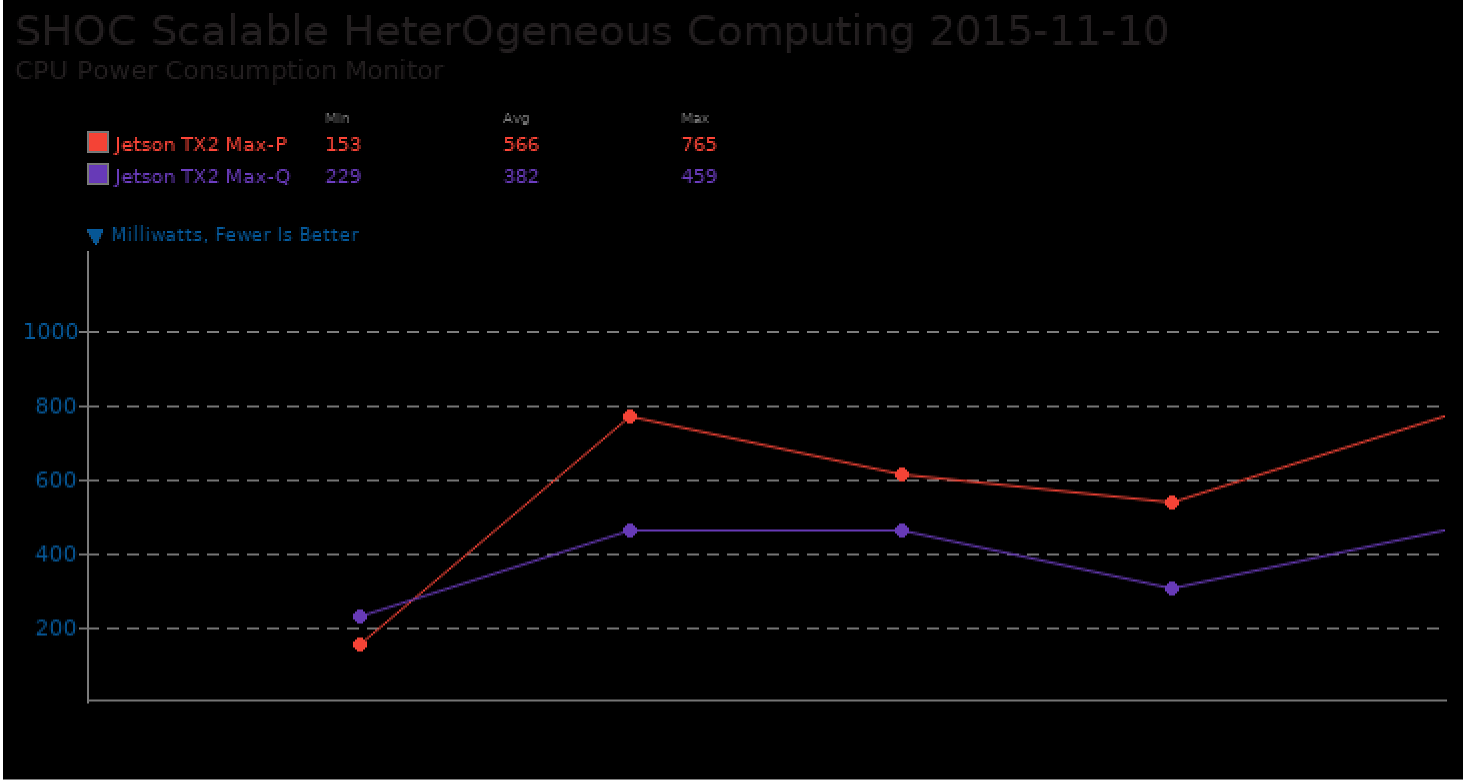
Jetson TX2 CUDA CPU Monitor



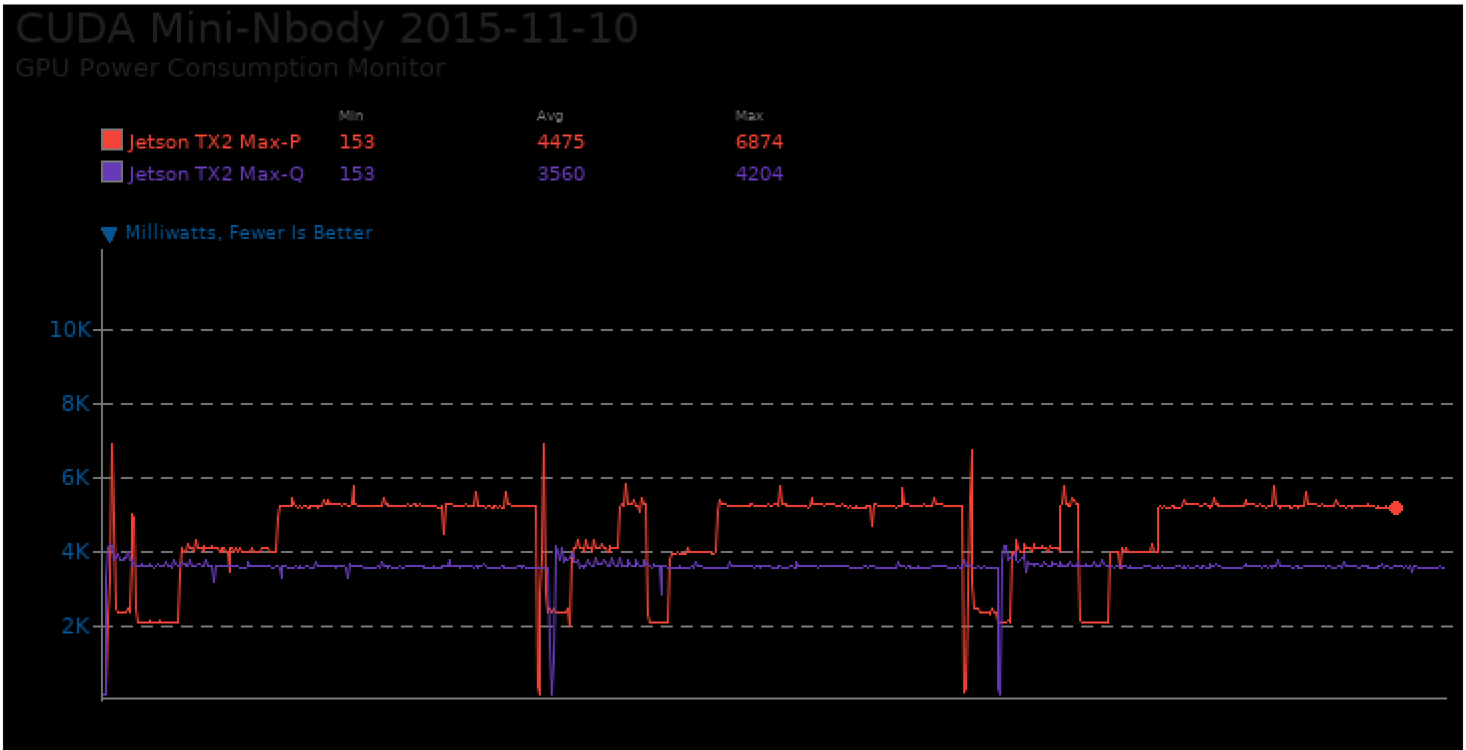


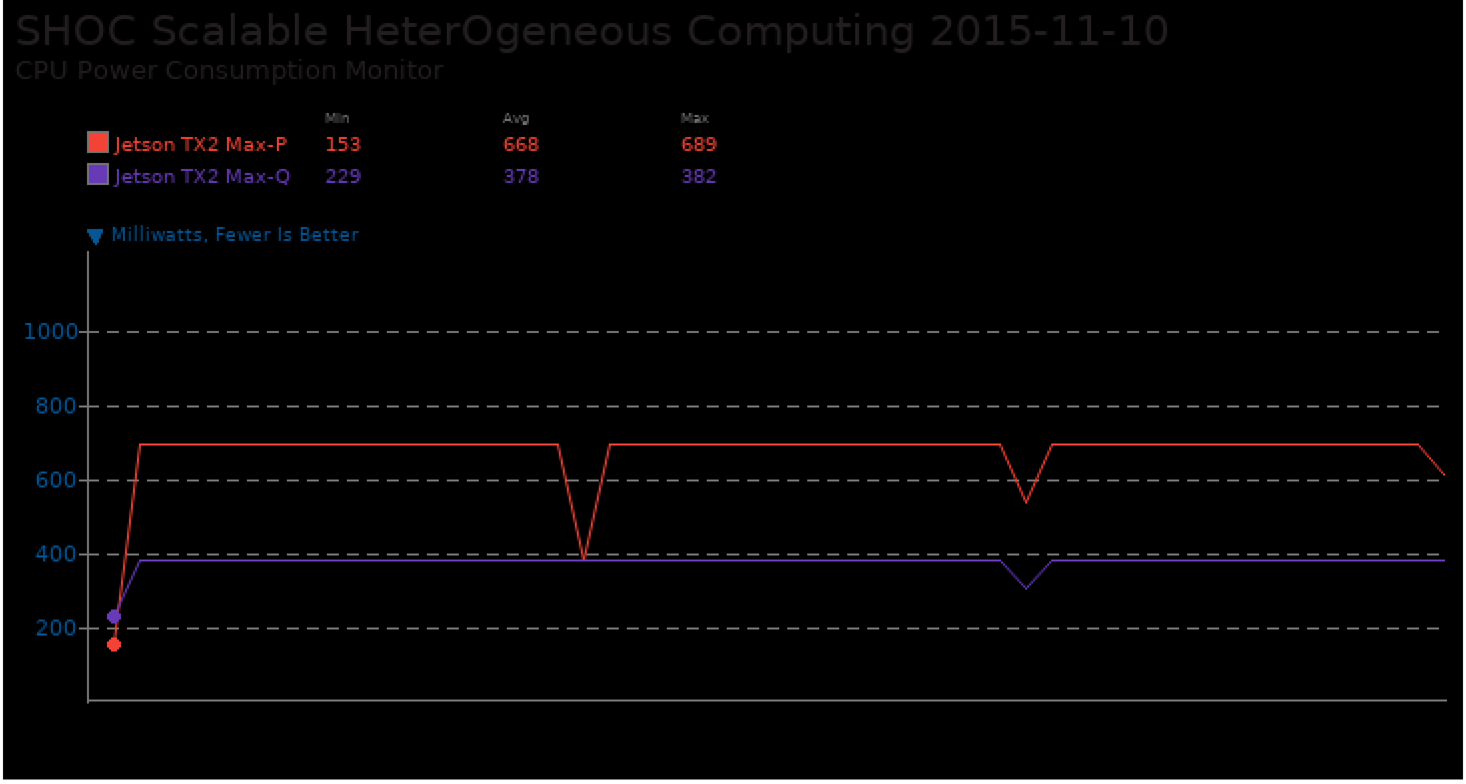


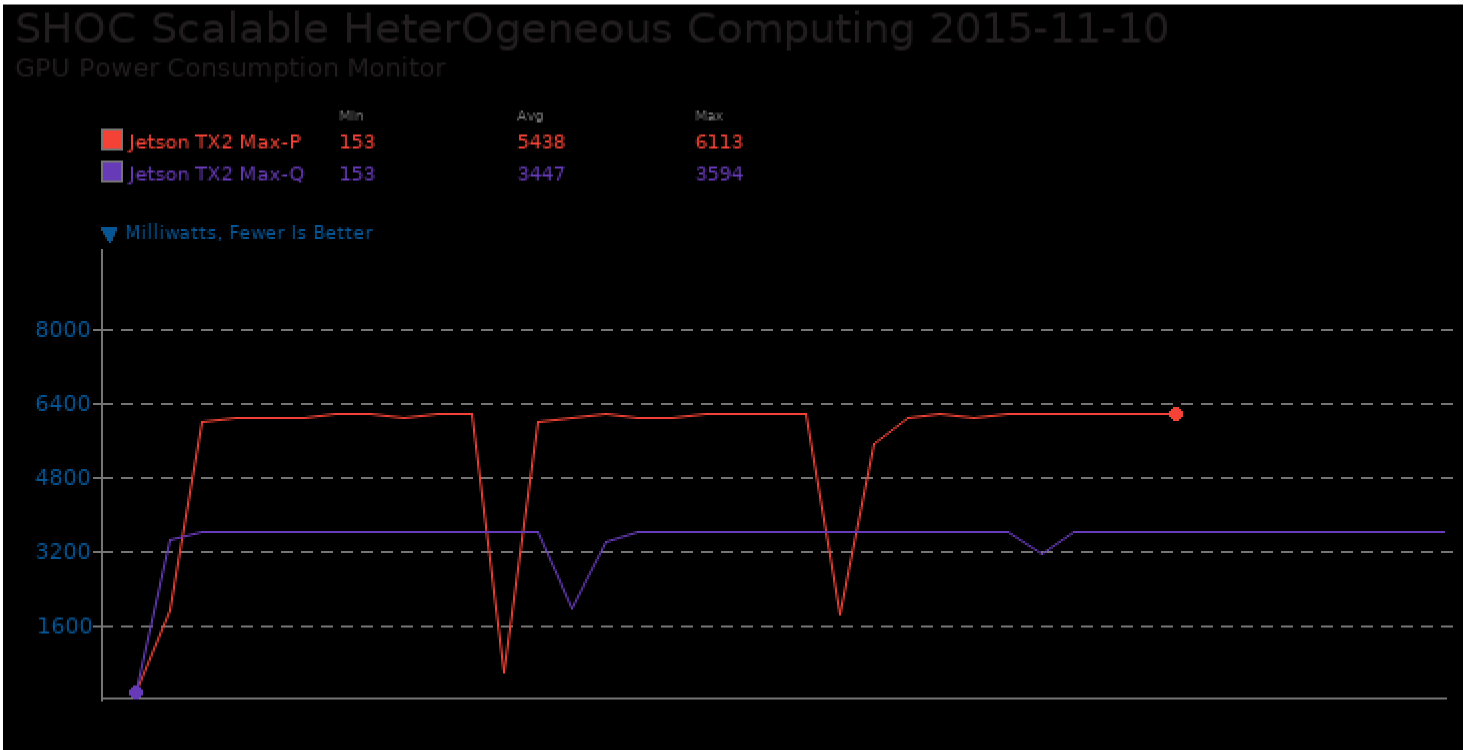
SHOC Scalable HeterOgeneous Computing 2015-11-10
CPU Power Consumption Monitor
Min Avg Max
Jetson TX2 Max-P 153 785 840
Jetson TX2 Max-Q 229 450 459
Milliwatts, Fewer Is Better
1000
800
600
400
200

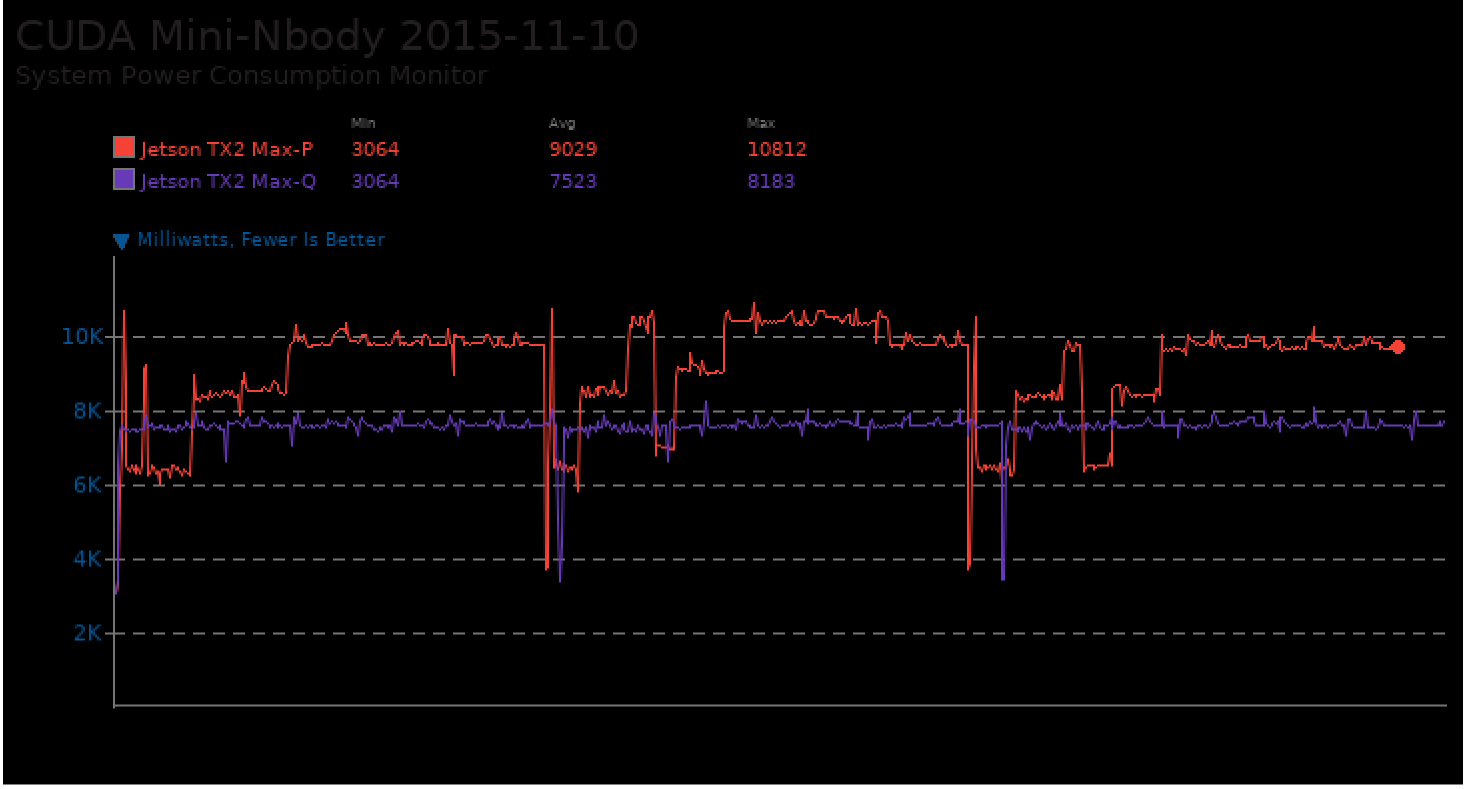


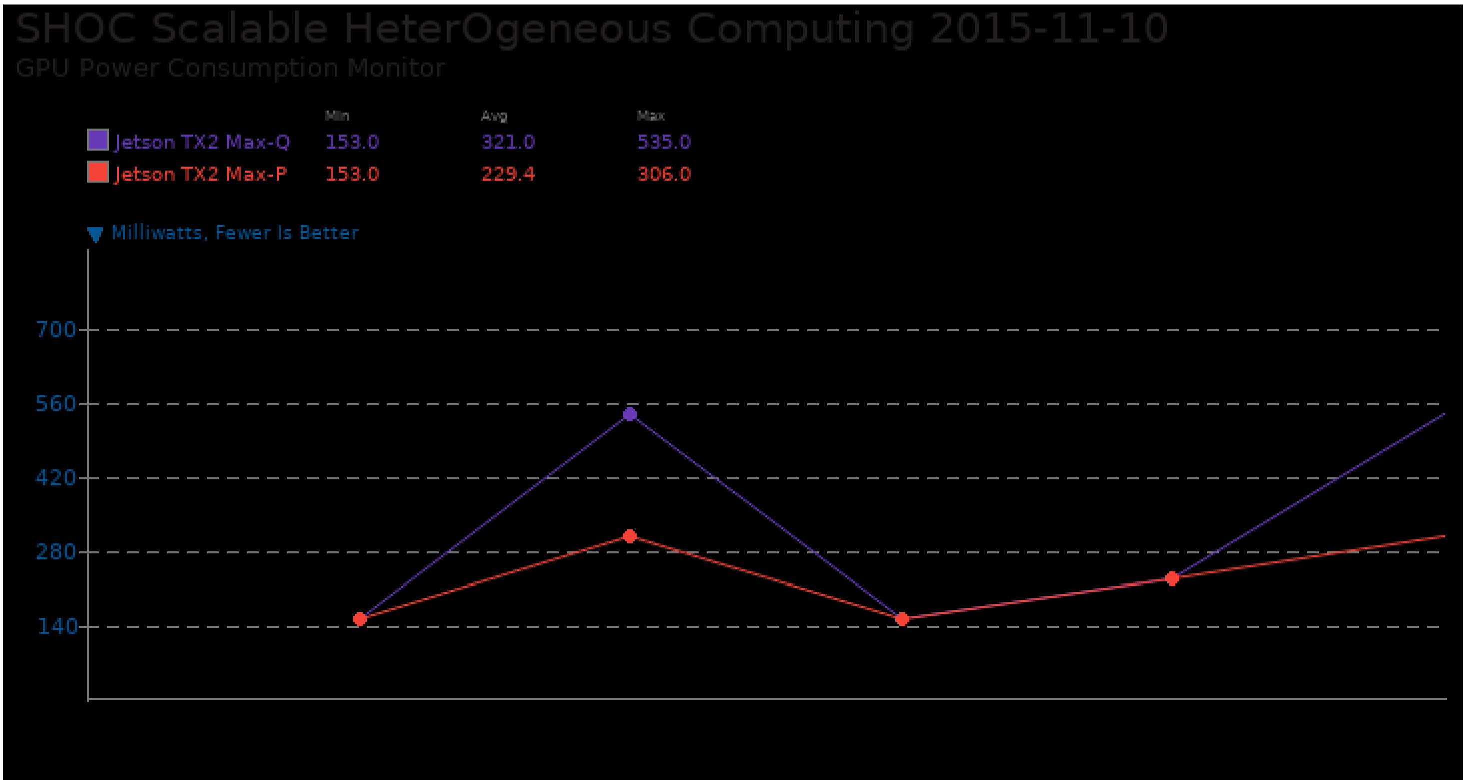
SHOC Scalable HeterOgeneous Computing 2015-11-10
CPU Power Consumption Monitor
Min Avg Max
Jetson TX2 Max-P 153 566 765
Jetson TX2 Max-Q 229 382 459
Milliwatts, Fewer Is Better
1000
800
600
400
200

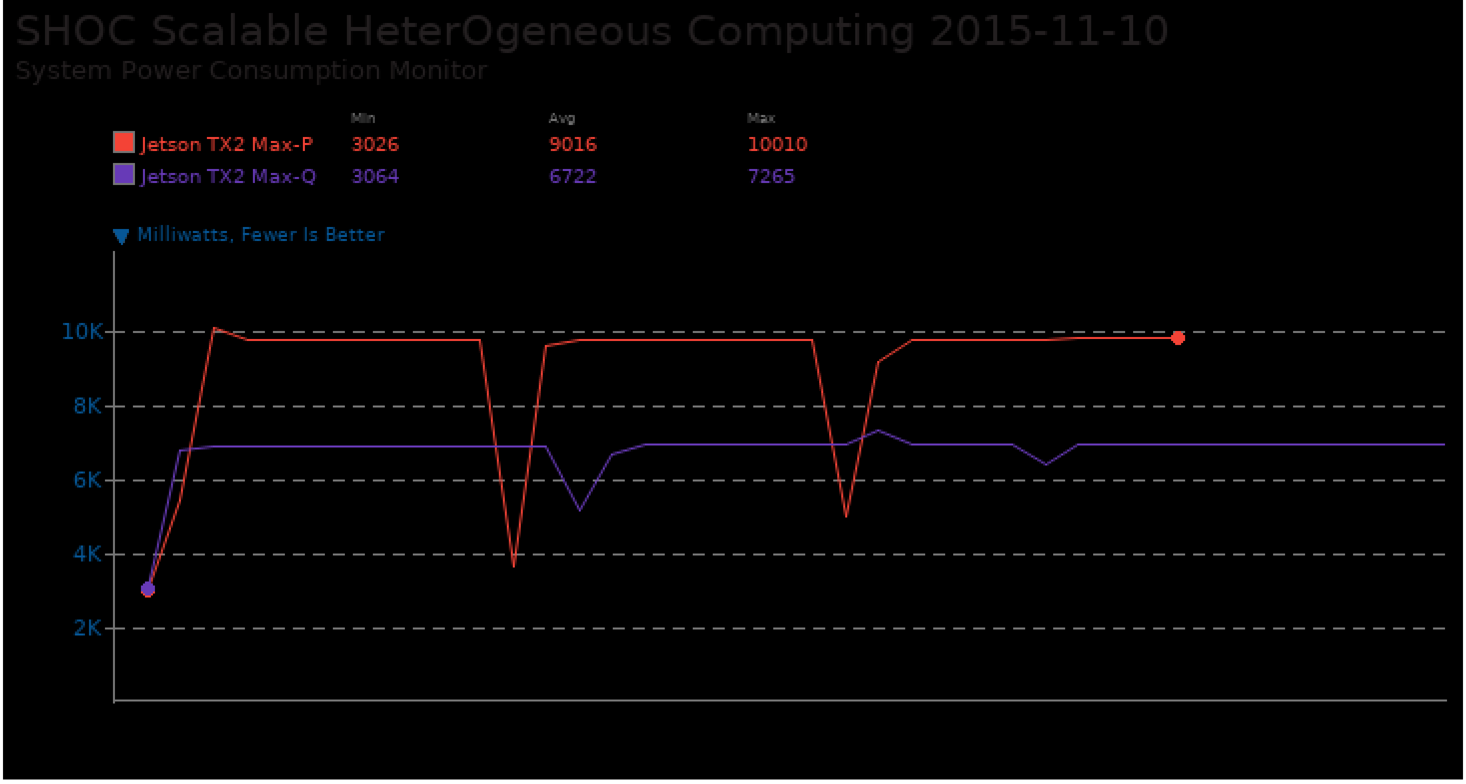

CUDA Mini-Nbody 2015-11-10
GPU Power Consumption Monitor
Min
Avg
Max
Jetson TX2 Max-P 153 4475 6874
Jetson TX2 Max-Q 153 3560 4204
Milliwatts, Fewer Is Better
10K
8K
6K
4K
2K


SHOC Scalable HeterOgeneous Computing 2015-11-10
CPU Power Consumption Monitor
Min
Avg
Max
Jetson TX2 Max-P 153 668 689
Jetson TX2 Max-Q 229 378 382
Milliwatts, Fewer Is Better
1000
800
600
400
200


SHOC Scalable HeterOgeneous Computing 2015-11-10
GPU Power Consumption Monitor
Min
Avg
Max
Jetson TX2 Max-P 153 5438 6113
Jetson TX2 Max-Q 153 3447 3594
Milliwatts, Fewer Is Better
8000
6400
4800
3200
1600

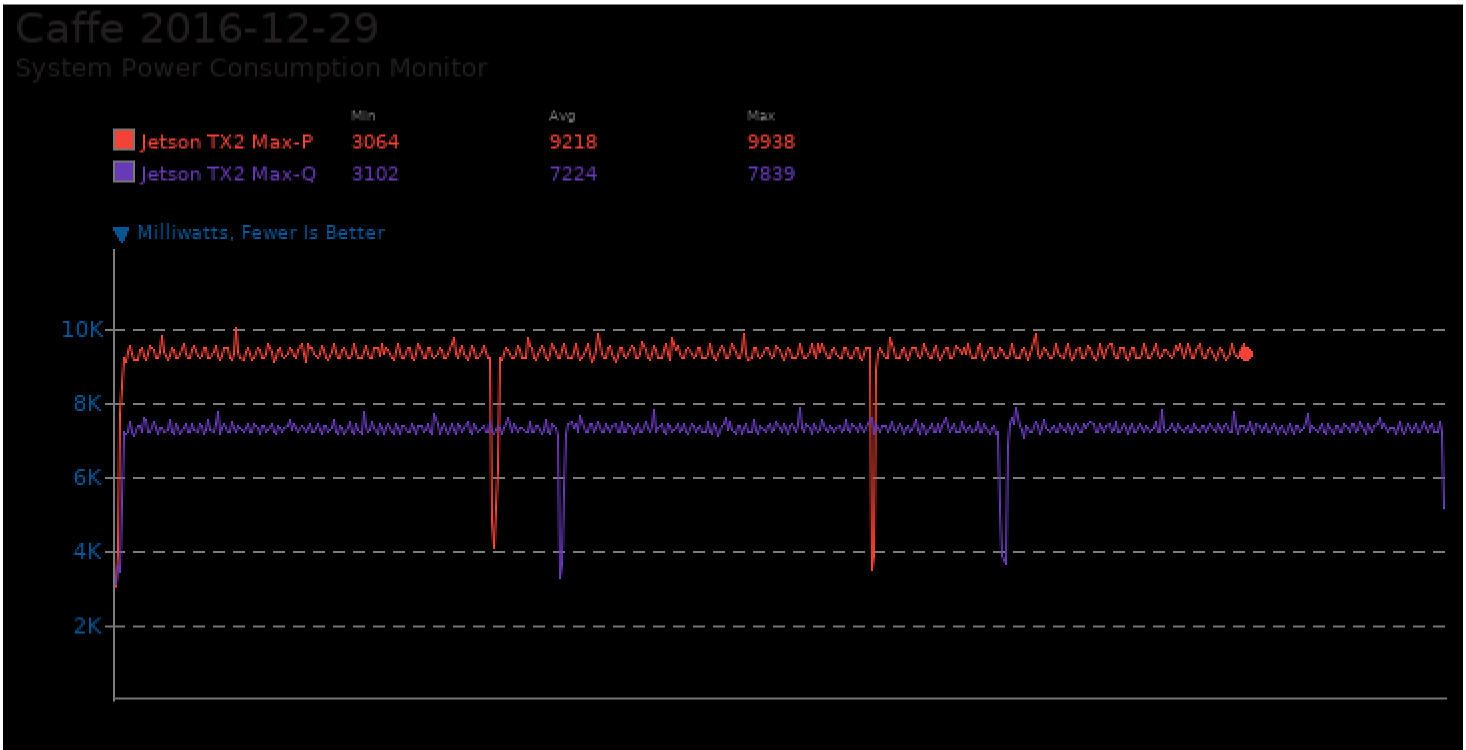

CUDA Mini-Nbody 2015-11-10
System Power Consumption Monitor
Min
Avg
Max
Jetson TX2 Max-P 3064 9029 10812
Jetson TX2 Max-Q 3064 7523 8183
Milliwatts, Fewer Is Better
10K
8K
6K
4K
2K

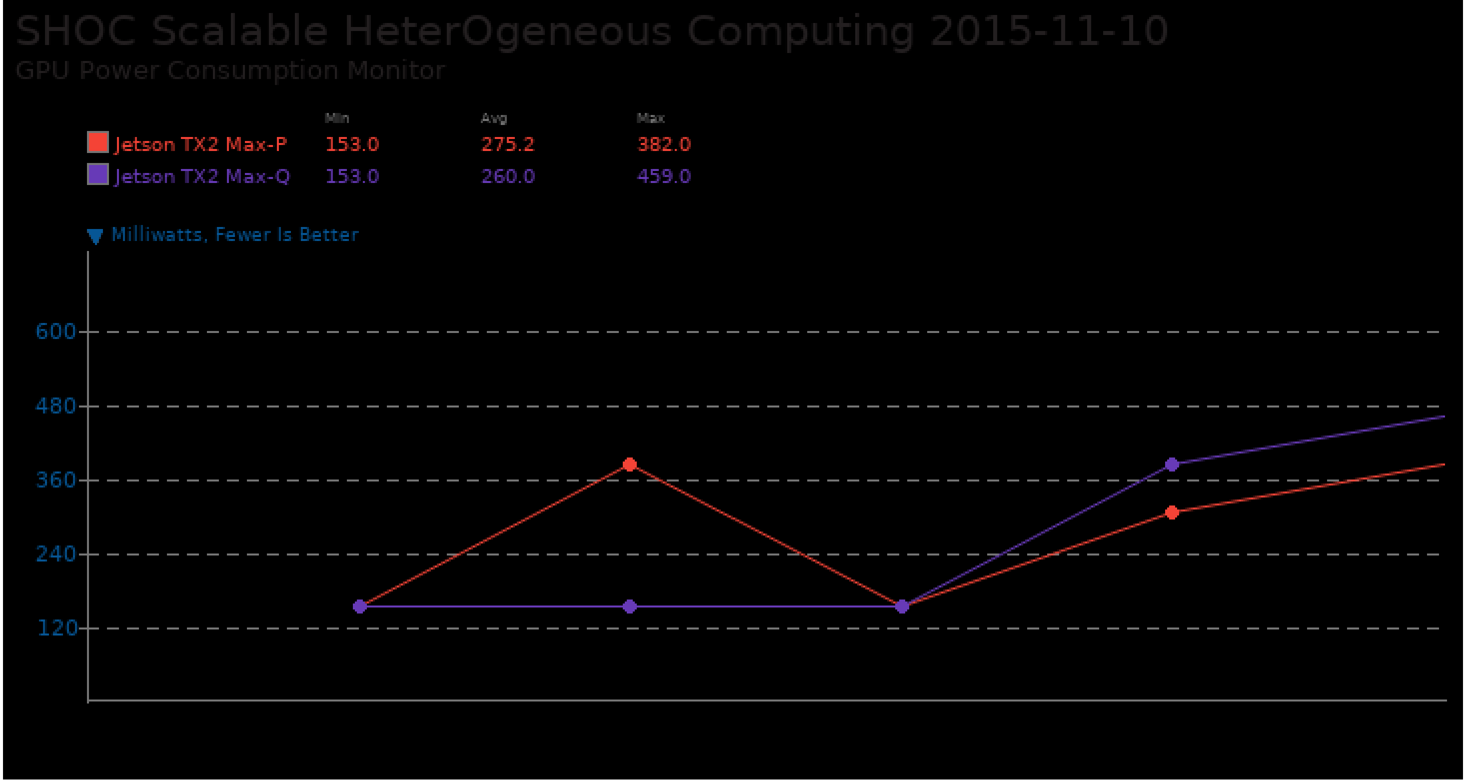

SHOC Scalable HeterOgeneous Computing 2015-11-10
GPU Power Consumption Monitor
Min
Avg
Max
Jetson TX2 Max-Q 153.0 321.0 535.0
Jetson TX2 Max-P 153.0 229.4 306.0
Milliwatts, Fewer Is Better
700
560
420
280
140

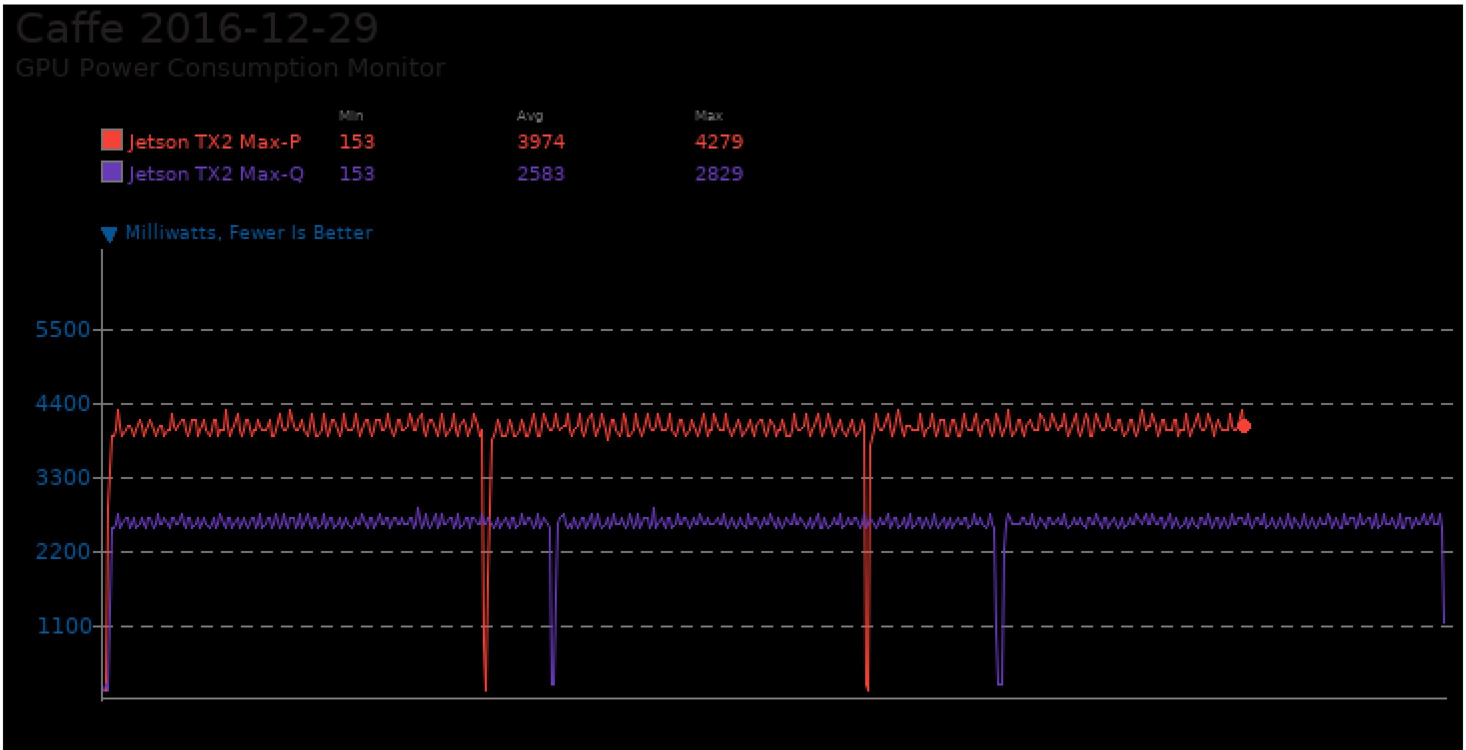

SHOC Scalable HeterOgeneous Computing 2015-11-10
System Power Consumption Monitor
Min
Avg
Max
Jetson TX2 Max-P 3026 9016 10010
Jetson TX2 Max-Q 3064 6722 7265
Milliwatts, Fewer Is Better
10K
8K
6K
4K
2K

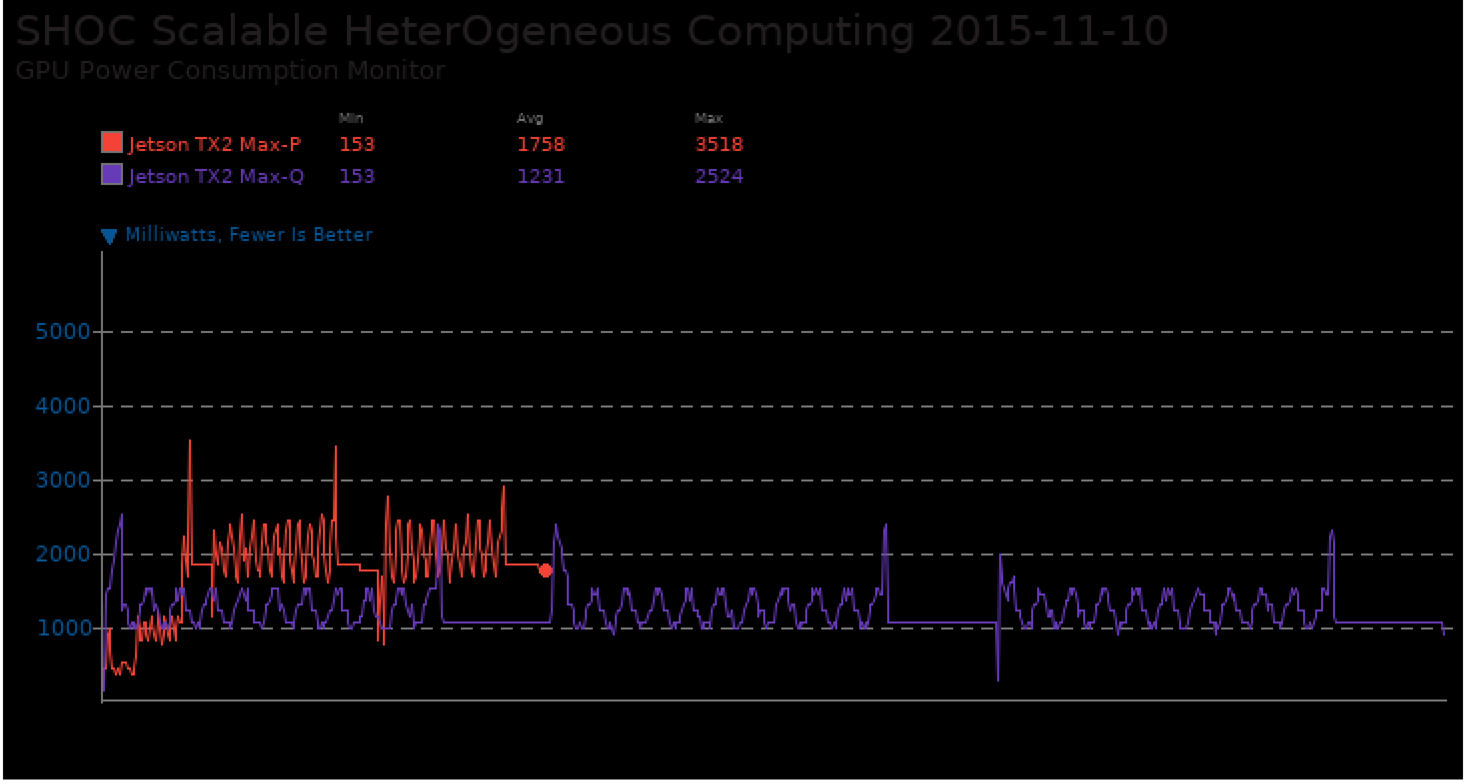
Phoronix Test Suite

Jetson TX2 CUDA CPU Monitor

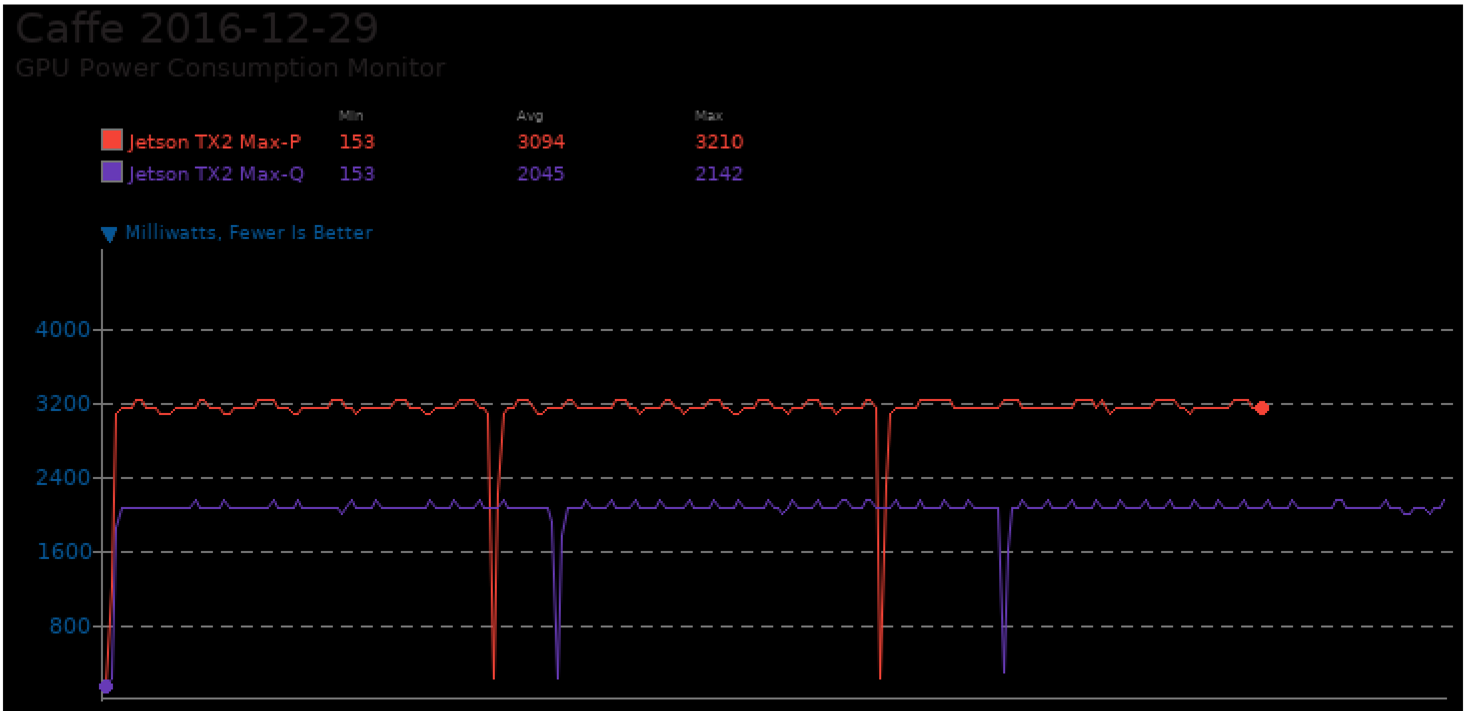


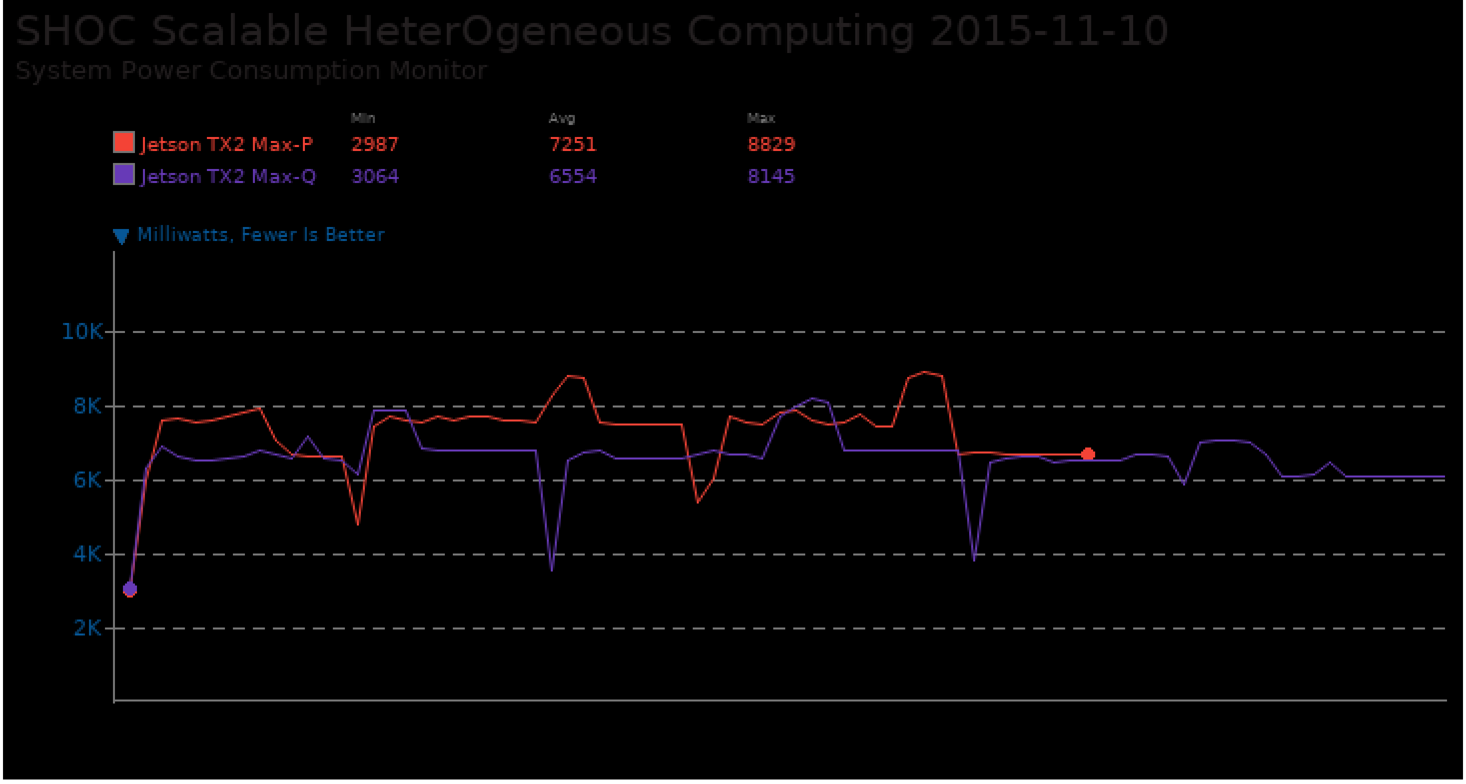


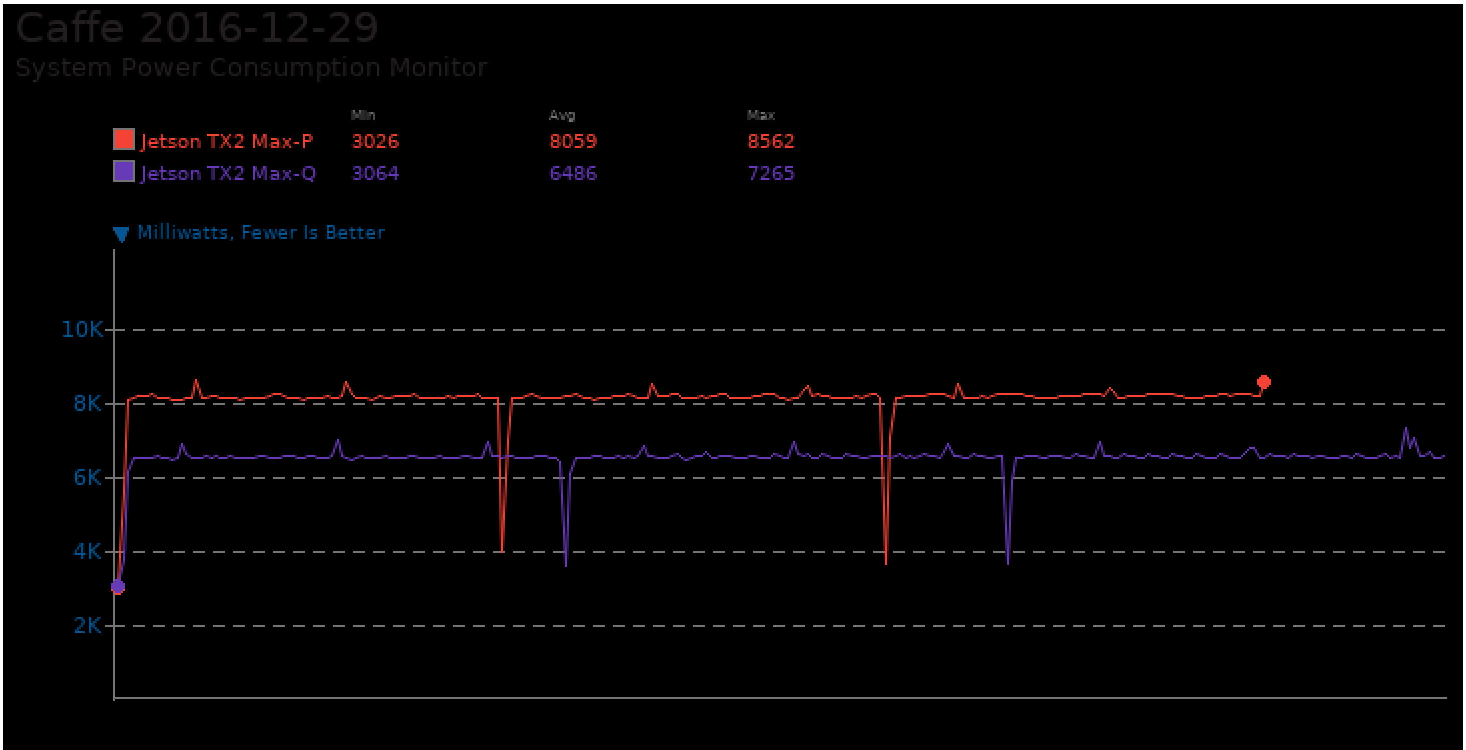

Caffe 2016-12-29
GPU Power Consumption Monitor
Min Avg Max
Jetson TX2 Max-P 153 3974 4279
Jetson TX2 Max-Q 153 2583 2829
Milliwatts, Fewer Is Better
5500
4400
3300
2200
1100


SHOC Scalable HeterOgeneous Computing 2015-11-10
GPU Power Consumption Monitor
Min Avg Max
Jetson TX2 Max-P 153 1758 3518
Jetson TX2 Max-Q 153 1231 2524
Milliwatts, Fewer Is Better
5000
4000
3000
2000
1000

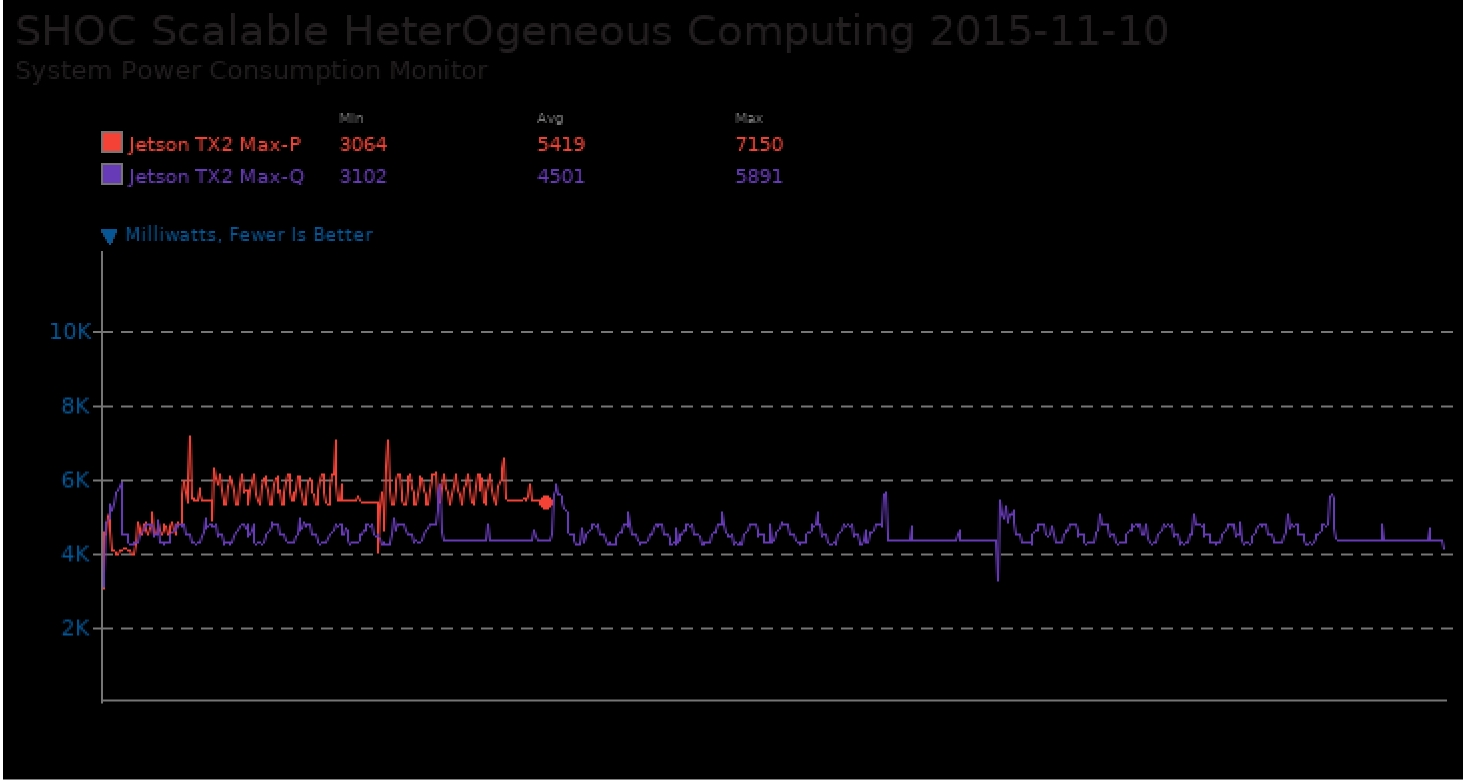
Jetson TX2 CUDA CPU Monitor



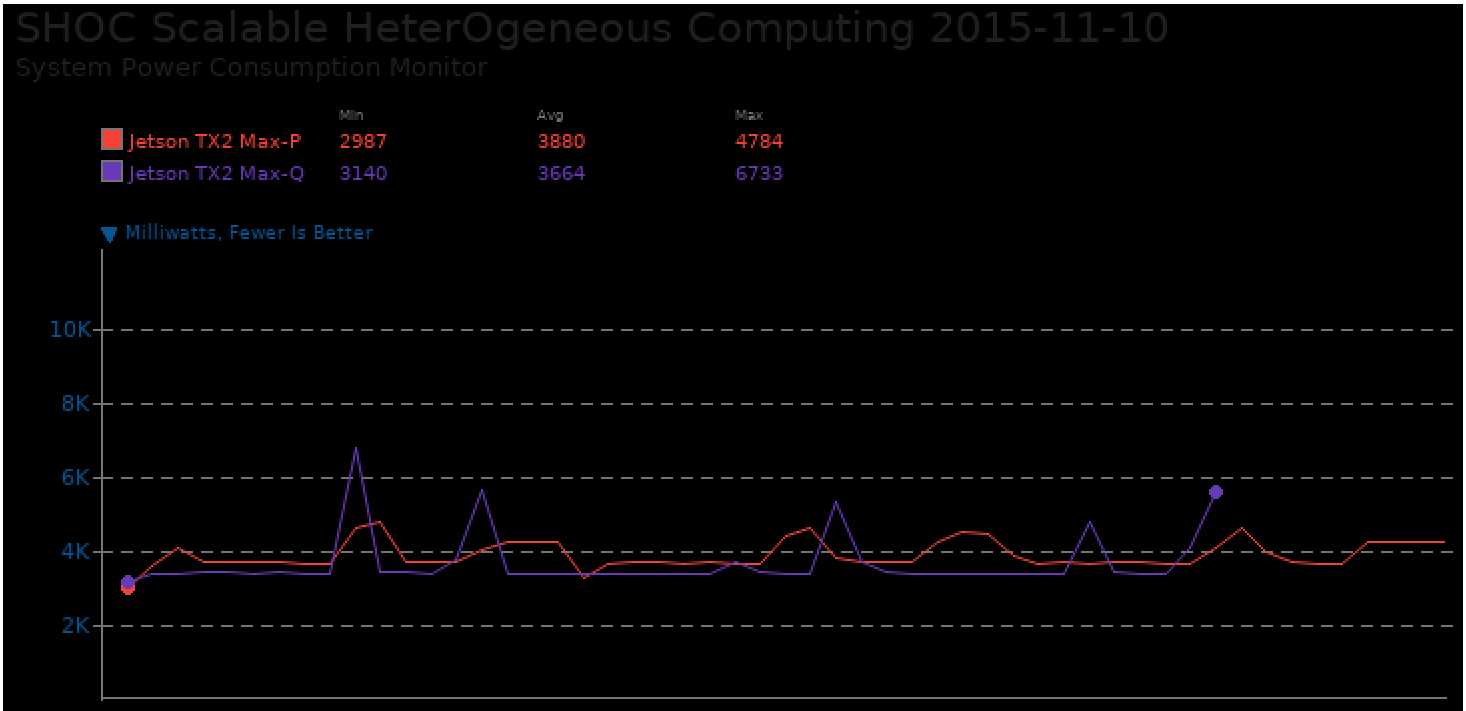




Caffe 2016-12-29
System Power Consumption Monitor
Min Avg Max
Jetson TX2 Max-P 3026 8059 8562
Jetson TX2 Max-Q 3064 6486 7265
Milliwatts, Fewer Is Better
10K
8K
6K
4K
2K



SHOC Scalable HeterOgeneous Computing 2015-11-10
System Power Consumption Monitor
Min Avg Max
Jetson TX2 Max-P 3064 5419 7150
Jetson TX2 Max-Q 3102 4501 5891
Milliwatts, Fewer Is Better
10K
8K
6K
4K
2K



SHOC Scalable HeterOgeneous Computing 2015-11-10
System Power Consumption Monitor
Min
Avg
Max
Jetson TX2 Max-P
2987
3880
4784
Jetson TX2 Max-Q
3140
3664
6733
Milliwatts, Fewer Is Better
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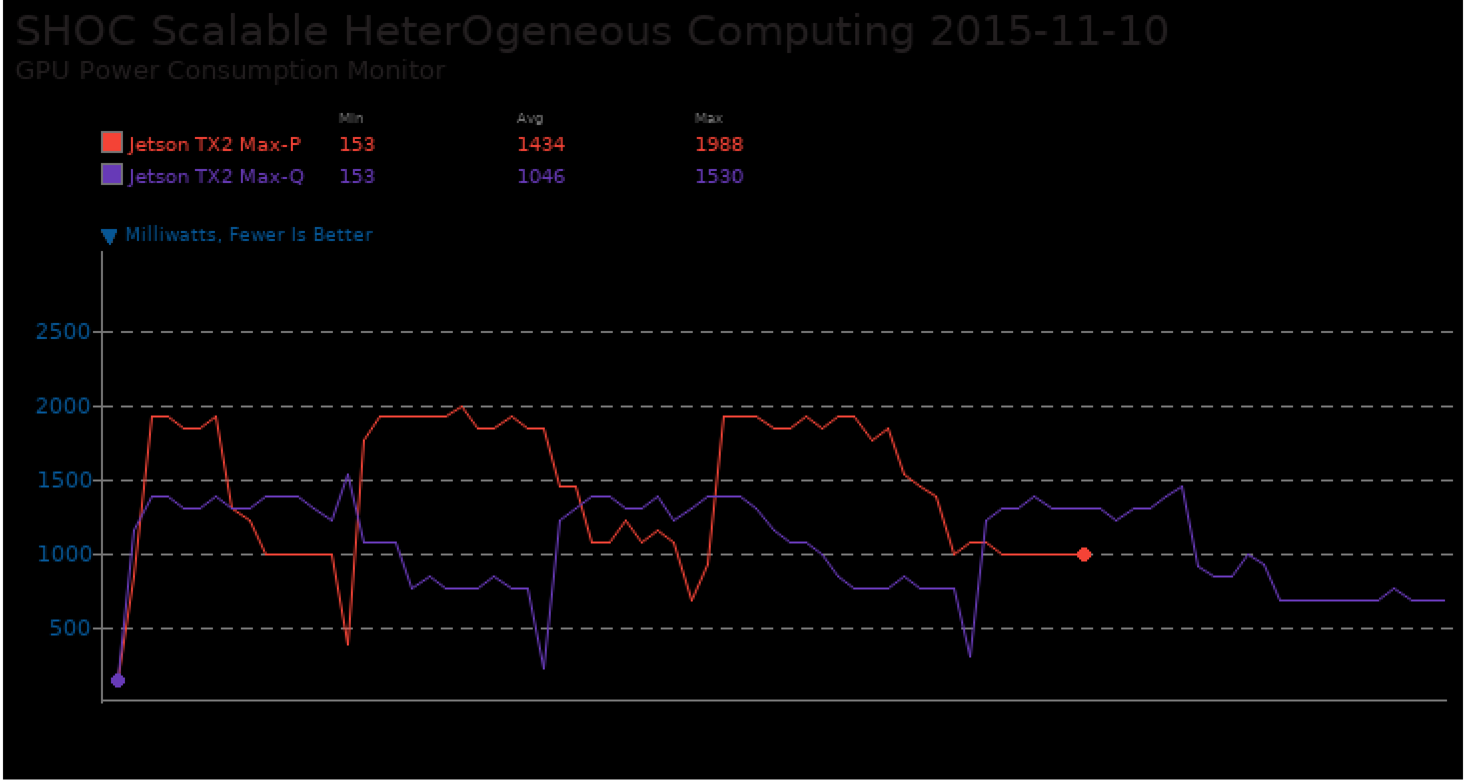
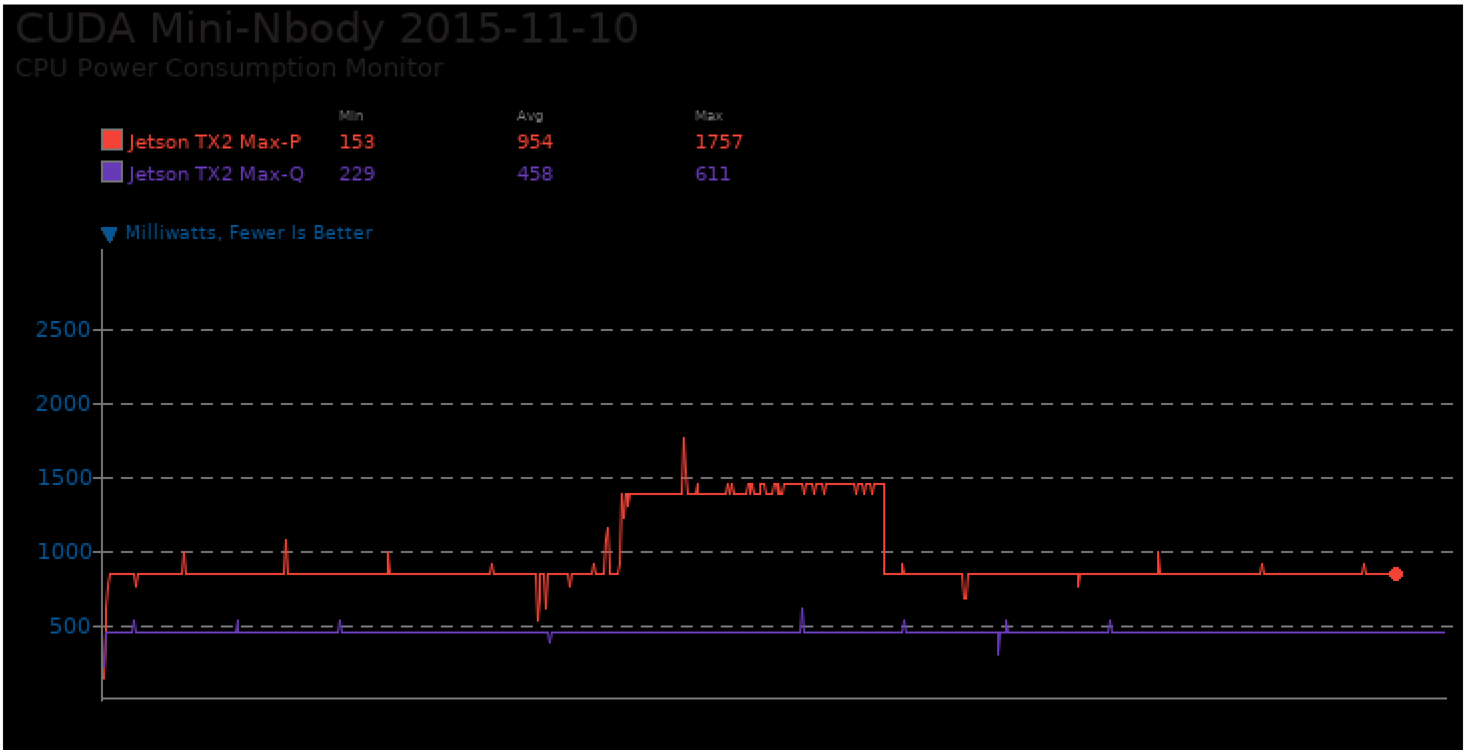
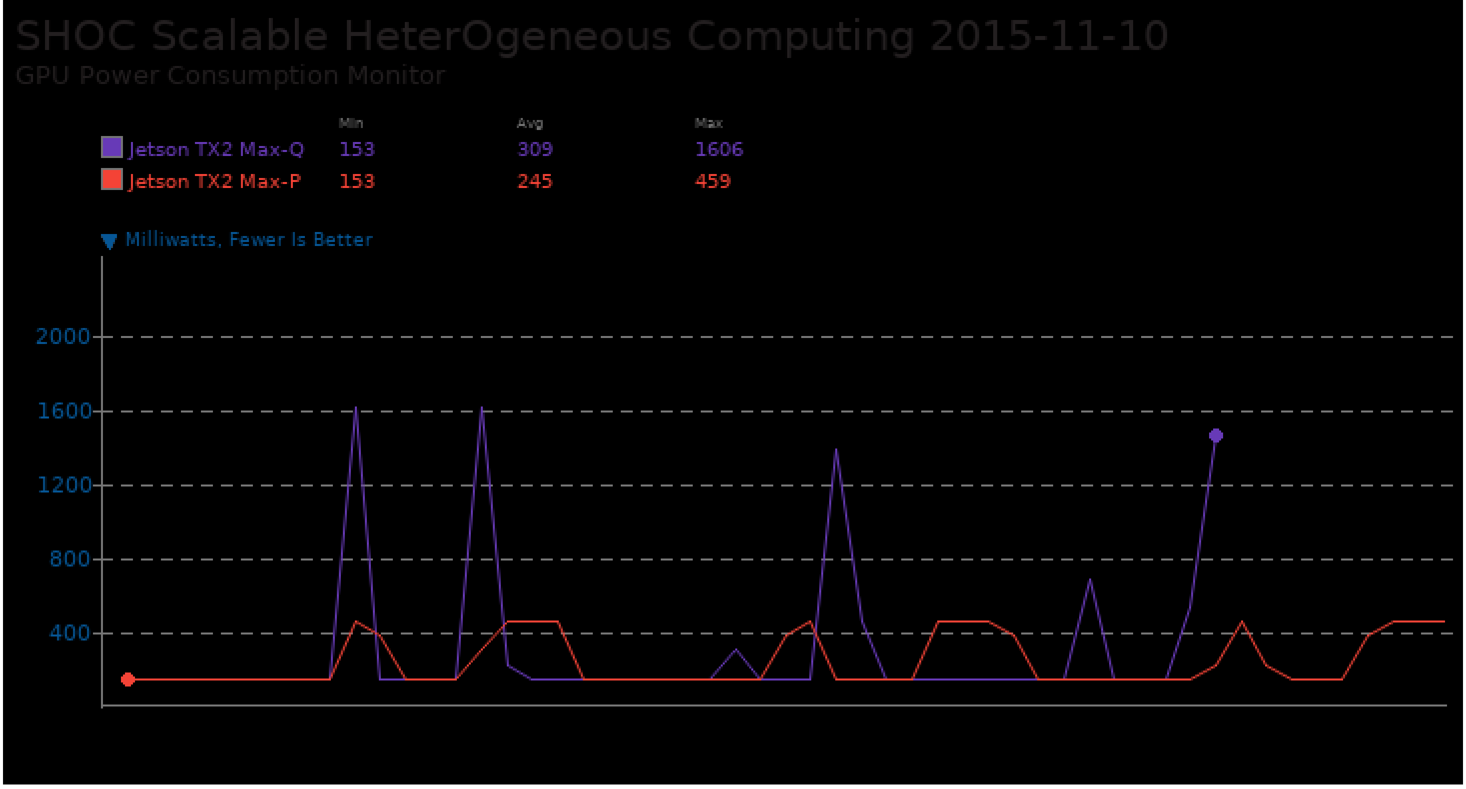
8K
6K
4K
2K

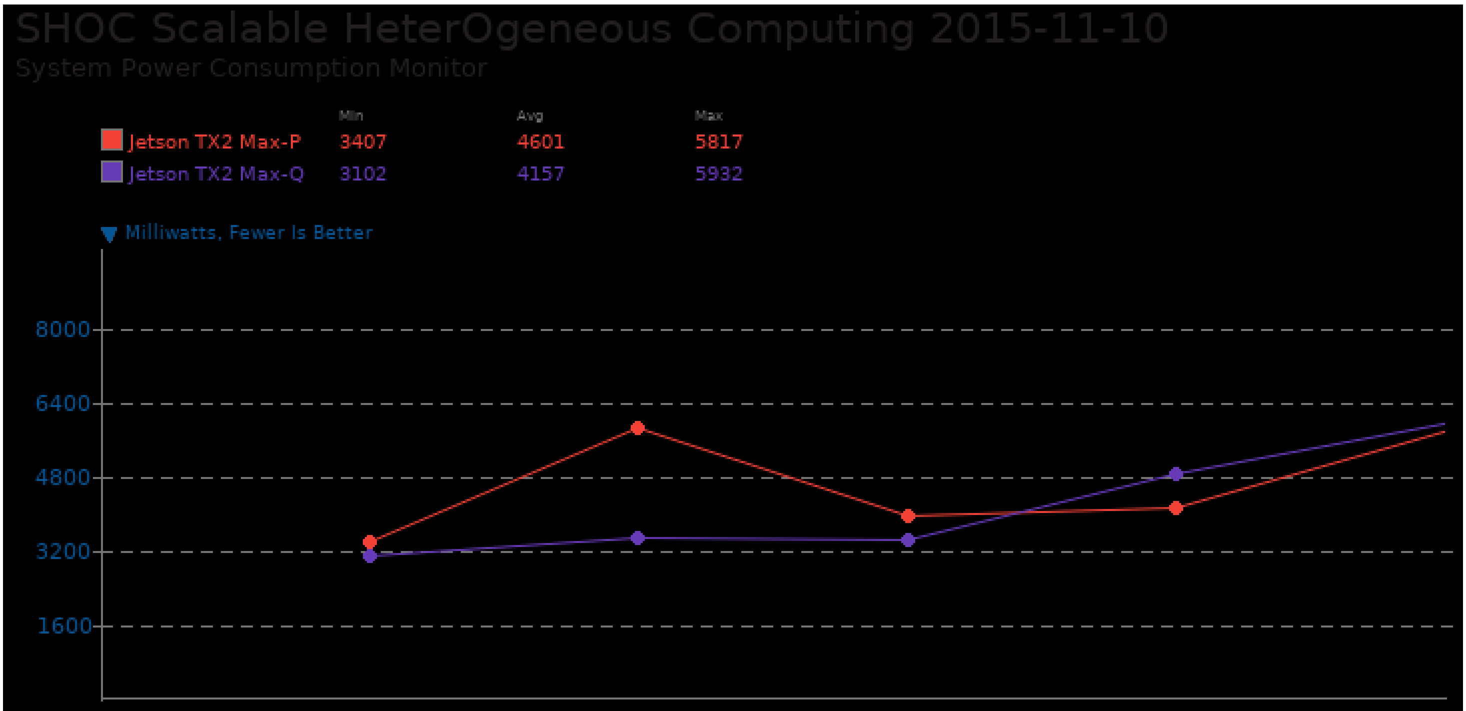


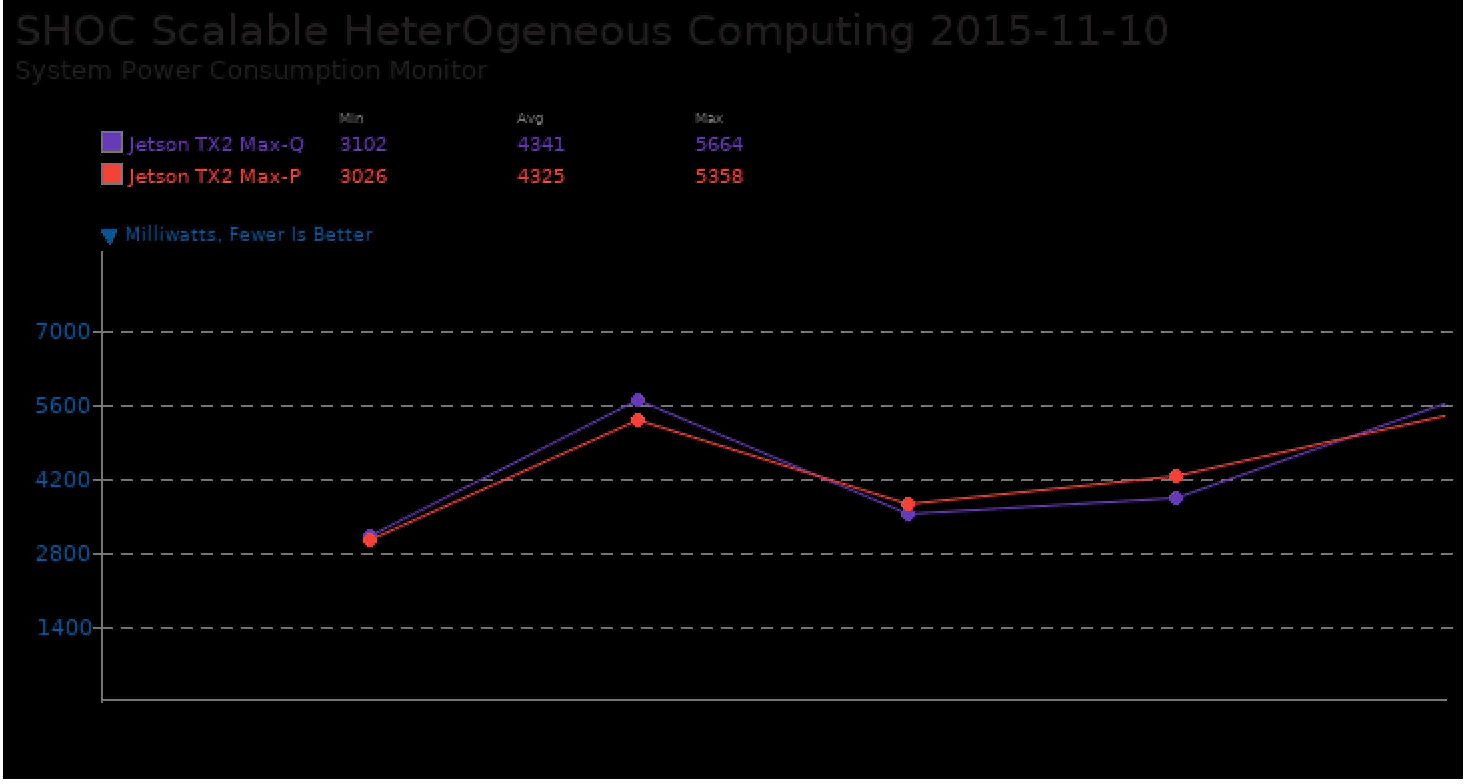
SHOC Scalable HeterOgeneous Computing 2015-11-10
GPU Power Consumption Monitor
Min
Avg
Max
Jetson TX2 Max-P
153
1434
1988
Jetson TX2 Max-Q
153
1046
1530
Milliwatts, Fewer Is Better
2500
2000
1500
1000
500

Jetson TX2 CUDA CPU Monitor

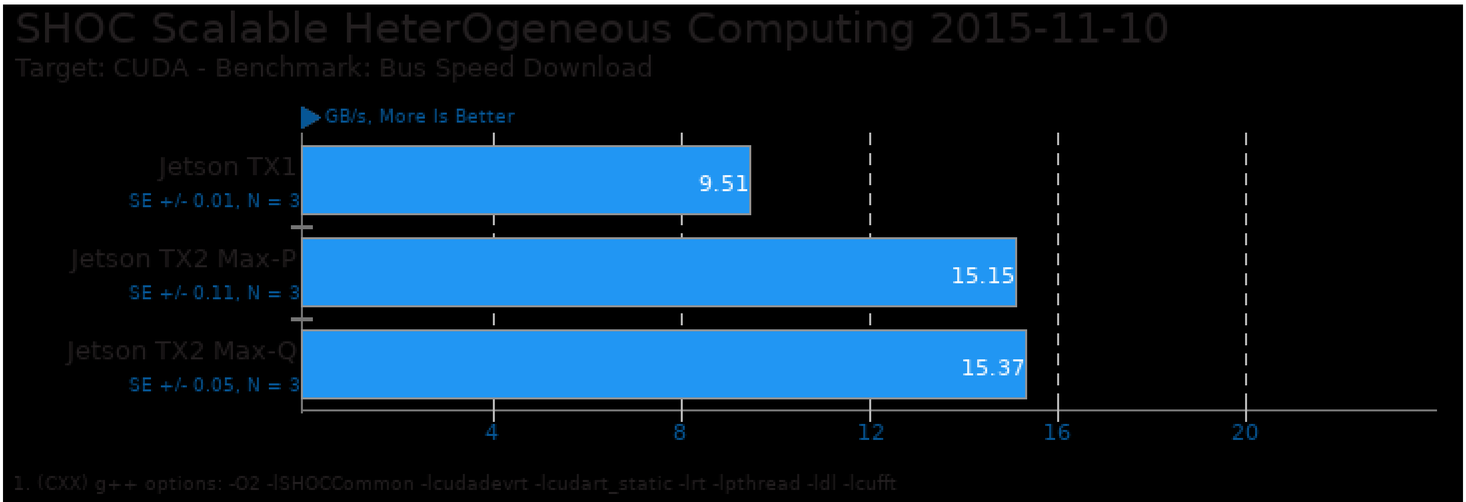


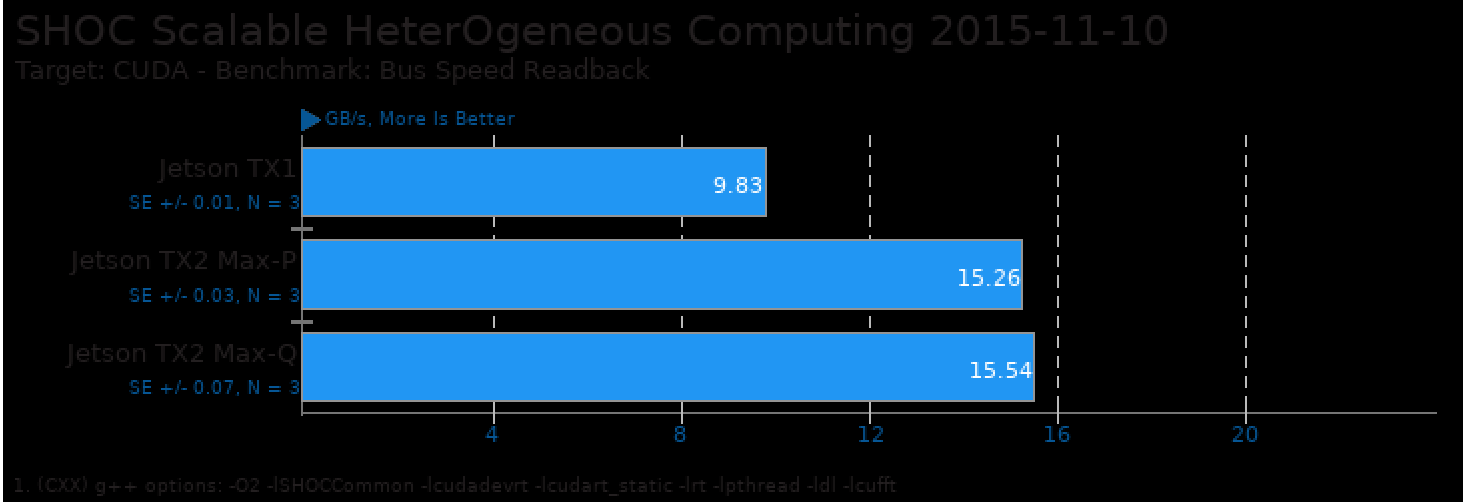


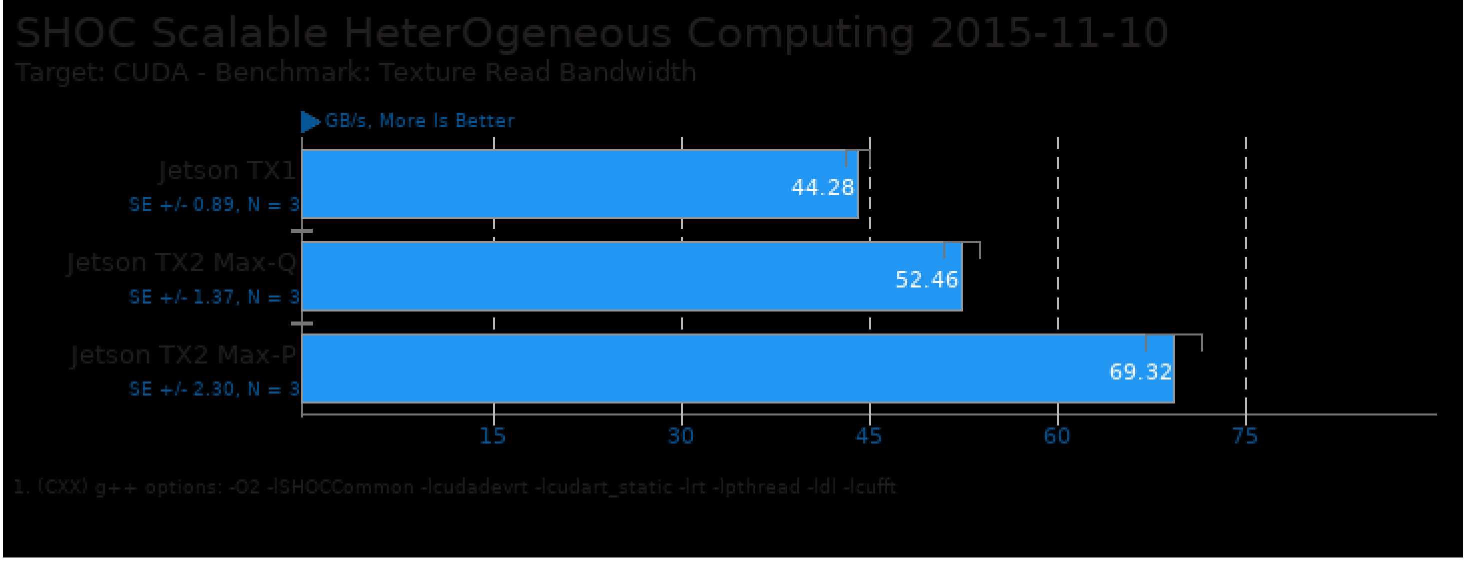

SHOC Scalable HeterOgeneous Computing 2015-11-10
System Power Consumption Monitor
Min
Avg
Max
Jetson TX2 Max-P 3407 4601 5817
Jetson TX2 Max-Q 3102 4157 5932
Milliwatts, Fewer Is Better
8000
6400
4800
3200
1600


SHOC Scalable HeterOgeneous Computing 2015-11-10
System Power Consumption Monitor
Min
Avg
Max
Jetson TX2 Max-Q 3102 4341 5664
Jetson TX2 Max-P 3026 4325 5358
Milliwatts, Fewer Is Better
7000
5600
4200
2800
1400

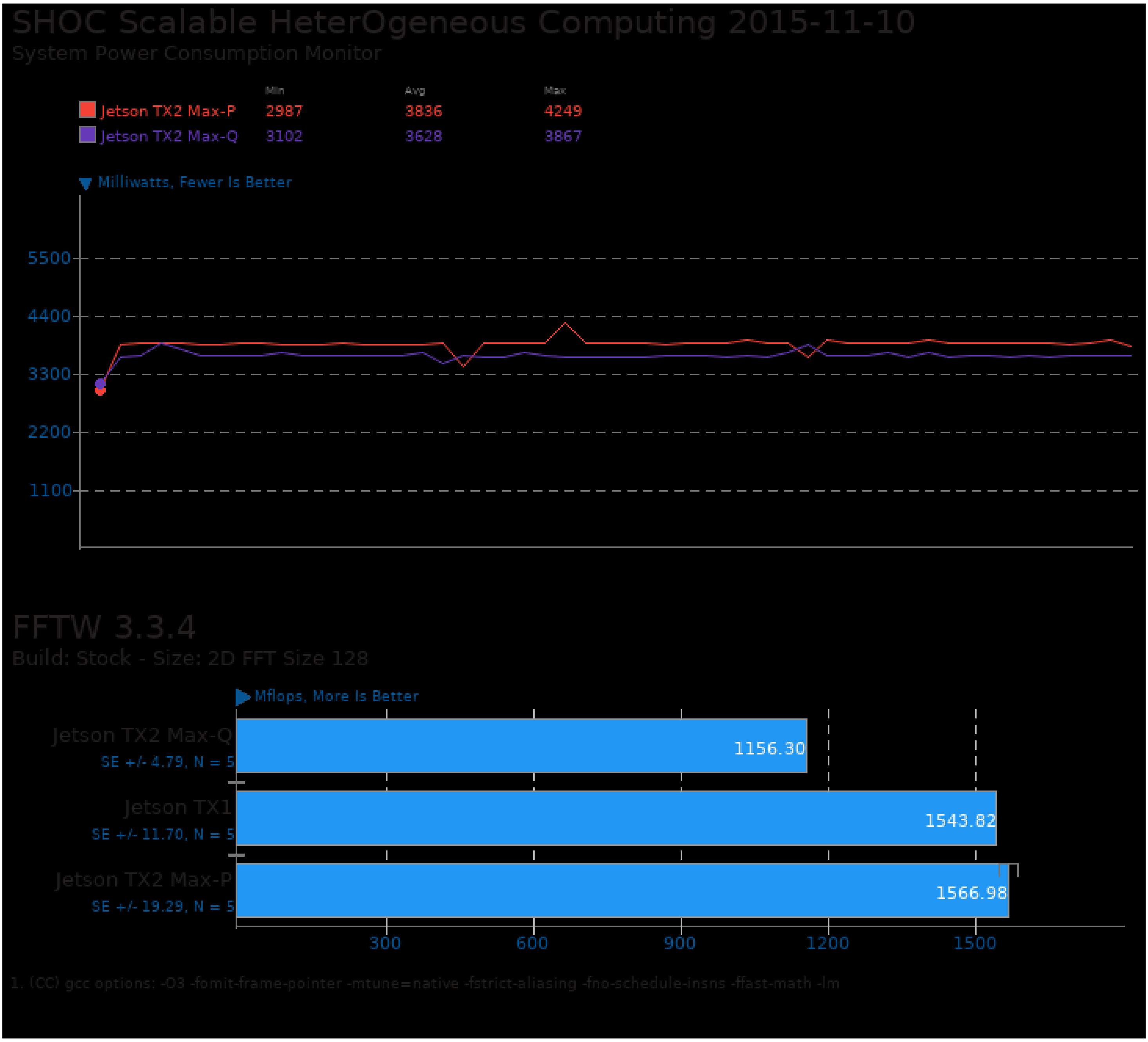
Jetson TX2 CUDA CPU Monitor



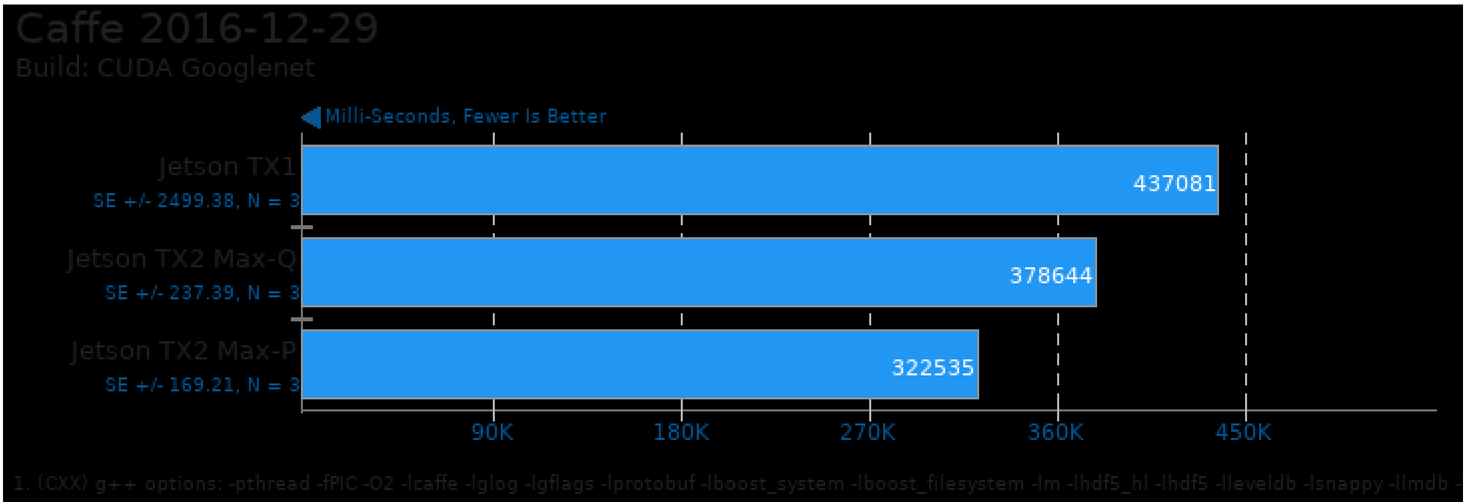


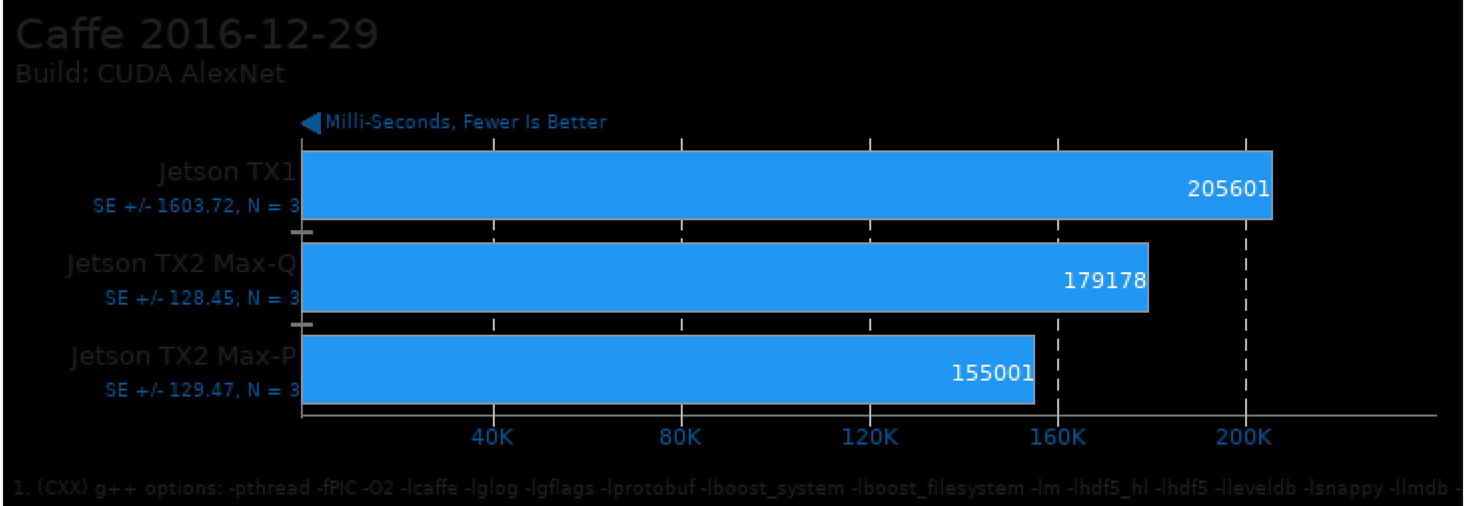


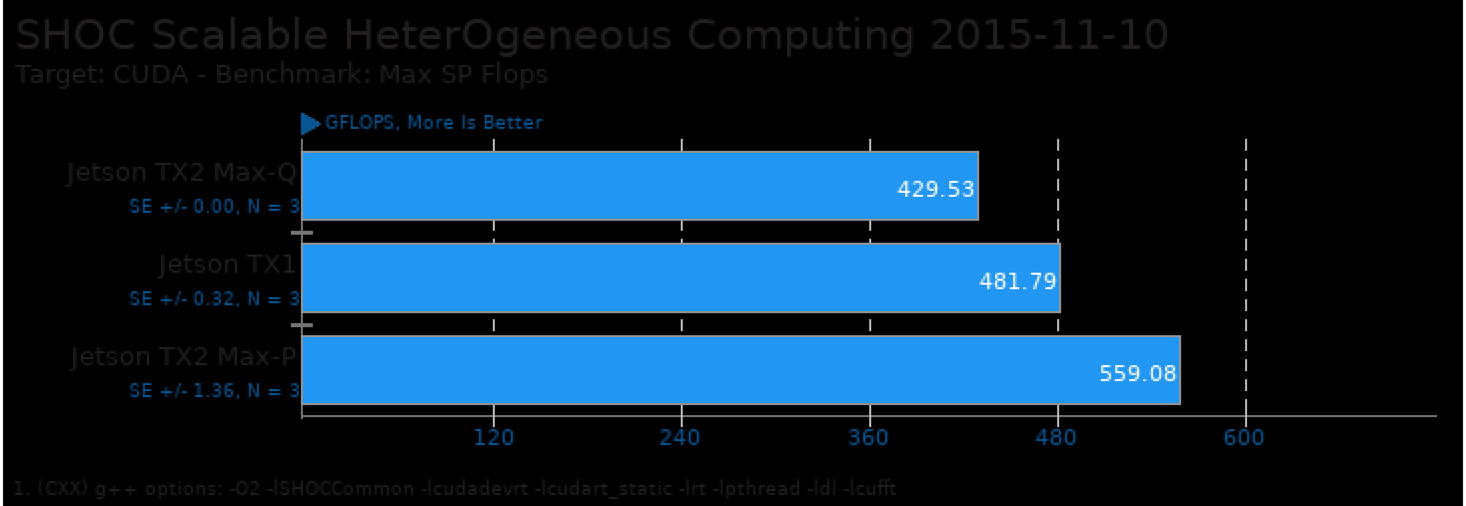
Jetson TX2 CUDA CPU Monitor

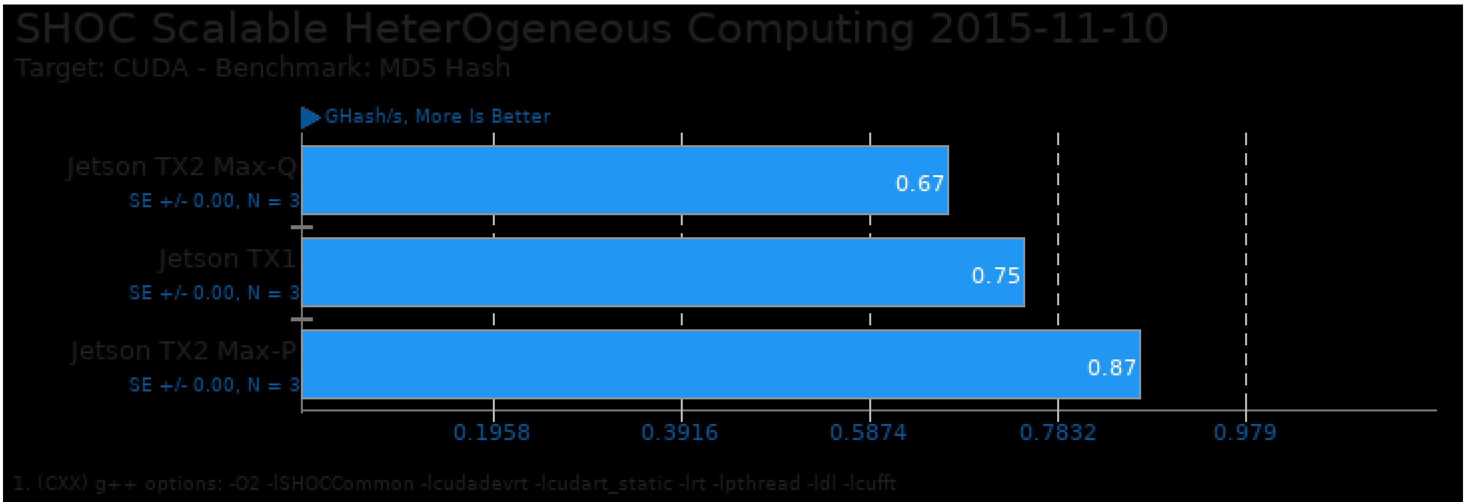


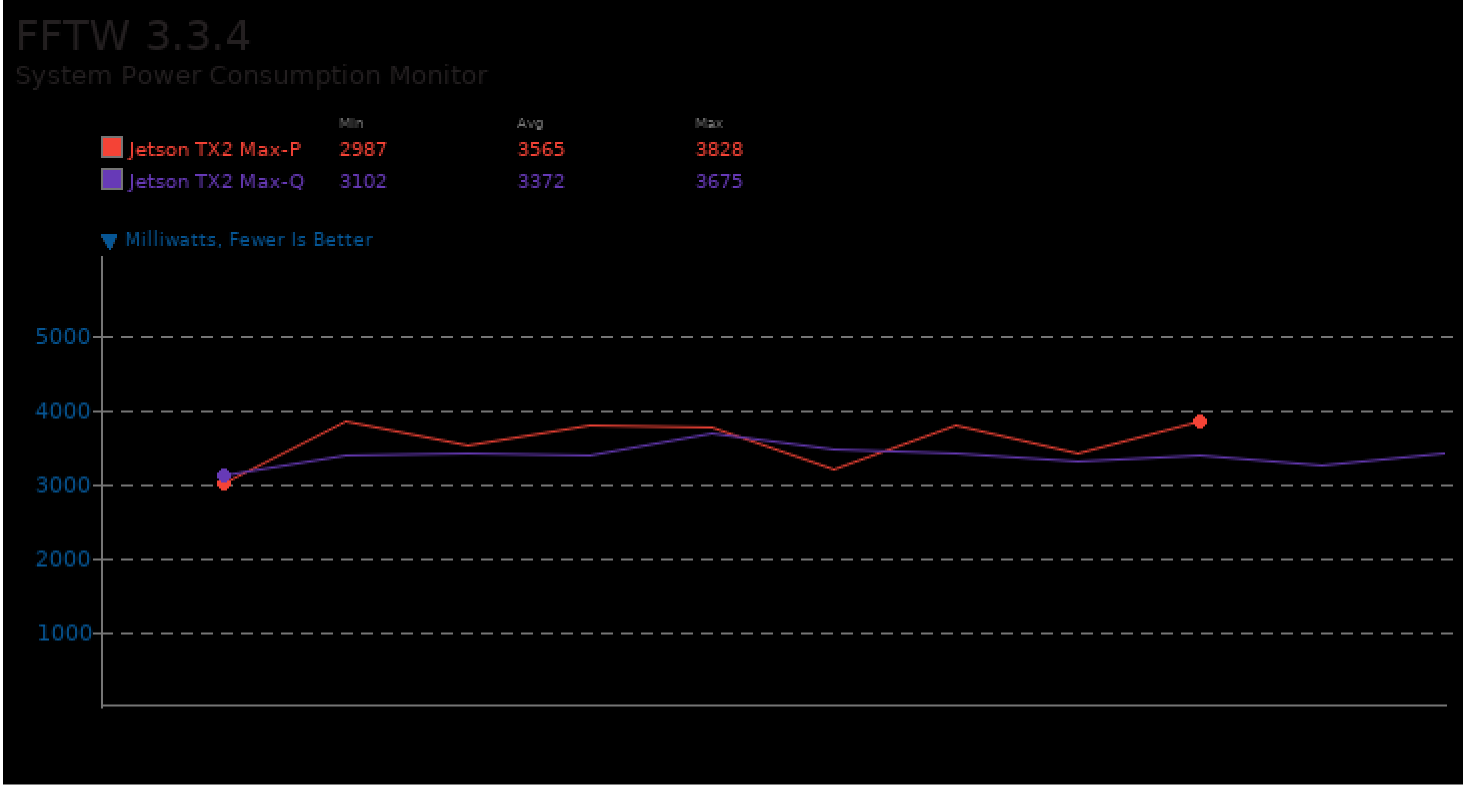
Jetson TX2 CUDA CPU Monitor



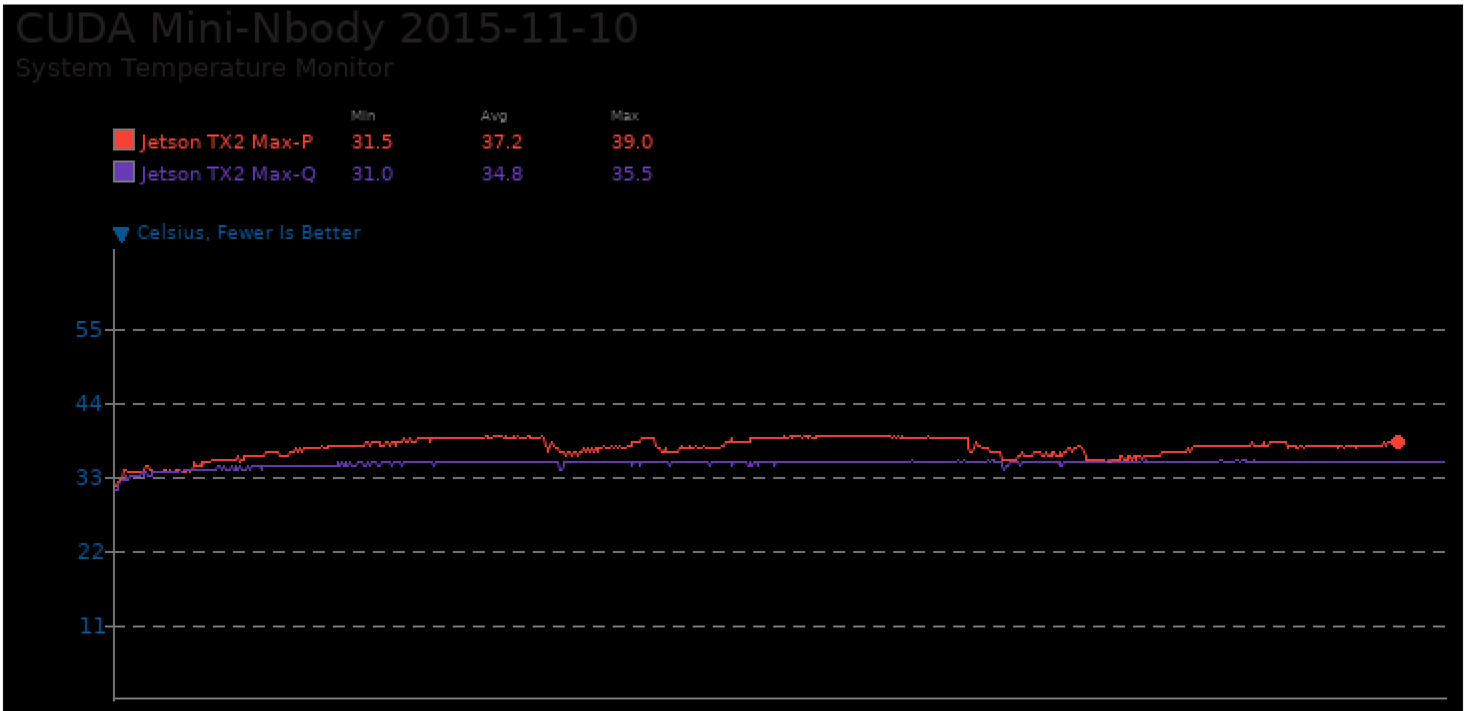


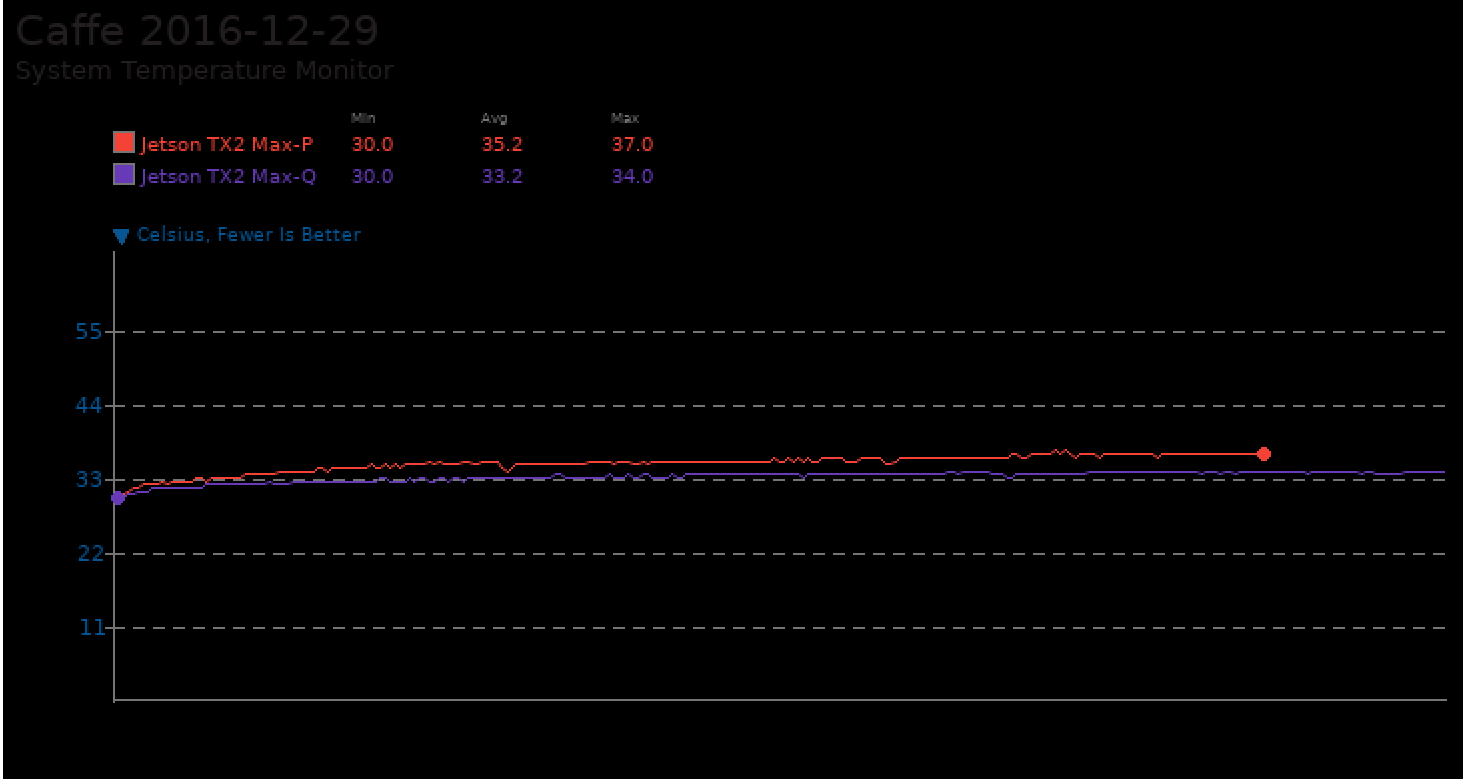



SHOC Scalable HeterOgeneous Computing 2015-11-10
Target: CUDA - Benchmark: MD5 Hash
GHash/s, More Is Better
Jetson TX2 Max-Q
SE +/- 0.00, N = 3
0.67
Jetson TX1
SE +/- 0.00, N = 3
0.75
Jetson TX2 Max-P
SE +/- 0.00, N = 3
0.87
0.1958
0.3916
0.5874
0.7832
0.979
1. (CXX) g++ options: -O2 -lSHOCCommon -lcudadevrt -lcudart_static -lrt -lpthread -ldl -lcufft

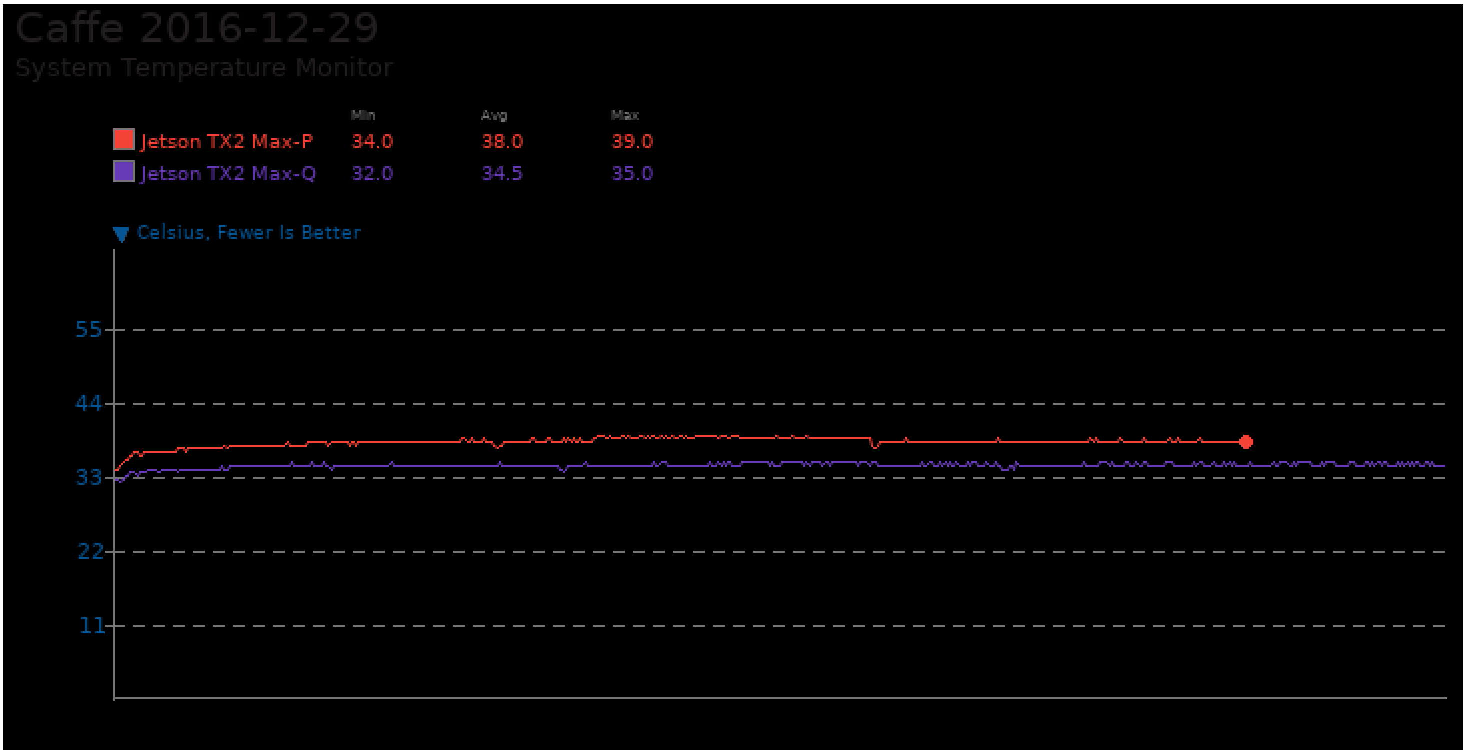

FFTW 3.3.4
System Power Consumption Monitor
Min
Avg
Max
Jetson TX2 Max-P 2987 3565 3828
Jetson TX2 Max-Q 3102 3372 3675
Milliwatts, Fewer Is Better
5000
4000
3000
2000
1000

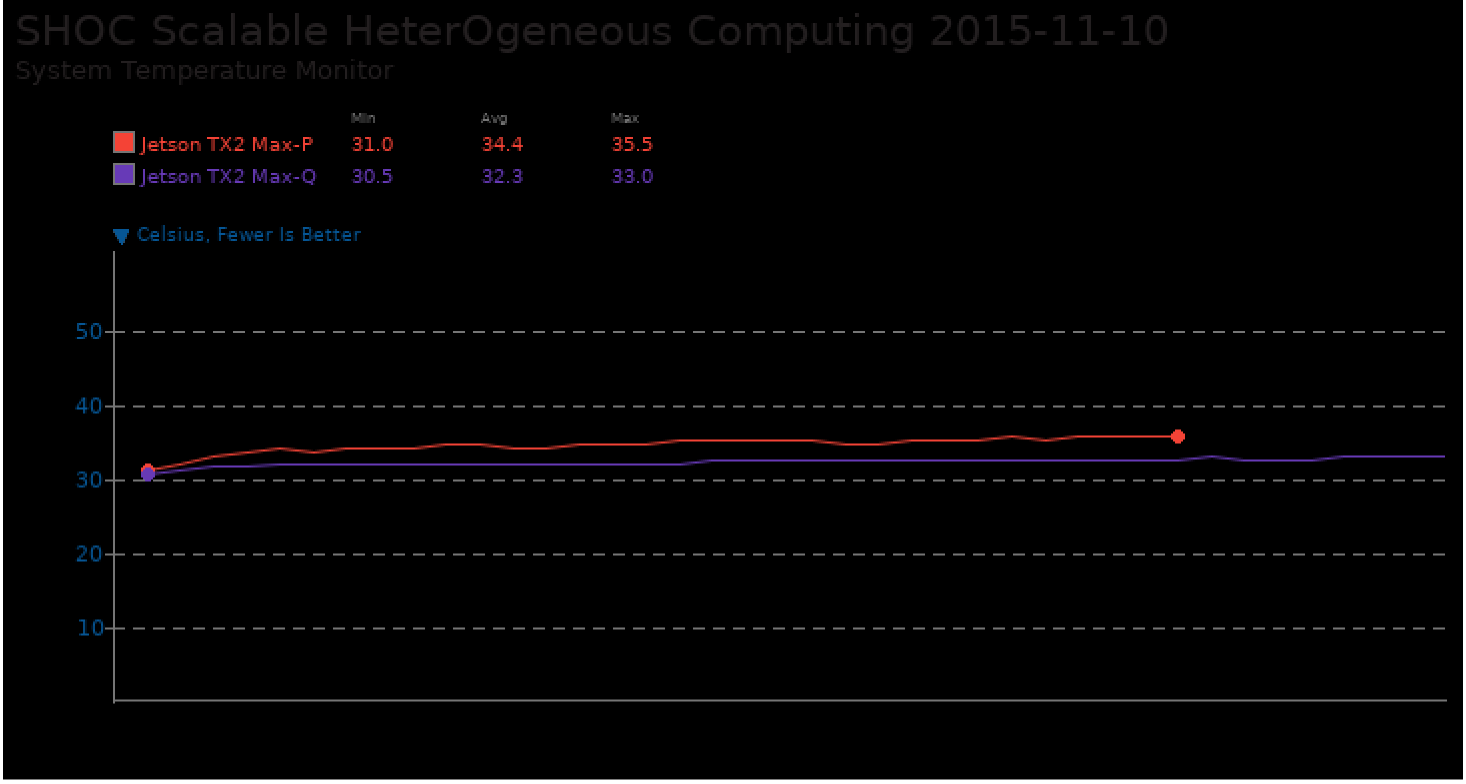
Jetson TX2 CUDA CPU Monitor



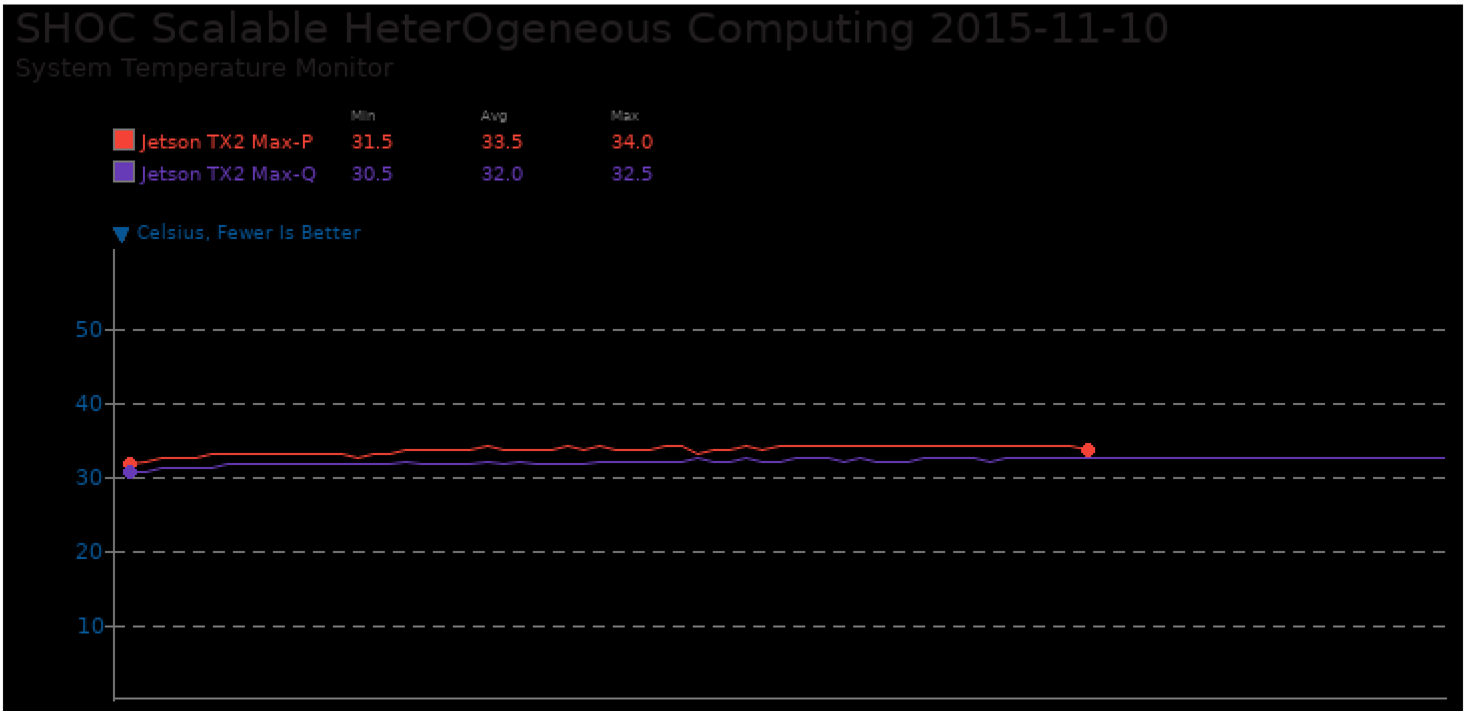


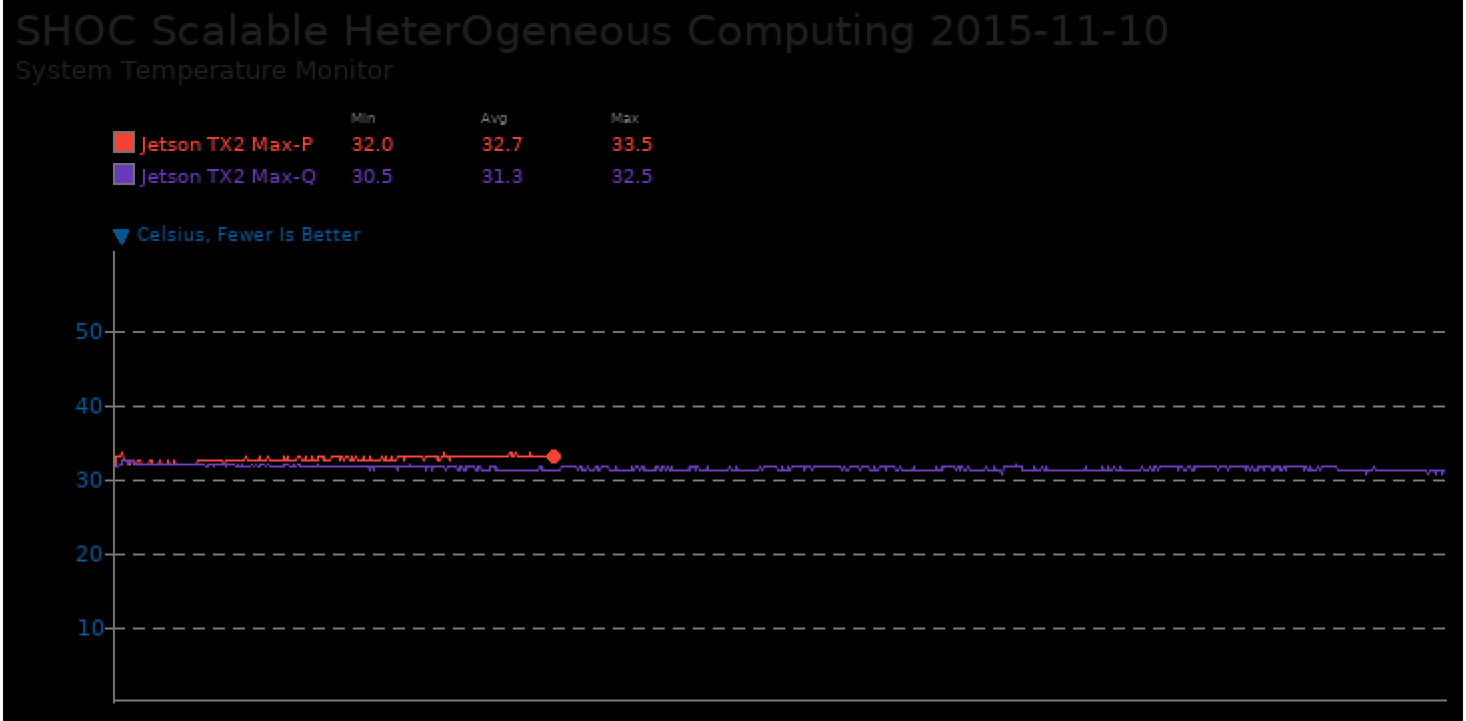
Jetson TX2 CUDA CPU Monitor



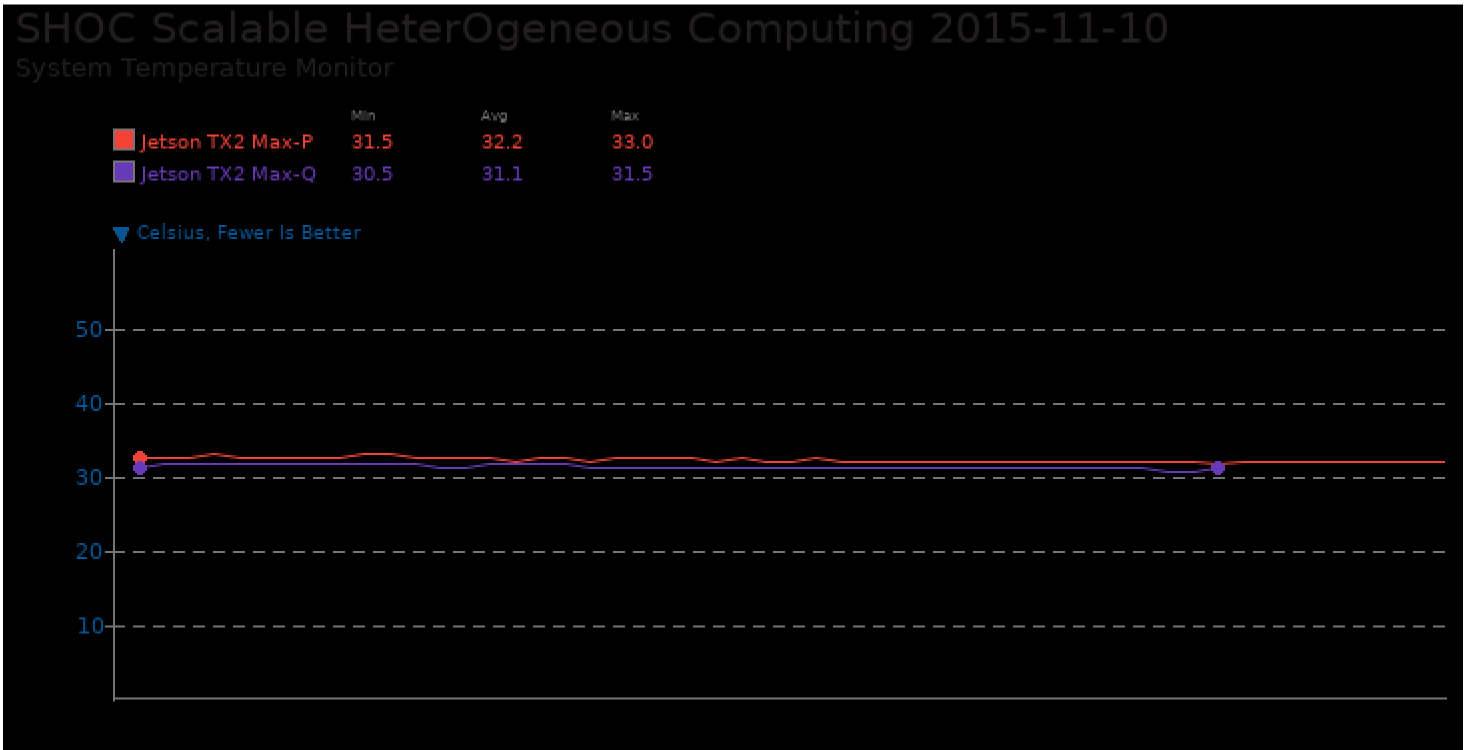


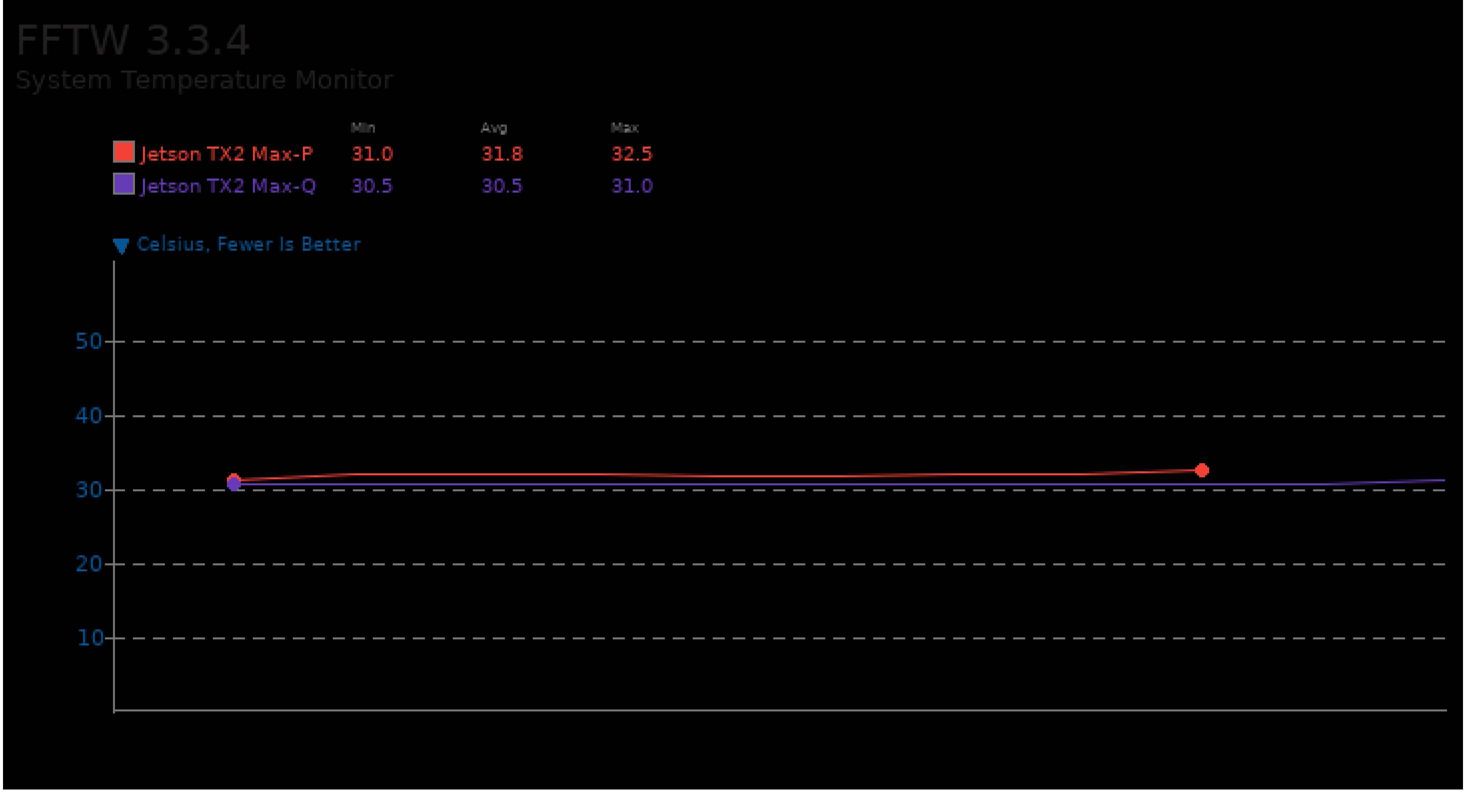
Jetson TX2 CUDA CPU Monitor

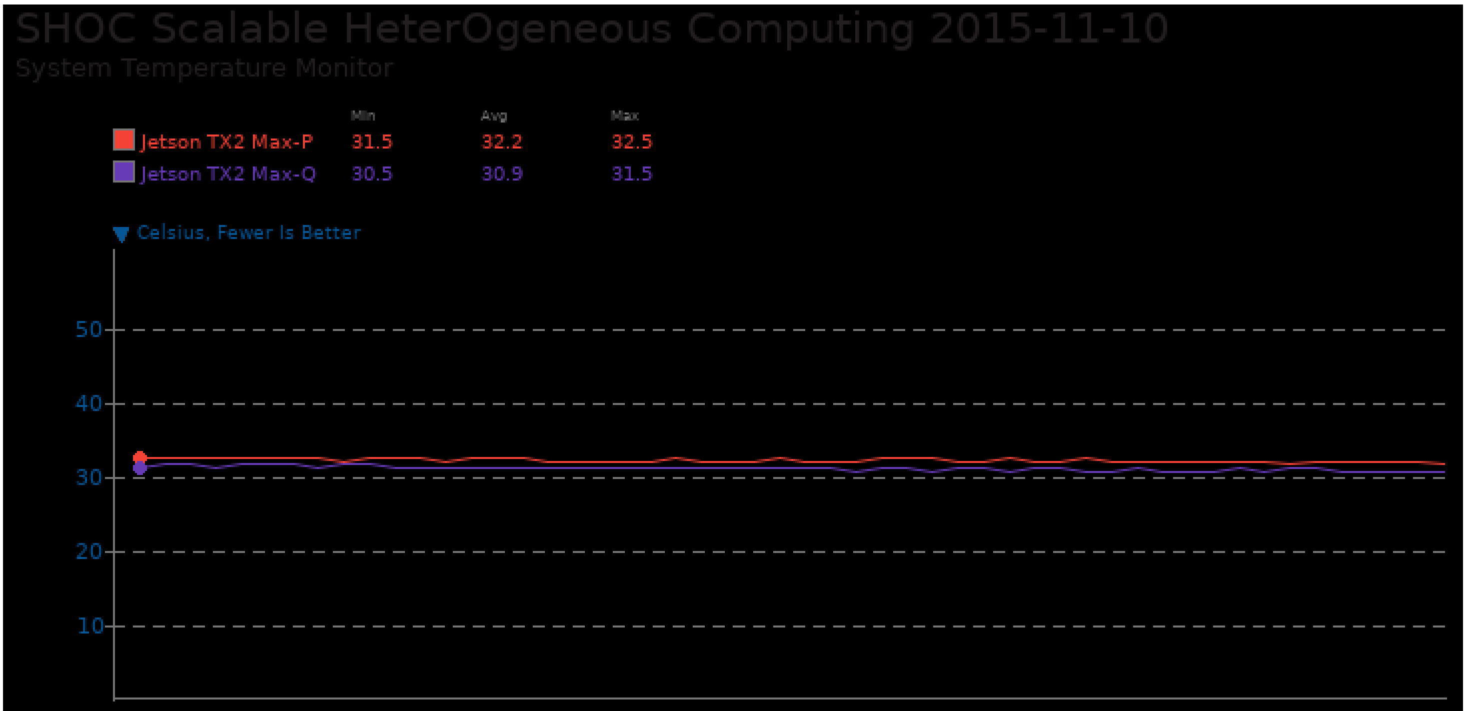


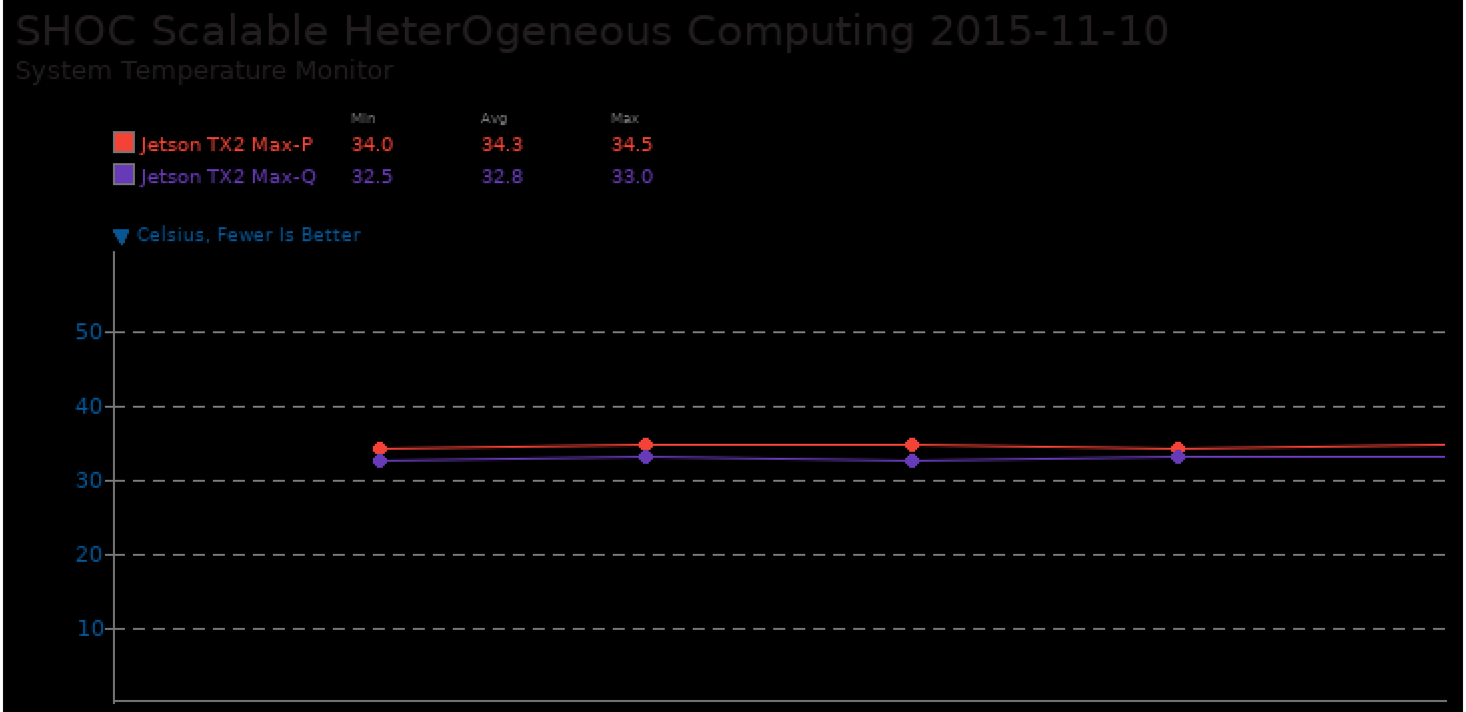


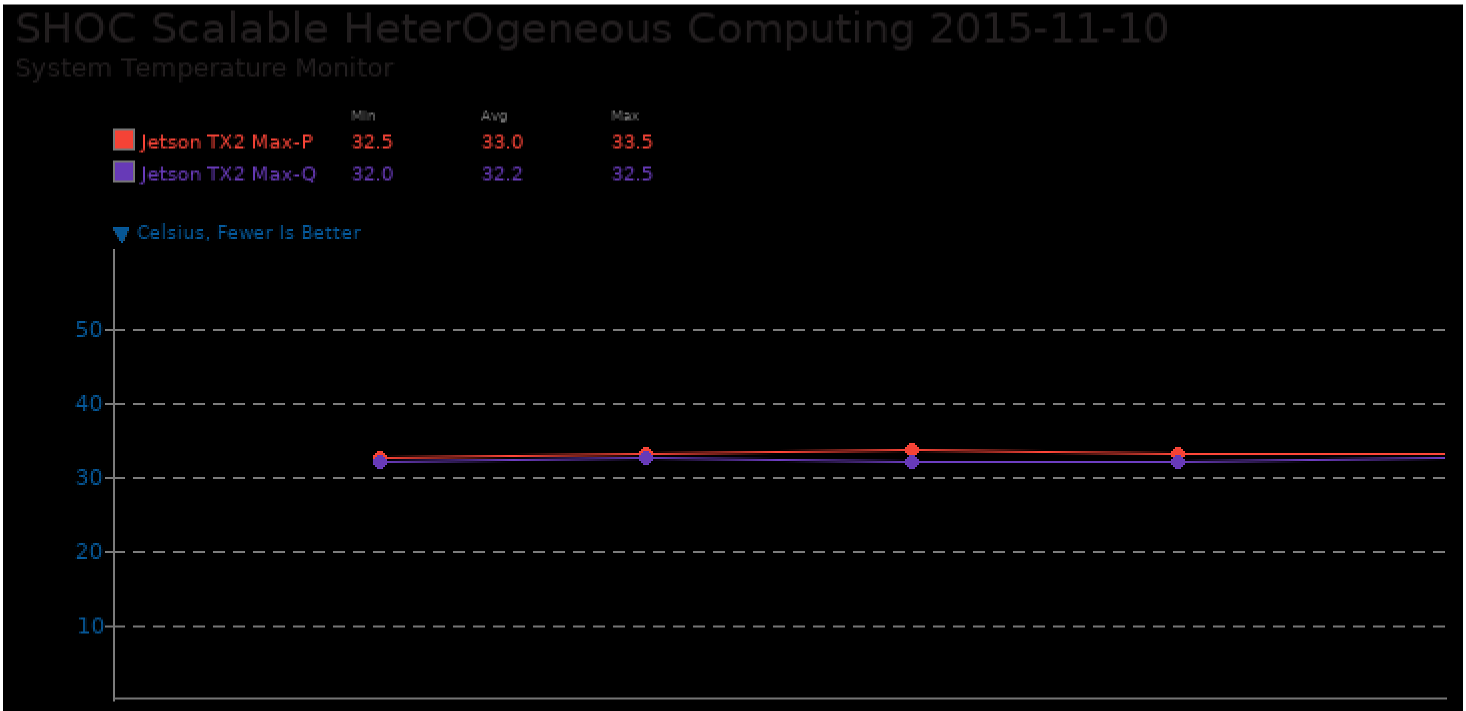
Jetson TX2 CUDA CPU Monitor

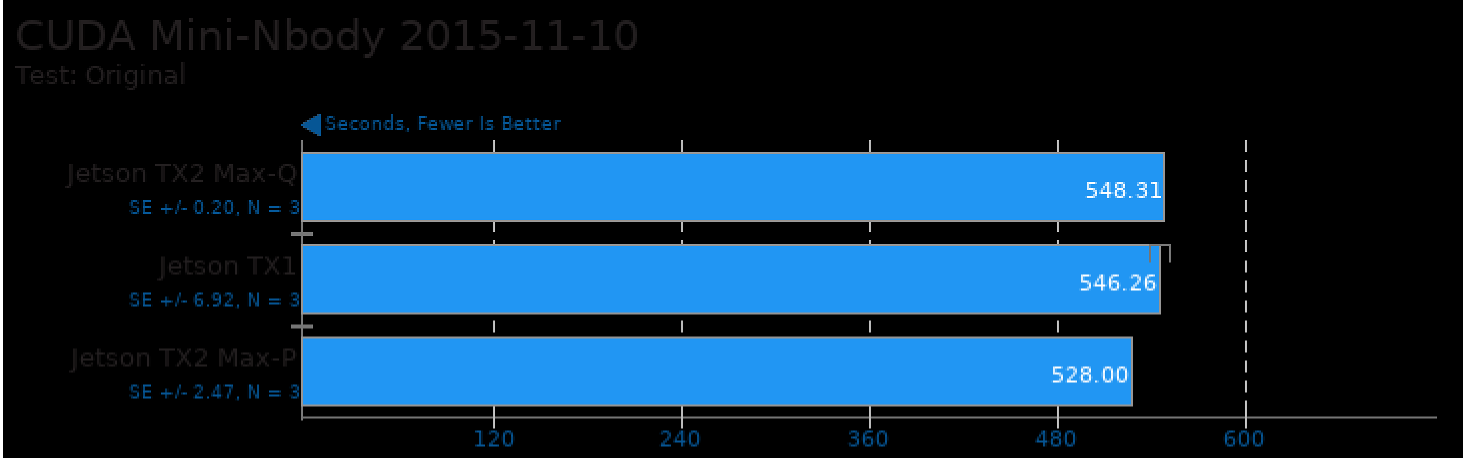


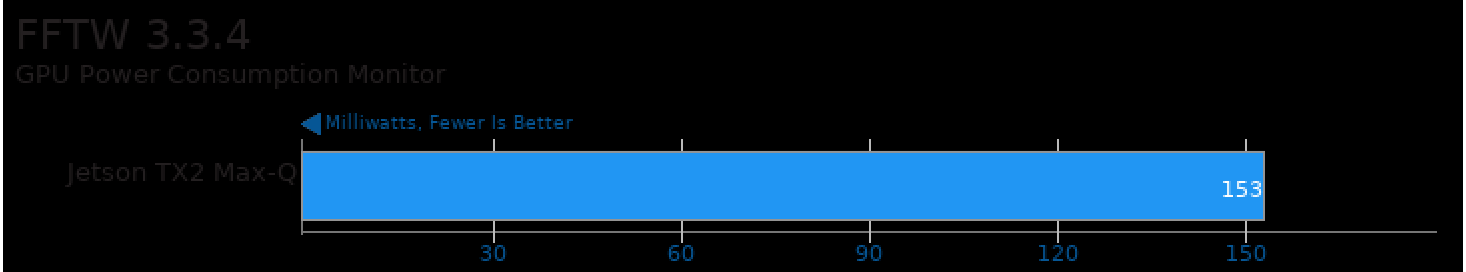


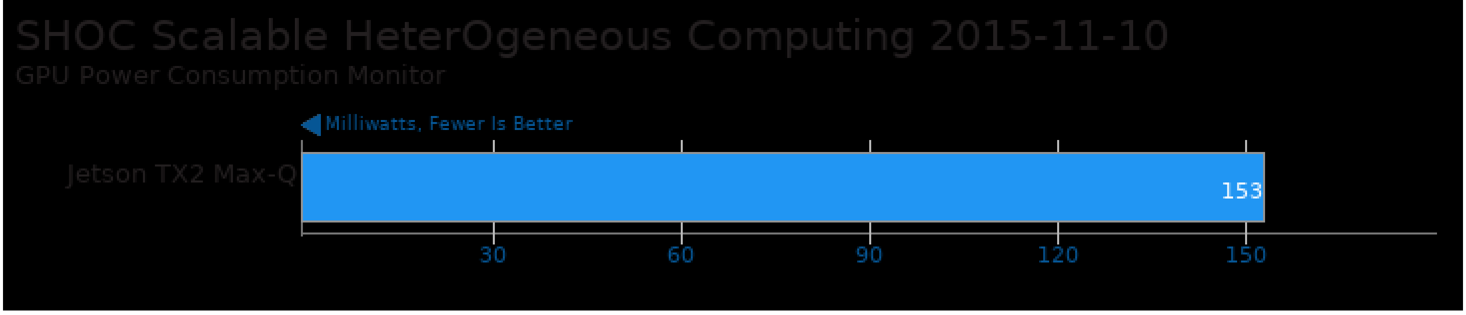

SHOC Scalable HeterOgeneous Computing 2015-11-10
System Temperature Monitor
Min Avg Max
Jetson TX2 Max-P 31.5 32.2 32.5
Jetson TX2 Max-Q 30.5 30.9 31.5
Celsius, Fewer Is Better
50
40
30
20
10

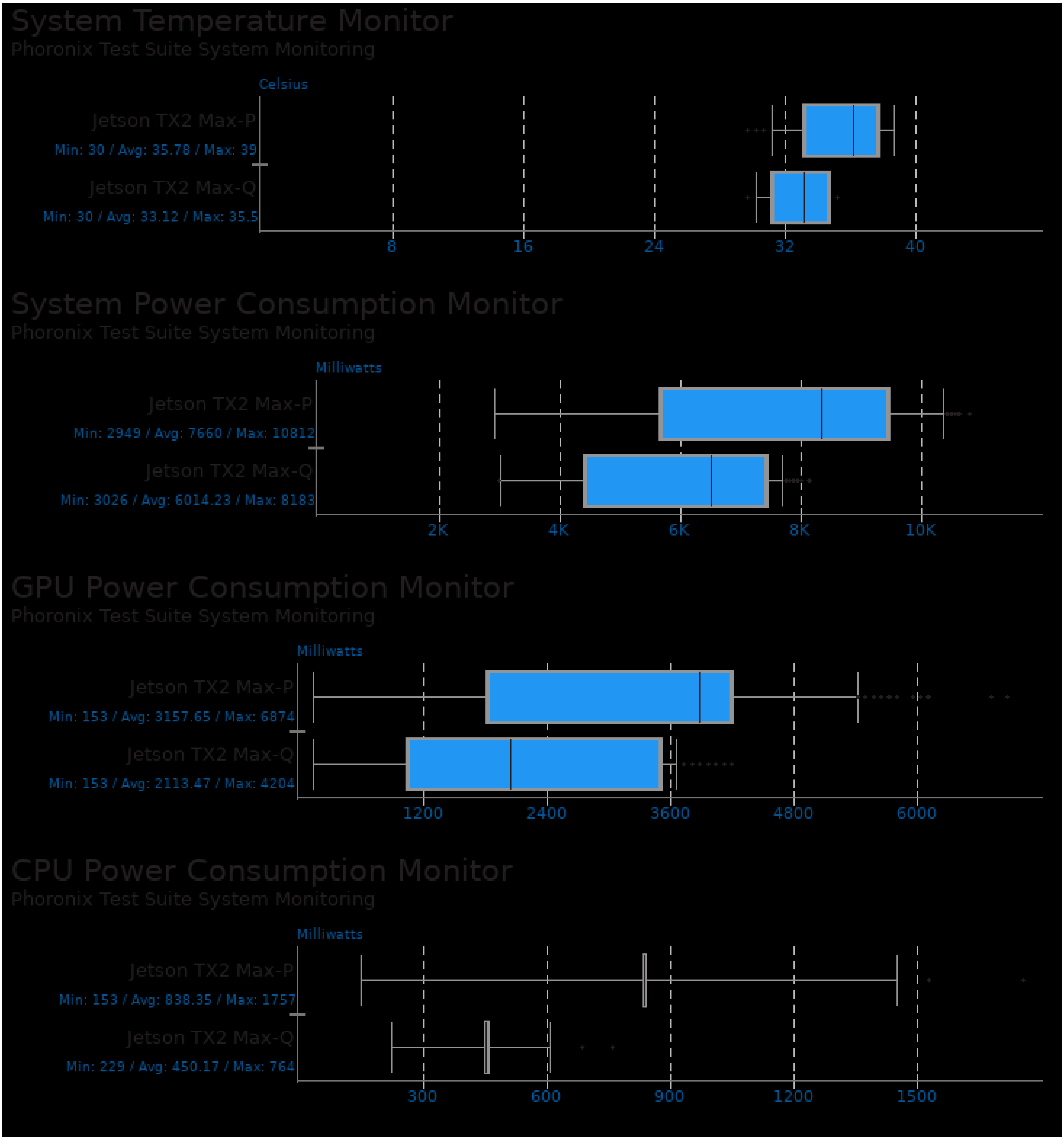

SHOC Scalable HeterOgeneous Computing 2015-11-10
System Temperature Monitor
Min Avg Max
Jetson TX2 Max-P 34.0 34.3 34.5
Jetson TX2 Max-Q 32.5 32.8 33.0
Celsius, Fewer Is Better
50
40
30
20
10


SHOC Scalable HeterOgeneous Computing 2015-11-10
System Temperature Monitor
Min Avg Max
Jetson TX2 Max-P 32.5 33.0 33.5
Jetson TX2 Max-Q 32.0 32.2 32.5
Celsius, Fewer Is Better
50
40
30
20
10

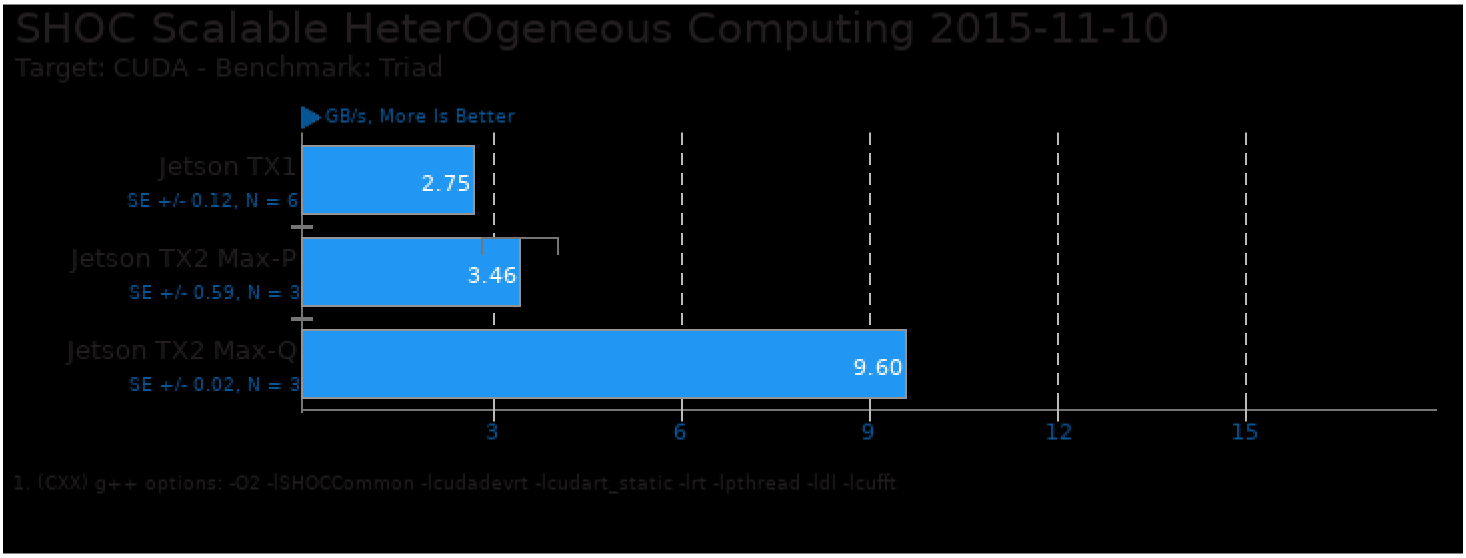

CUDA Mini-Nbody 2015-11-10
Test: Original
Seconds, Fewer Is Better
Jetson TX2 Max-Q
SE +/- 0.20, N = 3
548.31
Jetson TX1
SE +/- 6.92, N = 3
546.26
Jetson TX2 Max-P
SE +/- 2.47, N = 3
528.00
120
240
360
480
600


FFTW 3.3.4
GPU Power Consumption Monitor
Milliwatts, Fewer Is Better
Jetson TX2 Max-Q
153
30
60
90
120
150


SHOC Scalable HeterOgeneous Computing 2015-11-10
GPU Power Consumption Monitor
Milliwatts, Fewer Is Better
Jetson TX2 Max-Q
153
30
60
90
120
150

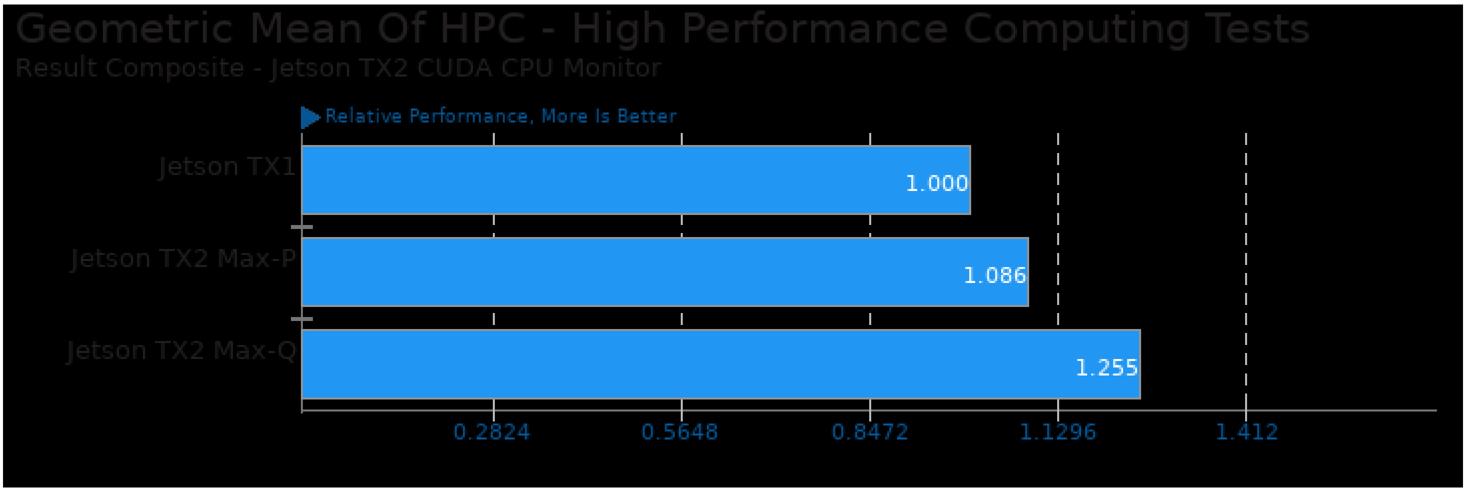

System Temperature Monitor
Phoronix Test Suite System Monitoring
Celsius
Jetson TX2 Max-P
Min: 30 / Avg: 35.78 / Max: 39
Jetson TX2 Max-Q
Min: 30 / Avg: 33.12 / Max: 35.5
8
16
24
32
40
System Power Consumption Monitor
Phoronix Test Suite System Monitoring
Milliwatts
Jetson TX2 Max-P
Min: 2949 / Avg: 7660 / Max: 10812
Jetson TX2 Max-Q
Min: 3026 / Avg: 6014.23 / Max: 8183
2K
4K
6K
8K
10K
GPU Power Consumption Monitor
Phoronix Test Suite System Monitoring
Milliwatts
Jetson TX2 Max-P
Min: 153 / Avg: 3157.65 / Max: 6874
Jetson TX2 Max-Q
Min: 153 / Avg: 2113.47 / Max: 4204
1200
2400
3600
4800
6000
CPU Power Consumption Monitor
Phoronix Test Suite System Monitoring
Milliwatts
Jetson TX2 Max-P
Min: 153 / Avg: 838.35 / Max: 1757
Jetson TX2 Max-Q
Min: 229 / Avg: 450.17 / Max: 764
300
600
900
1200
1500

Jetson TX2 CUDA CPU Monitor

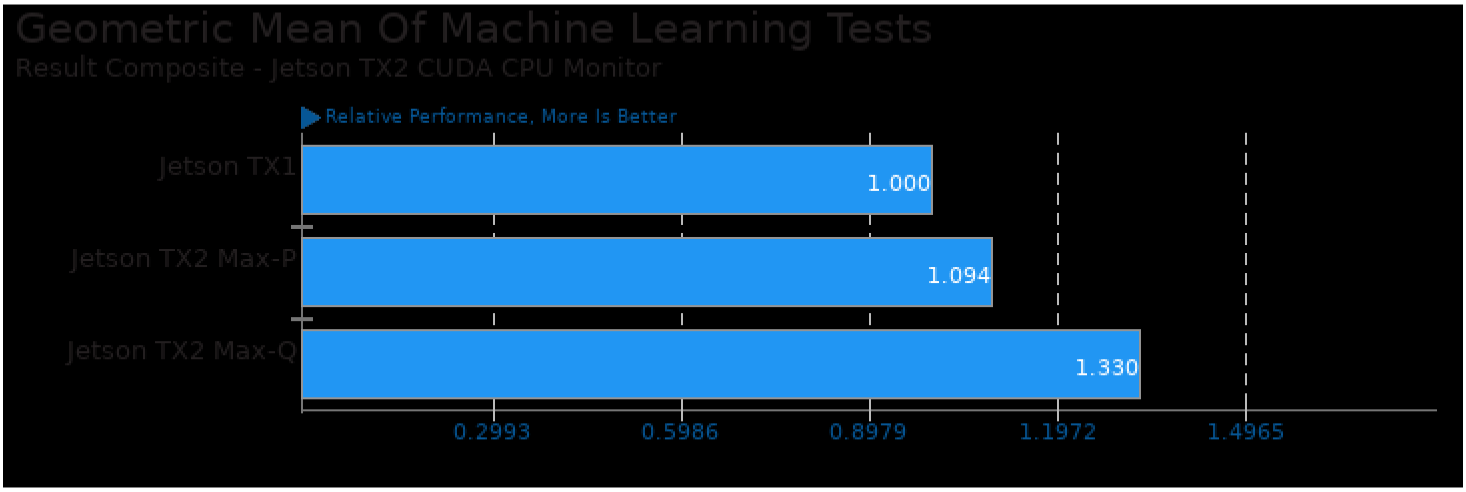


Jetson TX2 CUDA CPU Monitor

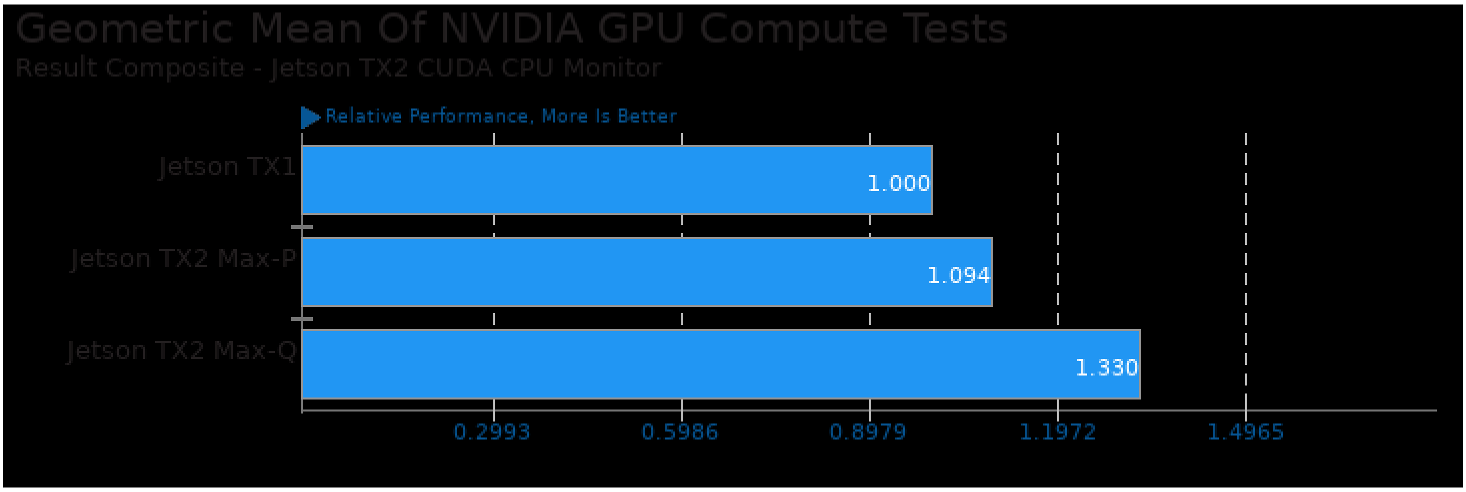
These geometric means are based upon test groupings / test suites for this result file.



Geometric mean based upon tests: pts/fftw, pts/caffe and pts/shoc



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



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

This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 08:12.