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rpi4@2GHz

Rockchip ARMv8 Cortex-A72 testing on Ubuntu 20.04 via the Phoronix Test Suite.

Automated Executive Summary

rockpi5b@2.4GHz had the most wins, coming in first place for 96% of the tests.

Based on the geometric mean of all complete results, the fastest (rockpi5b@2.4GHz) was 11.09x the speed of the slowest (visionfive1@1ghz). rockpi4@2GHz was 0.531x the speed of rockpi5b@2.4GHz, opi4b@1.8GHz was 0.905x the speed of rockpi4@2GHz, rpi4b_r@2ghz was 0.759x the speed of opi4b@1.8GHz, opi4LTS@1.6GHz was 0.995x the speed of rpi4b_r@2ghz, visionfive1@1ghz was 0.248x the speed of opi4LTS@1.6GHz.

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

Stress-NG (Test: MMAP) at 71.969x
Stress-NG (Test: MEMFD) at 69.595x
Stress-NG (Test: Vector Math) at 67.301x
Stress-NG (Test: Matrix Math) at 64.898x
Stress-NG (Test: NUMA) at 58.047x
Stress-NG (Test: Glibc C String Functions) at 40.935x
Stress-NG (Test: Socket Activity) at 39.342x
Stress-NG (Test: Memory Copying) at 37.183x

Smallpt (Global Illumination Renderer; 128 Samples) at 32.96x
Stress-NG (Test: Malloc) at 27.823x.

Test Systems:

rockpi4@2GHz

Processor: Rockchip ARMv8 Cortex-A72 @ 1.51GHz (6 Cores), Motherboard: ROCK PI 4B, Memory: 4096MB, Disk: 31GB SDU1 + 31GB SLD32G

OS: Debian 10, Kernel: 4.4.154-113-rockchip-gdb9dfc2cdd25 (aarch64), Display Server: X Server 1.20.4, Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1024x768

Compiler Notes: --build=aarch64-linux-gnu --disable-libphobos --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: cpufreq-dt performance
Disk Mount Options Notes: data=ordered,relatime,rw
Disk Details Notes: Block Size: 4096
Python Notes: Python 3.7.3

rpi4b_r@2ghz

Processor: ARMv8 Cortex-A72 @ 2.00GHz (4 Cores), Motherboard: BCM2835 Raspberry Pi 4 Model B Rev 1.2, Memory: 2048MB, Disk: 15GB SD16G

OS: Debian 10, Kernel: 5.4.51-v8+ (aarch64), Display Server: X Server 1.20.4, Compiler: GCC 8.3.0, File-System: ext4

Kernel Notes: snd_bcm2835.enable_compat_alsa=0 snd_bcm2835.enable_hdmi=1 snd_bcm2835.enable_headphones=1
Compiler Notes: --build=aarch64-linux-gnu --disable-libphobos --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: cpufreq-dt ondemand
Disk Mount Options Notes: noatime,rw
Disk Details Notes: Block Size: 4096
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Vulnerable + spectre_v1: Mitigation of __user pointer sanitization + spectre_v2: Vulnerable + srbds: Not affected + tsx_async_abort: Not affected

opi4b@1.8GHz

Processor: Rockchip ARMv8 Cortex-A72 @ 1.42GHz (6 Cores), Motherboard: OrangePi RK3399 AI boards based on Rockchip, Memory: 4096MB, Disk: 16GB AJTD4R

OS: Ubuntu 18.04, Kernel: 4.4.179-gc123b0c4-dirty (aarch64), Desktop: LXDE, Display Server: X Server 1.19.6, Compiler: GCC 7.5.0, File-System: ext4, Screen Resolution: 1024x768

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,stripe=1024 / Block Size: 4096

Processor Notes: Scaling Governor: cpufreq-dt interactive
Python Notes: Python 2.7.17 + Python 3.6.9

rockpi5b@2.4GHz

Processor: Rockchip ARMv8 Cortex-A76 @ 1.80GHz (6 Cores / 8 Threads), Motherboard: Radxa ROCK 5B, Memory: 16GB, Disk: 32GB SD32G, Graphics: rockchipdrmfb, Monitor: MACROSILICON, Network: Realtek RTL8125 2.5GbE

OS: Debian 11, Kernel: 5.10.66-20-rockchip-g0cdf37b755fe (aarch64), Display Server: X Server 1.20.11, Compiler: GCC 10.2.1 20210110, File-System: ext4, Screen Resolution: 1280x720

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++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-mutex --enable-multiarch --enable-nls --enable-objc-gc=auto --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-build-config=bootstrap-lto-lean --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-target-system-zlib=auto -v
Processor Notes: Scaling Governor: cpufreq-dt ondemand
Disk Mount Options Notes: relatime,rw
Disk Details Notes: Block Size: 4096
Python Notes: Python 3.9.2
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl + spectre_v1: Mitigation of __user pointer sanitization + spectre_v2: Not affected + srbds: Not affected + tsx_async_abort: Not affected

visionfive1@1ghz

Processor: SiFive RISC-V (2 Cores), Motherboard: StarFive VisionFive V1, Memory: 8GB, Disk: 32GB SD32G

OS: Fedora 33, Kernel: 5.15.10+ (riscv64), Desktop: Xfce, Display Server: X Server 1.20.11, Compiler: GCC 10.3.1 20210422 + Clang 11.0.0, File-System: ext4

Compiler Notes: --build=riscv64-redhat-linux --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-checking=release --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,fortran,objc,obj-c++,ada,go,d,lto --enable-multilib --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-abi=lp64d --with-arch=rv64gc --with-gcc-major-version-only --with-isl --with-linker-hash-style=gnu --with-multilib-list=lp64d
Disk Mount Options Notes: noatime,rw
Disk Details Notes: Block Size: 4096
Python Notes: Python 3.9.7

opi4LTS@1.6GHz

Processor: Rockchip ARMv8 Cortex-A72 @ 1.20GHz (6 Cores), Motherboard: OrangePi 4 LTS, Memory: 3072MB, Disk: 32GB SD32G

OS: Ubuntu 20.04, Kernel: 5.10.43 (aarch64), Desktop: Xfce, Display Server: X Server 1.20.13, Compiler: GCC 9.4.0, File-System: ext4

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++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc=auto --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 --with-target-system-zlib=auto -v
Processor Notes: Scaling Governor: cpufreq-dt performance
Disk Mount Options Notes: commit=600,errors=remount-ro,noatime,rw
Disk Details Notes: Block Size: 4096
Python Notes: Python 3.8.10
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Vulnerable + spectre_v1: Mitigation of __user pointer sanitization + spectre_v2: Vulnerable + srbds: Not affected + tsx_async_abort: Not affected

Phoronix Test Suite

rpi4@2GHz

	rockpi4@2GHz	rpi4b_r@2gh z	opi4b@1.8GHz	rockpi5b@2.4 GHz	visionfive1@ 1ghz	opi4LTS@1.6 GHz
IPC_benchmark - TCP Socket - 512 (Messages/sec)	1085305	427877	939785	1579848	167018	511215
Normalized	68.7%	27.08%	59.49%	100%	10.57%	32.36%
Standard Deviation	1.3%	1.5%	7.8%	1.2%	0.9%	0.1%
Stress-NG - MMAP (Bogo Ops/s)	9.48	4.40	8.24	23.03	0.32	5.25
Normalized	41.16%	19.11%	35.78%	100%	1.39%	22.8%
Standard Deviation	0.1%	0.5%	0.2%	0.3%	4.7%	0.7%
IPC_benchmark - TCP Socket - 256 (Messages/sec)	1242060	452076	1108806	1644648	205599	581725
Normalized	75.52%	27.49%	67.42%	100%	12.5%	35.37%
Standard Deviation	0.2%	1.8%	0.9%	2.5%	0.1%	2.2%
IPC_benchmark - TCP Socket - 128 (Messages/sec)	1296725	462024	1178363	1743221	227532	598526
Normalized	74.39%	26.5%	67.6%	100%	13.05%	34.33%
Standard Deviation	2.4%	0.7%	1.8%	0.9%	1.3%	0.6%
Stress-NG - MEMFD (Bogo Ops/s)	53.37	16.87	52.18	128.75	1.85	30.66
Normalized	41.45%	13.1%	40.53%	100%	1.44%	23.81%
Standard Deviation	0.2%	0.5%	0.1%	2%	2.2%	0.7%
Stress-NG - Vector Math (Bogo Ops/s)	5924	4926	4394	12649	187.94	4896
Normalized	46.84%	38.94%	34.74%	100%	1.49%	38.71%
Standard Deviation	0%	0.1%	0.1%	0%	0%	0.4%
Stress-NG - Matrix Math (Bogo Ops/s)	1903	1483	1987	17968	276.86	1685
Normalized	10.59%	8.25%	11.06%	100%	1.54%	9.38%
Standard Deviation	2.3%	2.5%	1.6%	0.8%	0.3%	0.8%
RAMspeed SMP - Triad - Integer (MB/s)	3856	2566	4529	17808		3919
Normalized	21.65%	14.41%	25.43%	100%		22.01%
Standard Deviation	1.4%	0.1%	0.5%	19.5%		2%
IPC_benchmark - U.U.D.S - 1024 (Messages/sec)	787023	433128	730492	888559	130373	301213
Normalized	88.57%	48.74%	82.21%	100%	14.67%	33.9%
Standard Deviation	3.8%	0.8%	2.3%	0.8%	0.6%	1.3%
IPC_benchmark - U.U.D.S - 512 (Messages/sec)	887585	461486	785009	975420	147275	335871
Normalized	91%	47.31%	80.48%	100%	15.1%	34.43%
Standard Deviation	2.4%	1.8%	3%	0.2%	1.4%	0.6%
IPC_benchmark - U.U.D.S - 128 (Messages/sec)	929281	480562	845538	1021908	158693	355913
Normalized	90.94%	47.03%	82.74%	100%	15.53%	34.83%
Standard Deviation	2.3%	1.2%	2.4%	0.3%	1.8%	1%
IPC_benchmark - U.U.D.S - 256 (Messages/sec)	921845	469955	825912	970223	153059	342621
Normalized	95.01%	48.44%	85.13%	100%	15.78%	35.31%
Standard Deviation	2.1%	0.8%	5%	0.4%	0.3%	1.7%

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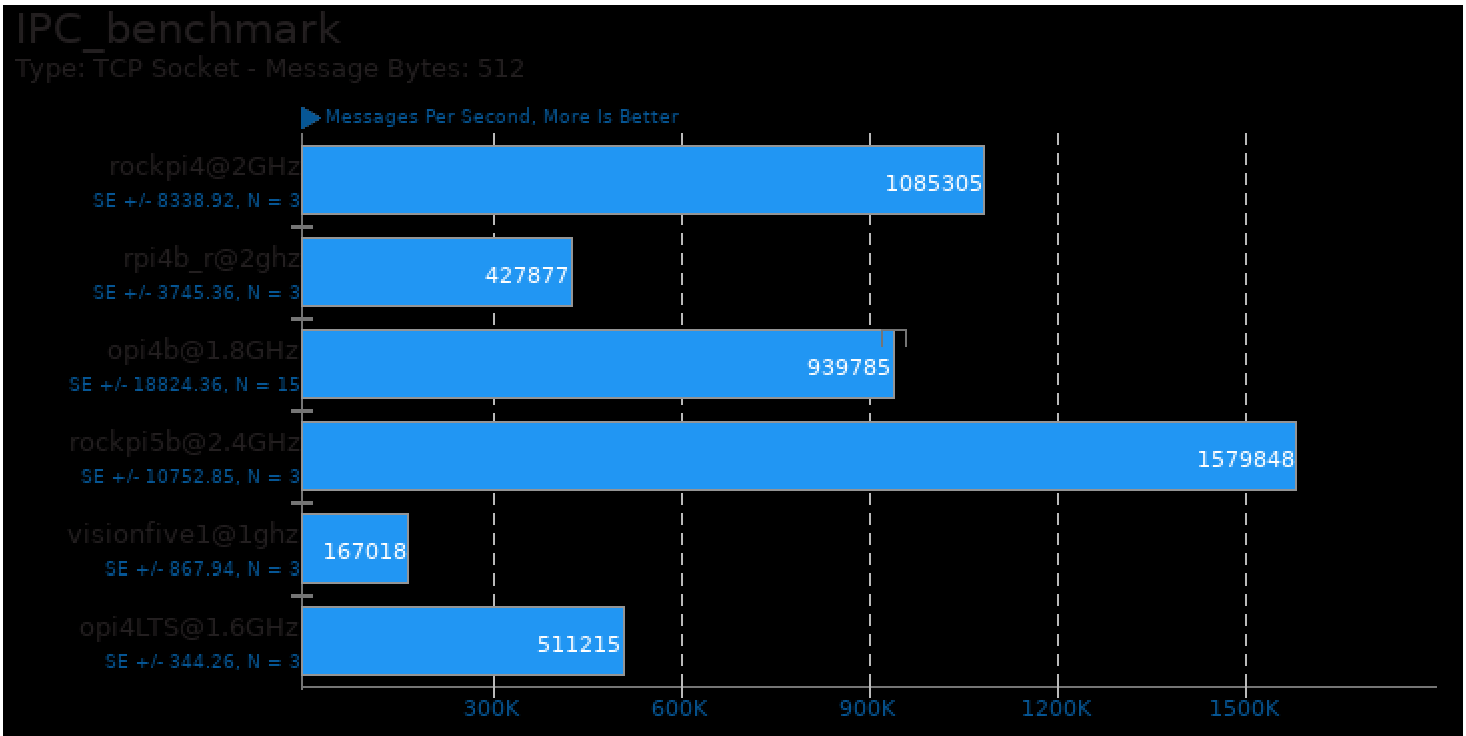
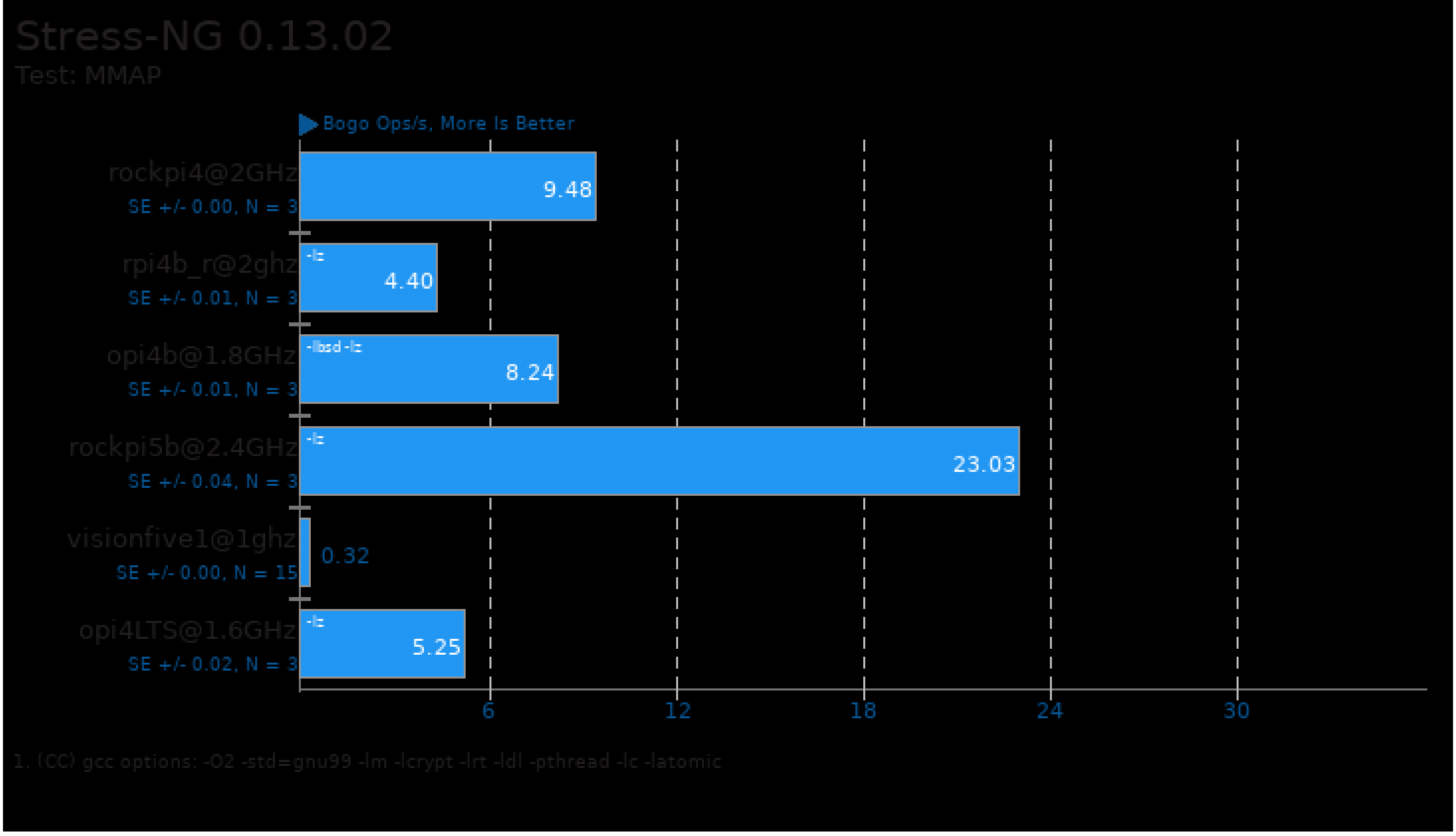
Stress-NG - NUMA (Bogo Ops/s)	65.67	44.70	67.03	429.55	7.4	83.92
Normalized	15.29%	10.41%	15.6%	100%	1.72%	19.54%
Standard Deviation	0.1%	0.1%	0.1%	0.1%	0%	0.6%
Stress-NG - IO_uring (Bogo Ops/s)				8433	1499	
Normalized				100%	17.77%	
Standard Deviation				2.3%	3.1%	
Stress-NG - S.V.M.P (Bogo Ops/s)	1258234	1130537	1028198	1522492	288391	793785
Normalized	82.64%	74.26%	67.53%	100%	18.94%	52.14%
Standard Deviation	0.2%	1.8%	0.8%	0.2%	5.9%	0.2%
RAMspeed SMP - Average - Integer (MB/s)	4722	3866	4607	20108		5406
Normalized	23.48%	19.22%	22.91%	100%		26.88%
Standard Deviation	0.2%	0.5%	0.4%	4.2%		0.3%
IPC_benchmark - FIFO Named Pipe - 128	1369741	685499	1236268	2255716	446809	827010
Normalized	60.72%	30.39%	54.81%	100%	19.81%	36.66%
Standard Deviation	3.8%	0.2%	2.4%	2%	2.4%	0.9%
RAMspeed SMP - Copy - Integer (MB/s)	5143	4240	4658	21378		5990
Normalized	24.06%	19.83%	21.79%	100%		28.02%
Standard Deviation	0.2%	3.4%	0.6%	2.1%		0.1%
RAMspeed SMP - Add - Integer (MB/s)	4794	3972	4543	19922		5649
Normalized	24.07%	19.94%	22.8%	100%		28.36%
Standard Deviation	0%	0.3%	0.5%	0%		0%
Stress-NG - G.C.S.F (Bogo Ops/s)	100359	110045	60863	261324	6384	76084
Normalized	38.4%	42.11%	23.29%	100%	2.44%	29.11%
Standard Deviation	0.1%	0.3%	0.1%	0%	0.2%	0.2%
RAMspeed SMP - Scale - Integer (MB/s)	5105	4649	4726	22124		6122
Normalized	23.07%	21.01%	21.36%	100%		27.67%
Standard Deviation	0.2%	0.4%	0.9%	0.7%		0.1%
IPC_benchmark - Unnamed Pipe - 128 (Messages/sec)	1319651	683713	1178427	2256501	474150	833309
Normalized	58.48%	30.3%	52.22%	100%	21.01%	36.93%
Standard Deviation	5.9%	1.1%	4%	3.8%	0.9%	0.9%
IPC_benchmark - FIFO Named Pipe - 1024	1176832	627821	1020474	1199893	274936	799276
Normalized	98.08%	52.32%	85.05%	100%	22.91%	66.61%
Standard Deviation	2.5%	0.4%	4.5%	0.5%	0.7%	2.1%
IPC_benchmark - Unnamed Pipe - 1024 (Messages/sec)	1184817	621057	1019995	1204291	277853	818901
Normalized	98.38%	51.57%	84.7%	100%	23.07%	68%
Standard Deviation	0.5%	0.8%	3.8%	2.3%	0%	2.4%
Stress-NG - Socket Activity (Bogo Ops/s)	783.00	418.50	666.83	2761	70.19	646.26
Normalized	28.35%	15.16%	24.15%	100%	2.54%	23.4%
Standard Deviation	0.6%	1.3%	2.4%	0.3%	4.2%	1%

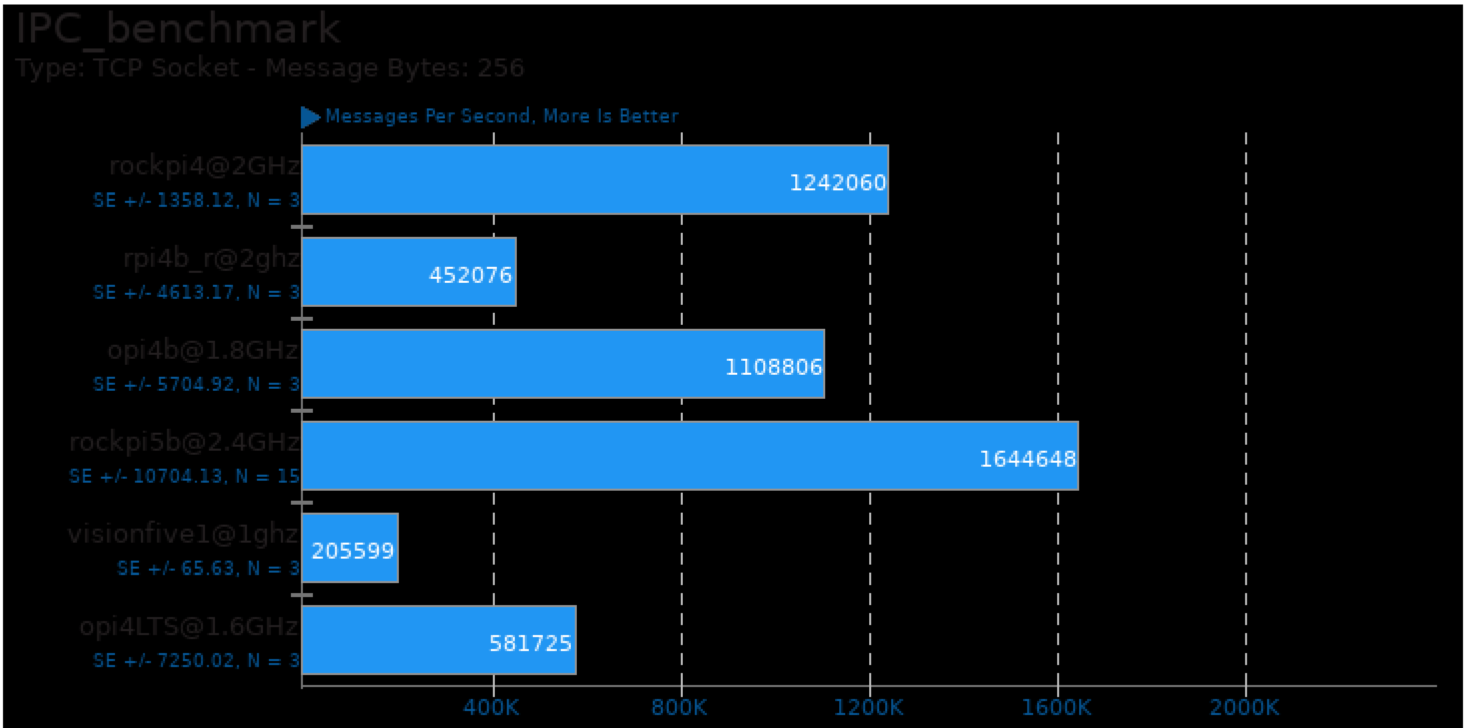
Stress-NG - Memory Copying (Bogo Ops/s)	168.21	92.51	144.18	663.72	17.85	152.62
Normalized	25.34%	13.94%	21.72%	100%	2.69%	22.99%
Standard Deviation	0.1%	2.4%	2.4%	0.5%	9.5%	0.2%
Smallpt - G.I.R.1.S (sec)	99.594	91.508	117.530	35.313	1164	130.063
Normalized	35.46%	38.59%	30.05%	100%	3.03%	27.15%
Standard Deviation	0.2%	0.4%	0.2%	0.1%	0.2%	0.1%
IPC_benchmark - FIFO Named Pipe - 256	1284175	675667	1167113	1623935	420531	847251
Normalized	79.08%	41.61%	71.87%	100%	25.9%	52.17%
Standard Deviation	1%	0.6%	5.1%	1.5%	0.8%	3.8%
SQLite - 8 (sec)	601.414	728.346	195.503	394.224	645.340	454.908
Normalized	32.51%	26.84%	100%	49.59%	30.29%	42.98%
Standard Deviation	1.9%	1.6%	0.3%	0.1%	0.6%	0.2%
IPC_benchmark - Unnamed Pipe - 256 (Messages/sec)	1279133	682966	1184781	1626135	443943	864829
Normalized	78.66%	42%	72.86%	100%	27.3%	53.18%
Standard Deviation	1.7%	1.4%	3.2%	4.8%	2.3%	1.2%
Stress-NG - Semaphores (Bogo Ops/s)	292744	255835	264461	332664	94654	306574
Normalized	88%	76.9%	79.5%	100%	28.45%	92.16%
Standard Deviation	0.2%	0.5%	1.9%	0.4%	1.5%	0.1%
IPC_benchmark - FIFO Named Pipe - 512	1198549	657047	1086984	1228152	375226	873356
Normalized	97.59%	53.5%	88.51%	100%	30.55%	71.11%
Standard Deviation	3.6%	2.7%	0.9%	3.9%	1.2%	1.8%
LibRaw - P.P.B (Mpix/sec)	6.42	6.96	5.29	17.08		5.86
Normalized	37.59%	40.75%	30.97%	100%		34.31%
Standard Deviation	0.4%	0.2%	0.2%	0.4%		0.5%
IPC_benchmark - Unnamed Pipe - 512 (Messages/sec)	1214093	665088	1097123	1236161	394856	914283
Normalized	98.21%	53.8%	88.75%	100%	31.94%	73.96%
Standard Deviation	4.8%	0.8%	1%	1.4%	1.1%	1%
Stress-NG - Malloc (Bogo Ops/s)	4584714	2650730	4102371	14582918	524141	4319899
Normalized	31.44%	18.18%	28.13%	100%	3.59%	29.62%
Standard Deviation	0.1%	0.1%	0%	0.9%	0.8%	0.7%
Stress-NG - Crypto (Bogo Ops/s)	342.52	332.72	337.11	963.18	36.22	333.36
Normalized	35.56%	34.54%	35%	100%	3.76%	34.61%
Standard Deviation	0.1%	0.2%	0.5%	0.4%	0.3%	0.7%
Stress-NG - Atomic (Bogo Ops/s)	68958	101834	64455	124956	80784	51432
Normalized	55.19%	81.5%	51.58%	100%	64.65%	41.16%
Standard Deviation	0.2%	0.1%	0.5%	0.3%	0.4%	0.4%
SQLite - 1 (sec)	105.509	139.275	64.949	72.688	110.971	86.269
Normalized	61.56%	46.63%	100%	89.35%	58.53%	75.29%
Standard Deviation	0.5%	4.5%	0.5%	0.7%	0.9%	0.4%
CacheBench - R.M.W (MB/s)	14892	14783	13289	23961	1322	11902
Normalized	62.15%	61.69%	55.46%	100%	5.52%	49.67%
Standard Deviation	0.2%	0.1%	0.2%	0%	0.2%	0.1%

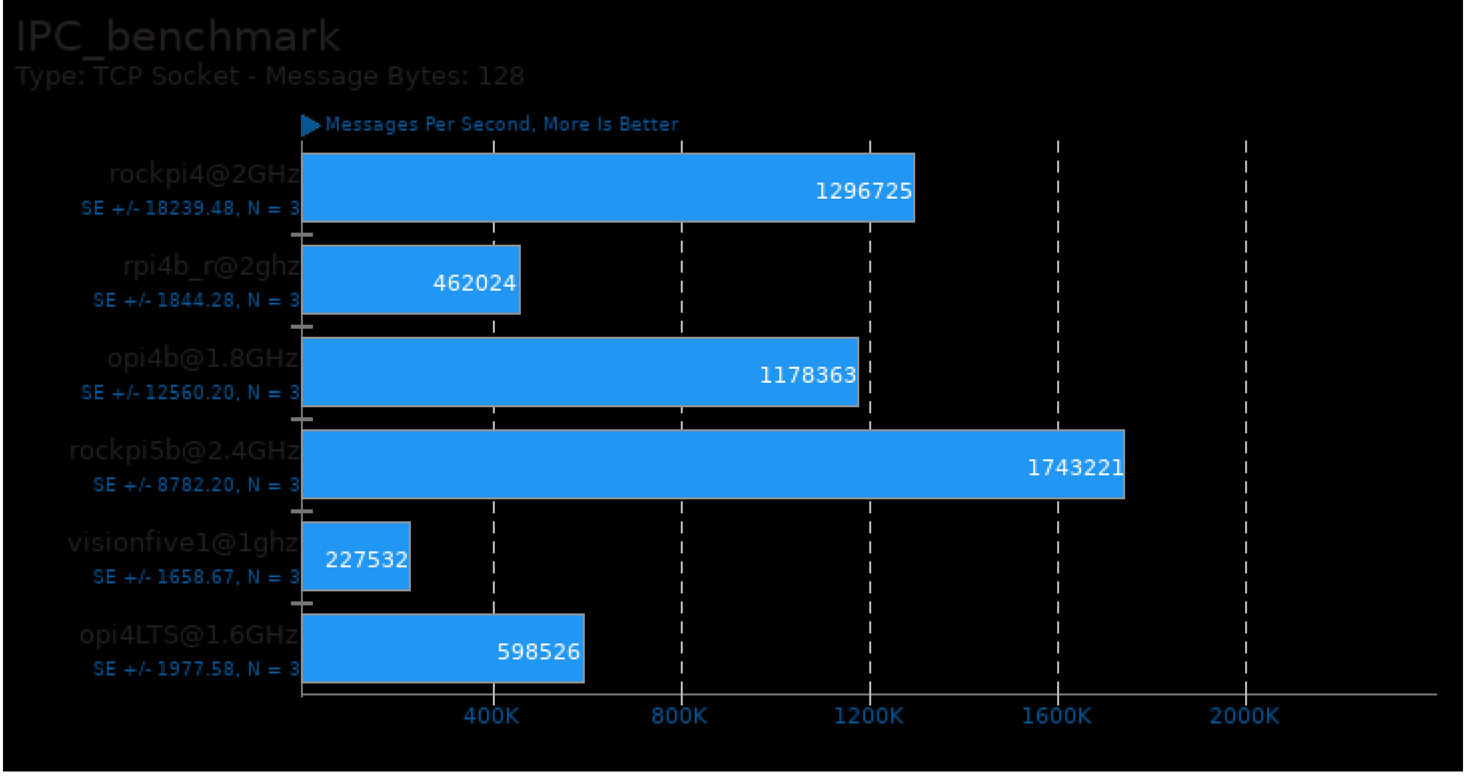
Stress-NG - G.Q.D.S (Bogo Ops/s)	14.09	14.09	12.08	**43.34**	**2.41**	10.59
Normalized	32.51%	32.51%	27.87%	100%	5.56%	24.43%
Standard Deviation	2.2%	0.7%	2.2%	0.3%	0.7%	1.3%
7-Zip Compression - C.S.T (MIPS)	4451	4183	3545	**12117**	**698**	4339
Normalized	36.73%	34.52%	29.26%	100%	5.76%	35.81%
Standard Deviation	1.3%	0.3%	1.3%	0.5%	0.9%	0.3%
Stress-NG - CPU Stress (Bogo Ops/s)	536.18	555.08	480.14	**1298**	**83.22**	434.30
Normalized	41.3%	42.75%	36.98%	100%	6.41%	33.45%
Standard Deviation	0.3%	0.4%	0.3%	0%	0.5%	0.3%
PyBench - T.F.A.T.T (Milliseconds)	4513	4263	5300	**1749**	**26639**	4897
Normalized	38.75%	41.03%	33%	100%	6.57%	35.72%
Standard Deviation	0.5%	0.2%	0.2%	0.1%	1.4%	0.8%
Hackbench - 4 - Thread (sec)	97.029	119.657	119.204	**48.246**	**712.693**	180.856
Normalized	49.72%	40.32%	40.47%	100%	6.77%	26.68%
Standard Deviation	0.7%	0.3%	0.1%	0.6%	0.2%	0.5%
Hackbench - 2 - Thread (sec)	50.501	62.608	60.302	**22.974**	**339.211**	90.276
Normalized	45.49%	36.69%	38.1%	100%	6.77%	25.45%
Standard Deviation	2.7%	0.8%	0.9%	0.3%	1.3%	0.4%
Coremark - CoreMark Size 666 - I.P.S (Iterations/Sec)	35944	43915	32549	**90210**	**6476**	27762
Normalized	39.84%	48.68%	36.08%	100%	7.18%	30.77%
Standard Deviation	0%	0.1%	0%	0%	0.1%	1.2%
Hackbench - 1 - Thread (sec)	31.059	34.415	33.259	**13.055**	**164.911**	45.076
Normalized	42.03%	37.93%	39.25%	100%	7.92%	28.96%
Standard Deviation	20.2%	1.2%	6.5%	0.4%	0.3%	0.9%
Stress-NG - SENDFILE (Bogo Ops/s)	29024	16205	25822	**34184**	**2774**	11153
Normalized	84.91%	47.41%	75.54%	100%	8.11%	32.63%
Standard Deviation	1.7%	0.1%	1.9%	0.1%	2.3%	0.5%
OpenSSL (sign/s)	145.3	127.2	133.1	**256.1**	**21.1**	112.0
Normalized	56.74%	49.67%	51.97%	100%	8.24%	43.73%
Standard Deviation	0%	0.4%	0.1%	0%	0.5%	0.6%
Stress-NG - Context Switching (Bogo Ops/s)	806439	345762	696242	**988738**	**83827**	267164
Normalized	81.56%	34.97%	70.42%	100%	8.48%	27.02%
Standard Deviation	6%	4.7%	2.1%	3.2%	8.9%	2.3%
OpenSSL (verify/s)	9908	8682	9030	**17121**	**1600**	7616
Normalized	57.87%	50.71%	52.74%	100%	9.35%	44.48%
Standard Deviation	0.1%	0%	0.1%	0%	0.2%	0.5%
Stress-NG - Forking (Bogo Ops/s)	3991	3145	2819	**10953**	**1061**	1991
Normalized	36.44%	28.71%	25.74%	100%	9.69%	18.18%
Standard Deviation	1.6%	0.9%	1.5%	0.3%	1.2%	0.7%
Stress-NG - CPU Cache (Bogo Ops/s)	52.85	83.89	35.92	**121.29**	**8.97**	62.61
Normalized	43.57%	69.16%	29.61%	100%	7.4%	51.62%
Standard Deviation	6.7%	1.6%	10.5%	4.3%	8.2%	3.2%

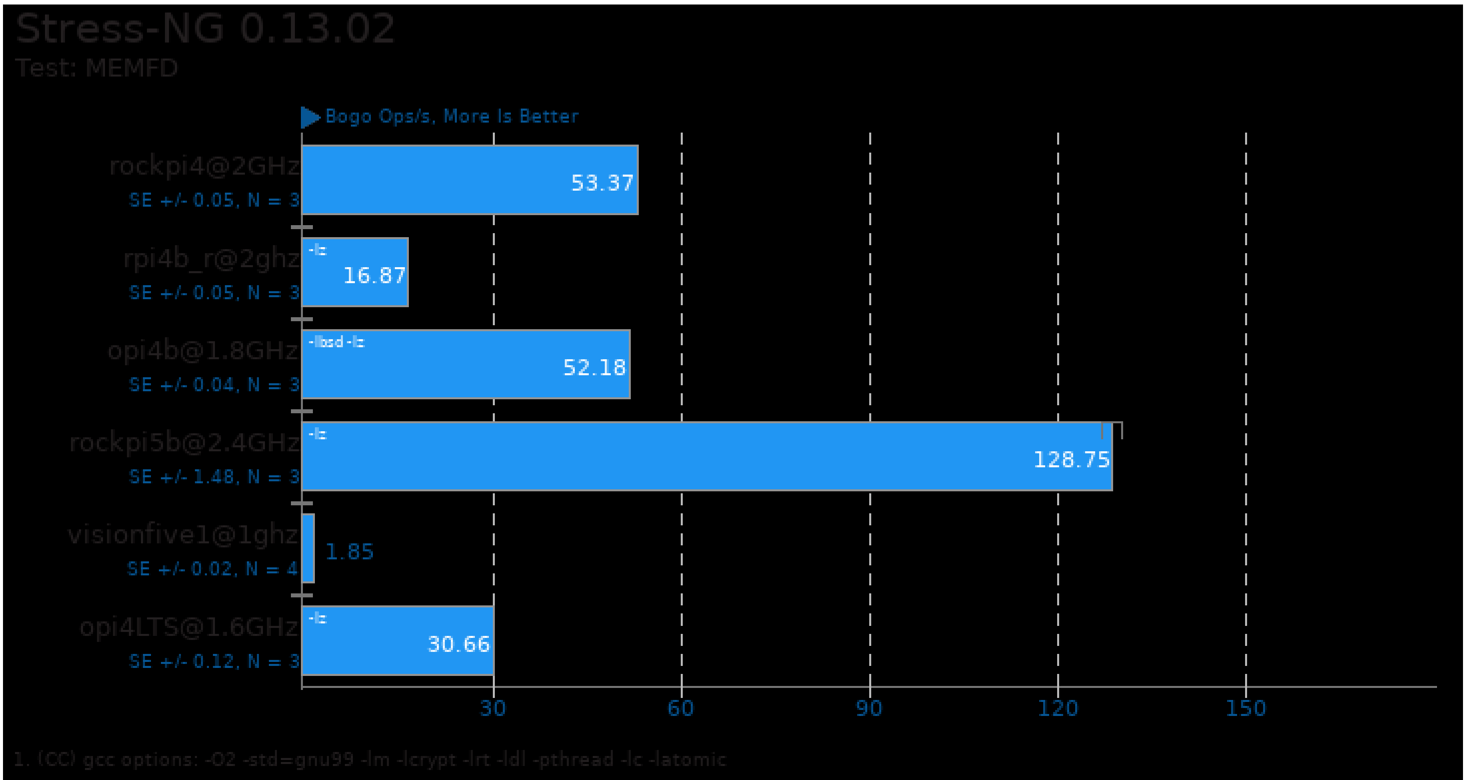
IPC_benchmark - TCP Socket - 1024	681836	379937	497064	**1249986**	**123130**	415390
Normalized	54.55%	30.4%	39.77%	100%	9.85%	33.23%
Standard Deviation	6.7%	2.4%	6.7%	6.5%	1.3%	2.2%

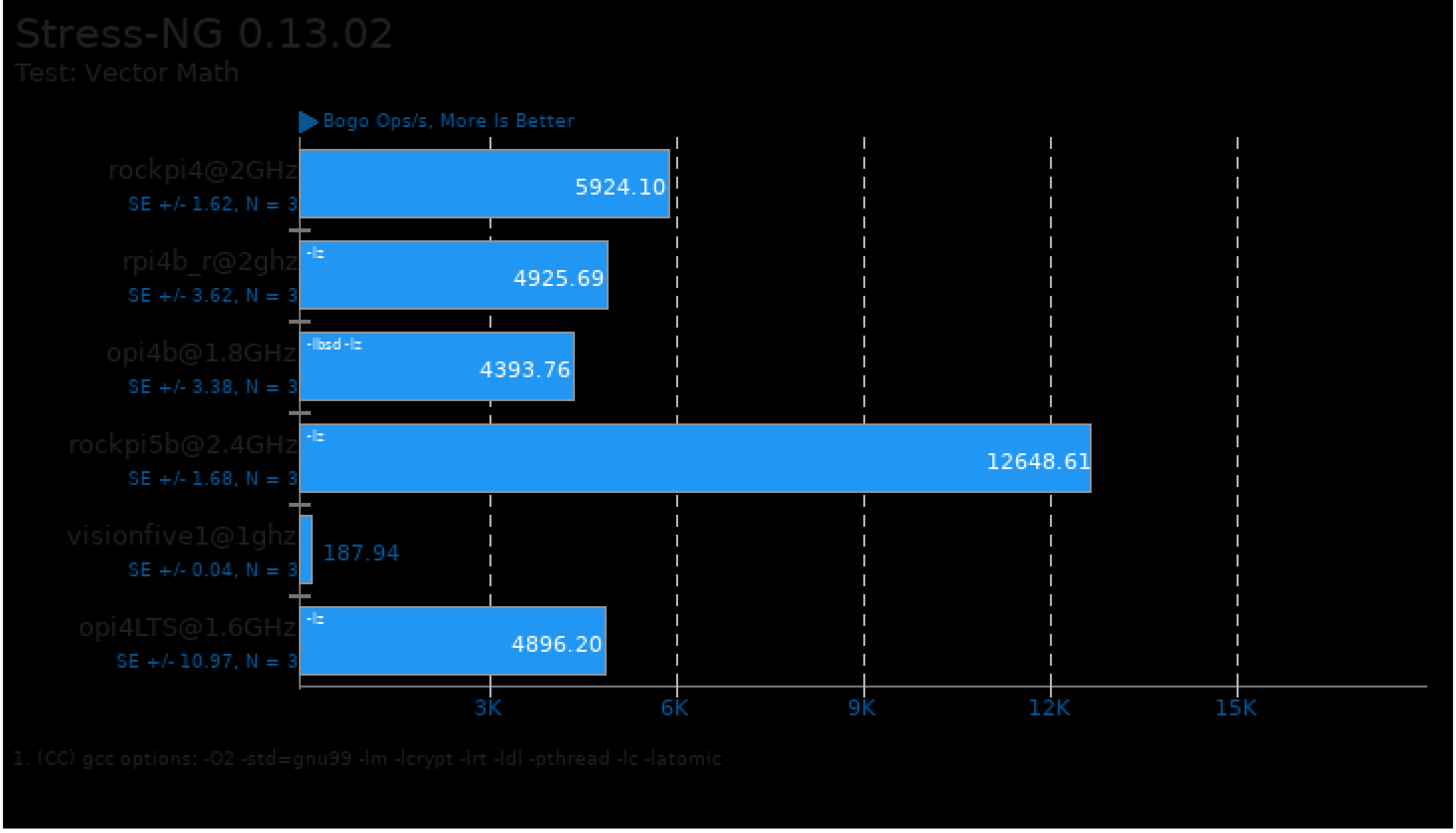

IPC_benchmark
Type: TCP Socket - Message Bytes: 512
Messages Per Second, More Is Better
rockpi4@2GHz
SE +/- 8338.92, N = 3
1085305
rpi4b_r@2ghz
SE +/- 3745.36, N = 3
427877
opi4b@1.8GHz
SE +/- 18824.36, N = 15
939785
rockpi5b@2.4GHz
SE +/- 10752.85, N = 3
1579848
visionfive1@1ghz
SE +/- 867.94, N = 3
167018
opi4LTS@1.6GHz
SE +/- 344.26, N = 3
511215
300K
600K
900K
1200K
1500K

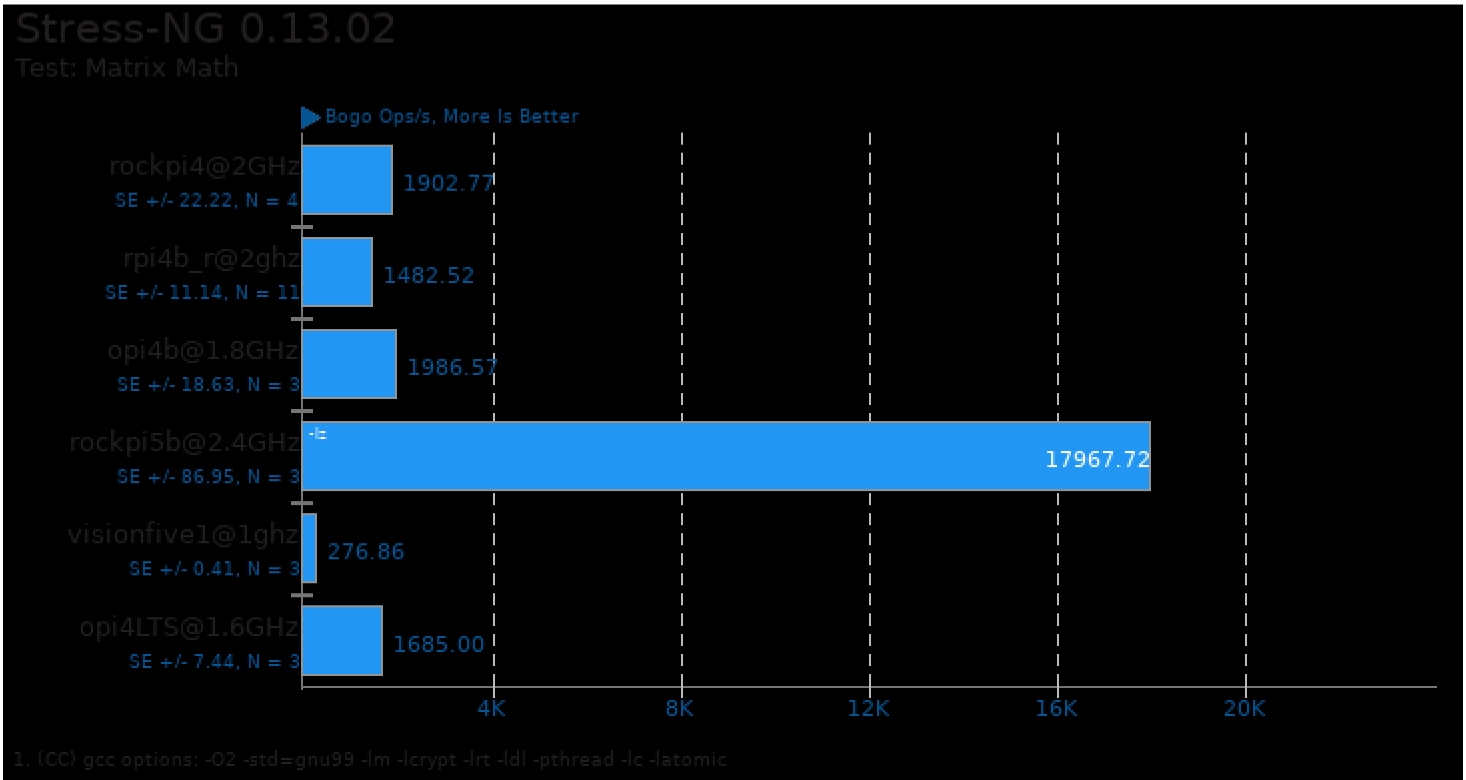

Stress-NG 0.13.02
Test: MMAP
Bogo Ops/s, More Is Better
rockpi4@2GHz
SE +/- 0.00, N = 3
9.48
rpi4b_r@2ghz
SE +/- 0.01, N = 3
-lz
4.40
opi4b@1.8GHz
SE +/- 0.01, N = 3
-lbsd -lz
8.24
rockpi5b@2.4GHz
SE +/- 0.04, N = 3
-lz
23.03
visionfive1@1ghz
SE +/- 0.00, N = 15
0.32
opi4LTS@1.6GHz
SE +/- 0.02, N = 3
-lz
5.25
6
12
18
24
30
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -ldl -pthread -lc -latomic

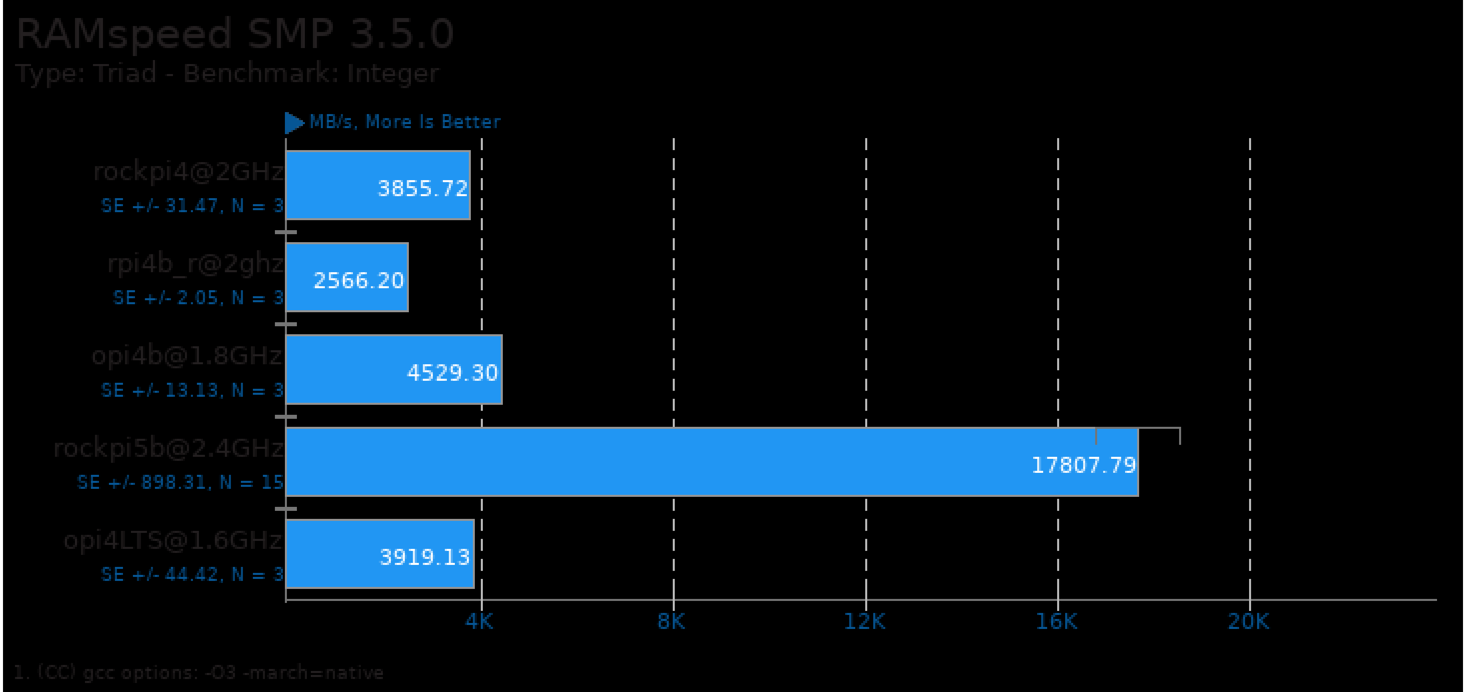

IPC_benchmark
Type: TCP Socket - Message Bytes: 256
Messages Per Second, More Is Better
rockpi4@2GHz
SE +/- 1358.12, N = 3
1242060
rpi4b_r@2ghz
SE +/- 4613.17, N = 3
452076
opi4b@1.8GHz
SE +/- 5704.92, N = 3
1108806
rockpi5b@2.4GHz
SE +/- 10704.13, N = 15
1644648
visionfive1@1ghz
SE +/- 65.63, N = 3
205599
opi4LTS@1.6GHz
SE +/- 7250.02, N = 3
581725
400K
800K
1200K
1600K
2000K

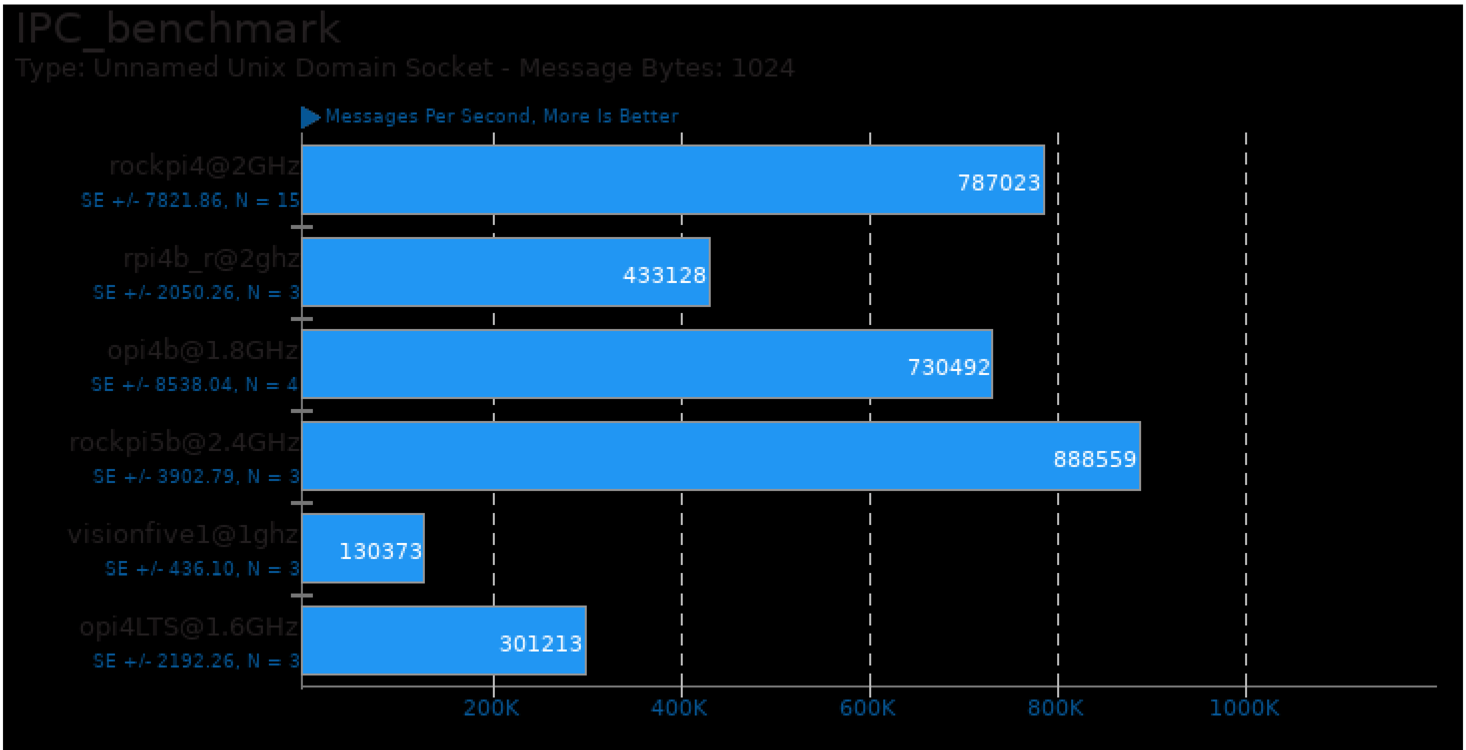

IPC_benchmark
Type: TCP Socket - Message Bytes: 128
Messages Per Second, More Is Better
rockpi4@2GHz
SE +/- 18239.48, N = 3
1296725
rpi4b_r@2ghz
SE +/- 1844.28, N = 3
462024
opi4b@1.8GHz
SE +/- 12560.20, N = 3
1178363
rockpi5b@2.4GHz
SE +/- 8782.20, N = 3
1743221
visionfive1@1ghz
SE +/- 1658.67, N = 3
227532
opi4LTS@1.6GHz
SE +/- 1977.58, N = 3
598526
400K
800K
1200K
1600K
2000K

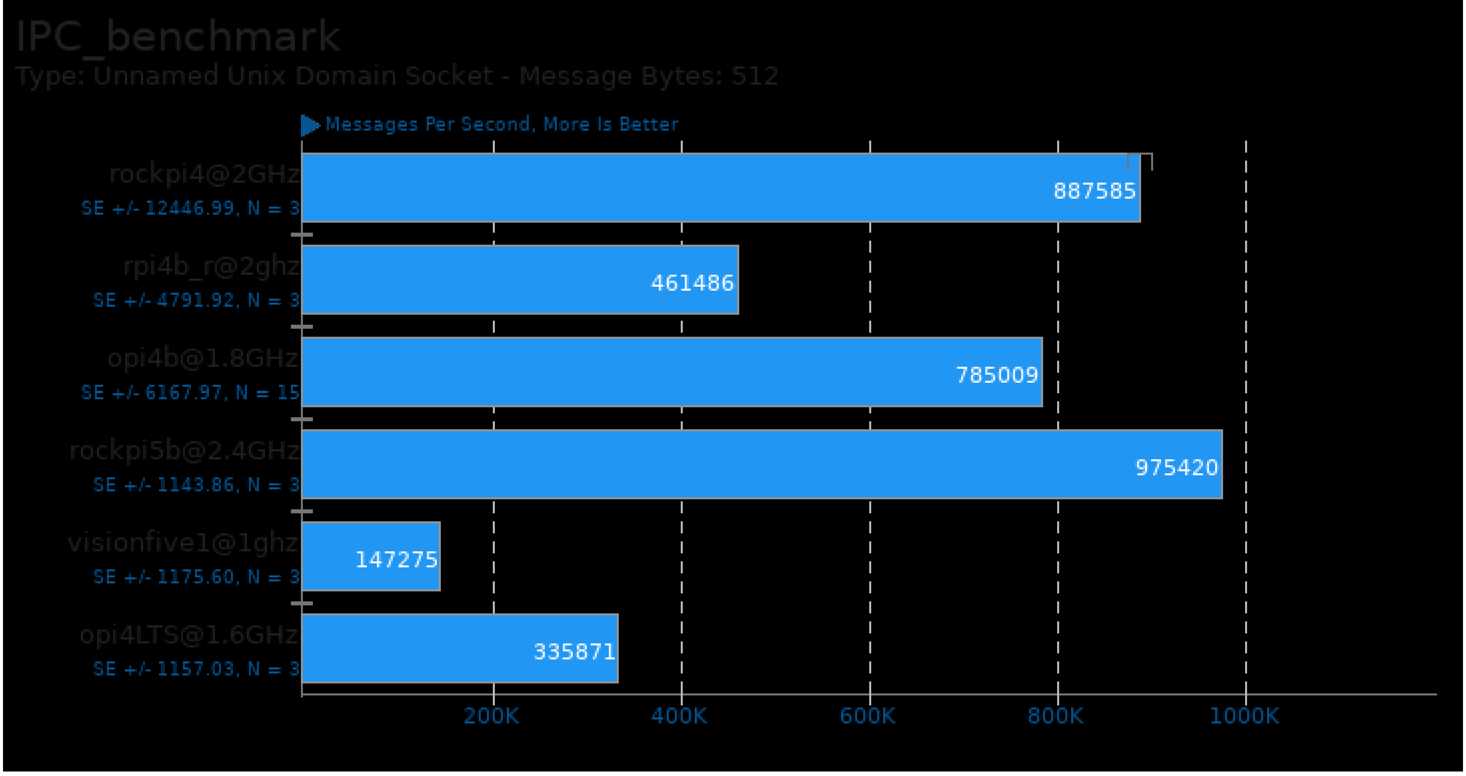

Stress-NG 0.13.02
Test: MEMFD
Bogo Ops/s, More Is Better
rockpi4@2GHz
SE +/- 0.05, N = 3
53.37
rpi4b_r@2ghz
SE +/- 0.05, N = 3
16.87
opi4b@1.8GHz
SE +/- 0.04, N = 3
52.18
rockpi5b@2.4GHz
SE +/- 1.48, N = 3
128.75
visionfive1@1ghz
SE +/- 0.02, N = 4
1.85
opi4LTS@1.6GHz
SE +/- 0.12, N = 3
30.66
30
60
90
120
150
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -ldl -pthread -lc -latomic

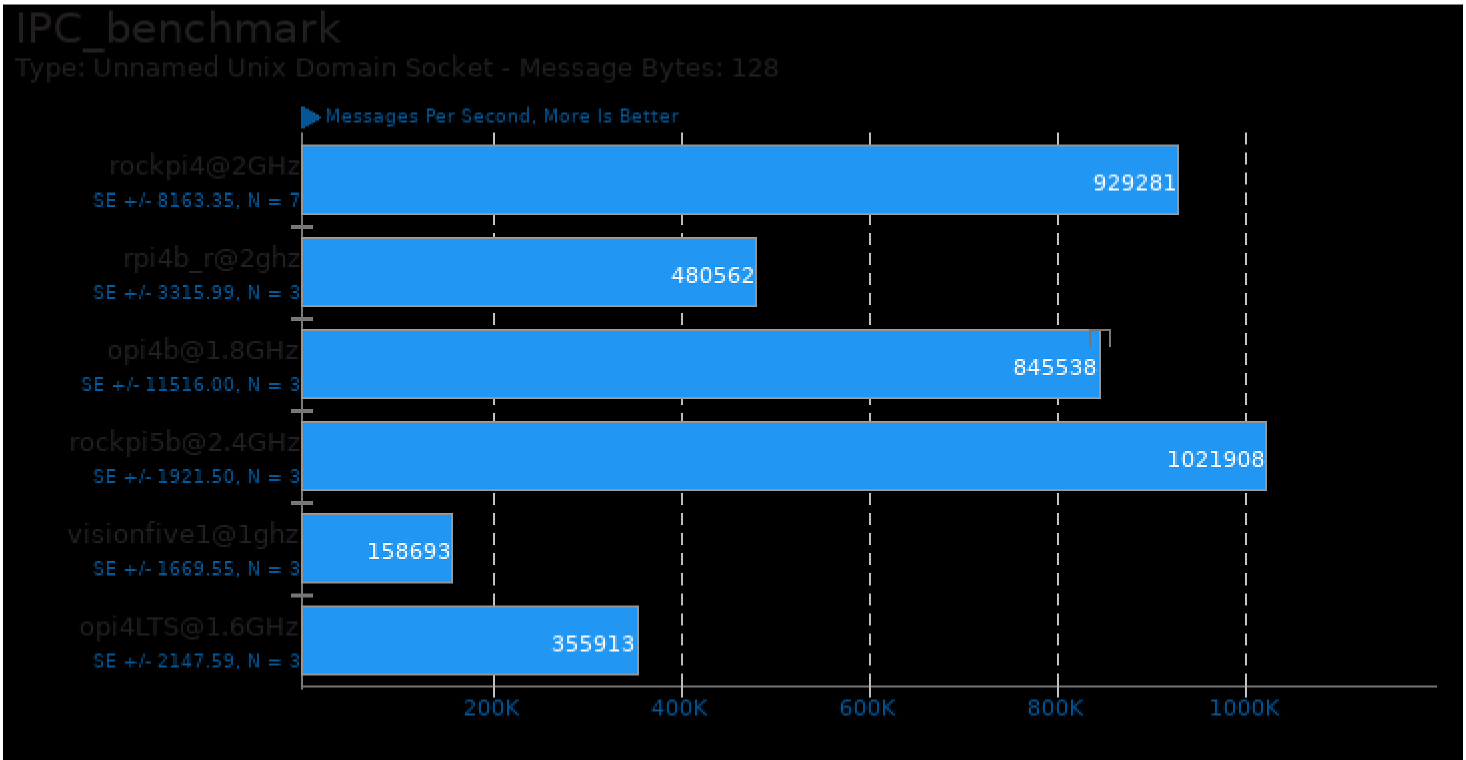

Stress-NG 0.13.02
Test: Vector Math
Bogo Ops/s, More Is Better
rockpi4@2GHz
SE +/- 1.62, N = 3
5924.10
rpi4b_r@2ghz
SE +/- 3.62, N = 3
4925.69
opi4b@1.8GHz
SE +/- 3.38, N = 3
4393.76
rockpi5b@2.4GHz
SE +/- 1.68, N = 3
12648.61
visionfive1@1ghz
SE +/- 0.04, N = 3
187.94
opi4LTS@1.6GHz
SE +/- 10.97, N = 3
4896.20
3K
6K
9K
12K
15K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -ldl -pthread -lc -latomic

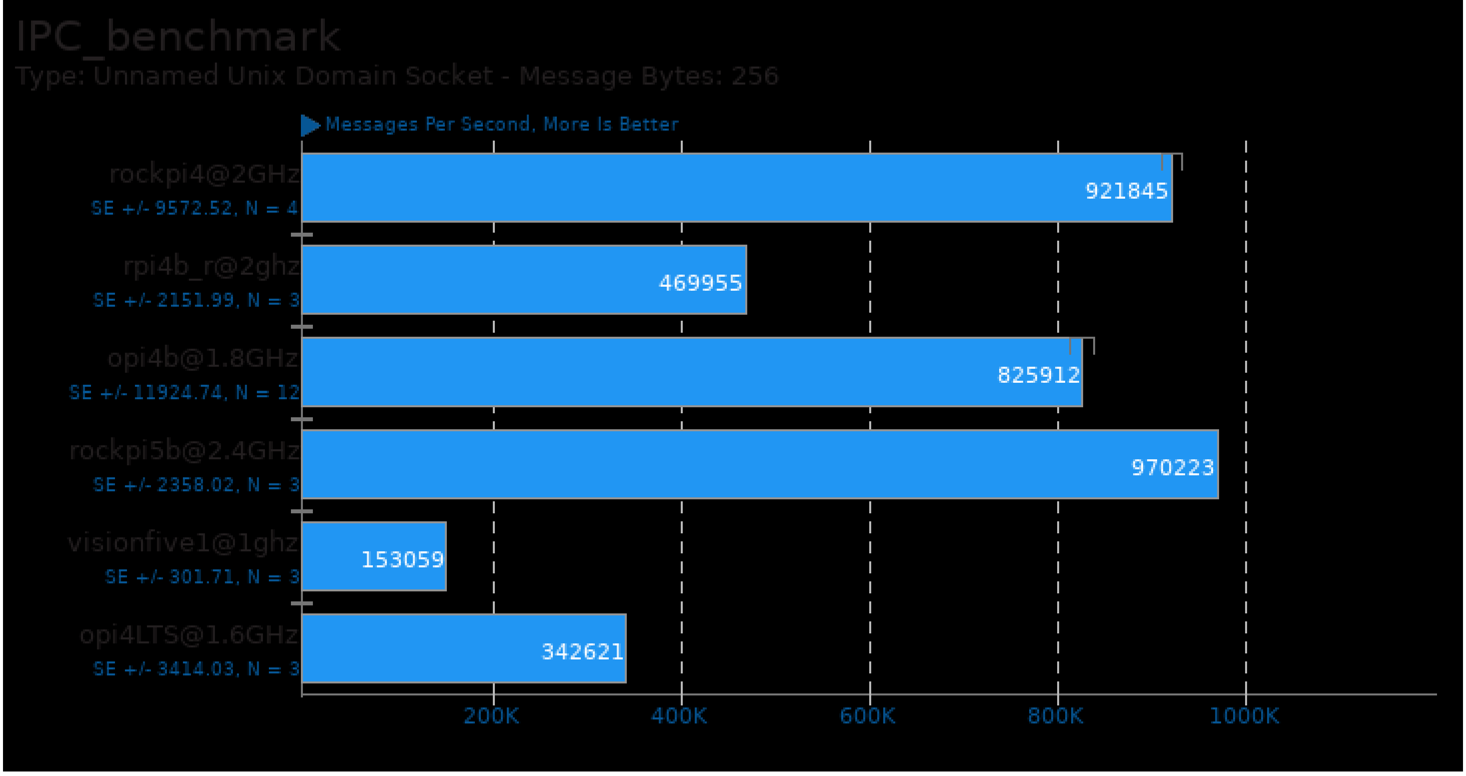

Stress-NG 0.13.02
Test: Matrix Math
Bogo Ops/s, More Is Better
rockpi4@2GHz
SE +/- 22.22, N = 4
1902.77
rpi4b_r@2ghz
SE +/- 11.14, N = 11
1482.52
opi4b@1.8GHz
SE +/- 18.63, N = 3
1986.57
rockpi5b@2.4GHz
SE +/- 86.95, N = 3
17967.72
visionfive1@1ghz
SE +/- 0.41, N = 3
276.86
opi4LTS@1.6GHz
SE +/- 7.44, N = 3
1685.00
4K
8K
12K
16K
20K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -ldl -pthread -lc -latomic

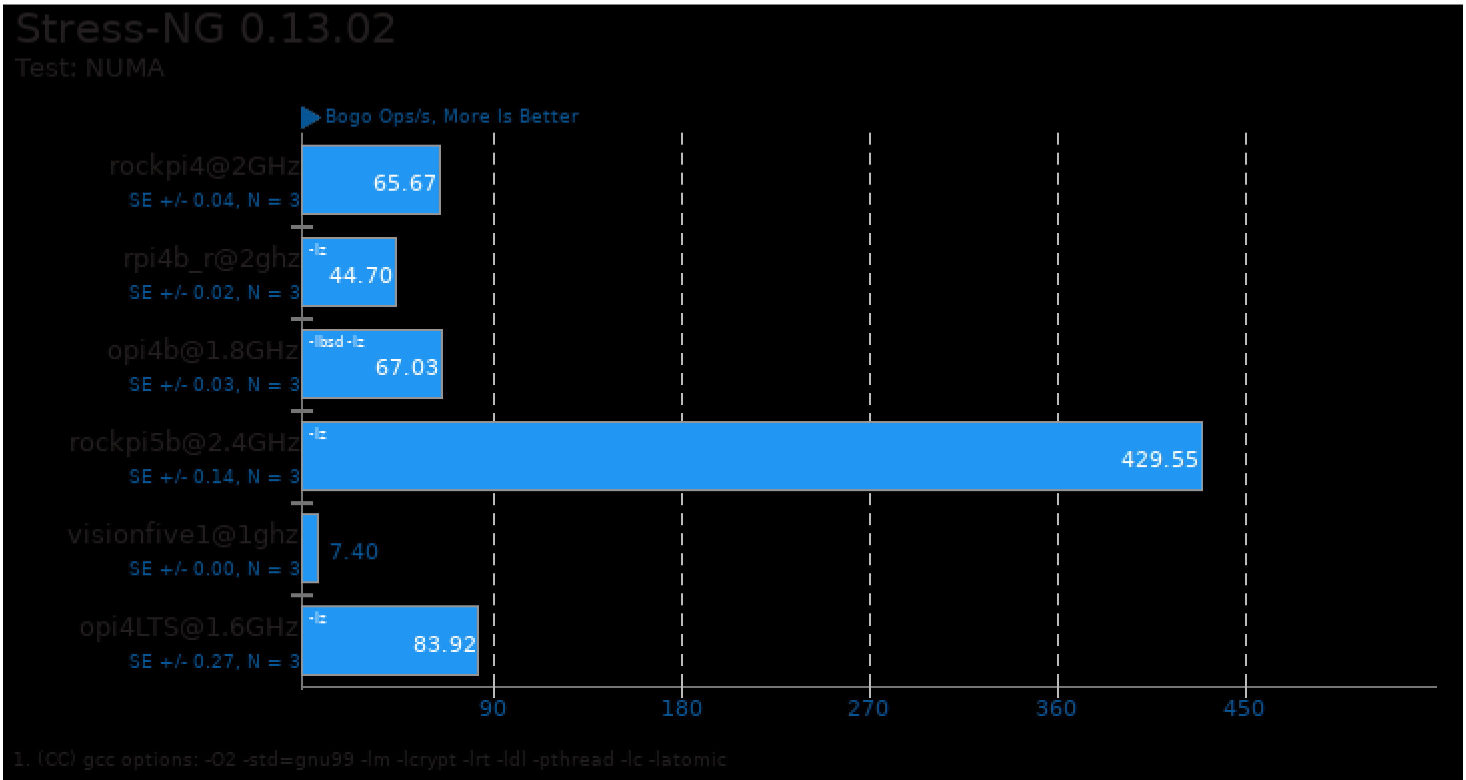

RAMspeed SMP 3.5.0
Type: Triad - Benchmark: Integer
MB/s, More Is Better
rockpi4@2GHz
SE +/- 31.47, N = 3
3855.72
rpi4b_r@2ghz
SE +/- 2.05, N = 3
2566.20
opi4b@1.8GHz
SE +/- 13.13, N = 3
4529.30
rockpi5b@2.4GHz
SE +/- 898.31, N = 15
17807.79
opi4LTS@1.6GHz
SE +/- 44.42, N = 3
3919.13
4K
8K
12K
16K
20K
1. (CC) gcc options: -O3 -march=native

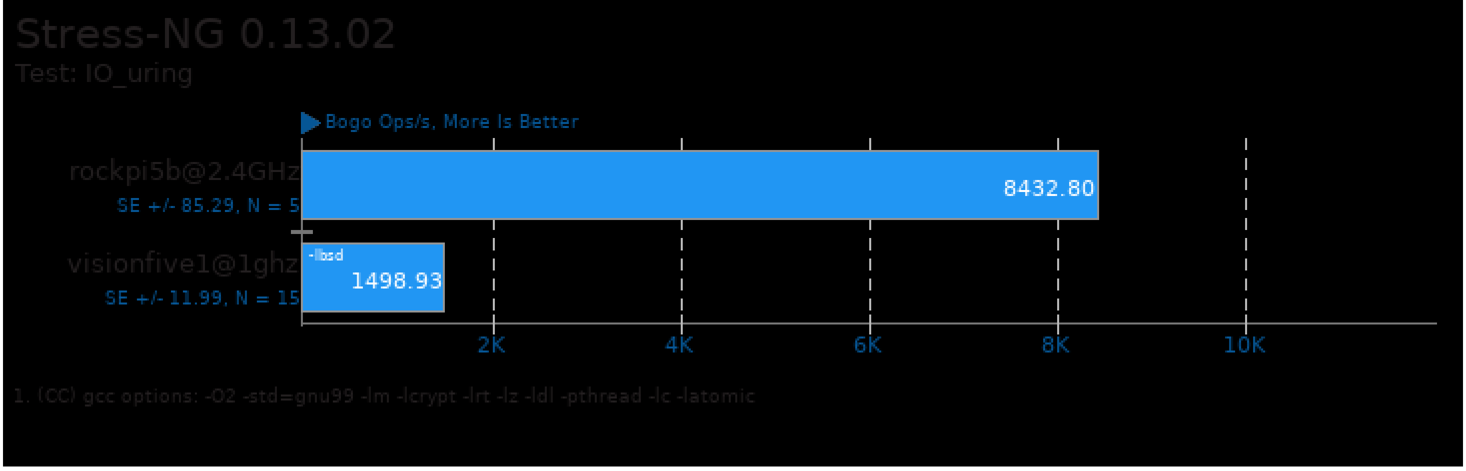

IPC_benchmark
Type: Unnamed Unix Domain Socket - Message Bytes: 1024
Messages Per Second, More Is Better
rockpi4@2GHz
SE +/- 7821.86, N = 15
787023
rpi4b_r@2ghz
SE +/- 2050.26, N = 3
433128
opi4b@1.8GHz
SE +/- 8538.04, N = 4
730492
rockpi5b@2.4GHz
SE +/- 3902.79, N = 3
888559
visionfive1@1ghz
SE +/- 436.10, N = 3
130373
opi4LTS@1.6GHz
SE +/- 2192.26, N = 3
301213
200K
400K
600K
800K
1000K

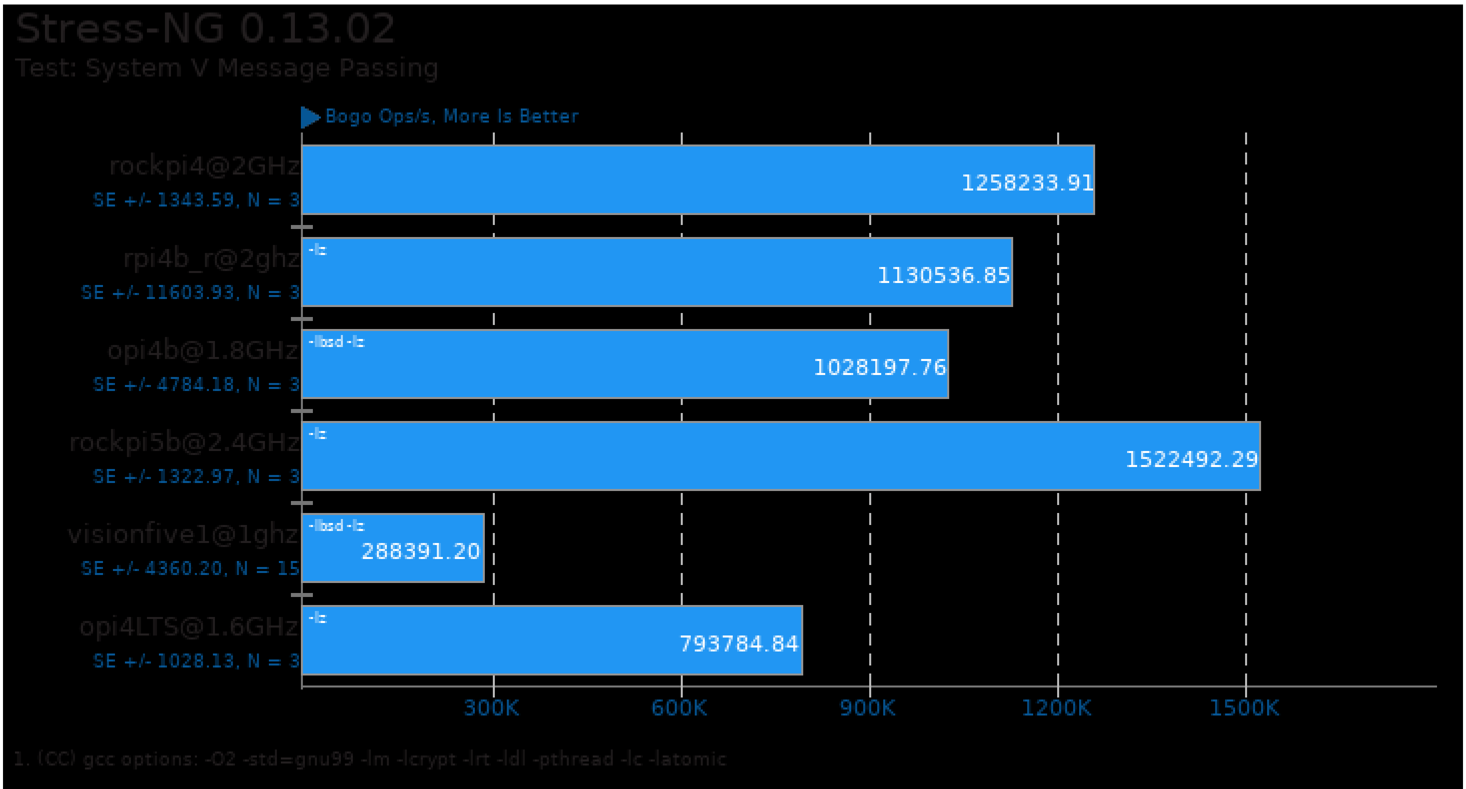

IPC_benchmark
Type: Unnamed Unix Domain Socket - Message Bytes: 512
Messages Per Second, More Is Better
rockpi4@2GHz
SE +/- 12446.99, N = 3
887585
rpi4b_r@2ghz
SE +/- 4791.92, N = 3
461486
opi4b@1.8GHz
SE +/- 6167.97, N = 15
785009
rockpi5b@2.4GHz
SE +/- 1143.86, N = 3
975420
visionfive1@1ghz
SE +/- 1175.60, N = 3
147275
opi4LTS@1.6GHz
SE +/- 1157.03, N = 3
335871
200K
400K
600K
800K
1000K

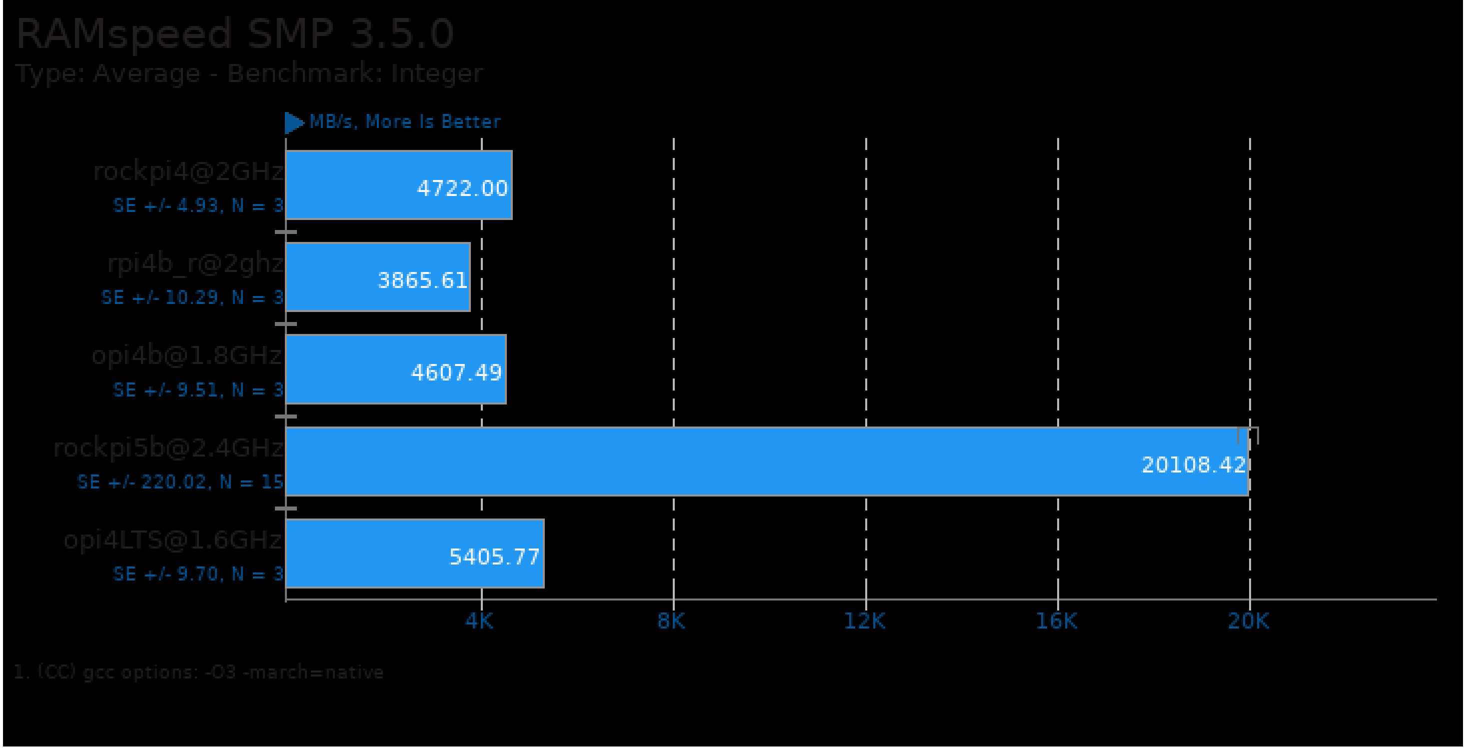

IPC_benchmark
Type: Unnamed Unix Domain Socket - Message Bytes: 128
Messages Per Second, More Is Better
rockpi4@2GHz
SE +/- 8163.35, N = 7
929281
rpi4b_r@2ghz
SE +/- 3315.99, N = 3
480562
opi4b@1.8GHz
SE +/- 11516.00, N = 3
845538
rockpi5b@2.4GHz
SE +/- 1921.50, N = 3
1021908
visionfive1@1ghz
SE +/- 1669.55, N = 3
158693
opi4LTS@1.6GHz
SE +/- 2147.59, N = 3
355913
200K
400K
600K
800K
1000K

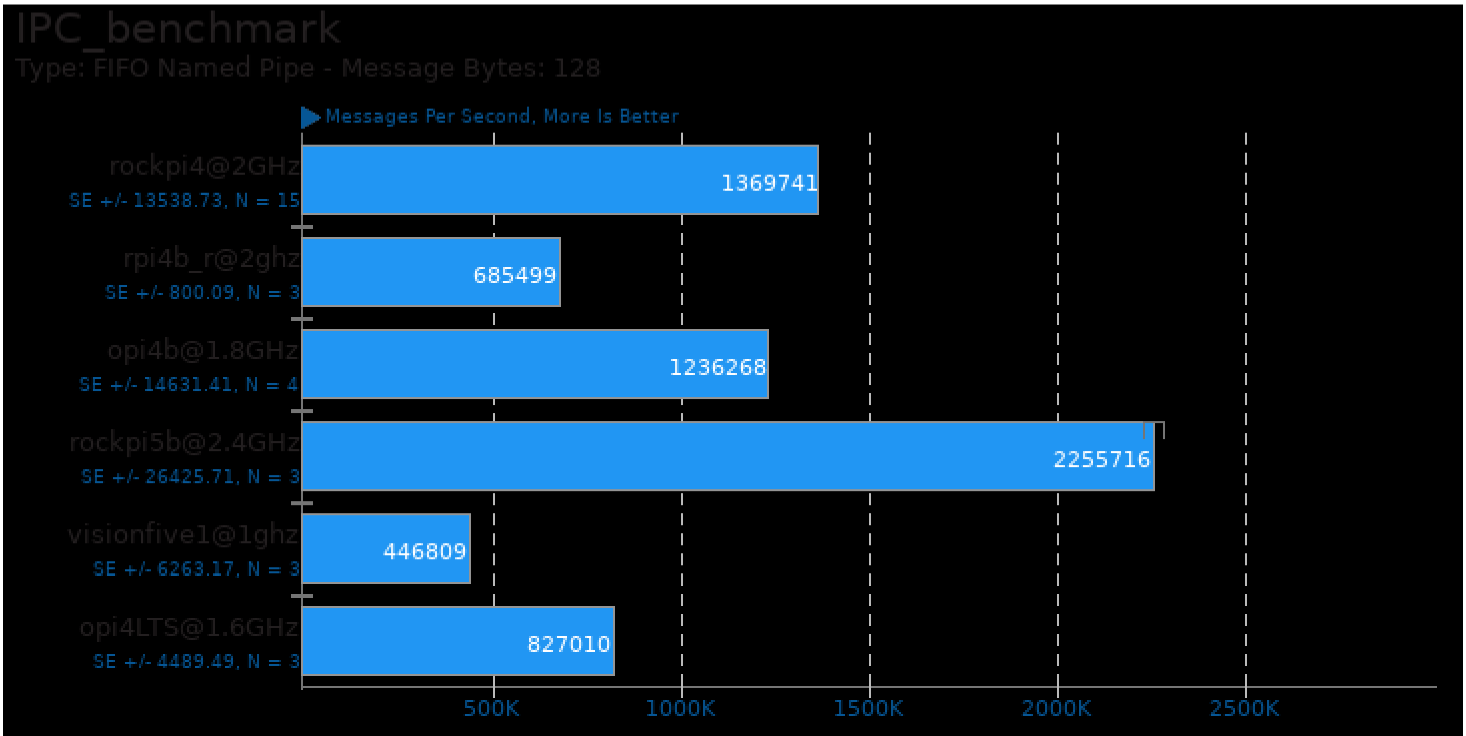

IPC_benchmark
Type: Unnamed Unix Domain Socket - Message Bytes: 256
Messages Per Second, More Is Better
rockpi4@2GHz
SE +/- 9572.52, N = 4
921845
rpi4b_r@2ghz
SE +/- 2151.99, N = 3
469955
opi4b@1.8GHz
SE +/- 11924.74, N = 12
825912
rockpi5b@2.4GHz
SE +/- 2358.02, N = 3
970223
visionfive1@1ghz
SE +/- 301.71, N = 3
153059
opi4LTS@1.6GHz
SE +/- 3414.03, N = 3
342621
200K
400K
600K
800K
1000K

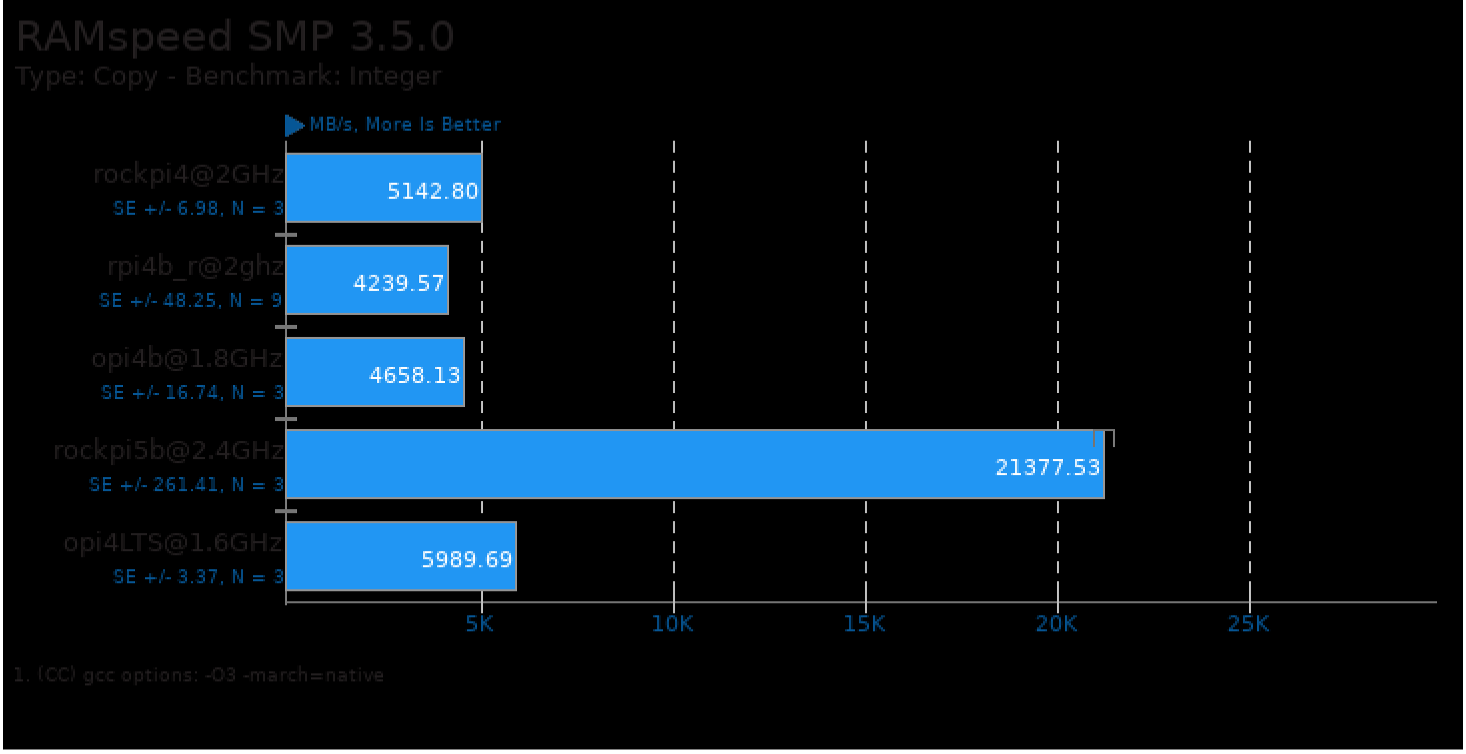

Stress-NG 0.13.02
Test: NUMA
Bogo Ops/s, More Is Better
rockpi4@2GHz
SE +/- 0.04, N = 3
65.67
rpi4b_r@2ghz
SE +/- 0.02, N = 3
-lz
44.70
opi4b@1.8GHz
SE +/- 0.03, N = 3
-lbsd -lz
67.03
rockpi5b@2.4GHz
SE +/- 0.14, N = 3
-lz
429.55
visionfive1@1ghz
SE +/- 0.00, N = 3
7.40
opi4LTS@1.6GHz
SE +/- 0.27, N = 3
-lz
83.92
90
180
270
360
450
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -ldl -pthread -lc -latomic

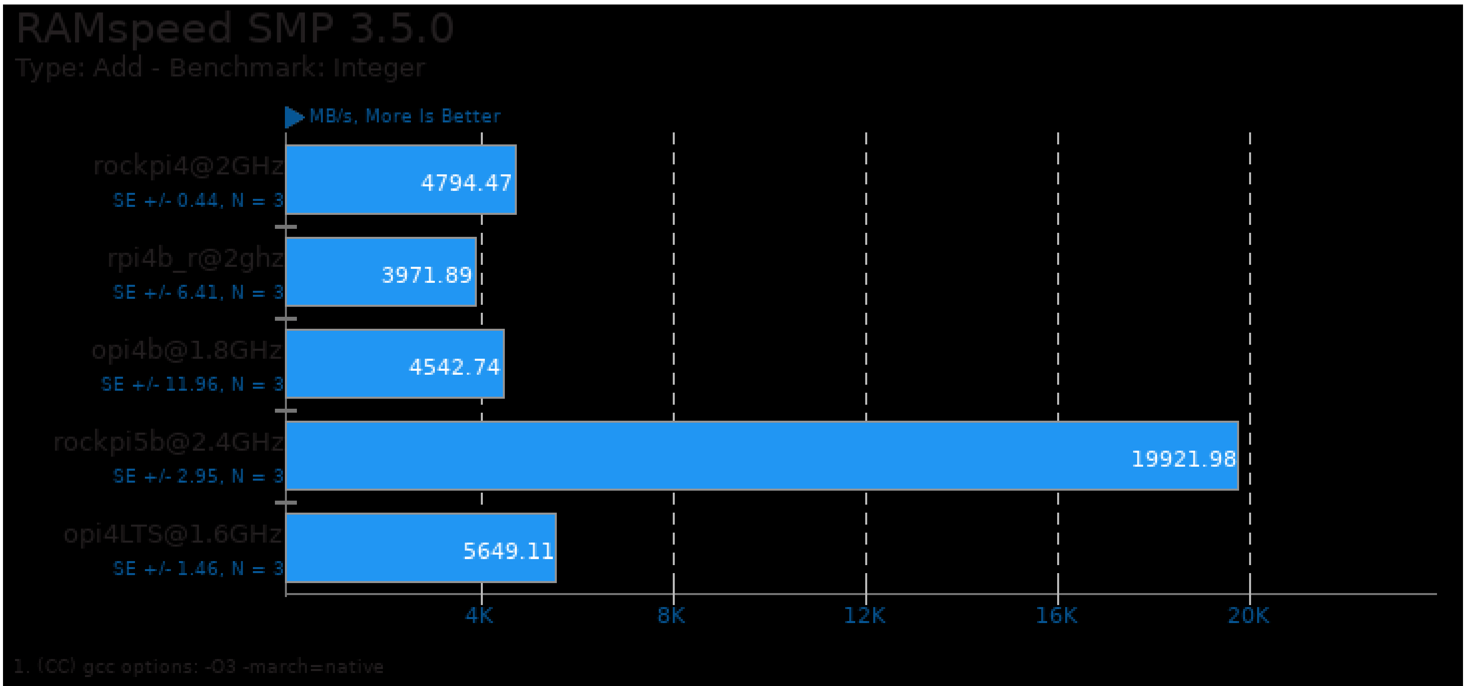

Stress-NG 0.13.02
Test: IO_uring
Bogo Ops/s, More Is Better
rockpi5b@2.4GHz
SE +/- 85.29, N = 5
8432.80
visionfive1@1ghz
SE +/- 11.99, N = 15
-lbsd
1498.93
2K
4K
6K
8K
10K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -pthread -lc -latomic

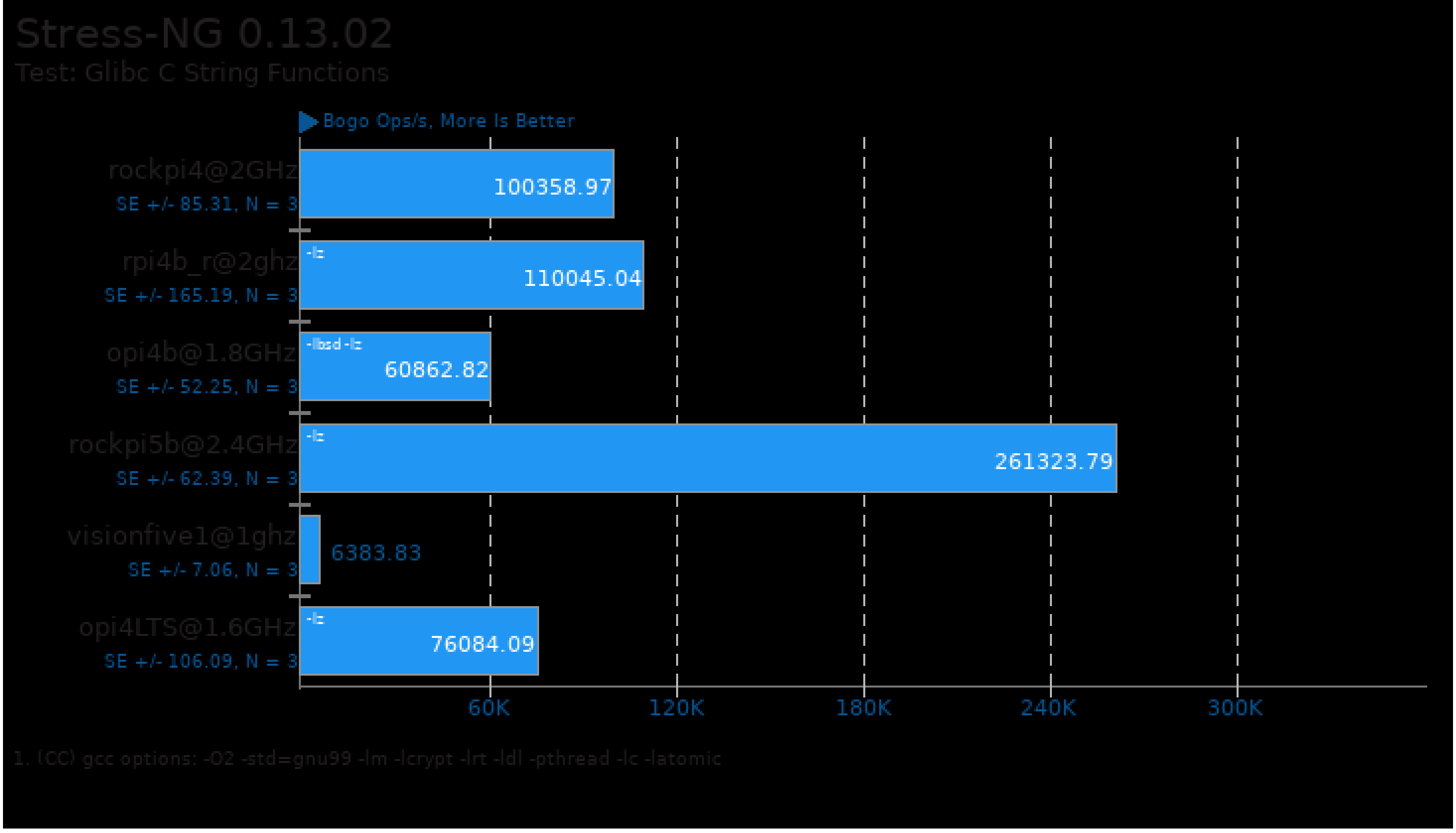

Stress-NG 0.13.02
Test: System V Message Passing
Bogo Ops/s, More Is Better
rockpi4@2GHz
SE +/- 1343.59, N = 3
1258233.91
rpi4b_r@2ghz
SE +/- 11603.93, N = 3
-lz
1130536.85
opi4b@1.8GHz
SE +/- 4784.18, N = 3
-lbsd -lz
1028197.76
rockpi5b@2.4GHz
SE +/- 1322.97, N = 3
-lz
1522492.29
visionfive1@1ghz
SE +/- 4360.20, N = 15
-lbsd -lz
288391.20
opi4LTS@1.6GHz
SE +/- 1028.13, N = 3
-lz
793784.84
300K
600K
900K
1200K
1500K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -ldl -pthread -lc -latomic

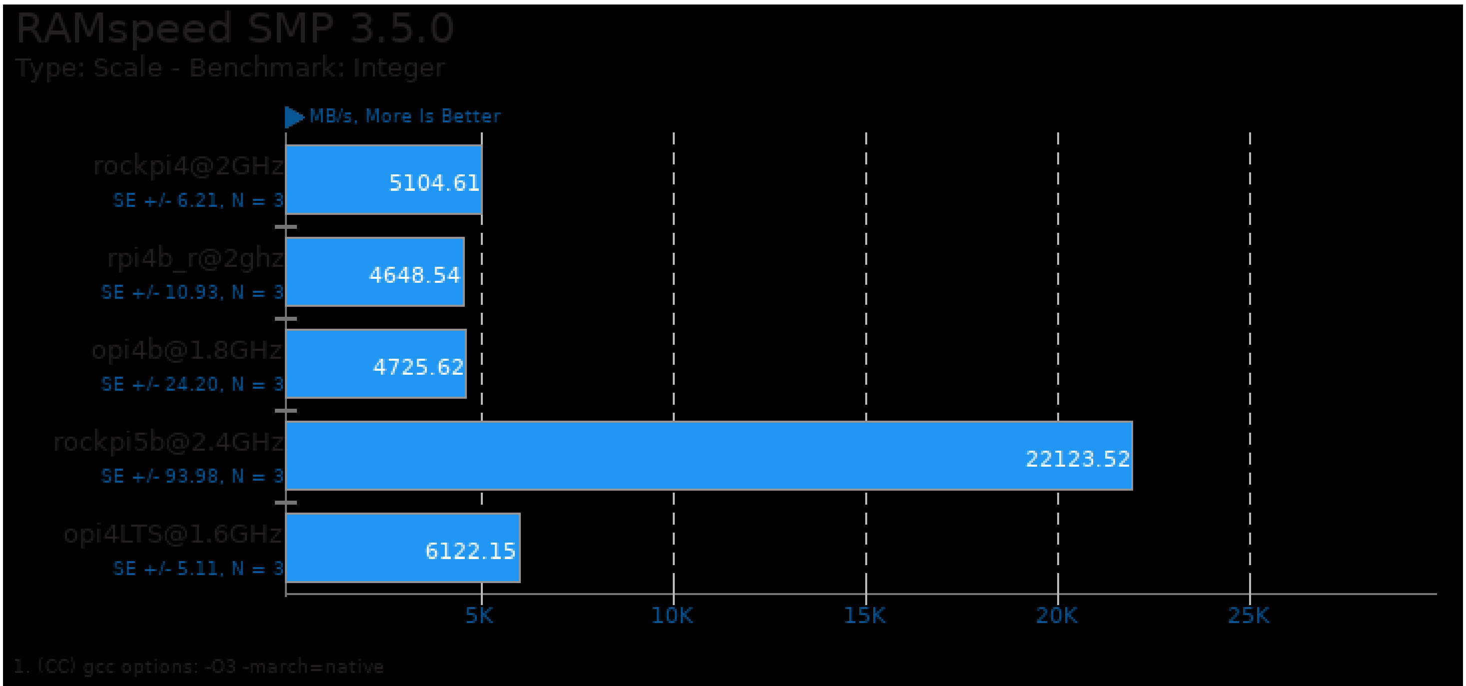

RAMspeed SMP 3.5.0
Type: Average - Benchmark: Integer
MB/s, More Is Better
rockpi4@2GHz
SE +/- 4.93, N = 3
4722.00
rpi4b_r@2ghz
SE +/- 10.29, N = 3
3865.61
opi4b@1.8GHz
SE +/- 9.51, N = 3
4607.49
rockpi5b@2.4GHz
SE +/- 220.02, N = 15
20108.42
opi4LTS@1.6GHz
SE +/- 9.70, N = 3
5405.77
4K
8K
12K
16K
20K
1. (CC) gcc options: -O3 -march=native

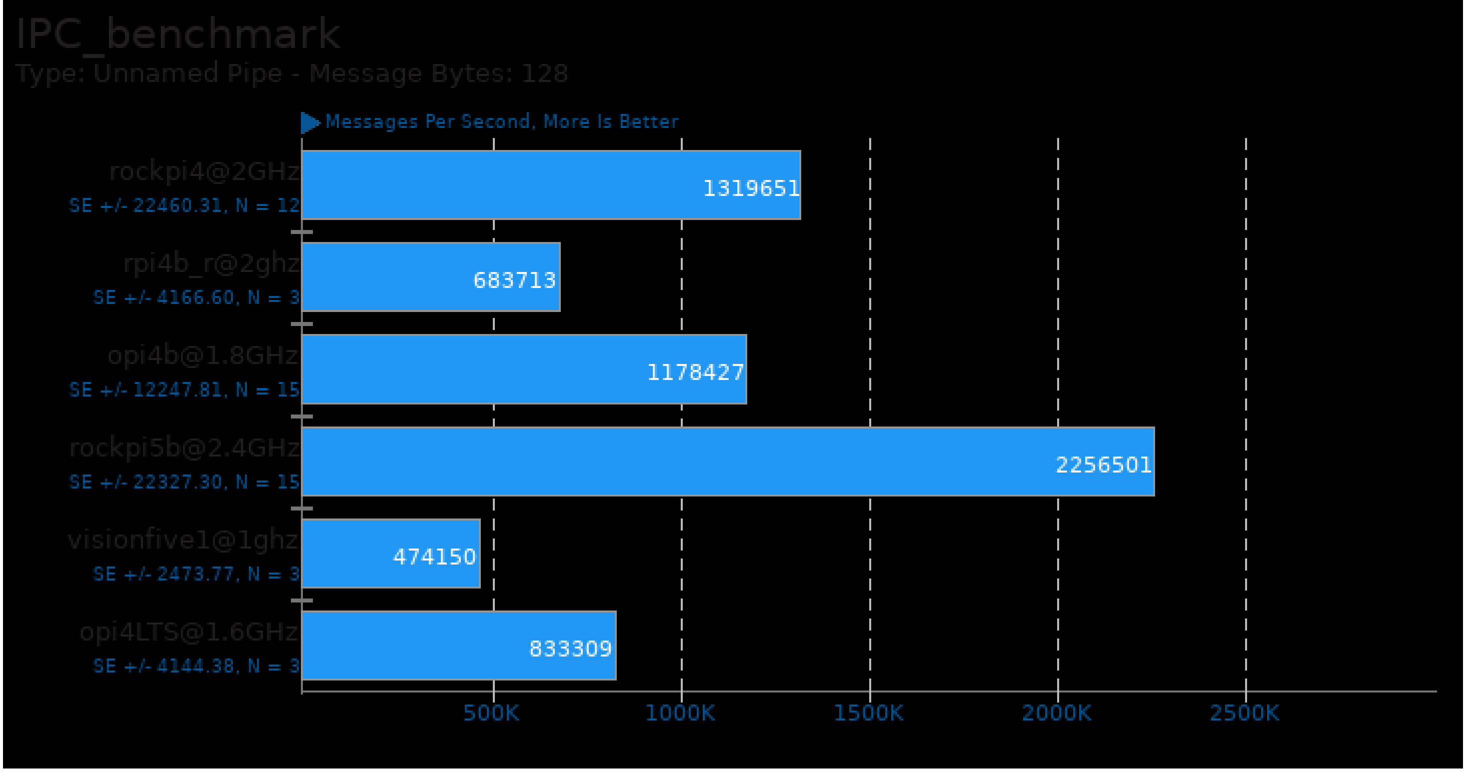

IPC_benchmark
Type: FIFO Named Pipe - Message Bytes: 128
Messages Per Second, More Is Better
rockpi4@2GHz
SE +/- 13538.73, N = 15
1369741
rpi4b_r@2ghz
SE +/- 800.09, N = 3
685499
opi4b@1.8GHz
SE +/- 14631.41, N = 4
1236268
rockpi5b@2.4GHz
SE +/- 26425.71, N = 3
2255716
visionfive1@1ghz
SE +/- 6263.17, N = 3
446809
opi4LTS@1.6GHz
SE +/- 4489.49, N = 3
827010
500K
1000K
1500K
2000K
2500K

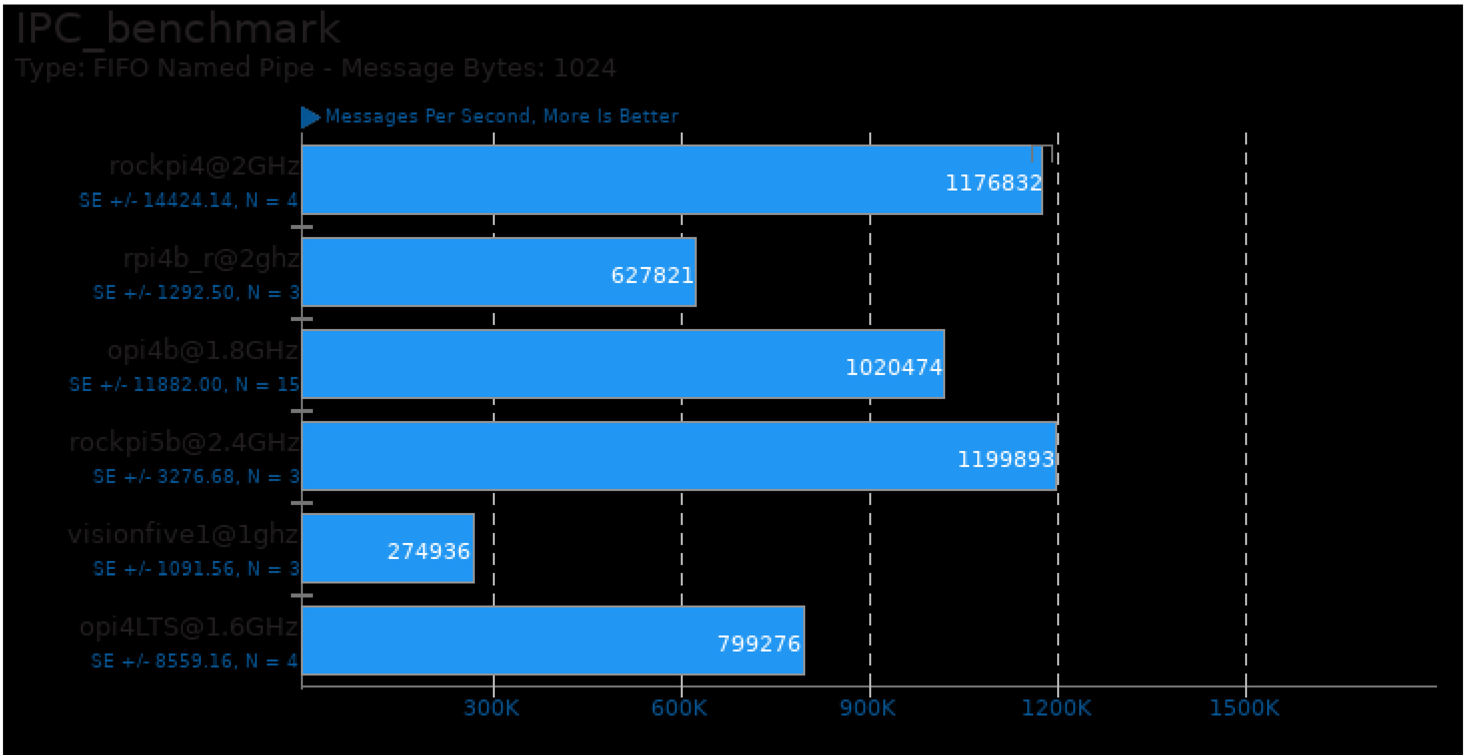

RAMspeed SMP 3.5.0
Type: Copy - Benchmark: Integer
MB/s, More Is Better
rockpi4@2GHz
SE +/- 6.98, N = 3
5142.80
rpi4b_r@2ghz
SE +/- 48.25, N = 9
4239.57
opi4b@1.8GHz
SE +/- 16.74, N = 3
4658.13
rockpi5b@2.4GHz
SE +/- 261.41, N = 3
21377.53
opi4LTS@1.6GHz
SE +/- 3.37, N = 3
5989.69
5K
10K
15K
20K
25K
1. (CC) gcc options: -O3 -march=native

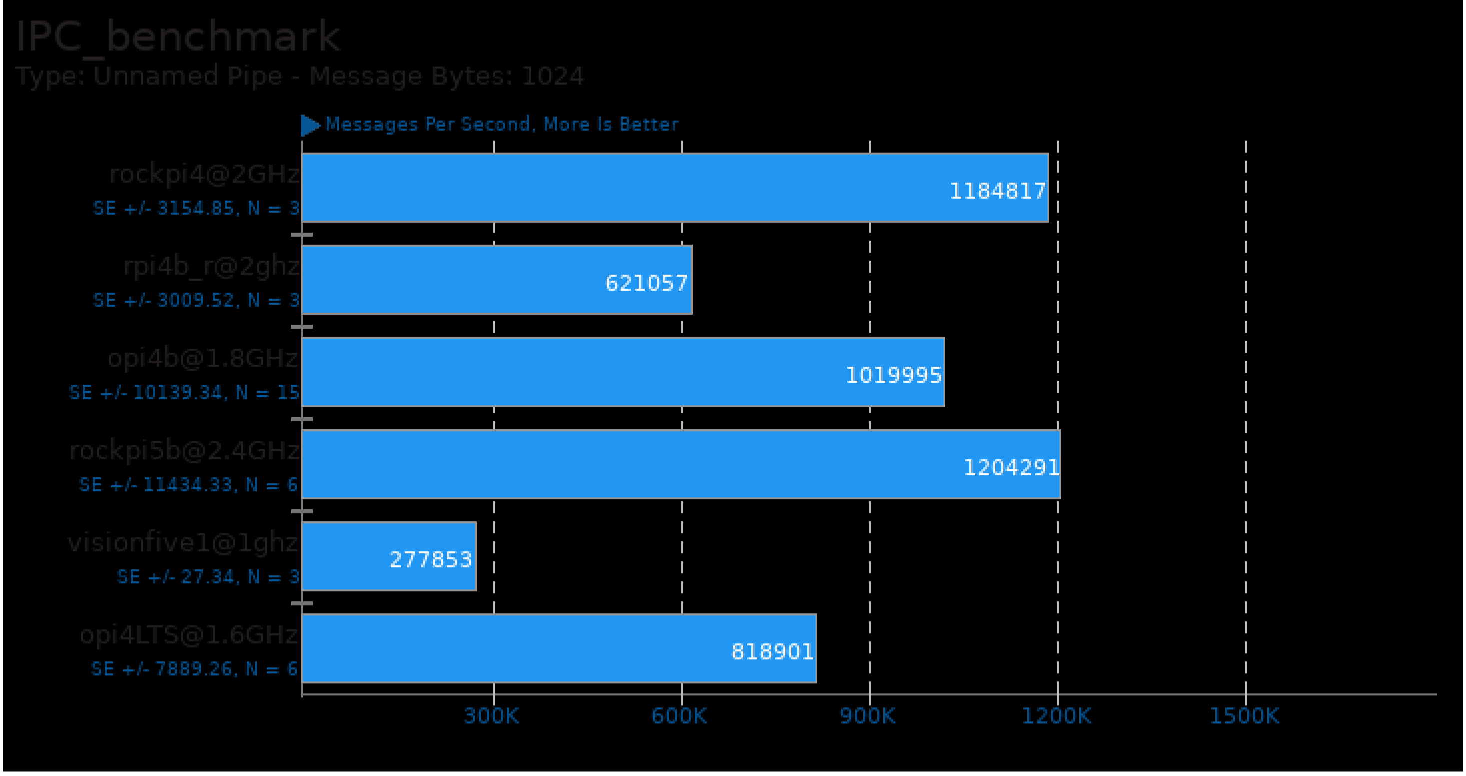

RAMspeed SMP 3.5.0
Type: Add - Benchmark: Integer
MB/s, More Is Better
rockpi4@2GHz
SE +/- 0.44, N = 3
4794.47
rpi4b_r@2ghz
SE +/- 6.41, N = 3
3971.89
opi4b@1.8GHz
SE +/- 11.96, N = 3
4542.74
rockpi5b@2.4GHz
SE +/- 2.95, N = 3
19921.98
opi4LTS@1.6GHz
SE +/- 1.46, N = 3
5649.11
4K
8K
12K
16K
20K
1. (CC) gcc options: -O3 -march=native

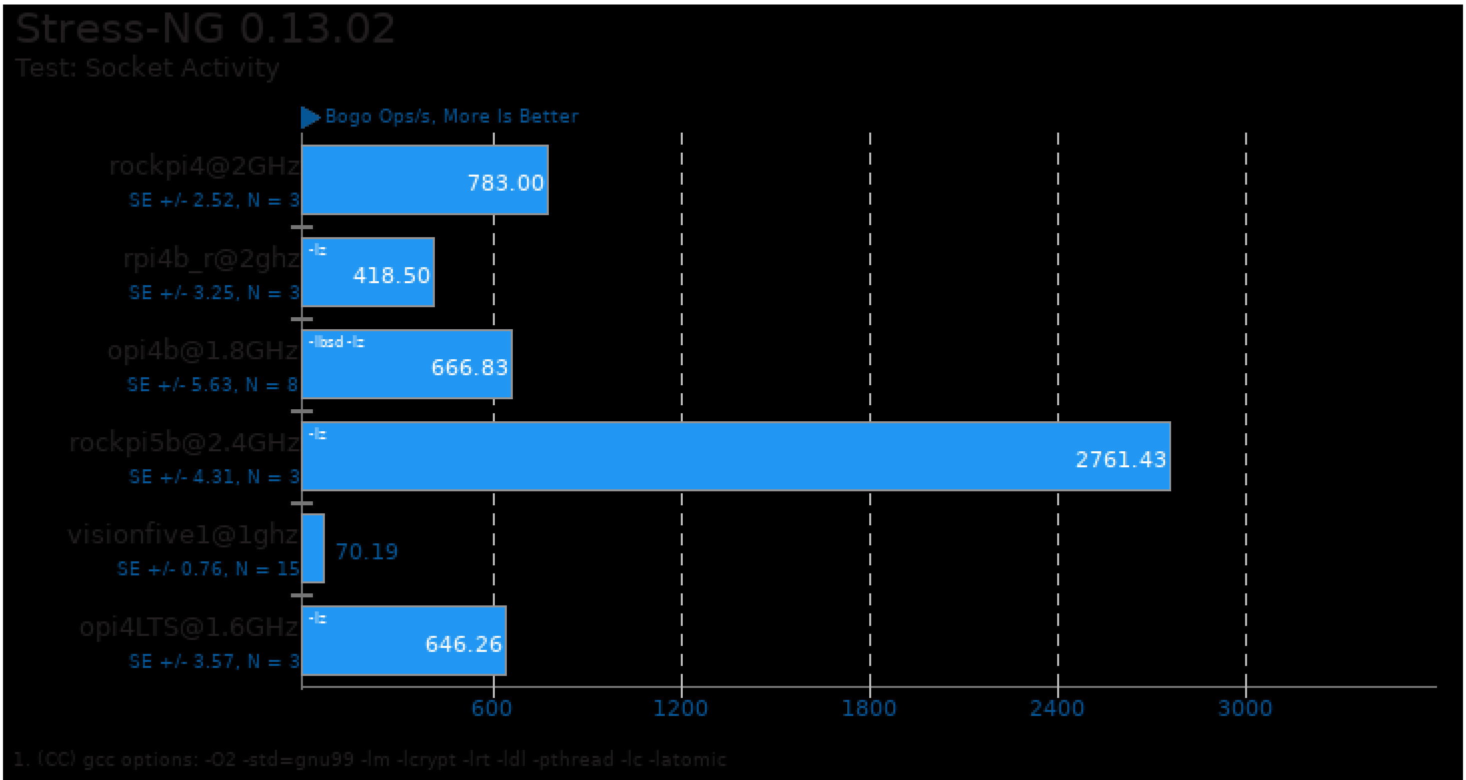

Stress-NG 0.13.02
Test: Glibc C String Functions
Bogo Ops/s, More Is Better
rockpi4@2GHz
SE +/- 85.31, N = 3
100358.97
rpi4b_r@2ghz
SE +/- 165.19, N = 3
-lz
110045.04
opi4b@1.8GHz
SE +/- 52.25, N = 3
-lbsd -lz
60862.82
rockpi5b@2.4GHz
SE +/- 62.39, N = 3
-lz
261323.79
visionfive1@1ghz
SE +/- 7.06, N = 3
6383.83
opi4LTS@1.6GHz
SE +/- 106.09, N = 3
-lz
76084.09
60K
120K
180K
240K
300K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -ldl -lpthread -lc -latomic


RAMspeed SMP 3.5.0
Type: Scale - Benchmark: Integer
MB/s, More Is Better
rockpi4@2GHz
SE +/- 6.21, N = 3
5104.61
rpi4b_r@2ghz
SE +/- 10.93, N = 3
4648.54
opi4b@1.8GHz
SE +/- 24.20, N = 3
4725.62
rockpi5b@2.4GHz
SE +/- 93.98, N = 3
22123.52
opi4LTS@1.6GHz
SE +/- 5.11, N = 3
6122.15
5K
10K
15K
20K
25K
1. (CC) gcc options: -O3 -march=native

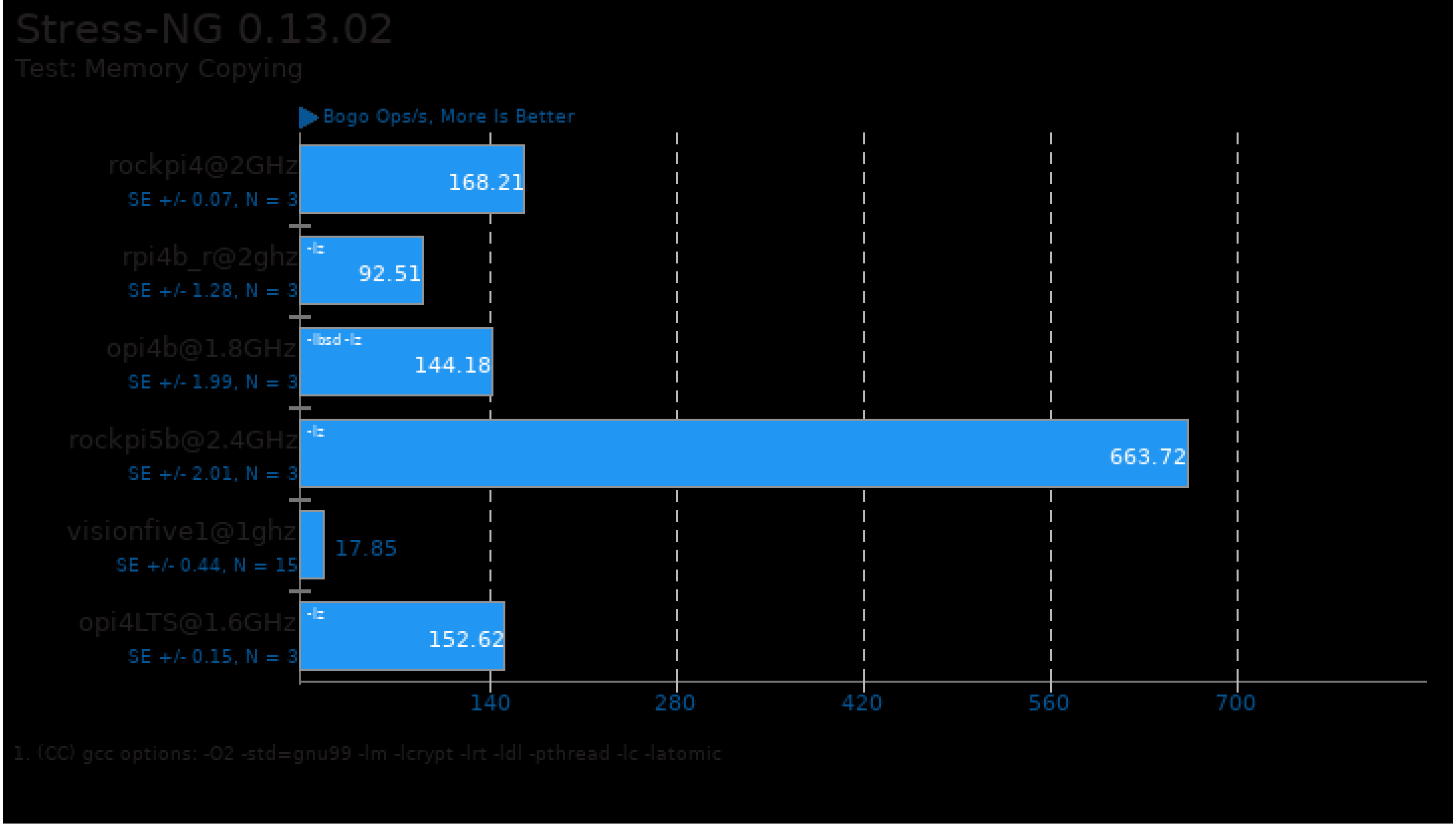

IPC_benchmark
Type: Unnamed Pipe - Message Bytes: 128
Messages Per Second, More Is Better
rockpi4@2GHz
SE +/- 22460.31, N = 12
1319651
rpi4b_r@2ghz
SE +/- 4166.60, N = 3
683713
opi4b@1.8GHz
SE +/- 12247.81, N = 15
1178427
rockpi5b@2.4GHz
SE +/- 22327.30, N = 15
2256501
visionfive1@1ghz
SE +/- 2473.77, N = 3
474150
opi4LTS@1.6GHz
SE +/- 4144.38, N = 3
833309
500K
1000K
1500K
2000K
2500K


IPC_benchmark
Type: FIFO Named Pipe - Message Bytes: 1024
Messages Per Second, More Is Better
rockpi4@2GHz
SE +/- 14424.14, N = 4
1176832
rpi4b_r@2ghz
SE +/- 1292.50, N = 3
627821
opi4b@1.8GHz
SE +/- 11882.00, N = 15
1020474
rockpi5b@2.4GHz
SE +/- 3276.68, N = 3
1199893
visionfive1@1ghz
SE +/- 1091.56, N = 3
274936
opi4LTS@1.6GHz
SE +/- 8559.16, N = 4
799276
300K
600K
900K
1200K
1500K

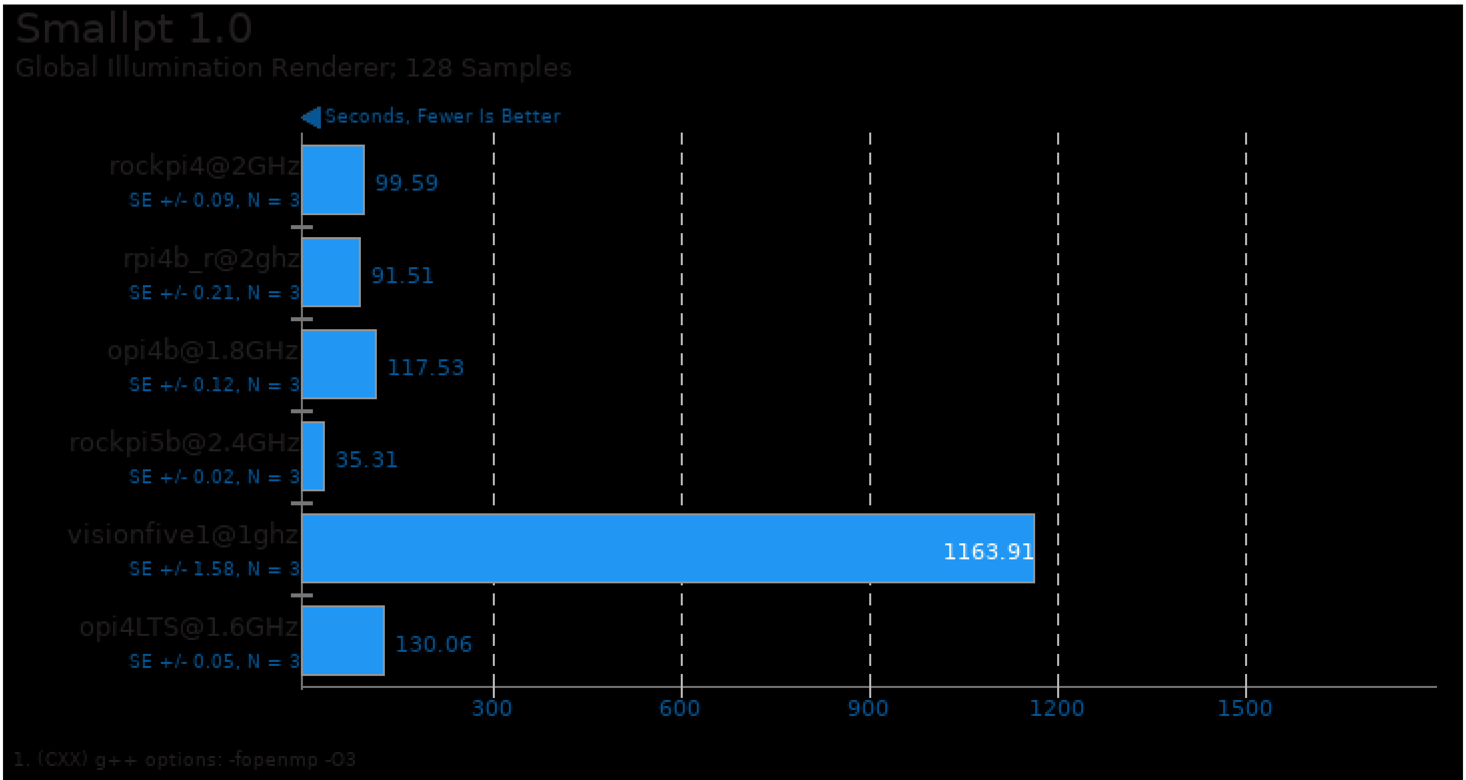

IPC_benchmark
Type: Unnamed Pipe - Message Bytes: 1024
Messages Per Second, More Is Better
rockpi4@2GHz
SE +/- 3154.85, N = 3
1184817
rpi4b_r@2ghz
SE +/- 3009.52, N = 3
621057
opi4b@1.8GHz
SE +/- 10139.34, N = 15
1019995
rockpi5b@2.4GHz
SE +/- 11434.33, N = 6
1204291
visionfive1@1ghz
SE +/- 27.34, N = 3
277853
opi4LTS@1.6GHz
SE +/- 7889.26, N = 6
818901
300K
600K
900K
1200K
1500K

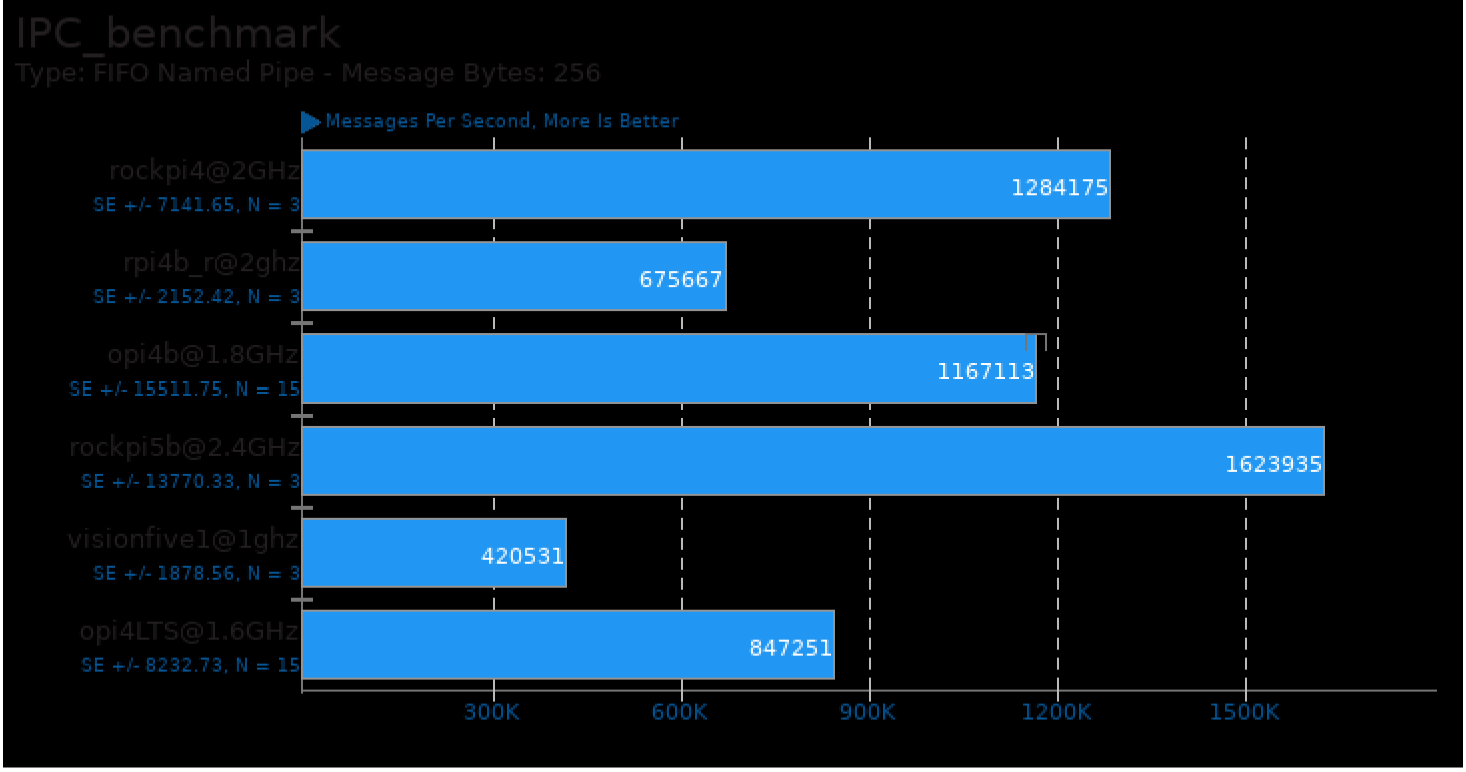


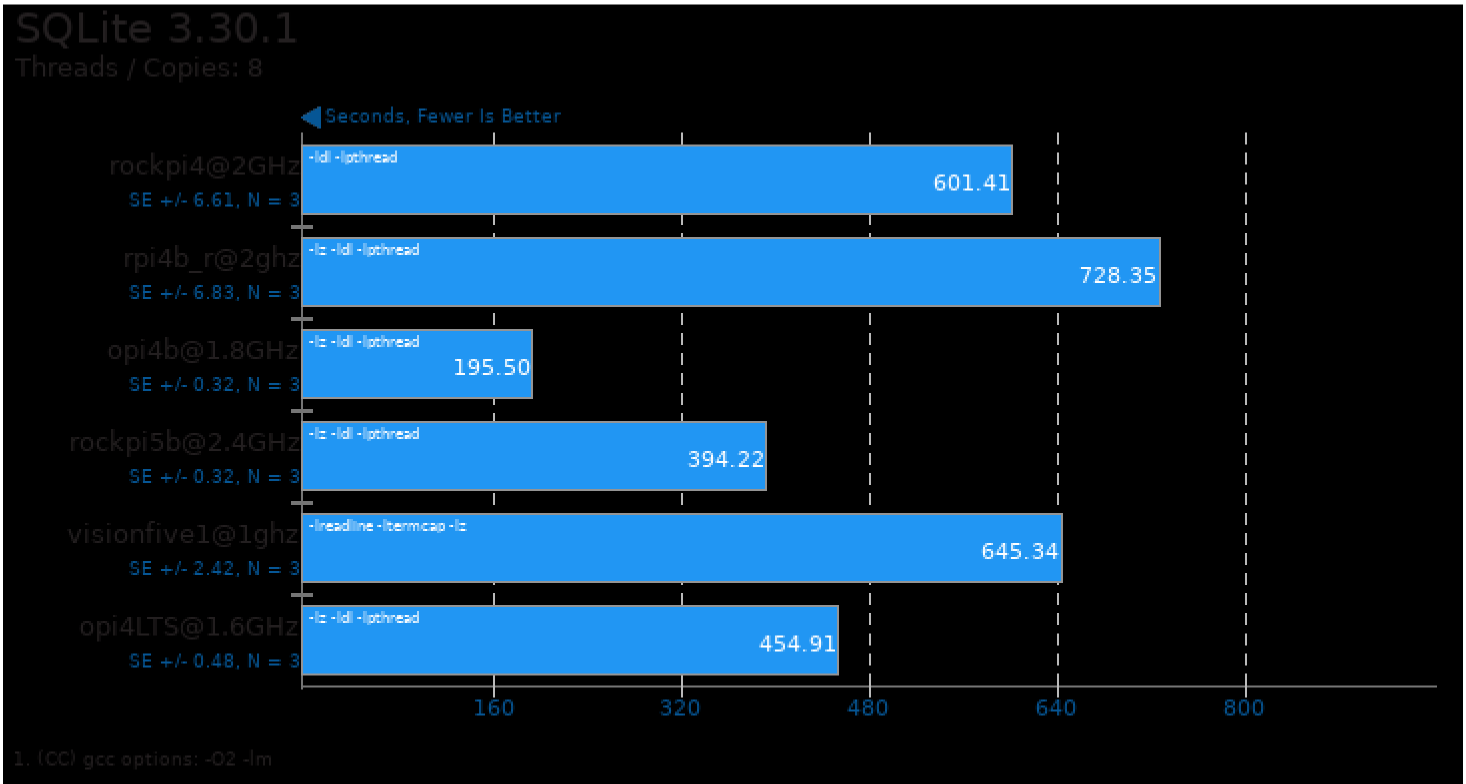
Stress-NG 0.13.02
Test: Socket Activity
Bogo Ops/s, More Is Better
rockpi4@2GHz
SE +/- 2.52, N = 3
783.00
rpi4b_r@2ghz
SE +/- 3.25, N = 3
418.50
opi4b@1.8GHz
SE +/- 5.63, N = 8
666.83
rockpi5b@2.4GHz
SE +/- 4.31, N = 3
2761.43
visionfive1@1ghz
SE +/- 0.76, N = 15
70.19
opi4LTS@1.6GHz
SE +/- 3.57, N = 3
646.26
600
1200
1800
2400
3000
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -ldl -pthread -lc -latomic

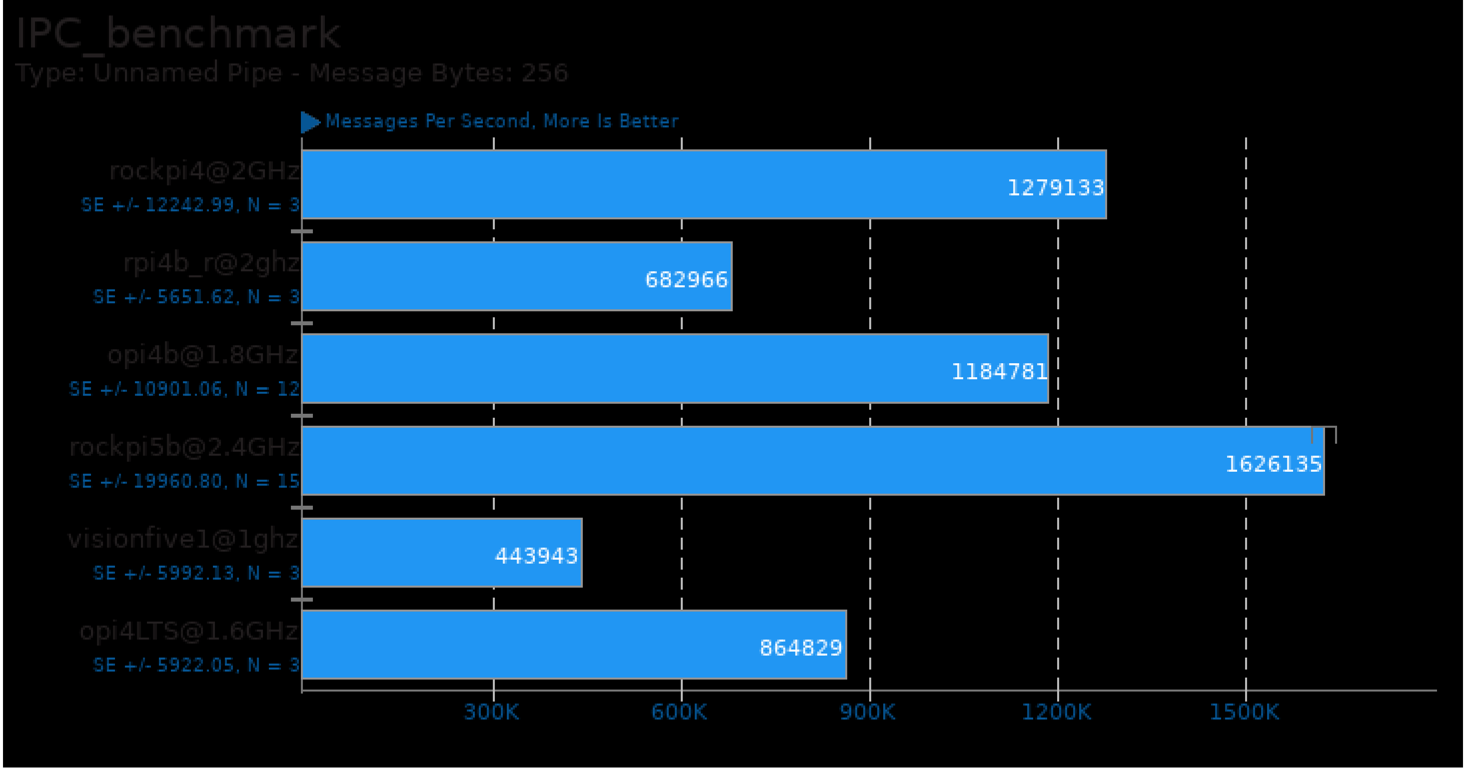


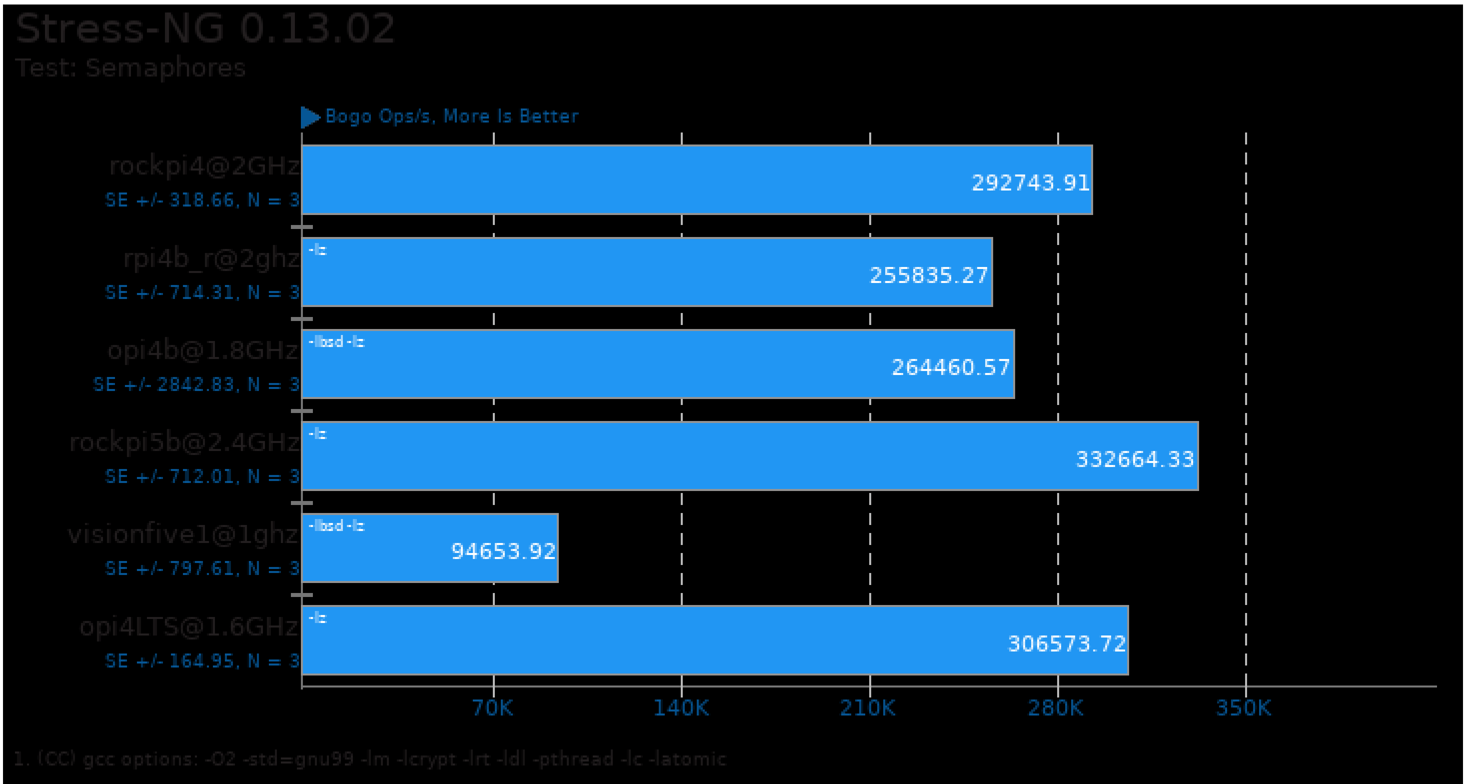
Stress-NG 0.13.02
Test: Memory Copying
Bogo Ops/s, More Is Better
rockpi4@2GHz
SE +/- 0.07, N = 3
168.21
rpi4b_r@2ghz
SE +/- 1.28, N = 3
92.51
opi4b@1.8GHz
SE +/- 1.99, N = 3
144.18
rockpi5b@2.4GHz
SE +/- 2.01, N = 3
663.72
visionfive1@1ghz
SE +/- 0.44, N = 15
17.85
opi4LTS@1.6GHz
SE +/- 0.15, N = 3
152.62
140
280
420
560
700
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -ldl -pthread -lc -latomic

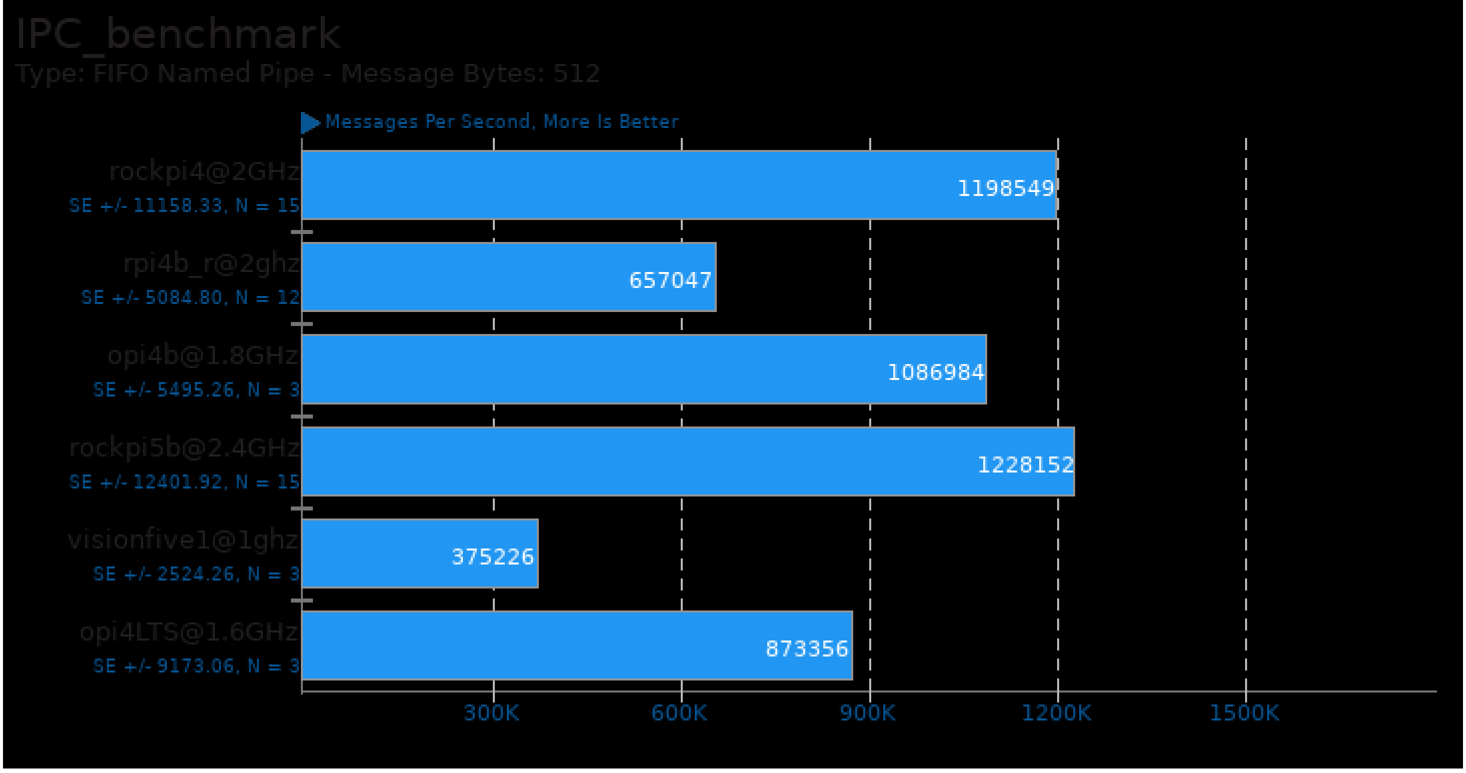

Smallpt 1.0
Global Illumination Renderer; 128 Samples
Seconds, Fewer Is Better
rockpi4@2GHz
SE +/- 0.09, N = 3
99.59
rpi4b_r@2ghz
SE +/- 0.21, N = 3
91.51
opi4b@1.8GHz
SE +/- 0.12, N = 3
117.53
rockpi5b@2.4GHz
SE +/- 0.02, N = 3
35.31
visionfive1@1ghz
SE +/- 1.58, N = 3
1163.91
opi4LTS@1.6GHz
SE +/- 0.05, N = 3
130.06
300
600
900
1200
1500
1. (CXX) g++ options: -fopenmp -O3

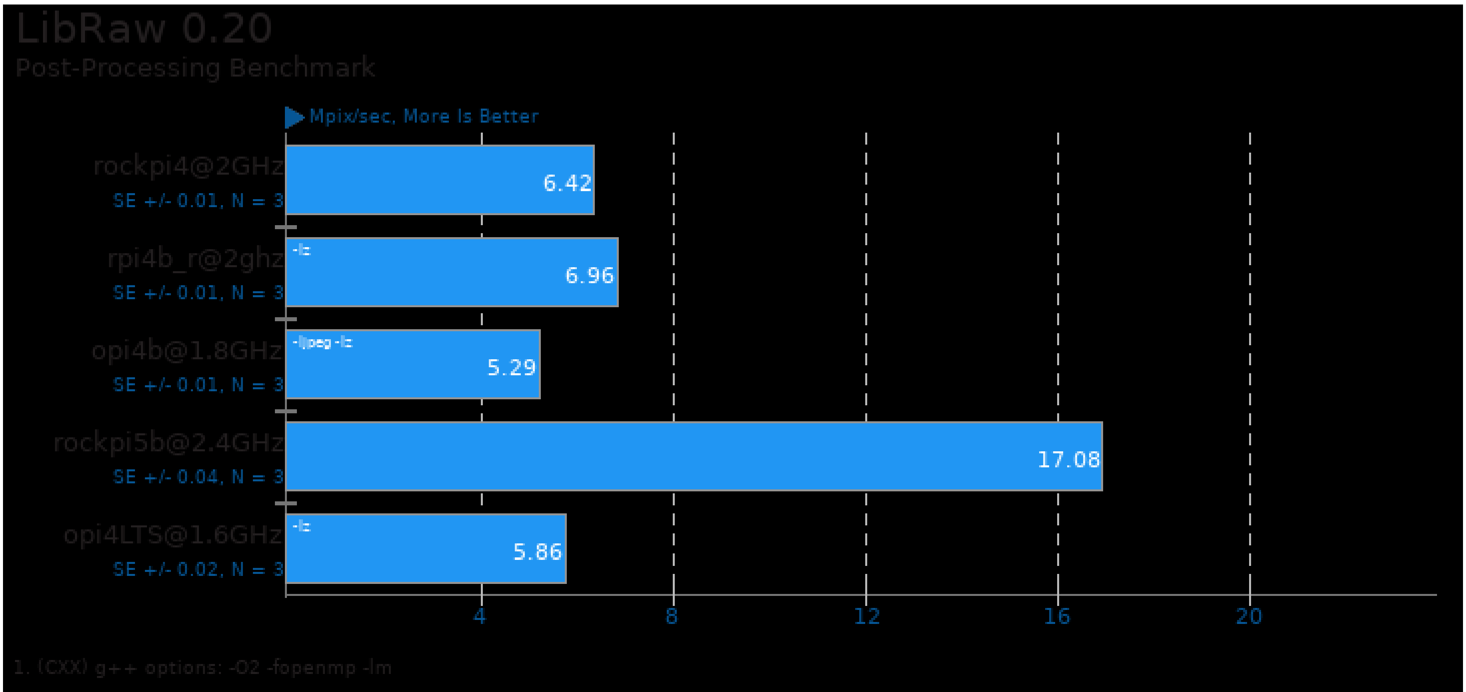

IPC_benchmark
Type: FIFO Named Pipe - Message Bytes: 256
Messages Per Second, More Is Better
rockpi4@2GHz
SE +/- 7141.65, N = 3
1284175
rpi4b_r@2ghz
SE +/- 2152.42, N = 3
675667
opi4b@1.8GHz
SE +/- 15511.75, N = 15
1167113
rockpi5b@2.4GHz
SE +/- 13770.33, N = 3
1623935
visionfive1@1ghz
SE +/- 1878.56, N = 3
420531
opi4LTS@1.6GHz
SE +/- 8232.73, N = 15
847251
300K
600K
900K
1200K
1500K

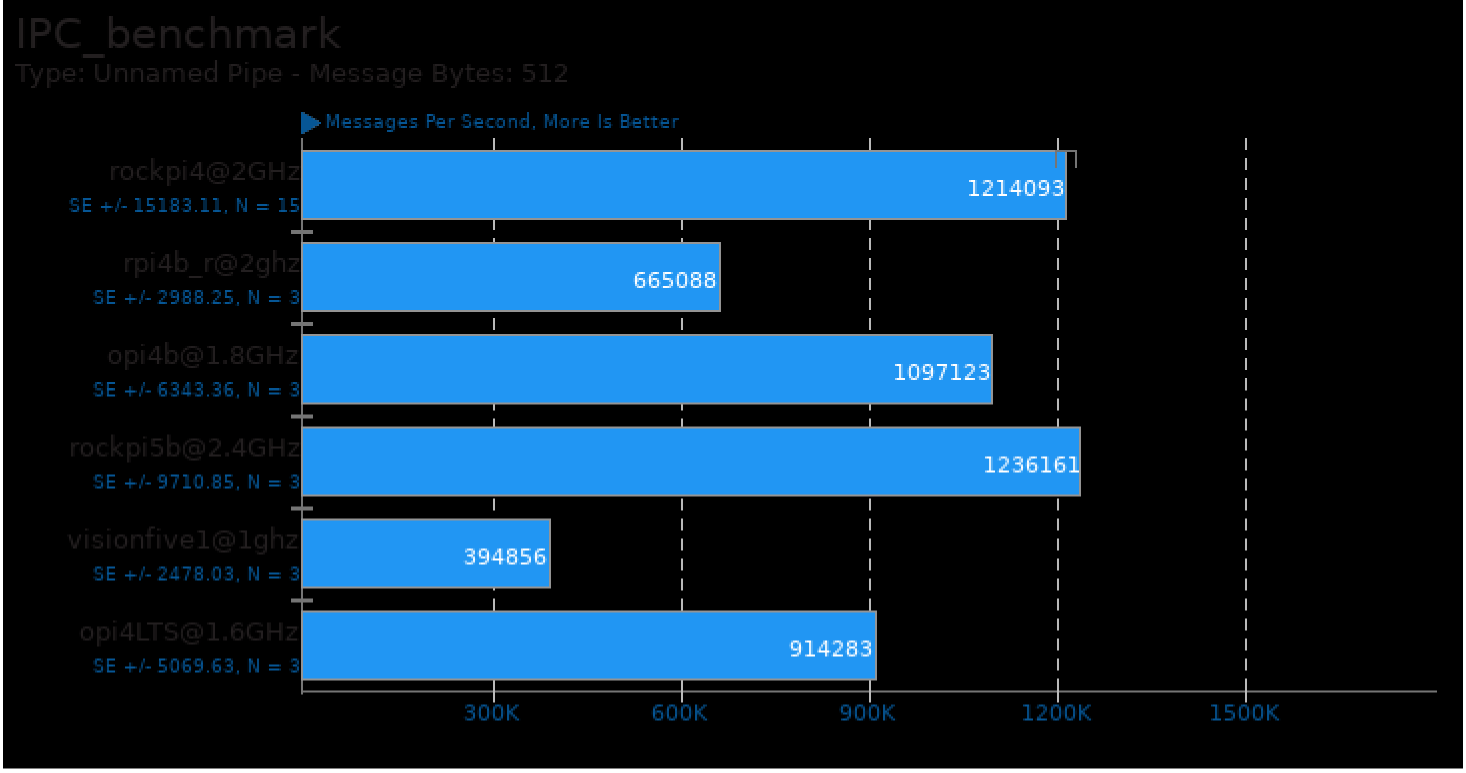

SQLite 3.30.1
Threads / Copies: 8
Seconds, Fewer Is Better
rockpi4@2GHz
SE +/- 6.61, N = 3
-ldl -lpthread
601.41
rpi4b_r@2ghz
SE +/- 6.83, N = 3
-lz -ldl -lpthread
728.35
opi4b@1.8GHz
SE +/- 0.32, N = 3
-lz -ldl -lpthread
195.50
rockpi5b@2.4GHz
SE +/- 0.32, N = 3
-lz -ldl -lpthread
394.22
visionfive1@1ghz
SE +/- 2.42, N = 3
-lreadline -ltermcap -lz
645.34
opi4LTS@1.6GHz
SE +/- 0.48, N = 3
-lz -ldl -lpthread
454.91
160
320
480
640
800
1. (CC) gcc options: -O2 -lm

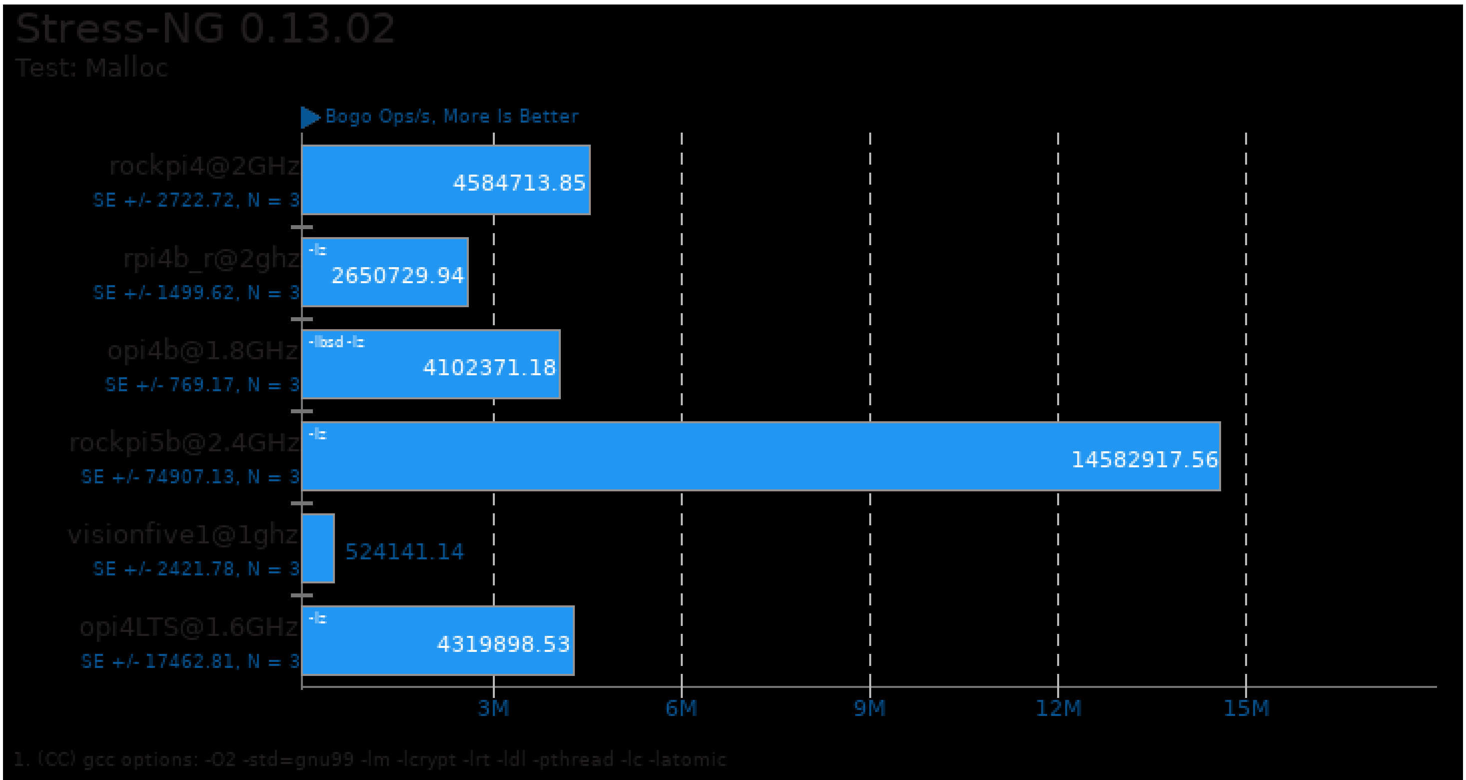

IPC_benchmark
Type: Unnamed Pipe - Message Bytes: 256
Messages Per Second, More Is Better
rockpi4@2GHz
SE +/- 12242.99, N = 3
1279133
rpi4b_r@2ghz
SE +/- 5651.62, N = 3
682966
opi4b@1.8GHz
SE +/- 10901.06, N = 12
1184781
rockpi5b@2.4GHz
SE +/- 19960.80, N = 15
1626135
visionfive1@1ghz
SE +/- 5992.13, N = 3
443943
opi4LTS@1.6GHz
SE +/- 5922.05, N = 3
864829
300K
600K
900K
1200K
1500K

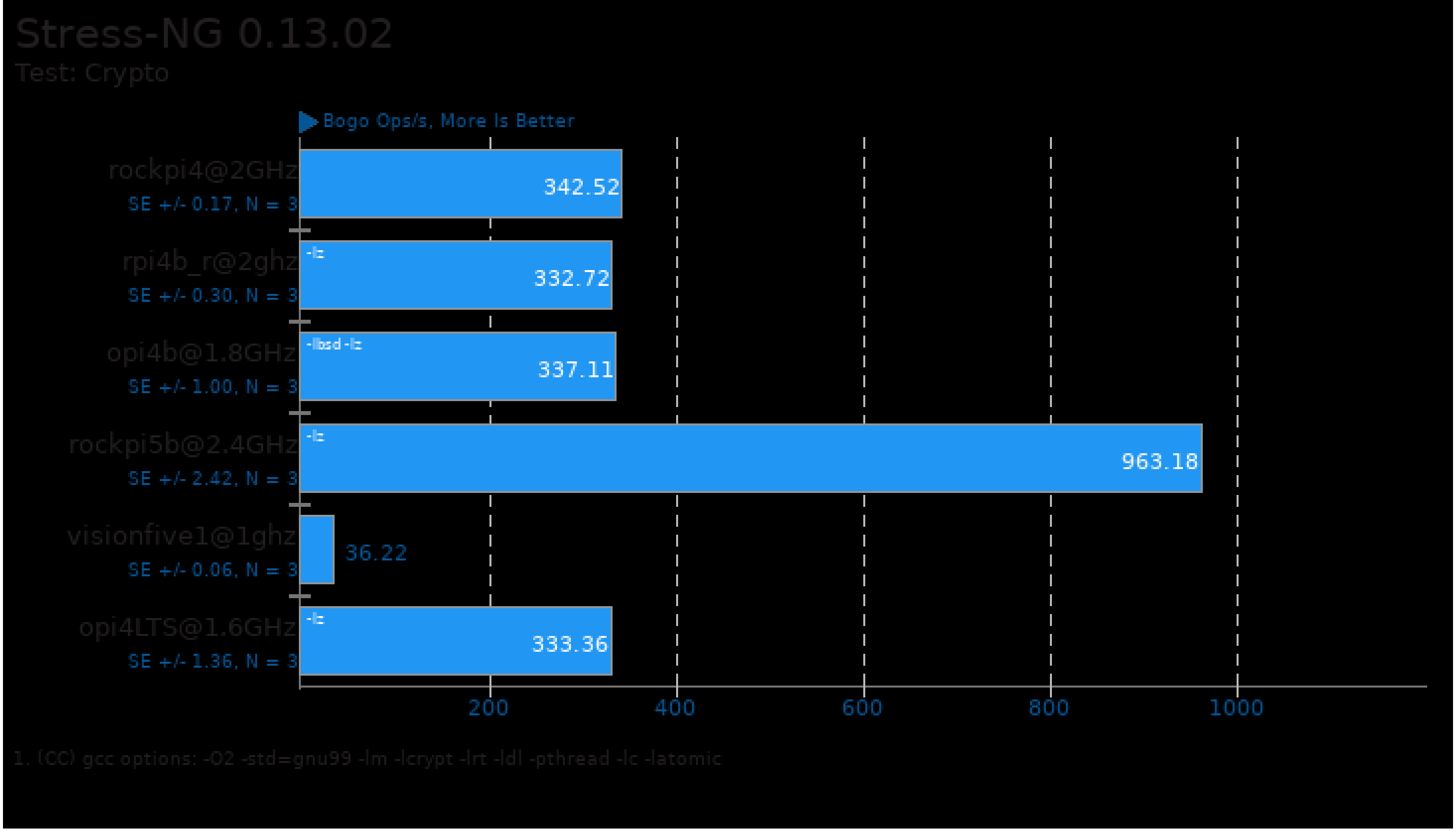

Stress-NG 0.13.02
Test: Semaphores
Bogo Ops/s, More Is Better
rockpi4@2GHz
SE +/- 318.66, N = 3
292743.91
rpi4b_r@2ghz
SE +/- 714.31, N = 3
-lz
255835.27
opi4b@1.8GHz
SE +/- 2842.83, N = 3
-lbsd -lz
264460.57
rockpi5b@2.4GHz
SE +/- 712.01, N = 3
-lz
332664.33
visionfive1@1ghz
SE +/- 797.61, N = 3
-lbsd -lz
94653.92
opi4LTS@1.6GHz
SE +/- 164.95, N = 3
-lz
306573.72
70K
140K
210K
280K
350K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -ldl -pthread -lc -latomic

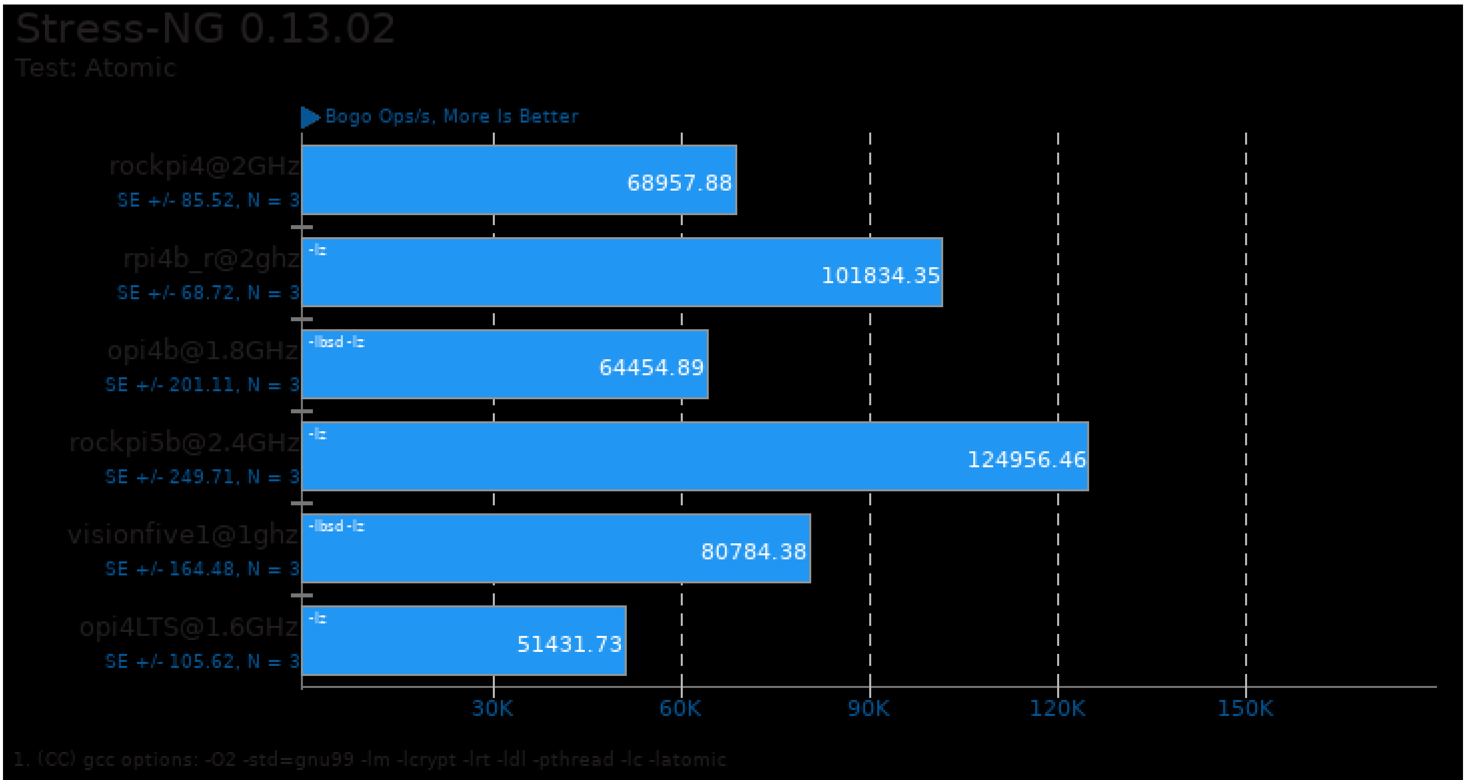

IPC_benchmark
Type: FIFO Named Pipe - Message Bytes: 512
Messages Per Second, More Is Better
rockpi4@2GHz
SE +/- 11158.33, N = 15
1198549
rpi4b_r@2ghz
SE +/- 5084.80, N = 12
657047
opi4b@1.8GHz
SE +/- 5495.26, N = 3
1086984
rockpi5b@2.4GHz
SE +/- 12401.92, N = 15
1228152
visionfive1@1ghz
SE +/- 2524.26, N = 3
375226
opi4LTS@1.6GHz
SE +/- 9173.06, N = 3
873356
300K
600K
900K
1200K
1500K

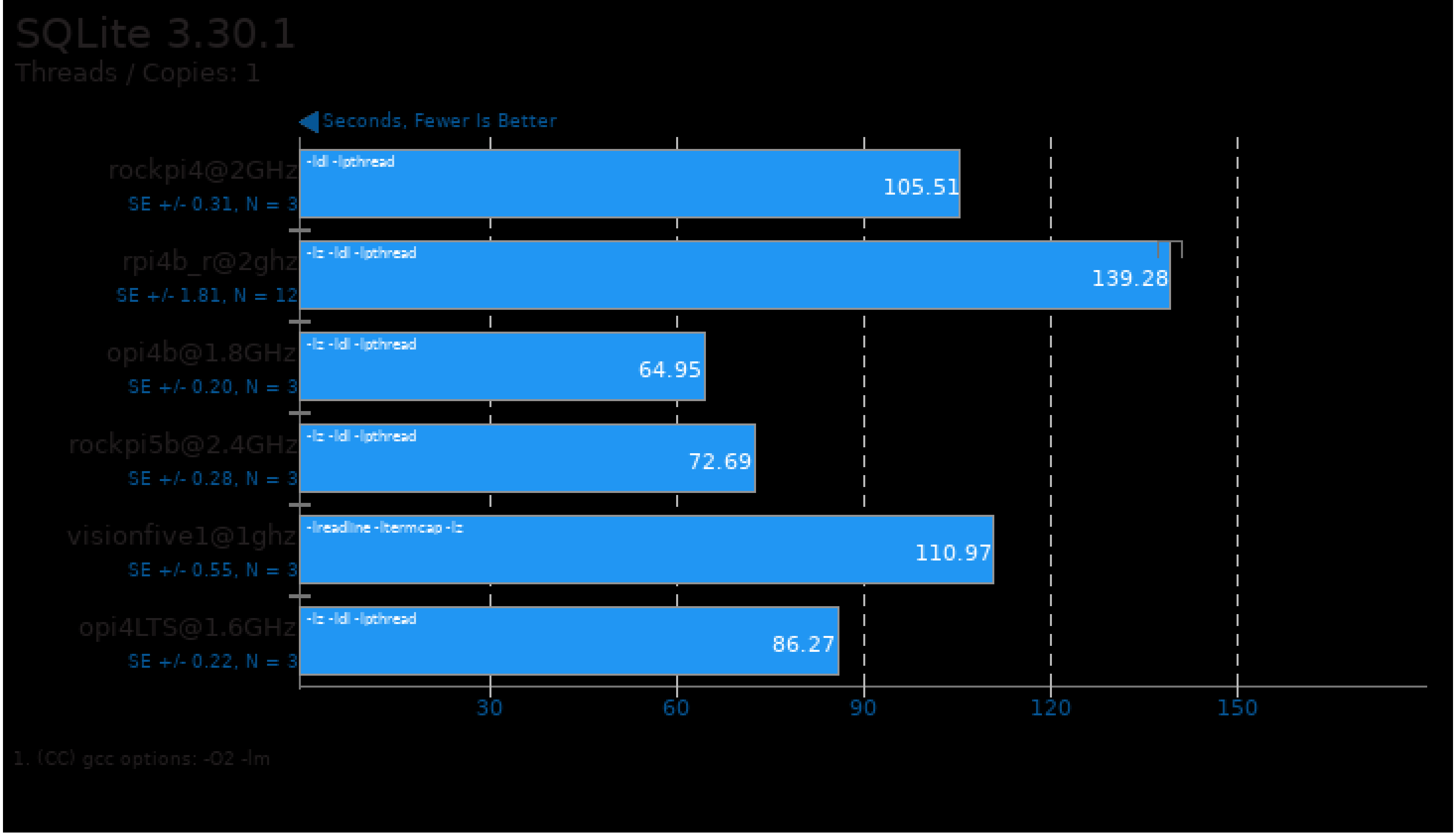

LibRaw 0.20
Post-Processing Benchmark
Mpix/sec, More Is Better
rockpi4@2GHz
SE +/- 0.01, N = 3
6.42
rpi4b_r@2ghz
SE +/- 0.01, N = 3
-lz
6.96
opi4b@1.8GHz
SE +/- 0.01, N = 3
-ljpeg -lz
5.29
rockpi5b@2.4GHz
SE +/- 0.04, N = 3
17.08
opi4LTS@1.6GHz
SE +/- 0.02, N = 3
-lz
5.86
4
8
12
16
20
1. (CXX) g++ options: -O2 -fopenmp -lm

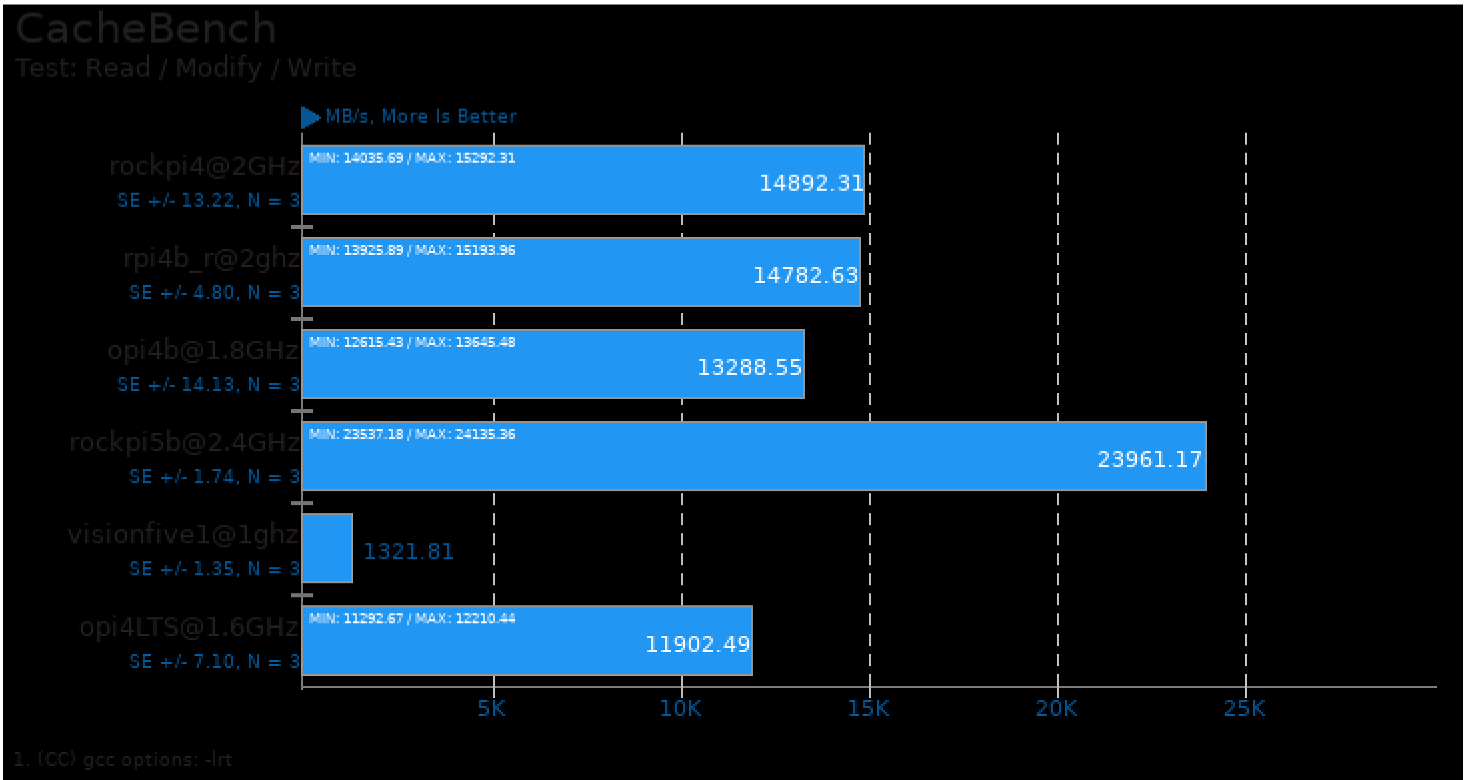

IPC_benchmark
Type: Unnamed Pipe - Message Bytes: 512
Messages Per Second, More Is Better
rockpi4@2GHz
SE +/- 15183.11, N = 15
1214093
rpi4b_r@2ghz
SE +/- 2988.25, N = 3
665088
opi4b@1.8GHz
SE +/- 6343.36, N = 3
1097123
rockpi5b@2.4GHz
SE +/- 9710.85, N = 3
1236161
visionfive1@1ghz
SE +/- 2478.03, N = 3
394856
opi4LTS@1.6GHz
SE +/- 5069.63, N = 3
914283
300K
600K
900K
1200K
1500K

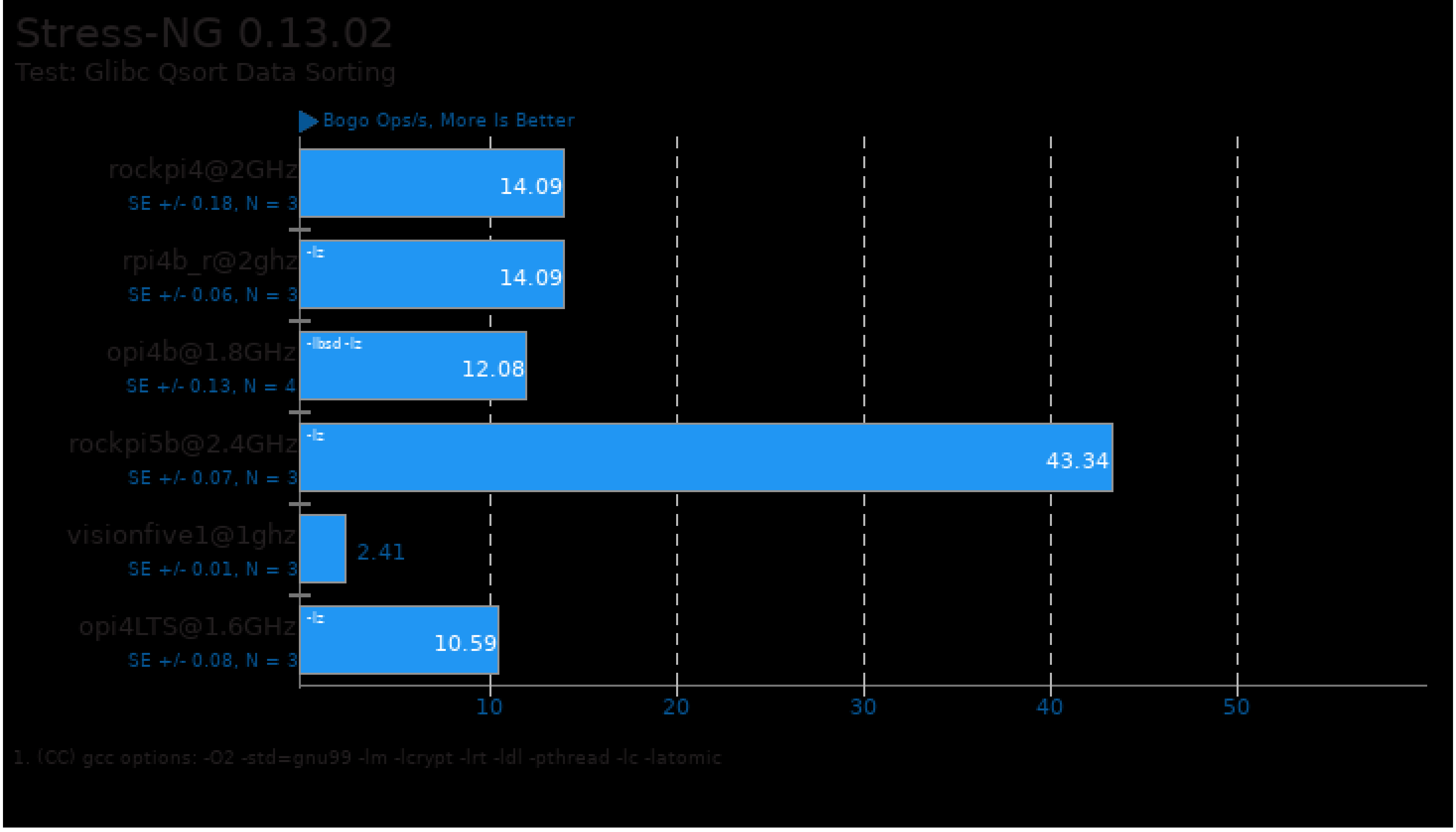

Stress-NG 0.13.02
Test: Malloc
Bogo Ops/s, More Is Better
rockpi4@2GHz
SE +/- 2722.72, N = 3
4584713.85
rpi4b_r@2ghz
SE +/- 1499.62, N = 3
2650729.94
opi4b@1.8GHz
SE +/- 769.17, N = 3
4102371.18
rockpi5b@2.4GHz
SE +/- 74907.13, N = 3
14582917.56
visionfive1@1ghz
SE +/- 2421.78, N = 3
524141.14
opi4LTS@1.6GHz
SE +/- 17462.81, N = 3
4319898.53
3M
6M
9M
12M
15M
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -ldl -pthread -lc -latomic

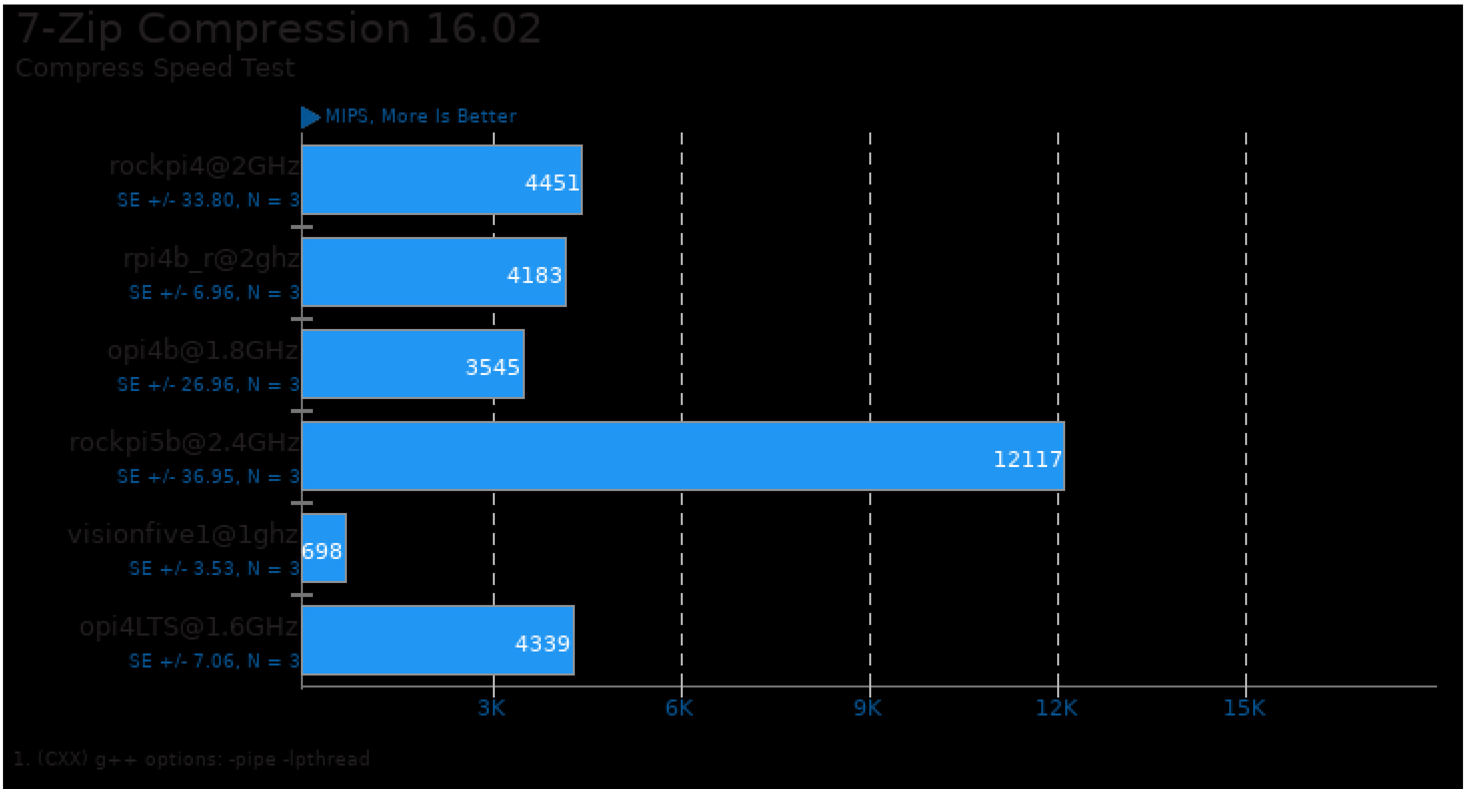

Stress-NG 0.13.02
Test: Crypto
Bogo Ops/s, More Is Better
rockpi4@2GHz
SE +/- 0.17, N = 3
342.52
rpi4b_r@2ghz
SE +/- 0.30, N = 3
332.72
opi4b@1.8GHz
SE +/- 1.00, N = 3
337.11
rockpi5b@2.4GHz
SE +/- 2.42, N = 3
963.18
visionfive1@1ghz
SE +/- 0.06, N = 3
36.22
opi4LTS@1.6GHz
SE +/- 1.36, N = 3
333.36
200
400
600
800
1000
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -ldl -pthread -lc -latomic

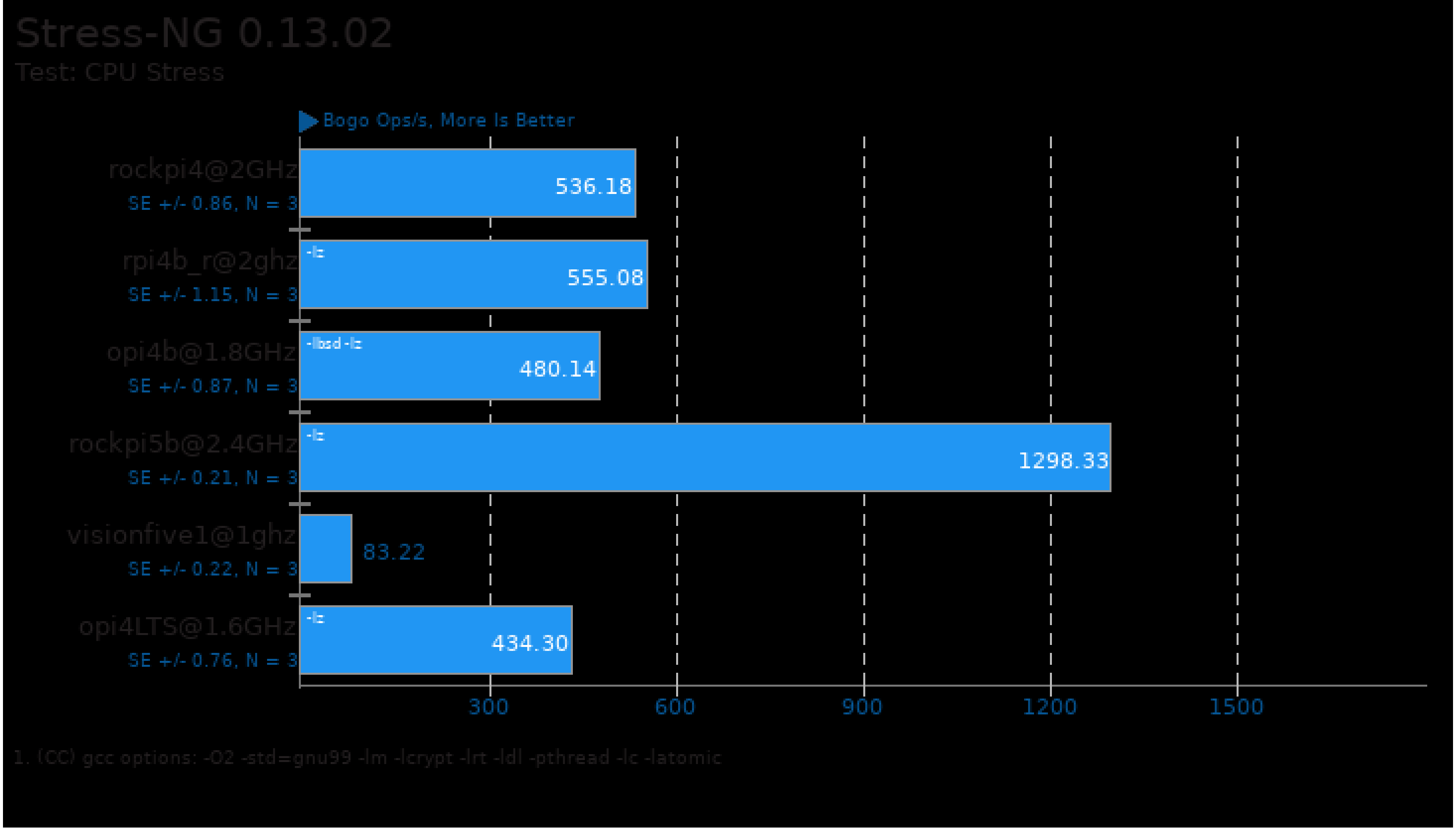

Stress-NG 0.13.02
Test: Atomic
Bogo Ops/s, More Is Better
rockpi4@2GHz
SE +/- 85.52, N = 3
68957.88
rpi4b_r@2ghz
SE +/- 68.72, N = 3
-lz
101834.35
opi4b@1.8GHz
SE +/- 201.11, N = 3
-lbsd -lz
64454.89
rockpi5b@2.4GHz
SE +/- 249.71, N = 3
-lz
124956.46
visionfive1@1ghz
SE +/- 164.48, N = 3
-lbsd -lz
80784.38
opi4LTS@1.6GHz
SE +/- 105.62, N = 3
-lz
51431.73
30K
60K
90K
120K
150K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -ldl -pthread -lc -latomic

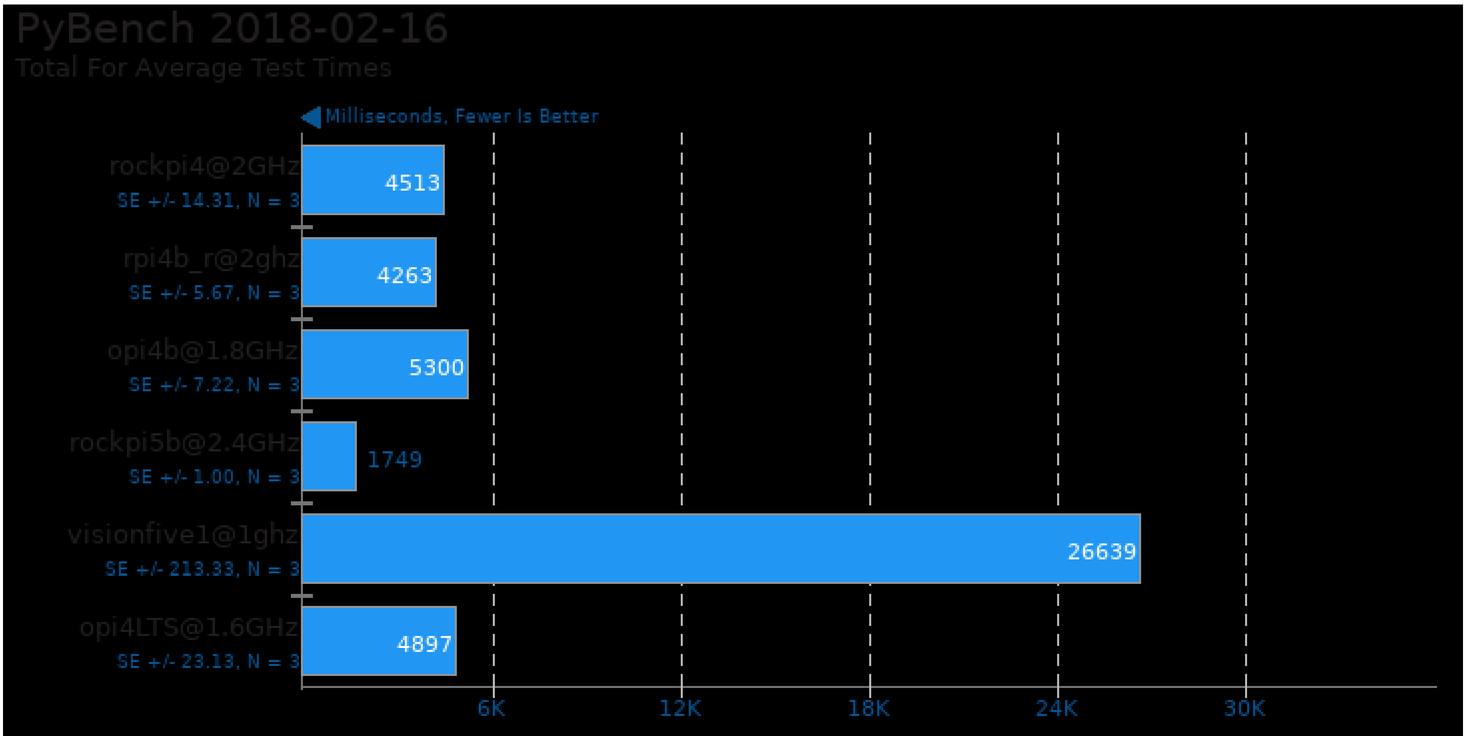

SQLite 3.30.1
Threads / Copies: 1
Seconds, Fewer Is Better
rockpi4@2GHz
SE +/- 0.31, N = 3
-ldl -lpthread
105.51
rpi4b_r@2ghz
SE +/- 1.81, N = 12
-lz -ldl -lpthread
139.28
opi4b@1.8GHz
SE +/- 0.20, N = 3
-lz -ldl -lpthread
64.95
rockpi5b@2.4GHz
SE +/- 0.28, N = 3
-lz -ldl -lpthread
72.69
visionfive1@1ghz
SE +/- 0.55, N = 3
-lreadline -ltermcap -lz
110.97
opi4LTS@1.6GHz
SE +/- 0.22, N = 3
-lz -ldl -lpthread
86.27
30
60
90
120
150
1. (CC) gcc options: -O2 -lm

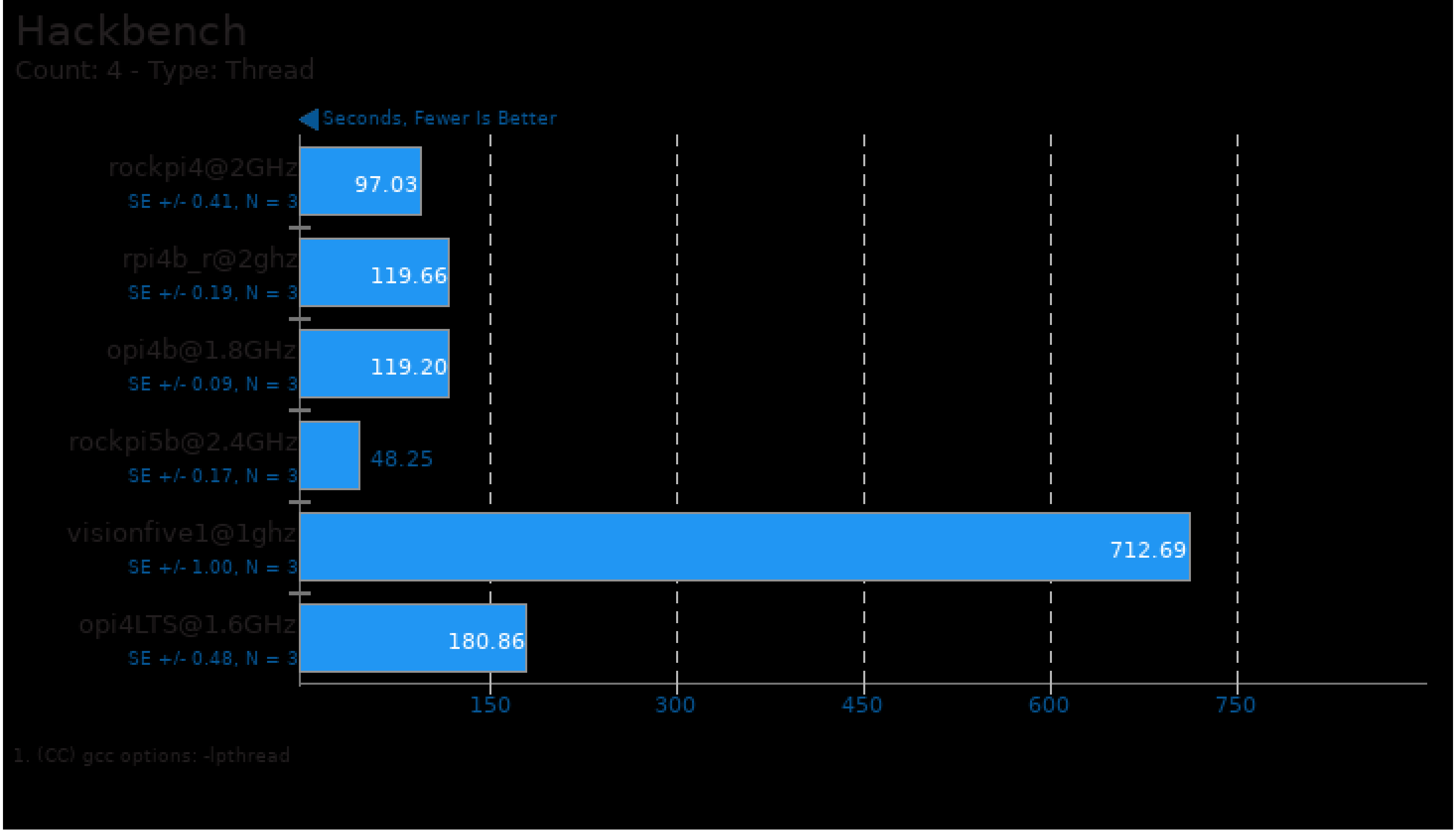

CacheBench
Test: Read / Modify / Write
MB/s, More Is Better
rockpi4@2GHz
SE +/- 13.22, N = 3
MIN: 14035.69 / MAX: 15292.31
14892.31
rpi4b_r@2ghz
SE +/- 4.80, N = 3
MIN: 13925.89 / MAX: 15193.96
14782.63
opi4b@1.8GHz
SE +/- 14.13, N = 3
MIN: 12615.43 / MAX: 13645.48
13288.55
rockpi5b@2.4GHz
SE +/- 1.74, N = 3
MIN: 23537.18 / MAX: 24135.36
23961.17
visionfive1@1ghz
SE +/- 1.35, N = 3
1321.81
opi4LTS@1.6GHz
SE +/- 7.10, N = 3
MIN: 11292.67 / MAX: 12210.44
11902.49
5K
10K
15K
20K
25K
1. (CC) gcc options: -lrt

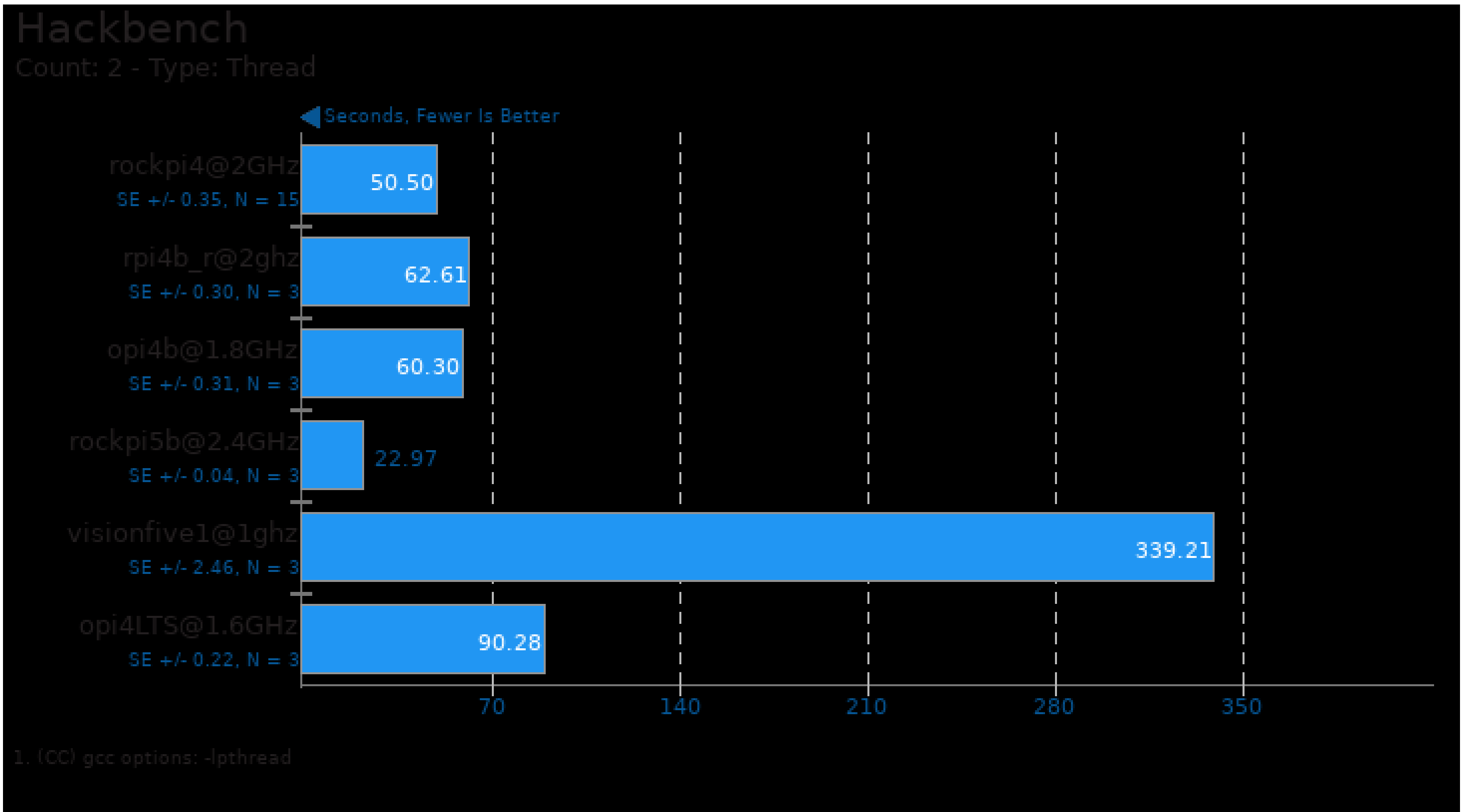

Stress-NG 0.13.02
Test: Glibc Qsort Data Sorting
Bogo Ops/s, More Is Better
rockpi4@2GHz
SE +/- 0.18, N = 3
14.09
rpi4b_r@2ghz
SE +/- 0.06, N = 3
-lz
14.09
opi4b@1.8GHz
SE +/- 0.13, N = 4
-lbsd -lz
12.08
rockpi5b@2.4GHz
SE +/- 0.07, N = 3
-lz
43.34
visionfive1@1ghz
SE +/- 0.01, N = 3
2.41
opi4LTS@1.6GHz
SE +/- 0.08, N = 3
-lz
10.59
10
20
30
40
50
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -ldl -pthread -lc -latomic

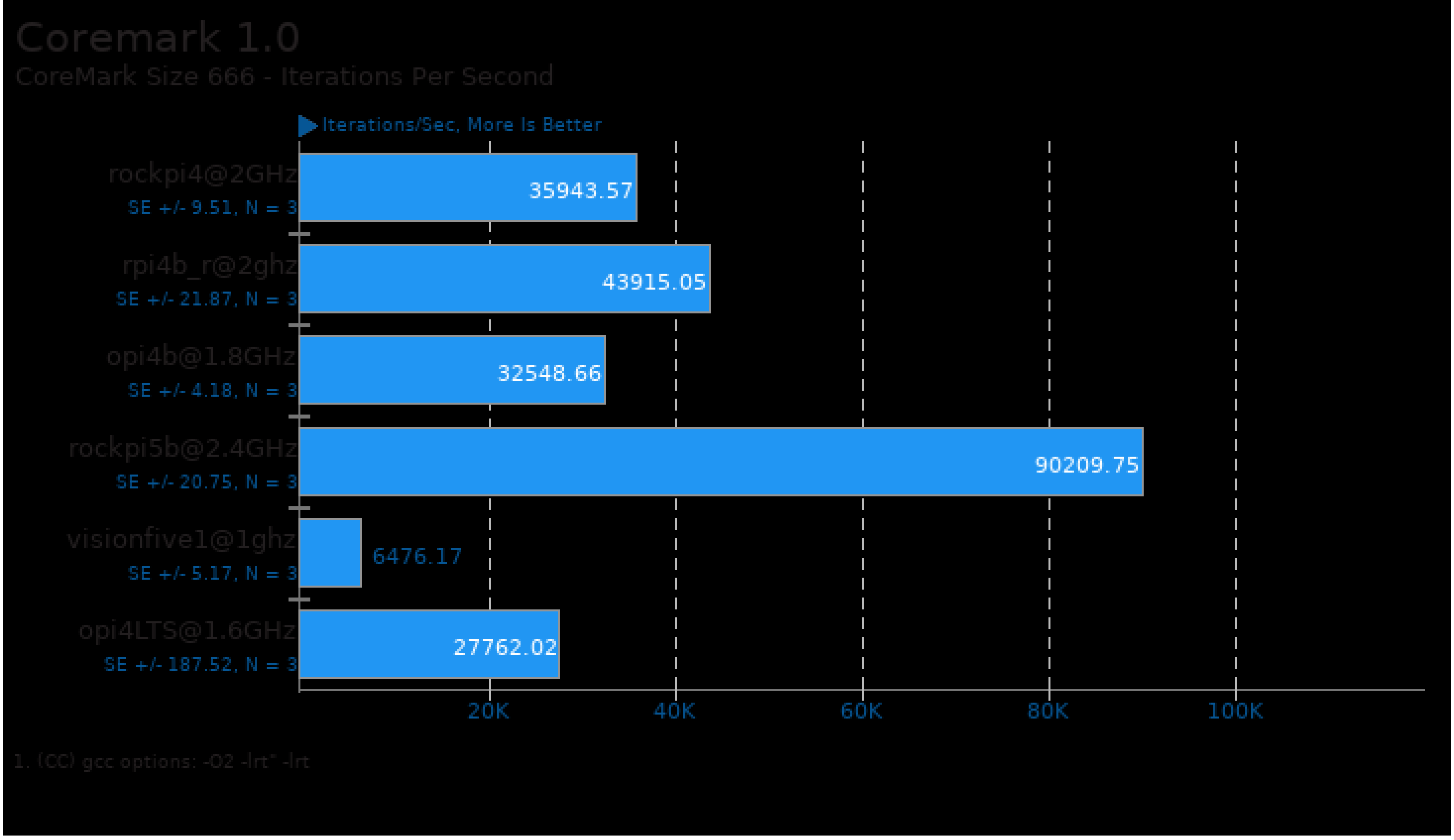

7-Zip Compression 16.02
Compress Speed Test
MIPS, More Is Better
rockpi4@2GHz
SE +/- 33.80, N = 3
4451
rpi4b_r@2ghz
SE +/- 6.96, N = 3
4183
opi4b@1.8GHz
SE +/- 26.96, N = 3
3545
rockpi5b@2.4GHz
SE +/- 36.95, N = 3
12117
visionfive1@1ghz
SE +/- 3.53, N = 3
698
opi4LTS@1.6GHz
SE +/- 7.06, N = 3
4339
3K
6K
9K
12K
15K
1. (CXX) g++ options: -pipe -lpthread

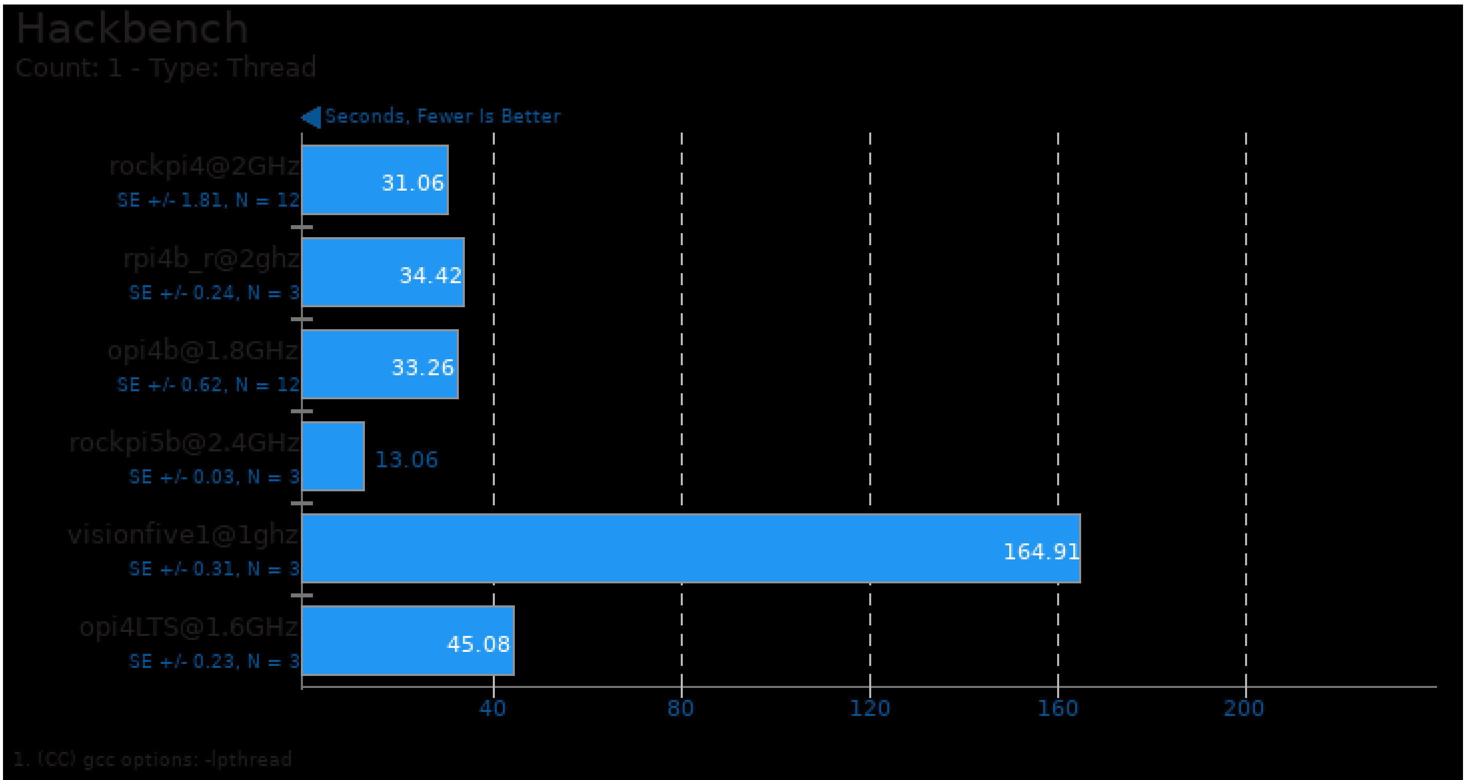

Stress-NG 0.13.02
Test: CPU Stress
Bogo Ops/s, More Is Better
rockpi4@2GHz
SE +/- 0.86, N = 3
536.18
rpi4b_r@2ghz
SE +/- 1.15, N = 3
-lz
555.08
opi4b@1.8GHz
SE +/- 0.87, N = 3
-lbsd -lz
480.14
rockpi5b@2.4GHz
SE +/- 0.21, N = 3
-lz
1298.33
visionfive1@1ghz
SE +/- 0.22, N = 3
83.22
opi4LTS@1.6GHz
SE +/- 0.76, N = 3
-lz
434.30
300
600
900
1200
1500
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -ldl -lpthread -lc -latomic

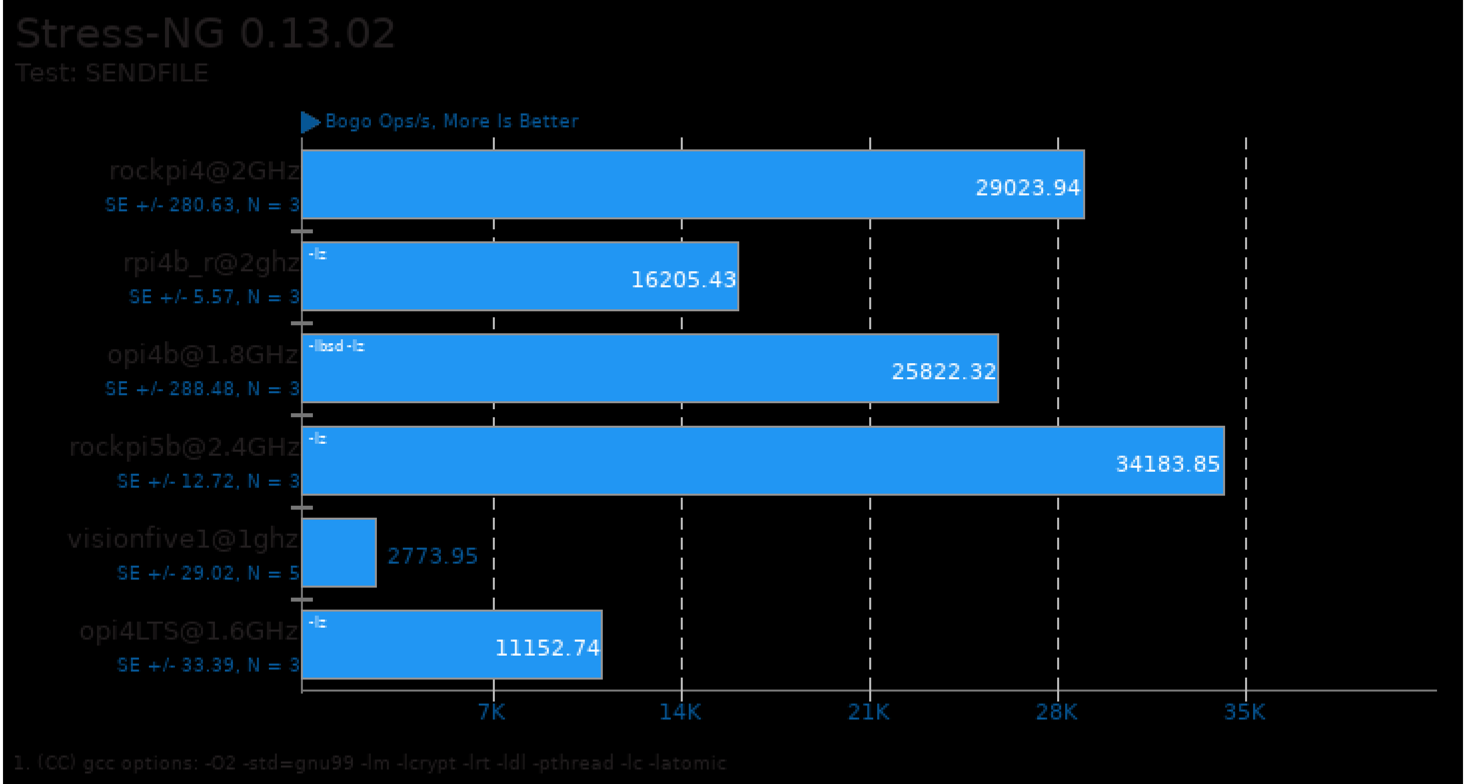

PyBench 2018-02-16
Total For Average Test Times
Milliseconds, Fewer Is Better
rockpi4@2GHz
SE +/- 14.31, N = 3
4513
rpi4b_r@2ghz
SE +/- 5.67, N = 3
4263
opi4b@1.8GHz
SE +/- 7.22, N = 3
5300
rockpi5b@2.4GHz
SE +/- 1.00, N = 3
1749
visionfive1@1ghz
SE +/- 213.33, N = 3
26639
opi4LTS@1.6GHz
SE +/- 23.13, N = 3
4897
6K
12K
18K
24K
30K

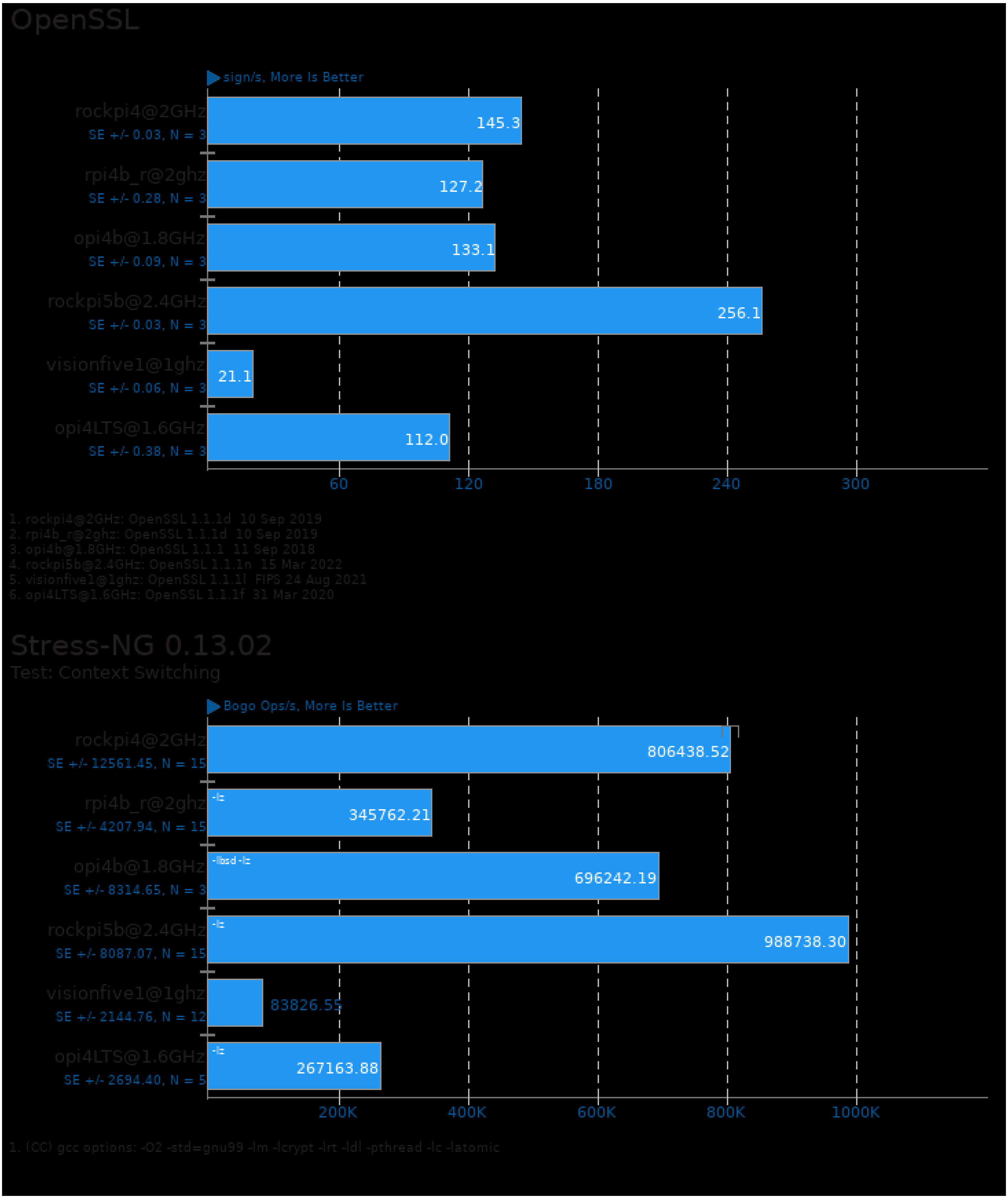

Hackbench
Count: 4 - Type: Thread
Seconds, Fewer Is Better
rockpi4@2GHz
SE +/- 0.41, N = 3
97.03
rpi4b_r@2ghz
SE +/- 0.19, N = 3
119.66
opi4b@1.8GHz
SE +/- 0.09, N = 3
119.20
rockpi5b@2.4GHz
SE +/- 0.17, N = 3
48.25
visionfive1@1ghz
SE +/- 1.00, N = 3
712.69
opi4LTS@1.6GHz
SE +/- 0.48, N = 3
180.86
150
300
450
600
750
1. (CC) gcc options: -lpthread

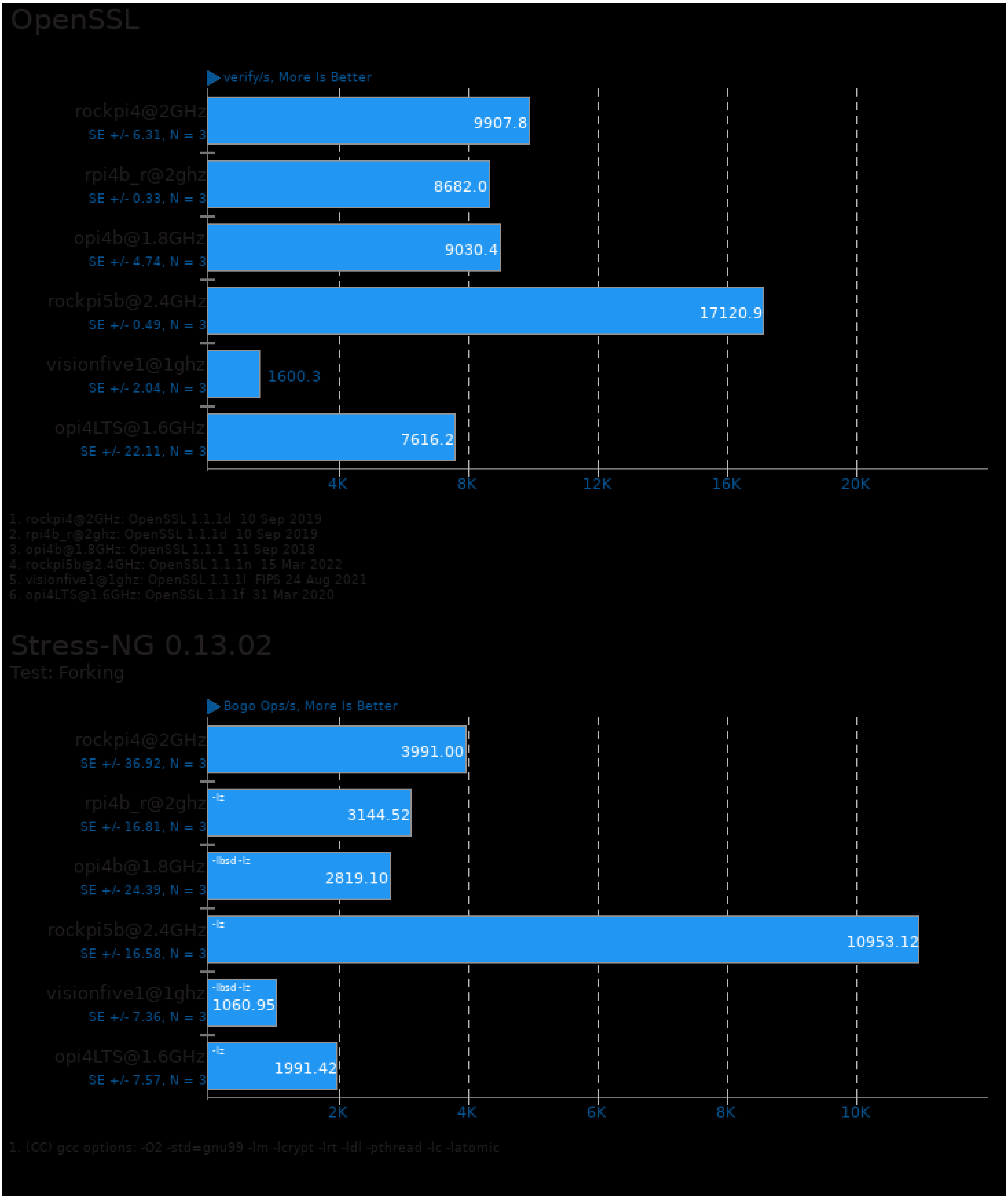

Hackbench
Count: 2 - Type: Thread
Seconds, Fewer Is Better
rockpi4@2GHz
SE +/- 0.35, N = 15
50.50
rpi4b_r@2ghz
SE +/- 0.30, N = 3
62.61
opi4b@1.8GHz
SE +/- 0.31, N = 3
60.30
rockpi5b@2.4GHz
SE +/- 0.04, N = 3
22.97
visionfive1@1ghz
SE +/- 2.46, N = 3
339.21
opi4LTS@1.6GHz
SE +/- 0.22, N = 3
90.28
70
140
210
280
350
1. (CC) gcc options: -lpthread

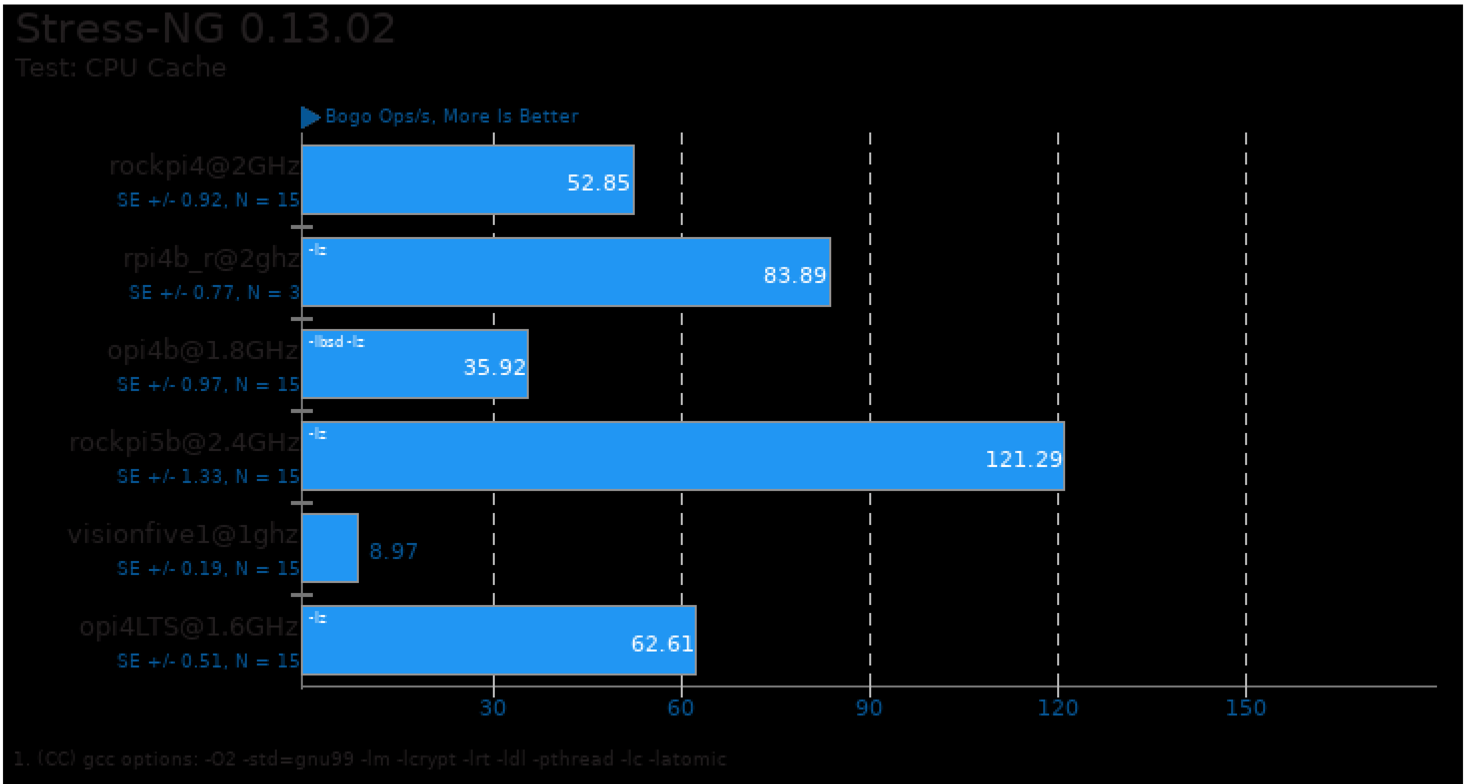

Coremark 1.0
CoreMark Size 666 - Iterations Per Second
Iterations/Sec, More Is Better
rockpi4@2GHz
SE +/- 9.51, N = 3
35943.57
rpi4b_r@2ghz
SE +/- 21.87, N = 3
43915.05
opi4b@1.8GHz
SE +/- 4.18, N = 3
32548.66
rockpi5b@2.4GHz
SE +/- 20.75, N = 3
90209.75
visionfive1@1ghz
SE +/- 5.17, N = 3
6476.17
opi4LTS@1.6GHz
SE +/- 187.52, N = 3
27762.02
20K
40K
60K
80K
100K
1. (CC) gcc options: -O2 -lrt" -lrt

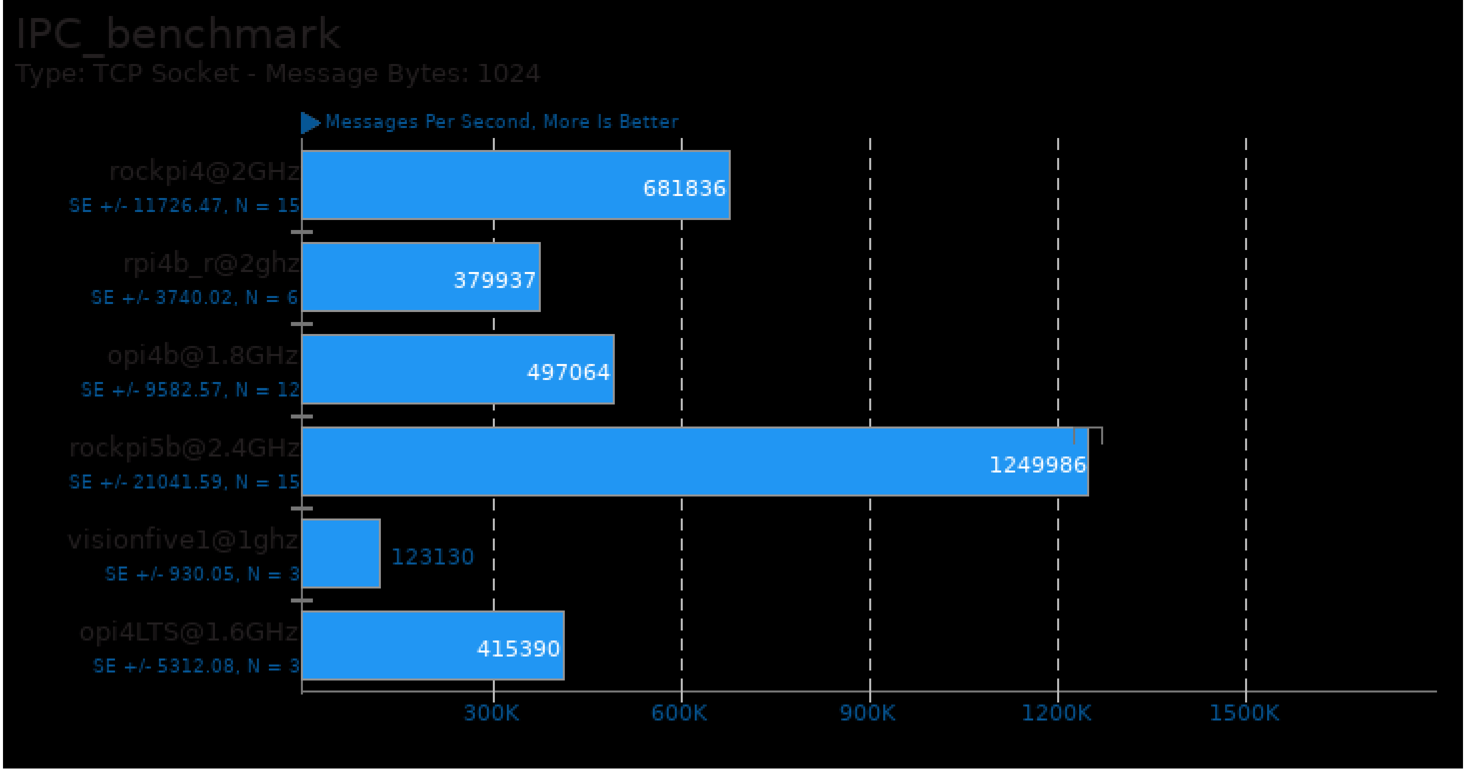

Hackbench
Count: 1 - Type: Thread
Seconds, Fewer Is Better
rockpi4@2GHz
SE +/- 1.81, N = 12
31.06
rpi4b_r@2ghz
SE +/- 0.24, N = 3
34.42
opi4b@1.8GHz
SE +/- 0.62, N = 12
33.26
rockpi5b@2.4GHz
SE +/- 0.03, N = 3
13.06
visionfive1@1ghz
SE +/- 0.31, N = 3
164.91
opi4LTS@1.6GHz
SE +/- 0.23, N = 3
45.08
40
80
120
160
200
1. (CC) gcc options: -lpthread


Stress-NG 0.13.02
Test: SENDFILE
Bogo Ops/s, More Is Better
rockpi4@2GHz
SE +/- 280.63, N = 3
29023.94
rpi4b_r@2ghz
SE +/- 5.57, N = 3
-lz
16205.43
opi4b@1.8GHz
SE +/- 288.48, N = 3
-lbsd -lz
25822.32
rockpi5b@2.4GHz
SE +/- 12.72, N = 3
-lz
34183.85
visionfive1@1ghz
SE +/- 29.02, N = 5
2773.95
opi4LTS@1.6GHz
SE +/- 33.39, N = 3
-lz
11152.74
7K
14K
21K
28K
35K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -ldl -lpthread -lc -latomic

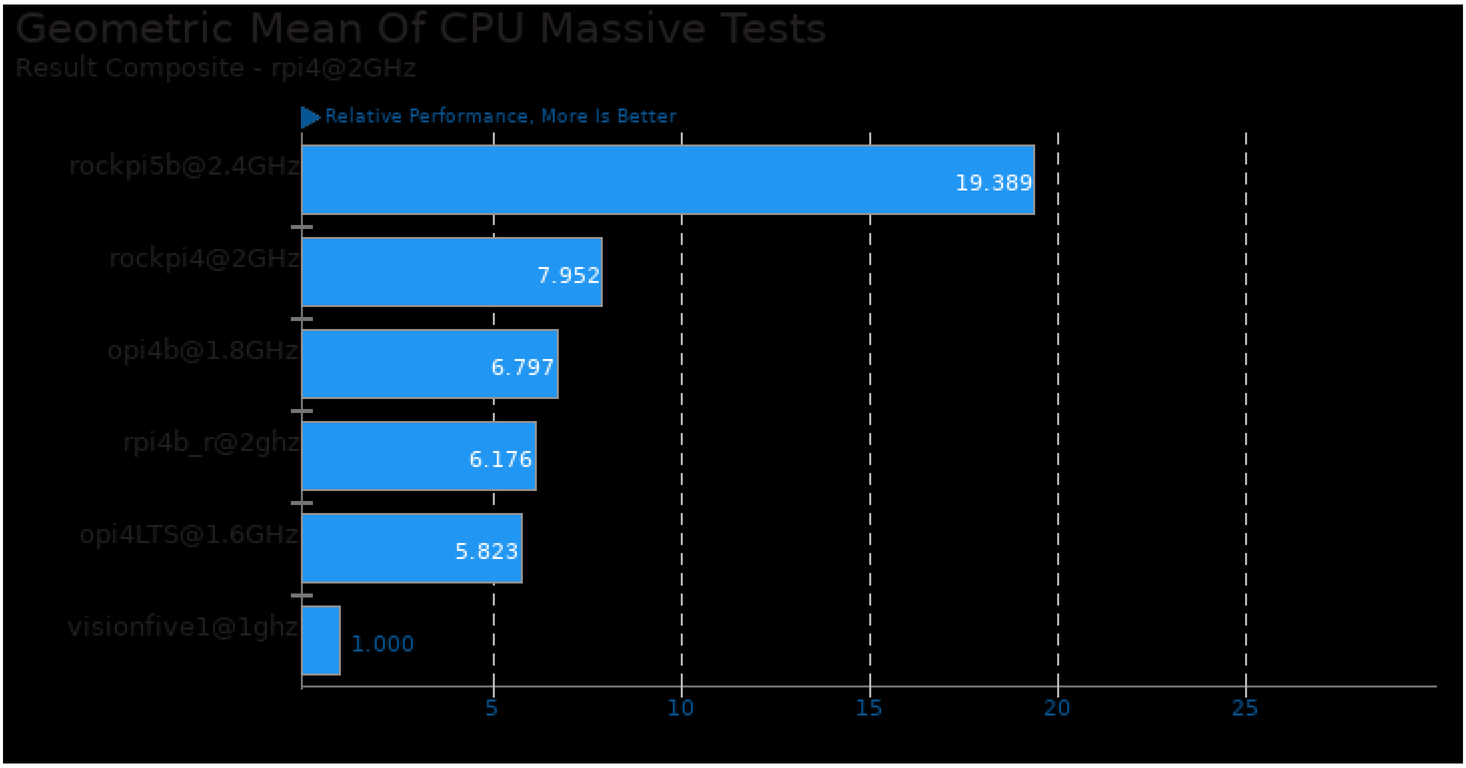

OpenSSL
sign/s, More Is Better
rockpi4@2GHz
SE +/- 0.03, N = 3
145.3
rpi4b_r@2ghz
SE +/- 0.28, N = 3
127.2
opi4b@1.8GHz
SE +/- 0.09, N = 3
133.1
rockpi5b@2.4GHz
SE +/- 0.03, N = 3
256.1
visionfive1@1ghz
SE +/- 0.06, N = 3
21.1
opi4LTS@1.6GHz
SE +/- 0.38, N = 3
112.0
60
120
180
240
300
1. rockpi4@2GHz: OpenSSL 1.1.1d 10 Sep 2019
2. rpi4b_r@2ghz: OpenSSL 1.1.1d 10 Sep 2019
3. opi4b@1.8GHz: OpenSSL 1.1.1 11 Sep 2018
4. rockpi5b@2.4GHz: OpenSSL 1.1.1n 15 Mar 2022
5. visionfive1@1ghz: OpenSSL 1.1.1l FIPS 24 Aug 2021
6. opi4LTS@1.6GHz: OpenSSL 1.1.1f 31 Mar 2020
Stress-NG 0.13.02
Test: Context Switching
Bogo Ops/s, More Is Better
rockpi4@2GHz
SE +/- 12561.45, N = 15
806438.52
rpi4b_r@2ghz
SE +/- 4207.94, N = 15
-lz
345762.21
opi4b@1.8GHz
SE +/- 8314.65, N = 3
-lbsd -lz
696242.19
rockpi5b@2.4GHz
SE +/- 8087.07, N = 15
-lz
988738.30
visionfive1@1ghz
SE +/- 2144.76, N = 12
83826.55
opi4LTS@1.6GHz
SE +/- 2694.40, N = 5
-lz
267163.88
200K
400K
600K
800K
1000K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -ldl -lpthread -lc -latomic


OpenSSL
verify/s, More Is Better
rockpi4@2GHz
SE +/- 6.31, N = 3
9907.8
rpi4b_r@2ghz
SE +/- 0.33, N = 3
8682.0
opi4b@1.8GHz
SE +/- 4.74, N = 3
9030.4
rockpi5b@2.4GHz
SE +/- 0.49, N = 3
17120.9
visionfive1@1ghz
SE +/- 2.04, N = 3
1600.3
opi4LTS@1.6GHz
SE +/- 22.11, N = 3
7616.2
4K
8K
12K
16K
20K
1. rockpi4@2GHz: OpenSSL 1.1.1d 10 Sep 2019
2. rpi4b_r@2ghz: OpenSSL 1.1.1d 10 Sep 2019
3. opi4b@1.8GHz: OpenSSL 1.1.1 11 Sep 2018
4. rockpi5b@2.4GHz: OpenSSL 1.1.1n 15 Mar 2022
5. visionfive1@1ghz: OpenSSL 1.1.1l FIPS 24 Aug 2021
6. opi4LTS@1.6GHz: OpenSSL 1.1.1f 31 Mar 2020
Stress-NG 0.13.02
Test: Forking
Bogo Ops/s, More Is Better
rockpi4@2GHz
SE +/- 36.92, N = 3
3991.00
rpi4b_r@2ghz
SE +/- 16.81, N = 3
-lz
3144.52
opi4b@1.8GHz
SE +/- 24.39, N = 3
-lbsd -lz
2819.10
rockpi5b@2.4GHz
SE +/- 16.58, N = 3
-lz
10953.12
visionfive1@1ghz
SE +/- 7.36, N = 3
-lbsd -lz
1060.95
opi4LTS@1.6GHz
SE +/- 7.57, N = 3
-lz
1991.42
2K
4K
6K
8K
10K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -ldl -lpthread -lc -latomic

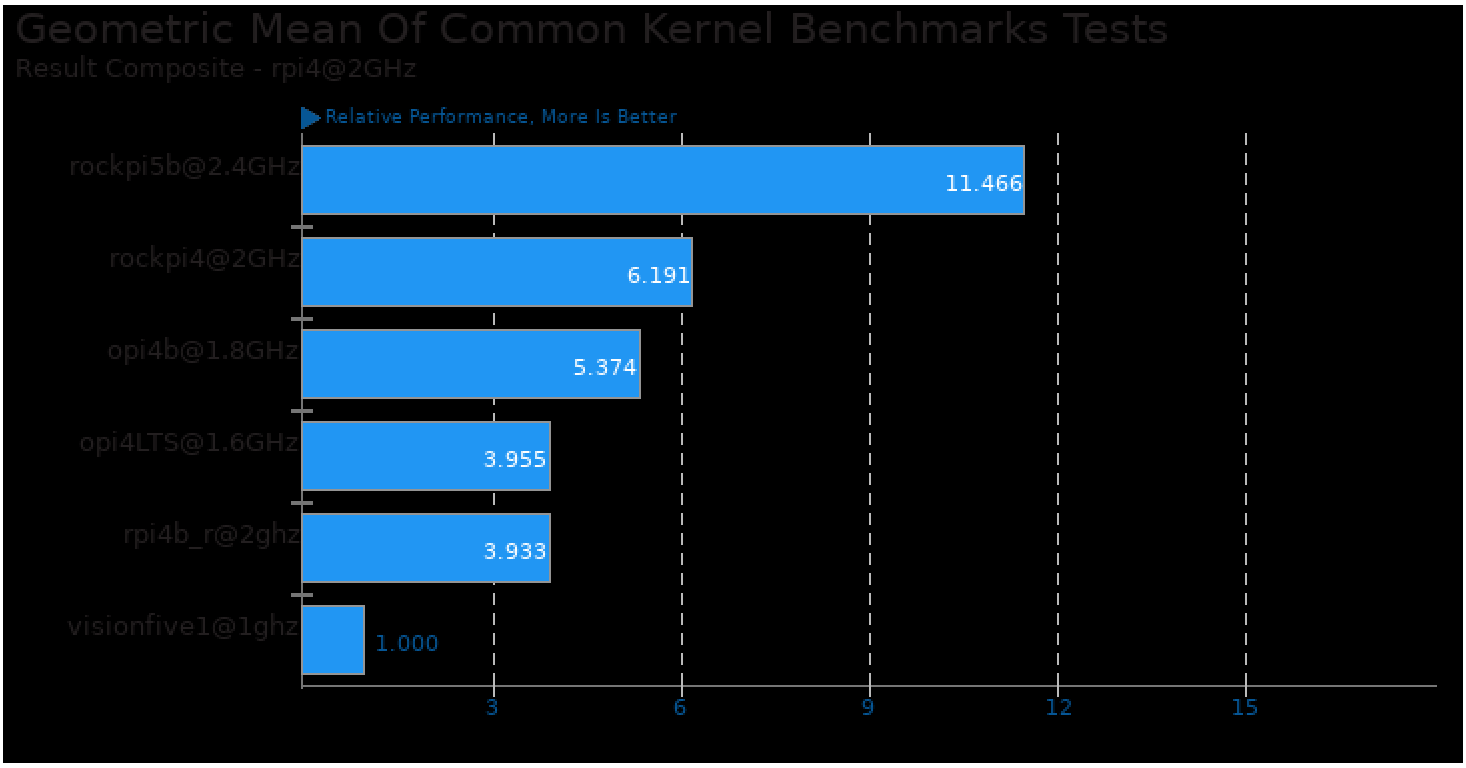

Stress-NG 0.13.02
Test: CPU Cache
Bogo Ops/s, More Is Better
rockpi4@2GHz
SE +/- 0.92, N = 15
52.85
rpi4b_r@2ghz
SE +/- 0.77, N = 3
-lz
83.89
opi4b@1.8GHz
SE +/- 0.97, N = 15
-lbsd -lz
35.92
rockpi5b@2.4GHz
SE +/- 1.33, N = 15
-lz
121.29
visionfive1@1ghz
SE +/- 0.19, N = 15
8.97
opi4LTS@1.6GHz
SE +/- 0.51, N = 15
-lz
62.61
30
60
90
120
150
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -ldl -pthread -lc -latomic


IPC_benchmark
Type: TCP Socket - Message Bytes: 1024
Messages Per Second, More Is Better
rockpi4@2GHz
SE +/- 11726.47, N = 15
681836
rpi4b_r@2ghz
SE +/- 3740.02, N = 6
379937
opi4b@1.8GHz
SE +/- 9582.57, N = 12
497064
rockpi5b@2.4GHz
SE +/- 21041.59, N = 15
1249986
visionfive1@1ghz
SE +/- 930.05, N = 3
123130
opi4LTS@1.6GHz
SE +/- 5312.08, N = 3
415390
300K
600K
900K
1200K
1500K

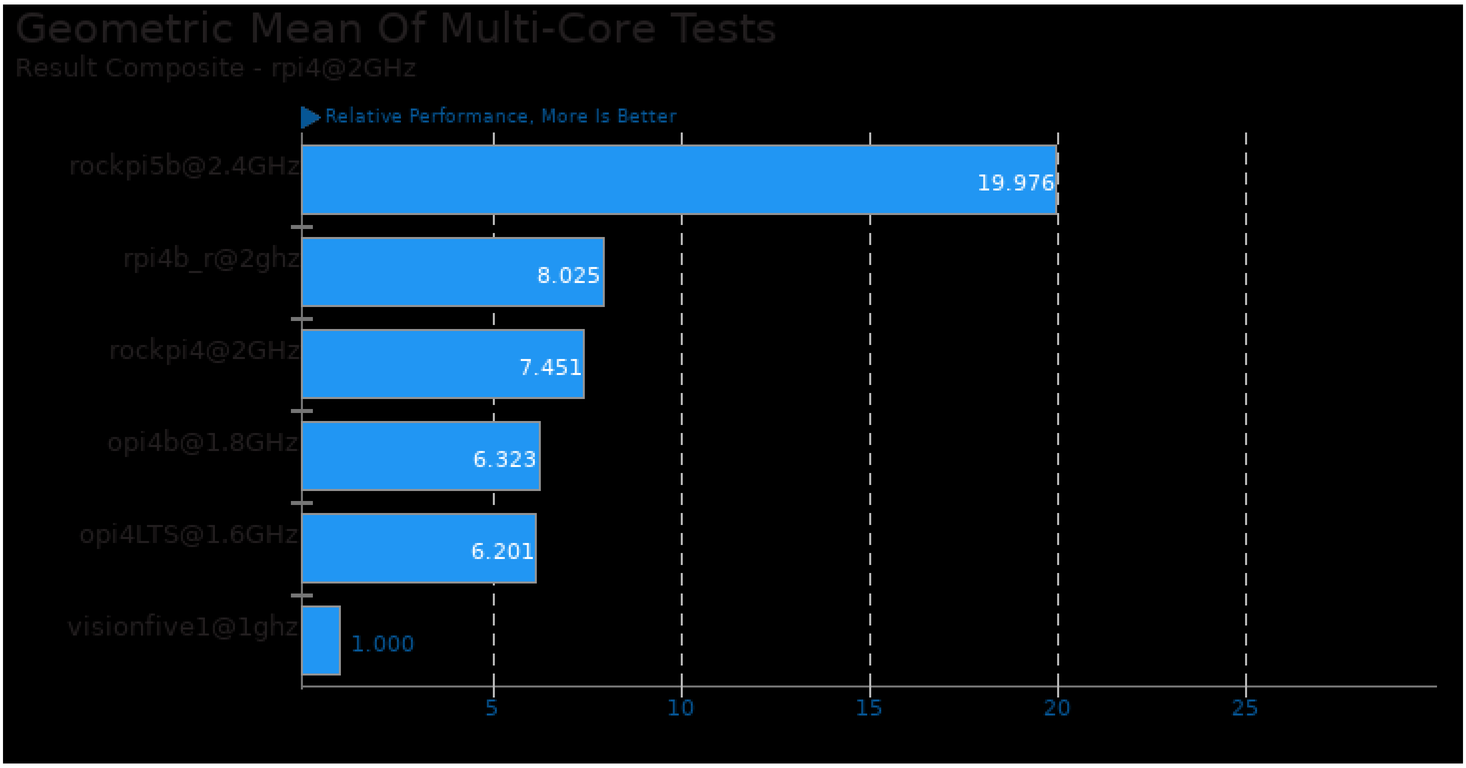
These geometric means are based upon test groupings / test suites for this result file.



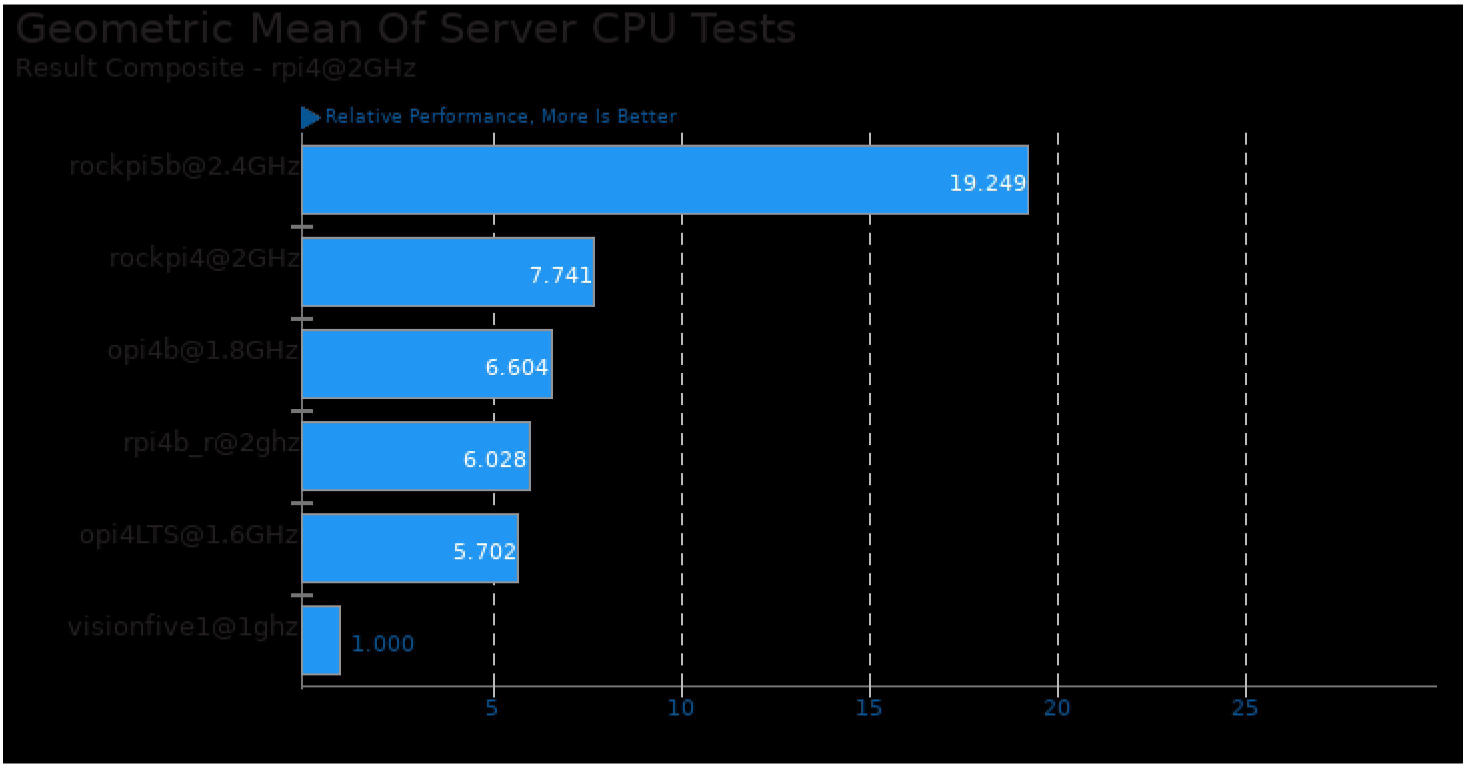
Geometric mean based upon tests: pts/cachebench, pts/compress-7zip, pts/hackbench, pts/ramspeed and pts/stress-ng



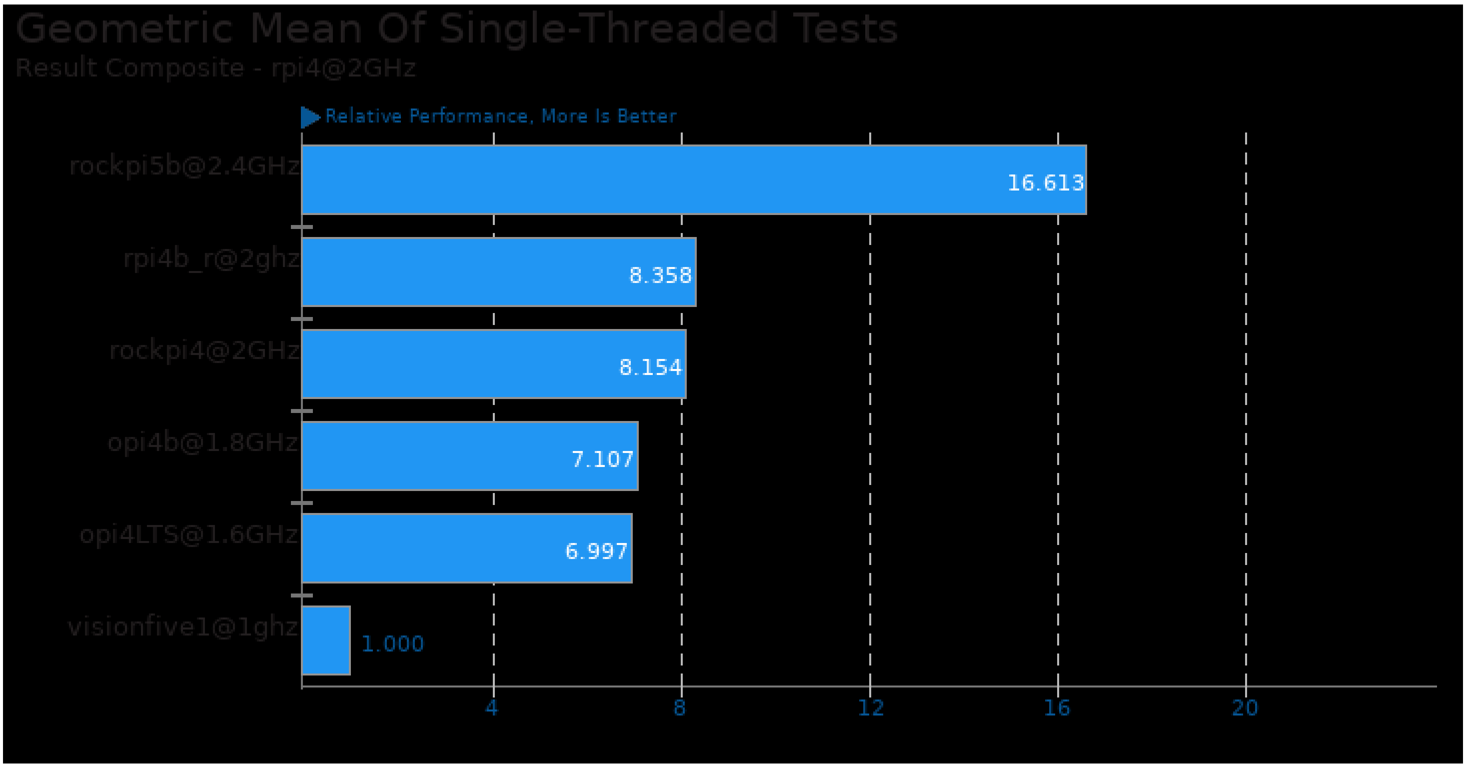
Geometric mean based upon tests: pts/hackbench, pts/ipc-benchmark and pts/stress-ng



Geometric mean based upon tests: pts/coremark, pts/smallpt and pts/compress-7zip



Geometric mean based upon tests: pts/compress-7zip, pts/hackbench, pts/stress-ng, pts/pybench and pts/ramspeed



Geometric mean based upon tests: pts/cachebench and pts/pybench

This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 08:50.