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FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

Early benchmarks by Michael Larabel.

Automated Executive Summary

Helix 500: FreeBSD 13 BETA1 had the most wins, coming in first place for 71% of the tests.

Based on the geometric mean of all complete results, the fastest (Helix 500: FreeBSD 13 BETA1) was 1.834x the speed of the slowest (Helix 500: FreeBSD 12.2). Karbon 700: FreeBSD 13 BETA1 was 1.701x the speed of Karbon 700: FreeBSD 12.2, Helix 500: FreeBSD 12.2 was 0.559x the speed of Karbon 700: FreeBSD 13 BETA1, Helix 500: FreeBSD 13 BETA1 was 1.834x the speed of Helix 500: FreeBSD 12.2.

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

OSBench (Test: Create Threads) at 5.881x
OSBench (Test: Launch Programs) at 3.495x
Stress-NG (Test: Socket Activity) at 3.14x
iPerf (Server Address: localhost - Server Port: 5201 - Duration: 10 Seconds - Test: TCP - Parallel: 1) at 2.916x
Stress-NG (Test: Forking) at 2.76x
OSBench (Test: Create Processes) at 2.739x
OSBench (Test: Memory Allocations) at 2.615x
BlogBench (Test: Read) at 2.485x

SMHasher (Hash: wyhash) at 2.298x
SMHasher (Hash: t1ha0_aes_avx2) at 2.291x.

Test Systems:

Karbon 700: FreeBSD 12.2

Processor: Intel Xeon E-2278GEL @ 2.00GHz (16 Cores), Motherboard: Logic Supply RXM-181 TBD by OEM, Chipset: Intel, Memory: 16GB, Disk: TS512GMTE510T, Graphics: Intel, Audio: Intel Coffee Lake HDA, Network: Intel PRO/1000 Connection

OS: FreeBSD, Kernel: 12.2-RELEASE (x86_64), Compiler: Clang 10.0.1, File-System: zfs, Screen Resolution: 800x600

Java Notes: OpenJDK Runtime Environment (build 11.0.9+11-1)
Python Notes: Python 3.7.9

Karbon 700: FreeBSD 13 BETA1

Processor: Intel Xeon E-2278GEL @ 1.99GHz (16 Cores), Motherboard: Logic Supply RXM-181 TBD by OEM, Chipset: Intel, Memory: 16GB, Disk: TS512GMTE510T, Graphics: Intel, Audio: Intel Coffee Lake HDA, Network: Intel PRO/1000 Connection

OS: FreeBSD, Kernel: 13.0-BETA1 (x86_64), Compiler: Clang 11.0.1, File-System: zfs, Screen Resolution: 800x600

Java Notes: OpenJDK Runtime Environment (build 11.0.9+11-1)
Python Notes: Python 3.7.9

Helix 500: FreeBSD 12.2

Processor: Intel Core i7-10700T @ 2.00GHz (16 Cores), Motherboard: Insyde CometLake TBD by OEM, Chipset: Intel, Memory: 32GB, Disk: TS256GMTS800 P1225CH1 + AHCI SGPIO Enclosure 2.00 0001, Graphics: Intel, Audio: Intel Comet Lake-H HDA, Network: Intel PRO/1000 Connection

OS: FreeBSD, Kernel: 12.2-RELEASE (x86_64), Compiler: Clang 10.0.1, File-System: zfs, Screen Resolution: 1024x768

Java Notes: OpenJDK Runtime Environment (build 11.0.9+11-1)
Python Notes: Python 3.7.9

Helix 500: FreeBSD 13 BETA1

Processor: Intel Core i7-10700T @ 1.99GHz (16 Cores), Motherboard: Insyde CometLake TBD by OEM, Chipset: Intel, Memory: 32GB, Disk: TS256GMTS800 P1225CH1 + AHCI SGPIO Enclosure 2.00 0001, Graphics: Intel, Audio: Intel Comet Lake-H HDA, Network: Intel PRO/1000 Connection

OS: FreeBSD, Kernel: 13.0-BETA1 (x86_64), Compiler: Clang 11.0.1, File-System: zfs, Screen Resolution: 1024x768

Java Notes: OpenJDK Runtime Environment (build 11.0.9+11-1)
Python Notes: Python 3.7.9

FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

	Karbon 700: FreeBSD 12.2	Karbon 700: FreeBSD 13 BETA1	Helix 500: FreeBSD 12.2	Helix 500: FreeBSD 13 BETA1
SMHasher - wyhash (cycles/hash)	33.333	18.838	**35.236**	**17.839**
Normalized	53.52%	94.7%	50.63%	100%
Standard Deviation	0%	0%	0%	0%
GNU MPC - M.P.B (Global Score)	4593	**8020**	**3990**	7763
Normalized	57.27%	100%	49.75%	96.8%
Standard Deviation	0.1%			0.1%
SMHasher - wyhash (MiB/sec)	12711	24086	**11679**	**26835**
Normalized	47.37%	89.75%	43.52%	100%
Standard Deviation	0.2%	0.2%	0.8%	0.2%
SMHasher - MeowHash (MiB/sec)	29576	50310	**27598**	**53634**
Normalized	55.14%	93.8%	51.46%	100%
Standard Deviation	0.9%	0.8%	0.6%	0.1%
SMHasher - MeowHash (cycles/hash)	72.770	41.421	**76.451**	**38.968**
Normalized	53.55%	94.08%	50.97%	100%
Standard Deviation	0%	0.2%	0%	0%
SMHasher - Spooky32 (MiB/sec)	11927	20891	**11180**	**22733**
Normalized	52.47%	91.9%	49.18%	100%
Standard Deviation	0.8%	0.3%	0.4%	0%
SMHasher - Spooky32 (cycles/hash)	56.679	32.106	**59.769**	**30.530**
Normalized	53.86%	95.09%	51.08%	100%
Standard Deviation	0.1%	0%	0%	0%
SMHasher - fasthash32 (MiB/sec)	5390	9433	**5111**	**9970**
Normalized	54.06%	94.61%	51.26%	100%
Standard Deviation	0%	0%	0%	0%
SMHasher - fasthash32 (cycles/hash)	45.231	25.996	**47.567**	**24.621**
Normalized	54.43%	94.71%	51.76%	100%
Standard Deviation	0%	0%	0.1%	0%
SMHasher - t1ha2_atonce (MiB/sec)	12108	**21002**	**10485**	20943
Normalized	57.65%	100%	49.93%	99.72%
Standard Deviation	0.4%	0.5%	0%	0%
SMHasher - t1ha2_atonce	44.670	25.354	**46.925**	**23.831**
Normalized	53.35%	93.99%	50.79%	100%
Standard Deviation	0.1%	0%	0.1%	0.1%
SMHasher - t1ha0_aes_avx2 (MiB/sec)	33407	60166	**31601**	**72402**
Normalized	46.14%	83.1%	43.65%	100%
Standard Deviation	3.9%	1.4%	3.4%	0.1%
SMHasher - t1ha0_aes_avx2 (cycles/hash)	44.475	25.178	**46.755**	**23.626**
Normalized	53.12%	93.84%	50.53%	100%
Standard Deviation	0%	0.2%	0.1%	0%
SciMark - Composite (Mflops)	354.06	613.82	**340.88**	**664.97**
Normalized	53.24%	92.31%	51.26%	100%
Standard Deviation	0.1%	0.1%	0.2%	0.3%
Go Benchmarks - json (ns/op)	9043850	**6029985**	**9538525**	7129231
Normalized	66.67%	100%	63.22%	84.58%
Standard Deviation	0.1%	5.3%	0.4%	6.3%
Go Benchmarks - build (ns/op)	38410777180	22342101760	**40047668537**	**20875309325**
Normalized	54.35%	93.43%	52.13%	100%
Standard Deviation	1.1%	2%	0.5%	0.8%
Go Benchmarks - garbage (ns/op)	2171602	**1441863**	**2303848**	1701560
Normalized	66.4%	100%	62.58%	84.74%
Standard Deviation	0.1%	3.8%	0.2%	4.9%

FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

MBW - M.C.F.B.S - 1024 MiB (MiB/s)	6831	7371	**6211**	**10811**
Normalized	63.18%	68.18%	57.45%	100%
Standard Deviation	1%	0.3%	1.8%	0.8%
Stress-NG - MMAP (Bogo Ops/s)	114.63	**216.97**	**101.96**	212.59
Normalized	52.83%	100%	46.99%	97.98%
Standard Deviation	5.9%	3.1%	11%	6.7%
Stress-NG - Malloc (Bogo Ops/s)	90297292	**160803472**	**85352349**	143900729
Normalized	56.15%	100%	53.08%	89.49%
Standard Deviation	0.1%	1.6%	0.3%	2.1%
Stress-NG - Forking (Bogo Ops/s)	15458	**38093**	**13801**	26910
Normalized	40.58%	100%	36.23%	70.64%
Standard Deviation	3.9%	1.2%	4.4%	2.2%
Stress-NG - CPU Stress (Bogo Ops/s)	1437	**2381**	**1357**	2103
Normalized	60.33%	100%	57%	88.34%
Standard Deviation	0.5%	2.5%	0.2%	2.3%
Stress-NG - Semaphores (Bogo	12107606	**20109853**	**11429812**	17337245
Normalized	60.21%	100%	56.84%	86.21%
Standard Deviation	3.3%	3.8%	5.1%	2.3%
Stress-NG - Matrix Math (Bogo Ops/s)	22147	**33294**	**21297**	29095
Normalized	66.52%	100%	63.97%	87.39%
Standard Deviation	0.4%	2.2%	1.8%	1.3%
Stress-NG - Memory Copying (Bogo Ops/s)	841.92	**796.42**	1511	**1610**
Normalized	52.29%	49.47%	93.83%	100%
Standard Deviation	0.8%	0.4%	0.7%	0.5%
Stress-NG - Socket Activity (Bogo	1557	3189	**1025**	**3218**
Normalized	48.39%	99.12%	31.85%	100%
Standard Deviation	3.3%	2.5%	0.2%	0.9%
Stress-NG - Context Switching (Bogo Ops/s)	10089739	**18590880**	**9683382**	14550134
Normalized	54.27%	100%	52.09%	78.26%
Standard Deviation	1.5%	7.2%	4%	2.4%
Stress-NG - G.C.S.F (Bogo Ops/s)	46245	**66805**	**43488**	60362
Normalized	69.22%	100%	65.1%	90.36%
Standard Deviation	0.2%	2.5%	0%	2.3%
Stress-NG - G.Q.D.S (Bogo Ops/s)	122.74	**185.89**	**116.43**	160.95
Normalized	66.03%	100%	62.63%	86.58%
Standard Deviation	0%	2.5%	0.1%	2.4%
Stress-NG - S.V.M.P (Bogo Ops/s)	777714	1465334	**675814**	**1543793**
Normalized	50.38%	94.92%	43.78%	100%
Standard Deviation	0.3%	0.3%	0.2%	0.2%
DaCapo Benchmark - H2 (msec)	4916	3710	**5139**	**3266**
Normalized	66.44%	88.03%	63.55%	100%
Standard Deviation	2.4%	7.6%	2.4%	6.3%
DaCapo Benchmark - Jython (msec)	8322	5005	**8648**	**4499**
Normalized	54.06%	89.89%	52.02%	100%
Standard Deviation	0.3%	1.1%	1.3%	1.3%
Renaissance - Scala Dotty (ms)	3350	1934	**3396**	**1804**
Normalized	53.86%	93.29%	53.14%	100%
Standard Deviation	1%	1.1%	1%	0.9%
Renaissance - Savina Reactors.IO	33209	19121	**40991**	**17989**
Normalized	54.17%	94.08%	43.89%	100%
Standard Deviation	0.5%	1.4%	1.9%	1.4%
Renaissance - T.H.R (ms)	**4013**	**2702**	4009	3107
Normalized	67.32%	100%	67.4%	86.96%

Standard Deviation	1.4%	1.3%	1.5%	1.4%
Hierarchical INTegration - FLOAT (QUIPs)	191826538	330736003	**185131230**	**353263833**
Normalized	54.3%	93.62%	52.41%	100%
Standard Deviation	0.2%	0.2%	0.1%	0.2%
BLAKE2 (Cycles/Byte)	5.10	2.91	**5.38**	**2.76**
Normalized	54.12%	94.85%	51.3%	100%
Standard Deviation	0.1%	0%	0.1%	0.2%
Botan - KASUMI (MiB/s)	45.653	73.008	**43.493**	**77.183**
Normalized	59.15%	94.59%	56.35%	100%
Standard Deviation	0%	0%	0%	0%
Botan - AES-256 (MiB/s)	1806	3182	**1717**	**3365**
Normalized	53.68%	94.58%	51.02%	100%
Standard Deviation	0%	0%	0%	0%
Botan - Twofish (MiB/s)	149.513	255.691	**142.139**	**272.245**
Normalized	54.92%	93.92%	52.21%	100%
Standard Deviation	0%	0.1%	0%	0.1%
Botan - Blowfish (MiB/s)	181.840	315.925	**173.428**	**336.257**
Normalized	54.08%	93.95%	51.58%	100%
Standard Deviation	0.1%	0%	0.2%	0.1%
Botan - CAST-256 (MiB/s)	64.355	112.752	**61.419**	**119.680**
Normalized	53.77%	94.21%	51.32%	100%
Standard Deviation	0.1%	0%	0%	0%
Java SciMark - Composite (Mflops)	1145	2012	**1077**	**2101**
Normalized	54.5%	95.74%	51.27%	100%
Standard Deviation	5.4%	5.4%	5.3%	5.2%
CacheBench - Read (MB/s)	3805	6663	**3615**	**7044**
Normalized	54.02%	94.59%	51.32%	100%
Standard Deviation	0%	0%	0%	0%
FLAC Audio Encoding - WAV To FLAC (sec)	21.935	12.418	**23.005**	**11.773**
Normalized	53.67%	94.81%	51.18%	100%
Standard Deviation	0.1%	0.1%	0.1%	0.1%
LAME MP3 Encoding - WAV To MP3 (sec)	21.230	11.707	**22.578**	**11.197**
Normalized	52.74%	95.64%	49.59%	100%
Standard Deviation	0%	0%	0.1%	0.1%
libjpeg-turbo tjbench - D.T (Megapixels/sec)	92.159009	169.459136	**87.701109**	**179.169436**
Normalized	51.44%	94.58%	48.95%	100%
Standard Deviation	0%	0.1%	0.1%	0.1%
Monkey Audio Encoding - WAV To APE (sec)	68.114	35.125	**72.441**	**33.682**
Normalized	49.45%	95.89%	46.5%	100%
Standard Deviation	0%	0%	0%	0%
LibRaw - P.P.B (Mpix/sec)	18.77	**30.33**	**17.51**	28.89
Normalized	61.89%	100%	57.73%	95.25%
Standard Deviation	0.2%	0.1%	0.1%	2.4%
LuaJIT - Composite (Mflops)	752.26	1304	**709.13**	**1385**
Normalized	54.3%	94.16%	51.19%	100%
Standard Deviation	0.1%	0.1%	0.5%	0.4%
LuaJIT - Monte Carlo (Mflops)	251.72	441.46	**239.72**	**467.48**
Normalized	53.85%	94.43%	51.28%	100%
Standard Deviation	0%	0.2%	0.2%	0.3%

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Phoronix Test Suite

LuaJIT - F.F.T (Mflops)	284.23	439.56	**238.16**	**457.09**
Normalized	62.18%	96.16%	52.1%	100%
Standard Deviation	0.5%	0.5%	2.1%	2%
LuaJIT - S.M.M (Mflops)	647.27	1129	**617.78**	**1206**
Normalized	53.66%	93.61%	51.22%	100%
Standard Deviation	0%	0.1%	0.1%	0.4%
LuaJIT - D.L.M.F (Mflops)	1825	3195	**1736**	**3399**
Normalized	53.7%	93.99%	51.06%	100%
Standard Deviation	0.3%	0.1%	0.6%	0.4%
LuaJIT - J.S.O.R (Mflops)	752.74	1317	**714.38**	**1397**
Normalized	53.9%	94.3%	51.15%	100%
Standard Deviation	0.2%	0%	0.2%	0%
dcraw - R.T.P.I.C (sec)	73.995	42.263	**78.007**	**40.080**
Normalized	54.17%	94.83%	51.38%	100%
Standard Deviation	0.1%	0.1%	0.1%	0.4%
FFTW - Stock - 2D FFT Size 4096 (Mflops)	3023	4660	**2802**	**5585**
Normalized	54.13%	83.45%	50.17%	100%
Standard Deviation	1.1%	0.5%	0.4%	0.2%
FFTW - Float + SSE - 2D FFT Size 4096 (Mflops)	9471	13846	**8966**	**14893**
Normalized	63.59%	92.97%	60.2%	100%
Standard Deviation	0%	4.9%	0.6%	0.4%
Timed HMMer Search - P.D.S (sec)	229.865	130.592	**269.920**	**126.047**
Normalized	54.84%	96.52%	46.7%	100%
Standard Deviation	0.2%	0.2%	0.7%	0.6%
Himeno Benchmark - P.P.S (MFLOPS)	1658	2879	**1523**	**2917**
Normalized	56.86%	98.69%	52.22%	100%
Standard Deviation	0%	0.1%	0.2%	0.1%
Scikit-Learn (sec)	291.104	**168.313**	**318.782**	171.043
Normalized	57.82%	100%	52.8%	98.4%
Standard Deviation	0%	0%	0.2%	0.2%
R Benchmark (sec)	1.3919	0.7841	**1.4291**	**0.7487**
Normalized	53.79%	95.49%	52.39%	100%
Standard Deviation	0.3%	0.4%	0.3%	0.2%
Numpy Benchmark (Score)	192.59	290.02	**185.47**	**311.95**
Normalized	61.74%	92.97%	59.46%	100%
Standard Deviation	0.2%	0.4%	0%	0.5%
Rodinia - OpenMP CFD Solver (sec)	**45.227**	33.306	43.771	**27.382**
Normalized	60.54%	82.21%	62.56%	100%
Standard Deviation	0.1%	1.2%	0.4%	2.4%
FFTE - N.2.3.C.F.R (MFLOPS)	**16402**	18436	22589	**31144**
Normalized	52.66%	59.2%	72.53%	100%
Standard Deviation	0.1%	0.4%	0.1%	0.3%
OSBench - Create Files (us/Event)	**123.229822**	67.993345	75.523087	**36.165431**
Normalized	29.35%	53.19%	47.89%	100%
Standard Deviation	11.1%	51.5%	1.1%	0.5%
OSBench - Create Threads (us/Event)	15.397072	**2.956391**	**17.385483**	3.126463
Normalized	19.2%	100%	17%	94.56%
Standard Deviation	0.7%	1.5%	0.4%	1.8%
OSBench - Launch Programs	127.126376	**49.739679**	**173.850060**	70.159435
Normalized	39.13%	100%	28.61%	70.9%
Standard Deviation	0.2%	0.4%	0.6%	2.1%
OSBench - Create Processes	60.876210	27.066866	**73.312521**	**26.769638**
Normalized	43.97%	98.9%	36.51%	100%

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Standard Deviation	0.7%	0.8%	2.3%	1.3%
OSBench - Memory Allocations (Ns/Event)	60.998678	26.557922	65.539910	25.064010
Normalized	41.09%	94.37%	38.24%	100%
Standard Deviation	0.3%	0.1%	2.9%	3.6%
iPerf - 5201 - 10 Seconds - UDP - 1000Mbit Objective - 32 (Mbits/s)	27600	30597	19509	30652
Normalized	90.04%	99.82%	63.65%	100%
Standard Deviation	1.7%	0.6%	3%	2.2%
iPerf - 5201 - 10 Seconds - TCP - 1 (Mbits/s)	35013	69905	24531	71529
Normalized	48.95%	97.73%	34.3%	100%
Standard Deviation	3.8%	1%	2.7%	2.9%
iPerf - 5201 - 10 Seconds - TCP - 32 (Mbits/s)	34030	62574	25384	63263
Normalized	53.79%	98.91%	40.12%	100%
Standard Deviation	1.4%	1%	10.7%	1.9%
Coremark - CoreMark Size 666 - I.P.S (Iterations/Sec)	153627	245018	139264	198249
Normalized	62.7%	100%	56.84%	80.91%
Standard Deviation	0.1%	2.5%	0.2%	2.2%
Aircrack-ng (k/s)	15542	26757	14764	27595
Normalized	56.32%	96.96%	53.5%	100%
Standard Deviation	0.1%	0%	0.2%	0.2%
Primesieve - 1.P.N.G (sec)	59.443	42.439	62.947	49.040
Normalized	71.39%	100%	67.42%	86.54%
Standard Deviation	0.1%	2.4%	0.4%	1.2%
Rust Prime Benchmark - P.N.T.T.2.0.0 (sec)	24.298	13.883	25.654	16.057
Normalized	57.14%	100%	54.12%	86.46%
Standard Deviation	0.2%	0.1%	0%	2.5%
Stockfish - Total Time (Nodes/s)	9083381	12872811	9132396	11051619
Normalized	70.56%	100%	70.94%	85.85%
Standard Deviation	1.1%	3.5%	0.8%	2.4%
John The Ripper - Blowfish (Real C/S)	7356	10942	6990	9600
Normalized	67.23%	100%	63.88%	87.74%
Standard Deviation		2.4%	0%	2.4%
John The Ripper - MD5 (Real C/S)	372525	498026	353647	426519
Normalized	74.8%	100%	71.01%	85.64%
Standard Deviation	0%	2.2%	0%	2.2%
Timed PHP Compilation - Time To Compile (sec)	85.209	52.808	87.218	58.163
Normalized	61.97%	100%	60.55%	90.79%
Standard Deviation	0.7%	1.4%	0.1%	2.4%
Rust Mandelbrot - T.T.C.S.P.M (sec)	109.013	61.733	113.782	59.564
Normalized	54.64%	96.49%	52.35%	100%
Standard Deviation	0.6%	0%	0.1%	0.2%
m-queens - Time To Solve (sec)	202.222	124.431	212.902	143.379
Normalized	61.53%	100%	58.45%	86.78%
Standard Deviation	0%	1.2%	0%	1.3%
Swet - Average (Operations/sec)	185466551	323138442	171943966	331636377
Normalized	55.92%	97.44%	51.85%	100%
Standard Deviation	1.5%	0.4%	0.7%	0.5%

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AOBench - 2048 x 2048 - Total Time (sec)	82.006	46.765	**85.865**	**43.877**
Normalized	53.5%	93.82%	51.1%	100%
Standard Deviation	0%	0%	0.1%	0.1%
GraphicsMagick - Sharpen (Iterations/min)	58	**87**	**55**	76
Normalized	66.67%	100%	63.22%	87.36%
Standard Deviation		2.4%		2.3%
GraphicsMagick - Enhanced (Iterations/min)	90	**139**	**86**	123
Normalized	64.75%	100%	61.87%	88.49%
Standard Deviation		1.2%		0.9%
GraphicsMagick - Resizing (Iterations/min)	**421**	**594**	455	582
Normalized	70.88%	100%	76.6%	97.98%
Standard Deviation		1.1%	0.8%	1.4%
GraphicsMagick - Noise-Gaussian (Iterations/min)	114	**159**	**110**	144
Normalized	71.7%	100%	69.18%	90.57%
Standard Deviation		1.1%		1.2%
GraphicsMagick - HWB Color Space (Iterations/min)	**620**	855	739	**984**
Normalized	63.01%	86.89%	75.1%	100%
Standard Deviation		0.8%		1.2%
x264 - H.2.V.E (FPS)	44.40	**72.79**	**41.58**	62.37
Normalized	61%	100%	57.12%	85.68%
Standard Deviation	2.5%	2.6%	0.7%	3.8%
x265 - Bosphorus 4K (FPS)	**6.15**	**8.40**	6.27	8.33
Normalized	73.21%	100%	74.64%	99.17%
Standard Deviation	0.7%	2.5%	0.2%	1.7%
x265 - Bosphorus 1080p (FPS)	28.86	**44.39**	**28.09**	40.25
Normalized	65.01%	100%	63.28%	90.67%
Standard Deviation	1.1%	1.8%	0.5%	2.5%
C-Ray - Total Time - 4.1.R.P.P (sec)	201.976	**138.167**	**211.923**	156.857
Normalized	68.41%	100%	65.2%	88.08%
Standard Deviation	0.1%	0.6%	0.1%	0.5%
TTSIOD 3D Renderer - P.R.W.S.S.M (FPS)	24.7638	40.5254	**23.7989**	**49.2219**
Normalized	50.31%	82.33%	48.35%	100%
Standard Deviation	0.4%	0.1%	0.4%	0.2%
rav1e - 5 (FPS)	0.604	**1.061**	**0.572**	1.060
Normalized	56.93%	100%	53.91%	99.91%
Standard Deviation	0.7%	0.2%	0.7%	2.5%
rav1e - 6 (FPS)	0.813	1.409	**0.757**	**1.445**
Normalized	56.26%	97.51%	52.39%	100%
Standard Deviation	0.1%	0.7%	1.1%	0.7%
rav1e - 10 (FPS)	1.808	3.129	**1.713**	**3.300**
Normalized	54.79%	94.82%	51.91%	100%
Standard Deviation	0.3%	0.3%	0.4%	0.3%
libavif avifenc - 8 (sec)	11.978	7.137	**12.480**	**6.576**
Normalized	54.9%	92.14%	52.69%	100%
Standard Deviation	0.6%	0.5%	0.6%	0.4%
libavif avifenc - 10 (sec)	11.355	6.795	**11.950**	**6.286**
Normalized	55.36%	92.51%	52.6%	100%

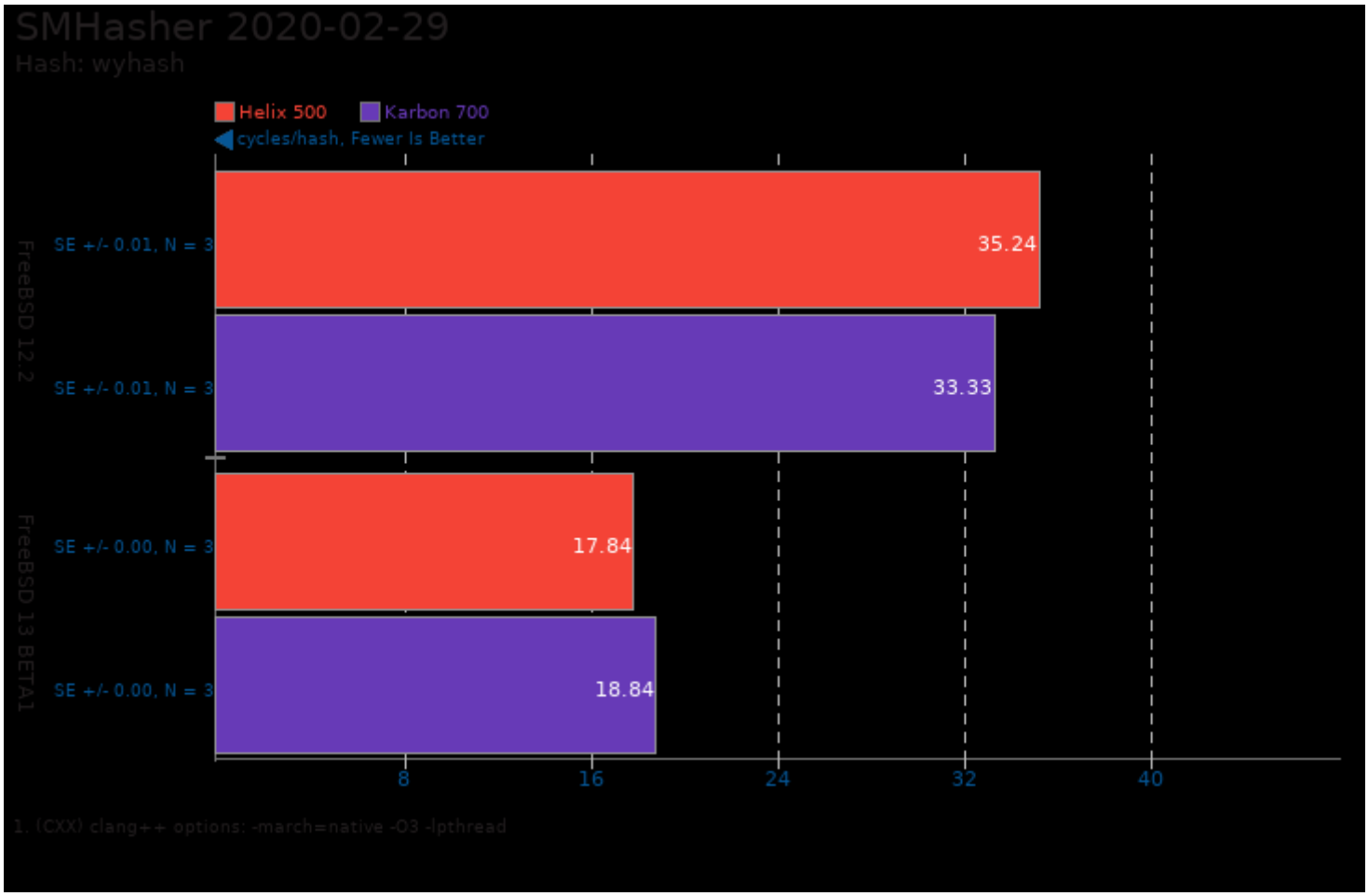
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

Standard Deviation	0.2%	0.7%	0.1%	0.7%
Smallpt - G.I.R.1.S (sec)	28.235	18.005	29.690	20.805
Normalized	63.77%	100%	60.64%	86.54%
Standard Deviation	0.1%	2.5%	0.1%	2.4%
Timed Eigen Compilation - Time To Compile (sec)	152.194	90.517	159.836	85.201
Normalized	55.98%	94.13%	53.31%	100%
Standard Deviation	0.1%	0.2%	0.1%	0.2%
PyPerformance - go (Milliseconds)	796	463	837	439
Normalized	55.15%	94.82%	52.45%	100%
Standard Deviation	0.1%	0.1%	0.2%	0.3%
PyPerformance - 2to3 (Milliseconds)	903	526	949	495
Normalized	54.82%	94.11%	52.16%	100%
Standard Deviation	0.2%	0.1%		
PyPerformance - float (Milliseconds)	308	185	323	175
Normalized	56.82%	94.59%	54.18%	100%
Standard Deviation			0.2%	
PyPerformance - nbody (Milliseconds)	370	233	389	220
Normalized	59.46%	94.42%	56.56%	100%
PyPerformance - pathlib	71.8	36.3	74.8	34.4
Normalized	47.91%	94.77%	45.99%	100%
Standard Deviation	0.3%	0.2%	0.2%	0.2%
PyPerformance - json_loads (Milliseconds)	81.8	42.6	87.3	40.7
Normalized	49.76%	95.54%	46.62%	100%
Standard Deviation	0.1%	0.2%	0.3%	0.1%
PyPerformance - crypto_pyaes (Milliseconds)	318	187	334	177
Normalized	55.66%	94.65%	52.99%	100%
Standard Deviation	0.2%			
PyPerformance - regex_compile (Milliseconds)	549	329	578	311
Normalized	56.65%	94.53%	53.81%	100%
Standard Deviation			0.2%	
PyPerformance - python_startup (Milliseconds)	21	13.7	22	13.3
Normalized	63.33%	97.08%	60.45%	100%
Standard Deviation		0%		0.4%
PyPerformance - django_template (Milliseconds)	190	113	201	107
Normalized	56.32%	94.69%	53.23%	100%
Standard Deviation	0.3%		0.3%	
PHP Micro Benchmarks - Zend bench (sec)	0.995	0.575	1.044	0.54
Normalized	54.27%	93.91%	51.72%	100%
Standard Deviation	0%	2.5%	0.1%	0%
PHP Micro Benchmarks - Zend micro_bench (sec)	5.174	2.998	5.426	2.822
Normalized	54.54%	94.13%	52.01%	100%
Standard Deviation	0%	0.5%	0%	0%
BlogBench - Read (Final Score)	728692	1652105	874264	1811112
Normalized	40.23%	91.22%	48.27%	100%
Standard Deviation	4.8%	1.6%	5.4%	0.2%
BlogBench - Write (Final Score)	4370	10259	5013	10280

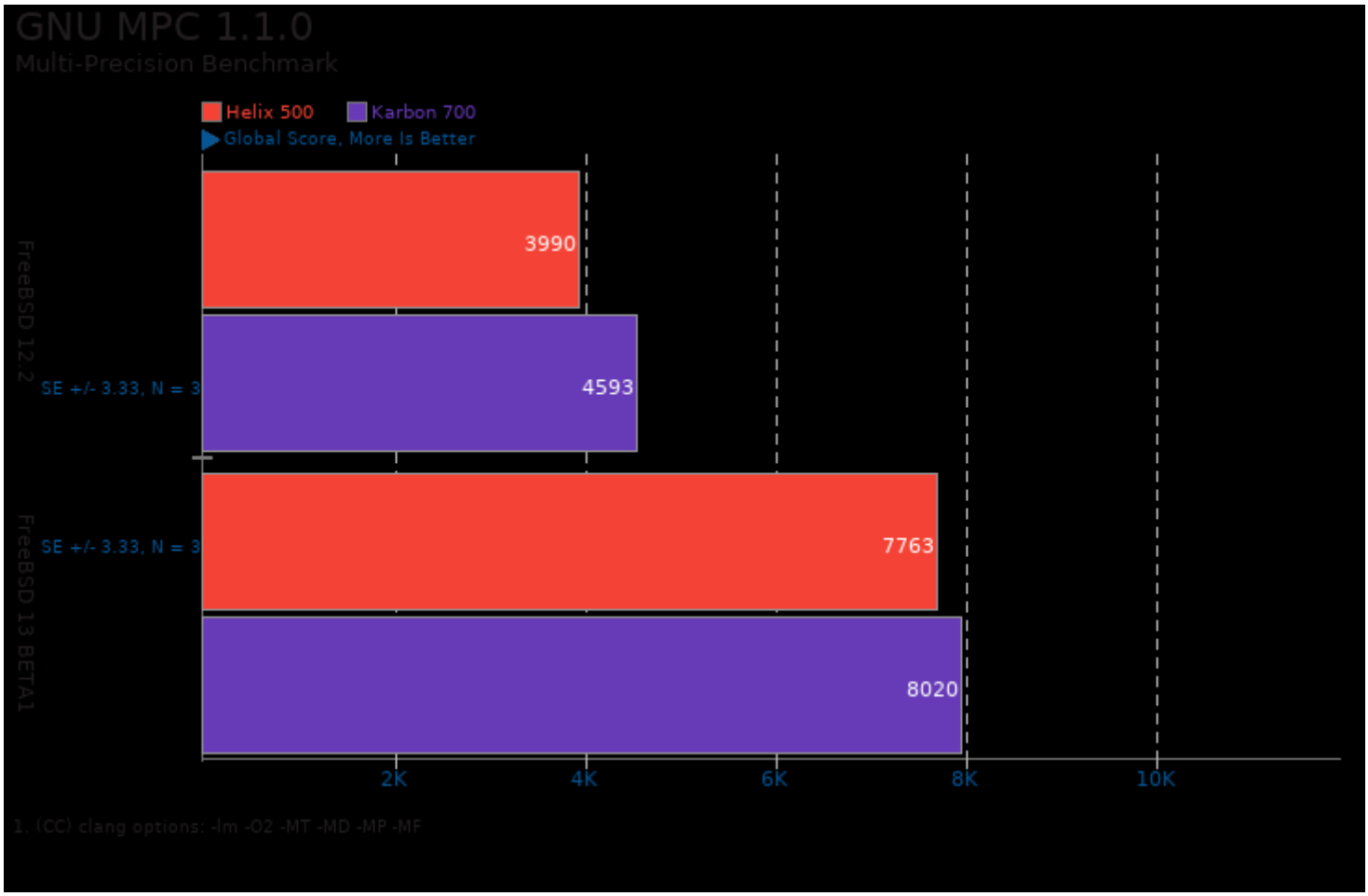
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

Normalized	42.51%	99.8%	48.76%	100%
Standard Deviation	6.1%		1.9%	
OpenSSL - R.4.b.P (Signs/sec)	778.6	**1353**	**739.2**	1169
Normalized	57.54%	100%	54.63%	86.4%
Standard Deviation	0%	1.2%	0%	6.6%
Node.js Express HTTP Load Test (Reqs/sec)	3958	6979	**3952**	**7380**
Normalized	53.63%	94.57%	53.55%	100%
Standard Deviation	0.1%	0.4%	0.4%	0.7%
PHPBench - P.B.S (Score)	273777	483162	**262992**	**511621**
Normalized	53.51%	94.44%	51.4%	100%
Standard Deviation	0%	0%	0.2%	0.1%
SQLite Speedtest - Timed Time - Size 1,000 (sec)	221.539	112.301	**233.356**	**106.113**
Normalized	47.9%	94.49%	45.47%	100%
Standard Deviation	0.1%	0.1%	0.3%	0.6%
simdjson - Kostya (GB/s)	0.46	0.83	**0.42**	**0.85**
Normalized	54.12%	97.65%	49.41%	100%
Standard Deviation	0%	0%	0%	0%
simdjson - LargeRand (GB/s)	0.24	0.46	**0.23**	**0.48**
Normalized	50%	95.83%	47.92%	100%
Standard Deviation	0%	0%	0%	0%
simdjson - PartialTweets (GB/s)	0.35	0.64	**0.33**	**0.66**
Normalized	53.03%	96.97%	50%	100%
Standard Deviation	0%	0%	0%	0%
simdjson - DistinctUserID (GB/s)	0.37	0.66	**0.34**	**0.68**
Normalized	54.41%	97.06%	50%	100%
Standard Deviation	0%	0%	0%	0%
Perl Benchmarks - Pod2html (sec)	0.31573604	0.16873474	**0.33328397**	**0.15992416**
Normalized	50.65%	94.78%	47.98%	100%
Standard Deviation	1.4%	0.9%	0.7%	0.5%
Fhourstones - C.C.4.S (Kpos / sec)	**8129**	12858	8231	**13969**
Normalized	58.19%	92.04%	58.92%	100%
Standard Deviation	0.1%	0.2%	0.2%	0.5%
Optcarrot - O.B (FPS)	67.68	114.64	**64.56**	**121.14**
Normalized	55.87%	94.63%	53.29%	100%
Standard Deviation	0.2%	0.1%	0.3%	0.2%
PolyBench-C - 3.M.M (sec)	5.817	3.343	**6.085**	**2.963**
Normalized	50.94%	88.63%	48.69%	100%
Standard Deviation	0.5%	0.6%	0.2%	0.1%
Bork File Encrypter - F.E.T (sec)	28.569	15.324	**30.133**	**14.420**
Normalized	50.47%	94.1%	47.85%	100%
Standard Deviation	1.2%	1.3%	0.8%	1.3%
Git - T.T.C.C.G.C (sec)	111.530	68.457	**120.284**	**64.843**
Normalized	58.14%	94.72%	53.91%	100%
Standard Deviation	0.3%	0.3%	0.2%	0.2%
PyBench - T.F.A.T.T (Milliseconds)	3180	1836	**3290**	**1750**
Normalized	55.03%	95.32%	53.19%	100%
Standard Deviation	0.2%	0.3%	0.2%	0.3%

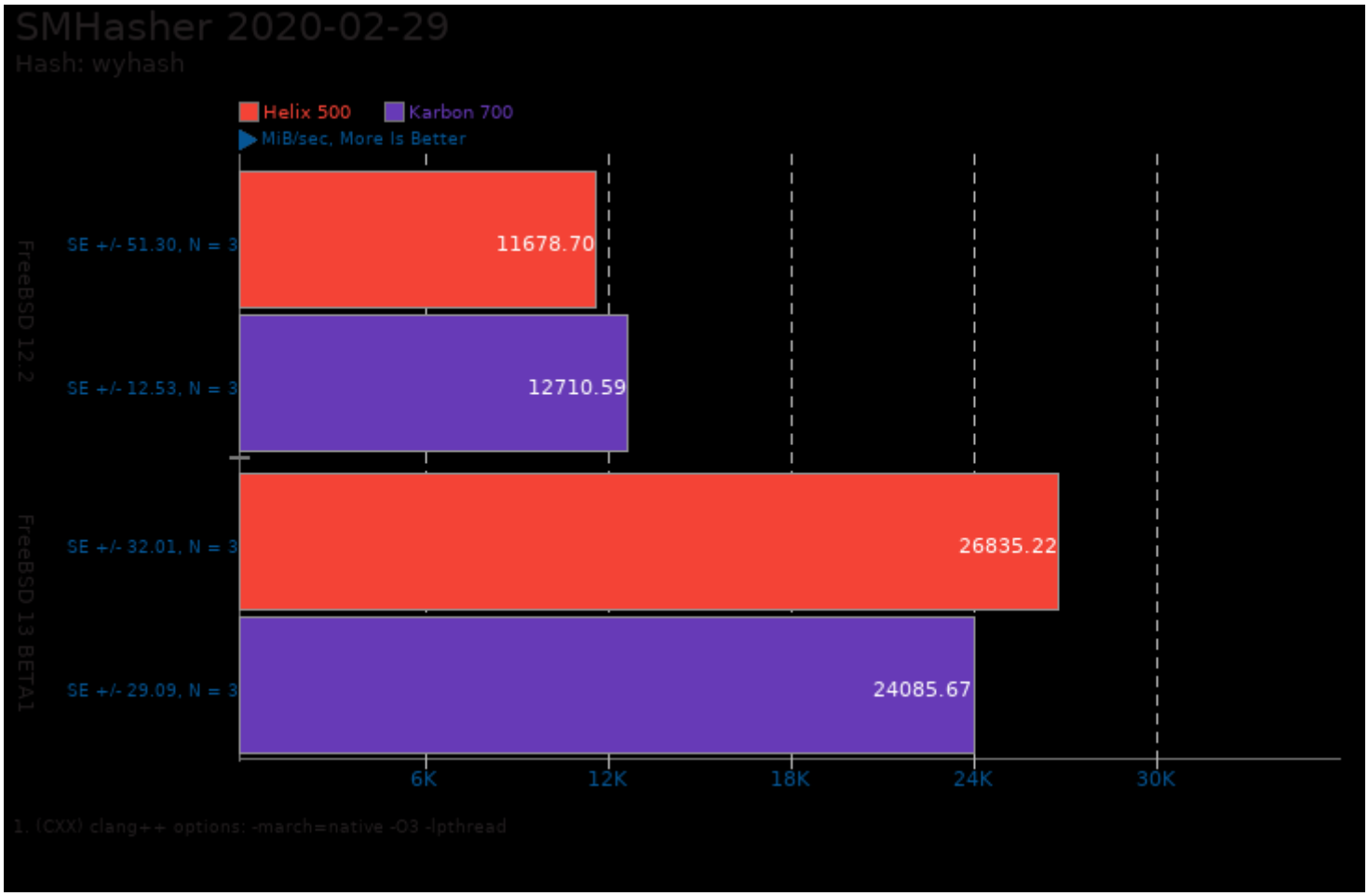
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks



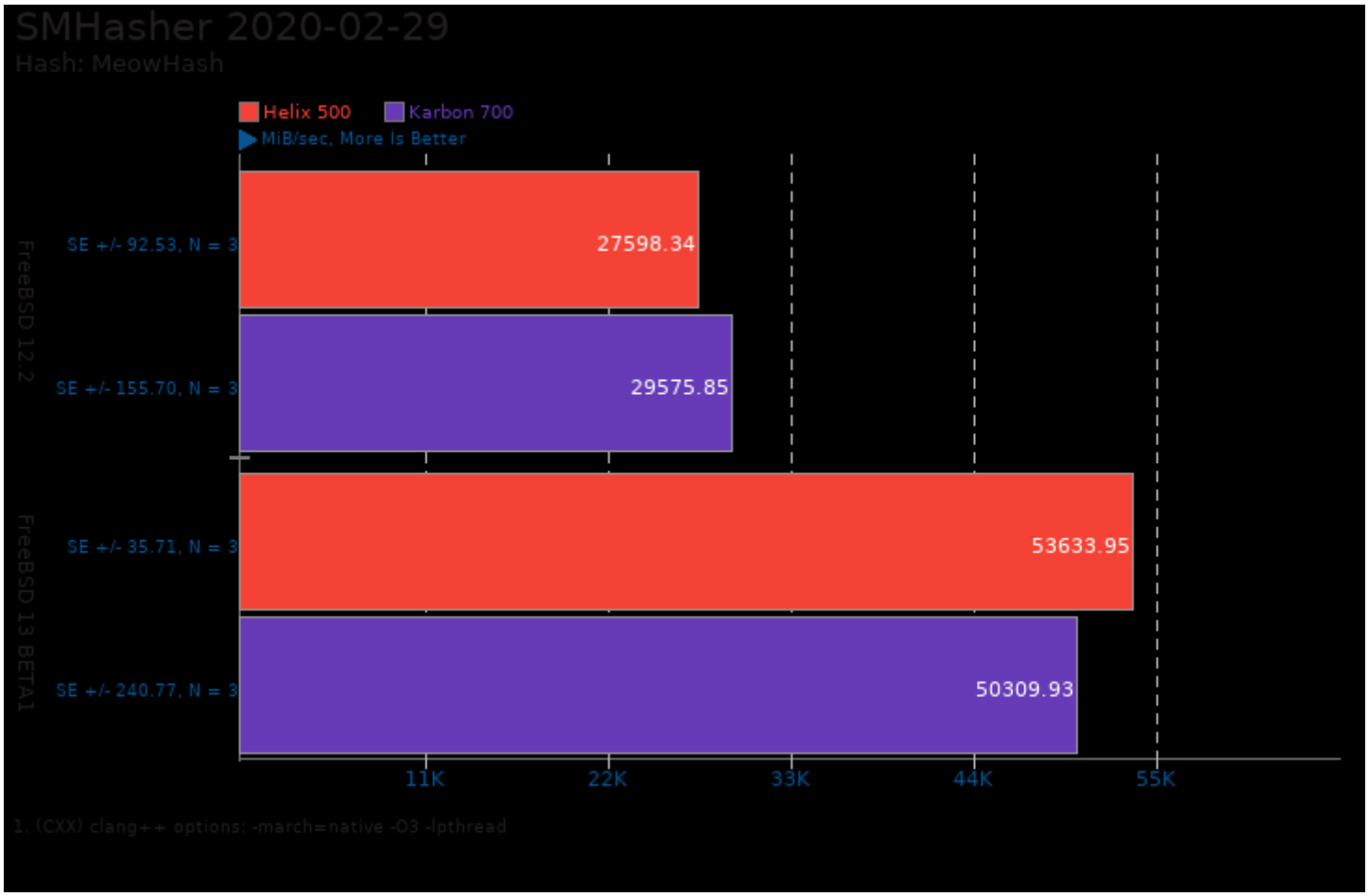
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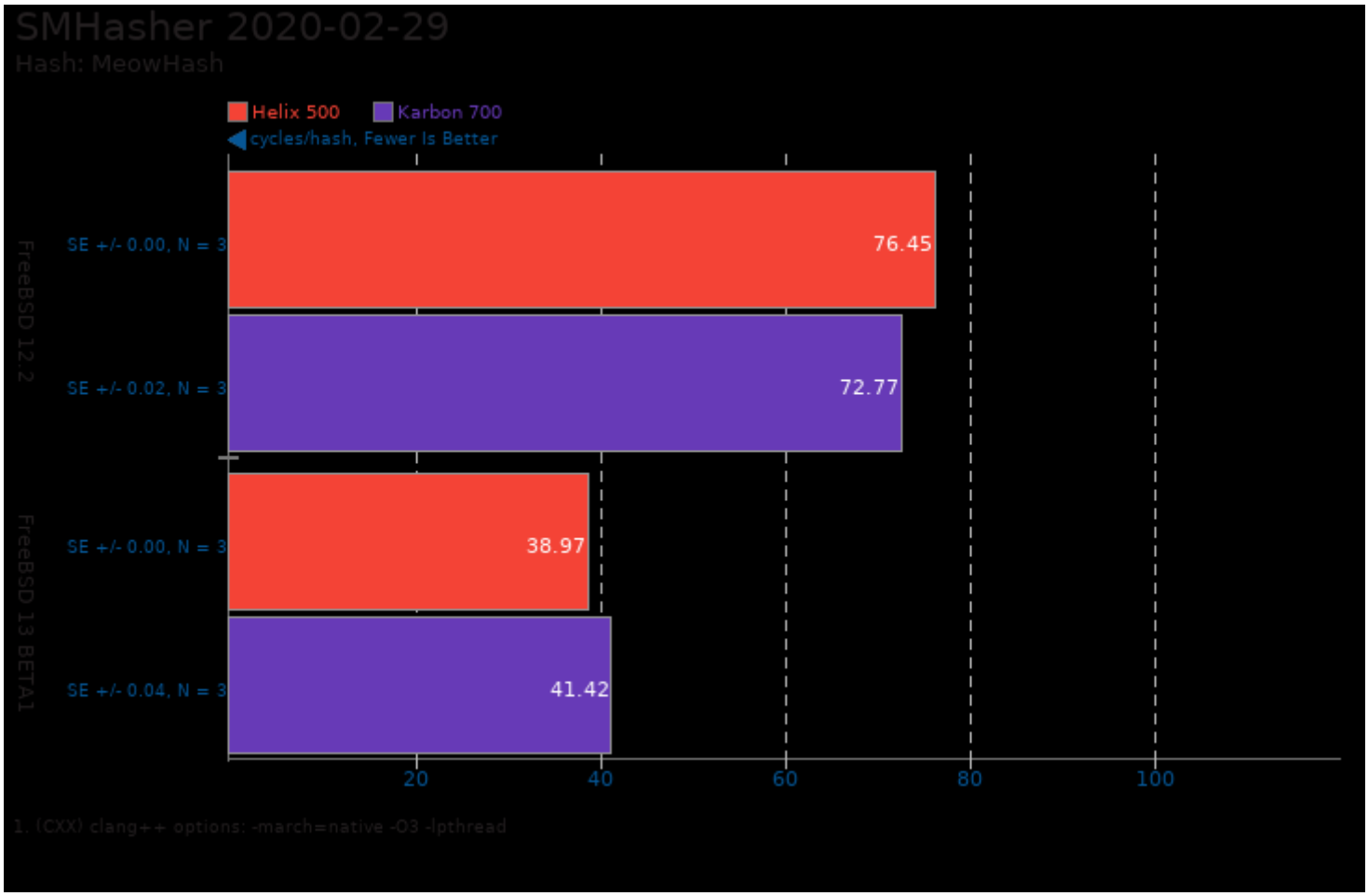
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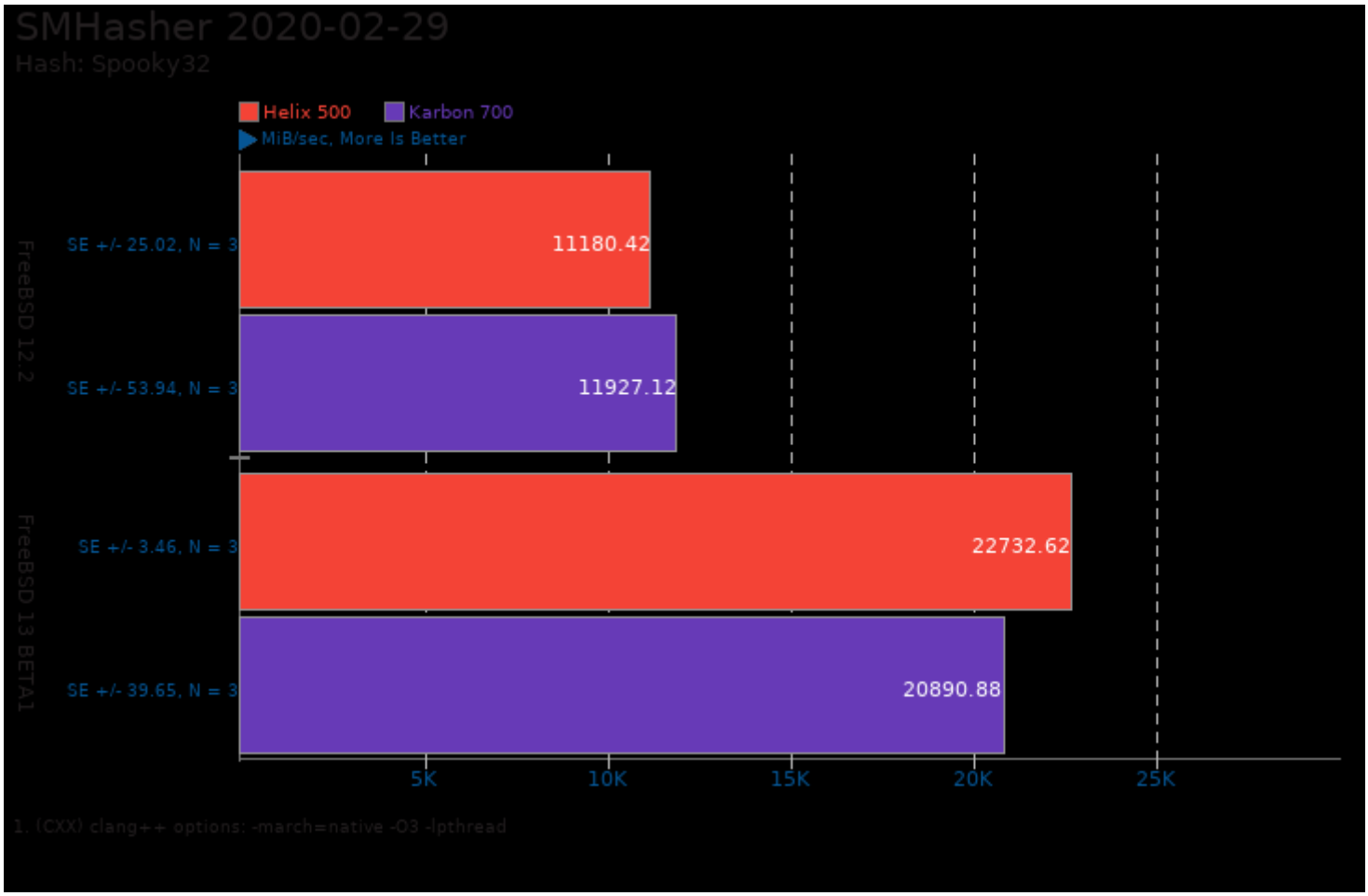
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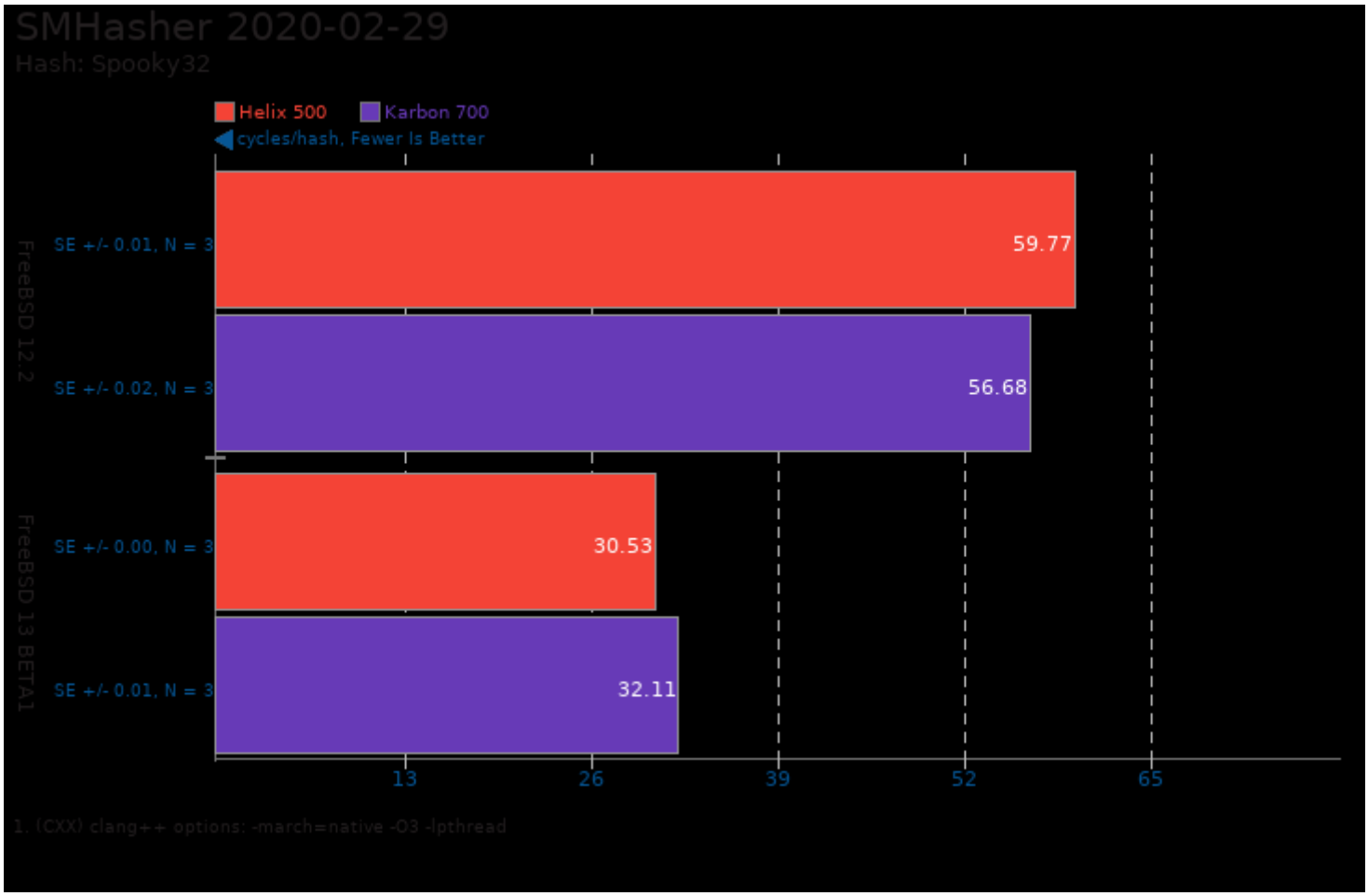
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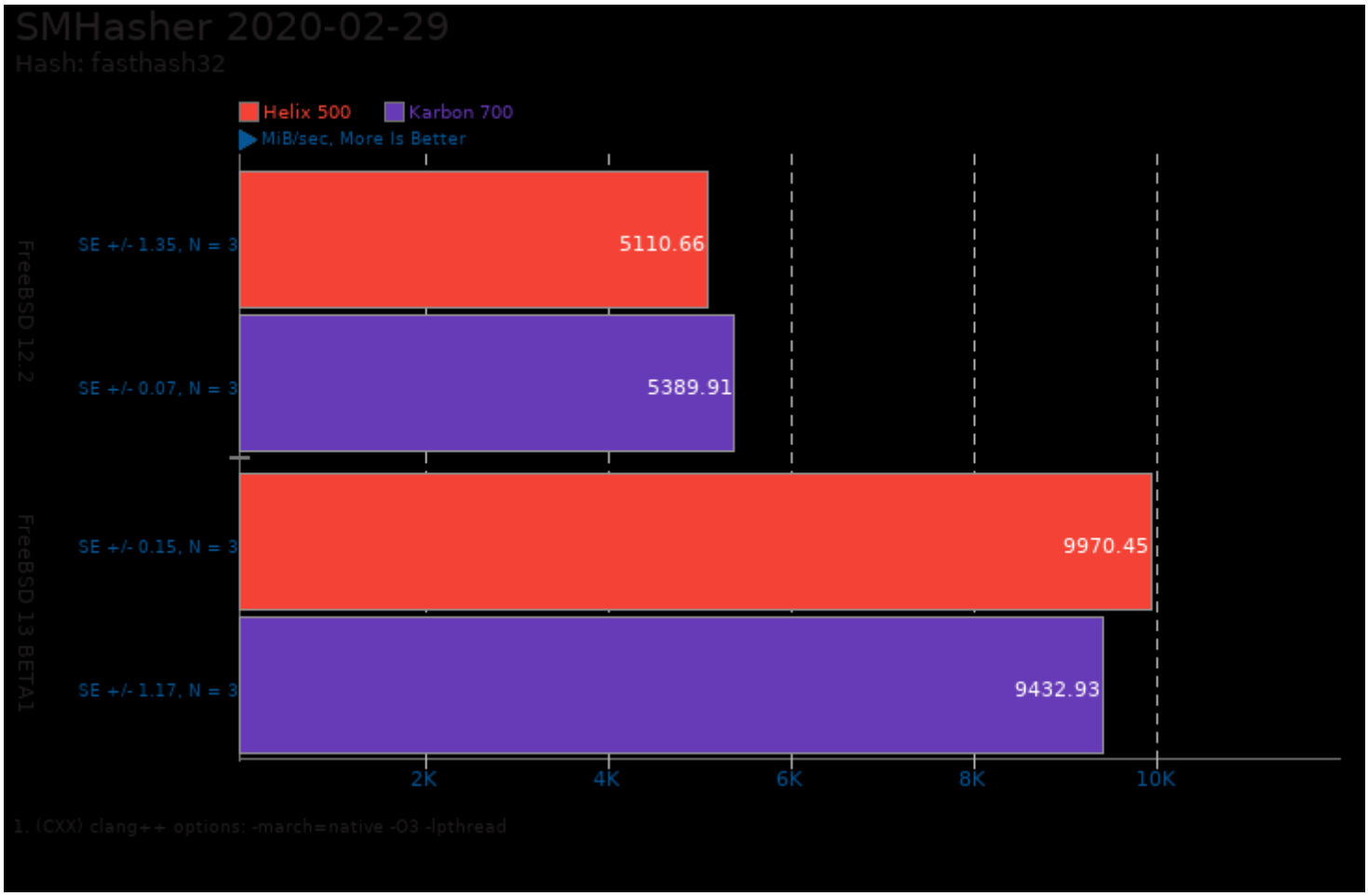
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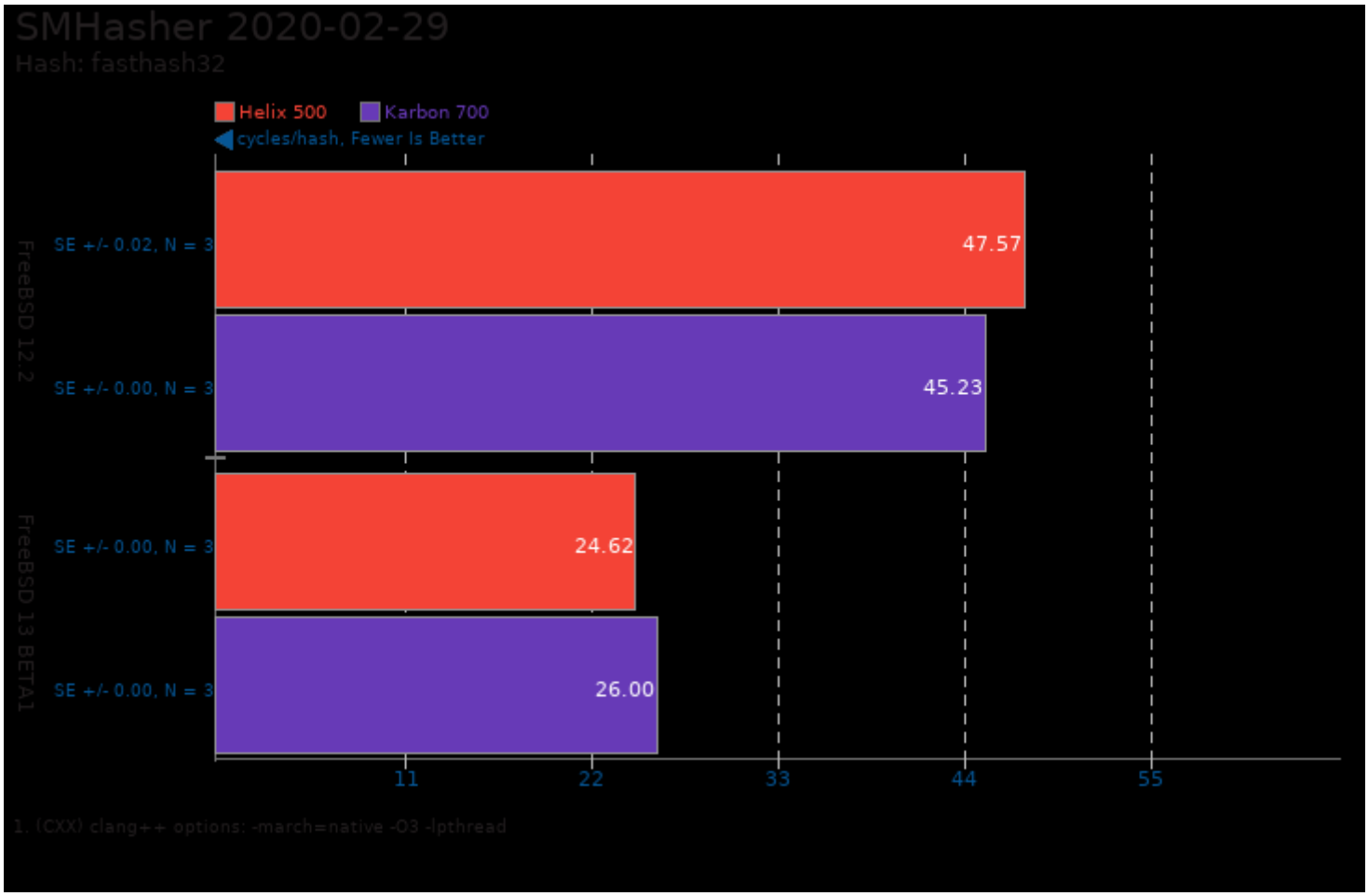
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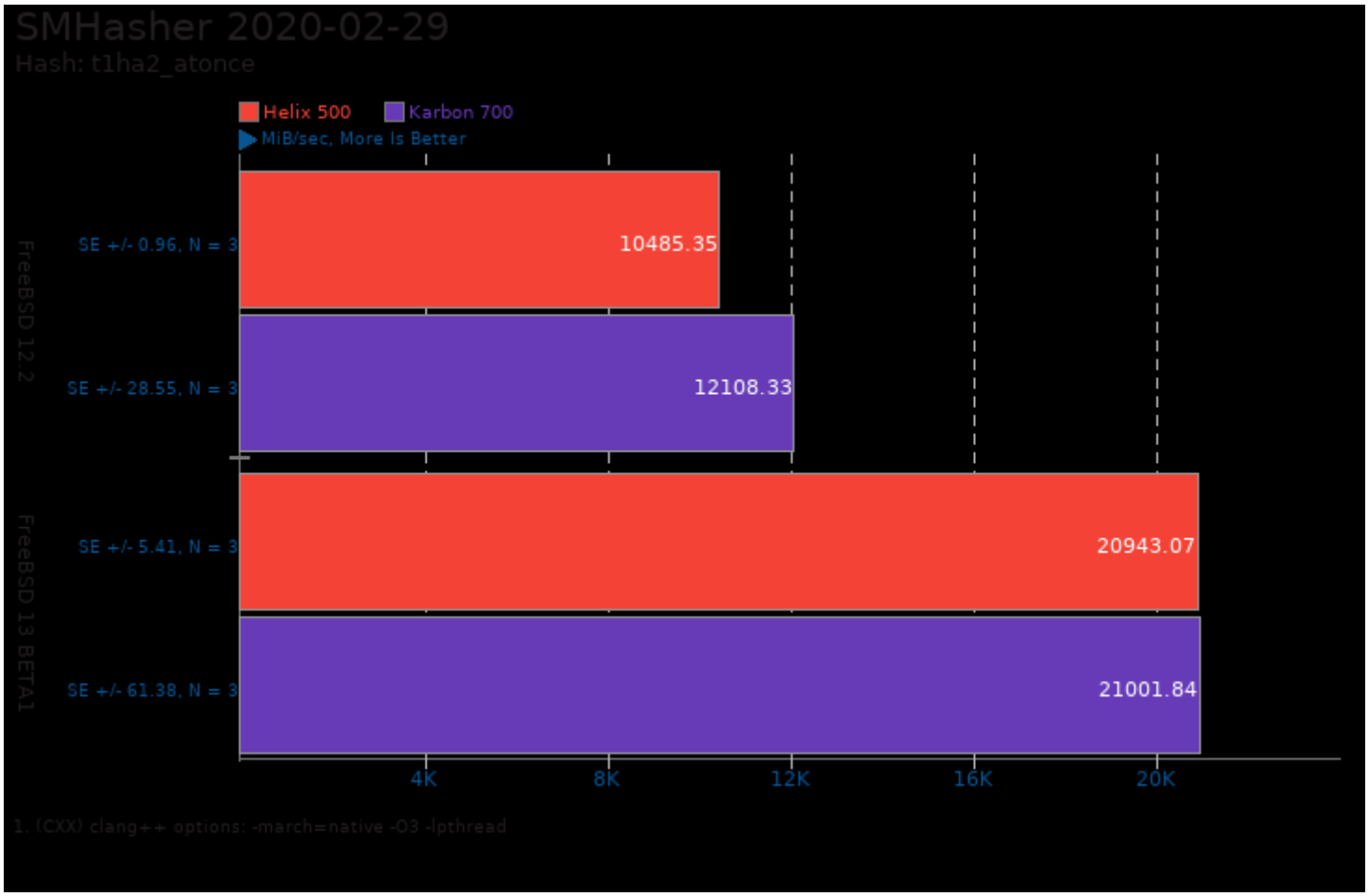
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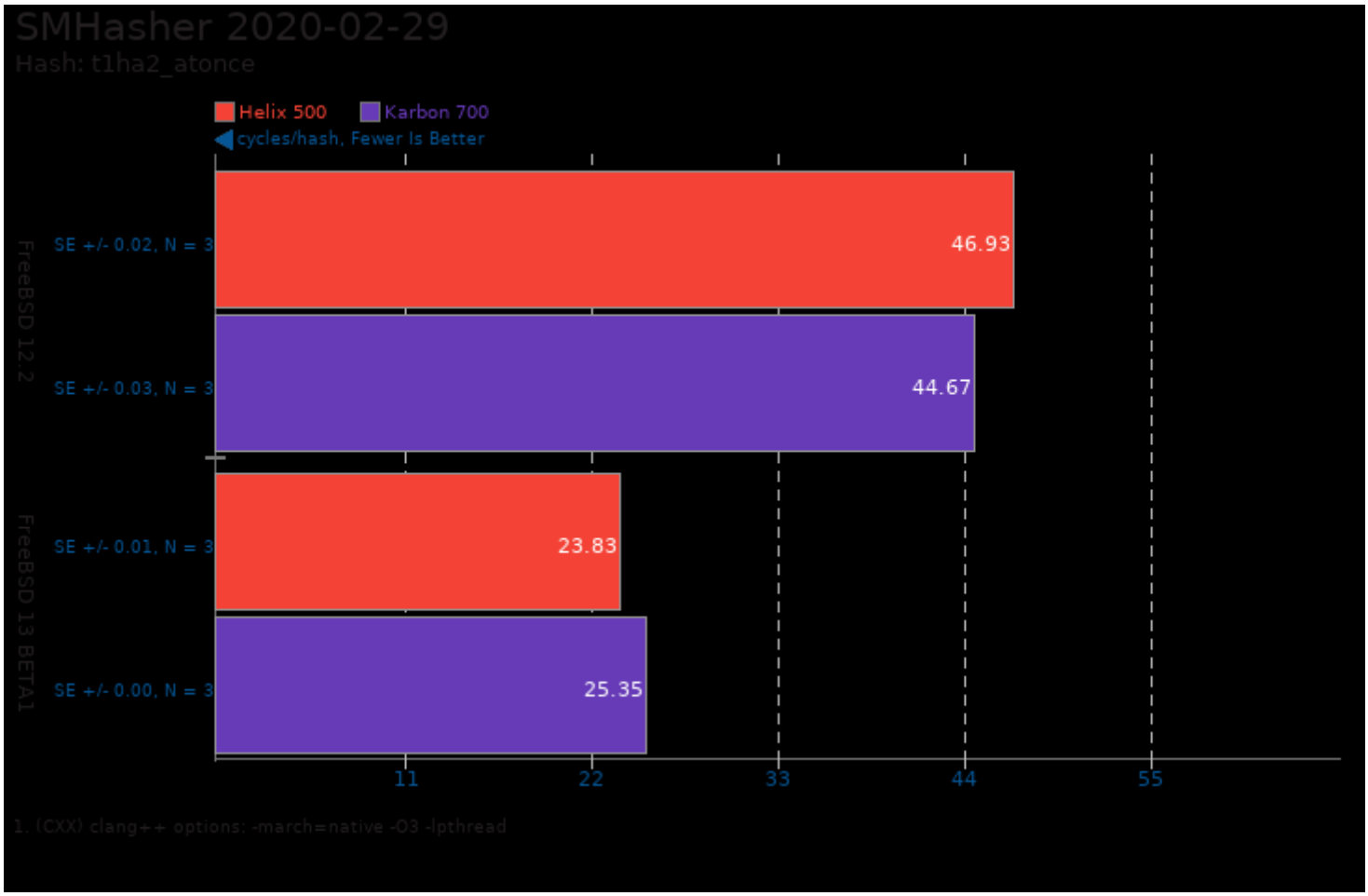
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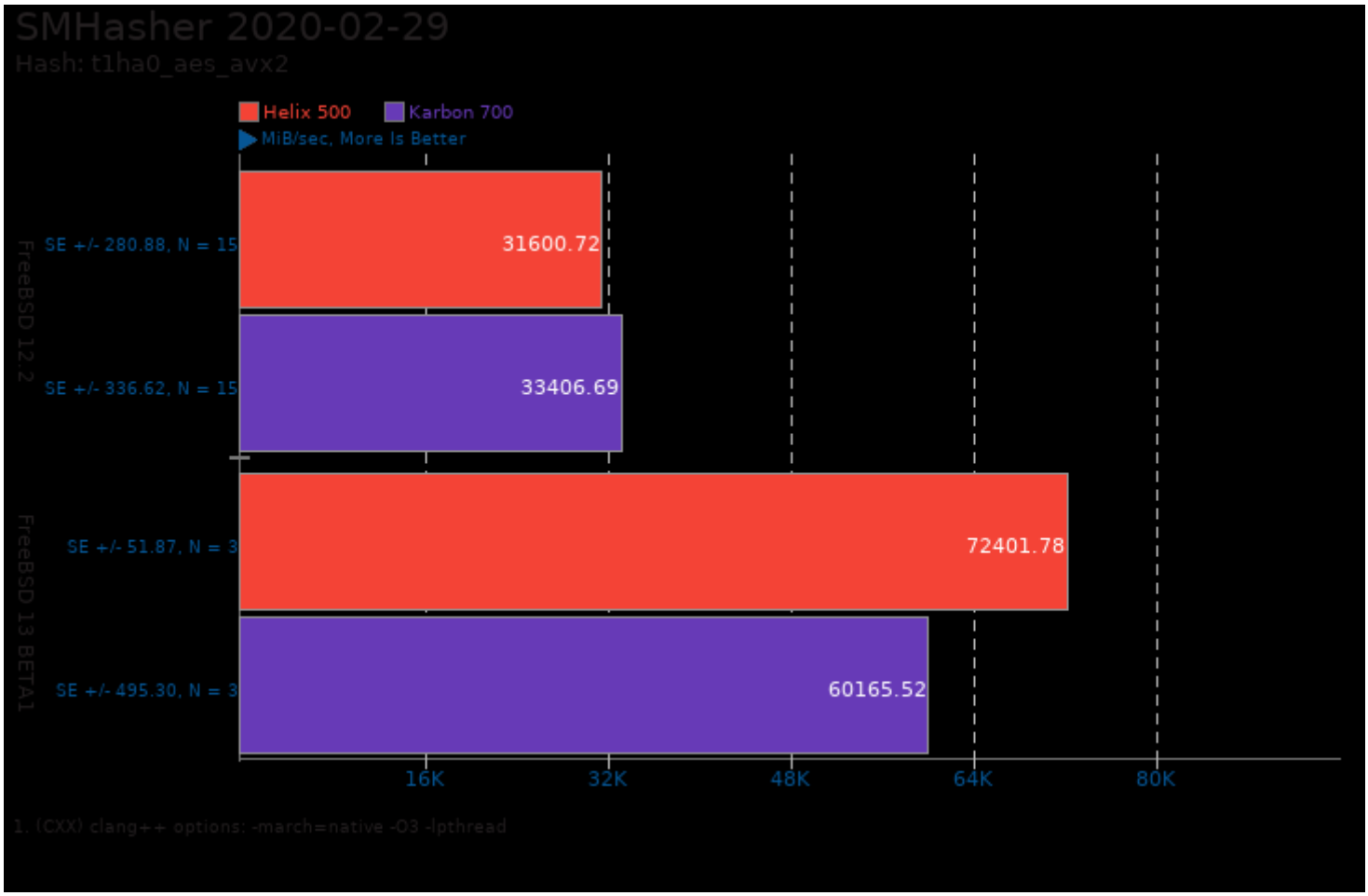


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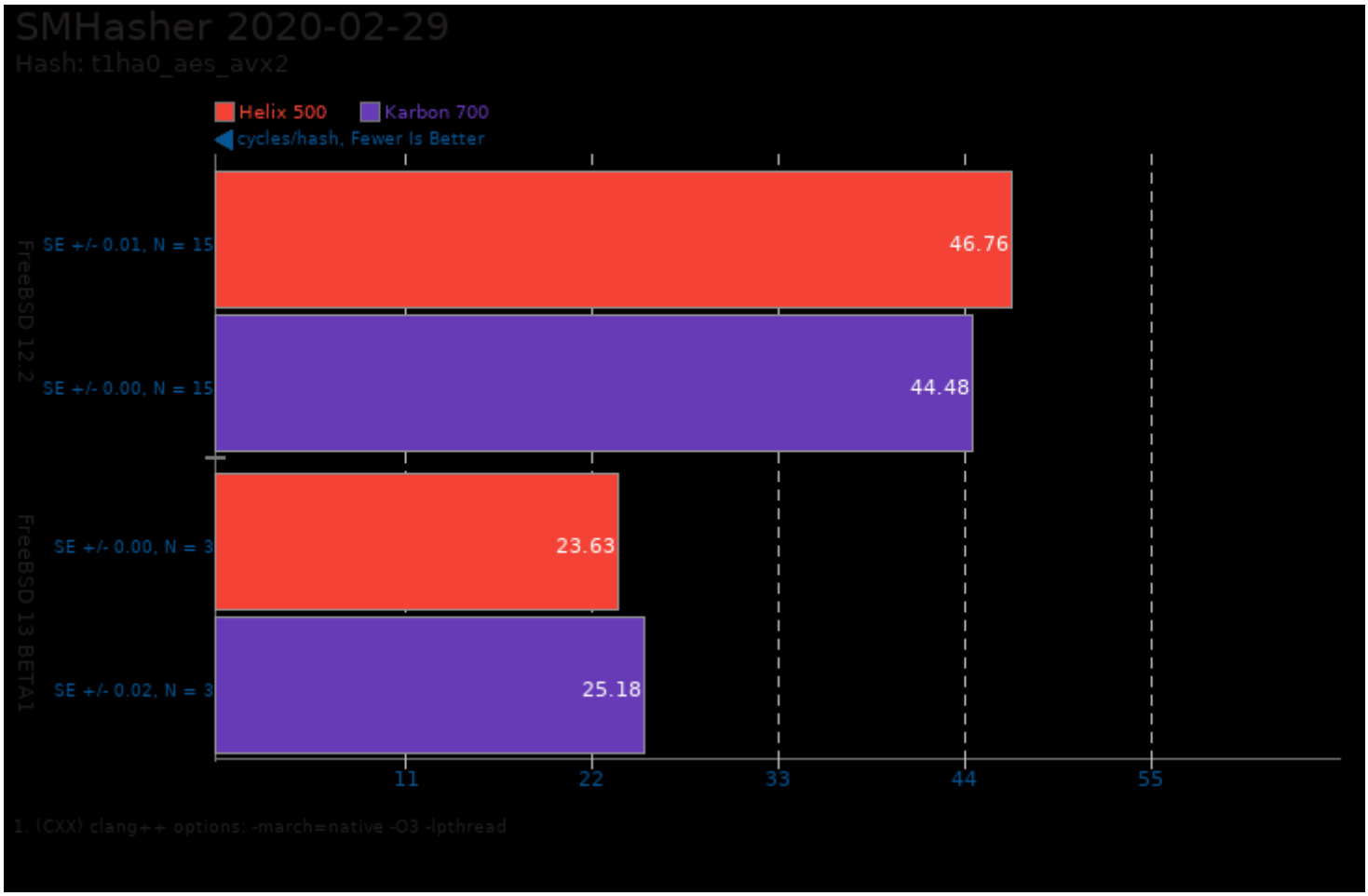


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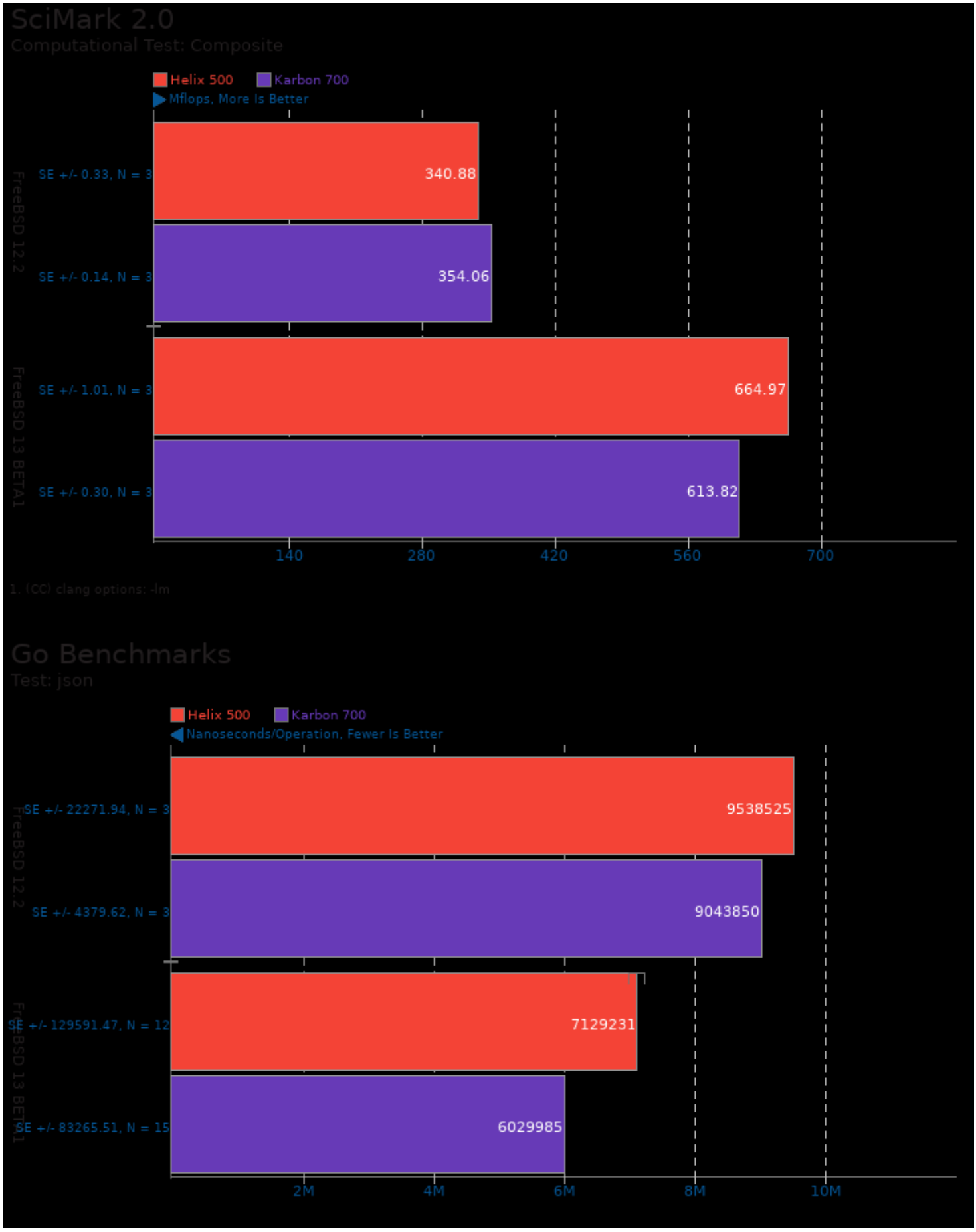



SMHasher 2020-02-29
Hash: t1ha0_aes_avx2
Helix 500
Karbon 700
MiB/sec, More Is Better
FreeBSD 12.2
SE +/- 280.88, N = 15
31600.72
SE +/- 336.62, N = 15
33406.69
FreeBSD 13 BETA1
SE +/- 51.87, N = 3
72401.78
SE +/- 495.30, N = 3
60165.52
16K
32K
48K
64K
80K
1. (CXX) clang++ options: -march=native -O3 -lpthread

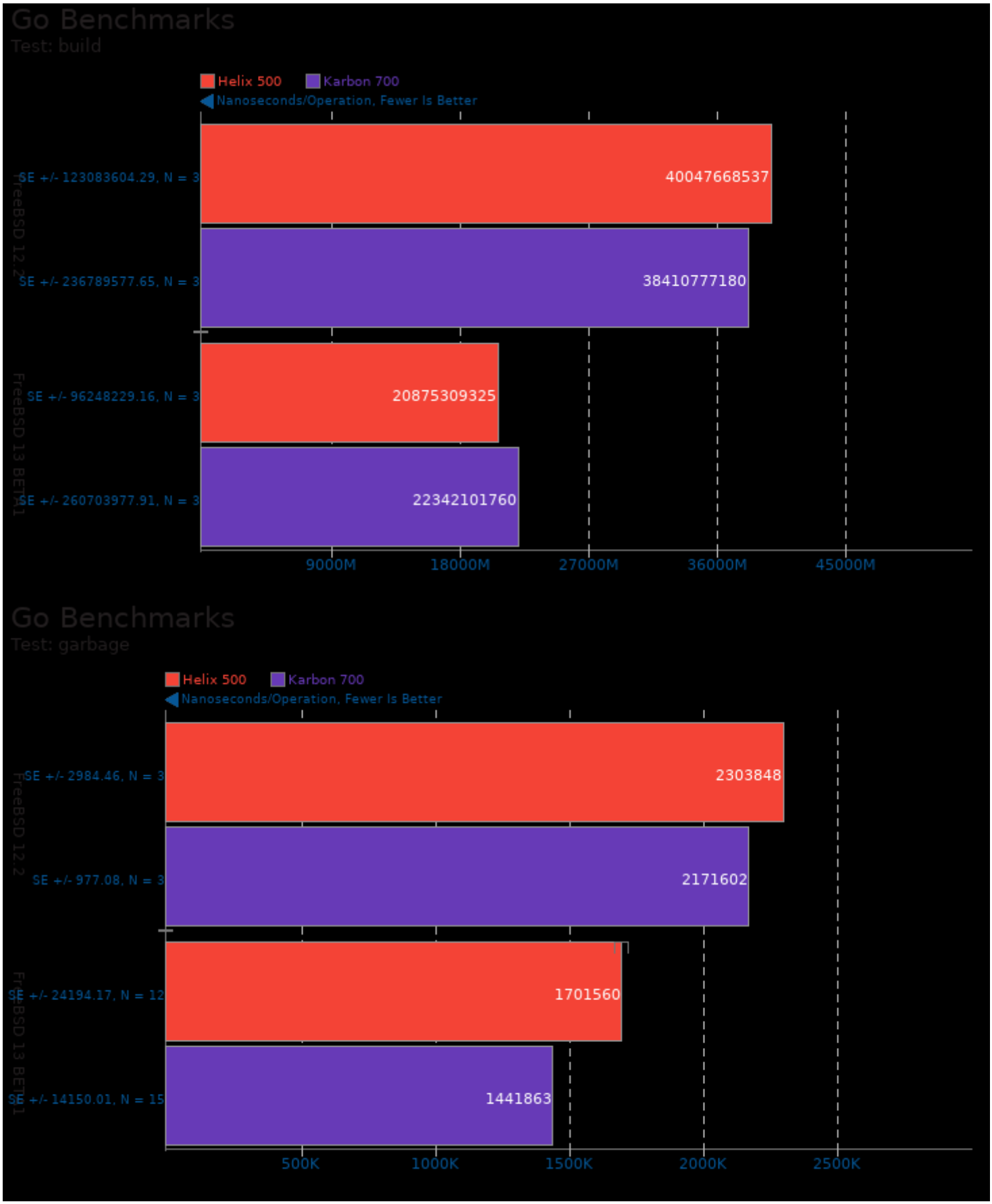
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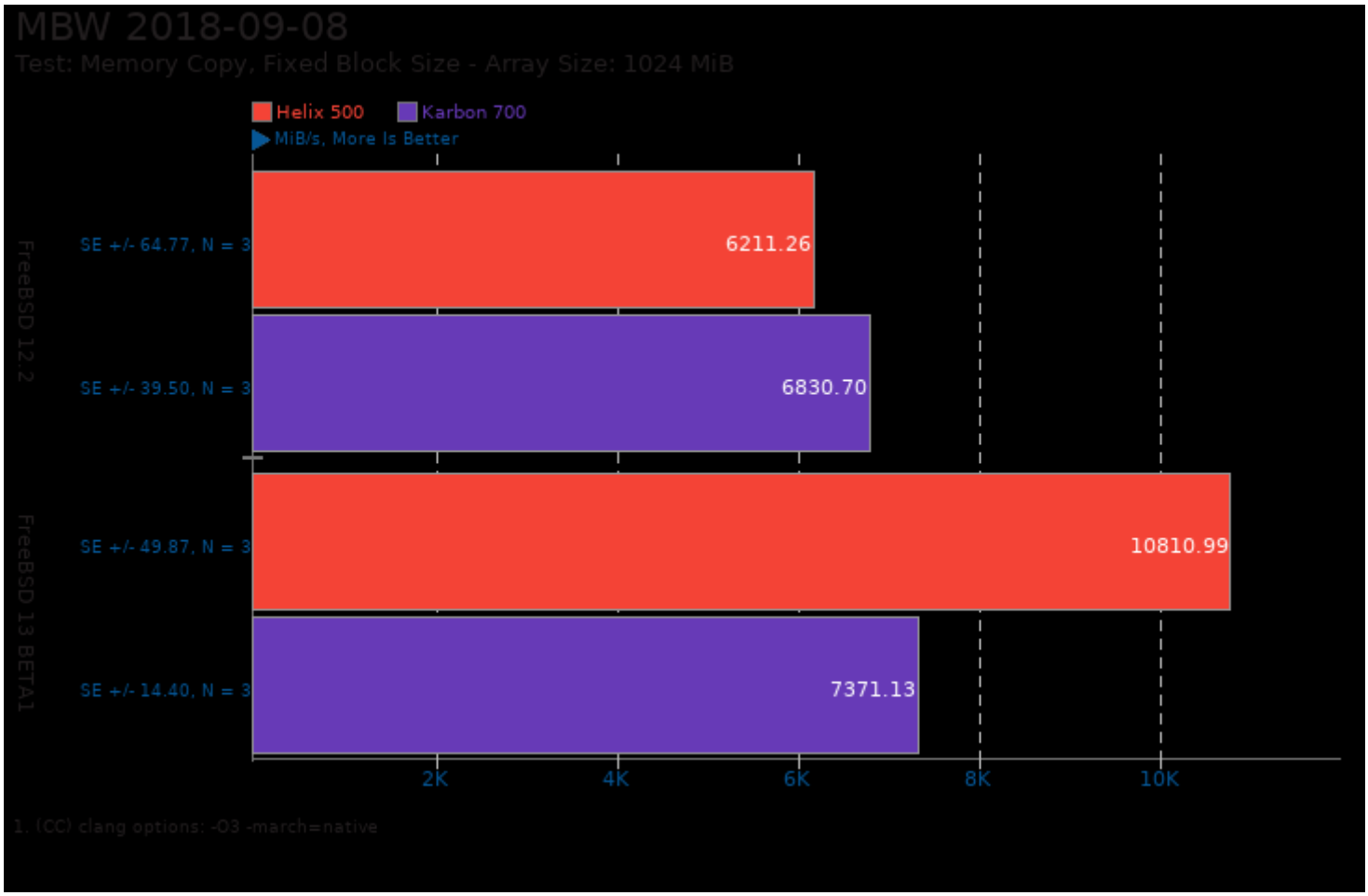
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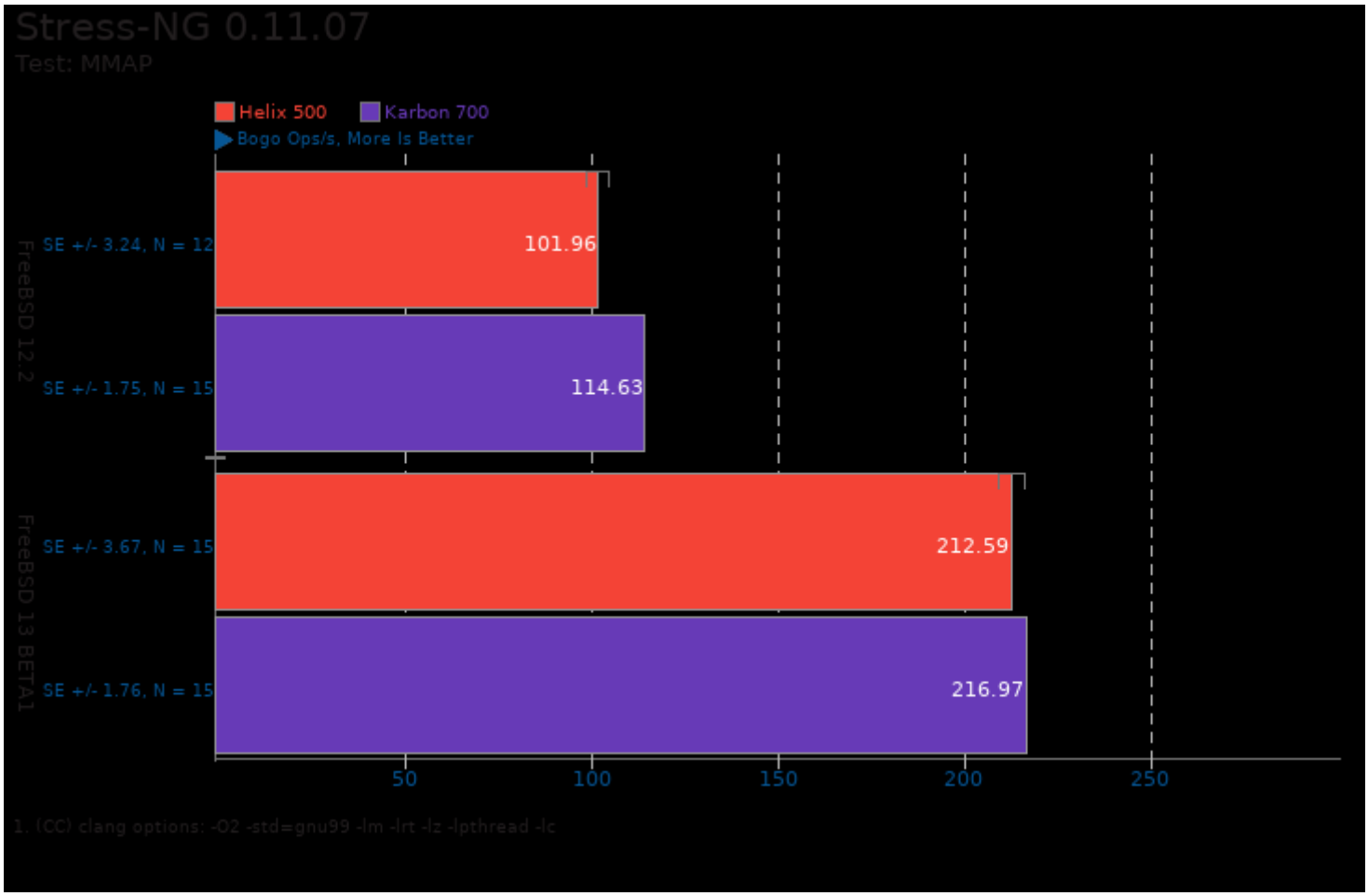


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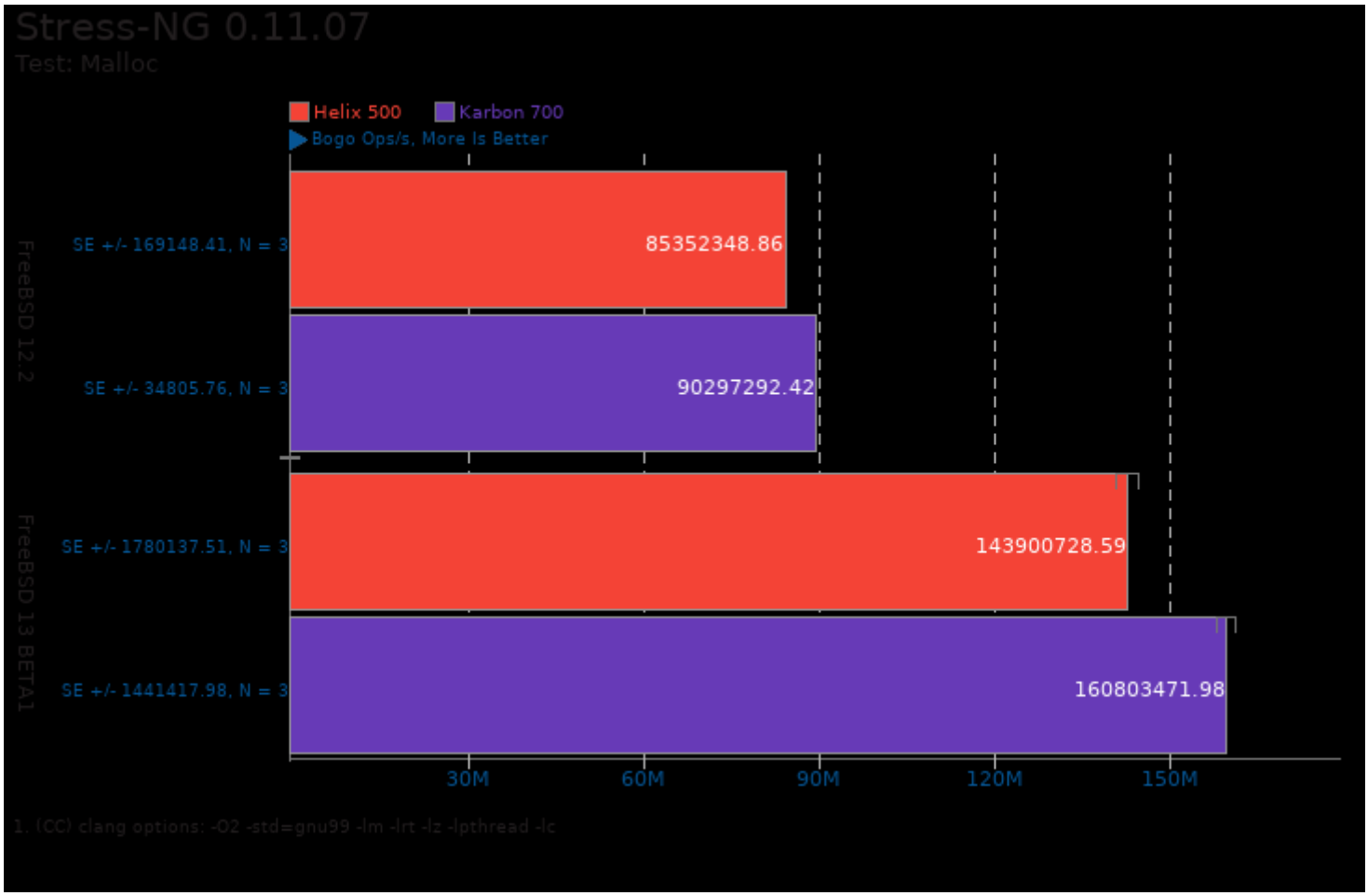


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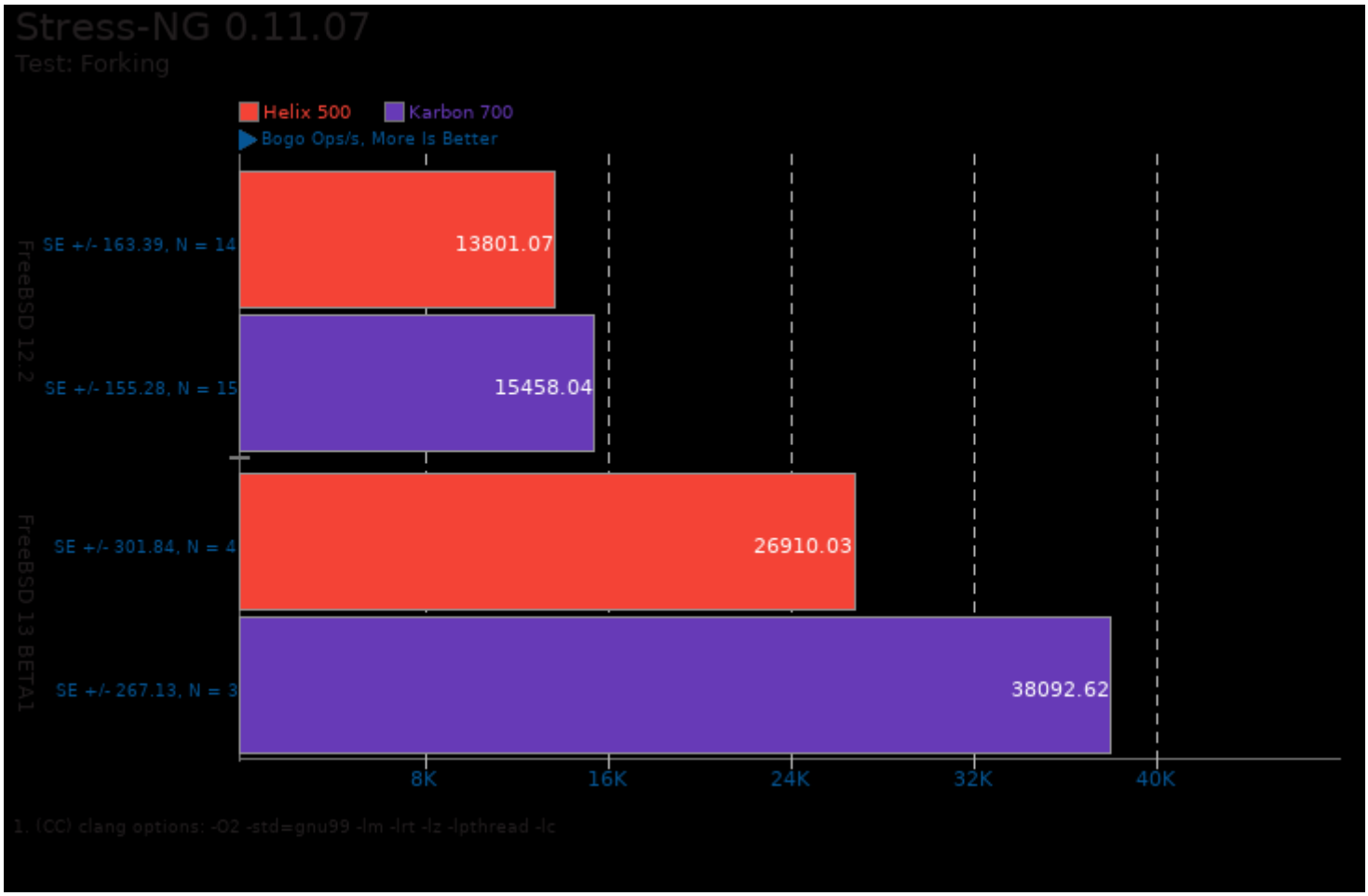



Stress-NG 0.11.07
Test: MMAP
Helix 500
Karbon 700
Bogo Ops/s, More Is Better
FreeBSD 12.2
SE +/- 3.24, N = 12
101.96
SE +/- 1.75, N = 15
114.63
FreeBSD 13 BETA1
SE +/- 3.67, N = 15
212.59
SE +/- 1.76, N = 15
216.97
50
100
150
200
250
1. (CC) clang options: -O2 -std=gnu99 -lm -lrt -lz -lpthread -lc

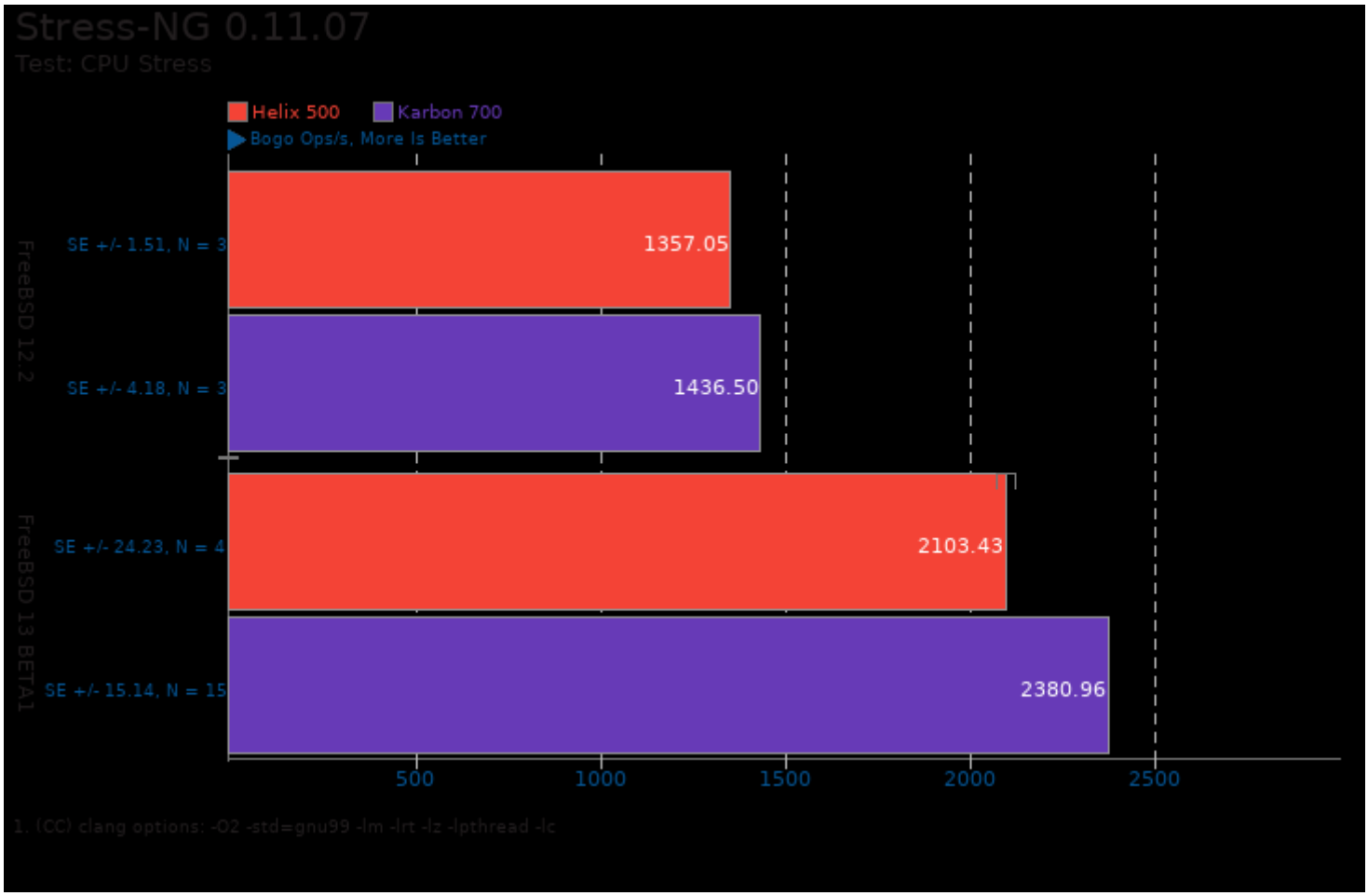
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks



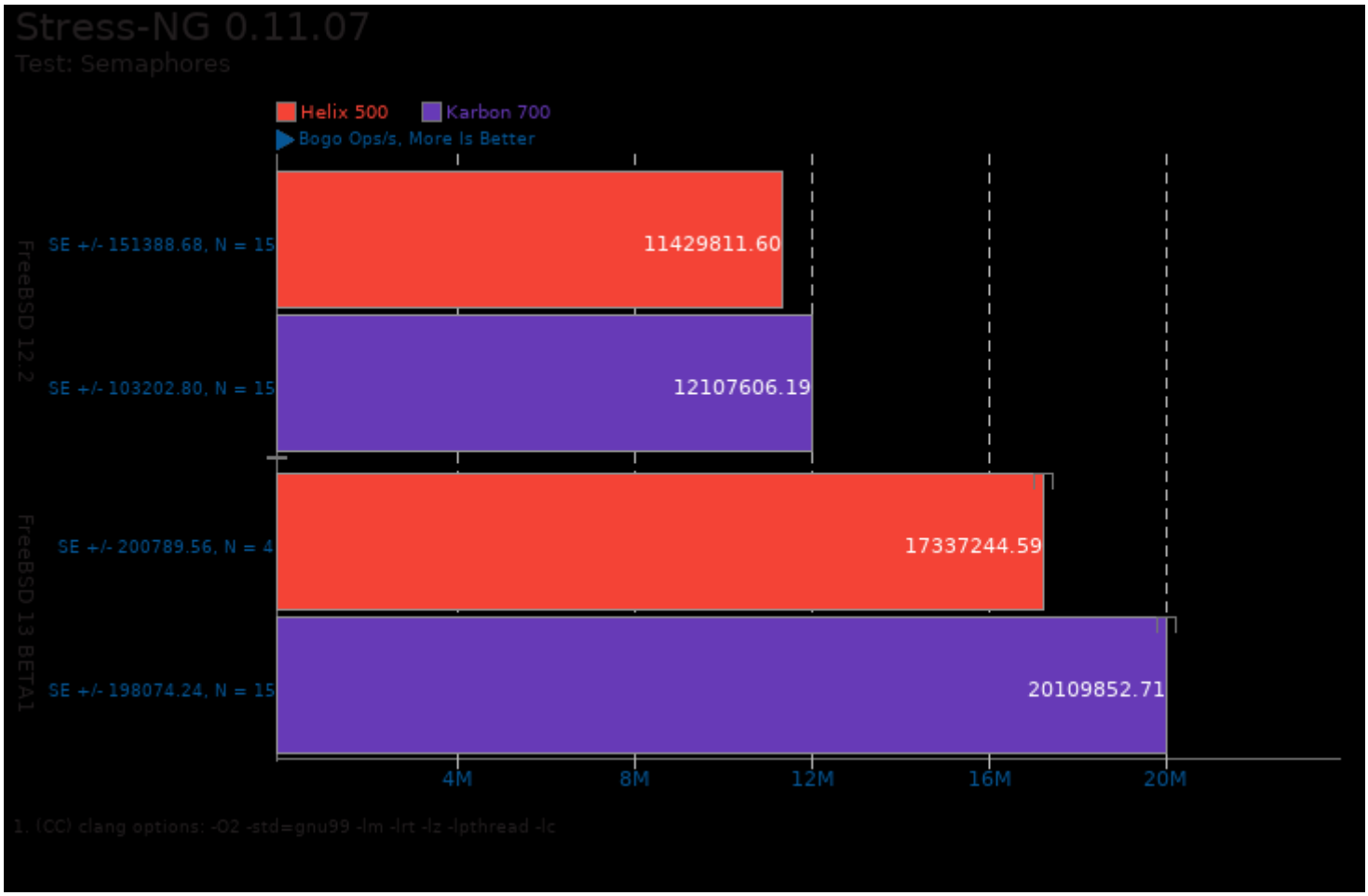
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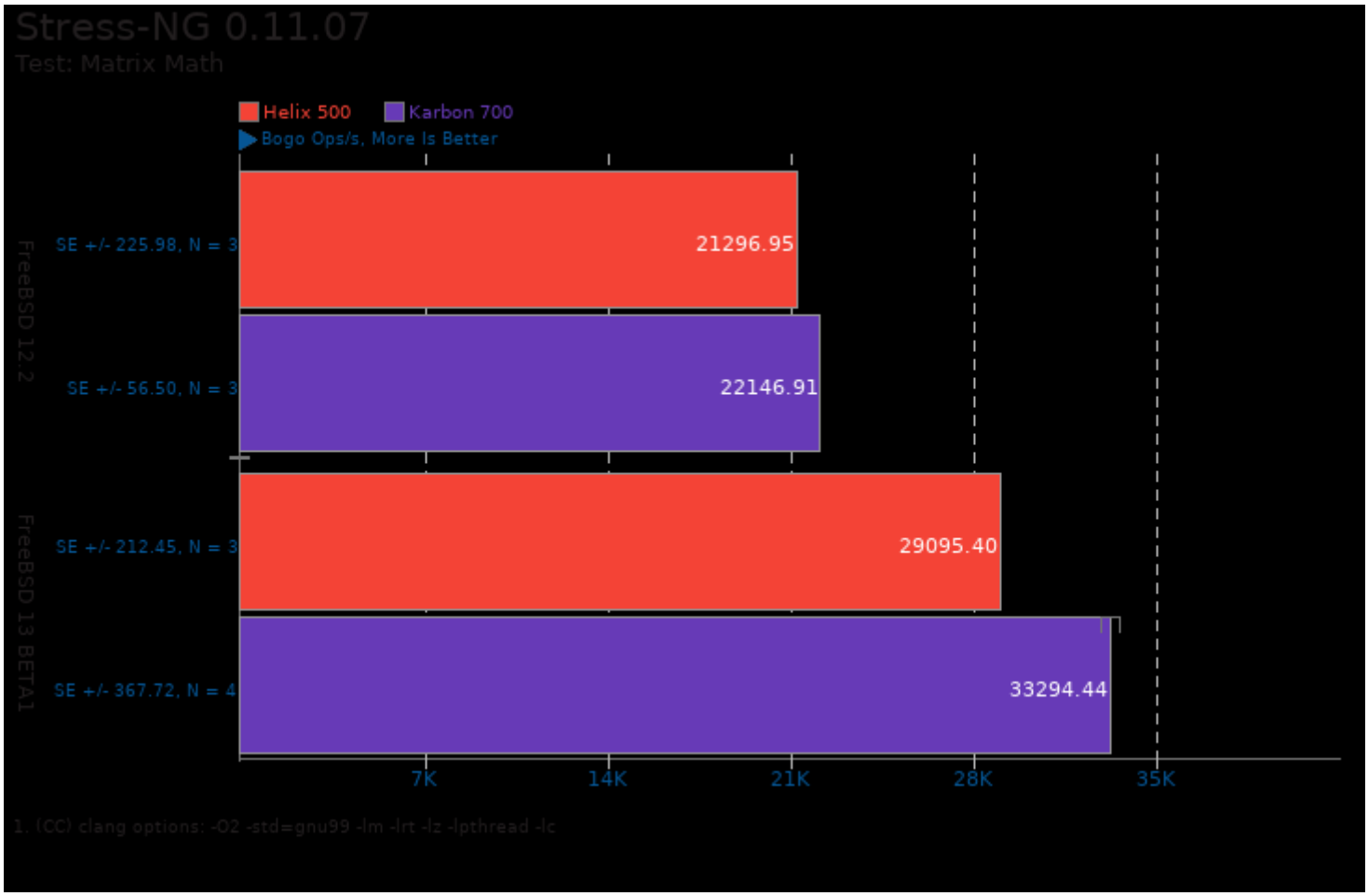
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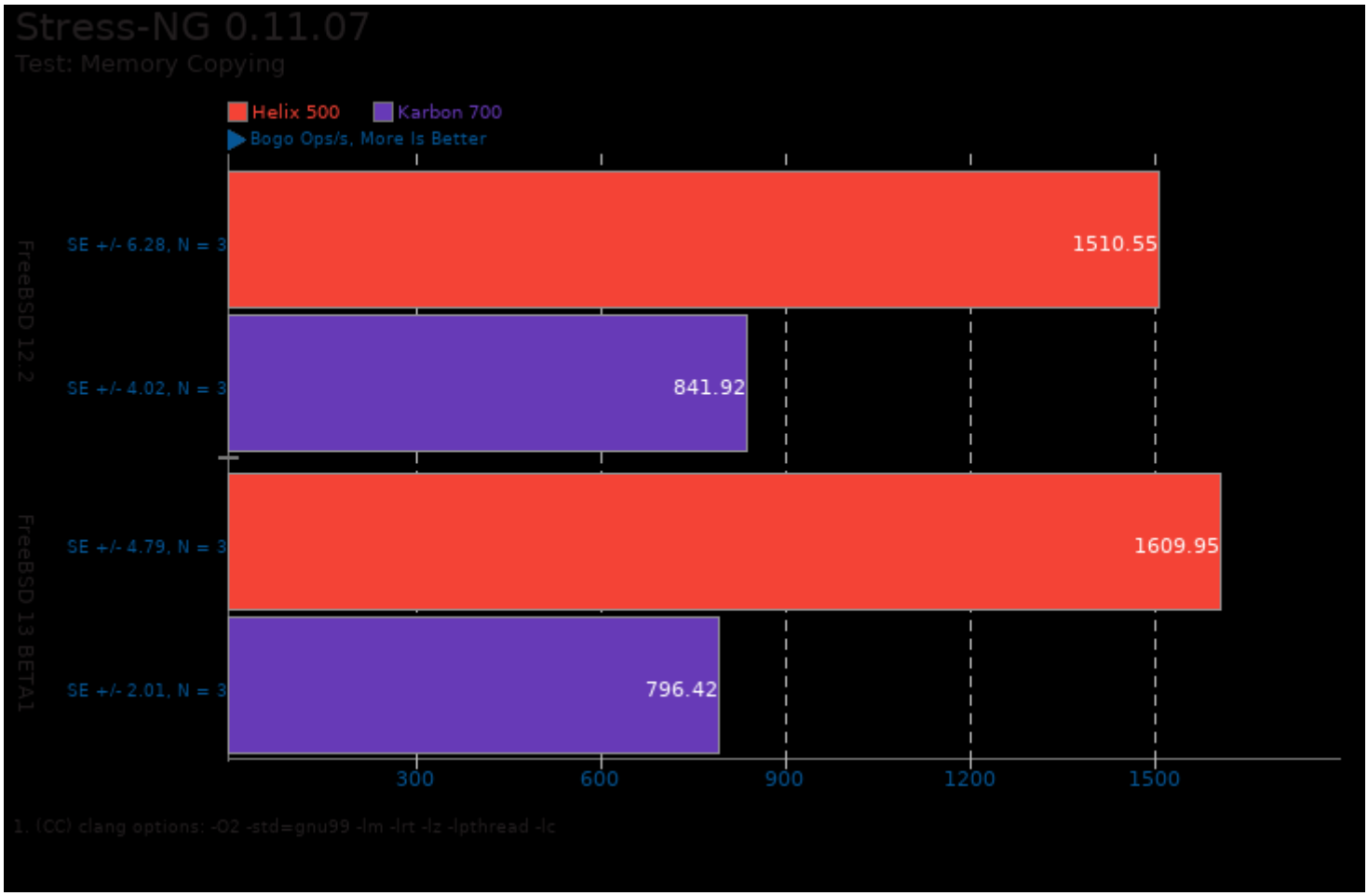
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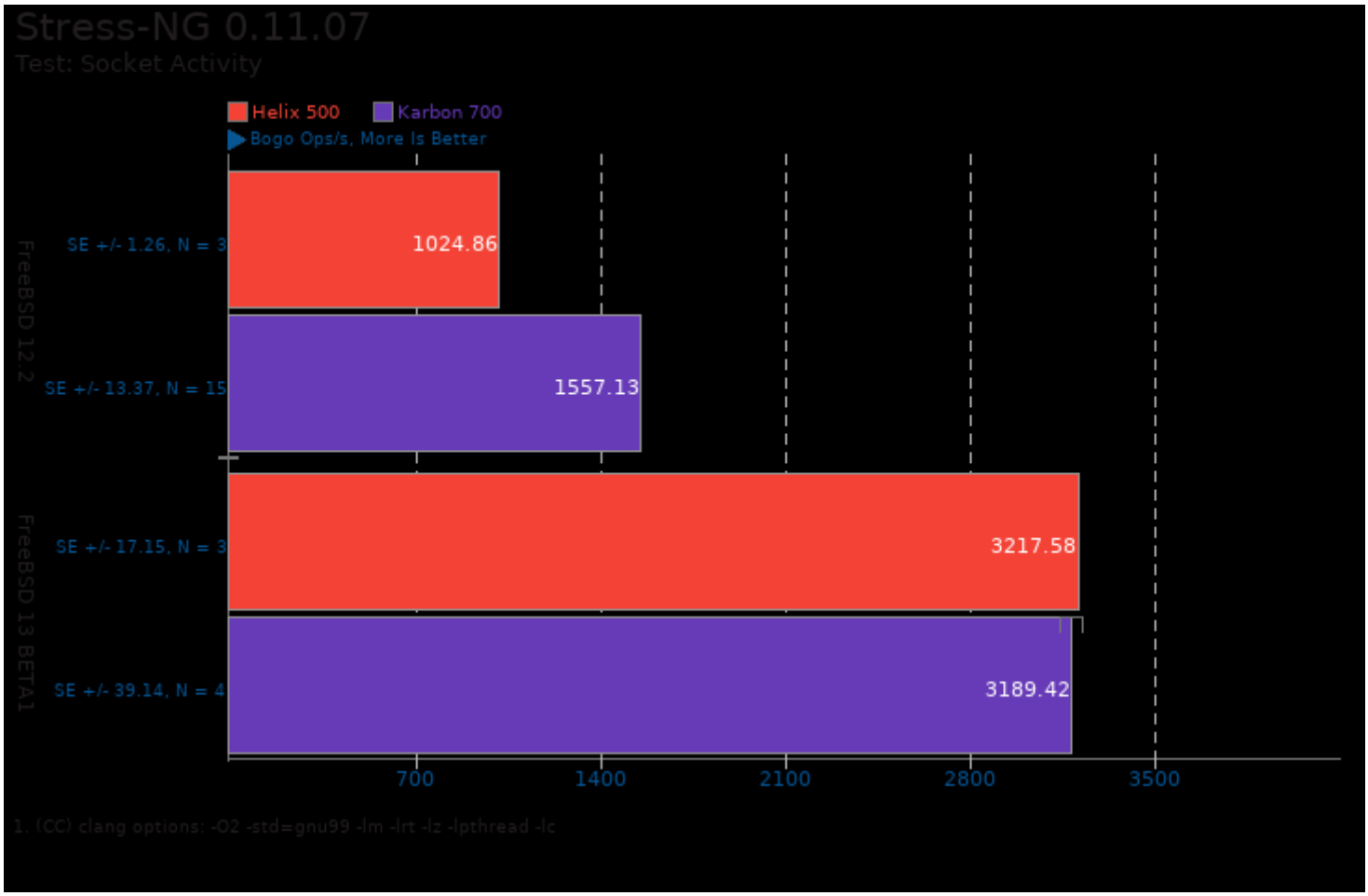
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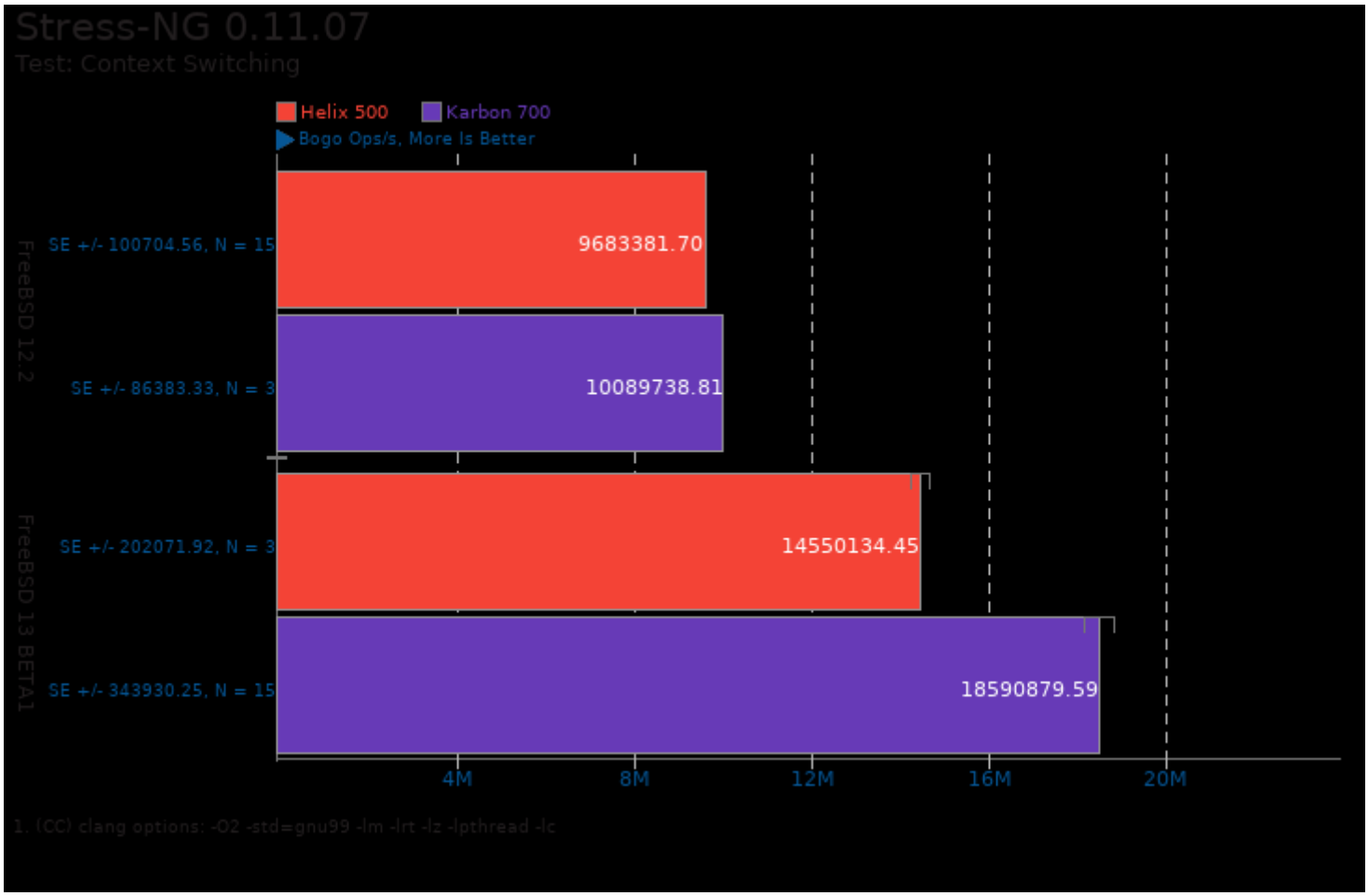
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks



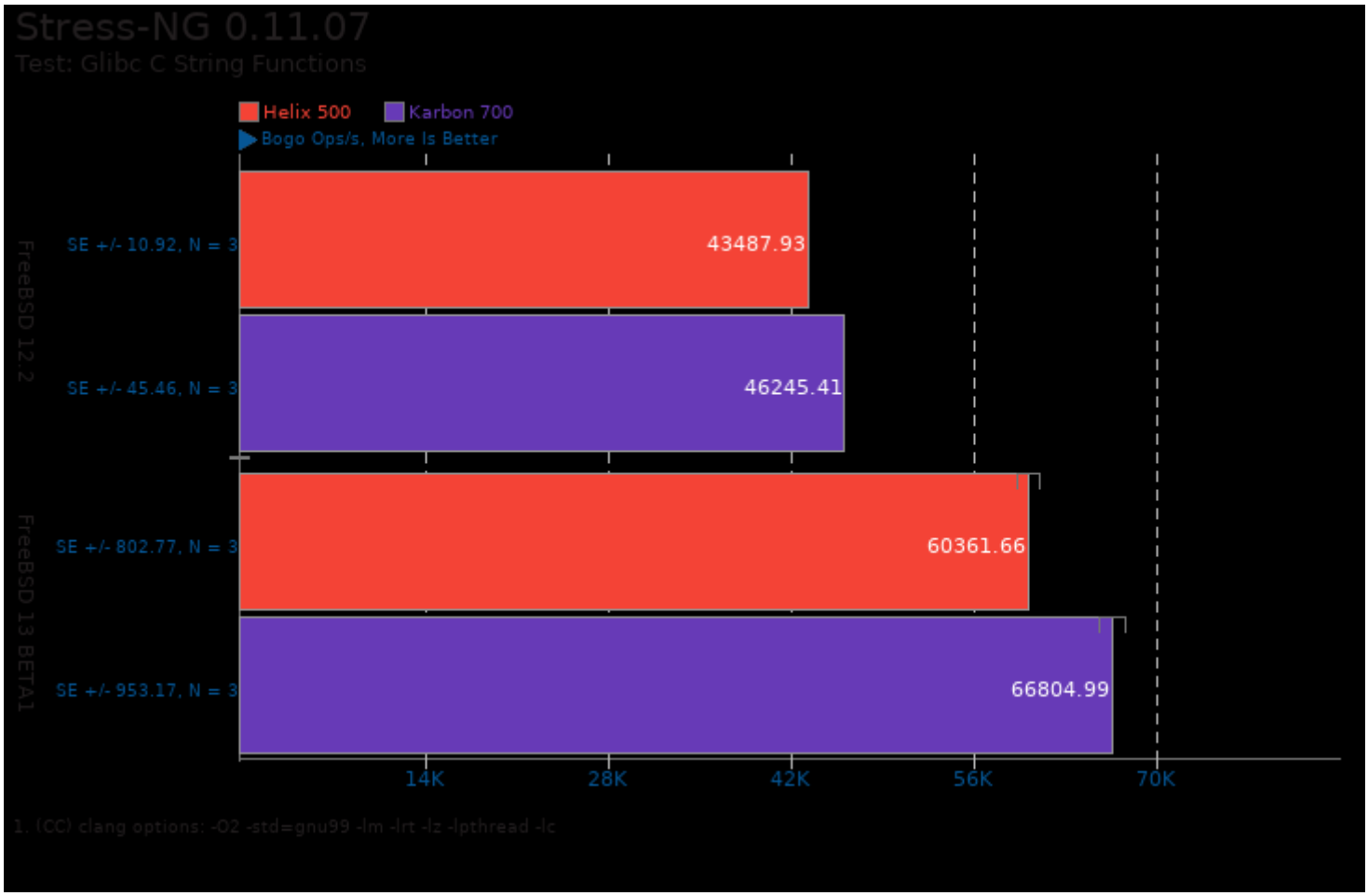
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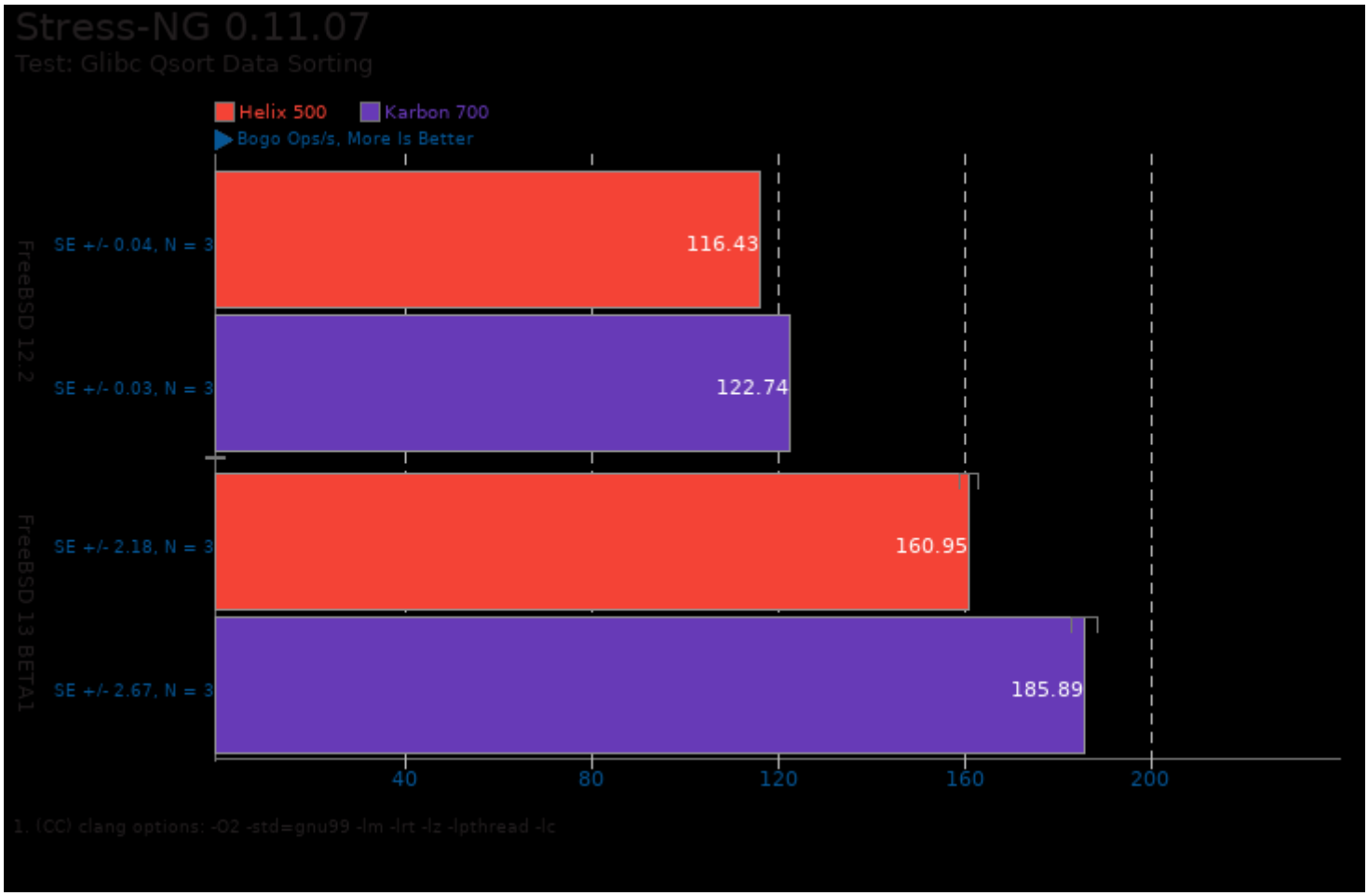
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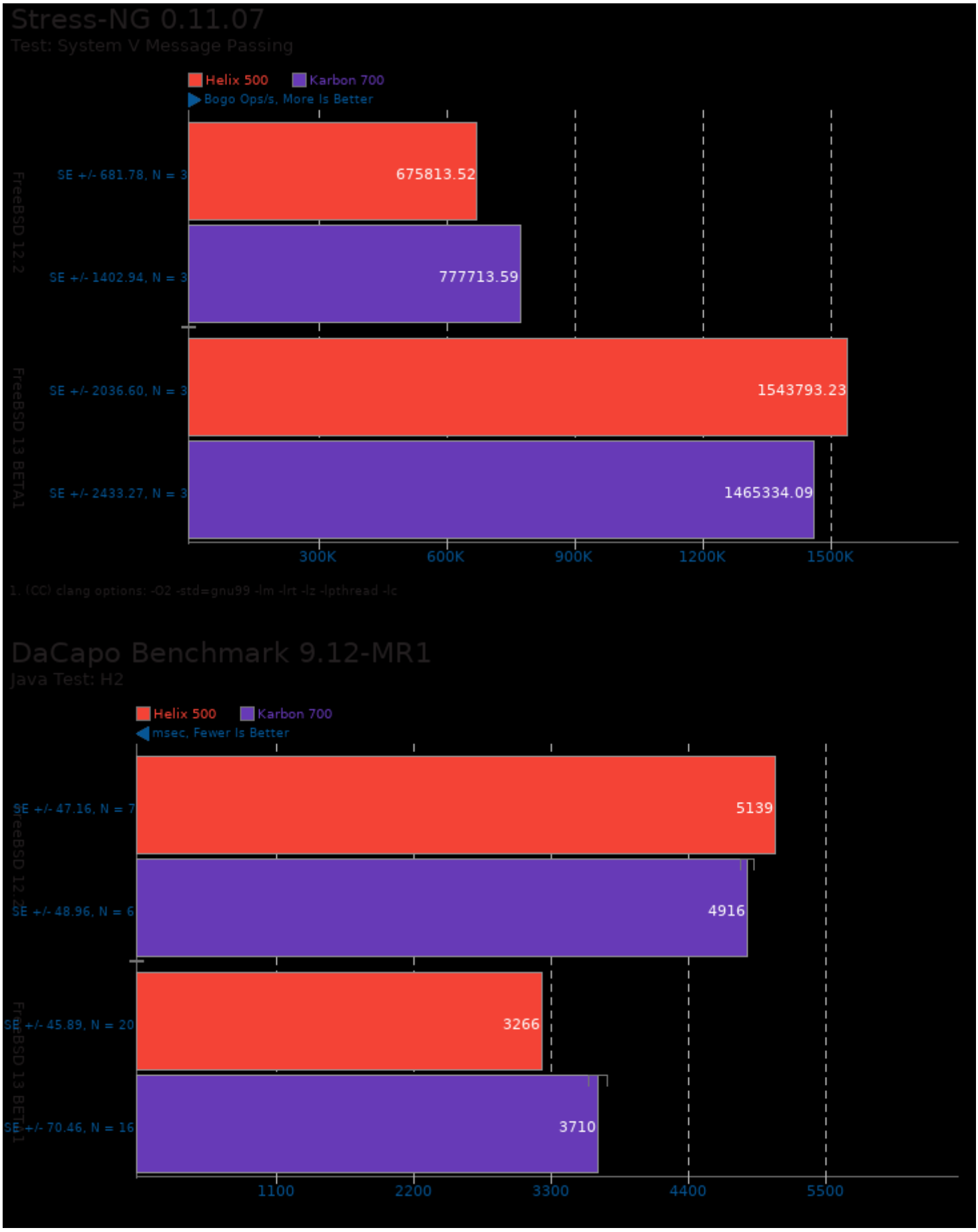
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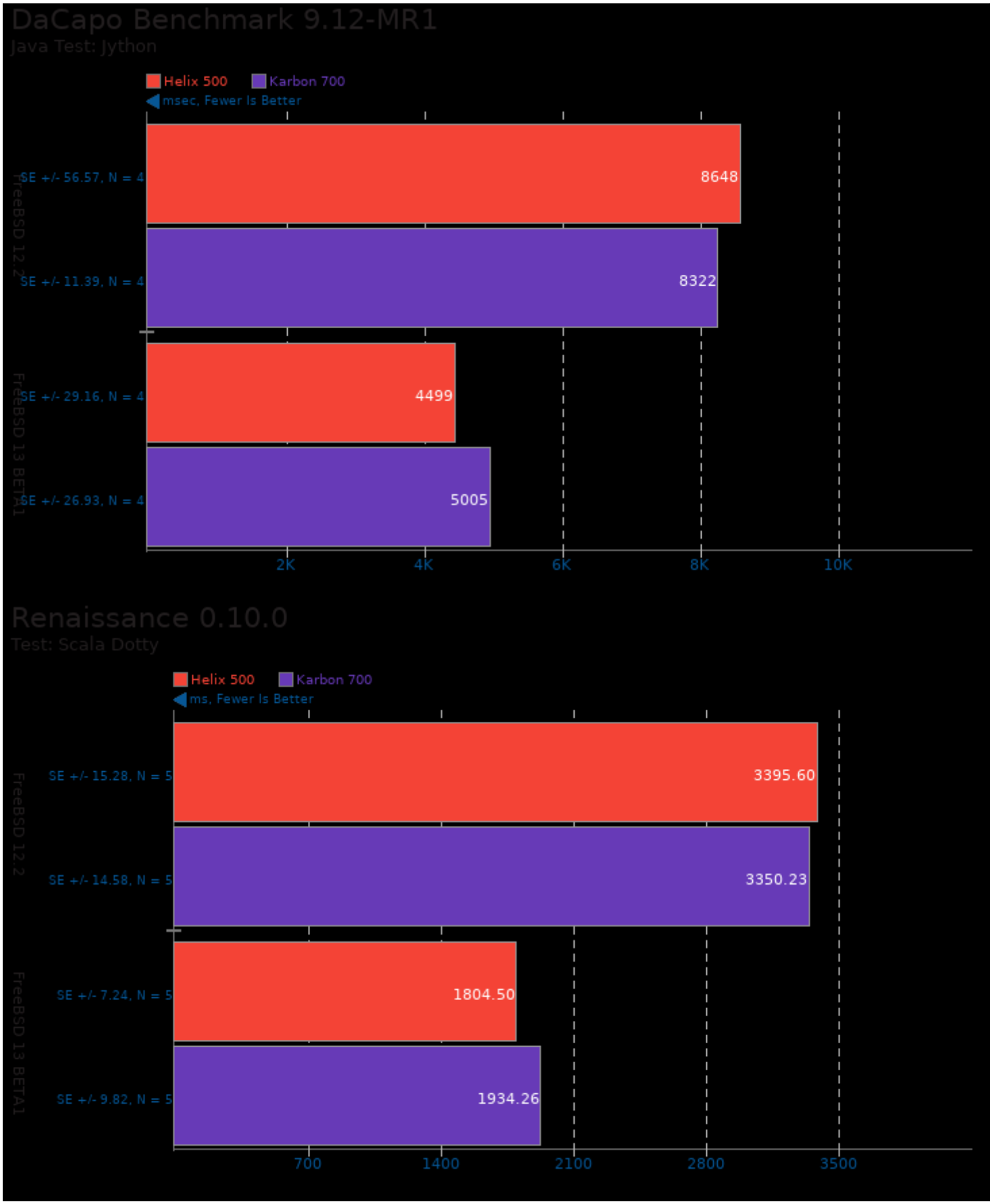
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks



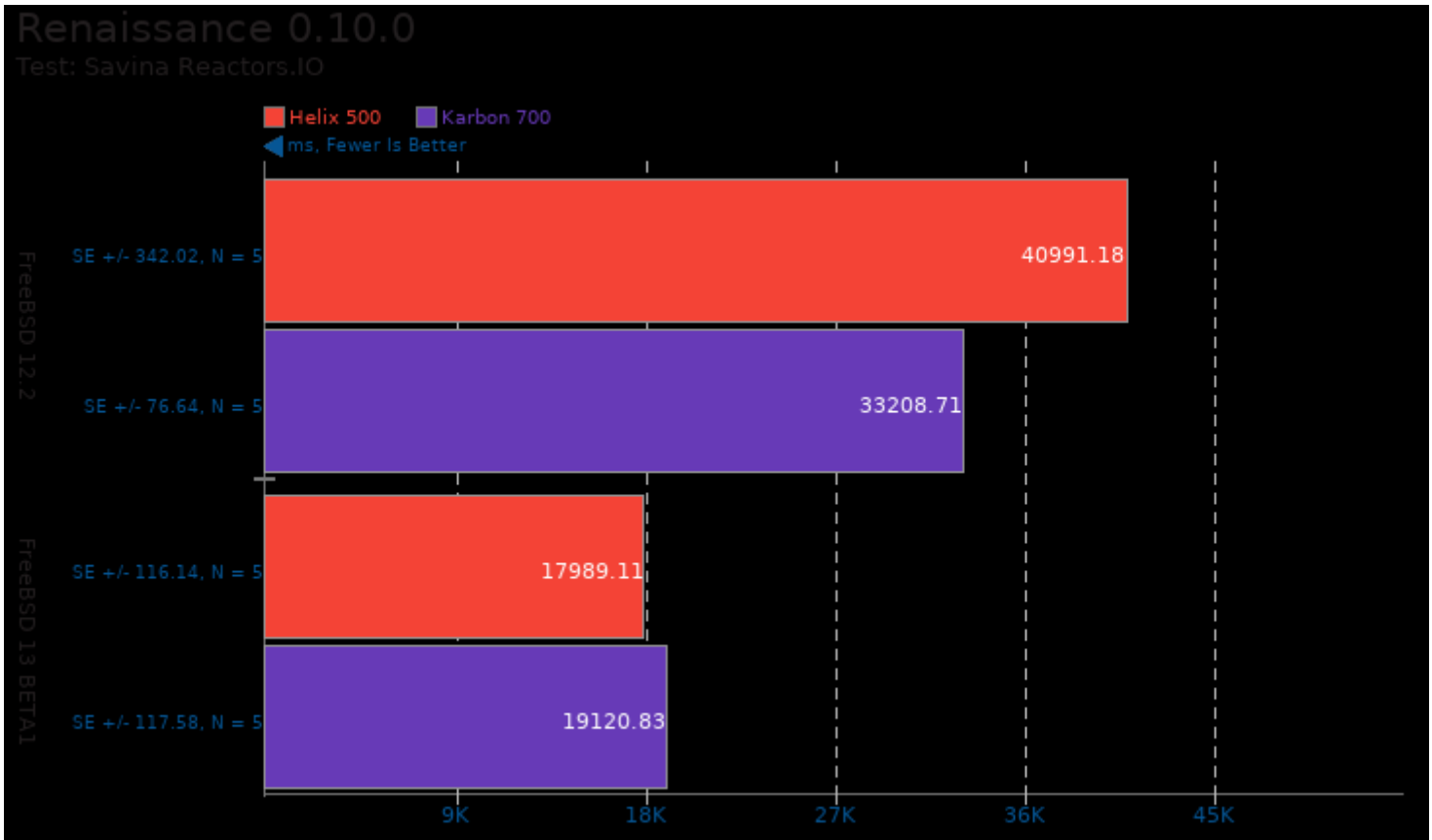
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

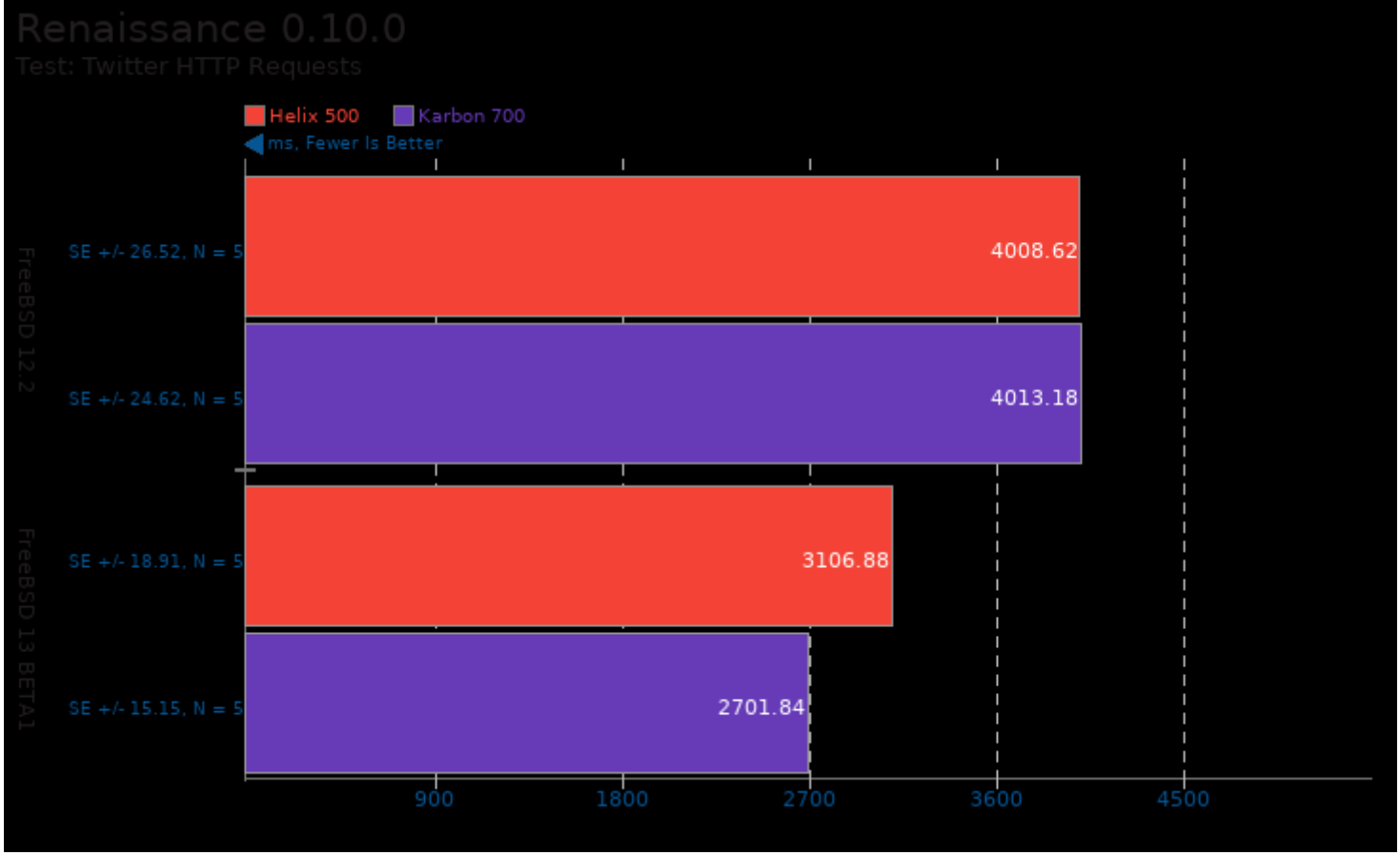


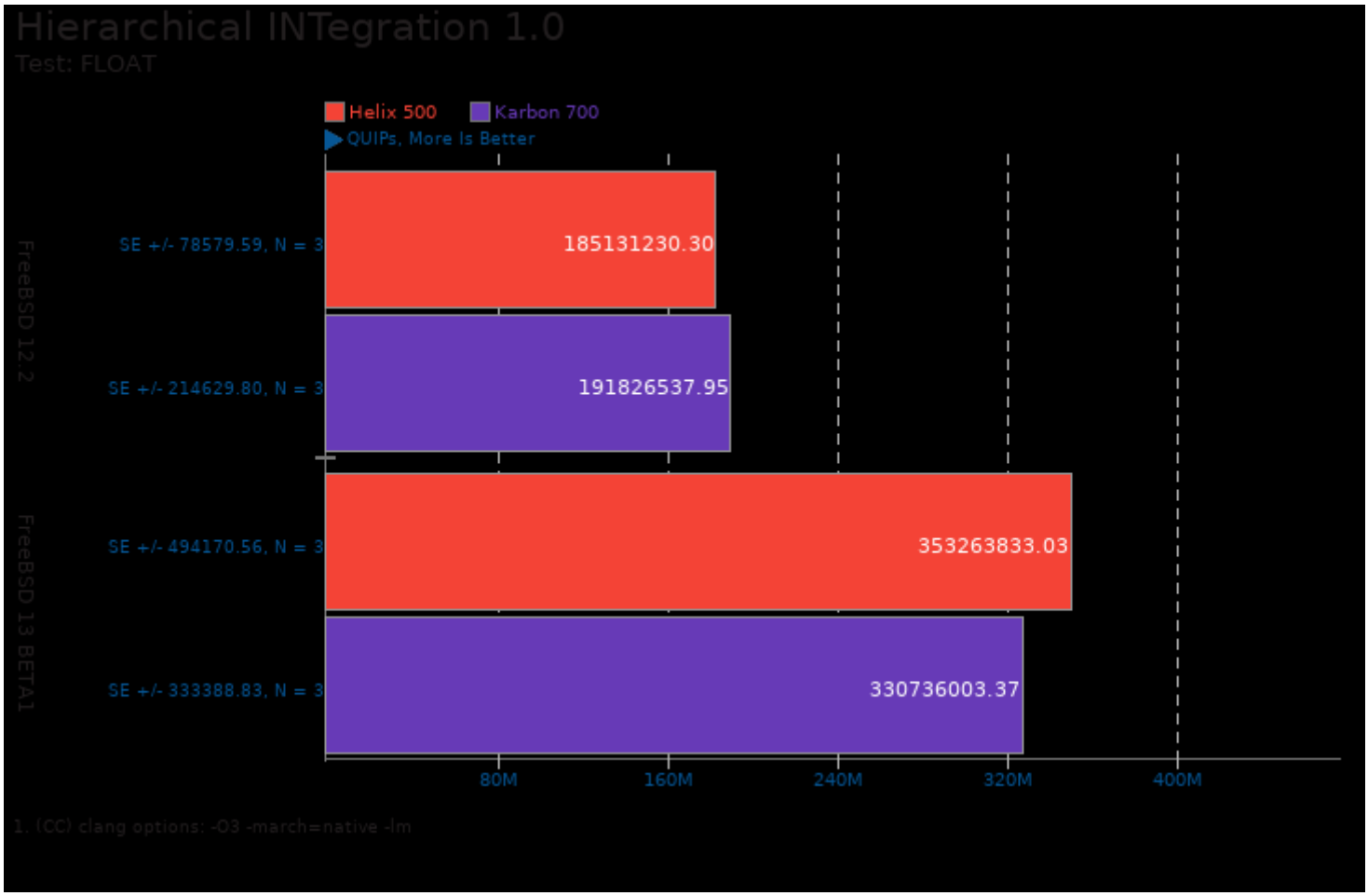
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks



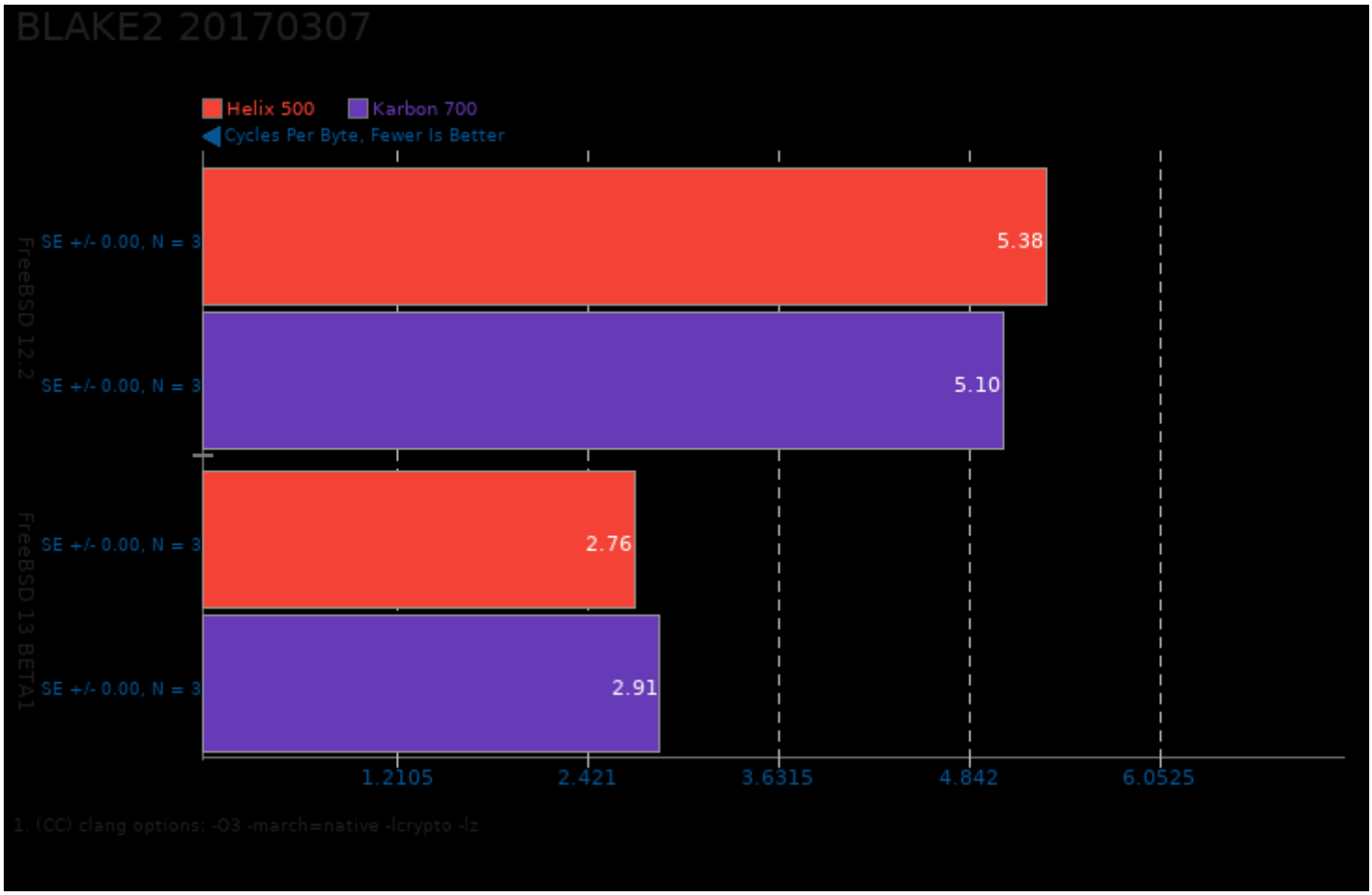
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks



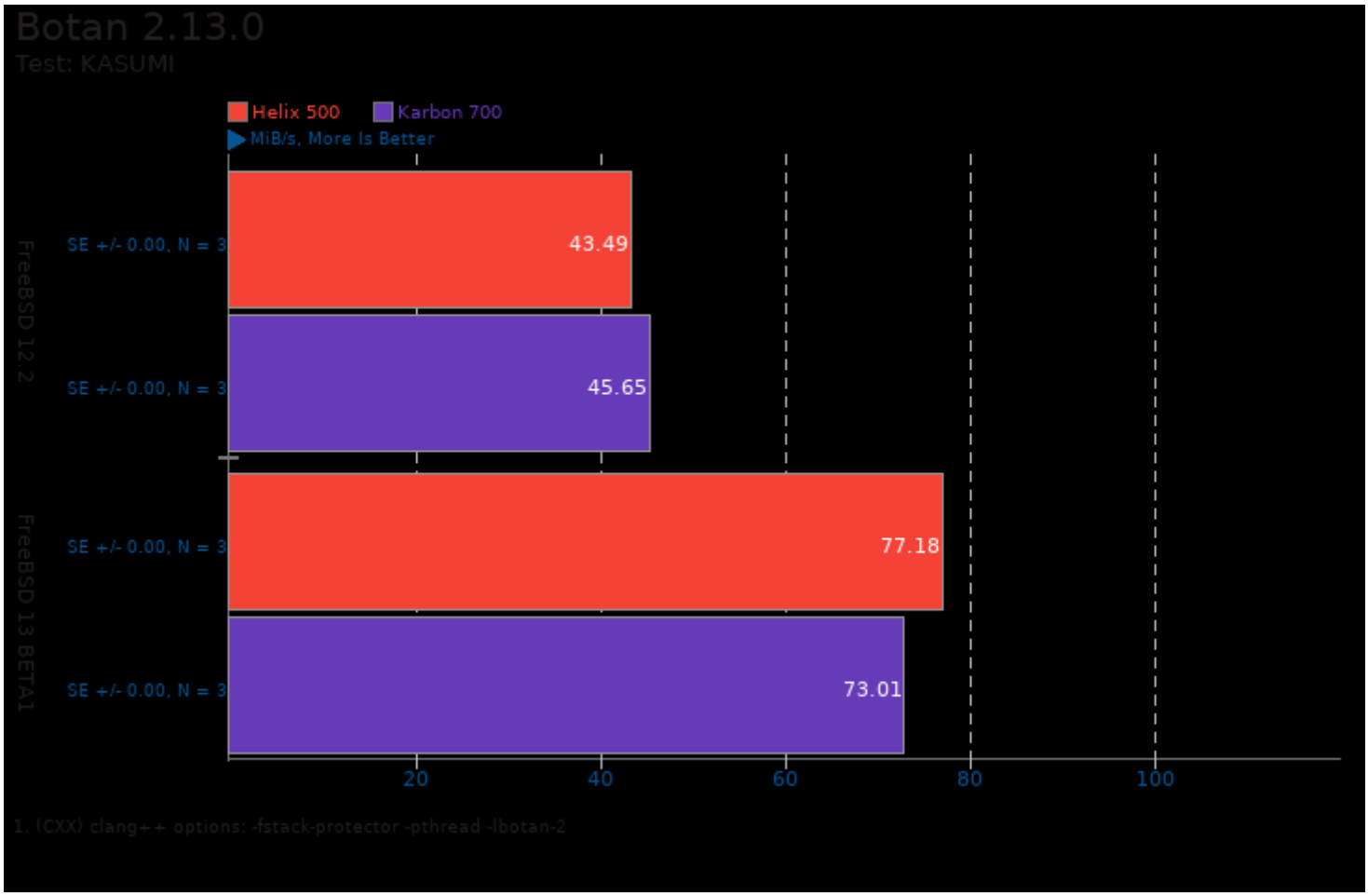


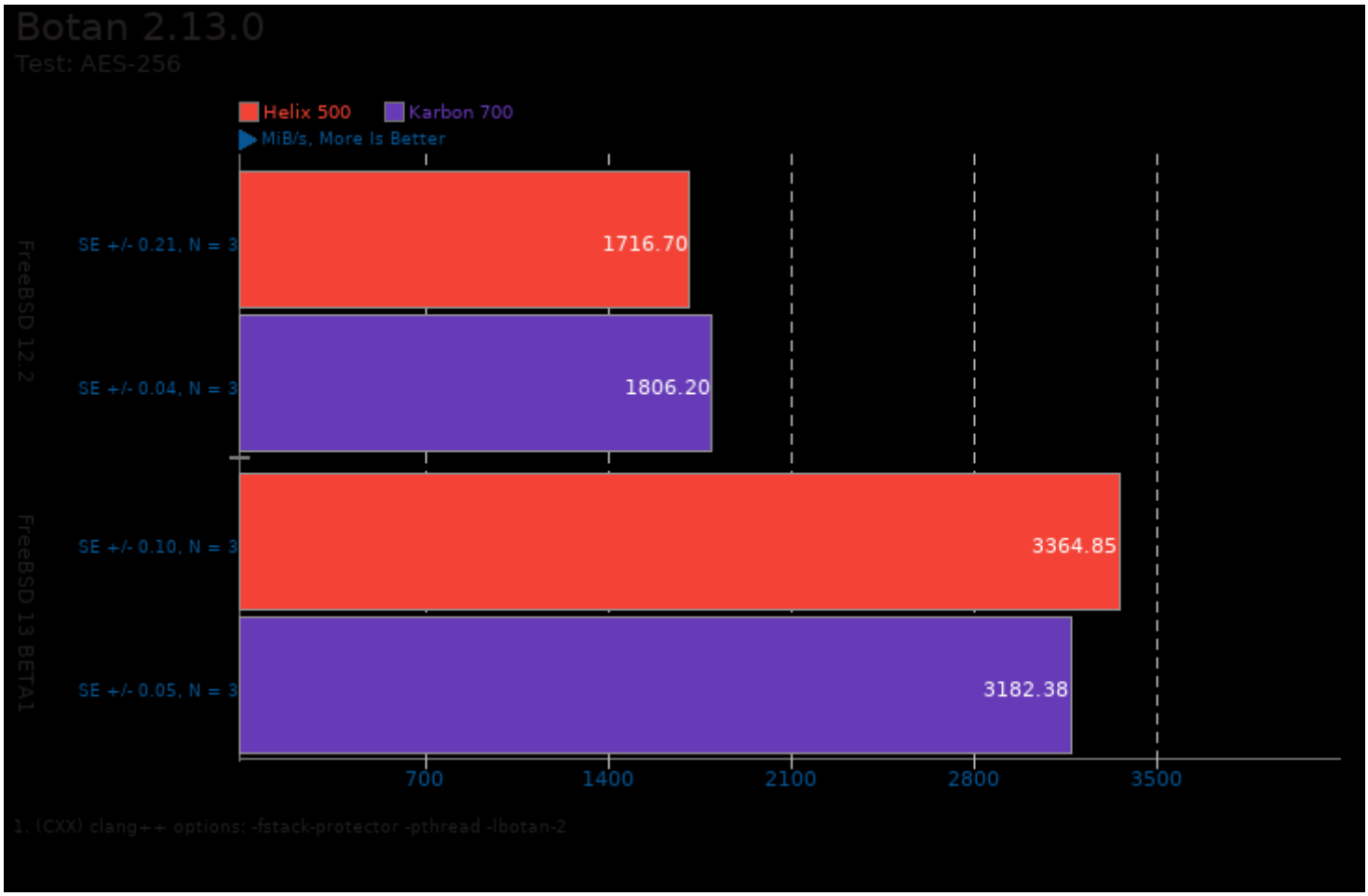

Hierarchical INTegration 1.0
Test: FLOAT
Helix 500
Karbon 700
QUIPs, More Is Better
SE +/- 78579.59, N = 3
185131230.30
SE +/- 214629.80, N = 3
191826537.95
SE +/- 494170.56, N = 3
353263833.03
SE +/- 333388.83, N = 3
330736003.37
FreeBSD 12.2
FreeBSD 13 BETA1
80M
160M
240M
320M
400M
1. (CC) clang options: -O3 -march=native -lm

FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

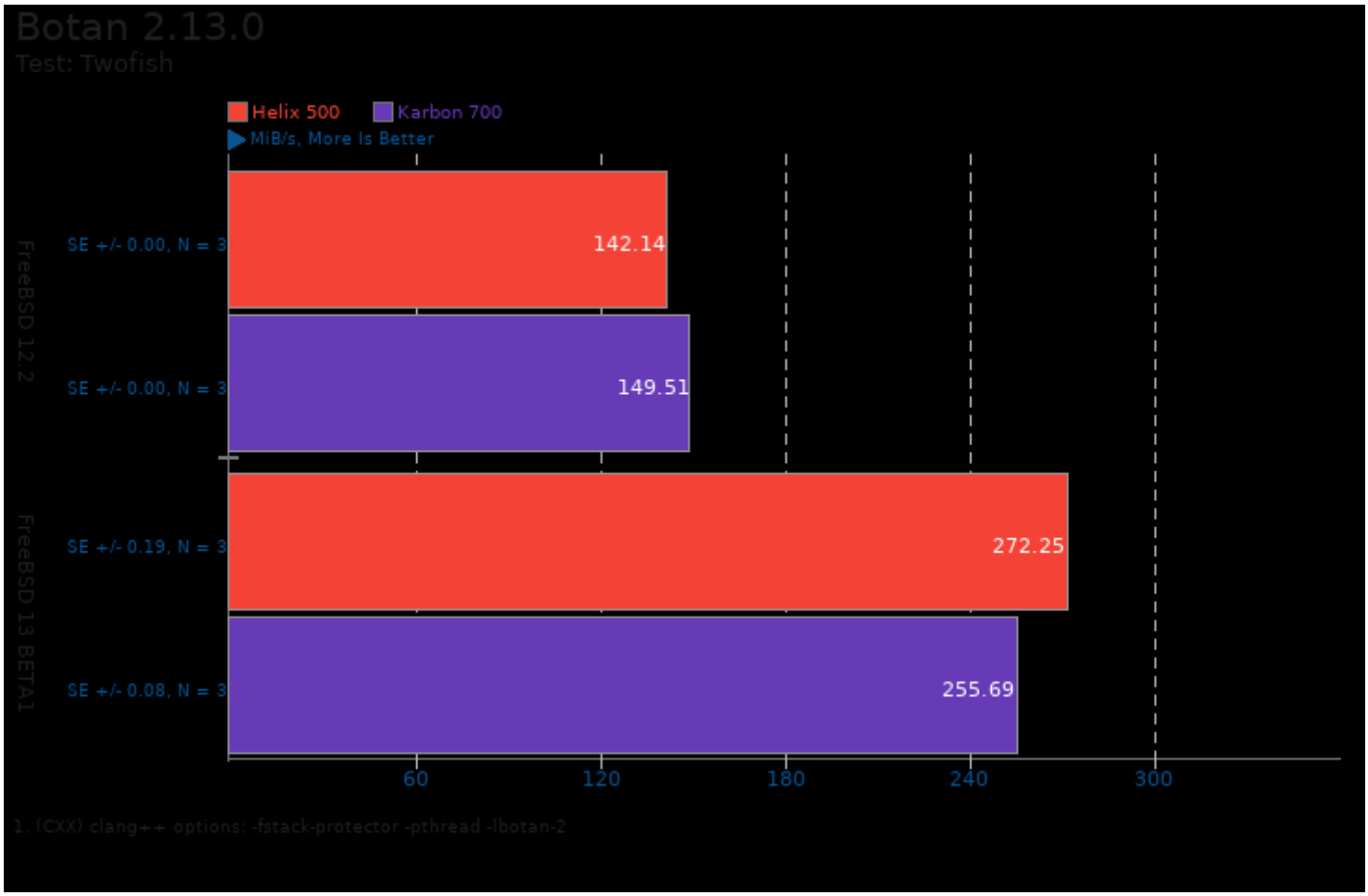


FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

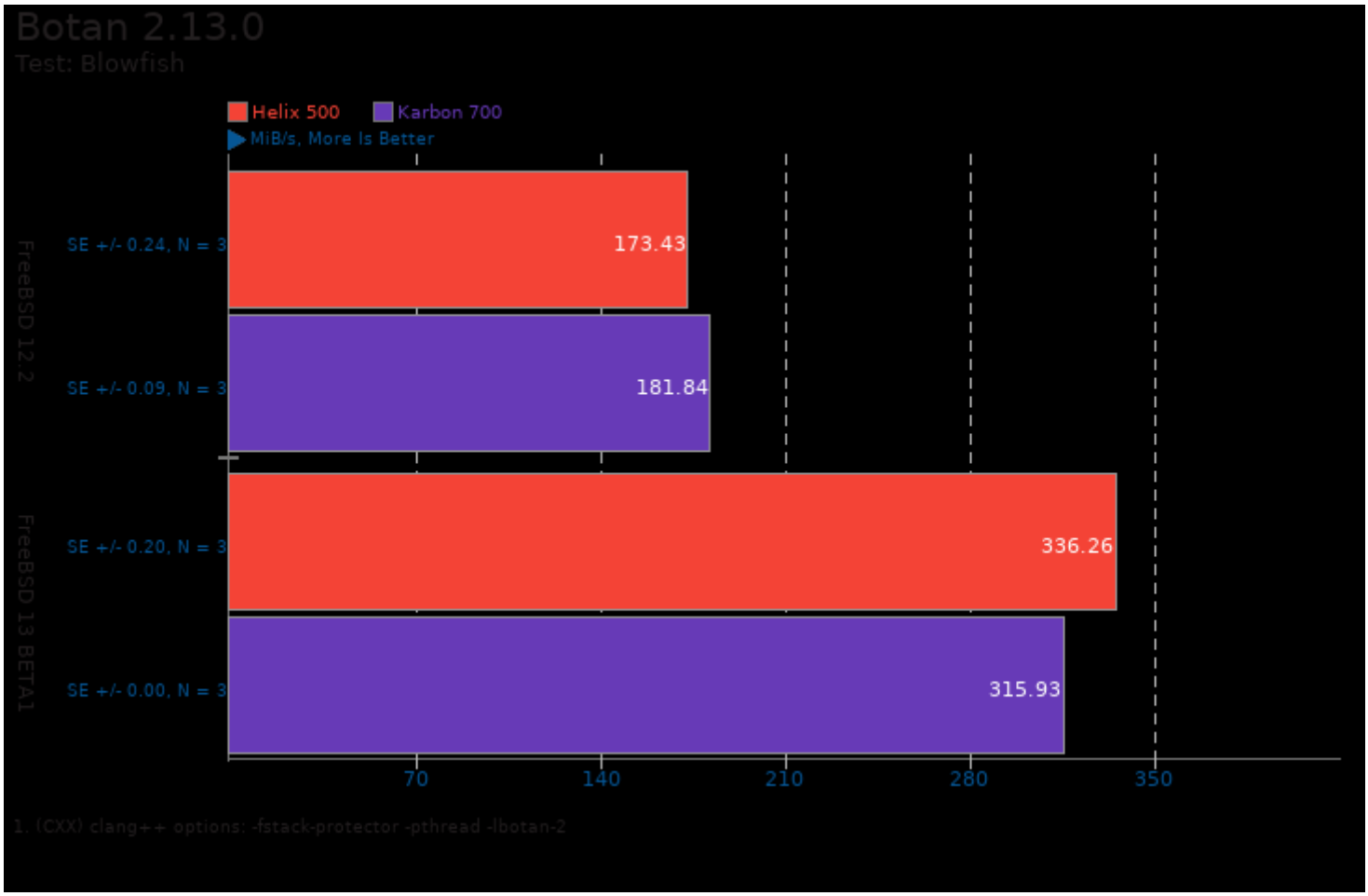



Botan 2.13.0
Test: AES-256
Helix 500
Karbon 700
MiB/s, More Is Better
FreeBSD 12.2
SE +/- 0.21, N = 3
1716.70
SE +/- 0.04, N = 3
1806.20
FreeBSD 13 BETA1
SE +/- 0.10, N = 3
3364.85
SE +/- 0.05, N = 3
3182.38
700
1400
2100
2800
3500
1. (CXX) clang++ options: -fstack-protector -pthread -lbotan-2

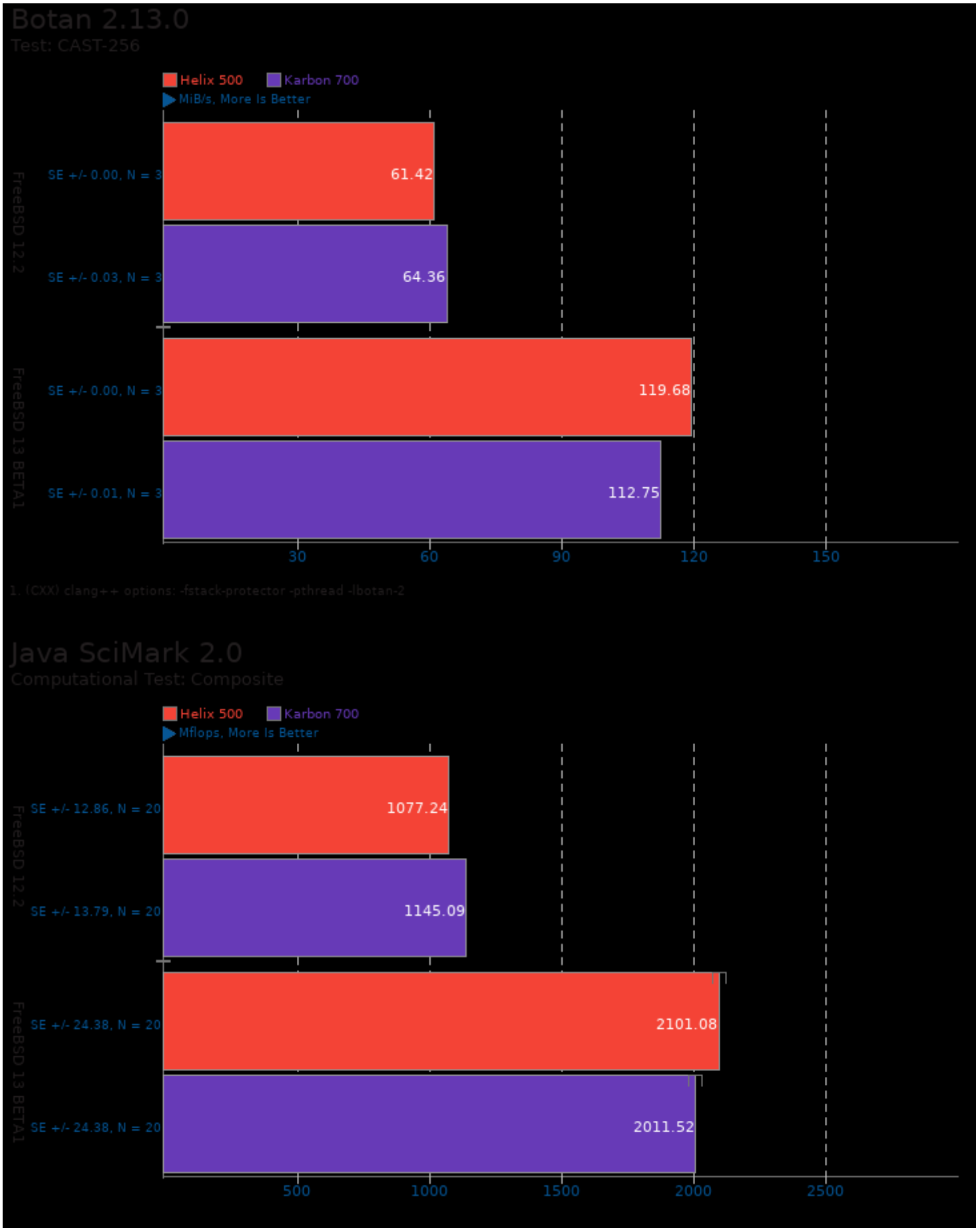
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks



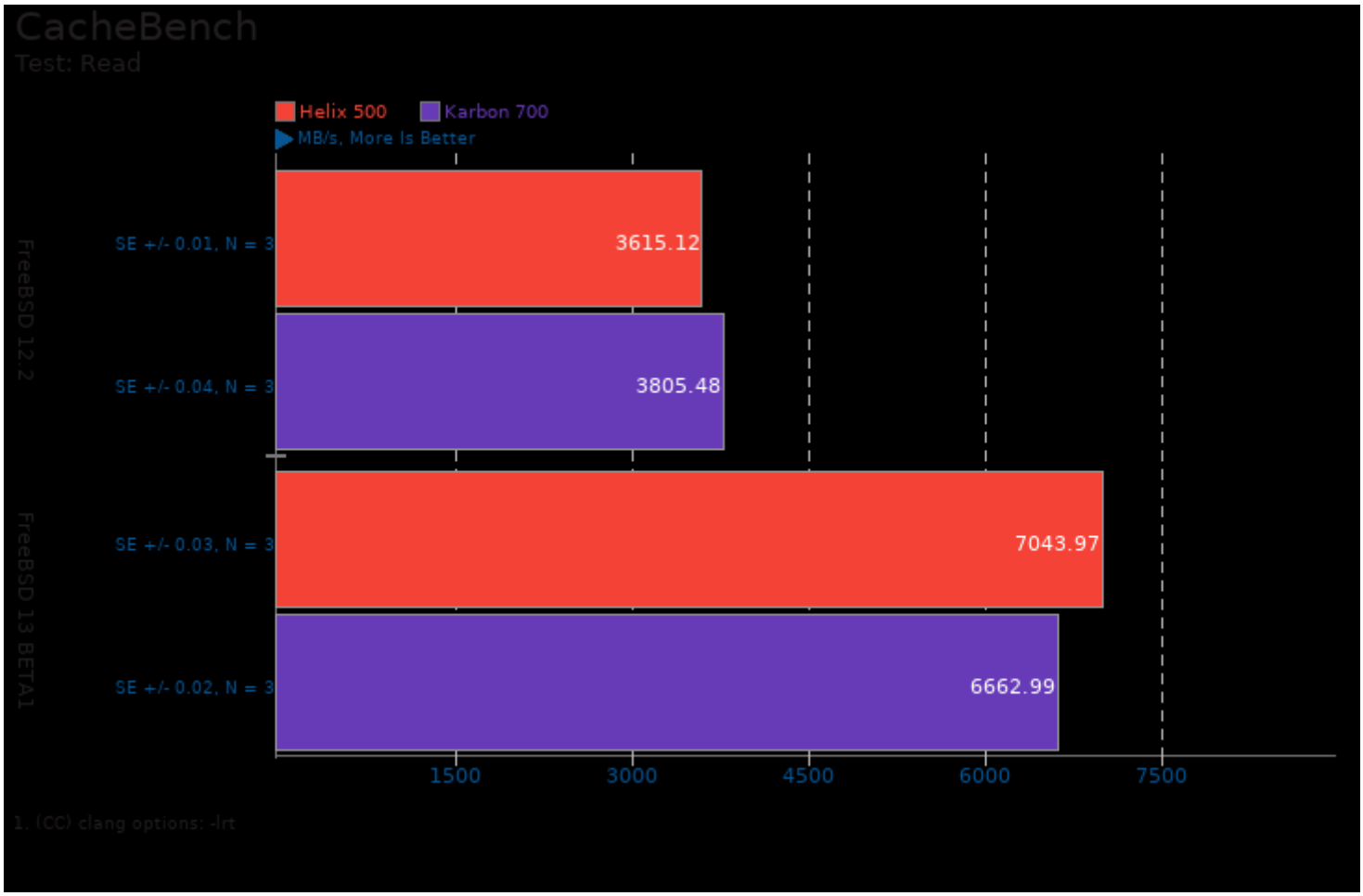
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

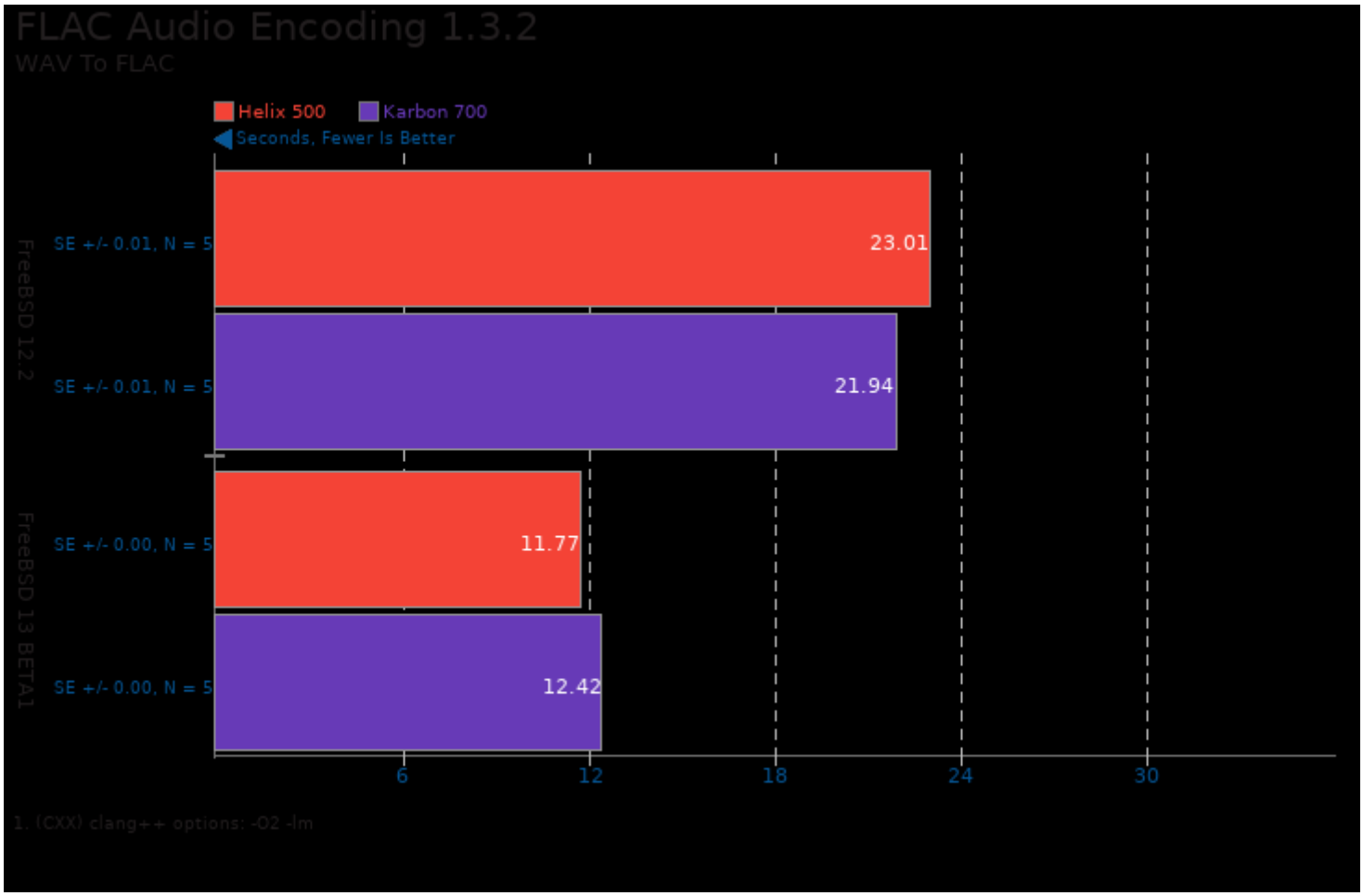


FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

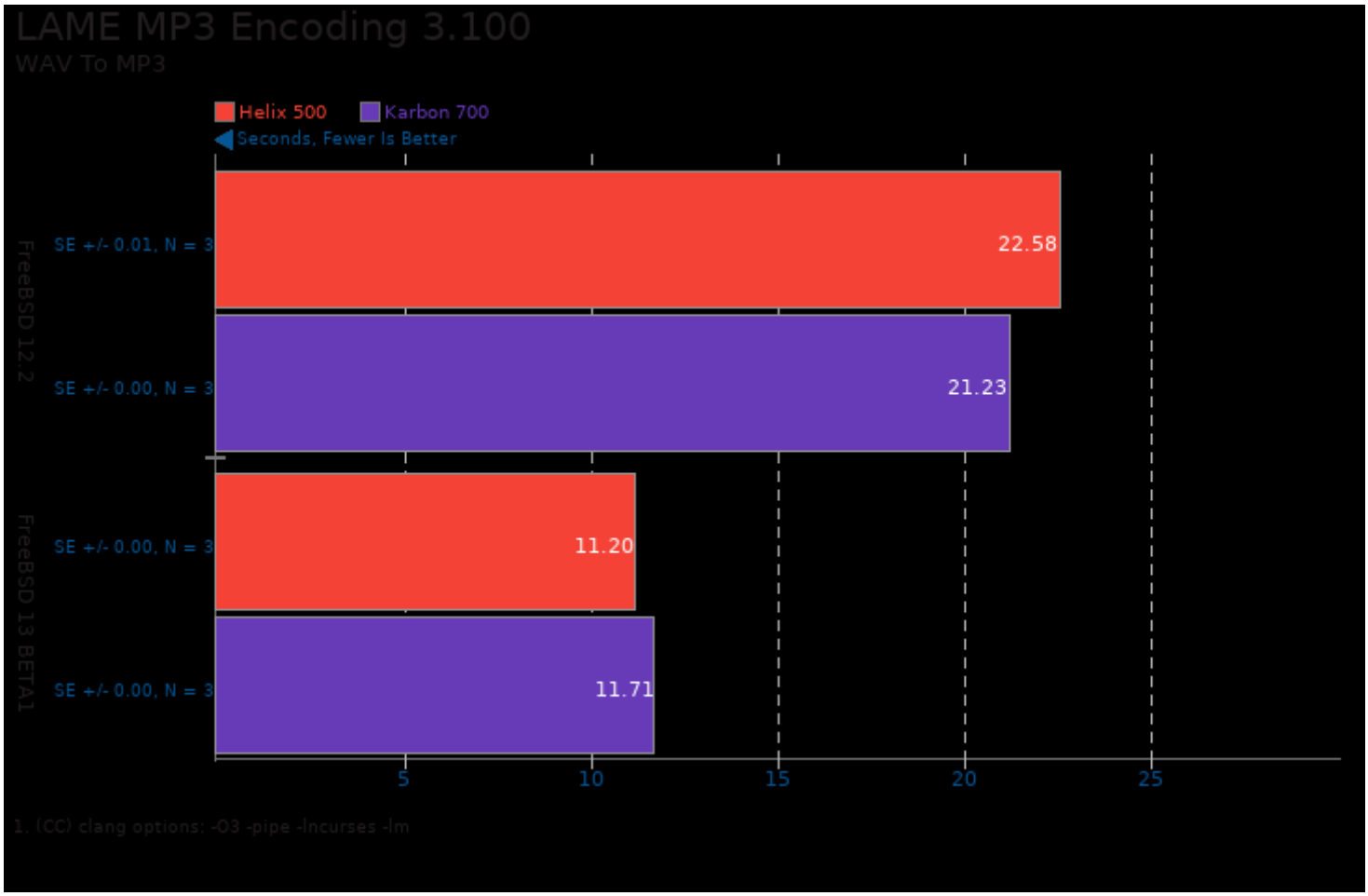


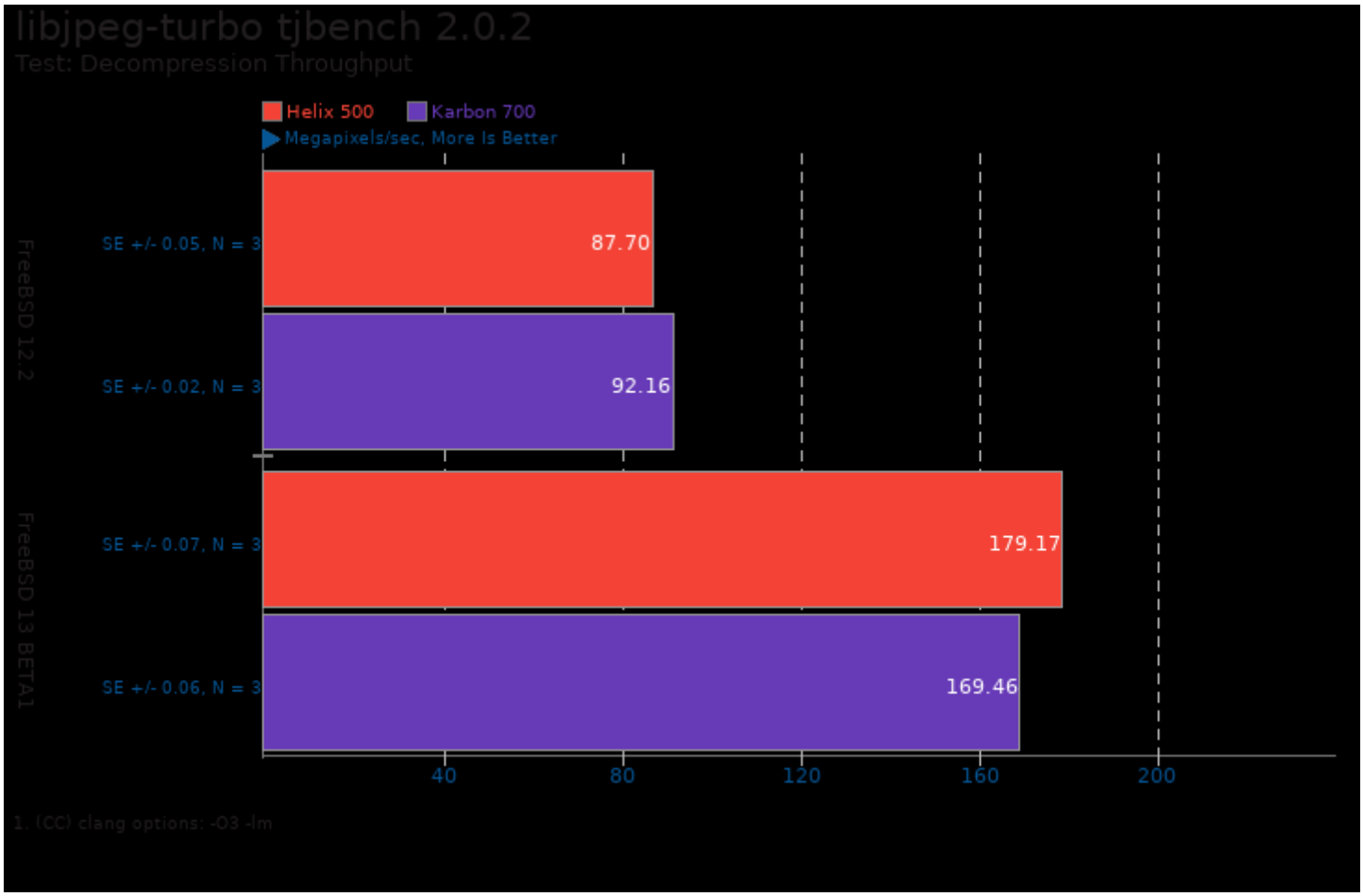
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks



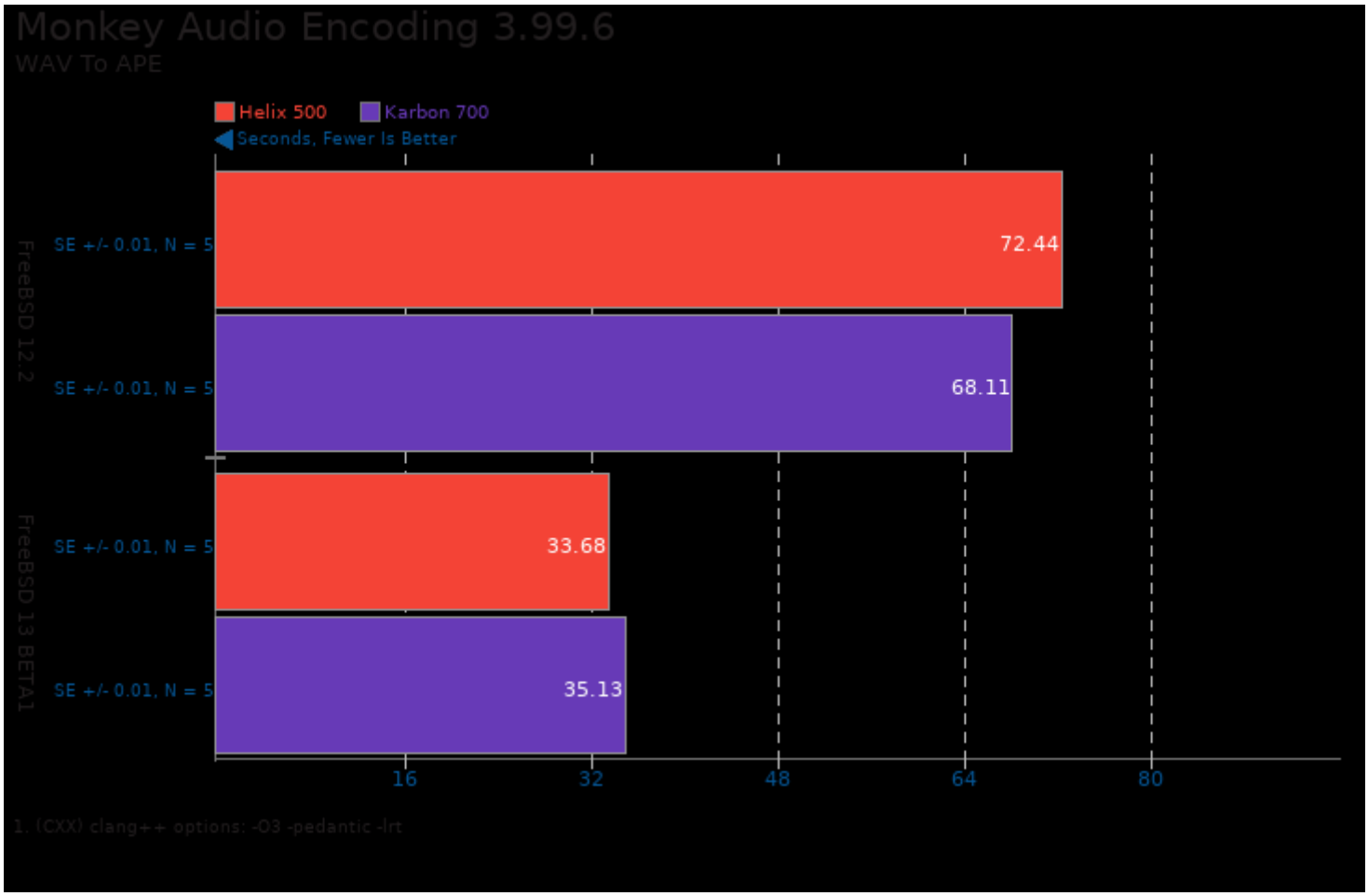

FLAC Audio Encoding 1.3.2
WAV To FLAC
Helix 500
Karbon 700
Seconds, Fewer Is Better
FreeBSD 12.2
SE +/- 0.01, N = 5
23.01
SE +/- 0.01, N = 5
21.94
FreeBSD 13 BETA1
SE +/- 0.00, N = 5
11.77
SE +/- 0.00, N = 5
12.42
6
12
18
24
30
1. (CXX) clang++ options: -O2 -lm

FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

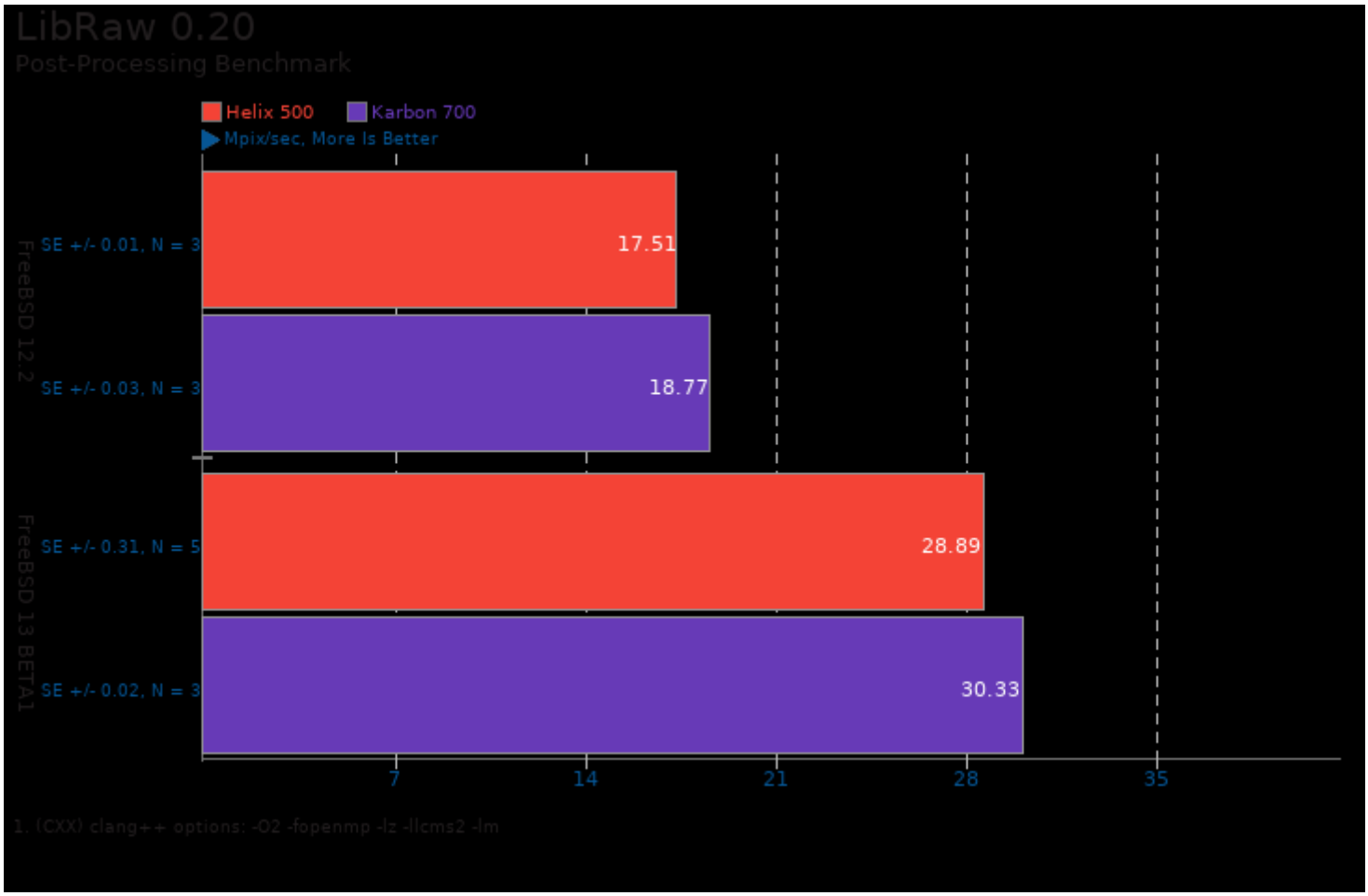


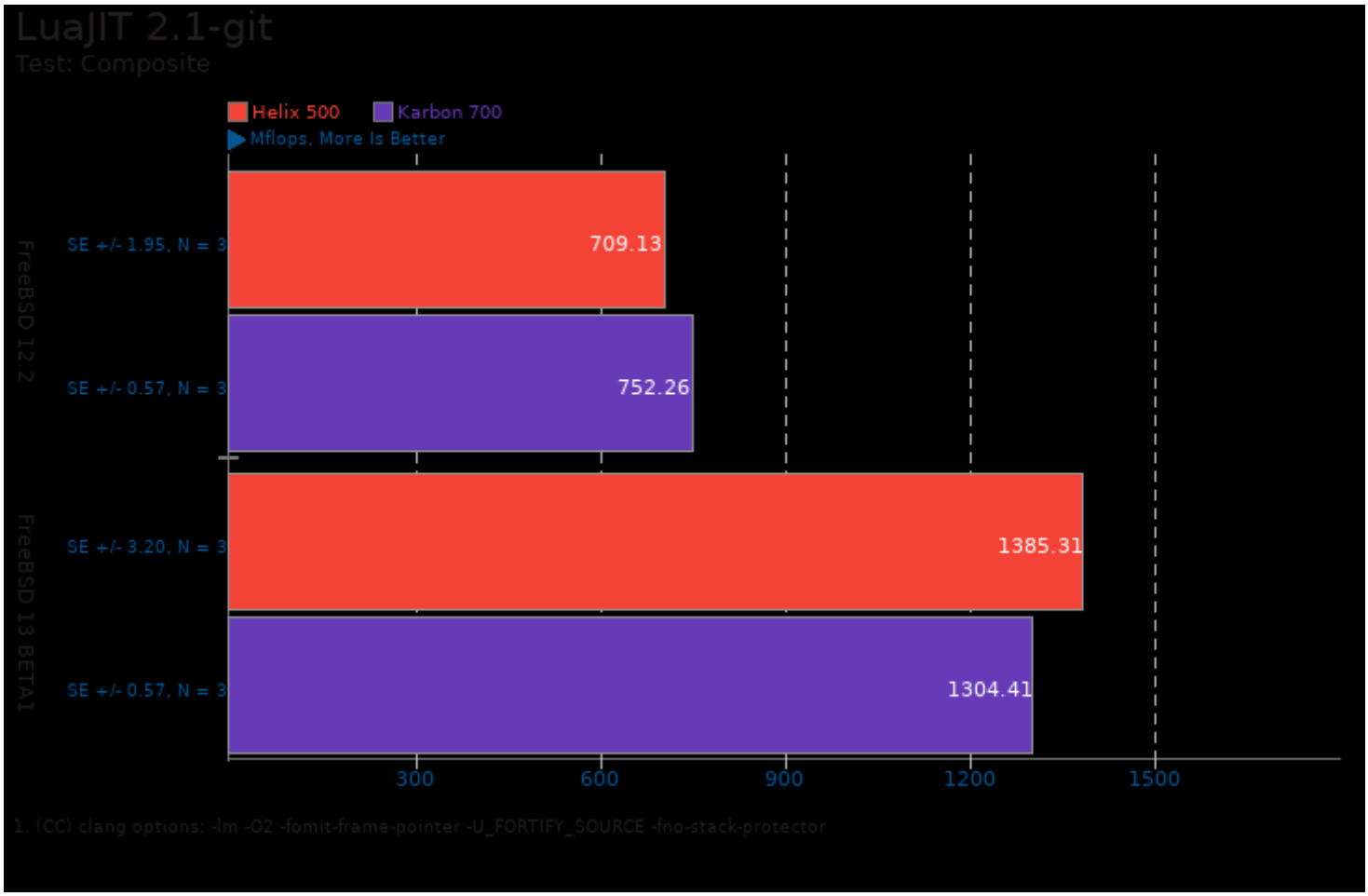

libjpeg-turbo tjbench 2.0.2
Test: Decompression Throughput
Helix 500
Karbon 700
Megapixels/sec, More Is Better
FreeBSD 12.2
FreeBSD 13 BETA1
SE +/- 0.05, N = 3
87.70
SE +/- 0.02, N = 3
92.16
SE +/- 0.07, N = 3
179.17
SE +/- 0.06, N = 3
169.46
40
80
120
160
200
1. (CC) clang options: -O3 -lm

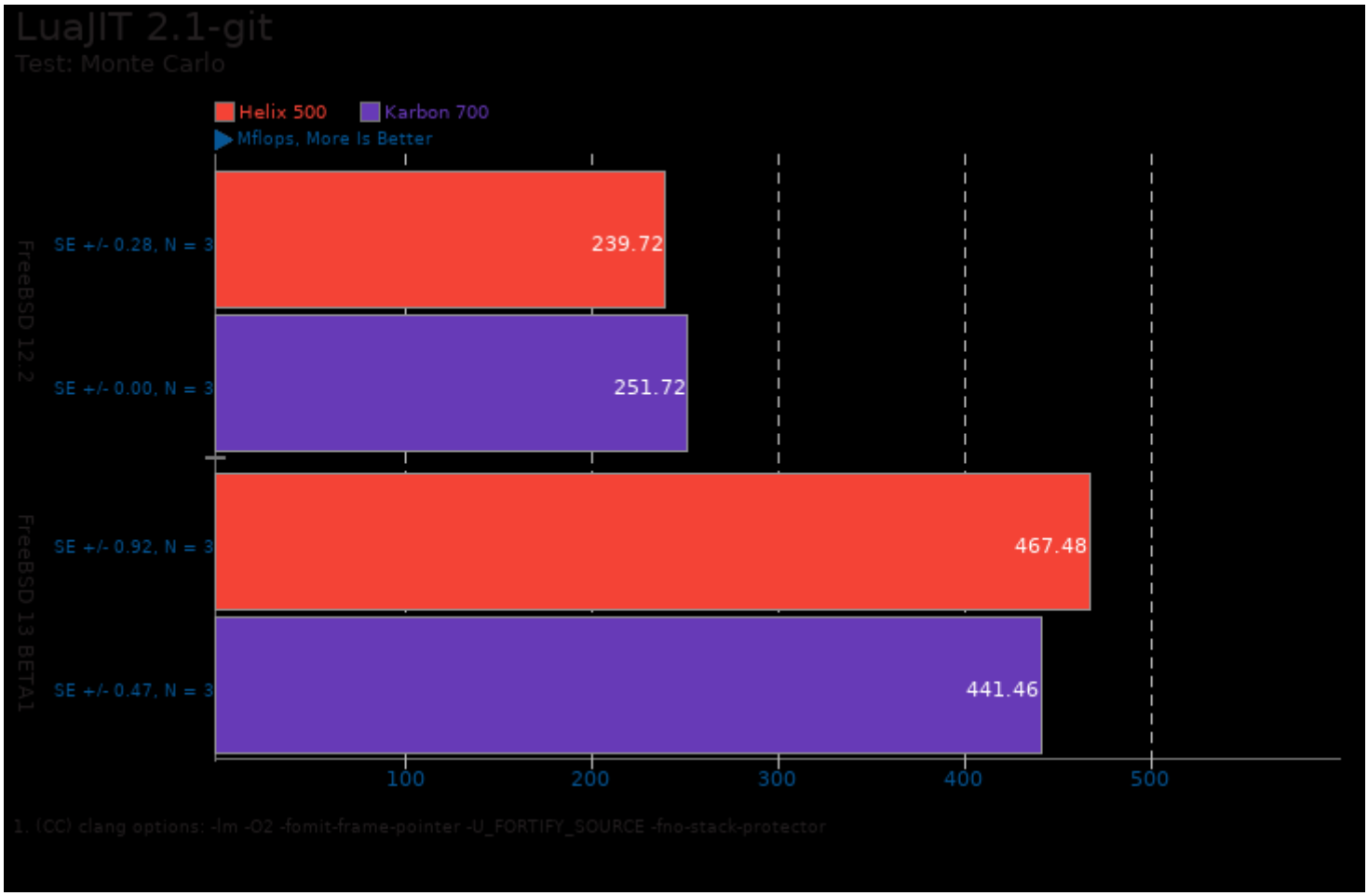
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

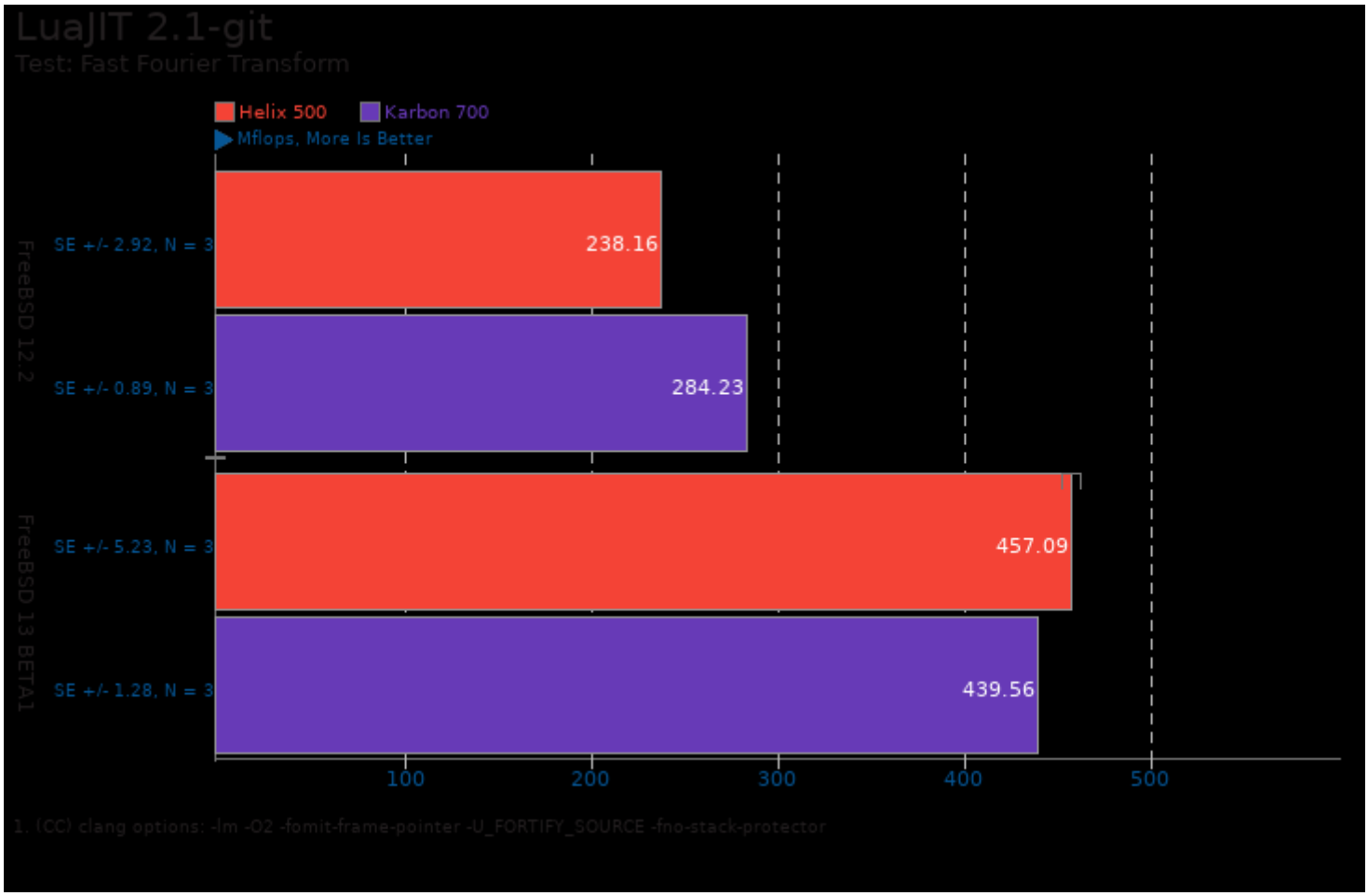


FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

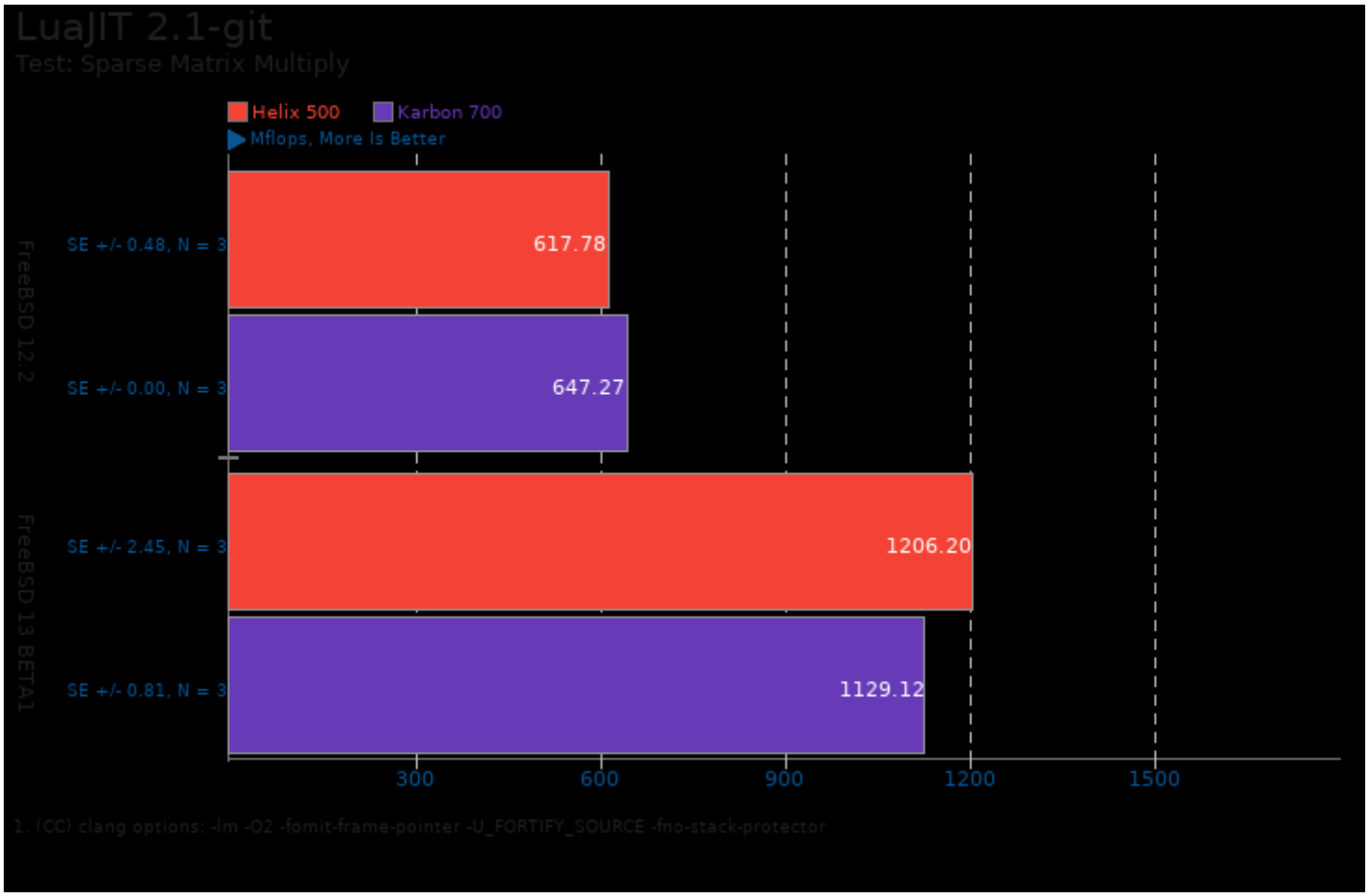


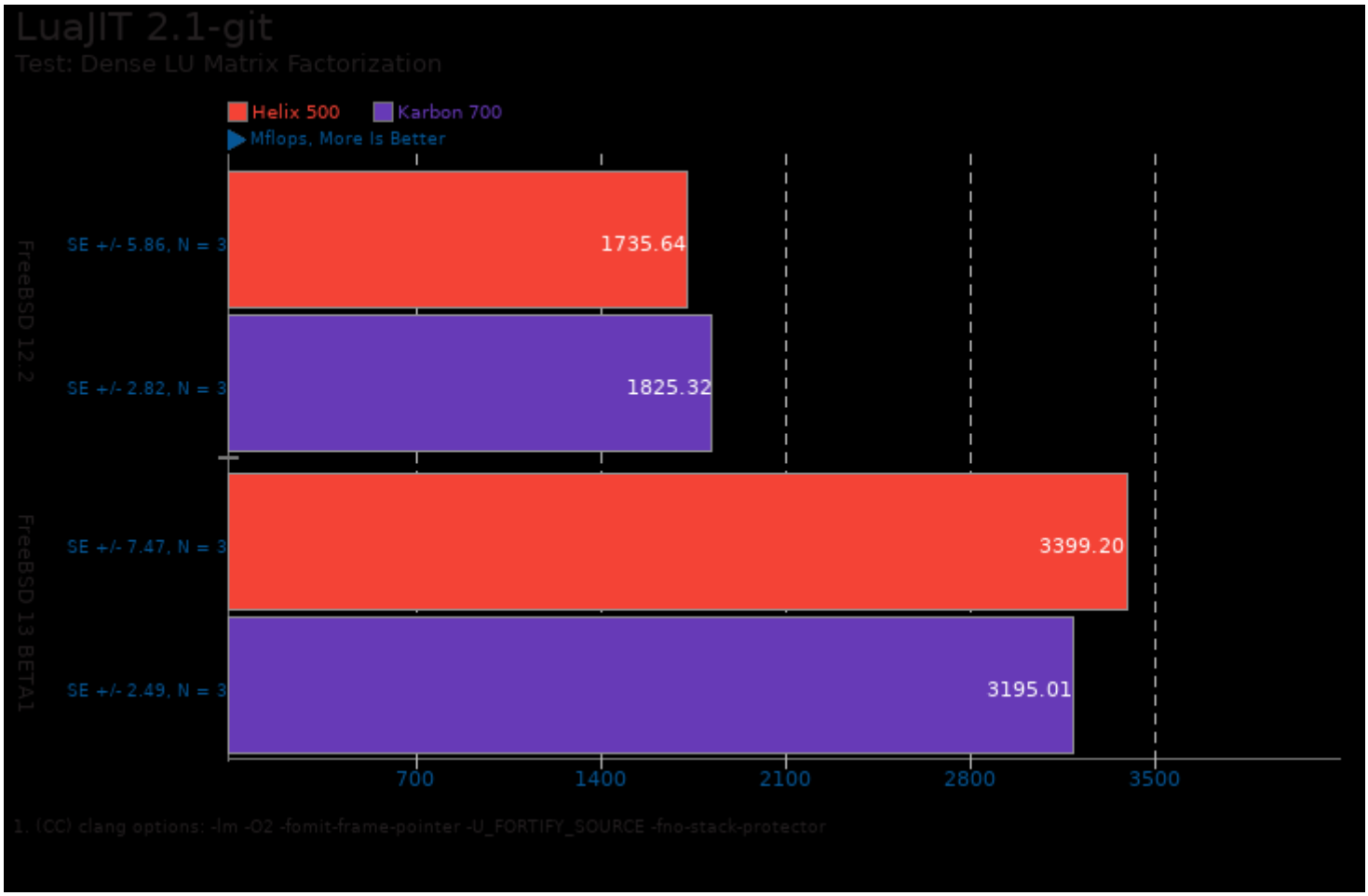

LuaJIT 2.1-git
Test: Composite
Helix 500
Karbon 700
Mflops, More Is Better
FreeBSD 12.2
SE +/- 1.95, N = 3
709.13
SE +/- 0.57, N = 3
752.26
FreeBSD 13 BETA1
SE +/- 3.20, N = 3
1385.31
SE +/- 0.57, N = 3
1304.41
300
600
900
1200
1500
1. (CC) clang options: -lm -O2 -fomit-frame-pointer -U_FORTIFY_SOURCE -fno-stack-protector


LuaJIT 2.1-git
Test: Monte Carlo
Helix 500
Karbon 700
Mflops, More Is Better
FreeBSD 12.2
SE +/- 0.28, N = 3
239.72
SE +/- 0.00, N = 3
251.72
FreeBSD 13 BETA1
SE +/- 0.92, N = 3
467.48
SE +/- 0.47, N = 3
441.46
100
200
300
400
500
1. (CC) clang options: -lm -O2 -fomit-frame-pointer -U_FORTIFY_SOURCE -fno-stack-protector

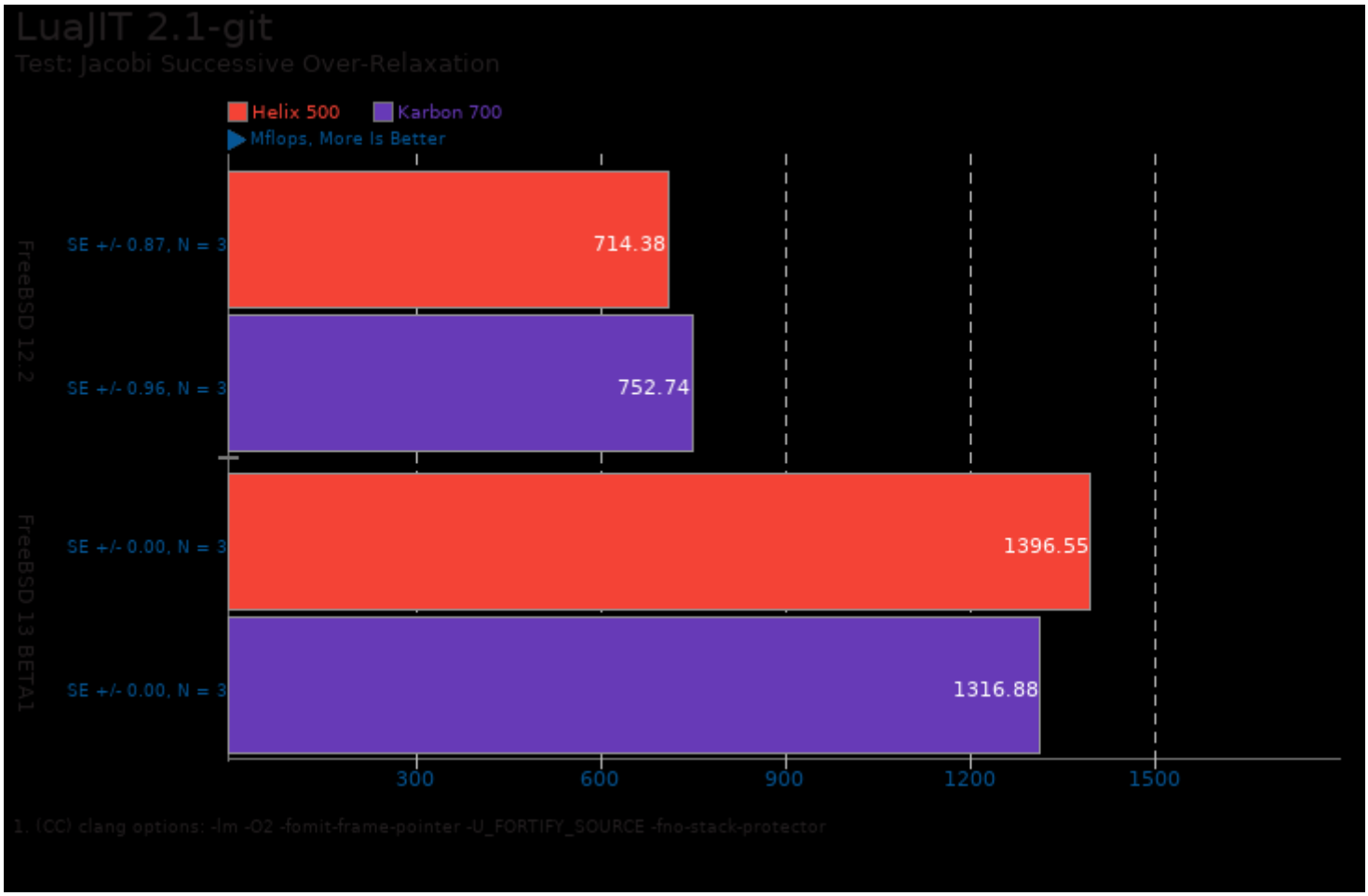

LuaJIT 2.1-git
Test: Fast Fourier Transform
Helix 500
Karbon 700
Mflops, More Is Better
FreeBSD 12.2
SE +/- 2.92, N = 3
238.16
SE +/- 0.89, N = 3
284.23
FreeBSD 13 BETA1
SE +/- 5.23, N = 3
457.09
SE +/- 1.28, N = 3
439.56
100
200
300
400
500
1. (CC) clang options: -lm -O2 -fomit-frame-pointer -U_FORTIFY_SOURCE -fno-stack-protector

FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

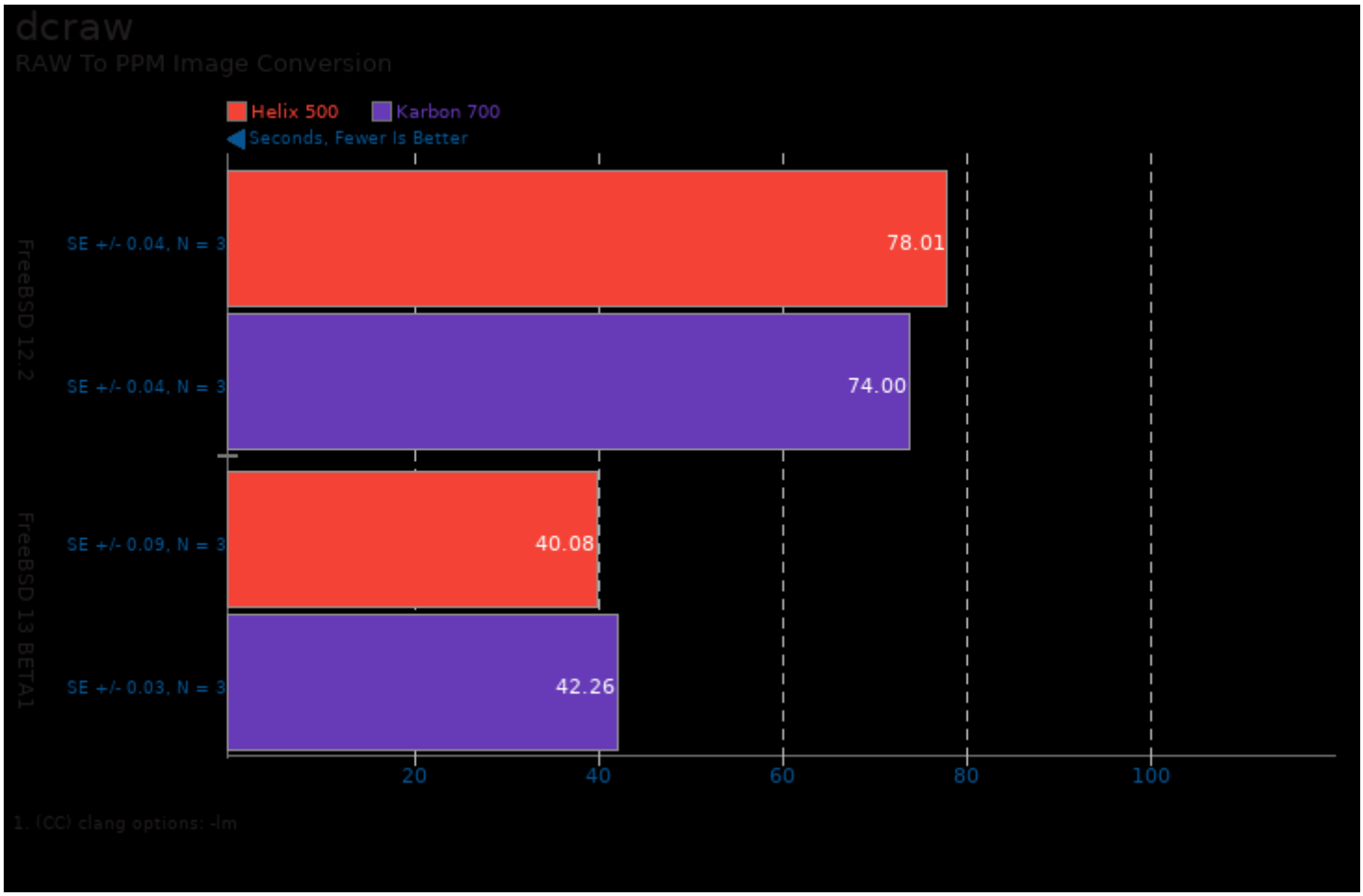



LuaJIT 2.1-git
Test: Dense LU Matrix Factorization
Helix 500
Karbon 700
Mflops, More Is Better
FreeBSD 12.2
SE +/- 5.86, N = 3
1735.64
SE +/- 2.82, N = 3
1825.32
FreeBSD 13 BETA1
SE +/- 7.47, N = 3
3399.20
SE +/- 2.49, N = 3
3195.01
700
1400
2100
2800
3500
1. (CC) clang options: -lm -O2 -fomit-frame-pointer -U_FORTIFY_SOURCE -fno-stack-protector

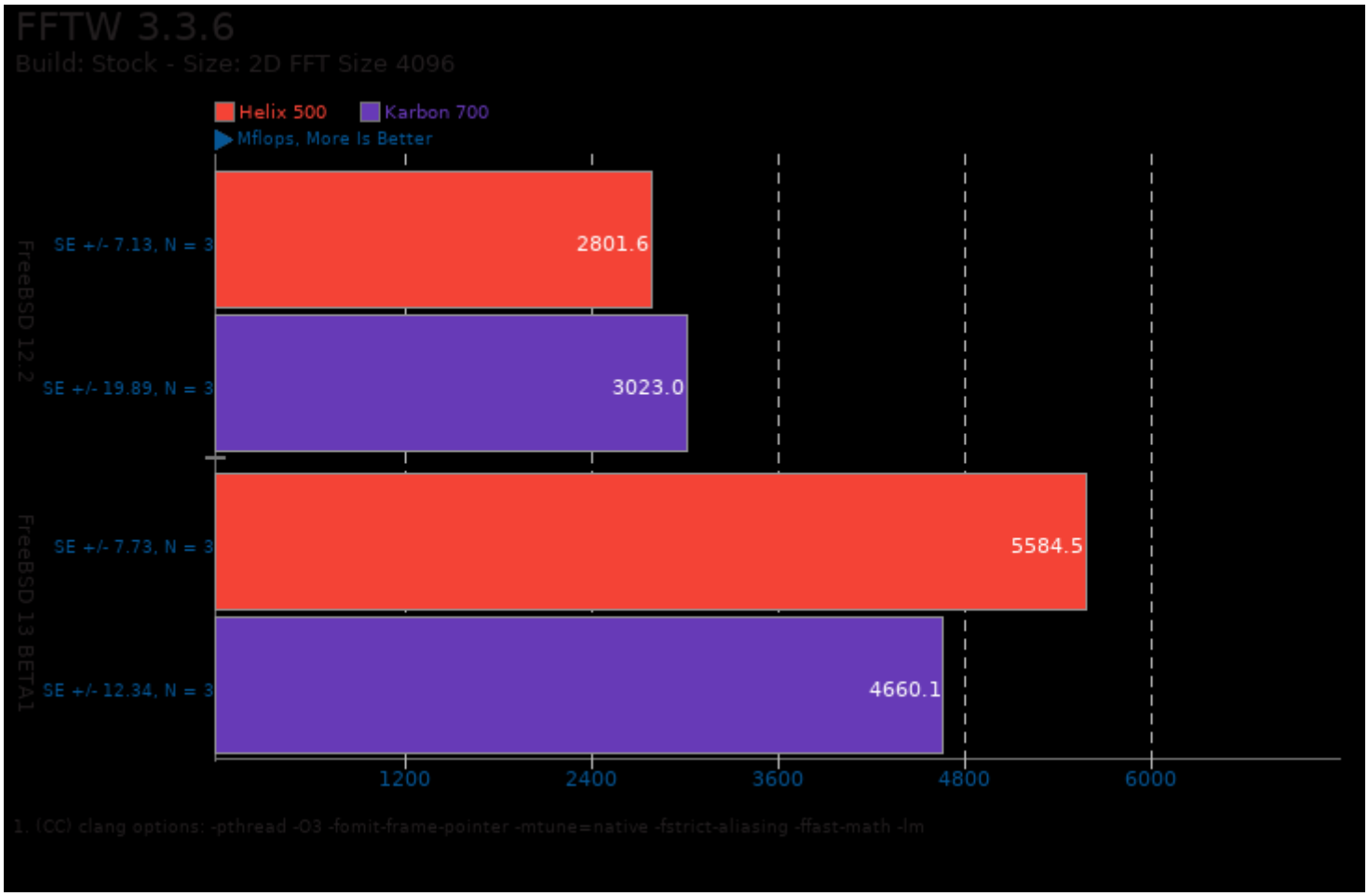
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks



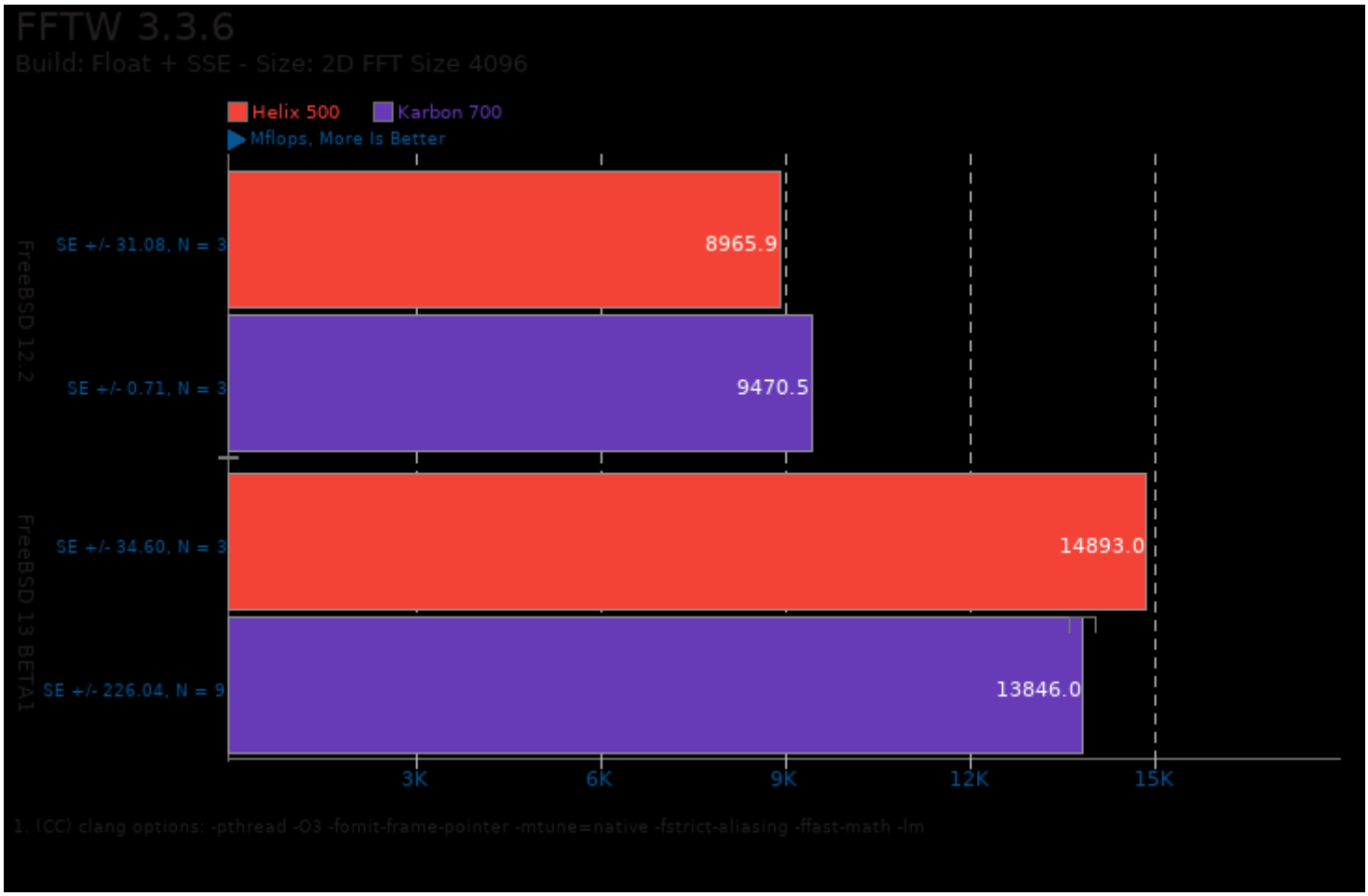
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks



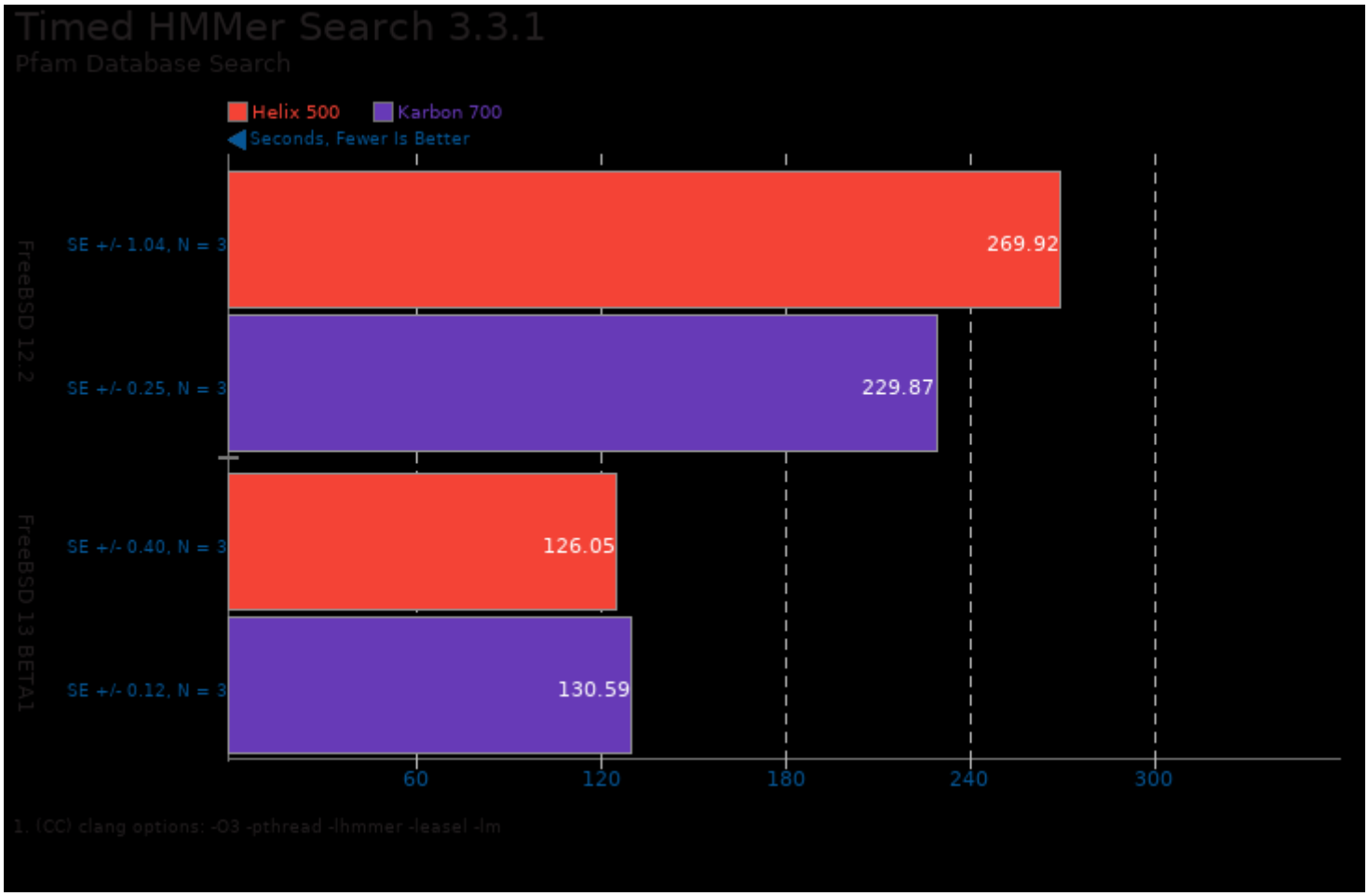
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

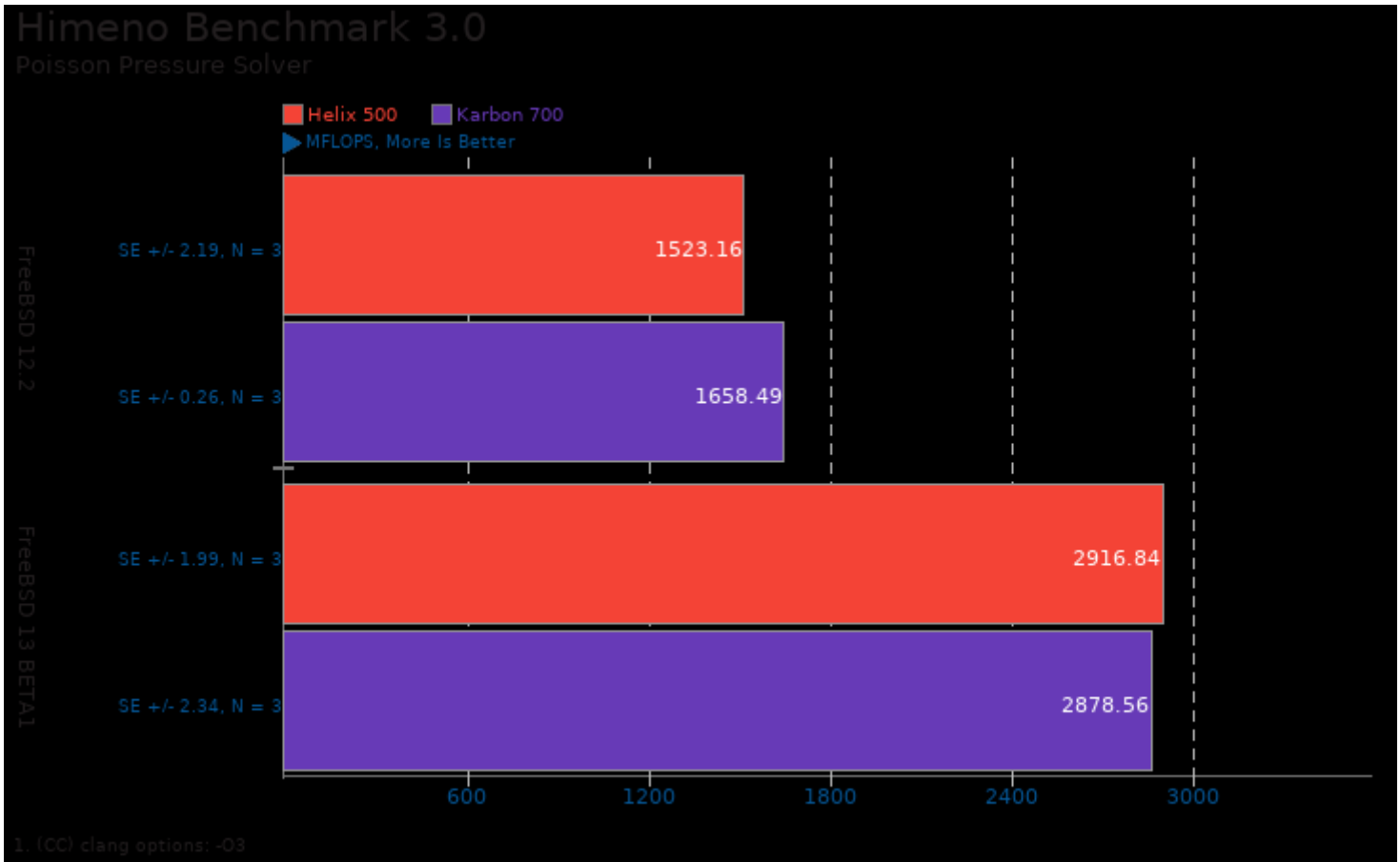


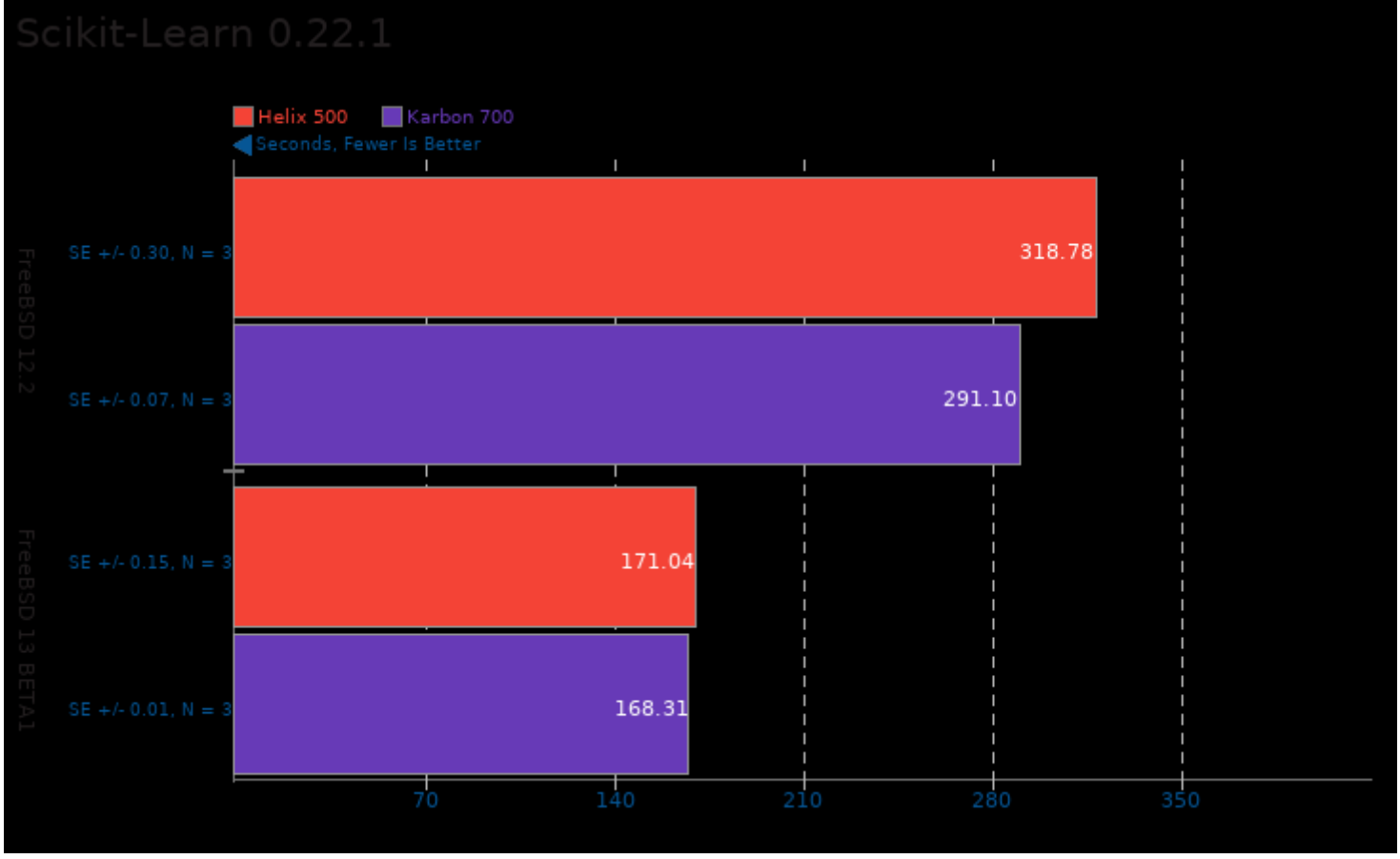
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks



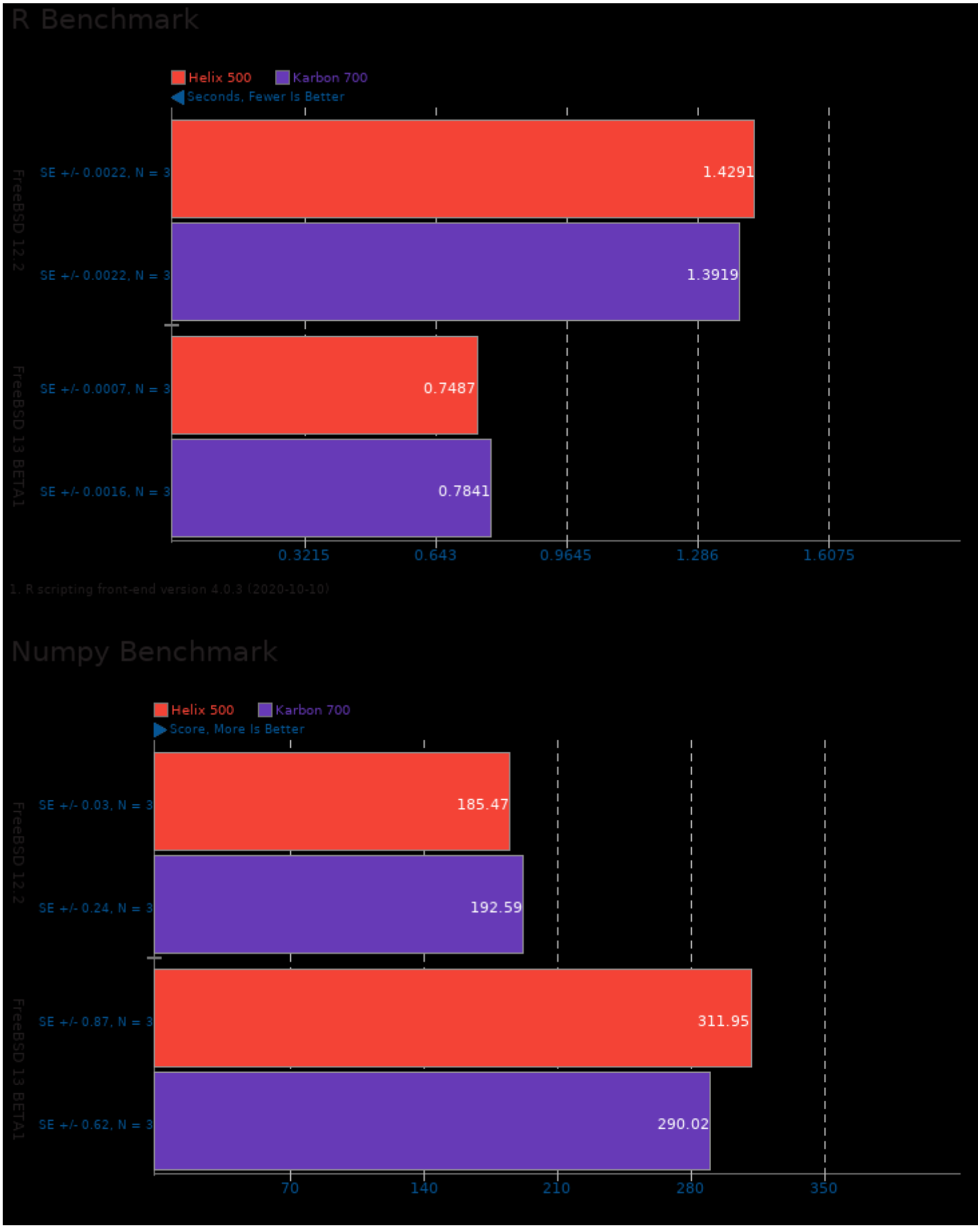
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

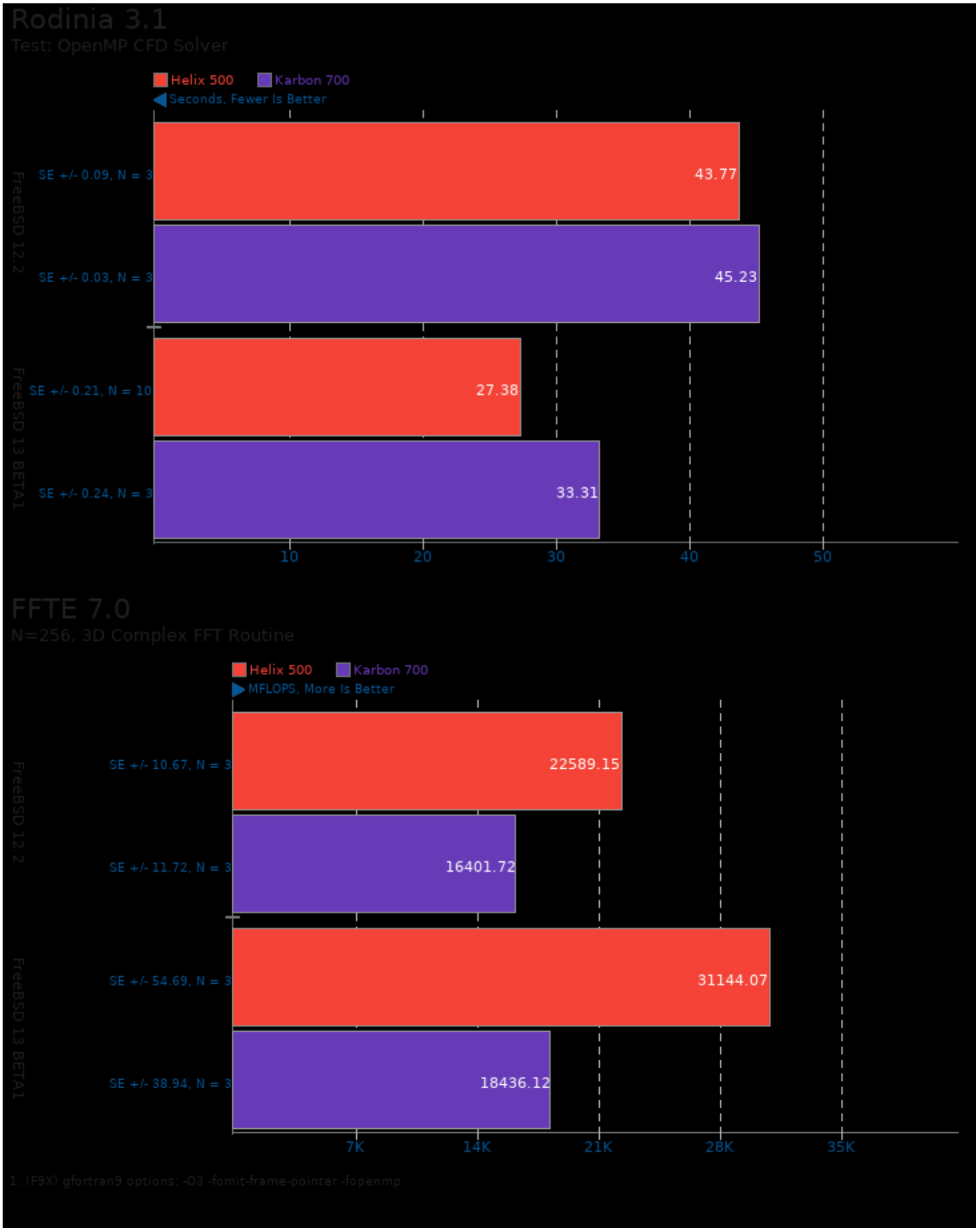



Himeno Benchmark 3.0
Poisson Pressure Solver
Helix 500
Karbon 700
MFLOPS, More Is Better
FreeBSD 12.2
FreeBSD 13 BETA1
SE +/- 2.19, N = 3
1523.16
SE +/- 0.26, N = 3
1658.49
SE +/- 1.99, N = 3
2916.84
SE +/- 2.34, N = 3
2878.56
600
1200
1800
2400
3000
1. (CC) clang options: -O3

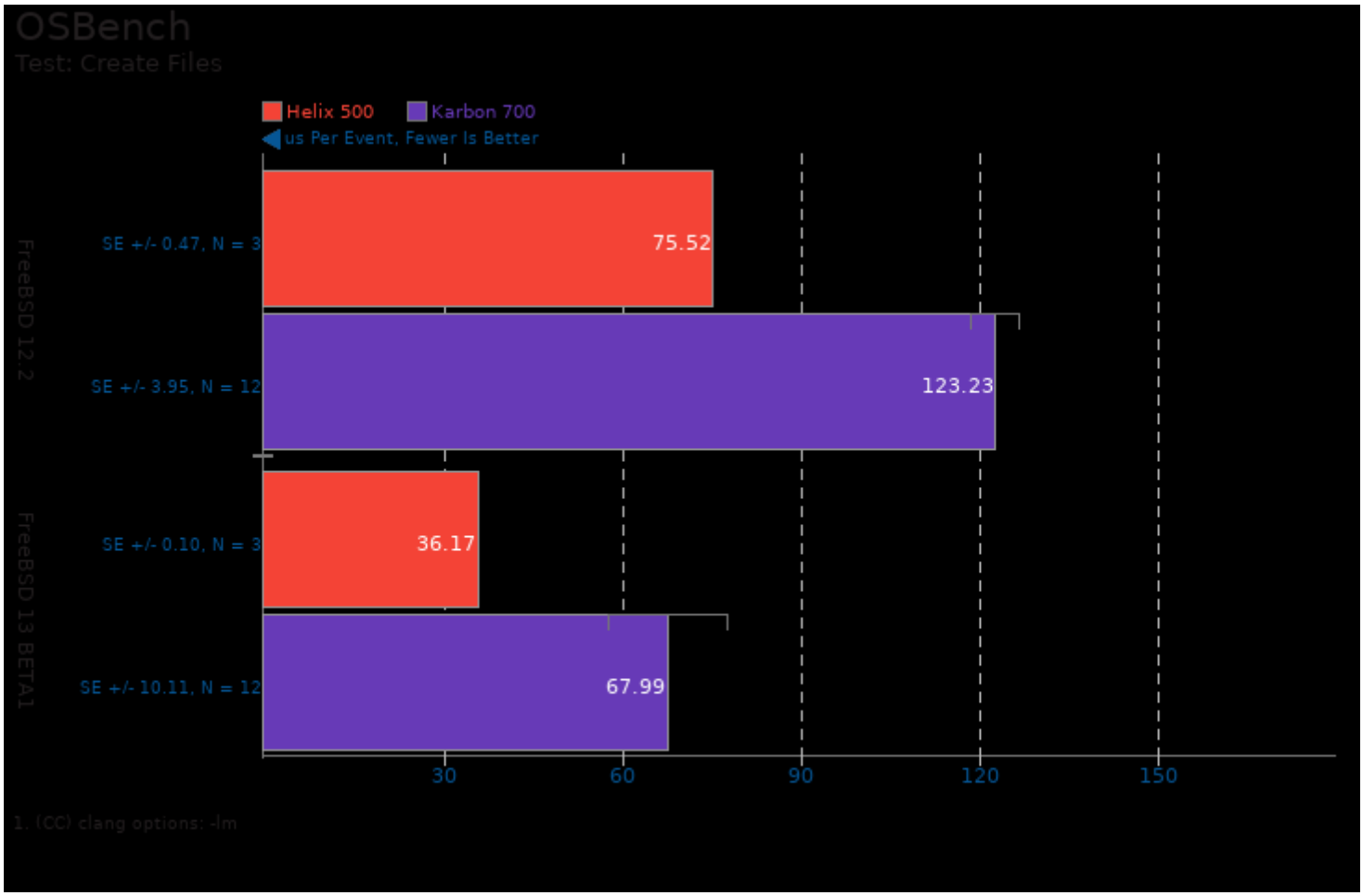

Scikit-Learn 0.22.1
Helix 500
Karbon 700
Seconds, Fewer Is Better
FreeBSD 12.2
FreeBSD 13 BETA1
SE +/- 0.30, N = 3
318.78
SE +/- 0.07, N = 3
291.10
SE +/- 0.15, N = 3
171.04
SE +/- 0.01, N = 3
168.31
70
140
210
280
350

FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

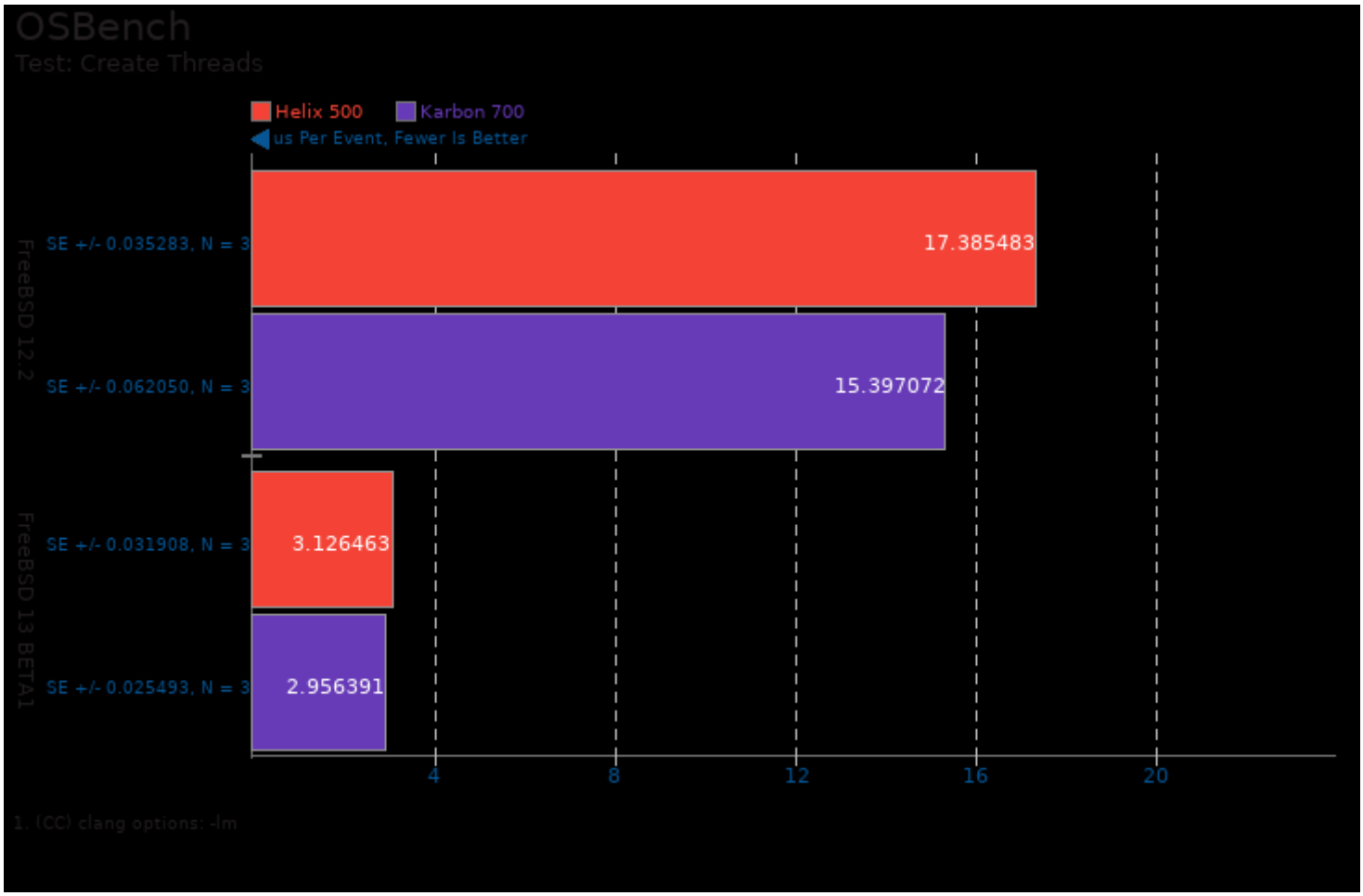



Rodinia 3.1
Test: OpenMP CFD Solver
Helix 500
Karbon 700
Seconds, Fewer Is Better
FreeBSD 12.2
SE +/- 0.09, N = 3
43.77
SE +/- 0.03, N = 3
45.23
FreeBSD 13 BETA1
SE +/- 0.21, N = 10
27.38
SE +/- 0.24, N = 3
33.31
10
20
30
40
50
FFTE 7.0
N=256, 3D Complex FFT Routine
Helix 500
Karbon 700
MFLOPS, More Is Better
FreeBSD 12.2
SE +/- 10.67, N = 3
22589.15
SE +/- 11.72, N = 3
16401.72
FreeBSD 13 BETA1
SE +/- 54.69, N = 3
31144.07
SE +/- 38.94, N = 3
18436.12
7K
14K
21K
28K
35K
1. (F9X) gfortran9 options: -O3 -fomit-frame-pointer -fopenmp

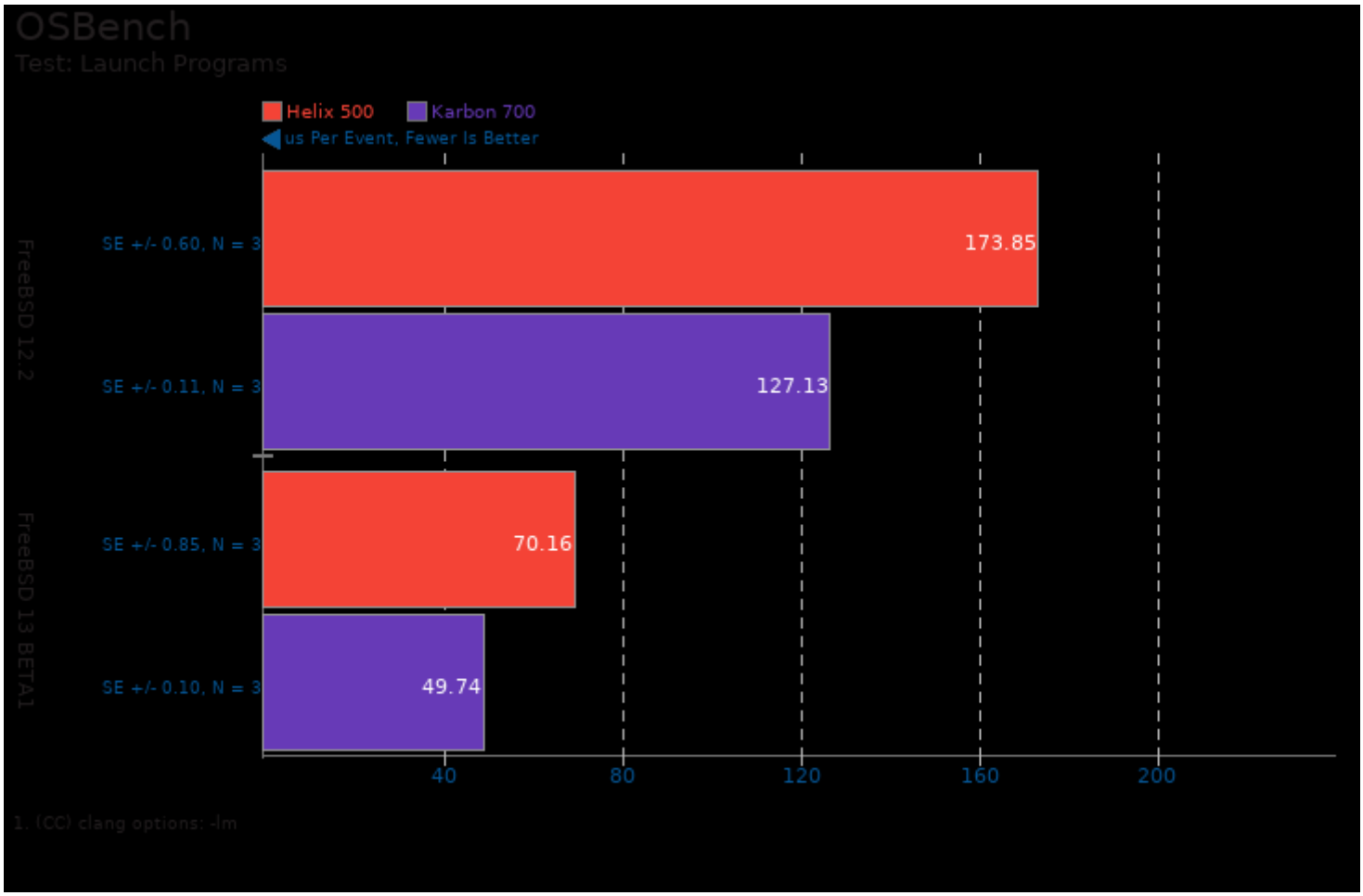
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks



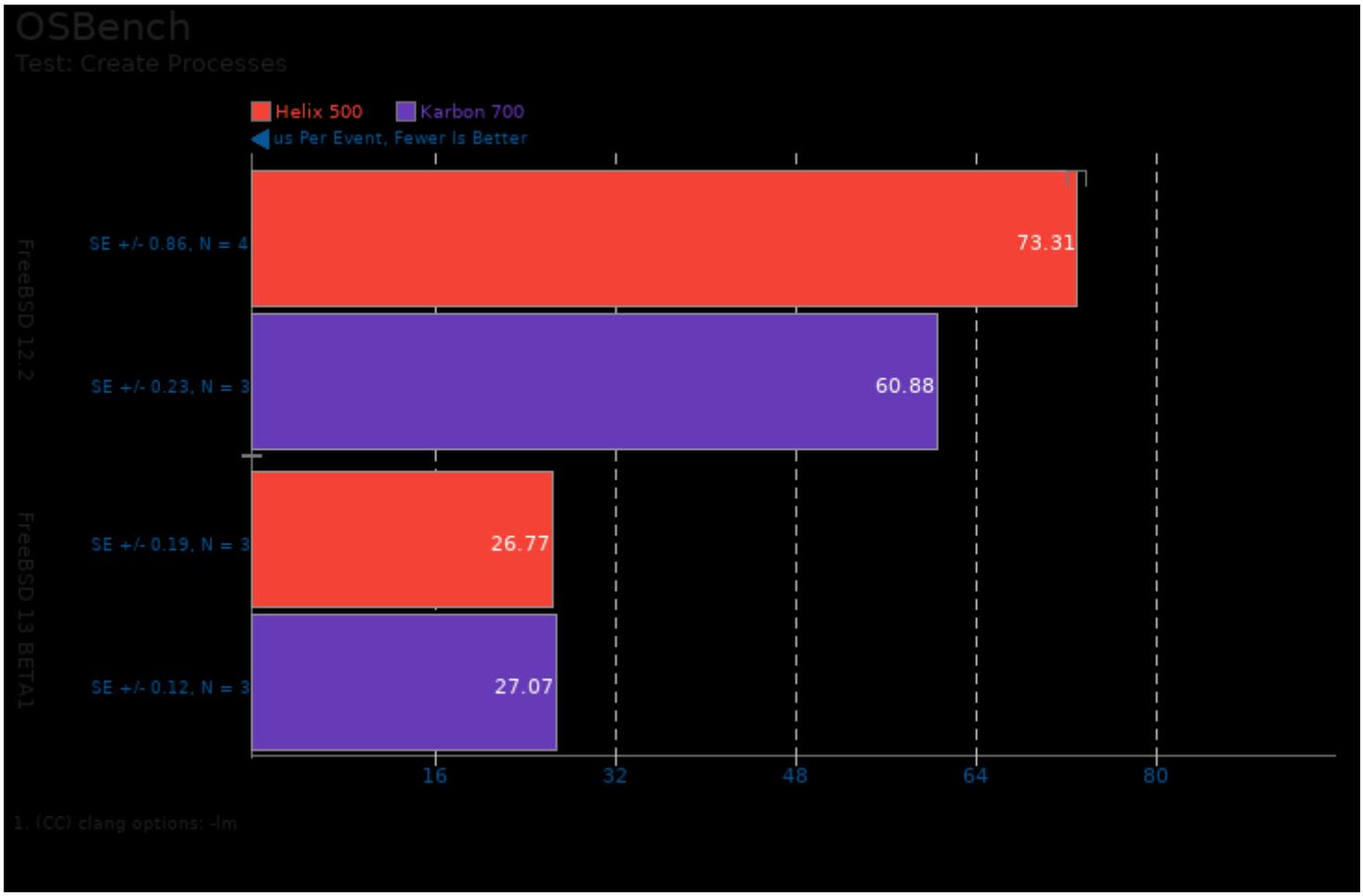
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

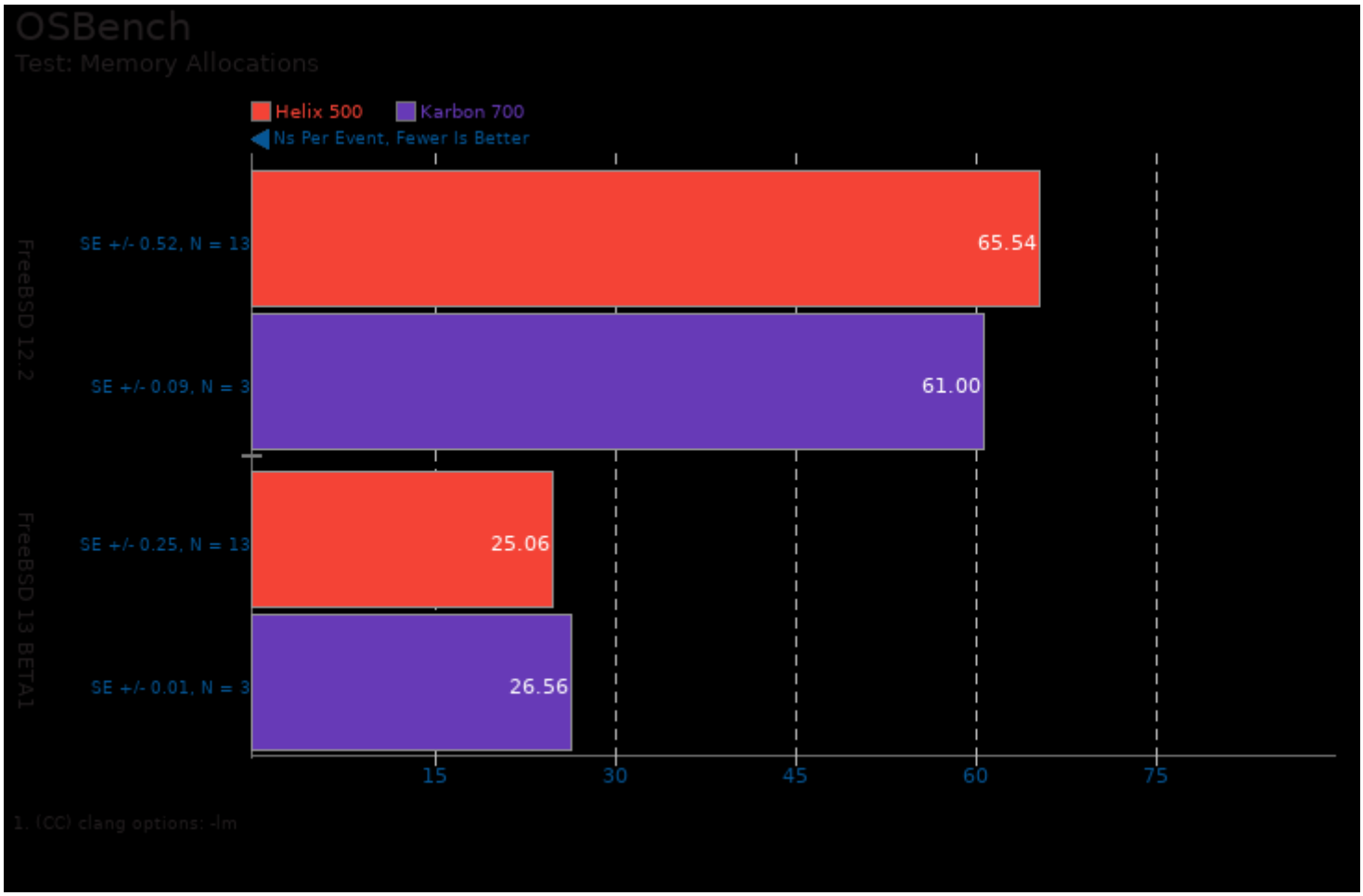


FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

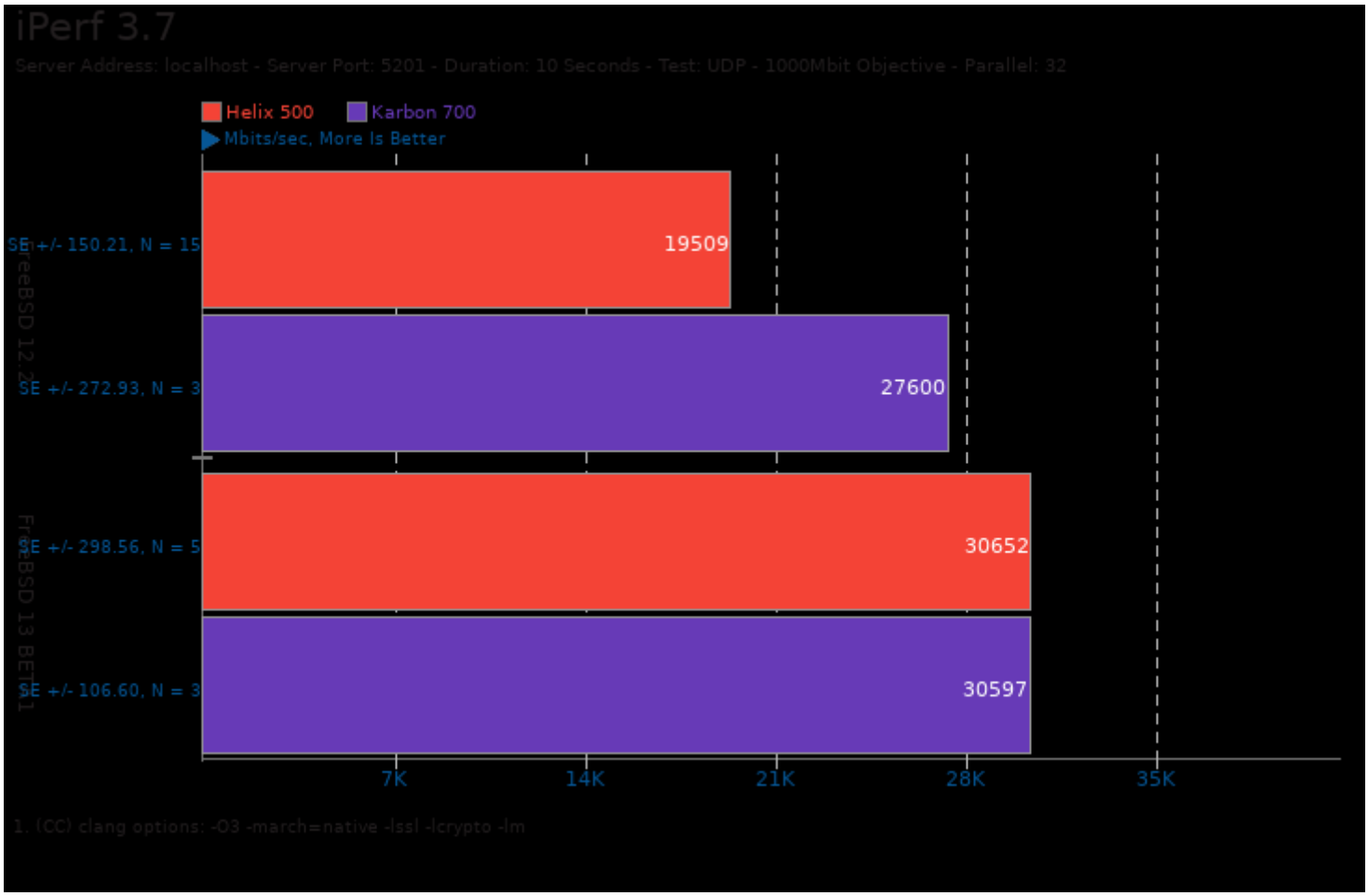


FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

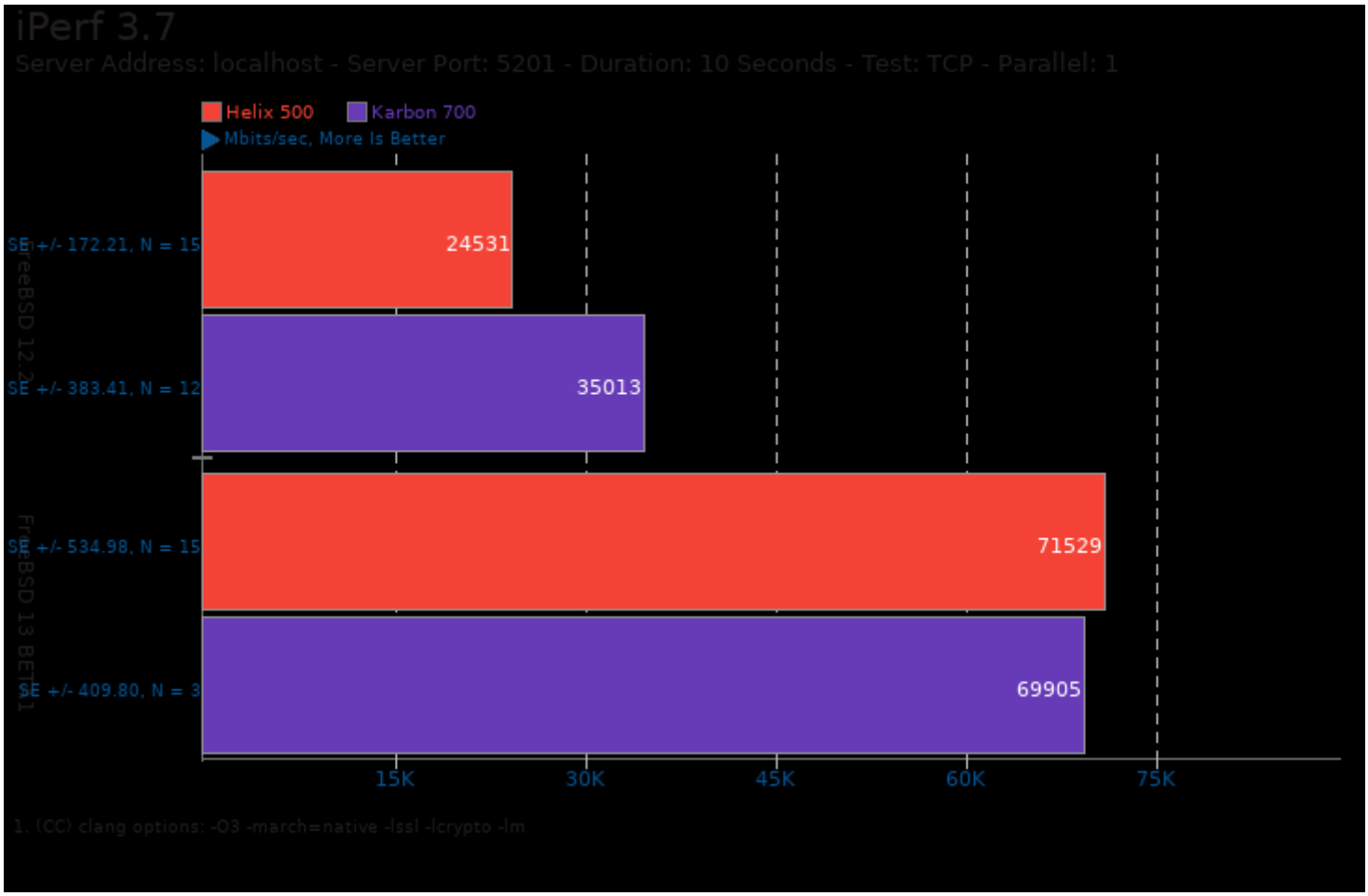



OSBench
Test: Memory Allocations
Helix 500
Karbon 700
Ns Per Event, Fewer Is Better
FreeBSD 12.2
SE +/- 0.52, N = 13
65.54
SE +/- 0.09, N = 3
61.00
FreeBSD 13 BETA1
SE +/- 0.25, N = 13
25.06
SE +/- 0.01, N = 3
26.56
15
30
45
60
75
1. (CC) clang options: -lm

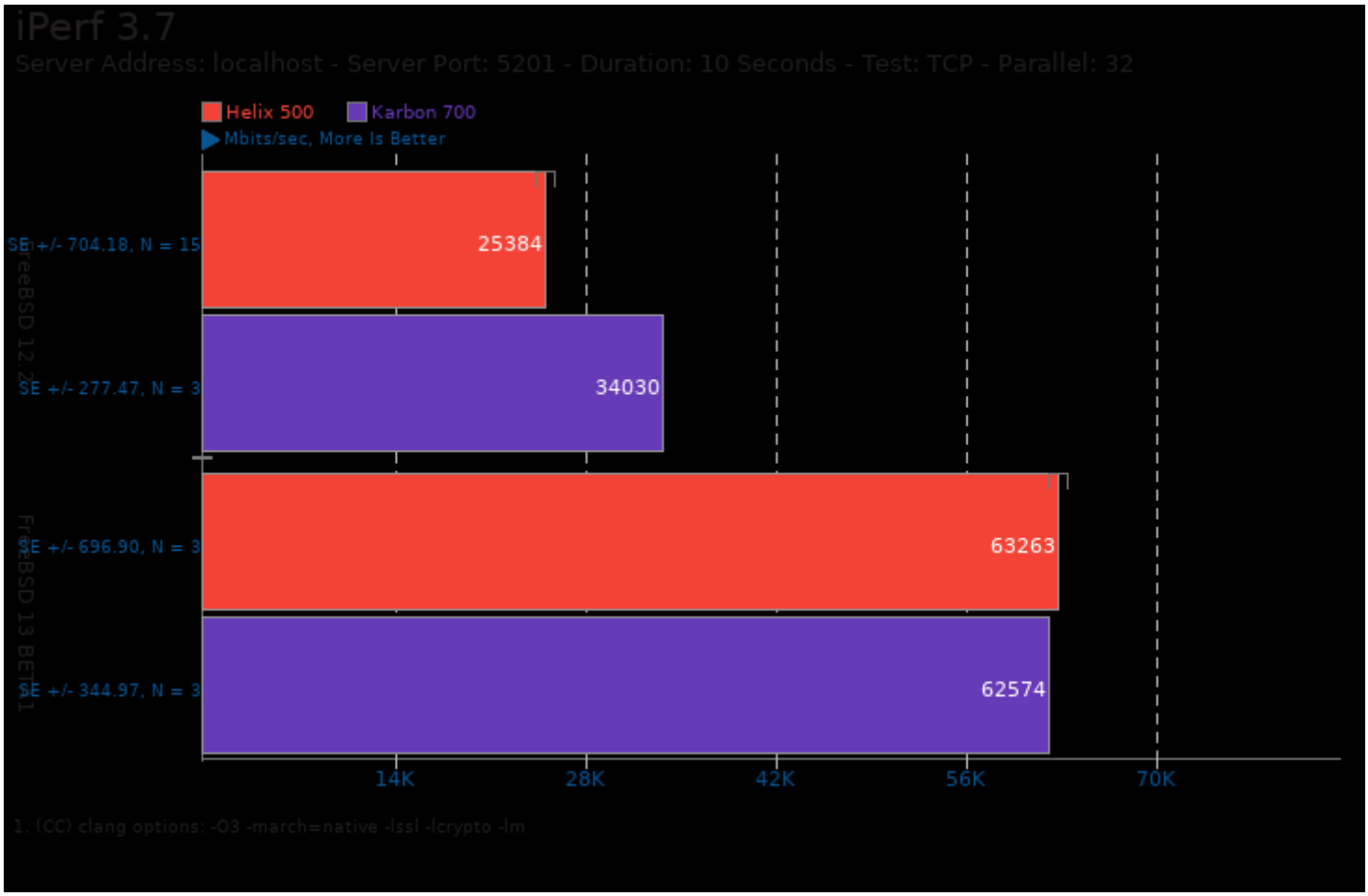
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

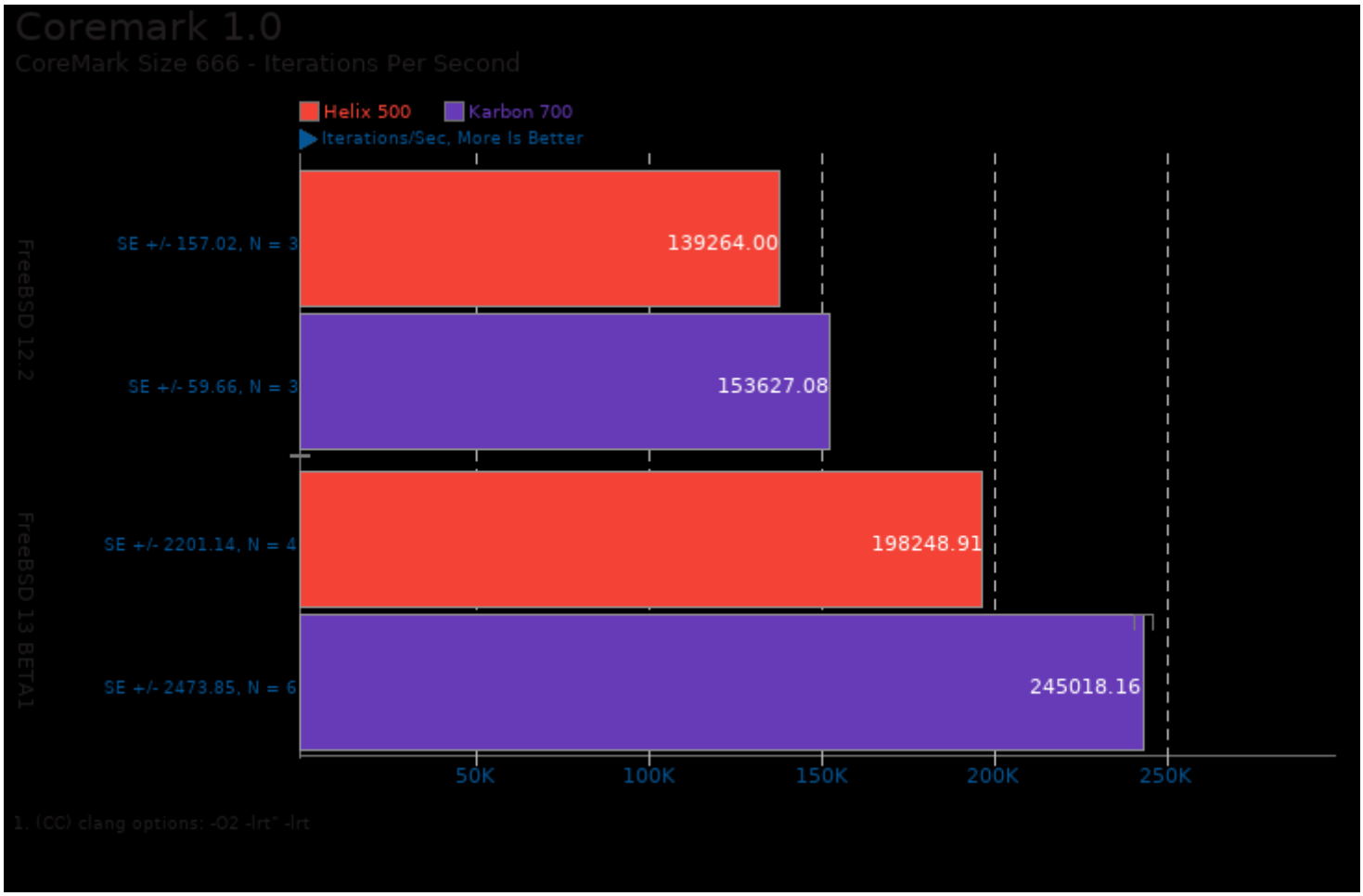


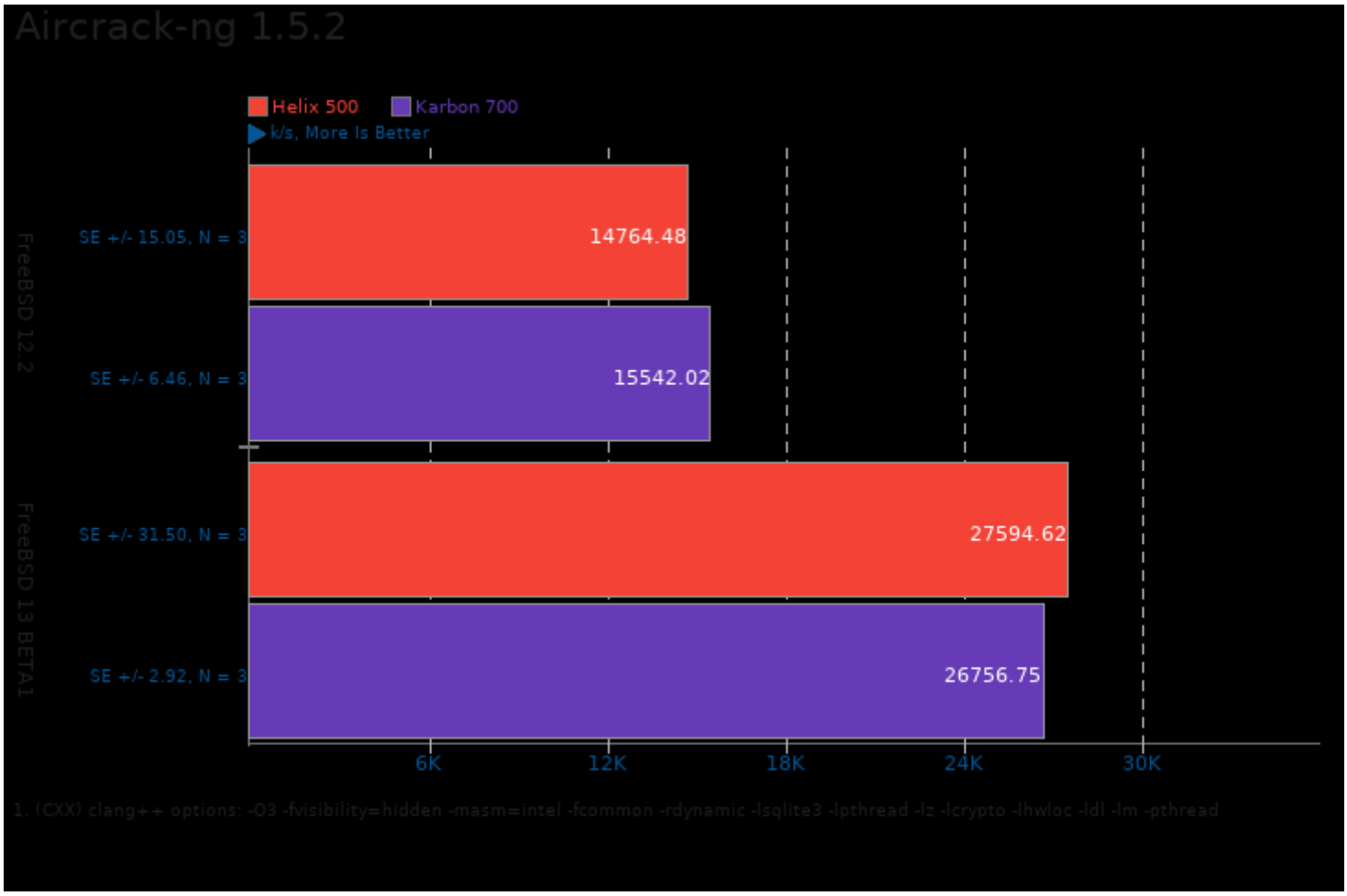
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks



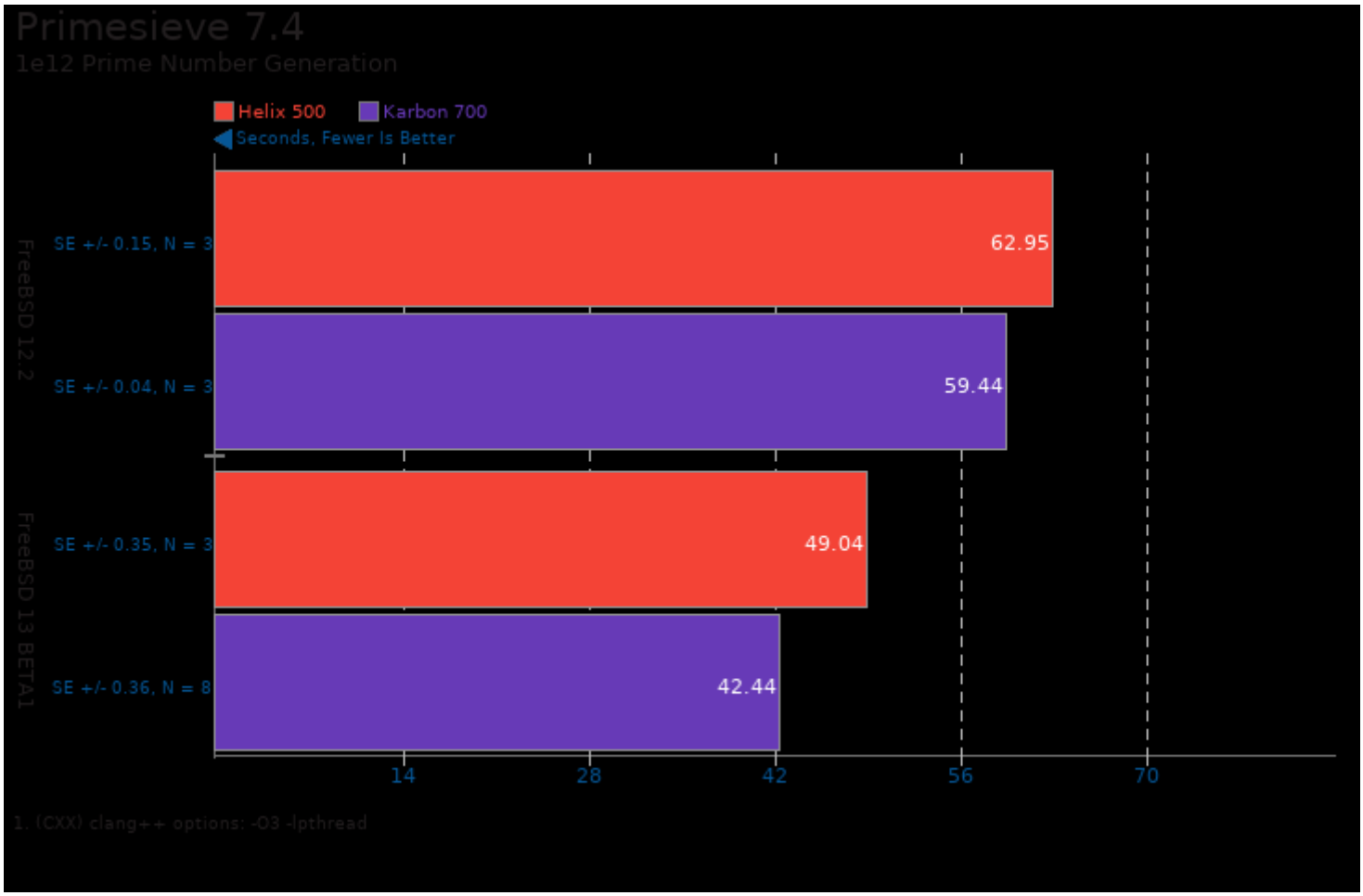
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

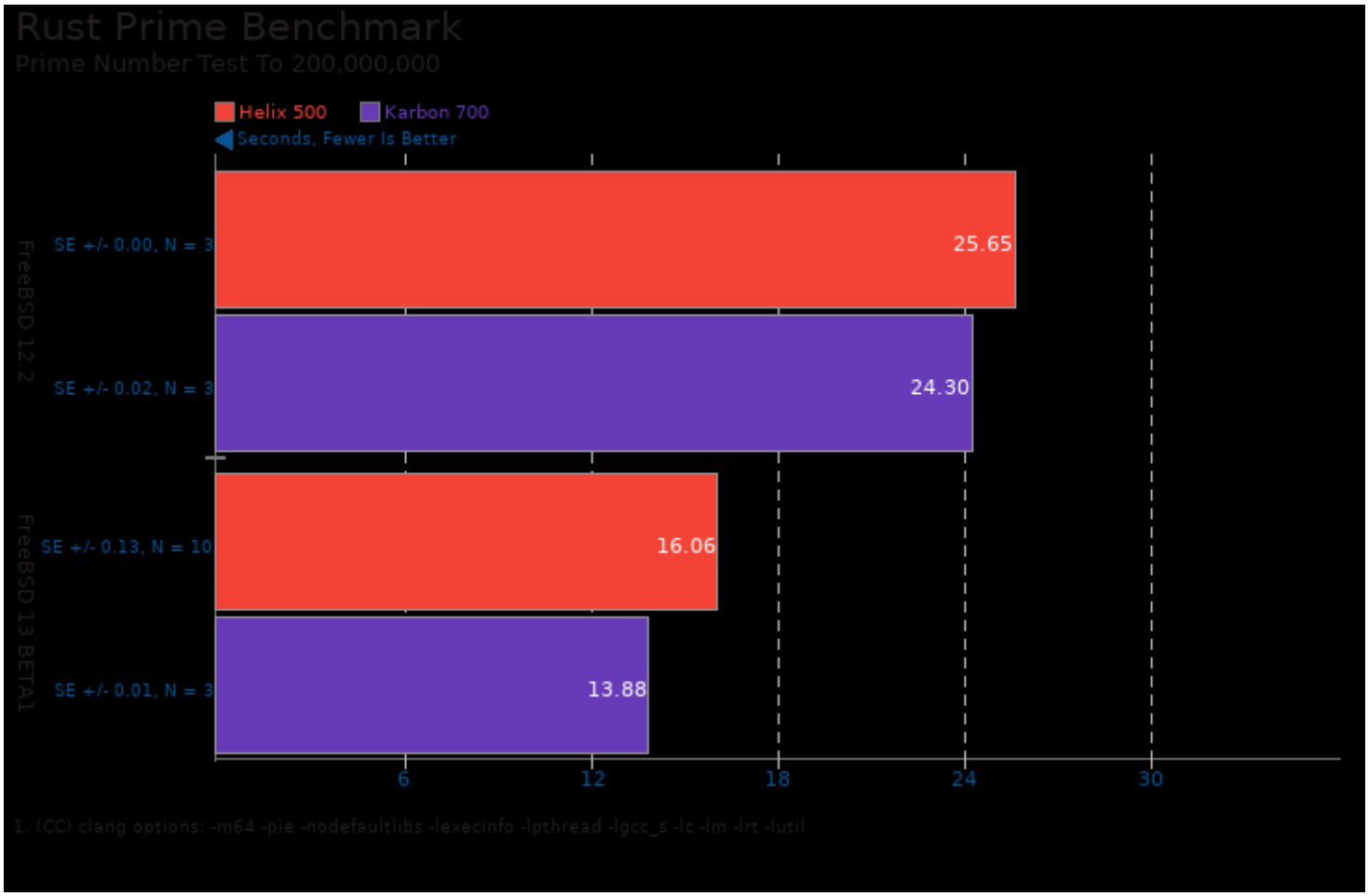



Coremark 1.0
CoreMark Size 666 - Iterations Per Second
Helix 500
Karbon 700
Iterations/Sec, More Is Better
FreeBSD 12.2
FreeBSD 13 BETA1
SE +/- 157.02, N = 3
139264.00
SE +/- 59.66, N = 3
153627.08
SE +/- 2201.14, N = 4
198248.91
SE +/- 2473.85, N = 6
245018.16
50K
100K
150K
200K
250K
1. (CC) clang options: -O2 -lrt" -lrt

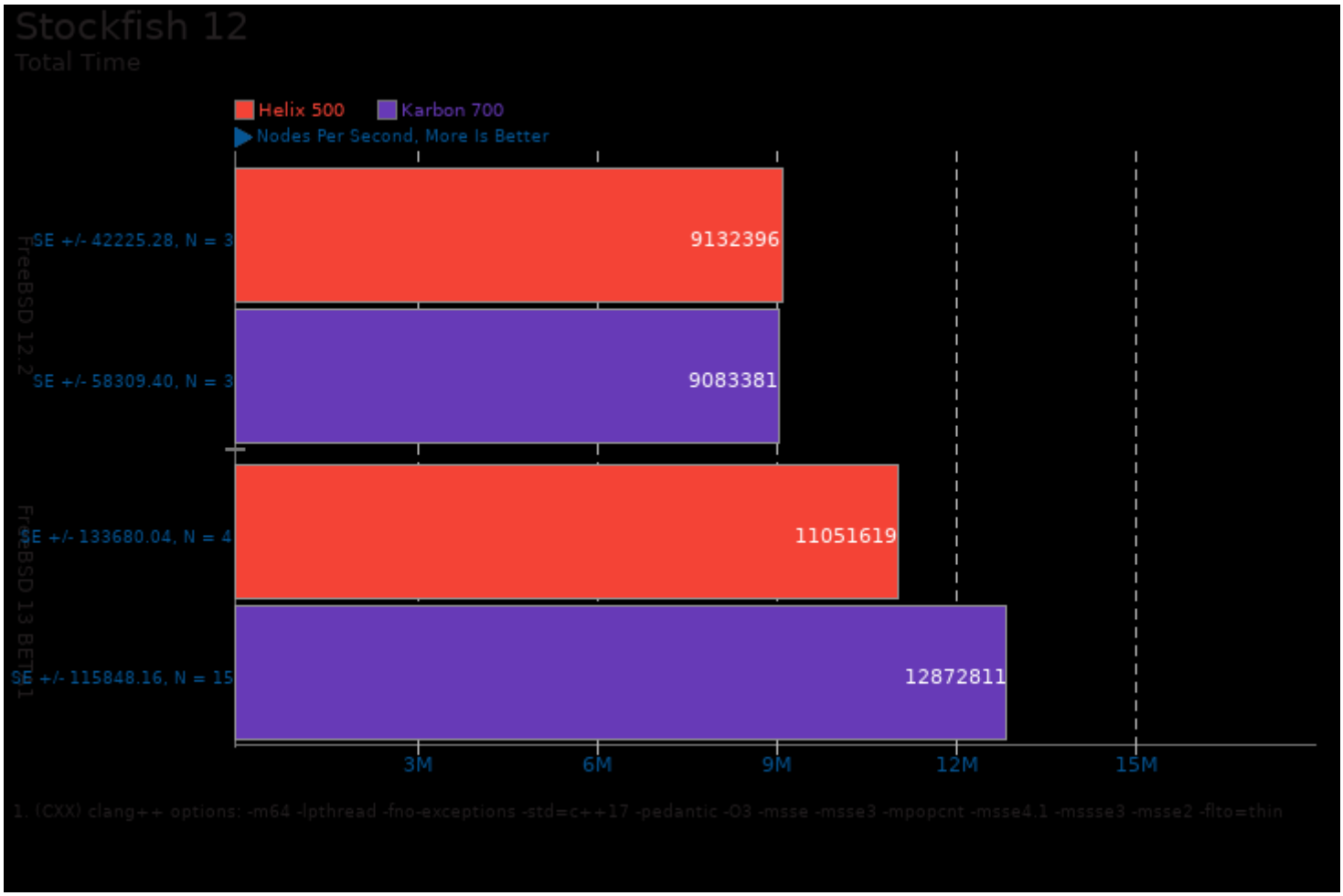

Aircrack-ng 1.5.2
Helix 500
Karbon 700
k/s, More Is Better
FreeBSD 12.2
FreeBSD 13 BETA1
SE +/- 15.05, N = 3
14764.48
SE +/- 6.46, N = 3
15542.02
SE +/- 31.50, N = 3
27594.62
SE +/- 2.92, N = 3
26756.75
6K
12K
18K
24K
30K
1. (CXX) clang++ options: -O3 -fvisibility=hidden -masm=intel -fcommon -rdynamic -lsqlite3 -lpthread -lz -lcrypto -lhwloc -ldl -lm -pthread

FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

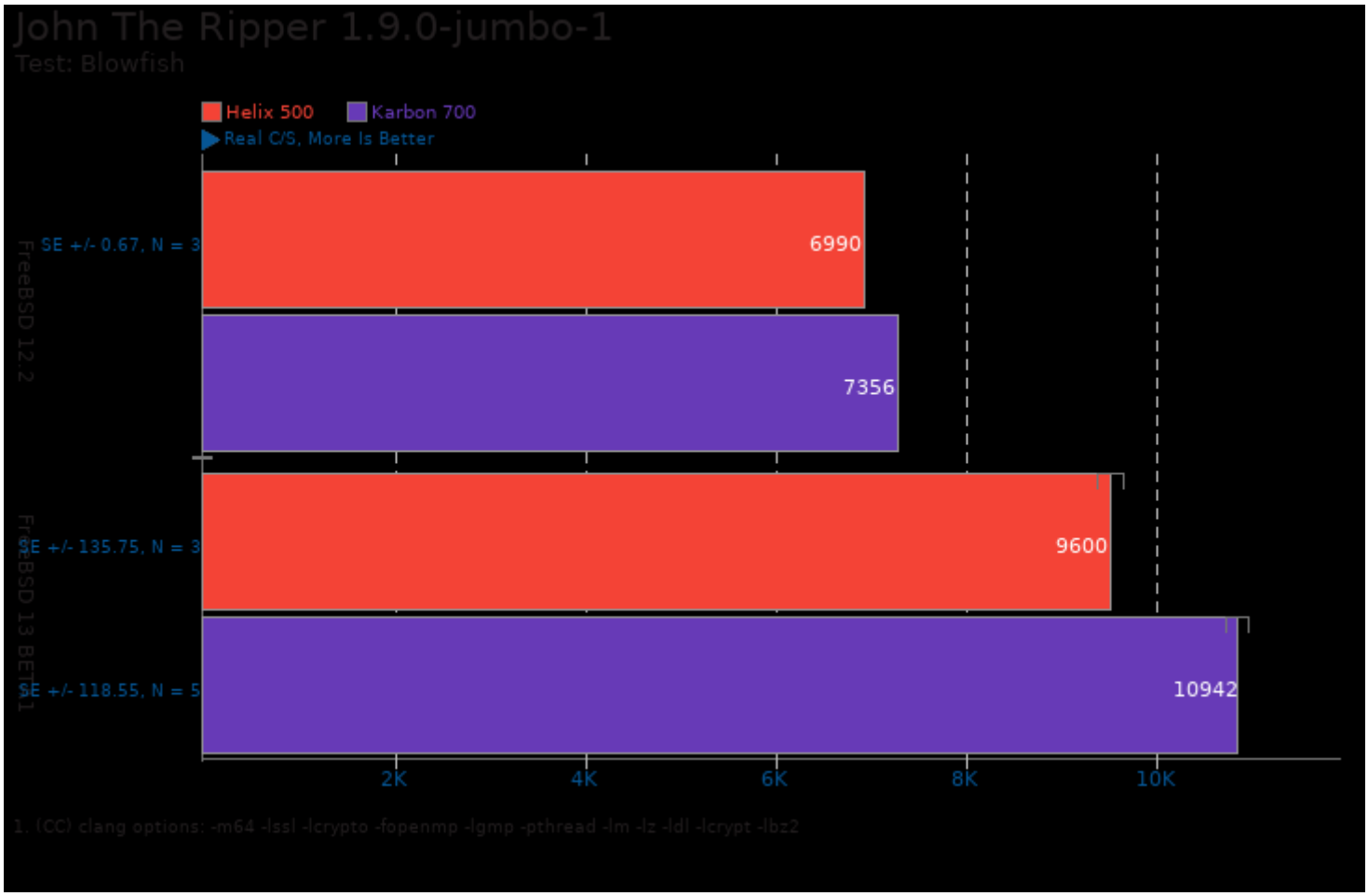



Rust Prime Benchmark
Prime Number Test To 200,000,000
Helix 500
Karbon 700
Seconds, Fewer Is Better
FreeBSD 12.2
SE +/- 0.00, N = 3
25.65
SE +/- 0.02, N = 3
24.30
FreeBSD 13 BETA1
SE +/- 0.13, N = 10
16.06
SE +/- 0.01, N = 3
13.88
6
12
18
24
30
1. (CC) clang options: -m64 -pie -nodefaultlibs -lexecinfo -lpthread -lgcc_s -lc -lm -lrt -lutil

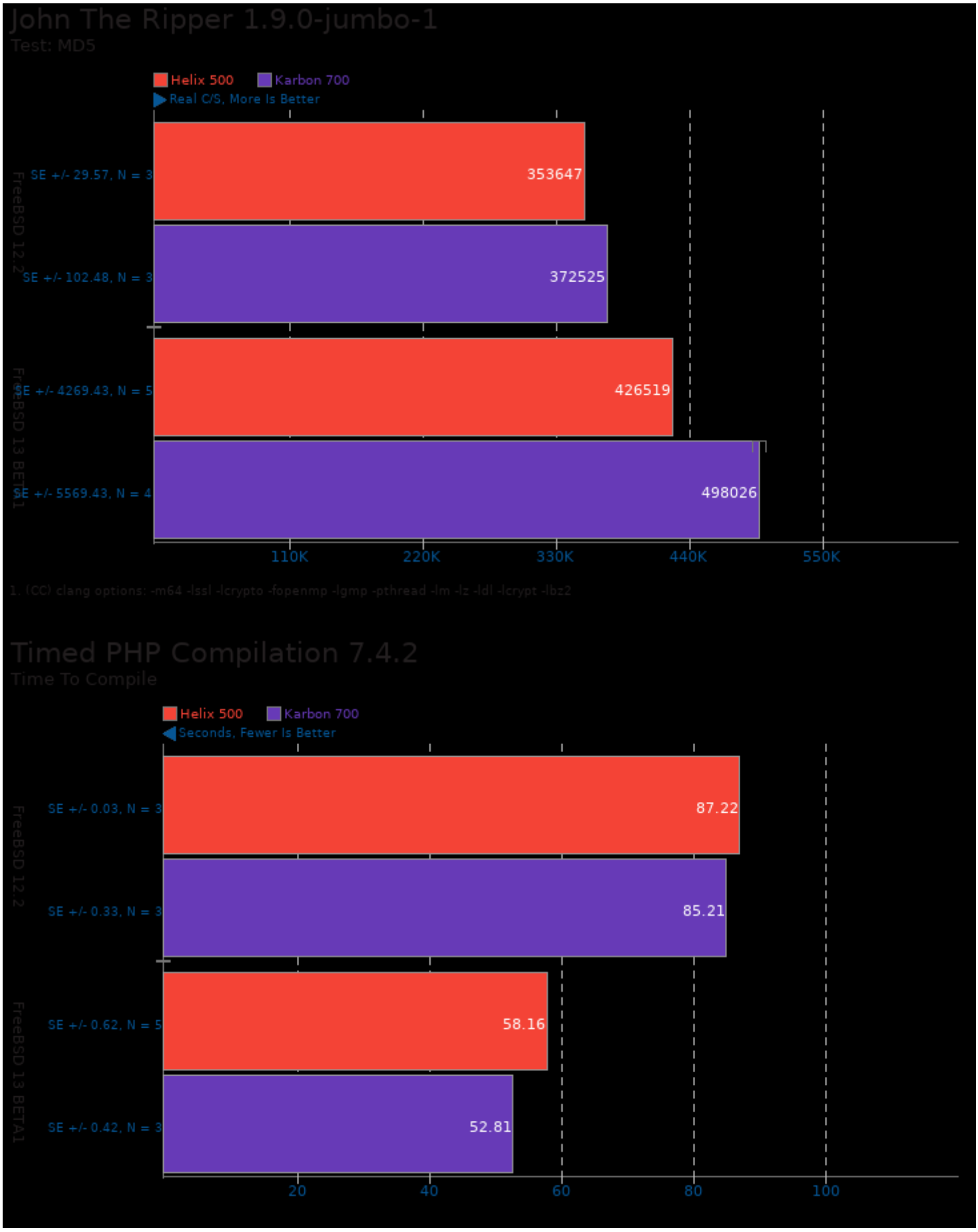
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

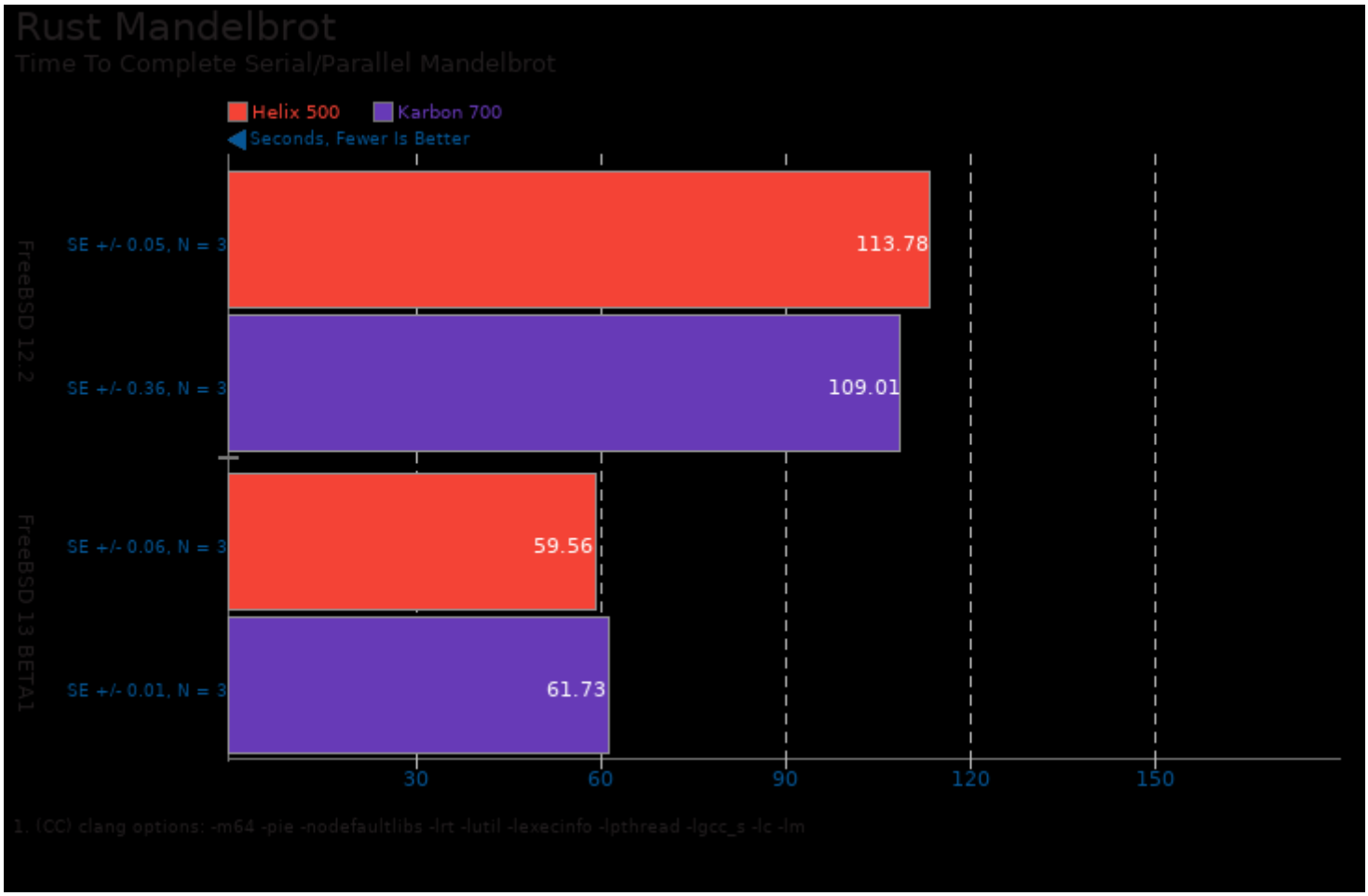


FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

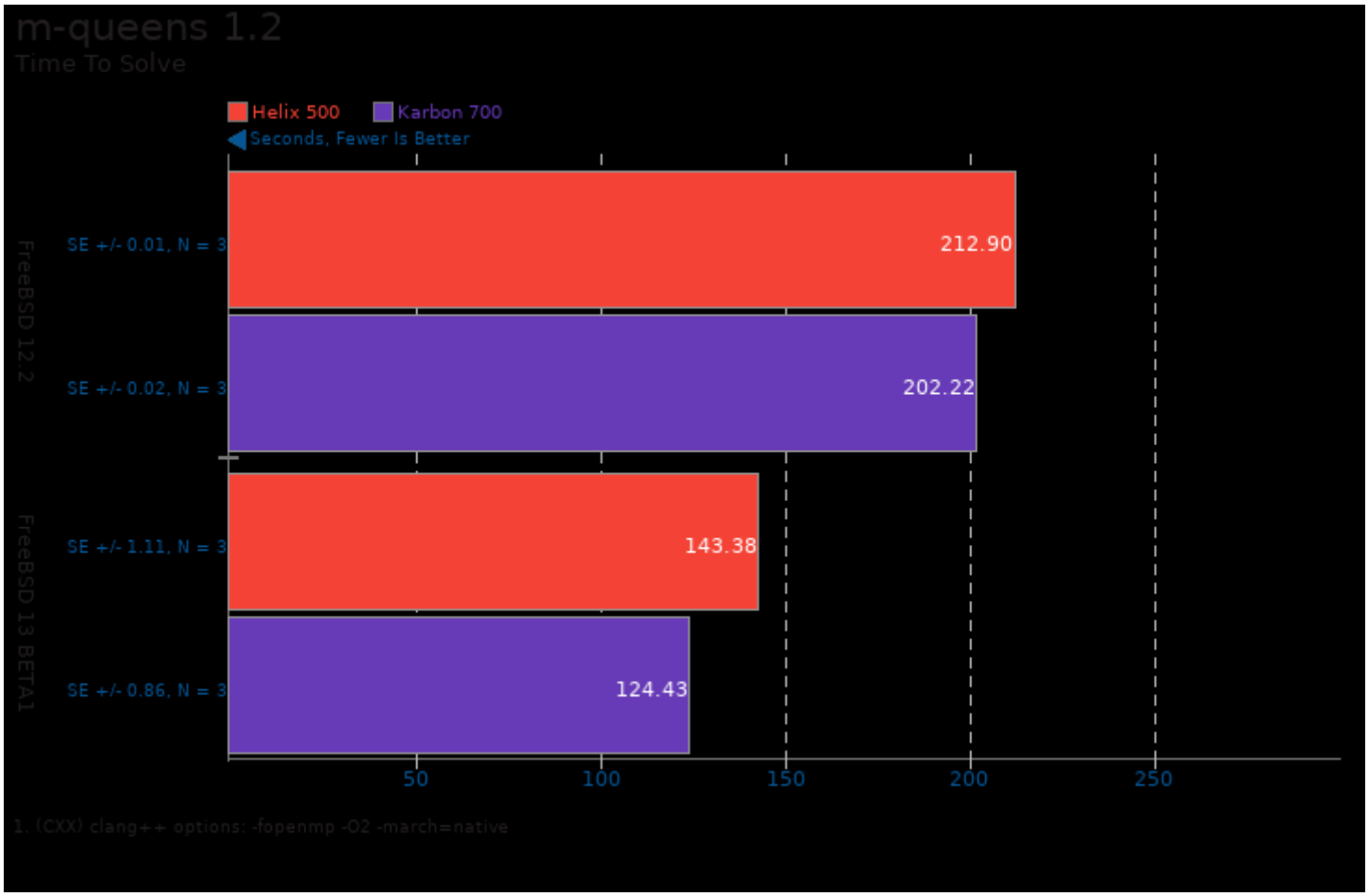


FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

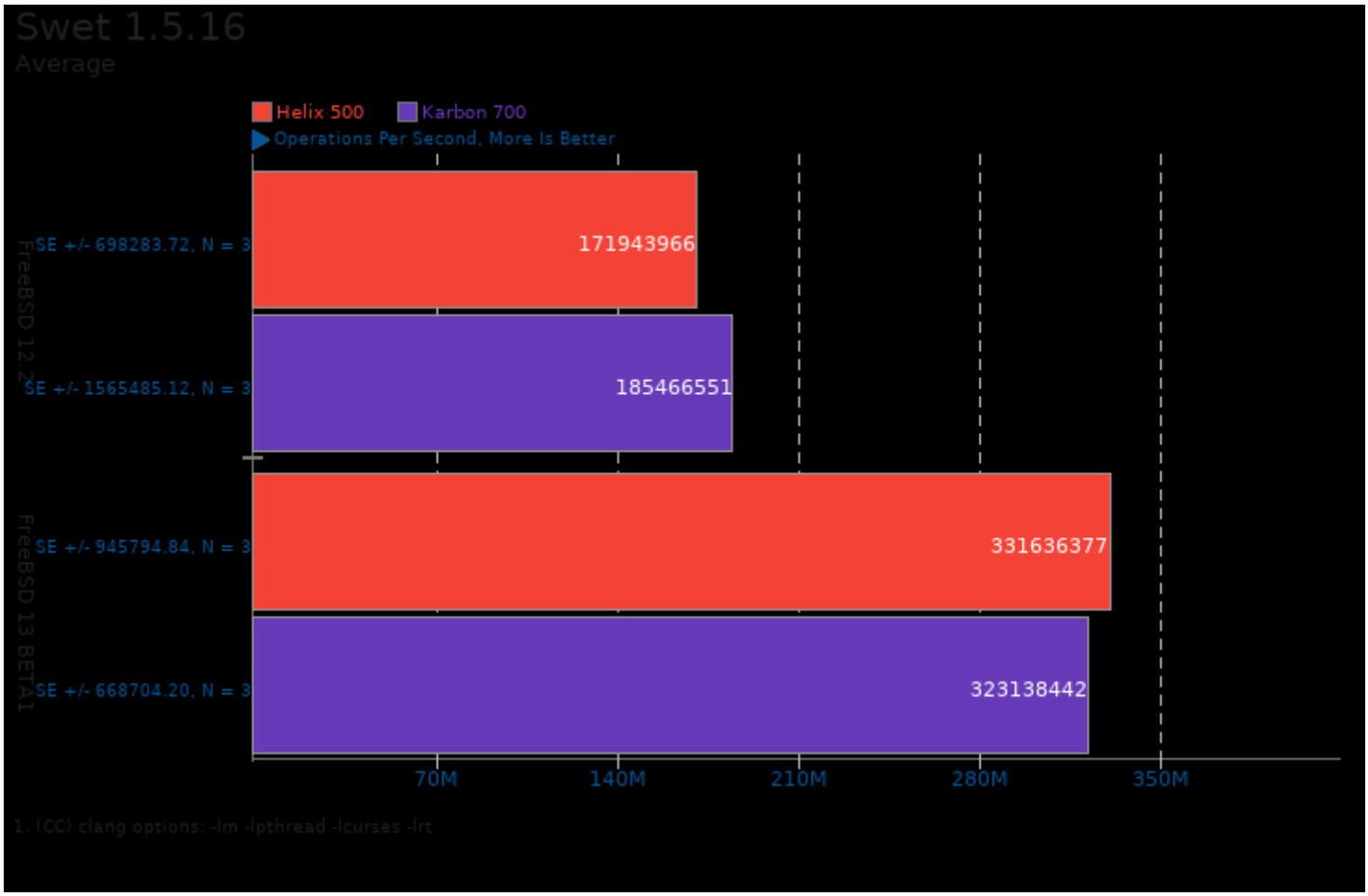



Rust Mandelbrot
Time To Complete Serial/Parallel Mandelbrot
Helix 500
Karbon 700
Seconds, Fewer Is Better
FreeBSD 12.2
FreeBSD 13 BETA1
SE +/- 0.05, N = 3
113.78
SE +/- 0.36, N = 3
109.01
SE +/- 0.06, N = 3
59.56
SE +/- 0.01, N = 3
61.73
30
60
90
120
150
1. (CC) clang options: -m64 -pie -nodefaultlibs -lrt -lutil -lexecinfo -lpthread -lgcc_s -lc -lm

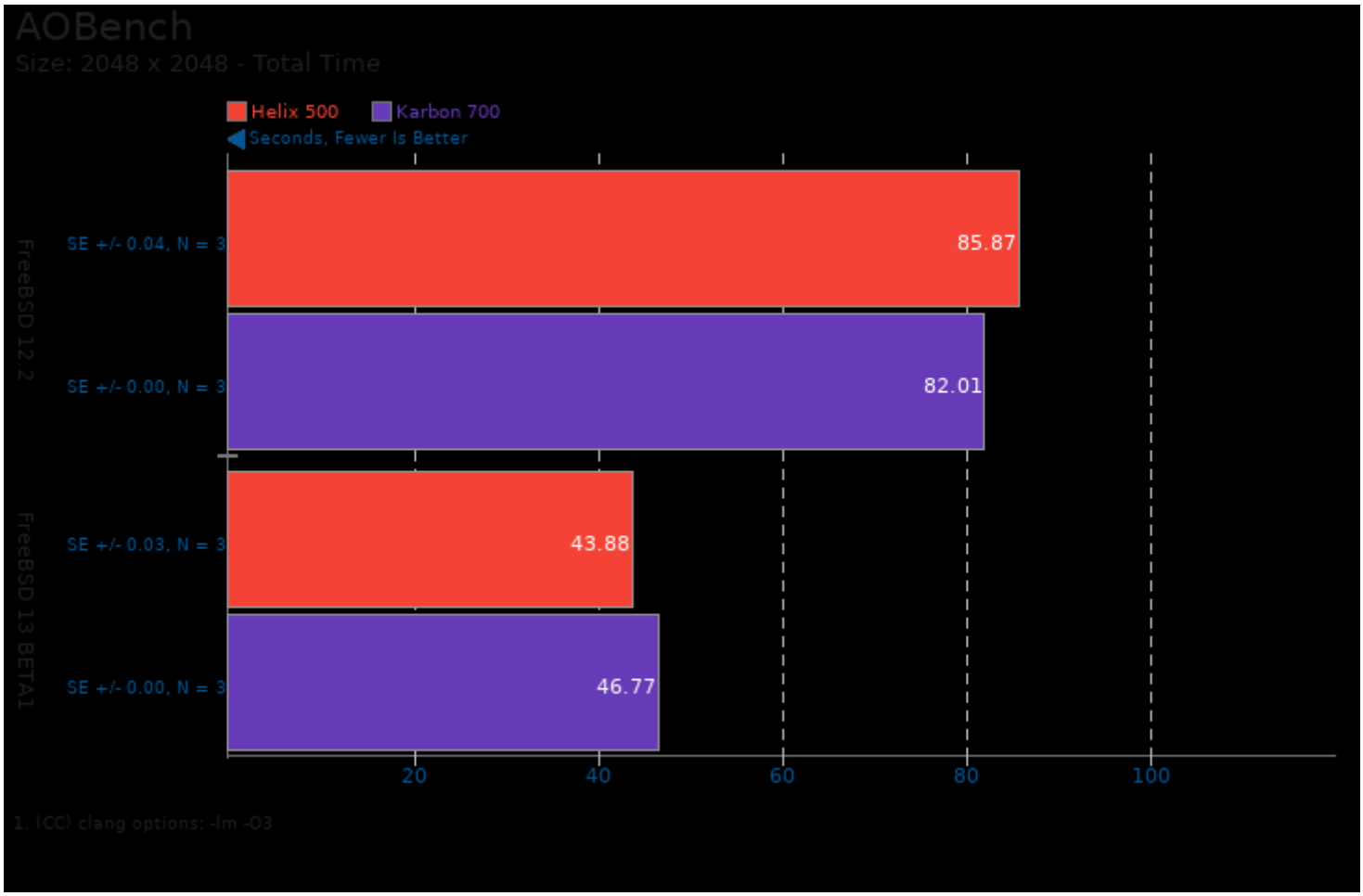
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

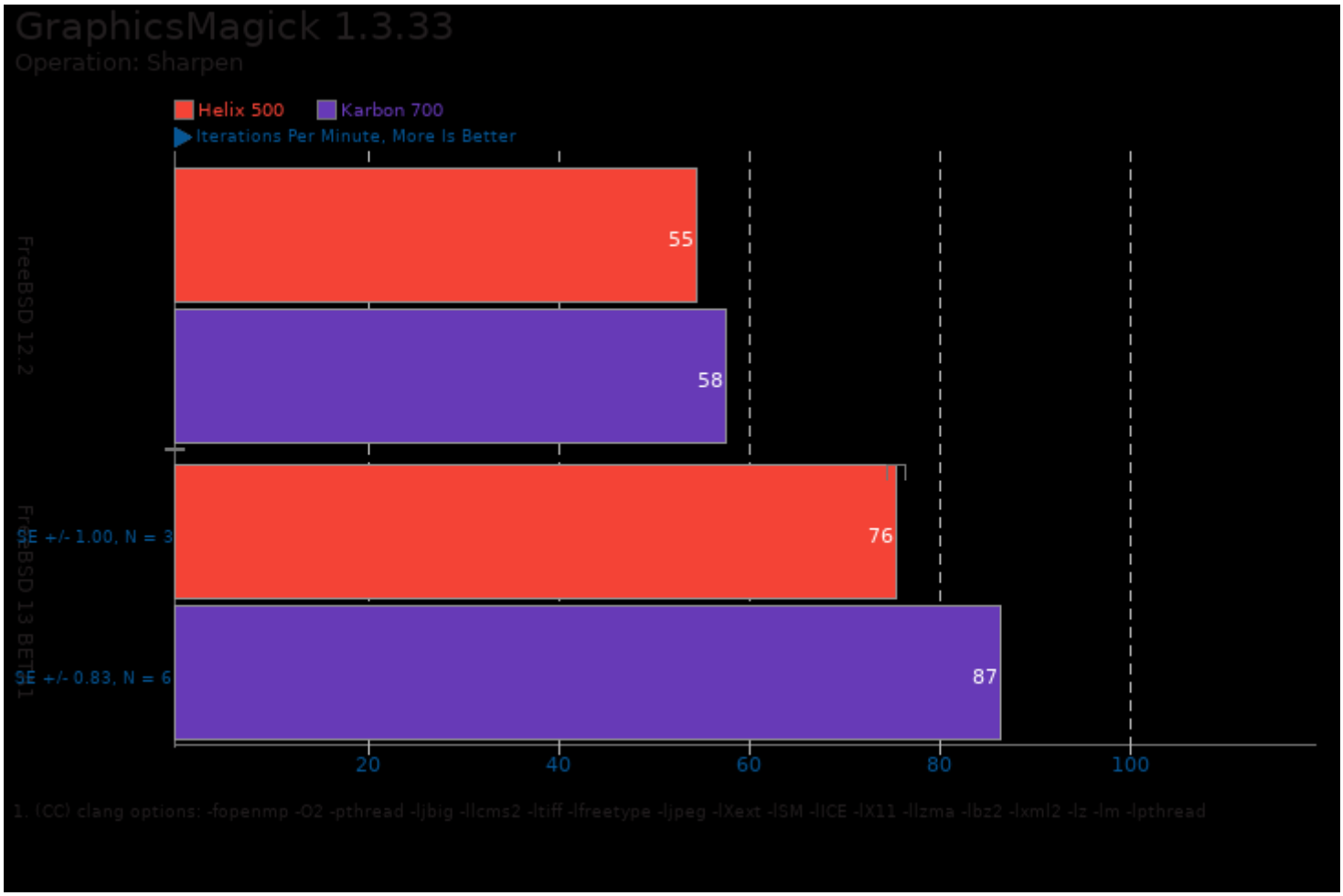


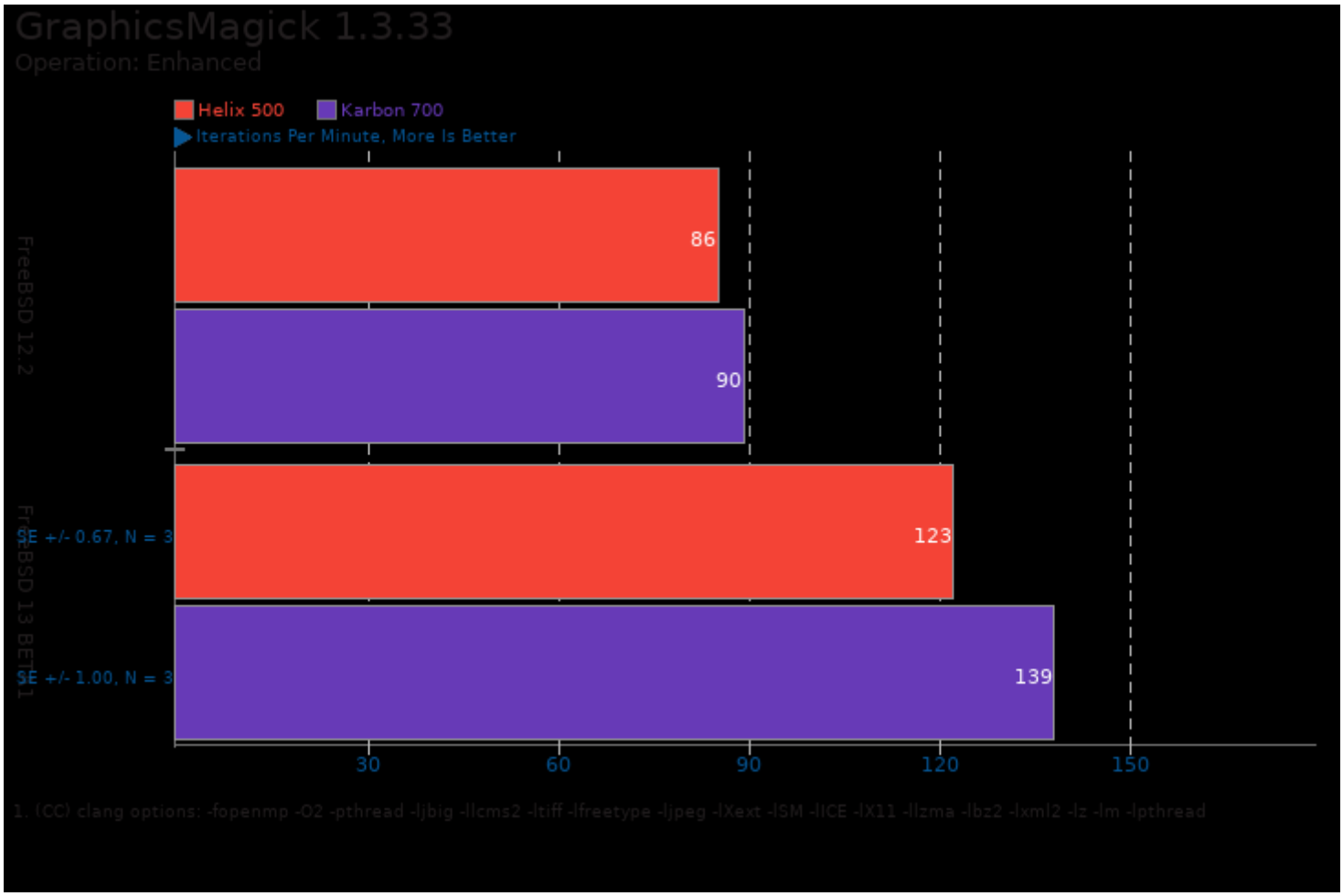
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks



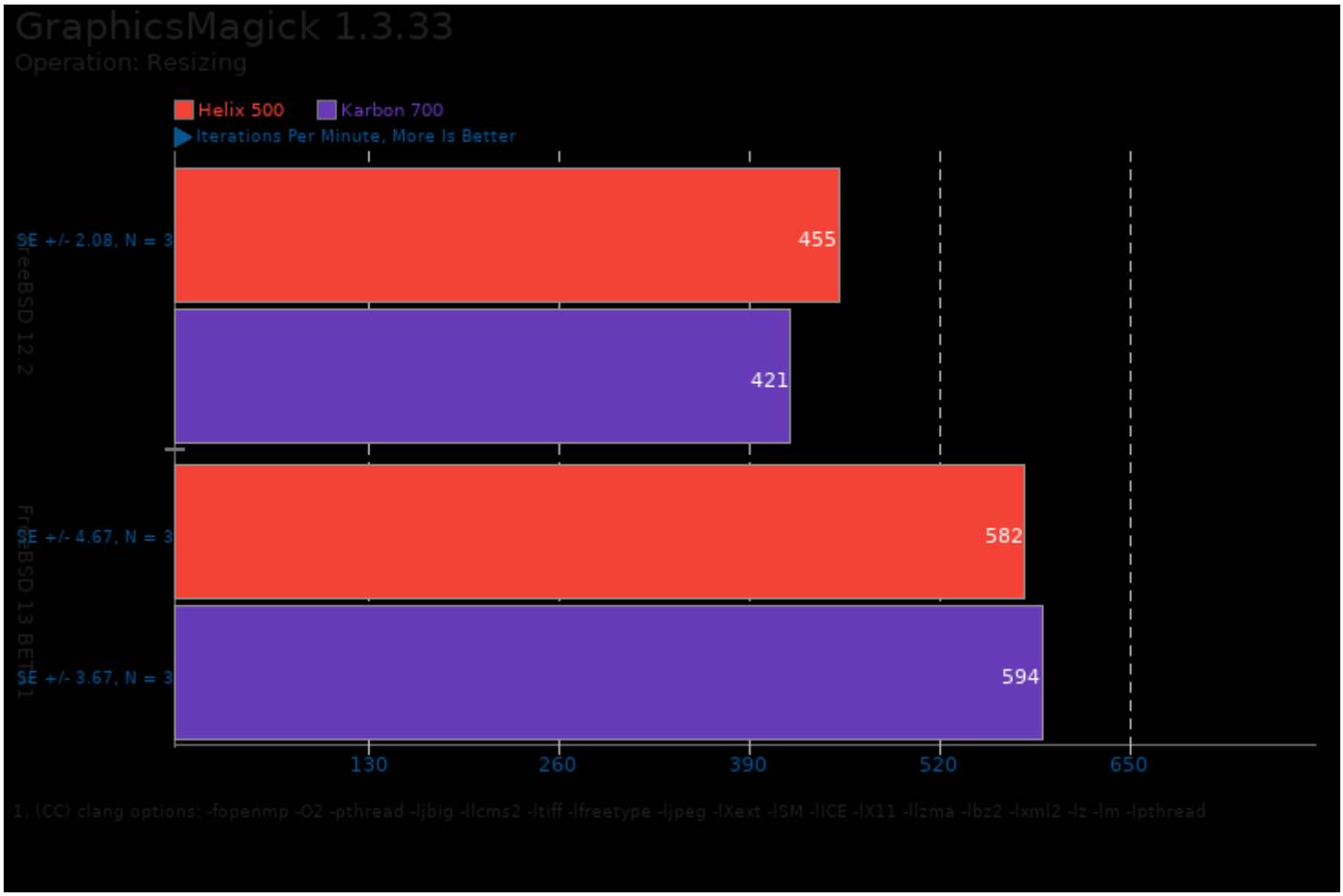
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

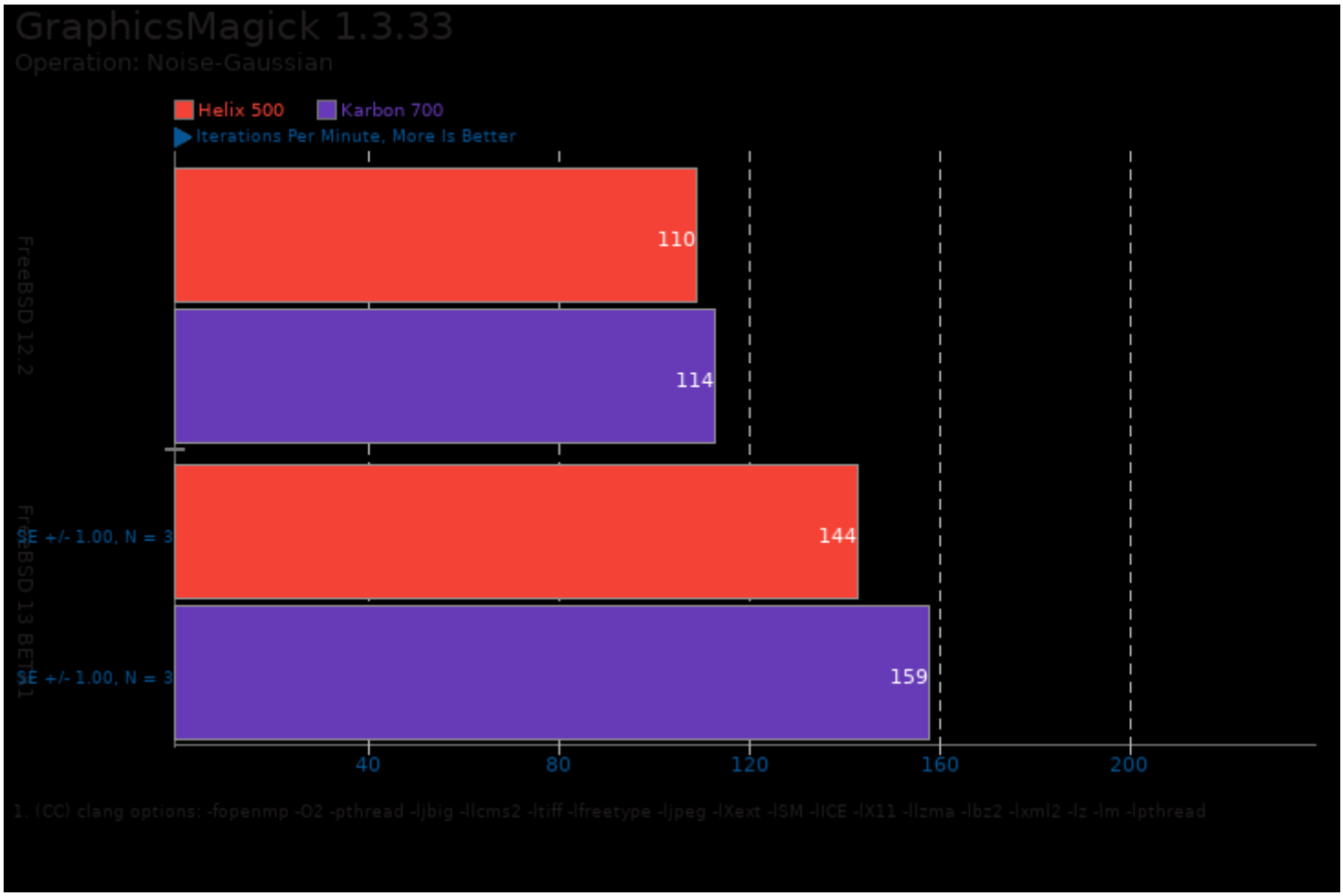


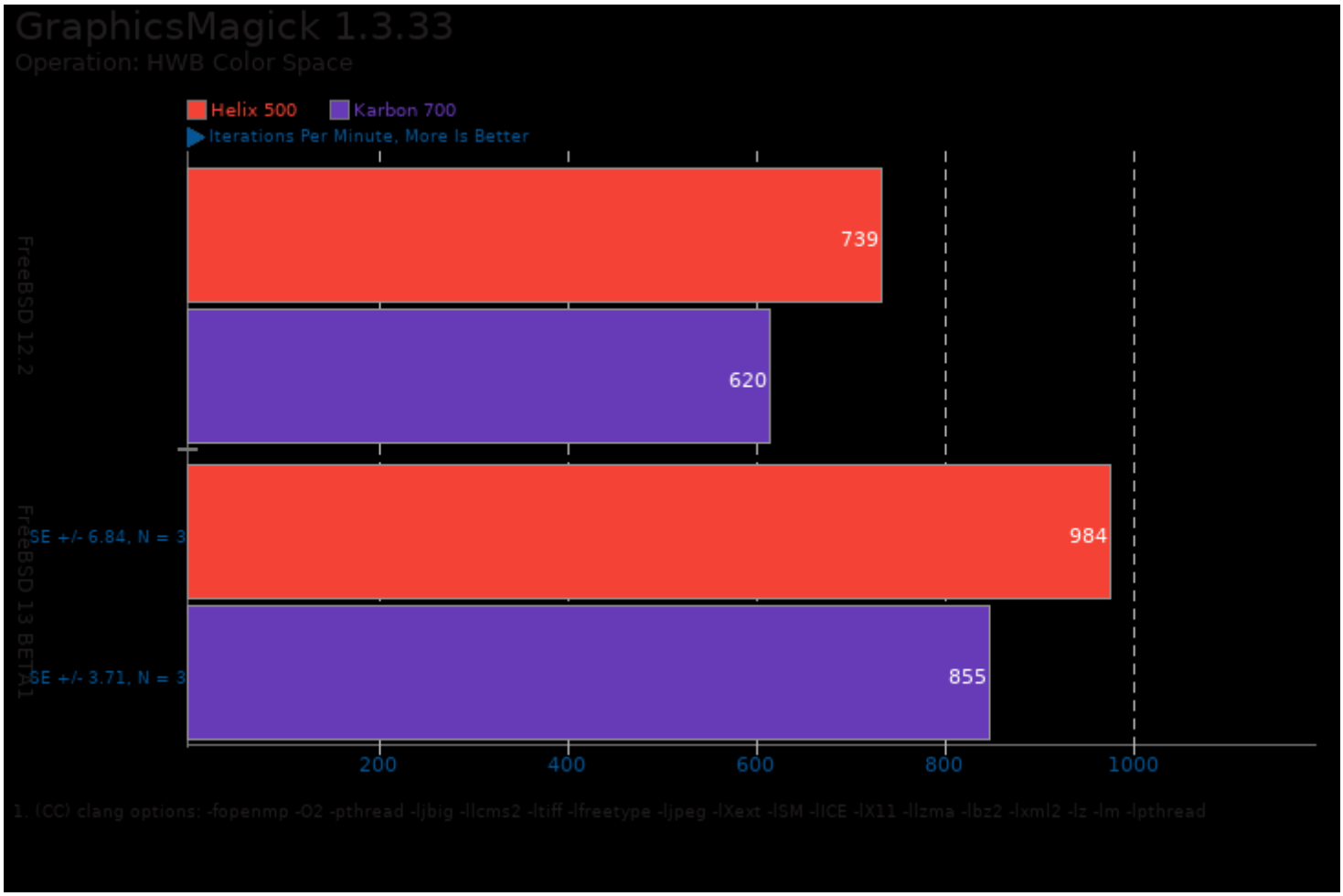

GraphicsMagick 1.3.33
Operation: Sharpen
Helix 500
Karbon 700
Iterations Per Minute, More Is Better
FreeBSD 12.2
FreeBSD 13 BETA1
55
58
76
87
SE +/- 1.00, N = 3
SE +/- 0.83, N = 6
20
40
60
80
100
1. (CC) clang options: -fopenmp -O2 -pthread -ljbig -llcms2 -ltiff -lfreetype -ljpeg -lXext -lSM -lICE -lX11 -llzma -lbz2 -lxml2 -lz -lm -lpthread

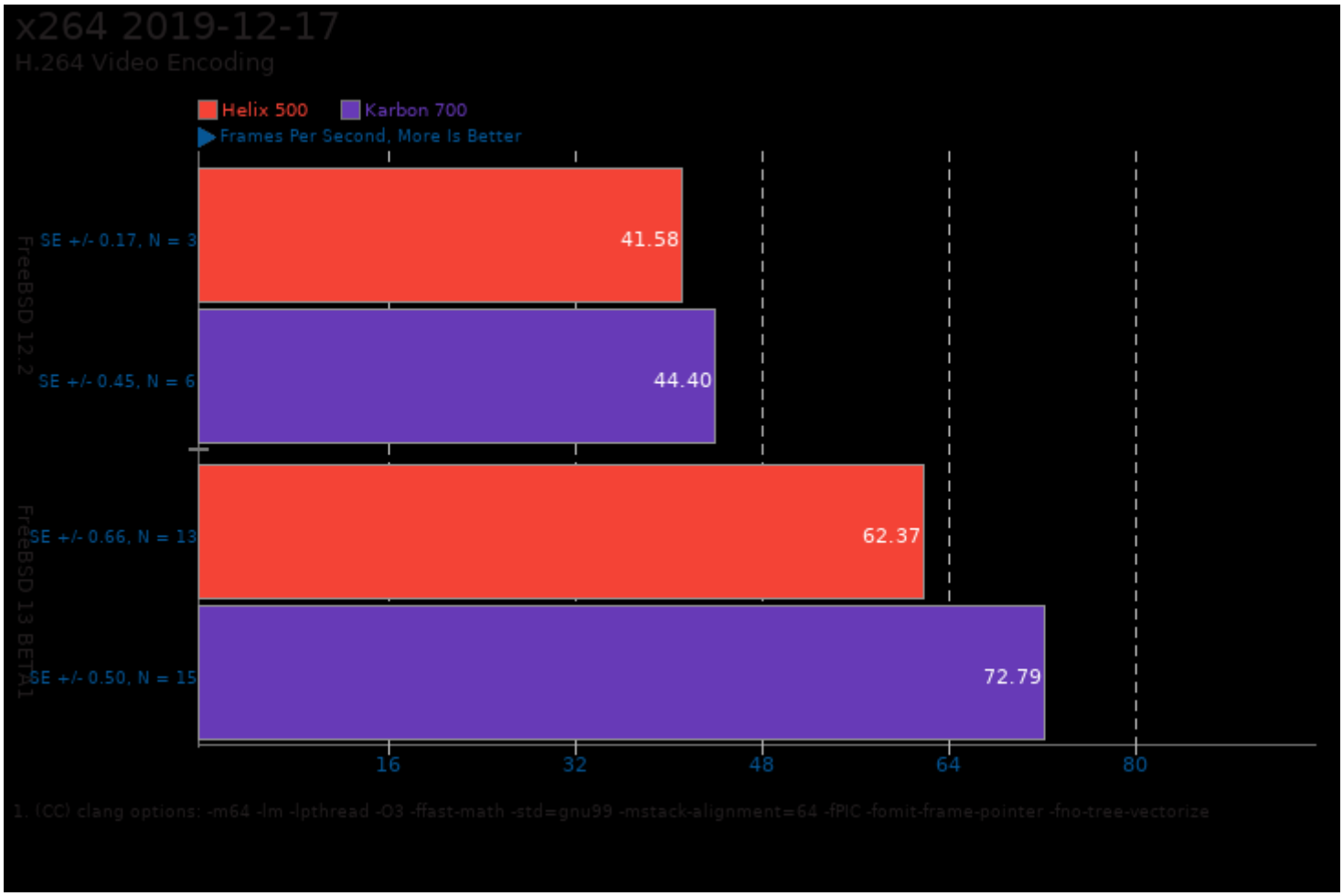

GraphicsMagick 1.3.33
Operation: Enhanced
Helix 500
Karbon 700
Iterations Per Minute, More Is Better
FreeBSD 12.2
FreeBSD 13 BETA
86
90
123
139
SE +/- 0.67, N = 3
SE +/- 1.00, N = 3
30
60
90
120
150
1. (CC) clang options: -fopenmp -O2 -pthread -ljbig -llcms2 -ltiff -lfreetype -ljpeg -lXext -lSM -lICE -lX11 -llzma -lbz2 -lxml2 -lz -lm -lpthread

FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

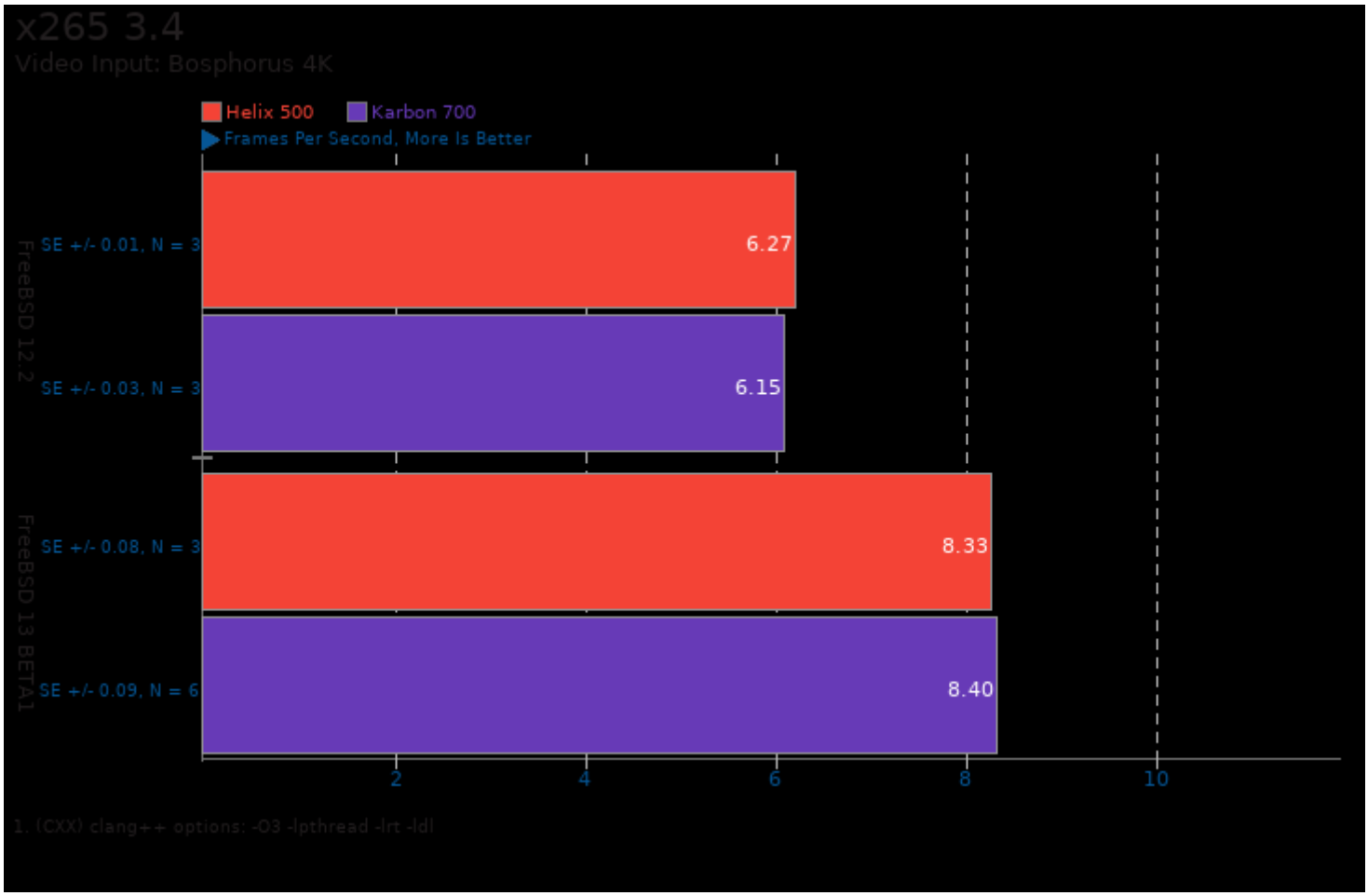



GraphicsMagick 1.3.33
Operation: Noise-Gaussian
Helix 500
Karbon 700
Iterations Per Minute, More Is Better
FreeBSD 12.2
FreeBSD 13 BETA
SE +/- 1.00, N = 3
SE +/- 1.00, N = 3
110
114
144
159
40
80
120
160
200
1. (CC) clang options: -fopenmp -O2 -pthread -ljbig -llcms2 -ltiff -lfreetype -ljpeg -lXext -lSM -lICE -lX11 -llzma -lbz2 -lxml2 -lz -lm -lpthread

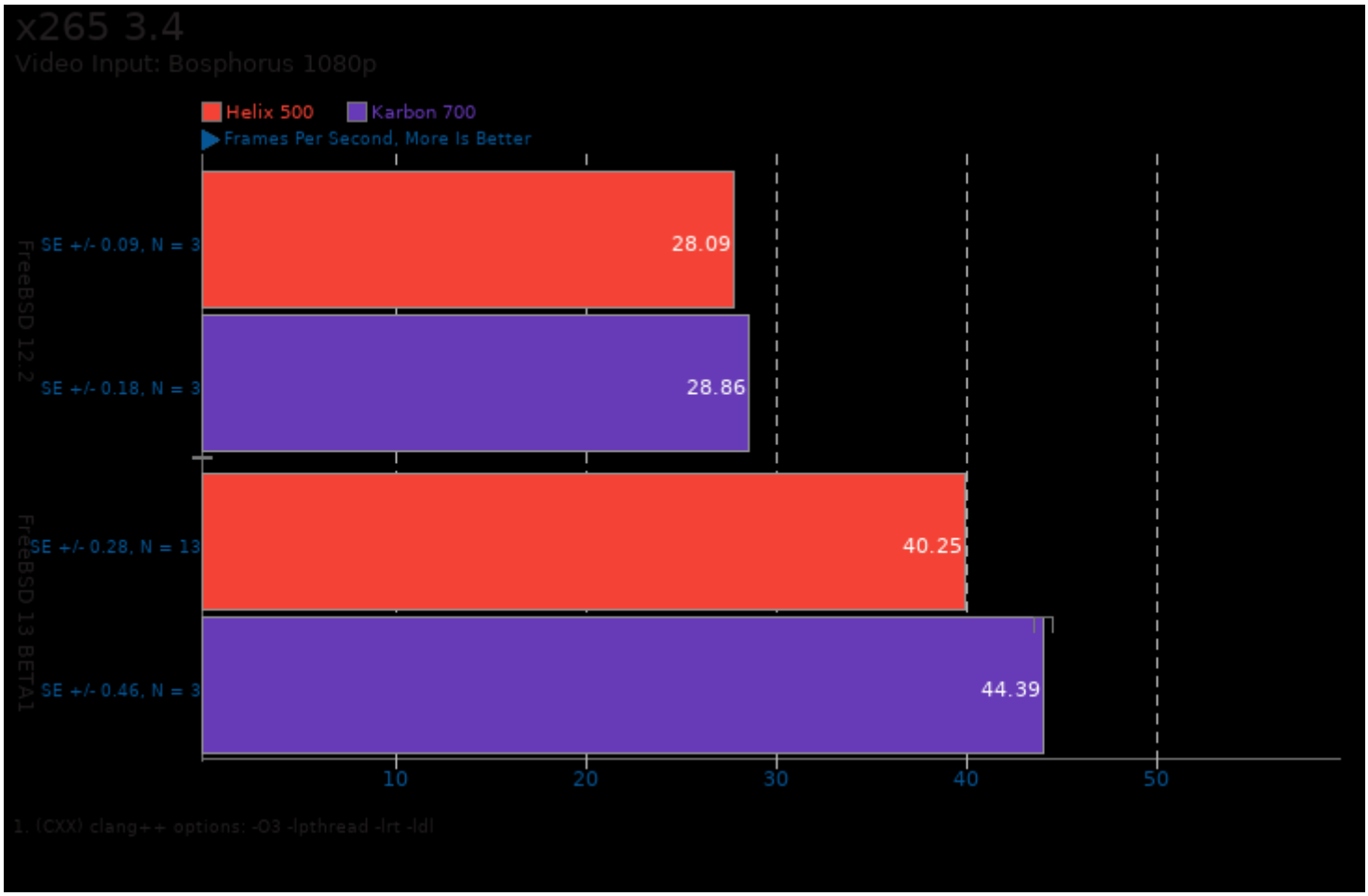

GraphicsMagick 1.3.33
Operation: HWB Color Space
Helix 500
Karbon 700
Iterations Per Minute, More Is Better
FreeBSD 12.2
739
620
FreeBSD 13 BETA1
SE +/- 6.84, N = 3
984
SE +/- 3.71, N = 3
855
200
400
600
800
1000
1. (CC) clang options: -fopenmp -O2 -pthread -ljbig -llcms2 -ltiff -lfreetype -ljpeg -lXext -lSM -lICE -lX11 -llzma -lbz2 -lxml2 -lz -lm -lpthread


x264 2019-12-17
H.264 Video Encoding
Helix 500
Karbon 700
Frames Per Second, More Is Better
FreeBSD 12.2
SE +/- 0.17, N = 3
41.58
SE +/- 0.45, N = 6
44.40
FreeBSD 13 BETA1
SE +/- 0.66, N = 13
62.37
SE +/- 0.50, N = 15
72.79
16
32
48
64
80
1. (CC) clang options: -m64 -lm -lpthread -O3 -ffast-math -std=gnu99 -mstack-alignment=64 -fPIC -fomit-frame-pointer -fno-tree-vectorize

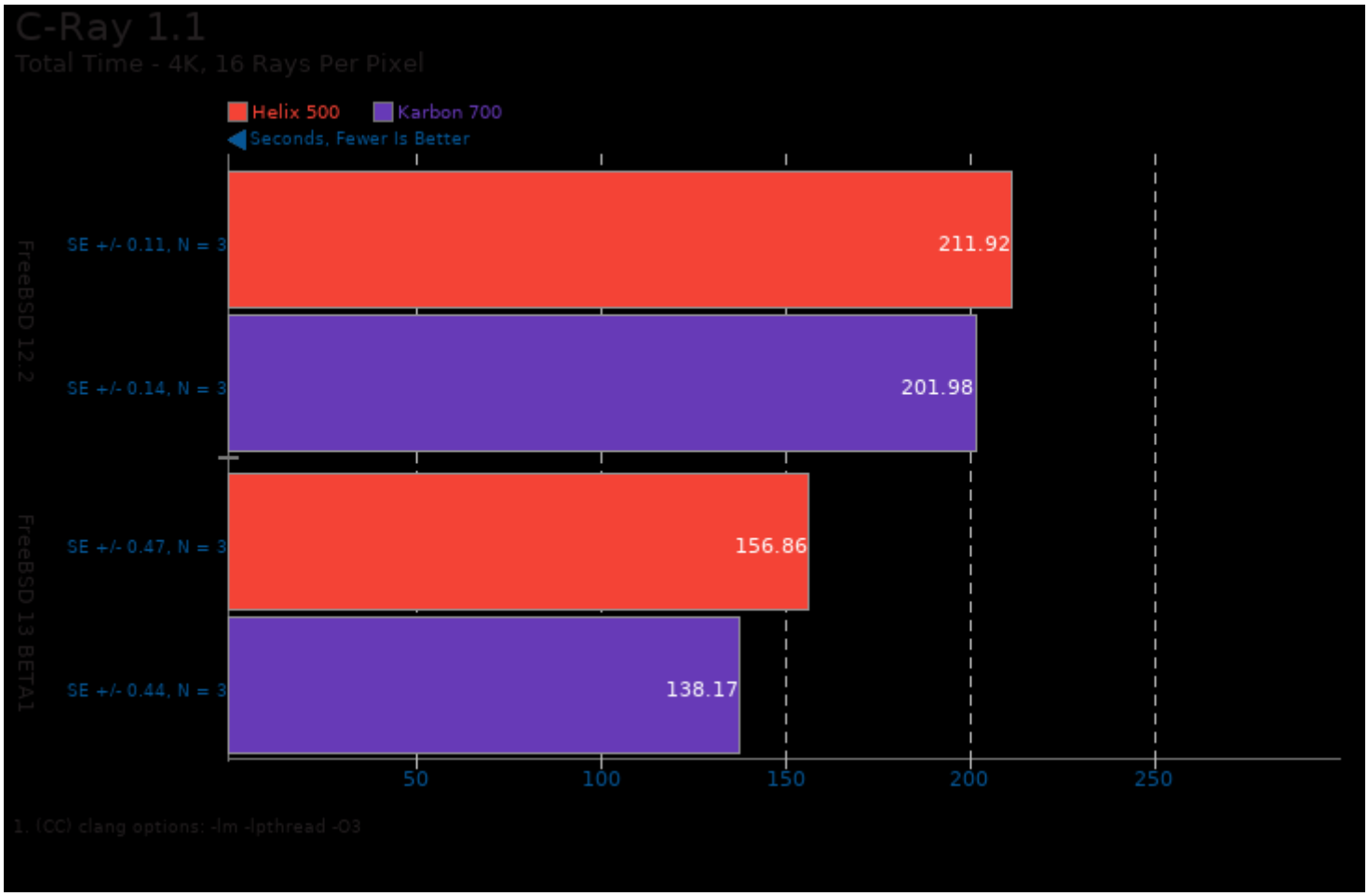
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

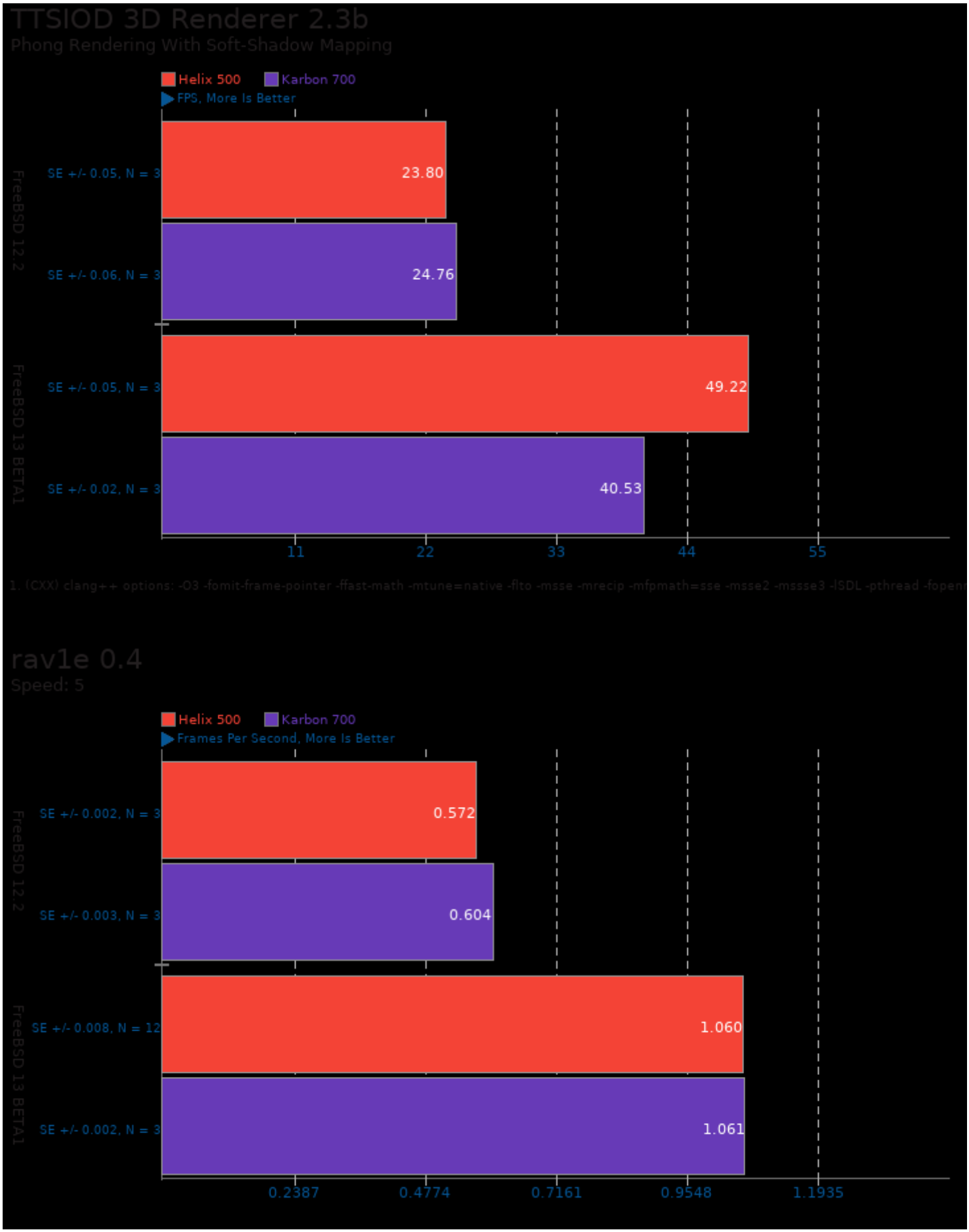


FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

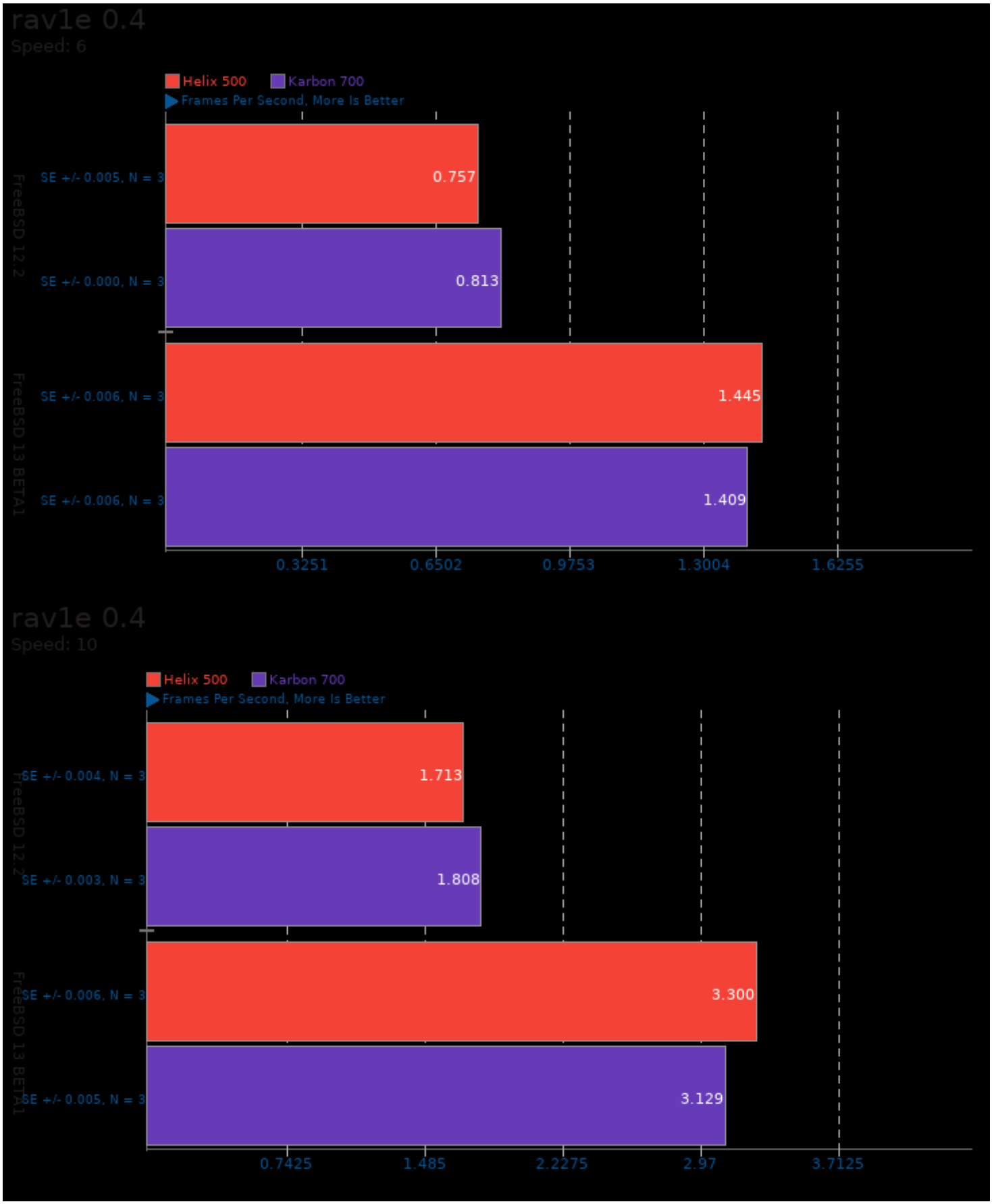


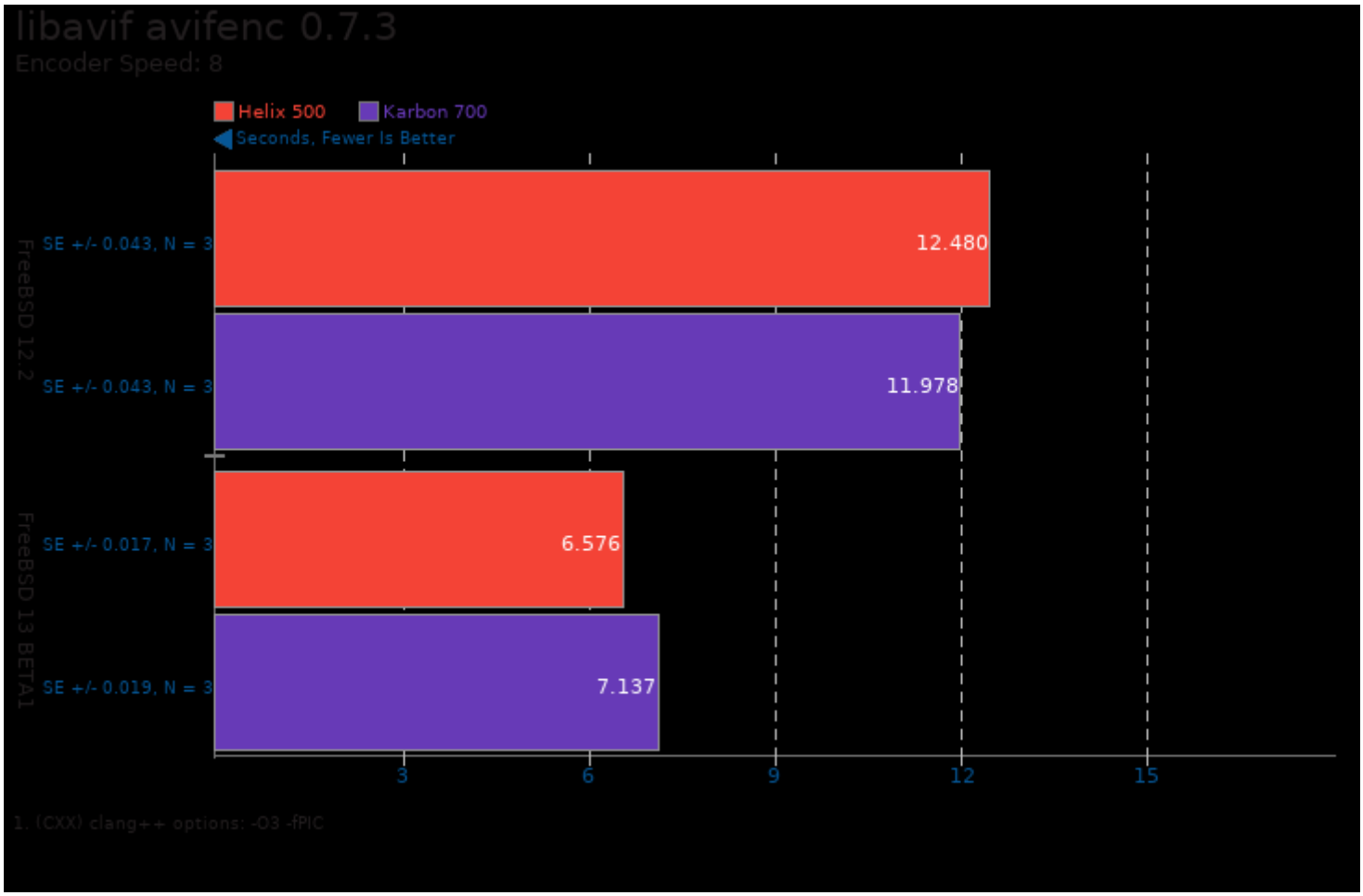
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks



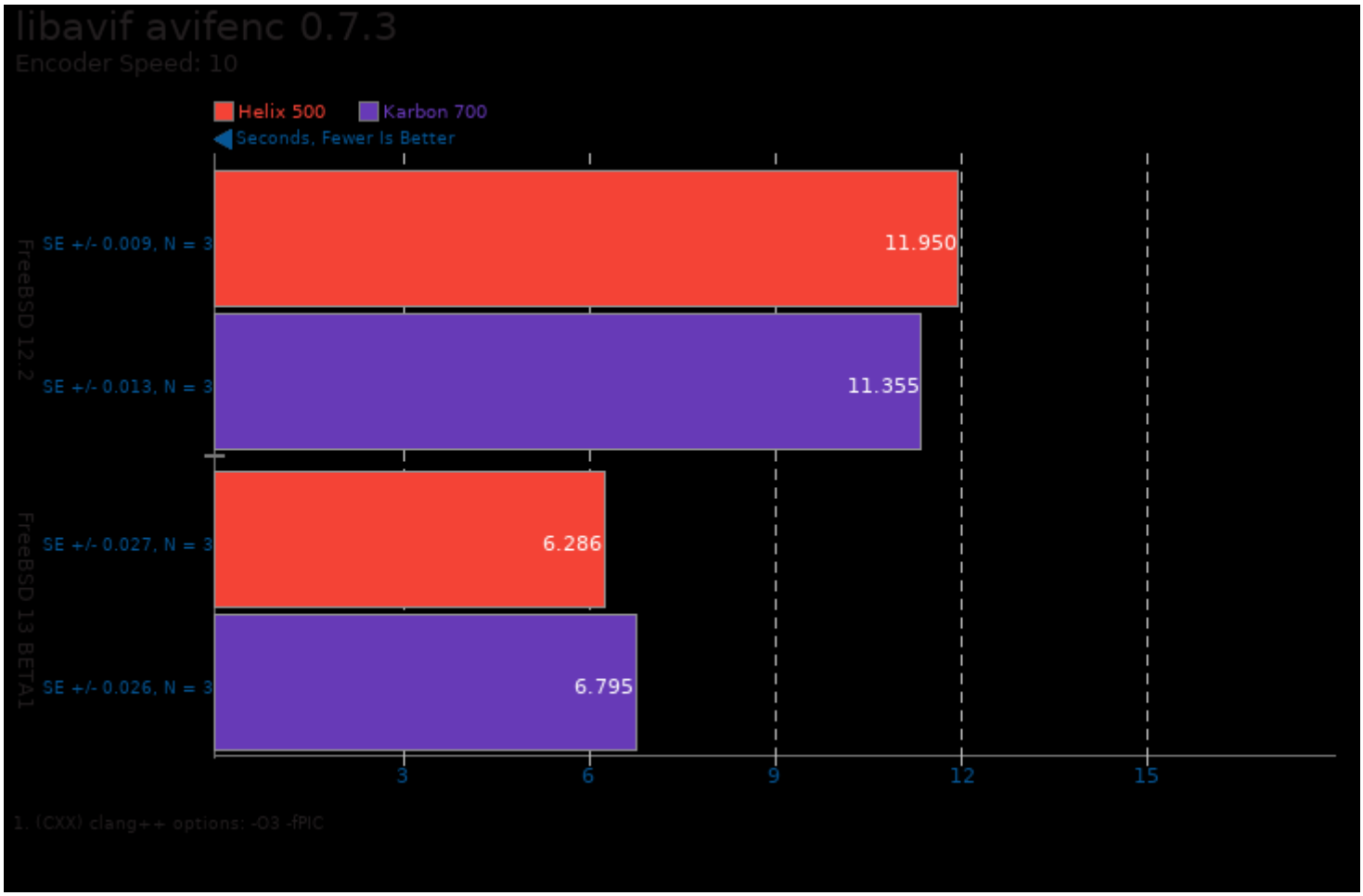

TTSIOD 3D Renderer 2.3b
Phong Rendering With Soft-Shadow Mapping
Helix 500
Karbon 700
FPS, More Is Better
FreeBSD 12.2
SE +/- 0.05, N = 3
23.80
SE +/- 0.06, N = 3
24.76
FreeBSD 13 BETA1
SE +/- 0.05, N = 3
49.22
SE +/- 0.02, N = 3
40.53
11
22
33
44
55
1. (CXX) clang++ options: -O3 -fomit-frame-pointer -ffast-math -mtune=native -flto -msse -mrecip -mfpmath=sse -msse2 -mssse3 -lSDL -pthread -fopen
rav1e 0.4
Speed: 5
Helix 500
Karbon 700
Frames Per Second, More Is Better
FreeBSD 12.2
SE +/- 0.002, N = 3
0.572
SE +/- 0.003, N = 3
0.604
FreeBSD 13 BETA1
SE +/- 0.008, N = 12
1.060
SE +/- 0.002, N = 3
1.061
0.2387
0.4774
0.7161
0.9548
1.1935

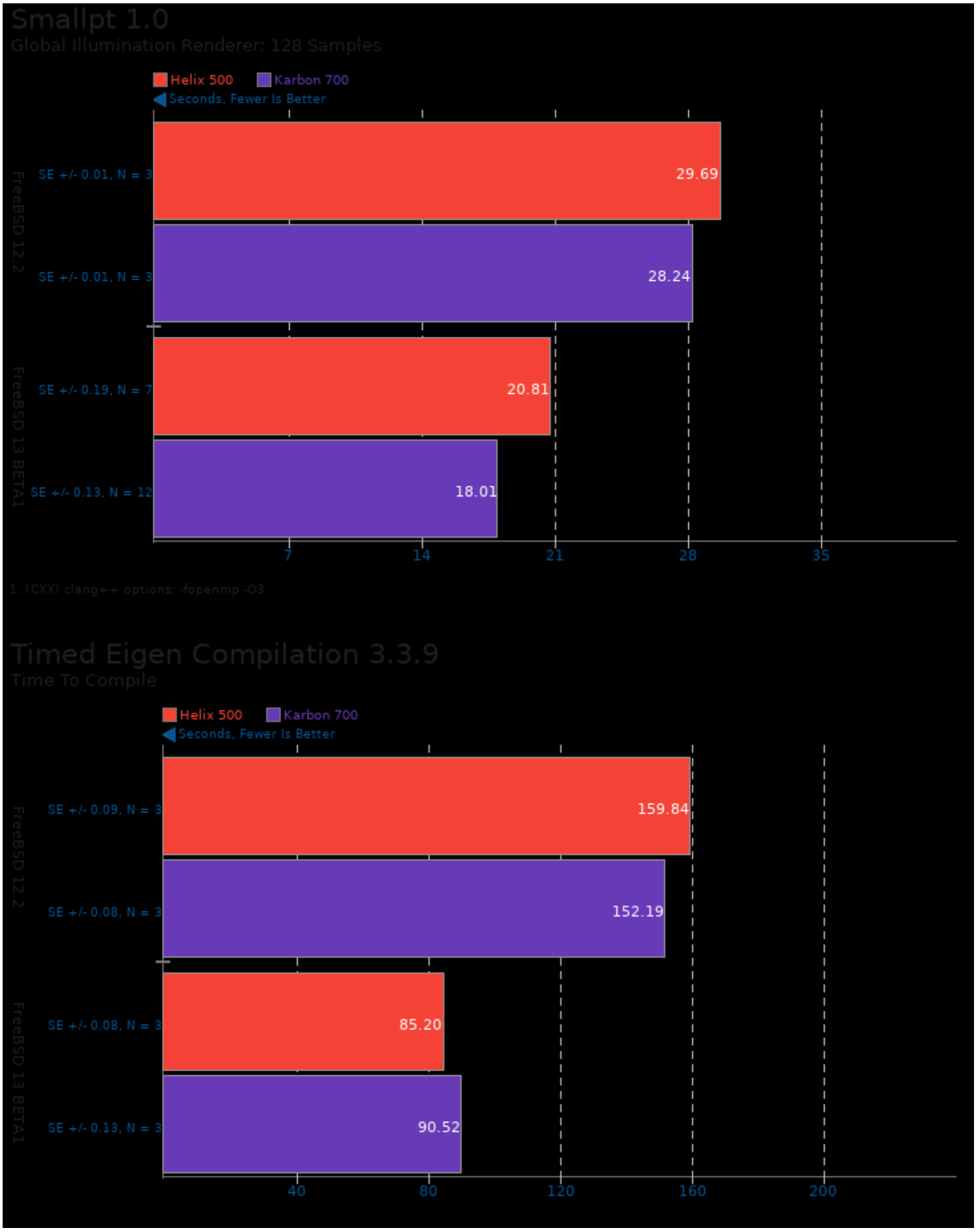
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

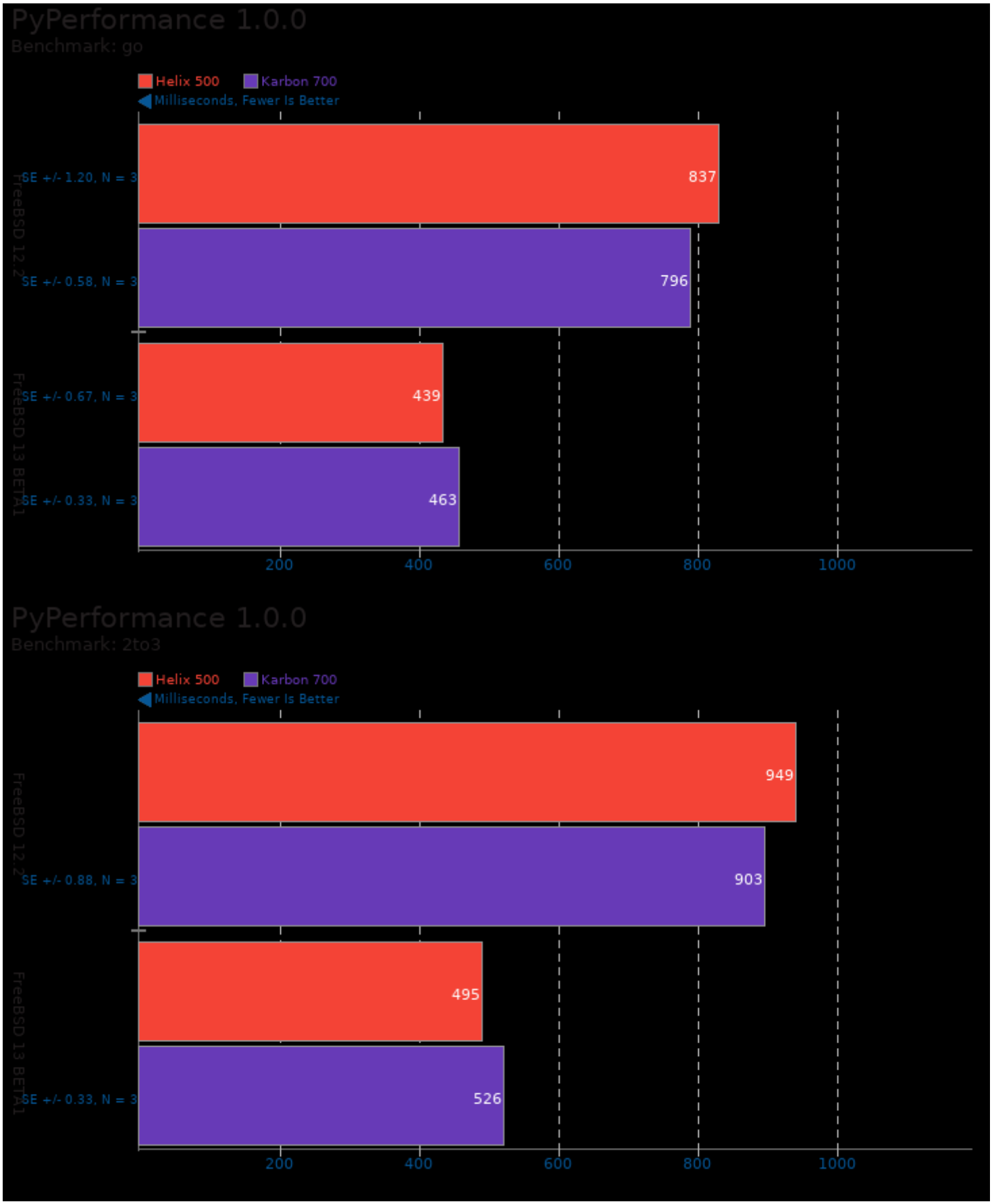


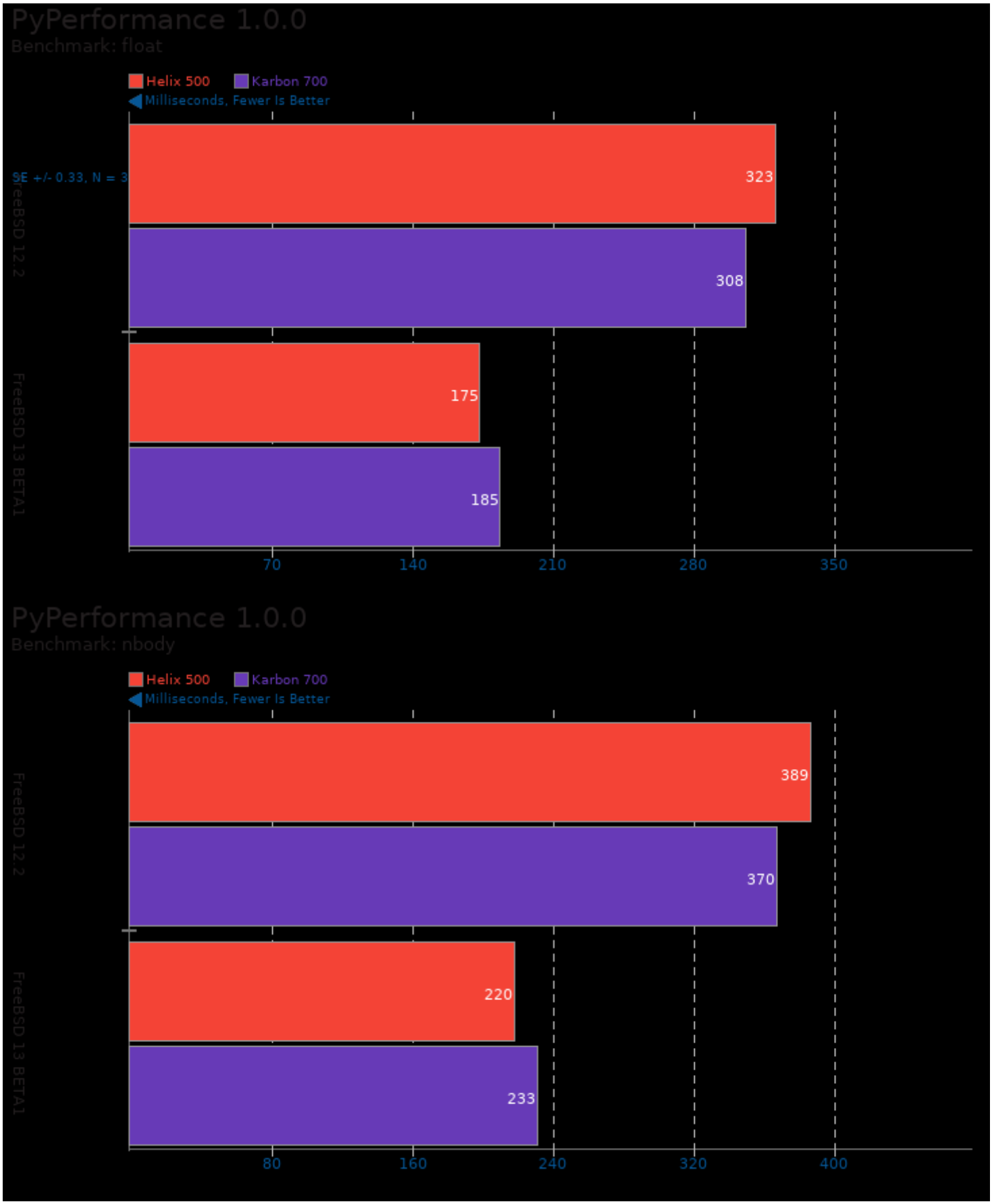

libavif avifenc 0.7.3
Encoder Speed: 8
Helix 500
Karbon 700
Seconds, Fewer Is Better
FreeBSD 12.2
SE +/- 0.043, N = 3
12.480
SE +/- 0.043, N = 3
11.978
FreeBSD 13 BETA1
SE +/- 0.017, N = 3
6.576
SE +/- 0.019, N = 3
7.137
3
6
9
12
15
1. (CXX) clang++ options: -O3 -fPIC

FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

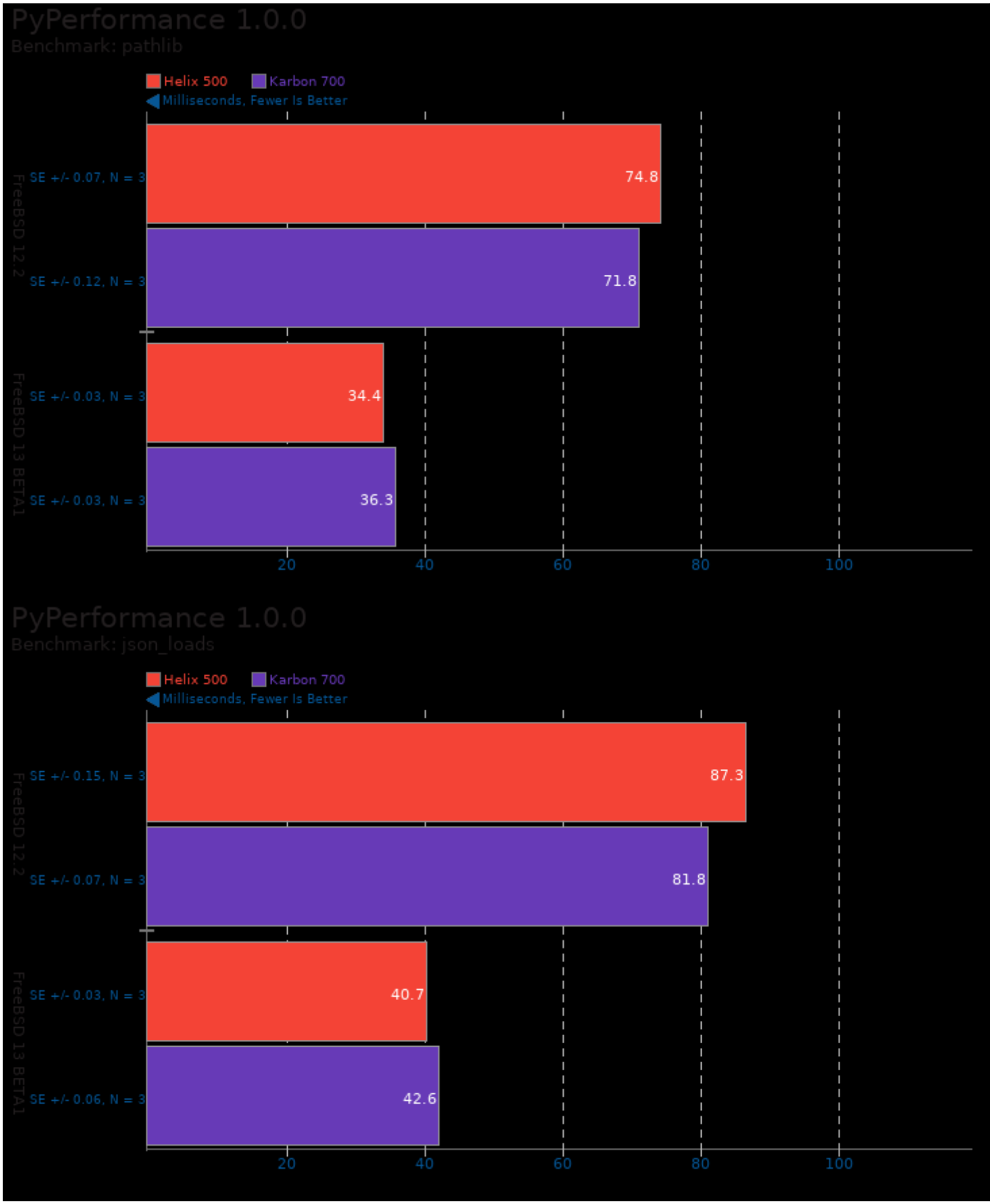



Smallpt 1.0
Global Illumination Renderer; 128 Samples
Helix 500
Karbon 700
Seconds, Fewer Is Better
FreeBSD 12.2
FreeBSD 13 BETA1
SE +/- 0.01, N = 3
29.69
SE +/- 0.01, N = 3
28.24
SE +/- 0.19, N = 7
20.81
SE +/- 0.13, N = 12
18.01
7
14
21
28
35
1. (CXX) clang++ options: -fopenmp -O3
Timed Eigen Compilation 3.3.9
Time To Compile
Helix 500
Karbon 700
Seconds, Fewer Is Better
FreeBSD 12.2
FreeBSD 13 BETA1
SE +/- 0.09, N = 3
159.84
SE +/- 0.08, N = 3
152.19
SE +/- 0.08, N = 3
85.20
SE +/- 0.13, N = 3
90.52
40
80
120
160
200

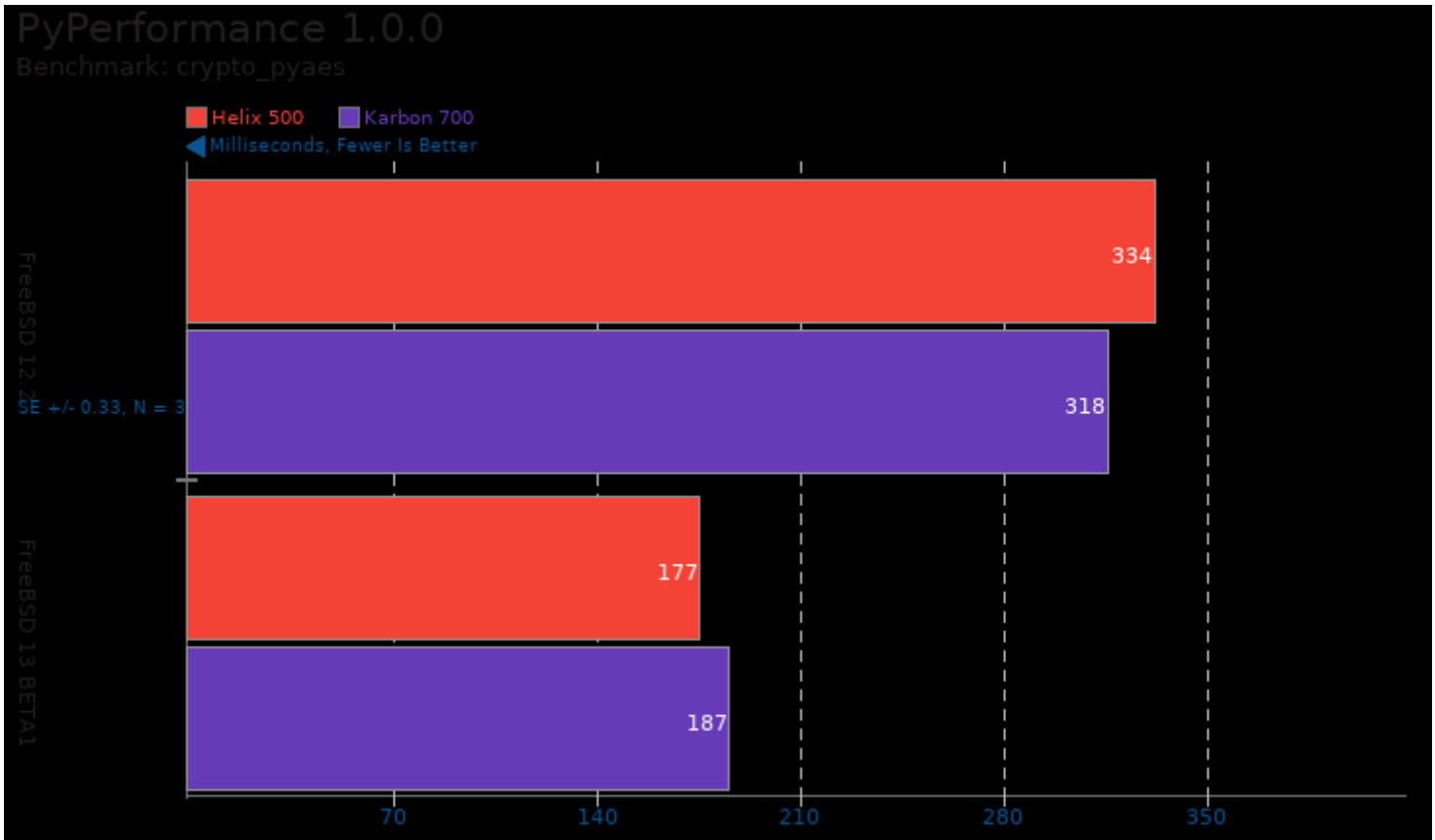

PyPerformance 1.0.0
Benchmark: go
Helix 500
Karbon 700
Milliseconds, Fewer Is Better
FreeBSD 12.2
FreeBSD 13 BETA1
SE +/- 1.20, N = 3
837
SE +/- 0.58, N = 3
796
SE +/- 0.67, N = 3
439
SE +/- 0.33, N = 3
463
200
400
600
800
1000
PyPerformance 1.0.0
Benchmark: 2to3
Helix 500
Karbon 700
Milliseconds, Fewer Is Better
FreeBSD 12.2
FreeBSD 13 BETA1
SE +/- 0.88, N = 3
949
903
SE +/- 0.33, N = 3
495
526
200
400
600
800
1000

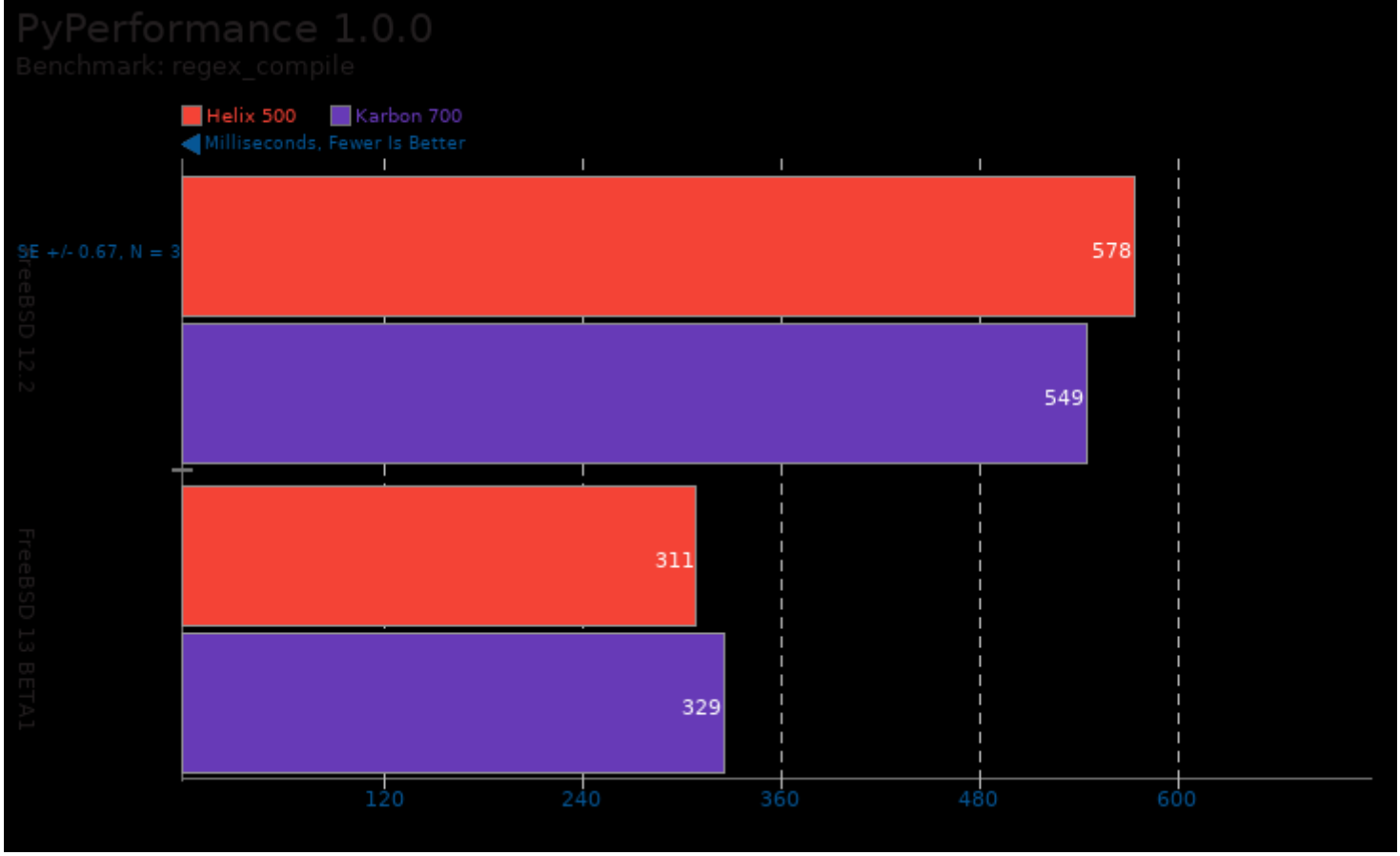

PyPerformance 1.0.0
Benchmark: float
Helix 500
Karbon 700
Milliseconds, Fewer Is Better
SE +/- 0.33, N = 3
FreeBSD 12.2
FreeBSD 13 BETA1
323
308
175
185
70
140
210
280
350
PyPerformance 1.0.0
Benchmark: nbody
Helix 500
Karbon 700
Milliseconds, Fewer Is Better
FreeBSD 12.2
FreeBSD 13 BETA1
389
370
220
233
80
160
240
320
400

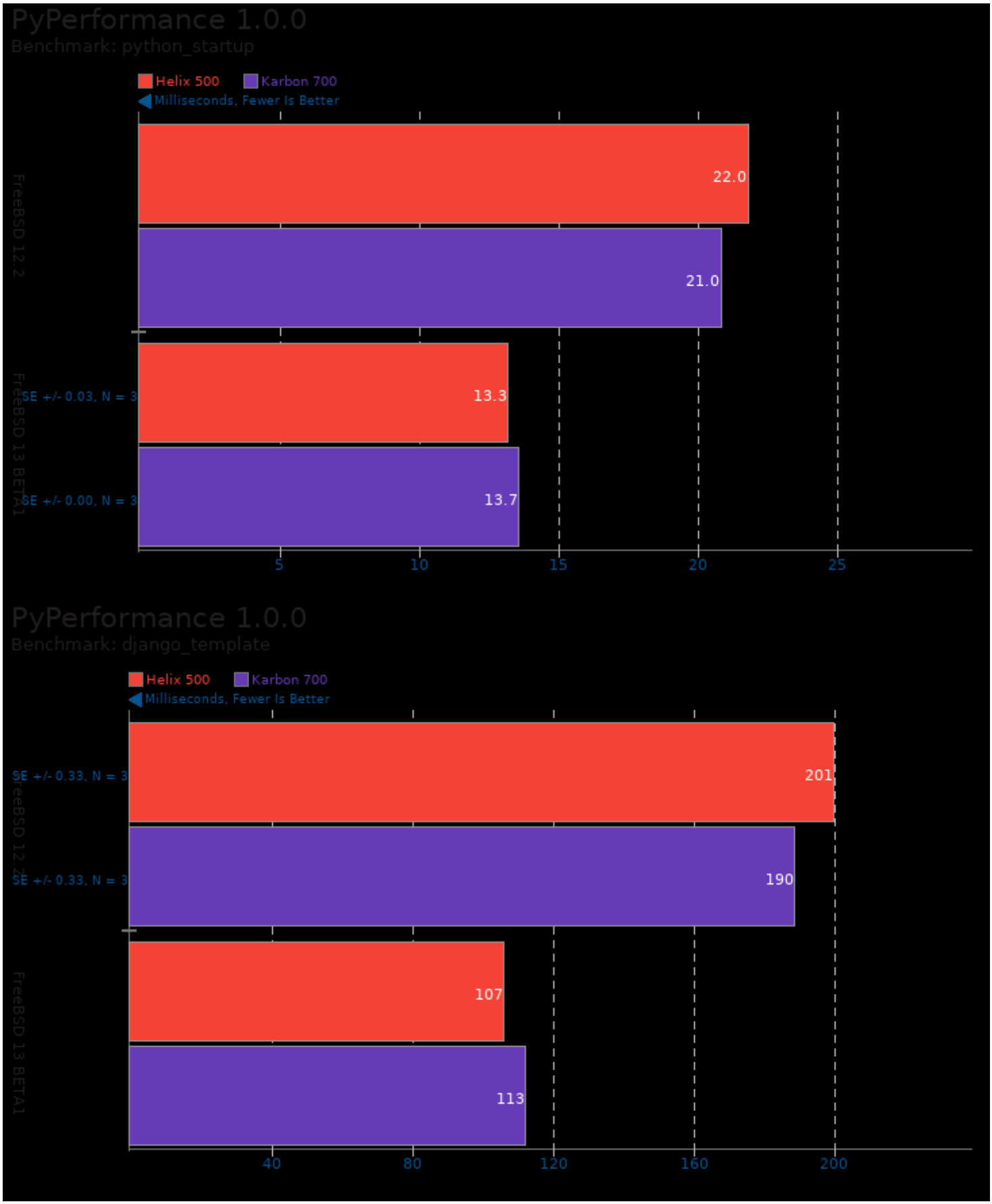
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

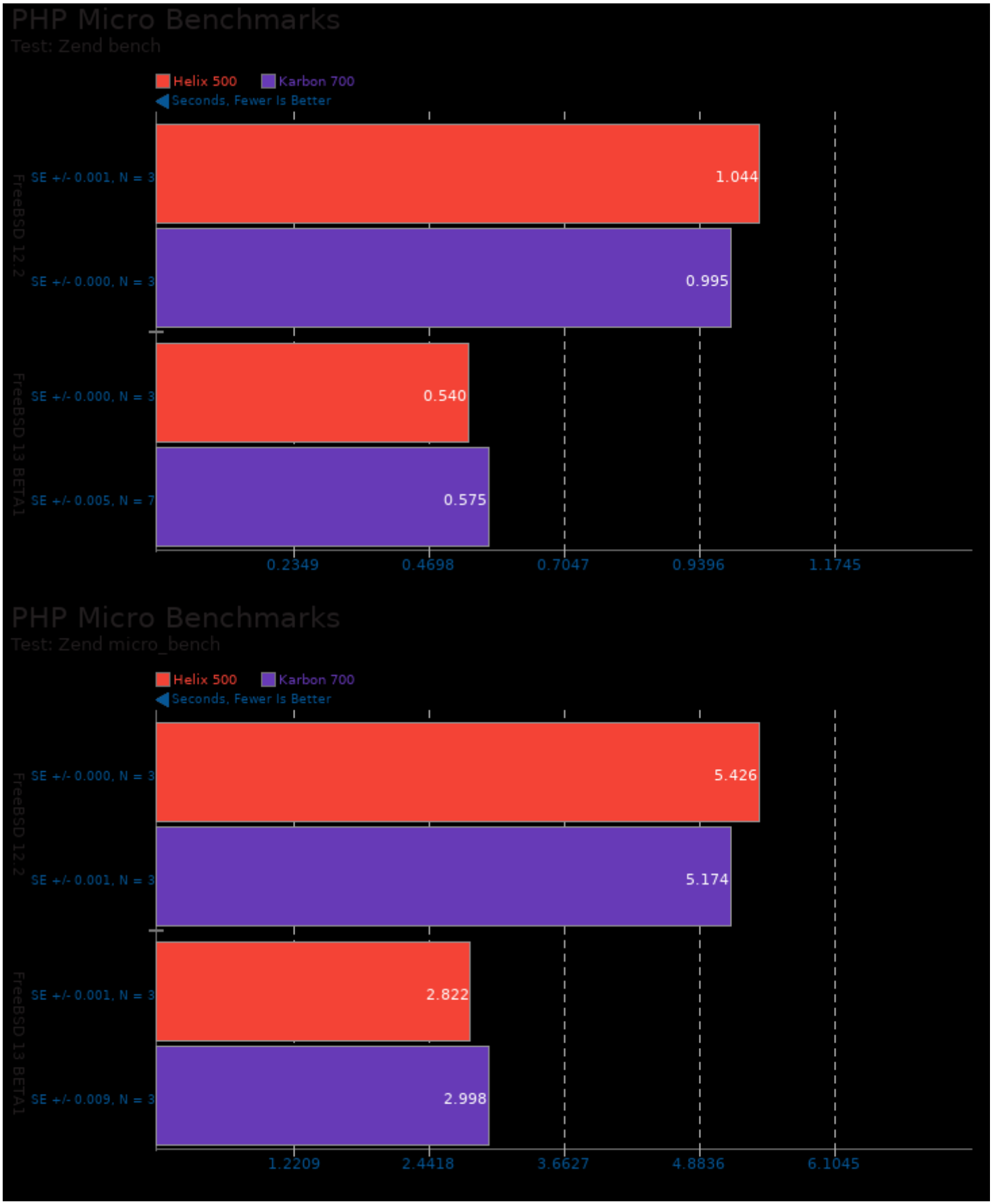


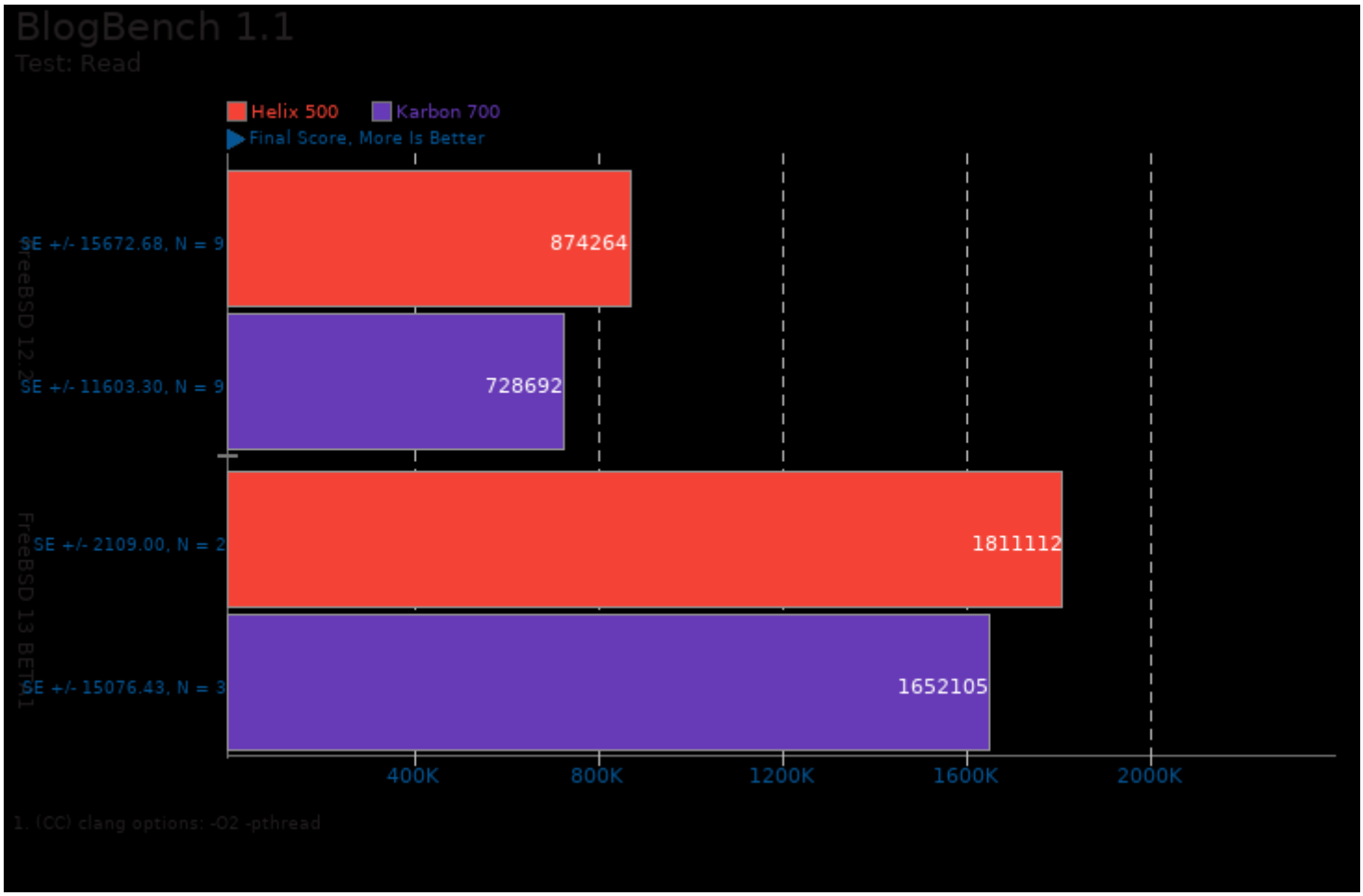
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks



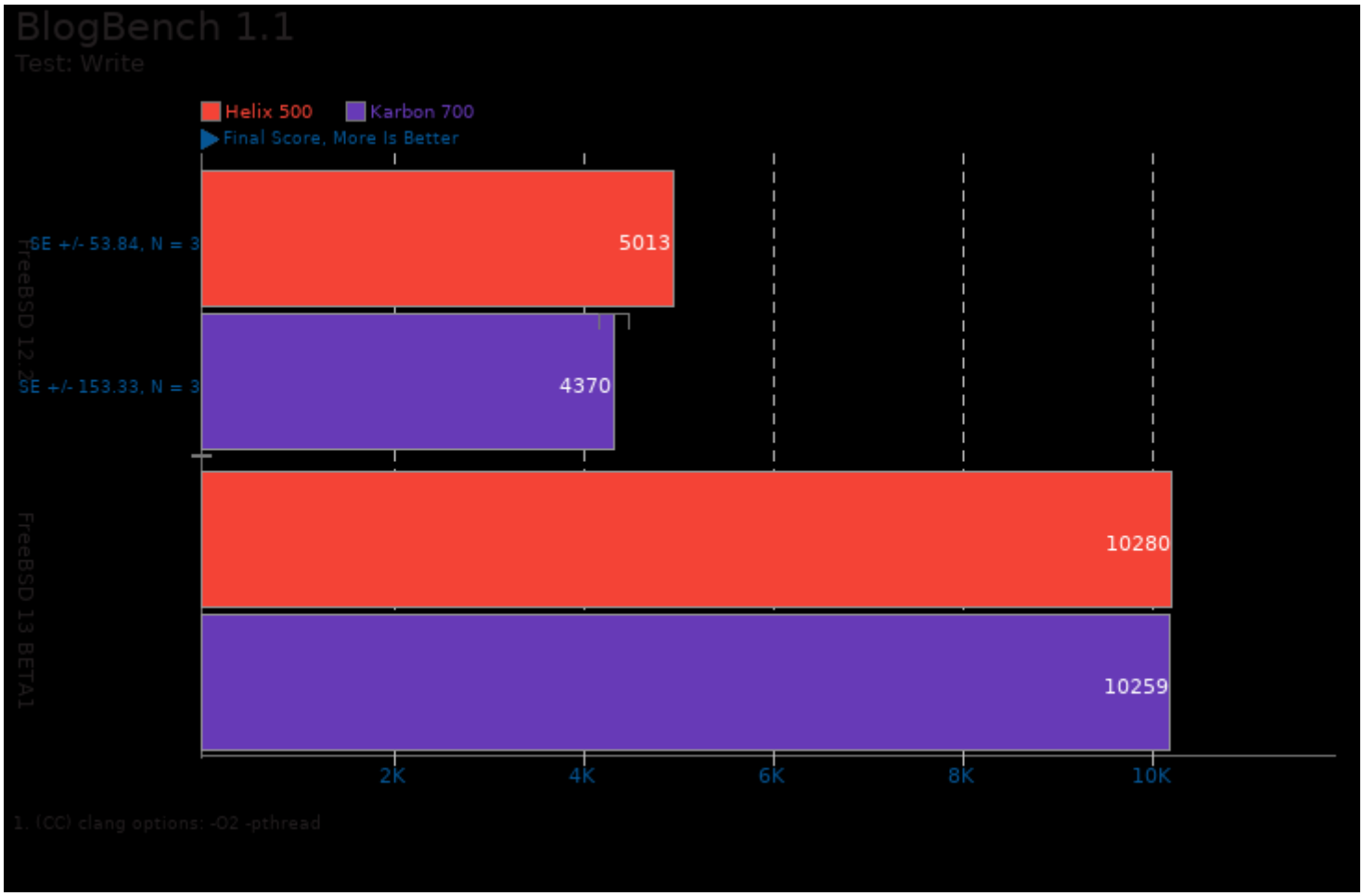



PyPerformance 1.0.0
Benchmark: python_startup
Helix 500
Karbon 700
Milliseconds, Fewer Is Better
FreeBSD 12.2
22.0
21.0
FreeBSD 13 BETA1
SE +/- 0.03, N = 3
13.3
SE +/- 0.00, N = 3
13.7
5
10
15
20
25
PyPerformance 1.0.0
Benchmark: django_template
Helix 500
Karbon 700
Milliseconds, Fewer Is Better
SE +/- 0.33, N = 3
201
SE +/- 0.33, N = 3
190
107
113
40
80
120
160
200

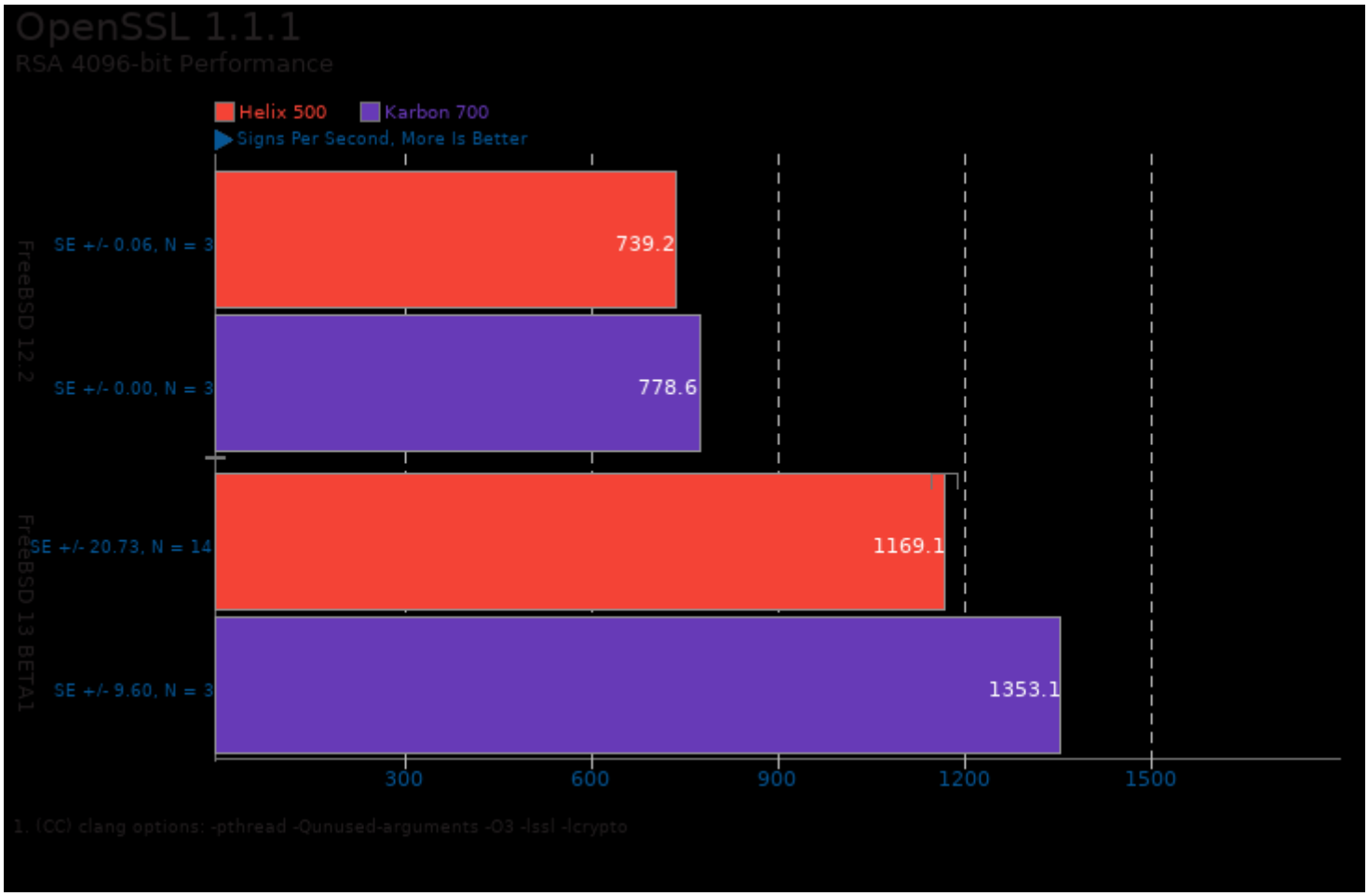

PHP Micro Benchmarks
Test: Zend bench
Helix 500
Karbon 700
Seconds, Fewer Is Better
FreeBSD 12.2
SE +/- 0.001, N = 3
1.044
SE +/- 0.000, N = 3
0.995
FreeBSD 13 BETA1
SE +/- 0.000, N = 3
0.540
SE +/- 0.005, N = 7
0.575
0.2349
0.4698
0.7047
0.9396
1.1745
PHP Micro Benchmarks
Test: Zend micro_bench
Helix 500
Karbon 700
Seconds, Fewer Is Better
FreeBSD 12.2
SE +/- 0.000, N = 3
5.426
SE +/- 0.001, N = 3
5.174
FreeBSD 13 BETA1
SE +/- 0.001, N = 3
2.822
SE +/- 0.009, N = 3
2.998
1.2209
2.4418
3.6627
4.8836
6.1045


BlogBench 1.1
Test: Read
Helix 500
Karbon 700
Final Score, More Is Better
SE +/- 15672.68, N = 9
874264
SE +/- 11603.30, N = 9
728692
SE +/- 2109.00, N = 2
1811112
SE +/- 15076.43, N = 3
1652105
400K
800K
1200K
1600K
2000K
1. (CC) clang options: -O2 -pthread

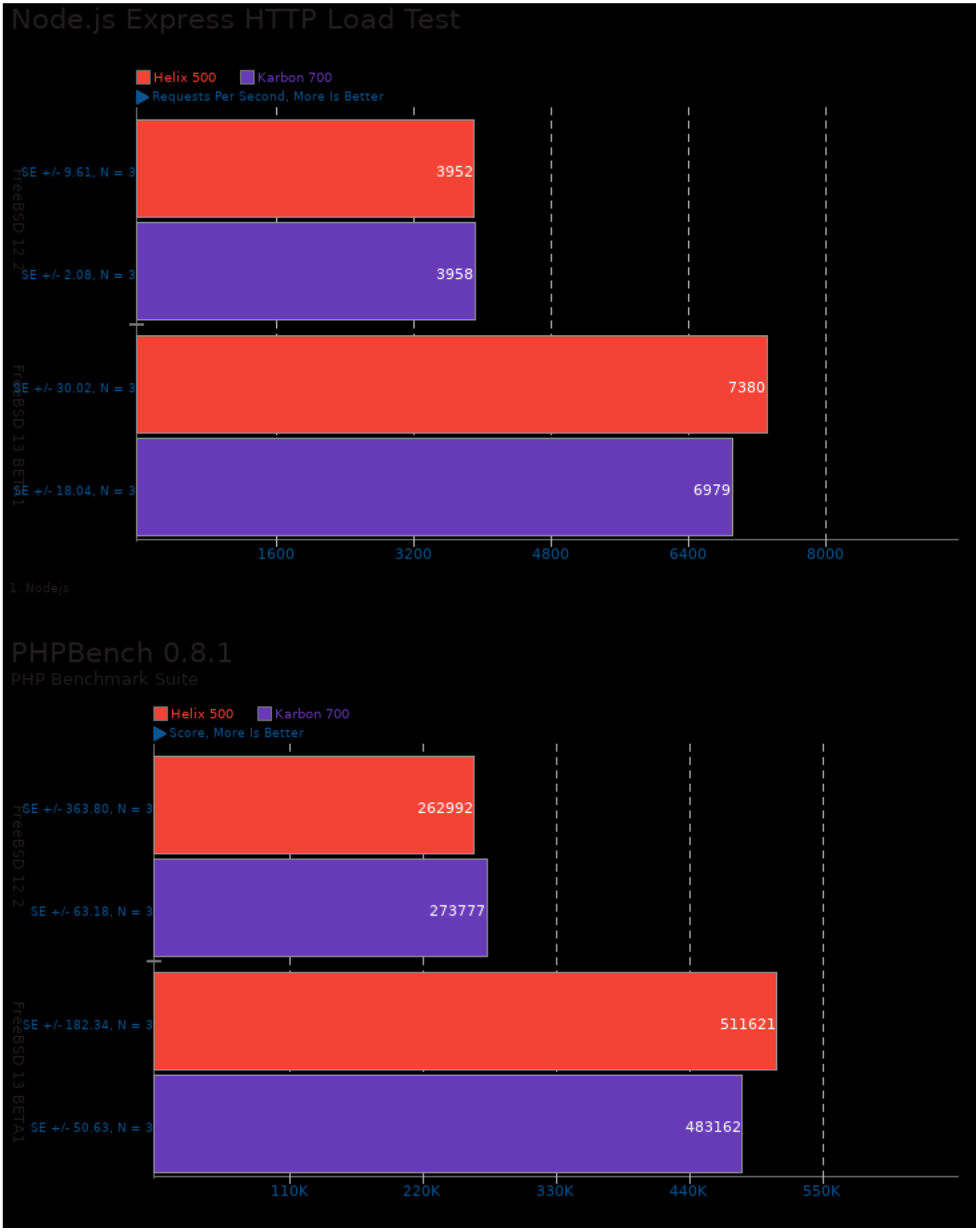
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

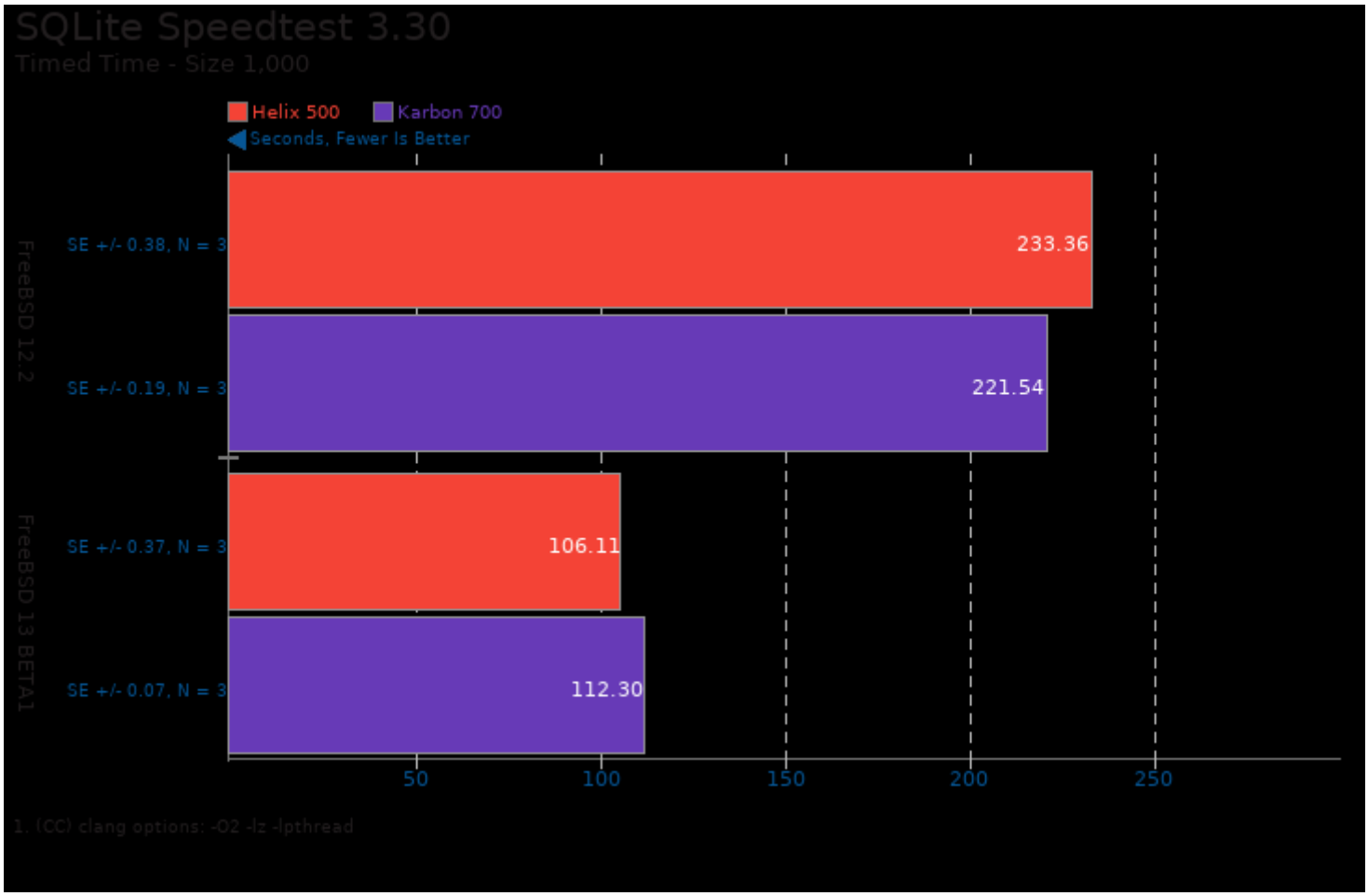


FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

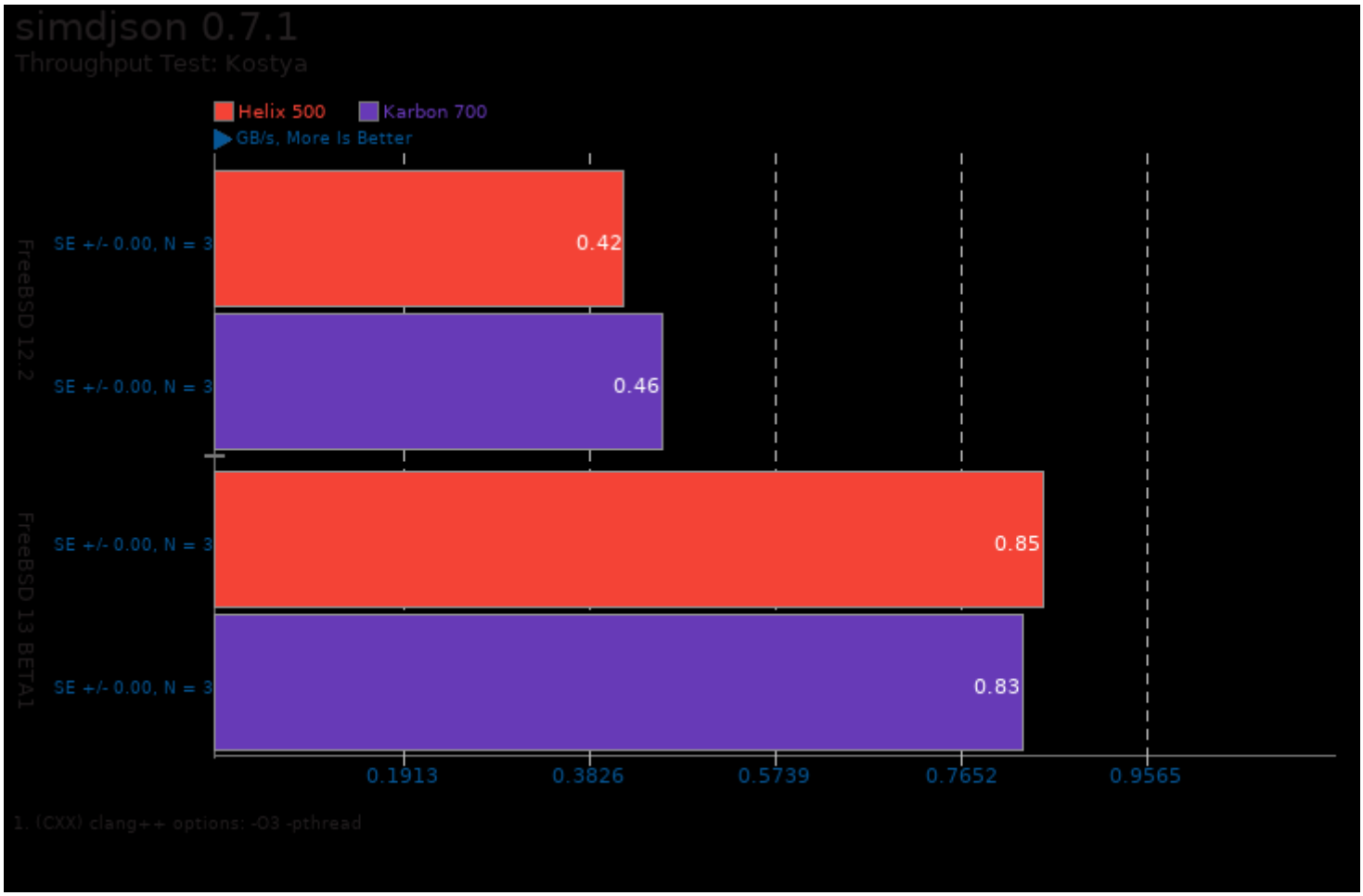


FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

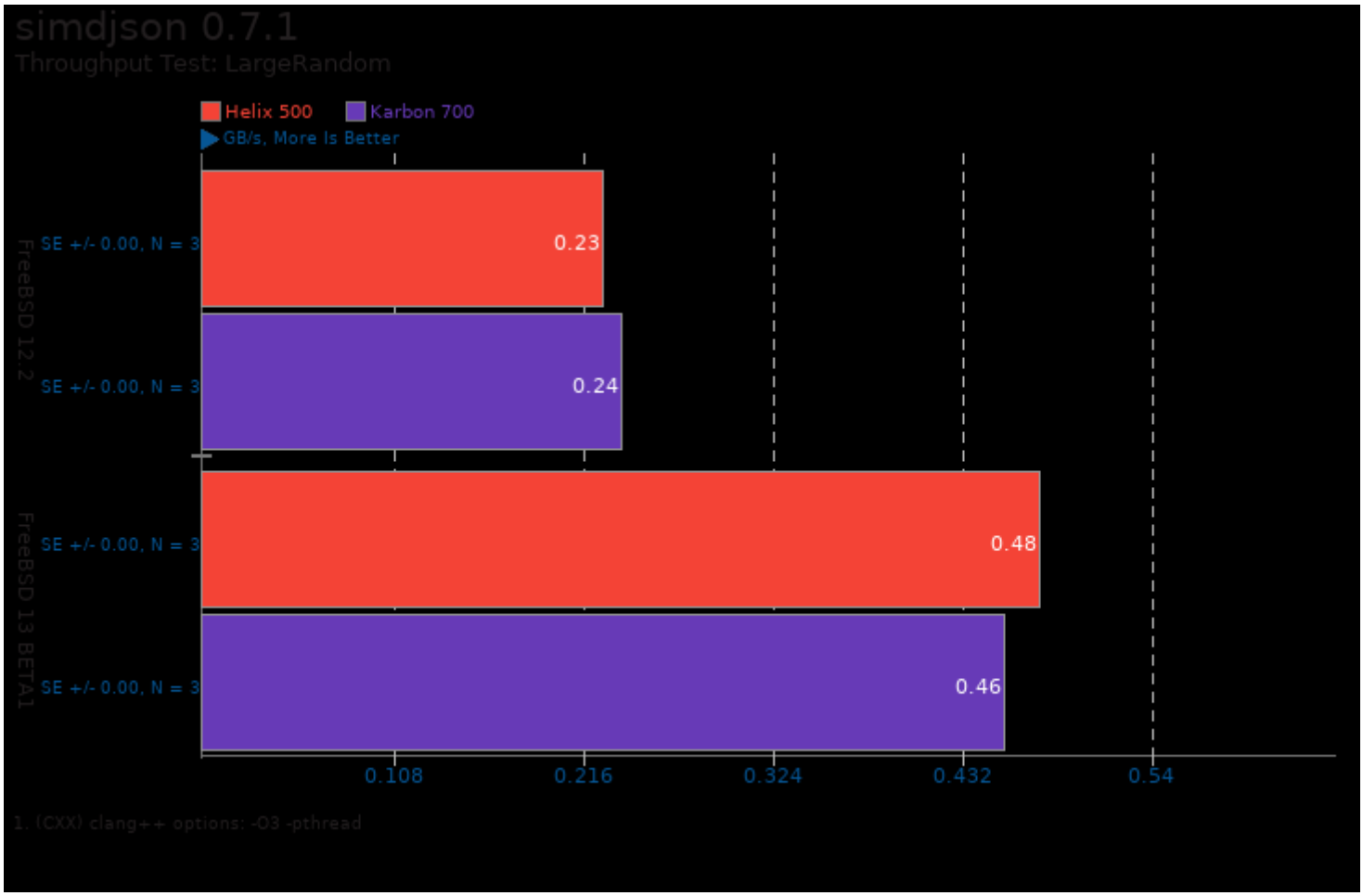



SQLite Speedtest 3.30
Timed Time - Size 1,000
Helix 500
Karbon 700
Seconds, Fewer Is Better
SE +/- 0.38, N = 3
233.36
SE +/- 0.19, N = 3
221.54
SE +/- 0.37, N = 3
106.11
SE +/- 0.07, N = 3
112.30
FreeBSD 12.2
FreeBSD 13 BETA1
50
100
150
200
250
1. (CC) clang options: -O2 -lz -lpthread

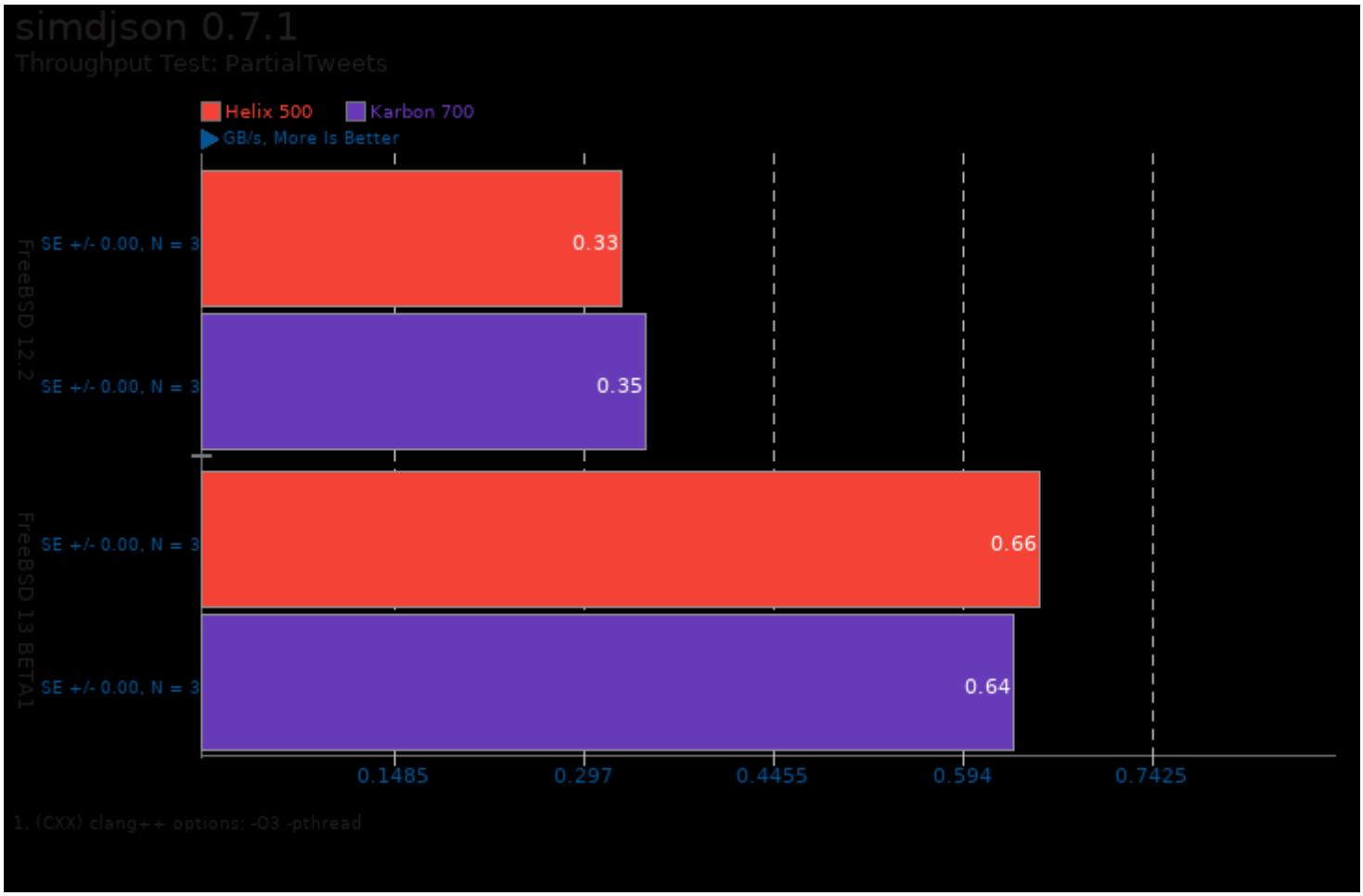
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

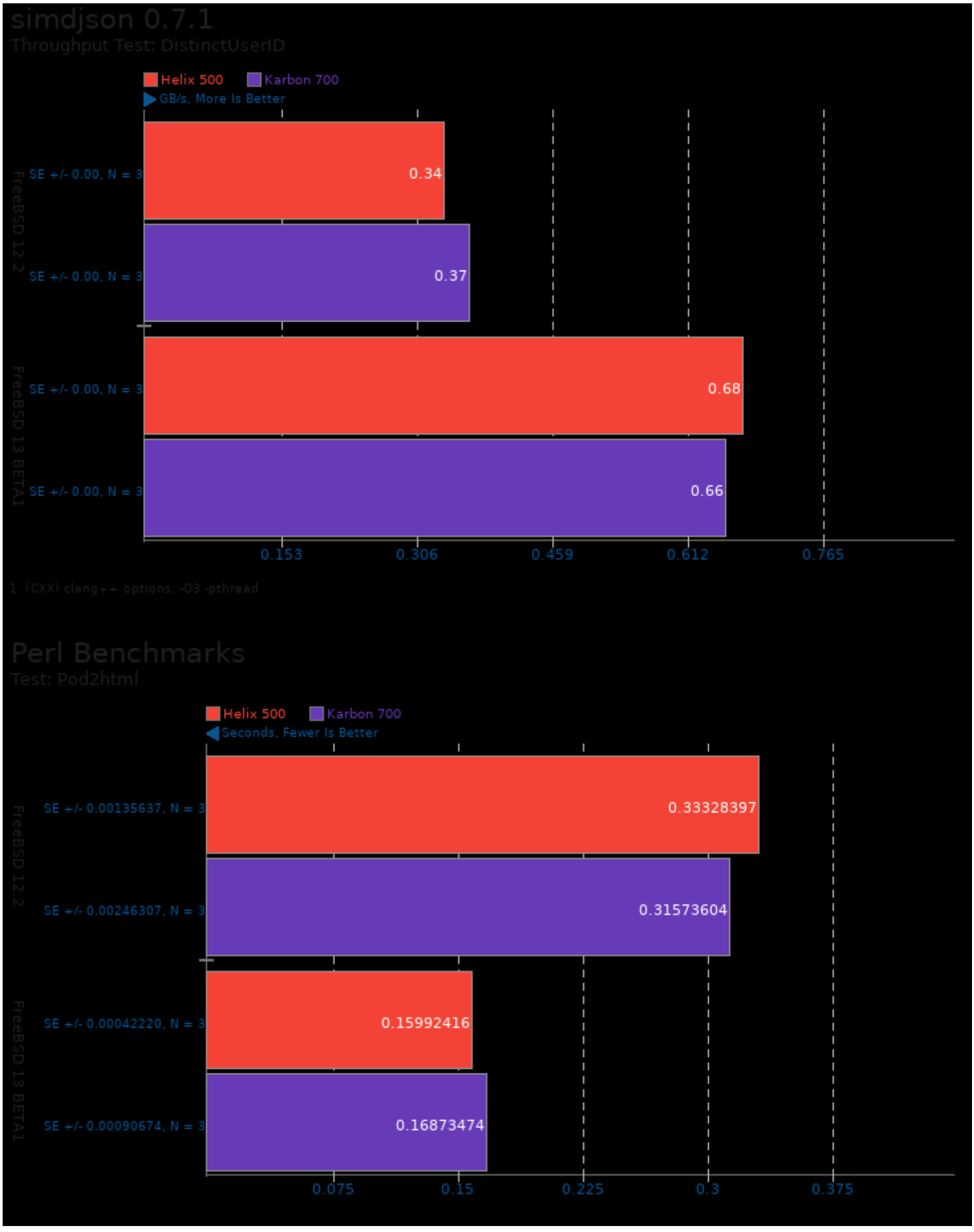


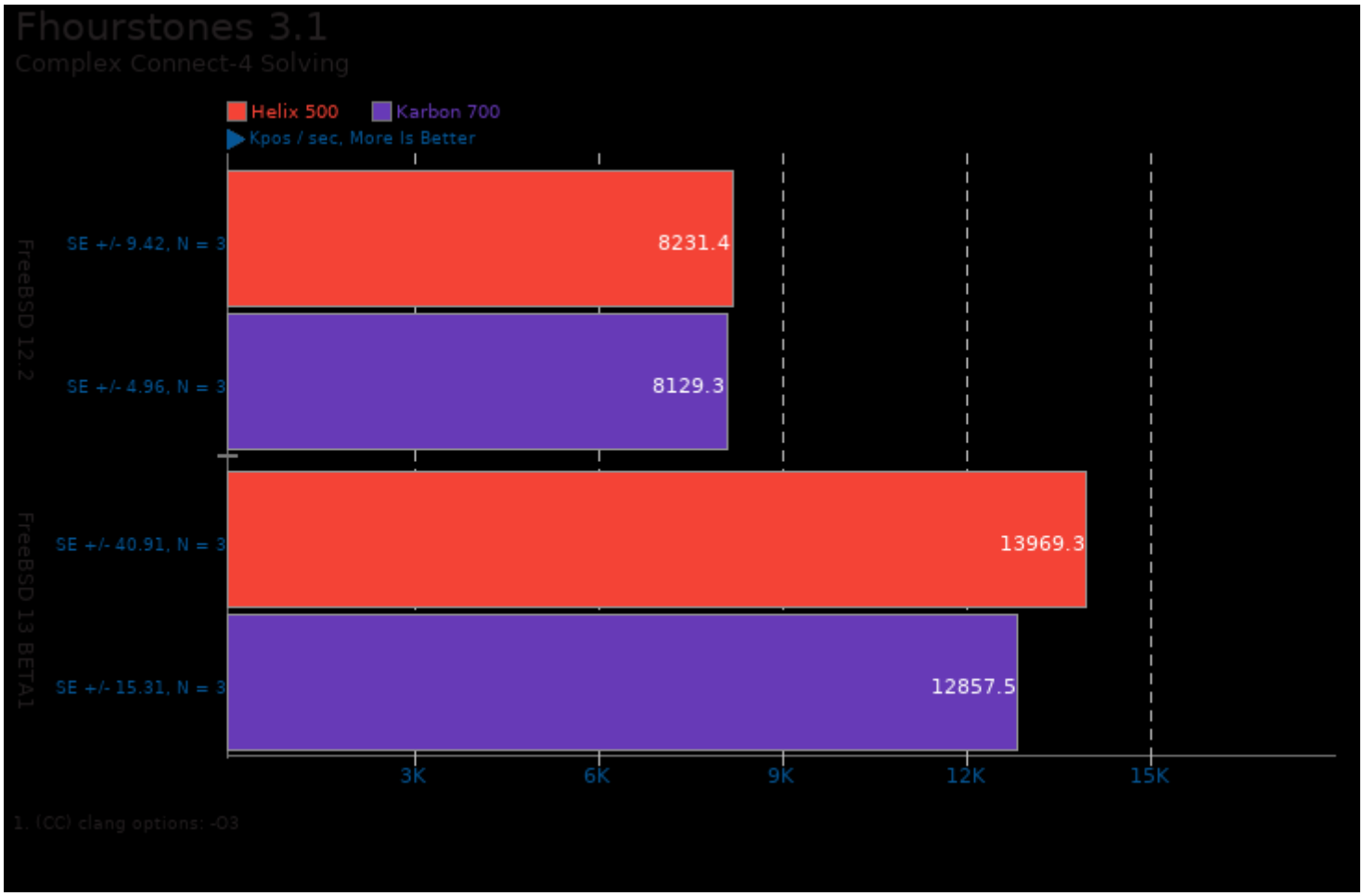
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks



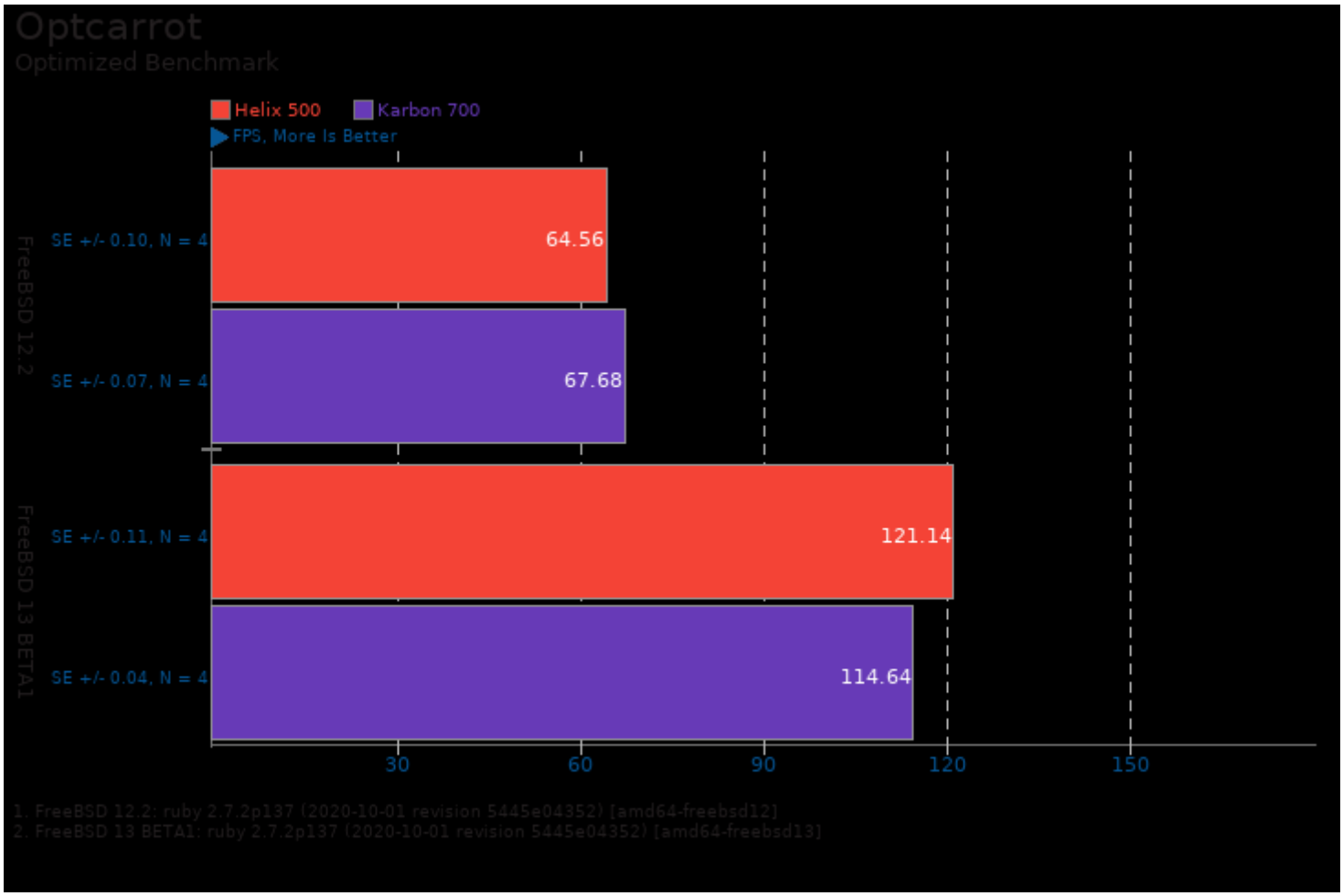
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

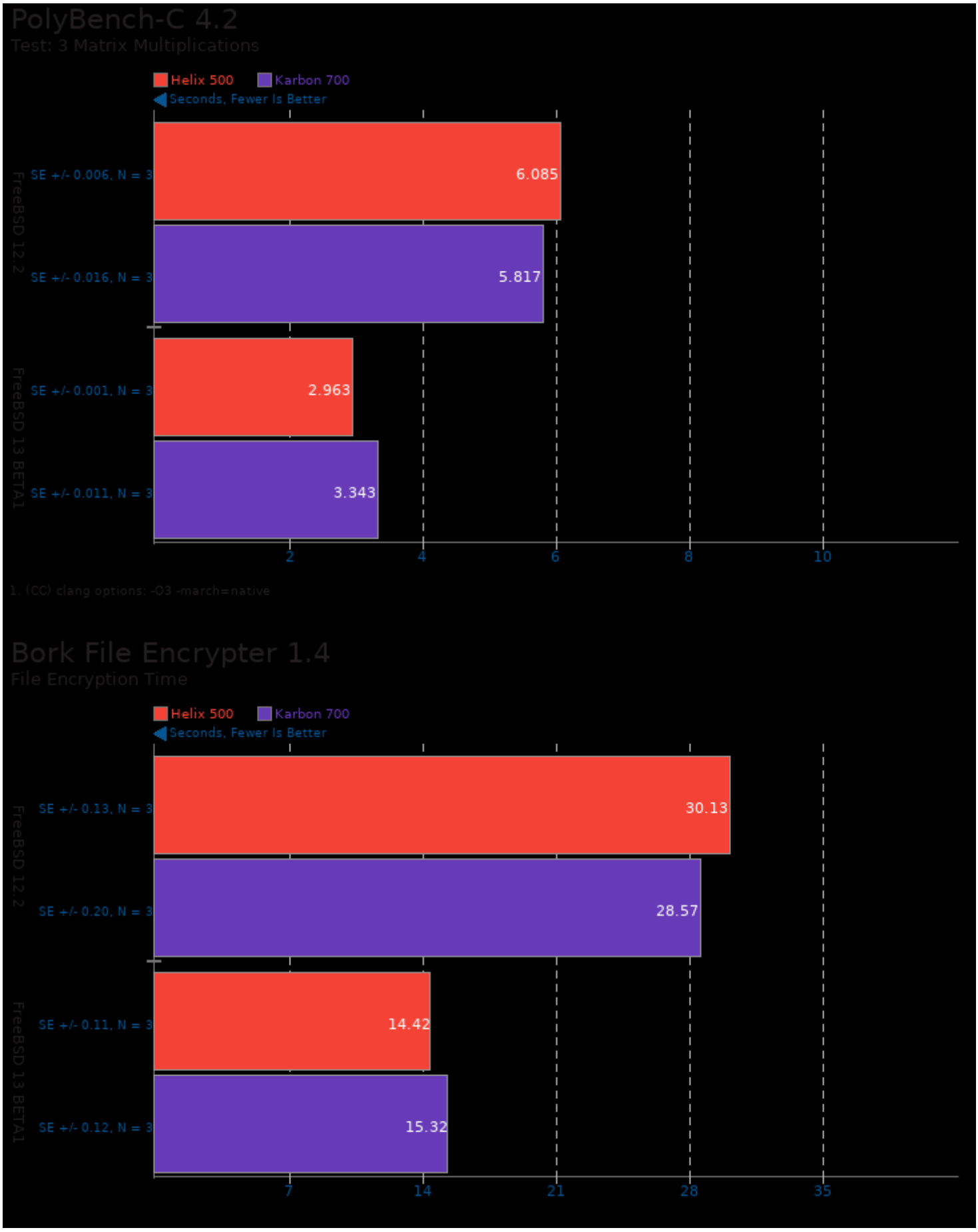



simdjson 0.7.1
Throughput Test: DistinctUserID
Helix 500
Karbon 700
GB/s, More Is Better
FreeBSD 12.2
SE +/- 0.00, N = 3
0.34
SE +/- 0.00, N = 3
0.37
FreeBSD 13 BETA1
SE +/- 0.00, N = 3
0.68
SE +/- 0.00, N = 3
0.66
0.153
0.306
0.459
0.612
0.765
1. (CXX) clang++ options: -O3 -pthread
Perl Benchmarks
Test: Pod2html
Helix 500
Karbon 700
Seconds, Fewer Is Better
FreeBSD 12.2
SE +/- 0.00135637, N = 3
0.33328397
SE +/- 0.00246307, N = 3
0.31573604
FreeBSD 13 BETA1
SE +/- 0.00042220, N = 3
0.15992416
SE +/- 0.00090674, N = 3
0.16873474
0.075
0.15
0.225
0.3
0.375


Fhourstones 3.1
Complex Connect-4 Solving
Helix 500
Karbon 700
Kpos / sec, More Is Better
FreeBSD 12.2
SE +/- 9.42, N = 3
8231.4
SE +/- 4.96, N = 3
8129.3
FreeBSD 13 BETA1
SE +/- 40.91, N = 3
13969.3
SE +/- 15.31, N = 3
12857.5
3K
6K
9K
12K
15K
1. (CC) clang options: -O3

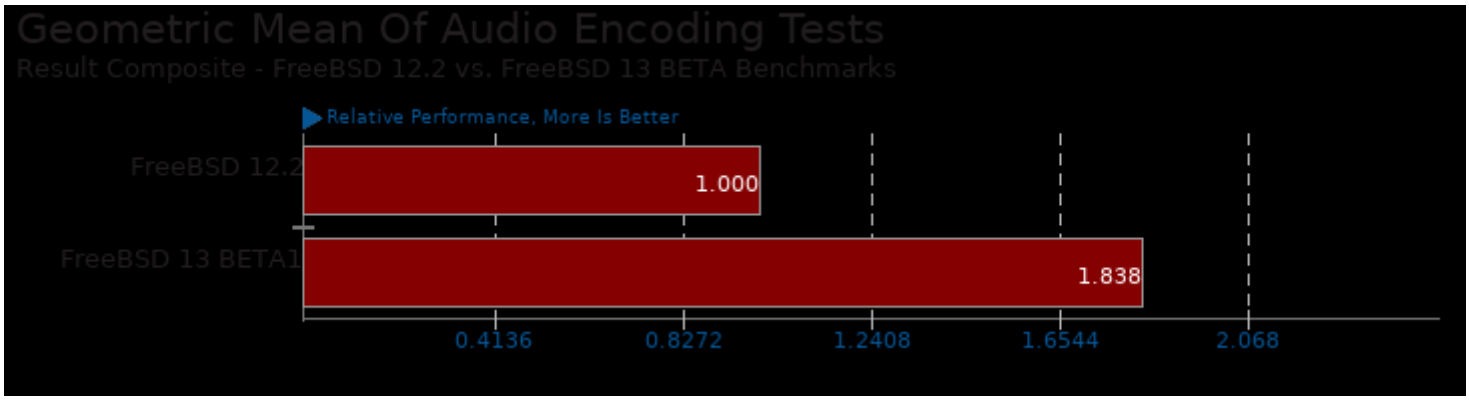
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks



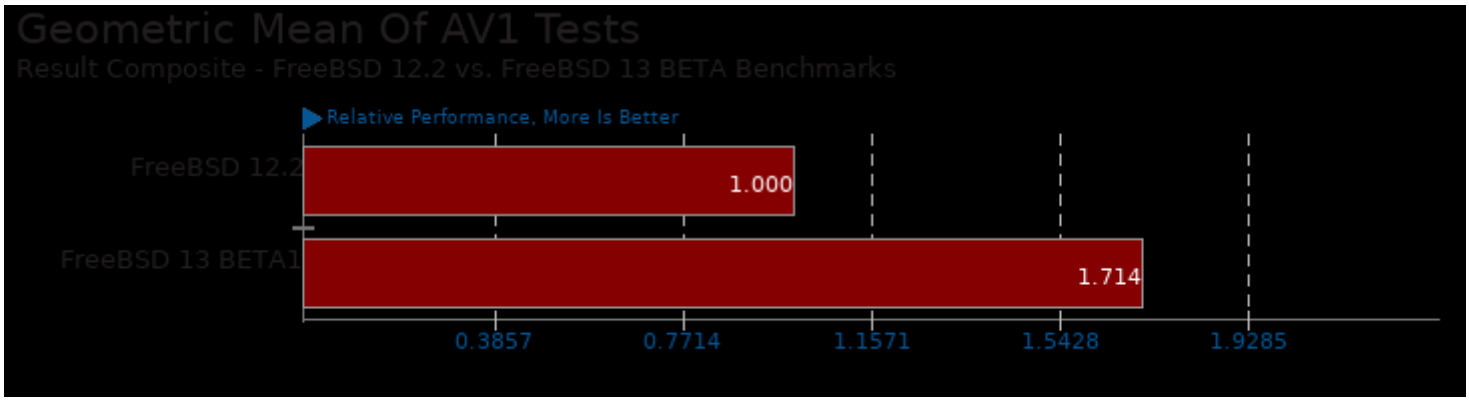

PolyBench-C 4.2
Test: 3 Matrix Multiplications
Helix 500
Karbon 700
Seconds, Fewer Is Better
FreeBSD 12.2
FreeBSD 13 BETA1
SE +/- 0.006, N = 3
6.085
SE +/- 0.016, N = 3
5.817
SE +/- 0.001, N = 3
2.963
SE +/- 0.011, N = 3
3.343
2
4
6
8
10
1. (CC) clang options: -O3 -march=native
Bork File Encrypter 1.4
File Encryption Time
Helix 500
Karbon 700
Seconds, Fewer Is Better
FreeBSD 12.2
FreeBSD 13 BETA1
SE +/- 0.13, N = 3
30.13
SE +/- 0.20, N = 3
28.57
SE +/- 0.11, N = 3
14.42
SE +/- 0.12, N = 3
15.32
7
14
21
28
35


Git
Time To Complete Common Git Commands
Helix 500
Karbon 700
Seconds, Fewer Is Better
FreeBSD 12.2
SE +/- 0.13, N = 3
120.28
SE +/- 0.21, N = 3
111.53
FreeBSD 13 BETA1
SE +/- 0.08, N = 3
64.84
SE +/- 0.12, N = 3
68.46
30
60
90
120
150
1. git version 2.30.0
PyBench 2018-02-16
Total For Average Test Times
Helix 500
Karbon 700
Milliseconds, Fewer Is Better
FreeBSD 12.2
SE +/- 4.67, N = 3
3290
SE +/- 4.41, N = 3
3180
FreeBSD 13 BETA1
SE +/- 2.73, N = 3
1750
SE +/- 3.38, N = 3
1836
700
1400
2100
2800
3500

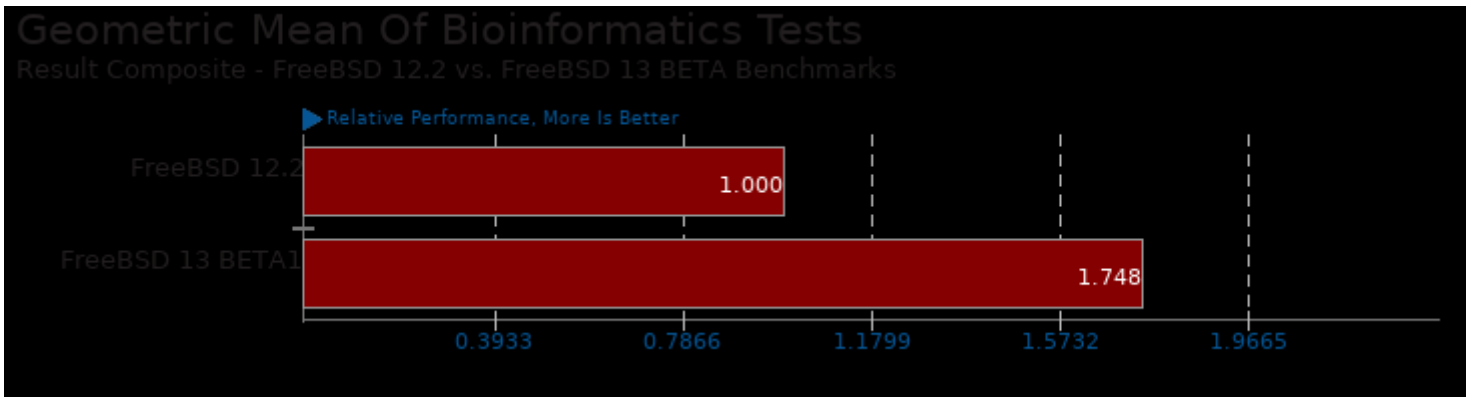
These geometric means are based upon test groupings / test suites for this result file.



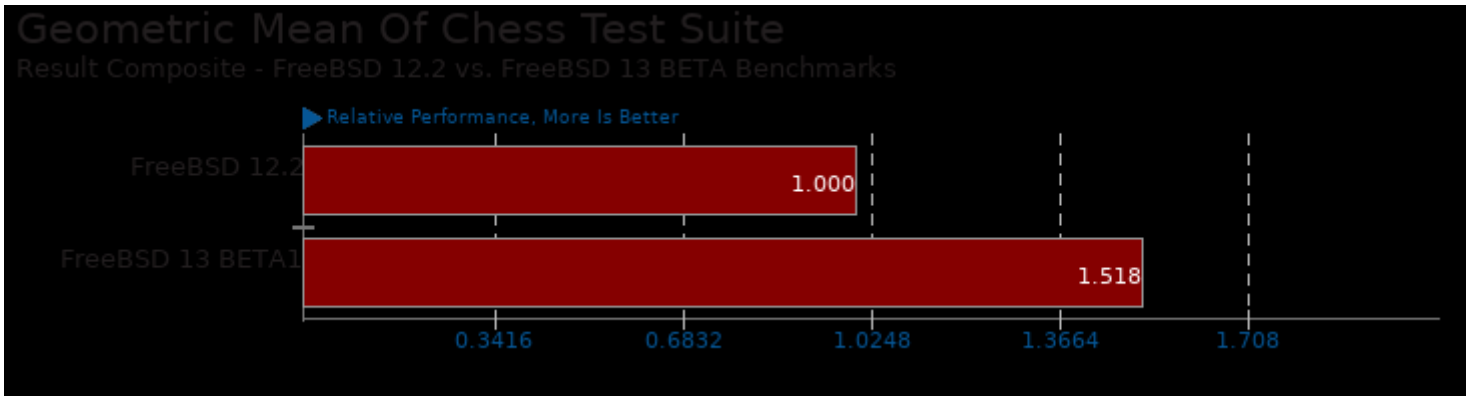
Geometric mean based upon tests: pts/encode-mp3, pts/encode-flac and pts/encode-ape



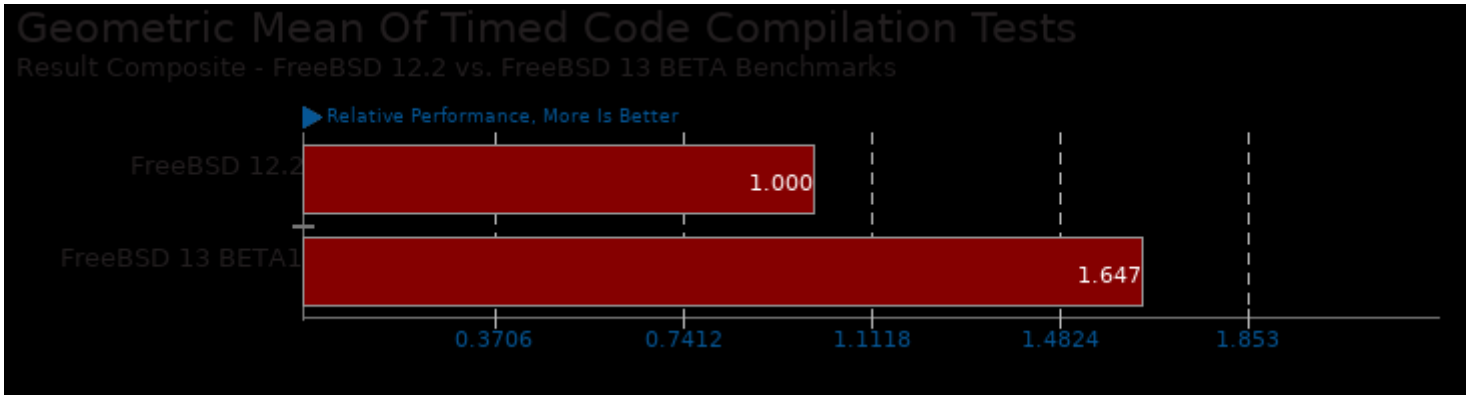
Geometric mean based upon tests: pts/rav1e and pts/avifenc



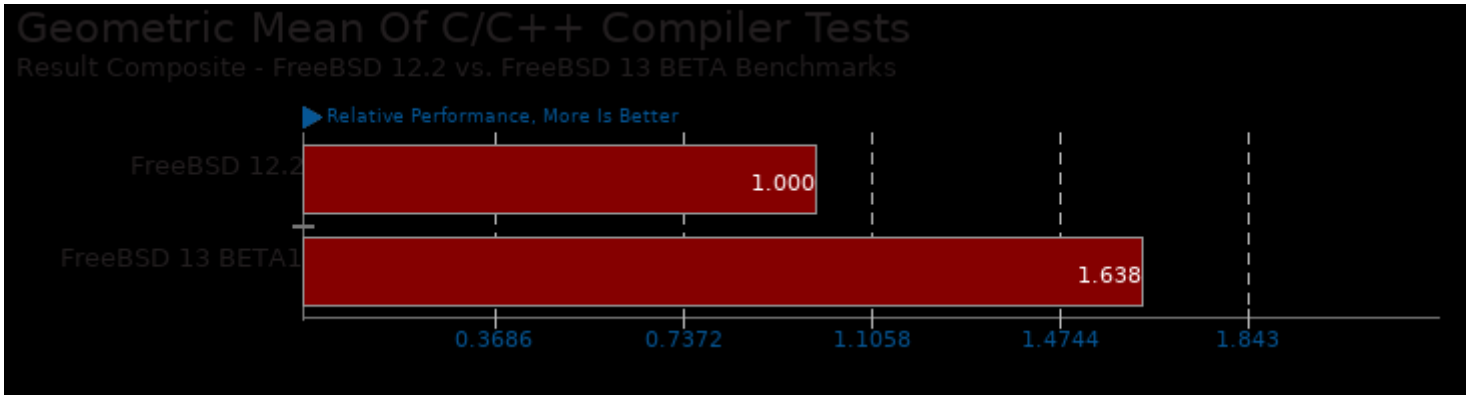
Geometric mean based upon tests: pts/himeno and pts/hmmer



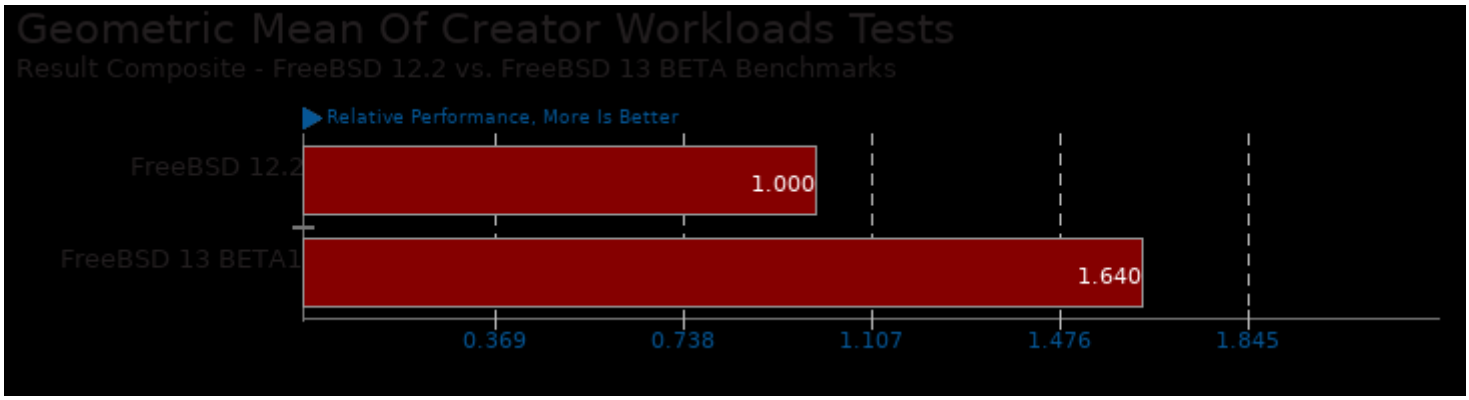
Geometric mean based upon tests: pts/stockfish and pts/m-queens



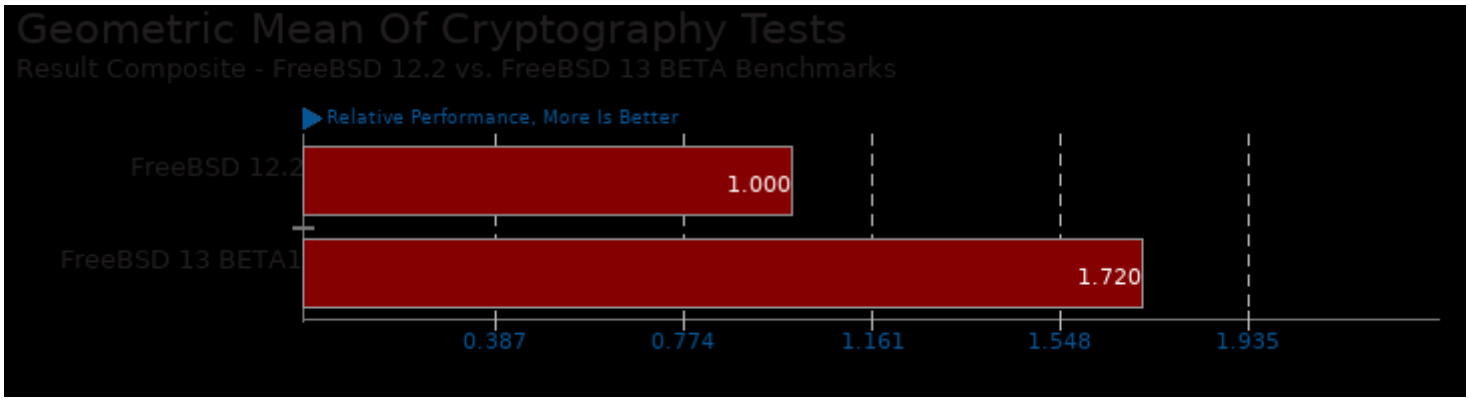
Geometric mean based upon tests: pts/build-php and pts/build-eigen



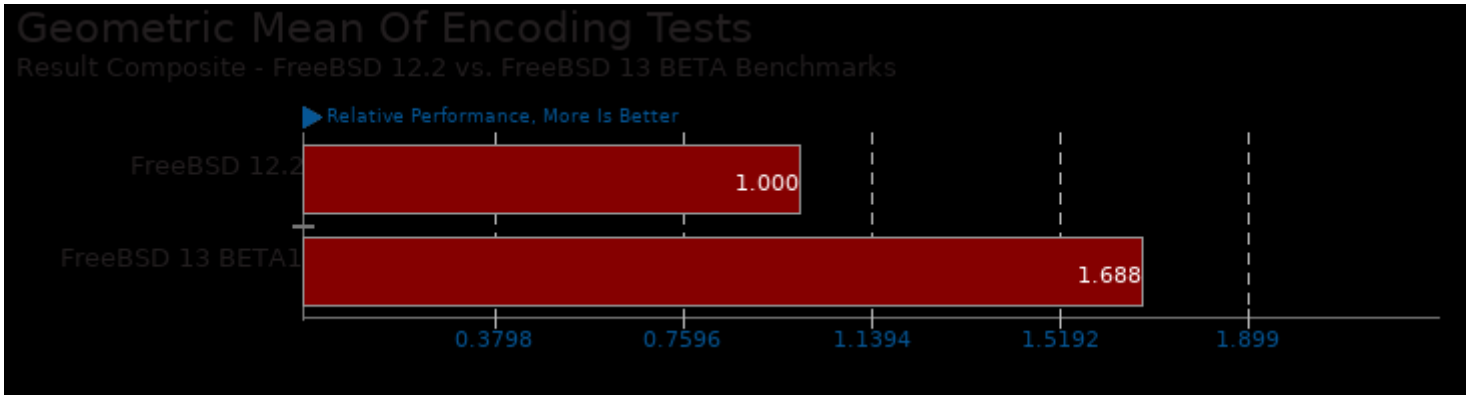
Geometric mean based upon tests: pts/fftw, pts/scimark2, pts/aobench, pts/graphics-magick, pts/himeno, pts/stockfish, pts/hmmer, pts/build-php, pts/c-ray, pts/encode-mp3, pts/encode-flac, pts/sqlite-speedtest, pts/john-the-ripper, pts/x264, pts/x265, pts/openssl, pts/aircrack-ng and pts/smhasher



Geometric mean based upon tests: pts/c-ray, pts/aobench, pts/smallpt, pts/ttsiod-renderer, pts/x264, pts/x265, pts/rav1e, pts/avifenc, pts/encode-mp3, pts/encode-flac, pts/encode-ape, pts/graphics-magick, pts/libraw, pts/tjbench, pts/dcraw and pts/luajit



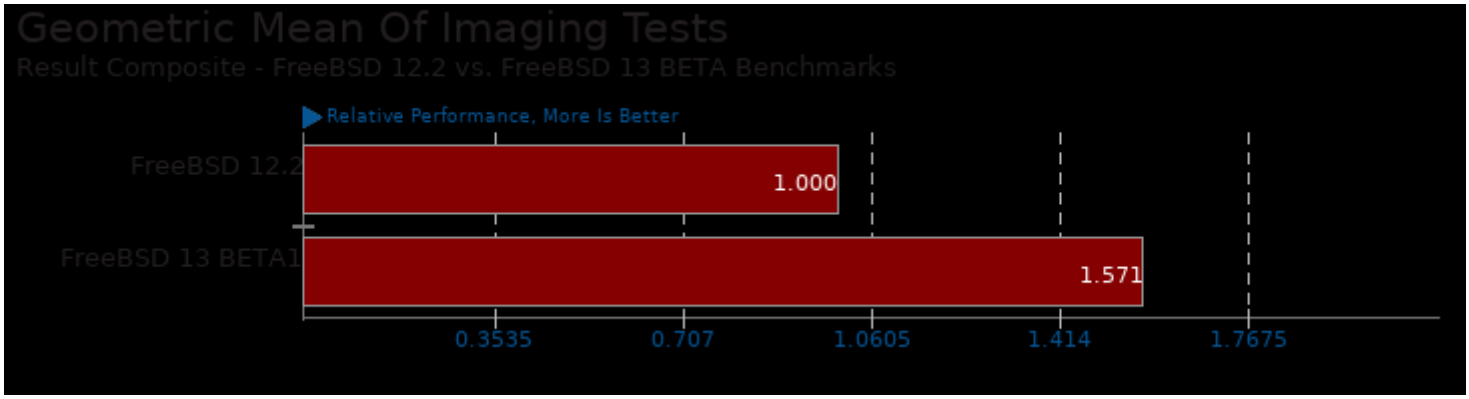
Geometric mean based upon tests: pts/openssl, pts/blake2, pts/john-the-ripper, pts/smhasher, pts/botan, pts/bork and pts/aircrack-ng



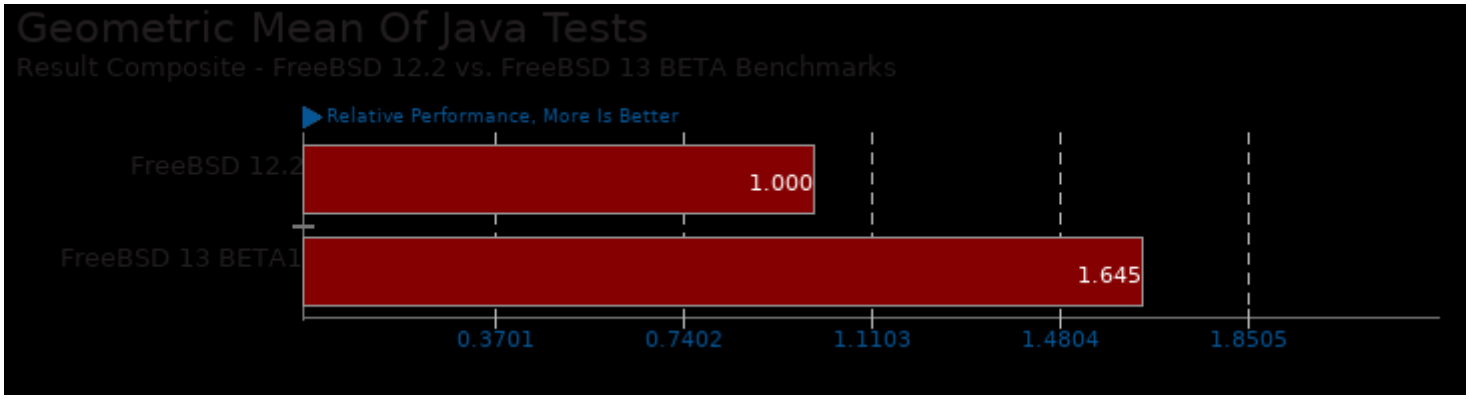
Geometric mean based upon tests: pts/encode-mp3, pts/encode-flac, pts/encode-ape, pts/x264, pts/x265, pts/rav1e and pts/avifenc



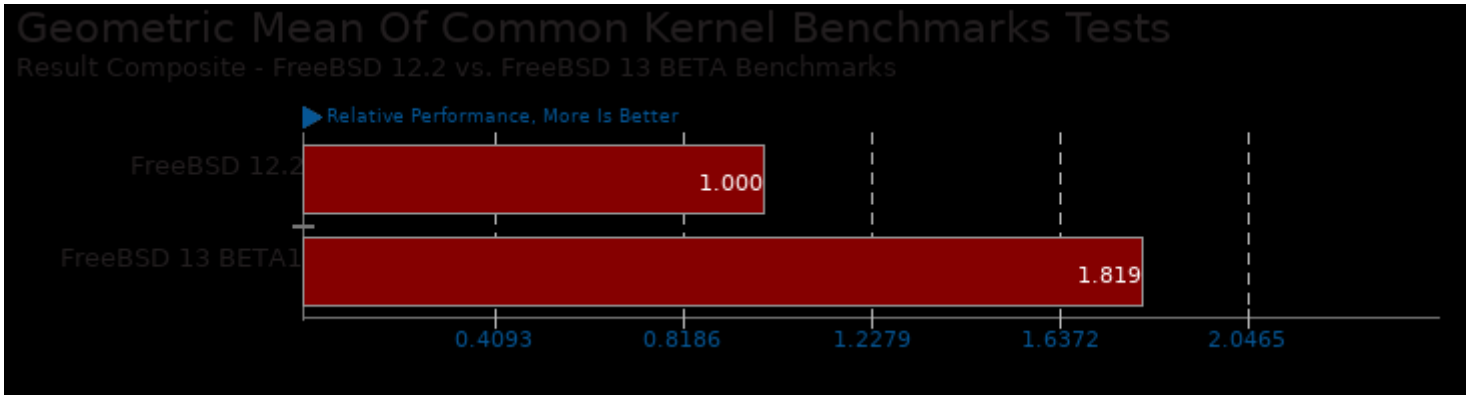
Geometric mean based upon tests: pts/rodinia, pts/ffte, pts/fftw, pts/himeno, pts/hmmer, pts/rbenchmark, pts/numpy and pts/scikit-learn



Geometric mean based upon tests: pts/graphics-magick, pts/libraw, pts/tjbench, pts/dcraw and pts/avifenc

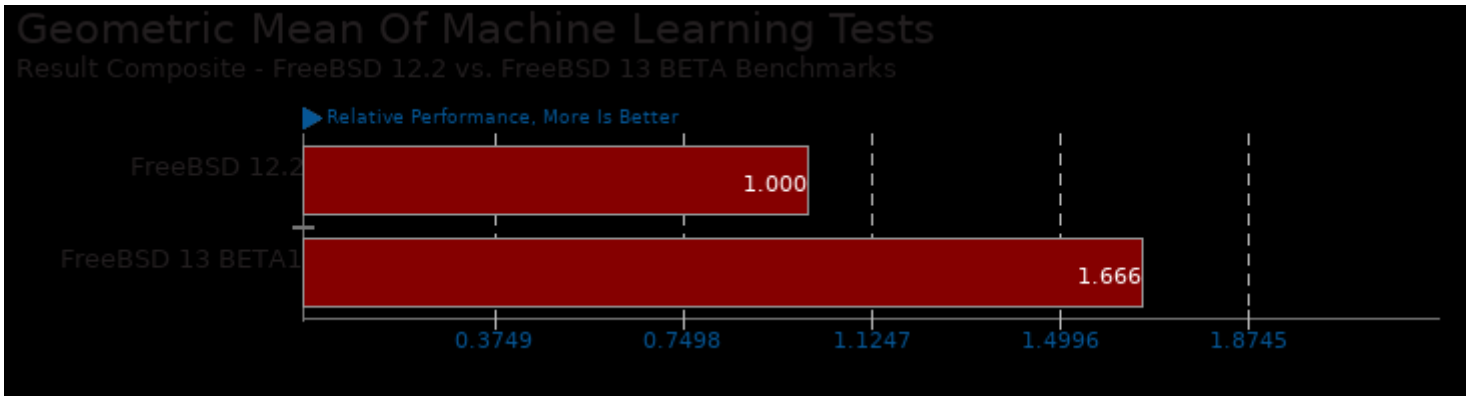


Geometric mean based upon tests: pts/bork, pts/java-scimark2, pts/dacapobench and pts/renaissance

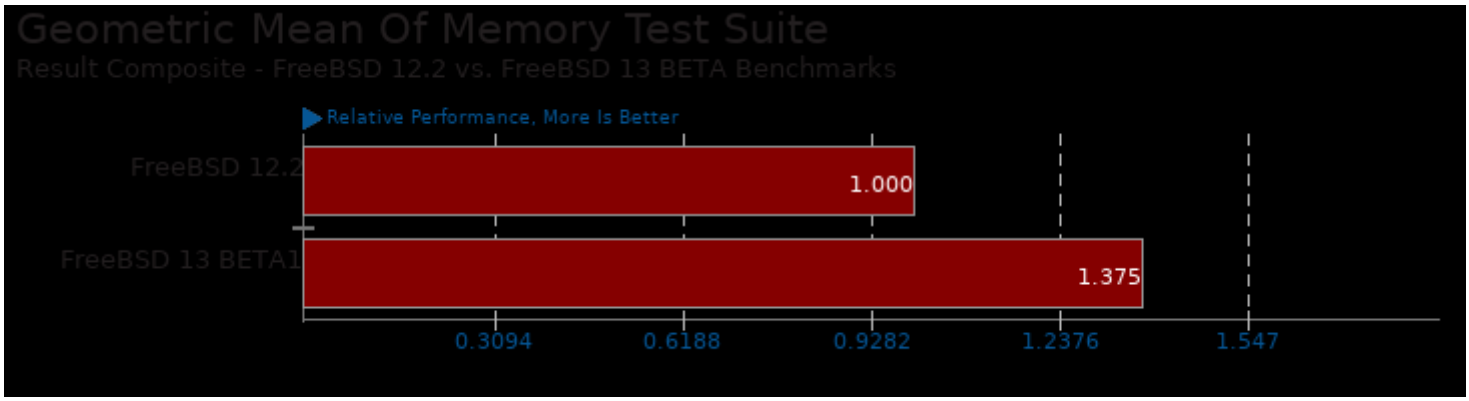


FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks

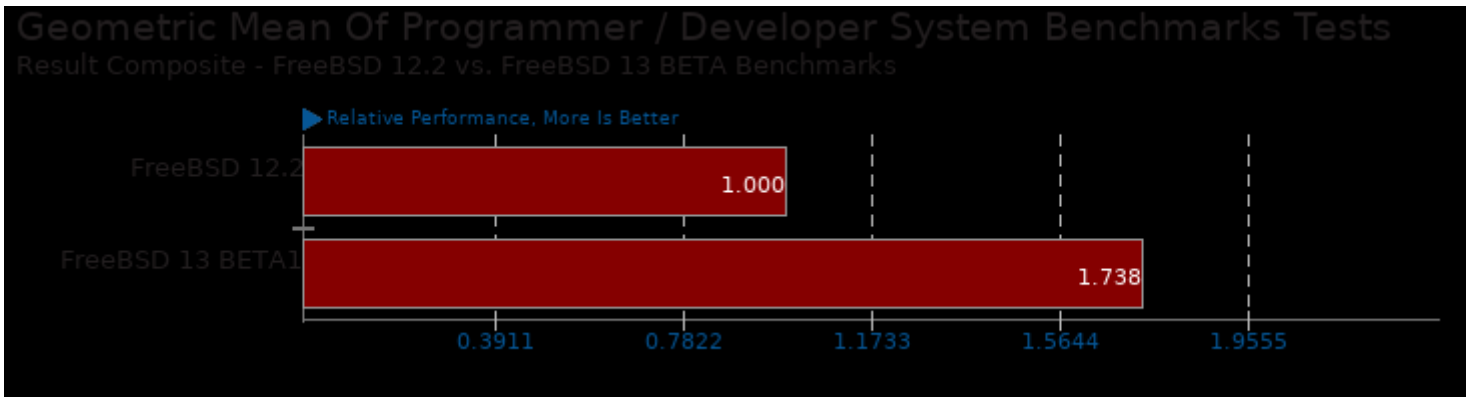
Geometric mean based upon tests: pts/sqlite-speedtest, pts/mbw, pts/openssl, pts/stress-ng, pts/osbench and pts/iperf



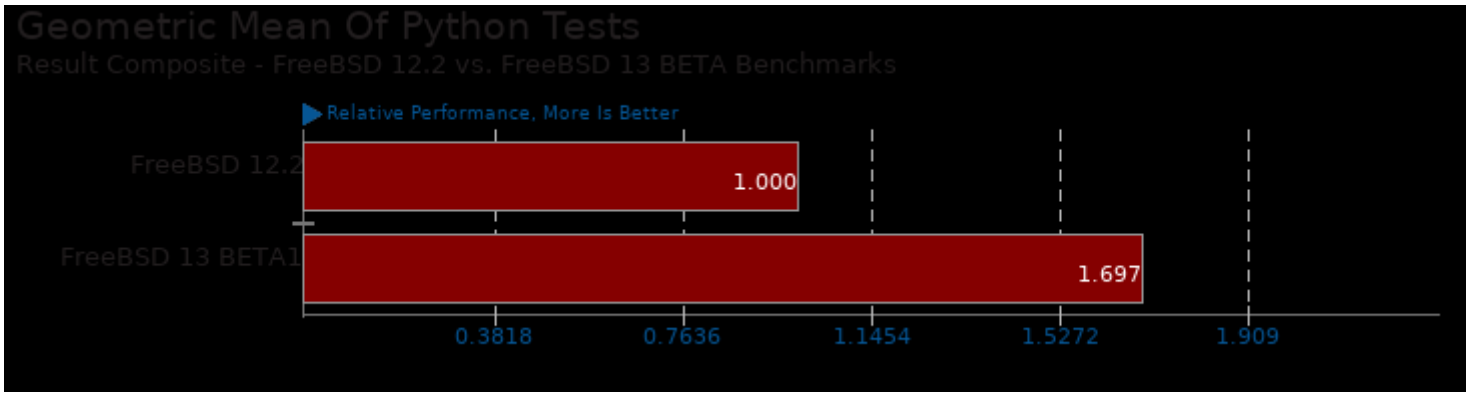
Geometric mean based upon tests: pts/rbenchmark, pts/numpy and pts/scikit-learn



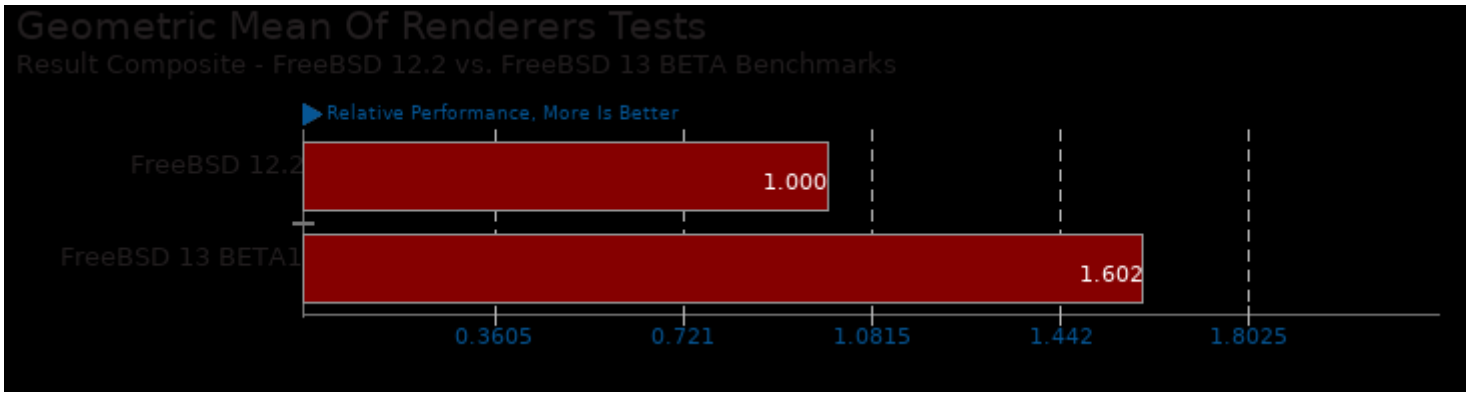
Geometric mean based upon tests: pts/cachebench and pts/mbw



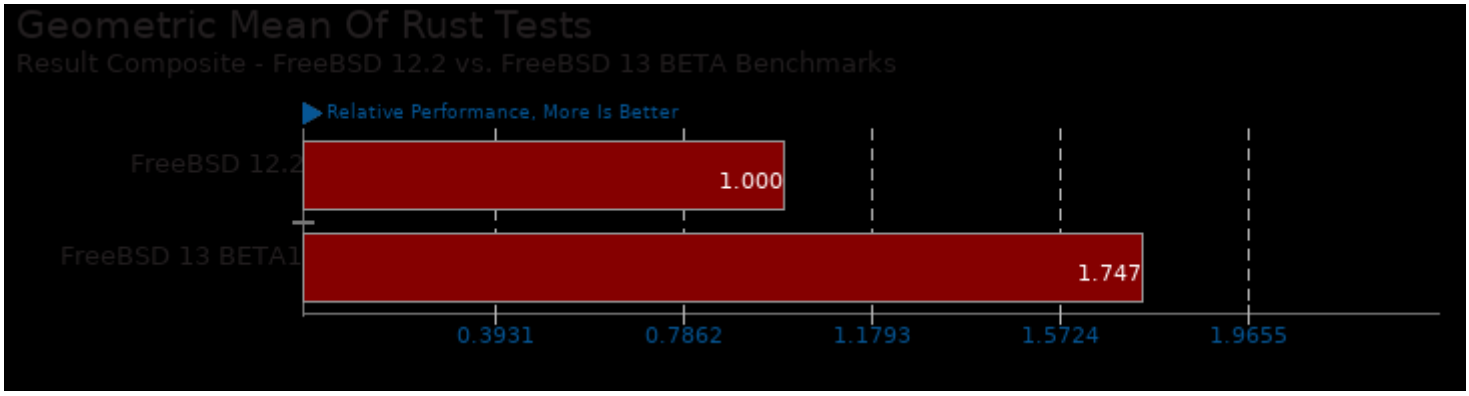
Geometric mean based upon tests: pts/simdjson, pts/sqlite-speedtest, pts/git, pts/pyperformance, pts/pybench, pts/build-php and pts/build-eigen



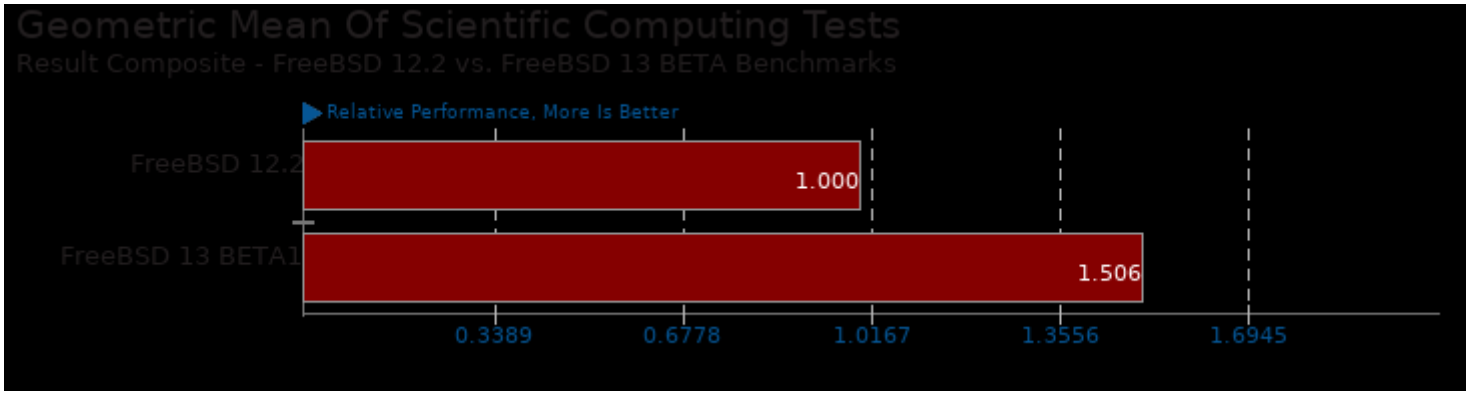
Geometric mean based upon tests: pts/pybench, pts/numpy, pts/scikit-learn and pts/pyperformance



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

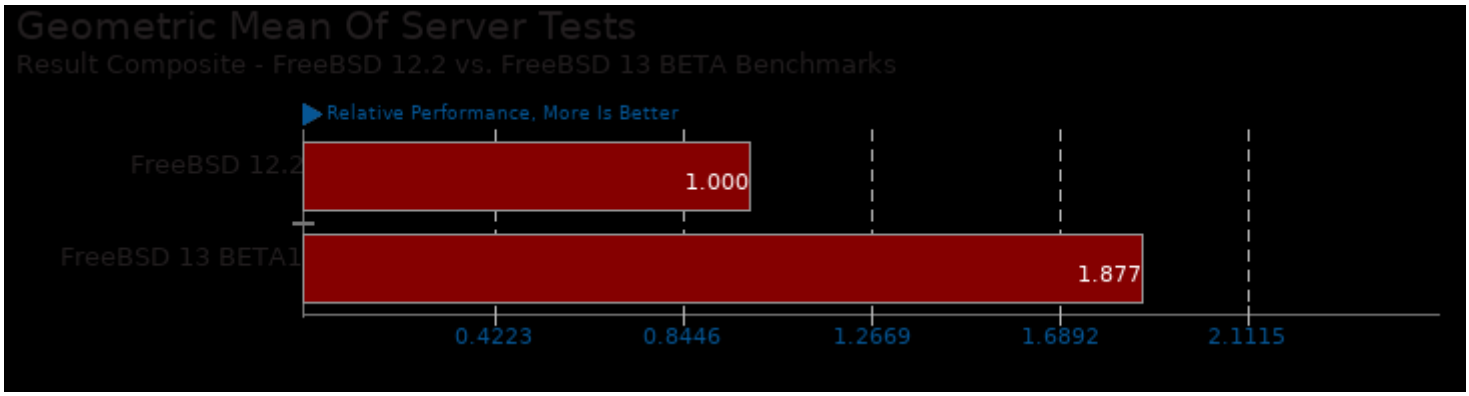


Geometric mean based upon tests: pts/rust-prime, pts/rust-mandel and pts/rav1e

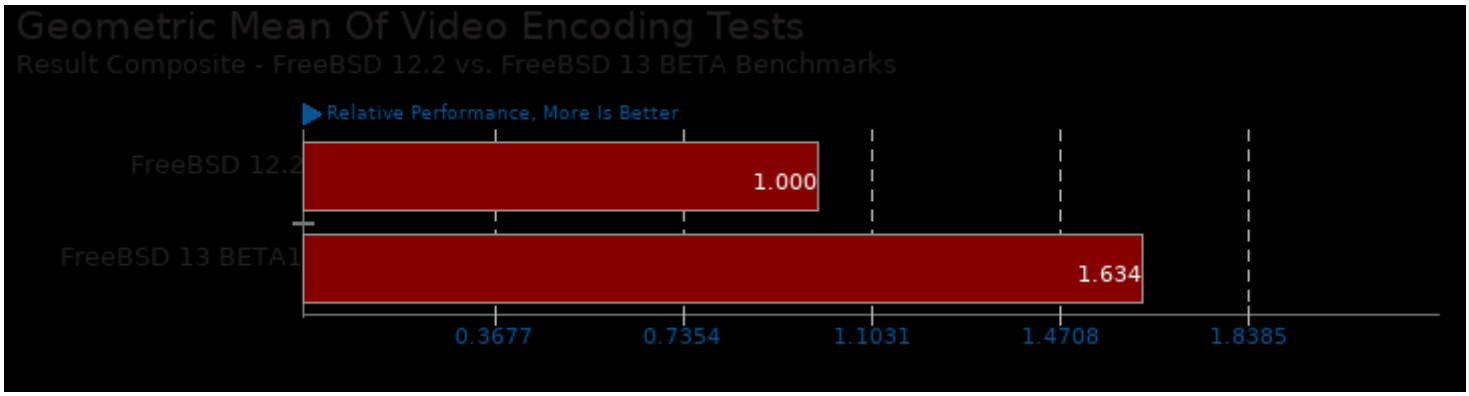


Geometric mean based upon tests: pts/ffte, pts/fftw, pts/himeno and pts/hmmer

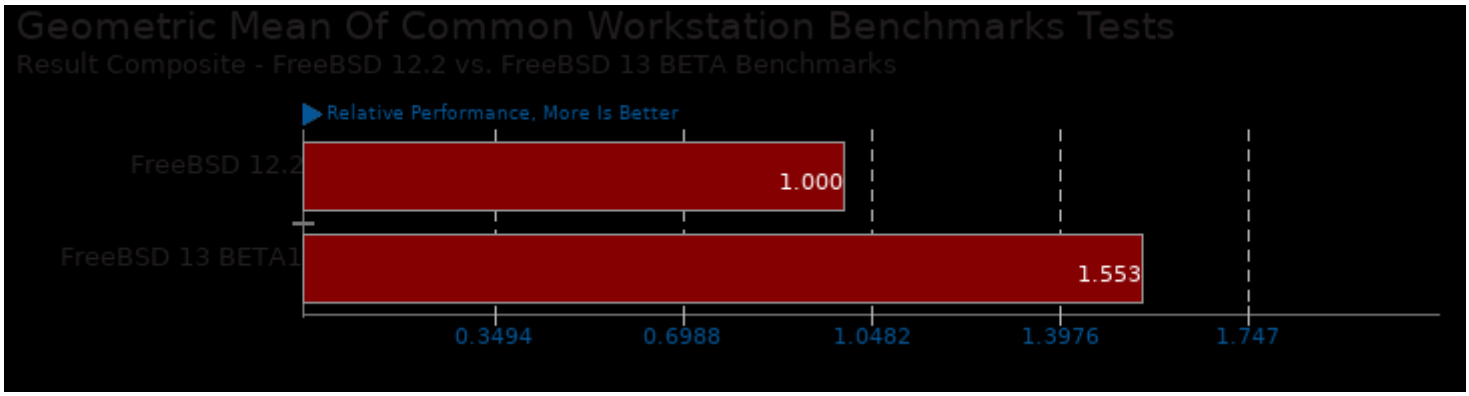
FreeBSD 12.2 vs. FreeBSD 13 BETA Benchmarks



Geometric mean based upon tests: pts/blogbench, pts/php, pts/phpbench, pts/node-express-loadtest, pts/openssl, pts/perl-benchmark, pts/simdjson and pts/sqlite-speedtest



Geometric mean based upon tests: pts/x264, pts/x265, pts/rav1e and pts/avifenc



Geometric mean based upon tests: pts/rodinia, pts/himeno, pts/x265, pts/swet and pts/git

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