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Intel Core i9-12900K testing with a ASUS ROG STRIX Z690-E GAMING WIFI (1720 BIOS) and Intel Arc A770 DG2 16GB on Ubuntu 22.04 via the Phoronix Test Suite.

Automated Executive Summary

D had the most wins, coming in first place for 27% of the tests.

Based on the geometric mean of all complete results, the fastest (C) was 1.002x the speed of the slowest (A). D was 0.999x the speed of C, B was 0.999x the speed of D, A was 1x the speed of B.

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

SMHasher (Hash: t1ha2_atonce) at 1.02x
SMHasher (Hash: MeowHash x86_64 AES-NI) at 1.017x
SMHasher (Hash: FarmHash128) at 1.014x
SMHasher (Hash: t1ha0_aes_avx2 x86_64) at 1.011x
SMHasher (Hash: wyhash) at 1.009x
SMHasher (Hash: FarmHash32 x86_64 AVX) at 1.008x
SMHasher (Hash: fasthash32) at 1.006x
SMHasher (Hash: Spooky32) at 1.006x
SMHasher (Hash: SHA3-256) at 1.001x

SMHasher (Hash: wyhash) at -1x.

Test Systems:

A

B

C

D

Processor: Intel Core i9-12900K @ 5.20GHz (16 Cores / 24 Threads), Motherboard: ASUS ROG STRIX Z690-E GAMING WIFI (1720 BIOS), Chipset: Intel Device 7aa7, Memory: 32GB, Disk: 1000GB Western Digital WDS100T1X0E-00AFY0, Graphics: Intel Arc A770 DG2 16GB (2400MHz), Audio: Intel Device 7ad0, Monitor: ASUS VP28U, Network: Intel I225-V + Intel Wi-Fi 6 AX210/AX211/AX411

OS: Ubuntu 22.04, Kernel: 6.0.0-060000rc2drmintelnext20220929-generic (x86_64), Desktop: GNOME Shell 42.4, Display Server: X Server 1.21.1.3 + Wayland, OpenGL: 4.6 Mesa 22.3.0-devel (git-31d38d1 2022-09-30 jammy-oibaf-ppa), Vulkan: 1.3.230, Compiler: GCC 11.2.0, File-System: ext4, Screen Resolution: 3840x2160

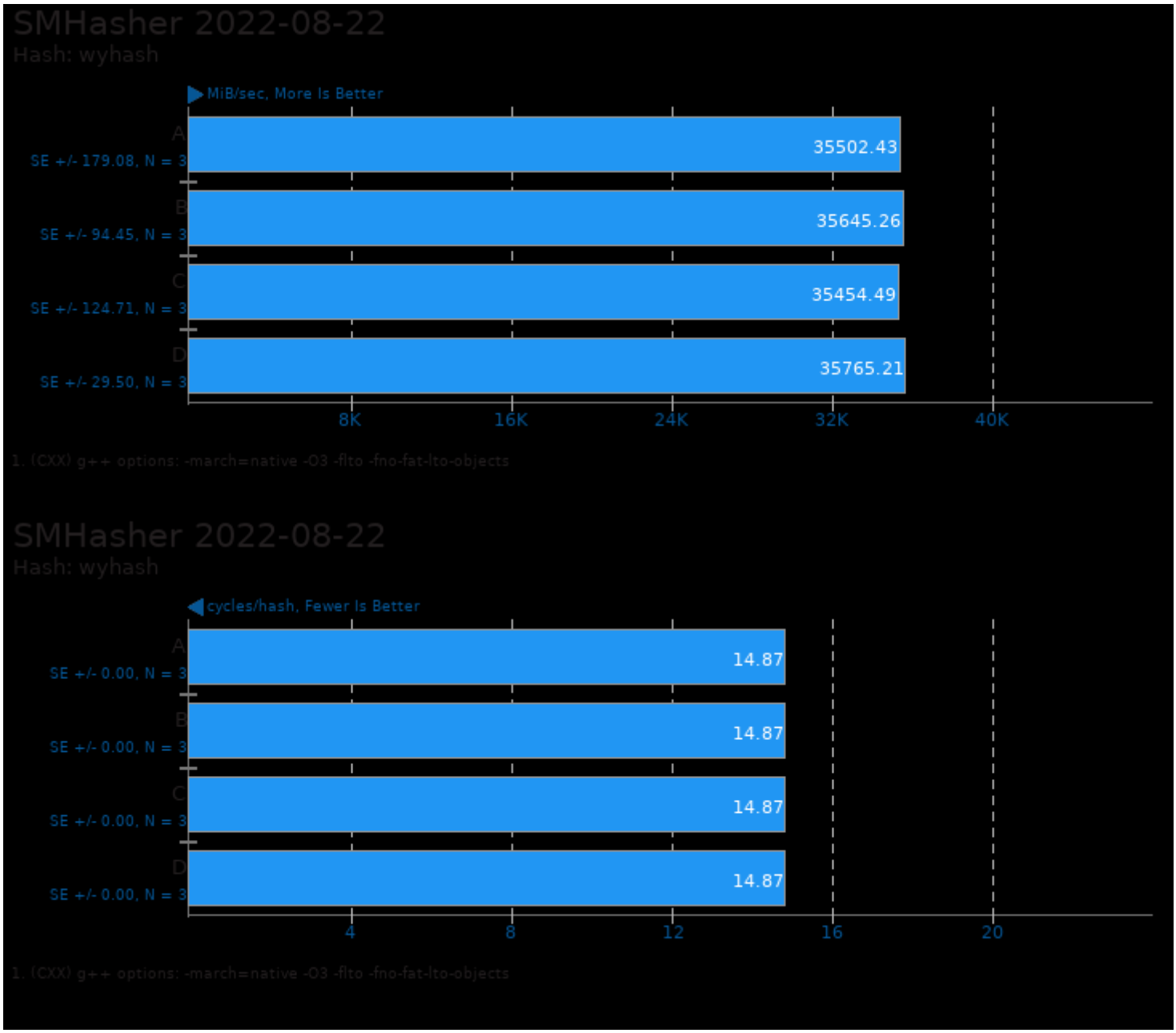
Kernel Notes: i915.force_probe=56a0 - Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-cet --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-serialization=2 --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-gcn/usr --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-build-config=bootstrap-lto-lean --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate powersave (EPP: balance_performance) - CPU Microcode: 0x23 - Thermald 2.4.9
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + retbleed: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Enhanced IBRS IBPB: conditional RSB filling PBRSB-eIBRS: SW sequence + srbds: Not affected + tsx_async_abort: Not affected

	A	B	C	D
SMHasher - wyhash (MiB/sec)	35502	35645	**35454**	**35765**
Normalized	99.27%	99.66%	99.13%	100%
Standard Deviation	0.9%	0.5%	0.6%	0.1%
SMHasher - wyhash (cycles/hash)	**14.87**	**14.87**	**14.873**	**14.87**
Normalized	100%	100%	99.98%	100%
Standard Deviation	0%	0%	0%	0%
SMHasher - SHA3-256 (MiB/sec)	300.08	300.19	**300.04**	**300.41**
Normalized	99.89%	99.93%	99.88%	100%
Standard Deviation	0%	0%	0.1%	0%
SMHasher - SHA3-256 (cycles/hash)	1302	1302	**1303**	**1301**
Normalized	99.91%	99.93%	99.8%	100%
Standard Deviation	0.1%	0.1%	0.3%	0.1%

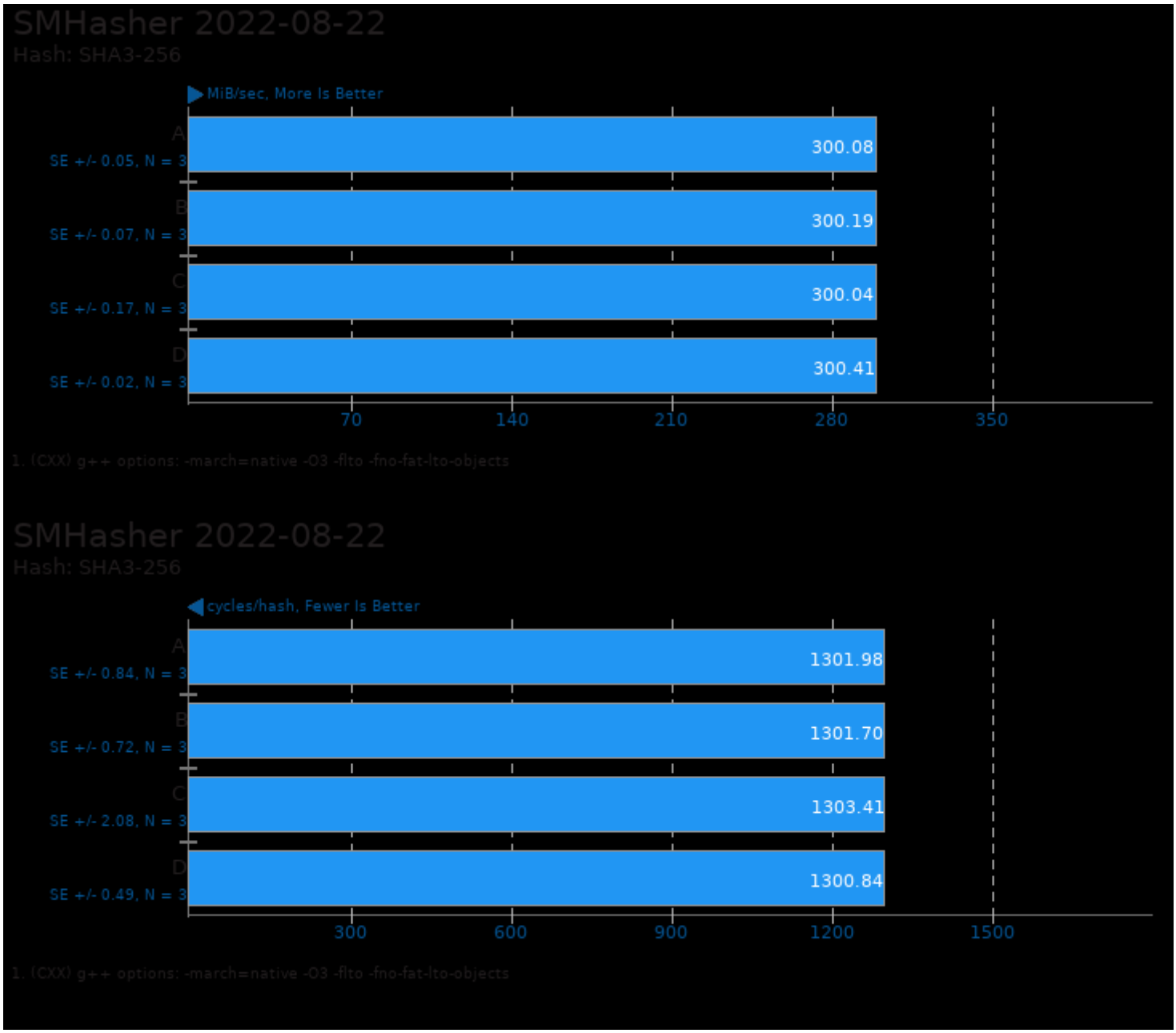
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SMHasher - Spooky32 (MiB/sec)	21944	**21918**	**22042**	21961
Normalized	99.56%	99.44%	100%	99.63%
Standard Deviation	0.8%	1.1%	0.2%	0.8%
SMHasher - Spooky32 (cycles/hash)	27.591	**27.652**	27.585	**27.582**
Normalized	99.97%	99.75%	99.99%	100%
Standard Deviation	0%	0.4%	0%	0%
SMHasher - fasthash32 (MiB/sec)	**9276**	**9336**	9335	9313
Normalized	99.36%	100%	100%	99.76%
Standard Deviation	1.1%	0%	0%	0.4%
SMHasher - fasthash32 (cycles/hash)	**22.908**	**22.807**	**22.807**	22.809
Normalized	99.56%	100%	100%	99.99%
Standard Deviation	0.8%	0%	0%	0%
SMHasher - FarmHash128 (MiB/sec)	**23215**	23258	23435	**23529**
Normalized	98.66%	98.85%	99.6%	100%
Standard Deviation	1%	0.9%	0.7%	0.2%
SMHasher - FarmHash128	**44.002**	43.939	**43.838**	43.847
Normalized	99.63%	99.77%	100%	99.98%
Standard Deviation	0.5%	0.4%	0%	0%
SMHasher - t1ha2_atonce (MiB/sec)	25767	**25683**	**26207**	26180
Normalized	98.32%	98%	100%	99.9%
Standard Deviation	0.1%	1.4%	1.4%	2.4%
SMHasher - t1ha2_atonce	20.358	**20.473**	**20.355**	20.357
Normalized	99.99%	99.42%	100%	99.99%
Standard Deviation	0%	1%	0%	0%
SMHasher - F.x.A (MiB/sec)	32613	32790	**32807**	**32556**
Normalized	99.41%	99.95%	100%	99.23%
Standard Deviation	0.2%	0.6%	0.6%	0.8%
SMHasher - F.x.A (cycles/hash)	**26.368**	26.403	**26.407**	26.396
Normalized	100%	99.87%	99.85%	99.89%
Standard Deviation	0%	0.2%	0.2%	0.2%
SMHasher - t.x (MiB/sec)	80583	**80683**	80448	**79799**
Normalized	99.88%	100%	99.71%	98.9%
Standard Deviation	4%	5%	4.9%	2.5%
SMHasher - t.x (cycles/hash)	**20.545**	**20.542**	20.544	**20.542**
Normalized	99.99%	100%	99.99%	100%
Standard Deviation	0.1%	0%	0.1%	0%
SMHasher - M.x.A.N (MiB/sec)	**60235**	59747	59859	**59252**
Normalized	100%	99.19%	99.38%	98.37%
Standard Deviation	0.6%	1.6%	1.8%	1.2%
SMHasher - M.x.A.N (cycles/hash)	**44.277**	**44.261**	44.267	44.266
Normalized	99.96%	100%	99.99%	99.99%
Standard Deviation	0%	0%	0.1%	0%

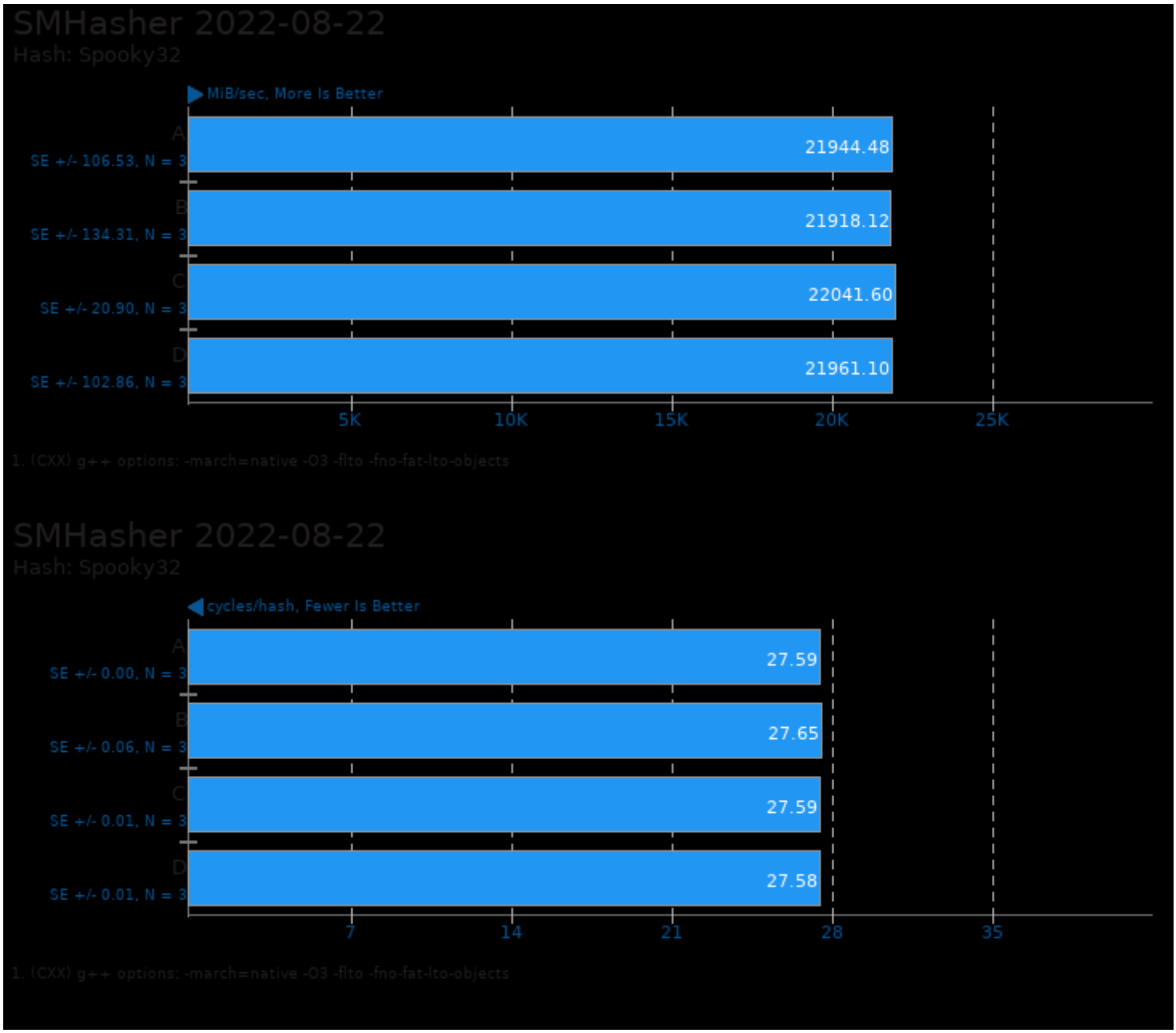
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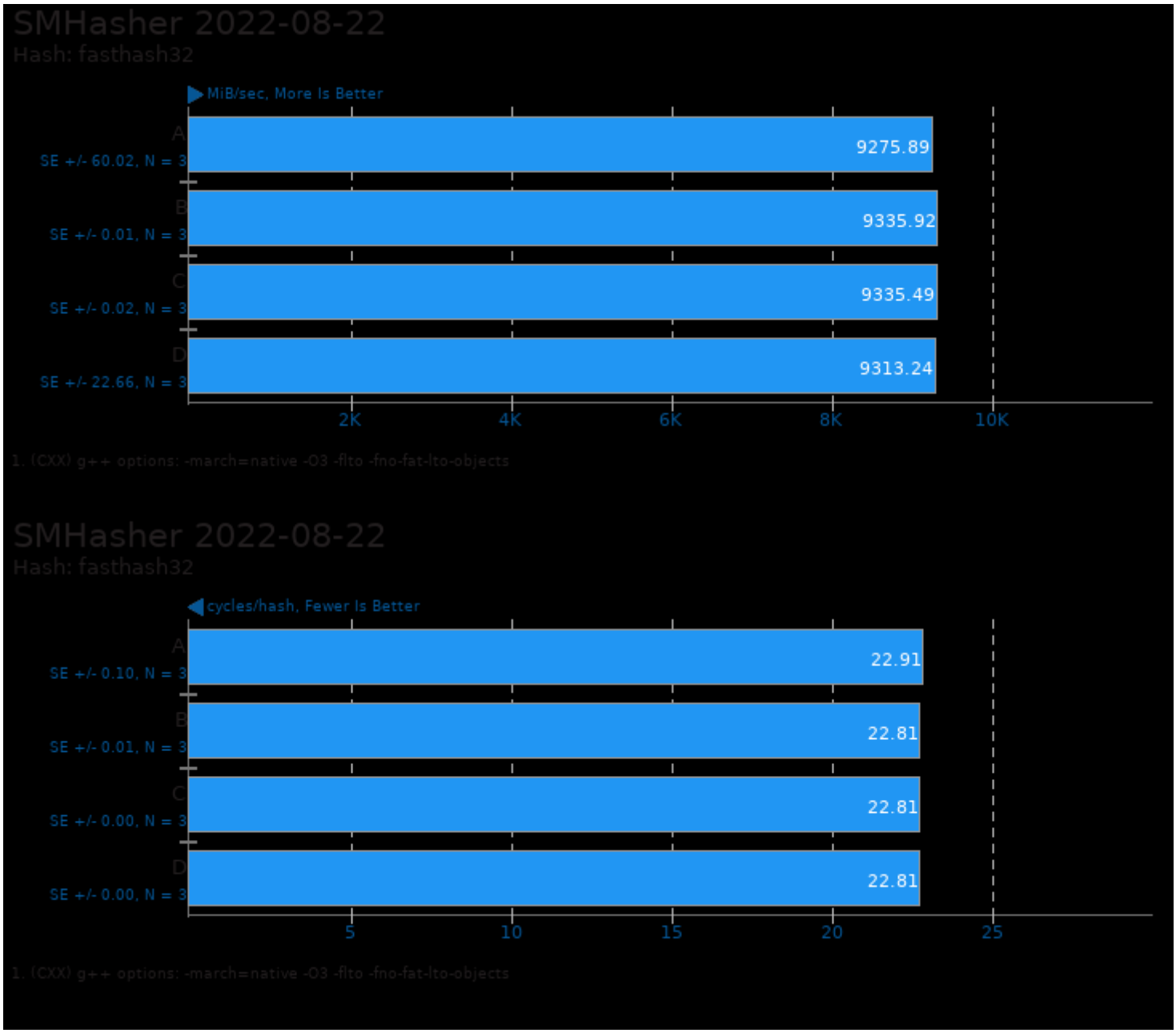
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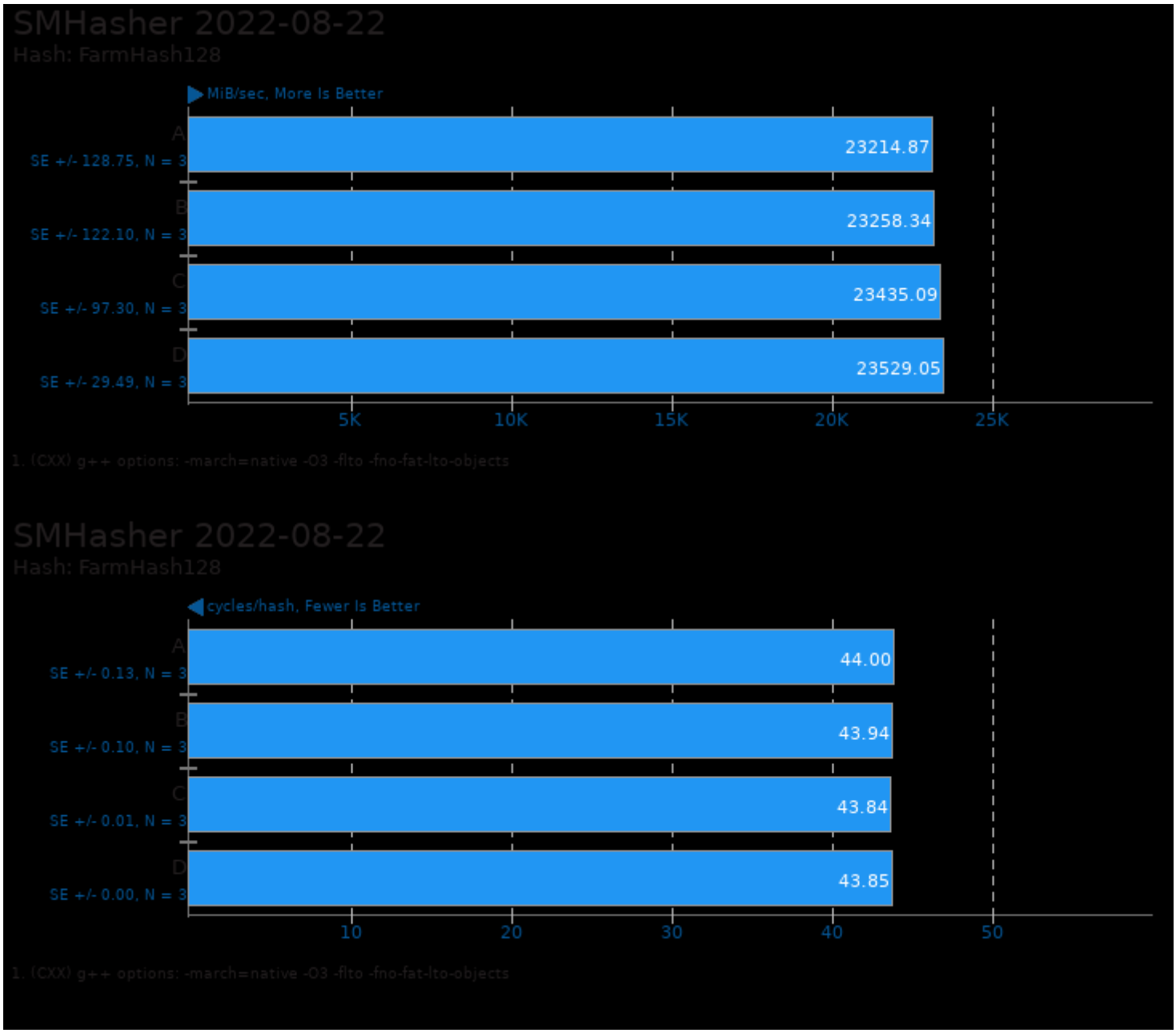
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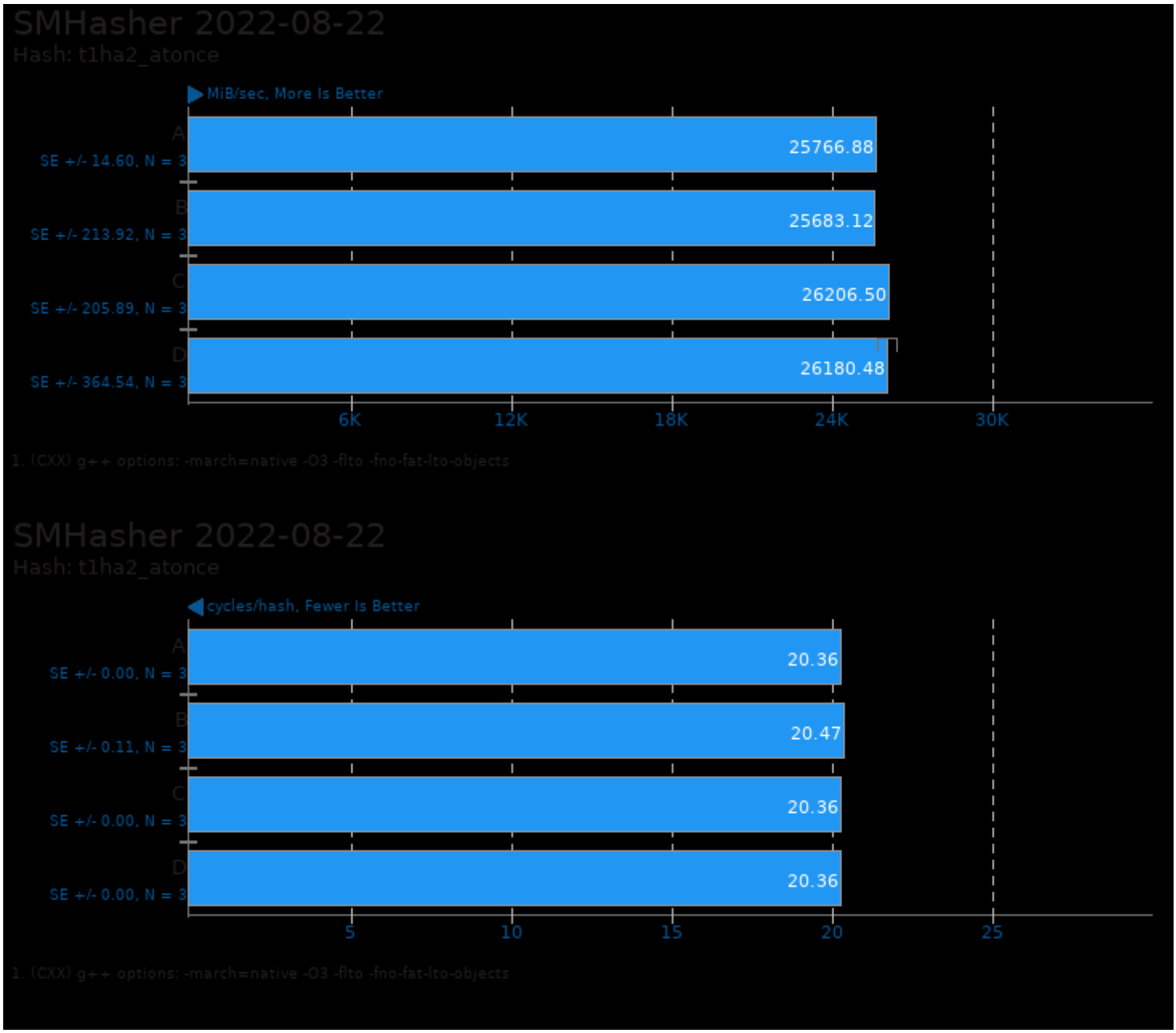
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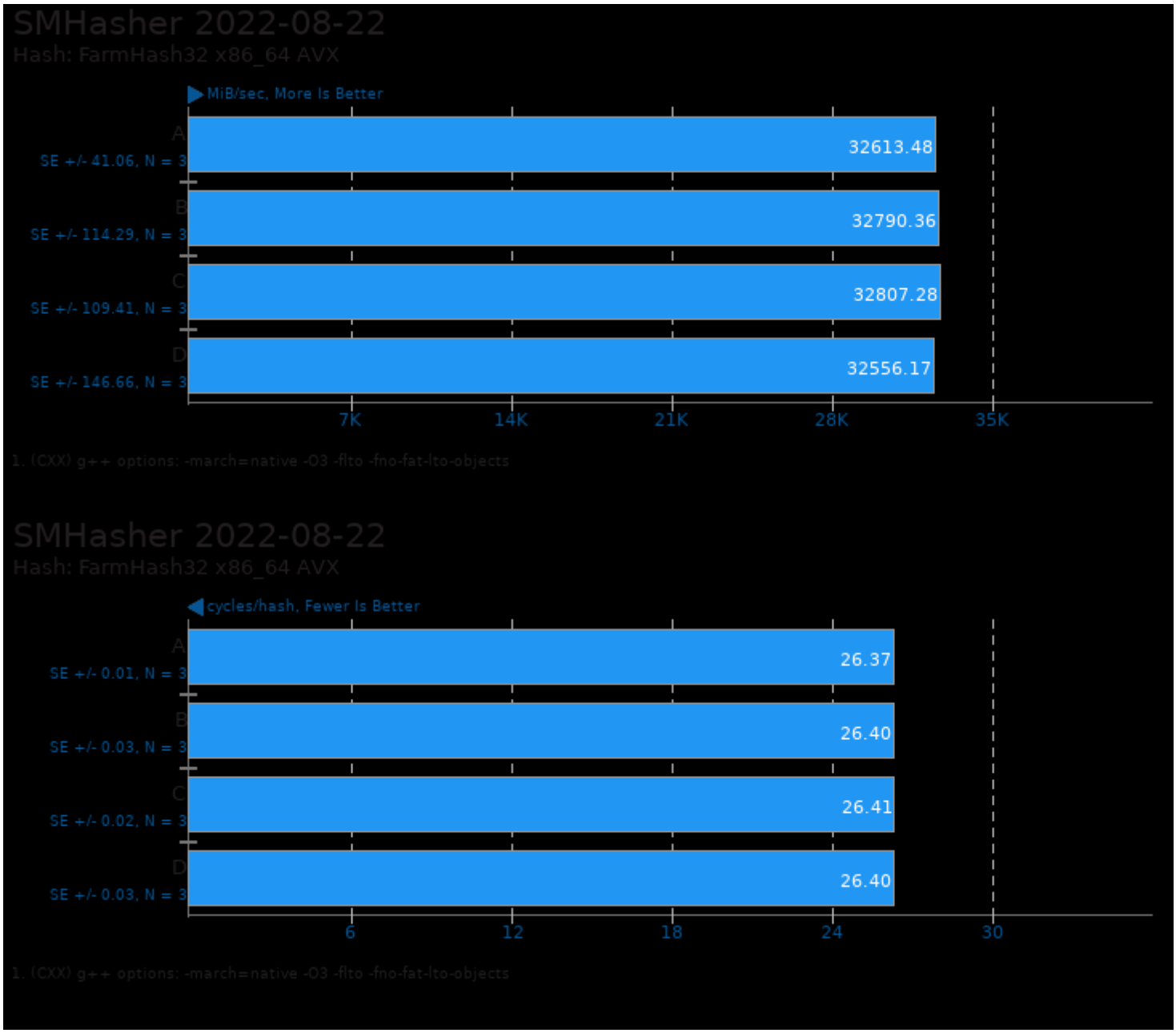
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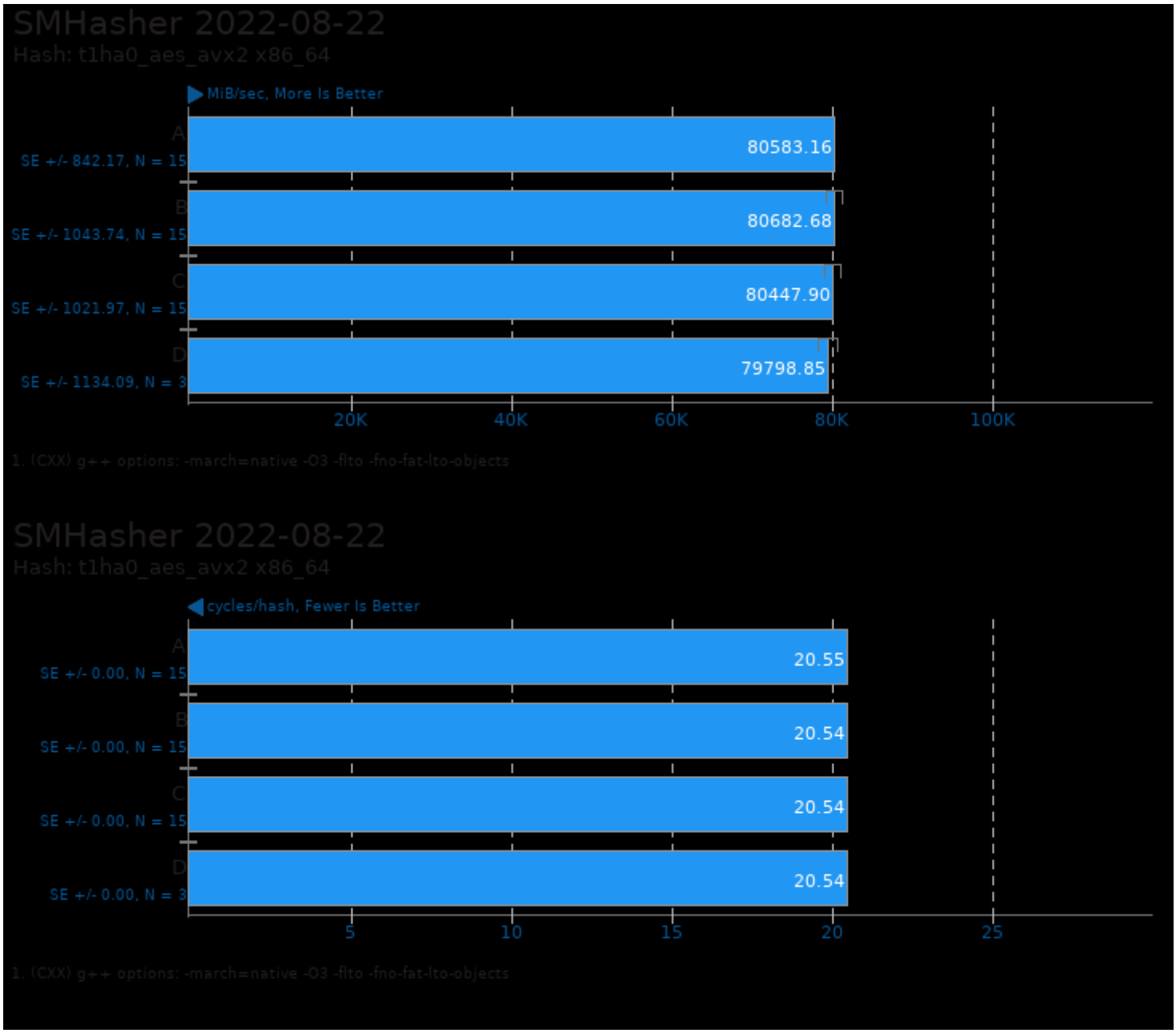
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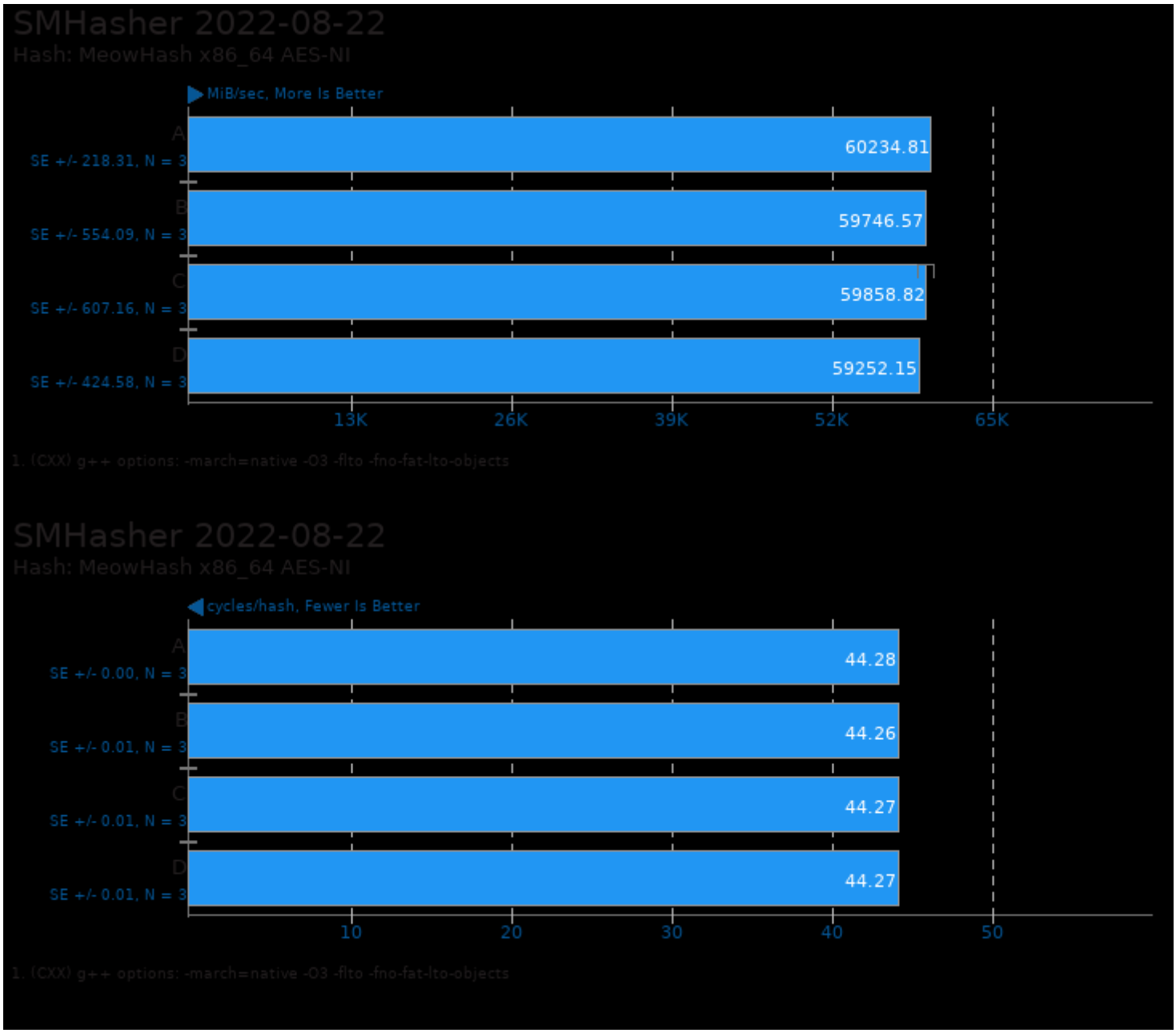
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