Execution-Fidelity Report

Bar-open vs intra-bar stress test

Version 1.11.0

June 2026

Purpose

Allocators care whether live fills resemble the assumptions embedded in the published backtest. This note describes how Smooth Brains executes on Hyperliquid, what we model in simulation, and where honest gaps remain.

Execution venue

All production risk runs on Hyperliquid perpetuals (BTC). Users connect their own wallet; the platform signs orders under trade-only delegation. Smooth Brains does not custody assets or hold withdrawal keys.

What the backtest assumes

Assumption	Published backtest
Fill style	Immediate-or-cancel taker at bar open price
Fee per fill	4.5 basis points (Hyperliquid taker schedule)
Slippage model	Embedded in bar-open execution convention
Funding	Included where applicable in simulation
Maximum portfolio exposure	3.4x notional vs equity

The fixed historical window runs through 16 June 2026 on frozen inputs. It is the reference track for headline metrics (~14,068% gross, 5.24 Sharpe, 317 trades).

What live execution does differently (and honestly)

Topic	Live behaviour
Order type	Market-style entries with protective stops placed at the venue
Stop placement	Native stop orders on Hyperliquid; fast websocket monitoring as backup
Large orders	May split via time-weighted execution when size warrants
Wide protective stops	On rare entries where the stop sits unusually far from entry, the current production release may cap worst-case loss on that trade at 10% of account equity without changing position size. Historical backtest figures are unchanged.
Latency	Real network and matching-engine delay; not zero

We do not claim bar-perfect parity between simulation and live fills. We claim the same signal decisions drive both, and we monitor divergence between live paper tracking and rolling replay.

Protective stops and risk

Every entry is intended to carry a venue-native protective stop before the position is considered open. If stop placement or read-back fails, the system fails closed - it does not leave unprotected exposure and retry silently.

A separate drawdown circuit breaker and kill switch can halt new risk when portfolio or operational limits are breached.

Monitoring and publication gates

Automated checks compare live paper tracking to the rolling research replay. Material mismatches block updated public figures and alert operators. This is process discipline, not a guarantee that the next fill will match the last simulated bar.

What this document does not cover

- Signal generation logic or entry timing rules.
- Client-specific sizing beyond the user's chosen risk profile.
- Other venues or assets (Bitcoin only in production today).

Disclaimer

Not financial advice. Execution shortfalls, outages, and regime change can materially affect live results relative to simulation.