

72-Hour Triple-Hybrid Soak

Three signature legs per receipt under adversarial minimums, refusal testing and live rotation.

FINAL VERDICT
PASS

Internal adversarial soak testing. Independent third-party security audit remains pending.

SYSTEM	WINDOW	RUN	SOURCE
R-Series triple-hybrid signing - frozen tag audit-tob-v1.1.0 (697f339)	22 Jul 2026 -> 25 Jul 2026	Run 5	Machine-generated run-5 closing snapshot

Closing metrics

543 CYCLES / RECEIPTS 0 failed	19/19 FAULTS SURVIVED 100% recovery	15/15 VERDICT GATES 0 pending	6 / 0 PARTIAL ATTEMPTS refused / accepted
4/4 PARTITIONS detected	1 LIVE ROTATION 3-leg continuity	44 / 0 DIVERGENCE checks / findings	0 STATE HAZARDS violations

WHAT THIS RUN DEMONSTRATES

The three-leg receipt profile - Ed25519, ML-DSA-65 and stateless SLH-DSA - operated for 72 hours under a hard adversity floor. The run proved partial-signature refusal, partition detection, unbroken three-leg key rotation, retired-epoch archival and zero divergence.

EVIDENCE STATUS

Final internal test verdict: PASS. All 15 gates were earned and all mandatory adversity floors were exceeded. The record is pre-audit evidence and does not assert external certification.

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Technical results

Metric / gate	Closing result	State
Cycles / receipts / failed	543 / 543 / 0	PASS
Faults injected / survived	19 / 19	PASS
Partials refused: 2-leg / 1-leg	3/3 / 3/3; 0 accepted	PASS
Partitions injected / detected	4 / 4	PASS
Live rotations / continuity	1 / unbroken	PASS
Retired epoch archival	All three legs archived	PASS
Signer restarts / state hazards	3 / 0	PASS
SLH-DSA sign P50 / P95	91.79 / 118.45 ms (549 samples)	PASS
SLH-DSA verify P50 / P95	5.4 / 9.89 ms (545 samples)	PASS
Receipt size	20,461 B avg; 6.07x two-leg	PASS
Divergence checks / divergences	44 / 0	PASS
RSS baseline -> final / alerts	73.4 -> 34.8 MB / 0	PASS
Final verdict	15/15 gates; 0 pending	PASS

Method and controls

- Hard minimums: at least 8 faults, 3 two-leg partials, 3 one-leg partials and 2 partitions.
- A partial receipt was a failure unless every incomplete injection was refused.
- The live rotation had to preserve one chain across all three legs and archive the retired epoch.
- Recovery rate remained unevaluable until faults actually existed; vacuous 100% results were prohibited.

ANOMALIES, LIMITS AND DISCLOSURES

Runs 2-4 exposed four harness/verdict defects: premature-true rotation gates, vacuous recovery rate, legacy two-leg gates and absence of an adversity floor. These were corrected before run 5 closed. They were harness defects, not R-Series core defects; the final run reported no open system anomaly.

RAW RECORD AND AUDIT SCOPE

Reference: machine-generated snapshots for runs 2-5, full logs, injection schedules, refusal receipts, rotation records and the frozen source tree. Raw records are retained for auditors. This software evidence does not establish flight qualification or external certification.