NIST STS Entropy Scorecard

STS SP 800-22 • α = 0.01 • 100 sequences × 1,000,000 bits • Binary mode
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PASS
Winner: **QSE**

Headline Verdict: Both sources pass NIST STS; QSE shows slightly stronger margins across tests.

QSE OVERALL
PASS
Passed Tests: 188/188

SYSTEM OVERALL
PASS
Passed Tests: 187/187

WINS BY TEST
8 QSE • 7 System
0 ties

Key Risk / Weakest Tests

Source	Weakest Test	Pass Rate	Uniformity p-value	Threshold Margin
QSE	NonOverlappingTemplate	97/100 (97.00%)	0.048716	1
System	NonOverlappingTemplate	96/100 (96.00%)	0.262249	0

Note: STS evaluates statistical randomness. It does not alone certify cryptographic strength or "quantum resilience."

Per-Test Comparison (All Tests)

Test	QSE Pass Rate	QSE p-value	System Pass Rate	System p-value	Winner
ApproximateEntropy	98/100 (98.00%)	0.455937	100/100 (100.00%)	0.066882	System
BlockFrequency	99/100 (99.00%)	0.171867	98/100 (98.00%)	0.616305	QSE
CumulativeSums	99/100 (99.00%)	0.719747	98/100 (98.00%)	0.162606	QSE
FFT	100/100 (100.00%)	0.401199	99/100 (99.00%)	0.759756	QSE
Frequency	99/100 (99.00%)	0.657933	98/100 (98.00%)	0.514124	QSE
LinearComplexity	97/100 (97.00%)	0.851383	100/100 (100.00%)	0.017912	System
LongestRun	98/100 (98.00%)	0.834308	98/100 (98.00%)	0.213309	QSE

NonOverlappingTemplate	97/100 (97.00%)	0.897763	97/100 (97.00%)	0.080519	**QSE**
OverlappingTemplate	99/100 (99.00%)	0.616305	98/100 (98.00%)	0.779188	**QSE**
RandomExcursions	53/53 (100.00%)	0.181557	59/59 (100.00%)	0.595549	**System**
RandomExcursionsVariant	53/53 (100.00%)	0.437274	59/59 (100.00%)	0.514124	**System**
Rank	100/100 (100.00%)	0.883171	98/100 (98.00%)	0.437274	**QSE**
Runs	99/100 (99.00%)	0.289667	99/100 (99.00%)	0.719747	**System**
Serial	99/100 (99.00%)	0.383827	100/100 (100.00%)	0.171867	**System**
Universal	99/100 (99.00%)	0.514124	100/100 (100.00%)	0.275709	**System**

Recommended Next Steps

- Run multiple independent batches (e.g., 5 runs) with newly generated data for both sources.
- Increase sequences to 200–300 per run for stronger statistical confidence.
- Track stability: count how often any test hits minimum thresholds across runs.
- Archive all STS reports and parameters for auditability.

— End of Report —