PQ-NTOR Performance: Single Handshake vs 3-Hop Circuit Construction
Test Platform: Phytium Pi (ARM64) | Algorithm: Kyber-512

Metric	Single Handshake	3-Hop Circuit	Ratio
Average Time	181.64 µs	1252.57 µs	6.90×
Median Time	180.00 µs	1181.80 µs	6.57×
Min Time	179.00 µs	1163.14 µs	6.50×
Max Time	284.00 µs	1911.23 µs	6.73×
Std Dev	7.58 µs	220.04 µs	29.03×
Stage Breakdown	**Time (µs)**	**Percentage**	
Directory Fetch	767.80	61.3%	
Hop 1 (Guard)	163.74	13.1%	
Hop 2 (Middle)	156.36	12.5%	
Hop 3 (Exit)	155.91	12.4%	
Total	1252.57	100.0%	