

LAN Pair Twisting Benchmark v1 – Methods

1. Scope

- Benchmark test comparing double-twist vs triple-twist machines for LAN cable pair twisting.

2. Equipment

- Double twist: HK-DT-800 (fw v2.4).
- Triple twist: HK-TT-500 (fw v3.1).
- Calibrated NEXT analyzer (Keysight DSA, SN: 56789).

3. Test Conditions

- Cable: Cat6 UTP pairs, 24 AWG.
- Lay length: 12 mm fixed.
- Back-twist: 100%.
- Repeats: 20 samples each machine.

4. Measurements

- Throughput (pairs/min).
- NEXT margin (dB).
- Lay stability (% deviation over 100 m).
- Scrap rate (%).

5. Statistical Method

- Independent samples t-test, $\alpha = 0.05$.
- Results expressed mean $\pm$ SD.

6. Data Availability

- CSV dataset and PDF methods openly available.