

Paragon-t

Parallel Testing for Frequency, Phase, Time of Day, Synchronization



Save on Time and Equipment with the Spirent Paragon-t

Put simply, the Spirent Paragon-t combines power with versatility. That's because it has four independent transmit and measurement ports enabling you to comprehensively test four separate network devices simultaneously — including SECs, EECs, and Boundary Clocks (BCs) and Slave Clocks (SCs).

For both legacy synchronization and next-generation Ethernet devices and systems, the Paragon-t proves wander tolerance at key rates so you can benchmark and validate against the latest ITU standards. It's invaluable for developers and labs testing a range of interfaces and outputs, and because it can also make lengthy simultaneous measurements, it's perfect for long term Software Regression/System Verification testing or during Acceptance and Installation testing.

The Paragon-t's built-in Calnex Analysis Tool (CAT) ensures that all your measurement results are on hand for fast, easy analysis. The CAT's multigraph window lets you correlate a variety of measurements and channels simultaneously to quickly characterize and validate system and device behaviour. Plus, it provides pass/fail evaluation to ITU-T standards or user masks.

If you're looking to rigorously test SECs, EECs, BCs and SCs, the Spirent Paragon-t provides all the frequency, phase, ToD and wander test functions you'll need. Furthermore, because you can generate wander on up to four interfaces, and make up to 12 precise measurements simultaneously, you'll save days of test time, greatly increase test coverage, and save on test equipment. That's real savings, not promises.

Features

- 4 ports SyncE clock generation plus frequency offset and wander — 1 GbE, 100BT
- 4 ports clock generation plus frequency offset and wander — E1 (bal/unbal), T1 (bal), 10 M (unbal), 2 M (unbal)
- 4 ports SyncE clock measurement — 1 GbE, 100BT
- 4 ports clock measurement — E1 (bal/unbal), T1 (bal), 10 M (unbal), 2 M (unbal)
- 4 ports phase measurement — 1 pps (bal/unbal)
- 4 ports ToD measurement
- Clock Reference input — GPS Antenna, 64 k, 2 M, 6.3 M, 10 M, T1 BITS, E1 MTS

Key Highlights

- Four independent transmit and receive ports to test four separate network devices simultaneously.
- Ideal for system verification, benchmarking, regression test or Proof of Concept.
- Test chains (e.g. Boundary Clocks) that require multiple simultaneous test points.
- Speed up test time and reduce test complexity: multiple ports for 4 x frequency generation, and simultaneous 4 x frequency, 4 x phase and 4 x ToD measurements.
- Supports 1588, SyncE, E1/T1, 2/10 MHz, 1 pps, ToD

Test multiple NEs and clocks simultaneously

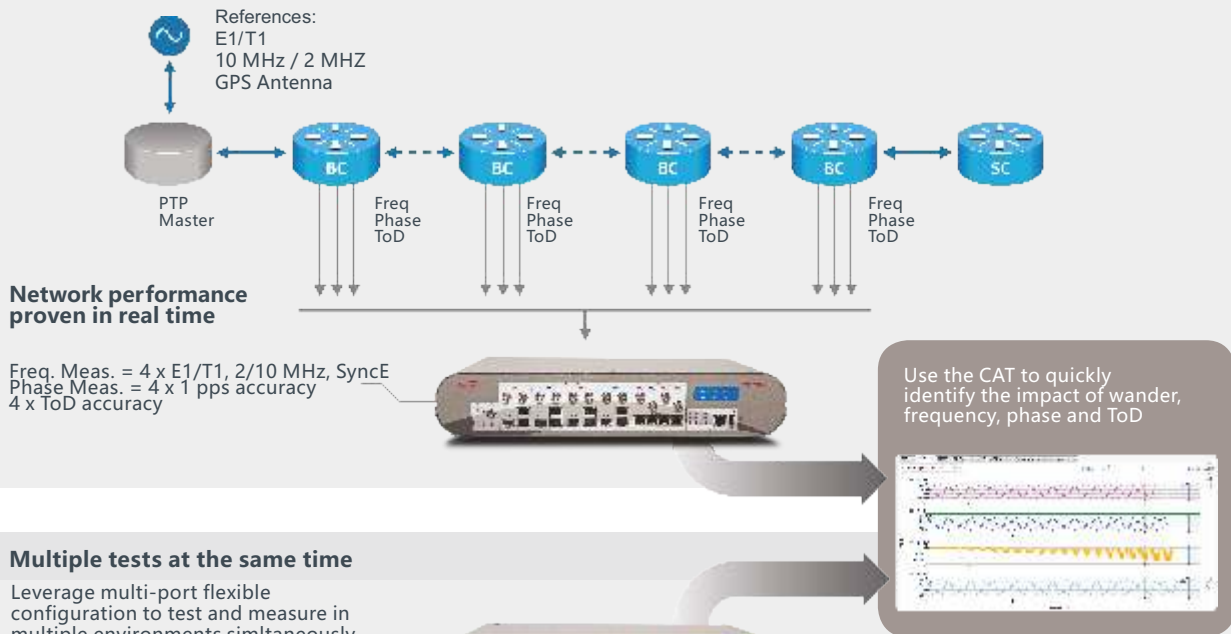
Simultaneously test multiple BCs/SCs

- 4 ports simultaneous BC and SC frequency measurements
- 4 ports simultaneous phase measurements — 1 pps
- 4 ports ToD measurement
- 4 ports MTIE, TDEV, clock MAFE and FFO pass/fail evaluation to standard or user masks

Simultaneous SyncE measurement

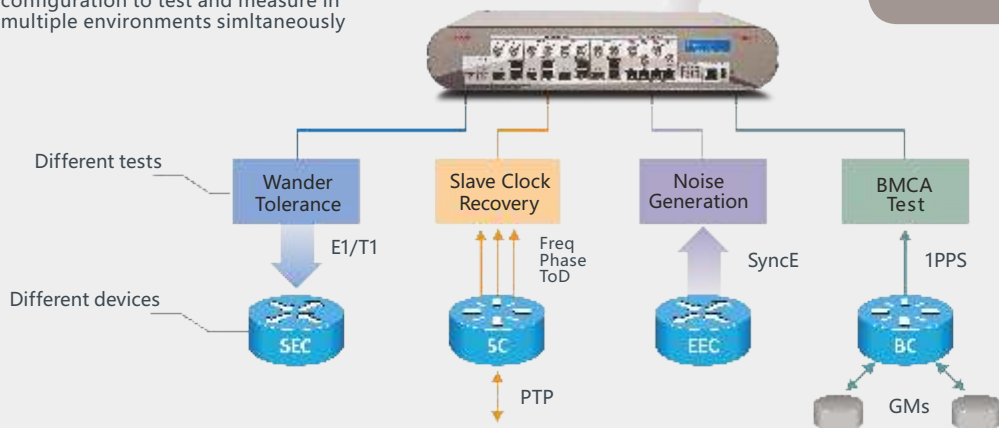
- 4 ports simultaneous SyncE wander measurement to G.8262/G.8261
- 4 ports SyncE ESMC monitoring with G.8264 decodes
- 4 ports MTIE, TDEV, clock MAFE and FFO pass/fail evaluation to G.8262/G.8261 standard or user masks
- Simultaneous wander measurements:
 - 4 ports SyncE wander generation to G.8262/O.174
 - 4 ports E1/T1/10 M/2 M to G.813/O.172

Testing network chains

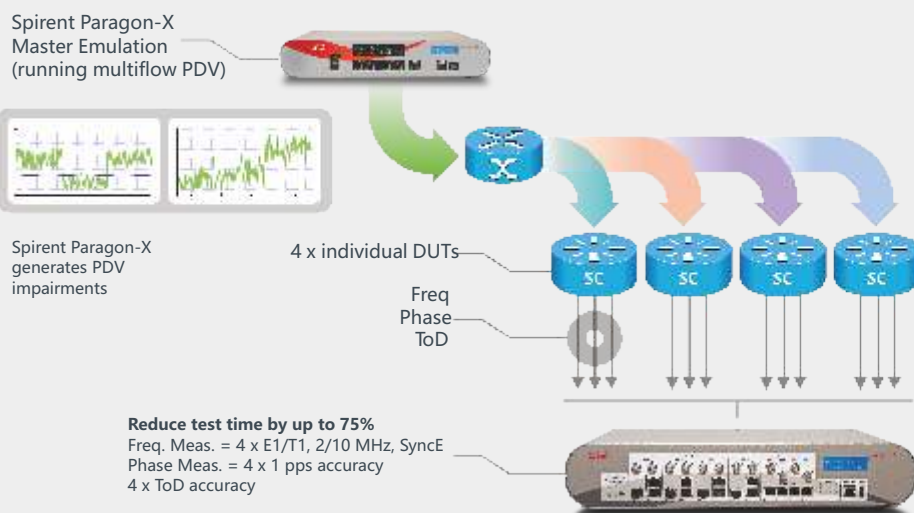


Multiple tests at the same time

Leverage multi-port flexible configuration to test and measure in multiple environments simultaneously



1588 multi-port BC or SC testing



Technical Specifications	
Physical Interfaces	Ethernet: 4 x 1 G, 100BT Electrical – RJ45, 4 x 1 G Optical (SFP required) 4 ports E1, 10 MHz, 2.048 MHz – BNC (unbalanced) 4 ports E1, T1 – RJ48 (balanced) 4 ports 1 pps – BNC (unbalanced) 4 ports 1 pps – RJ45 (balanced) 4 ports ToD – RJ45
Wander Generation/ Measurement	TIE to ITU-T G.8262 and ITU-T O.174/O.172 Measurement accuracy 1 ns
MTIE/TDEV Analysis	Built-in wander analysis software with ITU-T Masks (G.813, G.823, G.824, G.8261, G.8262, G.8263, G.8261.1, GR.1244) and Pass/Fail indication (also clock MAFE and clock FFO).
ESMC (SSM) Features	Decode ESMC messages to ITU-T G.8264 and plot Quality Level (QL) changes graphically (bi- directional) to G.8264, G.781 etc. QLs: PRS, PRC, INV3, SSU-A/TNC, INV5, INV6, ST2, SSU-B, INV9, EEC2/ST3, EEC1/SEC, SMC, ST3E, PROV, STU/UKN, DNU/DUS.
Reference Clocks	Lock internal timing reference to external reference. Reference Lock soft LED indication. External reference inputs: 64 kHz, 2.048 MHz, 6.312 MHz, 10 MHz, T1 BITS clock (1.544 Mb/s), E1 MTS (2.048 Mb/s), 1 pps single ended/differential, SyncE, GPS Antenna. Internal Ref. Clock: Frequency Stability over Temp: $\pm 1.5 \times 10^{-7}$ (no GPS), $< 5 \times 10^{-12}$ over 24 hrs (with GPS). Companion GPS/Rb timing source available (Option 132)
PC Control Interface	Any standard PC or laptop (min. 4GB RAM recommended) running Windows Vista, 7 or 8. RJ45 LAN connection to instrument.
Timing Measurements (Option 001, 002, 003)	E1, T1, 10 MHz, 2.048 MHz, SyncE Wander – TIE, MTIE, TDEV analysis with ITU-T masks, sample rate 0.1 Hz to 100 Hz. 1 pps accuracy – recovered slave clock 1 pps vs 1 pps reference
Simultaneous Measurements	4 x Clock Wander (E1/T1/10 MHz/2.048 MHz) – Option 001 4 x Clock Wander (SyncE) – Option 002 4 x 1 pps Wander/Accuracy – Option 003 4 x ToD Accuracy – Option 003
Wander Generator (Option 004, 005, 223)	E1, T1, 10 MHz, 2.048 MHz, SyncE Wander – Frequency Offset, Sine Wave, MTIE/TDEV, 0.01 to 10 μ s, 100 μ Hz to 10 Hz.
Remote Control	Scripting via TCL
Operation and Regulatory	Temperature 5 - 50°C, Humidity 0 - 95%, CE and EMC (incl. EN-61010, EN-61326, etc.) certified. Voltage 85 - 246 VAC, 100 - 240 VAC (Nominal) @ 50/60 Hz.