Highest throughput meets best accuracy

4080

8X MULTI-FUNCTION FLYING PROBE TESTER

IDEAL FOR **HIGH-VOLUME PRODUCTION TESTING** ...& MORE

4080 sets new benchmarks for flying probe board testing, delivering **unparalleled throughput and test capabilities.**

Up to 180 touches/sec are delivered by very high speed Linear Motors on each XYZ axis. The **highest positioning accuracy** is guaranteed by sub-micron resolution Linear Optical Encoders on each XYZ axis, making 4080 suitable to touch **50µm pads** at high speed and without leaving marks on them.

The **natural granite chassis**, combined with state-of-art linear motion technologies, offers low vibration and thermal stability, ensuring **unprecedented probing precision at ultra-fast test speed**.

Full test coverage is provided by a complete range of test capabilities integrated in 4080 systems, and by the **highest available measurement accuracy** offered by Flying Tester Technology: a complete forcing/measurement board integrated on each axis.

Board loading is flexible: while the system is equipped with automatic in-line transportation, boards can be manually loaded as well.

4080 footprint is **very compact: as little as 2.2m²**, including in-line board transportation.

- 180 touches/sec
- Min. pad size: 50 µm
- Dual-side probing
- 8 Multi-Tool Flying Heads
- Full test coverage
- Compact footprint: 2.2m² (23.14 ft²)
- Manual + in-line loading on same system

Speed and accuracy. Without compromise.

With 4080, you don't need to sacrifice speed for accuracy. Nor accuracy for speed. Product benchmarks recognized SPEA's flying probe tester as the **best on the market** in both aspects.

Full linear motion with **linear optical encoders** on XYZ axes provide ultra-high acceleration and speed, along with positional repeatability and accuracy over unlimited travel.

The system chassis is completely made of **selected natural granite**. Compared to conventional iron or steel, natural granite offers best damping characteristics and thermal stability, so to minimize vibration and deformation effects that would affect accuracy and reliability through time. This results in the capability to accurately and reliably contact **micro-pads as little as 50µm**, **at high speed**, like no other flying probe system can do.

Despite the speed, 4080 probes will touch the board softly. The **programmable probing force** makes the probes able to contact components at near-zero energy: even the most delicate electronics (ultra-fine pitch pads, sticky boards, flex circuits) can be tested with no risk of damage.

All these technology features enable 4080 to test also silicon wafers and glass wafers, accurately and gently.

Full linear motion on XYZ axes

- Highest speed of movement
- Positional repeatability over unlimited travel
- No mechanical wear
- Fewer mechanical parts compared to other technologies

Linear optical encoders on XYZ axes

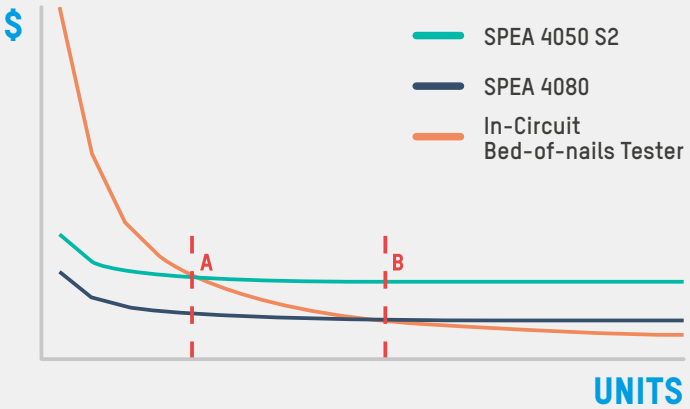
- Real-time positioning feedback
- Closed-loop accuracy
- Axis position is measured directly, with no error due to additional mechanical elements
- Positioning measurement stability over long time

Selected granite chassis

- Extremely high dynamic stability for the machine structure
- Excellent vibration damping
- High stiffness
- Very low thermal expansion

Suitable to replace bed-of-nails systems

With a throughput that is three times (or even more!) higher than the fastest single-side flying prober on the market, 4080 moves the ROI time of high-volume productions to a level that is very close to the one of a traditional bed-of-nails tester (from point A to point B in the chart below).



ICT — In-Circuit Test

SHORT FREE — 100% Short Circuit Test

NZT — Nodal Test

Open Pin Scan

Power-On Test

FCT — Functional Test

Optical Test

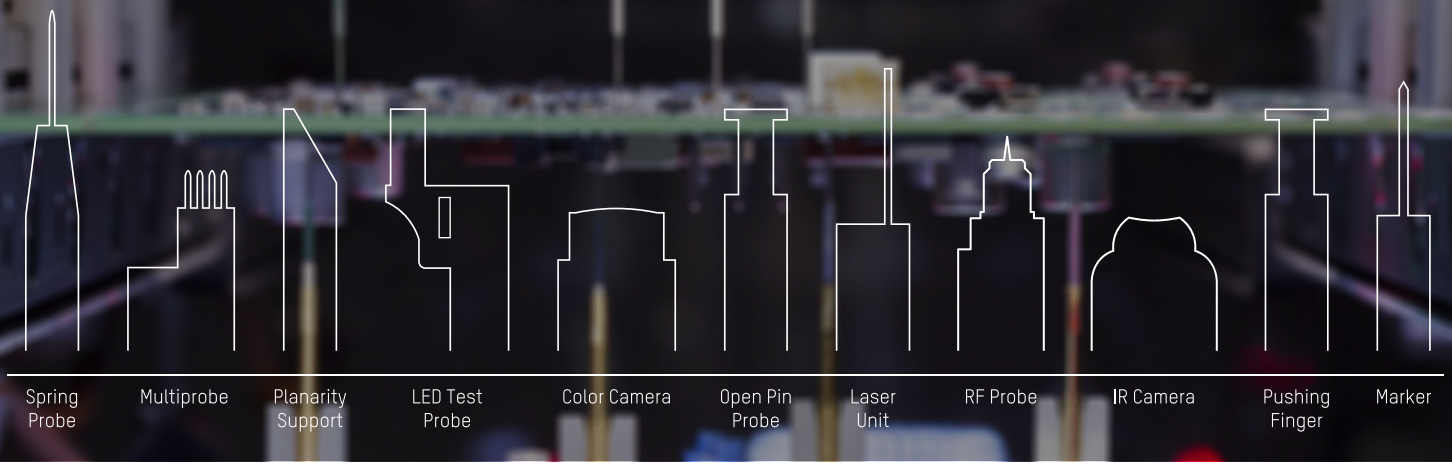
LED Light Test

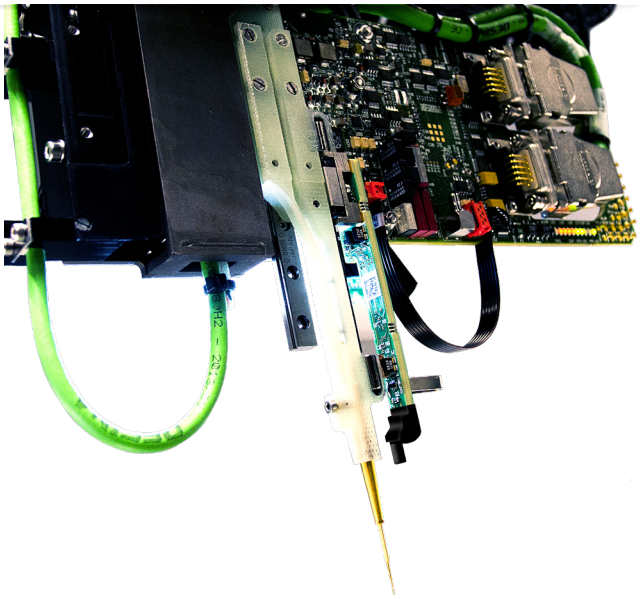
Leonardo 4. A world of apps.

4080 users take the advantage of working with an **extremely easy-to-use, app-based software environment**, similar to what smartphones made us used to. Every app is dedicated to a defined function, while its updating process is independent and does not affect overall software integrity. Leonardo 4 operating system incorporates all the functionalities and effectiveness of previous Leonardo versions, bringing them a step ahead. In the world of apps you want to use.

Up to 28 top & bottom flying tools

The 8 axes (4 top + 4 bottom) of **4080** testers allow you to install up to 28 simultaneous flying test tools, within a range of more than 50: in addition to the electrical probes, used to perform all the electrical tests, a variety of test tools are available to expand **4080**'s test capabilities.





Best measurement accuracy

The shorter the distance between probe and instruments, the faster and more accurate is the measurement. According to this simple rule, SPEA designed the concept of Flying Tester Technology.

Force & measurement instruments are placed directly on each flying head, delivering unsurpassed measurement speed and performance.

- Highest measurement performance & accuracy (0.1pF)
- Signal integrity
- No measurement degradation or interference
- Immediate signal acquisition (within hundreds of microseconds)

3D Laser Test | Flashing | Boundary Scan | Thermal Test | Waveform Capture | 5G RF Test | Wafer Test | Built-In Self-Test

4080 SPECIFICATIONS

Main Specs

Max touches	180 touches/sec*
Multi-Probe Flying Heads	8 (4 top + 4 bottom)
Tester interface	Up to 576 channels
Min. pad size	50µm
Min. pitch	160µm
XYZ Motion technology	Linear
XYZ Measuring encoders	Linear 10µm accuracy 0.0012µm resolution
On-axis measurement instrumentation	Included on each axis
Footprint (LxW)	1700 x 1300mm (2.2m²) standard 1700 x 1438mm (2.4m²) on 4080X model

BOARD LOADING

Conveyor loading	Integration in SMD line or test cell with loader/unloader Left-to-Right or Right-to-Left Pass-Through or Pass-Back
Manual loading	Front & side loading

TEST AREA SPECS

Max. board size (L x W)	1000 x 460mm (39.4 x 18.1")**
Max. test area (L x W)	510 x 454mm (20.1 x 17.9")
Max. component height	55mm standard 85mm optional 150mm on 4080X model
Max board thickness	10mm

Ease of use

SOFTWARE

Operating System: Leonardo 4, App Library
Automatic test program generation
Automatic test program debug
Automatic board repair
Automatic variant management
Production monitoring & analysis

Test Type

ELECTRICAL TEST

In-Circuit Test
All-Nets Short Circuit Test
Nodal Impedance, Voltage and Insulation Test
Open Pin Scan
Power-On Test
Discharge Capacitor Test
Voltage Spike Detection
Power Supply Test
Functional Test
Flashing via On-Board Programming
Boundary Scan
Waveform Capture
Flying Frequency Measurement up to 100 MHz
5G RF Test
Insulation Resistance Test with HV Probe

OTHER TESTS

Light Cromaticity & Intensity test	Flying LED sensor
3D Laser Test	Component height Board warpage Component alignment Component presence Tombstone ...
Optical Test	OCR, OCV, component presence, component orientation, 2D code reading...
Thermal Test	IR camera for temperature monitoring

ADDITIONAL PROBE UTILITIES

Multi-Probe units
Dynamic support rods
Pushing fingers
Markers

* At 2.5mm movement pitch, with 8 probes.

** For larger boards, please contact SPEA.

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