

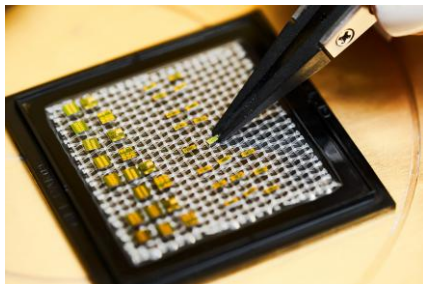
Inside VLC Photonics' New Test Lab: Where Next-Gen PICs Get Proven

Borja Jerez
Sales & Marketing Manager

EPIC TechWatch at ECOC – 23rd September 2026

About us

- Photonic Integrated Circuit (PIC) Design and Test house
- Company founded in 2011, focus on end-to-end PIC engineering solutions (ISO 9001:2015 quality certification)
- 46 employees at 2026-Q2 (75% engineers, 40% PhD, 10 nationalities)
- Part of Hitachi High-Tech Group since 2020 (>15.000-employee workforce)
- Facilities in Valencia, Spain



New facilities from November 2025!

325 m² of clean rooms
800 m² of lab facilities
750 m² of office space

Total: 1545 m² / 16600 sqft

Welcome Inside Our New Test Lab

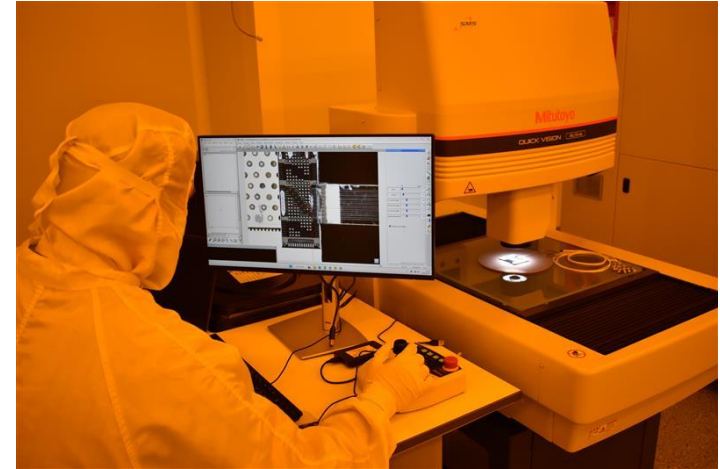


800 m² laboratory, including 245 m² of ISO-7 testing clean-room and 80 m² of ISO-8 laboratory



Just to start...Visual Inspection Equipment...

- ✓ Large FOV microscope (400 mm² / 0.1 μm).
- ✓ Scanning Electron Microscope (80 mm² / x100k).
- ✓ Energy Dispersive X-ray Spectroscopy
- ✓ Focused ion-beam etching / milling
- ✓ Defect inspection, chipping



...and Optical Testing Equipment to cover for a wide range of scenarios

- ✓ From 380 nm to 5 μm
- ✓ High-resolution/dynamic range spectral measurement
- ✓ Tunable lasers and broadband sources
- ✓ Vertical and Edge coupling
- ✓ Polarization control
- ✓ Back-reflections control



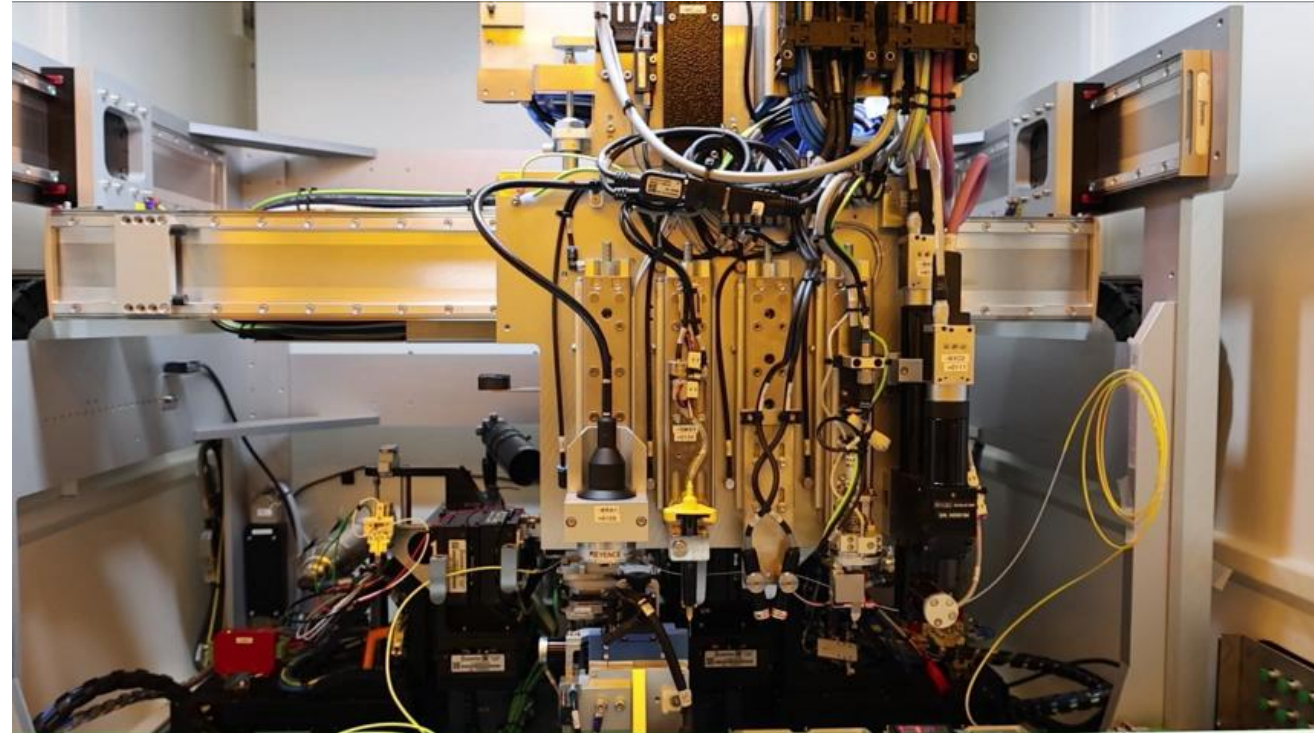
Automated Wafer-Level Testing Instruments for PICs and robust Testing Procedures

- ✓ Up to 300 mm wafers
 - Flexible configuration
 - Thermal control (up to 75°C)
 - Wafer expansion from blue tape
 - OSAT transfer for scalability
- ✓ Robust Testing Procedures
 - Setup preparation Measurement System Analysis (MSA)
 - Running the Test Campaign



Closing the Scalability Gap

- ✓ **Hands-off operation:** Automated loading from gel-packs (up to 8 trays)
- ✓ **Rapid alignment:** < 10 seconds per device under test
- ✓ **Flexible probing:** H + V optical coupling, swappable DC and high-speed RF probes
- ✓ **Assembly integration:** Same probes for testing → KGD assembly
- ✓ **Epoxy dispense & cure** for robust fiber attachment
- ✓ **Alignment:** XYZ 40 nm (optical) / 1 μ m (electrical), repeatability: 50 nm
- ✓ **Partnership with ficonTEC:** 4+ years of co-development



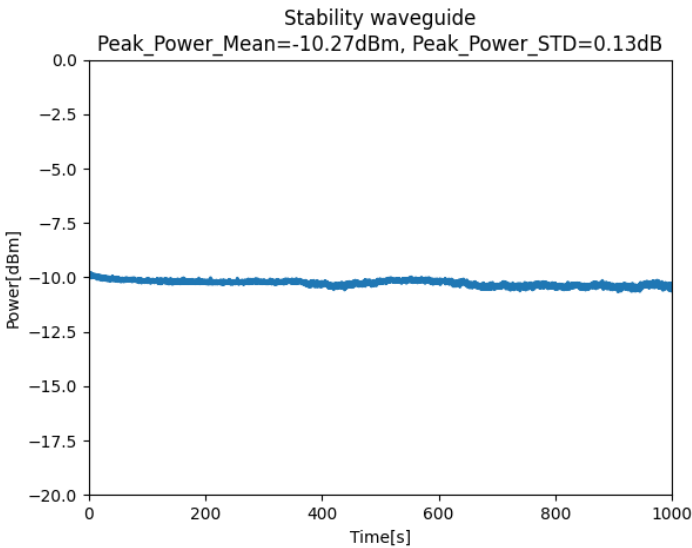
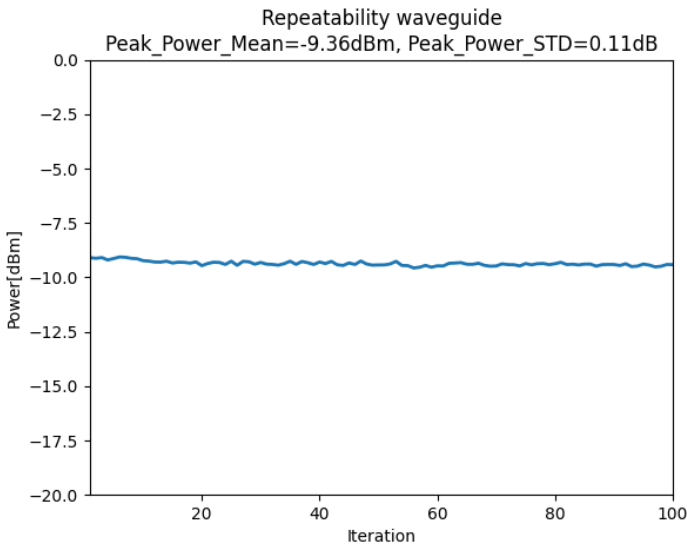


Automated Testing (at 50 °C)

- ✓ Power stability over time: < 0.02 dB variation
- ✓ Inter-operation repeatability: < 0.1 dB

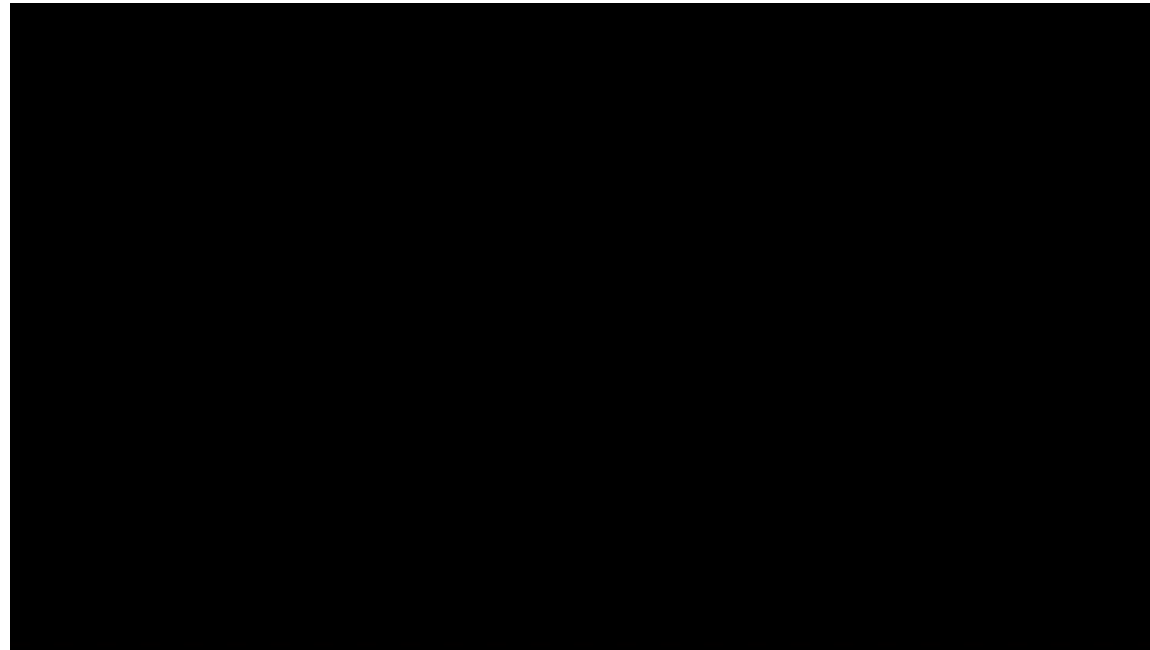
Manual bare-die alignment: > 0.5 dB
unacceptable for characterization at scale

Coupling	Repeatability STD	Stability STD
Vertical	0.07 dB	0.10 dB
Horizontal	0.11 dB	0.13 dB



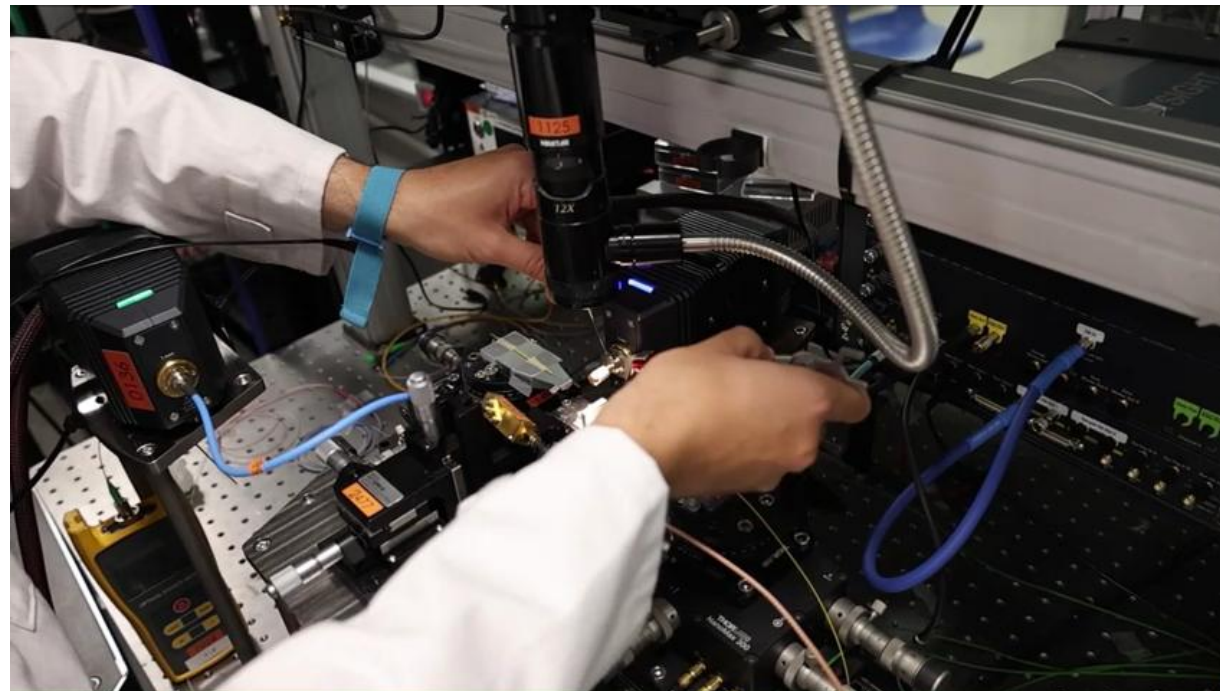
Semi-automatic die sorter

- ✓ **Precise pick & place** of dies from film-mounted wafers into Gel-Paks, waffle packs, film frames or trays. Zero chip damage recorded in validation batches.
- ✓ **Key specs:** Die size 200 μm - 25 mm, placement accuracy $\pm 120 \mu\text{m}$, die surface load <10 gf, end-to-end throughput of 240–360 UPH, 8-inch wafer capability.
- ✓ **In-house tooling**, custom recipes and wafer-map/serial-number traceability, cut sorting time by ~50% with a single operator



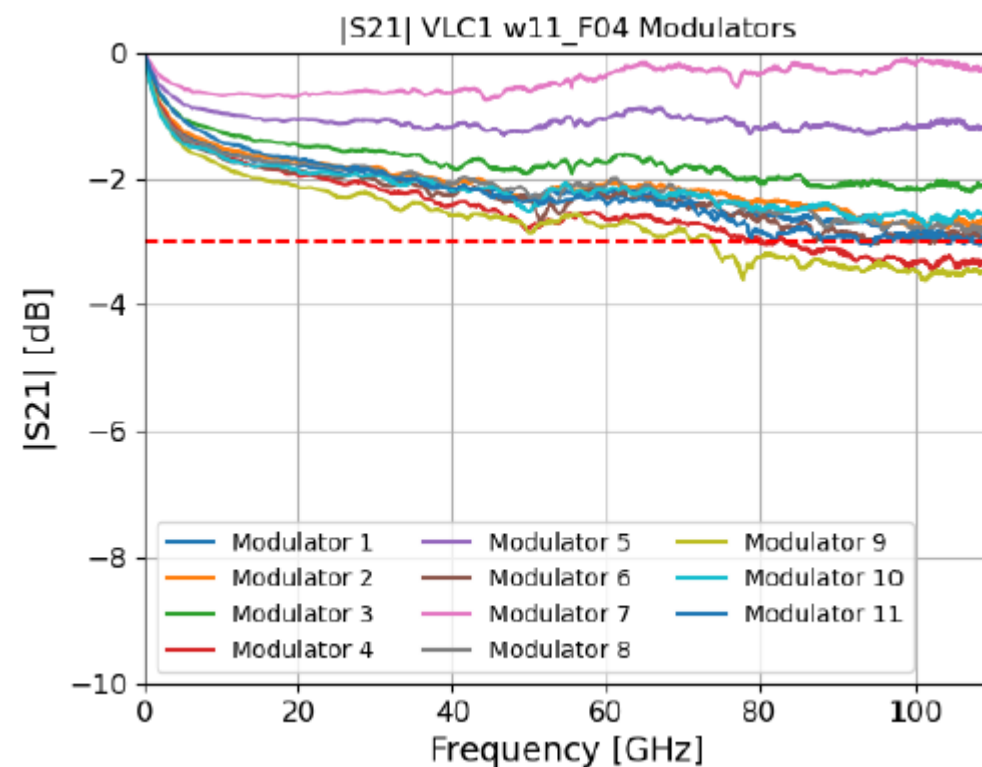
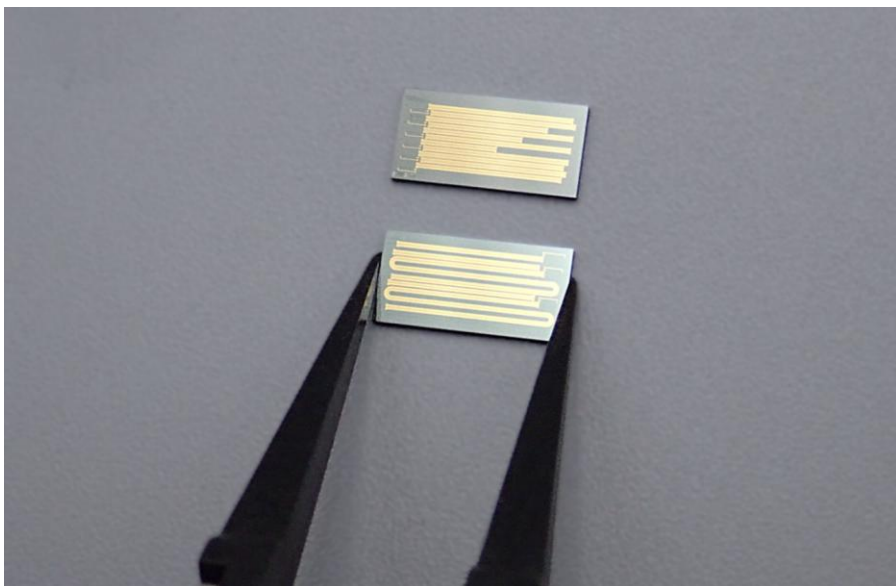
Wide Range of High-Speed Equipment

- ✓ Lightwave Component Analyzer (LCA) for full RF and optical characterization up to **110 GHz** in the full 1260-1620 nm range, compatible with the latest high-speed communication standards.
- ✓ Real time oscilloscopes with up to **100 GHz** bandwidth for high-resolution eye diagrams.
- ✓ Arbitrary waveform generators (AWG) up to **256 GSa/s** with a nominal analog bandwidth exceeding 80 GHz.
- ✓ BERT analyzers supporting up to **400G/800G** transceiver testing, up to $10^{-7}/10^{-12}$



TFLN PICs with BW > 110 GHz

- ✓ INSPIRE public initiative, in collaboration with Tecnobit and Luxtelligence
- ✓ Samples tested at our facilities, with our equipment



As their demand, market penetration and **co-integration with electronics** grow, the PICs reliability plays an increasingly essential role

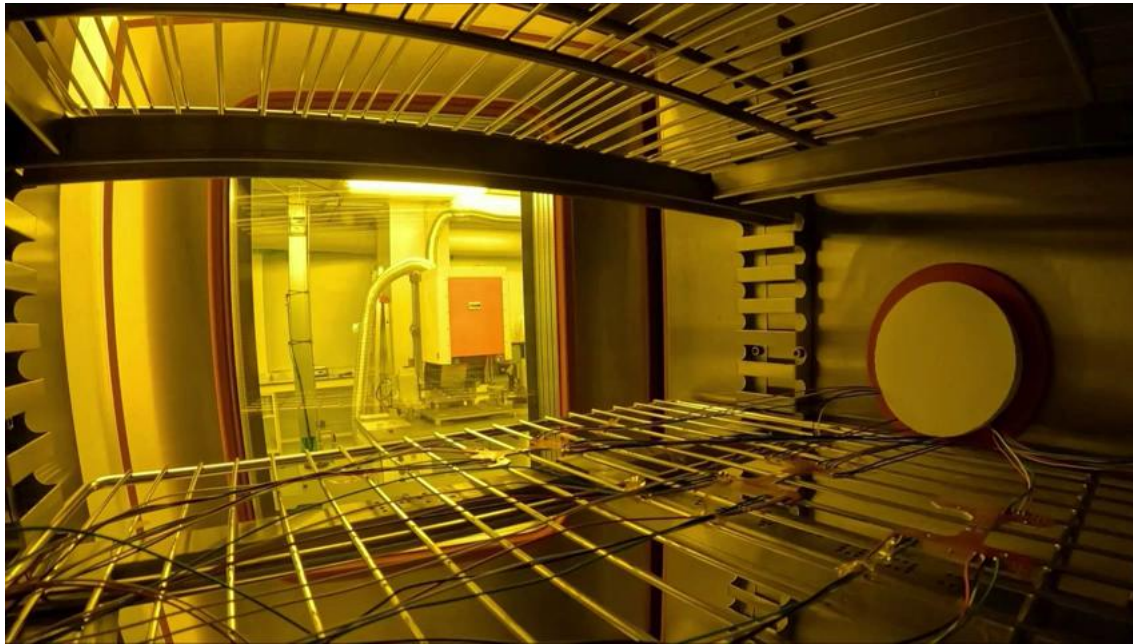
Different factors must be taken into account:

- ✓ Thermal sensitivity
- ✓ Material degradation
- ✓ Packaging stress
- ✓ Optical loss increase
- ✓ Coupling instability
- ✓ Electro-optic degradation
- ✓ Moisture ingress



New set of equipment able to conduct specific tests

- ✓ **HTOL** (High Temperature Operating Life), **HAST** (Highly Accelerated Stress Test), **TCT** (Thermal Cycling Test), **TST** (Thermal Shock Test), **HTS** (High Temperature Storage), Power Cycling, Short-term Burn-in
- ✓ Thermal and lifetime stress screening at die and package level





- A dedicated team with a combined **200+ years** of technical experience related to PICs
- **300+ PIC design projects** successfully delivered since inception
- **120+ tape-outs** with leading global foundries
- **50+ contributions** to peer-reviewed scientific journals and leading industry conferences
- Expertise across **7+ material platforms** with **20+ Manufacturing Partners**
- **15+ demonstrated configurations** for comprehensive OE Wafer-Level Testing
- **>10M€** investment in equipment and facilities (CapEx)
- Trusted by **140+ distinct customers**
- Global footprint with projects delivered to customers in over **25 countries**.

count on our
EXPERTISE
trust in our
EXPERIENCE
profit from our
CAPABILITIES



Shall we talk?



borja.jerez@vlcphotonics.com



www.vlcphotonics.com



VLC Photonics



VLC Photonics



Scan me