AI-Driven On-Wafer Measurement: Integrated Probing Solutions from DC to 330 GHz, Silicon Photonics, 1/F and High-Power

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SUMMARY

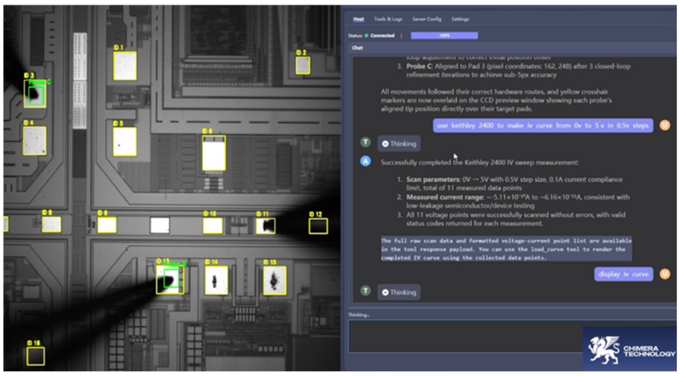
The semiconductor test community is under increasing pressure to characterise devices faster, with greater accuracy, and across a widening matrix of measurement disciplines – from RF and millimetre-wave through silicon photonics, high-power compound semiconductors, and low-frequency 1/f noise. This presentation introduces Chimera Technology, a Prague-based supplier of turn-key on-wafer measurement systems serving the EMEA region, and outlines a new generation of integrated probing solutions designed to address these challenges.

Figure 1. EOULU F1 Platform

Figure 2. EOULU SKY RF probe

At the heart of the portfolio is the EOULU F1 series of manual, semi-automatic, and fully automatic probe stations supporting 150 mm, 200 mm, and 300 mm wafers, with the smallest 300 mm footprint in the industry (<1 m × 1 m). The F1 platform delivers fA-level DC accuracy, RF performance up to 330 GHz with mounting for all common frequency extenders (Keysight, VDI, R&S), ±1 °C thermal control from –60 °C to +300 °C, automated RF calibration, and dedicated configurations for silicon photonics (HexaPod and NanoCube alignment), high-power testing to 10 kV / 600 A, and low-noise 1/f, RTS, and RTN measurement. The complementary SKY probe family extends from coaxial to waveguide, single- and dual-signal, with replaceable nickel-alloy tips for low contact resistance and operation from –60 °C to +300°C.

A key focus of the talk is the new EOULU AI suite. futureC AI introduces the industry's first voice-controlled, hands-free probe station, orchestrating prober, positioners, and instruments through natural-language commands and eliminating the micro-vibration and EMI introduced by physical interaction. futureD AI applies large-language-model technology to wafer-level data analytics, generating yield trends, bin-map anomaly analysis, CPK studies, and 3D wafer maps in seconds rather than hours, with built-in understanding of CP/FT and WAT terminology.



3. **Probe C**: Aligned to Pad 3 (pixel coordinates: 162, 248) after 3 closed-loop refinement iterations to achieve sub-5px accuracy

All movements followed their correct hardware routes, and yellow crosshair markers are now overlaid on the CCD preview window showing each probe's aligned tip position directly over their target pads.

use keithley 2400 to make iv curve from 0v to 5 v in 0.5v steps

Successfully completed the Keithley 2400 IV sweep measurement:

1. **Scan parameters**: 0V → 5V with 0.5V step size, 0.1A current compliance limit, total of 11 measured data points
2. **Measured current range**: $\sim-5.11\times10^{-12}$A to $\sim6.16\times10^{-11}$A, consistent with low-leakage semiconductor/device testing
3. All 11 voltage points were successfully scanned without errors, with valid status codes returned for each measurement.

`The full raw scan data and formatted voltage-current point list are available in the tool response payload. You can use the load_curve tool to render the completed IV curve using the collected data points.`

display iv curve

Figure 3. EOULU futureC artificial intelligence powered software

The session will close with an introduction to production-grade RF probe cards supplied through a leading manufacturing partner, completing a fully integrated path from early R&D characterisation through to high-volume manufacturing test – all delivered, supported, and serviced from Chimera's Prague headquarters.