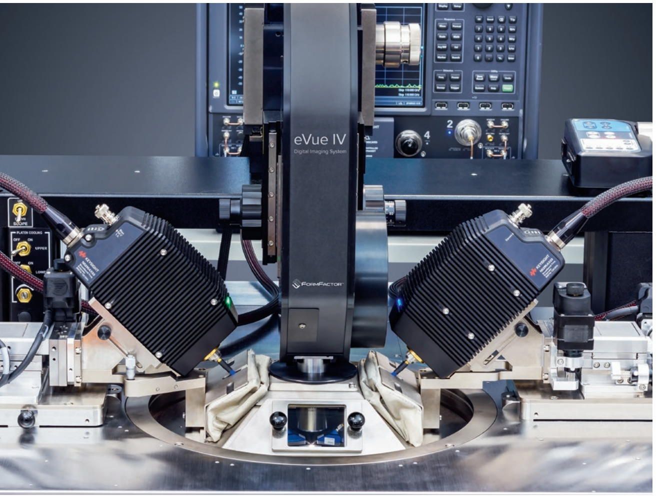
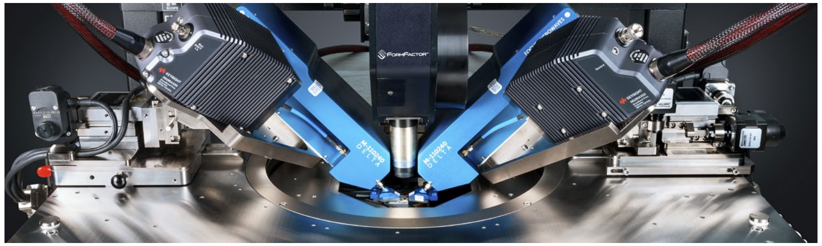
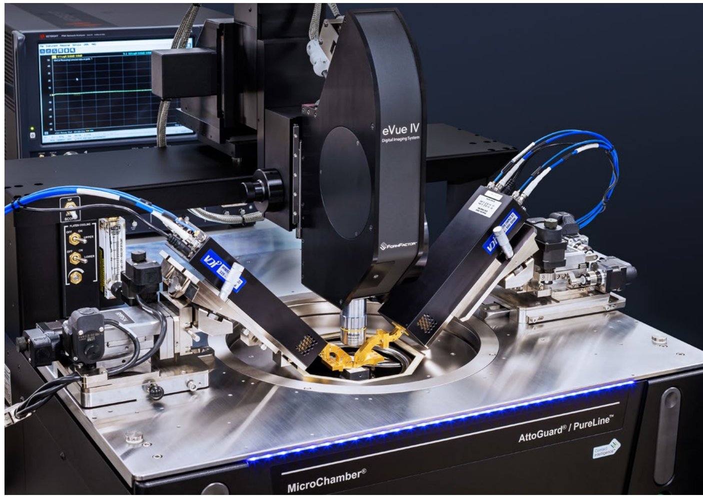
Integrated Measurement Systems (IMS)
for On-Wafer Test and Measurement

Product Line Overview







KEYSIGHT TECHNOLOGIES

FORMFACTOR™

On-Wafer Test Solutions from Keysight and FormFactor

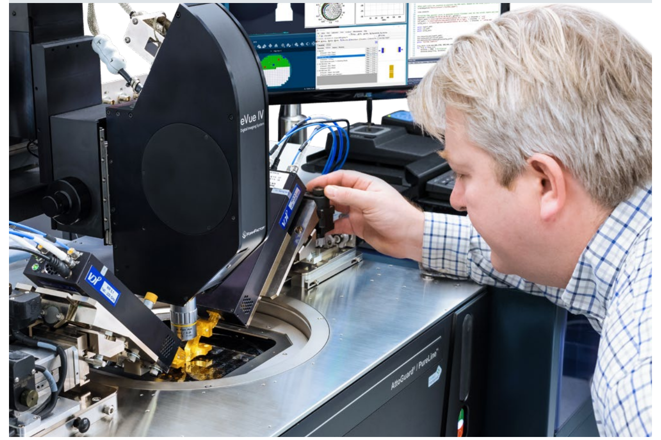
Comprehensive, integrated test systems carefully configured to meet the requirements of emerging, challenging, and essential semiconductor test applications – directly on wafer.

KEYSIGHT TECHNOLOGIES

/ #1 Semiconductor Test and Measurement Instrument supplier

/ Learn more at keysight.com

FORMFACTOR™



/ #1 Engineering Probe Systems supplier

/ Learn more at formfactor.com

MeasureOne™
Your Integration Connection

/ FormFactor partner leadership program

/ Learn more at formfactor.com/applications/measureone

Industry leader collaboration for better and faster data to enable innovation and reduce time to market.

Integrated Measurement Systems

Exclusively from FormFactor

IMS-K-mmW/THz

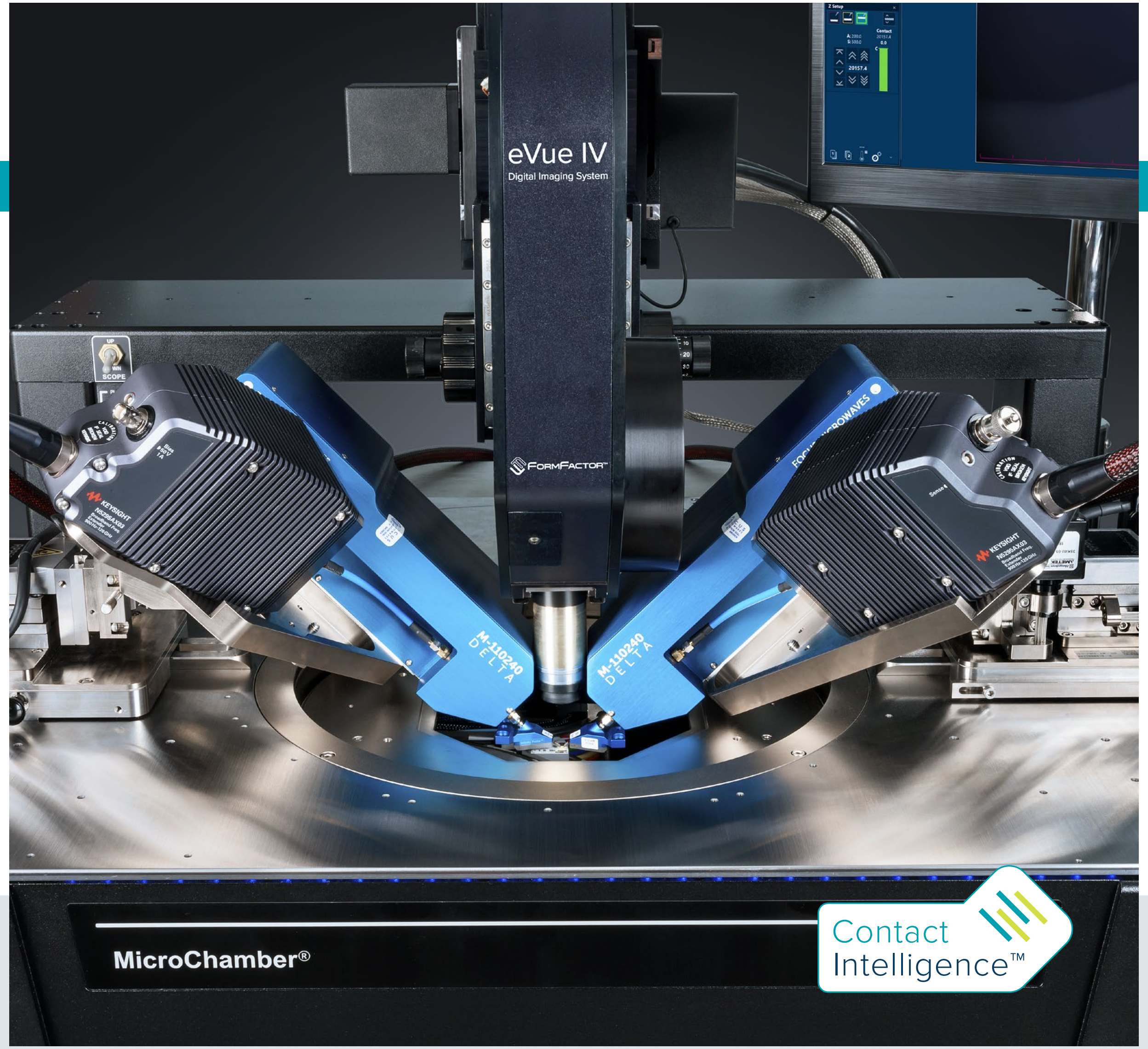
Highlights

- / Complete on-wafer test cell for high-frequency test applications from DC to terahertz – a turn-key solution, tailored to meet each requirement
- / **Accurate and repeatable data delivered by an industry-leading measurement team**
- / Fast, low-risk path to data – Keysight and FormFactor cooperate to configure and optimize the solution
- / Autonomous RF Measurement Assistant for automatic self-calibration and maximum test throughput – 24/7 operation with high repeatability even at multiple temperatures -60°C to +200°C

> “The best high-frequency S-parameter test equipment available, with unmatched on-wafer automation and performance.”

MeasureOne™
Your Integration Connection

PROBE SYSTEMS	PROBES & CALIBRATION	VNAS	FREQUENCY EXTENDERS
FormFactor™	FormFactor™	KEYSIGHT TECHNOLOGIES	VDI Virginia Diodes, Inc.
Manual, semi- and fully-automated Up 300 mm -60°C to +300°C PureLine™/ AttoGuard®/MicroChamber® Contact Intelligence™ Autonomous RF Measurement Assistant	Coaxial probes to 130 GHz Diplexer/broadband to 220 GHz Banded waveguide up to 1.1 THz Programmable and manual positioners for quick exchange of probes and frequency extenders	2-port or 4-port Also cables, power supplies, pulse generators, attenuators, bias-tees WaferPro XP, PathWave, IC-CAP software	Up to 1.1 THz
CM300xi SUMMIT200 EPS200MMW EPS150RF EPS150THZ *More models/options available*	Infinity InfinityXT ACP |Z| Probe Diplexer/broadband T-Wave WinCal software Impedance Std Substrates *More models/options available*	N529xA PNA mmWave N524xB PNA-X N522xB PNA *More models/options available*	VNA-X Mini models Tx and Rx models *More models/options available*
			



IMS-K-Load-Pull

Highlights

- / Complete on-wafer test cell for device load-pull test applications – a turn-key solution, tailored to meet each requirement
- / Best-in-class tuning range performance with minimized insertion loss and optimized gamma, allowing a large cover of tunable impedances over the Smith chart
- / Fast, low-risk, validated solutions by Keysight, Focus Microwaves and FormFactor
- / High-resolution microscope enabling highest visibility of small contact pads

> “The easy, automated path to accurate, high-volume load-pull data.”

MeasureOne™
Your Integration Connection

PROBE SYSTEMS	PROBES & CALIBRATION	VNAS	TUNERS
FormFactor™	FormFactor™	KEYSIGHT TECHNOLOGIES	FOCUS MICROWAVES
Manual, semi- and fully-automated IceShield insert for cold measurements TopHat for light- and EMI-shielded measurements Autonomous RF Measurement Assistant	Low-loss probes up to mmW frequencies Broad range of positioners and arms to support tuner integration	2-port or 4-port Also cables, power supplies, pulse generators, attenuators, bias-tees	Coaxial and waveguide vector load-pull Pulsed-IV characterization Noise Parameter Extraction Modeling SW
CM300xi SUMMIT200 EPS200MMW *More models/options available*	Infinity InfinityXT ACP |Z| Probe Diplexer/broadband T-Wave WinCal software Impedance Std Substrates *More models/options available*	N529xA PNA mmWave N524xB PNA-X P50xxB Streamline VNA *More models/options available*	Delta On Wafer tuners (Fundamental and Harmonics) Waveguide tuners Auriga IV/RF characterization system *More models/options available*
			

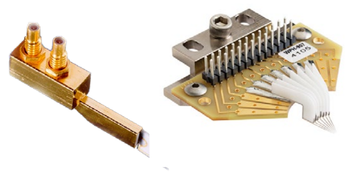
IMS-K-LFN

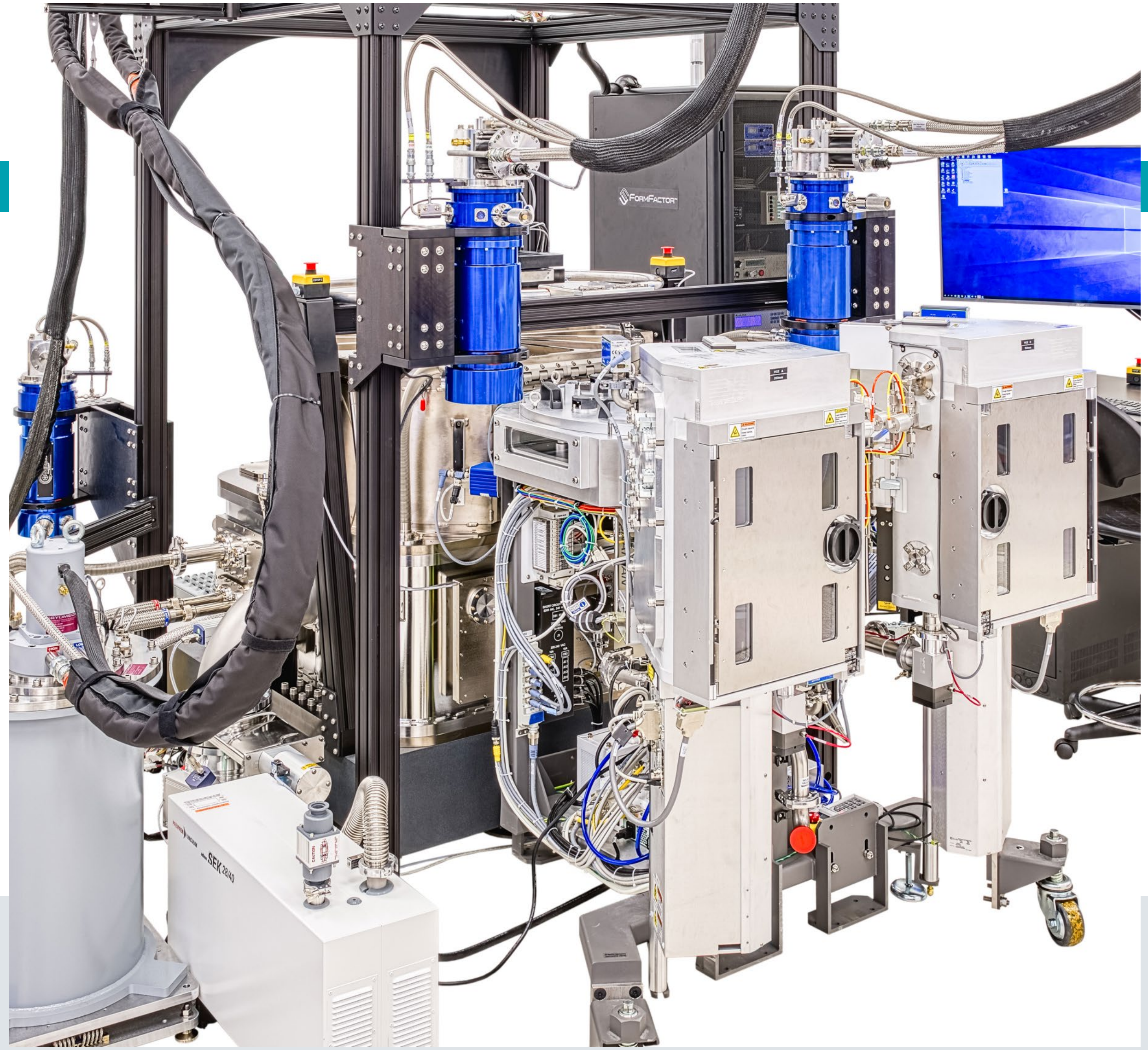
Highlights

- / Complete on-wafer test cell for 1/f (flicker noise) or RTN (random telegraph noise) test – a turn-key solution, tailored to meet each requirement
- / High-quality, repeatable data from industry's top test and measurement suppliers
- / Fast, low-risk path to data – Keysight and FormFactor cooperate to survey the site, and configure and optimize the solution
- / Ultra low spectral noise environment, resulting from industry's most effective techniques to shield and suppress noise from inside/outside system

> "The quietest on-wafer noise measurement environment available anywhere."

MeasureOne™
Your Integration Connection

PROBE SYSTEMS	PROBES	NOISE ANALYZERS & SMUS
FormFactor™	FormFactor™	Keysight Technologies
Manual, semi- and fully-automated up to 300mm -60°C to +300°C PureLine™/ AttoGuard®/ MicroChamber® Integrated TestCell Power Management for -190dB spectral noise Autonomous DC Measurement Assistant	Programmable and manual positioners fA-level and fF-level measurements	30 mHz to 100 MHz (W7802B) 1 mHz to 16 MHz (W7801B) Up to 200V / 100mA (W7802B) up to 10V / 10mA (W7801B) 1E-28 A2/Hz noise floor (W7802B) 1E-25 A2/Hz noise floor (W7801B) PathWave WaferPro (Wafer Pro Express)
CM300xi-ULN SUMMIT200 *More models/options available*	+ DCP-HTR, DCP-100 WPH, DC-Q *More models/options available*	+ E4727B A-LFNA with W7802B measurement bundle software M9019A PXIe chassis with E4727B, M3102A, etc. Add B1500A with B1530A WGFMU and W7801B measurement bundle SW *More models/options available*
		



IMS-K-Cryo-LFN

Highlights

- Complete on-wafer test cell for 1/f (flicker noise) or RTN (random telegraph noise) test at cryogenic temperatures – a turn-key solution, tailored to meet each requirement
- High-quality, repeatable data from industry's top test and measurement suppliers
- Fast, low-risk path to data – Keysight and FormFactor cooperate to survey the site, and configure and optimize the solution
- Cryogenic environment for testing ultra-low temperature devices and minimizing thermal noise

> "The industry's first integrated low-noise system with high-throughput cryogenic wafer test automation."

MeasureOne™
Your Integration Connection

CRYOGENIC PROBE SYSTEMS

<4K temperature at probe tip

Up to 56 RF and 520 DC lines

Manual, semi-, and fully-automated up to 300 mm wafers or singulated dies

Dry (cryogen-free) and continuous flow cooling options

Wafer exchange in <15 minutes

IQ3000

PAC200

More models/options available

+

PROBES AND PROBE CARDS

Cooled cables / probe tips

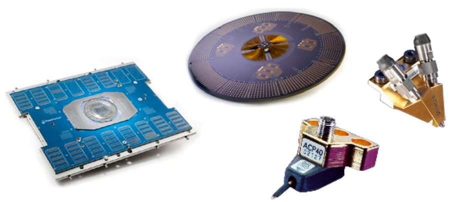
Full grid vertical probing

Cryogenic Cantilever Probe Card

Cryogenic Apollo Probe Card

|Z| Probe, multi-|Z|, ACP coax, DCP-HTR

More models/options available



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NOISE ANALYZERS & SMUS

30 mHz to 100 MHz (W7802B)
1 mHz to 16 MHz (W7801B)

Up to 200V / 100mA (W7802B)
up to 10V / 10mA (W7801B)

1E-28 A2/Hz noise floor (W7802B)
1E-25 A2/Hz noise floor (W7801B)

PathWave WaferPro
(Wafer Pro Express)

E4727B A-LFNA with W7802B measurement bundle software

M9019A PXIe chassis with E4727B, M3102A, etc.

Add B1500A with B1530A WGFMU and W7801B measurement bundle SW

More models/options available

IMS-K-SiPh

Highlights

- Complete on-wafer test cell for silicon photonics devices – a turn-key solution, tailored to meet each requirement
- High-quality, repeatable data from industry's top test and measurement suppliers
- Fast, low-risk path to data – Keysight and FormFactor cooperate to configure and optimize the solution
- Range of automation from initial technology R&D to high-volume engineering and production ramp – with sophisticated software tools to simplify and accelerate

> "The ultra-productive, world-class tools which enable silicon photonics developers to rapidly move from the lab to the fab."

PROBE SYSTEMS	LASERS AND INSTRUMENTS	FIBER/ARRAY POSITIONERS
FormFactor™	KEYSIGHT TECHNOLOGIES	PI
<4K temperature at probe tip Up to 56 RF and 520 DC lines Manual, semi-, and fully-automated up to 300 mm wafers or singulated dies Dry (cryogen-free) and continuous flow cooling options Wafer exchange in <15 minutes	Parameter analyzer or PXIe SMUs for optical to electrical (O-E) Modular lasers, tunable lasers, power meters, polarization synthesizer Photonics Application Suite (PAS), PathWave Test Automation with FormFactor Wafer prober plug-in	Single, dual or 3 sided, 6-axis optical positioning
CM300xi-SiPh SUMMIT200 MPS150-SiPh *More models/options available*	+ B2901A, B1500A, M9601A PXI SMU 81606A, 81607A, 81608A and 81602A N7776C, N7778C, N7744C, N7745C, N7786C, N7788C *More models/options available*	+ H-811.F2
		

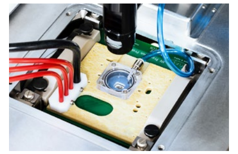
IMS-K-Power

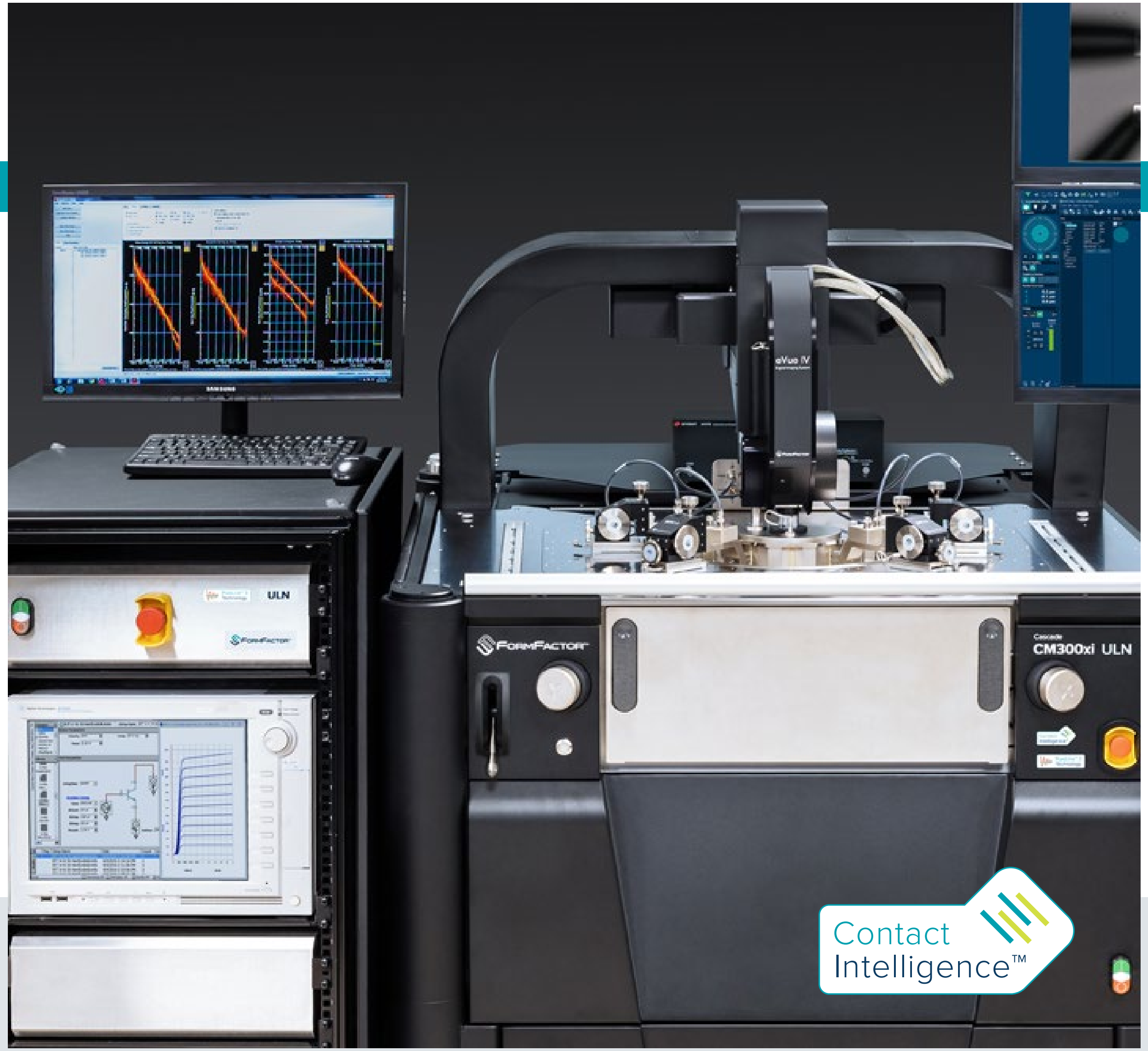
Highlights

- / Complete on-wafer test cell for high-voltage/ high-current devices – a turn-key solution, tailored to meet each requirement
- / High-quality, repeatable data from industry's top test and measurement suppliers
- / Fast, low-risk path to data – Keysight and FormFactor cooperate to configure and optimize the solution
- / Evaluation of novel new devices such as IGBT and materials such as GaN and SiC

> "The integrated solution to safe, automated wafer testing of power semiconductor devices."

MeasureOne™
Your Integration Connection

PROBE SYSTEM	PROBES	POWER ANALYZERS	PROBE CARDS
FormFactor™	FormFactor™	KEYSIGHT TECHNOLOGIES	T. I. P. S.
Manual, semi- and fully-automated Up to 300mm Up to 10 kV & 3,000 A -60°C to +300°C, high-inductance triaxial chuck Safety enclosure	Up to 10 kV Up to 600 A	2-port or 4-port Also cables, power supplies, pulse generators, attenuators, bias-tees	High voltage anti-arcing probe card High current probe card
TESLA300 TESLA200 EPS150TESLA *More models/options available*	HVP, HCP UHP DCP-HTR *More models/options available*	B1505A PDA N1265A Ultra High Current Expander N1268A Ultra High Voltage Expander N1258A Modular Selector *More models/options available*	LupoProbe Card
			



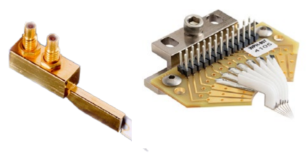
IMS-K-DC

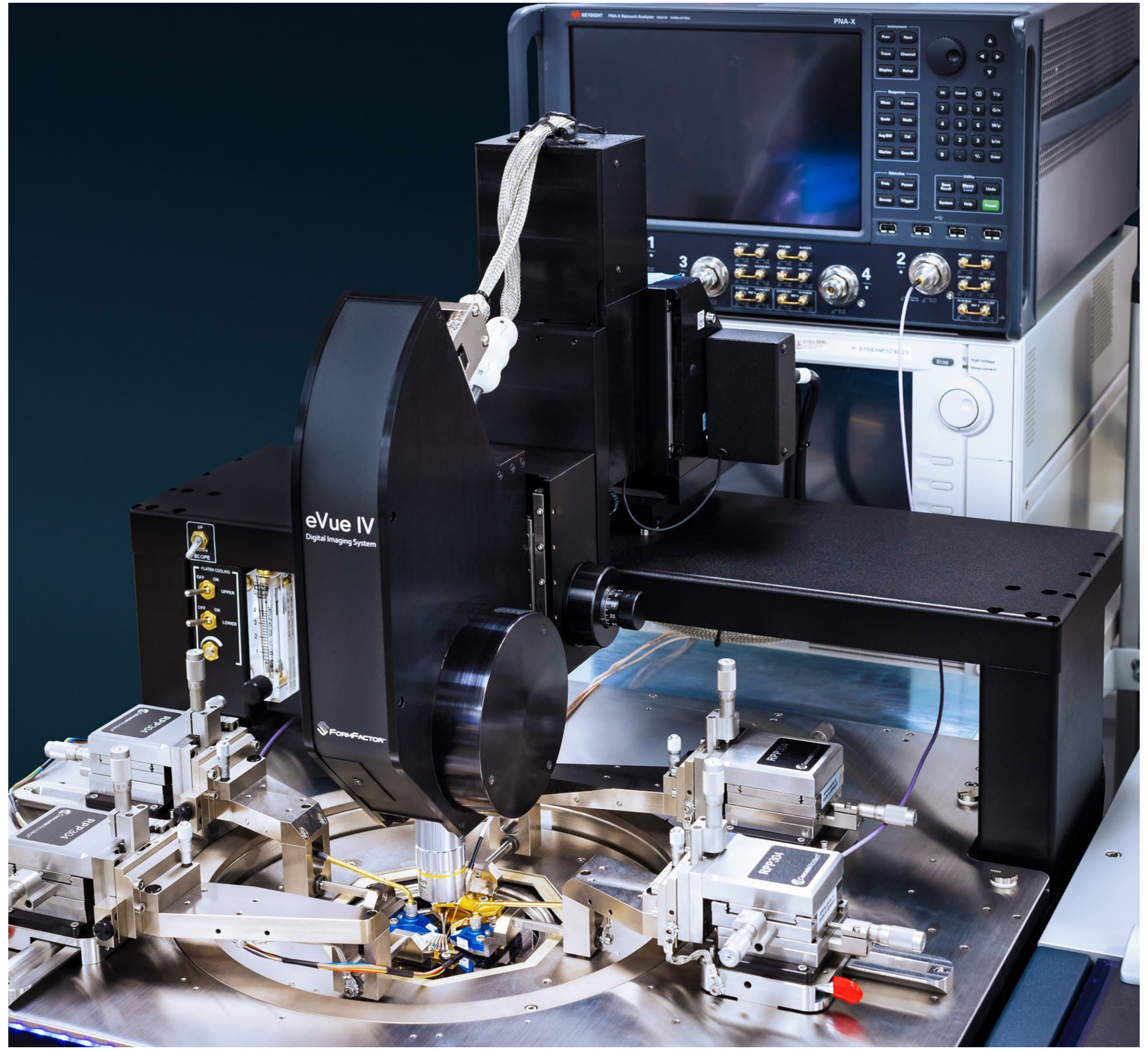
Highlights

- / Complete on-wafer test cell right out of the box - tailored and expandable to meet each requirement
- / High-quality, repeatable data from industry's #1 semiconductor test and measurement suppliers
- / Faster path to first data – Keysight and FormFactor review total system configuration before order
- / Autonomous DC Measurement Assistant for maximum test throughput – 24/7 operation with high repeatability even at multiple temperatures -60°C to +200°C

> "The quick and easy way to build up high-quality core test capabilities for on-wafer DC and general applications."

MeasureOne™
Your Integration Connection

PROBE SYSTEMS	PROBES	PARAMETER ANALYZERS
FormFactor™	FormFactor™	KEYSIGHT TECHNOLOGIES
Manual, semi- and fully-automated Up to 300mm -60°C to +300°C PureLine™/ AttoGuard®/ MicroChamber® Contact Intelligence™ Autonomous DC Measurement Assistant	Programmable and manual positioners fA-level and fF-level measurements	IV, CV, pulsed IV High-precision, high-speed, high-power WaferPro XP, PathWave, IC-CAP software
CM300xi SUMMIT200 MPS150 *More models/options available*	+ DCP-HTR, DCP-100 WPH DC-Q *More models/options available*	+ B1500A M96xxA PXI SMUs *More models/options available*
		



FormFactor™

KEYSIGHT TECHNOLOGIES

VDI Virginia Diodes, Inc.

FOCUS MICROWAVES

PI

T. I. P. S.

MeasureOne™ Your Integration Connection

How to Order an Integrated Measurement System

1. Integrated Measurement Systems are available exclusively from FormFactor – reach us at www.formfactor.com/sales-service/contact-sales/
2. A local FormFactor solution expert or representative will discuss your requirements with you, and will coordinate directly with Keysight and other partners to configure the solution and provide a comprehensive quotation
3. Place a single PO with FormFactor – we will orchestrate delivery and installation of the complete system
4. Accelerate your on-wafer test program!

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