mmW Wideband Modulated Characterization

Enabling Accurate, Reproducible & Scalable Wafer-Level Testing at subTHz Frequencies

OVERVIEW

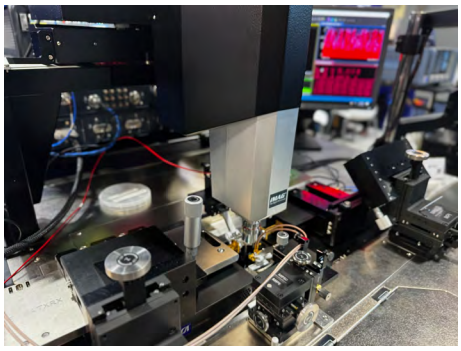
MPI Corporation, in collaboration with Keysight Technologies and Virginia Diodes Inc. (VDI), delivers a high-performance solution for **wafer-level wideband modulated characterization**. This joint development turns complex sub-THz testing into a fast, simple, and accurate process—enabling high-fidelity measurements for next-generation wireless technologies like 6G.

TECHNICAL CHALLENGES ADDRESSED

Achieving <1% EVM performance at mmWave and sub-mmWave frequencies is no small task. Legacy measurement platforms face major hurdles in signal stability, calibration complexity, and repeatability. This collaboration focuses on solving these issues through advanced system integration, high-precision mechanical design, and calibration innovation.

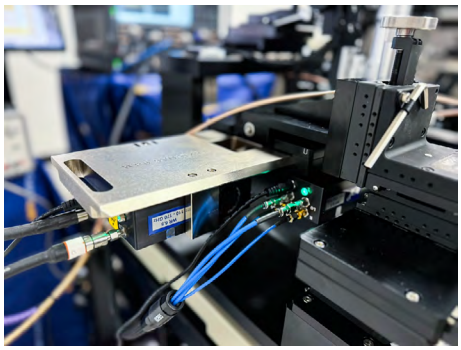
Advanced Wafer-Level Testing

- Support for high-order modulation scheme including 256QAM with <1% EVM
- Cross-platform probe station integration: from manual TS25-THZ to advanced automated system such as TS2000-IFE, offering ultra-stable positioning and excellent thermal & mechanical performance
- Capable of supporting both GSG and differential probing with minimal footprint



Measurement System Integration

- Compact and scalable system configuration with VDI frequency extenders and multipliers
- Seamless integration with Keysight PNA-X vector network analyzers and waveform generators
- Enhanced signal integrity, minimal conversion loss, and maximized signal-to-noise ratio

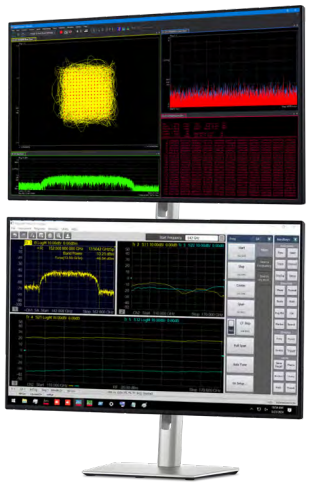


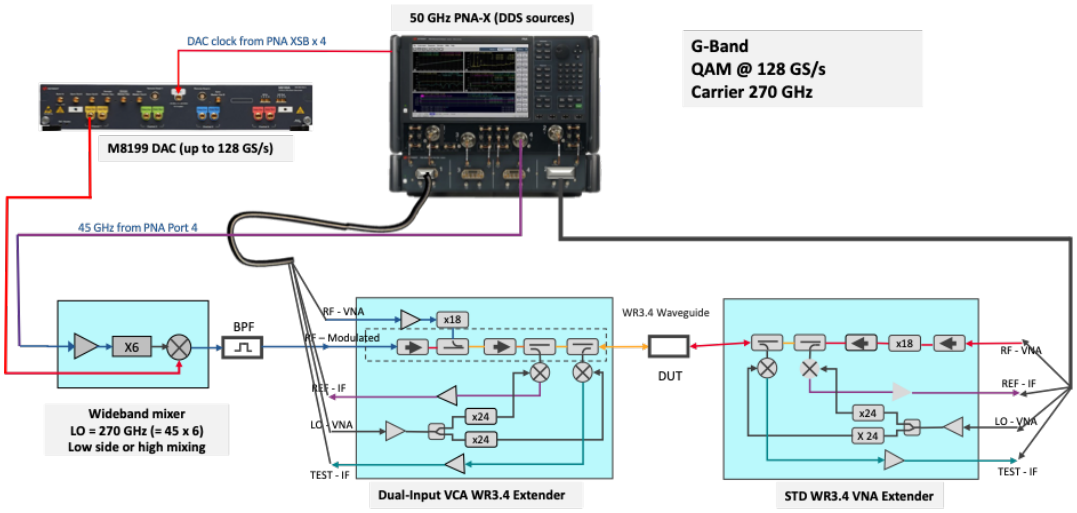
Metrological-Grade Calibration

- Native integration with QAlibria® software for automated, high-precision RF calibration
- Tailored calibration workflows for wideband modulated signal paths across mmW frequencies

Applications

- 6G RFIC & MMIC characterization under real operation conditions
- Wafer-level packaging and antenna-in-package (AiP) validation
- Design validation & small-scale production screening of mmW ICs





COLLABORATIVE INNOVATION

This solution exemplifies MPI's role in system-level innovation—bridging precision mechanical engineering with next-generation RF and mmW measurement techniques. The result is a robust, field-ready platform that empowers semiconductor and telecom R&D to validate their most advanced designs with confidence.

TS2000-IFE FULLY-AUTOMATED PROBE SYSTEM

The TS2000-IFE is MPI's most versatile 200 mm automated probe platform, purpose-built for advanced RF, mmWave, and Silicon Photonics applications. It incorporates IceFreeEnvironment™, enabling reliable wafer-level testing from -60°C to +300°C without ice formation, while supporting both micropositioners and probe cards simultaneously. This ensures precise thermal control and stability for demanding mmW and load-pull measurements.

In addition, WaferWallet®MAX delivers up to 10x higher productivity by automating testing across multiple wafers, with fast thermal transitions, reduced soak times, and advanced wafer swapping—making the TS2000-IFE ideal for transitioning from lab to fab environments.

See MPI Corporation's Terms and Conditions of Sale for more details.

MPI Global Presence

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