

FAB\$ and LAB\$

Maury Microwave: For 65 Years, Always Part of The Solution



Maury Microwave is one of a handful of eponymous RF/microwave companies that proudly reflects the legacy and vision of its founders—in this case 65 years after Mario Sr., Mario Jr. and Marc Maury started the company in southern California. Anyone working in the microwave industry quickly learns the importance of precision. While the frontier today may be mmWave and sub-THz, low GHz measurements were the challenge when Maury Microwave was founded. Maury's mission was and is to ensure they are accurate.

After three generations of family leadership, the company was acquired by Artemis Capital Partners in 2021. But the mission is the same: ensuring confidence in RF through THz measurements and models by providing the best, proven characterization solutions, components and services. Over the decades, Maury's products expanded, from vector network analyzer (VNA) calibration kits to rugged, precision cables. The company realized that the painstaking effort to calibrate a VNA could be compromised by the cables used for measurements. The next challenge was power amplifier (PA) design. As computing power enabled designers to extend simulation beyond simple load line analysis, Maury developed systems for load-pull measurements. Load-pull characterization enables a designer to precisely map the output power, efficiency, harmonics and gain contours of a semiconductor device, then define the PA load to optimize the performance.

Today, the company organizes its activities around four product lines: device characterization, precision calibration, interconnects and instrument amplifiers. Along the way, Maury acquired Anteverta-mw in 2015 and dBm-Corp in 2021. Anteverta-mw, based in Eindhoven, had developed a novel load-pull technology for active impedance control with wideband modulated signals, enabling device characterization with real-world signals. dBm, based in Oakland, N.J., brought system-level testing of satellite payloads and wireless systems, enabling Maury to add systems solutions to the portfolio.

The heart of the company remains in Ontario, Calif., a

90,000 square-foot facility that houses R&D, manufacturing, calibration and repair services, warehousing and shipping. Almost half of the facility—40,000 square feet—is dedicated to internal manufacturing, assembly and test of its precision coaxial and waveguide components. Maury has 15 advanced CNC milling and lathe cells, wire electrical discharge machining, honing and heat treatment capabilities. To guarantee precision tolerances, Maury uses optical and touch probe coordinate measuring machines, laser micrometers and air gages, as well as other standard inspection equipment. To assess RF performance, 20 VNAs support the metrology, interconnect and tuner product lines.

The Ontario facility also has a 3000 square-foot measurement and modeling lab with capabilities that are an engineer's dream: DC and pulsed IV measurements to 250 V and 30 A, S-parameter measurements to 170 GHz for CW and 67 GHz for pulsed. Load-pull testing comprises passive load-pull to 110 GHz, active to 170 GHz and harmonic to 67 GHz. Noise parameters and noise figure can be measured to 90 GHz, and Maury has a Faraday cage to avoid interference. The lab also has capabilities to measure mixers and transmit/receive signal chains to 67 GHz. Both fixtures and automated on-wafer measurements are supported, on-wafer with 200- and 300-mm probe stations. Fixture measurements support power levels to 1 kW pulsed. Following characterization, device modeling capabilities include enhanced poly harmonic distortion (EPHD) and neural network behavioral models to 67 GHz. The Ontario quality system is certified to ISO9001 and AS9100; its testing and calibration capabilities meet ISO/IEC 17025 requirements.

Reflecting the Maury family legacy, the company remains committed to using measurement science to serve the RF/microwave industry and help its customers develop new generations of products. Design success begins with accurate simulation, which relies on measurement accuracy. That's Maury Microwave's commitment, to always be part of the solution.

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