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04 November 2026

Editorial – Mini Special Issue of IEEE Transactions on Microwave Theory and Techniques

This Mini Special Issue of *IEEE Transactions on Microwave Theory and Techniques* presents extended versions of two selected papers originally submitted to the 2025 IEEE International Workshop on Integrated Nonlinear Microwave and Millimetre-Wave Circuits (INMMIC 2025), held in Turin, Italy. INMMIC serves as a focused international forum for advances in nonlinear microwave and millimeter-wave circuits, emphasizing integrated solutions and system-oriented design approaches.

The contributions included in this Mini Special Issue reflect key challenges and emerging trends in modern RF and microwave front-end design, such as ultrawideband operation, high efficiency, compact integration, and flexibility to evolving system requirements.

The first article reports on a fully integrated 6–18-GHz transmit/receive MMIC frontend implemented in 150-nm GaN-on-SiC technology. The work demonstrates the benefits of single-die integration through a top-down, system-level co-design strategy, where architectural choices, circuit tradeoffs, and layout considerations are jointly optimized.

The second article introduces an orthogonal load-modulated balanced amplifier (OLMBA) for back-off efficiency enhancement and agile frequency configuration. By exploiting asymmetric device biasing and a reflective termination at the output isolated port, the proposed architecture enables electronic optimization of the operating frequency while relaxing phase-delay constraints in the matching network design.

Together, these contributions highlight the continued evolution of GaN-based integrated circuits and power amplifier architectures that address efficiency, bandwidth, and system-level flexibility.

I would like to thank the authors for their high-quality contributions, the reviewers for their careful and timely evaluations, and the Editors-in-Chief and IEEE Publications staff for their continued support. I hope that this Mini Special Issue will serve as a resource for the microwave community and further strengthen the link between INMMIC and *IEEE Transactions on Microwave Theory and Techniques*.

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