MultiLane Announces Major Breakthrough for Cost-Effective PCB Architecture at 448G

HOUMAL, LEBANON, December 4, 2025 /EINPresswire.com/ -- MultiLane announced today a major milestone in high-frequency interconnect performance, achieving reliable operation beyond 110 GHz and validating its new PCB footprint architecture up to 120 GHz and confirming readiness for 448G PAM4 systems. This breakthrough directly challenges the long-standing industry belief that ultra-high-frequency performance requires premium laminates or complex materials. Instead, MultiLane's engineering team has demonstrated that disciplined SI design and intelligent footprint architecture on standard PCB technology can deliver the same results, if not better, at a fraction of the cost.

The achievement addresses one of the industry's most persistent bottlenecks: PCB transitions. While modern connectors are capable of 100 GHz+ operation, real system performance has been constrained by the PCB itself. MultiLane has proven that the limitations traditionally associated with standard boards can be overcome through architectural refinement rather than expensive material choices. By applying this design philosophy across both the SMPX multiport ecosystem and the RF Precision 1.00 mm family — including connectors, jumpers, adapters, and terminators — the advancement unlocks high-frequency capability across multiple product categories.

Full-band testing using a 120 GHz Vector Network Analyzer confirmed smooth, predictable S-parameters up to 110 GHz and successful validation at 120 GHz. Multiple channels and board samples were characterized, demonstrating strong repeatability across lanes and revisions. The measurement setup included SMPX 1×8 board-mount connectors, RF Precision 1.00 mm vertical CPW connectors, and 15 cm SMPX-to-1.00 mm cable assemblies, establishing consistent performance across the entire chain. The results make clear that the key enabler is intelligent SI-driven architecture, not exotic materials or ultra-tight fabrication processes.

"This is a major breakthrough for both MultiLane and the industry as a whole: SI-driven engineering now outperforms material-driven approaches," said Toufic Hatem, Interconnect Business Unit Manager at MultiLane. "With the PCB bottleneck effectively lifted, system designers can now deploy architectures targeting 448G PAM4-class performance without facing prohibitive material or manufacturing costs. We are proud to be at the forefront of high-frequency interconnect innovation, delivering reliable and commercially viable solutions for the next generation of bandwidth intensive applications."

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