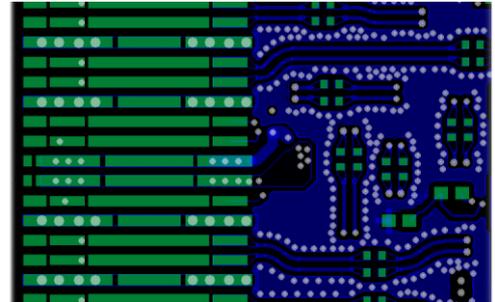


Signal Integrity Design Services

As data transmission speeds increase to 100G per electrical lane and beyond, signal integrity (SI) is an increasingly important aspect of successful system design. Connector vendors, semiconductor companies, original design manufacturers (ODMs), and hyperscalers all require sufficient command of SI disciplines to deliver their products to a rapidly evolving market in a timely manner.

SI expertise remains a scarce resource in the data center interconnect (DCI) industry. MultiLane's comprehensive family of high-speed products require diligent design to deliver a frequency performance profile in accordance with MSA compliance masks and end customer requirements. The company therefore holds a unique position in the industry, prioritizing SI expertise as a core competency.



NEW | MultiLane's SI Design and Consultancy Services

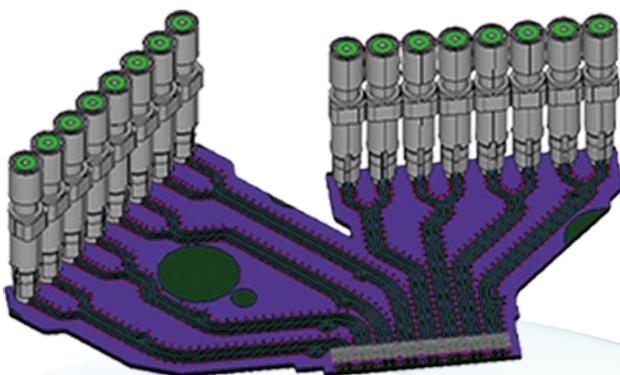
After tripling the size of its SI team in a calendar year, MultiLane is announcing a service offering consisting of SI design and optimization consultation. The new SI Business Unit (SIBU) enables industry partners to achieve optimal performance out of their complex layouts.

High-speed PCB Layout and Design

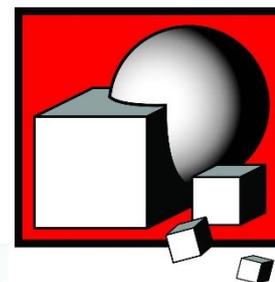
SIBU provides design and simulation services based on its extensive experience in ultra-high-speed (exceeding 100G per electrical lane) PCB design and manufacturing. For example, SIBU teams routinely design custom 8x100G interconnect boards for regular test instrumentation or custom load boards for ATE test environments such as Advantest's V93k ecosystem.

Tools

Cutting edge software tools are used to simulate and overcome a variety of signal integrity challenges before any physical device is built. The team is well-versed in designing high-speed simulations with platforms like CST Microwave Studio. These platforms are used to accurately predict the frequency roll-off of a high-speed channel among other parameters.

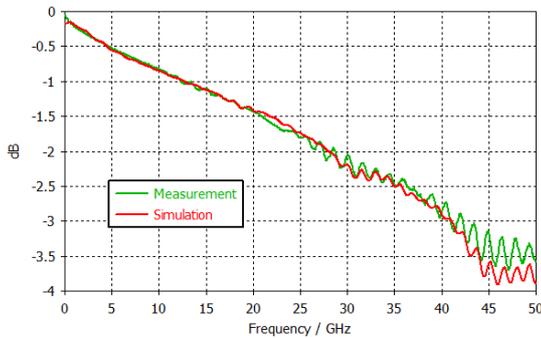


CST

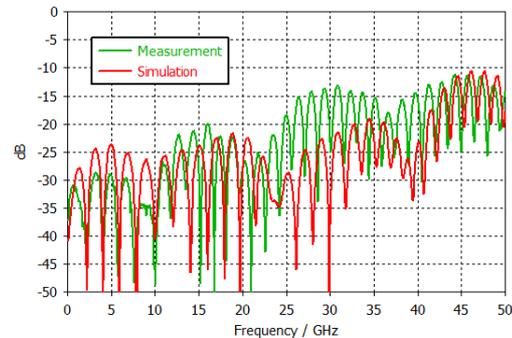


Faster Time-to-Market

MultiLane design teams are well adjusted to executing quick turn-around design cycles and ensuring customers realize a time-to-market which aligns with their product development schedules. In addition to augmenting customers' scarce SI design resources, MultiLane has the expertise for quick turnaround designs with **strong correlation between simulations and real-world performance**.



ML4064-MCB-112 Insertion Loss

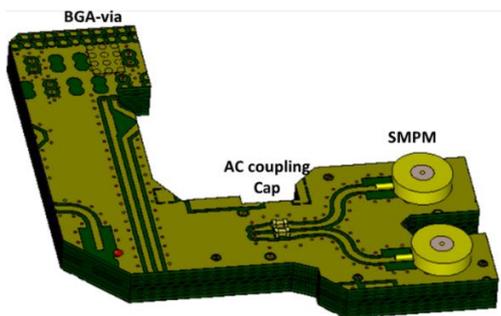


ML4064-MCB-112 Return Loss

Simulation, Design and Validation Capabilities

Any combination of the following capabilities can be conducted for high-speed system developments:

3D Simulation and Optimization

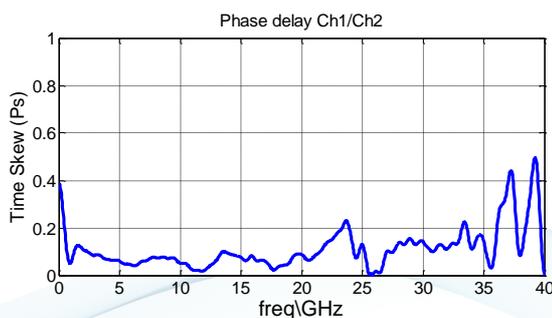


Full wave electromagnetic simulation using CST-MWS

- Single-ended & differential bus design for noise minimization
- Preliminary simulations during layout phase
- Connector footprint optimization
- AC coupling capacitor footprint optimization
- Optimization of BGA vias
- High speed RF trace simulation including broadband properties of materials, surface roughness, ENIG plating, etching effect, etc.
- Crosstalk simulation and timing analysis
- Future-proof design for next generation baud rates

Theoretical Simulation and Analysis

- Skew, IL deviation and COM calculation
- Skin depth, plating, and surface roughness effect



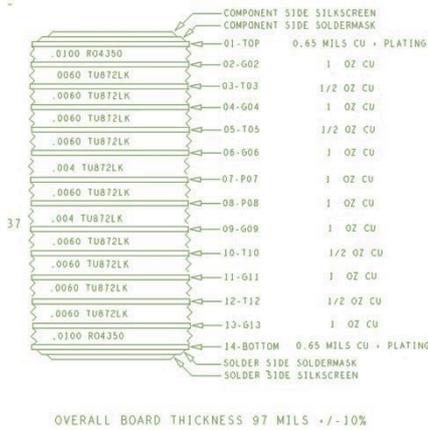
Time skew up to 40 GHz



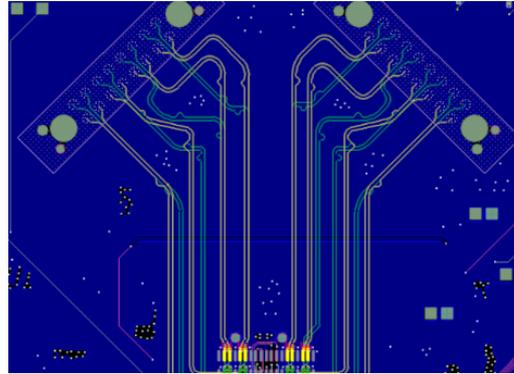
Insertion loss deviation up to 50 GHz

PCB Design and Review

- Defining PCB stack-ups and material selection
- Routing evaluation



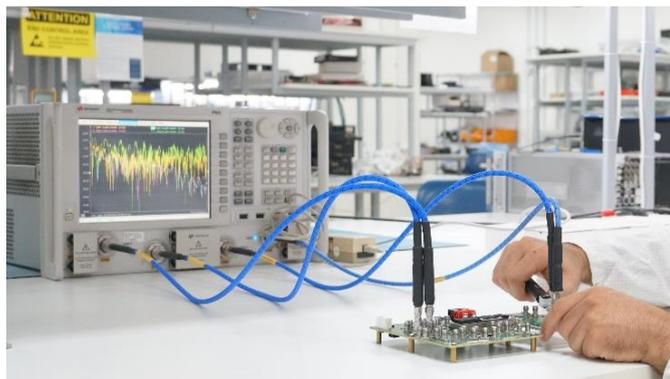
Multilayer Stackup-14 layers



Trace routing with length precision

In-House Bring-Up and Validation at MultiLane R&D Labs

- Time and frequency domain measurements
- Crosstalk and ICN measurements



Frequency and time domain measurements using a Vector Network Analyzer (VNA) up to 50 GHz

To inquire or receive a quote for your desired SI design consultancy or services, please contact our sales department at sales@multilaneinc.com.

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