AWR® Success Story

Marki Microwave Combines Microwave Office with Microlithic Manufacturing for Successful Custom Mixer Designs

Application:
Microlithic™ mixer

AWR Software:
Microwave Office®

COMPANY PROFILE

Marki Microwave's goal is to invent technologies to empower the RF and microwave industry to design faster, simplify production, eliminate complexity, and shatter performance barriers. This goal is achieved through intensive research, product development, and advanced and carefully controlled production. The company has a multi-decade legacy designing high performance microwave components, demonstrating technical leadership through collaboration with thousands of customers.

THE DESIGN CHALLENGE

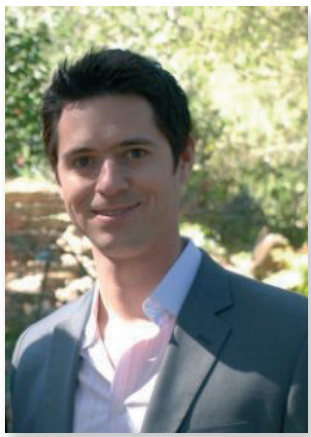
Marki Microwave was using a very time-consuming, empirical design process to produce the highest quality mixers for customers who expect the best performance available in the smallest footprint. Despite the industry-leading performance of its mixers, Marki had reached the fundamental limit on how small a mixer could be built by hand. The company knew that it must overcome this challenge in order to continue to innovate and advance the technology of its mixers for the future.

THE SOLUTION

Marki developed a new mixer design and manufacturing flow that leverages AWR's Microwave Office circuit simulation software combined with Marki's patent-pending Microlithic™ mixer manufacturing process in order to achieve more compact mixers with the same top quality and performance as their current hand-crafted ones.

Marki Microwave implemented a complex design cycle. First, passive structure models were created using conventional techniques. Next, these structures were integrated with nonlinear diode models and simulated using the Microwave Office® APLAC® harmonic balance simulator. Through careful control of the model parameters, these models were refined until the targeted results were produced, which were used to refine the passive structures. When units were finally fabricated, the simulation results were accurate enough to pinpoint and troubleshoot test problems. Finally, measurement data was used to refine the model parameters before release of the models to Marki's customers.

Thanks to the Microlithic/Microwave Office process, Marki has achieved a 14x reduction in size and a 5x reduction in design time while at the same time delivering the highest performance in the industry and scalable manufacturing. An additional benefit of the new Marki design process is the ability to provide its customers with an AWR behavioral model (available on the Marki Microwave website: www.markimicrowave.com/microlithic). This enables customers to design Marki Microwave world-class mixers into their end circuits, systems, and subassemblies and harness the same power and advantages of a simulation-driven design methodology that Marki has found so enabling.



"Designing in software has saved us incalculable amounts of time and money and significantly increased the outlook for a more profitable future and industry longevity for the company."

Christopher F. Marki
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