

## Skyworks Speeds Delivery of Multiple-Band PA Modules and Switch Functions into Single Multi-Chip Modules (MCMs)

*Microwave Office®'s Concurrent Design Approach and Integration of Essential EDA Technologies Accelerates Skyworks Time-to-Market of MCMs*

### CUSTOMER BACKGROUND

Skyworks Solutions, Inc. is an industry leader in radio solutions and precision analog semiconductors. The company's power amplifiers (PAs), front-end modules (FEMs), and direct conversion transceivers are at the heart of many of today's leading-edge multimedia handsets, cellular base stations, and wireless networking platforms. Skyworks also offers a portfolio of highly innovative linear products, supporting a diverse set of automotive, broadband, industrial, and medical customers.

### THE DESIGN CHALLENGE

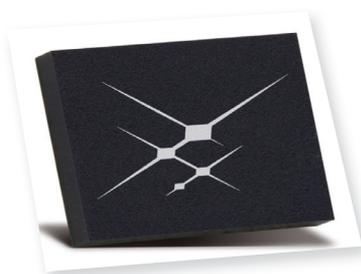
Skyworks Intera front-end modules were designed with cost and space savings in mind. Skyworks Intera FEMs combine the company's industry-leading PA module and switch functions into single, low-cost, laminate-based MCMs. Key features of the transmit FEMs include multi-band, multi-mode PAs, high-linearity transmit/receive switches and all associated filtering and control functions.

### THE SOLUTION

**What design problem did AWR software help solve?** AWR provides the only electronic design automation (EDA) environment capable of handling the increasing complexity and higher integration of multiple-band PA modules and switch functions into single MCMs. Microwave Office software has the unique ability to simulate multiple integrated circuits (ICs), operating within a complex package, including bondwires, vias, and interconnects. Seamless integration of electromagnetic (EM) simulation, circuit simulation, and layout reduces errors, which enables for a more robust design and accelerates time-to-market.

**What were your reasons for choosing AWR software?** Increased productivity, ease-of-use, and the concurrent design approach that the tool enables us to employ. Lastly, AWR customer service and on-site support is unmatched in the industry.

**What were the key benefits of using AWR software?** The resulting Skyworks FEMs are completed in about one-third the design time of competing tools and reduces the need to employ multiple EDA tools during the design cycle.



Skyworks EDGE Front-End Module  
SKY77508



Application:  
Multi-Chip Modules  
AWR Software:  
Microwave Office®



"This is a tool developed with the designer in mind. The concurrent AWR flow enables us to produce more accurate and robust designs three times faster than in other EDA tools, giving us a faster time-to-market, and enabling us to exceed our customers' expectations."

Paul T. DiCarlo  
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