Semtech Accelerates Time to Market of RF ASIC Development with Model-Based Design

MathWorks announced Semtech Corporation used MATLAB and Simulink products to reduce development time of optimized digital receivers in wireless RF devices. Semtech, a leading supplier of high-quality analog and mixed-signal semiconductors, adopted Model-Based Design tools to create FPGA prototypes 50% faster than before, reduce verification time from weeks to days and shorten development time by 33%.

A Simulink model based on system specifications helped engineers rapidly evaluate design ideas and improved collaboration among engineering teams. Simulink and Simulink HDL Coder enabled engineers to create prototypes in a few weeks and eliminate hand-coding. Using EDA Simulator Link, Semtech engineers reused the Simulink system model to test multiple critical points in the design, verify the VHDL in less than a day, and reduce overall verification time from weeks to days.

“We were tasked with the challenges of accelerating the development time for a digital receiver and finding a way to improve our development workflow. MathWorks tools enabled us to explore more alternatives and new features, and ultimately deliver a more optimized, better performing design,” said Frantz Prianon, IC design engineer at Semtech. “With Simulink and Simulink HDL Coder, once we have simulated the model we can generate VHDL directly, prototype on an FPGA, and fully verify the VHDL implementation. It saves a lot of time, and the generated code contains some optimizations we hadn’t thought of.”

“Semtech represents the leading edge of semiconductor companies that are transitioning to new methodologies for highly integrated mixed-signal devices. With Simulink and Model-Based Design, Semtech was able to evaluate multiple design ideas at the prototyping stage and eliminate bottlenecks in their development workflows,” said Ken Karnofsky, senior strategist for signal processing applications, MathWorks. “Further, automatic HDL code generation with Simulink HDL Coder allowed Semtech to eliminate coding errors and quickly create a working FPGA prototype.”

Signal Processing Toolbox, DSP System Toolbox, Fixed-Point Toolbox and Simulink Fixed-Point all helped further accelerate the development of the digital receiver. Model-Based Design has enabled Semtech to transition to a fully digital platform, advance digital and mixed-signal designs, and reduce power consumption while supporting design-flow integration with other products such as Mentor Graphics Questa Advanced Simulator. Semtech is currently working on an ASIC implementation of the receiver.

For additional information, visit www.mathworks.com [1].

For more information, visit http://www.semtech.com [2].

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