Meeting the power consumption and density requirements of modern electronic devices means engineers must consider power at all stages of the design process—from architecture through implementation. If not done properly, however, adding advanced power management to an already complex design process significantly increases project costs and risks. The Cadence Low-Power Methodology Kit enables design and implementation teams to streamline the adoption of low-power techniques, optimize their usage, and get predictable results with minimal risk.

**INTRODUCTION**

Ever-increasing device integration, as well as the need for advanced mobile applications, is driving the need to reduce power consumption across a wide range of design types (wireless, networking, and consumer). Reducing power usage not only helps improve battery life in mobile devices but also improves manufacturability at smaller device geometries, and reduces overall system and packaging costs.

Using traditional design techniques to target low-power designs leads to a complex, manual, unpredictable and highly error-prone flow. Achieving meaningful power reductions requires more than this “bolt on” approach of adding new capabilities into existing flows. Meaningful power reduction is only achieved by taking a holistic approach to low-power design from architectural choices all the way through final physical implementation and signoff. Verification throughout all stages is critical since advanced power management techniques have significant functional impact on the design.

**CADENCE LOW-POWER METHODOLOGY KIT**

The Cadence Low-Power Methodology Kit provides users with a complete front to back methodology for low-power implementation and verification. It combines industry-leading Cadence low-power technology from the Incisive and Encounter platforms, with a single power specification format (CPF) and proven methodologies.

The kit is more than just methodology. It captures best practices in the form of executable flows, as well as detailed checklists that ensure a high level of automation and a clean handoff between different tasks and groups within the design team. The kit is highly modularized
to allow for incremental adoption and to allow teams to focus on what is most critical for the design.

All flows are demonstrated on the Segment Representative Design (SRD)—a real world 802.11 based design—that integrates multiple IP blocks from ARM, ChipIdea, Wipro, TSMC and Virage.

The kit also includes expert applicability consulting to ensure teams can realize immediate benefits by adapting the kit contents to their own design and design environment.

**BENEFITS**

- Enables teams with limited experience in implementing advanced low-power techniques to adopt them in their design with significantly reduced risk
- Provides significant productivity improvements through supplied infrastructure
- Restores schedule predictability through application of proven processes
- Avoids common problems in low-power design through expert knowledge and best practices
- Optimizes flows and tradeoff analysis to ensure technology is applied to give the best results and improve overall quality of silicon
- Reduces overall packaging and system cost by allowing for expanded application of low-power techniques

**KIT COMPOSITION AND INTEGRATION**

The Cadence Low-Power Methodology Kit includes the following:

- Detailed low-power methodology guide, covering all aspects of low-power implementation
- Reference flow implementations with step-by-step walkthroughs
- Detailed documentation of the SRD and reference flow
- Detailed flow checklists, and trade-off analysis
- Expert consulting designed to map the verified and demonstrated methodologies to a specific customer design

The Low-Power Methodology Kit utilizes and integrates with the following technologies (not included)

- Cadence Logic Design Team Solution
- Incisive Plan-To-Closure Methodology
- Incisive Enterprise Family
- Incisive Formal Verifier
- Encounter RTL Compiler
- Encounter Test
- First Encounter
- SoC Encounter
- Encounter Conformal EC
- Encounter Conformal LP
- Voltage Storm

**Multiple Threshold Voltage**

**Low Power Clocking**

**Multiple Supply Voltages (MSV)**

**Power Shut Off (PSO)**

**Low Power Synthesis**

**Power Aware DFT**

**Prototyping and Parasitic Correlation**

**Power Planning**

**Low Power Floorplanning**

**Timing and SI Closure**

**Architecture Trade-off**

**RTL Design**

**CPF Creation**

**Low Power Functional Verification**

**Low Power Implementation Verification**

**Power Grid Sign-off**

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