

What's New in RSoft Photonic Device Tools 2026

Introduction

The RSoft Photonic Device Tools is a comprehensive suite of simulation and design tools for photonics and optoelectronics.

The RSoft 2026 release delivers powerful new products, enhanced features, and significant usability improvements for designing photonic devices such as Silicon photonics, photonic integrated circuits (PICs), and diffractive optical elements. Watch [Video](#)

Topology Optimizer – A Freeform Inverse Design Tool

The **Topology Optimizer** Utility is fully integrated into the RSoft CAD environment, complementing existing photonic design tools and supporting target-specification-driven photonic design.

It leverages FullWAVE's 2D and 3D FDTD solvers as the underlying electromagnetic engine to perform rigorous, freeform optimization. The optimizer operates directly on the spatial refractive-index distribution within a CAD-defined region, treating each grid cell as an independent design variable. To ensure the resulting designs are practical for fabrication, binarization and Design Rule Checks (DRC) options are included to penalize impractical feature sizes and enforce manufacturability constraints.

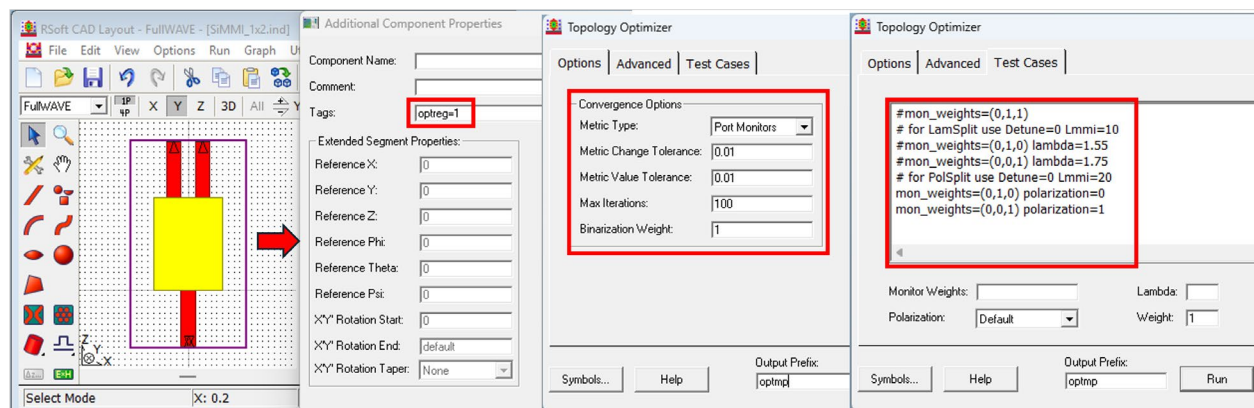


Figure 1. Create the layout, define the optimization regions (optreg = 1), launch the Topology Optimizer, and set up the options and Test Cases to meet the design targets.

Custom PDK Utility Upgrade – Integration with ADS Photonic Designer

RSoft Photonic Device Compiler, together with ADS Photonic Designer, automates the creation of custom device libraries, IP libraries, and foundry PDKs. By leveraging the Custom PDK Utility with RSoft device tools, complete S-matrix based cells — including simulation data, symbols, and layout — can be automatically generated. This enables users to extend existing PDKs, develop new PDKs, and support IP workflows within the ADS Photonic Designer environment.

Performance and Functional Improvements to GPU Features

GPU-accelerated FullWAVE FDTD delivers significant improvements in simulation speed. In RSoft 2026, dispersive FDTD simulations are further optimized with reduced initialization time and pre/post-processing overhead, delivering up to **3×** faster startup compared to previous GPU-accelerated releases for a showcase of 3D CMOS image sensor, while also extending support to **2D FDTD simulations** in addition to 3D model dimensions.

BSDF Utility Enhancements

The **BSDF-Generation utility** introduces multiple enhancements to improve simulation robustness, visualization, and data interoperability.

The new **Resume function** automatically detects failures and re-runs missing simulation cases, improving stability for long or cluster-based simulations.

The **expanded BSDF Viewer** enables direct visualization of BSDF data within RSoft, allowing users to analyze transmission and phase as a function of design parameters, wavelength, angle, and order using line, contour, or polar plot formats.

The new **BSDF Converter Utilities** enable bidirectional conversion of proprietary BSDF data using open formats, facilitating integration with external custom workflows, and supporting measurement-based datasets.

RSoft 2026 Availability

RSoft 2026 is available for download through the **Keysight Software Manager**.

This release enables you to design higher-performance photonic components, achieve faster simulation results, and integrate seamlessly into expanded photonic design workflows.

For more information or to request a trial, contact your Keysight representative or email: optics@keysight.com.

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