OptiPerformer

User's Reference

OptiSystem Project Simulator

Version 10

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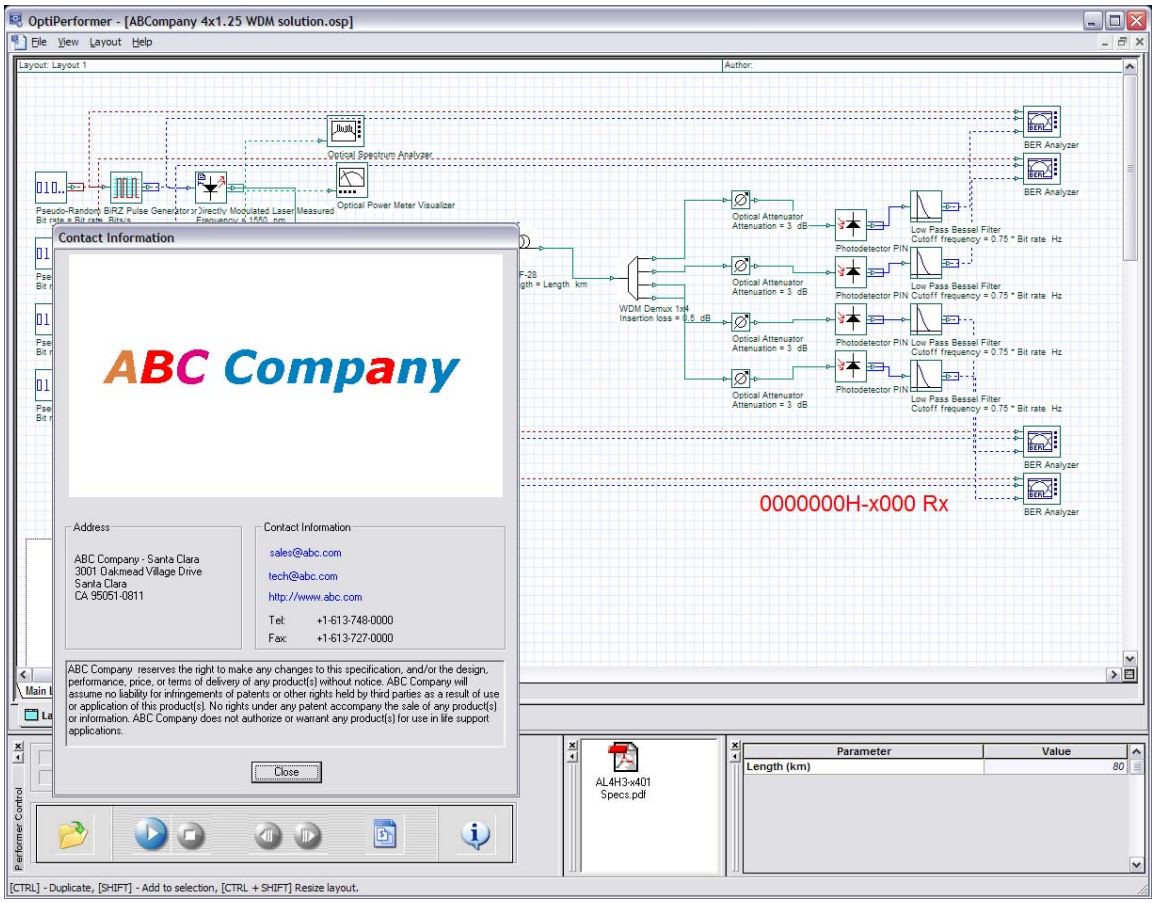
Introduction

OptiPerformer is a software tool that enables technical sales and marketing teams of component and system vendors to powerfully and cost-effectively demonstrate their products. The demonstration is carried out using design scenarios that accurately project performance characteristics of real systems built using vendor components or subsystems. By using OptiPerformer, an application engineer can easily demonstrate the benefits of a product, or propose different scenarios for the product, without having to develop the full depth of R&D-level technical knowledge typical of proficient OptiSystem users.

OptiPerformer's capabilities are derived from Optiwave's award-winning OptiSystem product, an optical system design tool that enables users to plan, test, and simulate almost every type of optical link in the physical layer of a broad spectrum of optical networks. OptiSystem addresses the needs of research scientists and optical telecom engineers, and offers the benefits of dramatic reductions of investment risk and time-to-market, rapid, low-cost prototyping, and global insight into system performance.

OptiPerformer extends OptiSystem's simulation power beyond an organization's R&D department, addressing the needs of the 'customer-facing' team. OptiPerformer features key streamlined functionality and enhanced ease-of-use, enabling technical-sales and marketing oriented users to convincingly demonstrate to their potential customers the value of their specific component solution. Further to this, potential customers can simulate and validate component and system vendors proposed component and sub-system performance versus competing offers within the virtual environment of OptiPerformer.

Figure 1 OptiPerformer GUI



OptiPerformer can be distributed and used by both system and component vendors, as well as their customers and prospects.

Main features

The main features of the OptiPerformer interface include:

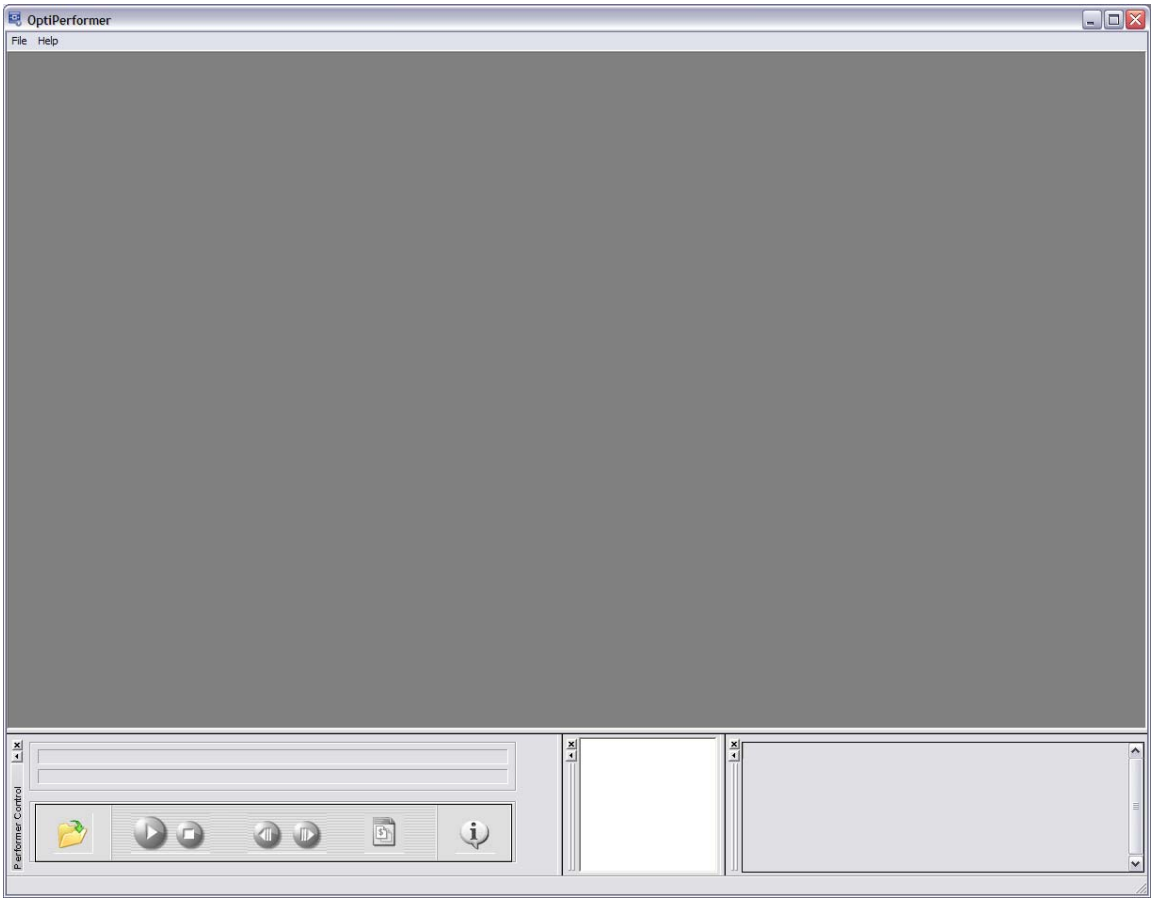
Feature	Description
Graphical user interface	A comprehensive Graphical User Interface (GUI) controls the optical component layout, component models, and presentation graphics. The Performer Control window provides simple, easy-to-use button controls for simulation control.
Mixed signal representation	OptiSystem handles mixed signal formats for optical and electrical signals in the Component Library. OptiSystem calculates the signals using the appropriate algorithms related to the required simulation accuracy and efficiency.
Quality and performance algorithms	In order to predict the system performance, OptiSystem calculates parameters such as BER and Q-Factor using numerical analysis or semi-analytical techniques for systems limited by inter symbol interference and noise.
Advanced visualization tools	Advanced visualization tools produce OSA Spectra, Oscilloscope, and Eye diagrams. Also included are WDM analysis tools listing signal power, gain, noise figure, and OSNR.
State-of-the-art calculation data-flow	The Calculation Scheduler controls the simulation by determining the order of execution of component modules according to the selected data flow model. The main data flow model that addresses the simulation of the transmission layer is the Component Iteration Data Flow (CIDF). The CIDF domain uses run-time scheduling, supporting conditions, data-dependent iteration, and true recursion.

Notes:

Using OptiPerformer

When you open OptiPerformer, the application looks like Figure 2.

Figure 2 OptiPerformer graphical user interface (GUI)



Main parts of the GUI

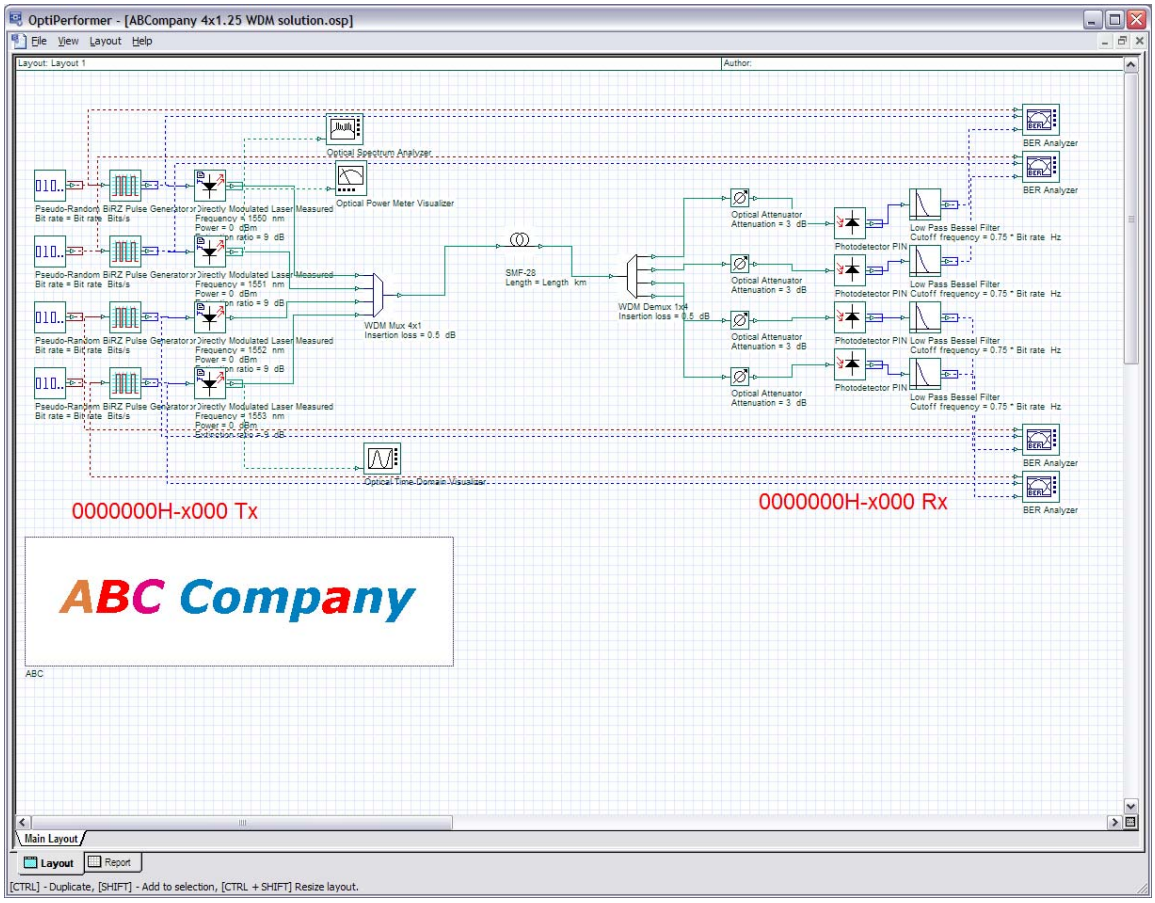
The OptiPerformer GUI contains the following main windows:

- Project Layout
- Perform Control
- Parameter Settings
- Show Navigate

Project Layout

The main working area that displays the layout of the project, including components and connections (see Figure 3).

Figure 3 Project Layout window

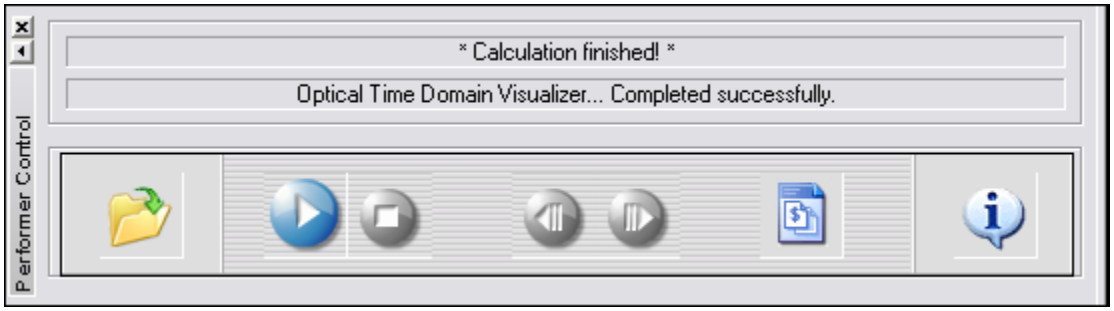


Perform Control

Perform Control (**Calculation Control**) allows you to control the calculation process of the active project. You can start calculations, abort an active calculation process, switch between sweep iterations, view the Bill of Materials, and access the **About the Design** dialog box using the buttons on the **Perform Control**.

Information regarding the progress of the calculation is displayed in the upper portion of the **Perform Control** (see Figure 4).

Figure 4 Perform Control (Calculation Control)



Show Navigate

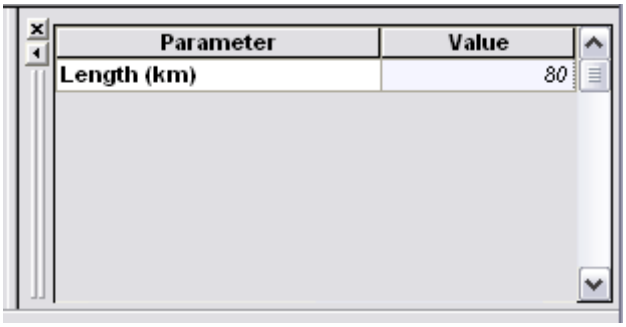
The **Show Navigate** control (**File Display**) allows you to view the list of file attachments included as part of the active project. For example, an Adobe .pdf file could contain documents regarding **OptiSystem**.

Figure 5 Show Navigate (File Display) control

Parameter Settings

The **Parameter Settings** control allows you to view the list of global parameters created as part of the active project.

Figure 6 Parameter Settings control



Menu bar

The **Menu bar** contains the menus available in OptiPerformer.

Figure 7 Menu bar

OptiPerformer menus and buttons

This section describes the menus and buttons available in OptiPerformer

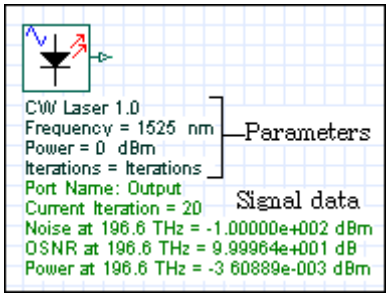
File menu

File menu item	Toolbar button	Description
Close	—	Close the active (current) project in the project layout window.
Exit	—	Close **OptiPerformer**.

View menu

View menu item	Toolbar button	Description
Parameter Set-up	—	Hides/displays the **Parameter Set-up** window (also called the **Parameter Set**tings window)/
Calculation Control	—	Hides/displays the **Calculation Control** window (also called the **Perform Control** window).
File Display	—	Hides/displays the **File Display** window.
Zoom Percent	—	Select the zoom percentage: 10, 50, 75, 100, 150. 200, 400, or 800.
Zoom In	—	Zoom in on the active (current) layout.
Zoom Out	—	Zoom out on the active (current) layout.
Zoom to Window	—	Zoom to the active (current) layout window.
Zoom 1:1	—	Return the active (current) layout to default size with no zoom.
Display Properties		
View Signal Data	—	Select to display calculated port signal data in the active (current) layout (see Figure 8).
View Parameters	—	Select to display calculated component parameter data in the active (current) layout (see Figure 8).
View Results	—	Select to display calculated component results data in the active (current) layout .
Refresh Layout (Ctrl+W)	—	Update displayed port/component data on the active (current) layout during calculations.

Figure 8 Display Properties in layout



Layout menu

Layout menu item	Perform Control button	Description
Previous Sweep Iteration (Ctrl+Page Up)		Display the sweep iteration prior to the active (current) iteration.
Next Sweep Iteration (Ctrl+Page Down)		Display the sweep iteration after the active (current) iteration.
Bill of Materials		Opens the Bill of Materials dialog box for the active (current) layout. See Bill of Materials for more information.

Help menu

Help menu item	Description
Help topics	Displays help topic information about OptiSystem.
About OptiPerformer	Provides information about Optiwave Corporation—mailing address, telephone and fax numbers, E-mail address, and URL.

Performer Control

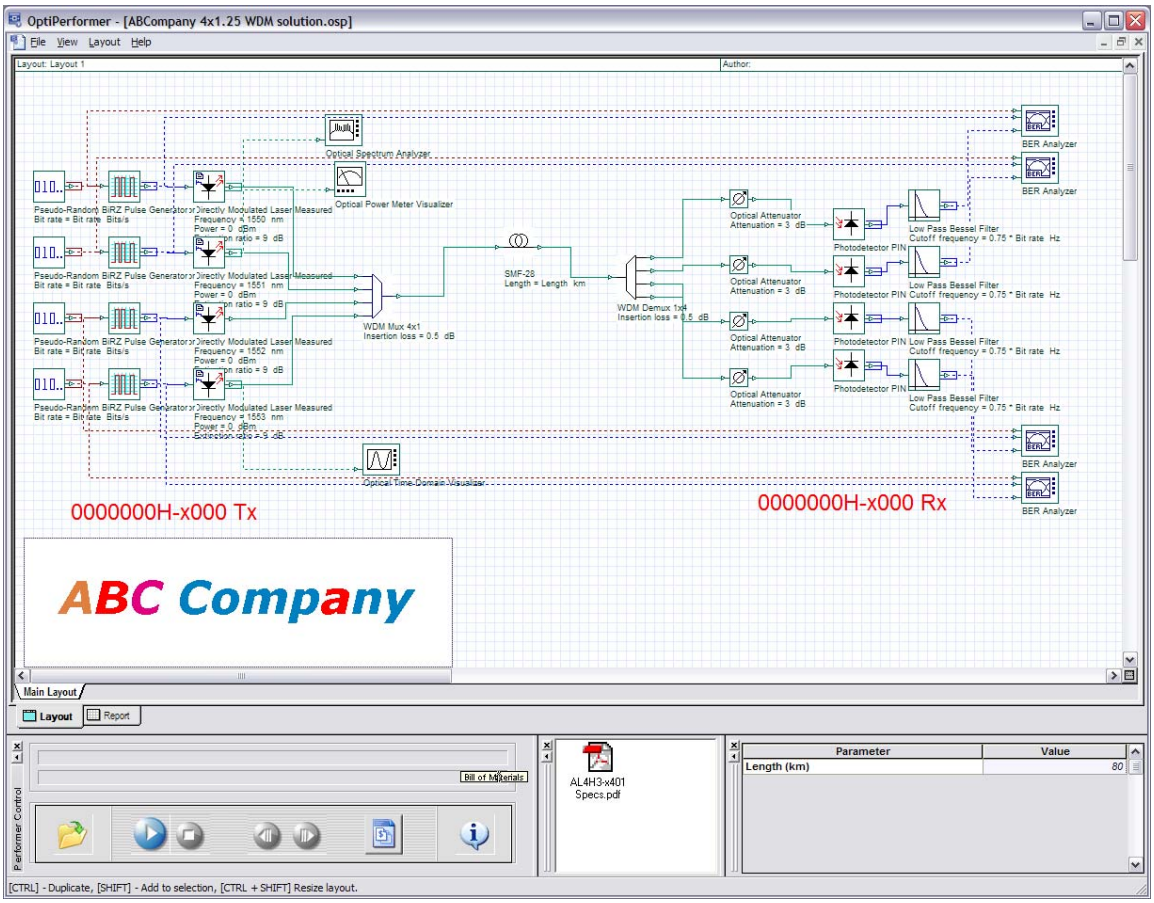
Perform Control button	Layout menu item	Description
	**Open File**	Opens a **Performer** project file (`*.osp`).
	**Run Calculation**	Runs the calculations for the active Performer project file.
	**Abort Calculation**	Aborts the calculations. Does not display/save results.
	**Previous Sweep Iteration (Ctrl+Page Up)**	Display the sweep iteration prior to the active (current) iteration.
	**Next Sweep Iteration (Ctrl+Page Down)**	Display the sweep iteration after the active (current) iteration.
	**Bill of Materials**	Opens the Bill of Materials dialog box for the active (current) layout.
	**Performer Project Info**	Opens the **About the Design** dialog box.

Loading a Performer file

To load a Performer file, perform the following procedure.

Step	Action
1	In OptiPerformer from the **File** menu, select **Open**.
2	Navigate to the location in which you saved the OptiPerformer file, select the file, and click **Open**. *The **OptiPerformer** project file appears in the main layout (see Figure 9).*

Figure 9 Loaded file in Performer

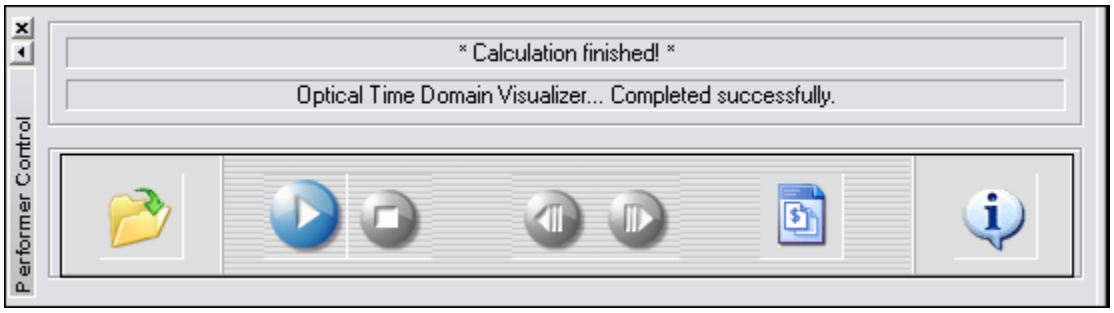


Performing a calculation

Action

- In the **Perform Control**, click the **Run Calculation** button.
  *The calculation starts and the progress appears above the buttons in the **Perform Control** (see Figure 10).*

Figure 10 Calculation progress in Perform Control

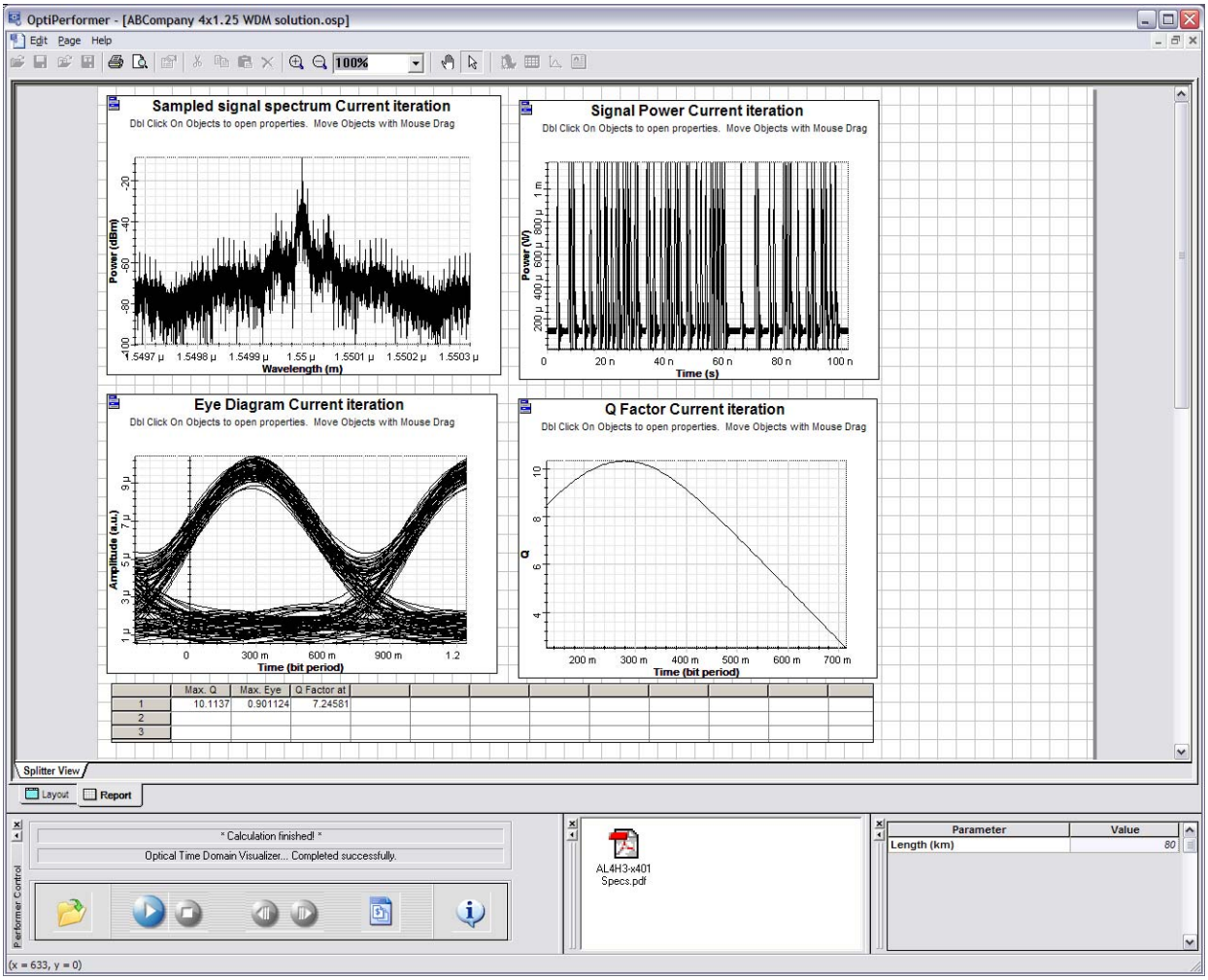


Report tab

The **Report** tab (**Report Page**) at the bottom of the design layout, allows you to see various representations of the project data, including graph views produced from the calculation results, data grids, and text boxes, all on one data sheet.

Note: Graphs are generated by components, although not all components generate graphs.

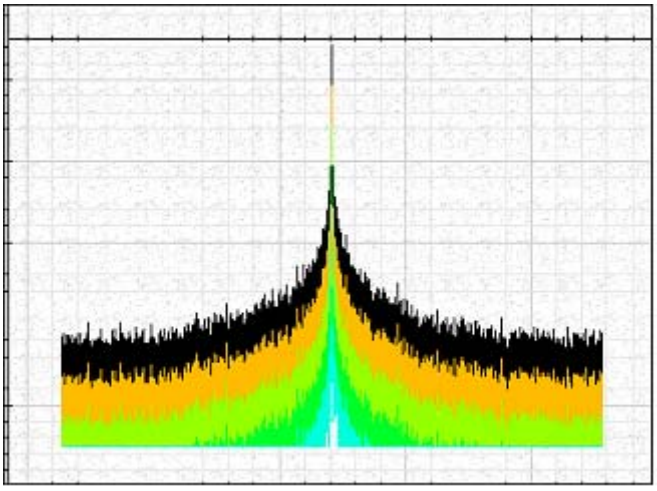
Figure 11 Results tab with Display Table



Multi-graph views

If you have selected a component that has more than one sweep iteration, the results are combined into the single graph view. Each view created has a different colour, indicating that the graph view includes several different graphs (see Figure 12).

Figure 12 Multi-Graph view

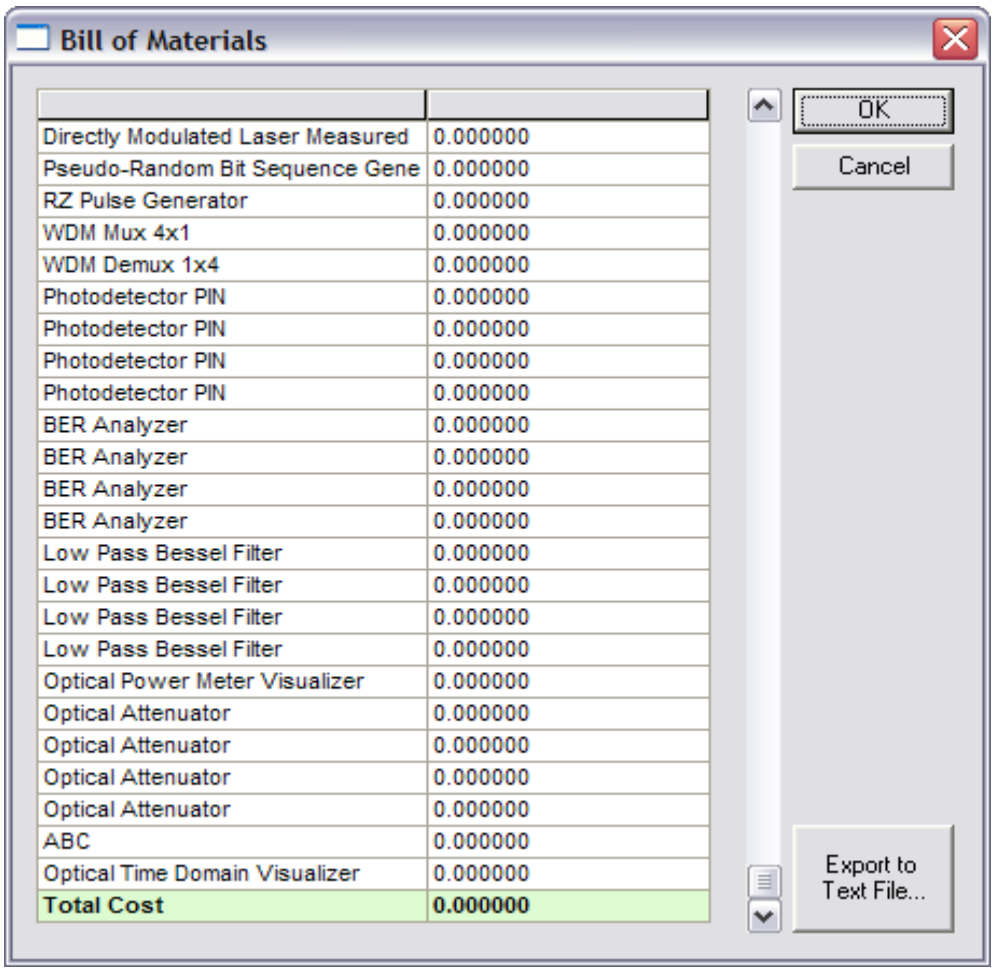


Bill of Materials

The **Bill of Materials** dialog box lists all components and layouts in an active project, their associated costs, and the total cost of the project (see Figure 13).

You can export the **Bill of Materials** to a text file, and use it as a spreadsheet.

Figure 13 Bill of Materials dialog box

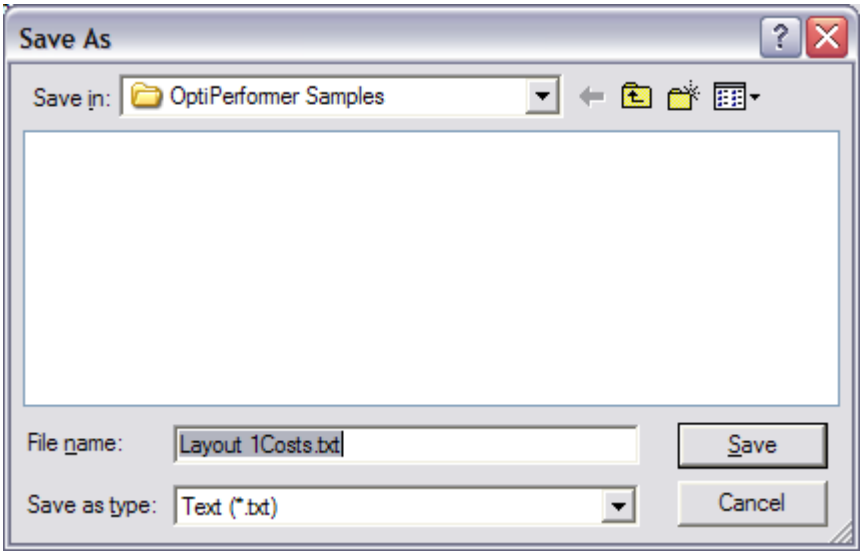


Directly Modulated Laser Measured	0.000000
Pseudo-Random Bit Sequence Gene	0.000000
RZ Pulse Generator	0.000000
WDM Mux 4x1	0.000000
WDM Demux 1x4	0.000000
Photodetector PIN	0.000000
Photodetector PIN	0.000000
Photodetector PIN	0.000000
Photodetector PIN	0.000000
BER Analyzer	0.000000
BER Analyzer	0.000000
BER Analyzer	0.000000
BER Analyzer	0.000000
Low Pass Bessel Filter	0.000000
Low Pass Bessel Filter	0.000000
Low Pass Bessel Filter	0.000000
Low Pass Bessel Filter	0.000000
Optical Power Meter Visualizer	0.000000
Optical Attenuator	0.000000
Optical Attenuator	0.000000
Optical Attenuator	0.000000
Optical Attenuator	0.000000
ABC	0.000000
Optical Time Domain Visualizer	0.000000
Total Cost	**0.000000**

Export to Text File

Opens the **Save As** dialog box and allows you to export the **Bill of Materials** to a text file (see Figure 14) for external cost spreadsheet creation.

Figure 14 Bill of Materials—Save As dialog box



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