

OptiSystem 15.0 Release Notes

IMPORTANT - PLEASE READ ME

Installation Notes:

- If you have an earlier version of OptiSystem on your computer, OptiSystem 15.0 will be automatically installed in a separate directory.
- OptiSystem 15.0 includes the option to install OptiSystem samples during (or any time after) installation. The installation location for the samples folder can be defined (by default the samples folder will be installed in "C:\Users\username\Documents\OptiSystem 15.0 Samples"). If you have saved any projects to the target installation location it is highly recommended to save this folder to a backup folder).
- PythonScript examples are distributed within OptiSystem 15.0 Samples. It is recommended to create a folder C:\Temp on your computer and Copy PythonScripts folder there. The Python script examples are preset to run flawlessly from C:\Temp Directory.

Minimum hardware and software requirements

OptiSystem requires the following minimum/recommended system configuration:

- Minimum PC configuration: PC with Pentium 4 processor or equivalent with 4G GB RAM.
- Recommended PC configuration: PC with a clock speed > 2 GHz with 2-4 cores (e.g. Intel i7 3rd/4th Gen, AMD Athlon/Athlon II) and 8 GB RAM.
- Operating Systems: Microsoft Windows 7/8.1/10 (**64-bit only!**)
- 400 MB free hard disk space
- 1024 x 768 graphic resolution, minimum 65536 colors
- Internet Explorer 5.5 or higher (to enable VBScript functionality)

Application execution

- When running OptiSystem under a Restricted User Profile, place all sample files in the Restricted User's folder, or wherever the user has Read/Write access. It may also be necessary to remove the Read-only flag from the file after the copy is made. This has to do with file permissions - OptiSystem needs to open the file in a read/write mode. Please contact your network administrator if you need assistance. Also when opening an OptiSystem project it will be necessary to open OptiSystem using the "Run as Administrator" command (right click to see this menu option command)
- There are some MATLAB files (.m) included that are necessary to make the samples work properly. Another important point - the path in the MATLAB search path (Main tab of the MATLAB component) has to be updated with the path to the MATLAB files, otherwise the samples will not work.
- The path to the Scilab/bin folder has to be added to Scilab component (a parameter field has been created for this purpose), otherwise the Scilab component library will not work.
- For the OptiSystem Help feature to function properly, Adobe Acrobat Reader must be installed. To get the latest version please visit the Adobe website at <http://www.adobe.com/>.

- Some computers provide a power saving feature, Hibernation. If available, this feature is controlled by opening Power Options in Control Panel. Clicking the Hibernate tab, and then selecting the Enable hibernate turns it on. After the computer goes into hibernation, it won't find the Optiwave protection key, and the simulation will stop with a message that the protection key can't be found. Disable the hibernation feature of the computer in order to avoid this problem.

OptiSystem Version 15.0 list of updates

Components

Component(s)	Library	Changes/Updates
Python Component	External Software Tools/CoSimulation Library/	The new Python Component is similar in concept to the MATLAB Component and can be used to build any type of customized component within OptiSystem.
Measured Optical Sensor	Sensors Library	The new Measured Optical Sensor component can be used to define up to two experimental parameters that affect transmission and reflection functions (based on S-parameters input files)
BER Test Multiple	Sensors Library	The new BER Test Multiple can be used to perform BER measurements for multiple devices under test (DUT). Up to 80 binary channels can be created.
Electrical Complex Conjugate	Signal processing library/Arithmetic/Electrical	This new component performs a complex conjugate operation on the complex data array of an electrical signal
Optical Complex Conjugate	Signal processing library/Arithmetic/Optical	This new component performs a complex conjugate operation on the complex field envelope of an optical signal (X and Y polarization)
Electrical Eye Viewer	Visualizer Library/Electrical	This new component allows for the direct viewing of an electrical eye without the need to attach a binary or reference signal input.
Dual Port Binary Sequence Visualizer, Dual Port M-ary Sequence Visualizer, Dual Port Optical Time Domain Visualizer, Dual Port Optical Spectrum Analyzer, Dual Port Oscilloscope Visualizer, Dual Port RF Spectrum Analyzer	Visualizers Library/Compare	A new tab has been added to the Compare visualizers to allow for the viewing of signals in separate viewers (top-bottom). For optical viewers the dual view is only available for the total signal power (Power X and Power Y can only be viewed in the single view window)
Optical Time Domain Visualizer, Oscilloscope Visualizer, Constellation Visualizer	Visualizers Library	New parameters have been added to allow users to pre-set the plot and line style settings for all views.
Electrical Downsampler	Signal Processing Library/Tools/Electrical	Added a new function to specify the sampling position.

Diffuse Channel, OWC Channel, FSO Channel	Free Space Optics	The free space components have been updated to include more results (geometric loss, gain calculations, etc). Also the calculation model for the Diffuse Channel component has been improved, including the addition of new parameters for Lambertian order and optical lens concentration factor.
Digital filter	Filters Library/Electrical	The Digital filter component includes a new parameter for automatically reloading file-based filter coefficients prior to a simulation iteration.

Other features and improvements

Other features	Changes/Updates
Python scripting	OptiSystem 15 includes support for Python scripting. Similar in capability to VBScripting, users can now set parameters, launch simulations and retrieve results from OptiSystem via the Python scripting language. Contact Optiwave at support@optiwave.com for further information.
Samples folder	<p>The Samples folder has been updated as follows:</p> <ul style="list-style-type: none">• A MATLAB version of an OFDM system design has been added to “Advanced modulation systems\OFDM systems\OFDM MATLAB”• A new “Optical wireless” folder has been added to the OptiSystem 15.0 samples. New examples have been added for indoor wireless (Li-Fi), terrestrial free space optics, and earth-satellite communications• A new set of examples and an overview package have been added to “Software interworking\MATLAB co-simulation\OptiSystem MATLAB data model”. These new examples provide further details on how the data model and structure between OptiSystem and MATLAB works.• A new “Link equalization and FIR filters” folder has been added to the OptiSystem 15.0 samples. New examples have been added for IIR filter design (S-domain, Z-domain) and link equalization techniques.

Documentation

Document	Changes
OptiSystem Component Library	<p>The parameter tables and/or technical description sections of the following components have been updated (or created):</p> <ul style="list-style-type: none">• Electrical Eye Viewer (new)• BER Test - Multiple (new)• Measured Optical Sensor (new)• Python Component (new)• Electrical Complex Conjugate (new), Optical Complex Conjugate (new)• Digital Filter• Transimpedance amplifier• Electrical Downsampler

OptiSystem Version 15.0 known issues/additional notes

Components

- Optical Switches. The control signal function for the optical switch components is not working as defined. When the control signal is changed (from 1 to 0 or from 0 to 1), the switch is not changing from its first state condition (of 0 or 1). This defect affects the follows components: Digital Optical Switch, Optical Y Switch, Optical Y Select, Ideal Y Switch, Ideal Y Select, Ideal Switch 2x2, Ideal Y Switch1x4, Ideal Y Select 4x1, Ideal Y Select Nx1, Ideal Y Switch1x8, Ideal Y Select 8x1, and Ideal Y Switch 1xN.
Work around: None
Target release for fix: TBD
- Measured Pulse Sequence Component. OptiSystem 14.2 crashes when duplicating a layout while using “Measured pulse sequence” component in a sweep mode regardless of number of sweeps. The problem has been fixed in OptiSystem 15.0.
- Optical power combiner Component. The results are different when switching between nm and THz setting of a laser diode (LD) used in conjunction with an Optical power combiner component when the LD randomness is set to “False” (not selected). The problem was related to precision calculation between the two units, which created a skip of a certain section in the calculation routine. This problem has been fixed in OptiSystem 15.0.
- 1X4 DEMUX component. The units of the channels of a 1X4 DEMUX component in OptiSystem 14.2 cannot be changed back to nm after saving a project, exist and reopen it. The units of the channels were first set to nm and the project was calculated then the units were changed to THz. After, the project was calculated then saved and exited. When the project is opened, the units of the channels cannot be changed back to “nm”. This problem is fixed in OptiSystem 15.0.
- NXN bidirectional AWG component. The DEMUXed channel are wrongly placed on the ports of the component. This issue has been fixed in OptiSystem 15.0
- 8B10B Sequence Generator/8B10B Sequence Decoder. The 8B10B sequence generator and decoders are not working as defined. A 10-bit sequence should be created for every 8-bit input bit sequence.
Work around: None
Target release for fix: TBD

Additional release notes/known issues

- Electrical Eye Analyzer. A new component, **Electrical Eye Viewer**, has been added to the Visualizer Library. This visualizer component replaces the now obsolete **Directly Detected Eye Analyzer Visualizer**. For any designs which contain the latter component, it is recommended to delete this component and replace it with the new **Electrical Eye Viewer**.
- Raman Amplifier Average Power Model/Raman Amplifier Steady State Model/Raman Amplifier Dynamic Model. When first setting up any of these components it is important to setup a valid file and file path for the Raman gain profiles (otherwise the component will fail). Example files can be found under “OptiSystem 15.0 Samples\Optical amplifiers\Raman amplifiers”, specifically *RGEfficiency_FusedSilica_NLO_3rdEd_Agrawal_Fig8-1_p300_Hz.dat* for “Raman gain efficiency” and *RGNorm_FusedSilica_NLO_3rdEd_Agrawal_Fig8-1_p300_Hz.dat* for “Raman gain”. The pump reference for these data files is 1000 nm.

- Dynamic graphs. Certain components have a dynamic graphing feature where graphs are automatically created based on the input setting for the component. For example the Raman amplifier models support the loading of multiple Raman Gain Efficiency curves for gain calculations. These graphs may not always automatically load under the Graphs tab within the Project Browser (even though they are being read correctly by the component). To ensure that the latest graphs are correctly loaded, a refresh function can be applied to the Project Browser, specifically under the file menu *View/Rebuild Project Browser*.
- Multi-thread all sweep iterations. When using a large number of sweeps that includes the loading of data files the application may crash.
Work around: Try running simulations with a smaller number of sweeps (around 25)
Target release for fix: TBD
- Selecting the Reports tab after running data intensive computations may cause the OptiSystem application to freeze. The OptiSystem application may freeze and shut down upon selecting the Reports tab after running simulations with very large sampled data sets and/or a large number of sweep iterations. This issue occurs infrequently, however it is highly recommended (as a general practice) to backup your project file prior to running any simulations that may create large data samples. It is also recommended to minimize the number of visualizers in your design when running simulations with a large number of samples.
Work around: Try to keep the number of visualizers in your design to a minimum when running large numbers of sweep iterations or if your design has a very large number of samples. The Script feature can also be used to run sweep iterations (this method is less memory intensive)
- Search Engine Window. When typing any word in the “Search Engine” window and pressing “enter”, the window closes in OptiSystem 14.2. This problem has been fixed in OptiSystem 15.0.
- Notification of file loading error. After loading a data file a warning may appear at the bottom of the Component parameter dialog box (after selecting OK) indicating that the file was not successfully loaded. This warning only appears momentarily and thus may be missed.
Work around: After attempting to load a file, select another tab within the Component parameters window (instead of selecting OK and closing the window). The window and the warning at the bottom of the window (if the data file is not successfully loaded) will remain active.