OptiSystem 17.0 Release Notes

IMPORTANT - PLEASE READ ME

Installation Notes:

- If you have an earlier major version of OptiSystem on your computer, OptiSystem 17.0 will be automatically installed in a separate directory.
- OptiSystem 17.0 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 17.0 Samples"). If you have saved any projects to the target installation location it is highly recommended to save this folder to a backup folder).

Minimum hardware and software requirements

OptiSystem requires the following minimum/recommended system configuration:

- Minimum PC configuration: PC with Pentium processor (E6, G Series) or equivalent.
- 8GB RAM.
- Recommended PC configuration: PC with a clock speed > 2 GHz with 2-4 cores (e.g. Intel i5, i7, i9 or equivalent AMD) and 16GB RAM or more.
- Operating Systems: Microsoft Windows 8.1/10 (**64-bit only!**)
- **Microsoft is shelving Windows 7**, we will be dropping Windows 7 support starting this release. However, the software might run under Windows 7, but we do not guarantee it and we will not be able to provide technical support for bugs/crashes.
- 1.5 GB free hard disk space.
- 1280 x 1024 graphic resolution

Application execution

- Administrators: when installing OptiSystem for users with Restricted User Profile, install the sample files in a folder where these users have Read/Write access. By default, the sample files are installed in the current user's Document folder. OptiSystem requires the read/write file access and will not work with read-only files.
- There are some MATLAB files (xxxxx.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 are configured in power saving mode to go to Hibernation or Sleep mode when they are not in use. It is recommended to disable this feature, especially when running unattended lengthy simulations. Typically, after the simulation is complete, the computer idles and eventually goes to Hibernation. This causes the

licensing platform drivers to invalidate the license. When the computer wakes up and resume its execution, OptiSystem software will issue a message that the license is not available and terminate, losing the simulation results in the process. Please disable the computer hibernation feature to avoid this problem.

OptiSystem Version 17.0 list of updates

Components

Component(s)	Library	Changes/Updates
GN-Model component	Default/Optical Fibers/ Library	The **GN-Model** component is used to simulate long-haul single span and multi-span DWDM transmission systems. The DWDM channels can be modulated using mQAM or mPSK modulation schemes. The GN-Model allows ultra-fast calculation of the optical transmission systems compared to those methods that use traditional way of solving the nonlinear Schrödinger equation.
LiFi Channel components	Default/Free Space Optics/ Library	The **LiFi Channel component offers users with capabilities to** investigate the power distribution of different transmitters located at different positions in a room. As well as, it calculates the impulse response and frequency response of the LiFi channel. Finally, the channel BER versus SNR performance can be simulated using this component for a non-return-to-zero on-off keying (NRZ-OOK) transmission systems.
Multicore Fiber components	Default/Optical Fibers/ Library	The **Multicore Fiber** component calculates core-to-core crosstalk and the total crosstalk for each core of a multicore fiber (MCF) cable.
MCF XT-Bending Radius Component	Default/Optical Fibers/ Library	This component calculate the effect of bending radius on the crosstalk between two core in a MCF.
MCF XT-Core Pitch	Default/Optical Fibers/ Library	The MCF XT-Core Pitch component calculates the effect of changing the core pitch on the crosstalk between two cores.
OTDR component	Default/Sensors/ Library	This component allows users to design and investigate OTDR performance of a multi-section fibers with different kinds of connection such as APC/APC, PC/PC, APC/PC and splice. Users control the pulses launching conditions and set the fiber cable physical characteristics.

Other features and improvements

Other features	Changes/Updates
Phi-OTDR	A check box is added to enable users saving the calculated data of the **Phi-OTDR** component to a file and allow them to define their desired path for storing the file.

Documentation

Document	Changes
VCSEL Laser component	The Measured LI and LV data files for the 683nm VCSEL Laser are copied from C:\Users\user name\Documents\OptiSystem 16.1 Samples\Optical transmitter design and analysis\VCSEL models and placed in C:\Users\user name\Documents\OptiSystem 16.1 Samples\Component sample files\Transmitters Library\Optical Sources. This allows easier access to the files.
Linear Multimode Fiber component	The datasheet of the **Linear Multimode Fiber** component is edited to show the format of the CamMMFi data file. A PDF file that describes the data structure is added to the example library at C:\ Users\user name\Documents\OptiSystem 17.0 samples\Component sample files\Multimode Library\Optical Fibers.
OFDM Modulation component	An equation to calculate the peak to average power ratio (PAPR) parameter for the **OFDM Modulation** component is added to the component datasheet. The PAPR parameter could be viewed through the “Component Results...”.
Optical Fiber	Appendix (3) is added to the **Optical Fiber** component data sheet to explain how to load the Optical Fiber data files located at C:\Program Files\Optiwave Software\OptiSystem 17\components\Optical Fiber\... to the component properties popup window.

OptiSystem Version 17.0 Improvements & Fixes

Additional release notes issues

a. The name of some libraries provided by Python software/Anaconda could change upon updates, which would cause OptiSystem to fail calculating the Python component examples provided in OptiSystem Example Library due to mismatch in the file names. Please make sure that python specific version (Python 3.7) is used with the proper release of OptiSystem.

b. The issue of accessing the “**Getting Started Guide**” and “**User Reference Guide**” from the “**Help**” filed in OptiSystem GUI tool bar is fixed in OptiSystem version 17.0.

c. OptiSystem software crashes when signals with optical spectrum has values of 0 Hz, while the setting of the **Optical Spectrum Analyzer** visualizer or the **Dual Port Optical Spectrum Analyzer** visualizer is in “m”. The software does not crash if the setting is “Hz”. The issue has been fixed in OptiSystem 17.0.

d. The results displayed using the **3D Graph** feature when dragged from the “**Graphs**” field of the component in the “**Project Browser**” docker into the “**Report**” page are not correct. This issue has been fixed in OptiSystem 17.0.

e. When changing the number of samples in the project layout and go from higher number of samples to a lower number of samples, the change is not reflected on the captured number of samples in the “**View Signal Visualizer**” component. This issue is resolved in OptiSystem 17.0.

Examples Library

a. The example (RA Optimizing pump power and frequencies - Average model.osd) is edited to allow convergence of the optimization of the Raman amplifier gain for the used lasers wavelength and pump power. The example is located at C:\Users\user name\Documents\OptiSystem 17.0 Samples\Optical amplifiers\Raman amplifiers

b. A new example (VCSEL Laser Measured Impulse response.osd) is created to simulate the frequency response of the "**VCSEL Laser Measured**" component. The file is located at C:\Users\user name\Documents\OptiSystem 17.0 Samples\Component sample files\Transmitters Library\Optical Sources

c. An example (polarization control in VCSEL Laser.osd) is created to control the polarization of the VCSEL laser output. The file is located at C:\Users\user name\Documents\OptiSystem 17.0 Samples\Optical transmitter design and analysis\VCSEL models

d. A new example (VCSEL Harmonic Distortion suppression.osd) is created to demonstrate the suppression of nonlinearity in VCSEL using feedback technique. The example file is located at C:\Users\user name\Documents\OptiSystem 17.0 Samples\Component sample files\Transmitters Library\Optical Sources

e. The example (Coexisting GPON and NG-PON1.osd) is created for upgrading GPON and coexisting with NG-PON1. The file is located at C:\Users\user name\Documents\OptiSystem 17.0 Samples\Metro and access systems\PON and CDMA systems

f. The text file CamMMFI.txt and its description in a pdf file are added to the example library directory at C:\Users\user name\Documents\OptiSystem 17.0 Samples\Component sample files\Multimode Library\Optical Fibers. The CamMMFI.txt file is used in the "Linear Multimode Fiber" component.

g. A new example (supercontinuum in PCF.osd) is created for generating supercontinuum in photonic crystal fiber (PCF). It is placed in the example library at C:\Users\user name\Documents\OptiSystem 17.0 Samples\Fiber analysis and design\PCF. The parameters of the PCF are generated using OptiMode software. The files used in OptiMode can be found in the same directory.

h. The BER calculation in the example (LiFi Model.osd) located in C:\Users\user name\Documents\OptiSystem 17.0 Samples\Optical wireless\Indoor optical link\... is fixed.

i. A new example (Raman self-frequency shift_Soliton.osd) is created and placed at the location C:\Users\user name\Documents\OptiSystem 17.0 Samples\Fiber analysis and design\Optical Fiber Nonlinearity\SRS. The effect of the pulse width on the Raman self-frequency shit and the propagated distance is demonstrated in this example.

j. A new example (Phase Modulator and detection.osd) located at C:\Users\user name\Documents\OptiSystem 17.0 Samples\Component sample files\Transmitters Library\Modulators\Optical\... is created.

k. The example (PAM fiber link w PAM Decision.osd) located at the C:\Users\user name\Documents\OptiSystem 17.0 Samples\Advanced modulation systems\PAM systems\... is edited for better visualization by adding "**Eye Diagram Analyzer**" visualizer at different locations.

l. An optical not signal example (Optical Not.osd) is created. It is located at C:\Users\user name\Documents\OptiSystem 17.0 Samples\Component sample files\Signal Processing Library\Logic\Optical.

m. A microwave photonic filter example (Microwave photonic filter.osd) is created. The example is located in the directory C:\Users\user name\Documents\OptiSystem 17.0 Samples\Microwave and RF optical systems.

n. A new example on satellite communication (inter satelite Design.osd) is added at the location C:\Users\user name\Documents\OptiSystem 17.0 Samples\Optical wireless\Earth-satellite design.

o. A new FBG sensor example (FBG temp sensing.osd) is created and placed in the directory C:\Users\user name\Documents\OptiSystem 17.0 Samples\Sensor systems\FBG Sensor.

p. A new example on double pass EDFA using reflective mirror and grating (double pass EDFA.osd) is added. The example is located at C:\Users\user name\Documents\OptiSystem 17.0 Samples\Optical amplifiers\EDFA models and analysis.

q. New example on using VCSELs in OFDM QAM modulated signals (Direct Detection OFDM 4 QAM_VCSEL direct modulation.osd) is created. It is located at C:\Users\user name\Documents\OptiSystem 17.0 Samples\Advanced modulation systems\OFDM systems.

r. The OFDM QAM direct detection example (Direct Detection OFDM 4 QAM.osd) is edited to allow best performance. The example is located at C:\Users\User name\Documents\OptiSystem 17.0 Samples\Advanced modulation systems\OFDM systems.

s. New example on PON (PON Co-existing.osd) is added. The file is located at C:\Users\user name\Documents\OptiSystem 17.0 Samples\Metro and access systems\PON and CDMA systems.

t. A new example (112Gbps SP-16QAM_B2B_subsystem with DSP_Investigating Power level calculation.osd) is added to validate the calculation of power levels of QAM modulated using postprocessing of modulated signal data in an excel sheet. The example and excel files are located at C:\Users\user name\Documents\OptiSystem 17.0 Samples\Advanced modulation systems\QAM systems\16 QAM.

u. A new single polarization 16QAM transmission example (112Gbps SP-16QAM_B2B_subsystem with DSP.osd) is added and located at C:\Users\user name\Documents\OptiSystem 17.0 Samples\Advanced modulation systems\QAM systems\16 QAM.

v. New 64QAM OFDM ROF example (64QAM-OFDM Signal ROF transmission.osd) is created and located at C:\Users\user name\Documents\OptiSystem 17.0 Samples\Advanced modulation systems\OFDM systems.

w. A new example (4 PAM - VCSEL MMF Fiber Link.osd) is created to generate a 4PAM signal using multimode VCSEL over multimode fiber. The example is located at C:\Users\user name\Documents\OptiSystem 17.0 Samples\Multimode systems.

x. New example (2D-SWZCC_spectral-spatial OCDMA system.osd) on two-dimensional spectral/spatial OCDMA system is added and located at C:\Users\user name\Documents\OptiSystem 17.0 Samples\Metro and access systems\PON and CDMA systems.

y. A new example (5 fiber cables with 2 splices and 2 connectors-OTDR example.osd) is created to characterize 5 pieces of fiber with 2 splices and 2 connectors. The example is located at C:\Users\user name\Documents\OptiSystem 17.0 Samples\Sensor systems\OTDR.

z. New example (6 fiber cables with 2 splices and 2 connectors-OTDR example.osd) is created to characterize 6 pieces of fiber with 2 splices and 3 connectors. The example is located at C:\Users\user name\Documents\OptiSystem 17.0 Samples\Sensor systems\OTDR.