

Keysight N7700 Photonic Application Suite

User's Guide

Notices

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Compliance and Environmental Information

Table 1 Compliance and Environmental Information

Safety Symbol	Description
	<p>This product complies with WEEE Directive (2002/96/EC) marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste.</p> <p>Product Category: With reference to the equipment types in WEEE Directive Annex I, this product is classed as a “Monitoring and Control instrumentation” product.</p> <p>Do not dispose in domestic household waste.</p>
	<p>To return unwanted products, contact your local Keysight office, or see http://about.keysight.com/en/companyinfo/environment/takeback.shtml for more information.</p>

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Keysight N7700 Photonic Application Suite
User's Guide

1 The Photonic Application Suite

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About this manual

This manual describes the usage of the Keysight Photonic Application Suite N7700.

General

The *N7700 Photonic Application Suite* is a modular software platform for fast and easy characterization and analysis of optical components and signals. The range of measurement functions currently includes:

- IL & PDL characterization for components including:
 - Broadband (flat spectrum) components like circulators, splitters, couplers, optical switches, etc.
 - Wavelength dependent components like WSS, ROADMs, multiplexers, filters, etc.
- Multi-port component measurements
- Polarization analysis and control
- Measurement of parameters including: IL, PDL, TE/TM, PER, Stokes Parameters, etc.
- Similar parameters based on optical-to-electrical responsivity for photodetecting devices

The *N7700 Photonic Application Suite* contains a free-of-charge File Viewer which allows viewing and analyzing measurement data. It has been designed for sharing measurement results throughout whole development teams or manufacturing groups. The Viewer is included in the N7700 Photonic Application Suite main package, which can easily be downloaded from www.keysight.com/find/N7700.

For performing measurement tasks a range of application packages are available:

Insertion Loss Measurement Package

The Insertion Loss measurement package performs very accurate swept-wavelength insertion loss measurements using one of Keysight's tunable laser sources plus optical power meters.

Fast Spectral Loss Measurement Package

Similar to the Insertion Loss measurement package, the Fast Spectral Loss measurement package performs very accurate swept-wavelength insertion loss measurements using one of Keysight's tunable laser sources plus optical power meters. However, this measurement package is optimized for fast repetition rates, using the advance functionality of newer instruments, including bidirectional sweep of the tunable laser source.

Insertion Loss/Polarization Dependent Loss Measurement Package

The IL/PDL measurement package makes rapid and very accurate measurements of spectral insertion loss and polarization dependent loss (PDL) characteristics of multiport optical components. The single-sweep Mueller Matrix method provides speed and immunity from vibrations and noise.

Lambda Scan Measurement Package

The Lambda Scan package introduces a new software structure to bring the features and behavior that have been developed in the separate N7700 engines together into a common platform, while adding support for the latest N77-C instruments for enhanced performance.

Filter / Multiplexer Analysis Package

The Filter / Multiplexer analysis package is a licensed extension of the measurement packages, installed with the main package, which contains functions for analysis of narrow-band components like filters, multiplexers and DPSK demodulators:

- Peak search
- PDf / PD λ analysis
- DWDM channel analysis

Polarization Navigator

The Polarization Navigator package supports the N778xB instruments with all the tools needed for your work in the polarization domain: measurement of Stokes parameters and degree of polarization (DOP); representation on the Poincaré sphere or time dependent long term monitoring, spike analysis, etc. Also various functions for control, switching and scrambling the polarization of optical signals are provided.

Further functions and capabilities are added to the Photonic Application Suite on a continuous basis.

2 Installing Photonic Application Suite

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System Requirements

The following are the minimum requirements for the Photonic Application Suite software.

- Operating System: Microsoft Windows 10 (64 bit)
- Depending on the instruments, PC interfaces to LAN, USB, and GPIB can be used.

You might also refer to the Release Notes documents of the measurement engines to know their specific requirements.

Photonic Applications Package Manager

This section explains how to install the Photonic Application Suite on your computer.

NOTE

You need administrative permissions to install the Photonic Application Suite.

If you obtained the Photonic Application Suite on a CD, the Package Manager should start automatically once you put the CD into the drive. Otherwise run “setup.exe” from the CD root directory.

If you downloaded the Package Manager from the Keysight web, site run “PASPackageManager_version_number.exe”.

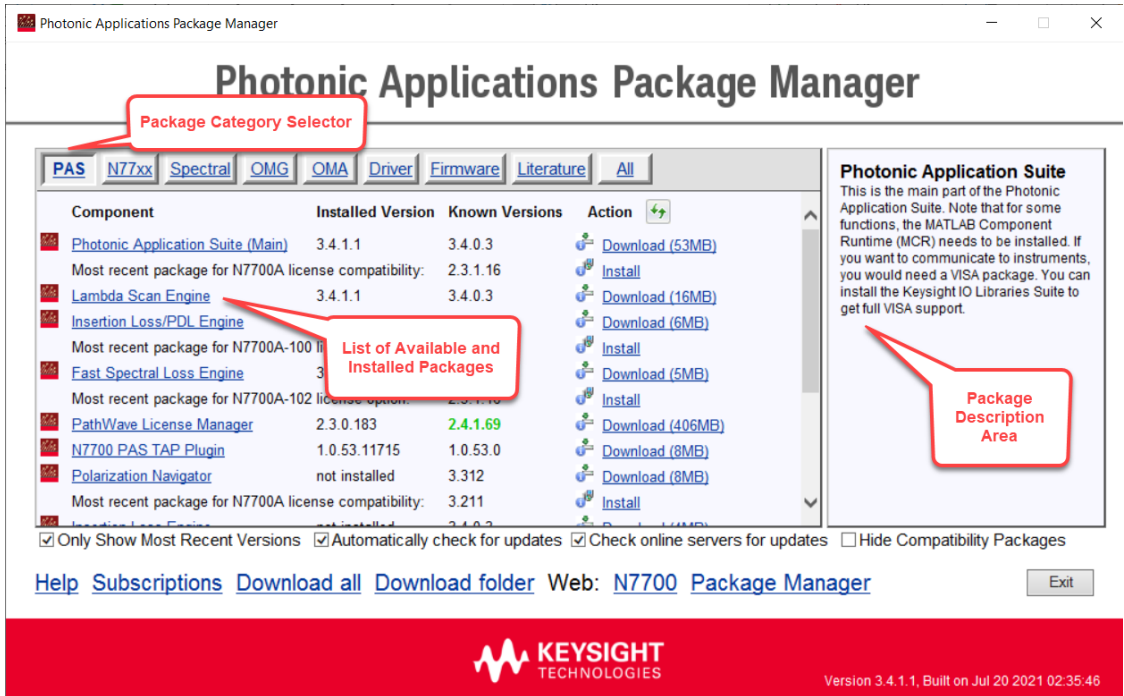
If the Photonic Application Suite (Main) Package 1.1 or higher is installed on your PC, you can launch the “Package Manager” from the “Keysight Photonic Application Suite” folder in the start menu.

NOTE

If an Internet connection is available, the Package Manager will check whether newer packages are available on the Keysight Update Server. Using the same mechanism, the Package Manager will update itself if a newer version is found on the Update Server.

NOTE

Click the Help link on the bottom right of the Package Manager window to access instructions and troubleshooting tips for using the Package Manager.



The Package manager lists all known packages and shows which version of each of the packages is installed on your PC, if any. It also lists all packages that are available for download or installation.

The packages are grouped into categories like “Driver” and “Literature”. Click on the group buttons to show only packages belonging to that group.

When moving the mouse cursor over the names in the “Components” column, a description of this package is shown in the package description area. When moving the mouse cursor over the links (download/install) or the version numbers of the “Known Versions” column, release notes (if available) and specific information (like missing requirements) for this package are displayed in the package description area.

The “Known Version” number is colored green, if there is a version available that is newer than the one currently installed.

To the right there is a list of available actions for each of the packages:

- Download

If your computer is connected to the Internet, the Package Manager will check for the latest available versions and show the action “Download” for any available packages. The size of the compressed package is listed for each one. Once download is complete, the Package Manager checks the file integrity.

- Install

If you’ve downloaded a package in the past or you’re running the Package Manager from CD, the packages don’t need to be downloaded.

By clicking install, the package will be uncompressed and the installer will be launched.

- Show Info

Some packages do not contain an installer, but documents instead. By pressing Show Info, these documents will be shown (e.g. text files).

- Not available

There may be package versions known to the Package Manager that are no longer available on the Update Server and that have not been downloaded to your PC before. Those packages are listed, but no action is available.

If there is an information icon to the left of an action, release notes are available. When moving the mouse over the information icon, the release notes are displayed in the Package Description Area.

NOTE

Certain packages require other packages to be installed. Once you installed a package that requires one or more other packages, those packages will be indicated by an arrow to the right of the action list. It is strongly recommended to install all these packages as well before running any applications.

NOTE

By removing the “Only Show Most Recent Versions” check mark, all known and available package versions are listed.

NOTE

By default, some of the applications of this suite will check regularly whether updates are available on the Keysight Update Server (requires Internet access). To disable this feature, remove the “Automatically Check for Updates” check mark.

There are a number of functions at the bottom of the Package Manager Window:

- www.keysight.com/find/N7700

Show Photonic Application Suite product website including ordering information (Internet access required).

- Manage Subscriptions

Enter or remove access codes for accessing restricted packages (Internet access required).

- Download All

Download all packages visible in the current group, if they are newer than the installed ones (Internet access required).

- Explore Download Folder

Explore Photonic Application Suite download folder. You can copy 'setup.exe' and the 'Packages' folder to a removable disk or network drive to install downloaded packages to a PC without Internet access.

Delete files from the 'Packages' folder to free disk space.

Select “Photonic Application Suite (Main)” to install the main part of the suite. It is required for most of the application packages including the Polarization Navigator.

NOTE

The instrument drivers should be installed on the PC before connecting the instruments, especially via USB. This can be ensured by first installing the indicated packages of the Photonic Application Suite. If you have connected the instrument(s) prior to software installation, you may have to delete the instrument(s) manually from the Windows Device Manager. This does not apply to instruments that are connected via GPIB or to USB connection of N77xx-C instruments, which do not require a USB driver.

NOTE

Please install the Keysight IO Libraries Suite before you connect any instruments to your PC.

Installation

Refer to the [The Photonic Application Suite](#) on page 9 to learn how to use the Package Manager for installing the Photonic Application Suite.

NOTE

Please install the Photonic Application Suite before you plug in any USB instrument(s) to the USB port of the PC.

Install the Keysight IO Libraries Suite as well.

Hint: If you plugged in a USB instrument before you installed the driver, you might need to delete the instrument from the Device Manager manually. This does not apply to N77xxC instruments, which do not require a USB driver.

What do I need to install?

Photonic Application Suite (Main)

In any case, the “Photonic Application Suite (Main)” package needs to be installed. It provides main features and software infrastructure such as:

- File Viewer
- Example Measurement Files
- Code Examples
- COM Infrastructure Components
- Installed Package Manager and Launch Pad
- User's Guide

Lambda Scan (LS) Engine

Install this engine to perform swept-wavelength IL/PDL Measurement using one or more N774xA/N774xC/N7747A/N7748A Multiport Power Meters combined with an N7786C or N7786B Polarization Synthesizer and one or more Tunable Laser Sources. The LS engine also supports B2901A/B2902A/ B2911A/B2912A/M9601A/M9614A/M9615A precision source/measure units and the 81610A/81613A return loss modules. Also supported are the swept-wavelength PMD measurements using an N7788C Optical Component Analyzer and one or more tunable laser sources.

Insertion Loss / PDL Engine

Install this legacy engine to perform swept-wavelength IL/PDL Measurement using one or more N774xA Multiport Power Meters combined with an N7786B Polarization Synthesizer and one or more Tunable Laser Sources. The IL/PDL engine also supports B2901A/B2902A/B2911A/B2912A precision source/measure units and the 81610A/81613A return loss modules.

Fast Spectral Loss Measurement Engine

Install this legacy engine to perform fast swept-wavelength IL Measurement with very high repetition rates using a Keysight Tunable Laser Source and multiport power meters.

Insertion Loss Engine

Install this legacy engine to perform swept-wavelength IL Measurement using most Keysight power sensors and a Tunable Laser Source.

Polarization Navigator

Install the Polarization Navigator if you want to individually control instruments of the N778xB series. The software provides:

- Swept-wavelength PMD-Measurement using an N7788B and a tunable laser source.
- Polarization Analysis using an N7781B, N7786B or N7788B.
- Control of N7784B/N7785B/N7786B Polarization Controllers/Synthesizers.
- PER Analysis using the N7782B.

MATLAB Component Runtime (MCR)

Install the MCR if you want to use the Lambda Scan or IL/PDL measurement engine of the Photonic Application Suite. Also some features of the Polarization Navigator such as color plots make use of the MCR.

Please note that the MCR is distributed by TheMathWorks, Inc. (www.mathworks.com).

The MCR is deployed with the Photonic Application Suite Installer package. This deployment is subject to the license agreement that is part of Photonic Application Suite Installer package as well.

MATLAB®. ©1994–2021 TheMathWorks, Inc.

Keysight IO Libraries Suite

You should install the Keysight IO Libraries Suite if you want to communicate with any Keysight instrument. If you have already installed any third-party VISA (e.g. NI), you can have Keysight IO Libraries install Keysight VISA as “secondary VISA” when prompted during installation.

816x VXI PnP Driver

Install this driver if you want to use the Insertion Loss measurement engine of the Photonic Application Suite.

You can also use this package to directly control Keysight tunable lasers and power sensors.

This driver is needed for the Photonic Foundation Library.

N774xA IVI-COM/IVI-C Driver

Install this driver if you want to use it for programming N7744A/C or N7745A/C power meters.

Keysight N77xx Viewer Program

This is a user interface program for controlling basic functions and visualizing measurement data from the Photonic Application Suite measurement engines.

Installing Software Licenses

NOTE

Visit <http://www.keysight.com/find/N7700> to learn how to purchase or to obtain a trial license file.

You can obtain a trial license file by visiting the following URL:

<http://www.keysight.com/find/N7700>

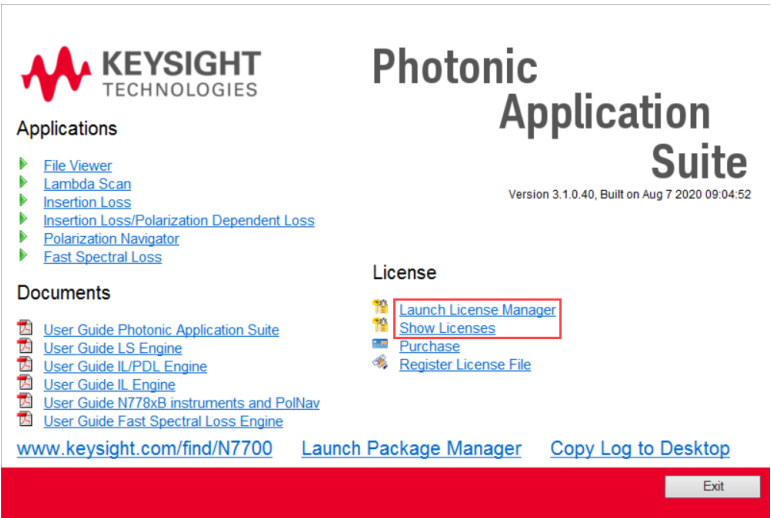
Keysight offer various licensing schemes for the Photonic Application Suite package including its various measurement engines. The following four types of licenses are supported:

- Node-locked
- Transportable
- USB portable
- Floating

For a complete list of licenses offered for the Photonic Application Suite, contact Keysight support.

The licenses can be installed using Keysight PathWave License Manager. For instructions on installing the licenses, refer to the online help for the Keysight PathWave License Manager or the license redemption e-mail. The Keysight PathWave License Manager can be downloaded using Photonic Applications Package Manager.

You can check the status of your license by clicking the **Show Licenses** link in the Launch Pad. Also, you can launch the Keysight PathWave License Manager by clicking the **Launch License Manager** link.



NOTE

Click Help > Technical Support > My Support Subscriptions in the Lambda Scan measurement engine to view a list of license subscriptions for your application.

3 File Viewer / File Viewer Control

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Introduction

The *File Viewer* can be used to display and analyze measurement files. You can overlay different measurements and do post processing using the installed plugins.

The main file format is the .omr file format which is used by various measurement engines of the Photonic Application Suite for storing measurement and evaluation results. Furthermore, the *File Viewer* can display Keysight file formats which have been generated by various instruments or applications.

Table 2 lists the supported file formats and the software applications that generate these file formats.

Table 2 File formats supported by File Viewer

File format	Generated by
.omr	N7700 Photonic Application Suite 81910A Photonic All-Parameter Analyzer
.pbin (only PMD-measurements)	Keysight Polarization Navigator
.cfp	N4391A/N4392A Optical Modulation Analyzer (CFP2-ACO application)
.icr	N4391A/N4392A Optical Modulation Analyzer (ICR Test application)

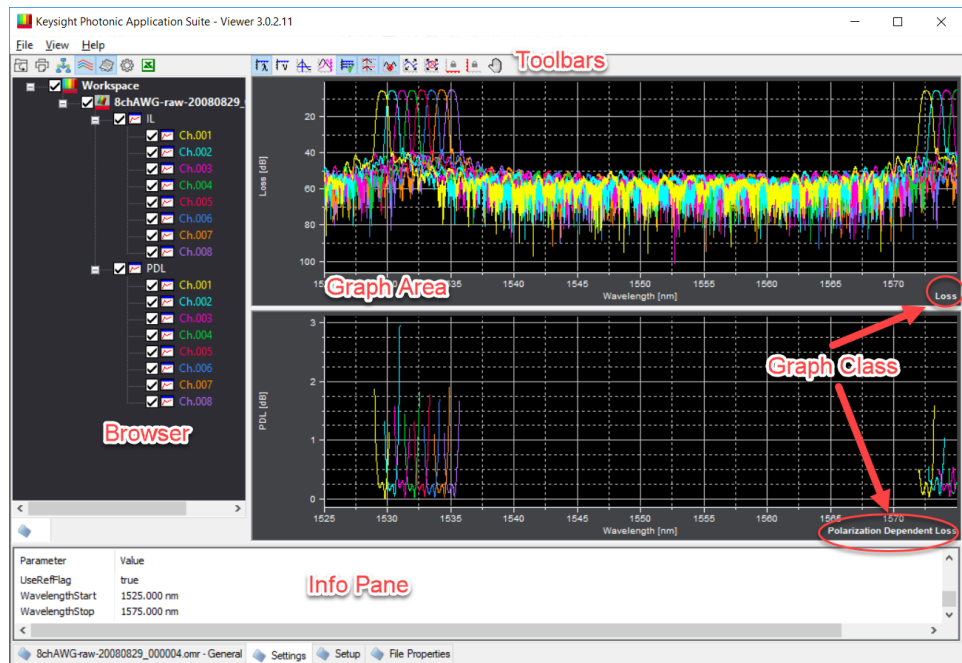
You will find the *File Viewer Control* in various measurement engines as well. This control basically works like the standalone *File Viewer*. Therefore, all such engines have a consistent user interface in terms of file and graph handling.

Using the File Viewer

You can start the *File Viewer* by starting the *Launch Pad* and clicking on “File Viewer”. You can open files by clicking on File->Open. Note that you can select multiple files by keeping the ctrl key pressed during selection.

The file extension .omr is linked to the *File Viewer*, so double-clicking .omr files will add these files to an already open *File Viewer* window or otherwise launch a *File Viewer* to display these files.

The *File Viewer* window consists of the illustrated elements in the figure below:



By default, the Dark mode is enabled for the File Viewer. You can switch back to the lighter theme, as described in the [Graphs](#) on page 38.

To close a file, select “Close” from that file’s context menu in the browser tree. You can close all open files by right-clicking Workspace and selecting “Close All”.

If you modified a file, you can save the file by clicking on “Save As” in the context menu.

The Graph Area

The graph area displays the selected graphs. Usually, depending on the selected Layout Preset, one graph window will contain all selected graphical data of a specific graph class. That means, for example, all selected insertion loss data will be plotted into the same graph window. This allows comparison of the loss curves of different channels and files. You can select the curves to be displayed from the browser window.

Select “Remove Graph” from the context menu of the graph to close a window. Double-click on a data entry in the browser window such as “IL” (for insertion loss) or “PDL” (for polarization dependent loss) to open a new graph window.

NOTE

Use the mouse to select an area for zooming into the graphs. Double-click into a graph once or repeatedly to move back to the preceding zoom or to view the complete curve.

Switching between Wavelength and Frequency Scale

Use the toolbar buttons “Wavelength Scale” or “Frequency Scale” to switch the X-Axis between wavelength and frequency.



Using Markers

Use the toolbar button “Show/Hide Marker” to turn the markers on and off.



The markers snap to a curve which is displayed in the window. Markers can be snapped to traces by right-clicking the trace. Doing so makes the currently closer one of the markers snap to the clicked trace. To snap the other marker in situations where one of the markers is out of view, simply hide markers and show the markers again (using the Show/Hide Marker

button on the toolbar). This will make them reappear at about one-quarter and three-quarters of the currently visible range. Then, proceed by right-clicking the trace and the respective closer marker will snap.

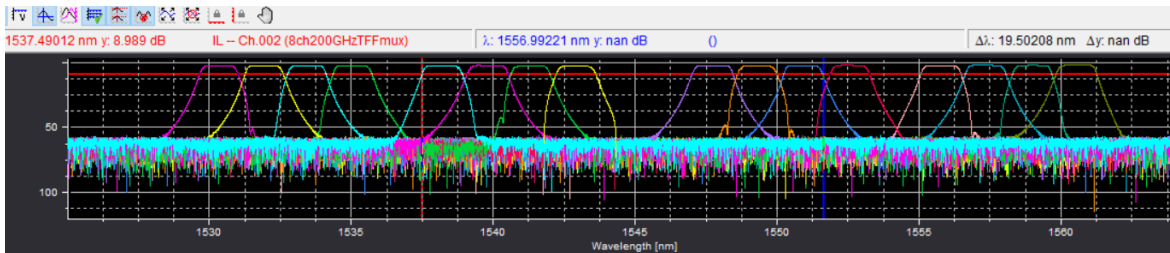
Both markers can be snapped to traces from different graphs. This allows, e.g., quantitative comparison of different traces (e.g. TE/TM for a single port or Average IL difference between two ports) at a certain wavelength.

NOTE

Marker snap targets are defined for each graph separately. Especially when using linked markers, remember to snap markers to the same trace / channel for each graph.

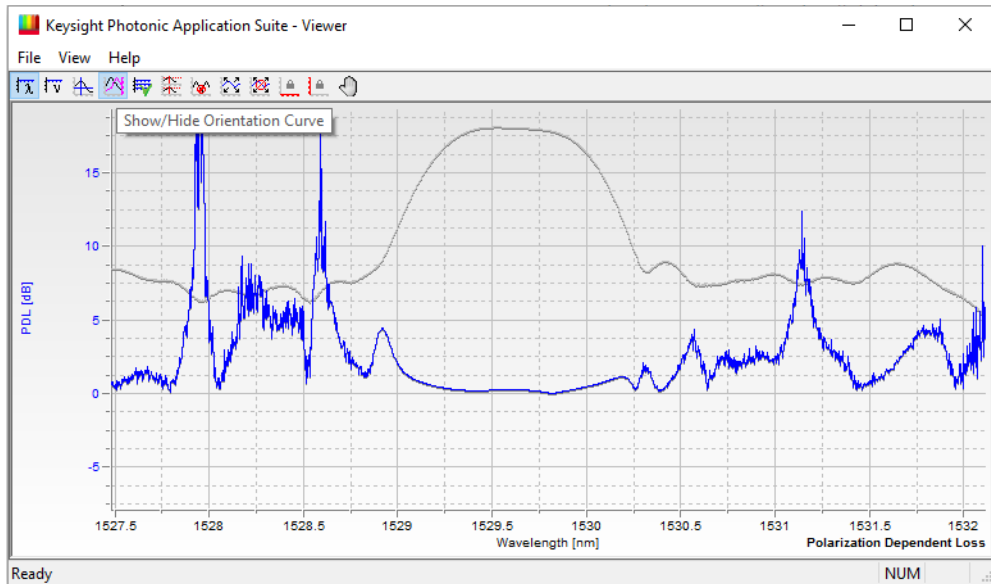
Use the mouse to move the markers. Move the mouse over the marker, press and hold the left mouse button and move the marker. Release mouse button, when marker is in desired position.

When markers are active, there is an additional information pane displayed above each graph, showing the x and y values corresponding to the current marker positions as well as the difference between them. Additionally, this information pane shows further details on the currently snapped-to trace, such as the actual measurement parameter (e.g. “Ref Power (TLS2)” and file name.



Showing Orientation Curves

When viewing a graph it is often useful to know how the graph relates to the loss curve. The software allows plotting the loss curve in the background of a graph to provide better orientation. Turn the orientation curves on/off using the toolbar button “Show/Hide Orientation Curves”.



Sync X-Axis

Use the toolbar button “Sync X-Axis” to synchronize the x-axes of all open graphs. Zoom and pan operations that are applied to any of the graphs will automatically be applied to all other graphs as well. Synchronizing will occur until “Sync X-Axis” is turned off.

Sync Markers

Use the toolbar button “Sync markers” to synchronize the marker position of all open graphs. Moving one of the markers in any graph window will cause the markers in all other windows to move as well. This will also update the marker information panes above the graph windows. Synchronizing will occur until “Sync Markers” is turned off.

NOTE

When markers are synchronized, but x-axes are not, markers may disappear from certain graphs, if markers are moved in another graph.

Hide High Loss Data

When measuring multichannel devices, one often wants to analyze in-channel regions. Measurement parameters other than power or insertion loss are usually not well defined or noisy outside the channel bandwidth. Therefore the channel feature of interest is hard to distinguish, due to the presence of many noise-like traces. By setting “Hide High Loss Data” to on, regions will be hidden for which the insertion loss exceeded the set limit. This applies to all open graph windows, except for the insertion loss trace itself. This is a toggle function, i.e. data hiding will occur until “Hide High Loss Data” is turned off.

NOTE

Hide High Loss Data is set to active by default, each time the File Viewer is started. To permanently disable hiding of high-loss regions, set the Loss Limit to a very large value.

NOTE

You can change the Loss Limit value from the options dialog (see “Files on page 39” on page 33).

NOTE

The Hide High Loss Data option requires the OMR files to contain appropriate insertion loss graphs for each channel.

Reset Zoom

Clicking “Reset Zoom” will reset the zoom of all graphs, so that all data is visible simultaneously, regardless of the “Sync X-Axis” setting. However, if “Lock X-Range” and/or “Lock Y-Range” are active, “Reset Zoom” will only operate along the non-locked dimensions.

Lock X-Range

When a file is loaded or a new measurement is acquired, the zoom ranges will automatically extend, if required, so that all data will be visible. If “Lock X-Range” is active, the current x-range of all graph windows will be frozen. This affects manual zoom-in, zoom-out and “Reset Zoom” operations as well.

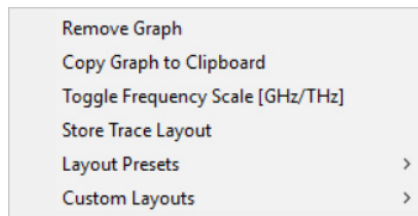
Lock Y-Range

When a file is loaded or a new measurement is acquired, the zoom ranges will automatically extend, if required, so that all data will be visible. If “Lock Y-Range” is active, the current y-range of all graph windows will be frozen. This affects manual zoom-in, zoom-out and “Reset Zoom” operations as well.

NOTE

Automatic zoom extension only occurs upon loading files and acquiring new measurement data. Operations like toggling the display of certain channels and files may toggle data that is not visible in the current view. Use the “Reset Zoom” button to make such data visible.

When right-clicking the graph area with the mouse cursor not directly pointing at trace data, a context menu shows additional options.



Remove Graph

Selecting Remove Graph hides the graph type, e.g. PDL, that the context menu has been opened on. You can get it back by double-clicking (right-clicking, then choosing View Graph) the appropriate graph type in the tree on the left.

Copy Graph to Clipboard

By selecting “Copy Graph to Clipboard”, a bitmap (bmp) copy of the active graph will be put on the clipboard, which can be inserted into other applications.

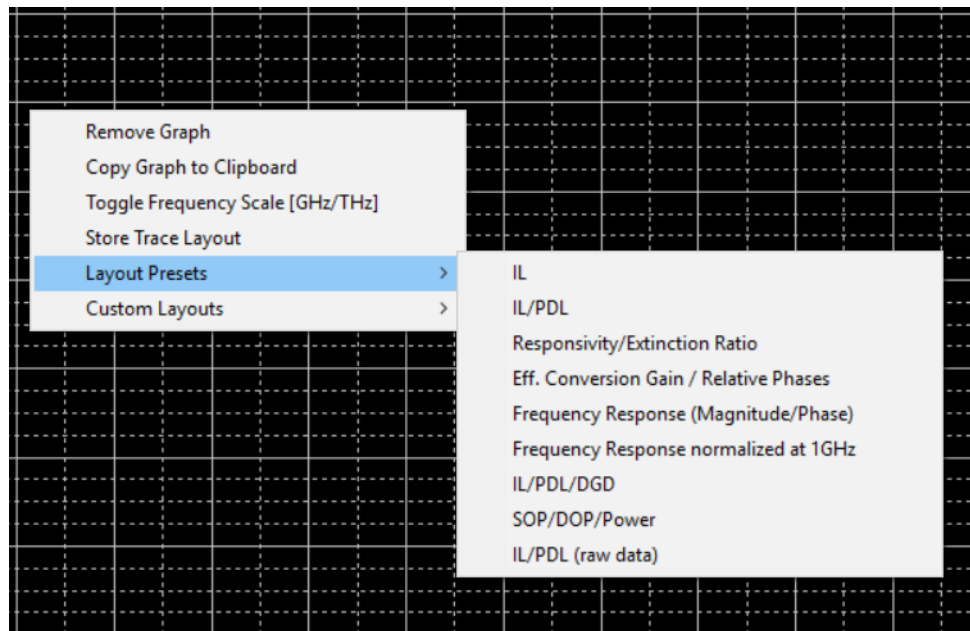
Toggle Frequency Scale

Use this option to choose whether the frequency scale should be displayed in GHz or in THz.

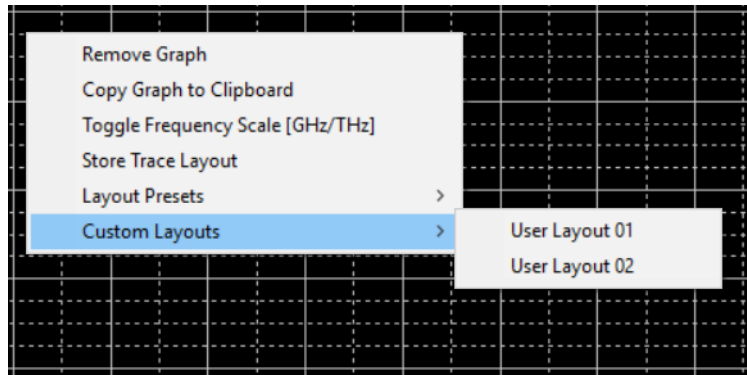
Trace Layouts

Since the graph layout is a global setting, switching between measurement engines, such as Lambda Scan, IL/PDL, and FSIL, between different user applications or user DUTs, different layouts may be desired.

Layout Presets contains several predefined layouts, such as for different applications or for viewing measurement raw data with a single click.



Custom layouts can be saved by selecting **Store Trace Layout** and selecting them from **Custom Layouts** at a later time.



It is not possible to rename or remove custom layouts from the File Viewer itself. However, being very careful and creating a backup copy first, this can be achieved by editing this file:

```
C:\ProgramData\Keysight\Photonic Application Suite\
AgGraphContainer.xml
```

NOTE

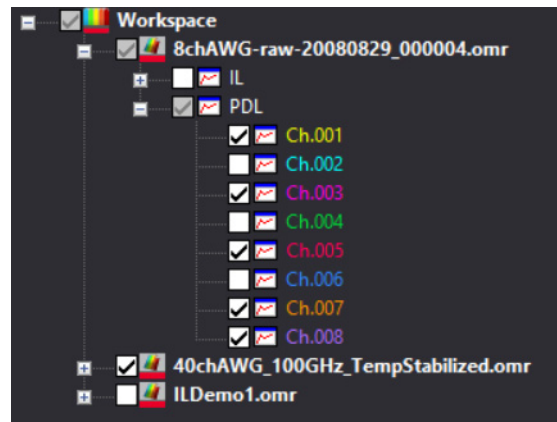
Make sure that no instance of the FileViewer or any measurement engine is currently running. Otherwise any changes to the file will be overwritten when the corresponding program is stopped.

The Browser

The browser contains an overview of all currently opened files as well as the selected graphs to display.

Showing / Hiding Channels and Files

You can select the displayed information by checking or unchecking the channels or files.



Showing / Hiding Graphs

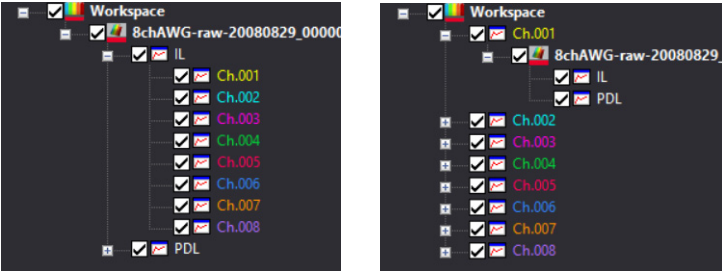
To add graphs (data types like IL or PDL) that are currently not shown, you can double-click them in the browser tree or select “View Graph” from their context menu. To remove such graphs, uncheck “View Graph” from the same menu or select “Remove Graph” from the context menu on the graph area.

Sort by Files / Sort by Channels

Normally, the filenames are on top of the tree follows by the graph classes and the channels. Use the toolbar button “Change Tree Order” to select an alternate hierarchy.

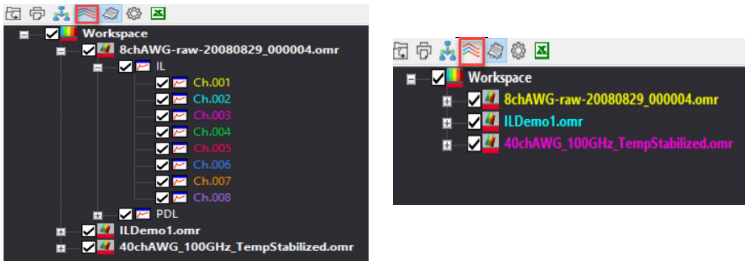


The alternate hierarchy shows the channels on top. That might be useful if you want to select/deselect specific channels.



Color by Files / Color by Channels

Depending upon the files you are viewing, you might want to view all channels of a measurement shown in different colors (e.g. DWDM devices) or all open files shown in different colors (e.g. single channel devices). You can toggle the color mode by clicking the corresponding button. The default mode is “Color by Channels”.



The Info Pane

The info pane shows information contained in a single file. Select one file by single-clicking it in the browser. The information contained in that file will be displayed in the info pane on the bottom of the window. Use the tabs to browse through this information.

NOTE

Running plug-ins usually causes additional tabs to appear in the info pane.

NOTE

Different engines generate tabs with different names, or tabs with identical names but different content.

NOTE

All data from the currently selected tab can be copied to the clipboard by pressing CTRL-A (no CTRL-C required afterwards).

NOTE

There's a tab called File Properties that shows the currently selected file's location.

The Options Dialog

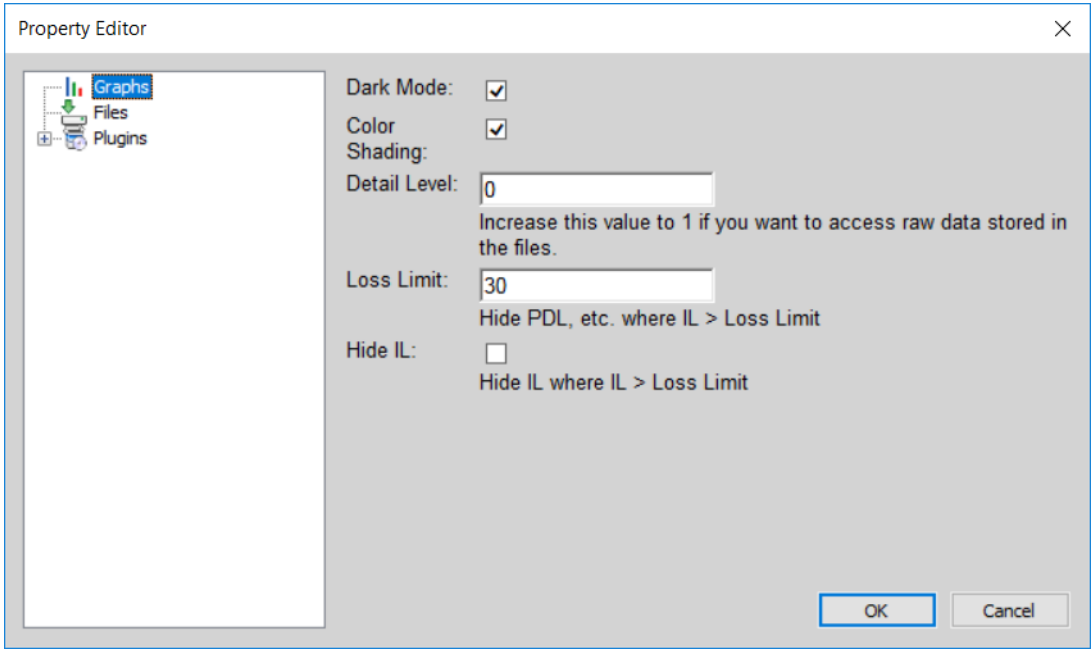
View the options dialog by clicking on the toolbar icon shown below.



This opens the Property Editor dialog that is divided into the following three sections:

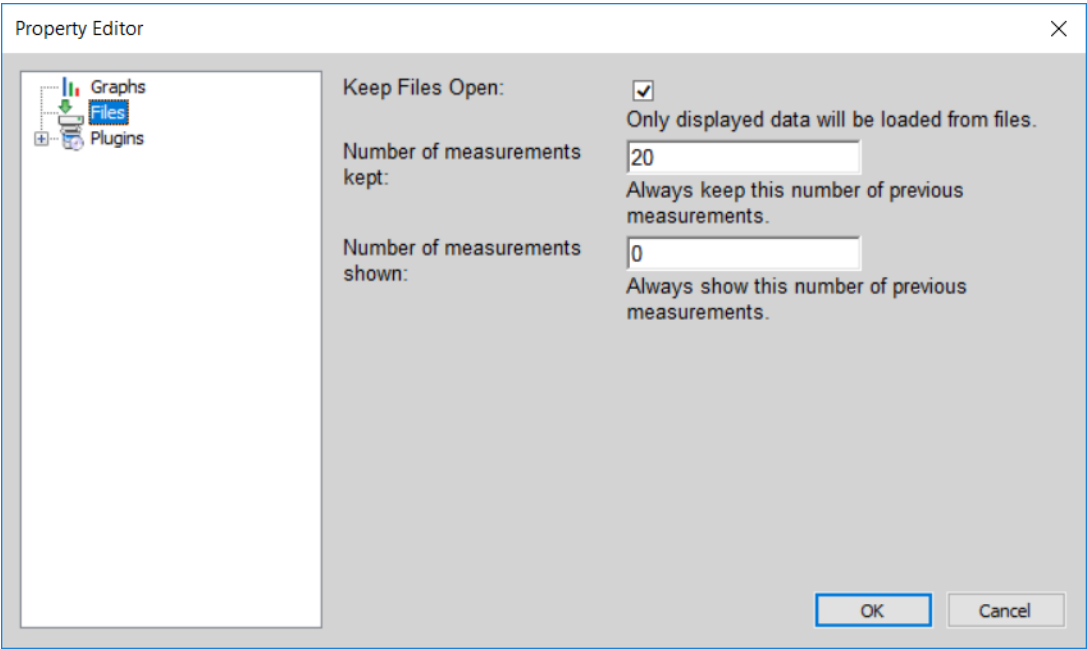
- Graphs
- Files
- Plugins

Graphs



License	Description
Dark Mode	Uncheck this box if you prefer a lighter theme as the background for the File Viewer.
Color Shading	Uncheck this box if you prefer a background without any color shading.
Detail Level	The default value is 0. In that case, only standard measurement data are shown. Some measurement files may contain raw data needed to re-evaluate the measurement. Set the detail level to 1 if you want to browse these information, too.
Loss Limit	This is the maximum loss threshold that is applied if "Hide Low Loss Data" is set to on in the viewer pane (see Hide High Loss Data on page 31).
Hide IL	If this check-box is set, the insertion loss trace will be affected by the Hide High Loss Data mechanism as well (see Hide High Loss Data on page 31).

Files



License	Description
Keep Files Open	Normally this box is checked. In this mode, the opened measurement files are kept open and the data is only read if they are really needed. If unchecked, the whole measurement file is loaded into memory and closed afterwards. Keeping the files open increases speed and saves memory. However, it is not possible to move or delete files when they are opened by the file viewer.
Number of Measurements Kept	When using measurement engines, this value defines the number of most recent measurement files that are stored automatically. Details on this feature an be found in the corresponding measurement engine's user's guide. Note: This field is not displayed in the Files settings in the LS Engine. To configure the number of measurements kept in the LS Engine, modify the GlobalSettings.cfg file available from the Start menu. For more information, refer to the <i>Automatic History Saves</i> section in the <i>LS Engine User Guide</i> .
Number of Measurements Shown	When using measurement engines, this value defines the number of most recent measurement files that are displayed automatically. Details on this feature an be found in the corresponding measurement engine's user's guide.

Plugins

The contents of the “Plugins” section depends on the installed plugins. See next chapter for details on the default plugins.

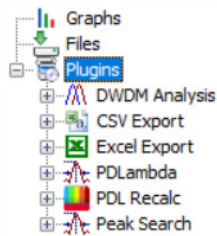
4 The Plugin System

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The Plugin System

The plugin system allows adding features to the File Viewer Component. That means that these plugins can be used in all measurement engines that use the File Viewer Component, such as the Lambda Scan engine, IL engine, IL/PDL engine, or FSIL engine.

The software comes with the following plugins:

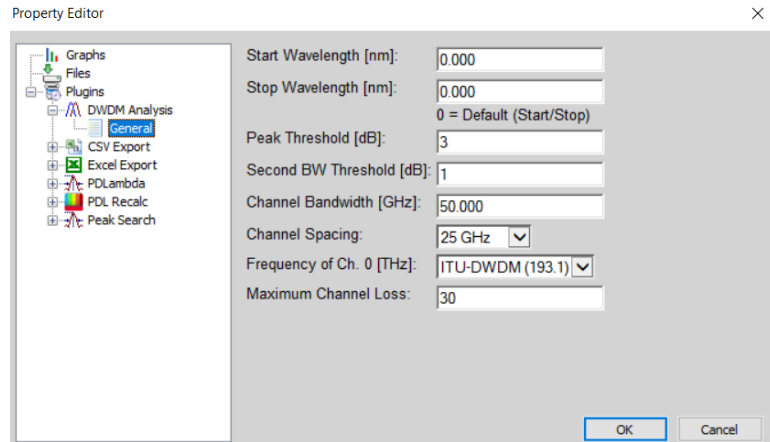


NOTE

Not all of the above plugins might be displayed in the context menu of the measurement files in the Browser Tree. The availability of the plugins in the context menu will depend on whether the functionality of that plugin can be applied to the given measurement or whether the license for using the plugin is available.

Some Photonic Application Suite engines and packages may include additional plugins. Check their respective user's guides for information on those plugins.

DWDM Analysis



- Plugin Description:** This plugin allows you to characterize filter transmission peaks. In a multi-channel measurement, one peak per channel will be detected and evaluated. So this is particularly adapted to measuring multiplexer passbands. It is provided by licensing the Filter/Multiplexer Analysis package.
- Steps:** Right-click on a file and select “DWDM Analysis” from the context menu.
- Setup Parameters:** You will be asked for setup parameters:
- **Start Wavelength [nm]**
The start wavelength of the evaluation interval. Set this value to 0 if you want to evaluate from the beginning.
 - **Stop Wavelength [nm]**
The start wavelength of the evaluation interval. Set this value to 0 if you want to evaluate to the end of the measurement.
 - **Peak Threshold [dB]**
Determines the threshold for the edge detection which is used to calculate the channel bandwidth. The result will appear in a column named “Bandwidth (x dB)” where x is the selected Peak Threshold. For example, the full-width half-maximum width, FWHM, is given with a setting of 3 dB.
 - **Second BW Threshold [dB]**
This is basically identical to Peak Threshold, but will be listed as another column in the DWDM results, so two different bandwidths may be analyzed simultaneously.

- Channel Bandwidth [GHz]
Defines the channel bandwidth, also called operating wavelength range. This value is used by the plugin to determine maximum insertion loss per channel and channel isolation. It will typically be a small fraction, like 25% of the channel spacing.
- Channel Spacing
The spacing of the channels.
- Frequency of Ch. 0 [THz]
Defines the frequency grid origin. Currently this supports ITU-DWDM and LAN-WDM.
- Maximum Channel Loss
The maximum insertion loss to detect peaks. Peaks with higher insertion loss will not be detected. This value is used to avoid noise variations being detected as peaks.

Results: The result of the evaluation will create the tab “DWDMAnalysis” in the Info pane.

The generated columns are defined as follows:

- Channel
The Channel number as shown in the browser window.
- Peak Wvl
The wavelength with the maximum transmission.
- Center Wavelength
The center wavelength derived by analyzing the filter edges at the chosen threshold.
- nom. Wavelength
The closest nominal wavelength for the chosen channel spacing.
- nom. Wavelength Error
The deviation from the closest nominal wavelength.
- Loss at nom. Channel
The loss value at the nominal wavelength.
- Ch-Loss (max)
The maximum loss value within the channel bandwidth.

NOTE

This parameter is evaluated with respect to the selected channel grid. If the DUT channels are not located at matching channel frequencies, the loss values may not represent the actual channel loss with respect to the measured channel's center-wavelength.

- Channel Ripple
The transmission / loss variation within the channel.

NOTE

This parameter is evaluated with respect to the selected channel grid. If the DUT channels are not located at matching channel frequencies, the ripple values may not represent the actual channel ripple with respect to the measured channel's center-wavelength.

- Ch-Isolation (adj)
The isolation between adjacent channels.

NOTE

This parameter is evaluated with respect to the selected channel grid. If the DUT channels are not located at matching channel frequencies, the isolation values may not represent the actual channel isolation with respect to the measured channel's center-wavelength.

- Ch-Isolation (nonadj)
The isolation between non-adjacent channels.

NOTE

This parameter is evaluated with respect to the selected channel grid. If the DUT channels are not located at matching channel frequencies, the isolation values may not represent the actual channel isolation with respect to the measured channel's center-wavelength.

- Total Crosstalk
The cumulative crosstalk to this channel from all other channels (limited by start and stop wavelength parameters).

NOTE

This parameter is evaluated with respect to the selected channel grid. If the DUT channels are not located at matching channel frequencies, the crosstalk values may not represent the actual channel crosstalk with respect to the measured channel's center-wavelength.

- PDL at nom. Channel
The polarization dependent loss at the nominal channel wavelength.

- Ch-PDL (max)
The maximum PDL value within the selected channel bandwidth.

NOTE

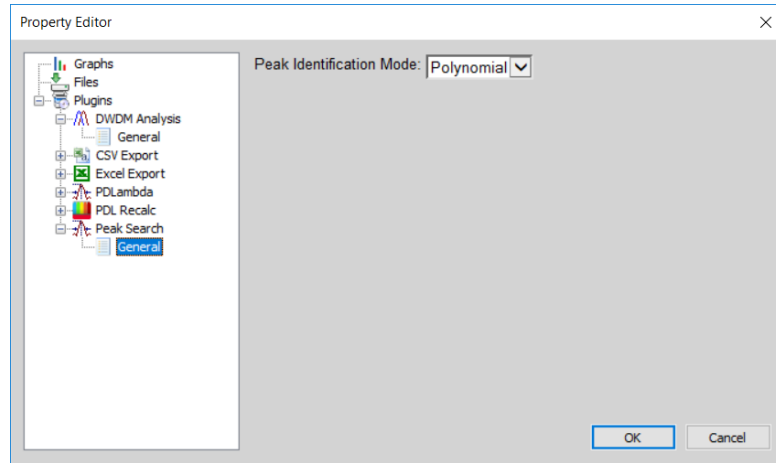
The PDL parameters are evaluated with respect to the selected channel grid. If the DUT channels are not located at matching wavelengths, these are not valid parameters.

- Loss at Center
The loss at the center wavelength.
- Bandwidth (x dB)
The bandwidth defined by the Peak Threshold.
- Bandwidth (x dB)
The bandwidth defined by Second BW Threshold.

Averaging

Plugin Description:	<p>The averaging plugin calculates average values of the</p> <ul style="list-style-type: none">• Insertion Loss Curve• PDL Curve• DGD Curve
Steps:	<p>Right-click on a file and select “Averaging” from the context menu.</p>
Results:	<p>The Averaging plugin adds an additional tab called “Average” to the <i>Info Pane</i> at the bottom of the window. This tab contains a column for each type of data contained in the file, e.g. Insertion Loss and Polarization Dependent Loss. Each channel is represented in one row on that tab, with the average values of this channel displayed in the columns.</p>

Peak Search



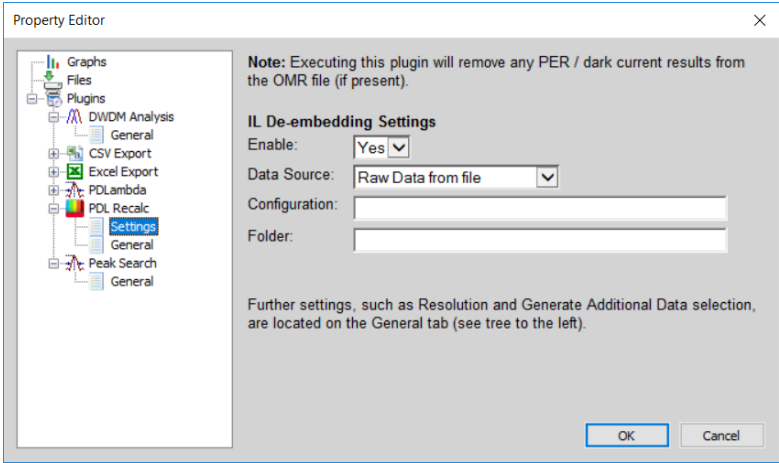
- Plugin Description:** The peak search plugin looks for several peaks in each channel. This plugin is licensed with the Filter/Multiplexer package.
- Steps:** Right-click on a file and select “Peak Search” from the context menu.
- Setup Parameters:** You will be asked for setup parameters:
- **Peak Identification Mode**
 Polynomial: A polynomial fit is used to accurately detect the peak. This mode should be used for non-flat-top filter characteristics.
 3dB Edge: Use this mode for flat-top filters. The center wavelength is calculated by detecting the 3dB transition of the side-lobes.
- Results:** The result of the evaluation will create the tab “Peak” in the Info pane.
- The generated columns are defined as follows:
- **Channel**
The Channel number as shown in the browser window.
 - **Peak Wvl**
The peak center wavelength.
 - **Peak Freq**
The peak center frequency.
 - **Loss at Peak**
The loss value at the peak center.

- PDL at Peak
If the measurement contain PDL data, this column shows the PDL at the peak center.
- DGD at Peak
If the measurement contain DGD data, this column shows the DGD at the peak center.

In addition to the table data, graphs are generated to visualize the evaluation result. They appear in the browser window and can be selected and deselected for viewing. Depending on the content, they are named IL (Peak), PDL (Peak) or DGD (Peak).

You can save the evaluated data by right-clicking on the file and selecting "Save As".

PDL Recalculate



- Plugin Description: Measurement data generated by the IL/PDL engine can be re-evaluated if the measurement file contains raw data.
- Steps: Right-click on a file and select “PDL Recalculate” from the context menu.

NOTE

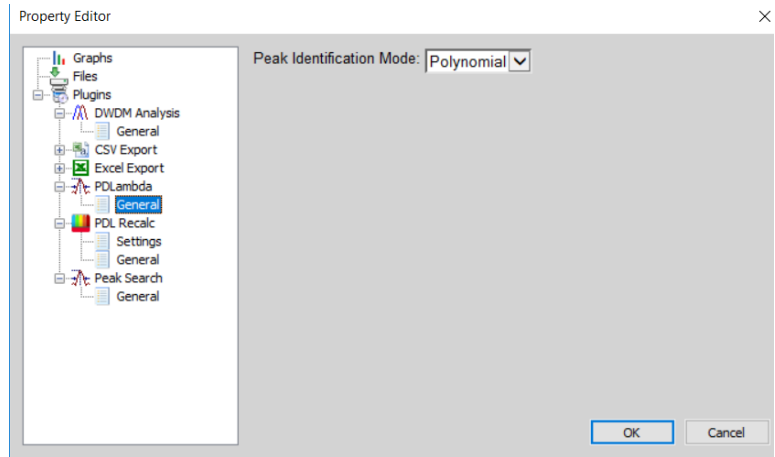
If the OMR file does not contain raw data, the plugin will be disabled in the file context menu. Refer to the *LS Engine User's Guide* or *IL/PDL Engine User's Guide* for details on how to make the application save raw data.

- Setup Parameters:
- The plugin asks for the following settings:
- Resolution [nm]
Defines the averaging bandwidth. Set this value to 0 if you want to use the highest available resolution.
 - Generate TE/TM data
Set this value to Yes for generating TE and TM graphs in addition to IL and PDL graphs. When set to Yes, another graph will be generated, containing the first row of the Mueller matrix of the measured device. Set this value to No to keep the size of the data files low.
 - Additional evaluation options, depending upon the specific instruments used in the measurement setup.

- Configuration settings for IL de-embedding
See the *LS Engine User's Guide* or *IL/PDL Engine User's Guide* for details on these settings.

Results: The result will overwrite the current IL and PDL graphs.

PD Lambda



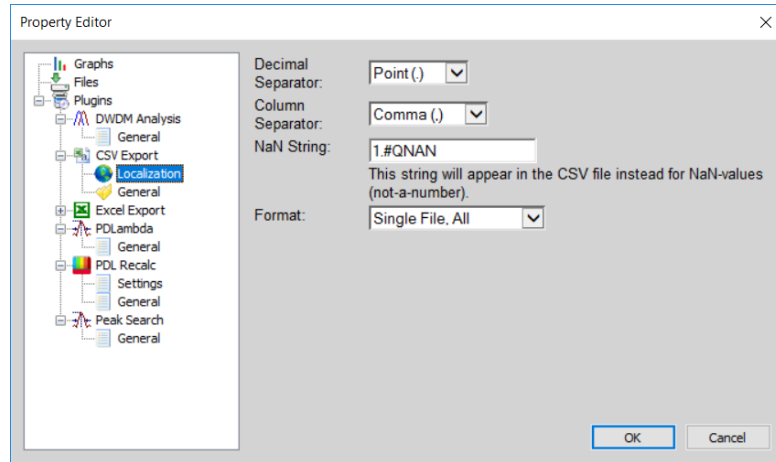
- Plugin Description:** This plugin calculates the polarization dependent wavelength shift (often referred to as PD- λ). The plugin detects the difference of the peak center wavelengths of the TE and TM curve. Therefore, it can only run if the measurement contains a TE/TM graph. This plugin is licensed with the Filter/Multiplexer package.
- Steps:** Right-click on a file and select “PD Lambda” from the context menu.
- Setup Parameters:** You will be asked for setup parameters:
- **Peak Identification Mode**
 Polynomial: A polynom fit is used to accurately detect the peak. This mode should be used for non-flat-top filter characteristics.
 3dB Edge: Use this mode for flat-top filters. The center wavelength is calculated by detecting the 3dB transition of the side-lobes.
- Results:** The result of the evaluation will create the tab “PDLambda” in the Info pane.
- The generated columns are defined as follows:
- **Channel**
The Channel number as shown in the browser window.
 - **Peak Wvl**
The peak center wavelength. This is the average value of the TE and TM peak center wavelengths.

- **Peak Freq**
The peak center frequency. This is the average value of the TE and TM peak center frequencies.
- **PDLambda**
The polarization dependent wavelength shift. Note that the sign is arbitrary since it is unknown which of the curve is TE or TM. This limitation is given by the measurement principle. In order not to lose information, the algorithm does not simply calculate the absolute values, since changes of the sign can in fact be detected. The algorithm chooses the sign in a way that the majority of the PDLambda values within each trace are negative. Thus, the majority of the PDf values will be positive.
- **PDf**
Polarization dependent frequency shift. This is the same information as shown in PDLambda, but in GHz.

In addition to the table data, graphs are generated to visualize the evaluation result. They appear in the browser window and can be selected or deselected for viewing. Depending on the content they are named “PD Lambda” or “PD f”.

You can save the evaluated data by right-clicking on the file and selecting “Save As”.

Export to CSV



Plugin
Description:

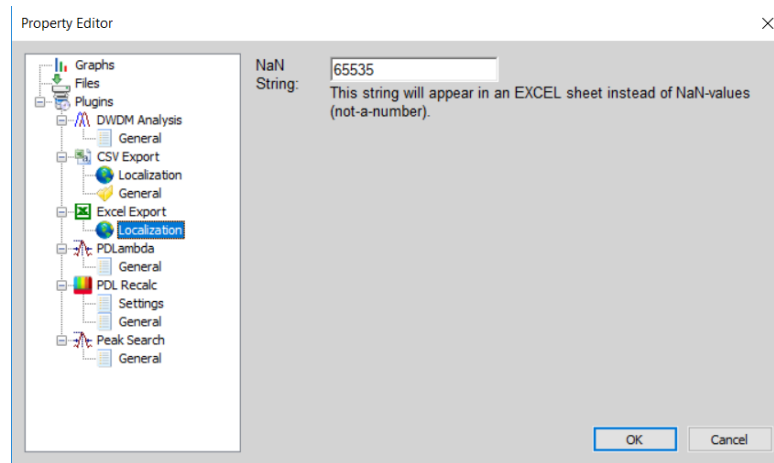
This plugin exports data into a comma-separated values (CSV) file.

Setup
Parameters:

You will be asked for setup parameters:

- Decimal Separator
The decimal separator.
- Column Separator
The character used to separate the columns.
- NaN String
Graph data can contain NaN values ("Not a Number"). E.g. if the linear transmission is 0, the value in dB becomes undefined. This string will be printed into the file if a NaN value occurs.
- Format
 - Single File, All: This will write all information contained with the measurement into a single file. The file starts with the Info pane data followed by graph-blocks containing the individual traces.
 - Single File, Only Data: This will export only the graph data, i.e. the traces.
 - Multiple Files: This will write the Info pane information as well as each graph into separate files. These files typically can be loaded with Microsoft Excel just by double-clicking.

Export to Excel



Plugin Description: This plugin exports data into Microsoft Excel. Excel needs to be installed on your computer. When you use this plugin, Excel will be started and the data will be transferred.

Setup Parameters: You will be asked for the setup parameter:

- **NaN String**
Graph data can contain NaN values ("Not a Number"). E.g. if the linear transmission is 0, the value in dB becomes undefined. This string will be printed into the spreadsheet. This is because the automation interface of Excel does not support NaN values. Thus, you need to use a value or string which does not normally occur in a measurement. Default is 65535.

5 Automation

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COM Components

Automation is implemented using a mechanism called “COM”. COM has been introduced by Microsoft on the Windows platform to allow a unified way to communicate between different software components. Today, almost every programming language such as C#, C++, LabVIEW, Keysight Vee as well as MATLAB offers ways to use these so-called COM components. Once familiar with handling COM components, programming can be done using function browsers or auto-completion that show you the available properties and functions/methods including their parameter names. It is thus often possible to use the available functions without consulting the documentation.

Since the syntax of calling COM components is a little different in every programming language, we focus in our examples on MATLAB code. MATLAB has a very generic syntax and it should be easy to adapt the code to any other language. Further examples are included in the software distribution. These examples get installed with the Photonic Application Suite and can usually be found at the following location:

C:\Program Files\Keysight\Photonic Application Suite\Examples

The following sections contain references for common objects, such as OMR files (IOMRFile), graph objects (IOMRGraph) and property objects (IOMRProperty).

For details on the COM interfaces for controlling a specific Photonic Application Suite measurement engine, refer to that engine’s User’s Guide.

NOTE

Up to version 2.0 of the Photonic Application Suite (PAS), the library was implemented as a DLL and accessed through the COM class OMRCOMFileHandler. This DLL did not support 64-bit remoting environments.

With PAS version 2.1 it has been replaced by a COM server executable accessed through the class AgServerOMRFileHandler which does support 32 bit and 64 bit remoting environments.

Migrating from the old class to the new class just means changing the name of the class at the very beginning of an automation program / method.

For sake of compatibility, the DLL is still part of any PAS installation.

While this DLL was built for 32-bit architecture only when it was introduced with PAS 2.1, installations of PAS 3.0 and higher contain a 64-bit version of the DLL only.

Reference: Interface “IOMRFile”

The IOMRFile interface is invoked using the following PROGID to identify the COM server:

`AgServerOMRFileHandler.OMRFile`

MATLAB:

```
File = actxserver('AgServerOMRFileHandler.OMRFile');
```

The above line is only required when loading an OMR file from disk. For accessing the measurement result of an active engine, the IOMRFile interface is also returned by the method

`IEngine.MeasurementResult`

It provides access to the content of the measurement result.

method Property

Type-Library:

```
get: HRESULT Property([in] BSTR PropertyName,
[out,retval] IOMRProperty** Property);
```

MATLAB:

```
Property = MeasurementResult.Property('');
```

Returns a reference to the underlying IOMRProperty object which contains information about the measurement file, e.g. measurement setup parameters and plugin results. Use an empty string as a parameter to access the root level of the properties tree. Refer to [Reference: Interface “IOMRProperty”](#) on page 67 for details on how to access individual property values and sub-properties.

property GraphNames

Type-Library:

```
get: HRESULT GraphNames([out, retval]
SAFEARRAY(BSTR)* pVal);
```

MATLAB:

```
StringArray = MeasurementResult.GraphNames;
```

Returns a string array containing the names of the graphs contained in the OMR file. Pass this value to the “Graph” property to access the graph content.

method Graph

Type-Library:

```
HRESULT Graph([in] BSTR GraphName, [out,retval]
IOMRGraph** GraphPtr);
```

MATLAB:

```
Graph = MeasurementResult.Graph('TLS0_RXTXAvgIL');
```

Returns a reference to the underlying graph object which contains a single parameter graph such as IL or PDL. You need to provide the graph name which can be one of the following with “x” being the number of the TLS in a multi-TLS setup:

“TLSx_RXTXAvgIL” for IL graphs

“TLSx_RTXPDL” for PDL graphs

“TLSx_TETM” for TE/TM graphs

“TLSx_MuellerRow1” for Müller graphs

“TLSx_ReturnLoss” for return loss graphs

“TLSx_Responsivity” for diode responsivity graphs

“TLSx_ResponsivityMaxMin” for more diode responsivity graphs

“TLSx_CMRR” for common mode rejection ratio (DC) graphs

“TLSx_ExtinctionRatio” for polarizer / polarization beam splitter extinction ratio graphs

“TLSx_DiodeCurrent” for diode current graphs

The result is a reference to an IOMRGraph interface. Please refer to the next pages to see the methods and properties.

Additional Graphs may be present containing raw or reference data.

Subsequent application of plugins may create additional graphs. Refer to those plugins for the respective names.

TLSx_DiodeCurrent, TLSx_Responsivity and TLSx_ResponsivityMaxMin will be only available, if a power meter with electrical inputs was used in the measurement and the calculation of these graphs has not been turned off.

TLSx_ReturnLoss will be only available, if a return loss module was used in the measurement and the calculation of these graphs has not been turned off.

TLSx_TETM and TLSx_MuellerRow1 will be only available if `Engine.GenerateTETMData` has been set to 1.

TLSx_CMRR will only be available if responsivity calculation is enabled and at least two ports are selected (CMRR will be computed from data from each pair of two adjacent ports).

TLSx_ExtinctionRatio will only be available if PBS Extinction Ratio measurement has been activated in Supplementary Measurements section of the IL/PDL or Lambda Scan engine.

NOTE

Earlier versions of the IL/PDL engine, as well as other engines which do not support multiple TLS contain graph names without the leading "TLSx_".

property Plugins

Type-Library:

```
get: HRESULT Plugins([out, retval] SAFEARRAY(BSTR) * pVal);
```

MATLAB:

```
StringArray = MeasurementResult.Plugins;
```

Returns a string array containing the names of the available plugins. Pass the name of the desired plugin to the "Plugin" property to access the plugin.

method Plugin

Type-Library:

```
HRESULT Plugin([in] BSTR PluginName, [out, retval] IOMRPlugin** PluginPtr);
```

MATLAB:

```
Plugin = MeasurementResult.Plugin('Average');
```

Returns a reference to the plugin object which allows for applying the plugin to the data contained in the OMR file. You need to provide the plugin name which can be found by checking the “Plugins” property. See [Reference: Interface “IOMRPlugin”](#) on page 70 for details on using plugins.

method Write

Type-Library:

```
HRESULT Write([in] BSTR Filename);
```

MATLAB:

```
MeasurementResult.Write('test.omr');
```

Saves the data as OMR file. Will automatically overwrite an existing file.

method OpenRead

Type-Library:

```
HRESULT OpenRead([in] BSTR Filename);
```

MATLAB:

```
File.OpenRead('test.omr');
```

Loads an OMR file from disk.

method Close

Type-Library:

```
HRESULT Close;
```

MATLAB:

```
File.Close;
```

Closes an open OMR file.

NOTE

If an OMR file is opened using the IOMRFile interface, e.g. by your own automation application, the same file cannot be opened by another application using the IOMRFile interface, e.g. the Photonic Application Suite FileViewer.

Reference: Interface “IOMRGraph”

The IOMRGraph interface is returned by the property

IOMRFile.Graph

It provides access to the content of a single measurement plot.

Note that a graph contains 2-dimensional plots. The data can be stored using two arrays with X and Y data. If the X-axis is equally spaced, the X-axis will be omitted and the properties xStart and xStep are used to define the X-axis.

A graph can consist of several channel plots. Each channel consists of one or more curves. This is used for representing vectorial data such as polarization state (e.g. a channel of 3-element Stokes vectors consists of 3 curves).

method Property

Type-Library:

```
get: HRESULT Property([in] BSTR PropertyName,
[out, retval] IOMRProperty** Property);
```

MATLAB:

```
Property = Graph.Property('');
```

Returns a reference to the underlying IOMRProperty object which contains information about the graph. Use an empty string as a parameter to access the root level of the properties tree. Refer to [Reference: Interface “IOMRProperty”](#) on page 67 for details on how to access individual property values and sub-properties.

property XData

Type-Library:

```
get: HRESULT XData([out, retval] SAFEARRAY(double)*
pVal);
```

MATLAB:

```
XData = Graph.XData;
```

Returns an array of double-precision floating point numbers containing the X coordinates. If this array is empty, the graph has an equidistant X-axis and the axis is defined by the properties xStart and xStep.

property YData

Type-Library:

```
get: HRESULT YData([out, retval] SAFEARRAY(double) *
pVal);
```

MATLAB:

```
YData = Graph.YData;
```

Returns an array of double-precision floating point numbers containing the Y coordinates.

property xStart

Type-Library:

```
get: HRESULT xStart([out, retval] DOUBLE* pVal);
```

MATLAB:

```
xStart = Graph.xStart;
```

If the property XData is an empty array, the X-axis data is equally spaced. xStart defines the start value of the X-axis.

property xStep

Type-Library:

```
get: HRESULT xStep([out, retval] DOUBLE* pVal);
```

MATLAB:

```
xStep = Graph.xStep;
```

If the property XData is an empty array, the X-axis data is equally spaced. xStep defines the increment per step.

property xStop

Type-Library:

```
get: HRESULT xStop([out, retval] DOUBLE* pVal);
```

MATLAB:

```
xStop = Graph.xStop;
```

If the property XData is an empty array, the X-axis data is equally spaced. xStop defines the stop value of the X-axis. Normally xStop equals xStart+n*xStep, where n is the number of samples (can be determined by the property dataPerCurve).

property noChannels

Type-Library:

```
get: HRESULT noChannels([out, retval] LONG* pVal);
```

MATLAB:

```
noChannels = Graph.noChannels;
```

Returns the number of channels in the plot.

property noCurves

Type-Library:

```
get: HRESULT noCurves([out, retval] LONG* pVal);
```

MATLAB:

```
noCurves = Graph.noCurves;
```

Returns the number of curves per channel. This value is normally 1. In case measurement sweeps with vectorial data such as Polarization State, this value is greater than 1. The total number of samples returned by YData should be noCurves*dataPerCurve*noChannels.

property dataPerCurve

Type-Library:

```
get: HRESULT dataPerCurve([out, retval] LONG* pVal);
```

MATLAB:

```
dataPerCurve = Graph.dataPerCurve;
```

Returns the number of samples per curve. The total number of samples returned by YData should be noCurves*dataPerCurve*noChannels.

Reference: Interface “IOMRProperty”

The IOMRProperty interface is returned by the properties
IOMRFile.Property,
IOMRGraph.Property
and
IOMRPlugin.Property

property PropertyNames

Type-Library:

```
get: HRESULT PropertyNames([out, retval]
SAFEARRAY(BSTR) * pVal);
```

MATLAB:

```
StringArray = Property.PropertyNames;
```

Returns a string array containing the names of the sub-properties contained in the property object. Pass any of these names to the “Property” property to access that properties value or sub-properties.

method Property

Type-Library:

```
get: HRESULT Property([in] BSTR Path, [out,retval]
IOMRProperty** Property);
```

MATLAB:

```
SubProperty = Property('');
SubProperty = Property('General');
SubProperty = Property('General.Date');
```

Returns a reference to a sub-property. If an empty string is used as parameter, the top-level property is referenced. Refer to [property PropertyNames](#) on page 67 for a list of available properties. You can use a property name to directly access a certain property. Concatenate property names using the dot character to directly access sub-properties.

property Value

Type-Library:

```
get: HRESULT Value([out, retval] VARIANT* pVal);
```

```
put: HRESULT Value([in] VARIANT newVal);
```

MATLAB:

```
v = Property('General.Date').Value;
```

```
Property('General.Date').Value = v;
```

Sets or gets a property value.

property FlagInfoPane

Type-Library:

```
get: HRESULT FlagInfoPane([out, retval] VARIANT_BOOL* pVal);
```

```
put: HRESULT FlagInfoPane([in] VARIANT_BOOL newVal);
```

MATLAB:

```
b = Property('CustomInfo').FlagInfoPane;
```

```
Property('CustomInfo').FlagInfoPane = b;
```

Defines whether this property is a measurement info pane or not. If set to true, an additional info pane with this property's name will be shown in the FileViewer, listing all sub-properties of this property.

NOTE

We recommend storing user defined properties in custom tabs, to make sure the engine does not overwrite custom data, or vice versa.

property FlagHide

Type-Library:

```
get: HRESULT FlagHide([out, retval] VARIANT_BOOL* pVal);
```

```
put: HRESULT FlagHide([in] VARIANT_BOOL newVal);
```

MATLAB:

```
b = Property('CustomInfo.CustomValue').FlagHide;
```

```
Property('CustomInfo.CustomValue').FlagHide = b;
```

Defines whether this property is visible in the FileViewer or not. The property will still be accessible using the COM interface, even if hidden in the FileViewer.

Reference: Interface “IOMRPlugin”

The IOMRPlugin interface is returned by the property
IOMRFile.Plugin.

See [The Plugin System](#) on page 41 for an overview about some of the available plugins. Some Photonic Application Suite engines and packages may include additional plugins. Check their respective user’s guides for information on those plugins

property IsFileCompatible

Type-Library:

```
get: HRESULT IsFileCompatible([in] BSTR GraphName, [out, retval]
VARIANT_BOOL* pVal);
```

MATLAB:

```
b = Plugin.IsFileCompatible('');
```

Can be used to check whether the plugin can be used with the OMR file.

NOTE

Use an empty string as GraphName parameter unless noted otherwise.

property SettingsXML

Type-Library:

```
get: HRESULT SettingsXML([out, retval] BSTR*
SettingsXML);
```

```
put: HRESULT SettingsXML([in] BSTR SettingsXML);
```

MATLAB:

```
xml = Plugin.SettingsXML;
```

```
Plugin.SettingsXML = xml;
```

Transfers the plugin properties to or from the plugin. By changing the values in the XML string and writing it back to the plugin, the behavior of certain plugins can be customized.

method Evaluate

Type-Library:

```
HRESULT Evaluate([in] BSTR GraphName);
```

MATLAB:

```
Plugin.Evaluate('');
```

Performs the plugin operation to the OMR file. In case the plugin allows for customizing parameters, settings from the “SettingXML” property will be used. Use “EvaluateInteractive” instead, to get a settings dialog prior to plugin execution.

NOTE

Use an empty string as GraphName parameter unless noted otherwise.

NOTE

When using the Evaluate method of the CSV Export plugin, the target filename is provided through the GraphName parameter.

method EvaluateInteractive

Type-Library:

```
HRESULT EvaluateInteractive([in] BSTR GraphName);
```

MATLAB:

```
Plugin.EvaluateInteractive('');
```

Performs the plugin operation to the OMR file after showing a dialog of the plugin parameters. Use “SettingsXML”, and “Evaluate” instead, to achieve silent plugin execution.

NOTE

Use an empty string as GraphName parameter unless noted otherwise.

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6 Troubleshooting

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Symptoms and Solutions

The list of values for a drop-down control appears invisible or displaced

Possible Reason	Solution
Different scaling factors for the different screens in some multi-screen setups.	Ensure that the scaling factor for all the screens is consistent.
	Consider using a single screen setup, define another screen as the default screen, or start the engine from an Explorer window on the screen that the engine GUI is intended to show on.
The engine window is maximized.	To make the invisible list of values appear on the screen, restore the window to its normal size ensuring that it is not too close to the top left edge of the screen. Then set the required value in the drop-down control. Note that the list of values will still appear displaced.
	If the list of values is visible (although displaced), select the drop-down list and use the cursor (arrow) and Enter keys to navigate to and select the required value.

PD Lambda and Peak Search plugins fail to identify channels / peaks in polynomial mode

Possible Reason	Solution
Too few samples within channel/peak	Repeat measurement with increased wavelength resolution

COM API registration fails

Possible Reason	Solution
MATLAB Compiler Runtime (MCR) has not been installed prior to measurement engine installation.	Register the COM API after later MCR installation or re-register for any other reasons, by running the Re-register all N7700 COM APIs program from the Start menu.

NOTE

A troubleshooting utility called **Get N7700 System Information** has been introduced to help Keysight technical support gather some vital details required to resolve problems with the software at the user end, engine startup problems, for instance. This utility is accessible from the Start menu and should be run to capture information that can be shared with Keysight technical support.

