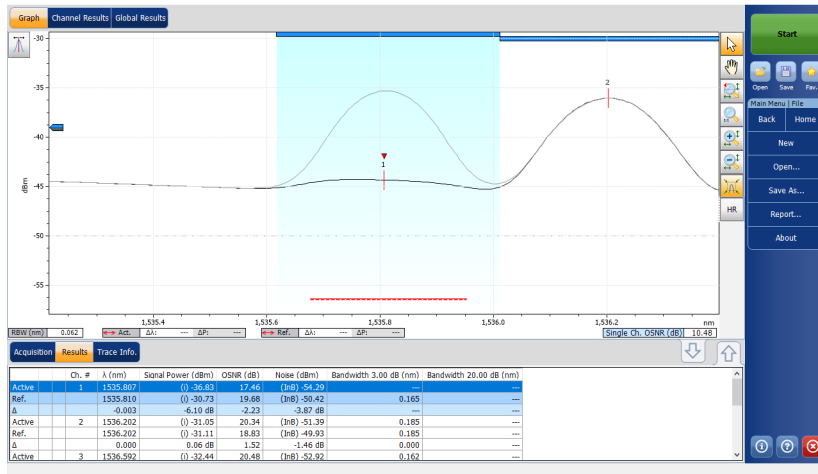


OSA

Optical Spectrum Analyzer



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Units of Measurement

Units of measurement in this publication conform to SI standards and practices.

Patents

The exhaustive list of patents is available at EXFO.com/patent.

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Regulatory Information

USA Electromagnetic Interference Regulatory Statement

Electronic test and measurement equipment is exempt from FCC part 15, subpart B compliance in the United States of America. However, EXFO Inc. makes reasonable efforts to ensure compliance to the applicable standards.

The limits set by these standards are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the user documentation, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Canada Electromagnetic Interference Regulatory Statement

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference.

Cet équipement génère, utilise et peut émettre de l'énergie radio-fréquence et, s'il n'est pas installé et utilisé conformément à la documentation de l'utilisateur, il peut occasionner une interférence néfaste aux communications radio. L'utilisation de cet équipement dans une zone résidentielle est susceptible d'occasionner une interférence néfaste.

Caution: This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.

Attention : Cet appareil n'est pas destiné à être utilisé dans des environnements résidentiels et peut ne pas assurer la protection adéquate à la réception radioélectrique dans ce type d'environnements.

This is a class A, group 1 product.

Ceci est un produit de classe A, groupe 1.

- Class A equipment: Equipment that is, by virtue of its characteristics, highly unlikely to be used in a residential environment, including a home business shall be classified as class A and shall comply with the class A limits specified in the applicable ICES standard. Characteristics considered in this assessment include price, marketing and advertising methodology, the degree to which the functional design inhibits applications suitable to residential environments, or any combination of features that would effectively preclude the use of such equipment in a residential environment.

Classe A : Matériel qui, en raison de ses caractéristiques, ne sera fort probablement pas utilisé dans un milieu domiciliaire ni par des entreprises établies à domicile. Parmi les caractéristiques considérées dans cette évaluation, il y a le prix, les méthodes de commercialisation et de publicité, la mesure dans laquelle les fonctions de l'appareil font qu'il ne se prête pas à des applications convenant au milieu domiciliaire ou toute combinaison de ces caractéristiques qui aurait pour conséquence d'en prévenir effectivement l'utilisation à domicile. Utilisé également pour indiquer les limites d'émission correspondantes qui s'appliquent à un tel matériel.

- Class B equipment: Equipment that cannot be classified as Class A shall comply with the Class B limits specified in the applicable ICES standard.

Classe B : Matériel qui ne peut pas être inclus dans la classe A. Utilisé également pour indiquer les limites d'émission correspondantes qui s'appliquent à un tel matériel.

- Group 1 equipment: group 1 contains all equipment which is not classified as group 2 equipment, and includes equipment such as laboratory and scientific equipment, industrial process, measurement and control equipment.

Group 2 equipment: group 2 contains all ISM RF equipment in which radio-frequency energy in the frequency range 9 kHz to 400 GHz is intentionally generated and used or only used locally, in the form of electromagnetic radiation, inductive and/or capacitive coupling, for the treatment of material for inspection/analysis purposes, or for transfer of electromagnetic energy.

Appareils du groupe 1 : le groupe 1 réunit tous les appareils compris dans le domaine d'application de la présente Norme, qui ne sont pas classés comme étant des appareils du groupe 2. Le groupe 1 inclut les appareils scientifiques et de laboratoire, les processus industriels, appareils de mesure ou de contrôle.

Appareils du groupe 2 : le groupe 2 réunit tous les appareils ISM à fréquences radioélectriques dans lesquels de l'énergie à fréquences radioélectriques dans la plage de fréquences comprises entre 9 kHz et 400 GHz est produite et utilisée volontairement ou uniquement utilisée localement sous forme de rayonnement électromagnétique, de couplage inductif et/ou capacitif, pour le traitement de la matière, à des fins d'examen ou d'analyse ou pour le transfert d'énergie électromagnétique.

Supplier's Declaration of Conformity (SDoC)

The SDoC for your product is as follows:

CAN ICES-001 (A) / NMB-001 (A)

EU and UK Electromagnetic Compatibility Regulatory Statement

Warning: This is a class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures. Your product is suitable for use in industrial electromagnetic environments.

Simplified EU and UK Declaration of Conformity

The full text of the declaration of conformity is available at the following Internet address: *www.exfo.com/en/resources/legal-documentation*.

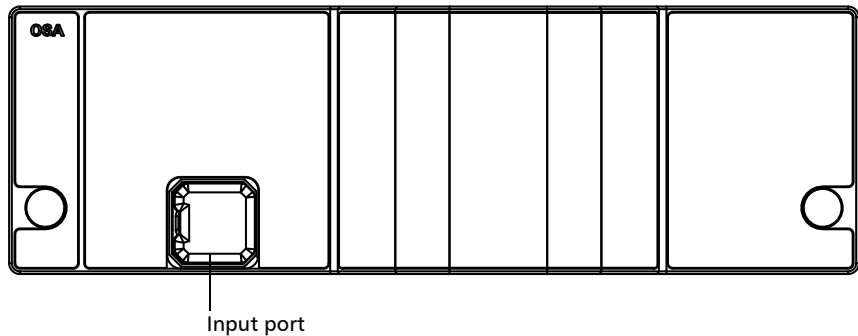
EU Economic Operator

EXFO Solutions SAS
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35091 Rennes Cedex 9
FRANCE

1 **Introducing the Optical Spectrum Analyzer**

The Optical Spectrum Analyzer (OSA) is designed to measure optical power as a function of wavelength or frequency and Optical Signal to Noise Ratio (OSNR).

Your OSA offers spectral characterization for CWDM/DWDM network component testing and manufacturing, network validation as well as commissioning, offering in addition InBand Optical Signal to Noise Ratio (OSNR) measurement for ROADMs and 40 Gbit/s signals and networks, and Pol-Mux OSNR for coherent 40 G/100 G/200 G networks.



The Optical Spectrum Analyzer supports local control, or remote control using SCPI commands.

You can also use the IVI drivers you can find on the EXFO Website at www.exfo.com. The drivers have their own specific documentation to help you use them with your application.

Introducing the Optical Spectrum Analyzer

Models

Models

The OSA comes in different models:

Model	Description	Platforms
FTBx-5235	Entry-level OSA ideal for a variety of field applications, including DWDM and CWDM network commissioning and troubleshooting. The test modes available for your module are WDM and Drift. Note: <i>This module does not support remote control using SCPI commands or IVI drivers.</i>	FTB-1v2 FTB-1v2 Pro FTB-2 FTB-2 Pro FTB-4 Pro
FTBx-5243-HWA	Three-slot high wavelength accuracy model combining the measurement capabilities of an OSA with the spectral precision of a wavemeter.	FTB-4 Pro LTB-8

Model	Description	Platforms
FTBx-5245	Small form factor expert DWDM OSA designed for efficient commissioning, maintenance and troubleshooting of DWDM components and links in the field, from 25 GHz to CWDM. It can measure power as a function of wavelength for new modulation schemes, such as non-return-to-zero (NRZ), duo binary, which present large line widths and often display multiple peaks. In-depth analysis ensures the correct identification and signal measurement of each carrier. It also measures OSNR based on the IEC 61280-2-9 and IEC 61282-12 methods.	FTB-2 FTB-2 Pro FTB-4 Pro LTB-8
FTBx-5245-HPW	High-power model version of the FTBx-5245.	
FTBx-5245-P	Model featuring a polarization controller. It is a hardware-ready version of an expert OSA, without the software to compute the InBand/ <i>i</i> -InBand OSNR. You can upgrade this model using the software key, and it will become fully capable of InBand/ <i>i</i> -InBand/Pol-Mux OSNR measurement.	
FTBx-5245-P-HPW	High-power model version of the FTBx-5245-P.	
FTBx-5255	High-resolution model with a polarization controller for InBand and Pol-Mux testing, and better optical performance. It is designed for accurate and precise spectral measurements.	
FTBx-5255-HPW	High-power model version of the FTBx-5255-P.	

Typical Applications

You can use your OSA for the following tasks:

- Characterizing channels in the O- to U-band spectra
- Testing laser sources for spectral purity and power distribution
- Testing the transmission characteristics of optical devices
- Troubleshooting and monitoring key parameters on CWDM or DWDM signals to check system stability
- Characterizing all channel spacings, from 25 GHz DWDM to CWDM (from 12.5 GHz for 5255)
- Testing high-speed networks (beyond 40 Gbit/s)
- Measuring OSNR, but specifically within the channel (InBand or Pol-Mux OSNR)

Optional Software Packages

Optional software options are available for your application.

Option Name	Description
Advanced (Adv)	The Advanced option gives you access to the following test modes: ➤ Drift: time-based WDM analysis for signal monitoring. ➤ ST: characterization of the spectral transmittance of optical components such as filters. ➤ EDFA: characterization of the performance of an Erbium Doped Fiber Amplifier. ➤ DFB: characterization of a DFB laser source. ➤ FP: characterization of a Fabry-Perot laser source.
In-Band (InB)	The in-band option enables you to perform in-band noise measurements, which is the right OSNR method for 10 G signals in a ROADM network, as well as 40 G noncoherent signals.
WDM Investigator (Inv)	This option activates the WDM Investigator mode measurement diagnostics. When this option is activated, it is possible to have access to the following: ➤ Qualitative analysis of the noise source in measurement results for each channel through the WDM Investigator dashboard ➤ Qualitative analysis of the PMD pulse spreading on live noncoherent signals Note: The WDM Investigator (Inv) software option is dependent on the InBand (InB) option. The InB option must be enabled for the Inv software option to work.

Introducing the Optical Spectrum Analyzer

Post-Processing Application

Option Name	Description
Commissioning (Com)	The commissioning option can be used to test channels individually by comparing one channel at a time with a trace where all channels are enabled (or on). The option allows you to use the single channel OSNR tool.
In-Service Pol-Mux (INSPM)	If your module includes the commissioning software option, you can add this option to perform non-intrusive in-service Pol-Mux analyses on live networks (this option is available for FTBx-5255 modules only).

Post-Processing Application

A post-processing, or offline version of the application is available for you to use on a conventional computer. This offline version has most of the module application, but does not allow you to perform acquisitions.

Technical Specifications

To obtain this product's technical specifications, visit the EXFO Web site at www.exfo.com.

Conventions

Before using the product described in this guide, you should understand the following conventions:



WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in *death or serious injury*. Do not proceed unless you understand and meet the required conditions.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in *minor or moderate injury*. Do not proceed unless you understand and meet the required conditions.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in *component damage*. Do not proceed unless you understand and meet the required conditions.



IMPORTANT

Refers to information about this product you should not overlook.

2 ***Safety Information***



WARNING

Do not install or terminate fibers while a light source is active. Never look directly into a live fiber and ensure that your eyes are protected at all times.



WARNING

The use of controls, adjustments and procedures, namely for operation and maintenance, other than those specified herein may result in hazardous radiation exposure or impair the protection provided by this unit.



WARNING

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.



WARNING

Use only accessories designed for your unit and approved by EXFO. For a complete list of accessories available for your unit, refer to its technical specifications or contact EXFO.



IMPORTANT

Refer to the documentation provided by the manufacturers of any accessories used with your EXFO product. It may contain environmental and/or operating conditions limiting their use.



IMPORTANT

When you see the following symbol on your unit , make sure that you refer to the instructions provided in your user documentation. Ensure that you understand and meet the required conditions before using your product.



IMPORTANT

When you see the following symbol on your unit , it indicates that the unit is equipped with a laser source, or that it can be used with instruments equipped with a laser source. These instruments include, but are not limited to, modules and external optical units.



IMPORTANT

Other safety instructions relevant for your product are located throughout this documentation, depending on the action to perform. Make sure to read them carefully when they apply to your situation.

Laser Safety Information

Your instrument is in compliance with standard IEC 60825-1: 2014.

Laser radiation may be encountered at the optical output port.

The following label indicates that a product contains a Class 1 source:



Complies with FDA performance standards for laser products except for conformance with IEC 60825-1 Ed. 3, as described in Laser Notice No. 56, dated May 8, 2019.

Electrical Safety Information

For more information on equipment ratings, refer to the user documentation for your platform.

The maximum input power is  4 W for 5235 and 5245 modules, and 11.4 W for 5243 and 5255 modules.

3 ***Preparing Your OSA for a Test***



IMPORTANT

For optimal test results, you should allow a minimum warm-up period of two hours for your OSA before starting your tests.

Cleaning and Connecting Optical Fibers



IMPORTANT

To ensure maximum power and to avoid erroneous readings:

- Always inspect fiber ends and make sure that they are clean as explained below before inserting them into the port. EXFO is not responsible for damage or errors caused by bad fiber cleaning or handling.
- Ensure that your patchcord has appropriate connectors. Joining mismatched connectors will damage the ferrules.

To connect the fiber-optic cable to the port:

1. Inspect the fiber using a fiber inspection scope (or probe). If the fiber is clean, proceed to connecting it to the port. If the fiber is dirty, clean it as explained below.
2. Clean the fiber ends as follows:
 - 2a. Gently wipe the fiber end with a lint-free swab dipped in optical-grade liquid cleaner.
 - 2b. Use a dry swab to dry the connector completely.
 - 2c. Visually inspect the fiber end to ensure its cleanliness.

Preparing Your OSA for a Test

Cleaning and Connecting Optical Fibers

3. Carefully align the connector and port to prevent the fiber end from touching the outside of the port or rubbing against other surfaces.

If your connector features a key, ensure that it is fully fitted into the port's corresponding notch.

4. Push the connector in so that the fiber-optic cable is firmly in place, thus ensuring adequate contact.

If your connector features a screw sleeve, tighten the connector enough to firmly maintain the fiber in place. Do not overtighten, as this will damage the fiber and the port.

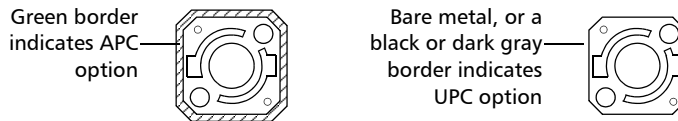
Note: *If your fiber-optic cable is not properly aligned and/or connected, you will notice heavy loss and reflection.*

EXFO uses good quality connectors in compliance with EIA-455-21A standards.

To keep connectors clean and in good condition, EXFO strongly recommends inspecting them with a fiber inspection scope (or probe) before connecting them. Failure to do so may result in permanent damage to the connectors and degradation in measurements.

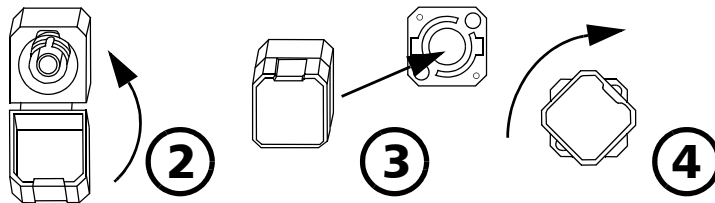
Installing the EXFO Universal Interface (EUI)

The EUI fixed baseplate is available for connectors with angled (APC) or non-angled (UPC) polishing. The type of border around the baseplate indicates which type of connector it is designed for.



To install an EUI connector adapter onto the EUI baseplate:

1. Hold the EUI connector adapter so the dust cap opens downwards.



2. Close the dust cap in order to hold the connector adapter more firmly.
3. Insert the connector adapter into the baseplate.
4. While pushing firmly, turn the connector adapter clockwise on the baseplate to lock it in place.

Selecting a Test Mode

Your module gives you different ways to test all your DWDM systems:

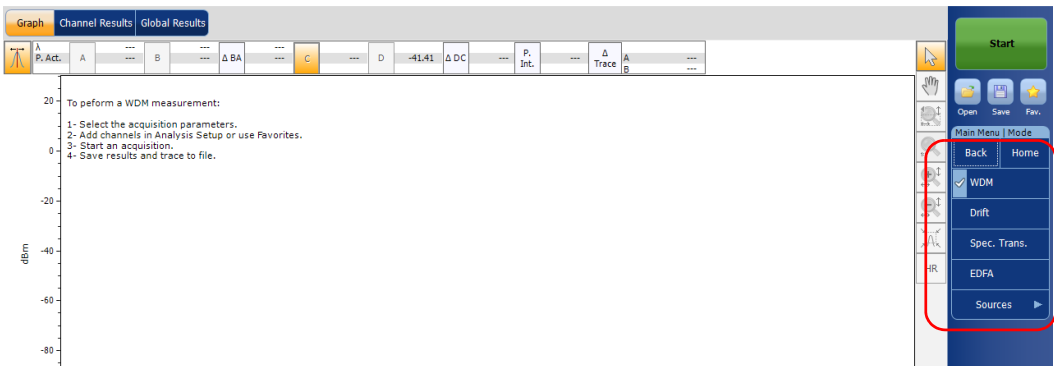
- WDM: Allows you to analyze an optical link. By default, the WDM test mode is selected.
- Drift: Allows you to monitor an optical link for a fixed duration.
- DFB: Allows you to characterize a DFB laser source.
- Fabry-Perot (FP): Allows you to characterize a Fabry-Perot laser source.
- Spectral Transmittance: Allows you to characterize the spectral transmittance of optical components such as filters.
- EDFA: Allows you to characterize the performance of an Erbium Doped Fiber Amplifier (EDFA) using the OSA module in field deployed systems (NB measurement assumes transmission conditions).
- Transmitter: Allows you to characterize multiple lasers into a single acquisition. The transmitter combines part of WDM analysis such as OSNR and DFB Side modes characterization to perform measurements. You can enable a filter to remove the noise from the side modes and apply a mask to the measured peak to select the area of the main mode peak where the filter will not apply.

To select a test mode:

- 1.** From the **Main Menu**, press **Mode**.



- 2.** Select the desired test mode. The DFB, FP, and Transmitter sources are under the **Sources** item.



Once you select the mode, you will notice a  against the selected mode and all the tabs on the main window and the main menu will change accordingly.

After selecting the test mode, you must configure it. You will find specific instructions for your test mode in the corresponding related chapters.

Switching Modes While a Trace is Open

If you switch test modes while a trace is already on-screen, the trace will be loaded in the new selected mode and analyzed using the current analysis setup, if the test modes are compatible.

WDM, Spectral Transmittance and EDFA test modes are made to ease the switch between the modes. The table below indicates the equivalencies between the trace types. For example, an active trace in WDM mode becomes an output trace in EDFA mode, and vice-versa.

WDM	ST	EDFA
Active	Output	Output
Reference	Input	Input

Nulling Electrical Offsets

The offset nulling process provides a zero-power reference measurement, thus eliminating the effects of electronic offsets and dark current due to detectors.

Temperature and humidity variations affect the performance of electronic circuits and optical detectors. For this reason, EXFO recommends performing a nulling of the electrical offsets whenever environmental conditions change.

Nulling can be performed for all tests modes. In addition, a nulling is performed automatically each time you start the OSA application, and at regular intervals afterwards.

Nulling can take more or less time depending on the platform and module you are using. It is automatically performed when doing an InBand measurement of 100 traces or more and if significant temperature variations are detected in the case of the FTBx-5255 module.

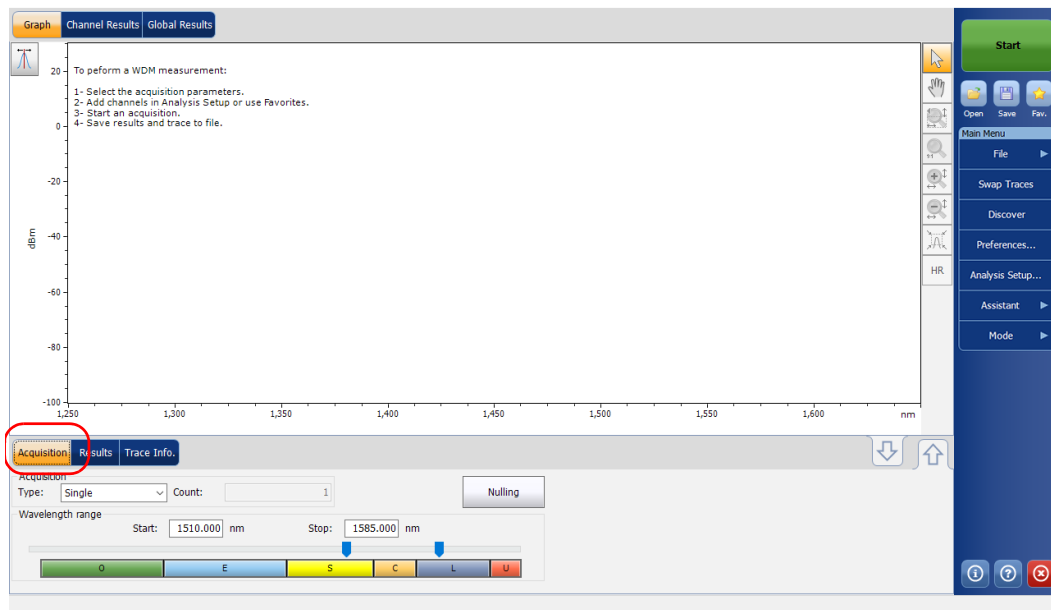
Note: *You cannot perform an offset nulling in the offline version of the application*

Preparing Your OSA for a Test

Nulling Electrical Offsets

To perform an offset nulling:

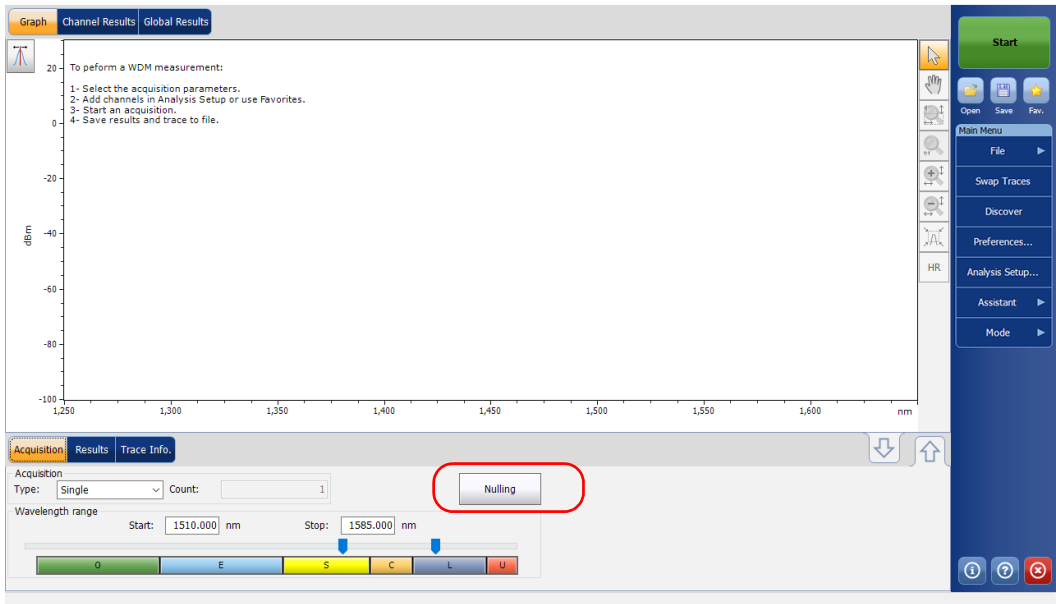
1. From the main window, select the **Acquisition** tab.



2. Disconnect any incoming signal to obtain an optimal accuracy.

3. Press Nulling.

You are notified that the nulling is in progress in the status bar.



Note: Several features, such as the **Start** button and *Discover*, are not available during the nulling process.

Performing User Calibration

Calibrating your module can help you achieve better results. It is particularly important when the measurement accuracy is critical or when your OSA has experienced unusual shock or vibrations. To reach the highest possible accuracy, you can perform a wavelength or power calibration. Your OSA allows you to modify and read the user calibration values, revert to the factory calibration, load and save the modified user calibration file. The user configuration file (*.txt) contains the reference and modified wavelength and power values.

You can perform user calibration in any test mode. Select a test mode as explained in *Selecting a Test Mode* on page 16, and follow the procedures mentioned below for performing user calibration.

Note: *The procedure for performing user calibration is the same for all test modes. The procedure is explained with WDM mode only in this document.*



IMPORTANT

For optimal results, you should allow a minimum warm-up period of two hours for your OSA before performing user calibration.



IMPORTANT

You must clear the correction factor list before making new calibration measurements. If calibration measurements are made when user correction factors are inside the module, the latter will affect the measurements and the calibration results become inapplicable.

Note: *If you want to keep the correction factor list for a later use, save it under a different name in the folder.*

Note: *The user calibration feature is not available in the offline version of the application.*

To perform a user calibration:

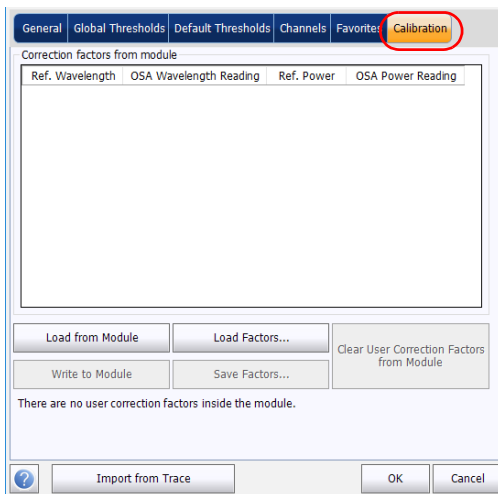
1. Allow your unit to warm up.
2. From the **Main Menu**, press **Analysis Setup**.



Preparing Your OSA for a Test

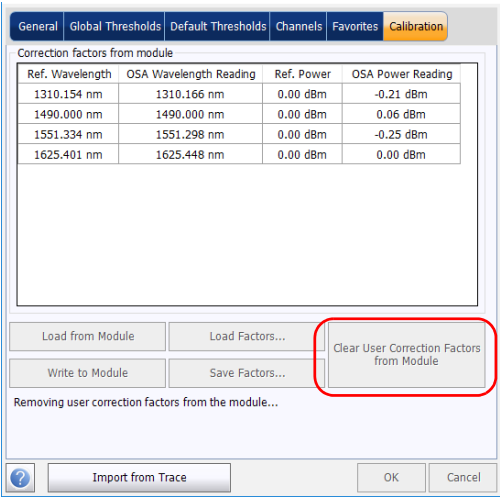
Performing User Calibration

3. Select the **Calibration** tab.



Note: *You cannot edit the power or wavelength values directly from the application. The modifications in the user calibration have to be made in a text file, and then it can be loaded in the application.*

4. If user correction factors are in the system, press **Clear User Correction Factors from Module**, then confirm your choice.



5. Take measurements for your test mode.

Preparing Your OSA for a Test

Performing User Calibration

6. Note the measurements to a .txt file using the following format:
 - The first column is the reference wavelengths, in nm.
 - The second column is the wavelength read by your module, in nm.
 - The third column is the reference power, in dBm.
 - The fourth column is the power read by your module, in dBm.

Note: *The columns are separated by a semi-colon (;). You can have up to 100 calibration points.*

Here is an example of a measurement file:

1310.154; 1310.167; -1.34; -1.55

1490.000; 1490.000; 1.09; 1.15

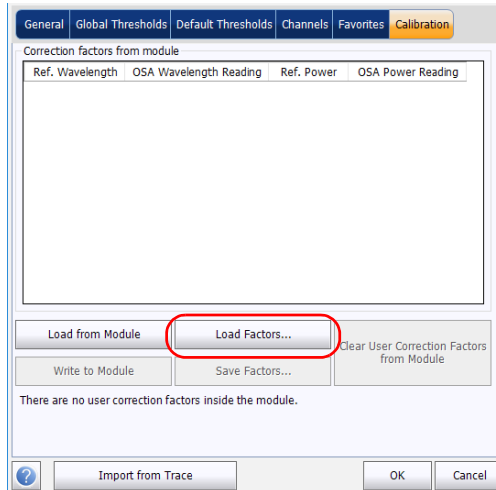
1551.334; 1551.298; -5.20; -5.45

1625.401; 1625.448; 0.00; 0.00

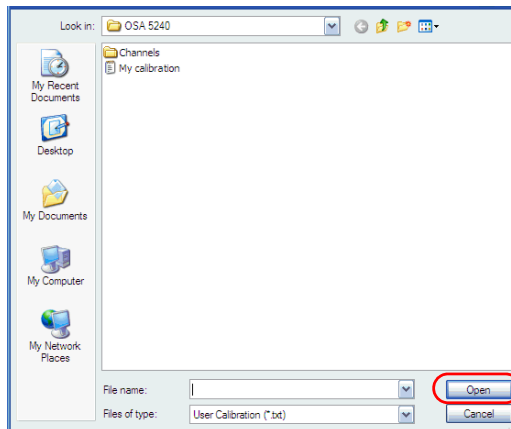
Note: *The decimal separator is a point (.). This format is independent of the regional settings.*

7. Save your .txt file in a location of your choice.

8. Back in the **Calibration** tab on your unit, load the file using **Load Factors**.



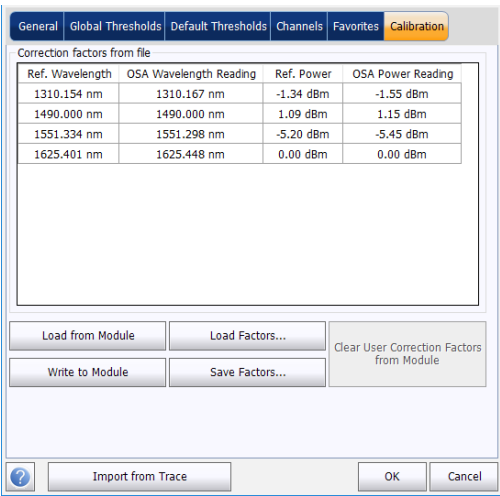
9. Select the modified user calibration file and press **Open**.



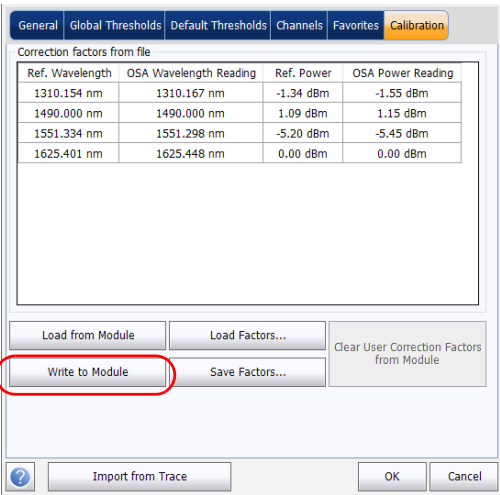
Preparing Your OSA for a Test

Performing User Calibration

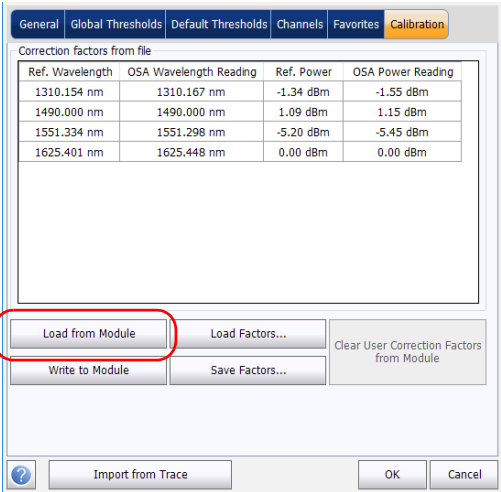
The calibration values will replace the Correction factors list in the **Analysis setup - Calibration** window.



- 10.** Press **Write to Module** to apply the modified calibration values to the module.



11. To verify that the calibration changes are properly applied to the module, press **Load from Module**.



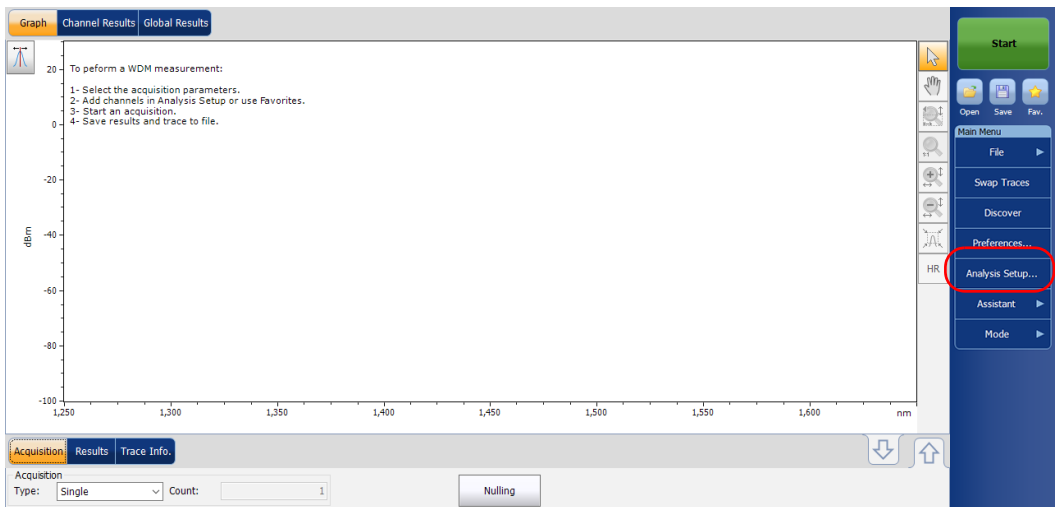
Note: The **OK** and **Cancel** buttons do not have any impact on the calibration page or the correction factors inside the module.

Preparing Your OSA for a Test

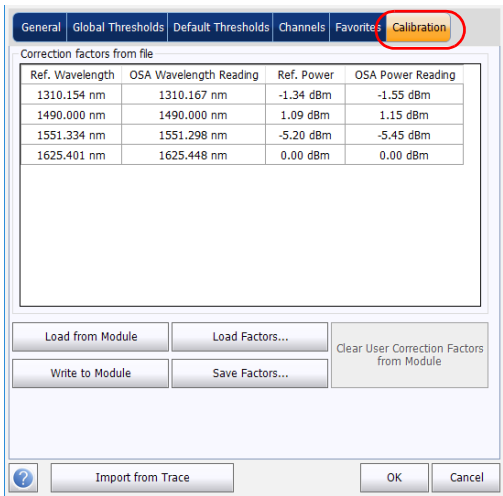
Performing User Calibration

To save a user calibration:

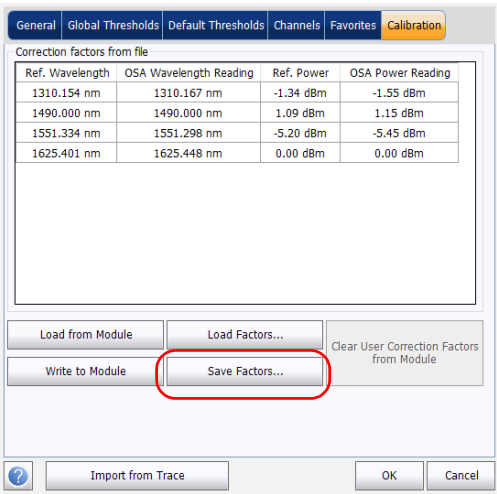
1. From the Main Menu, press Analysis Setup.



2. Select the Calibration tab.



3. Press **Save Factors**, to save the modified user calibration values.



Preparing Your OSA for a Test

Using the Autonaming Feature

Using the Autonaming Feature

Defining a file autonaming format will allow you to quickly and automatically name traces in a sequential order. The customized name appears when the file is saved using the Save As option. You can select which fields you want to include in the file name and the order in which they should be displayed.

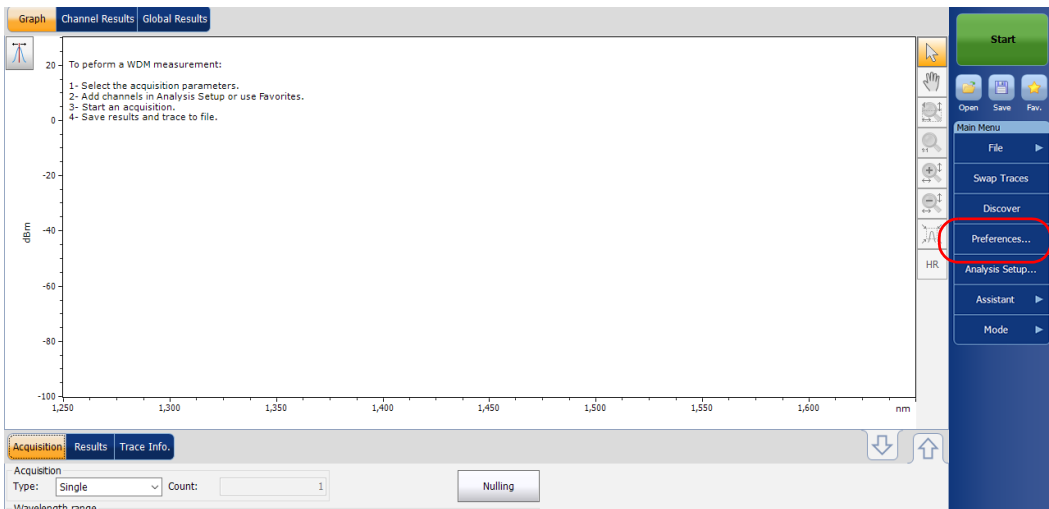
The Link ID is used by the application to suggest a file name when you want to save the current acquisition. The link parameters are prefix and suffix values (file names) for the link IDs.

Note: The autonaming feature is not available in the offline application.

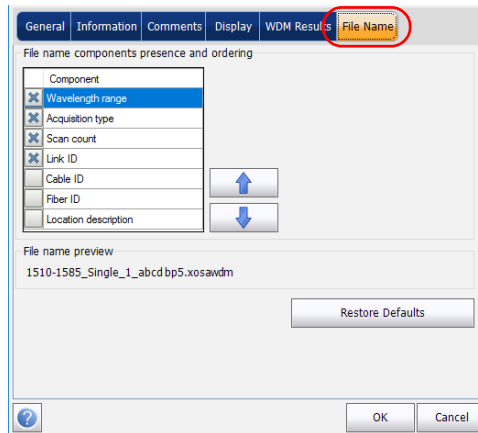
Note: The procedure below uses the WDM test mode as an example, but the autonaming feature is available for all test modes.

To customize the file name:

1. From the Main Menu, press **Preferences**.



2. Select the **File Name** tab.



3. Select which parameters you want to include in the file name from the list of available choices:

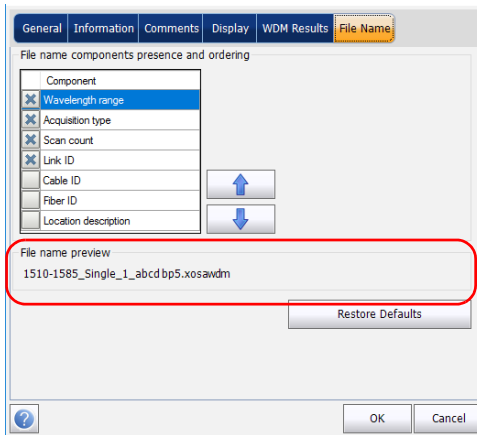
- Wavelength/frequency range: current wavelength/frequency acquisition range.
- Acquisition type: current acquisition type.
- Scan count: current number of scans in the acquisition tab.
- Link ID: prefix value for the link ID configured in the **Preferences-Information** tab.
- Cable ID: prefix value for the cable ID configured in the **Preferences-General** tab.
- Fiber ID: prefix value for the fiber ID configured in the **Preferences-General** tab.
- Location description: location description provided in the **Preferences-Information** tab.

Preparing Your OSA for a Test

Using the Autonoming Feature

4. Press the up or down arrows to change the order in which the field values will appear in the file name.

Based on your selection, a preview of the file name is displayed under **File name preview**. The field values are separated with an underscore (_).



5. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default settings.

4

Setting Up the Instrument in WDM Mode

Before performing a spectral analysis in the WDM mode, you must set up the test application with the appropriate parameters, as explained in this chapter.

Select the WDM test mode as explained in *Selecting a Test Mode* on page 16 before setting up the WDM test parameters.

- The *preferences* are the result displayed in the graph and tables, as well as the job information and related comments saved with each file.
- The *analysis parameters* include the channel list details, pass-fail threshold settings and allows you to select the noise and power calculation methods.
- The *acquisition parameters* include the type of measurement you want to perform and the wavelength range.

See *Defining Preferences* on page 37, *Setting Up WDM Analysis Parameters* on page 53 and *Setting Up Acquisition Parameters* on page 80 for more details.

Setting Up the Instrument in WDM Mode

You can set up your unit in different manners, depending on your testing needs.

- The preferred way is to use the complete analysis setup parameters and complete the information in all tables, as explained in *Setting Up WDM Analysis Parameters* on page 53. This setup will be used for the next acquisition.
- The easiest way to set up the instrument, especially when the operator does not know in advance what to expect at the input of the module is to use the **Discover** button. After the **Discover** button has been pressed, a measurement and analysis will be performed according to the best setup determined by the instrument and this setup will be used for the next scan. This is explained in *Using the Discover Feature* on page 281.
- The most efficient way to set up the instrument is to use one of the favorites configurations, uploading a pre-customized acquisition and analysis setup configuration. The operator in the field only has to press the  button, select the appropriate configuration and press **Start**. As an example, a pre-customized configuration could be: “32 channels DWDM 50GHz”; “Toronto-Montreal CWDM” or “Vendor ABC DWDM ROADM 40Gb”. This is explained in *Managing Favorites* on page 292.
- You can also import the setup from the current trace. This method will take the data and channel information from the current trace and apply them in the corresponding tabs. For more information, see *Setting Up WDM Analysis Parameters* on page 53.

Defining Preferences

The preferences window allows you to set general information and comments on trace, set display parameters and customize the WDM results table.

Note: Only the **Display** and **WDM Results** tabs are available in offline mode.

Defining Trace Information

The trace information relates to the description of the job to be done, cable and job IDs, and any relevant information about what is being tested.

To enter general information:

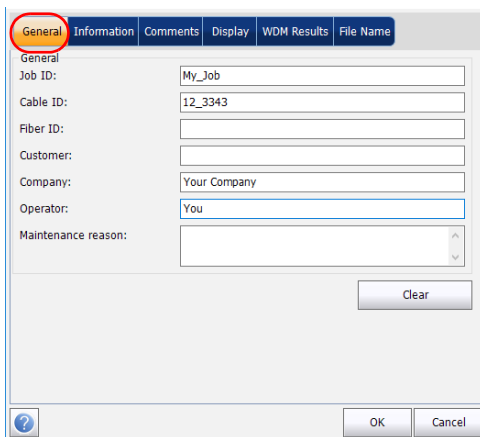
1. From the **Main Menu**, press **Preferences**.



Setting Up the Instrument in WDM Mode

Defining Preferences

2. Select the **General** tab.



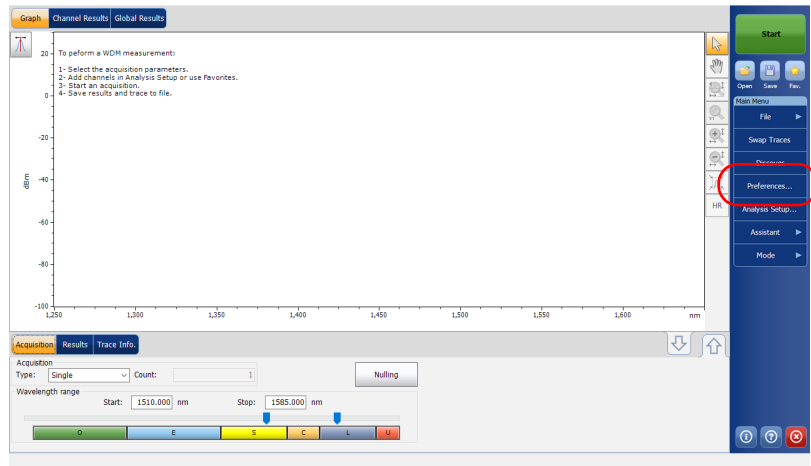
The screenshot shows a software window with a tabbed interface. The 'General' tab is selected and highlighted with a red circle. The window contains several input fields: 'Job ID' (My_Job), 'Cable ID' (12_3343), 'Fiber ID' (empty), 'Customer' (empty), 'Company' (Your Company), 'Operator' (You), and 'Maintenance reason' (empty). A 'Clear' button is located below the input fields. At the bottom of the window are 'OK' and 'Cancel' buttons.

3. Define the general parameters as needed.
4. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

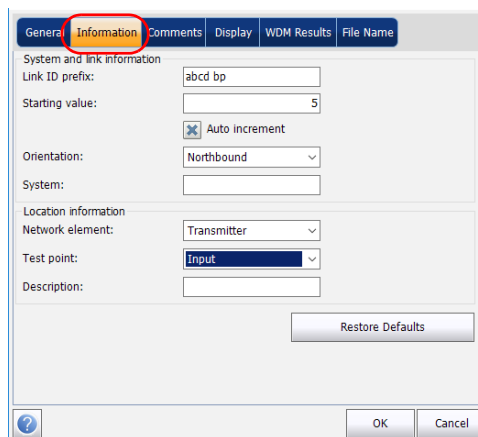
Press **Clear** to clear all the changes made in the **General** tab.

To enter link and location information:

1. From the Main Menu, press **Preferences**.



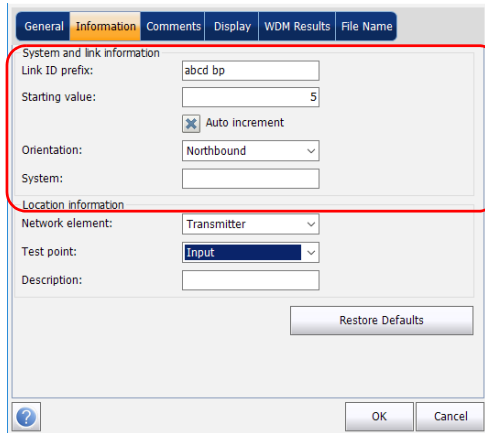
2. Select the **Information** tab.



Setting Up the Instrument in WDM Mode

Defining Preferences

3. Under **System and link information**, define the following parameters as needed:



The screenshot shows the 'Information' tab of a software window. The 'System and link information' section is highlighted with a red box. It contains the following fields and values:

- Link ID prefix: abcd bp
- Starting value: 5
- Auto increment: ☒
- Orientation: Northbound
- System: (empty)

Below this section is the 'Location information' section with the following fields and values:

- Network element: Transmitter
- Test point: Input
- Description: (empty)

At the bottom of the window are buttons for 'Restore Defaults', 'OK', and 'Cancel'.

- Link ID prefix: The prefix value for the link ID. You can enter any alphanumeric value.
- Starting value: The suffix increment starting value for the link ID. This value is incremented each time a new file is saved provided the **Auto Increment** option is selected.



IMPORTANT

If the Auto Increment option is not selected, you have to manually change the file name when saving the trace file, otherwise the application will overwrite the previously saved file.

- Orientation: The orientation of the link.
- System: Information about the system under test.

4. Under **Location Information**, define the following parameters as needed:

The screenshot shows a software window with several tabs: General, Information, Comments, Display, WDM Results, and File Name. The 'Information' tab is active. It is divided into two main sections. The top section, 'System and link information', contains the following fields: 'Link ID prefix' with the value 'abcd bp', 'Starting value' with the value '5', a checked 'Auto increment' checkbox, 'Orientation' set to 'Northbound', and an empty 'System' field. The bottom section, 'Location information', is highlighted with a red rectangular box and contains: 'Network element' set to 'Transmitter', 'Test point' set to 'Input', and an empty 'Description' field. Below these sections is a 'Restore Defaults' button. At the very bottom of the window are 'OK' and 'Cancel' buttons.

- Network element: Sets the type of network element.
 - Test point: Sets the location where the test is performed on the link.
 - Description: Enter the description of location if required.
5. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

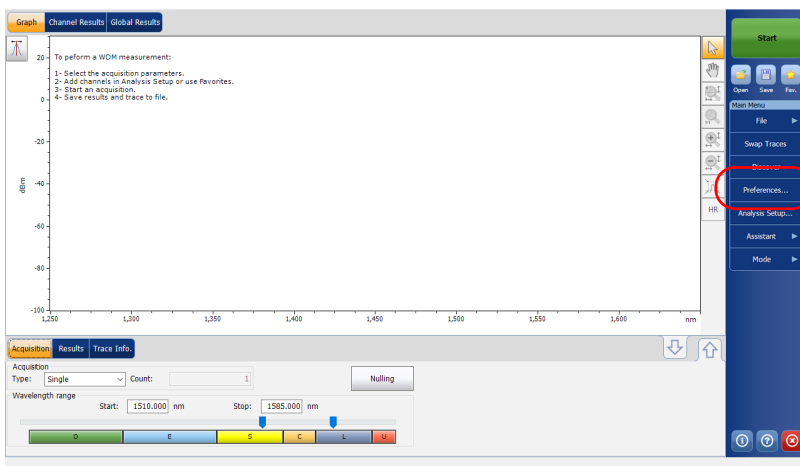
Press **Restore Defaults** to remove all the changes and apply the default values.

Setting Up the Instrument in WDM Mode

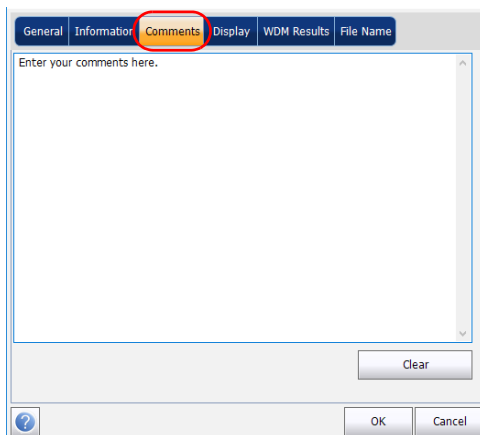
Defining Preferences

To enter comments:

1. From the Main Menu, press **Preferences**.



2. Select the **Comments** tab.



3. Enter your comments for the current trace.
4. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Clear** to clear all the changes made in the **Comments** tab.

Setting Up the Instrument in WDM Mode

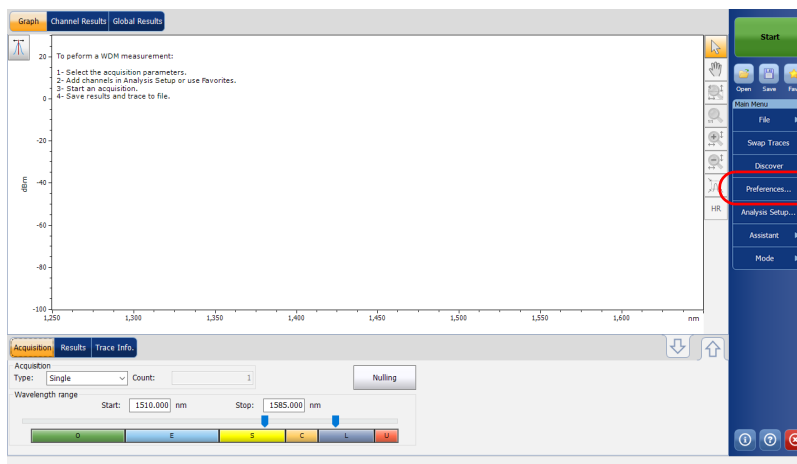
Defining Preferences

Defining Display Parameters

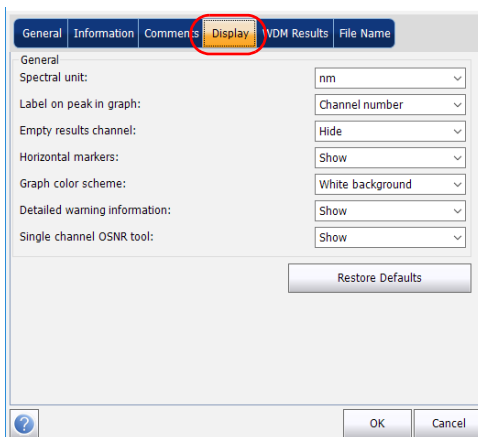
The application allows you to set display settings for the acquisition trace. You can set the spectral unit for the trace and the results table. You can also select the label that should appear on the peaks of the trace.

To define display parameters:

1. From the **Main Menu**, press **Preferences**.

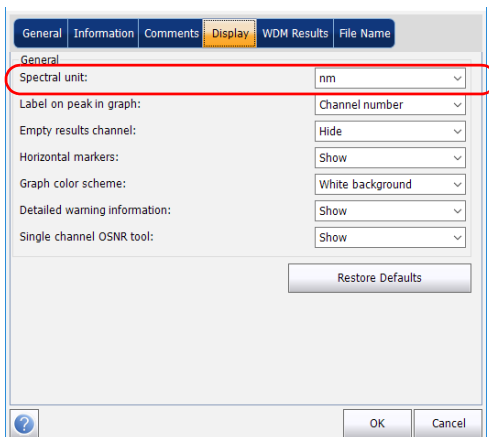


2. Select the **Display** tab.



The screenshot shows a software window with several tabs: General, Information, Comments, Display, WDM Results, and File Name. The 'Display' tab is selected and highlighted with a red circle. Below the tabs, there is a 'General' section with several settings, each with a dropdown menu: 'Spectral unit' (set to 'nm'), 'Label on peak in graph' (set to 'Channel number'), 'Empty results channel' (set to 'Hide'), 'Horizontal markers' (set to 'Show'), 'Graph color scheme' (set to 'White background'), 'Detailed warning information' (set to 'Show'), and 'Single channel OSNR tool' (set to 'Show'). A 'Restore Defaults' button is located below these settings. At the bottom of the window are buttons for '?', 'OK', and 'Cancel'.

3. Select the spectral unit you want to work with, either nm or THz.

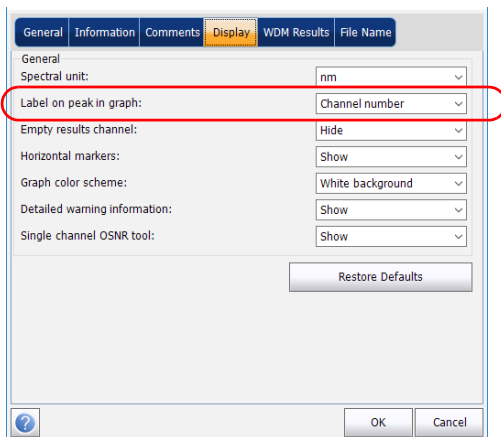


This screenshot is identical to the one above, but with a red circle highlighting the 'Spectral unit' dropdown menu, which currently displays 'nm'. The other settings and the overall window layout remain the same.

Setting Up the Instrument in WDM Mode

Defining Preferences

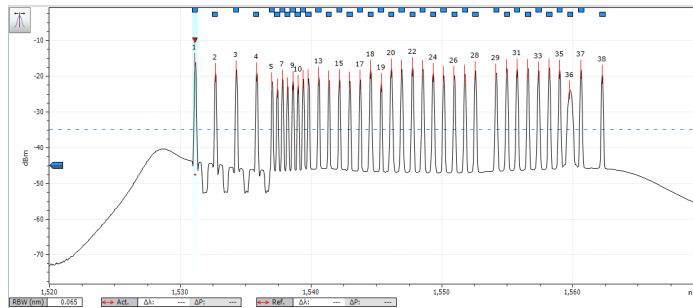
4. Select the label that will appear on the peaks in the graph, either the channel name, its number, or nothing.



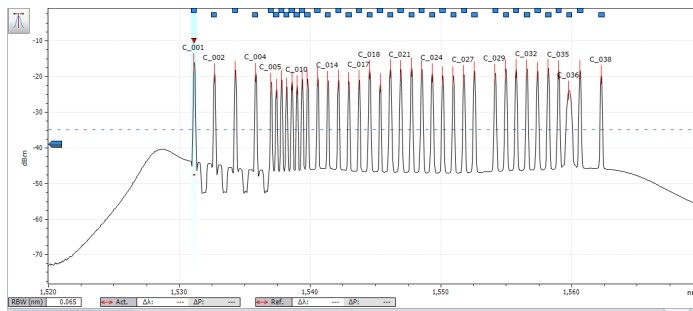
Setting Up the Instrument in WDM Mode

Defining Preferences

Note: The channel name and channel number cannot be shown at the same time.



Channel
numbers



Defined channel
names

Setting Up the Instrument in WDM Mode

Defining Preferences

5. Select whether you want to show or hide the empty channels from the channel list in the **Results** tab.

The screenshot shows the 'Display' tab of a settings dialog. The 'Empty results channel' dropdown is highlighted with a red circle and set to 'Hide'. Other settings include 'Spectral unit' (nm), 'Label on peak in graph' (Channel number), 'Horizontal markers' (Show), 'Graph color scheme' (White background), 'Detailed warning information' (Show), and 'Single channel OSNR tool' (Show). A 'Restore Defaults' button is at the bottom right of the settings area. The dialog has 'OK' and 'Cancel' buttons at the bottom.

Note: When selected, empty channels are shown on screen and in the report files.

6. Select whether you want to show the horizontal markers or not.

The screenshot shows the 'Display' tab of a settings dialog. The 'Horizontal markers' dropdown is highlighted with a red circle and set to 'Show'. Other settings include 'Spectral unit' (nm), 'Label on peak in graph' (Channel number), 'Empty results channel' (Hide), 'Graph color scheme' (White background), 'Detailed warning information' (Show), and 'Single channel OSNR tool' (Show). A 'Restore Defaults' button is at the bottom right of the settings area. The dialog has 'OK' and 'Cancel' buttons at the bottom.

7. Select the background color scheme for the graph as desired.

The screenshot shows the 'Display' tab of a preference window. The tabs at the top are General, Information, Comments, Display (selected), WDM Results, and File Name. The 'General' section contains several settings: 'Spectral unit' is set to 'nm', 'Label on peak in graph' is 'Channel number', 'Empty results channel' is 'Hide', 'Horizontal markers' is 'Show', 'Graph color scheme' is 'White background' (highlighted with a red circle), 'Detailed warning information' is 'Show', and 'Single channel OSNR tool' is 'Show'. A 'Restore Defaults' button is located at the bottom right of the settings area. At the very bottom of the window are 'OK' and 'Cancel' buttons.

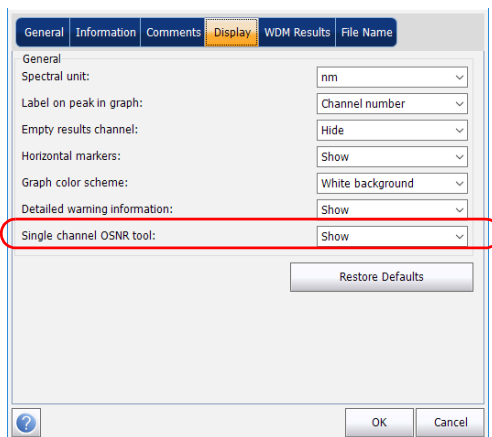
8. Select whether you want to show the detailed warning information in the **Results** tab or not.

This screenshot is similar to the previous one, showing the 'Display' tab. In this instance, the 'Detailed warning information' dropdown is highlighted with a red circle and set to 'Show'. All other settings remain the same as in the previous screenshot: 'Spectral unit' is 'nm', 'Label on peak in graph' is 'Channel number', 'Empty results channel' is 'Hide', 'Horizontal markers' is 'Show', 'Graph color scheme' is 'White background', and 'Single channel OSNR tool' is 'Show'. The 'Restore Defaults' button and the 'OK'/'Cancel' buttons at the bottom are also present.

Setting Up the Instrument in WDM Mode

Defining Preferences

9. Select whether you want to show the Single channel OSNR tool in the main window or not. If you select to show the tool, it will be displayed as soon as a trace is loaded as reference.



10. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

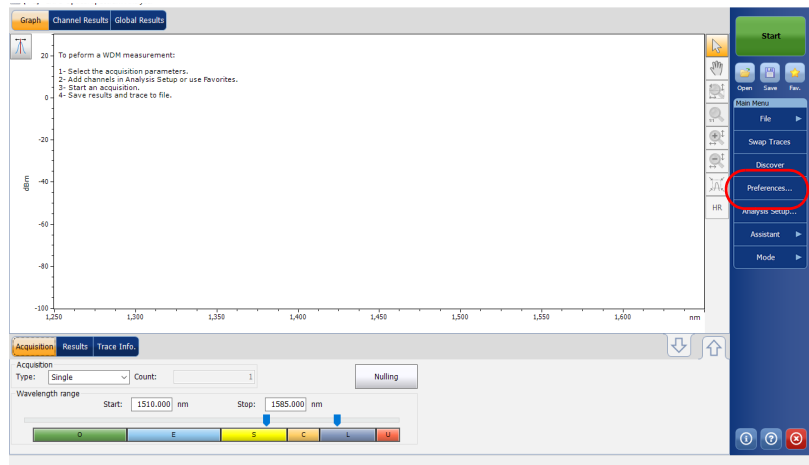
Press **Restore Defaults** to remove all the changes and apply the default values.

Customizing WDM Results Table

It is possible to select which results you would like to be displayed in the **Results** tab of your WDM tests.

To customize the results table:

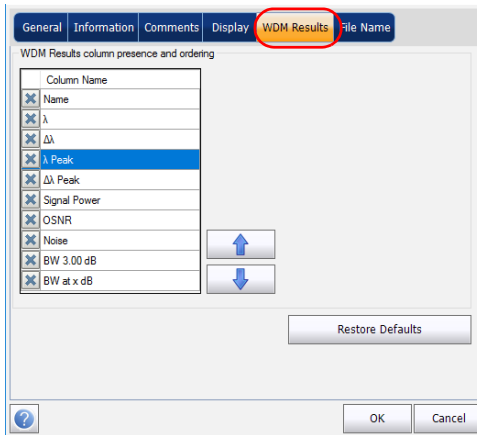
1. From the **Main Menu**, press **Preferences**.



Setting Up the Instrument in WDM Mode

Defining Preferences

2. Select the **WDM Results** tab.



3. Select which parameters you want to display in the **Results** tab from the list of available choices:

- Name: name of channel.
- λ (Center wavelength/frequency): spectral center-of-mass for the peak in that channel.
- Signal Power: signal power for the selected channel (excludes noise).
- OSNR: optical signal to noise ratio, given by Signal power (according to the current calculation method, in dBm), minus Noise (according to the current calculation method, in dBm).
- Noise: noise level for the selected channel. The type of noise is indicated in front of the measurement (IEC, Fit, Inb, Inb nf, IECi, CCSA or Pmx).
- BW 3.00 dB: bandwidth measured by taking the width of a signal at 50 % linear power of the peak, or -3 dB from the peak.
- BW at x dB: bandwidth measured by taking the width of a signal at x dB from the peak.

- $\Delta\lambda/f$: deviation of the spectral center of mass for the peak in that channel.
 - λ/f Peak: spectral peak in that channel.
 - $\Delta\lambda/f$ Peak: deviation of the spectral peak in that channel.
4. Press the up or down arrows to change the order in which the columns will appear in the **Results** tab.
 5. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

Setting Up WDM Analysis Parameters

This section presents the various analysis settings for the application, particularly the channel list and settings. You can set the default channel parameters, channel list, global thresholds, default channel thresholds, manage favorite configurations and perform user calibration.

Note: *When you change the analysis setup parameters, the new settings are active as soon as you confirm your choice. The current trace is re-analyzed, and the analysis setup parameters will be applied to the global results and channel results for the following acquisitions.*

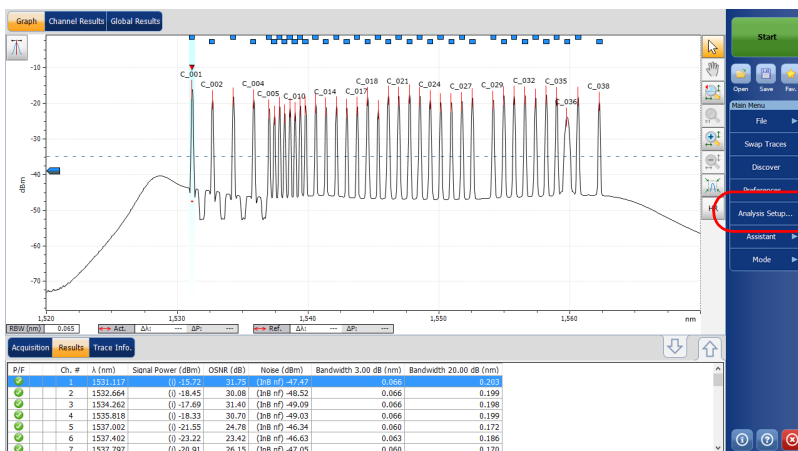
You can either set each parameter individually, or use parameters from the current trace and import them.

Setting Up the Instrument in WDM Mode

Setting Up WDM Analysis Parameters

To import the parameters from the current trace:

1. Make sure that you have a trace on-screen.
2. From the **Main Menu**, press **Analysis Setup**.



Setting Up the Instrument in WDM Mode

Setting Up WDM Analysis Parameters

3. From any tab, press **Import from Trace**.

The screenshot shows the 'WDM Analysis Parameters' dialog box. The 'General' tab is selected and highlighted with a red circle. The 'Import from Trace' button at the bottom is also highlighted with a red circle. The dialog contains the following sections:

- Default channel settings**
 - ☒ Activate default channel
 - Channel width: 50.0 GHz ☐ Snap to ITU grid
 - Signal power calculation: Integrated signal power
 - Noise for OSNR: Fixed range IEC based
 - OSNR distance: 25.0 GHz
 - Noise region: 2.5 GHz
- Global analysis parameters**
 - Peak detection level: -45.00 dBm
 - RBW for OSNR: Instrument's RBW
 - Wavelength offset: 0.000 nm
 - Power offset: 0.00 dB
 - Bandwidth at: 20.00 dB
 -

At the bottom, there is a help icon (?), the 'Import from Trace' button (highlighted with a red circle), and 'OK' and 'Cancel' buttons.

4. Press **OK** to confirm the changes.

Setting Up the Instrument in WDM Mode

Setting Up WDM Analysis Parameters

Defining General Settings

The general analysis parameters for WDM acquisitions affect the calculation of the results. Any change you make to the settings affect future traces, or you can apply them to the active trace when reanalyzing it.

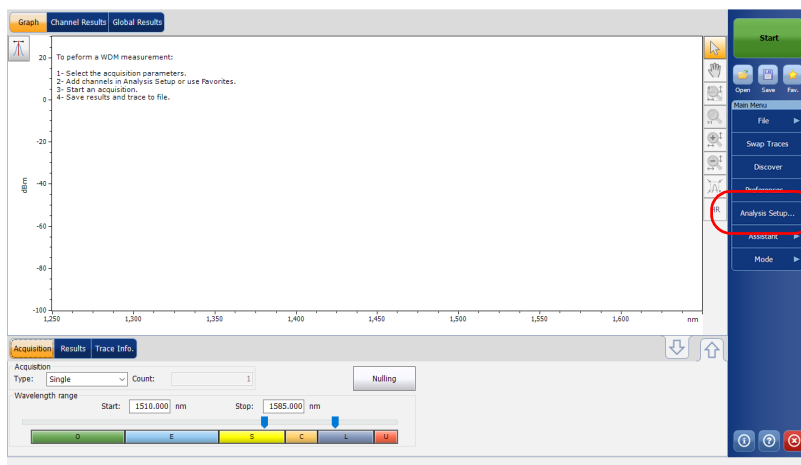


IMPORTANT

In the General tab, you can set the default channel parameters. Any channel found during an acquisition that is not defined in the channel list will be analyzed according to the default channel settings.

To define general settings:

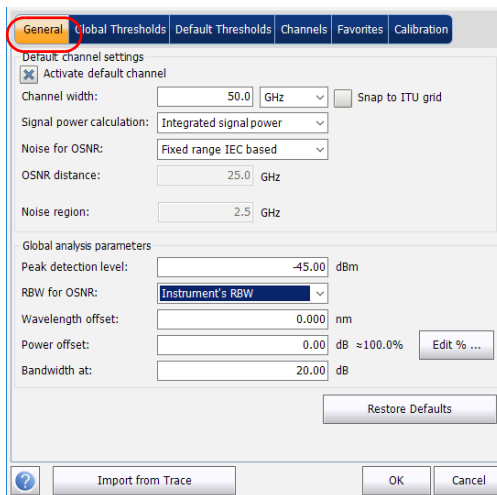
1. From the Main Menu, press Analysis Setup.



Setting Up the Instrument in WDM Mode

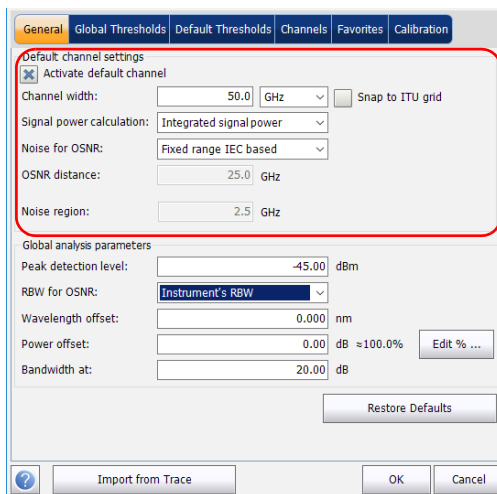
Setting Up WDM Analysis Parameters

2. Select the **General** tab.



The screenshot shows the 'General' tab selected in the WDM analysis settings dialog. The 'Default channel settings' section includes a checked 'Activate default channel' box, a 'Channel width' of 50.0 GHz, a 'Signal power calculation' of 'Integrated signal power', 'Noise for OSNR' set to 'Fixed range IEC based', an 'OSNR distance' of 25.0 GHz, and a 'Noise region' of 2.5 GHz. The 'Global analysis parameters' section includes a 'Peak detection level' of -45.00 dBm, 'RBW for OSNR' set to 'Instrument's RBW', a 'Wavelength offset' of 0.000 nm, a 'Power offset' of 0.00 dB, and a 'Bandwidth at' of 20.00 dB. A 'Restore Defaults' button is located at the bottom right of the settings area. The bottom of the dialog features a help icon, an 'Import from Trace' button, and 'OK' and 'Cancel' buttons.

3. Under **Default channel settings**, define the following parameters as needed:



This screenshot is identical to the previous one, but with a red rectangular box highlighting the 'Default channel settings' section. This section contains the following parameters: 'Activate default channel' (checked), 'Channel width' (50.0 GHz), 'Signal power calculation' (Integrated signal power), 'Noise for OSNR' (Fixed range IEC based), 'OSNR distance' (25.0 GHz), and 'Noise region' (2.5 GHz).

Setting Up the Instrument in WDM Mode

Setting Up WDM Analysis Parameters

- Clear the **Activate default channel** option to use the currently defined channel list for analysis. This reduces the analysis time by eliminating the peak detection over the complete spectral range. The peaks outside the defined channel list will not be analyzed.
- Channel width (GHz or nm): indicates the limit inside which the power values will be considered in the channel.

For default channels, the channel width that sets the limits of the channel, should be the same as the channel distance or smaller (channel distance is defined while creating a channel list). If the channel width is not compatible with the channel spacing, either a single peak may be found for two distinct channels and two analysis would be performed and displayed for that peak, or, it is possible that two peaks may be found within the same channel and be considered as one multi-peak signal. With this result, you can use markers to find the spacing between adjacent channels or to find the channel width.

- Snap to ITU Grid: When selected, each detected peak will be defined by the nearest ITU channel. The ITU grid is based on the selected channel width.
- Signal power calculation: indicates which calculation method to apply for signal power value.

Integrated signal power: The integrated signal power represents the sum of the power values included between the channel limits of this channel, minus the estimated noise contribution between the same boundaries. In some cases, for instance CATV signals, signals with high-frequency modulation, or signals with an inherent line width similar or larger than the OSA's resolution bandwidth, this calculation becomes a better estimation of the true signal power.

Peak signal power: The peak signal power represents the maximum power value inside the channel. Note that it differs a little from the peak measurement on the spectrum due to the fact that the estimated noise is subtracted to get the peak signal power.

Total channel power: The total channel power represents the sum of the integrated signal power and of the noise within the channel. The OSNR calculation is not performed when the signal power calculation type is the total channel power.

- Noise for OSNR: indicates which calculation method to use for OSNR value.

Fixed range IEC based (IEC): The IEC method uses the interpolation of noise measured on both sides of the signal to estimate the noise level. The position at which the noise is estimated from the center wavelength is given by the OSNR distance.

InBand (InB): The InBand method uses a series of scans having different polarization states to calculate the noise level under the peak (InBand).

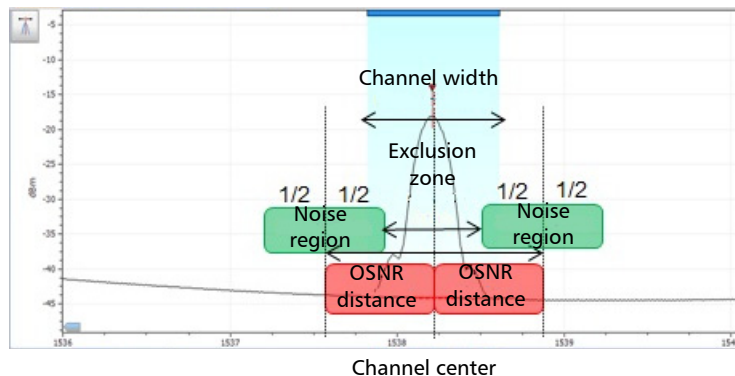
InBand narrow filter (InB nf): The InBand narrow filter method uses additional processing to provide an accurate OSNR value for the narrow carved noise. This is because with narrow filters, the noise level under the peak is not uniform and the OSNR value depends on the processing width selected.

Setting Up the Instrument in WDM Mode

Setting Up WDM Analysis Parameters

Fifth order polynomial fit (Fit): The fifth order polyfit method calculates the noise curve and thus the signal to noise ratio. The OSA will approximate the noise curve using a fifth order polynomial fit. This fit definition relies on fit and exclusion zones. Only the points in the fit zones are used to calculate the fifth order polynomial fit. If you select the fifth order polyfit method, you have to define the fit and exclusion zones for your tests using the OSNR distance and noise region fields. The exclusion zone is indirectly obtained from the OSNR distance.

Gaussian filter: Calculates the noise curve and thus the signal to noise ratio. The OSA will approximate the noise curve using a Gaussian filter. This filter definition relies on fit and exclusion zones. Only the points in the fit zones are used to calculate the Gaussian filter. If you select this filter, you have to define the fit and exclusion zones for your tests using the OSNR distance and noise region fields. The exclusion zone is indirectly obtained from the OSNR distance.



- OSNR distance (GHz or nm): Except for the fifth order polyfit and Gaussian fit selections, the OSNR distance is automatically set at the channel edge, that is, at half of the channel width from the center wavelength.

For the fifth order polyfit, the OSNR distance corresponds to the distance from the channel peak to the center of the fit zone. It is independent of the channel width.

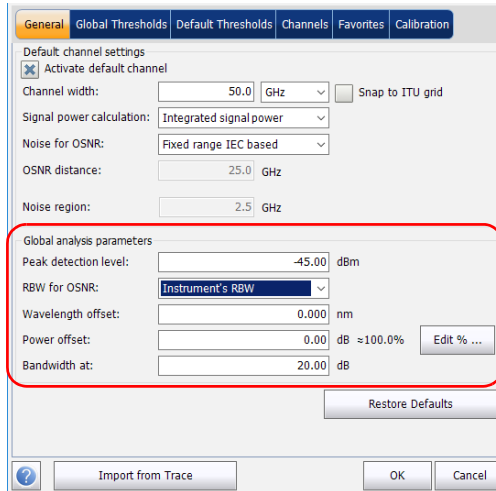
For the Gaussian fit, the OSNR distance corresponds to the distance from the main mode peak to the center of the fit zone. It is independent of the main mode peak width.

- Noise region: The noise region, or fit zone, defines the region where the polynomial or Gaussian fit applies. Two identical regions are centered at the OSNR distance.

Setting Up the Instrument in WDM Mode

Setting Up WDM Analysis Parameters

4. Under **Global analysis parameters**, define the following parameters as needed:



The screenshot shows the 'Global analysis parameters' section of the WDM Analysis Parameters dialog box. The section is highlighted with a red border. The parameters are as follows:

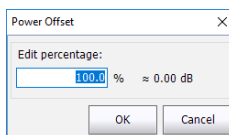
Parameter	Value	Unit
Peak detection level:	-45.00	dBm
RBW for OSNR:	Instrument's RBW	nm
Wavelength offset:	0.000	nm
Power offset:	0.00	dB
Bandwidth at:	20.00	dB

Buttons: Import from Trace, OK, Cancel, Restore Defaults, Edit % ...

- **Peak detection level (dBm):** indicates the minimum power level from where the peak can be considered as a signal.
- **RBW for OSNR (nm):** indicates the resolution bandwidth selected for the OSNR calculation. This parameter is generally set to 0.1 nm to allow for a common basis of comparison between different OSAs having different effective resolutions. The instrument's RBW value is written below the graph. This parameter does not actually have an effect on the acquisition, but is only a normalization factor used to provide the OSNR value in a standardized manner.

- Wavelength offset (nm): indicates the offset value applied on the wavelength. This does not replace a calibration performed at EXFO, but it can help you temporarily sharpen the specifications if you have determined that, for example, your modules are used beyond the normal allowed use. Entering a value in THz is not possible. When an offset is applied, it is indicated at the bottom of the graph ($\lambda \leftrightarrow$).
- Power offset (dB): indicates the offset value applied on the power. This does not replace a calibration performed at EXFO, but it can help you achieve the specifications if you have determined that, for example, your modules are used beyond the normal allowed use. When an offset is applied, it is indicated at the bottom of the graph ($P \leftrightarrow$).

To edit the power offset as a tap percentage, press the **Edit %** button.



The percentage value entered in **Edit percentage** will be converted to a corresponding equivalent value in dB.

- Bandwidth at (dB): Set the power level used, relative to the channel peak power, to compute the second bandwidth result.
5. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

Setting Up the Instrument in WDM Mode

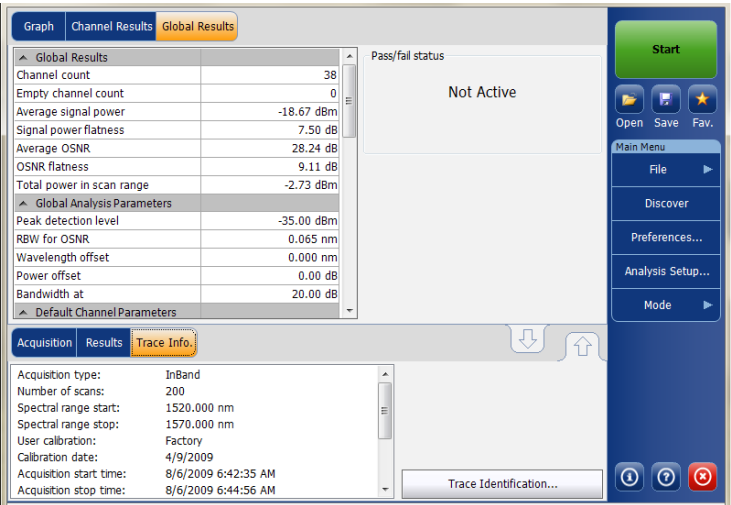
Setting Up WDM Analysis Parameters

Defining Global Thresholds

Any change you make to the global threshold settings affect future traces, or you can apply them to the active trace when reanalyzing it.

The application allows you to activate and deactivate the threshold functionality with a single control. When thresholds are globally enabled, the results are displayed with the Pass/Fail status based on various settings (global results, channel results). In addition, a global pass/fail status is also displayed in the **Global Results** tab (See *Global Results Tab* on page 313).

When thresholds are globally disabled, results are displayed without a Pass/Fail status and the Global pass/fail status will not be active in the **Global Results** tab. The **P/F** column under the results table will not be displayed.



Setting Up the Instrument in WDM Mode

Setting Up WDM Analysis Parameters

You can set your pass/fail threshold limits in different ways depending on the type of test you are performing.

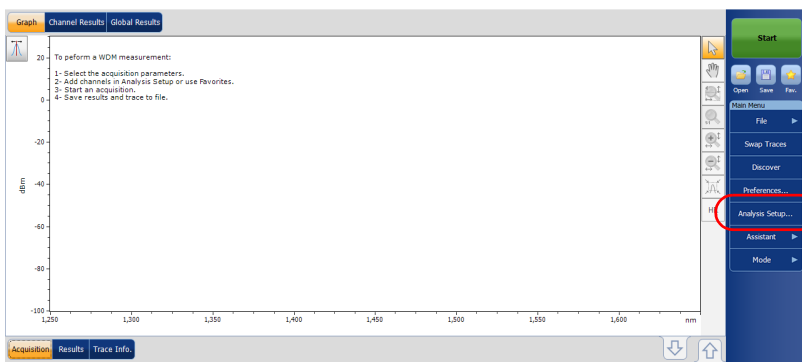
Threshold Limit	Definition
None	No threshold limit is set. The results will be displayed without a Pass/Fail verdict.
Min. only	The threshold limit is set for a minimum value only. The Pass/Fail verdict is declared as Pass (in green), when the value is equal to or greater than the minimum threshold set. The verdict is declared as Fail (in red), when the value is below the minimum threshold set.
Max. only	The threshold limit is set for a maximum value only. The Pass/Fail verdict is declared as Pass (in green), when the value is equal to or less than the maximum threshold set. The verdict is declared as Fail (in red), when the value is above the maximum threshold set.
Min. and Max.	The threshold limit is set for the minimum and maximum value. The Pass/Fail verdict is declared as Pass (in green), when the value is equal to or within the minimum and maximum thresholds set. The Pass/Fail verdict is declared as Fail (in red), when the value is beyond the minimum or maximum thresholds set.
Use Default	When this limit is set, the corresponding threshold set for the default channels in the Analysis Setup tab will be applied to the channel.
Max. Deviation	The threshold limit is set for the deviation value. The Pass/Fail verdict is declared as Pass (in green), when the value is equal to or within the deviation threshold set. The Pass/Fail verdict is declared as Fail (in red), when the value is beyond deviation threshold set.

Setting Up the Instrument in WDM Mode

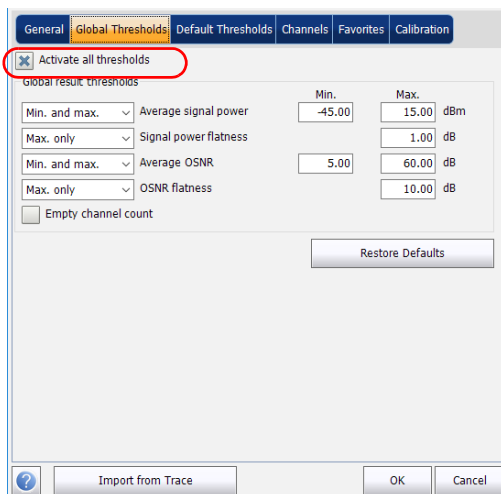
Setting Up WDM Analysis Parameters

To define global thresholds:

1. From the **Main Menu**, press **Analysis Setup**.



2. Select the **Global Thresholds** tab.
3. Select the **Activate all thresholds** option to manually set the global threshold values. If this option is not selected, all the thresholds will be deactivated, results are displayed without a Pass/Fail status and Global pass/fail status are not active in the **Global Results** tab.



4. Enter values in the boxes as explained below:
 - Average signal power (dBm): the sum of the signal powers of all the peaks detected in the current acquisition, divided by the total number of peaks.
 - Signal power flatness (dB): the difference between the maximum and minimum signal power values of the detected peaks, in dB.
 - Average OSNR (dB): the sum of the entire OSNR of the peaks detected in the current acquisition, divided by the total number of peaks.
 - OSNR flatness (dB): the difference between the maximum and minimum OSNR values of the detected peaks, in dB.
 - Empty channel count: The number of empty channels from the channel list.
5. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

Setting Up the Instrument in WDM Mode

Setting Up WDM Analysis Parameters

Defining Default Thresholds

Default thresholds will be applied to any channel found outside the channel list during the acquisition or re-analysis.

Note: *The default thresholds settings are enabled only when the **Activate all thresholds** option is selected in the **Global Thresholds** tab. For more information, see Defining Global Thresholds on page 64.*

You can set your pass/fail threshold limits in different ways depending on the type of test you are performing.

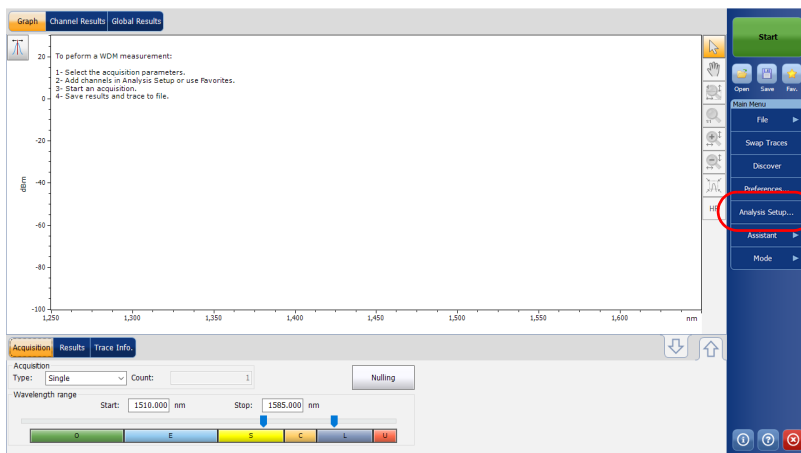
Threshold Limit	Definition
None	No threshold limit is set. The results will be displayed without a Pass/Fail verdict.
Min. only	The threshold limit is set for a minimum value only. The Pass/Fail verdict is declared as Pass (in green), when the value is equal to or greater than the minimum threshold set. The verdict is declared as Fail (in red), when the value is below the minimum threshold set.
Max. only	The threshold limit is set for a maximum value only. The Pass/Fail verdict is declared as Pass (in green), when the value is equal to or less than the maximum threshold set. The verdict is declared as Fail (in red), when the value is above the maximum threshold set.
Min. and Max.	The threshold limit is set for the minimum and maximum value. The Pass/Fail verdict is declared as Pass (in green), when the value is equal to or within the minimum and maximum thresholds set. The Pass/Fail verdict is declared as Fail (in red), when the value is beyond the minimum or maximum thresholds set.
Max. deviation	The threshold limit is set for the deviation value. The Pass/Fail verdict is declared as Pass (in green), when the value is equal to or within the deviation threshold set. The Pass/Fail verdict is declared as Fail (in red), when the value is beyond deviation threshold set.

Setting Up the Instrument in WDM Mode

Setting Up WDM Analysis Parameters

To define default Thresholds:

1. From the **Main Menu**, press **Analysis Setup**.



Setting Up the Instrument in WDM Mode

Setting Up WDM Analysis Parameters

2. Select the **Default Thresholds** tab.

The screenshot shows the 'Default Thresholds' tab selected. The 'Default channel' section contains the following parameters:

Parameter	Min.	Max.	Unit
Wavelength		± 0.020	nm
Signal power	-45.00	15.00	dBm
Noise	-99.99	-40.00	dBm
OSNR	5.00	60.00	dB

Buttons at the bottom: Import from Trace, OK, Cancel. A 'Restore Defaults' button is located below the parameter table.

3. Enter values in the boxes as explained below:
 - Wavelength/Frequency (nm/GHz): the channel's central wavelength/frequency.
 - Signal power (dBm): the signal power for the default channel (excludes noise).
 - Noise (dBm): the level of the noise for the selected channel.
 - OSNR (dB): the optical signal to noise ratio, given by Signal power (according to the current calculation method, in dBm) minus Noise (according to the current calculation method, in dBm).
4. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

Managing Channels

Testing DWDM systems involves characterizing multiple signals in a link. The application allows you to define channels using a channel editor or quickly generate them from the current data. You can also rapidly create a list of equally spaced channels. Once a channel list is created, you can modify it as needed. You can edit the analysis parameters for one channel or multiple channels.

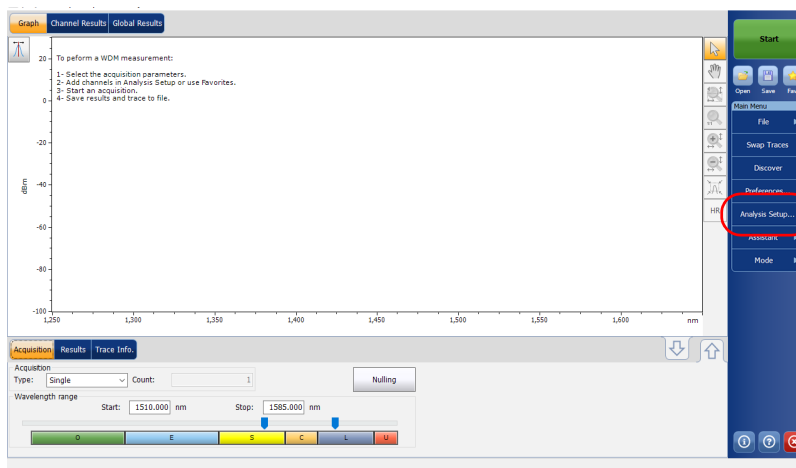
While creating the channel list, some channels may overlap. When the channel widths are specified in nm, two channels are considered to be overlapping when more than 1.2 GHz (approximately) of frequency range is common between the two channels.

Setting Up the Instrument in WDM Mode

Setting Up WDM Analysis Parameters

To add a channel list:

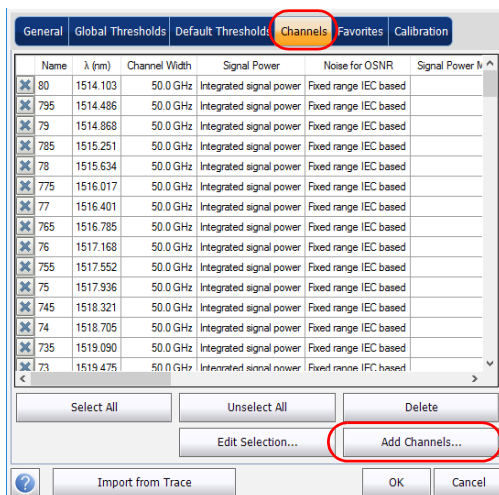
1. From the Main Menu, press **Analysis Setup**.



Setting Up the Instrument in WDM Mode

Setting Up WDM Analysis Parameters

2. Select the **Channels** tab.
3. By default, the channel list is empty. Press **Add Channels**.



Setting Up the Instrument in WDM Mode

Setting Up WDM Analysis Parameters

4. Enter values in the boxes as explained below:

The screenshot shows a dialog box titled "Add channels". It contains the following fields and controls:

- Start range: 1528.773 nm
- Stop range: 1560.606 nm
- Channel center wavelength: ITU 100 GHz (dropdown menu)
- Channel distance: 100 GHz (dropdown menu)
- Channel width: 100 GHz (dropdown menu)
- Name prefix: (empty text box)
- Starting value: 1 (text box)
- Increment value: 1 (text box)
- Restore Defaults (button)
- OK (button)
- Cancel (button)

- Start range (nm or THz): starting range of the channel list.
- Stop range (nm or THz): ending range of the channel list.
- Channel center wavelength/frequency: spectral center-of-mass for the peak in that channel.

Note: When using the custom channel center wavelength option, the first channel will be centered at the Start Range, and the list will be created using channel distance and channel width.

- Channel distance (nm or GHz): distance between channels. The value of channel distance will be set depending on the selection made for the channel center wavelength option. The channel distance box will be enabled only when the channel center wavelength option is set to custom.
- Channel width (nm or GHz): limit inside which the power values will be considered in the channel. Integrated power is calculated on channel width.
- Name prefix: adds a prefix to the channel names.

- Starting value: sets the increment starting value for the channel name in the channel list.
- Increment value: sets the increment value for the channel name in the channel list.

5. Press **OK** to return to the **Channels** window, which now lists the added channels.

Note: *When new channels are added, the **Use Default thresholds** selection will be applied to the channel parameters.*

Note: *A warning message will be displayed if channels are overlapping, but the analysis can still be performed on overlapping channels. If any duplicate channels are added, a confirmation message will be displayed to overwrite the existing channels with the duplicate channels.*

6. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

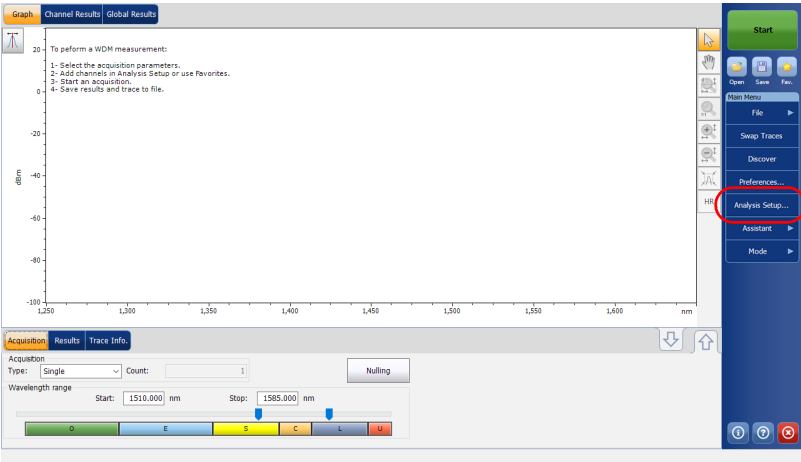
Note: *The application displays a message if more than 1000 channels are added. You can exit the **Analysis Setup** window only after deleting the extra channels from the channel list. You can delete the channels manually as required.*

Setting Up the Instrument in WDM Mode

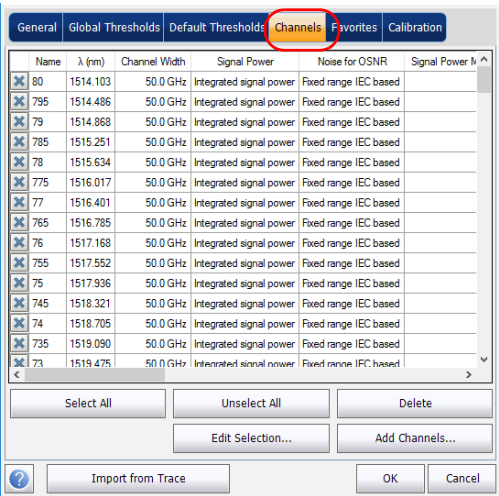
Setting Up WDM Analysis Parameters

To edit the parameters of a specific channel:

- 1. From the Main Menu, press Analysis Setup.



- 2. Select the Channels tab.



Setting Up the Instrument in WDM Mode

Setting Up WDM Analysis Parameters

3. Select the channel or channels to be modified in the channel list.

If you want the changes to be applied to all of your channels, press **Select All**. Channels can be selected one by one or all together. You can press **Unselect All** to clear all channel selections. To delete the selected channels, press **Delete**.

4. Press **Edit Selection**.

The screenshot shows the 'Channels' tab of the 'WDM Analysis Parameters' dialog box. The dialog has tabs for 'General', 'Global Thresholds', 'Default Thresholds', 'Channels' (selected), 'Favorites', and 'Calibration'. Below the tabs is a table with columns: Name, λ (nm), Channel Width, Signal Power, Noise for OSNR, and Signal Power I_n. The table contains 15 rows of channel data. Below the table are buttons for 'Select All', 'Unselect All', 'Delete', 'Edit Selection...', and 'Add Channels...'. The 'Edit Selection...' button is highlighted with a red circle. At the bottom of the dialog are buttons for 'Import from Trace', 'OK', and 'Cancel'.

Name	λ (nm)	Channel Width	Signal Power	Noise for OSNR	Signal Power I _n
80	1514.103	50.0 GHz	Integrated signal power	Fixed range IEC based	
795	1514.486	50.0 GHz	Integrated signal power	Fixed range IEC based	
79	1514.868	50.0 GHz	Integrated signal power	Fixed range IEC based	
785	1515.251	50.0 GHz	Integrated signal power	Fixed range IEC based	
78	1515.634	50.0 GHz	Integrated signal power	Fixed range IEC based	
775	1516.017	50.0 GHz	Integrated signal power	Fixed range IEC based	
77	1516.401	50.0 GHz	Integrated signal power	Fixed range IEC based	
765	1516.785	50.0 GHz	Integrated signal power	Fixed range IEC based	
76	1517.168	50.0 GHz	Integrated signal power	Fixed range IEC based	
755	1517.552	50.0 GHz	Integrated signal power	Fixed range IEC based	
75	1517.936	50.0 GHz	Integrated signal power	Fixed range IEC based	
745	1518.321	50.0 GHz	Integrated signal power	Fixed range IEC based	
74	1518.705	50.0 GHz	Integrated signal power	Fixed range IEC based	
735	1519.090	50.0 GHz	Integrated signal power	Fixed range IEC based	
73	1519.475	50.0 GHz	Integrated signal power	Fixed range IEC based	

Setting Up the Instrument in WDM Mode

Setting Up WDM Analysis Parameters

5. If you want to name the channels, enable the corresponding option. Then enter the name prefix you want to use. If you have selected more than one channel and want the name to be incremented automatically, enter the starting value for the incrementation, then the increment value for each new channel.

☒ Channel name

Name prefix:

Starting value:

Increment value:

Analysis

Channel width: GHz

Signal power calculation:

Noise for OSNR:

OSNR distance: GHz

Noise region: GHz

Thresholds

		Min.	Max.
Max. deviation	Wavelength		$\pm$ 0.020 nm
Min. and max.	Signal power	-45.00	15.00 dBm
Min. and max.	Noise	-99.99	-40.00 dBm
Min. and max.	OSNR	5.00	60.00 dB

Setting Up the Instrument in WDM Mode

Setting Up WDM Analysis Parameters

6. Modify the settings as needed. For more information about the settings, see *Defining General Settings* on page 56 and *Defining Default Thresholds* on page 68. If you leave a box empty, it will remain as it was before your changes.

☒ Channel name

Name prefix:

Starting value:

Increment value:

Analysis

Channel width:

Signal power calculation:

Noise for OSNR:

OSNR distance:

Noise region:

Thresholds

	Min.	Max.	
Max. deviation Wavelength		0.020	nm
Min. and max. Signal power	-45.00	15.00	dBm
Min. and max. Noise	-99.99	-40.00	dBm
Min. and max. OSNR	5.00	60.00	dB

7. Press **OK** to return to the **Channels** tab, which now contains the modified settings.
8. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Setting Up Acquisition Parameters

Before performing your test, you must set the acquisition type and parameters.

There are five types of acquisitions in WDM mode:

- **Single:** Spectral measurement is performed once. The results are displayed according to this measurement.
- **Averaging:** Spectral measurements are performed based on the number of scans that you have entered for this parameter. The trace will be displayed after each acquisition and averaged with the previous traces.
- **Real-Time:** In real-time acquisition, spectral measurements are performed continuously until you press **Stop**. No averaging is done for spectral measurements. The graph and results are refreshed after each acquisition.
- **InBand:** The InBand type acquisition will perform a series of scans in different polarization conditions in order to enable the InBand OSNR calculation.
- **i-InBand:** The *i*-InBand acquisition enables an adaptive intelligent InBand OSNR calculation that takes into account the multiple scans (up to 500) in various polarization conditions to determine the best available InBand analysis parameters for the signals under test on a per channel basis. With this acquisition type, you do not need to make difficult parameter setting choices (the InBand or InBand narrow filter and number of scans are automatically determined), especially when you are faced with complex system configurations.

Note: *The InBand and i-InBand option are available only if the module supports it and you have purchased the corresponding InB software option.*

Setting Up the Instrument in WDM Mode

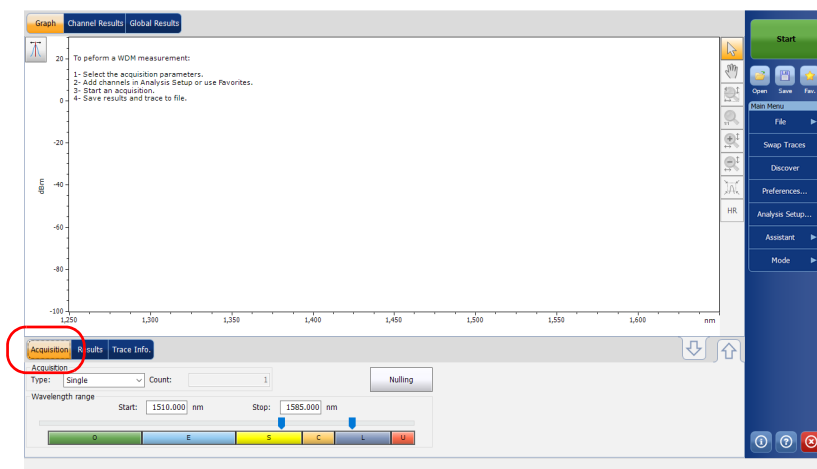
Setting Up Acquisition Parameters

Before performing measurements on an optical spectrum, you must select the wavelength/frequency range to use. You can perform the scan on the full range, on spectral bands, or select a custom range.

Note: *The shorter the wavelength or frequency range, the faster the acquisition.*

To set parameters in the Acquisition tab:

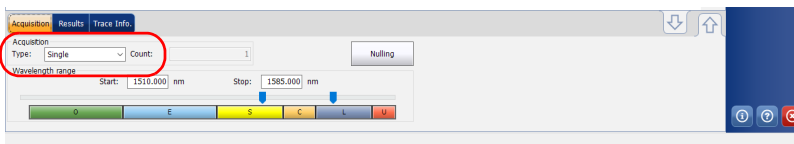
1. From the main window, select the **Acquisition** tab.



Setting Up the Instrument in WDM Mode

Setting Up Acquisition Parameters

2. Select the acquisition type.



3. If you are performing an averaging type acquisition, enter the number of scans the unit will perform.

If you are performing an InBand type acquisition, either enter the number of scans or select a predefined number of scans the unit will perform.

Note: You cannot modify the number of scans count value if you are performing a single or real-time or i-InBand acquisition.

Note: In i-InBand mode, the scan count value is always set to 500.

4. Select the wavelength range for your acquisition.



You can select the wavelength range by entering the start and stop values or by selecting a range on the double slider.

To select the wavelength range using the double slider, move the left and right handles on the double slider or simply click on any band.

Note: You can select more than one adjoining ranges to include in your range, for example, $S + C$.

The wavelength range covered within these bands of the spectra are listed below.

- O band (original): 1255 to 1365 nm
- E band (extended): 1355 to 1465 nm
- S band (short wavelengths): 1455 to 1535 nm
- C band (conventional “erbium window”): 1525 to 1570 nm
- L band (long wavelengths): 1560 to 1630 nm
- U band (ultralong wavelengths): 1620 to 1650 nm.

Using the Commissioning Assistant

If you have purchased the commissioning (Com) option, you can use an assistant to calculate the OSNR of coherent channels.

The assistant lets you select a measurement file where all channels are on, or active, and then compares them to other measurement files on which one of the channels is off while all of the others are still on.

The commissioning assistant automates OSNR measurements of 40 G/100 G coherent signals based on two standards: the China Communications Standards Association (CCSA) YD/T 2147-2010 and the IEC recommendation 61282-10.

The Chinese CCSA YD/T 2147-2010 standard recommends calculating Pol-Mux OSNR as follows:

$$\text{Pol-Mux OSNR} = 10\log_{10}((P - N)/(n/2))$$

where, for a 50 GHz channel:

- P is the integrated power (Signal + Noise) over the 0.4 nm channel bandwidth
- N is the integrated power (Noise) over 0.4 nm bandwidth
- n is the integrated power (Noise) inside 0.2 nm, then normalized to 0.1 nm

The IEC 61282-12 recommendation has not yet reached final approval stage, and therefore the calculation might differ slightly from that presented in this document. The standard defines OSNR as

OSNR (dB) = 10log (R) with

$$R = \frac{1}{B_r} \int_{\lambda_1}^{\lambda_2} \frac{s(\lambda)}{\rho(\lambda)} d\lambda$$

where:

- $s(\lambda)$: is the time-averaged signal spectral power density, not including ASE, expressed in W/nm.
- $\rho(\lambda)$: is the ASE spectral power density, independent of polarization, expressed in W/nm.
- B_r : is the reference bandwidth expressed in nm (usually 0.1 nm if not otherwise stated) and the integration range in nm from λ_1 to λ_2 is chosen to include the total signal spectrum.

Note: *To be valid, the trace with all channels on, or all of the traces with a channel off must come from a module onto which the commissioning option was activated.*

Note: *The units and empty channel display information come from the user preferences set in your application.*



IMPORTANT

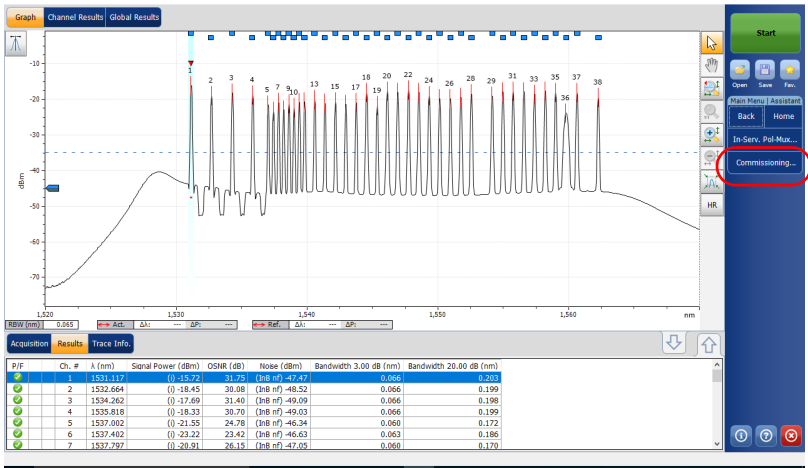
When performing OSNR measurements using the Commissioning Assistant, you must make sure that the noise level with the channel shutdown is representative of the real ASE noise level. For instance, ROADM equalization capabilities might change the noise level to compensate for the loss of one channel in the off trace measurement.

Setting Up the Instrument in WDM Mode

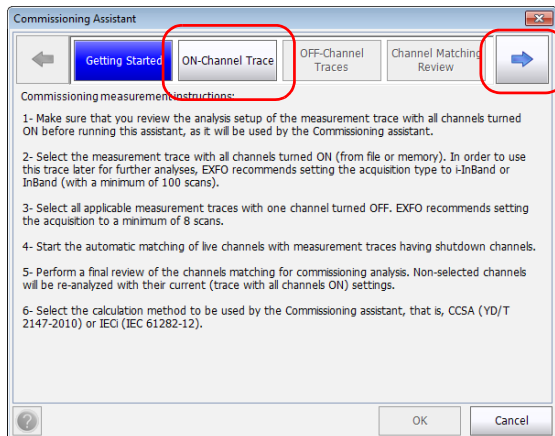
Using the Commissioning Assistant

To use the commissioning assistant:

- 1. Review the analysis parameters of the trace you want to use with all channels on. This is the key measurement trace for the rest of the operation.
- 2. From the main window, select **Assistants**, then **Commissioning**.



3. When you are ready to proceed, press either the right arrow button, or **On-channel trace**.



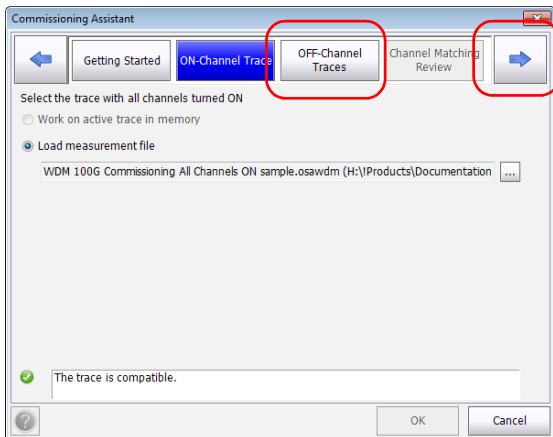
4. Select the trace that will be used with all channels ON. This trace can be the one presently in memory (active trace only, not the reference trace), or you can select another one that you have previously stored. Once the measurement file is selected, you can see at the bottom of the window whether this measurement is compatible or not for commissioning.

Note: *EXFO recommends setting the acquisition type to i-InBand or InBand (with a minimum of 100 scans) to acquire this trace.*

Setting Up the Instrument in WDM Mode

Using the Commissioning Assistant

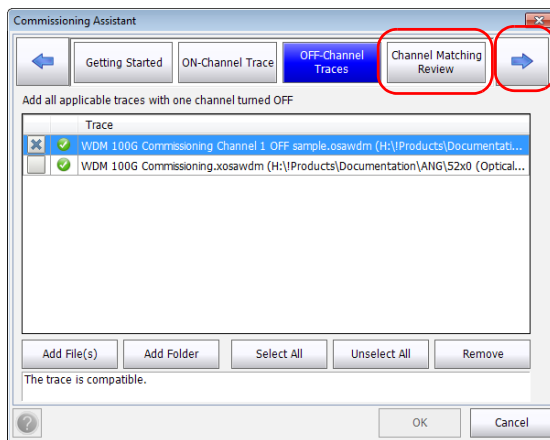
5. Once your choice is done, press the arrow button, or **OFF-channel traces**.



6. Using the buttons at the bottom of the window, select all of the applicable measurements traces (files) with one corresponding channel off. An indicator next to the trace shows if the measurement file is compatible or not.

Note: EXFO recommends setting the acquisition to a minimum of 8 scans.

Once the traces are selected, press the arrow button, or **Channel matching review**.

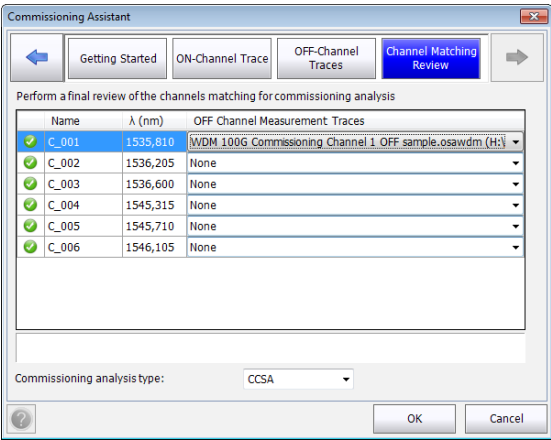


Setting Up the Instrument in WDM Mode

Using the Commissioning Assistant

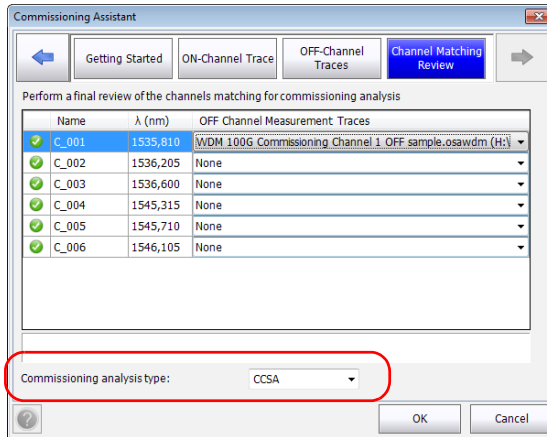
- 7. When channels can be associated automatically and that there is only one possible choice, the corresponding measurement file appears in the list. If no traces match some of the channels, they will be set to *none*.

In the case of channels where there is more than one corresponding measurement file, select which measurement you want to use for the commissioning test using the choices in the drop-down lists.



Note: You can go back in the assistant step to select or modify traces. However, if you do, the matches in the **Channel matching review** page will not be automatically reassigned and you have to perform a manual assignment (association) for the channels with modified or new measurement files.

8. Select the type of analysis used to perform the noise calculation (CCSA or IECi, as explained on page 84).



9. When all channels are matched (or explicitly excluded when marked *None*), press **OK** to complete the analysis process and close the Assistant.

The results appear on-screen in the **Results** table and **Channel Results** tab. The type of analysis is indicated between parentheses. Non-selected channels will be re-analyzed with their current (trace with all channels on) settings.

Note: To keep the results you have just obtained with the commissioning assistant, you must save your measurement trace.

Setting Up the Instrument in WDM Mode

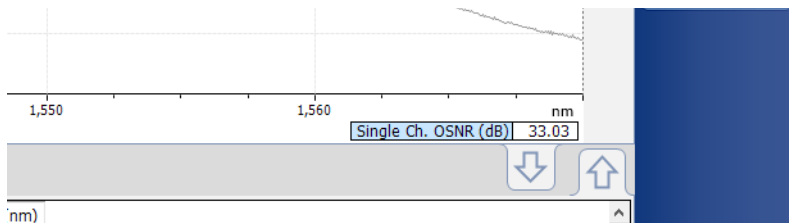
Measuring OSNR on a Single Channel

Measuring OSNR on a Single Channel

Using the same calculations and principles explained in *Using the Commissioning Assistant* on page 84, you can see the OSNR value for a single channel right in the **Graph** tab.

To see the OSNR value for one channel:

1. Make sure that you have activated the single channel OSNR tool in the display preferences (see *Defining Display Parameters* on page 44 for details).
2. Open your two traces for the comparison. One of the traces must have all channels on, and the other trace must have one channel turned off.
3. Select the channel for which you want to see the value. It will appear at the bottom of the graph.

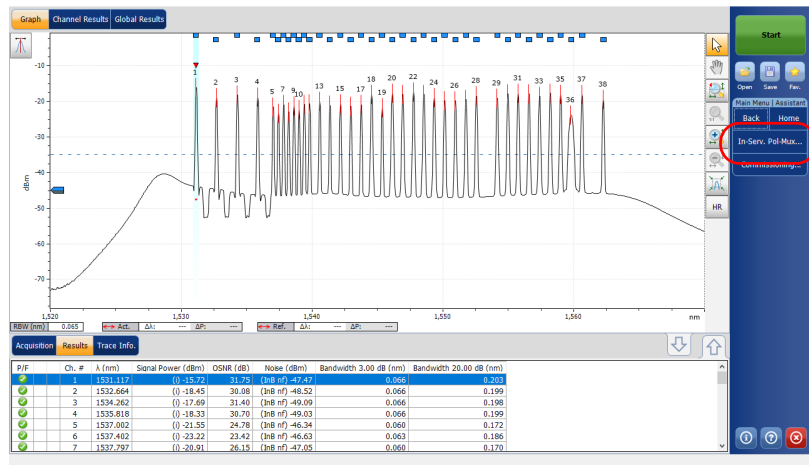


Using the In-Service Pol-Mux Measurement Assistant

If you have purchased the INSPM option, you can perform In-Service Pol-Mux measurements with the help of an assistant. While the commissioning assistant lets you perform this measurement only when deploying a new link, the in-service Pol-Mux measurement assistant lets you perform the measurement on an active link.

To use the in-service Pol-Mux measurement assistant:

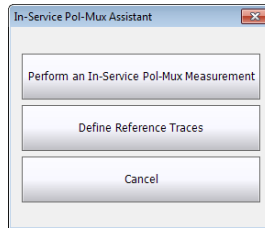
1. From the main window, select **Assistants**, then **In-Serv. Pol-Mux**.



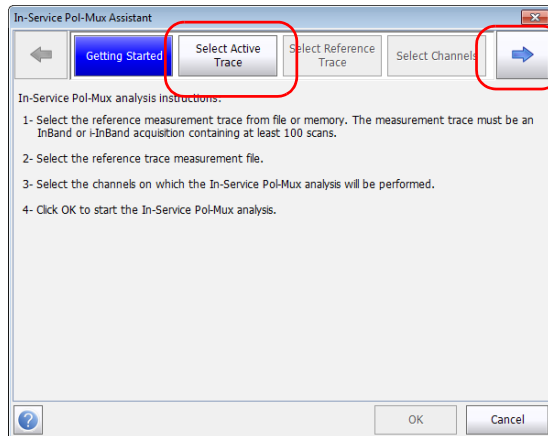
Setting Up the Instrument in WDM Mode

Using the In-Service Pol-Mux Measurement Assistant

2. Select **Perform an In-Service Pol-Mux Measurement**.



3. When you are ready to proceed, press either the right arrow button, or **Select Active Trace**.

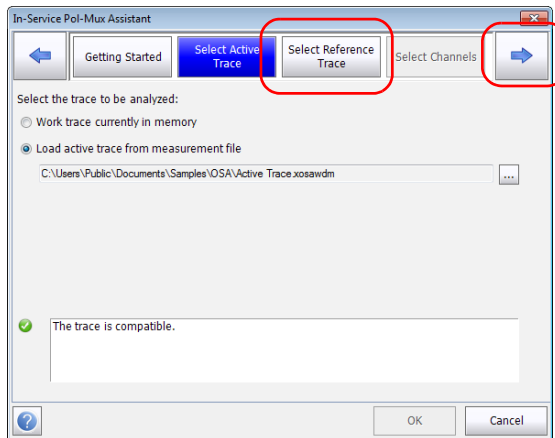


4. Select which WDM measurement you want to use as the active trace, on which the OSNR Pol-Mux measurement will be performed. This trace can be the one presently in memory, or you can select another one that you have previously stored. Once the measurement file is selected, you can see at the bottom of the window whether this measurement is compatible or not.

Setting Up the Instrument in WDM Mode

Using the In-Service Pol-Mux Measurement Assistant

5. Once your choice is done, press the arrow button, or **Select Reference Trace**.

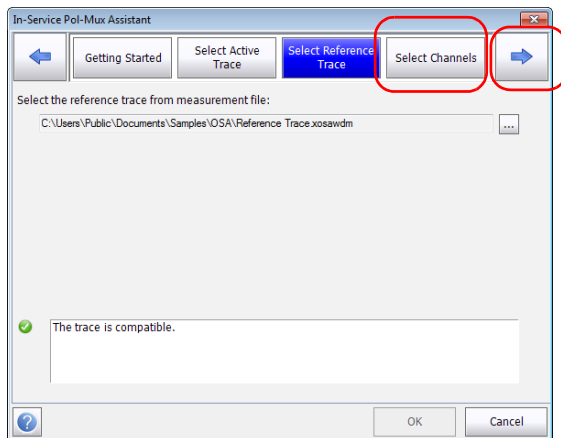


6. Select which measurement you want to use for the reference trace. Once the measurement file is selected, you can see at the bottom of the window whether this measurement is compatible or not.

Setting Up the Instrument in WDM Mode

Using the In-Service Pol-Mux Measurement Assistant

7. Once you have selected the reference trace, press the arrow button, or **Select Channels**.

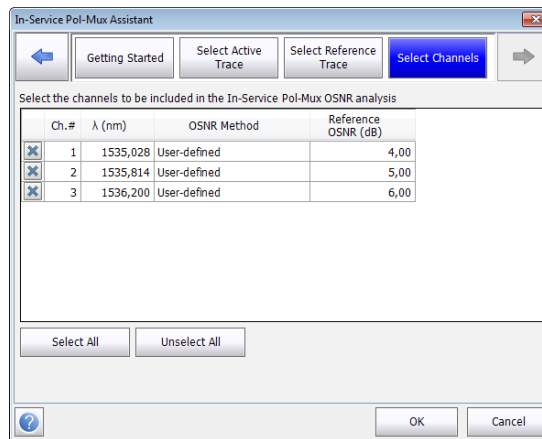


Setting Up the Instrument in WDM Mode

Using the In-Service Pol-Mux Measurement Assistant

8. Select which channels will be used in measuring the in-service Pol-Mux OSNR. You can either select them individually or use the **Select All** button to use the complete list.

Note: The list of available channels represents only those for which a Pol-Mux analysis is possible. For a channel to be displayed, its reference OSNR value must be configured in the reference trace and a pol-mux signal must be present on the active trace for this same channel.



9. Press **OK** to close the assistant and perform the measurement. The result appears on-screen.

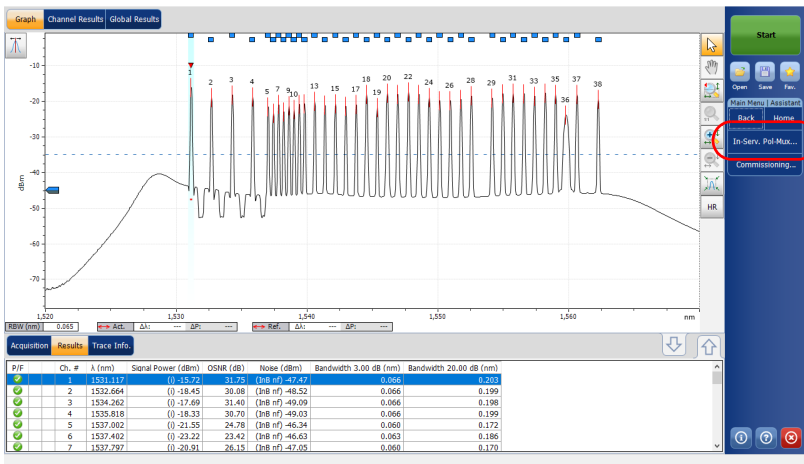
Using the Pol-Mux Reference Trace Edition Assistant

To qualify WDM measurement as a reference for In-Service Pol-Mux analysis, you need to define the OSNR values for the channels of interest. The OSNR values can come from the measurement currently in memory, another measurement of your choice.

A reference measurement file used for Pol-Mux analysis, whether it is the file currently in memory or a file you select, must absolutely contain a reference OSNR value for each channel that can be analyzed. This assistant will help you build such a file in order to be able to use the In-Service Pol-Mux assistant afterwards. The values will be extracted from the measured OSNR values or can be entered manually. The resulting file will be the same as the original file, plus the reference OSNR value information for each channel.

To use the Pol-Mux reference trace edition assistant:

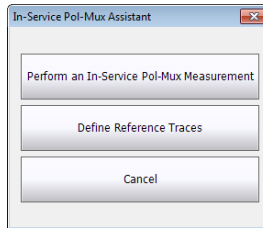
- 1. From the main window, select **Assistants**, then **In-Serv. Pol-Mux**.



Setting Up the Instrument in WDM Mode

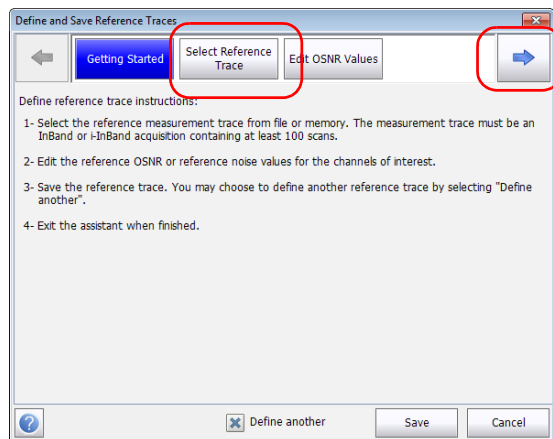
Using the Pol-Mux Reference Trace Edition Assistant

2. Select **Define Reference Traces**.



3. When you are ready to proceed, press either the right arrow button, or **Select Reference Trace**.

Note: *If you want to define another reference trace immediately after completing the one you are defining now, select the option at the bottom of the window.*

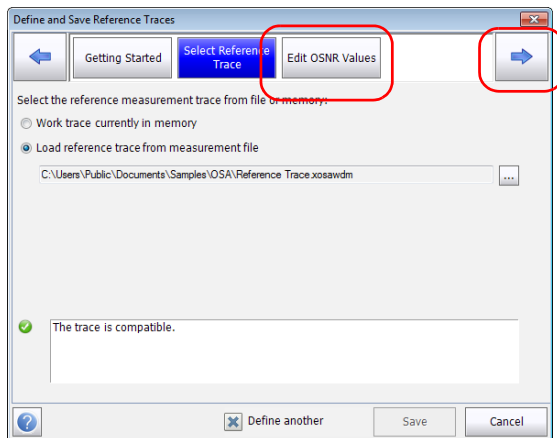


4. Select which WDM measurement you want to use for the reference trace. This trace can be the one presently in memory or you can select another one that you have previously stored. Once the measurement file is selected, you can see at the bottom of the window whether this measurement is compatible or not.

Setting Up the Instrument in WDM Mode

Using the Pol-Mux Reference Trace Edition Assistant

5. Once the trace is selected, press the arrow button, or **Edit OSNR Values**.



Setting Up the Instrument in WDM Mode

Using the Pol-Mux Reference Trace Edition Assistant

6. Set the reference OSNR values. You can do this in the following ways:
 - Select individual cells and enter single OSNR values.
 - Select multiple channels and press **Edit Selection** to edit multiple OSNR values
 - Select multiple channels and press **Import OSNR Values** to import IEC, IECi, CCSA or Pol-Mux OSNR values from the measurement trace.

Note: The trace import availability is dependent of the type of measured OSNR values.

Note: If you want to clear the reference OSNR values, select the channels, then press **Clear Selection** and confirm your choice.

Define and Save Reference Traces

Getting Started | Select Reference Trace | **Edit OSNR Values**

Enter the OSNR or Noise values that will serve as reference for future In-Service Pol-Mux analyses.

Ch.#	λ (nm)	OSNR Method	Reference Noise (dBm)	Reference OSNR (dB)
7	1538,173	User-defined	-19,45	5,00
8	1538,963	User-defined	-20,36	5,00
9	1539,365	User-defined	-22,08	5,00
10	1539,761	---	---	---
11	1540,153	---	---	---
12	1540,553	---	---	---
13	1541,345	---	---	---
14	1542,135	User-defined	-20,14	5,00
15	1542,539	---	---	---

Select All | Unselect All | Clear Selection... | Interpolate Noise Values

Import OSNR Values | **Edit Selection...**

Define another | Save | Cancel

Setting Up the Instrument in WDM Mode

Using the Pol-Mux Reference Trace Edition Assistant

7. Alternatively, you can edit noise values and the OSNR values will be updated accordingly. This can be done in the following ways:
 - Select individual cells and enter single noise values.
 - Interpolate noise values by entering the known noise values, then pressing **Interpolate Noise Values**. All empty cells between edited noise cells will be automatically filled with interpolated noise values.

Note: *This interpolation approach will only be valid if the channels between the boundaries come from the same transmitter location and have traveled along the same path.*

Define and Save Reference Traces

Getting Started | Select Reference Trace | **Edit OSNR Values**

Enter the OSNR or Noise values that will serve as reference for future In-Service Pol-Mux analyses.

Ch.#	λ (nm)	OSNR Method	Reference Noise (dBm)	Reference OSNR (dB)	
☐	7	1538,173	User-defined	-19,45	5,00
☐	8	1538,963	User-defined	-20,36	5,00
☒	9	1539,365	User-defined	-22,08	5,00
☒	10	1539,761	---	---	---
☒	11	1540,153	---	---	---
☒	12	1540,553	---	---	---
☒	13	1541,345	---	---	---
☒	14	1542,135	User-defined	-20,14	5,00
☐	15	1542,539	---	---	---

Select All | Unselect All | Clear Selection... | **Interpolate Noise Values**

Import OSNR Values | Edit Selection...

Define another | Save | Cancel

8. Once you are done editing the values, press **Save** and save the file using the name and location of your choice.

The assistant closes when the file is saved, unless you have selected to create another reference file; in that case, you are returned to step 4.

Using the Comparison Mode

The comparison mode will let you load two measurement files (one as an active trace and the other as reference) for comparison purposes. The trace configuration of either file can be loaded by checking 'Import trace configuration'.

Note: *The loading of measurement files in comparison mode will not provoke an analysis.*

When working in WDM mode, you can use the reference trace to compare the results for the channels. The application will use the data of the reference file to do its comparison, and this comparison is effective as long as the reference trace is open in the application. If you want to exit the comparison mode, simply clear the traces as explained in *Managing Measurement Files* on page 284.

If you want to apply the same analysis settings for both traces, change them as explained in *Setting Up WDM Analysis Parameters* on page 53, then select **OK** to apply them.

5 ***Setting Up the Instrument in Drift Mode***

Before performing a spectral analysis in the Drift mode, you must set up the test application with the appropriate parameters, as explained in this chapter.

Select the Drift test mode as explained in *Selecting a Test Mode* on page 16 before setting up the Drift test parameters.

- The *preferences* are the result displayed in the graph and tables, as well as the job information and related comments saved with each file.
- The *analysis parameters* include the channel list details, pass-fail threshold settings and allows you to select the noise and power calculation methods.
- The *acquisition parameters* include the type of measurement you want to perform and the wavelength range.

See *Defining Preferences* on page 107, *Setting Up Drift Analysis Parameters* on page 122 and *Setting Up Acquisition Parameters* on page 146 for more details.

Setting Up the Instrument in Drift Mode

You can set up your unit in different manners, depending on your testing needs.

- The preferred way is to use the complete analysis setup parameters and complete the information in all tables, as explained in *Setting Up Drift Analysis Parameters* on page 122. This setup will be used for the next acquisition.
- The easiest way to set up the instrument, especially when the operator does not know in advance what to expect at the input of the module is to use the **Discover** button. After the **Discover** button has been pressed, a measurement and analysis will be performed according to the best setup determined by the instrument and this setup will be used for the next scan. This is explained in *Using the Discover Feature* on page 281.
- The most efficient way to setup the instrument is to use one of the favorites configurations, uploading a pre-customized acquisition and analysis setup configuration. The operator in the field only has to press the  button, select the appropriate configuration and press **Start**. As an example, a pre-customized configuration could be: “32 channels DWDM 50GHz”; “Toronto-Montreal CWDM” or “Vendor ABC DWDM ROADM 40Gb”. This is explained in *Managing Favorites* on page 292.
- You can also import the setup from the current trace. This method will take the data and channel information from the current trace and apply them in the corresponding tabs. For more information, see *Setting Up Drift Analysis Parameters* on page 122.

Defining Preferences

The preferences window allows you to set general information and comments on trace, set display parameters and customize the drift results table.

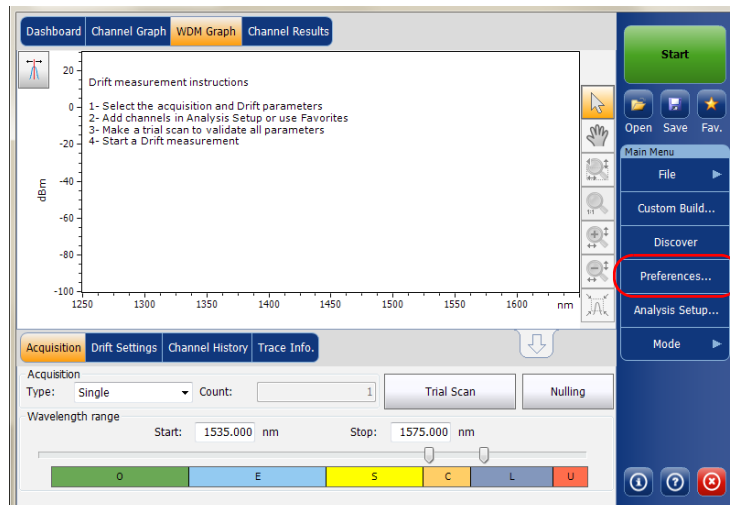
Note: Only the **Display** and **Drift Results** tabs are available in offline mode.

Defining Trace Information

The trace information relates to the description of the job to be done, cable and job IDs, and any relevant information about what is being tested.

To enter general information:

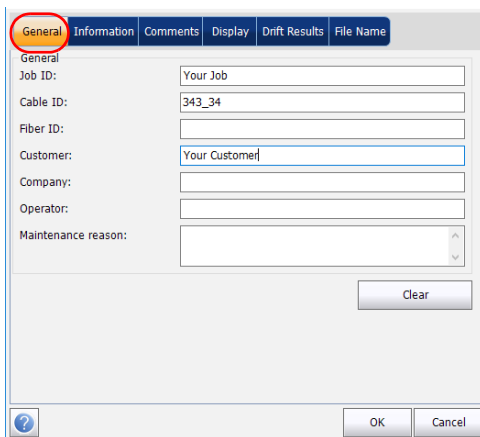
1. From the **Main Menu**, press **Preferences**.



Setting Up the Instrument in Drift Mode

Defining Preferences

2. Select the **General** tab.



The screenshot shows a software window with a tabbed interface. The 'General' tab is selected and highlighted with a red circle. The tabs are: General, Information, Comments, Display, Drift Results, and File Name. The 'General' tab contains the following fields:

- Job ID: Text box containing 'Your Job'
- Cable ID: Text box containing '343_34'
- Fiber ID: Text box (empty)
- Customer: Text box containing 'Your Customer'
- Company: Text box (empty)
- Operator: Text box (empty)
- Maintenance reason: Text box (empty)

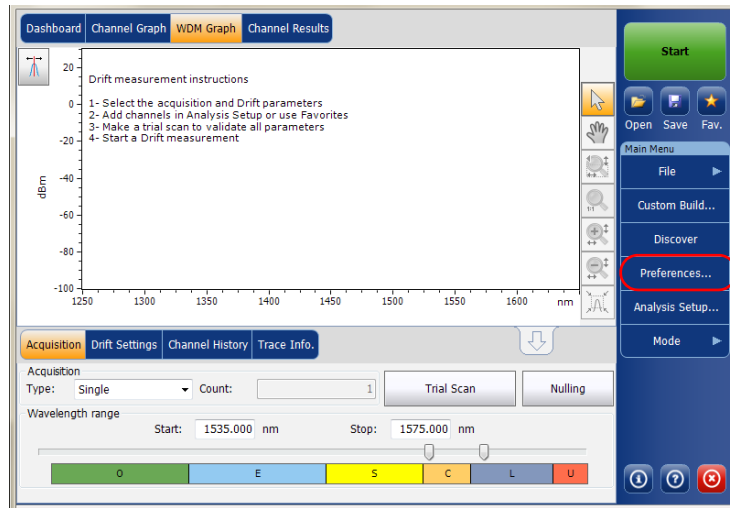
Below the fields is a 'Clear' button. At the bottom of the window are 'OK' and 'Cancel' buttons, and a help icon (?) on the left.

3. Define the general parameters as needed.
4. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

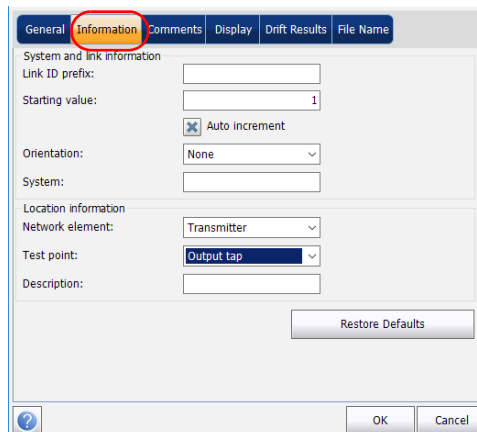
Press **Clear** to clear all the changes made in the **General** tab.

To enter link and location information:

1. From the **Main Menu**, press **Preferences**.



2. Select the **Information** tab.



Setting Up the Instrument in Drift Mode

Defining Preferences

3. Under **System and link information**, define the following parameters as needed:

- Link ID prefix: prefix value for the link ID. You can enter any alphanumeric value.
- Starting value: suffix increment starting value for the link ID.

This value is incremented each time a new file is saved provided the **Auto Increment** option is selected.



IMPORTANT

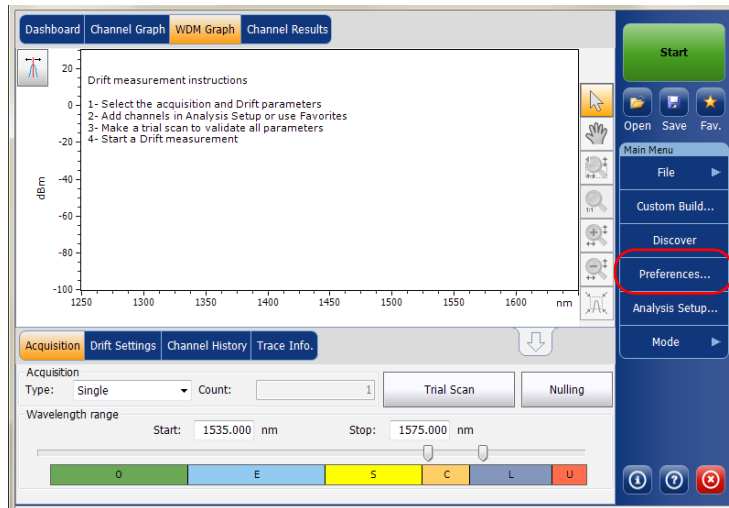
If the Auto Increment option is not selected, you have to manually change the file name when saving the trace file, otherwise the application will overwrite the previously saved file.

- Orientation: orientation of the link.
 - System: information about the system under test.
4. Under **Location Information**, define the following parameters as needed:
 - Network element: Sets the type of network element.
 - Test point: Sets the location where the test is performed on the link.
 - Description: Enter the description of location if required.
 5. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

To enter comments:

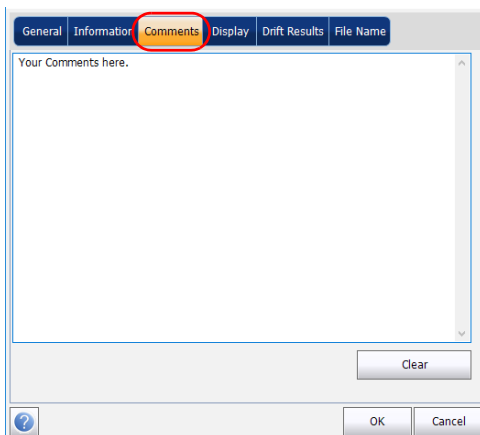
1. From the **Main Menu**, press **Preferences**.



Setting Up the Instrument in Drift Mode

Defining Preferences

2. Select the **Comments** tab.



3. Enter your comments for the current trace.
4. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

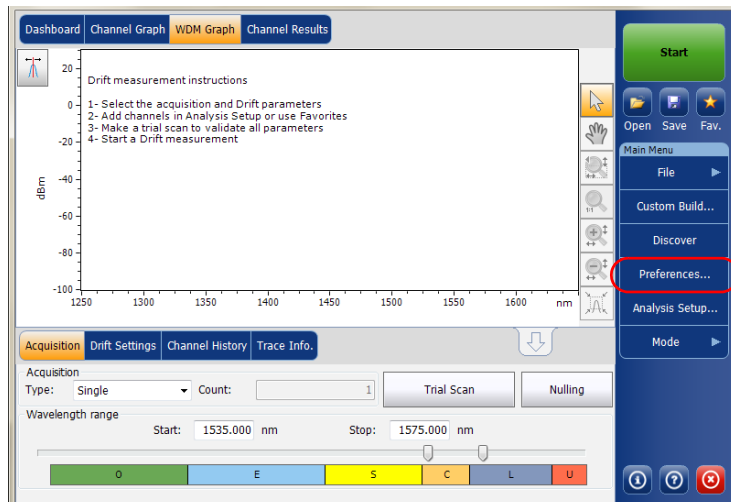
Press **Clear** to clear all the changes made in the **Comments** tab.

Defining Display Parameters

The application allows you to set display settings for the acquisition trace. You can set the spectral unit for the trace and the results table. You can also select the label that should appear on the peaks of the trace.

To define display parameters:

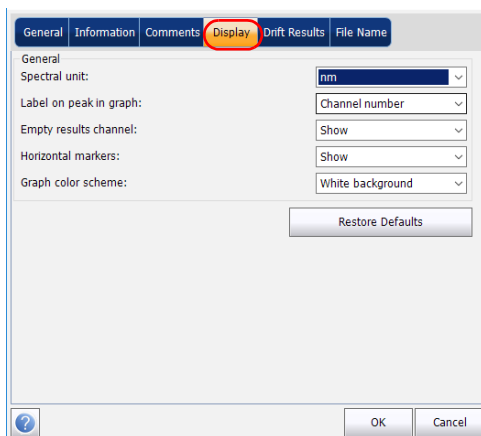
1. From the **Main Menu**, press **Preferences**.



Setting Up the Instrument in Drift Mode

Defining Preferences

2. Select the **Display** tab.

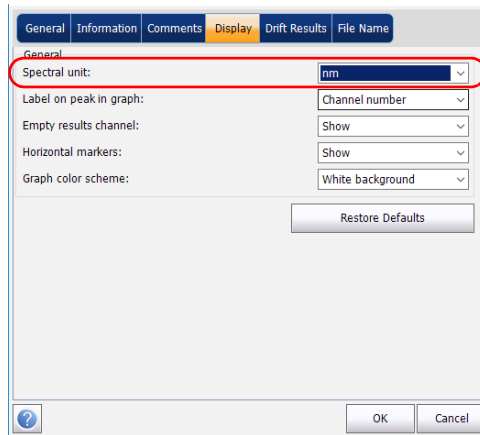


The screenshot shows a software window with a tabbed interface. The tabs are 'General', 'Information', 'Comments', 'Display', 'Drift Results', and 'File Name'. The 'Display' tab is selected and highlighted with a red circle. The 'Display' tab contains the following settings:

- Spectral unit:** A dropdown menu with 'nm' selected.
- Label on peak in graph:** A dropdown menu with 'Channel number' selected.
- Empty results channel:** A dropdown menu with 'Show' selected.
- Horizontal markers:** A dropdown menu with 'Show' selected.
- Graph color scheme:** A dropdown menu with 'White background' selected.

Below these settings is a 'Restore Defaults' button. At the bottom of the window are 'OK' and 'Cancel' buttons, and a help icon (question mark in a circle) is located in the bottom left corner.

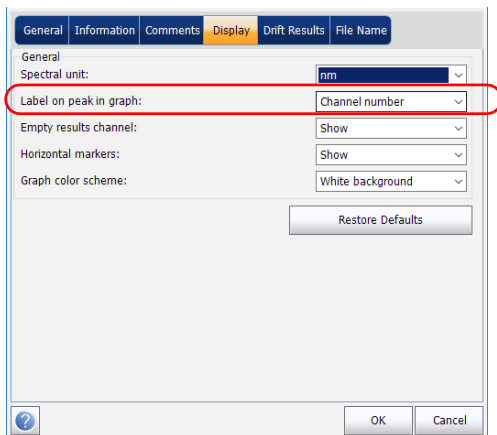
3. Select the spectral unit you want to work with, either nm or THz.



Setting Up the Instrument in Drift Mode

Defining Preferences

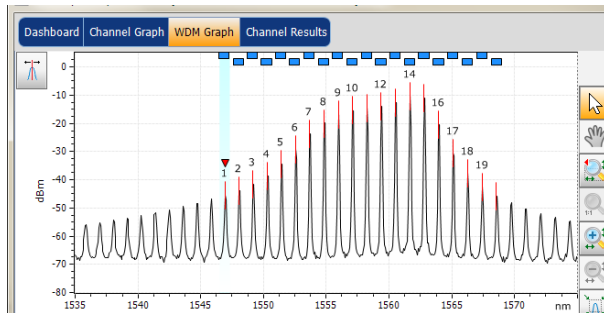
4. Select the label that will appear on the peaks in the graph, either the channel name, its number, or nothing.



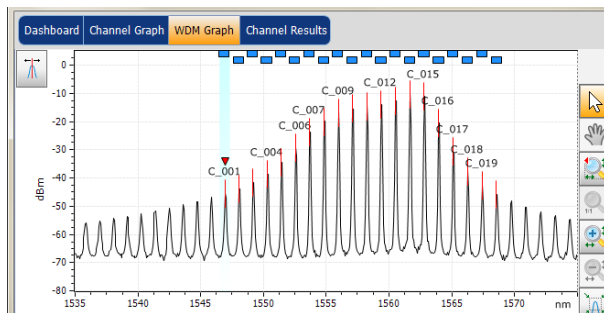
Setting Up the Instrument in Drift Mode

Defining Preferences

Note: The channel name and channel number cannot be shown at the same time.



Channel numbers

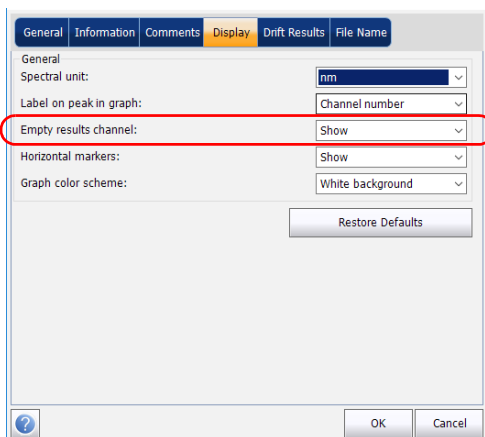


Defined channel names

Setting Up the Instrument in Drift Mode

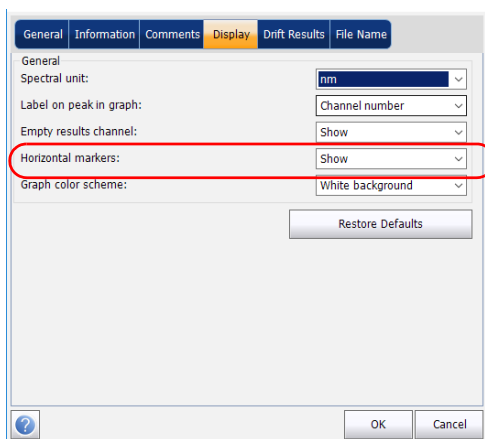
Defining Preferences

5. Select whether you want to show or hide the empty channels from the channel list in the **Dashboard**, **Channel Graph**, **Channel Results** and **Channel History** tabs.



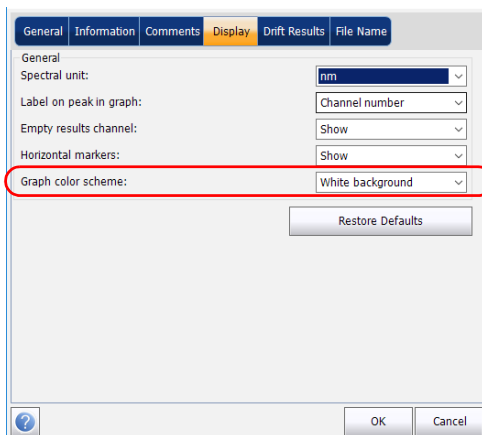
The screenshot shows the 'Display' tab of a preference window. The 'Empty results channel' dropdown menu is highlighted with a red circle and is set to 'Show'. Other settings include 'Spectral unit' set to 'nm', 'Label on peak in graph' set to 'Channel number', 'Horizontal markers' set to 'Show', and 'Graph color scheme' set to 'White background'. A 'Restore Defaults' button is located below the settings. The window has 'OK' and 'Cancel' buttons at the bottom right.

6. Select if you want to show the horizontal markers or not.



The screenshot shows the 'Display' tab of a preference window. The 'Horizontal markers' dropdown menu is highlighted with a red circle and is set to 'Show'. Other settings include 'Spectral unit' set to 'nm', 'Label on peak in graph' set to 'Channel number', 'Empty results channel' set to 'Show', and 'Graph color scheme' set to 'White background'. A 'Restore Defaults' button is located below the settings. The window has 'OK' and 'Cancel' buttons at the bottom right.

7. Select the background color scheme for the graph as desired.



8. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

Setting Up the Instrument in Drift Mode

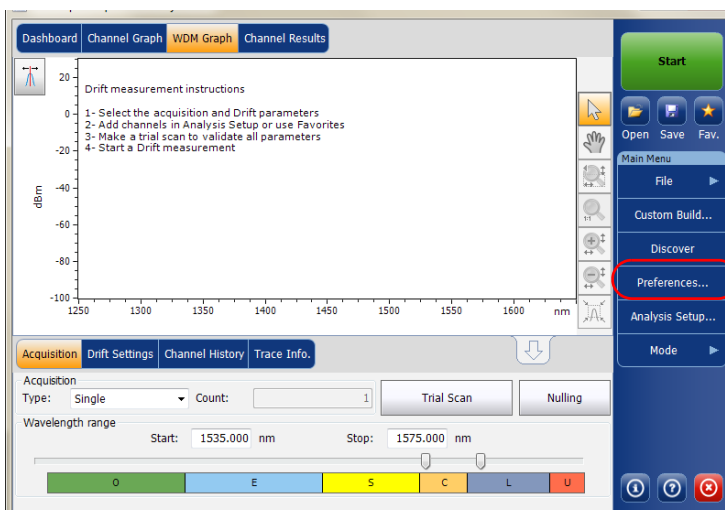
Defining Preferences

Customizing Drift Results Table

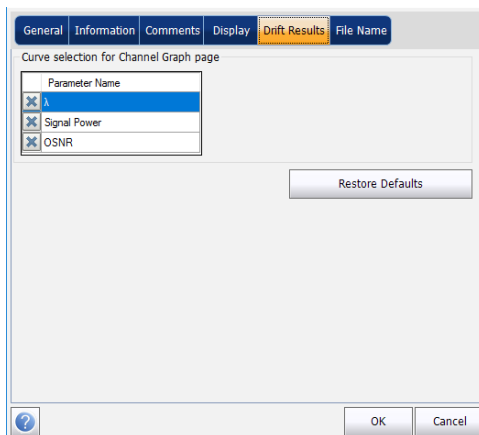
It is possible to select which results you would like to be displayed in the **Results** tab of your Drift tests.

To customize the results table:

1. From the **Main Menu**, press **Preferences**.



2. Select the **Drift Results** tab.



3. Select which parameters you want to display in the **Channel Graph** tab from the list of available choices:
 - Center wavelength/frequency: spectral center-of-mass for the peak in that channel.
 - Signal Power: signal power for the selected channel (excludes noise).
 - OSNR: Optical Signal to Noise Ratio, given by Signal power (according to the current calculation method, in dBm) minus Noise (according to the current calculation method, in dBm).
4. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

Setting Up the Instrument in Drift Mode

Setting Up Drift Analysis Parameters

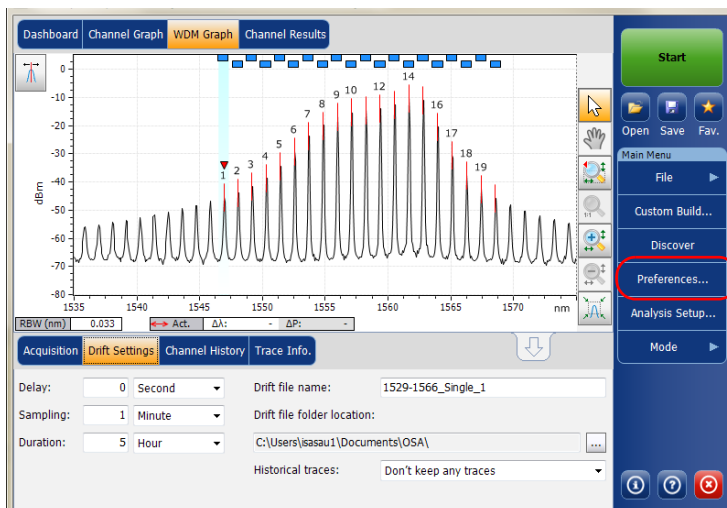
This section presents the various analysis settings for the application, particularly the channel list and settings. These settings are applied on subsequent acquisitions. You can set the channel list, global thresholds, default channel thresholds, channel parameters, manage favorite configurations and perform user calibration.

Note: *The analysis setup parameters will be applied to the global results and channel results, upon the next acquisition.*

You can either set each parameter individually, or use parameters from the current trace and import them.

To import the parameters from the current trace:

1. Make sure that you have a trace on-screen.
2. From the **Main Menu**, press **Analysis Setup**.



Setting Up the Instrument in Drift Mode

Setting Up Drift Analysis Parameters

3. From any tab, press **Import from Trace**.

The screenshot shows a software window with a tabbed interface. The 'General' tab is selected and highlighted with a red circle. The window contains the following settings:

- Default channel settings:**
 - ☒ Activate default channel
 - Channel width: 100.0 GHz
 - Signal power calculation: Integrated signal power
 - Noise for OSNR: Fixed range IEC based
 - OSNR distance: 50.0 GHz
 - Noise region: 5.0 GHz
- Global analysis parameters:**
 - Peak detection level: -47.71 dBm
 - RBW for OSNR: 0.100 nm
 - Wavelength offset: 0.000 nm
 - Power offset: 0.00 dB ≈100.0% (with an 'Edit % ...' button)
 - Bandwidth at: 20.00 dB

At the bottom of the window, there is a 'Restore Defaults' button and three buttons: a help button (question mark icon), an 'Import from Trace' button (highlighted with a red circle), and 'OK' and 'Cancel' buttons.

4. Press **OK** to confirm the changes.

Setting Up the Instrument in Drift Mode

Setting Up Drift Analysis Parameters

Defining General Settings

The general analysis parameters for drift acquisitions affect the calculation of the results. These calculations take place after an acquisition. If these settings are modified, they will be applied to the next acquisition.

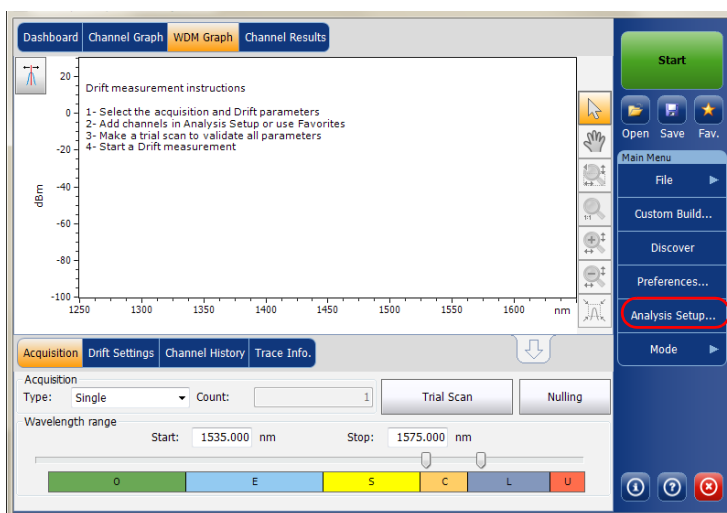


IMPORTANT

In the General tab, you can set the default channel parameters. Any channel found during an acquisition that is not defined in the channel list will be analyzed according to the default channel settings.

To define general settings:

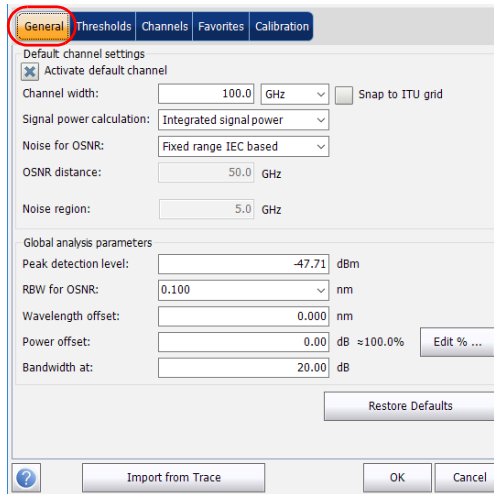
1. From the Main Menu, press Analysis Setup.



Setting Up the Instrument in Drift Mode

Setting Up Drift Analysis Parameters

2. Select the **General** tab.



The screenshot shows a software window with five tabs: General, Thresholds, Channels, Favorites, and Calibration. The 'General' tab is selected and highlighted with a red circle. The window is divided into two main sections: 'Default channel settings' and 'Global analysis parameters'.

Default channel settings:

- ☒ Activate default channel
- Channel width: 100.0 GHz ☐ Snap to ITU grid
- Signal power calculation: Integrated signal power
- Noise for OSNR: Fixed range IEC based
- OSNR distance: 50.0 GHz
- Noise region: 5.0 GHz

Global analysis parameters:

- Peak detection level: -47.71 dBm
- RBW for OSNR: 0.100 nm
- Wavelength offset: 0.000 nm
- Power offset: 0.00 dB $\approx 100.0\%$
- Bandwidth at: 20.00 dB

At the bottom right of the 'Global analysis parameters' section is a button labeled 'Restore Defaults'.

At the bottom of the window are four buttons: a help icon (?), 'Import from Trace', 'OK', and 'Cancel'.

Setting Up the Instrument in Drift Mode

Setting Up Drift Analysis Parameters

3. Under **Default channel settings**, define the following parameters as needed:

The screenshot shows the 'Default channel settings' dialog box with the following parameters:

- Default channel settings:**
 - ☒ Activate default channel
 - Channel width: 100.0 GHz
 - Signal power calculation: Integrated signal power
 - Noise for OSNR: Fixed range IEC based
 - OSNR distance: 50.0 GHz
 - Noise region: 5.0 GHz
- Global analysis parameters:**
 - Peak detection level: -47.71 dBm
 - RBW for OSNR: 0.100 nm
 - Wavelength offset: 0.000 nm
 - Power offset: 0.00 dB
 - Bandwidth at: 20.00 dB

- Clear the **Activate default channel** selection, to use the currently defined channel for analysis. This reduces the analysis time by eliminating the peak detection over the complete spectral range. The peaks outside the defined channel list will not be analyzed.
- Channel width (GHz or nm): indicates the limit inside which the power values will be considered in the channel.

For default channels, the channel width that sets the limits of the channel, should be the same as the channel distance or smaller (channel distance is defined while creating a channel list). If the channel width is not compatible with the channel spacing, either a single peak may be found for two distinct channels and two analysis would be performed and displayed for that peak, or, it is possible that two peaks may be found within the same channel and be considered as one multi-peak signal. With this result, you can use markers to find the spacing between adjacent channels or to find the channel width.

- **Snap to ITU Grid:** When selected, each detected peak will be defined by the nearest ITU channel. The ITU grid is based on the selected channel width.
- **Signal power calculation:** indicates which calculation method to apply for signal power value.

Integrated signal power: The integrated signal power represents the sum of the power values included between the channel limits of this channel, minus the estimated noise contribution between the same boundaries. In some cases, for instance CATV signals, signals with high-frequency modulation, or signals with an inherent line width similar or larger than the OSA's resolution bandwidth, this calculation becomes a better estimation of the true signal power.

Peak signal power: The peak signal power represents the maximum power value inside the channel. Note that it differs a little from the peak measurement on the spectrum due to the fact that the estimated noise is subtracted to get the peak signal power.

Total channel power: The total channel power represents the sum of the integrated signal power and of the noise within the channel.

Setting Up the Instrument in Drift Mode

Setting Up Drift Analysis Parameters

- Noise for OSNR: indicates which calculation method to use for OSNR value.

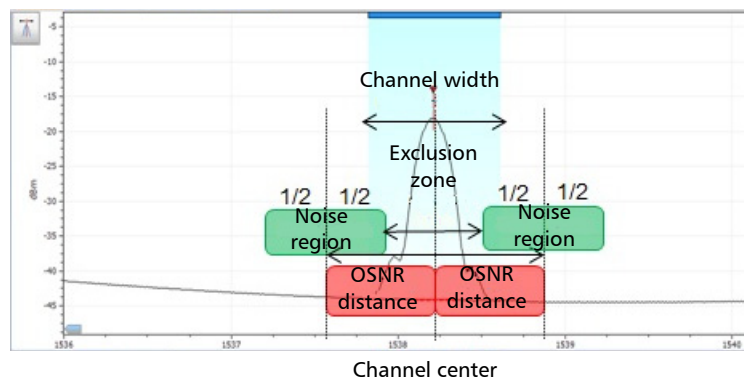
Fixed range IEC based (IEC): The IEC method uses the interpolation of noise measured on both sides of the signal to estimate the noise level. The position at which the noise is estimated from the center wavelength is given by the OSNR distance.

InBand (InB): The InBand method uses a series of scans having different polarization states to calculate the noise level under the peak (InBand).

InBand narrow filter (InB nf): The InBand narrow filter method uses additional processing to provide an accurate OSNR value for the narrow carved noise. This is because with narrow filters, the noise level under the peak is not uniform and the OSNR value depends on the processing width selected.

Fifth order polynomial fit (Fit): The fifth order polyfit method calculates the noise curve and thus the signal to noise ratio. The OSA will approximate the noise curve using a fifth order polynomial fit. This fit definition relies on fit and exclusion zones. Only the points in the fit zones are used to calculate the fifth order polynomial fit. If you select the fifth order polyfit method, you will have to define the fit and exclusion zones for your tests using the OSNR distance and noise region fields. The exclusion zone is indirectly obtained from the OSNR distance.

Gaussian filter: Calculates the noise curve and thus the signal to noise ratio. The OSA will approximate the noise curve using a Gaussian filter. This filter definition relies on fit and exclusion zones. Only the points in the fit zones are used to calculate the Gaussian filter. If you select this filter, you have to define the fit and exclusion zones for your tests using the OSNR distance and noise region fields. The exclusion zone is indirectly obtained from the OSNR distance.



- **OSNR distance (GHz or nm):** Except for the fifth order polyfit selection, the OSNR distance is automatically set at the channel edge, that is, at half of the channel width from the center wavelength.

For the fifth order polyfit, the OSNR distance corresponds to the distance from the channel peak to the center of the fit zone. It is independent of the channel width.

- **Noise region:** The noise region, or fit zone, defines the region where the polynomial fit applies. Two identical regions are centered at the OSNR distance.

Setting Up the Instrument in Drift Mode

Setting Up Drift Analysis Parameters

4. Under **Global analysis parameters**, define the following parameters as needed:

The screenshot shows the 'General' tab of the instrument's configuration window. The 'Global analysis parameters' section is highlighted with a red rectangle. This section includes the following parameters:

- Peak detection level: -47.71 dBm
- RBW for OSNR: 0.100 nm
- Wavelength offset: 0.000 nm
- Power offset: 0.00 dB
- Bandwidth at: 20.00 dB

Other visible settings include:

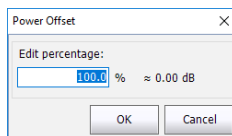
- Channel width: 100.0 GHz
- Signal power calculation: Integrated signal power
- Noise for OSNR: Fixed range IEC based
- OSNR distance: 50.0 GHz
- Noise region: 5.0 GHz

The window also features a 'Restore Defaults' button and 'OK' and 'Cancel' buttons at the bottom.

- Peak detection level (dBm): indicates the minimum power level from where the peak can be considered as a signal.
- RBW for OSNR (nm): indicates the resolution bandwidth selected for the OSNR calculation. This parameter is generally set to 0.1 nm to allow for a common basis of comparison between different OSAs having different effective resolutions. The instrument's RBW value is written below the graph. This parameter does not actually have an effect on the acquisition, but is only a normalization factor used to provide the OSNR value in a standardized manner.

- Wavelength offset (nm): indicates the offset value applied on the wavelength. This does not replace a calibration performed at EXFO, but it can help you temporarily sharpen the specifications if you have determined that, for example, your modules are used beyond the normal allowed use. Entering a value in THz is not possible. When an offset is applied, it is indicated at the bottom of the graph ($\lambda \leftrightarrow$).
- Power offset (dB): indicates the offset value applied on the power. This does not replace a calibration performed at EXFO, but it can help you achieve the specifications if you have determined that, for example, your modules are used beyond the normal allowed use. When an offset is applied, it is indicated at the bottom of the graph (P $\leftrightarrow$).

To edit the power offset as a tap percentage, press the **Edit %** button.



The percentage value entered in **Edit percentage** will be converted to a corresponding equivalent value in dB.

- Bandwidth at (dB): Set the power level used, relative to the channel peak power, to compute the bandwidth.
5. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

Setting Up the Instrument in Drift Mode

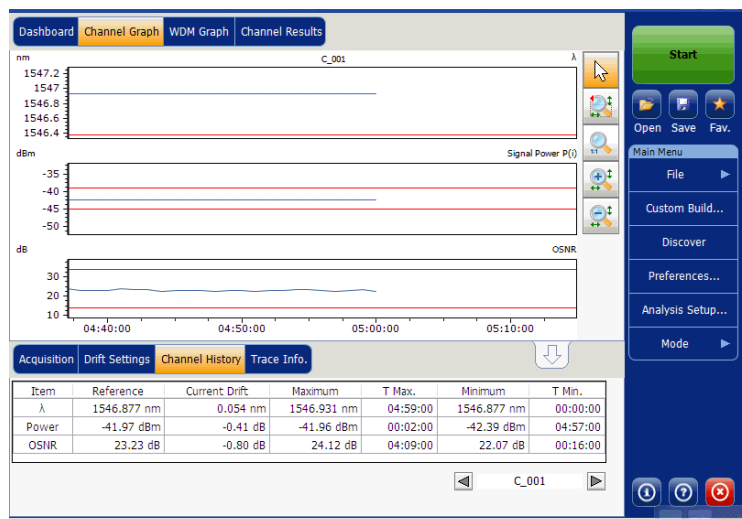
Setting Up Drift Analysis Parameters

Defining Default Channel Thresholds

The thresholds will be applied to any channel found outside the channel list during the next acquisition. Thresholds will be applied to the channel results during the next acquisition.

The application allows you to activate and deactivate the threshold functionality with a single control. When thresholds are globally enabled, the results are displayed with the Pass/Fail status based on various settings.

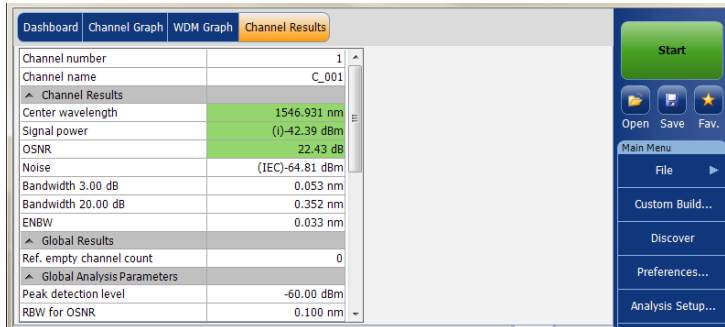
When thresholds are globally disabled, results are displayed without a Pass/Fail status in the **Channel Graph** and **Channel History** tabs.



Setting Up the Instrument in Drift Mode

Setting Up Drift Analysis Parameters

When thresholds are globally disabled, the results in the **Channel Results** tab are also displayed without a Pass/Fail status.



Setting Up the Instrument in Drift Mode

Setting Up Drift Analysis Parameters

You can set your pass/fail threshold limits in different ways depending on the type of test you are performing.

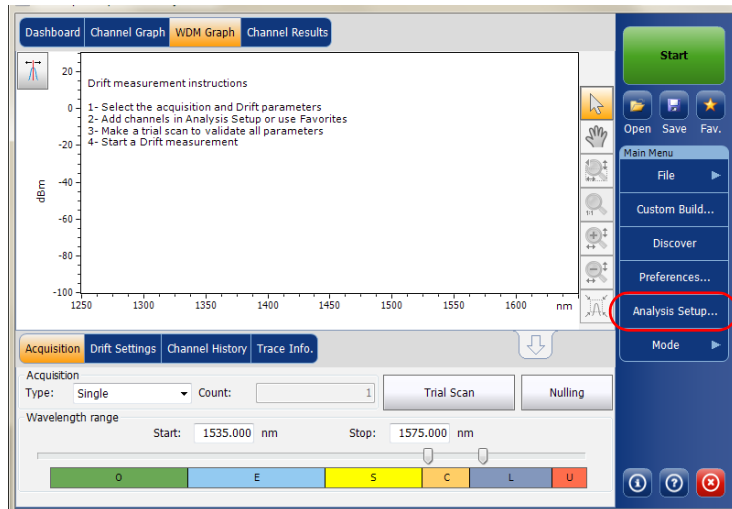
Threshold Limit	Definition
None	No threshold limit is set. The results will be displayed without a Pass/Fail verdict.
Min only	The threshold limit is set for a minimum value only. The Pass/Fail verdict is declared as Pass (in green), when the value is equal to or greater than the minimum threshold set. The verdict is declared as Fail (in red), when the value is below the minimum threshold set.
Max only	The threshold limit is set for a maximum value only. The Pass/Fail verdict is declared as Pass (in green), when the value is equal to or less than the maximum threshold set. The verdict is declared as Fail (in red), when the value is above the maximum threshold set.
Min and Max	The threshold limit is set for the minimum and maximum value. The Pass/Fail verdict is declared as Pass (in green), when the value is equal to or within the minimum and maximum thresholds set. The Pass/Fail verdict is declared as Fail (in red), when the value is beyond the minimum or maximum thresholds set.
Max. Deviation	The threshold limit is set for the deviation value. The Pass/Fail verdict is declared as Pass (in green), when the value is equal to or within the deviation threshold set. The Pass/Fail verdict is declared as Fail (in red), when the value is beyond deviation threshold set.

Setting Up the Instrument in Drift Mode

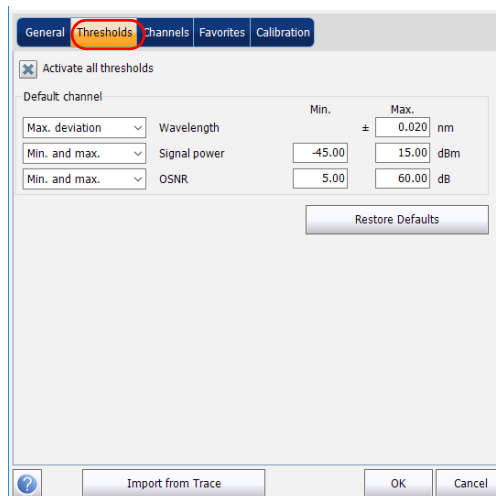
Setting Up Drift Analysis Parameters

To define the default channel thresholds:

1. From the **Main Menu**, press **Analysis Setup**.



2. Select the **Thresholds** tab.



Setting Up the Instrument in Drift Mode

Setting Up Drift Analysis Parameters

3. Select the **Activate all thresholds** option to manually set the channel threshold values. If this option is not selected, all the thresholds will be deactivated, results are displayed without a Pass/Fail status in the **Channel Graph**, **Channel History** and **Channel Results** tabs.

The screenshot shows the 'Thresholds' tab of a configuration window. At the top, there are tabs for 'General', 'Thresholds', 'Channels', 'Favorites', and 'Calibration'. The 'Thresholds' tab is active. Below the tabs, there is a checkbox labeled 'Activate all thresholds' which is checked and highlighted with a red circle. Underneath this checkbox is a section titled 'Default channel'. This section contains three rows of settings, each with a dropdown menu on the left and input fields on the right. The first row is 'Max. deviation' for 'Wavelength', with a value of '0.020' and unit 'nm'. The second row is 'Min. and max.' for 'Signal power', with a minimum value of '-45.00' and a maximum value of '15.00', both in 'dBm'. The third row is 'Min. and max.' for 'OSNR', with a minimum value of '5.00' and a maximum value of '60.00', both in 'dB'. Below these settings is a button labeled 'Restore Defaults'. At the bottom of the window, there are three buttons: a help button (question mark icon), 'Import from Trace', 'OK', and 'Cancel'.

4. Enter values in the boxes as explained below:
 - Wavelength/Frequency (nm/GHz): central wavelength/frequency of the channel.
 - Signal power (dBm): signal power for the selected channel (excludes noise).
 - OSNR (dB): Optical Signal to Noise Ratio, given by Signal power (according to the current calculation method, in dBm) minus Noise (according to the current calculation method, in dBm).
5. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

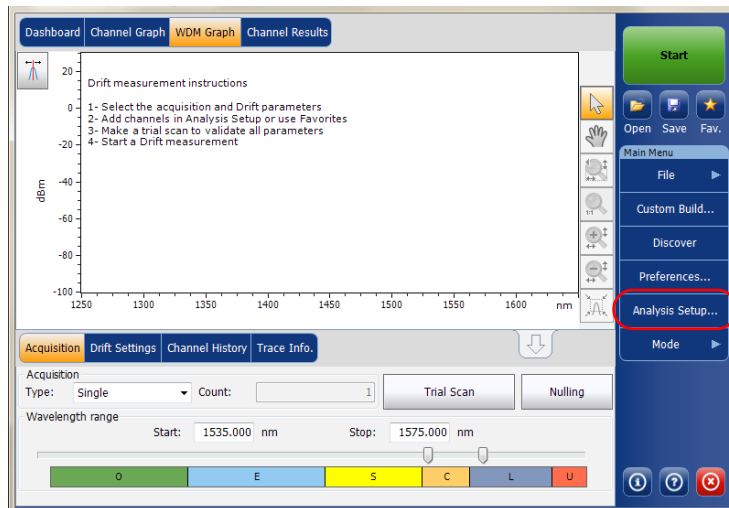
Managing Channels

Testing DWDM systems involves characterizing multiple signals in a link. The application allows you to define channels using a channel editor or quickly generate them from the current data. You can also rapidly create a list of equally spaced channels. Once a channel list is created, you can modify it as needed. You can edit the analysis parameters for one channel or multiple channels.

While creating the channel list, some channels may overlap. When the channel widths are specified in nm, two channels are considered to be overlapping when more than 1.2 GHz (approximately) of frequency range is common between the two channels.

To add a channel list:

1. From the **Main Menu**, press **Analysis Setup**.



Setting Up the Instrument in Drift Mode

Setting Up Drift Analysis Parameters

- 2. Select the **Channels** tab.
- 3. By default, the channel list is empty. Press **Add Channels**.

GeneralThresholdsChannelsFavoritesCalibration

	Name	λ (nm)	Channel Width	Signal Power	Noise for OSNR	Signal Power Min.
☒	C_001	1545.322	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_002	1546.917	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_003	1548.515	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_004	1549.315	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_005	1550.918	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_006	1552.524	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_007	1554.134	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_008	1554.940	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_009	1556.555	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_010	1558.173	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_011	1558.983	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_012	1560.606	100.0 GHz	Integrated signal power	Fixed range IEC based	

<

>

Select All

Unselect All

Delete

Edit Selection...

Add Channels...

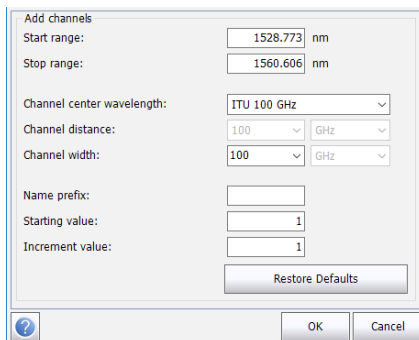
?

Import from Trace

OK

Cancel

4. Enter values in the boxes as explained below:



The screenshot shows a dialog box titled "Add channels". It contains the following fields and controls:

- Start range: 1528.773 nm
- Stop range: 1560.606 nm
- Channel center wavelength: ITU 100 GHz (dropdown)
- Channel distance: 100 GHz (dropdown)
- Channel width: 100 GHz (dropdown)
- Name prefix: (empty text box)
- Starting value: 1
- Increment value: 1
- Restore Defaults button
- OK and Cancel buttons at the bottom right.

- Start range (nm or THz): starting range of the channel list.
- Stop range (nm or THz): ending range of the channel list.
- Channel center wavelength/frequency: spectral center-of-mass for the peak in that channel.

Note: When using the custom channel center wavelength option, the first channel will be centered at the Start Range, and the list will be created using channel distance and channel width.

Setting Up the Instrument in Drift Mode

Setting Up Drift Analysis Parameters

- Channel distance (nm or GHz): distance between the channels. The value of channel distance will be set depending on the selection made for the channel center wavelength option. The channel distance box will be enabled only when the channel center wavelength option is set to custom.
 - Channel width (nm or GHz): limit inside which the power values will be considered in the channel. Integrated power is calculated on channel width.
 - Name prefix: adds prefix to the channel names.
 - Starting Value: increment starting value for the channel name in the channel list.
 - Increment value: increment value for the channel name in the channel list.
5. Press **OK** to return to the **Channels** window, which now lists the added channels.

Note: *When new channels are added, the Use Default thresholds will be applied to the channel parameters.*

Note: *A warning message will be displayed if any channels are overlapping, but the analysis can still be performed on overlapping channels. If any duplicate channels are added, a confirmation message will be displayed to overwrite the existing channels with the duplicate channels.*

6. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

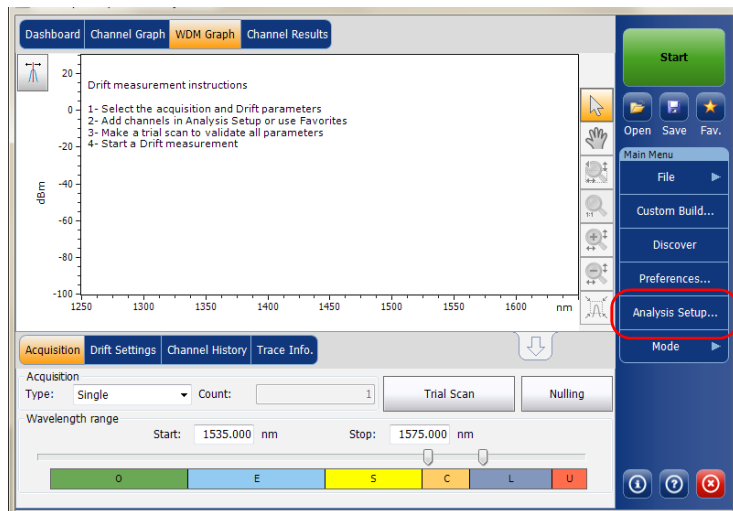
Note: *The application displays a message if more than 1000 channels are added. You can exit the **Analysis Setup** window only after deleting the extra channels from the channel list. You can delete the channels manually as required.*

Setting Up the Instrument in Drift Mode

Setting Up Drift Analysis Parameters

To edit the parameters of a specific channel:

1. From the **Main Menu**, press **Analysis Setup**.



Setting Up the Instrument in Drift Mode

Setting Up Drift Analysis Parameters

2. Select the Channels tab.

GeneralThresholdChannelsFavoritesCalibration

	Name	λ (nm)	Channel Width	Signal Power	Noise for OSNR	Signal Power Min.
☒	C_001	1545.322	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_002	1546.917	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_003	1548.515	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_004	1549.315	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_005	1550.918	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_006	1552.524	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_007	1554.134	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_008	1554.940	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_009	1556.555	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_010	1558.173	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_011	1558.983	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_012	1560.606	100.0 GHz	Integrated signal power	Fixed range IEC based	

<

>

Select All

Unselect All

Delete

Edit Selection...

Add Channels...

?

Import from Trace

OK

Cancel

Setting Up the Instrument in Drift Mode

Setting Up Drift Analysis Parameters

3. Select the channel or channels to be modified in the channel list.

If you want the changes to be applied to all of your channels, press **Select All**. Channels can be selected one by one or all together. You can press **Unselect All** to clear all channel selections. To delete the selected channels, press **Delete**.

4. Press **Edit Selection**.

The screenshot shows a software window with a 'Channels' tab selected. The window contains a table with 12 channels, each with a selection checkbox, Name, λ (nm), Channel Width, Signal Power, Noise for OSNR, and Signal Power Min. Below the table are buttons for 'Select All', 'Unselect All', 'Delete', 'Edit Selection...', and 'Add Channels...'. The 'Edit Selection...' button is highlighted with a red circle. At the bottom are buttons for 'Import from Trace', 'OK', and 'Cancel'.

	Name	λ (nm)	Channel Width	Signal Power	Noise for OSNR	Signal Power Min.
☒	C_001	1545.322	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_002	1546.917	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_003	1548.515	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_004	1549.315	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_005	1550.918	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_006	1552.524	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_007	1554.134	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_008	1554.940	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_009	1556.555	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_010	1558.173	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_011	1558.983	100.0 GHz	Integrated signal power	Fixed range IEC based	
☒	C_012	1560.606	100.0 GHz	Integrated signal power	Fixed range IEC based	

Setting Up the Instrument in Drift Mode

Setting Up Drift Analysis Parameters

5. If you want to name the channels, enable the corresponding option. Then enter the name prefix you want to use. If you have selected more than one channel and want the name to be incremented automatically, enter the starting value for the incrementation, then the increment value for each new channel.

The screenshot shows a configuration dialog box for an instrument. A red rectangle highlights the 'Channel name' section at the top. This section includes a checked checkbox labeled 'Channel name', a text field for 'Name prefix' containing 'MyChannel', a 'Starting value' field with '1', and an 'Increment value' field with '1'. To the right of these fields is a 'Restore Defaults' button. Below this section is the 'Analysis' section, which contains settings for 'Channel width' (100.0 GHz), 'Signal power calculation' (Integrated signal power), 'Noise for OSNR' (Fixed range IEC based), 'OSNR distance' (50.0 GHz), and 'Noise region' (5.0 GHz), each with its own 'Restore Defaults' button. The bottom section is titled 'Thresholds' and contains a table of settings for Wavelength, Signal power, and OSNR, with dropdown menus for 'Max. deviation', 'Min. and max.', and 'Min. and max.' for each parameter. At the very bottom of the dialog are 'OK' and 'Cancel' buttons.

		Min.	Max.	
Max. deviation	Wavelength		± 0.020	nm
Min. and max.	Signal power	-45.00	15.00	dBm
Min. and max.	OSNR	5.00	60.00	dB

Setting Up the Instrument in Drift Mode

Setting Up Drift Analysis Parameters

6. Modify the settings as needed. For more information about the settings, see *Managing Channels on page 137*. If you leave a box empty, it will remain as it was before your changes. Modify appropriate settings.

☒ Channel name
Name prefix:
Starting value:
Increment value:

Analysis
Channel width: GHz
Signal power calculation:
Noise for OSNR:
OSNR distance: GHz
Noise region: GHz

Thresholds
Max. deviation Min. Max.
Min. and max. -45.00 15.00 dBm
Min. and max. 5.00 60.00 dB

7. Press **OK** to return to the **Channels** tab, which now contains the modified settings.
8. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Setting Up Acquisition Parameters

Before performing your test, you must set the acquisition type and parameters from the **Acquisition** tab and other parameters from the **Drift Settings** tab.

There are three types of acquisitions in Drift mode: single, averaging and InBand.

- **Single:** Spectral measurement is performed once. The results are displayed according to this measurement.
- **Averaging:** Spectral measurements are performed based on the number of scans that you have entered for this parameter. The trace will be displayed after each acquisition and averaged with the previous traces.
- **InBand:** The InBand type acquisition will perform a series of scans in different polarization conditions in order to enable the InBand OSNR calculation.

Note: *The InBand option is available only if the module supports it.*

Before performing measurements on an optical spectrum, you must select the wavelength/frequency range to use. You can perform the scan on the full range, on spectral bands, or select a custom range.

Note: *The shorter the wavelength or frequency range, the faster the acquisition.*

You can configure the delay, sampling and total duration for a drift measurement. You can also configure the drift files name and select a location where it should be saved.

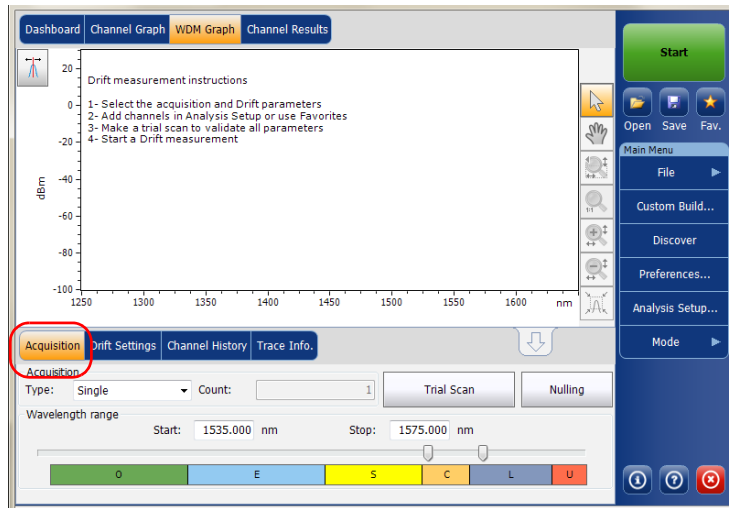
The application allows you to perform a trial scan while setting up the drift measurement.

Setting Up the Instrument in Drift Mode

Setting Up Acquisition Parameters

To set parameters in the Acquisition tab:

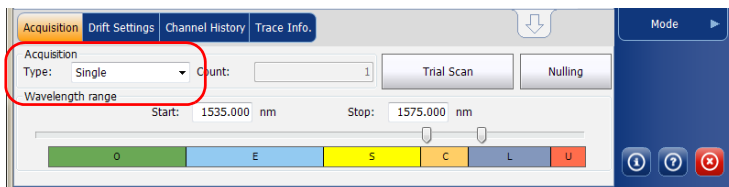
1. From the main window, select the **Acquisition** tab.



Setting Up the Instrument in Drift Mode

Setting Up Acquisition Parameters

2. Select the acquisition type.

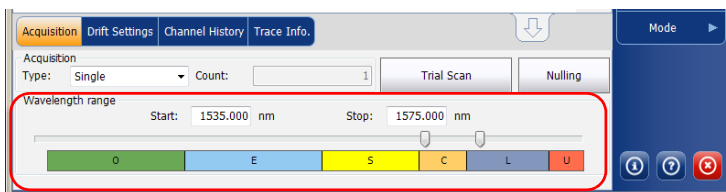


3. If you are performing an averaging type acquisition, enter the number of scans the unit will perform.

If you are performing an InBand type acquisition, either enter the number of scans or select a predefined number of scans the unit will perform.

Note: You cannot modify the number of scans count value if you are performing a single acquisition.

4. Select the wavelength range for your acquisition.



You can select the wavelength range by entering the start and stop values or by selecting a range on the double slider.

To select the wavelength range using the double slider, move the left and right handles on the double slider or simply click on any band.

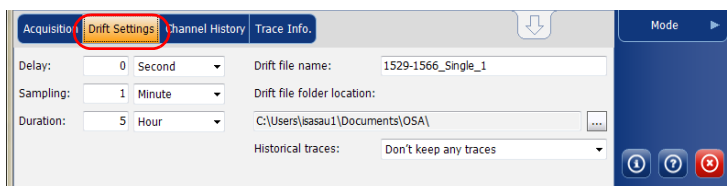
Note: You can select more than one adjoining ranges to include in your range, for example, S + C.

The wavelength range covered within these bands of the spectra are listed below.

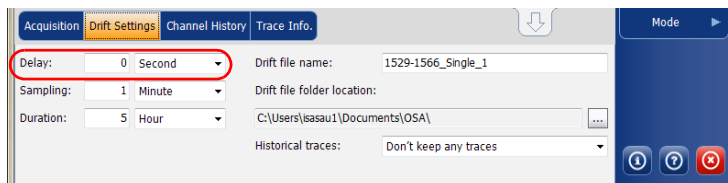
- O band (original): 1255 to 1365 nm
- E band (extended): 1355 to 1465 nm
- S band (short wavelengths): 1455 to 1535 nm
- C band (conventional “erbium window”): 1525 to 1570 nm
- L band (long wavelengths): 1560 to 1630 nm
- U band (ultralong wavelengths): 1620 to 1650 nm.

To set parameters in the Drift Settings tab:

1. From the main window, select the **Drift Settings** tab.



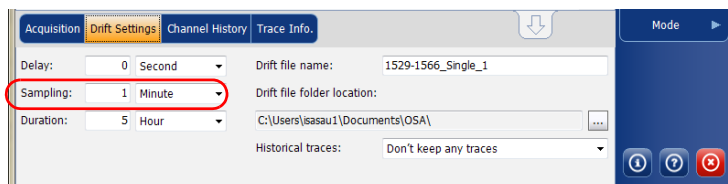
2. Set a delay unit and count before taking the first acquisition in a drift measurement. The application will wait for this time before taking the first acquisition of a drift measurement.



Setting Up the Instrument in Drift Mode

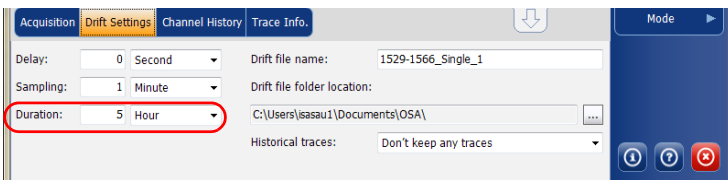
Setting Up Acquisition Parameters

3. Select a sampling unit and enter a sampling count to configure a time that should be elapsed between the start of each acquisition during a drift measurement.



The screenshot shows the 'Drift Settings' tab in a software interface. The 'Sampling' dropdown is highlighted with a red circle, showing '1 Minute'. Other settings include 'Delay: 0 Second' and 'Duration: 5 Hour'. The 'Trace Info' section on the right shows 'Drift file name: 1529-1566_Single_1' and 'Drift file folder location: C:\Users\sasau1\Documents\OSA\'. The 'Historical traces' dropdown is set to 'Don't keep any traces'.

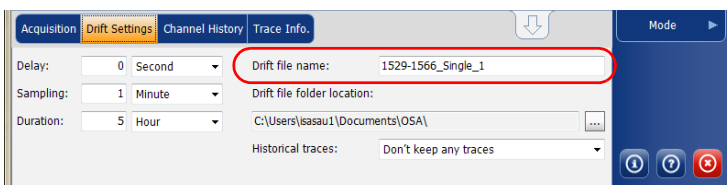
4. Select a duration unit and enter a duration count to configure the total duration of a drift measurement.



The screenshot shows the 'Drift Settings' tab. The 'Duration' dropdown is highlighted with a red circle, showing '5 Hour'. Other settings are the same as in the previous screenshot.

5. Enter a drift file name that should be used to save the drift file.

Note: This is not available in offline mode.

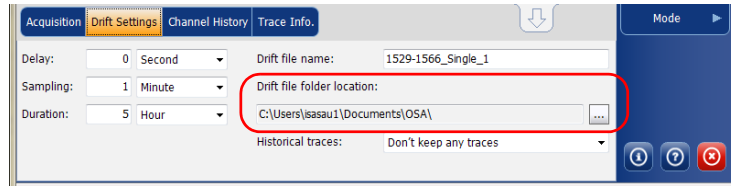


The screenshot shows the 'Drift Settings' tab. The 'Drift file name' text field is highlighted with a red circle, containing the text '1529-1566_Single_1'. Other settings are the same as in the previous screenshots.

Setting Up the Instrument in Drift Mode

Setting Up Acquisition Parameters

6. Select a location where the drift file should be saved.



Acquisition | **Drift Settings** | Channel History | Trace Info.

Delay: 0 Second
Sampling: 1 Minute
Duration: 5 Hour

Drift file name: 1529-1566_Single_1
Drift file folder location: C:\Users\lsasau1\Documents\OSA\
Historical traces: Don't keep any traces

7. Select whether you want to keep all of the historical traces in the subfolder, keep only the significant ones, or keep none. The historical traces are stored in separate *.osawdm files.

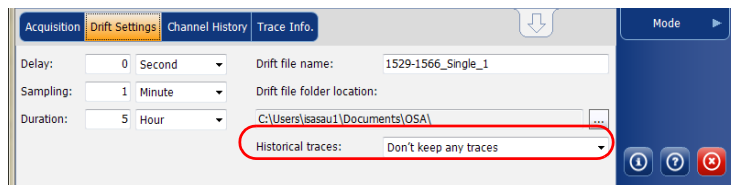
A significant event is when

- a value from a given channel has crossed its threshold (going from pass to fail).
- there is no signal power in a given channel.

These historical files are stored in a dedicated folder having the same name as the associated drift measurement file name.

Note: You can have a maximum of 3 significant traces per channel.

Note: This option is not available in offline mode.



Acquisition | **Drift Settings** | Channel History | Trace Info.

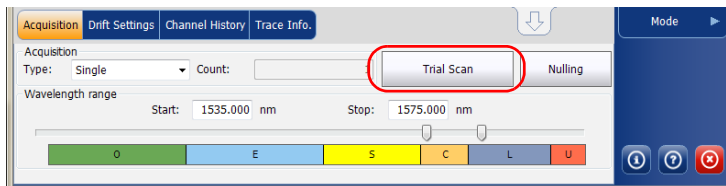
Delay: 0 Second
Sampling: 1 Minute
Duration: 5 Hour

Drift file name: 1529-1566_Single_1
Drift file folder location: C:\Users\lsasau1\Documents\OSA\
Historical traces: Don't keep any traces

Setting Up the Instrument in Drift Mode

Setting Up Acquisition Parameters

8. To test your parameters, return to the **Acquisition** tab. Press **Trial Scan** to perform a trial acquisition.



When a trial acquisition is running, the **Start** button is disabled. You are notified that the acquisition is in progress in the status bar.

The trial scan is performed using the analysis setup parameters. When the acquisition is complete, the resulting acquisition is displayed in the **WDM Graph** tab and **Channel Results** tab. The **Channel History** tab displays results as if only time 0:00 was available. The other drift mode tabs are empty (**Dashboard**, **Channel Graph**).

Building a Custom Drift Measurement

You can build a drift measurement using a WDM measurement you already have as a reference. The selected channels and thresholds can be imported from the analysis setup or the reference measurement.

A custom drift measurement is particularly useful for offline processing of your data over time and comparing result variations.

The WDM measurements you add must meet specific criteria to be included in the custom build. The table below describes those compatibility criteria.

Note: *Files that are not compatible will automatically be rejected from the custom build measurement.*

Criteria	Test	Compatibility Status
Acquisition type	Target WDM measurement acquisition type differs from drift reference trace acquisition type	Compatible with warnings
Acquisition number of scans	Target WDM measurement acquisition number of scans differs from drift reference trace acquisition number of scans.	Compatible with warnings
Spectral range	➤ Target WDM measurement acquisition spectral range only partially overlaps spectral range of drift reference trace. ➤ There is no overlap between target WDM measurement spectral range and drift reference trace spectral range.	➤ Compatible with warnings ➤ Incompatible

Setting Up the Instrument in Drift Mode

Building a Custom Drift Measurement

Criteria	Test	Compatibility Status
Acquisition start time	➤ Target WDM measurement acquisition start time is identical to another WDM measurement (including the drift reference trace) acquisition time. ➤ Target WDM measurement acquisition start time overlaps with another WDM measurement (including the drift reference trace) acquisition time range.	➤ Compatible with warnings ➤ Incompatible
Calibration type (user/factory)	Target WDM measurement instrument's calibration type differs from drift reference trace instrument's calibration type.	Compatible with warnings
Calibration date	Target WDM measurement instrument's calibration date differs from drift reference trace instrument's calibration date	Compatible with warnings
Instrument's model	Target WDM measurement instrument's model differs from drift reference trace instrument's model	Compatible with warnings
Instrument's serial number	Target WDM measurement instrument's serial number differs from drift reference trace instrument's serial number	Compatible with warnings
Instrument's RBW	Target WDM measurement instrument's RBW differs from drift reference trace instrument's RBW	Compatible with warnings

Setting Up the Instrument in Drift Mode

Building a Custom Drift Measurement

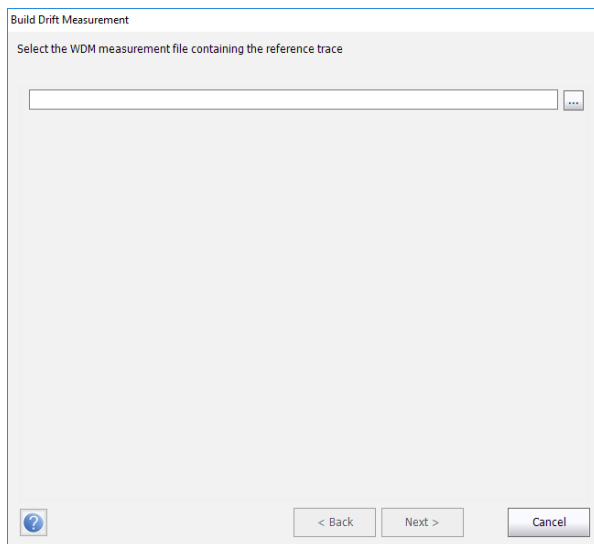
Criteria	Test	Compatibility Status
Power offset	Target WDM measurement power offset differs from drift reference trace power offset	Compatible with warnings
Wavelength offset	Target WDM measurement wavelength offset differs from drift reference trace wavelength offset	Compatible with warnings
Noise measurement	Target WDM measurement acquired trace data does not support configured noise measurement analysis parameter. (This criteria is specific for In-Band noise measurement against IEC acquired data)	Compatible with warnings

Setting Up the Instrument in Drift Mode

Building a Custom Drift Measurement

To build a custom drift measurement:

- 1.** If you have not done so already, select the Drift test mode.
- 2.** From the main window, select **Custom Build**.
- 3.** Select the reference trace you want to use to build the measurement, then click **Next**.



4. Select whether you want to import the analysis setup from the selected reference file, or use the settings currently set in your application, then click **Next**.

The screenshot shows a software window titled "Build Drift Measurement". Inside, the instruction "Select drift measurement analysis setup" is displayed. There are two radio button options: "Import from reference measurement file" (which is selected) and "Use application current analysis setup". Below these options is an information icon (a blue circle with a white 'i') followed by the text "The analysis setup will be editable in the following steps." At the bottom of the window, there are three buttons: a help button (a square with a question mark), a "< Back" button, a "Next >" button, and a "Cancel" button.

Setting Up the Instrument in Drift Mode

Building a Custom Drift Measurement

5. Enter, or review if they were imported, the general details for your measurement. See *Defining General Settings* on page 124 for details on each item.

The screenshot shows the 'Build Drift Measurement' dialog box with the following settings:

Default channel settings	
☒ Activate default channel	
Channel width:	50.0 GHz
Signal power calculation:	Integrated signal power
Noise for OSNR:	Fixed range IEC based
OSNR distance:	25.0 GHz
Noise region:	2.5 GHz

Global analysis parameters	
Peak detection level:	-50.00 dBm
RBW for OSNR:	0.100 nm
Wavelength offset:	0.000 nm
Power offset:	0.00 dB $\approx 100.0\%$
Bandwidth at:	20.00 dB

Buttons: ? < Back Next > Cancel

Restore Defaults

6. Click **Next**.

Setting Up the Instrument in Drift Mode

Building a Custom Drift Measurement

7. If desired, adjust the threshold settings for your measurement. For details on each item, see *Defining Default Channel Thresholds* on page 132. When you are done, click **Next**.

Build Drift Measurement

Adjust analysis setup threshold parameters

☒ Activate all thresholds

Default channel

		Min.	Max.	
Max. deviation	Wavelength		± 0.020	nm
Min. and max.	Signal power	-45.00	15.00	dBm
Min. and max.	OSNR	5.00	60.00	dB

Restore Defaults

? < Back Next > Cancel

Setting Up the Instrument in Drift Mode

Building a Custom Drift Measurement

8. Select which channels are to be included in the drift measurement. For details on each item, see *Managing Channels* on page 137. When you are done, click **Next**.

Build Drift Measurement

Adjust analysis setup channel list parameters

	Name	λ (nm)	Channel Width	Signal Power	Noise for OSNR	Signal Power Min. (dBm)
☒	C_001	1535.810	50.0 GHz	Integrated signal power	InBand	-45.00
☒	C_002	1536.205	50.0 GHz	Integrated signal power	InBand	-45.00
☒	C_003	1536.600	50.0 GHz	Integrated signal power	InBand	-45.00
☒	C_004	1545.315	50.0 GHz	Integrated signal power	InBand	-45.00
☒	C_005	1545.710	50.0 GHz	Integrated signal power	InBand	-45.00
☒	C_006	1546.105	50.0 GHz	Integrated signal power	InBand	-45.00

Select All

Unselect All

Delete

Edit Selection...

Add Channels...

?

< Back

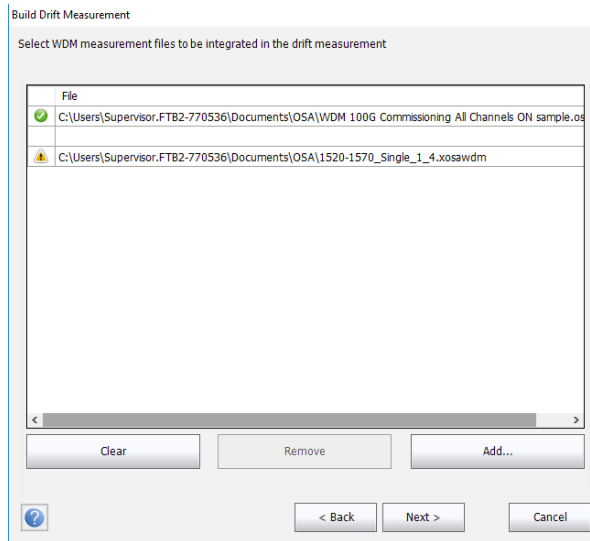
Next >

Cancel

Setting Up the Instrument in Drift Mode

Building a Custom Drift Measurement

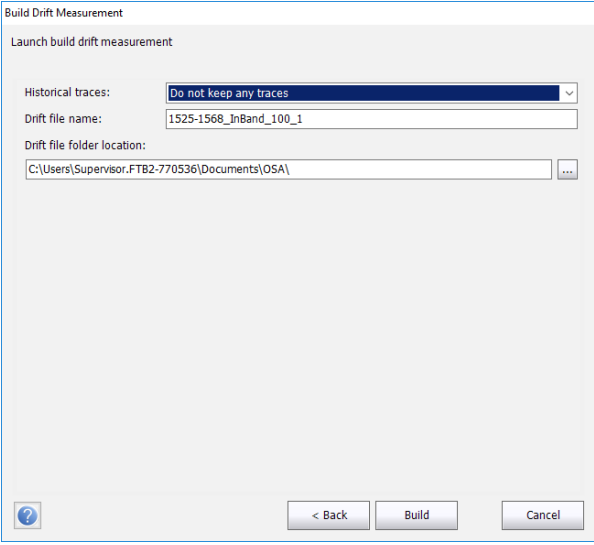
9. Add one or more measurement files at this point, then click **Next**.



Setting Up the Instrument in Drift Mode

Building a Custom Drift Measurement

- 10.** Before starting the measurement process, you can select what to do with the historical traces (keep them all, keep only the significant ones, or keep none), set the drift file name and its location.



The screenshot shows a dialog box titled "Build Drift Measurement". Inside, there is a section labeled "Launch build drift measurement". It contains three input fields: "Historical traces:" with a dropdown menu showing "Do not keep any traces", "Drift file name:" with a text box containing "1525-1568_InBand_100_1", and "Drift file folder location:" with a text box containing "C:\Users\Supervisor.FTB2-770536\Documents\OSA\" and a browse button "...". At the bottom left is a help icon "?", and at the bottom right are three buttons: "< Back", "Build", and "Cancel".

- 11.** Once you are ready, click **Build**.

Once the process is complete, you can navigate through the results of the built drift.

6 ***Setting Up the Instrument in DFB Mode***

Before performing a spectral analysis in the DFB mode, you must set up your OSA module and the test application with the appropriate parameters, as explained in this chapter.

Select the DFB test mode as explained in *Selecting a Test Mode* on page 16 before setting up the DFB test parameters.

- The *preferences* are the result displayed in the graph and tables, as well as the job information and related comments saved with each file.
- The *acquisition parameters* include the type of measurement you want to perform and the wavelength range.

See *Defining Preferences* on page 164 and *Setting Up Acquisition Parameters* on page 176 for more details.

Setting Up the Instrument in DFB Mode

Defining Preferences

Defining Preferences

The preferences window allows you to set general information and comments on trace and set display parameters.

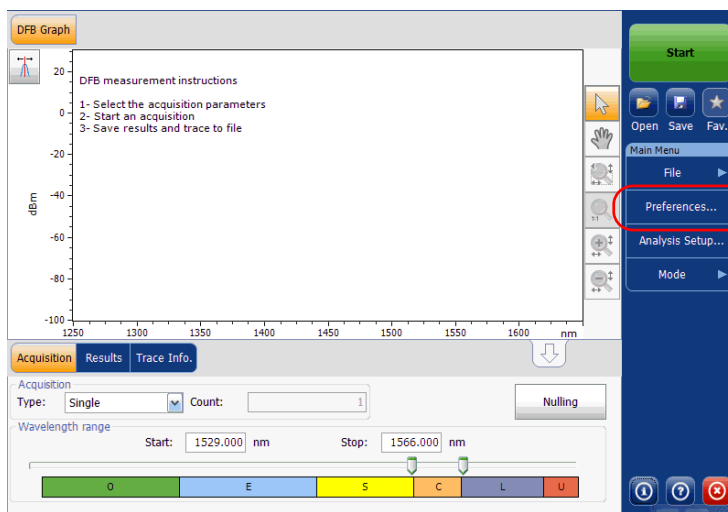
Note: In offline mode, only the **Display** tab is available.

Defining Trace Information

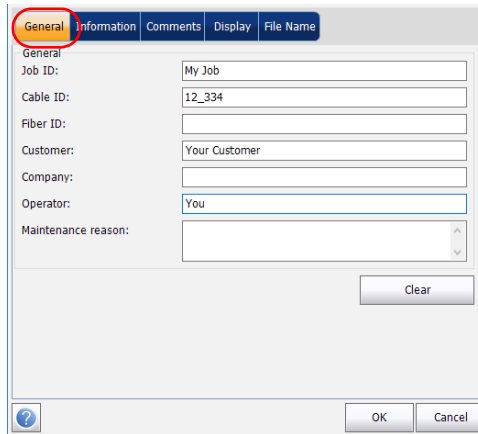
The trace information relates to the description of the job to be done, cable and job IDs, and any relevant information about what is being tested.

To enter general information:

1. From the **Main Menu**, press **Preferences**.



2. Select the **General** tab.



The screenshot shows a software window with five tabs: 'General', 'Information', 'Comments', 'Display', and 'File Name'. The 'General' tab is selected and highlighted with a red circle. Below the tabs, the 'General' section contains several input fields: 'Job ID:' with the value 'My Job', 'Cable ID:' with the value '12_334', 'Fiber ID:' (empty), 'Customer:' with the value 'Your Customer', 'Company:' (empty), 'Operator:' with the value 'You', and 'Maintenance reason:' (empty). A 'Clear' button is located at the bottom right of the input fields. At the bottom of the window, there are three buttons: a help button (question mark icon), 'OK', and 'Cancel'.

3. Define the general parameters as needed.
4. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

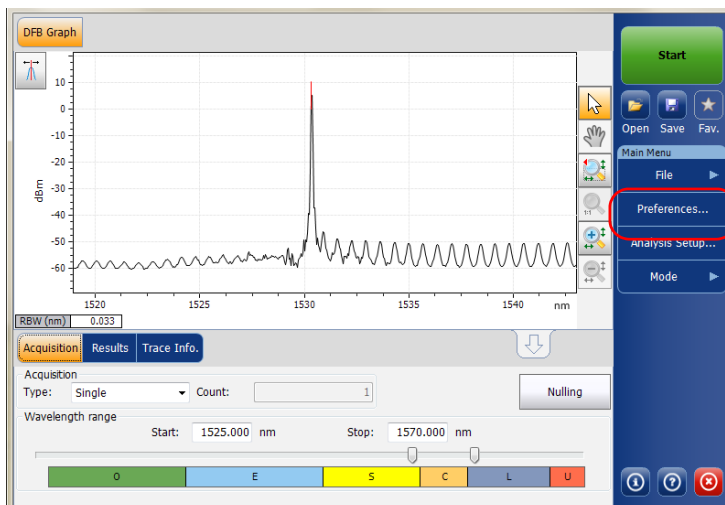
Press **Clear** to clear all the changes made in the **General** tab.

Setting Up the Instrument in DFB Mode

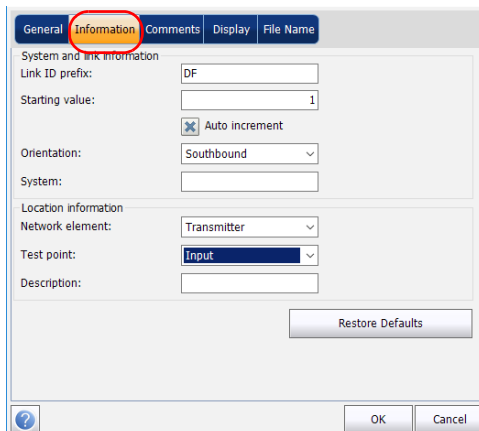
Defining Preferences

To enter link and location information:

1. From the **Main Menu**, press **Preferences**.



2. Select the **Information** tab.



3. Under **System and link information**, define the following parameters as needed:

- Link ID prefix: prefix value for the link ID. You can enter any alphanumeric value.
- Starting value: suffix increment starting value for the link ID.

This value is incremented each time a new file is saved provided the **Auto Increment** option is selected.



IMPORTANT

If the Auto Increment option is not selected, you have to manually change the file name when saving the trace file, otherwise the application will overwrite the previously saved file.

- Orientation: orientation of the link.
 - System: information about the system under test.
4. Under **Location Information**, define the following parameters as needed:
 - Network element: type of network element.
 - Test point: where the test is performed on the link.
 - Description: Enter the description of location if required.
 5. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

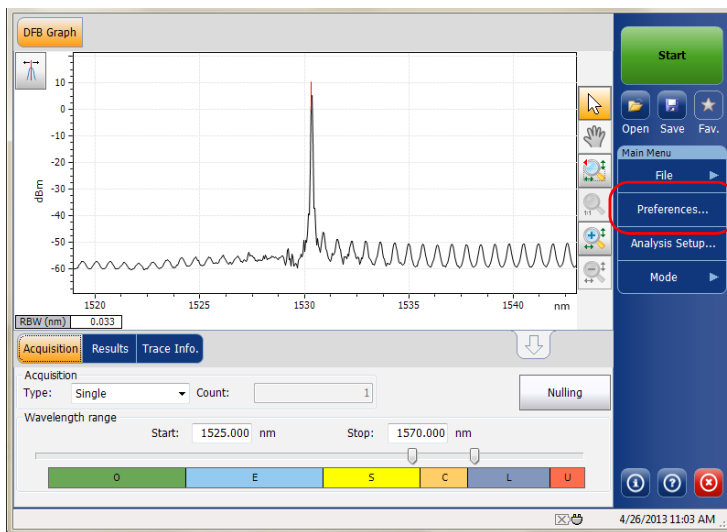
Press **Restore Defaults** to remove all the changes and apply the default values.

Setting Up the Instrument in DFB Mode

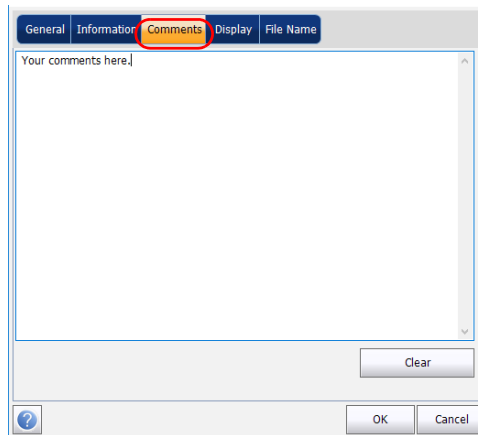
Defining Preferences

To enter comments:

1. From the **Main Menu**, press **Preferences**.



2. Select the **Comments** tab.



3. Enter your comments for the current trace.
4. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Clear** to clear all the changes made in the **Comments** tab.

Setting Up the Instrument in DFB Mode

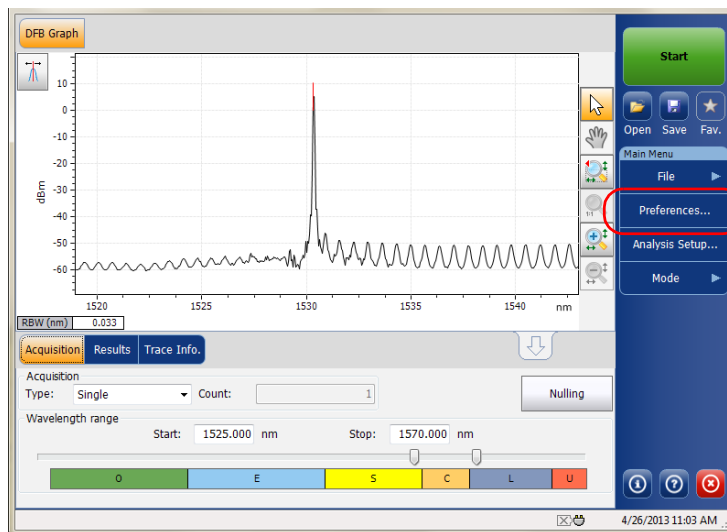
Defining Preferences

Defining Display Parameters

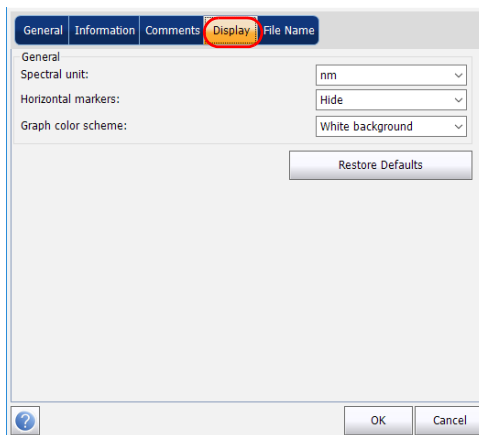
The application allows you to set display settings for the acquisition trace. You can set the spectral unit for the trace and the results table.

To define display parameters:

1. From the **Main Menu**, press **Preferences**.



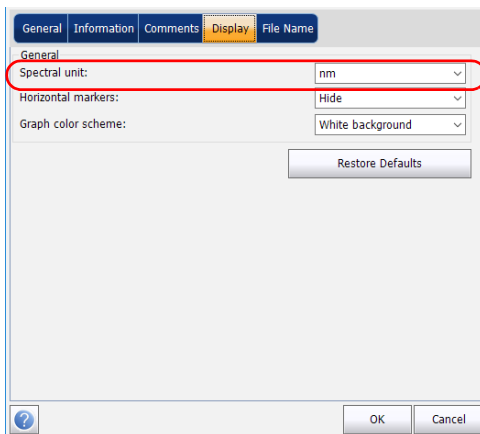
2. Select the **Display** tab.



Setting Up the Instrument in DFB Mode

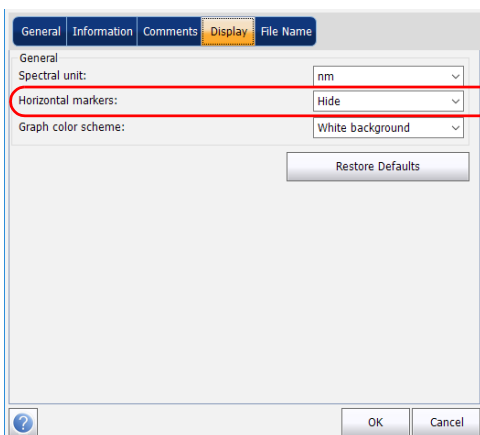
Defining Preferences

3. Select the spectral unit you want to work with, either nm or THz.



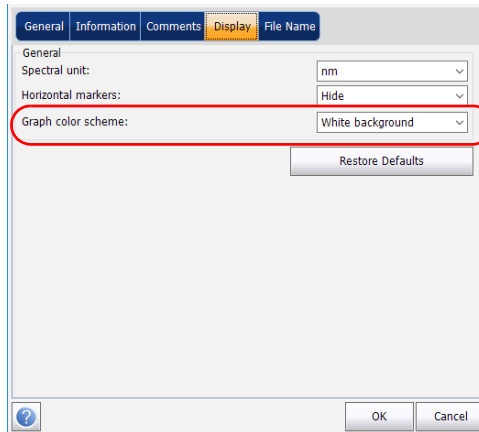
The screenshot shows a dialog box with tabs: General, Information, Comments, Display (selected), and File Name. Under the 'General' section, there are three dropdown menus: 'Spectral unit' (set to 'nm'), 'Horizontal markers' (set to 'Hide'), and 'Graph color scheme' (set to 'White background'). A 'Restore Defaults' button is located below these settings. At the bottom of the dialog are 'OK' and 'Cancel' buttons, and a help icon (?) is in the bottom-left corner.

4. Select if you want to show the horizontal markers or not.



This screenshot is identical to the previous one, showing the same dialog box. In this instance, the 'Horizontal markers' dropdown menu is highlighted with a red circle, and its value is 'Hide'.

5. Select the background color scheme for the graph as desired.



6. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

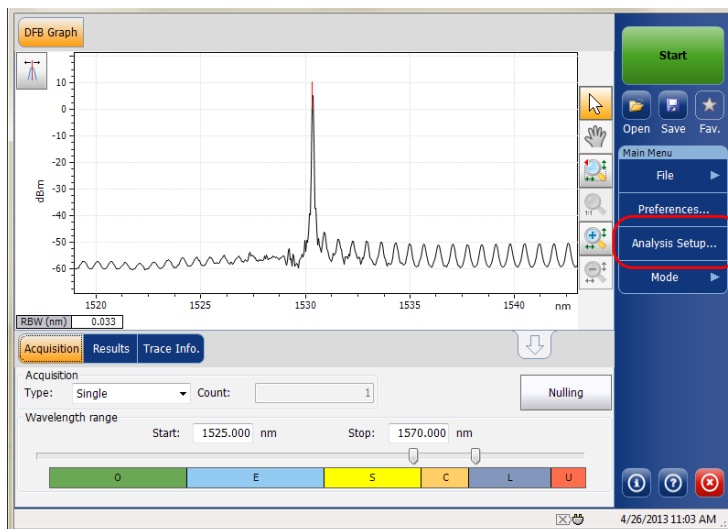
Setting Up the Instrument in DFB Mode

Setting the DFB Second Peak Center Position

When testing in DFB mode, you can set the value, in dB, below the peak at which the second peak center will be calculated.

To set the peak center position:

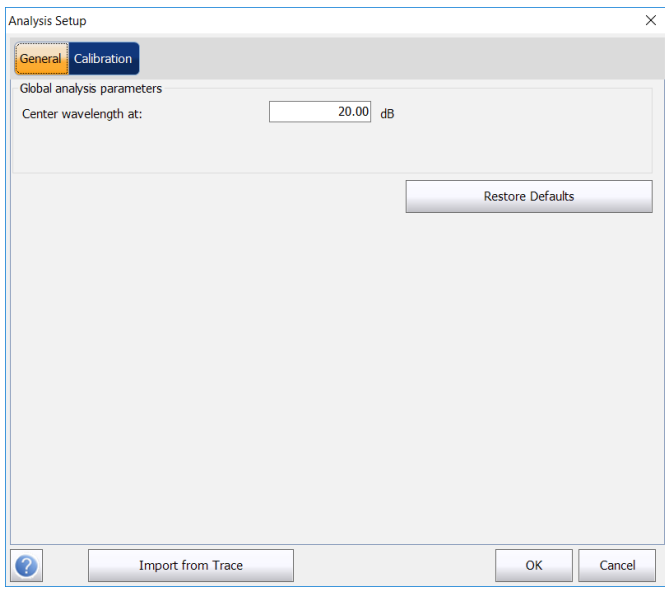
1. From the **Main Menu**, press **Analysis Setup**.



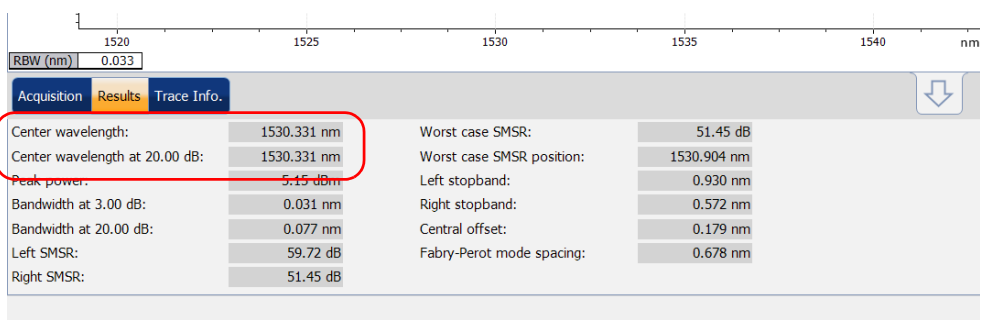
Setting Up the Instrument in DFB Mode

Setting the DFB Second Peak Center Position

2. Under **Global Analysis Parameters**, set the center wavelength value as needed.



When you take your DFB measurement, you will notice both center wavelength values in the **Results** tab.



Setting Up Acquisition Parameters

Before performing your test, you must set the acquisition type and parameters.

There are three types of acquisitions in DFB mode:

- **Single:** Spectral measurement is performed once. The results are displayed according to this measurement.
- **Averaging:** Spectral measurements are performed based on the number of scans that you have entered for this parameter. The trace will be displayed after each acquisition and averaged with the previous traces.
- **Real-Time:** In real-time acquisition, spectral measurements are performed continuously until you press **Stop**. No averaging is done for spectral measurements. The graph and results are refreshed after each acquisition.

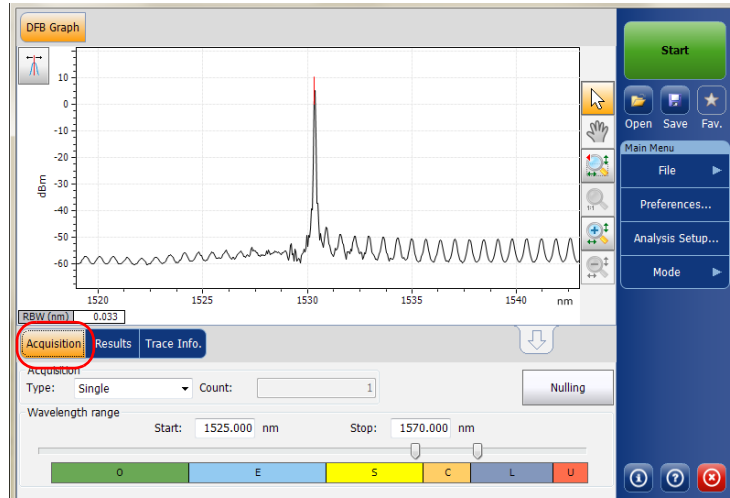
Before performing measurements on an optical spectrum, you must select the wavelength/frequency range to use. You can perform the scan on the full range, on spectral bands, or select a custom range.

Note: *The shorter the wavelength or frequency range, the faster the acquisition.*

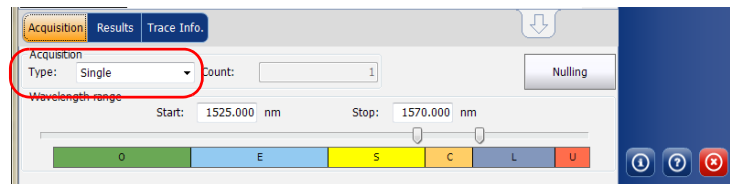
Note: *The **Acquisition** tab is not available in offline mode.*

To set parameters in the Acquisition tab:

1. From the main window, select the **Acquisition** tab.



2. Select the acquisition type.



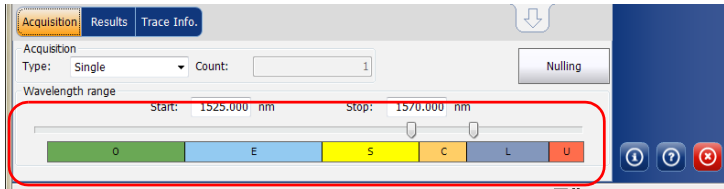
3. If you are performing an averaging-type acquisition, enter the number of scans the unit will perform.

Note: You cannot modify the number of scans count value if you are performing a single or real-time acquisition.

Setting Up the Instrument in DFB Mode

Setting Up Acquisition Parameters

4. Select the wavelength range for your acquisition.



You can select the wavelength range by entering the start and stop values or by selecting a range on the double slider.

To select the wavelength range using the double slider, move the left and right handles on the double slider or simply click on any band.

Note: *You can select more than one adjoining ranges to include in your range, for example, S + C.*

The wavelength range covered within these bands of the spectra are listed below.

- O band (original): 1255 to 1365 nm
- E band (extended): 1355 to 1465 nm
- S band (short wavelengths): 1455 to 1535 nm
- C band (conventional “erbium window”): 1525 to 1570 nm
- L band (long wavelengths): 1560 to 1630 nm
- U band (ultralong wavelengths): 1620 to 1650 nm.

7 ***Setting Up the Instrument in FP Mode***

Before performing a spectral analysis in the FP mode, you must set up your OSA module and the test application with the appropriate parameters, as explained in this chapter.

Select the FP test mode as explained in *Selecting a Test Mode* on page 16 before setting up the FP test parameters.

- The *preferences* are the result displayed in the graph and tables, as well as the job information and related comments saved with each file.
- The *acquisition parameters* include the measurement you want to perform and the wavelength range.

See *Defining Preferences* on page 180 and *Setting Up Acquisition Parameters* on page 189 for more details.

Setting Up the Instrument in FP Mode

Defining Preferences

Defining Preferences

The preferences window allows you to set general information and comments on trace and set display parameters.

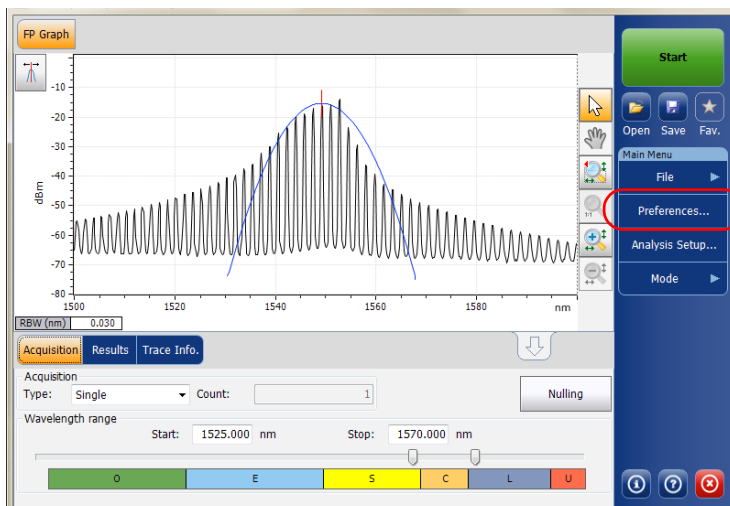
Note: *In offline mode, only the **Display** tab is available.*

Defining Trace Information

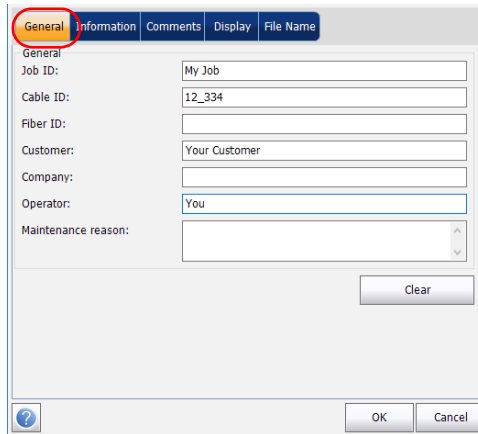
The trace information relates to the description of the job to be done, cable and job IDs, and any relevant information about what is being tested.

To enter general information:

1. From the **Main Menu**, press **Preferences**.



2. Select the **General** tab.



The screenshot shows a software window with five tabs: General, Information, Comments, Display, and File Name. The 'General' tab is selected and highlighted with a red circle. Below the tabs, the 'General' section contains several input fields: 'Job ID:' with the value 'My Job', 'Cable ID:' with the value '12_334', 'Fiber ID:' (empty), 'Customer:' with the value 'Your Customer', 'Company:' (empty), 'Operator:' with the value 'You', and 'Maintenance reason:' (empty). A 'Clear' button is located at the bottom right of the input fields. At the bottom of the window, there are 'OK' and 'Cancel' buttons, and a help icon (question mark) on the left.

3. Define the general parameters as needed.
4. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

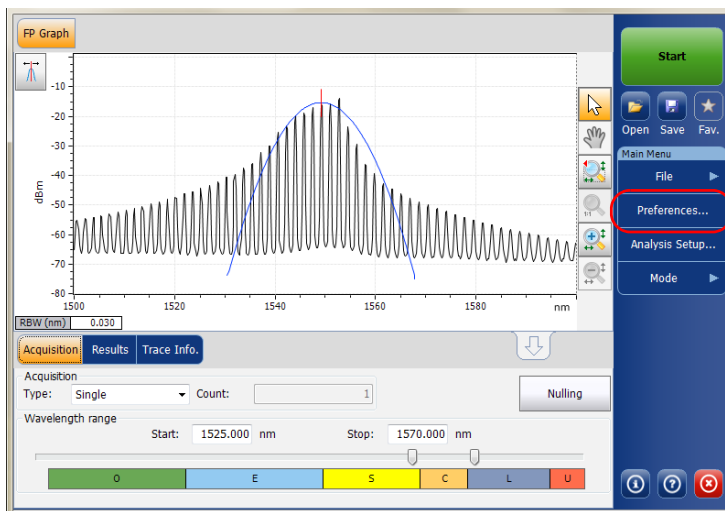
Press **Clear** to clear all the changes made in the **General** tab.

Setting Up the Instrument in FP Mode

Defining Preferences

To enter link and location information:

1. From the **Main Menu**, press **Preferences**.



2. Select the **Information** tab.

The screenshot shows the 'Information' tab of the preferences dialog. The 'General' tab is also visible. The 'Information' tab contains the following fields and options:

- System and link information**
 - Link ID prefix:
 - Starting value:
 - ☒ Auto increment
 - Orientation:
 - System:
- Location information**
 - Network element:
 - Test point:
 - Description:

At the bottom right, there is a 'Restore Defaults' button. At the bottom left, there is a question mark icon. At the bottom right, there are 'OK' and 'Cancel' buttons.

3. Under **System and link information**, define the following parameters as needed:

- Link ID prefix: prefix value for the link ID. You can enter any alphanumeric value.
- Starting value: suffix increment starting value for the link ID.

This value is incremented each time a new file is saved provided the **Auto Increment** option is selected.



IMPORTANT

If the Auto Increment option is not selected, you have to manually change the file name when saving the trace file, otherwise the application will overwrite the previously saved file.

- Orientation: orientation of the link.
 - System: information about the system under test.
4. Under **Location Information**, define the following parameters as needed:
 - Network element: type of network element.
 - Test point: where the test is performed on the link.
 - Description: Enter the description of location if required.
 5. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

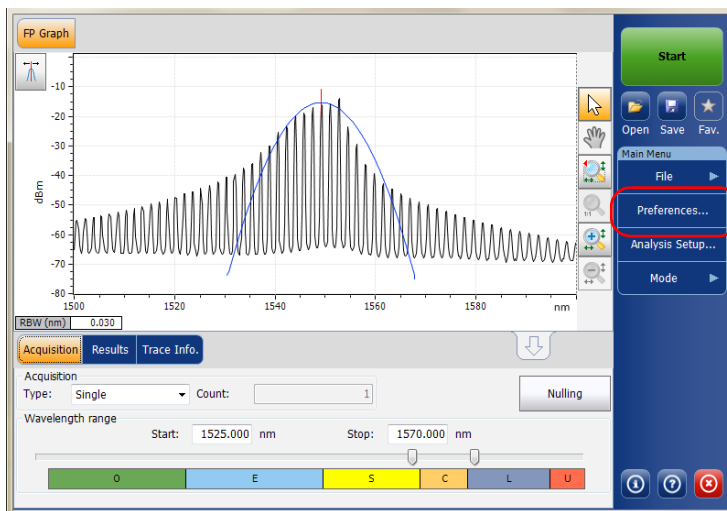
Press **Restore Defaults** to remove all the changes and apply the default values.

Setting Up the Instrument in FP Mode

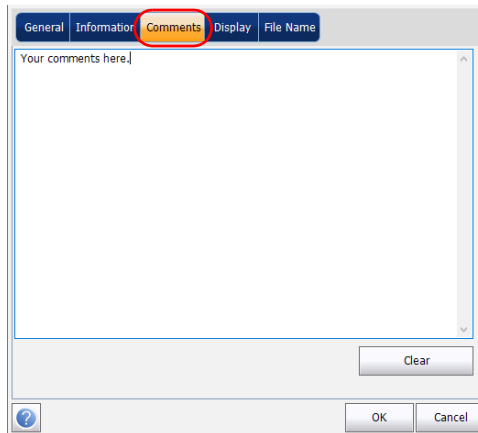
Defining Preferences

To enter comments:

1. From the **Main Menu**, press **Preferences**.



2. Select the **Comments** tab.



3. Enter your comments for the current trace.
4. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Clear** to clear all the changes made in the **Comments** tab.

Setting Up the Instrument in FP Mode

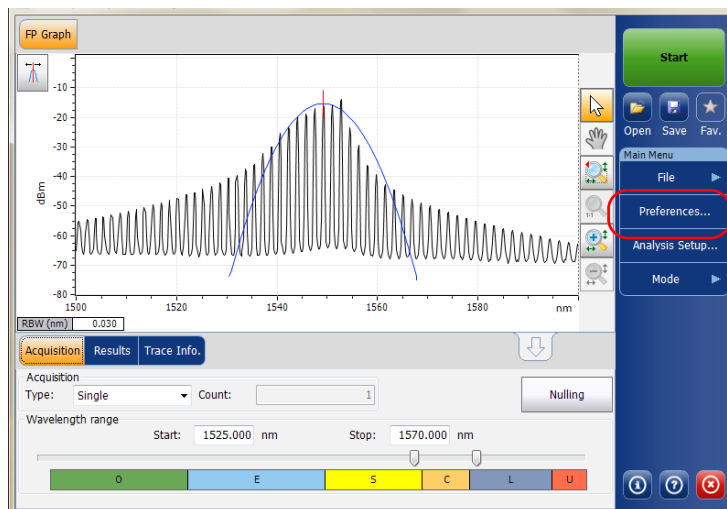
Defining Preferences

Defining Display Parameters

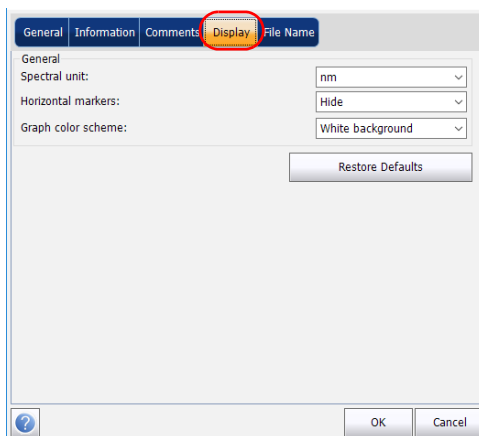
The application allows you to set display settings for the acquisition trace. You can set the spectral unit for the trace and the results table.

To define display parameters:

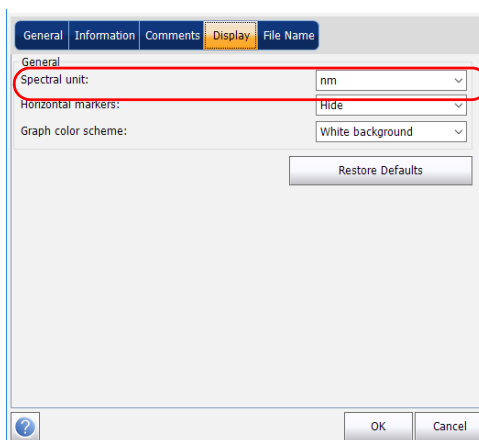
1. From the **Main Menu**, press **Preferences**.



2. Select the **Display** tab.



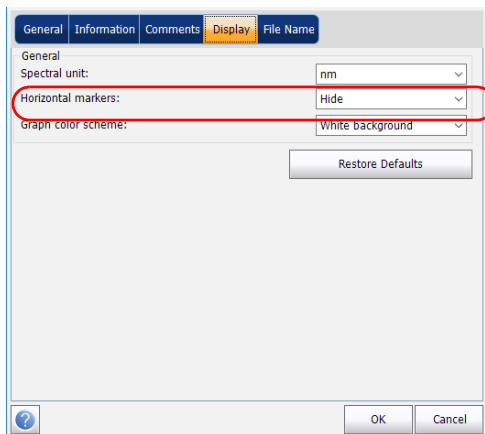
3. Select the spectral unit you want to work with, either nm or THz.



Setting Up the Instrument in FP Mode

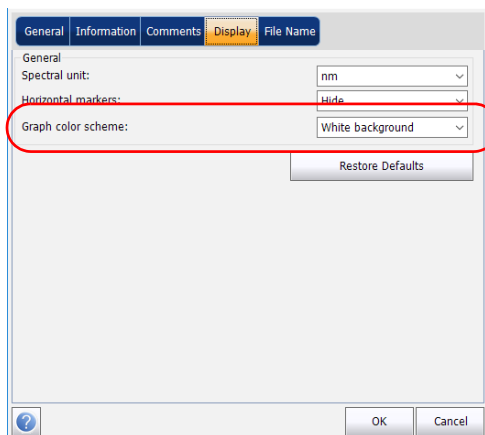
Defining Preferences

4. Select if you want to show the horizontal markers or not.



The screenshot shows a software window with five tabs: General, Information, Comments, Display, and File Name. The 'Display' tab is selected and highlighted in orange. Below the tabs, there are three settings: 'Spectral unit:' set to 'nm', 'Horizontal markers:' set to 'Hide', and 'Graph color scheme:' set to 'White background'. A red circle is drawn around the 'Horizontal markers:' dropdown menu. Below these settings is a 'Restore Defaults' button. At the bottom of the window are 'OK' and 'Cancel' buttons.

5. Select the background color scheme for the graph as desired.



This screenshot is identical to the previous one, showing the 'Display' tab with 'Spectral unit:' set to 'nm', 'Horizontal markers:' set to 'Hide', and 'Graph color scheme:' set to 'White background'. In this image, a red circle is drawn around the 'Graph color scheme:' dropdown menu instead of the 'Horizontal markers:' menu.

6. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

Setting Up Acquisition Parameters

Before performing your test, you must set the acquisition type and parameters.

There are three types of acquisitions in FP mode:

- **Single:** Spectral measurement is performed once. The results are displayed according to this measurement.
- **Averaging:** Spectral measurements are performed based on the number of scans that you have entered for this parameter. The trace will be displayed after each acquisition and averaged with the previous traces.
- **Real-Time:** In real-time acquisition, spectral measurements are performed continuously until you press **Stop**. No averaging is done for spectral measurements. The graph and results are refreshed after each acquisition.

Before performing measurements on an optical spectrum, you must select the wavelength/frequency range to use. You can perform the scan on the full range, on spectral bands, or select a custom range.

Note: *The shorter the wavelength or frequency range, the faster the acquisition.*

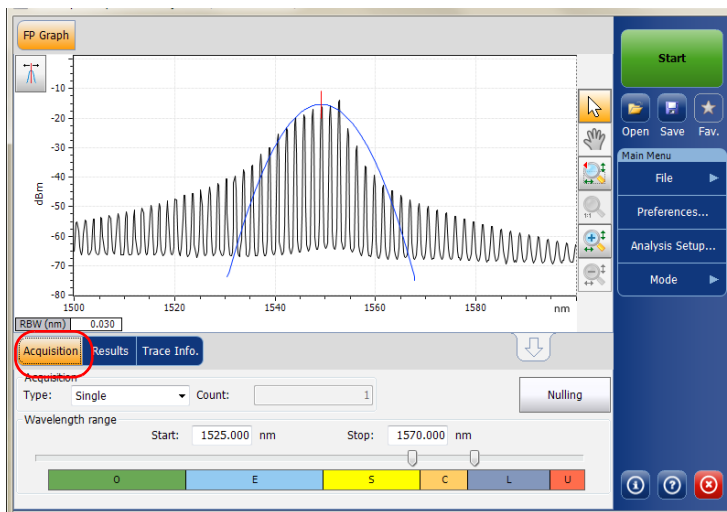
Note: *The **Acquisition** tab is not available in offline mode.*

Setting Up the Instrument in FP Mode

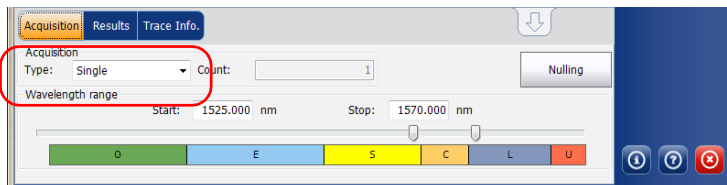
Setting Up Acquisition Parameters

To set parameters in the Acquisition tab:

1. From the main window, select the **Acquisition** tab.



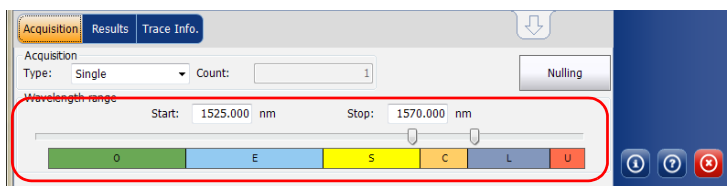
2. Select the acquisition type.



3. If you are performing an averaging type acquisition, enter the number of scans the unit will perform.

Note: *You cannot modify the number of scans count value if you are performing a single or real-time acquisition.*

4. Select the wavelength range for your acquisition.



You can select the wavelength range by entering the start and stop values or by selecting a range on the double slider.

To select the wavelength range using the double slider, move the left and right handles on the double slider or simply click on any band.

Note: *You can select more than one adjoining ranges to include in your range, for example, S + C.*

The wavelength range covered within these bands of the spectra are listed below.

- O band (original): 1255 to 1365 nm
- E band (extended): 1355 to 1465 nm
- S band (short wavelengths): 1455 to 1535 nm
- C band (conventional “erbium window”): 1525 to 1570 nm
- L band (long wavelengths): 1560 to 1630 nm
- U band (ultralong wavelengths): 1620 to 1650 nm.

Setting Up the Instrument in Spectral Transmittance Mode

Before performing a spectral analysis in the Spectral Transmittance mode, you must set up your OSA module and the test application with the appropriate parameters, as explained in this chapter.

Select the Spectral Transmittance test mode as explained in *Selecting a Test Mode* on page 16 before setting up the test parameters.

- The *preferences* are the result displayed in the graph and tables, as well as the job information and related comments saved with each file.
- The *analysis parameters* include the channel details, the nominal wavelength or frequency and the input and output offset values.
- The *acquisition parameters* include the type of measurement you want to perform and the wavelength range.

See *Defining Preferences* on page 194 , *Setting Up Spectral Transmittance Analysis Parameters* on page 204 and *Setting Up Acquisition Parameters* on page 211 for more details.

Setting Up the Instrument in Spectral Transmittance Mode

Defining Preferences

Defining Preferences

The preferences window allows you to set general information and comments on trace and set display parameters.

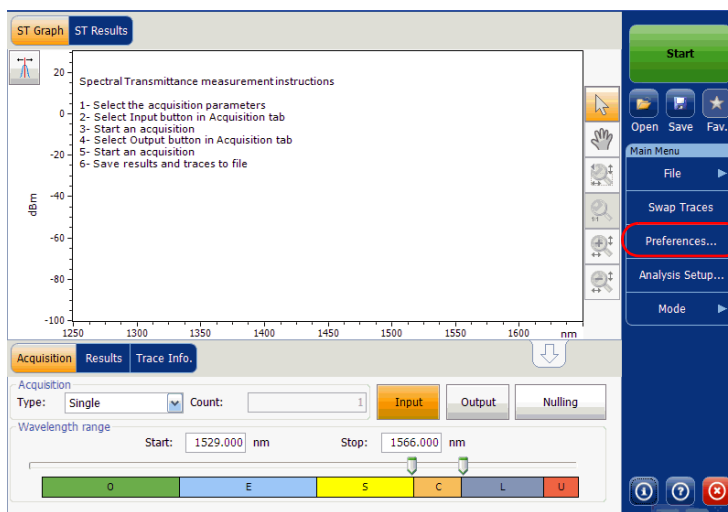
Note: In offline mode, only the **Display** tab is available.

Defining Trace Information

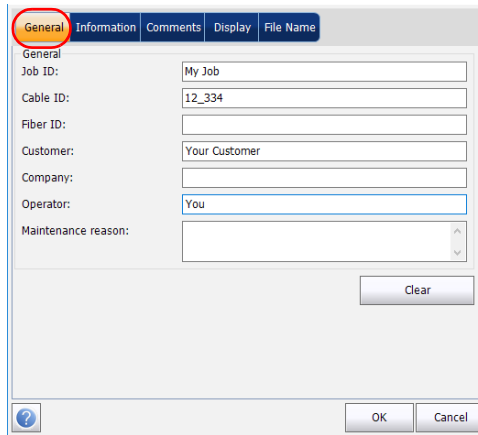
The trace information relates to the description of the job to be done, cable and job IDs, and any relevant information about what is being tested.

To enter general information:

1. From the **Main Menu**, press **Preferences**.



2. Select the **General** tab.



The screenshot shows a software window with five tabs: 'General', 'Information', 'Comments', 'Display', and 'File Name'. The 'General' tab is selected and highlighted with a red circle. Below the tabs, the 'General' section contains several input fields: 'Job ID:' with the value 'My Job', 'Cable ID:' with the value '12_334', 'Fiber ID:' (empty), 'Customer:' with the value 'Your Customer', 'Company:' (empty), 'Operator:' with the value 'You', and 'Maintenance reason:' (empty). A 'Clear' button is located at the bottom right of the input fields. At the bottom of the window, there are three buttons: a help button (question mark icon), 'OK', and 'Cancel'.

3. Define the general parameters as needed.
4. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

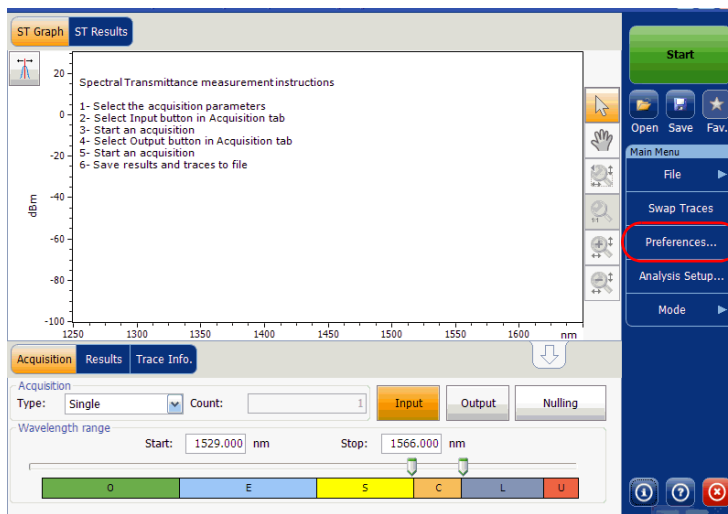
Press **Clear** to clear all the changes made in the **General** tab.

Setting Up the Instrument in Spectral Transmittance Mode

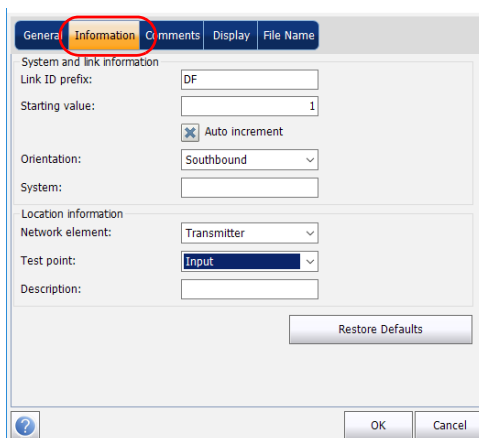
Defining Preferences

To enter link and location information:

1. From the **Main Menu**, press **Preferences**.



2. Select the **Information** tab.



3. Under **System and link information**, define the following parameters as needed:

- Link ID prefix: prefix value for the link ID. You can enter any alphanumeric value.
- Starting value: suffix increment starting value for the link ID.

This value is incremented each time a new file is saved provided the **Auto Increment** option is selected.



IMPORTANT

If the Auto Increment option is not selected, you have to manually change the file name when saving the trace file, otherwise the application will overwrite the previously saved file.

- Orientation: orientation of the link.
 - System: information on the system under test.
4. Under **Location Information**, define the following parameters as needed:
 - Network element: network element type.
 - Test point: where the test is performed on the link.
 - Description: a description of the location, if required.
 5. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

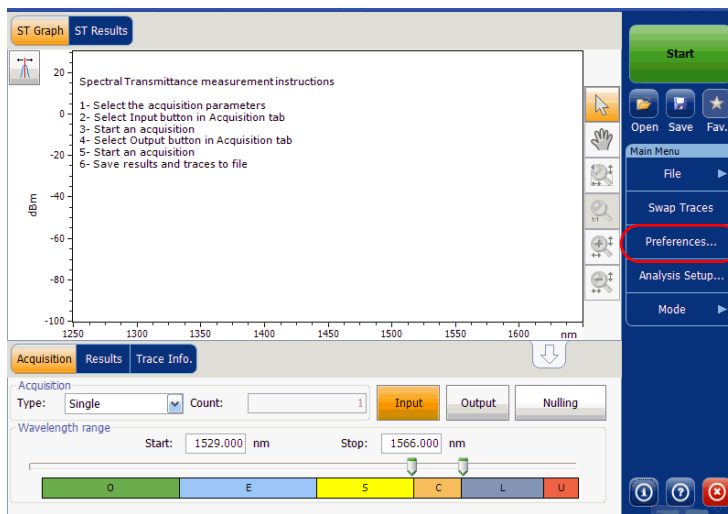
Press **Restore Defaults** to remove all the changes and apply the default values.

Setting Up the Instrument in Spectral Transmittance Mode

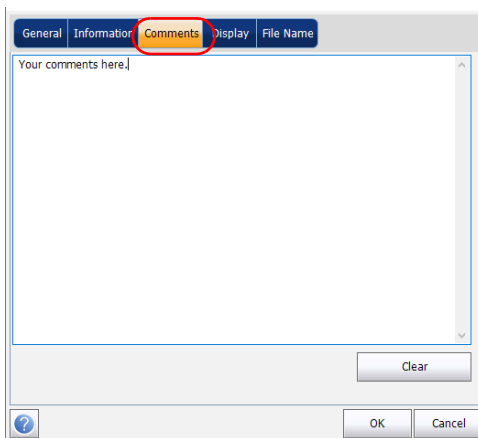
Defining Preferences

To enter comments:

1. From the **Main Menu**, press **Preferences**.



2. Select the **Comments** tab.



3. Enter your comments for the current trace.
4. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Clear** to clear all the changes made in the **Comments** tab.

Setting Up the Instrument in Spectral Transmittance Mode

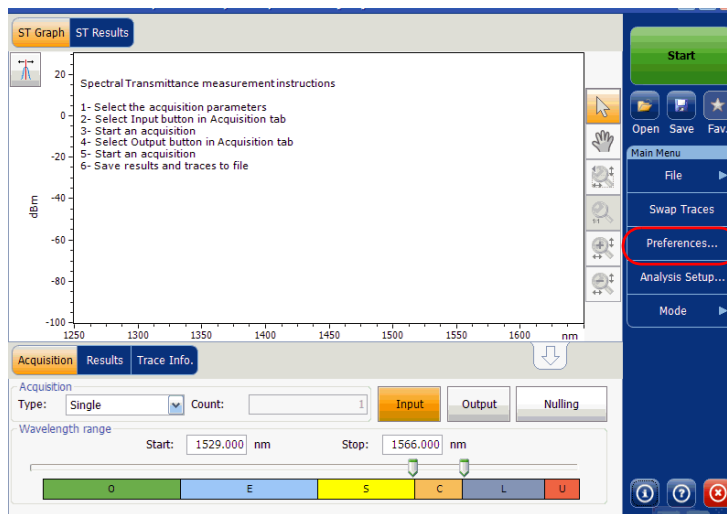
Defining Preferences

Defining Display Parameters

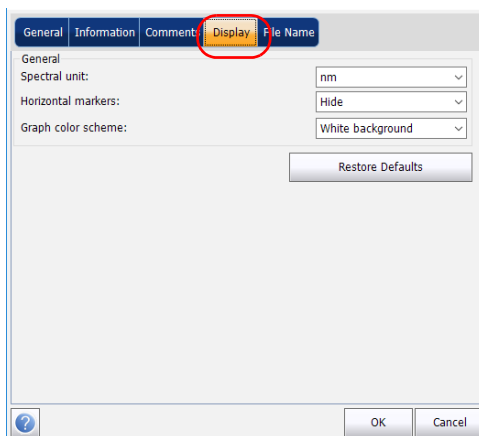
The application allows you to set display settings for the acquisition trace. You can set the spectral unit for the trace and the results table.

To define display parameters:

1. From the **Main Menu**, press **Preferences**.



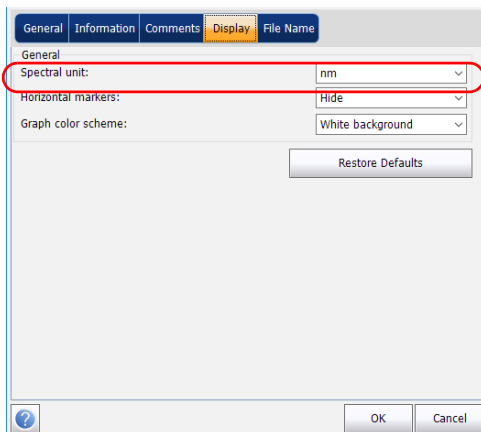
2. Select the **Display tab.**



Setting Up the Instrument in Spectral Transmittance Mode

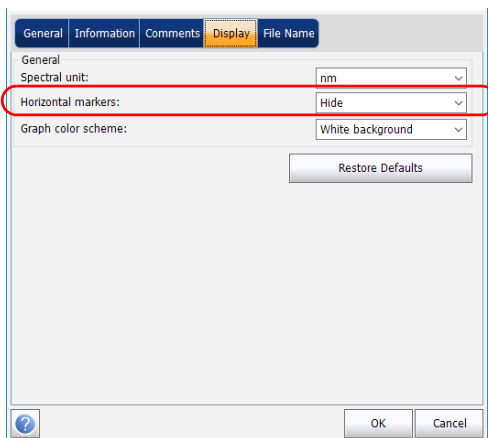
Defining Preferences

3. Select the spectral unit you want to work with, either nm or THz.



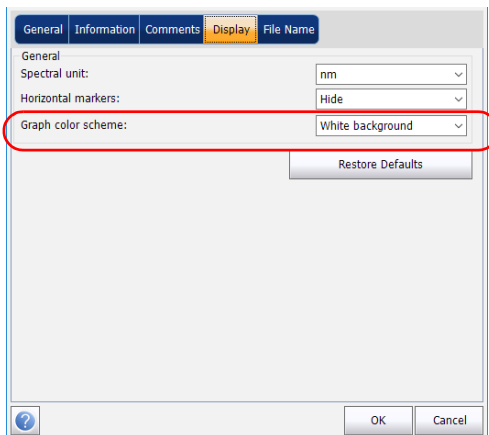
The screenshot shows a software window with four tabs: General, Information, Comments, and Display. The 'Display' tab is active. Under the 'General' section, there are three dropdown menus: 'Spectral unit' (set to 'nm'), 'Horizontal markers' (set to 'Hide'), and 'Graph color scheme' (set to 'White background'). A 'Restore Defaults' button is located below these settings. At the bottom of the window are 'OK' and 'Cancel' buttons. A red circle highlights the 'Spectral unit' dropdown.

4. Select if you want to show the horizontal markers or not.



This screenshot is identical to the previous one, showing the 'Display' tab of the preference window. In this instance, a red circle highlights the 'Horizontal markers' dropdown, which is currently set to 'Hide'.

5. Select the background color scheme for the graph as desired.



6. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

Setting Up the Instrument in Spectral Transmittance Mode

Setting Up Spectral Transmittance Analysis Parameters

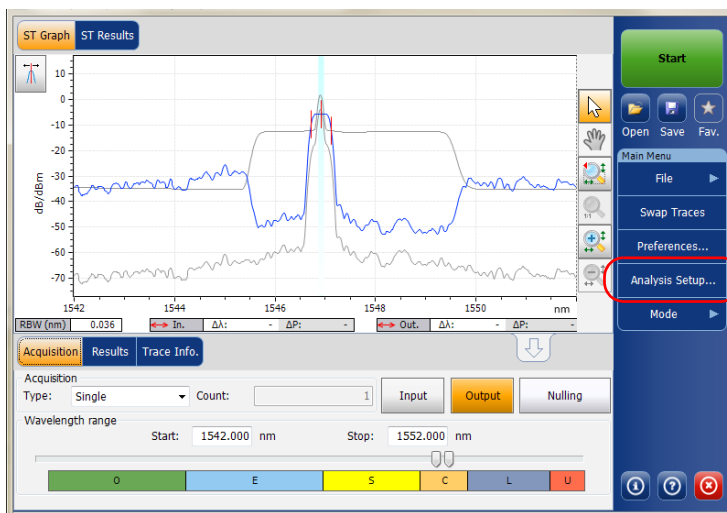
This section presents the various analysis settings for the application. These settings are applied on subsequent acquisitions/re-analyses.

Note: When you change the analysis setup parameters, the new settings are active as soon as you confirm your choice. The current trace is re-analyzed, and the analysis setup parameters will be applied to the global results and channel results for the following acquisitions.

You can either set each parameter individually, or use parameters from the current trace and import them.

To import the parameters from the current trace:

1. Make sure that you have a trace on-screen.
2. From the **Main Menu**, press **Analysis Setup**.



Setting Up the Instrument in Spectral Transmittance Mode

Setting Up Spectral Transmittance Analysis Parameters

3. From any tab, press **Import from Trace**.

The screenshot shows the 'ST Analysis' dialog box with the 'Calibration' tab selected. The 'Global analysis parameters' section contains the following fields and values:

Parameter	Value	Unit
Channel definition:	ITU 50 GHz	
Nominal wavelength:	Auto	
Channel distance:	50.000	GHz
Channel range:	25.000	GHz
Bandwidth 1 at:	1.00	dB
Bandwidth 2 at:	3.00	dB
Input wavelength offset:	0.000	nm
Input power offset:	0.00	dB ≈100.0 %
Output wavelength offset:	0.000	nm
Output power offset:	0.00	dB ≈100.0 %

Buttons: ? (Help), **Import from Trace** (highlighted with a red circle), OK, Cancel, Restore Defaults.

4. Press **OK** to confirm the changes.

Setting Up the Instrument in Spectral Transmittance Mode

Setting Up Spectral Transmittance Analysis Parameters

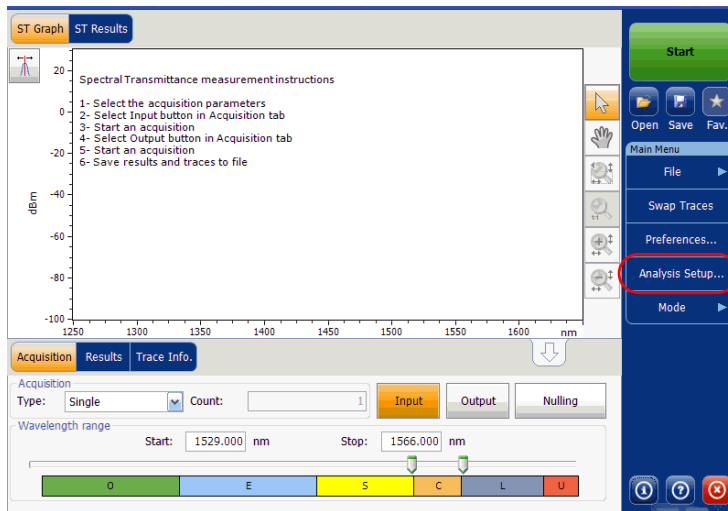
Defining ST Analysis Settings

The global analysis parameters for spectral transmittance acquisitions affect the calculation of the results.

Note: When you change the analysis setup parameters, the new settings are active as soon as you confirm your choice. The current trace is re-analyzed, and the analysis setup parameters will be applied to the ST results for the following acquisitions.

To define ST analysis parameters:

1. From the **Main Menu**, press **Analysis Setup**.



Setting Up the Instrument in Spectral Transmittance Mode

Setting Up Spectral Transmittance Analysis Parameters

2. Select the **ST Analysis** tab.

The screenshot shows a software window titled "Global analysis parameters" with two tabs: "ST Analysis" (highlighted with a red circle) and "Calibration". The "ST Analysis" tab contains the following parameters:

Parameter	Value	Unit	Additional Info
Channel definition:	ITU 50 GHz		
Nominal wavelength:	Auto		
Channel distance:	50.000	GHz	
Channel range:	25.000	GHz	
Bandwidth 1 at:	1.00	dB	
Bandwidth 2 at:	3.00	dB	
Input wavelength offset:	0.000	nm	
Input power offset:	0.00	dB	≈100.0 % Edit % ...
Output wavelength offset:	0.000	nm	
Output power offset:	0.00	dB	≈100.0 % Edit % ...

At the bottom right of the parameter area is a "Restore Defaults" button. At the bottom of the window are buttons for "?", "Import from Trace", "OK", and "Cancel".

Setting Up the Instrument in Spectral Transmittance Mode

Setting Up Spectral Transmittance Analysis Parameters

3. Under **Global analysis parameters**, define the following parameters as needed:

ST Analysis Calibration

Global analysis parameters

Channel definition: ITU 50 GHz

Nominal wavelength: Auto

Channel distance: 50.000 GHz

Channel range: 25.000 GHz

Bandwidth 1 at: 1.00 dB

Bandwidth 2 at: 3.00 dB

Input wavelength offset: 0.000 nm

Input power offset: 0.00 dB ≈100.0 % Edit % ...

Output wavelength offset: 0.000 nm

Output power offset: 0.00 dB ≈100.0 % Edit % ...

Restore Defaults

Import from Trace OK Cancel

- Channel definition: indicates the limit inside which the power values will be considered in the channel.

Centred on max peak: Channel is centered on the lowest insertion loss peak.

ITU Grid: Select the nearest ITU channel from the peak with lowest insertion loss.

CWDM: Select the nearest CWDM channel from the peak with lowest insertion loss.

Custom: Channel is centered on value specified by the user.

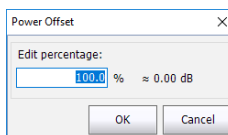
- Nominal wavelength or frequency (nm or THz): indicates a single value that represent the channels center wavelength (in nm) or frequency (in THz). This field is editable only when Channel definition is selected as Custom.

Setting Up the Instrument in Spectral Transmittance Mode

Setting Up Spectral Transmittance Analysis Parameters

- Channel distance (GHz or nm): indicates distance between the channels. The value of channel distance will be set depending on the selection made for the channel definition option. The channel distance box will be enabled only when the channel center wavelength option is set to custom.
- Channel range (GHz or nm): indicates the limit inside which the power values will be considered in the channel. Integrated power is calculated on channel width.
- Bandwidth 1 at (dB): Set the power level used, relative to the channel peak power, to compute the bandwidth.
- Bandwidth 2 at (dB): Set the power level used, relative to the channel peak power, to compute the bandwidth.
- Input wavelength offset (nm): indicates the offset value applied on the input wavelength. This does not replace a calibration performed at EXFO, but it can help you temporarily sharpen the specifications if you have determined that, for example, your modules are used beyond the normal allowed use. Entering a value in THz is not possible. When an offset is applied, it is indicated at the bottom of the graph ($\lambda \leftrightarrow$).
- Input power offset (dB): indicates the offset value applied on the input power. This does not replace a calibration performed at EXFO, but it can help you achieve the specifications if you have determined that, for example, your modules are used beyond the normal allowed use. When an offset is applied, it is indicated at the bottom of the graph ($P \leftrightarrow$).

To edit the power offset value as a tap percentage, press the **Edit %** button.



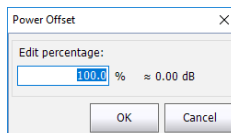
Setting Up the Instrument in Spectral Transmittance Mode

Setting Up Spectral Transmittance Analysis Parameters

The percentage value entered in **Edit percentage** will be converted to a corresponding value in dB.

- Output wavelength offset (nm): indicates the offset value applied on the output wavelength. This does not replace a calibration performed at EXFO, but it can help you temporarily sharpen the specifications if you have determined that, for example, your modules are used beyond the normal allowed use. Entering a value in THz is not possible. When an offset is applied, it is indicated at the bottom of the graph ($\lambda \leftrightarrow$)
- Output power offset (dB): indicates the offset value applied on the output power. This does not replace a calibration performed at EXFO, but it can help you achieve the specifications if you have determined that, for example, your modules are used beyond the normal allowed use. When an offset is applied, it is indicated at the bottom of the graph (P $\leftrightarrow$).

To edit the power offset value as a tap percentage, press the **Edit %** button.



The percentage value entered in **Edit percentage** will be converted to a corresponding value in dB.

4. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

Setting Up Acquisition Parameters

Before performing your test, you must set the acquisition type and parameters.

There are three types of acquisitions in Spectral Transmittance mode: single, averaging and real-time.

- **Single:** Spectral measurement is performed once. The results are displayed according to this measurement.
- **Averaging:** Spectral measurements are performed based on the number of scans that you have entered for this parameter. The trace will be displayed after each acquisition and averaged with the previous traces.
- **Real-Time:** In real-time acquisition, spectral measurements are performed continuously until you press **Stop**. No averaging is done for spectral measurements. The graph and results are refreshed after each acquisition.

Before performing measurements on an optical spectrum, you must select the wavelength/frequency range to use. You can perform the scan on the full range, on spectral bands, or select a custom range.

Note: *The shorter the wavelength or frequency range, the faster the acquisition.*

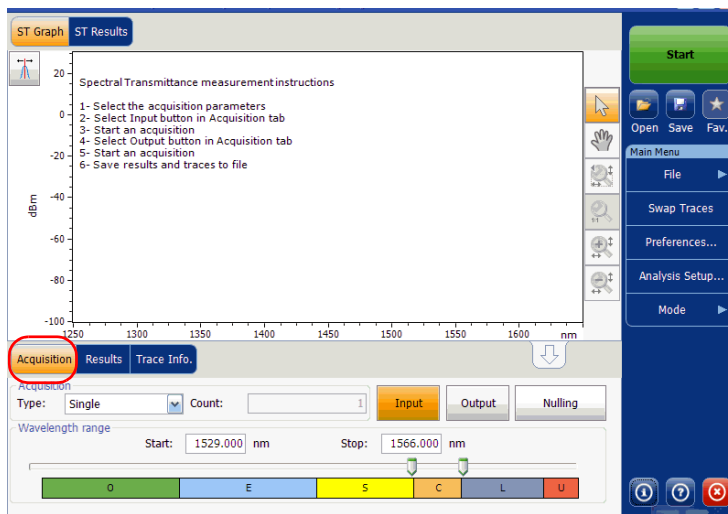
Note: *The **Acquisition** tab is not available in offline mode.*

Setting Up the Instrument in Spectral Transmittance Mode

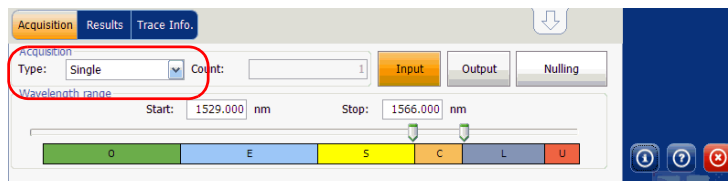
Setting Up Acquisition Parameters

To set parameters in the Acquisition tab:

1. From the main window, select the **Acquisition** tab.



2. Select the acquisition type.



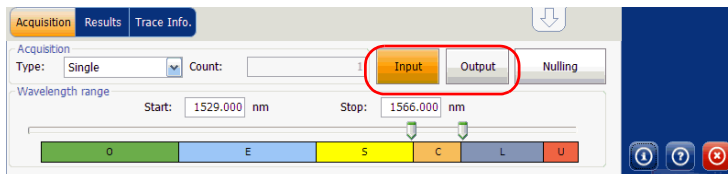
3. If you are performing an averaging type acquisition, enter the number of scans the unit will perform.

Note: You cannot modify the number of scans count value if you are performing a single or real-time acquisition.

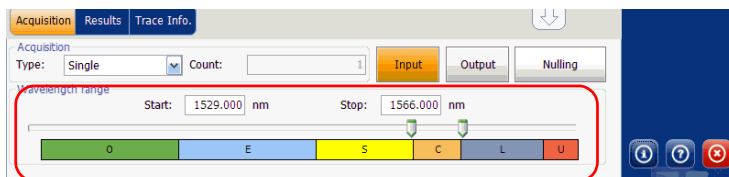
Setting Up the Instrument in Spectral Transmittance Mode

Setting Up Acquisition Parameters

4. Press **Input** or **Output** to specify which position to use to store the next acquisition.



5. Select the wavelength range for your acquisition.



You can select the wavelength range by entering the start and stop values or by selecting a range on the double slider.

To select the wavelength range using the double slider, move the left and right handles on the double slider or simply click on any band.

Note: You can select more than one adjoining ranges to include in your range, for example, *S + C*.

The wavelength range covered within these bands of the spectra are listed below.

- O band (original): 1255 to 1365 nm
- E band (extended): 1355 to 1465 nm
- S band (short wavelengths): 1455 to 1535 nm
- C band (conventional “erbium window”): 1525 to 1570 nm
- L band (long wavelengths): 1560 to 1630 nm
- U band (ultralong wavelengths): 1620 to 1650 nm.

9 **Setting Up the Instrument in EDFA Mode**

Before performing a spectral analysis in the EDFA mode, you must set up your OSA module and the test application with the appropriate parameters, as explained in this chapter.

Select the EDFA test mode as explained in *Selecting a Test Mode* on page 16 before setting up the EDFA test parameters.

- The *preferences* are the result displayed in the graph and tables, as well as the job information and related comments saved with each file.
- The *analysis parameters* include the channel list details, and allows you to configure global analysis parameters.
- The *acquisition parameters* include the type of measurement you want to perform and the wavelength range.

See *Defining Preferences* on page 217, *Setting Up EDFA Analysis Parameters* on page 232 and *Setting Up Acquisition Parameters* on page 248 for more details.

Setting Up the Instrument in EDFA Mode

You can set up your unit in different manners depending on your testing needs.

- The preferred way is to use the complete analysis setup parameters and complete the information in all tables, as explained in *Setting Up EDFA Analysis Parameters* on page 232. This setup will be used for the next acquisition.
- The most efficient way to setup the instrument is to use one of the favorites configurations, uploading a pre-customized acquisition and analysis setup configuration. The operator in the field only has to press the  button, select the appropriate configuration and press **Start**. As an example, a pre-customized configuration could be: “32 channels DWDM 50GHz”; “Toronto-Montreal CWDM” or “Vendor ABC DWDM ROADM 40Gb”. This is explained in *Managing Favorites* on page 292.
- You can also import the setup from the current trace. This method will take the data and channel information from the current trace and apply them in the corresponding tabs. For more information, see *Setting Up EDFA Analysis Parameters* on page 232.

Defining Preferences

The preferences window allows you to set general information and comments on trace, set display parameters and customize the EDFA results table.

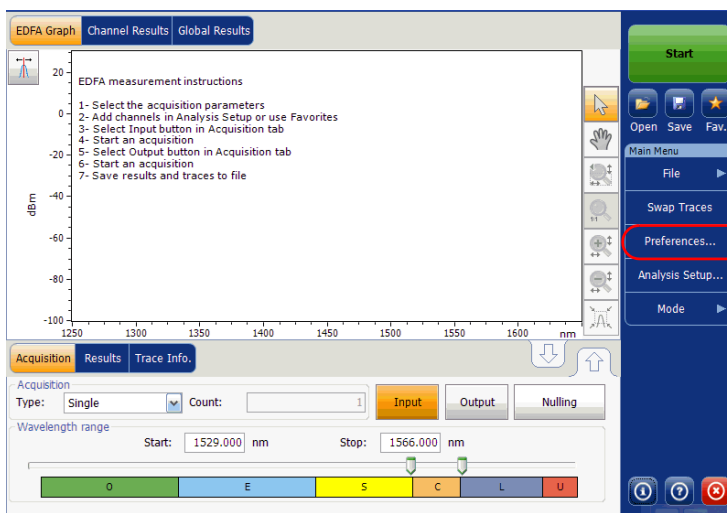
Note: Only the **Display** and **EDFA Results** tabs are available in offline mode.

Defining Trace Information

The trace information relates to the description of the job to be done, cable and job IDs, and any relevant information about what is being tested.

To enter general information:

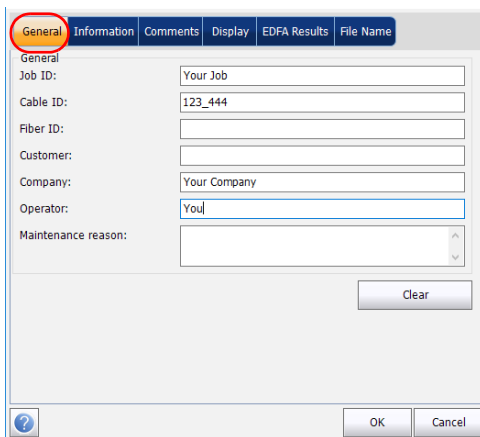
1. From the **Main Menu**, press **Preferences**.



Setting Up the Instrument in EDFA Mode

Defining Preferences

2. Select the **General** tab.



The screenshot shows a software window with a tabbed interface. The 'General' tab is selected and highlighted with a red circle. The tabs are: General, Information, Comments, Display, EDFA Results, and File Name. The 'General' tab contains the following fields:

- Job ID: Text box with 'Your Job' entered.
- Cable ID: Text box with '123_444' entered.
- Fiber ID: Text box (empty).
- Customer: Text box (empty).
- Company: Text box with 'Your Company' entered.
- Operator: Text box with 'You' entered.
- Maintenance reason: Text box (empty).

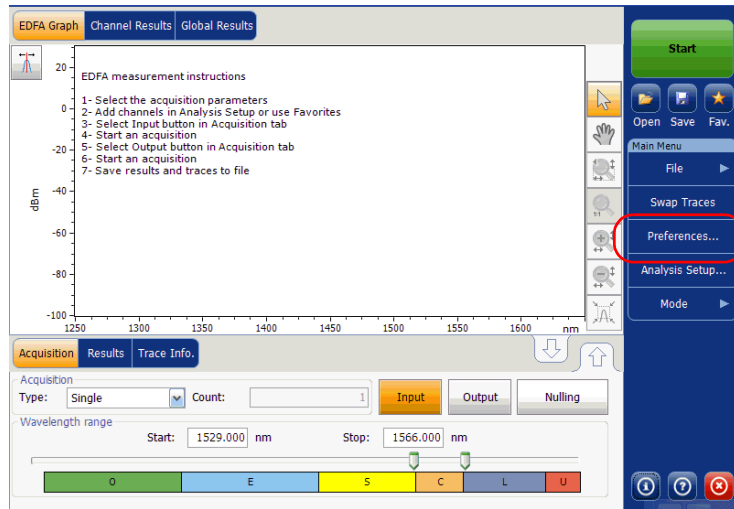
At the bottom right of the form area is a 'Clear' button. At the bottom of the window are 'OK' and 'Cancel' buttons, and a help icon (?) on the bottom left.

3. Define the general parameters as needed.
4. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

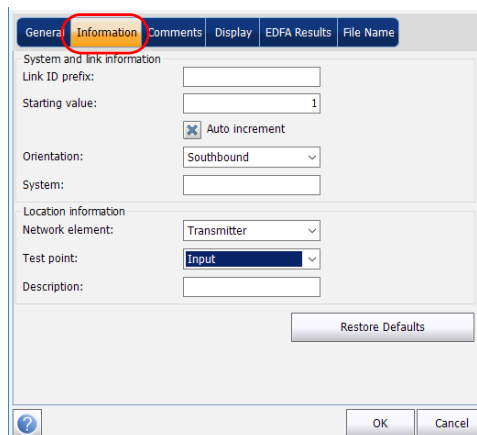
Press **Clear** to clear all the changes made in the **General** tab.

To enter link and location information:

1. From the **Main Menu**, press **Preferences**.



2. Select the **Information** tab.



Setting Up the Instrument in EDFA Mode

Defining Preferences

3. Under **System and link information**, define the following parameters as needed:

- Link ID prefix: prefix value for the link ID. You can enter any alphanumeric value.
- Starting value: suffix increment starting value for the link ID.

This value is incremented each time a new file is saved provided the **Auto Increment** option is selected.



IMPORTANT

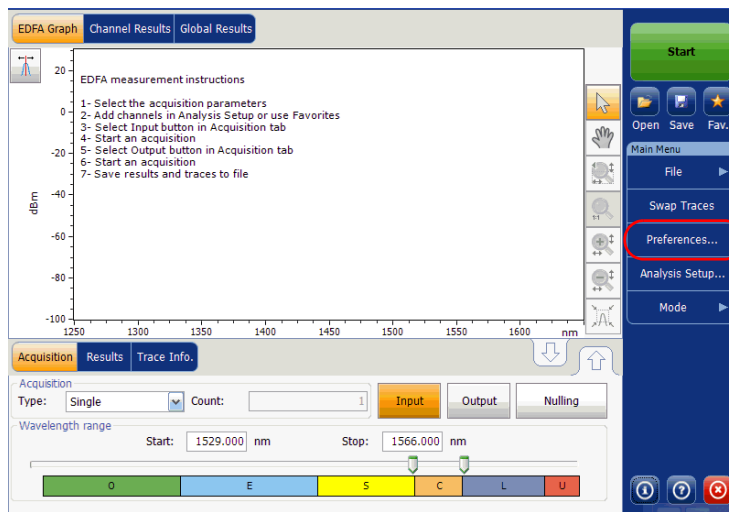
When the Auto Increment option is not selected, while saving the trace file, you have to manually change the file name, else the application will overwrite the previously saved files every time you save a new trace.

- Orientation: orientation of the link.
 - System: information about the system under test.
4. Under **Location Information**, define the following parameters as needed:
 - Network element: type of network element.
 - Test point: where the test is performed on the link
 - Description: Enter the description of location if required.
 5. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

To enter comments:

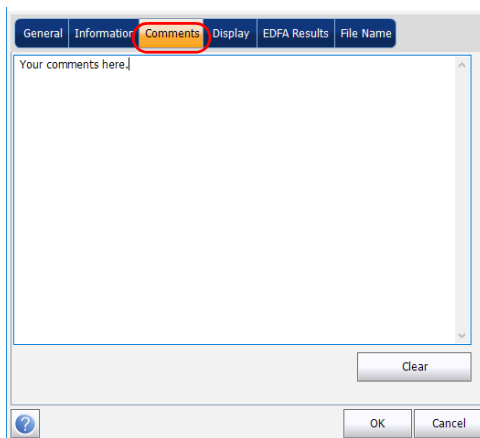
1. From the **Main Menu**, press **Preferences**.



Setting Up the Instrument in EDFA Mode

Defining Preferences

2. Select the **Comments** tab.



3. Enter your comments for the current trace.
4. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

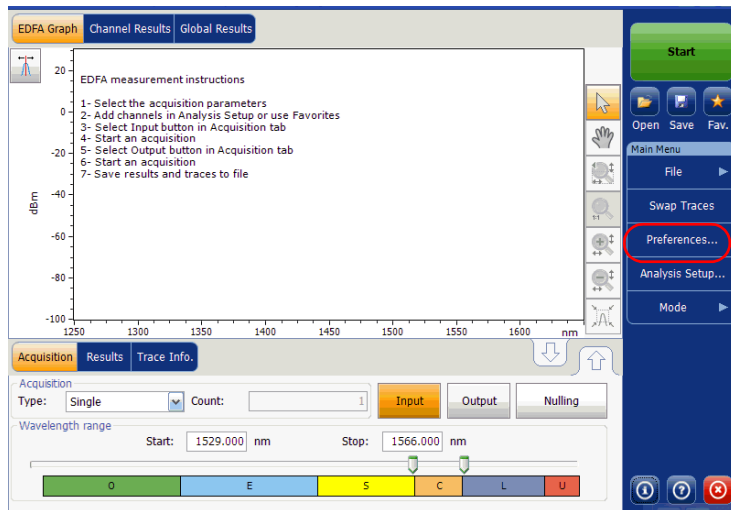
Press **Clear** to clear all the changes made in the **Comments** tab.

Defining Display Parameters

The application allows you to set display settings for the acquisition trace. You can set the spectral unit for the trace and the results table. You can also select the label that should appear on the peaks of the trace.

To define display parameters:

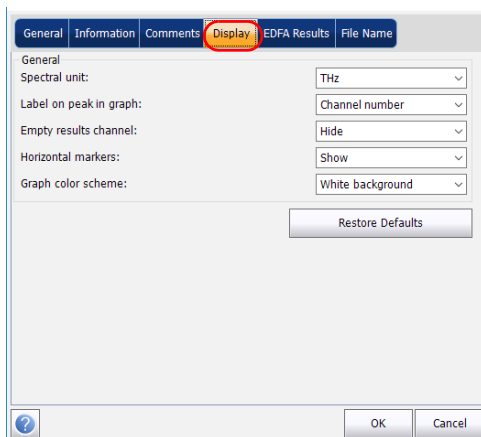
1. From the **Main Menu**, press **Preferences**.



Setting Up the Instrument in EDFA Mode

Defining Preferences

2. Select the **Display** tab.



3. Select the spectral unit you want to work with, either nm or THz.

The screenshot shows a software window with several tabs: General, Information, Comments, Display (selected), EDFA Results, and File Name. The 'Display' tab contains the following settings:

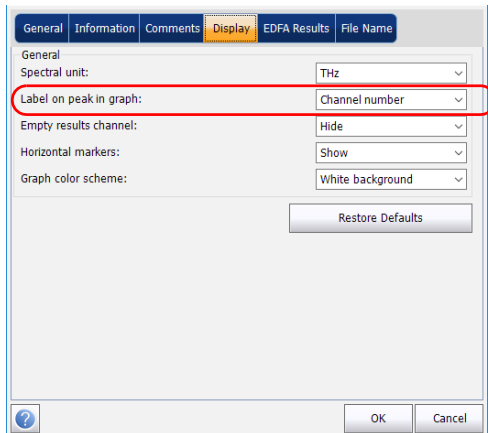
General	
Spectral unit:	THz
Label on peak in graph:	Channel number
Empty results channel:	Hide
Horizontal markers:	Show
Graph color scheme:	White background

Below the settings is a 'Restore Defaults' button. At the bottom of the window are 'OK' and 'Cancel' buttons.

Setting Up the Instrument in EDFA Mode

Defining Preferences

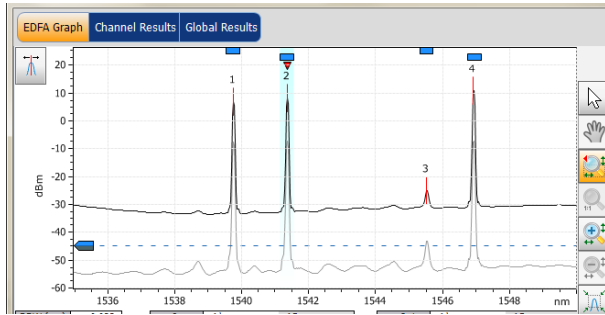
4. Select the label that will appear on the peaks in the graph, either the channel name, its number, or nothing.



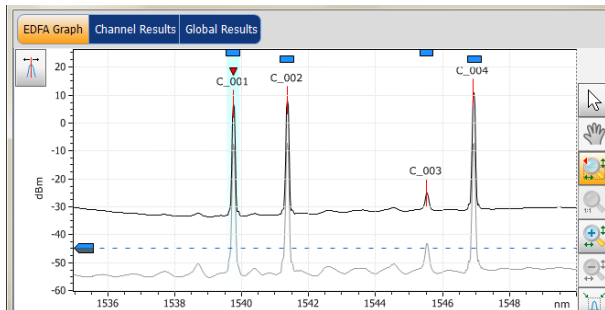
Setting Up the Instrument in EDFA Mode

Defining Preferences

Note: The channel name and channel number cannot be shown at the same time.



Channel numbers

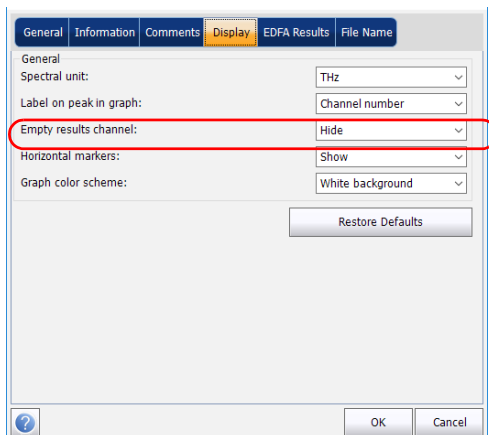


Defined channel names

Setting Up the Instrument in EDFA Mode

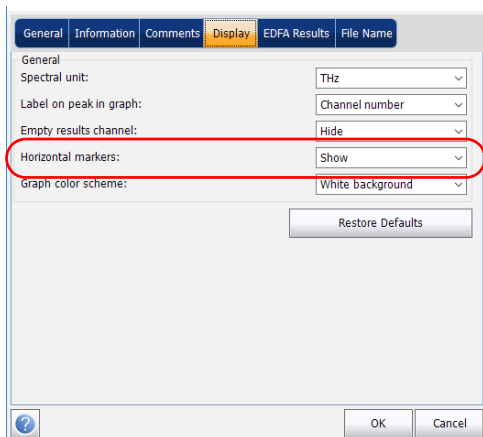
Defining Preferences

5. Select whether you want to display the empty channels from the channel list in the **Results** tab.



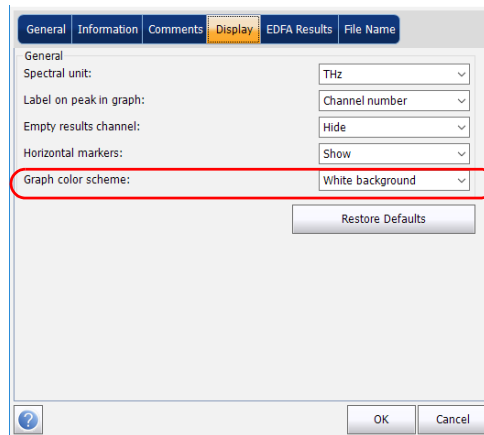
The screenshot shows the 'Display' tab of a preferences window. The 'Empty results channel' dropdown menu is highlighted with a red circle and is set to 'Hide'. Other settings include 'Spectral unit' (THz), 'Label on peak in graph' (Channel number), 'Horizontal markers' (Show), and 'Graph color scheme' (White background). A 'Restore Defaults' button is located below the settings. The 'OK' and 'Cancel' buttons are at the bottom right.

6. Select if you want to show the horizontal markers or not.



The screenshot shows the 'Display' tab of a preferences window. The 'Horizontal markers' dropdown menu is highlighted with a red circle and is set to 'Show'. Other settings include 'Spectral unit' (THz), 'Label on peak in graph' (Channel number), 'Empty results channel' (Hide), and 'Graph color scheme' (White background). A 'Restore Defaults' button is located below the settings. The 'OK' and 'Cancel' buttons are at the bottom right.

7. Select the background color scheme for the graph as desired.



8. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

Setting Up the Instrument in EDFA Mode

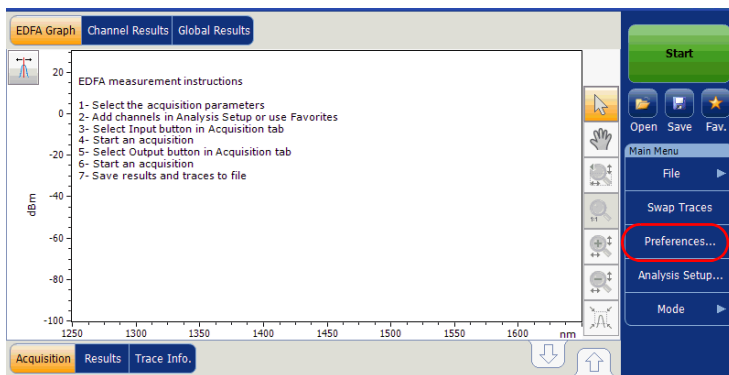
Defining Preferences

Customizing EDFA Results Table

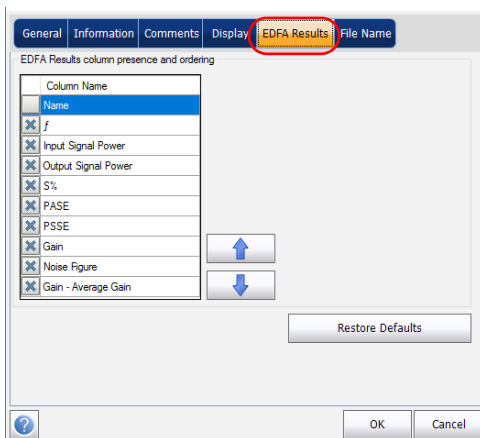
It is possible to select which results you would like to be displayed in the **Results** tab of your EDFA tests.

To customize the results table:

1. From the **Main Menu**, press **Preferences**.



2. Select the **EDFA Results** tab.



3. Select which parameters you want to display in the **Results** tab from the list of available choices:
 - Name: name of channel.
 - Center wavelength/frequency: spectral center-of-mass for the peak in that channel.
 - Input Signal Power: signal power for the selected channel (excludes noise).
 - Output Signal Power: signal power for the selected channel (excludes noise).
 - S %: current output power according to the measured output power (Output Signal Power / [Output Signal Power + PASE]).
 - PASE: power of the spontaneous emission amplified by EDFA.
 - PSSE: power of the spontaneous emission of the source.
 - Gain: gain (Output Signal Power - Input Signal Power) for the selected channel.
 - Noise Figure: EDFA's noise figure measured for the selected channel.
 - Gain - Avg. Gain: selected channel gain minus the average of all channel gains.
4. Press the up or down arrows to change the order in which the columns will appear in the **Results** tab.
5. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

Setting Up the Instrument in EDFA Mode

Setting Up EDFA Analysis Parameters

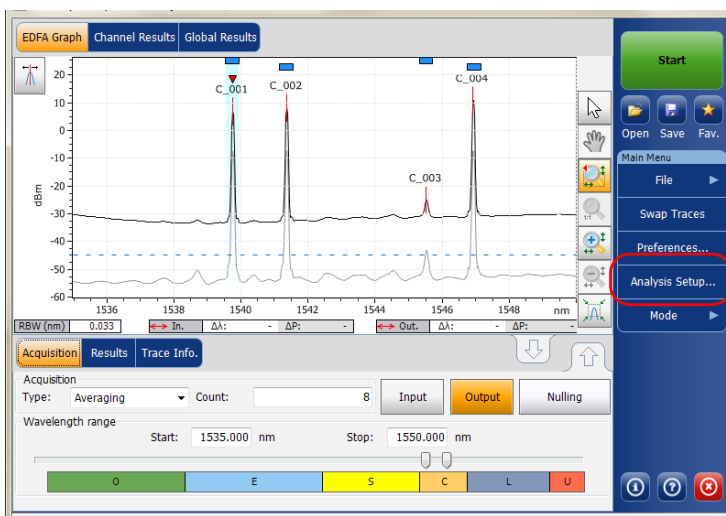
This section presents the various analysis settings for the application, particularly the channel list and settings. You can set the channel list, channel parameters, manage favorite configurations and perform user calibration.

Note: When you change the analysis setup parameters, the new settings are active as soon as you confirm your choice. The current trace is re-analyzed, and the analysis setup parameters will be applied to the global results and channel results for the following acquisitions.

You can either set each parameter individually, or use parameters from the current trace and import them.

To import the parameters from the current trace:

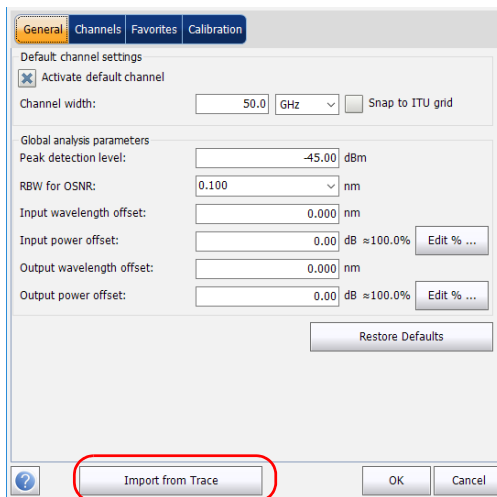
1. Make sure that you have a trace on-screen.
2. From the **Main Menu**, press **Analysis Setup**.



Setting Up the Instrument in EDFA Mode

Setting Up EDFA Analysis Parameters

3. From any tab, press **Import from Trace**.



4. Press **OK** to confirm the changes.

Setting Up the Instrument in EDFA Mode

Setting Up EDFA Analysis Parameters

Defining General Settings

The general analysis parameters for EDFA acquisitions affect the calculation of the results. Any change you make to the settings affect future traces, or you can apply them to the active trace when reanalyzing it.

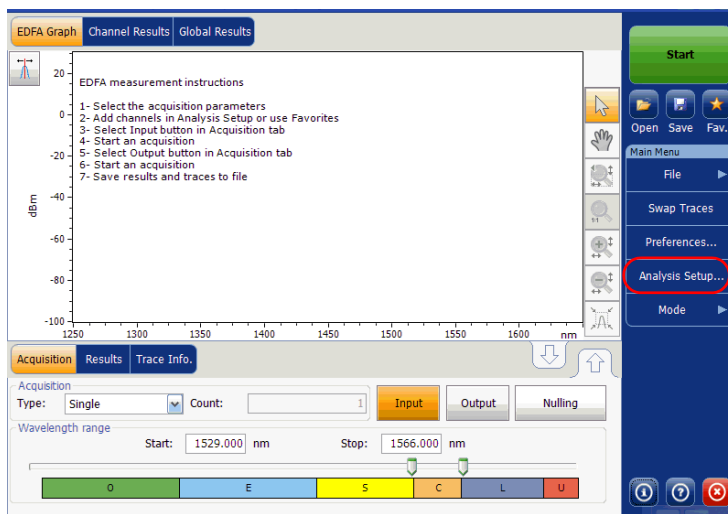


IMPORTANT

In the General tab, you can set the default channel parameters. Any channel found during an acquisition that is not defined in the channel list will be analyzed according to the default channel settings.

To define general settings:

1. From the Main Menu, press Analysis Setup.



2. Select the **General** tab.

The screenshot shows the 'General' tab of the EDFA analysis software interface. The 'General' tab is highlighted with a red circle. The interface includes a 'Default: channel settings' section with a checked 'Activate default channel' checkbox and a 'Channel width' of 50.0 GHz. Below this is the 'Global analysis parameters' section, which includes fields for 'Peak detection level' (-45.00 dBm), 'RBW for OSNR' (0.100 nm), 'Input wavelength offset' (0.000 nm), 'Input power offset' (0.00 dB $\approx$ 100.0%), 'Output wavelength offset' (0.000 nm), and 'Output power offset' (0.00 dB $\approx$ 100.0%). Each offset field has an 'Edit % ...' button. A 'Restore Defaults' button is located at the bottom of the parameters section. At the very bottom of the window are buttons for '?', 'Import from Trace', 'OK', and 'Cancel'.

Section	Parameter	Value	Unit	Buttons
Default: channel settings	Activate default channel	☒		
	Channel width	50.0	GHz	☐ Snap to ITU grid
Global analysis parameters	Peak detection level	-45.00	dBm	
	RBW for OSNR	0.100	nm	
	Input wavelength offset	0.000	nm	
	Input power offset	0.00	dB $\approx$ 100.0%	Edit % ...
	Output wavelength offset	0.000	nm	
	Output power offset	0.00	dB $\approx$ 100.0%	Edit % ...
Restore Defaults				

Setting Up the Instrument in EDFA Mode

Setting Up EDFA Analysis Parameters

- Under **Default channel settings**, define the following parameters as needed:

Default: channel settings

☒ Activate default channel

Channel width: 50.0 GHz ☐ Snap to ITU grid

Global analysis parameters

Peak detection level: -45.00 dBm

RBW for OSNR: 0.100 nm

Input wavelength offset: 0.000 nm

Input power offset: 0.00 dB ≈ 100.0% Edit % ...

Output wavelength offset: 0.000 nm

Output power offset: 0.00 dB ≈ 100.0% Edit % ...

Restore Defaults

? Import from Trace OK Cancel

- Clear the **Activate default channel** selection, to use the currently defined channel for analysis. This reduces the analysis time by eliminating the peak detection over the complete spectral range. The peaks outside the defined channel list will not be analyzed.

- Channel width (GHz or nm): indicates the limit inside which the power values will be considered in the channel.

For default channels, the channel width that sets the limits of the channel, should be the same as the channel distance or smaller (channel distance is defined while creating a channel list). If the channel width is not compatible with the channel spacing, either a single peak may be found for two distinct channels and two analysis would be performed and displayed for that peak, or, it is possible that two peaks may be found within the same channel and be considered as one multi-peak signal. With this result, you can use markers to find the spacing between adjacent channels or to find the channel width.

- Snap to ITU Grid: When selected, each detected peak will be defined by the nearest ITU channel. The ITU grid is based on the selected channel width.

4. Under **Global analysis parameters**, define the following parameters as needed:

The screenshot shows the 'General' tab of the instrument's settings window. The 'Global analysis parameters' section is highlighted with a red box. The parameters are as follows:

Parameter	Value	Unit
Peak detection level:	-45.00	dBm
RBW for OSNR:	0.100	nm
Input wavelength offset:	0.000	nm
Input power offset:	0.00	dB ≈100.0%
Output wavelength offset:	0.000	nm
Output power offset:	0.00	dB ≈100.0%

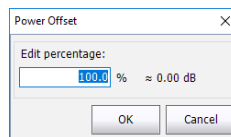
Buttons: 'Edit % ...' (next to Input power offset), 'Edit % ...' (next to Output power offset), 'Restore Defaults'.

Setting Up the Instrument in EDFA Mode

Setting Up EDFA Analysis Parameters

- Peak detection level (dBm): minimum power level from where the peak can be considered as a signal.
- RBW for OSNR (nm): indicates the resolution bandwidth selected for the OSNR calculation. This parameter is generally set to 0.1 nm to allow for a common basis of comparison between different OSAs having different effective resolutions. The instrument's RBW value is written below the graph. This parameter does not actually have an effect on the acquisition, but is only a normalization factor used to provide the OSNR value in a standardized manner.
- Input wavelength offset (nm): offset value applied on the input wavelength. This does not replace a calibration performed at EXFO, but it can help you temporarily sharpen the specifications if you have determined that, for example, your modules are used beyond the normal allowed. Entering a value in THz is not possible. When an offset is applied, it is indicated at the bottom of the graph ($\lambda \leftrightarrow$).
- Input power offset (dB): offset value applied on the input power. This does not replace a calibration performed at EXFO, but it can help you achieve the specifications if you have determined that, for example, your modules are used beyond the normal allowed. When an offset is applied, it is indicated at the bottom of the graph ($P \leftrightarrow$).

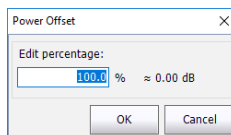
To edit the power offset value as a tap percentage, press the **Edit %** button.



The percentage value entered in **Edit percentage** will be converted to a corresponding equivalent value in dB.

- **Output wavelength offset (nm):** offset value applied on the output wavelength. This does not replace a calibration performed at EXFO, but it can help you temporarily sharpen the specifications if you have determined that, for example, your modules are used beyond the normal allowed. Entering a value in THz is not possible. When an offset is applied, it is indicated at the bottom of the graph ($\lambda \leftrightarrow$).
- **Output power offset (dB):** offset value applied on the output power. This does not replace a calibration performed at EXFO, but it can help you achieve the specifications if you have determined that, for example, your modules are used beyond the normal allowed. When an offset is applied, it is indicated at the bottom of the graph ($P \leftrightarrow$).

To edit the power offset value as a tap percentage, press the **Edit %** button.



The percentage value entered in **Edit percentage** will be converted to a corresponding equivalent value in dB.

5. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

Setting Up the Instrument in EDFA Mode

Setting Up EDFA Analysis Parameters

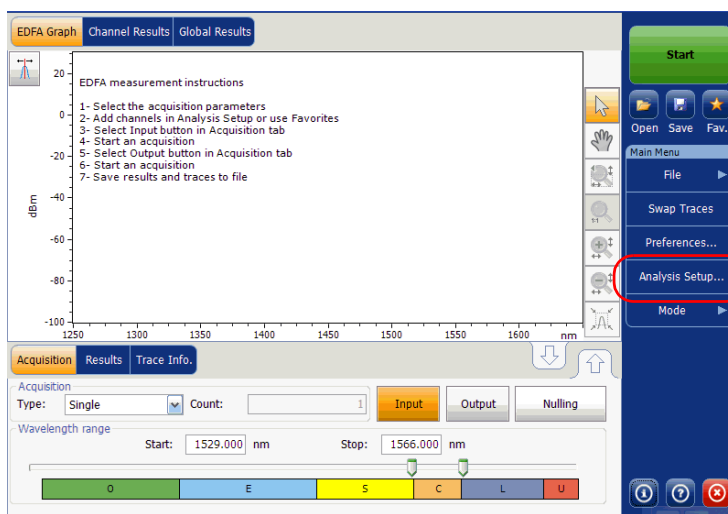
Managing Channels

Testing DWDM systems involves characterizing multiple signals in a link. The application allows you to define channels using a channel editor or quickly generate them from the current data. You can also rapidly create a list of equally spaced channels. Once a channel list is created, you can modify it as needed. You can edit the analysis parameters for one channel or multiple channels.

While creating the channel list, some channels may overlap. When the channel widths are specified in nm, two channels are considered to be overlapping when more than 1.2 GHz of frequency range is common between the two channels.

To add a channel list:

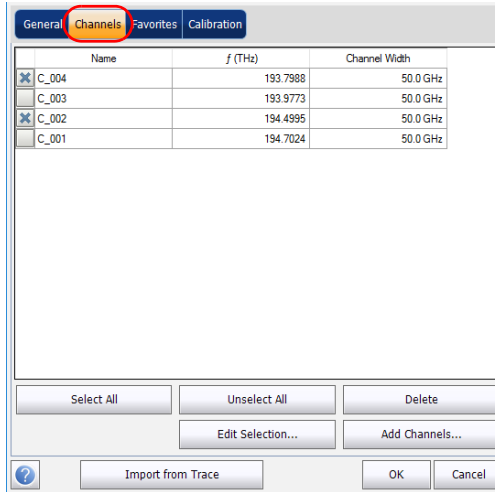
1. From the **Main Menu**, press **Analysis Setup**.



Setting Up the Instrument in EDFA Mode

Setting Up EDFA Analysis Parameters

2. Select the **Channels** tab.



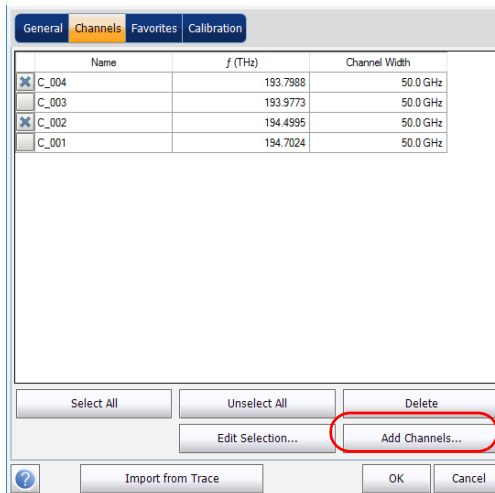
Name	f (THz)	Channel Width
☒ C_004	193.7988	50.0 GHz
☐ C_003	193.9773	50.0 GHz
☒ C_002	194.4995	50.0 GHz
☐ C_001	194.7024	50.0 GHz

Select All Unselect All Delete

Edit Selection... Add Channels...

Import from Trace OK Cancel

3. By default, the channel list is empty. Press **Add Channels**.



Name	f (THz)	Channel Width
☒ C_004	193.7988	50.0 GHz
☐ C_003	193.9773	50.0 GHz
☒ C_002	194.4995	50.0 GHz
☐ C_001	194.7024	50.0 GHz

Select All Unselect All Delete

Edit Selection... Add Channels...

Import from Trace OK Cancel

Setting Up the Instrument in EDFA Mode

Setting Up EDFA Analysis Parameters

4. Enter values in the boxes as explained below:

The screenshot shows a dialog box titled "Add channels". It contains the following fields and controls:

- Start range: 1528.773 nm
- Stop range: 1560.606 nm
- Channel center wavelength: ITU 100 GHz (dropdown menu)
- Channel distance: 100 GHz (dropdown menu)
- Channel width: 100 GHz (dropdown menu)
- Name prefix: (empty text box)
- Starting value: 1 (text box)
- Increment value: 1 (text box)
- Restore Defaults (button)
- OK (button)
- Cancel (button)

- Start range (nm or THz): starting range of the channel list.
- Stop range (nm or THz): ending range of the channel list.
- Channel center wavelength/frequency: spectral center-of-mass for the peak in that channel.

Note: When using the custom channel center wavelength option, the first channel will be centered at the start range, and the list will be created using channel distance and channel width.

- Channel distance (nm or GHz): distance between the channels. The value of channel distance will be set depending on the selection made for the channel center wavelength option. The channel distance box will be enabled only when the channel center wavelength option is set to custom.
- Channel width (nm or GHz): limit inside which the power values will be considered in the channel. Integrated power is calculated on channel width.

- Name prefix: adds prefix to the channel names.
- Starting Value: sets the increment starting value for the channel name in the channel list.
- Increment value: sets the increment value for the channel name in the channel list.

5. Press **OK** to return to the **Channels** window, which now lists the added channels.

Note: *When new channels are added, the Use Default thresholds will be applied to the channel parameters.*

Note: *A warning message will be displayed if any channels are overlapping, but the analysis can still be performed on overlapping channels. If any duplicate channels are added, a confirmation message will be displayed to overwrite the existing channels with the duplicate channels.*

6. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

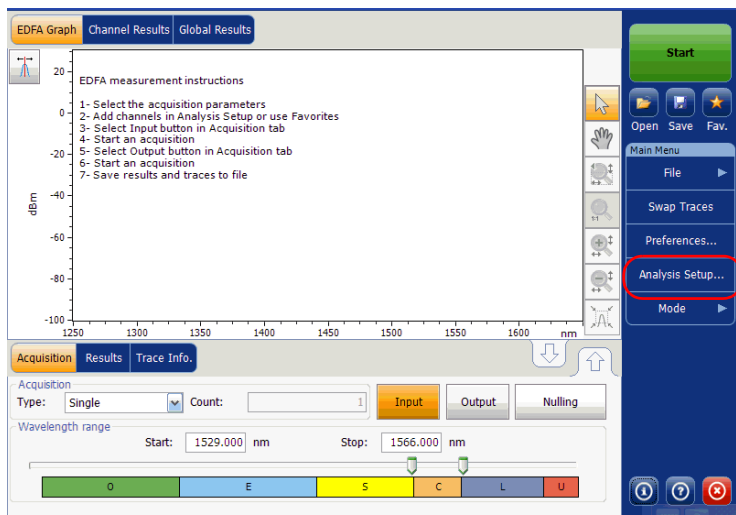
Note: *The application displays a message if more than 1000 channels are added. You can exit the **Analysis Setup** window only after deleting the extra channels from the channel list. You can delete the channels manually as required.*

Setting Up the Instrument in EDFA Mode

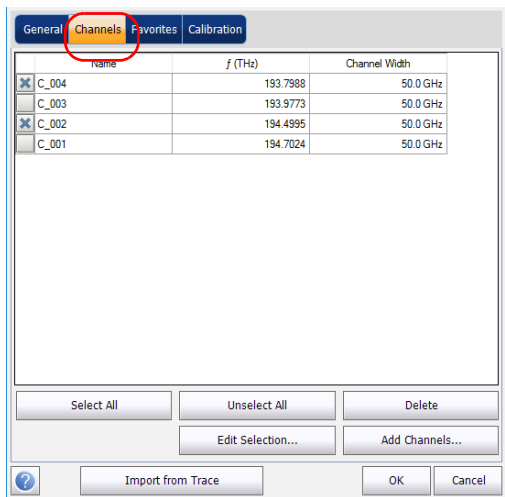
Setting Up EDFA Analysis Parameters

To edit the parameters of a specific channel:

- 1. From the Main Menu, press Analysis Setup.



- 2. Select the Channels tab.



Setting Up the Instrument in EDFA Mode

Setting Up EDFA Analysis Parameters

3. Select the channel or channels to be modified in the channel list.

If you want the changes to be applied to all of your channels, press **Select All**. Channels can be selected one by one or all together. You can press **Unselect All** to clear all channel selections. To delete the selected channels, press **Delete**.

4. Press **Edit Selection**.

	Name	f (THz)	Channel Width
☒	C_004	193.7988	50.0 GHz
☐	C_003	193.9773	50.0 GHz
☒	C_002	194.4995	50.0 GHz
☐	C_001	194.7024	50.0 GHz

Buttons: Select All, Unselect All, Delete, Edit Selection... (highlighted), Add Channels...

Footer: Import from Trace, OK, Cancel

Setting Up the Instrument in EDFA Mode

Setting Up EDFA Analysis Parameters

5. If you want to name the channels, enable the corresponding option. Then enter the name prefix you want to use. If you have selected more than one channel and want the name to be incremented automatically, enter the starting value for the incrementation, then the increment value for each new channel.

☒ Channel name

Name prefix:

Starting value:

Increment value:

Analysis

Channel width:

Setting Up the Instrument in EDFA Mode

Setting Up EDFA Analysis Parameters

6. Modify the settings as needed. For more information about the settings, see *Managing Channels on page 240*. If you leave a box empty, it will remain as it was before your changes.

The screenshot shows a dialog box for setting up EDFA analysis parameters. It has two main sections: 'Channel name' and 'Analysis'. The 'Channel name' section is expanded, showing 'Name prefix' set to 'MyChannel', 'Starting value' set to 1, and 'Increment value' set to 1. The 'Analysis' section is also expanded, showing 'Channel width' set to 50.0 GHz. A red rectangle highlights the 'Analysis' section.

7. Press **OK** to return to the **Channels** tab, which now contains the modified settings.
8. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Setting Up Acquisition Parameters

Before performing your test, you must set the acquisition type and parameters.

There are three types of acquisitions in EDFA mode: single, averaging and real-time.

- **Single:** Spectral measurement is performed once. The results are displayed according to this measurement.
- **Averaging:** Spectral measurements are performed based on the number of scans that you have entered for this parameter. The trace will be displayed after each acquisition and averaged with the previous traces.
- **Real-Time:** In real-time acquisition, spectral measurements are performed continuously until you press **Stop**. No averaging is done for spectral measurements. The graph and results are refreshed after each acquisition.

Before performing measurements on an optical spectrum, you must select the wavelength/frequency range to use. You can perform the scan on the full range, on spectral bands, or select a custom range.

Note: *The shorter the wavelength or frequency range, the faster the acquisition.*

Setting Up the Instrument in EDFA Mode

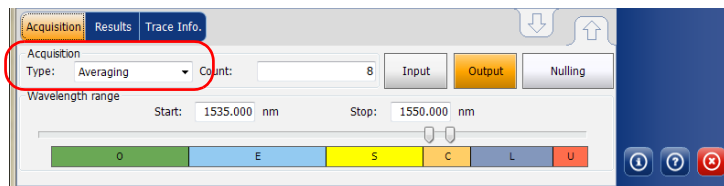
Setting Up Acquisition Parameters

To set parameters in the Acquisition tab:

1. From the main window, select the **Acquisition** tab.



2. Select the acquisition type.



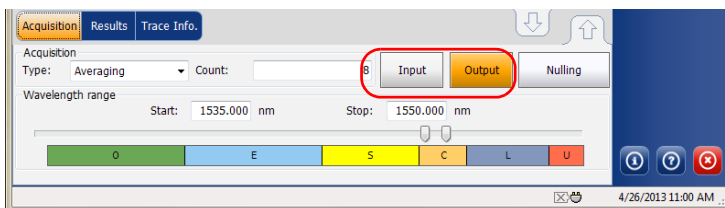
Setting Up the Instrument in EDFA Mode

Setting Up Acquisition Parameters

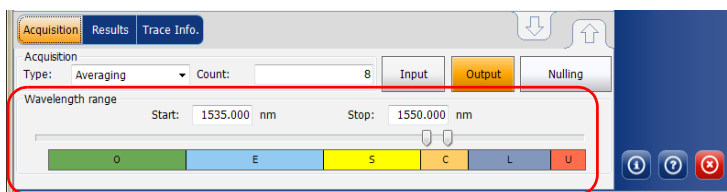
3. If you are performing an averaging type acquisition, enter the number of scans the unit will perform.

Note: You cannot modify the number of scans count value if you are performing a single or real-time acquisition.

4. Press **Input** or **Output** to specify which position to use to store the next acquisition.



5. Select the wavelength range for your acquisition.



You can select the wavelength range by entering the start and stop values or by selecting a range on the double slider.

To select the wavelength range using the double slider, move the left and right handles on the double slider or simply click on any band.

Note: You can select more than one adjoining ranges to include in your range, for example, S + C.

The wavelength range covered within these bands of the spectra are listed below.

- O band (original): 1255 to 1365 nm
- E band (extended): 1355 to 1465 nm
- S band (short wavelengths): 1455 to 1535 nm
- C band (conventional “erbium window”): 1525 to 1570 nm
- L band (long wavelengths): 1560 to 1630 nm
- U band (ultralong wavelengths): 1620 to 1650 nm.

10 ***Setting Up the Instrument in Transmitter Mode***

Before performing a spectral analysis in the transmitter mode, you must set up your OSA module and the test application with the appropriate parameters, as explained in this document.

- The *preferences* are the result displayed in the graph and tables, as well as the job information and related comments saved with each file.
- The *analysis parameters* include the area to be analyzed around the peak, the possibility to mask the data of the main peak from analysis and to set the noise range for OSNR.
- The *acquisition parameters* include the type of measurement you want to perform and the wavelength range.

See *Setting Up Transmitter Analysis Parameters* on page 268 and *Setting Up Acquisition Parameters* on page 275 for more details.

Setting Up the Instrument in Transmitter Mode

Defining Preferences

Defining Preferences

The preferences window allows you to set general information and comments on trace, set display parameters and customize the results table.

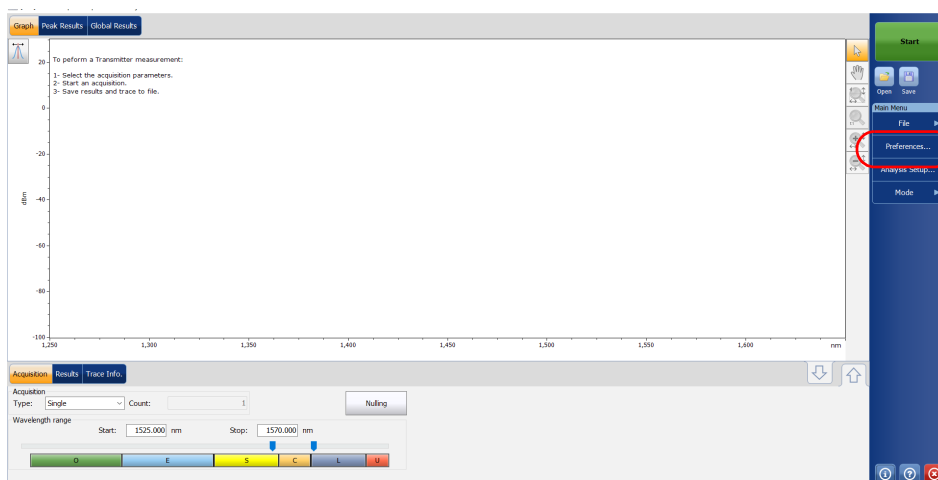
Note: Only the **Display** and **Transmitter Results** tabs are available in offline mode.

Defining Trace Information

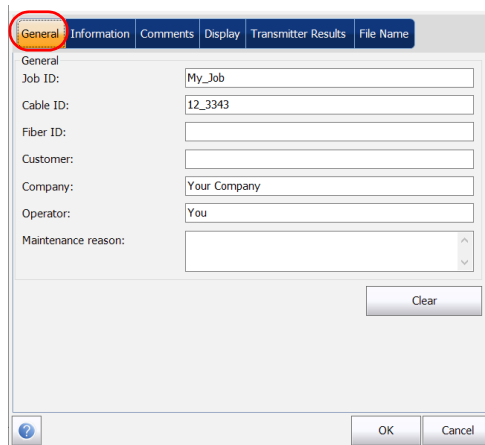
The trace information relates to the description of the job to be done, cable and job IDs, and any relevant information about what is being tested.

To enter general information:

1. From the **Main Menu**, press **Preferences**.



2. Select the **General** tab.



The screenshot shows a software window with a tabbed interface. The 'General' tab is selected and highlighted with a red circle. The tabs are: General, Information, Comments, Display, Transmitter Results, and File Name. The 'General' tab contains the following fields:

- Job ID: My_Job
- Cable ID: 12_3343
- Fiber ID: (empty)
- Customer: (empty)
- Company: Your Company
- Operator: You
- Maintenance reason: (empty)

At the bottom right of the form area is a 'Clear' button. At the bottom of the window are 'OK' and 'Cancel' buttons.

3. Define the general parameters as needed.
4. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Clear** to clear all the changes made in the **General** tab.

Setting Up the Instrument in Transmitter Mode

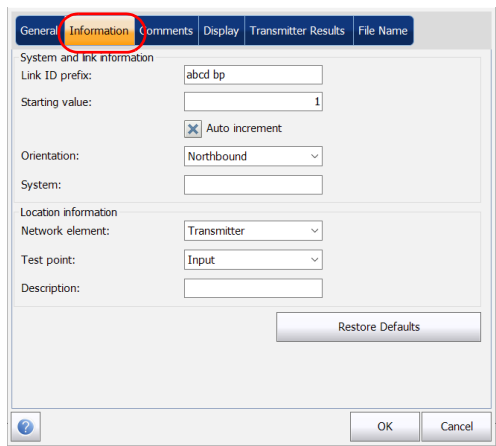
Defining Preferences

To enter link and location information:

- 1. From the Main Menu, press **Preferences**.



- 2. Select the **Information** tab.



3. Under **System and link information**, define the following parameters as needed:

The screenshot shows a software window with several tabs: General, Information, Comments, Display, Transmitter Results, and File Name. The 'Information' tab is active. Within this tab, the 'System and link information' section is enclosed in a red rectangular box. This section includes the following fields and controls:

- Link ID prefix:** A text box containing 'abcd bp'.
- Starting value:** A text box containing '1'.
- Auto increment:** A checkbox that is checked.
- Orientation:** A dropdown menu showing 'Northbound'.
- System:** An empty text box.

Below the red box, the 'Location information' section contains:

- Network element:** A dropdown menu showing 'Transmitter'.
- Test point:** A dropdown menu showing 'Input'.
- Description:** An empty text box.

At the bottom of the window, there is a 'Restore Defaults' button, and at the very bottom, 'OK' and 'Cancel' buttons.

- **Link ID prefix:** The prefix value for the link ID. You can enter any alphanumeric value.
- **Starting value:** The suffix increment starting value for the link ID. This value is incremented each time a new file is saved provided the **Auto Increment** option is selected.



IMPORTANT

If the **Auto Increment** option is not selected, you have to manually change the file name when saving the trace file, otherwise the application will overwrite the previously saved file.

- **Orientation:** The orientation of the link.
- **System:** Information about the system under test.

Setting Up the Instrument in Transmitter Mode

Defining Preferences

4. Under **Location Information**, define the following parameters as needed:

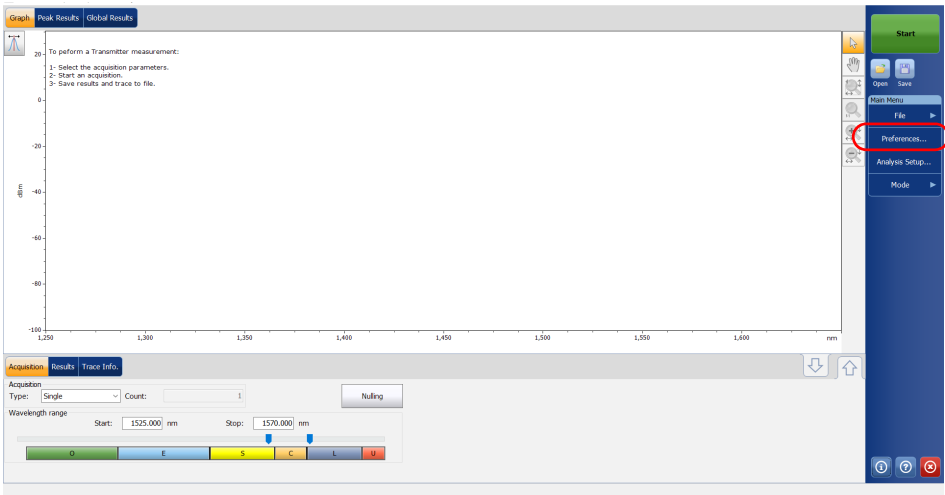
The screenshot shows a software window with several tabs: General, Information (selected), Comments, Display, Transmitter Results, and File Name. The 'Information' tab is active, displaying two main sections. The 'System and link information' section includes fields for 'Link ID prefix' (set to 'abcd bp'), 'Starting value' (set to '1'), an 'Auto increment' checkbox (checked), 'Orientation' (set to 'Northbound'), and a 'System' field. The 'Location information' section, which is highlighted with a red rectangle, includes a 'Network element' dropdown menu (set to 'Transmitter'), a 'Test point' dropdown menu (set to 'Input'), and a 'Description' text input field. Below the 'Location information' section is a 'Restore Defaults' button. At the bottom of the window are 'OK' and 'Cancel' buttons.

- Network element: Sets the type of network element.
 - Test point: Sets the location where the test is performed on the link.
 - Description: Enter the description of location if required.
5. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

To enter comments:

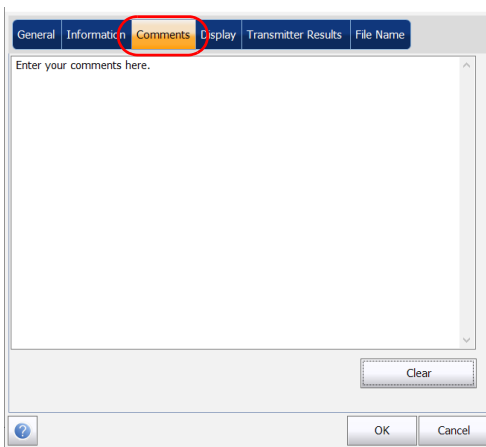
1. From the Main Menu, press **Preferences**.



Setting Up the Instrument in Transmitter Mode

Defining Preferences

2. Select the **Comments** tab.



3. Enter your comments for the current trace.
4. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

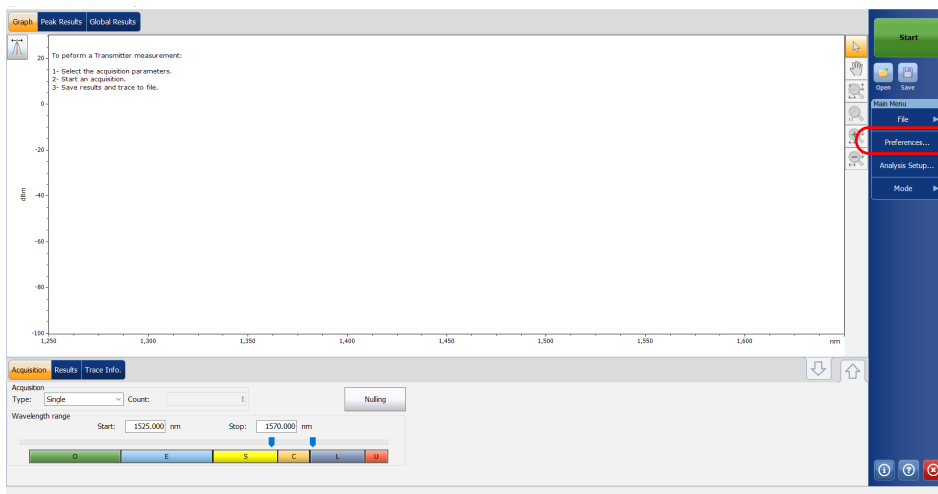
Press **Clear** to clear all the changes made in the **Comments** tab.

Defining Display Parameters

The application allows you to set display settings for the acquisition trace. You can set the spectral unit for the trace and the results table. You can also select the label that should appear on the peaks of the trace.

To define display parameters:

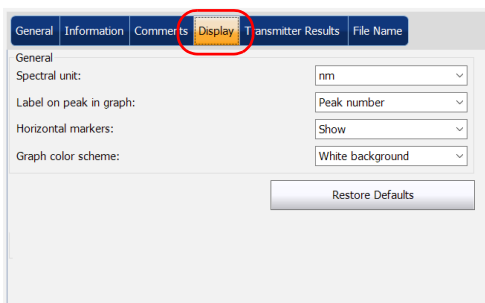
1. From the **Main Menu**, press **Preferences**.



Setting Up the Instrument in Transmitter Mode

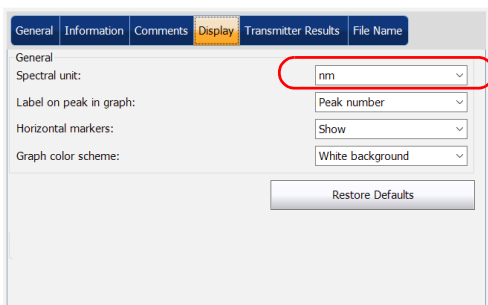
Defining Preferences

2. Select the **Display** tab.



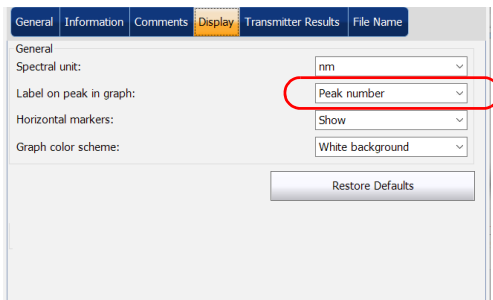
The screenshot shows the 'Display' tab selected in the preference menu. The 'Display' tab is highlighted with a red circle. The 'Spectral unit' dropdown is set to 'nm'. The 'Label on peak in graph' dropdown is set to 'Peak number'. The 'Horizontal markers' dropdown is set to 'Show'. The 'Graph color scheme' dropdown is set to 'White background'. A 'Restore Defaults' button is visible at the bottom.

3. Select the spectral unit you want to work with, either nm or THz.



The screenshot shows the 'Display' tab selected in the preference menu. The 'Spectral unit' dropdown is highlighted with a red circle and is set to 'nm'. The 'Label on peak in graph' dropdown is set to 'Peak number'. The 'Horizontal markers' dropdown is set to 'Show'. The 'Graph color scheme' dropdown is set to 'White background'. A 'Restore Defaults' button is visible at the bottom.

4. Select the label that will appear on the peaks in the graph, either the peak number, or nothing.

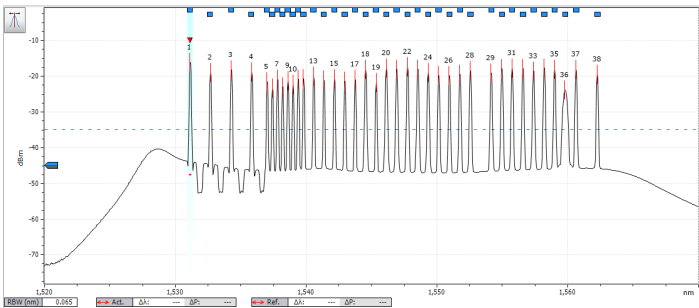


The screenshot shows the 'Display' tab selected in the preference menu. The 'Label on peak in graph' dropdown is highlighted with a red circle and is set to 'Peak number'. The 'Spectral unit' dropdown is set to 'nm'. The 'Horizontal markers' dropdown is set to 'Show'. The 'Graph color scheme' dropdown is set to 'White background'. A 'Restore Defaults' button is visible at the bottom.

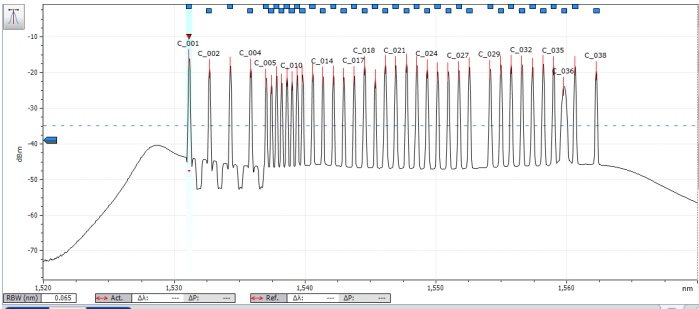
Setting Up the Instrument in Transmitter Mode

Defining Preferences

Note: The channel name and channel number cannot be shown at the same time.



Channel numbers



Defined channel names

5. Select whether you want to show the horizontal markers or not.

General Information Comments **Display** Transmitter Results File Name

General

Spectral unit: nm

Label on peak in graph: Peak number

Horizontal markers: Show

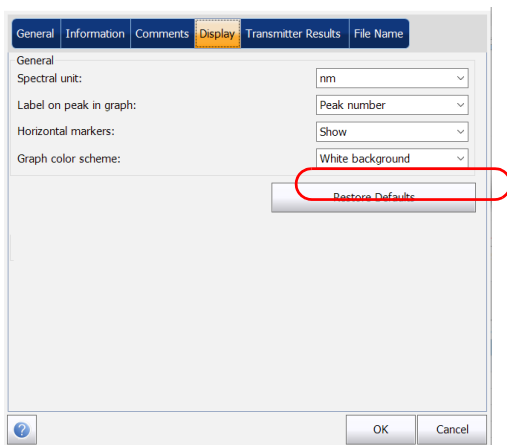
Graph color scheme: White background

Restore Defaults

Setting Up the Instrument in Transmitter Mode

Defining Preferences

6. Select the background color scheme for the graph as desired.



7. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

Customizing the Transmitter Results Table

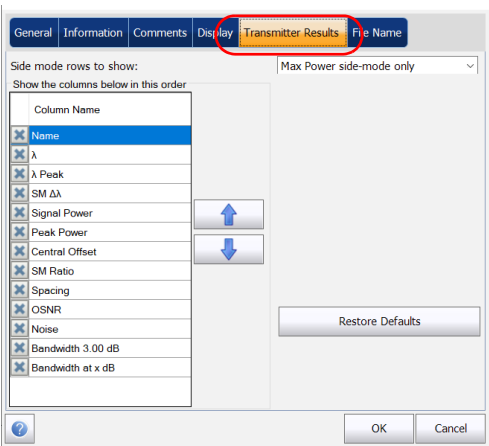
It is possible to select which results you would like to be displayed in the **Results** tab of your transmitter tests.

To customize the results table:

1. From the **Main Menu**, press **Preferences**.



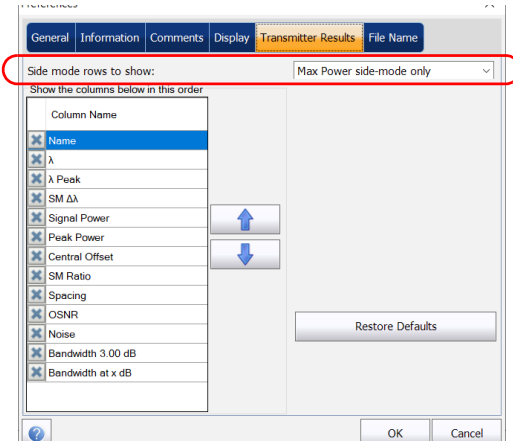
2. Select the **Transmitter Results** tab.



Setting Up the Instrument in Transmitter Mode

Defining Preferences

3. Select how many side modes you want to display to the left and right of the peak.



4. Select which parameters you want to display in the **Results** tab from the list of available choices:
 - Name: name of main mode peak.
 - λ (Center wavelength/frequency): spectral center-of-mass for the peak.
 - λ Peak: spectral peak of the mode.
 - SM $\Delta\lambda$: spectral difference between the main mode peak and the side modes.
 - Signal Power: signal power for the selected peak (excludes noise).
 - Peak Power: peak signal power.
 - Central offset: spectral position of the main mode minus the means of the spectral positions of the first adjacent left and right side modes.

- SM Ratio: power difference between the peak of the main mode and the side modes.
 - Spacing: average estimated spacing between adjacent modes in the laser.
 - OSNR: optical signal to noise ratio, given by Signal power (according to the current calculation method, in dBm), minus Noise (according to the current calculation method, in dBm).
 - Noise: noise level for the selected peak. The type of noise is indicated in front of the measurement (IEC, Fit, or Gaussian).
 - BW 3.00 dB: bandwidth measured by taking the width of a signal at 50 % linear power of the peak, or -3 dB from the peak.
 - BW at x dB: bandwidth measured by taking the width of a signal at x dB from the peak.
5. Press the up or down arrows to change the order in which the columns will appear in the **Results** tab.
 6. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Restore Defaults** to remove all the changes and apply the default values.

Setting Up the Instrument in Transmitter Mode

Setting Up Transmitter Analysis Parameters

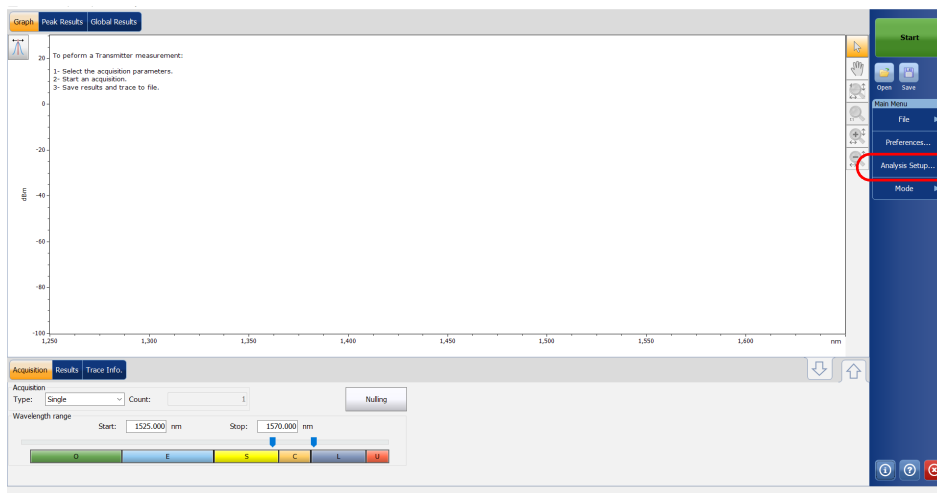
This section presents the various analysis settings for the application. You can set the area to be analyzed around the peak, mask the data of the main peak from analysis and set the noise range for OSNR.

Note: When you change the analysis setup parameters, the new settings are active as soon as you confirm your choice. The current trace is re-analyzed, and the analysis setup parameters will be applied to the global results and peak results for the following acquisitions.

You can either set each parameter individually, or use parameters from the current trace and import them.

To define the transmitter analysis settings:

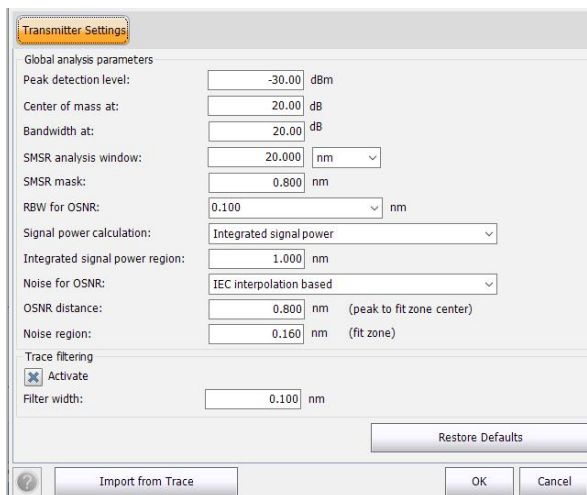
1. From the Main Menu, press Analysis Setup.



Setting Up the Instrument in Transmitter Mode

Setting Up Transmitter Analysis Parameters

2. Define the following parameters as needed:



Transmitter Settings

Global analysis parameters

Peak detection level: dBm

Center of mass at: dB

Bandwidth at: dB

SMSR analysis window: nm

SMSR mask: nm

RBW for OSNR: nm

Signal power calculation:

Integrated signal power region: nm

Noise for OSNR:

OSNR distance: nm (peak to fit zone center)

Noise region: nm (fit zone)

Trace filtering

☒ Activate

Filter width: nm

- **Peak detection level (dBm):** Indicates the minimum power level from where the peak can be considered as a signal.
- **Center of mass at:** Is the relative position for computing the main mode peak center of mass.
- **Bandwidth at (dB):** Sets the power level used, relative to the peak power, to compute the second bandwidth result.
- **SMSR analysis window:** Is the area on the spectrum around the peak where the analysis will take place. In the **Graph** tab, you will see the area covered by the analysis window indicated in turquoise.
- **SMSR mask:** Is the area around the main mode peak where the filter will not apply. In the **Graph** tab, you will see the area covered by the mask indicated in pink.

Setting Up the Instrument in Transmitter Mode

Setting Up Transmitter Analysis Parameters

- **RBW for OSNR (nm):** Indicates the resolution bandwidth selected for the OSNR calculation. This parameter is generally set to 0.1 nm to allow for a common basis of comparison between different OSAs having different effective resolutions. The instrument's RBW value is written below the graph. This parameter does not actually have an effect on the acquisition, but is only a normalization factor used to provide the OSNR value in a standardized manner.
- **Signal power calculation:** Indicates which calculation method to apply for signal power value.

Integrated signal power: Represents the sum of the power values included between the limits of this main mode peak, minus the estimated noise contribution between the same boundaries. In some cases, for instance signals with high-frequency modulation, or signals with an inherent line width similar to or larger than the OSA's resolution bandwidth, this calculation becomes a better estimation of the true signal power.

Peak signal power: Represents the maximum power value inside the main mode peak. Note that it differs a little from the peak measurement on the spectrum due to the fact that the estimated noise is subtracted to get the peak signal power.

- **Integrated signal power region:** Represents the width of the area used to analyze the integrated signal power.
- **Noise for OSNR:** Indicates which calculation method to use for OSNR value.

IEC interpolation based (IEC): Uses the interpolation of noise measured on both sides of the signal to estimate the noise level. This fit definition relies on fit and exclusion zones. Only the points in the fit zones are used to calculate the linear interpolation fit. If you select this fit method, you have to define the fit and exclusion zones for your tests using the OSNR distance and noise region fields. The exclusion zone is indirectly obtained from the OSNR distance.

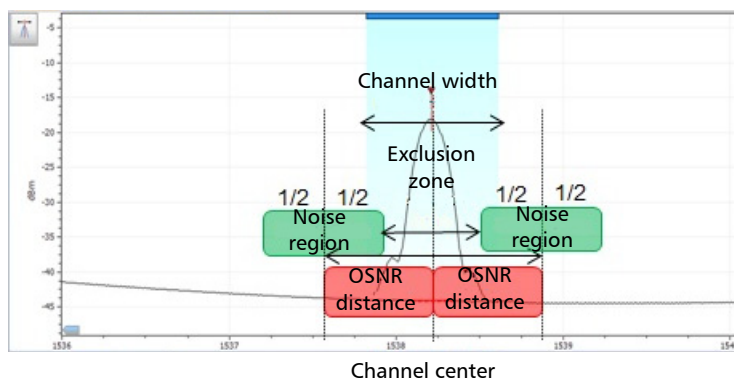
Setting Up the Instrument in Transmitter Mode

Setting Up Transmitter Analysis Parameters

Fifth order polynomial fit (Fit): Calculates the noise curve and thus the signal to noise ratio. The OSA will approximate the noise curve using a fifth order polynomial fit. This fit definition relies on fit and exclusion zones. Only the points in the fit zones are used to calculate the fifth order polynomial fit. If you select this fit method, you have to define the fit and exclusion zones for your tests using the OSNR distance and noise region fields. The exclusion zone is indirectly obtained from the OSNR distance.

Gaussian filter: Calculates the noise curve and thus the signal to noise ratio. The OSA will approximate the noise curve using a Gaussian filter. This filter definition relies on fit and exclusion zones. Only the points in the fit zones are used to calculate the Gaussian filter. If you select this filter, you have to define the fit and exclusion zones for your tests using the OSNR distance and noise region fields. The exclusion zone is indirectly obtained from the OSNR distance.

For the Gaussian filter, the OSNR distance corresponds to the distance from the main mode peak to the center of the fit zone. It is independent of the main mode peak width.

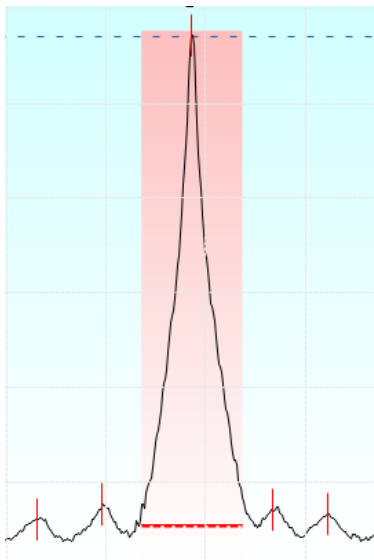
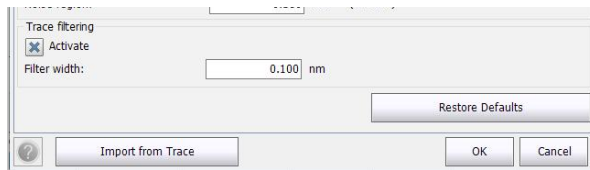


- OSNR distance (GHz or nm): Is the distance from the main mode peak to the center of the fit zone. It is independent of the main mode width.

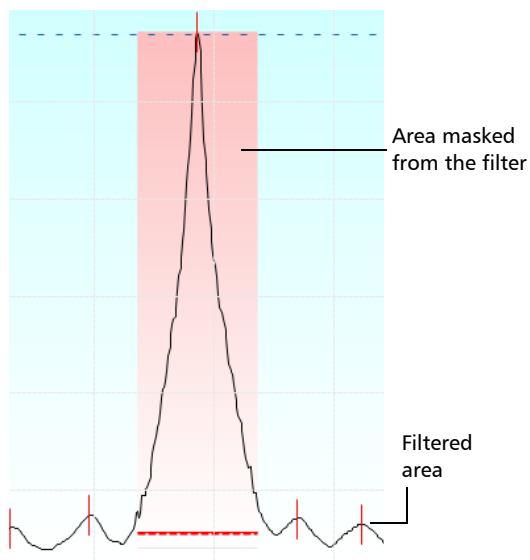
Setting Up the Instrument in Transmitter Mode

Setting Up Transmitter Analysis Parameters

- Noise region (fit zone): Defines the region where the polynomial fit applies. Two identical regions are centered at the OSNR distance.
- Trace filtering: Activates the trace filtering in the area surrounding the mask. You can increase or decrease the filter width as needed.



Unfiltered View



Filtered View

3. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

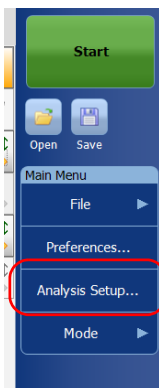
Press **Restore Defaults** to remove all the changes and apply the default values.

Setting Up the Instrument in Transmitter Mode

Setting Up Transmitter Analysis Parameters

To import the parameters from the current trace:

1. Make sure that you have a trace on-screen.
2. From the **Main Menu**, press **Analysis Setup**.



Setting Up the Instrument in Transmitter Mode

Setting Up Transmitter Analysis Parameters

3. Press **Import from Trace**.

The screenshot shows the 'Transmitter Settings' dialog box. It contains various input fields and dropdown menus for configuring transmitter analysis parameters. The 'Import from Trace' button at the bottom is circled in red.

Global analysis parameters	
Peak detection level:	-30.00 dBm
Center of mass at:	20.00 dB
Bandwidth at:	20.00 dB
SMSR analysis window:	20.000 nm
SMSR mask:	0.800 nm
RBW for OSNR:	0.100 nm
Signal power calculation:	Integrated signal power
Integrated signal power region:	1.000 nm
Noise for OSNR:	IEC interpolation based
OSNR distance:	0.800 nm (peak to fit zone center)
Noise region:	0.160 nm (fit zone)

Trace filtering

☒ Activate

Filter width: 0.100 nm

Restore Defaults

Import from Trace

OK Cancel

4. Press **OK** to confirm the changes.

Setting Up Acquisition Parameters

Before performing your test, you must set the acquisition type and parameters.

There are three types of acquisitions in transmitter mode:

- **Single:** Spectral measurement is performed once. The results are displayed according to this measurement. This mode allows for quick acquisitions.
- **Averaging:** Spectral measurements are performed based on the number of scans that you have entered for this parameter. The trace will be displayed after each acquisition and averaged with the previous traces.
- **Real-Time:** Spectral measurements are performed continuously until you press **Stop**. No averaging is done for spectral measurements. The graph and results are refreshed after each acquisition.

Before performing measurements on an optical spectrum, you must select the wavelength/frequency range to use. You can perform the scan on the full range, on spectral bands, or select a custom range.

Note: *The shorter the wavelength or frequency range, the faster the acquisition.*

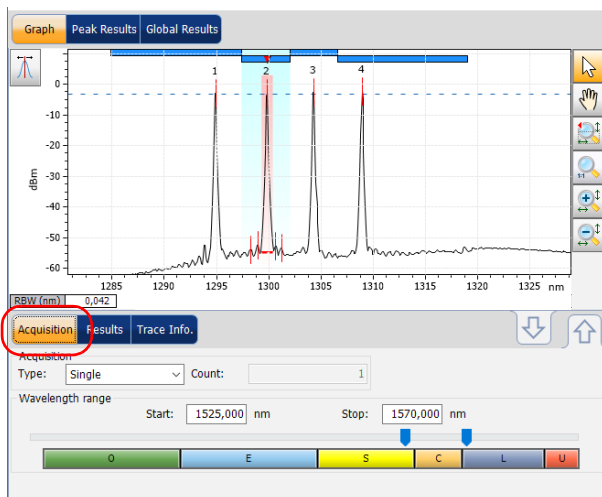
Note: *The **Acquisition** tab is not available in offline mode.*

Setting Up the Instrument in Transmitter Mode

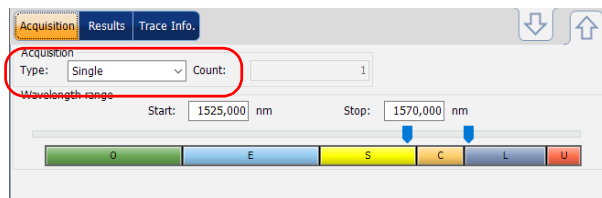
Setting Up Acquisition Parameters

To set parameters in the Acquisition tab:

1. From the main window, select the **Acquisition** tab.



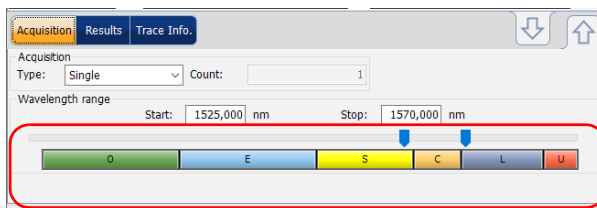
2. Select the acquisition type.



3. If you are performing an averaging-type acquisition, enter the number of scans the unit will perform.

Note: You cannot modify the number of scans count value if you are performing a single or real-time acquisition.

4. Select the wavelength range for your acquisition.



You can select the wavelength range by entering the start and stop values or by selecting a range on the double slider.

To select the wavelength range using the double slider, move the left and right handles on the double slider or simply click on any band.

Note: You can select more than one adjoining ranges to include in your range, for example, S + C.

The wavelength range covered within these bands of the spectra are listed below.

- O band (original): 1255 to 1365 nm
- E band (extended): 1355 to 1465 nm
- S band (short wavelengths): 1455 to 1535 nm
- C band (conventional “erbium window”): 1525 to 1570 nm
- L band (long wavelengths): 1560 to 1630 nm
- U band (ultralong wavelengths): 1620 to 1650 nm.

11 Starting a Measurement

Before starting a measurement you must select and configure a test mode. You will find the instructions to select a test mode in *Selecting a Test Mode* on page 16. For instructions on configuring various test modes, see their respective sections.

Note: You cannot start a measurement in offline mode.

To start the measurement:

From the main window, Press **Start**. The button will turn into a **Stop** button.



You are notified that the acquisition is in progress in the status bar.

When the acquisition is complete, the corresponding trace or traces, plus result data, trace information and pass-fail statuses, if activated, appear.

12 **Managing Files and Test Configurations**

Using the Discover Feature

The Discover feature allows you to start a measurement procedure to automatically build an analysis setup (scan range, channel list, analysis parameters, etc.) based on the signal being detected on the input port of the module.

Note: *The Discover features is available on the WDM and Drift test modes only.*

The procedure starts with a full range single scan (1250 nm to 1650 nm) to determine signal spectral range. It is followed by a second scan to establish the analysis parameters by locating the various peaks from the incoming signal.

When the discover process is successful, the application displays the results and graph for the detected channels and the newly discovered analysis parameters are applied automatically to the analysis setup.

Note: *If no signal is detected with the first scan, then the graph shows the full range scan and ends the discover procedure. The application analysis parameters remain unchanged.*

Managing Files and Test Configurations

Using the Discover Feature

Discover analysis parameters are established as follows:

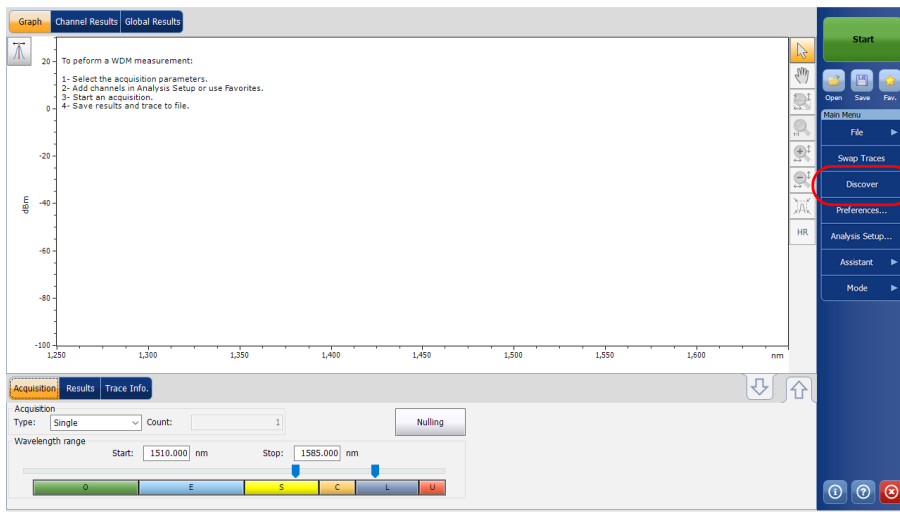
- The acquisition spectral range is set at 5 nm before the first detected signal peak, and 5 nm after the last detected signal peak (respecting spectral range limits).
- A channel list is created based on detected signal peaks; default settings are applied for all channel parameters.
- The center wavelength of each channel is aligned with an ITU grid (200, 100, 50 or 25 GHz for DWDM).
- The channel width is determined using the overlap criteria; if two channels overlap by more than 0.001 nm or 0.001 GHz, then their widths are reduced to the lower width. If the width of two channels is at 25 GHz and they still overlap, then the width is not reduced and the application considers it as a multi-peak signal (like recent modulation formats for 10 Gb/s or 40 Gb/s) and sets the width of the channel to 50 GHz.

Note: *One of the limitations of using the Discover feature is that the channels are discovered based on the ITU-Grid. All detected peaks will be aligned with an ITU-channel; the channel width and distance are computed and fit in one of the ITU grids (25, 50, 100 or 200 GHz). If your channel is not based on the ITU grid, the results may not be correct. In this case, you can use the default channel definition or create a new channel list.*

To start an automatic setup measurement:

Note: You cannot do a setup measurement in offline mode.

From the **Main Menu**, press **Discover**. The **Start** button turns into a **Stop** button and the first scan of the discover starts.



Note: If you already have an active trace on screen that was modified, you will be prompted to save it. Any reference trace will be cleared.

You are notified that the discover acquisition is in progress in the status bar.

When the automatic setup measurement is complete, you can start using these newly detected parameters. Simply press **Start** to perform another measurement with the newly found settings.

Managing Measurement Files

The application allows you to manage the measurement files for all test modes. You can save files for future reference, open files to continue a test, or clear them to make room on your unit.

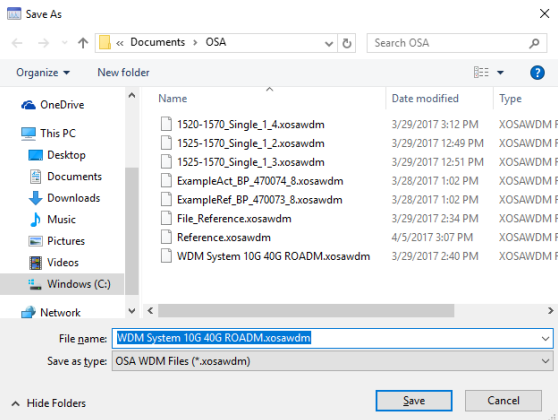
Note: *You can also open files from one type of test into another type of test (for example, open a WDM trace while in EDFA test mode) for specific test needs, see Opening Files in Other Test Modes on page 288 for more information.*

To save files:

- 1. From the **Main Menu**, Press **File**, and then press **Save As**.

OR

From the main window, press .



- 2. If desired, change the location and file name.
- 3. Press **Save** to save the trace, else press **Cancel** to exit the window.

Note: *Once a trace is overwritten, you cannot access it anymore.*

Note: *You cannot save a reference trace.*

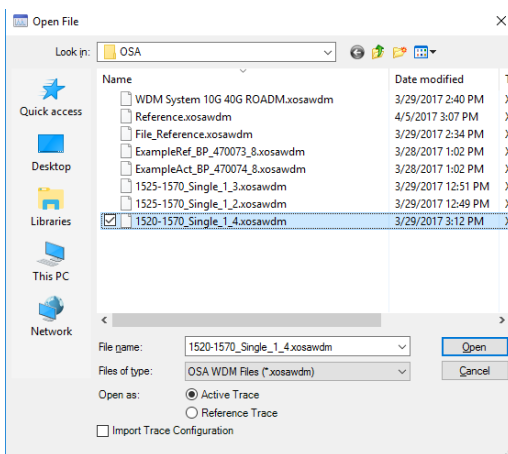
To open a file:

1. From the **Main Menu**, Press **File**, and then press **Open**.

OR

From the main window, press .

2. If you had already acquired (but not saved) a trace, a warning window appears, asking you if you want to save the current trace. Press **Yes** to save the trace. Once the trace is saved, you can open a new trace. Press **No** to display the new trace without saving the previously acquired one. Press **Cancel** to return to the previous window.



Managing Files and Test Configurations

Managing Measurement Files

3. Scroll through the list and select a trace to open.
4. Select the trace type the file will be loaded into:
 - In WDM mode, two choices are available: Active Trace and Reference Trace.
 - In Spectral Transmittance and EDFA modes, when opening an OSA WDM file, two choices are available: Input Trace and Output Trace.

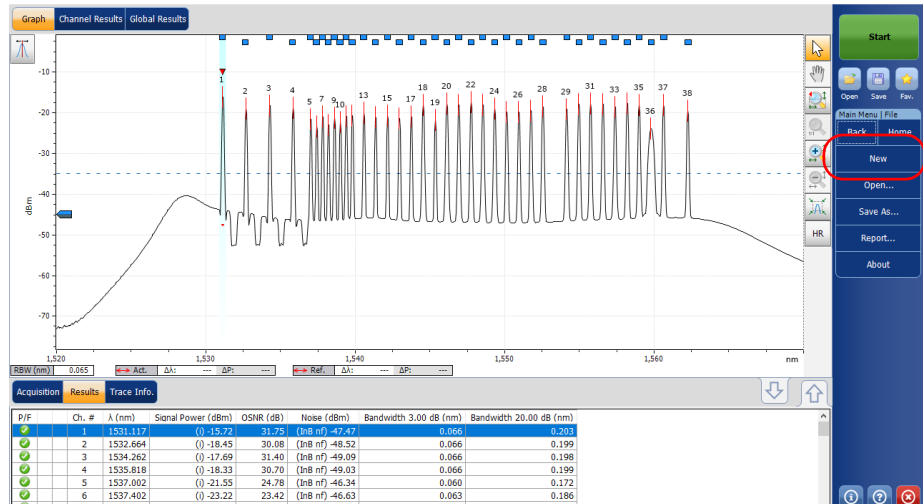
Note: *This option is not available in Drift, DFB and FP modes.*

If you are in WDM, Drift, EDFA or ST modes, you can select whether you want to also import the trace configuration and overwrite the current analysis setup and acquisition context at the same time that you open the file. The file type must be the same for the configuration importation to be valid.

5. Press **Open** to open the file. The trace appears in the **Graph** tab. All the values in the main window will also be updated from the file.

To clear a file:

1. From the **Main Menu**, Press **File**.
2. Press **New**.



3. If you had already acquired (but not saved) a trace, a warning window appears, asking you if you want to save the current trace. Press **Yes** to save the trace. Once the trace is saved, you can make room for a new trace. Press **No** to create a new trace without saving the previously acquired one. Press **Cancel** to return to the previous window.

Note: In WDM mode, any reference trace will be cleared at this point.

Opening Files in Other Test Modes

Sometimes, you will need to open a file of a specific test mode while being in a different test mode. Depending on the type of file and the mode you selected, your unit will react differently.

Opening Other Test Mode Files in WDM Mode

Your application allows you to open different file types in WDM mode.

While loading a spectral transmittance (.osast) file, the application will re-analyze the newly imported data using the current WDM analysis setup.

While loading an EDFA (.osaedfa) file, the application will re-analyze the newly imported data using a temporary setup built from the retrieved channel list, retrieved default channel settings and blanks filled using the current WDM analysis setup.

While loading a spectral transmittance or EDFA file, the application imports trace data as follows:

- If an Input trace is present in the file, it is imported as the WDM reference trace.
- If an Output trace is present in the file, it is imported as the WDM active trace.

Opening Other Test Mode Files in DFB Mode

Your application allows you to open WDM file type in DFB mode.

While loading a WDM (.xosawdm or .osawdm) file, the application will re-analyze the newly imported data using the DFB analysis setup and imports the following data from the selected trace:

- Raw trace data
- Trace information
- Trace identification

Opening Other Test Mode Files in FP Mode

Your application allows you to open WDM file type in FP mode.

While loading a WDM (.xosawdm or .osawdm) file in the FP mode, the application will re-analyze the newly imported data using the FP analysis setup and imports the following data from the selected trace:

- Raw trace data
- Trace information
- Trace identification

Opening Other Test Mode Files in ST Mode

Your application allows you to open WDM file type in spectral transmittance mode.

While loading a WDM (.xosawdm or .osawdm) file, the application behaves as if a new acquisition is requested. This means that the application does not change the modified state of the current measurement while loading a WDM file.

Before loading a WDM file, the application allows you to select in which trace you want to import the WDM file. Select **Input Trace**, or **Output Trace** as required. Once you have selected the file, the application imports the following data in the selected trace.

- Raw trace data
- Trace information
- Trace identification

Opening Other Test Mode Files in EDFA Mode

Your application allows you to open WDM file type in EDFA mode.

While loading a WDM (.xosawdm or .osawdm) file, the application behaves as if a new acquisition is requested. This means that the application does not change the modified state of the current measurement while loading a WDM file.

Before loading a WDM file, the application allows you to select in which trace you want to import the WDM file. Select **Input Trace**, or **Output Trace** as required. Once you have selected the file, the application imports the following data in the selected trace.

- Raw trace data
- Trace information
- Trace identification

Managing Favorites

Favorites are configuration files that contain all of the parameters from the **Analysis Setup** tab and **Acquisition** tab. When you often use the same settings, you can save them as a favorite, then recall them for future acquisitions.

Note: The Favorites feature is available for the WDM, Drift and EDFA test modes.

To load a test configuration:

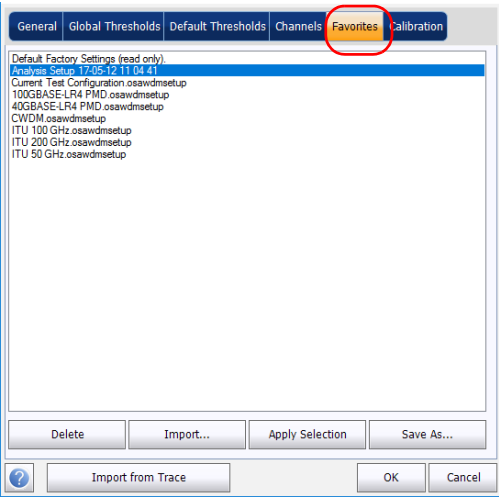
1. From the Main Menu, press **Analysis Setup**.

OR

From the main window, press .



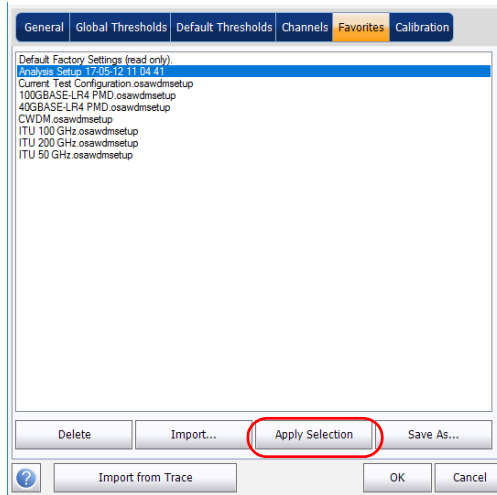
2. Select the **Favorites** tab.



Managing Files and Test Configurations

Managing Favorites

3. To apply the settings from a favorite file to the current analysis setup, select a file from the favorites list and press **Apply Selection**. This button will be enabled only when a file is selected from the favorites list. When you press **Apply Selection**, the contents of the file are loaded in the other tabs of this window.



4. Press **OK** to proceed with the loaded configuration and close the window, or press **Cancel** to exit without saving.

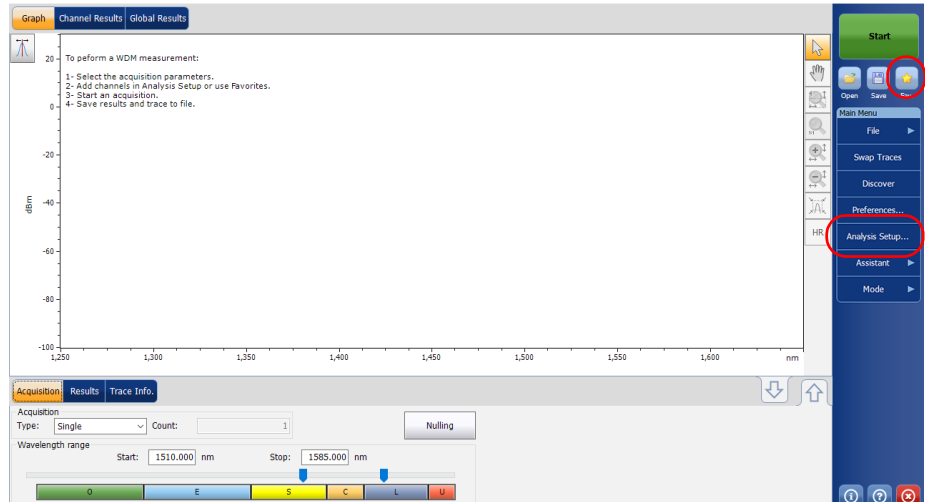
Note: Pressing **OK** automatically starts the reanalysis process if a measurement file was already present.

To save a test configuration:

1. From the **Main Menu**, press **Analysis Setup**.

OR

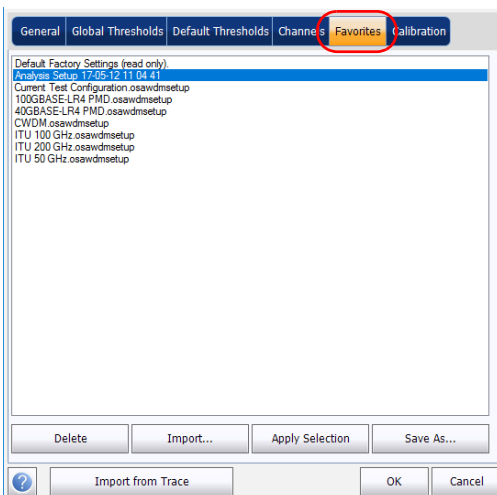
From the main window, press .



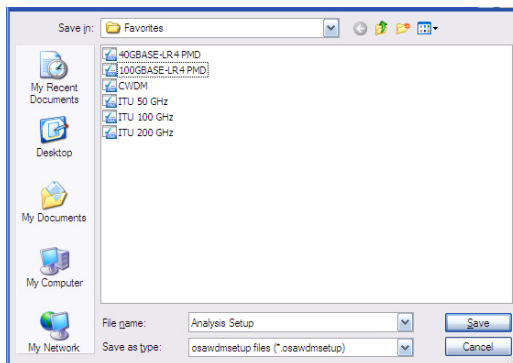
Managing Files and Test Configurations

Managing Favorites

2. Select the **Favorites** tab.



3. To save an analysis setup to a file, press **Save As**. The default folder where the file will be saved is the Favorites folder. You should use this folder unless you want to transfer a copy on an external storing device such as a USB stick.



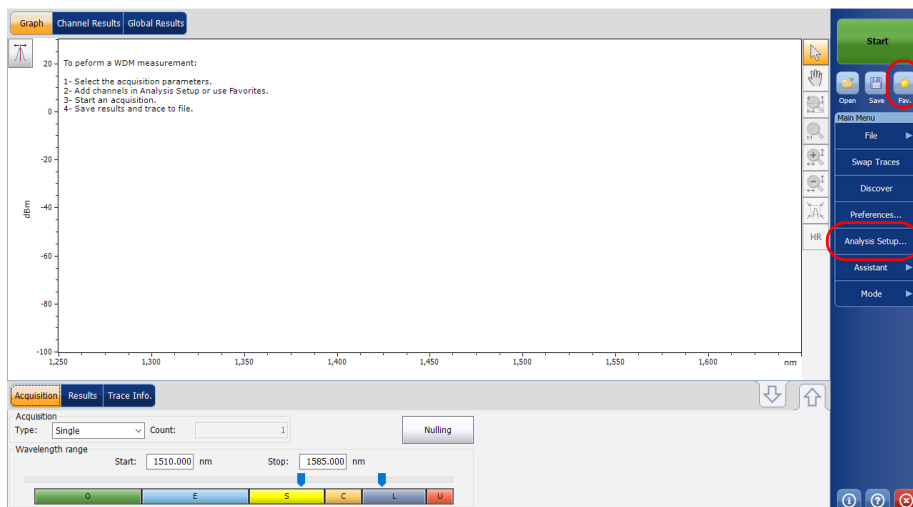
4. In the **Save As** window, enter a file name and press **Save**. The file will be added to the favorites list in the **Analysis Setup – Favorites** tab.
5. Press **Save** to save the configuration and close the window, or press **Cancel** to exit without saving.

To import a test configuration:

1. From the **Main Menu**, press **Analysis Setup**.

OR

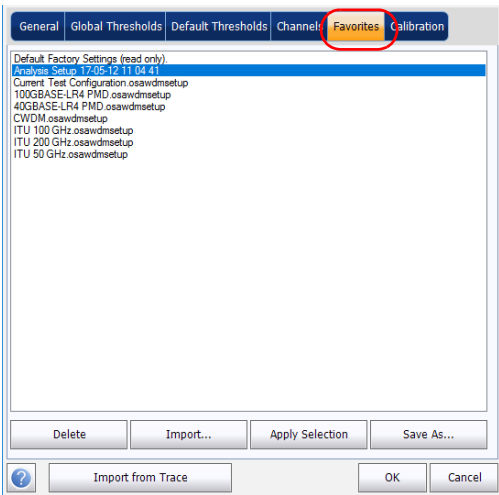
From the main window, press .



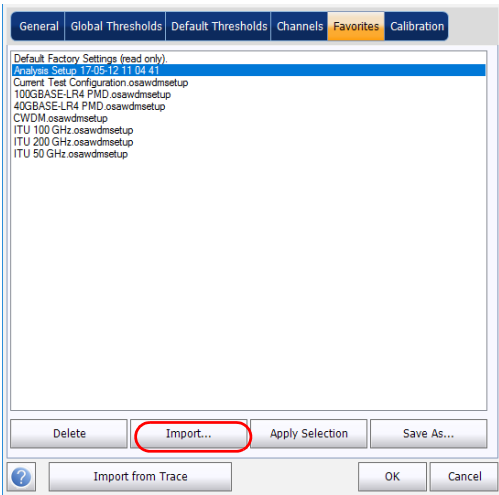
Managing Files and Test Configurations

Managing Favorites

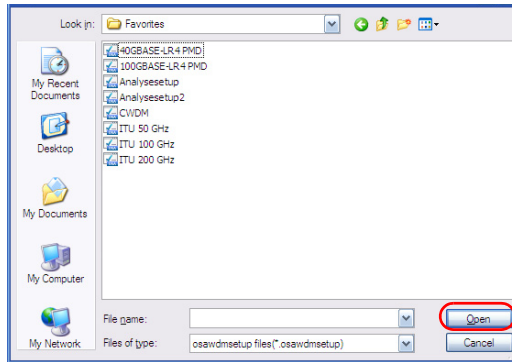
2. Select the **Favorites** tab.



3. Press **Import** to import an analysis setup from a file.



4. From the Import window, select the file you want to import and press **Open**. The file will be added to the favorites list in the **Analysis Setup – Favorites** tab.



5. Press **OK** to load the configuration and close the window, or press **Cancel** to exit without saving.

Note: To load this newly imported test configuration, you must select it from the favorites list and press **Apply Selection**.

Managing Files and Test Configurations

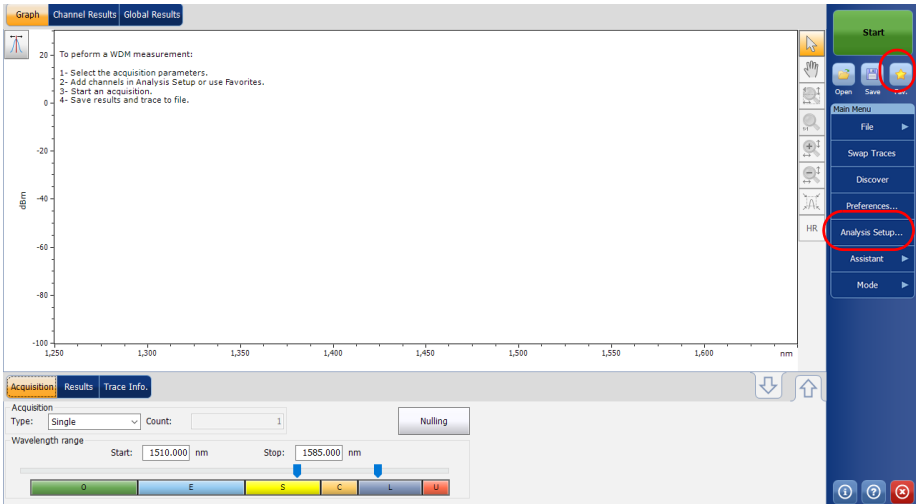
Managing Favorites

To delete a test configuration:

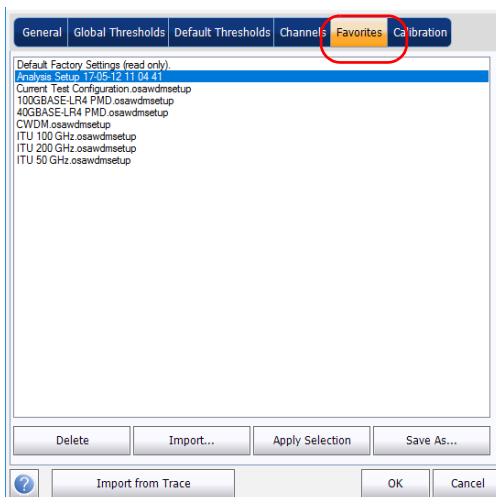
- 1. From the Main Menu, press **Analysis Setup**.

OR

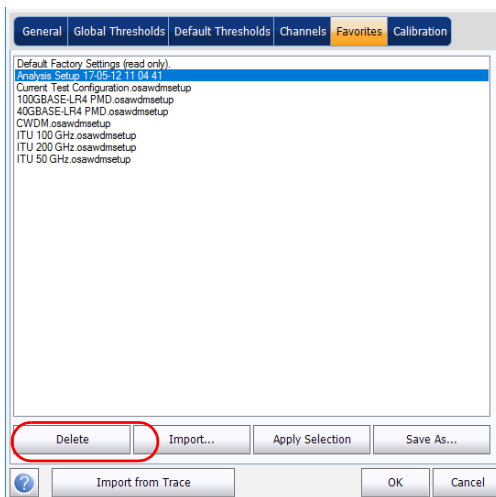
From the main window, press .



2. Select the **Favorites** tab.



3. To delete a configuration file from the favorites list, select it and press **Delete**. Press **Yes** to confirm your choice.



Importing a Configuration from the Current Trace

In WDM, Drift, EDFA and ST modes, you can import the analysis and channel configuration from the measurement file currently on-screen. See the corresponding test mode for details.

Using a Restore Point

When you modify the analysis setup and press **OK**, a restore point is created. This can be useful when you want to revert to the values you had prior to changing a test configuration.

You can keep up to three restore points during a working session, but they are cleared when you start a new session, or if you change the test mode.

13 *Managing Results*

Each test mode has its own results tabs, where you can view the trace details, channel results and global results for all measured channels.

You can use zoom options on the trace, configure markers to view the power values for specific wavelengths, and view trace information.

You can also manage trace files and generate reports for all test modes.

Note: *When a power result is flagged using an asterisk (*), it means that the detector is saturated. When the optical power on the detector is too high, the detector gets saturated and the returned value is probably incorrect.*

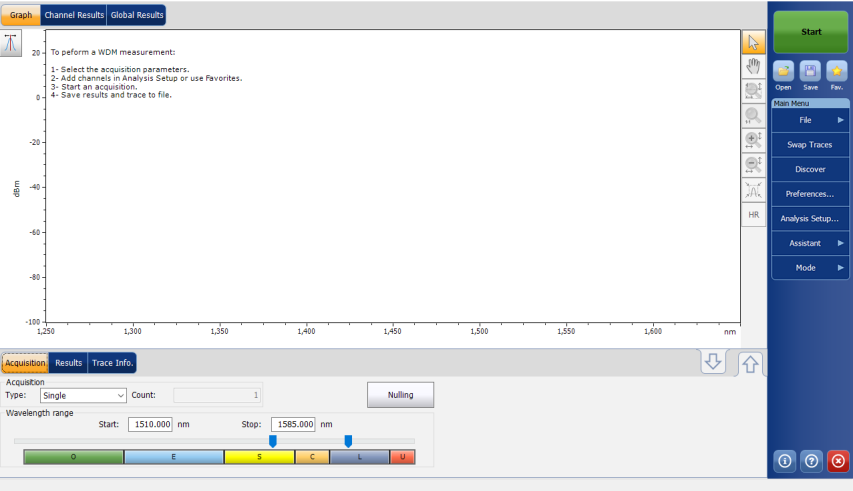
Managing Results

Managing WDM Test Results

The application allows you to view and manage your WDM test results. You can view the graph of your acquisition, results for a single channel, global results and information about the trace.

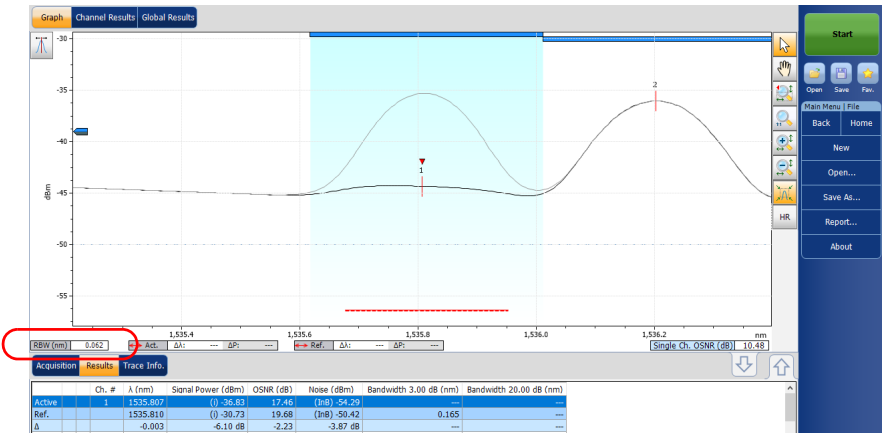
Graph Tab

The **Graph** tab allows you to view the spectrum of the active and reference traces. This graph represents the optical power against wavelength or frequency.



When the acquisition is taken (see *Starting a Measurement* on page 279 for details on how to perform a test), the active trace will be displayed in the tab with information along the following axis values:

- X axis: wavelength in nm or frequency in THz.
- Y axis: optical power expressed in dBm, as measured in the optical resolution bandwidth (RBW) of the OSA. This reference RBW is shown at the bottom of the graph.



If the current active trace was previously saved, the application will display the file name of the current trace in the title bar.

The graph will display peak indicators for all the channels found by the application with a red vertical line over the peaks to indicate the peak position.

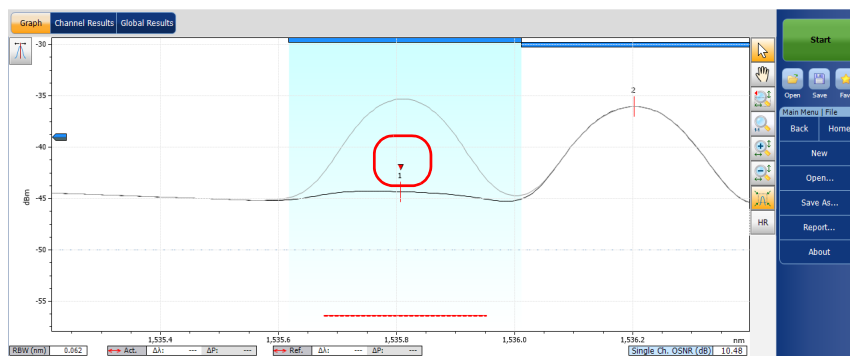
A blue horizontal bar (■) will be displayed on the top of a channel if it does not overlap with another channel. If the channel overlaps with another channel, the horizontal bar will be yellow (■).

Managing Results

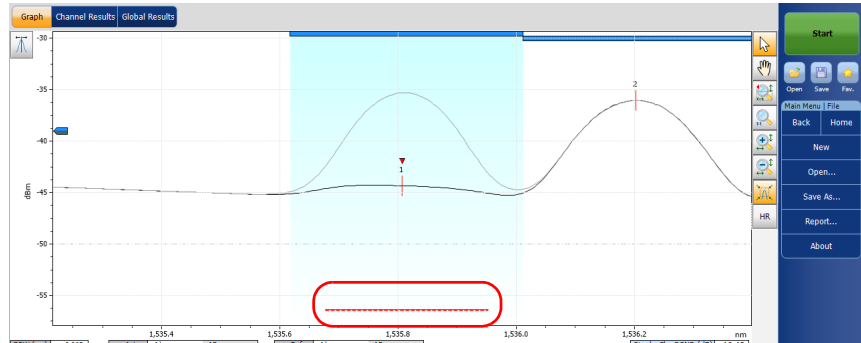
Managing WDM Test Results

The selected peak indicator, a small red inverted triangle (▼) points down at the top of the currently selected channel peak. In the graph zone, you can change the selected peak by clicking inside the peak limits of the desired channel. Peak selection in the graph is synchronized with the channel selection in lower tab results list; changing the selection in the graph modifies the selection in the list and vice-versa.

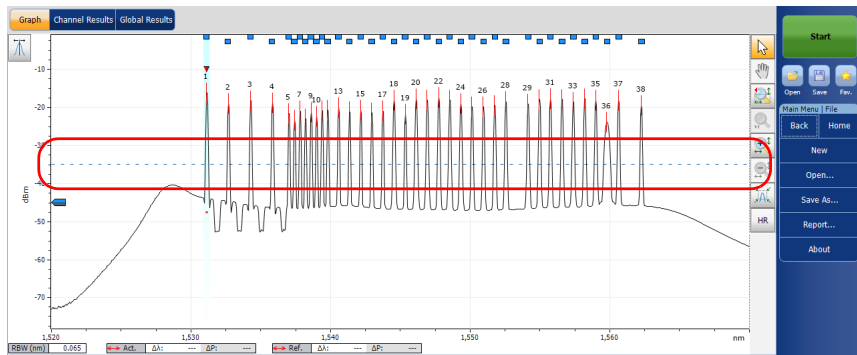
Note: *This is valid only for channels in the list for which a signal is detected. If you select a channel that has no signal, no peak is selected in the graph.*



The noise level for a channel is indicated by a dotted line under the selected peak. The width of the noise level indicator is set according to the current Noise for OSNR setting. The width of the noise level indicator depends on the noise associated with the OSNR setting (from the largest to the narrowest): IEC, InB, InB nf, Pol-Mux and fit.



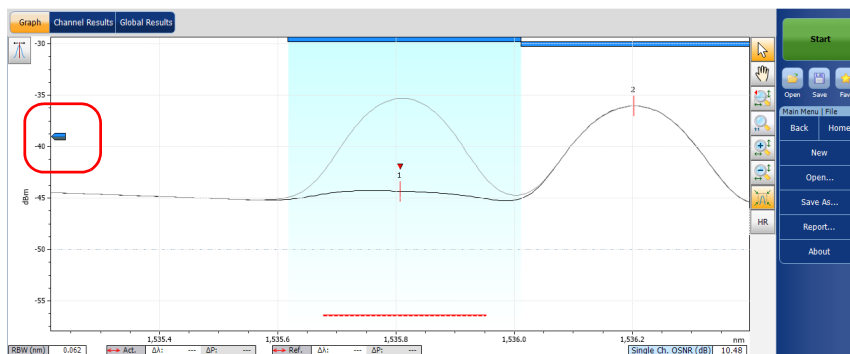
A dotted line across the full spectral width corresponds to the peak detection level indicator. This line indicates the minimum power level (dBm) from where a peak can be considered as a valid signal.



A peak detection level cursor is available in the graph when the **Results** tab is selected. The cursor is positioned along the Y-axis in accordance with the application's peak detection level global analysis parameter.

Managing WDM Test Results

You can move the cursor to modify the peak detection level for the current measurement. Each time the cursor is moved, the trace(s) is/are fully analyzed again using the application analysis setup.



Note: If you select another tab than **Results**, the cursor disappears, but you can still see the peak detection level indicator line.

Note: If there is a reference trace, it appears in gray in the graph.

Note: For more information on these, see *Managing Markers on page 363* and *Using Zoom Controls on page 361*.

Results Tab

In the **Results** tab, each channel will be represented for both the active and reference traces, with the delta between both results. Only the results for the channels within the scan range will be analyzed. The pass (✓)/fail (✗) verdict for thresholds are also displayed; if the verdict is fail for any parameter, its value will appear in red.

To view results:

From the main window, select the **Results** tab.

Acquisition		Results	Trace Info.				
P/F	Ch. #	λ (nm)	Signal Power (dBm)	OSNR (dB)	Noise (dBm)	Bandwidth 3.00 dB (nm)	Bandwidth 20.00 dB (nm)
✓	1	1531.117	(f) -15.72	31.75	(nB nF) -47.47	0.066	0.203
✓	2	1532.664	(f) -18.45	30.08	(nB nF) -48.52	0.066	0.199
✓	3	1534.262	(f) -17.69	31.40	(nB nF) -49.09	0.066	0.198
✓	4	1535.818	(f) -18.33	30.70	(nB nF) -49.03	0.066	0.199
✓	5	1537.002	(f) -21.55	24.78	(nB nF) -46.34	0.060	0.172
✓	6	1537.402	(f) -23.22	23.42	(nB nF) -46.63	0.063	0.186
✓	7	1537.797	(f) -20.91	26.15	(nB nF) -47.05	0.060	0.170

If there are issues with a channel, an icon appears to notify you and provides information as a tooltip if you press on it.

P - Polarization discrimination insufficient. P1 - The polarization discrimination was insufficient to establish a valid polarization-based OSNR calculation for this channel.							
P	1	1535.807	(f) -36.58	25.13	(nB) -61.71	---	---
	2	1536.202	(f) -32.08	11.06	(CCSA) -43.14	0.185	---
	3	1536.592	(f) -33.67	10.17	(CCSA) -43.84	0.162	---

If you have enabled the detailed warnings column in the display parameters, you can see a letter corresponding to the issue.

Acquisition		Results	Trace Info.				
	Ch. #	λ (nm)	Power (dBm)	OSNR (dB)	Noise (dBm)	BW 3.00 dB (nm)	BW 20.00 dB (nm)
P	1	1535.807	(f) -36.58	25.13	(InB) -61.71	---	---
	2	1536.202	(f) -32.08	11.06	(CCSA) -43.14	0.185	---
	3	1536.592	(f) -33.67	10.17	(CCSA) -43.84	0.162	---

Note: For details on filtering displayed channel results, see *Defining Display Parameters* on page 44.

For details on each result type, see *Customizing WDM Results Table* on page 51.

Managing Results

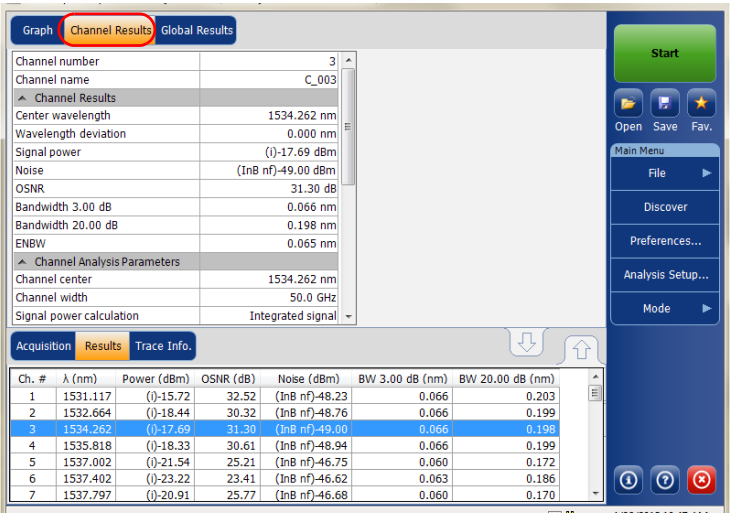
Managing WDM Test Results

Channel Results Tab

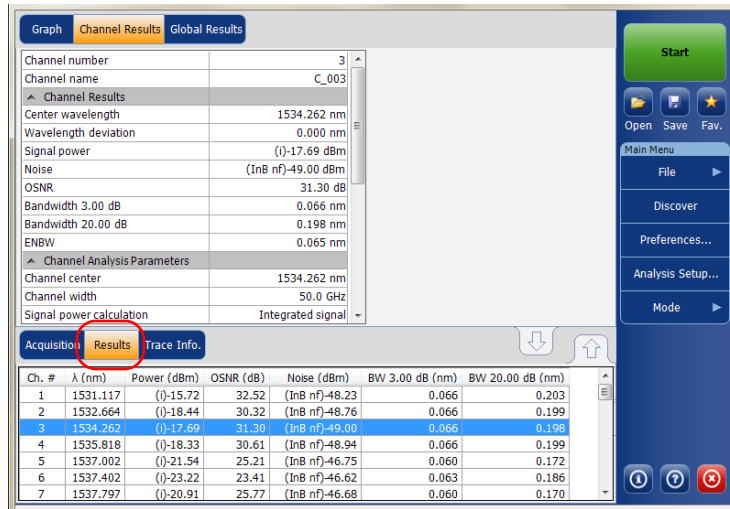
The application allows you to view the complete information about the parameters measured for the selected channel. This is also where the pass/fail verdict for thresholds are displayed. If the verdict is fail for any parameter, its value will appear in red. If the verdict is pass, its value will appear in green.

To view channel results:

- 1. From the main window, select **Channel Results** tab.



2. Select a row from the **Results** tab to view the results for this channel.



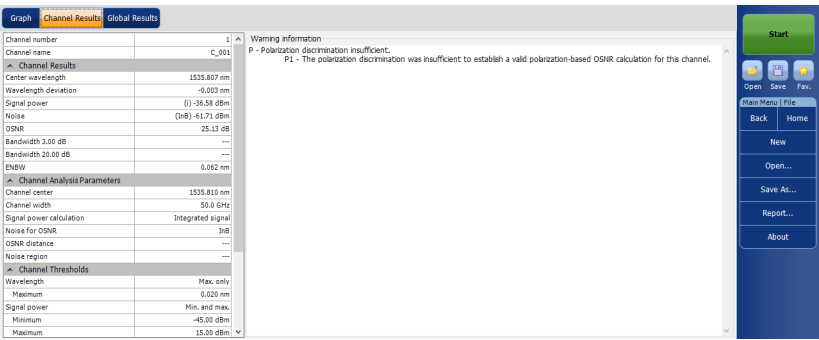
The screenshot shows the 'Channel Results' tab in the software. The 'Results' sub-tab is selected, and the table below shows the results for 7 channels. The third row (Channel 3) is highlighted in blue.

Ch. #	λ (nm)	Power (dBm)	OSNR (dB)	Noise (dBm)	BW 3.00 dB (nm)	BW 20.00 dB (nm)
1	1531.117	(i)-15.72	32.52	(InB nf)-48.23	0.066	0.203
2	1532.664	(i)-18.44	30.32	(InB nf)-48.76	0.066	0.199
3	1534.262	(i)-17.69	31.30	(InB nf)-49.00	0.066	0.198
4	1535.818	(i)-18.33	30.61	(InB nf)-48.94	0.066	0.199
5	1537.002	(i)-21.54	25.21	(InB nf)-46.75	0.060	0.172
6	1537.402	(i)-23.22	23.41	(InB nf)-46.62	0.063	0.186
7	1537.797	(i)-20.91	25.77	(InB nf)-46.68	0.060	0.170

Managing Results

Managing WDM Test Results

If there is a warning associated with the channel, you can view the details on the right part of the tab.



Note: For details on each result type, see Customizing WDM Results Table on page 51 and Defining General Settings on page 56.

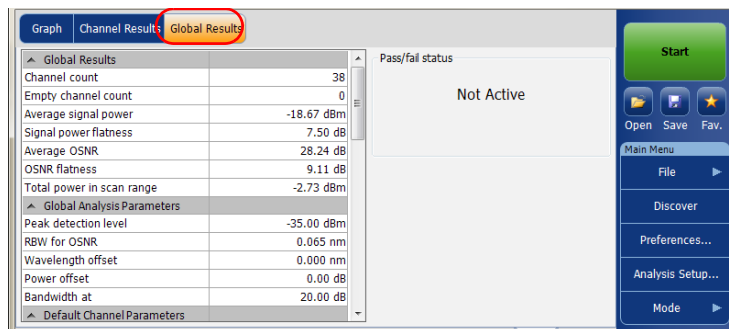
Note: The wavelength/frequency deviation is the difference between the channel center wavelength/frequency and the measured signal center wavelength/frequency.

Global Results Tab

The application allows you to view the global results of the current measurement. The pass/fail verdict for thresholds are displayed in the **Global Results** tab. If the verdict is fail for any parameter, its value appears in red. If the verdict is pass, its value appears in green.

To view global results:

From the main window, select the **Global Results** tab.



Results and analysis parameters global to all channels will be displayed. For more information on each item, see *Defining Global Thresholds* on page 64 and *Defining General Settings* on page 56.

In addition, you can view the global pass/fail status, provided the thresholds are activated in the **Global Result Thresholds** tab in the **Analysis Setup** window. If the thresholds are enabled, the **Global pass/fail status** pane will display a Pass or Fail status based on the global results, or **Not Active** if the thresholds are disabled.

WDM Investigator Tab

The WDM Investigator tab presents information allowing you to do massive network prevention and maintenance. With the WDM Investigator dashboard, an OSA can identify several types of impairments on a per-channel basis, which gives visibility into a WDM network. In addition, the WDM Investigator dashboard provides useful information on the channel characteristics.

Note: *If your measurement file contains diagnostic information, the latter will be stored in the file when you save it. It will be possible to view the diagnostic information later with the OSA application (the WDM Investigator (Inv) option is not required to view the stored file). You can also view the same information with the offline application.*

Channel diagnostics and the WDM Investigator tab are only available for the active trace, if the two conditions below are met:

- The measurement under analysis was performed on an OSA module onto which the WDM Investigator (Inv) software option is activated.
- Diagnostics are computed only for channels analyzed with the i-InBand noise for OSNR.

To view the WDM Investigator diagnostics:

From the main window, select the **WDM Investigator** tab.

The screenshot shows the WDM Investigator tab selected. The interface includes a top navigation bar with tabs: Graph, Channel Results, Global Results, and WDM Investigator (highlighted). Below the tabs, there's a section for 'Channel Characteristics' and 'Impairments' with a grid of status icons (green checkmarks, yellow warnings, red crosses). A table at the bottom displays channel analysis results.

Ch. #	λ (nm)	Power (dBm)	OSNR (dB)	Noise (dBm)	BW 3.00 dB (nm)	BW 20.00 dB (nm)
1	1529.543	(-)-18.17	? 23.07	? (InB)-41.24	0.232	-
2	1531.883	(-)-19.59	17.63	(InB nf)-37.22	0.138	-
3	1532.672	(-)-18.06	17.49	(InB nf)-35.55	0.132	0.391
4	1533.458	(-)-15.83	24.98	(InB)-40.81	0.130	0.299
5	1534.238	(-)-17.45	17.92	(InB nf)-35.37	0.134	0.384
6	1535.815	(-)-18.79	18.85	(InB nf)-37.64	0.068	0.313
7	1536.600	(-)-20.90	16.86	(InB nf)-37.77	0.133	-

As you change the channel selection in the WDM Investigator tab, the selected row in the Results tab list will move accordingly to indicate the corresponding channel analysis results.

The WDM Investigator diagnostics are divided into two types: channel characteristics (informative) and impairments (qualitative). Both the channel characteristics and the impairment identification help to pinpoint the exact failure affecting a channel, which reduce test time and help prevent future failures.

Managing Results

Managing WDM Test Results

There are two channel characteristic types:

- Pol-Mux signal: This specific kind of channel characteristic determines if the signal is polarization multiplexed. Pol-Mux signals appear unpolarized (minimal polarization extinction) at the end of an i-InBand acquisition.

Note: When a signal is identified as Pol-Mux, no further diagnostics are provided.

Note: This information is available for polarized signals only.

- Carved noise: When the ASE noise is filtered so that the noise level affecting the peak at the center is higher than the noise level at either channel edge, this usually indicates the presence of filters/ROADMs on the link.

Four levels of information are given for channel characteristics diagnostics.

Symbol	Meaning
	Not present
	Present
	Inconclusive
No symbol (blank)	Not analyzed (empty channel)

Impairment diagnostics check for the presence of several types of impairments and give an assessment of their severity. There are four impairment types:

- **PMD Pulse Spreading:** This impairment shows the presence of Polarization Mode Dispersion (PMD) in a channel. When PMD is present on the path of the signal, depending on the polarization axis of the signal injected, the signal may suffer from pulse spreading which, in turn, leads to polarization dependent spectral deformations. These deformations can be analyzed to determine how much polarization pulse broadening the signal has experienced during the measurement.
- **Interchannel Crosstalk:** In densely-filled channel plans, neighboring channels may have a non-negligible portion of their spectrum that extends within the channel bandpass of a given signal.
- **Non-Linear Depolarization:** Fast changing power levels in multichannel systems (10 G and 40 G) may induced local polarization dependent changes in the refraction index of the fiber. This, sometimes, leads to inter-channel nonlinear effects (for example cross-phase modulation) which, in turn, lead to partial depolarization of neighboring channels.
- **Carrier leakage:** In a phase-modulated transmission, a CW carrier wave is modulated using external modulators which are generally polarization dependent. When the CW source polarization axis is not optimally aligned with the modulator, a portion of the CW signal passes through unmodulated and gets transmitted as such along the path. When this CW residual signal is present, it may be detected as carrier leakage using advanced polarization analysis to provide a useful diagnostic.

Managing Results

Managing WDM Test Results

The symbols that are used to illustrate the diagnostics are the same, regardless of the type of impairment. The global diagnostic status is shown in the status bar at the bottom of the window according to the severity displayed in the table below. The most severe status takes precedence over the others for all tested channels.

Five statuses are provided for impairments diagnostics. The symbols are presented from the most severe to the least severe.

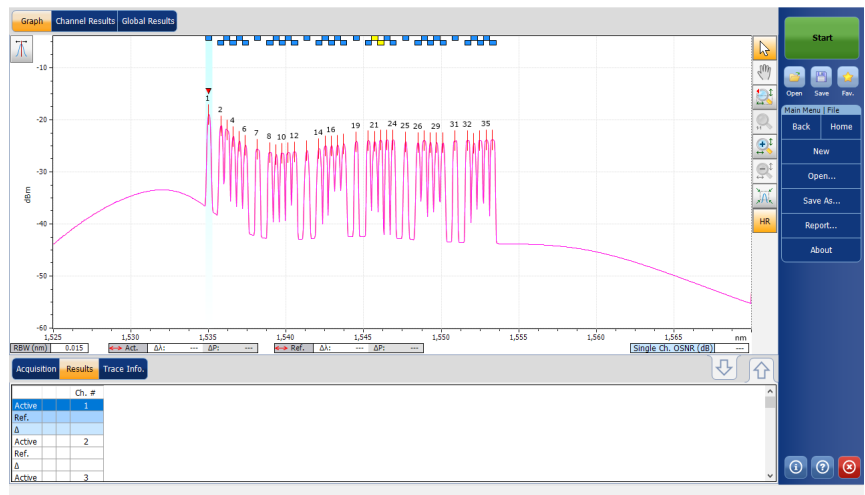
Symbol	Meaning
	Risk
	Warning
	Inconclusive
	OK
No symbol (blank)	Not analyzed (empty channel)

Viewing the High-Resolution Bandwidth Version of a Trace (FTBx-5255 Models Only)

When in WDM mode, you can view the high-resolution bandwidth version of the loaded traces. This viewing mode offers fewer details in the result tabs, but allows you to perform manual measurements using the markers.

To view the high-resolution version of a trace:

1. Open the desired trace. The high-resolution mode will be available for both the active and reference traces.
2. From the **Graph** tab, select **HR**. The active trace will turn magenta and the reference trace will turn orange to indicate that they are now in high-resolution mode. The RBW value is also changed to illustrate the greater resolution.



Managing Results

Managing WDM Test Results

3. Perform your measurements as needed using the markers.

You can export the points composing the HR active trace as a .txt report as long as it has been displayed at least once. For more information on creating reports, see *Generating Reports* on page 371.

Note: *If you open a reference trace and an active trace and only one of them is compatible with the HR mode, enabling the HR view will only display that one. The non-compatible trace will reappear when you switch back to the normal viewing mode.*

Note: *If you try to use the HR mode on a trace that is not compatible, the application will indicate that the mode is not available and provide possible reasons why.*

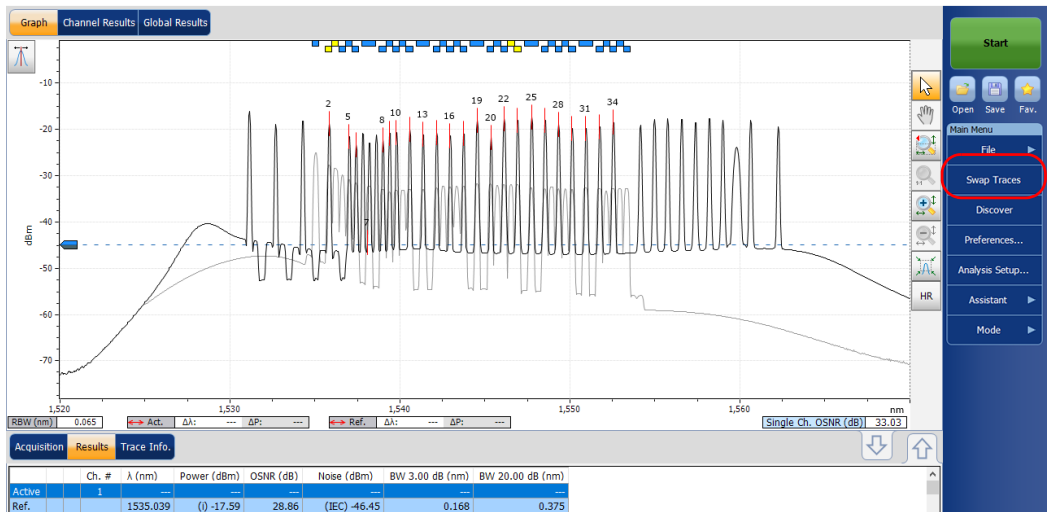
Swapping WDM Traces

The Swap Trace feature allows you to swap the WDM active and reference traces. With this feature, the active trace is replaced with the reference trace and vice versa. The application will recalculate the comparison delta of the results for the traces in memory.

Note: The swap trace feature will not be available if there are no traces in the application.

To swap WDM traces:

From the **Main Menu**, press **Swap Traces**.

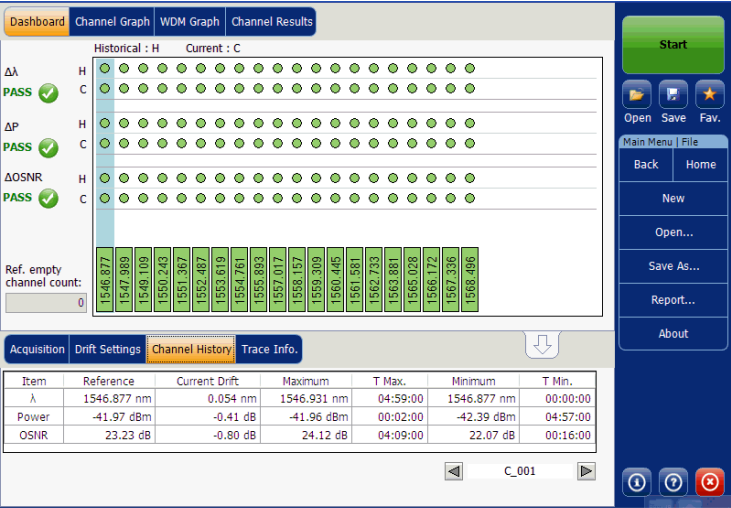


Managing Drift Test Results

The application allows you to view and manage your drift test results. You can view the dashboard, channel graph and WDM graph of your drift acquisition, channel history results for a single channel and information about the trace.

Dashboard Tab

The dashboard allows you to view at-a-glance the pass/fail status of each parameter for each channel that is measured during a drift measurement. When there is no measurement, the dashboard is blank.



You can select a channel directly from the dashboard or from the **Channel History** tab. For each channel, the dashboard displays the pass/fail status for each of the following parameters:

- Central wavelength/frequency
- Signal power
- OSNR

Both the current pass/fail status (last completed acquisition) and the historical pass/fail status are displayed in the dashboard. The historical pass/fail status will be set to Fail as soon as one occurrence of fail has occurred in the past or in the current acquisition.

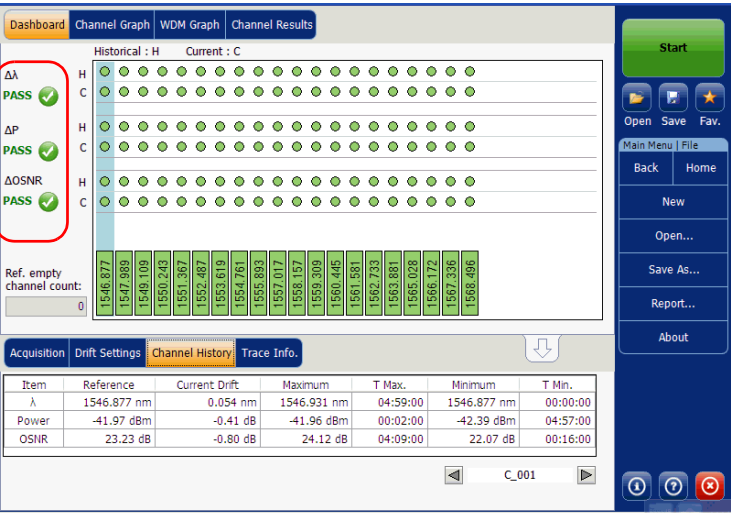
The screenshot shows the 'Channel History' tab in a software interface. It displays a grid of pass/fail status for three parameters: $\Delta\lambda$, ΔP , and ΔOSNR . Each parameter has two rows: 'Historical : H' and 'Current : C'. The status is indicated by green circles (Pass) and red circles (Fail). A red box highlights the 'Current : C' row for all three parameters, showing all 'Pass' status. Below the grid, a 'Ref. empty channel count:' is shown as 0. At the bottom, a table provides detailed drift data for the selected channel.

Item	Reference	Current Drift	Maximum	T Max.	Minimum	T Min.
λ	1546.877 nm	0.054 nm	1546.931 nm	04:59:00	1546.877 nm	00:00:00
Power	-41.97 dBm	-0.41 dB	-41.96 dBm	00:02:00	-42.39 dBm	04:57:00
OSNR	23.23 dB	-0.80 dB	24.12 dB	04:09:00	22.07 dB	00:16:00

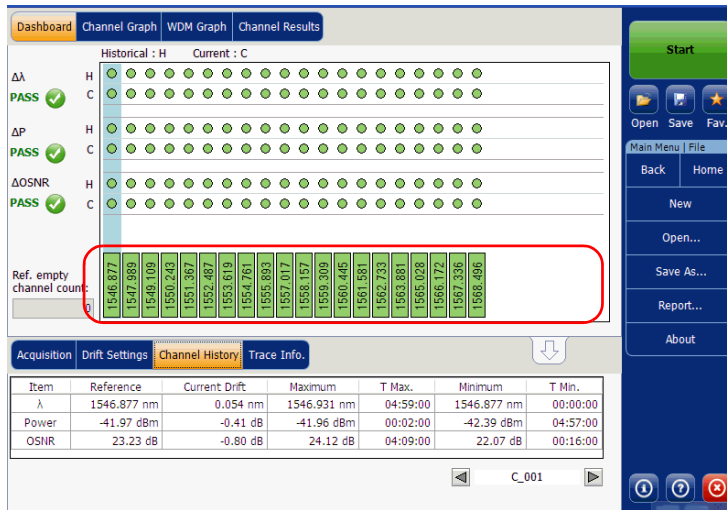
Managing Results

Managing Drift Test Results

The dashboard shows a global status (all channels) for each parameter. This global status is set to Fail if at least one channel has a failed historical status for that given parameter, otherwise the global status is set to Pass.



The dashboard displays a channel status (all parameters) for a given channel. This channel status is set to Fail as soon as one of the parameters has a failed historical status for that given channel, otherwise the channel status is set to Pass.



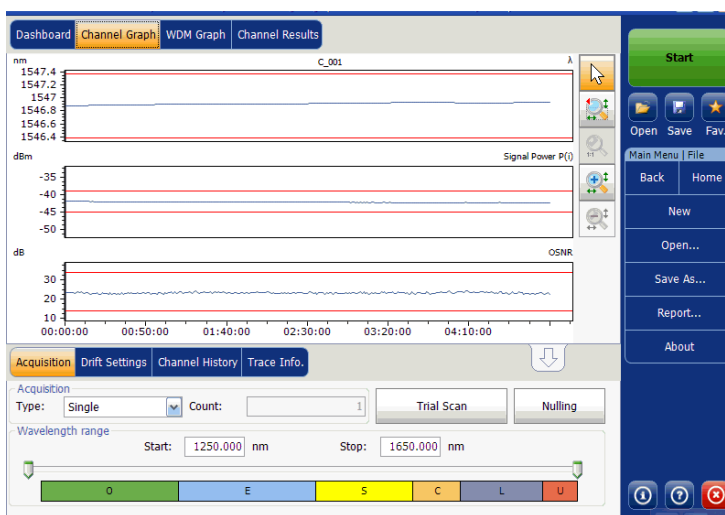
Managing Results

Managing Drift Test Results

Channel Graph Tab

The **Channel Graph** tab displays three different graphs for the selected channel. You can select which graphs you want to display from the **Drift Results** tab in the **Preferences** Window. The three graphs are X-Y plots of:

- Spectral position (center of mass of wavelength or frequency) of the channel over time
- Signal power of the channel over time
- OSNR of the channel over time



Channel History Tab

The channel history table shows channel results for the active trace. The result is displayed for the selected channel only. The pass/fail verdict for thresholds are also displayed in the results table. If the verdict is fail for any parameter, its value will appear in red.

The application displays the progress of the measurement in the status bar, while the acquisition is taken. The Elapsed time and Expected duration for the measurement to stop is displayed in the **Channel History** tab.

Acquisition Drift Settings Channel History Trace Info.						
Item	Reference	Current Drift	Maximum	T Max.	Minimum	T Min.
λ	1531.446 nm	-0.002 nm	1531.446 nm	00:00:00	1531.444 nm	00:00:40
Power	-39.70 dBm	-0.06 dB	-39.70 dBm	00:00:00	-39.76 dBm	00:00:40
OSNR	5.86 dB	0.02 dB	5.90 dB	00:00:30	5.81 dB	00:00:20
Expected duration: 0000:01:00 Elapsed time: 0000:00:42						

To view channel history results:

From the main window, select the **Channel History** tab.

Acquisition Drift Settings Channel History Trace Info.						
Item	Reference	Current Drift	Maximum	T Max.	Minimum	T Min.
λ	1546.877 nm	0.054 nm	1546.931 nm	04:59:00	1546.877 nm	00:00:00
Power	-41.97 dBm	-0.41 dB	-41.96 dBm	00:02:00	-42.39 dBm	04:57:00
OSNR	23.23 dB	-0.80 dB	24.12 dB	04:09:00	22.07 dB	00:16:00

Results for the following parameters related to the selected channel are displayed in the **Channel History** table:

- Spectral position (center of mass of wavelength or frequency) of the channel against time (nm or THz)
- Signal power of the channel against time (dBm)
- OSNR of the channel against time (dB)

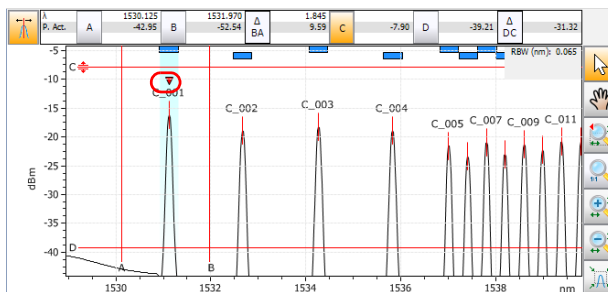
Managing Results

Managing Drift Test Results

For each of the above parameters, the following results are displayed:

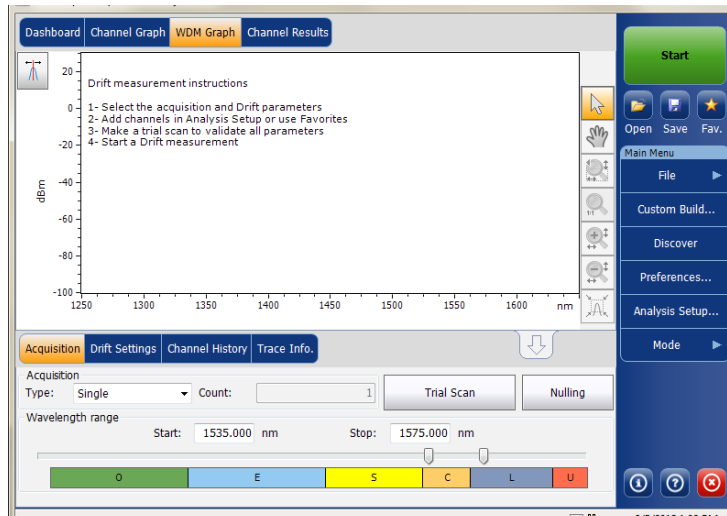
- Reference: channel reference values for the current drift acquired during the initial acquisition.
- Current Drift: current drift values, that is, the current deviation from the channel's reference for the drift's latest acquisition.
- Maximum: maximum values reached during the drift.
- T Max.: time of the drift at which the channel was at its maximum value. Displayed time is relative to the time at the start of the drift measurement.
- Minimum: minimum values reached during the drift.
- T Min.: time of the drift at which the channel was at its minimum value. Displayed time is relative to the time at the start of the drift measurement.

A small red marker (▼) will point down at the peak in the **WDM Graph** tab when you select a channel in the **Channel History** tab. The red marker will move accordingly to indicate the corresponding peak on the graph, with a focus on the selected channel.



WDM Graph Tab

The **WDM Graph** tab allows you to view the spectrum of the active trace for the last WDM acquisition in your drift measurement. This graph represents the optical power versus wavelength or frequency.

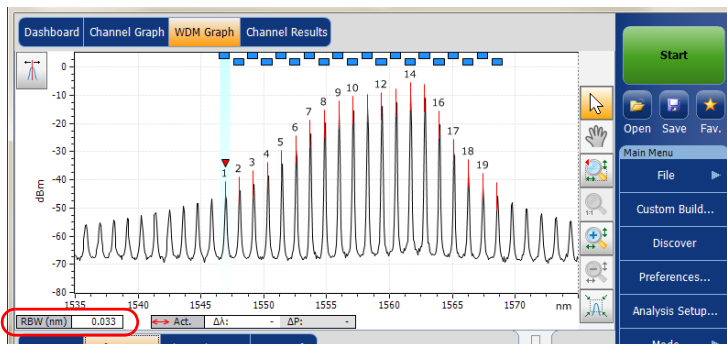


Managing Results

Managing Drift Test Results

When the acquisition is taken (see *Starting a Measurement* on page 279 for details on how to perform a test), the active trace will be displayed in the tab with information along the following axis values:

- X axis: wavelength in nm or frequency in THz.
- Y axis: optical power expressed in dBm, as measured in the optical resolution bandwidth (RBW) of the OSA. This reference RBW is shown at the bottom of the graph.



The graph will display peak indicators for all the channels found by the application with a red vertical line over the peaks to indicate the peak position.

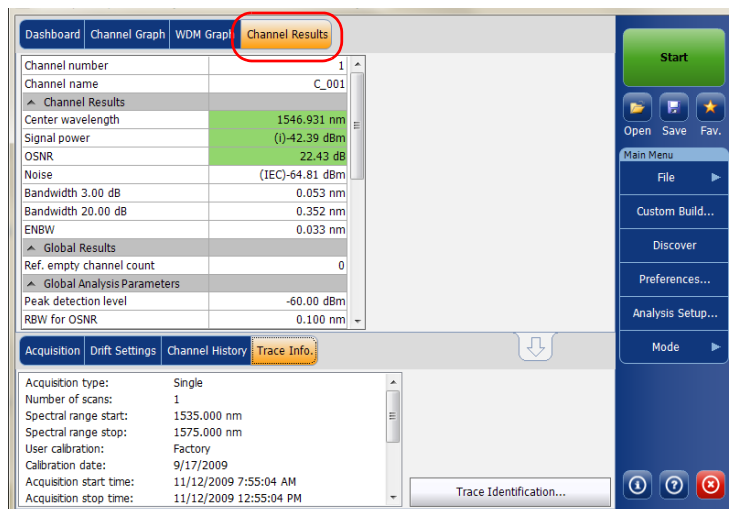
A blue horizontal bar (■) will be displayed on the top of a channel if it does not overlap with another channel. If the channel overlaps with another channel, the horizontal bar will be yellow (■).

Channel Results Tab

When you select a channel in the **Channel History** tab, the **Channel Results** tab will show complete information about the parameters measured for the selected channel. The pass/fail verdict for thresholds are also displayed in the **Channel Results** tab. If the verdict is fail for any parameter, its value appears in red. If the verdict is pass, its value appears in green.

To view channel results:

1. From the main window, select **Channel Results** tab.



Managing Results

Managing Drift Test Results

- 2. Select a channel from the **Channel History** tab to view the channel results for the selected channel.

Acquisition Drift Settings Channel History Trace Info.						
Item	Reference	Current Drift	Maximum	T. Max.	Minimum	T. Min.
λ	1546.877 nm	0.054 nm	1546.931 nm	04:59:00	1546.877 nm	00:00:00
Power	-41.97 dBm	-0.41 dB	-41.96 dBm	00:02:00	-42.39 dBm	04:57:00
OSNR	23.23 dB	-0.80 dB	24.12 dB	04:09:00	22.07 dB	00:16:00

◀ C_001 ▶

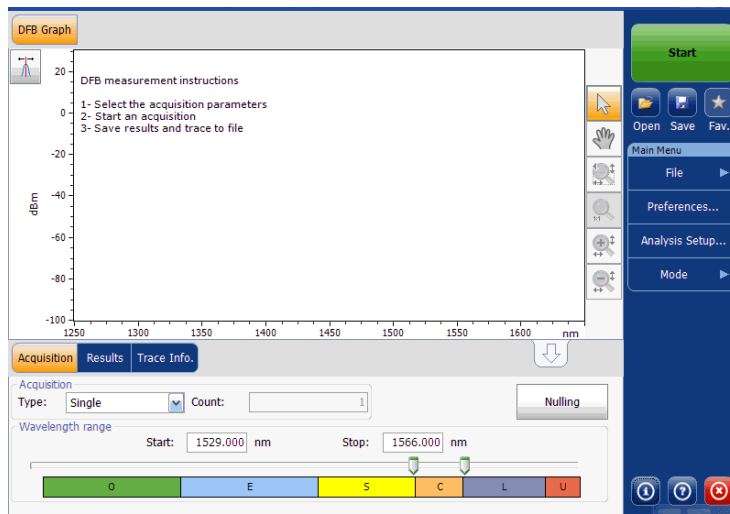
Note: For details on each item, see Customizing WDM Results Table on page 51 and Defining General Settings on page 56.

Managing DFB Test Results

The application allows you to view and manage your DFB test results. You can view the graph and results for your DFB laser source.

DFB Graph Tab

The **DFB Graph** tab allows you to view the spectrum of a DFB laser source. This graph represents the optical power against wavelength or frequency.

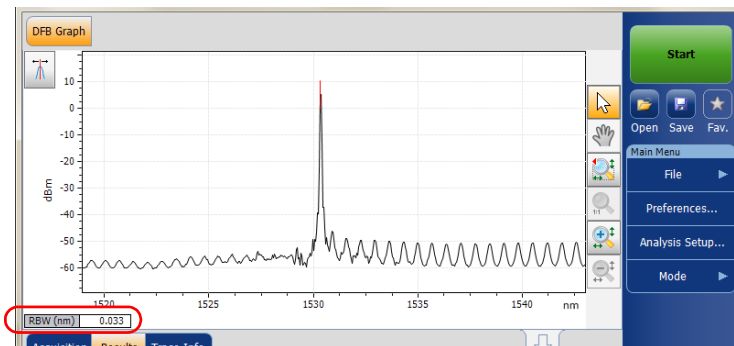


Managing Results

Managing DFB Test Results

When the acquisition is taken (see *Starting a Measurement* on page 279 for details on how to perform a test), the active trace will be displayed in the tab with information along the following axis values:

- X axis: wavelength in nm or frequency in THz.
- Y axis: optical power expressed in dBm, as measured in the optical resolution bandwidth (RBW) of the OSA. This reference RBW is shown at the bottom of the graph.



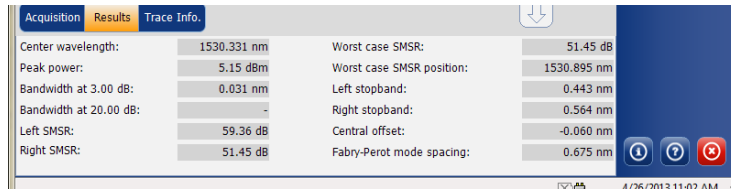
If the current trace was previously saved, the graph will display the file name of the current trace in the title bar.

Results Tab

You can view the analysis of the DFB laser source from the **Results** tab.

To view results:

From the main window, select the **Results** tab.



Acquisition		Results		Trace Info.	
Center wavelength:	1530.331 nm	Worst case SMSR:	51.45 dB		
Peak power:	5.15 dBm	Worst case SMSR position:	1530.895 nm		
Bandwidth at 3.00 dB:	0.031 nm	Left stopband:	0.443 nm		
Bandwidth at 20.00 dB:	-	Right stopband:	0.564 nm		
Left SMSR:	59.36 dB	Central offset:	-0.060 nm		
Right SMSR:	51.45 dB	Fabry-Perot mode spacing:	0.675 nm		

The following information related to the DFB measurement is displayed in the **Results** table:

- Center wavelength/frequency: spectral center-of-mass for the peak.
- Peak power (dBm): peak signal power.
- Bandwidth 3.00 dB: bandwidth measured by taking the width of a signal at 50 % linear power of the peak or -3 dB from the peak.
- Bandwidth 20.00 dB: bandwidth measured by taking the width of a signal at 1 % linear power of the peak or -20 dB from the peak.
- Left SMSR: Left side-mode suppression ratio. It is the power difference between the main mode and the most powerful outstanding side-mode on the left.
- Right SMSR: Right side-mode suppression ratio. It is the power difference between the main mode and the most powerful outstanding side-mode on the right.

Managing Results

Managing DFB Test Results

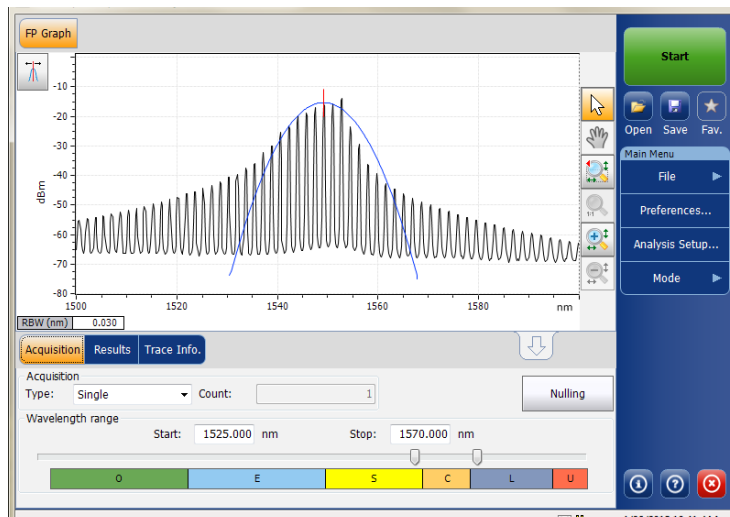
- Worst case SMSR: power difference between the main mode and the side-mode with the highest power.
- Worst case SMSR position: spectral position of the worst SMSR.
- Left stopband: spectral position difference between the main mode and the closest side-mode on the left.
- Right stopband: spectral position difference between the main mode and the closest side-mode on the right.
- Central offset: spectral position of the main mode minus the mean of the spectral positions of the first adjacent left and right side-modes.
- Fabry-Perot mode spacing: average estimated spectral spacing between adjacent Fabry-Perot modes of the DFB.

Managing FP Test Results

The application allows you to view and manage your FP test results. You can view the graph and results for your FP laser source.

FP Graph Tab

The **FP Graph** tab allows you to view the spectrum of a FP laser source. This graph represents the optical power against wavelength or frequency.

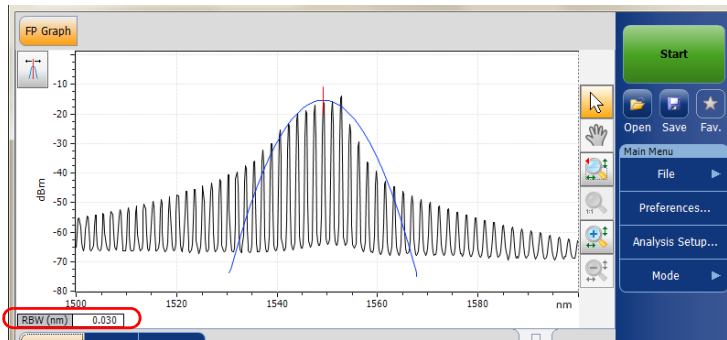


Managing Results

Managing FP Test Results

When the acquisition is taken (see *Starting a Measurement* on page 279 for details on how to perform a test), the active trace will be displayed in the tab with information along the following axis values:

- X axis: wavelength in nm or frequency in THz.
- Y axis: optical power expressed in dBm, as measured in the optical resolution bandwidth (RBW) of the OSA. This reference RBW is shown at the bottom of the graph.



If the current trace was previously saved, the graph will display the file name of the current trace in the title bar.

Results Tab

You can view the analysis of the FP laser source from the **Results** tab.

To view results:

From the main window, select the **Results** tab.

Acquisition	Results	Trace Info.
Center wavelength:	1549.177 nm	Peak mode power:
RMS width:	3.563 nm	Peak mode wavelength:
FWHM:	3.264 nm	MTSM at 10.00 dB:
Gaussian fit error factor:	0.16	Fit width at 3.00 dB:
Total power:	-1.20 dBm	Fit width at 20.00 dB:
Power (detected modes):	-1.26 dBm	Mode spacing:

The following information related to the FP measurement is displayed in the **Results** table:

- Center wavelength/frequency: spectral center-of-mass for the peak.
- RMS width: indicates the second moment of the spectral distribution.
- FWHM: indicates the full width at the half-maximum position.
- Gaussian fit error factor: indicates the normalized RMS error factor in the Gaussian fit.
- Total power (dBm): indicates the integrated power of the acquisition window.
- Power (detected modes) (dBm): indicates the integrated power from the starting point of the first mode to the ending point of the last mode.
- Peak mode power (dBm): indicates the power of the peak mode of the Fabry-Perot laser.

Managing Results

Managing FP Test Results

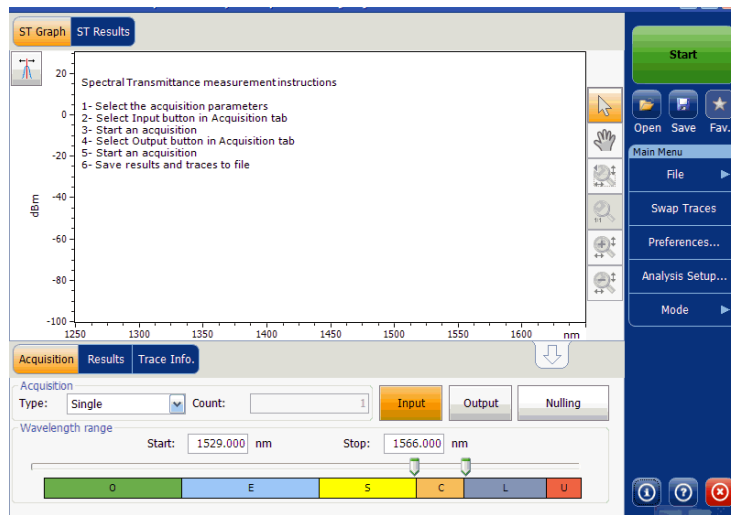
- Peak mode wavelength/frequency: indicates the wavelength/frequency of the peak mode of the Fabry-Perot laser.
- MTSM at 10.00 dB: indicates the maximum wavelength difference between the peak power mode and the last mode with amplitude that is one tenth (10 dB down) of the peak mode amplitude.
- Fit width at 3.00 dB: indicates the spectral width of the Gaussian fit at 3 dB.
- Fit width at 20.00 dB: indicates the spectral width of the Gaussian fit at 20 dB.
- Mode spacing: average estimated spectral spacing between adjacent Fabry-Perot modes of the FP.

Managing Spectral Transmittance Test Results

The application allows you to view and manage your spectral transmittance test results. You can view the graph of your acquisition, results for a single channel, global results and information about the trace.

ST Graph Tab

The **ST Graph** tab allows you to view the spectrum of the input trace, the output trace and the calculated ST trace. This graph represents the optical power against wavelength or frequency.

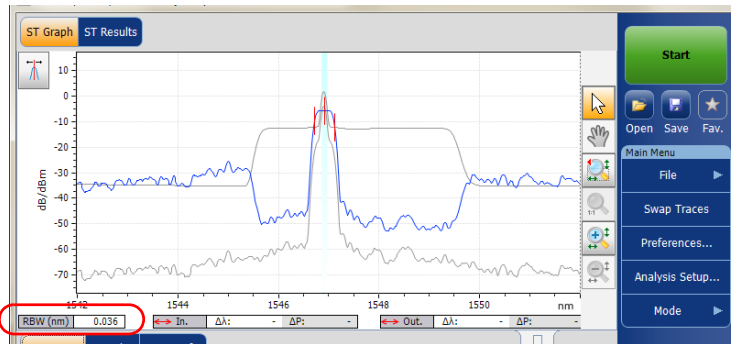


Managing Results

Managing Spectral Transmittance Test Results

When the acquisition is taken (see *Starting a Measurement* on page 279 for details on how to perform a test), the active trace will be displayed in the tab with information along the following axis values:

- X axis: wavelength in nm or frequency in THz.
- Y axis: optical power expressed in dBm, as measured in the optical resolution bandwidth (RBW) of the OSA. This reference RBW is shown at the bottom of the graph.



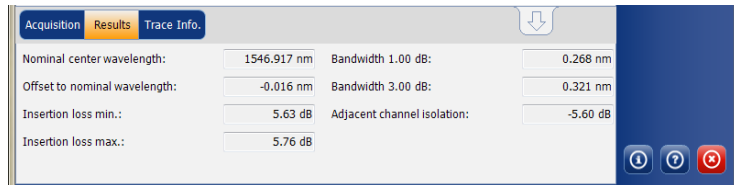
If the current trace was previously saved, the graph will display the file name of the current trace in the title bar.

Results Tab

The results table shows the spectral transmittance results for the active trace. Results for only the channels within the scan range will be displayed.

To view results:

From the main window, select the **Results** tab.



The following results related to the channels are displayed:

- Nominal center wavelength or frequency: single value representing the channels center wavelength (in nm) or frequency (in THz).
- Offset to nominal wavelength or frequency: offset value applied to the nominal wavelength (nm) or frequency (THz).
- Insertion loss min: minimum difference between a reference power level and the measured power level (in dB).
- Insertion loss max: maximum difference between a reference power level and the measured power level (in dB).
- Bandwidth x at (dB): bandwidth measured by taking the width of a signal at x dB from the peak.
- Bandwidth y at (dB): bandwidth measured by taking the width of a signal at y dB from the peak.
- Adjacent channel isolation: isolation (in dB) taken at the channel distance on the left or right of the nominal wavelength. The worst value between the left and right isolation is kept.

Managing Results

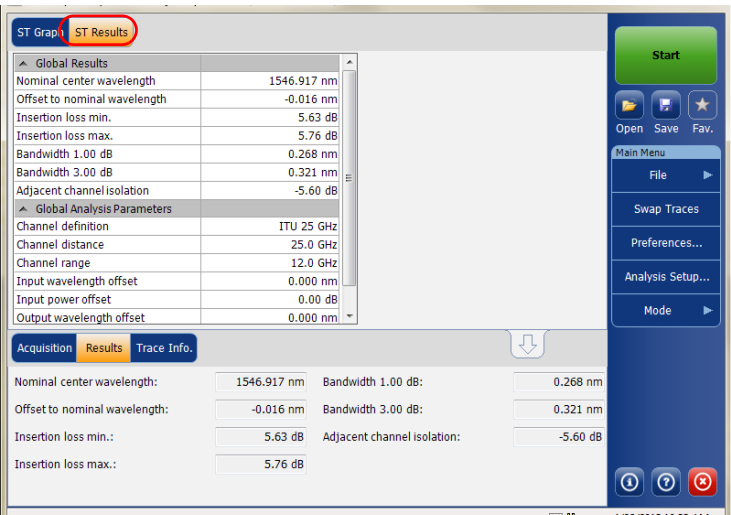
Managing Spectral Transmittance Test Results

ST Results Tab

The **ST Results** tab will show complete information about the spectral transmittance parameters and the global analysis parameters.

To view ST results:

From the main window, select **ST Results** tab.



Note: For details on each item, see Results Tab on page 343 and Defining ST Analysis Settings on page 206.

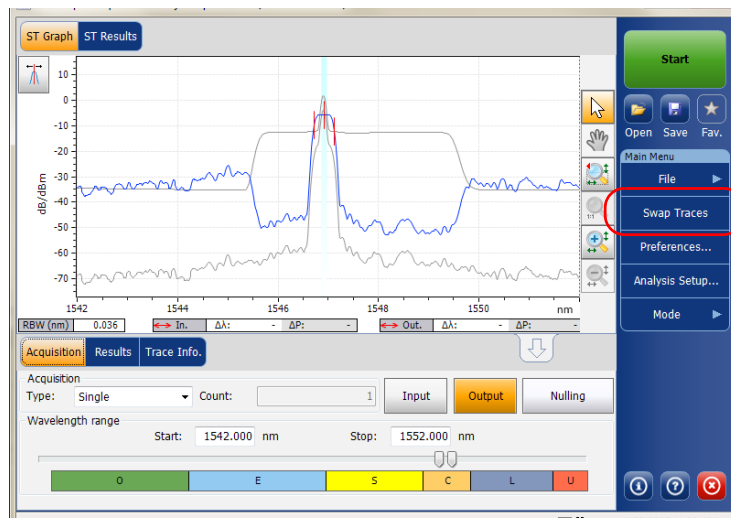
Swapping Spectral Transmittance Traces

The Swap Trace feature allows you to swap spectral transmittance input and output traces. With this feature, the input trace is replaced with the output trace and vice versa. All results are recalculated.

Note: The swap trace feature will not be available if there are no traces in the application.

To swap spectral transmittance traces:

From the Main Menu, press Swap Traces.

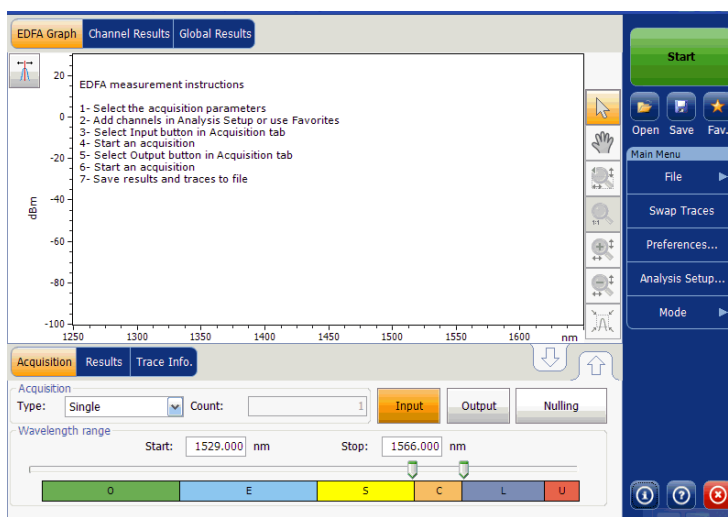


Managing EDFA Test Results

The application allows you to view and manage your EDFA test results. You can view the graph of your acquisition, results for a single channel, global results and information about the trace.

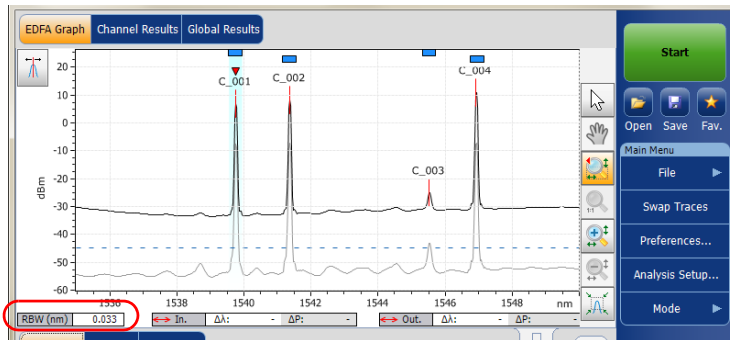
EDFA Graph Tab

The **EDFA Graph** tab allows you to view the spectrum of the input trace and the output trace. This graph represents the optical power against wavelength or frequency.



When the acquisition is taken (see *Starting a Measurement* on page 279 for details on how to perform a test), the trace will be displayed in the **EDFA Graph** tab with information along the following axis values:

- X axis: wavelength in nm or frequency in THz
- Y axis: optical power expressed in dBm, as measured in the optical resolution bandwidth (RBW) of the OSA. This reference RBW is shown in the graph.



If the current trace was previously saved, the graph will display the file name of the current trace in the title bar.

The graph will display peak indicators for all the channels found by the application with a red vertical line over the peaks to indicate the peak position.

A blue horizontal bar (■) will be displayed on the top of a channel if it does not overlap with another channel. If the channel overlaps with another channel, the horizontal bar will be yellow (■).

Managing Results

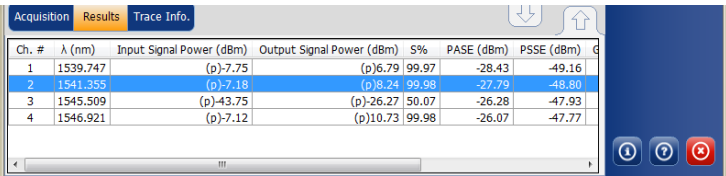
Managing EDFA Test Results

Results Tab

The results table shows channel results for both the input or output traces. The results for only the channels within the scan range will be displayed.

To view results:

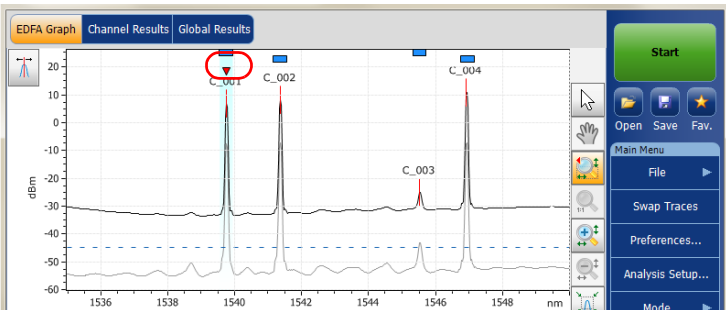
From the main window, select the **Results** tab.



Ch. #	λ (nm)	Input Signal Power (dBm)	Output Signal Power (dBm)	S%	PASE (dBm)	PSSE (dBm)
1	1539.747	(p)-7.75	(p)6.79	99.97	-28.43	-49.16
2	1541.355	(p)-7.18	(p)8.24	99.98	-27.79	-48.80
3	1545.509	(p)-43.75	(p)-26.27	50.07	-26.28	-47.93
4	1546.921	(p)-7.12	(p)10.73	99.98	-26.07	-47.77

For information on each item, see *Customizing EDFA Results Table* on page 230.

A small red marker (▼) will point down at the peak in the **EDFA Graph** tab when you select a row in the **Results** tab. The red marker will move accordingly to indicate the corresponding peak on the graph, with a focus on the selected channel.

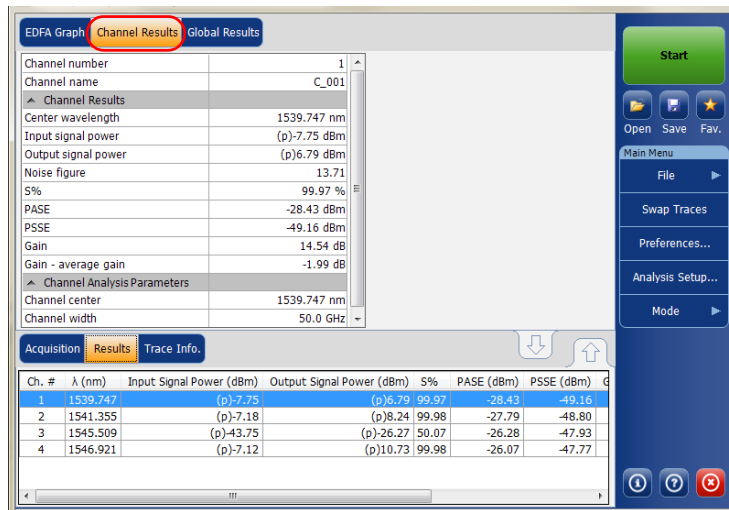


Channel Results Tab

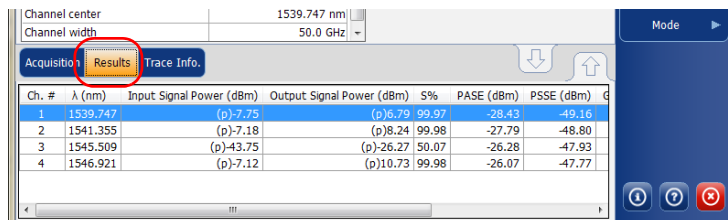
When you select a row from the **Results** tab, the **Channel Results** tab will show complete information about the parameters measured for the selected channel.

To view channel results:

1. From the main window, select **Channel Results** tab.



2. Select a row from the **Results** tab to view the channel results for the selected channel.



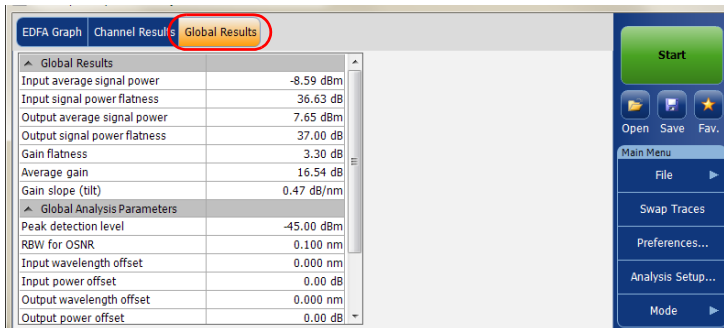
For details on each item, see *Customizing EDFA Results Table* on page 230.

Global Results Tab

The application allows you to view the global results of the current measurement.

To view global results:

From the main window, select the **Global Results** tab.



Results for the following parameters for all the channels will be displayed:

- Input average signal power: sum of the signal powers of all the peaks detected in the current acquisition, divided by the total number of peaks.
- Input signal power flatness: difference between the maximum and minimum signal power values of the detected peaks, in dB.
- Output average signal power: sum of the signal powers of all the peaks detected in the current acquisition, divided by the total number of peaks.
- Output signal power flatness: difference between the maximum and minimum signal power values of the detected peaks, in dB.
- Gain flatness: difference between the maximum and minimum gain values of the detected channels, in dB.

- Average gain: sum of the gain of all detected channels in the current measurement, divided by the total number of channels.
- Gain slope (tilt): slope of the linear fit on the gain values of the detected channels.

Swapping EDFA Traces

The Swap Trace feature allows you to swap EDFA input and output traces. With this feature, the input trace is replaced with the output trace and vice versa. All results are recalculated.

Note: Swap Trace feature will not be available if there are no traces in the application.

To swap EDFA traces:

From the Main Menu, press Swap Traces.



Managing Results

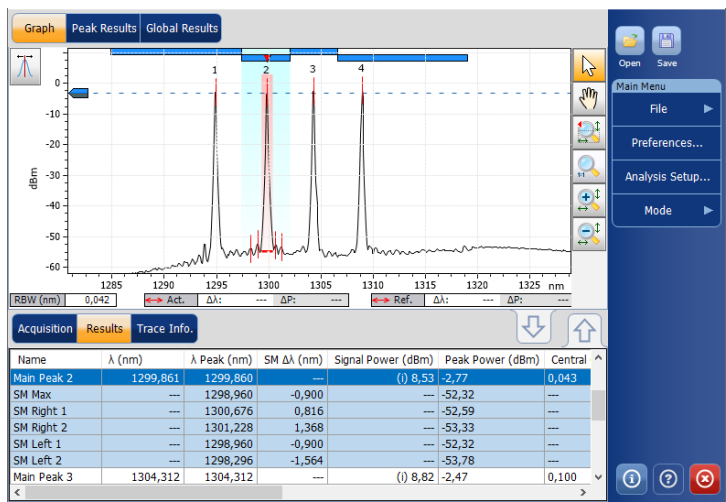
Managing Transmitter Mode Test Results

Managing Transmitter Mode Test Results

The application allows you to view and manage your test results. You can view the graph of your acquisition, results for the peak, global results and information about the trace.

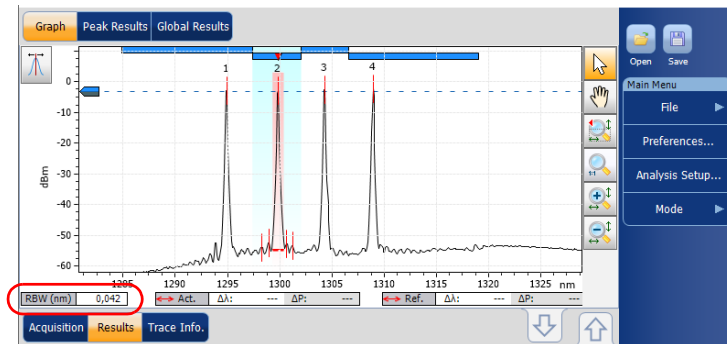
Graph Tab

The **Graph** tab allows you to view the spectrum of the active trace. This graph represents the optical power against wavelength or frequency.



When the acquisition is taken (see *Starting a Measurement* on page 279 for details on how to perform a test), the active trace will be displayed in the tab with information along the following axis values:

- X axis: wavelength in nm or frequency in THz.
- Y axis: optical power expressed in dBm, as measured in the optical resolution bandwidth (RBW) of the OSA. This reference RBW is shown at the bottom of the graph.



If the current active trace was previously saved, the application will display the file name of the current trace in the title bar.

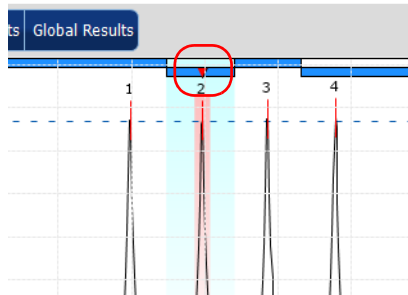
The graph will display peak indicators for all the peaks found by the application with a red vertical line over the peaks to indicate the peak position.

A blue horizontal bar (■) will be displayed on the top of a peak.

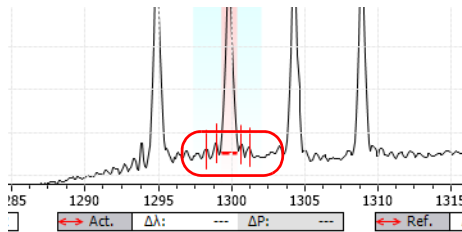
Managing Results

Managing Transmitter Mode Test Results

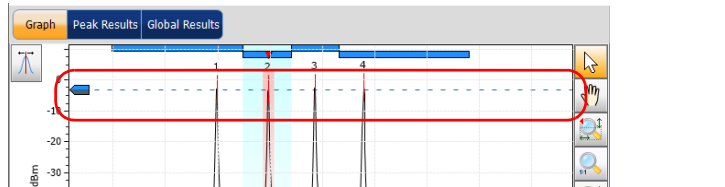
The selected peak indicator, a small red inverted triangle (▼) points down at the top of the currently selected peak. In the graph zone, you can change the selected peak by clicking inside the peak limits of the desired main mode peak. The selection in the graph is synchronized with the peak selection in lower tab results list; changing the selection in the graph modifies the selection in the list and vice-versa.



The noise level for a peak is indicated by a dotted line under the selected peak. The width of the noise level indicator is set according to the current Noise for OSNR setting. The width of the noise level indicator depends on the noise associated with the OSNR setting (from the largest to the narrowest): IEC, InB, InB nf, Pol-Mux and fit.

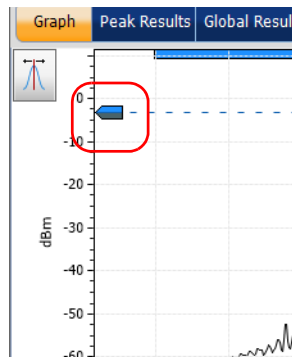


A dotted line across the full spectral width corresponds to the peak detection level indicator. This line indicates the minimum power level (dBm) from where a peak can be considered as a valid signal.



A peak detection level cursor is available in the graph when the **Results** tab is selected. The cursor is positioned along the Y-axis in accordance with the application's peak detection level global analysis parameter.

You can move the cursor to modify the peak detection level for the current measurement. Each time the cursor is moved, the trace is fully analyzed again using the application analysis setup.

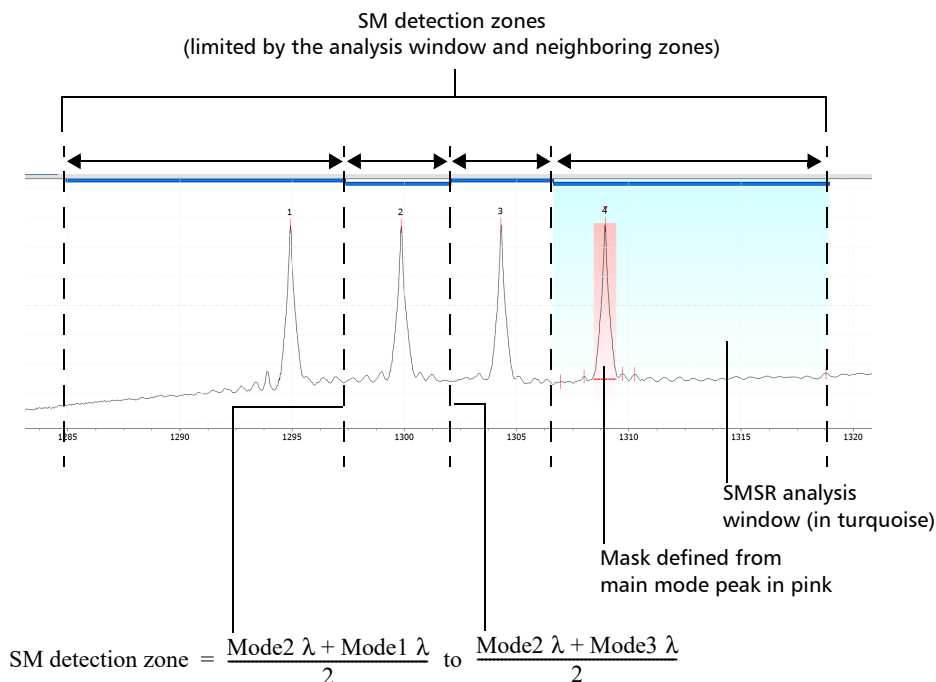


Note: If you select another tab than **Results**, the cursor disappears, but you can still see the peak detection level indicator line.

Managing Results

Managing Transmitter Mode Test Results

The detection zone for the side modes will be calculated as illustrated below, depending on the analysis window and the neighboring peaks. The mask and analysis window will be applied to the main mode peak.



Results Tab

You can view the analysis of the transmitter test from the **Results** tab.

To view results:

From the main window, select the **Results** tab.

Acquisition	Results	Trace Info.				
Name	λ (nm)	λ Peak (nm)	SM $\Delta\lambda$ (nm)	Signal Power (dBm)	Peak Power (dBm)	Central
Main Peak 2	1299,861	1299,860	---	(i) 8,53	-2,77	0,043
SM Max	---	1298,960	-0,900	---	-52,32	---
SM Right 1	---	1300,676	0,816	---	-52,59	---
SM Right 2	---	1301,228	1,368	---	-53,33	---
SM Left 1	---	1298,960	-0,900	---	-52,32	---
SM Left 2	---	1298,296	-1,564	---	-53,78	---
Main Peak 3	1304,312	1304,312	---	(i) 8,82	-2,47	0,100

Note: For details on filtering displayed peak results, see Customizing the Transmitter Results Table on page 265.

Global Results Tab

The application allows you to view the global results of the current measurement.

To view global results:

From the main window, select the **Global Results** tab.

Graph	Peak Results	Global Results
Global Results Peak count 1 Average signal power 4,85 dBm Signal power flatness 0,00 dB Total power in scan range 4,85 dBm Average OSNR 4,85 dB OSNR flatness 0,00 dB		
Global Analysis Parameters Peak detection level -12,00 dBm SMR Analysis Window 20,00 nm RBW for OSNR 0,100 nm Wavelength offset 0,000 nm Integrated Signal Power Region 1,000 nm Center of mass At 20,00 dB		

For more information on each item, see *Setting Up Transmitter Analysis Parameters* on page 268.

Managing Results

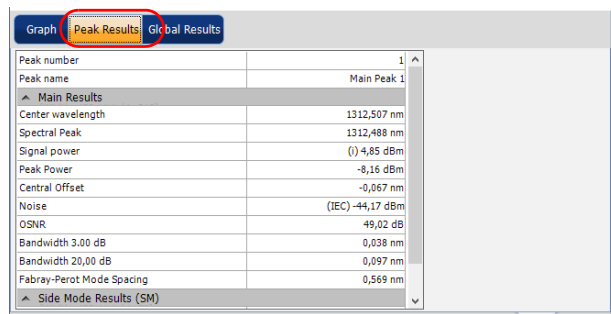
Managing Transmitter Mode Test Results

Peak Results Tab

You can see details about the peak and the side modes for your current measurement.

To view global results:

From the main window, select the **Peak Results** tab.

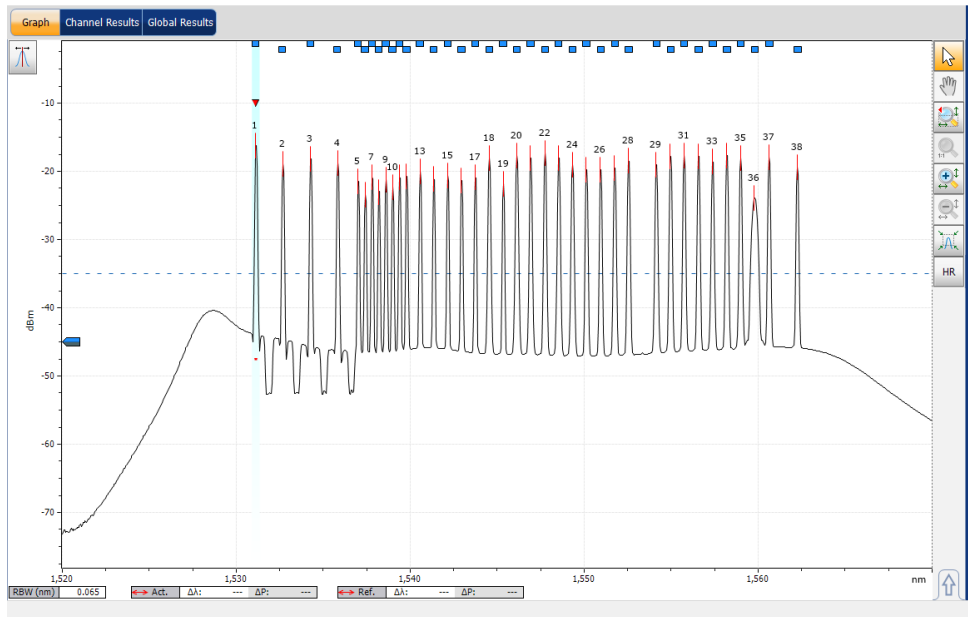


Adjusting the Display Size

Your application allows you to toggle the view of your main window. You can change the view of the upper and lower tabs from the normal view to 100 % upper tabs or 100 % lower tabs view.

To adjust the display size:

For 100 % upper tab view, press .



Managing Results

Adjusting the Display Size

For 100 % lower tabs view, press .

AcquisitionResultsTrace Info.							
P/F	Ch. #	λ (nm)	Signal Power (dBm)	OSNR (dB)	Noise (dBm)	Bandwidth 3.00 dB (nm)	Bandwidth 20.00 dB (nm)
	1	1531.117	(f) -15.72	31.75	(InB nf) -44.42	0.068	0.203
	2	1532.664	(f) -18.45	30.08	(InB nf) -48.52	0.066	0.199
	3	1534.262	(f) -17.69	31.40	(InB nf) -49.09	0.066	0.198
	4	1535.818	(f) -18.33	30.70	(InB nf) -49.03	0.066	0.199
	5	1537.002	(f) -21.55	24.78	(InB nf) -46.34	0.060	0.172
	6	1537.402	(f) -23.22	23.42	(InB nf) -46.63	0.063	0.186
	7	1537.797	(f) -20.91	26.15	(InB nf) -47.05	0.060	0.170
	8	1538.184	(f) -22.86	24.01	(InB nf) -46.87	0.061	0.180
	9	1538.590	(f) -21.00	25.73	(InB nf) -46.74	0.063	0.180
	10	1538.976	(f) -22.34	24.38	(InB nf) -46.72	0.059	0.171
	11	1539.373	(f) -20.61	25.82	(InB nf) -46.43	0.063	0.180
	12	1539.784	(f) -20.68	25.62	(InB nf) -46.30	0.061	0.177
	13	1540.559	(f) -19.91	25.86	(InB nf) -45.77	0.062	0.175
	14	1541.339	(f) -21.18	24.83	(InB nf) -46.00	0.059	0.171
	15	1542.143	(f) -20.62	25.59	(InB nf) -46.21	0.060	0.171
	16	1542.937	(f) -21.07	25.39	(InB nf) -46.47	0.063	0.182
	17	1543.726	(f) -20.64	26.07	(InB nf) -46.71	0.063	0.178
	18	1544.526	(f) -17.50	28.54	(InB nf) -46.04	0.066	0.223
	19	1545.337	(f) -21.66	25.18	(InB nf) -46.85	0.061	0.176
	20	1546.109	(f) -16.81	29.83	(InB nf) -46.64	0.070	0.241
	21	1546.907	(f) -17.52	29.28	(InB nf) -46.80	0.065	0.215
	22	1547.732	(f) -16.74	30.07	(InB nf) -46.81	0.066	0.212
	23	1548.522	(f) -17.28	29.55	(InB nf) -46.83	0.068	0.232
	24	1549.310	(f) -18.21	27.85	(InB nf) -46.06	0.070	0.233
	25	1550.116	(f) -19.26	27.68	(InB nf) -46.95	0.066	0.208
	26	1550.932	(f) -19.29	27.83	(InB nf) -47.12	0.065	0.205
	27	1551.738	(f) -18.77	28.32	(InB nf) -47.09	0.069	0.222
	28	1552.536	(f) -17.75	29.37	(InB nf) -47.11	0.069	0.219
	29	1554.130	(f) -18.37	28.08	(InB nf) -46.46	0.068	0.230
	30	1554.949	(f) -17.11	29.46	(InB nf) -46.57	0.070	0.221
	31	1555.726	(f) -17.08	29.28	(InB nf) -46.36	0.067	0.215
	32	1556.357	(f) -17.26	28.99	(InB nf) -46.26	0.067	0.212
	33	1557.366	(f) -17.84	28.33	(InB nf) -46.17	0.068	0.229
	34	1558.184	(f) -16.95	29.15	(InB nf) -46.09	0.070	0.225
	35	1558.975	(f) -17.55	27.65	(InB nf) -45.21	0.067	0.224
	36	1559.781	(f) -18.24	27.03	(InB nf) -45.28	0.238	---

Using Zoom Controls

Use the zoom controls to change the scale of the trace display.

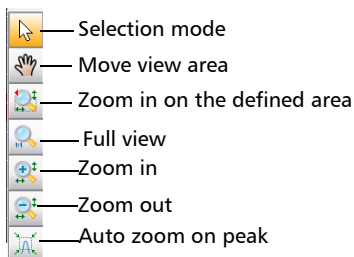
You can zoom in on or out of the graph using the corresponding buttons or let the application automatically adjust the zoom on the currently selected peak from the results table.

You can quickly zoom in on or out of a selected peak.

You can also return to the original graph value.

The application provides an automatic zoom on peak feature. When this feature is activated and you press on a row in the peak results grid, the graph will zoom and tab to show that peak covering 33 % of the graph canvas. By default, this option is deactivated.

Note: *You cannot select channels on the graph when the markers are displayed.*



Note: *You can only move the markers with the  button.*

Managing Results

Using Zoom Controls

To view specific portions of the graph:

- You can define which portion of the graph will be visible by pressing  and dragging the graph with the stylus or your finger.
- You can also zoom in on a specific area by pressing  and defining the zoom area with the stylus or your finger (a rectangle with dotted lines will appear to help you define the area). Once you release the stylus, the application automatically zooms in on the graph.
- You can zoom in or out on the center of the portion of the graph that is displayed by using, respectively,  or . The application automatically adjusts the zoom by 50 % and 100 % respectively.

To automatically zoom in on the selected peak:

Select the peak on the graph or in the table results and press .

To revert to the complete graph view:

Press .

Managing Markers

You can use markers to perform manual measurements and verification directly on the trace. All test modes feature two vertical markers and two horizontal markers. The vertical markers are used to indicate the power level on the trace at the wavelength or frequency it is positioned, and the horizontal markers are used for indicating power at the level they are. You can measure actual power and wavelength values of any point on the trace using the vertical markers.

Note: *Horizontal markers will be displayed only if the markers are activated in the **Preferences** tab of the related test mode.*

Each marker is identified by a letter: A and B are for vertical markers, and C and D for horizontal markers.

The application allows you to fix the distance between the markers. When this feature is activated, while moving any one marker, both markers will move at the same rate and distance.

Markers A and B in the marker toolbar act as toggle buttons to enable selection. When a marker is activated, the color of the button changes to orange and the selected marker displays a double arrow at the base of the marker in the graph tab, which means that the marker can be moved.

At this point, if you select the other vertical marker in the graph tab, the selection of the toggle switches to this marker. However, if you select the other marker button from the marker toolbar, both markers will be selected and the distance between both will be locked.

Note: *If you select a vertical marker while the horizontal markers are active, the selection will toggle to the other type of marker and vice versa.*

Note: *If you zoom into the graph, or pan within it, the markers remain in their set positions.*

Managing Results

Managing Markers

You can also use the automated marker positioning to place the markers around a specific channel peak. The positions are set from the results grid, according to the following by default:

- A: set at the peak wavelength “ λ Peak(nm)” or frequency “ f peak(Thz)”.
- B: set at the wavelength/frequency which corresponds to a 3 dB drop from the peak maximum power (Signal power “p” without subtracting the noise).
- C: set at the peak power (λ Peak).
- D: set at 3 dB below marker C.

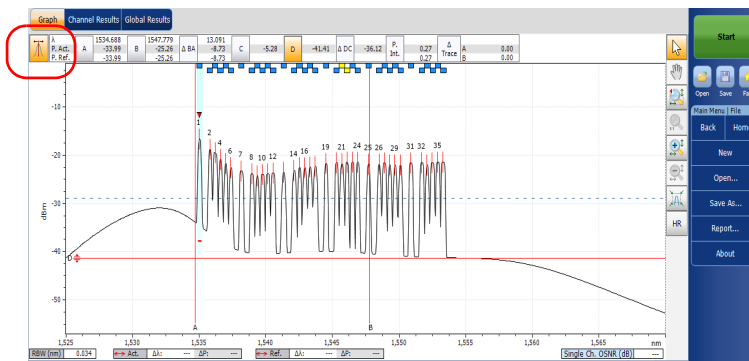
If you move one of the markers, these new settings are kept for the next use of the automated markers until you reset them or select another zoom feature.

If the channel you select does not display a signal, the markers remain in the position that they were before.

In the case of the WDM and Drift modes, the markers are placed on the active trace. In the case of EDFA testing, the markers will be on the output trace.

To display the marker toolbar:

Press the  button on the top left-hand corner of the display.

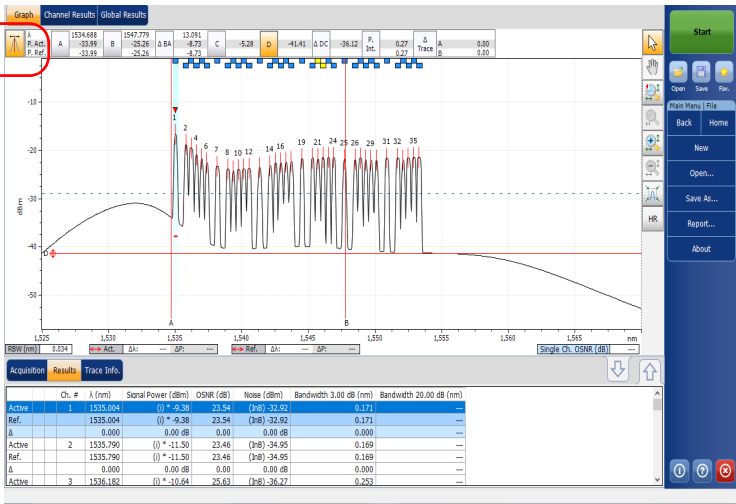


To display the automated markers:

Press the  button. The focus will be done on the currently selected channel in the **Results** tab.

To manually enter a marker position value:

1. If you have not done so already, press the  button on the top left-hand corner of the display to make the marker toolbar appear.



2. Set the marker by entering precise values in the box corresponding to it or by dragging it on-screen.

As markers A and B appear on the graph, the following values will be displayed in the marker toolbar.

- power values corresponding to the wavelength position of both markers (in the case of WDM, the active and reference values are displayed; in the case of spectral transmittance and EDFA, the input and output values are displayed).
- wavelength or frequency difference between the markers (A-B)
- power difference in dB between the markers

Managing Results

Managing Markers

- integrated power between the markers in dBm
- for WDM, spectral transmittance and EDFA modes, power difference between the traces (active against reference or input against output) for both markers in dB.

As markers C and D appear on the graph, the power difference between the markers (C-D) related to the horizontal markers will be displayed in the marker toolbar.

You can also move the markers directly on the graph tab. Drag the marker to the desired area in the display. You will notice that the corresponding box in the marker toolbar changes according to the marker's position. If you want to set a precise value for the marker, simply enter it in the box.

Note: *After using the zoom tools in the graph tab, you can only move the markers again on the graph after deactivating the zoom. Pressing the arrow in the zoom tools section will deactivate the zoom function.*

Note: *Markers A and B cannot cross. Displacing a marker over the second one will cause both markers to move together.*

Managing Trace Information

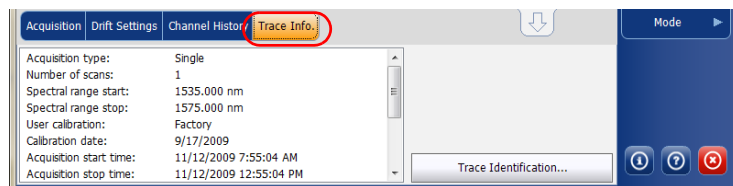
After acquiring a trace, you might want to view details about the acquisition. The **Trace Info.** tab shows information related to acquisition parameters and conditions. You can also edit information about the tested fiber and job or add comments. This information is saved along with the trace.

Note: Trace information is available for both active and reference traces, but you can edit only the trace information pertaining to the active trace.

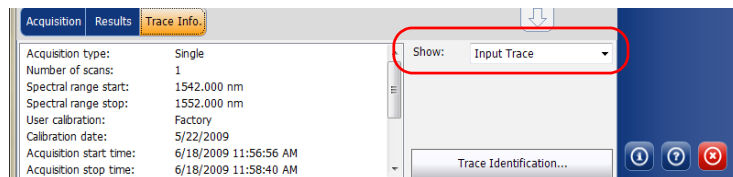
Note: If you want to apply the settings of the **Trace Identification** window to the **Preferences** tab, select the **Use as template** option and press **OK**.

To view trace information parameters:

1. From the main window, select the **Trace Info.** tab.



2. For some test types (WDM if there is a reference trace, spectral transmittance and EDFA), select which trace you want to view.

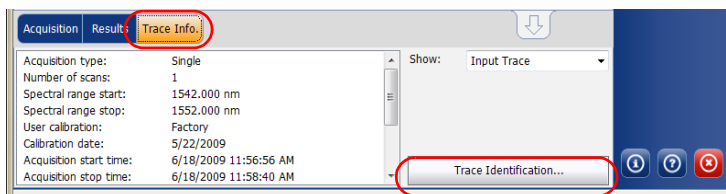


Managing Results

Managing Trace Information

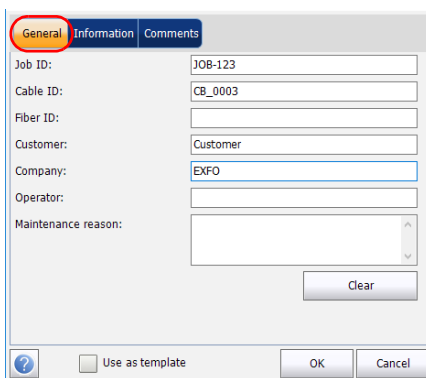
To edit general information:

1. From the main window, select the **Trace Info.** tab.
2. Press **Trace Identification.**



Note: Trace identification is not available for the WDM reference trace.

3. Select the **General** tab.

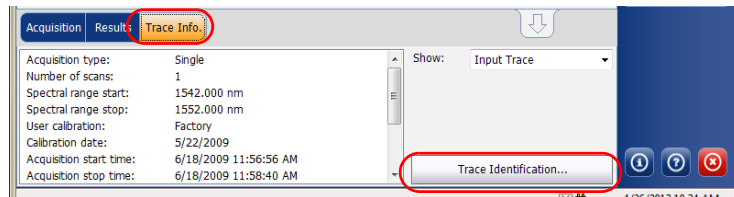


4. Edit the general information as required.
5. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

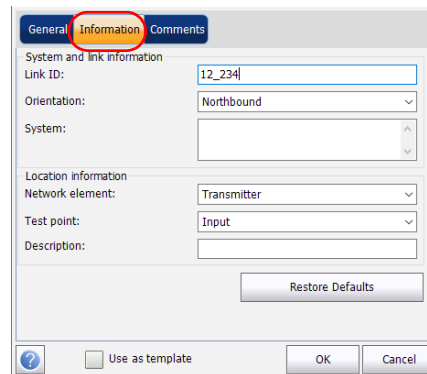
Press **Clear** to clear all the changes made in the **General** tab.

To edit trace information:

1. From the main window, select the **Trace Info.** tab.
2. Press **Trace Identification.**



3. Select the **Information** tab.



4. Edit the information as required.
5. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

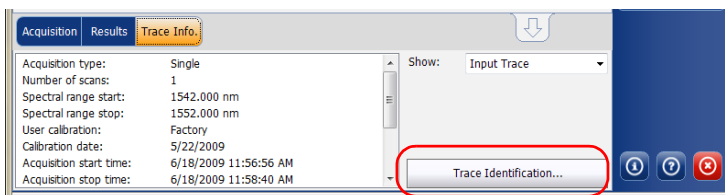
Press **Restore Defaults** to remove all the changes and apply the default values.

Managing Results

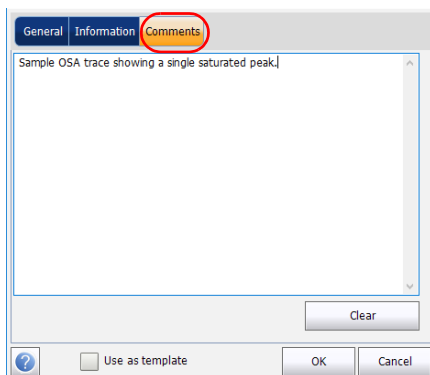
Managing Trace Information

To edit comments:

1. From the main window, select the **Trace Info.** tab.
2. Press **Trace Identification.**



3. Select the **Comments** tab.



4. Edit comments in the **Comments** window for the current trace.
5. Press **OK** to save the changes and close the window, or press **Cancel** to exit without saving.

Press **Clear** to clear all the changes made in the **Comments** tab.

Generating Reports

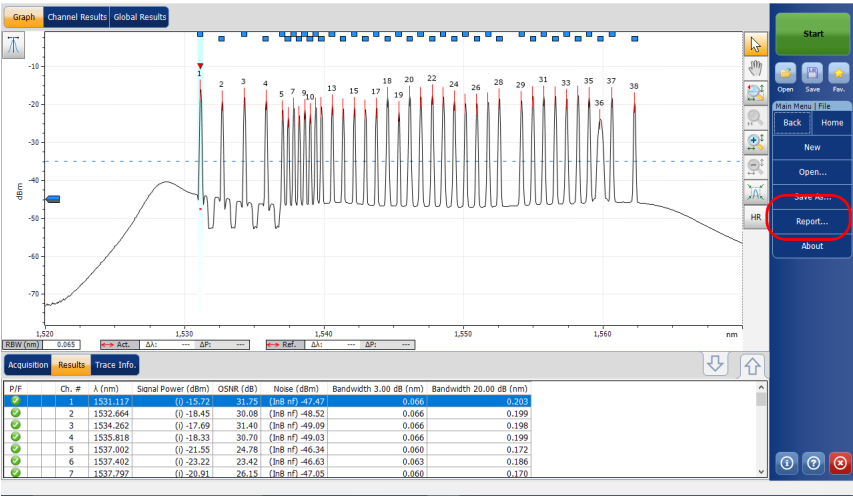
After performing any acquisition, you can generate a report for the current acquisition and save it in .html, PDF or .txt format depending on the supported file type for your test mode. The report file will include trace information, acquisition conditions and other results and details specific to each test mode.

Note: Empty channels that are shown on screen are included in the report files.

Note: The .txt format report type is only available for the WDM and Drift modes.

To generate a report:

- 1. From the **Main Menu**, select **File**.
- 2. Press **Report**.

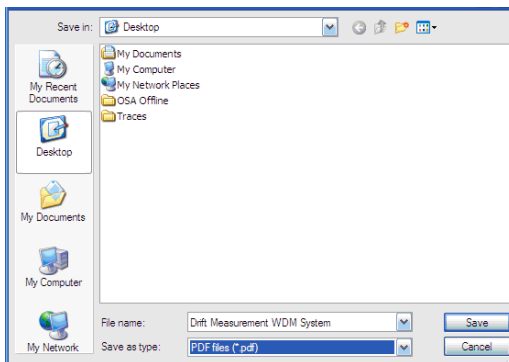


- 3. In the **Save As** window, enter a file name.

Managing Results

Generating Reports

4. From the **Save as type** list, select the format for your report.



5. Press **Save**. The report will be added to the **Reports** folder. You can change the location where you want to save the report as desired.

14 **Maintenance**

To help ensure long, trouble-free operation:

- Always inspect fiber-optic connectors before using them and clean them if necessary.
- Keep the unit free of dust.
- Clean the unit casing and front panel with a cloth slightly dampened with water.
- Store unit at room temperature in a clean and dry area. Keep the unit out of direct sunlight.
- Avoid high humidity or significant temperature fluctuations.
- Avoid unnecessary shocks and vibrations.
- If any liquids are spilled on or into the unit, turn off the power immediately, disconnect from any external power source, remove the batteries and let the unit dry completely.



WARNING

The use of controls, adjustments and procedures, namely for operation and maintenance, other than those specified herein may result in hazardous radiation exposure or impair the protection provided by this unit.

Cleaning EUI Connectors

Regular cleaning of EUI connectors will help maintain optimum performance. There is no need to disassemble the unit.



IMPORTANT

If any damage occurs to internal connectors, the module casing will have to be opened and a new calibration will be required.

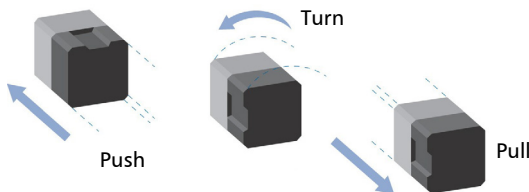


WARNING

Looking into the optical connector while the light source is active **WILL** result in permanent eye damage. EXFO strongly recommends to **TURN OFF** the unit before proceeding with the cleaning procedure.

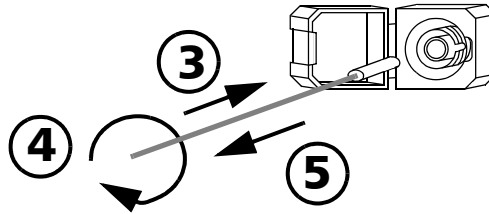
To clean EUI connectors:

1. Remove the EUI from the instrument to expose the connector baseplate and ferrule.



2. Moisten a 2.5 mm cleaning tip with *one drop* of optical-grade liquid cleaner.

3. Slowly insert the cleaning tip into the EUI adapter until it comes out on the other side (a slow clockwise rotating movement may help).



4. Gently turn the cleaning tip one full turn, then continue to turn as you withdraw it.
5. Repeat steps 3 to 4 with a dry cleaning tip.

Note: *Make sure you don't touch the soft end of the cleaning tip.*

6. Clean the ferrule in the connector port as follows:
 - 6a. Deposit *one drop* of optical-grade liquid cleaner on a lint-free wiping cloth.



IMPORTANT

Avoid contact between the tip of the bottle and the wiping cloth, and dry the surface quickly.

- 6b. Gently wipe the connector and ferrule.
 - 6c. With a dry lint-free wiping cloth, gently wipe the same surfaces to ensure that the connector and ferrule are perfectly dry.
 - 6d. Verify connector surface with a fiber inspection probe (for example, EXFO's FIP).
7. Put the EUI back onto the instrument (push and turn clockwise).
8. Throw out cleaning tips and wiping cloths after one use.

Recalibrating the Unit

EXFO manufacturing and service center calibrations are based on the ISO/IEC 17025 standard (*General Requirements for the Competence of Testing and Calibration Laboratories*). This standard states that calibration documents must not contain a calibration interval and that the user is responsible for determining the re-calibration date according to the actual use of the instrument.

The validity of specifications depends on operating conditions. For example, the calibration validity period can be longer or shorter depending on the intensity of use, environmental conditions and unit maintenance, as well as the specific requirements for your application. All of these elements must be taken into consideration when determining the appropriate calibration interval of this particular EXFO unit.

Under normal use, the recommended interval for your Optical Spectrum Analyzer is: one year.

For newly delivered units, EXFO has determined that the storage of this product for up to six months between calibration and shipment does not affect its performance.

To help you with calibration follow-up, EXFO provides a special calibration label that complies with the ISO/IEC 17025 standard and indicates the unit calibration date and provides space to indicate the due date. Unless you have already established a specific calibration interval based on your own empirical data and requirements, EXFO would recommend that the next calibration date be established according to the following equation:

Next calibration date = Shipping date + Recommended calibration period (one year)

To ensure that your unit conforms to the published specifications, calibration may be carried out at an EXFO service center or, depending on the product, at one of EXFO's certified service centers. Calibrations at EXFO are performed using standards traceable to national metrology institutes.

Note: *You may have purchased a FlexCare plan that covers calibrations. See the Service and Repairs section of this user documentation for more information on how to contact the service centers and to see if your plan qualifies.*

Recycling and Disposal



This symbol on the product means that you should recycle or dispose of your product (including electric and electronic accessories) properly, in accordance with local regulations. Do not dispose of it in ordinary garbage receptacles.

For complete recycling/disposal information, visit the EXFO Web site at www.exfo.com/recycle.

15 Troubleshooting

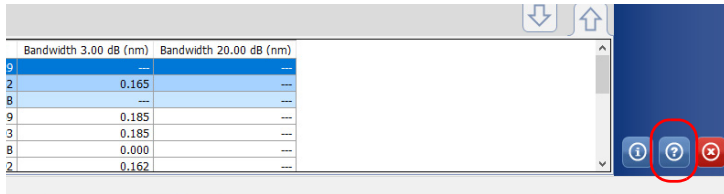
Obtaining Online Help

Context-sensitive and interactive help is conveniently available at all times to guide you through the use of your application.

Note: *You will also find a printable PDF version of the Optical Spectrum Analyzer user guide on your unit.*

To access online help:

Anywhere in the application, press the ? button to get help about the current function.



Contacting the Technical Support Group

To obtain after-sales service or technical support for this product, contact EXFO at one of the following numbers. The Technical Support Group is available to take your calls from Monday to Friday, 8:00 a.m. to 7:00 p.m. (Eastern Time in North America).

Technical Support Group

400 Godin Avenue
Quebec (Quebec) G1M 2K2
CANADA

1 866 683-0155 (USA and Canada)
Tel.: 1 418 683-5498
Fax: 1 418 683-9224
support@exfo.com

For detailed information about technical support, and for a list of other worldwide locations, visit the EXFO Web site at www.exfo.com.

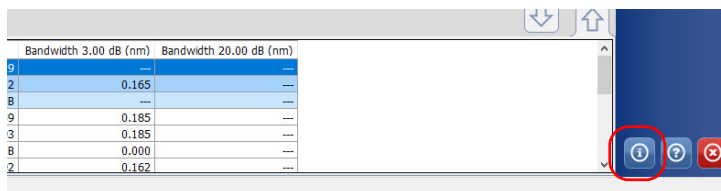
If you have comments or suggestions about this user documentation, you can send them to customer.feedback.manual@exfo.com.

To accelerate the process, please have information such as the name and the serial number (see the product identification label), as well as a description of your problem, close at hand.

You may also be requested to provide software and module version numbers. This information, as well as technical support contact information, can be found in the **About** window.

To view the information about the product:

From the **Main Menu**, press .



Transportation

Maintain a temperature range within specifications when transporting the unit. Transportation damage can occur from improper handling. The following steps are recommended to minimize the possibility of damage:

- Pack the unit in its original packing material when shipping.
- Avoid high humidity or large temperature fluctuations.
- Keep the unit out of direct sunlight.
- Avoid unnecessary shocks and vibrations.



IMPORTANT

Keep this information close at hand, as it contains important details about your product.



CAUTION

- Always use the GP-10-102 case when transporting your module. EXFO does not recommend transporting the modules in a platform and/or in a case other than the one designed for your specific module.
- Handle the case with care when transporting the module.
- Please follow these guidelines. Modules damaged from rough handling during transport or shipment are not covered by any EXFO warranty.

16 **Warranty**

General Information

EXFO Inc. (EXFO) warrants this equipment against defects in material and workmanship for a period of one year from the date of original shipment. EXFO also warrants that this equipment will meet applicable specifications under normal use.

During the warranty period, EXFO will, at its discretion, repair, replace, or issue credit for any defective product, as well as verify and adjust the product free of charge should the equipment need to be repaired or if the original calibration is erroneous. If the equipment is sent back for verification of calibration during the warranty period and found to meet all published specifications, EXFO will charge standard calibration fees.



IMPORTANT

The warranty can become null and void if:

- unit has been tampered with, repaired, or worked upon by unauthorized individuals or non-EXFO personnel.
- warranty sticker has been removed.
- case screws, other than those specified in this guide, have been removed.
- case has been opened, other than as explained in this guide.
- unit serial number has been altered, erased, or removed.
- unit has been misused, neglected, or damaged by accident.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED, IMPLIED, OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL EXFO BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

Warranty

Gray Market and Gray Market Products

Gray Market and Gray Market Products

Gray market is a market where products are traded through distribution channels that are legal but remain unofficial, unauthorized, or unintended by the original manufacturer. Intermediaries using such channels to distribute products are considered to be part of the gray market (hereafter unauthorized intermediary).

EXFO considers that a product originates from the gray market (hereafter gray market product) in the following situations:

- A product is sold by an unauthorized intermediary.
- A product is designed and destined for a particular market and sold on a second market.
- A product is resold, despite being reported lost or stolen.

When products are purchased on the gray market, rather than through an authorized EXFO distribution channel, EXFO is unable to guarantee the source and quality of those products nor the local safety regulations and certifications (CE, UL, etc.).

EXFO will not honor warranty, install, maintain, repair, calibrate, provide technical support nor make any support contracts available for gray market products.

For complete information, refer to EXFO's policy regarding gray market products at

www.exfo.com/en/how-to-buy/sales-terms-conditions/gray-market/

Liability

EXFO shall not be liable for damages resulting from the use of the product, nor shall be responsible for any failure in the performance of other items to which the product is connected or the operation of any system of which the product may be a part.

EXFO shall not be liable for damages resulting from improper usage or unauthorized modification of the product, its accompanying accessories and software.

Exclusions

EXFO reserves the right to make changes in the design or construction of any of its products at any time without incurring obligation to make any changes whatsoever on units purchased. Accessories, including but not limited to fuses, pilot lamps, batteries and universal interfaces (EUI) used with EXFO products are not covered by this warranty.

This warranty excludes failure resulting from: improper use or installation, normal wear and tear, accident, abuse, neglect, fire, water, lightning or other acts of nature, causes external to the product or other factors beyond the control of EXFO.



IMPORTANT

In the case of products equipped with optical connectors, EXFO will charge a fee for replacing connectors that were damaged due to misuse or bad cleaning.

Certification

EXFO certifies that this equipment met its published specifications at the time of shipment from the factory.

Service and Repairs

EXFO commits to providing product service and repair for five years following the date of purchase.

To send any equipment for service or repair:

1. Call one of EXFO's authorized service centers (see *EXFO Service Centers Worldwide* on page 387). Support personnel will determine if the equipment requires service, repair, or calibration.
2. If equipment must be returned to EXFO or an authorized service center, support personnel will issue a Return Merchandise Authorization (RMA) number and provide an address for return.
3. If possible, back up your data before sending the unit for repair.
4. Pack the equipment in its original shipping material. Be sure to include a statement or report fully detailing the defect and the conditions under which it was observed.
5. Return the equipment, prepaid, to the address given to you by support personnel. Be sure to write the RMA number on the shipping slip. *EXFO will refuse and return any package that does not bear an RMA number.*

Note: *A test setup fee will apply to any returned unit that, after test, is found to meet the applicable specifications.*

After repair, the equipment will be returned with a repair report. If the equipment is not under warranty, you will be invoiced for the cost appearing on this report. EXFO will pay return-to-customer shipping costs for equipment under warranty. Shipping insurance is at your expense.

Routine recalibration is not included in any of the warranty plans. Since calibrations/verifications are not covered by the basic or extended warranties, you may elect to purchase FlexCare Calibration/Verification Packages for a definite period of time. Contact an authorized service center (see *EXFO Service Centers Worldwide* on page 387).

EXFO Service Centers Worldwide

If your product requires servicing, contact your nearest authorized service center.

EXFO Headquarters Service Center

400 Godin Avenue
Quebec (Quebec) G1M 2K2
CANADA

1 866 683-0155 (USA and Canada)
Tel.: 1 418 683-5498
Fax: 1 418 683-9224
support@exfo.com

EXFO Europe Service Center

Winchester House, School Lane
Chandlers Ford, Hampshire S053 4DG
ENGLAND

Tel.: +44 2380 246800
Fax: +44 2380 246801
support.europe@exfo.com

EXFO Telecom Equipment (Shenzhen) Ltd.

3rd Floor, Building C,
FuNing Hi-Tech Industrial Park, No. 71-3,
Xintian Avenue,
Fuhai, Bao'An District,
Shenzhen, China, 518103

Tel: +86 (755) 2955 3100
Fax: +86 (755) 2955 3101
support.asia@exfo.com

To view EXFO's network of partner-operated Certified Service Centers nearest you, please consult EXFO's corporate website for the complete list of service partners:

<http://www.exfo.com/support/services/instrument-services/exfo-service-centers>.

A **SCPI Command Reference**

This section presents detailed information on the commands and queries supplied with your Optical Spectrum Analyzer.



IMPORTANT

Since the platforms can house many instruments, you must explicitly specify which instrument you want to remotely control.

You must add the following mnemonic *at the beginning of any command or query* that you send to an instrument:

LINstrument<LogicalInstrumentPos>:

where <LogicalInstrumentPos> corresponds to the identification number of the instrument.

- For instruments usable with IQS-600 platforms:

IQS controller or expansion unit
identification number (for example, 001)

XXX

Instrument slot number (0 to 9)

For information on modifying unit identification, refer to your platform user guide.

- For instruments usable with FTB-500 platforms:

FTB-500 backplane identification number

1Y

Instrument slot number:
4-slot backplane: 0 to 3;
8-slot backplane: 0 to 7

- For instruments usable with other platforms:

Use the LINS value defined in the Remote Control Configuration tool (accessible from System Settings). For information on modifying the LINS value, refer to your platform user guide.

SCPI Command Reference

Quick Reference Command Tree

Note: The FTBx-5235 module does not support remote control using SCPI commands or IVI drivers.

Quick Reference Command Tree

Command								Parameter(s)	P.
ABORt									409
CALCulate[1..n]	COMPress	CENTer	[WAVelength]					<Center[<wsp>M]> MAXimum MINimum DEFault	410
			[WAVelength] ?]					[MAXimum MINimum DEFault]	412
		POINts						<Points> MAXimum MINimum DEFault	414
		POINts?						[MAXimum MINimum DEFault]	416
		SPAN	[WAVelength]					<Span[<wsp>M] > MAXimum MINimum DEFault	418
			[WAVelength] ?]					[MAXimum MINimum DEFault]	420
		STARt	[WAVelength]					<Start[<wsp>M]> MAXimum MINimum DEFault	422
			[WAVelength] ?]					[MAXimum MINimum DEFault]	425
		STOP	[WAVelength]					<Stop[<wsp>M]> MAXimum MINimum DEFault	427
			[WAVelength] ?]					[MAXimum MINimum DEFault]	430
		STATe						<State>	432

Command								Parameter(s)	P.
CALCulate[1..n] (continued)	COMPRESS	STATE?							435
	DFB	CENTER[1 2]	RelativeLEVEL					<PowerLevel <wsp>DB W/W PCT > MAXimum MINimum DEFAULT	436
			RelativeLEVEL?					[MAXimum MINimum DEFAULT]	438
		DATA	BANDwidth[1 2] BWIDTh[1 2]	FREQuency?					440
				[WAVelength]?					442
				RelativeLEVEL?					444
			CENTER	FREQuency?					445
				[WAVelength]?					446
			CenterOFFset	FREQuency?					447
				[WAVelength]?					449
			FPMS	FREQuency?					451
				[WAVelength]?					452
			PPOWER?						453
			SBAND STOPband	LEFT	FREQuency?				454
					[WAVelength]?				456
				RIGHT	FREQuency?				458
					[WAVelength]?				460
			SMSR	LEFT?					462
				LEFT	POSITION	FREQuency?			463
						[WAVelength]?			465
				RIGHT?					467

SCPI Command Reference

Quick Reference Command Tree

Command								Parameter(s)	P.
CALCulate[1..n] (continued)	DFB	DATA	SMSR	RIGHT	POSition	FREQuency?			468
						[WAVelength]?			470
				WORSt?					472
				WORSt	POSition	FREQuency?			473
						[WAVelength]?			475
		STATe						<State>	477
		STATe?							479
	EDFa	CHANnel	AUTO					<Auto>	480
			AUTO?						481
			AUTO	CENTer	ITUGrid			<Auto>	482
					ITUGrid?				484
				WIDTh	FREQuency			<Width[<wsp>HZ > MAXimum MINimum DEFault	485
					FREQuency?			[MAXimum MINimum DEFault]	487
					[WAVelength]			<Width[<wsp>M] > MAXimum MINimum DEFault	489
					[WAVelength]?			[MAXimum MINimum DEFault]	491
			CATalog?						493
			COUNT?						495
			[DEFine]					<Name>, <Define[<wsp>M HZ]> MAXimum MINimum	496
			[DEFine]?					<Name>	499
			DELeTe	[NAME]				<Name>	501
				ALL					503

Command								Parameter(s)	P.
CALCulate[1..n] (continued)	EDFA	CHANnel	CENTER	FREQuency				<Center[<wsp>HZ]> MAXimum MINimum DEFault	504
				FREQuency?				[MAXimum MINimum DEFault]	506
				[WAVelength]				<Center[<wsp>M]> MAXimum MINimum DEFault	508
				[WAVelength]?				[MAXimum MINimum DEFault]	510
			WIDTH	FREQuency				<Width[<wsp>HZ]> MAXimum MINimum DEFault	512
				FREQuency?				[MAXimum MINimum DEFault]	514
				[WAVelength]				<Width[<wsp>M]> MAXimum MINimum DEFault	516
				[WAVelength]?				[MAXimum MINimum DEFault]	518
			NSElect					<Select> MAXimum MINimum	520
			NSElect?						522
			SElect					<Select>	523
			SElect?						524
		DATA	CHANnel	ASEPower?					525
				CATalog?					526
			CENTER	FREQuency?					528
				[WAVelength]?					530
			CenterMASS	FREQuency?					532
				[WAVelength]?					534

SCPI Command Reference

Quick Reference Command Tree

Command								Parameter(s)	P.
CALCulate[1..n] (continued)	EDFA	DATA	CHANnel	COUNT?					536
				GAIN?					538
				GMAGain?					539
				INPut	SIGnalPower?				540
					TPOWer?				541
				NFIGure?					542
				NSElect				<Select> MAXimum MINimum	543
				NSElect?					545
				OUTPut	SIGnalPower?				546
					TPOWer?				547
				SElect				<Select>	548
				SElect?					549
				SMPRatio?					551
				SSEPower?					553
			GAIN	FLATness?					554
				MEAN?					555
				SLOPe	FREQuency?				557
					[WAVelength]?				558
			INPut	SIGnalPower	FLATness?				559
					MEAN?				560
					TPOWer?				562
			OUTPut	SIGnalPower	FLATness?				563
					MEAN?				564
					TPOWer?				566
		OSNR	BANDwidth BWIDth	[RESolution]				<Resolution [<wsp>M]> MAXimum MINimum DEFault	567

Command								Parameter(s)	P.
CALCulate[1..n] (continued)	EDFA	OSNR	BANDwidth BWIDth	[RESolution] ?				[MAXimum MINimum DEFault]	569
				[RESolution]	AUTO			<Auto>	571
					AUTO?				573
		STATe						<State>	575
		STATe?							577
		THReshold						<Threshold <wsp>DBM W > MAXimum MINimum DEFault	578
		THReshold?						[MAXimum MINimum DEFault]	580
	FP	DATA	CENTer	FREQuency?					582
				[WAVelength]?					583
			FITWidth[1 2] FWIDth[1 2]	FREQuency?					584
				[WAVelength]?					586
				RelativeLEVe l?					588
			FWHM	FREQuency?					589
				[WAVelength]?					590
			GAUSsiterro r?						591
			MTSM	FREQuency?					592
				[WAVelength]?					593
				RelativeLEVe l?					594
			MSPAcing	FREQuency?					595
				[WAVelength]?					596
			POWer?						597

SCPI Command Reference

Quick Reference Command Tree

Command								Parameter(s)	P.
CALCulate[1..n] (continued)	FP	DATA	PEAKmode PMode	FREQuency?					598
				[WAVelength]?					599
				POWer?					600
			RMSWidth	FREQuency?					601
				[WAVelength]?					602
			TPOWer?						603
	FP	STATe						<State>	604
		STATe?							606
	MARKer [1 2]	AOFF							607
		FUNCTion						IPOWer OFF	608
		FUNCTion?							610
		FUNCTion	DATA?						611
		MODE						POSition DELTa	613
		MODE?							614
		REFerence						<Reference> MAXimum MINimum	615
		REFerence?							617
		[STATe]						<State>	618
		[STATe]?							620
		TRACe						<TraceName>	621
		TRACe?							622
		X	FREQuency					<Position[<wsp> HZ]> MAXimum MINimum DEFault	623
			FREQuency?						625
			[WAVelength]					<Position[<wsp> M]> MAXimum MINimum DEFault	626
			[WAVelength]?						628
		Y?							629

Command								Parameter(s)	P.
CALCulate[1..n] (continued)	ST	BANDwidth[1 2] BWIDth[1 2]	RelativeLEVel					<PowerLevel <wsp>DB W/W PCT > MAXimum MINimum DEFault	631
			RelativeLEVel?					[MAXimum MINimum DEFault]	633
		CHANnel	CENTER	AUTO				<Auto>	635
				AUTO?					637
				FREQuency				<Center <wsp> HZ > MAXimum MINimum DEFault	639
				FREQuency?				[MAXimum MINimum DEFault]	641
				[WAVelength]				<Center <wsp>M > MAXimum MINimum DEFault	643
				[WAVelength]?				[MAXimum MINimum DEFault]	645
				ITUGrid				<Auto>	647
				ITUGrid?					649
			SPACing	FREQuency				<Spacing <wsp> HZ > MAXimum MINimum DEFault	650
				FREQuency?				[MAXimum MINimum DEFault]	653
				[WAVelength]				<Spacing <wsp> M > MAXimum MINimum DEFault	655
				[WAVelength]?				[MAXimum MINimum DEFault]	657
			WIDTH	FREQuency				<Width <wsp> HZ > MAXimum MINimum DEFault	659
				FREQuency?				[MAXimum MINimum DEFault]	661
				[WAVelength]				<Width <wsp> M > MAXimum MI Nimum DEFault	663
				[WAVelength]?				[MAXimum MINimum DEFault]	665
		DATA	ACISolation?						667

SCPI Command Reference

Quick Reference Command Tree

Command								Parameter(s)	P.
CALCulate[1..n] (continued)	ST	DATA	BANDwidth[1 2] BWIDth[1 2]	FREQuency?					669
				[WAVelength]?					671
			CenterOFFset	FREQuency?					673
				[WAVelength]?					674
			CHANnel	CENTER	FREQuency?				675
					[WAVelength]?				676
			ILOSs						677
			ILOSs?						678
		STATe						<Auto>	679
		STATe?							681
	TX	AWINDOW	SPAN	[WAVelength]				<Span[<wsp>M] > MAXimum MINimum DEFault	682
				[WAVelength]?				[MAXimum MINimum DEFault]	684
				FREQuency				<Span[<wsp>HZ] > MAXimum MINimum DEFault	686
				FREQuency?				[MAXimum MINimum DEFault]	688
		BANDwidth[1 2] BWIDth[1 2]	RelativeLEVEL					<PowerLevel[<wsp>DB W/W PCT] > MAXimum MINimum DEFault	690
			RelativeLEVEL?					[MAXimum MINimum DEFault]	692
		CENTER	RelativeLEVEL					<PowerLevel[<wsp>DB W/W PCT] > MAXimum MINimum DEFault	694
			RelativeLEVEL?					[MAXimum MINimum DEFault]	696
		DATA	OSNR	FLATness?					698
				MEAN?					699

Command								Parameter(s)	P.
CALCulate[1..n] (continued)	TX	DATA	PEAK	ABLeft	[WAVelength]?				700
					FREQuency?				702
				ABRight	[WAVelength]?				704
					FREQuency?				706
				BANDwidth[1 2] BWIDTh[1 2]	[WAVelength]?				708
					FREQuency?				710
				CenterMAss	[WAVelength]?				712
					FREQuency?				714
				COFFset	[WAVelength]?				716
					FREQuency?				718
				COUNt?					720
				CPEAk	[WAVelength]?				721
					FREQuency?				723
				FPMSpacing	[WAVelength]?				725
					FREQuency?				727
				NOISe?					729
				NSElect				<Number>	731
				NSElect?					732
				OSNR?					733
				PPOWer?					735
				SIGnalPower ?					736
			SMODE	COFFset	[WAVelength]?				738
					FREQuency?				740

SCPI Command Reference

Quick Reference Command Tree

Command								Parameter(s)	P.
CALCulate[1..n] (continued)	TX	DATA	SMODE	COUNT?					742
				CPEAk	[WAVelength]?				744
					FREQuency?				746
				LOCation?					748
				NSElect				<Number>	750
				NSElect?					752
				NSElect	LEFT			<Number>	754
					RIGHT			<Number>	755
				NUMBer?					756
				PPOWer?					758
				SRATio?					760
			SIGnalPower	FLATness?					761
				MEAN?					762
			TPOWer?						763
		FILTer	STATe					<State>	764
			STATe?						765
			WINDow	SPAN				<Span[<wsp>M] > MAXimum MINi mum DEFault	766
				SPAN?				[MAXimum MINim um DEFault]	768
		NOISe	DISTance	[WAVelength]				<Distance[<wsp> M] > MAXimum MI Nimum DEFault	770
				[WAVelength]?				[MAXimum MINim um DEFault]	772
				FREQuency				<Distance[<wsp> HZ] > MAXimum MINimum DEFault	774
				FREQuency?				[MAXimum MINim um DEFault]	776
			TYPE					IEC GAUSs POLYn omial5	778

Command								Parameter(s)	P.
CALCulate[1..n] (continued)	TX	NOISe	TYPE?						779
			WIDTH	[WAVelength]				<Width[<wsp>M] > MAXimum MINimum DEFault	780
				[WAVelength]?				[MAXimum MINimum DEFault]	782
				FREQuency				<Width[<wsp>HZ] > MAXimum MINimum DEFault	784
				FREQuency?				[MAXimum MINimum DEFault]	786
		OSNR	BANDwidth BWIDth	[RESolution]				<Resolution[<wsp>M] > MAXimum MINimum DEFault	788
				[RESolution]?				[MAXimum MINimum DEFault]	790
				[RESolution]	AUTO			<Auto>	792
					AUTO?				794
		SIGnalPower	TYPE					IPOWER PPOWER	795
			TYPE?						796
			WIDTH	[WAVelength]				<Width[<wsp>M] > MAXimum MINimum DEFault	797
				[WAVelength]?				[MAXimum MINimum DEFault]	799
				FREQuency				<Width[<wsp>HZ] > MAXimum MINimum DEFault	801
				FREQuency?				[MAXimum MINimum DEFault]	803
		SMSR	MASK	[WAVelength]				<Mask[<wsp>M] > MAXimum MINimum DEFault	805
				[WAVelength]?				[MAXimum MINimum DEFault]	807
				FREQuency				<Mask[<wsp>HZ] > MAXimum MINimum DEFault	809
				FREQuency?				[MAXimum MINimum DEFault]	811

SCPI Command Reference

Quick Reference Command Tree

Command								Parameter(s)	P.
CALCulate[1..n] (continued)	TX	STATe						<State>	813
		STATe?							815
		THReshold						<Threshold[<wsp> >DBM W]> MAXi mum MINimum D EFAULT	816
		THReshold?						[MAXimum MINim um DEFAULT]	818
	[WDM]	BANDwidth [1 2] BWIDth[1 2]	RelativeLEVe l					<PowerLevel [<wsp>DB W/W PCT]> MAXimum MINimum DEFAULT	820
			RelativeLEVe l?					[MAXimum MINimum DEFAULT]	822
		CHANnel	AUTO					<Auto>	824
			AUTO?						825
			AUTO	CENter	ITUGrid			<Auto>	826
					ITUGrid?				828
				NOISe	AUTO			<Auto>	829
					AUTO?				831
					DISTance	FREQuency		<Distance[<wsp> HZ]> MAXimum MINimum DEFAULT	832
						FREQuency?		[MAXimum MINimum DEFAULT]	834
						WAVelength		<Distance[<wsp> M]> MAXimum MINimum DEFAULT	836
						[WAVelength]?		[MAXimum MINimum DEFAULT]	838
					TYPE			IEC INBand INBandNarrowfilter POLYnomial5 GAUSSian	840
					TYPE?				842
					WIDTh	FREQuency		<Width[<wsp>HZ > MAXimum MINimum DEFAULT	844

Command								Parameter(s)	P.
CALCulate[1..n] (continued)	[WDM]	CHANnel	AUTO	NOISe	WIDTH	FREQuency?		[MAXimum MINimum DEFault]	846
						[WAVelength]		<Width[<wsp>M] > MAXimum MINimum DEFault	848
						[WAVelength]?		[MAXimum MINimum DEFault]	851
				SIGnalPower	TYPE			IPOWer PPOWer TPOWer	853
					TYPE?				855
				WIDTH	FREQuency			<Width[<wsp>HZ > MAXimum MINimum DEFault	857
					FREQuency?			[MAXimum MINimum DEFault]	859
					[WAVelength]			<Width[<wsp>M] > MAXimum MINimum DEFault	861
					[WAVelength]?			[MAXimum MINimum DEFault]	863
			CATalog?						865
			COUNT?						867
			[DEFine]					<Name>,<Define[<wsp>M HZ]> MAXimum MINimum	868
			[DEFine]?					<Name>	871
			DElete	[NAME]				<Name>	873
				ALL					874
			CENTer	FREQuency				<Center[<wsp> HZ]> MAXimum MINimum DEFault	875
				FREQuency?				[MAXimum MINimum DEFault]	877
				[WAVelength]				<Center[<wsp>M] > MAXimum MINimum DEFault	879
				[WAVelength]?				[MAXimum MINimum DEFault]	881
			WIDTH	FREQuency				<Width[<wsp>HZ > MAXimum MINimum DEFault	883

SCPI Command Reference

Quick Reference Command Tree

Command								Parameter(s)	P.
CALCulate[1..n] (continued)	[WDM]	CHANnel	WIDTH	FREQuency?				[MAXimum MINimum DEFAULT]	885
				[WAVelength]				<Width[<wsp>M] > MAXimum MINimum DEFAULT]	887
				[WAVelength]?				[MAXimum MINimum DEFAULT]	889
			NOISe	AUTO				<Auto>	891
				AUTO?					893
				DISTance	FREQuency			<Distance[<wsp> HZ]> MAXimum MINimum DEFAULT]	895
					FREQuency?			[MAXimum MINimum DEFAULT]	897
					[WAVelength]			<Distance[<wsp> M]> MAXimum MINimum DEFAULT]	899
					[WAVelength]?			[MAXimum MINimum DEFAULT]	901
				TYPE				IEC INBand INBand Narrowfilter	903
				TYPE?					905
				WIDTH	FREQuency			<Width[<wsp>HZ > MAXimum MINimum DEFAULT]	907
					FREQuency?			[MAXimum MINimum DEFAULT]	909
					[WAVelength]			<Width[<wsp>M] > MAXimum MINimum DEFAULT]	911
					[WAVelength]?			[MAXimum MINimum DEFAULT]	914
			NSElect					<Select> MAXimum MINimum	916
			NSElect?						918
			SElect					<Select>	919
			SElect?						920
			SIGnalPower	TYPE				IPower PPower TPower	921
				TYPE?					923

SCPI Command Reference

Quick Reference Command Tree

Command								Parameter(s)	P.
CALCulate[1..n] (continued)	[WDM]	DATA	CHANnel	BANDwidth[1 2] BWIDTh[1 2]	FREQuency?				925
					RelativeLEVel?				927
					[WAVelength]?				929
				CATalog?					931
				COUNt?					933
				CENTER	FREQuency?				935
					[WAVelength]?				937
				CenterMASS	FREQuency?				939
					[WAVelength]?				941
				CenterPEAK	FREQuency?				943
					[WAVelength]?				945
				ENBW?					947
				NOISe?					949
				NOISe	AUTO?				951
					TYPE?				953
				OSNR?					955
				NSElect				<Select> MAXimum MINimum	957
				NSElect?					959
				SElect				<Select>	960
				SElect?					961
				SIGnalPower?					963
				SIGnalPower	TYPE?				965
				STATus	QUEStionable	BIT<9 10 11>	CONDition?		967
			OSNR	FLATness?					969
				MEAN?					970
			SIGnalPower	FLATness?					971

SCPI Command Reference

Quick Reference Command Tree

Command								Parameter(s)	P.
CALCulate[1..n] (continued)	[WDM]	DATA	SIGnalPower	MEAN?					972
			TPOWer?						973
		OSNR	BANDwidth BWIDth	[RESolution]				<Resolution <wsp >M > MAXimum MINimum DEFault	974
				[RESolution] ?				[MAXimum MINimum DEFault]	976
				[RESolution]	AUTO			<Auto>	978
					AUTO?				980
		STATe						<State>	981
		STATe?							983
		THReshold						<Threshold <wsp >DBM W > MAXimum MINimum DEFault	984
		THReshold?						[MAXimum MINimum DEFault]	986
	DATE?								988
	POWer	DATE?							989
	WAVelength	DATE?							990
	ZERO	[AUTO]						<Auto> ON OFF ONCE	991
		[AUTO]?							993
IDN[1..n]?									994
INITiate	CONTinuous							<Continuous>	995
	CONTinuous ?								998
	[IMMediate]								999
MEMory	TABLE	DATA?						<TableName>	1001
		DEFine						<ColumnName>	1003
		DEFine?							1005
		POINT?						<TableName>	1006
		SElect						<TableName>	1007
		SElect?							1008
	STORe	MEASurement	[WDM]					<FileName>	1009

Command								Parameter(s)	P.
MMEMemory (continued)	STORe	MEASurement	DFB					<FileName>	1011
			EDFa					<FileName>	1013
			FP					<FileName>	1015
			ST					<FileName>	1017
			TX						1019
SENSe[1..n]	AVERage	COUNt						<Count> MAXimum MINimum DEFault	1020
		COUNt?						[MAXimum MINimum DEFault]	1022
		STATe						<State>	1024
		STATe?							1025
		TYPE						SCALar PolarizationMinMaxHold	1026
		TYPE?							1028
	CORRection	OFFSet	[MAGNitude]					<Offset[<wsp>DB W/W PCT]> MAXimum MINimum DEFault	1029
			[MAGNitude]?					[MAXimum MINimum DEFault]	1031
	FREQuency	STARt						<Start[<wsp>HZ] > MAXimum MINimum DEFault	1033
		STARt?						[MAXimum MINimum DEFault]	1035
		STOP						<Stop[<wsp>HZ] > MAXimum MINimum DEFault	1037
		STOP?						[MAXimum MINimum DEFault]	1039
	[WAVelength]	OFFSet						<Offset[<wsp>M] > MAXimum MINimum DEFault	1041
		OFFSet?						[MAXimum MINimum DEFault]	1043
		STARt						<Start[<wsp>M] > MAXimum MINimum DEFault	1033
		STARt?						[MAXimum MINimum DEFault]	1035

SCPI Command Reference

Quick Reference Command Tree

Command								Parameter(s)	P.
SENSe[1..n] (continued)	[WAVelength]	STOP						<Stop <wsp>M > MAximum MINimum DEFault	1037
		STOP?						[MAximum MINimum DEFault]	1039
SNUMber?									1053
STATus?									1054
STATus	OPERation	BIT<8 9>	CONDition?						1055
TRACe	BANDwidth BWIDth	RESolution?						<TraceName>	1057
	[DATA]	X	START	[WAVElengt h]?				<TraceName>	1059
			STOP	[WAVElengt h]?				<TraceName>	1061
		[Y]	[WAVElengt h]?					<TraceName>	1063
	FEED	CONTrol						<TraceName>, ALWays NEXT NEVer	1066
		CONTrol?						<TraceName>	1068
	POINTs?							<TraceName>	1070
TRIGger[1..n]	[SEQUence]	SOURce						IMMediate TImeR	1072
		SOURce?							1073
UNIT[1..n]	POWER							DBM W	1074
	POWER?								1076
	RATio							DB W/W PCT	1077
	RATio?								1078
	SPECtrum							M HZ	1079
	SPECtrum?								1080

Product-Specific Commands—Description

:ABORt	
Description	This command resets the trigger system and places all trigger sequences in the IDLE state. Any trace acquisition that is in progress is aborted as quickly as possible. The command is not completed until the trigger sequence is in the IDLE state.
	This command is an event and has no associated *RST condition or query form.
Syntax	:ABORt
Parameter(s)	None
Example(s)	ABOR
Notes	A call to ABORt only returns once the acquisition is completely stopped and the instrument is ready for new commands. For this reason, the execution of this command may take a few seconds. For a continuously initiated acquisition (INIT:CONT ON), calling ABORt will automatically set it to OFF.
See Also	:INITiate[:IMMediate] :INITiate:CONTInuous :STATus :STATus:OPERation:BIT<8 9>:CONDition?

:CALCulate[1..n]:COMPRESS:CENTER[:WAVElength]

Description	This command sets the compressed trace center wavelength value. This command has no associated *RST" condition.
Syntax	:CALCulate[1..n]:COMPRESS:CENTER[:WAVElength]<wsp><Center[<wsp>M]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Center:</i> The program data syntax for <Center> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Center> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:COMPRESS:CENTer[:WAVElength]

Default allows the instrument to select a value for the <Center> parameter.

The <Center> parameter corresponds to a valid wavelength value inside the original trace.

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Example(s)

CALC:COMP:CEN:WAV 1550.0 NM
 CALC:COMP:CEN:WAV? Returns 1.55000E-006

See Also

:CALCulate:COMPRESS:CENTer[:WAVElength] 1550.0 nm
 :CALCulate:COMPRESS:SPAN[:WAVElength] 10 nm
 :CALCulate:COMPRESS:POINts[:WAVElength] 100

 :TRACe:POINts? "COMP:TRC"
 :TRACe:DATA? "COMP:TRC"

:CALCulate[1..n]:COMPRESS:CENTER[:WAVElength]?

Description	This query returns the center wavelength of the sub-trace representing the zone of interest on the trace to compress. At *RST, this value is set to (START + STOP)/2.
Syntax	:CALCulate[1..n]:COMPRESS:CENTER[:WAVElength]?[<wsp> MAXimum MINimum DEFault]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFault. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFault is used to retrieve the instrument's default value.
Response Syntax	<Center>

:CALCulate[1..n]:COMPRESS:CENTer[:WAVelength]?

Response(s)

Center:

The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element.

The <Center> response corresponds to either the current or the MINimum/MAXimum center wavelength in meters.

Example(s)

CALC:COMP:CENT:WAV 1550.0 NM
 CALC:COMP:CENT:WAV? Returns 1.55000E-006

See Also

:CALCulate:COMPRESS:CENTer[:WAVelength]
 :CALCulate:COMPRESS:POINTs?
 :CALCulate:COMPRESS:SPAN[:WAVelength]?
 :CALCulate:COMPRESS:START[:WAVelength]?
 :CALCulate:COMPRESS:STOP[:WAVelength]?
 :CALCulate:COMPRESS:STATe?

:CALCulate[1..n]:COMPRESS:POINTS

Description

This command sets the number of samples to generate for the compressed trace based on the acquired data inside the zone of interest of the trace to compress.

At *RST, this value is set to 2.

Syntax

:CALCulate[1..n]:COMPRESS:POINTS<wsp><Points>|MAXimum|MINimum|DEFAULT

Parameter(s)

Points:

The program data syntax for <Points> is defined as a <numeric_value> element. The <Points> special forms MINimum, MAXimum and DEFAULT are accepted on input.

MINimum allows to set the instrument to the smallest supported value.

MAXimum allows to set the instrument to the greatest supported value.

DEFAULT allows the instrument to select a value for the <Points> parameter.

The <Points> parameter corresponds to a valid number of samples.

The CALCulate[1..n]:COMPRESS:POINTS? MIN and CALCulate[1..n]:COMPRESS:POINTS? MAX queries can be used to determine the valid range for the number of samples.

:CALCulate[1..n]:COMPRESS:POINTS	
Example(s)	CALC:COMP:POIN 100 CALC:COMP:POIN? Returns 100
Notes	The compressed trace resolution is coupled to the POINTs command as follows: $\text{Resolution} = (\text{STOP} - \text{START}) / (\text{POINTS} - 1)$ To generate a compressed trace from 1520.0 nm to 1570.0 nm with a 0.1 nm resolution, the number of POINTs shall be set to 501.
See Also	:CALCulate:COMPRESS:CENTer[:WAVelength] :CALCulate:COMPRESS:POINTS? :CALCulate:COMPRESS:SPAN[:WAVelength] :CALCulate:COMPRESS:START[:WAVelength] :CALCulate:COMPRESS:STOP[:WAVelength] :CALCulate:COMPRESS:STATe

:CALCulate[1..n]:COMPRESS:POINTS?	
Description	This query returns the number of samples to generate for the compressed trace. At *RST, this value is set to 2.
Syntax	:CALCulate[1..n]:COMPRESS:POINTS? [<wsp> MAXimum MINimum DEFault]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFault. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFault is used to retrieve the instrument's default value.
Response Syntax	<Points>
Response(s)	<i>Points:</i> The response data syntax for <Points> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Points> response corresponds to the number of samples.

:CALCulate[1..n]:COMPRESS:POINTS?

Example(s)

CALC:COMP:POIN 100
CALC:COMP:POIN? Returns 100

See Also

:CALCulate:COMPRESS:CENTer[:WAVelength]?
:CALCulate:COMPRESS:POINTS
:CALCulate:COMPRESS:SPAN[:WAVelength]?
:CALCulate:COMPRESS:START[:WAVelength]?
:CALCulate:COMPRESS:STOP[:WAVelength]?

:CALCulate:COMPRESS:STATe?
:TRACE:POINTS?

:CALCulate[1..n]:COMPress:SPAN[:WAVelength]

Description

This command sets the wavelength span of the sub-trace representing the zone of interest on the trace to compress.

The SPAN command is coupled to the START, STOP and CENTER commands. Changing the SPAN value affects the coupled commands as follows:

$$\begin{aligned}\text{START} &= \text{CENTER} - (\text{SPAN}/2) \\ \text{STOP} &= \text{CENTER} + (\text{SPAN}/2)\end{aligned}$$

At *RST, this value is set to (STOP - START).

Syntax

:CALCulate[1..n]:COMPress:SPAN[:WAVelength]
<wsp> <Span[<wsp>M]> | MAXimum | MINimum | DEFault

Parameter(s)

Span:

The program data syntax for is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The special forms MINimum, MAXimum and DEFault are accepted on input.

:CALCulate[1..n]:COMPRESS:SPAN [:WAVelength]

MINimum allows to set the instrument to the smallest supported value.

MAXimum allows to set the instrument to the greatest supported value.

DEFault allows the instrument to select a value for the parameter.

The parameter corresponds to a valid wavelength in meters.

The
:CALCulate[1..n]:COMPRESS:SPAN[:WAVelength]?
MIN and
:CALCulate[1..n]:COMPRESS:SPAN[:WAVelength]?
MAX queries can be used to determine the valid wavelength range.

Example(s)

CALC:COMP:SPAN:WAV 10.0 NM
CALC:COMP:SPAN:WAV? Returns 1.000E-008

Notes

Changing the wavelength span may set the START/STOP values of the sub-trace outside of the limits of the trace to compress. In such case the compressed trace will not be generated.

See Also

:CALCulate:COMPRESS:CENTER[:WAVelength]
:CALCulate:COMPRESS:POINTS
:CALCulate:COMPRESS:SPAN[:WAVelength]?
:CALCulate:COMPRESS:START[:WAVelength]
:CALCulate:COMPRESS:STOP[:WAVelength]
:CALCulate:COMPRESS:STATE

:CALCulate[1..n]:COMPRESS:SPAN[:WAVelength]?	
Description	This query returns the wavelength span of the sub-trace representing the zone of interest on the trace to compress. At *RST, this value is set to (STOP - START).
Syntax	:CALCulate[1..n]:COMPRESS:SPAN[:WAVelength]? [<wsp>MAXimum MINimum DEFault]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFault. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFault is used to retrieve the instrument's default value.
Response Syntax	

**:CALCulate[1..n]:COMPRESS:SPAN
[:WAVelength]?**

Response(s)	<i>Span:</i> The response data syntax for is defined as a <NR3 NUMERIC RESPONSE DATA> element. The response corresponds to the wavelength span in meters.
Example(s)	CALC:COMP:SPAN:WAV 10.0 NM CALC:COMP:SPAN:WAV? Returns 1.000E-008
See Also	:CALCulate:COMPRESS:CENTer[:WAVelength]? :CALCulate:COMPRESS:POINTs? :CALCulate:COMPRESS:SPAN[:WAVelength] :CALCulate:COMPRESS:START[:WAVelength]? :CALCulate:COMPRESS:STOP[:WAVelength]? :CALCulate:COMPRESS:STATe?

:CALCulate[1..n]:COMPRESS:START[:WAVElength]

Description

This command sets the start wavelength of the sub-trace representing the zone of interest on the trace to compress.

The START command is coupled to the STOP, CENTER and SPAN commands. Changing the START value affects the coupled commands as follows:

$$\begin{aligned}\text{CENTER} &= (\text{START} + \text{STOP}) / 2 \\ \text{SPAN} &= \text{STOP} - \text{START}\end{aligned}$$

At *RST, this value is set to 1525.0 nm.

Syntax

:CALCulate[1..n]:COMPRESS:START[:WAVElength]
<wsp><Start[<wsp>M]>|MAXimum|MINimum|DEFAULT

Parameter(s)

Start:

The program data syntax for <Start> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Start> special forms MINimum, MAXimum and DEFAULT are accepted on input.

:CALCulate[1..n]:COMPRESS:START[:WAVElength]

MINimum allows to set the instrument to the smallest supported value.

MAXimum allows to set the instrument to the greatest supported value.

DEFAULT allows the instrument to select a value for the <Start> parameter.

The <Start> parameter corresponds to a valid wavelength in meters.

The
CALCulate[1..n]:COMPRESS:START[:WAVElength]?
MIN and
CALCulate[1..n]:COMPRESS:START[:WAVElength]?
MAX queries can be used to determine the valid wavelength range.

Example(s)

CALC:COMP:STAR:WAV 1460.0 NM
CALC:COMP:STAR:WAV? Returns 1.46000E-006

:CALCulate[1..n]:COMPRESS:START[:WAVelength]	
Notes	The compressed trace will not be generated if the start wavelength of the sub-trace is set outside of the limits of the trace to compress.
See Also	:CALCulate:COMPRESS:CENTer[:WAVelength] :CALCulate:COMPRESS:POINts :CALCulate:COMPRESS:SPAN[:WAVelength] :CALCulate:COMPRESS:START[:WAVelength]? :CALCulate:COMPRESS:STOP[:WAVelength] :CALCulate:COMPRESS:STATe :SENSe[1..n][:WAVelength]:START :TRACe[:DATA]:X:START[:WAVelength]?

:CALCulate[1..n]:COMPRESS:START[:WAVElength]?

Description	This query returns the start wavelength of the sub-trace representing the zone of interest on the trace to compress. At *RST, this value is set to 1525.0 nm.
Syntax	:CALCulate[1..n]:COMPRESS:START[:WAVElength] ?[<wsp>MAXimum MINimum DEFault]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFault. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFault is used to retrieve the instrument's default value.
Response Syntax	<Start>

:CALCulate[1..n]:COMPRESS:START[:WAVelength]?

Response(s)

Start:

The response data syntax for <Start> is defined as a <NR3 NUMERIC RESPONSE DATA> element.

The <Start> response corresponds to either the current or the MINimum/MAXimum start wavelength in meters.

Example(s)

CALC:COMP:STAR:WAV 1460.0 NM
CALC:COMP:STAR:WAV? Returns 1.46000E-006

See Also

:CALCulate:COMPRESS:CENTER[:WAVelength]?
:CALCulate:COMPRESS:POINTS?
:CALCulate:COMPRESS:SPAN[:WAVelength]?
:CALCulate:COMPRESS:START[:WAVelength]
:CALCulate:COMPRESS:STOP[:WAVelength]?

:CALCulate:COMPRESS:STATE?
:SENSe[1..n][:WAVelength]:START?
:TRACe[DATA]:X:START[:WAVelength]?

:CALCulate[1..n]:COMPRESS:STOP [:WAVElength]

Description

This command sets the stop wavelength of the sub-trace representing the zone of interest on the trace to compress.

The STOP command is coupled to the START, CENTER and SPAN commands. Changing the STOP value affects the coupled commands as follows:

$$\begin{aligned}\text{CENTER} &= (\text{START} + \text{STOP}) / 2 \\ \text{SPAN} &= \text{STOP} - \text{START}\end{aligned}$$

At *RST, this value is set to 1570.0 nm.

Syntax

:CALCulate[1..n]:COMPRESS:STOP[:WAVElength]
 <wsp><Stop[<wsp>M]>|MAXimum|MINimum|DEFAULT

Parameter(s)

Stop:

The program data syntax for <Stop> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Stop> special forms MINimum, MAXimum and DEFAULT are accepted on input.

:CALCulate[1..n]:COMPRESS:STOP [:WAVelength]

MINimum allows to set the instrument to the smallest supported value.

MAXimum allows to set the instrument to the greatest supported value.

DEFault allows the instrument to select a value for the <Stop> parameter.

The <Stop> parameter corresponds to a valid wavelength in meters.

The
CALCulate[1..n]:COMPRESS:STOP[:WAVelength]?
MIN and
CALCulate[1..n]:COMPRESS:STOP[:WAVelength]?
MAX queries can be used to determine the valid wavelength range.

Example(s)

CALC:COMP:STOP:WAV 1650.0 NM
CALC:COMP:STOP:WAV? Returns 1.65000E-006

**:CALCulate[1..n]:COMPRESS:STOP
[:WAVelength]**

Notes	The compressed trace will not be generated if the stop wavelength of the sub-trace is set outside of the limits of the trace to compress.
See Also	:CALCulate:COMPRESS:CENTer[:WAVelength] :CALCulate:COMPRESS:POINts :CALCulate:COMPRESS:SPAN[:WAVelength] :CALCulate:COMPRESS:STARt[:WAVelength] :CALCulate:COMPRESS:STOP[:WAVelength]? :CALCulate:COMPRESS:STATe :SENSe[1..n][:WAVelength]:STOP :TRACe[:DATA]:X:STOP[:WAVelength]?

:CALCulate[1..n]:COMPRESS:STOP[:WAVElength]?	
Description	This query returns the stop wavelength of the sub-trace representing the zone of interest on the trace to compress. At *RST, this value is set to 1570.0 nm.
Syntax	:CALCulate[1..n]:COMPRESS:STOP[:WAVElength] ?[<wsp>MAXimum MINimum DEFault]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFault. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFault is used to retrieve the instrument's default value.
Response Syntax	<Stop>

**:CALCulate[1..n]:COMPRESS:STOP
[:WAVelength]?**

Response(s)	<i>Stop:</i> The response data syntax for <Stop> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Stop> response corresponds to either the current or the MINimum/MAXimum stop wavelength in meters.
Example(s)	CALC:COMP:STOP:WAV 1650.0 NM CALC:COMP:STOP:WAV? Returns 1.65000E-006
See Also	:CALCulate:COMPRESS:CENTer[:WAVelength]? :CALCulate:COMPRESS:POINTs? :CALCulate:COMPRESS:SPAN[:WAVelength]? :CALCulate:COMPRESS:START[:WAVelength]? :CALCulate:COMPRESS:STOP[:WAVelength] :CALCulate:COMPRESS:STATe? :SENSe[1..n][:WAVelength]:STOP? :TRACe[:DATA]:X:STOP[:WAVelength]?

:CALCulate[1..n]:COMPRESS:STATE

Description

This command controls the activation of data generation for the compressed trace.

The trace compression process is defined based on the configuration of the following:

- A sub-trace representing a zone of interest on the trace to compress
- The number of samples required in the compressed trace.

The configuration of the sub-trace is done using the set of commands START, STOP, CENTER and SPAN. The configuration of the number of samples in the compressed trace is done using the POINTs command.

Once enabled, a compressed trace is automatically generated following a trace acquisition as long as the configured compression zone (the sub-trace range) is inside the acquired trace. The compressed trace data is stored in trace memory "COMP:TRC" and can be retrieved using the commands of the TRACE subsystem.

At *RST, this value is set to off (disabled).

Syntax

:CALCulate[1..n]:COMPRESS:STATE<wsp> <State>

:CALCulate[1..n]:COMPRESS:STATE

Parameter(s)

State:

The program data syntax for <State> is defined as a <Boolean Program Data> element. The <State> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0.

The <State> parameter corresponds to the new state of the compressed trace generation.

- 0 or OFF: compressed trace generation is disabled.
- 1 or ON: compressed trace generation is enabled.

:CALCulate[1..n]:COMPress:STATe

Example(s)	CALC:COMP:STAT ON CALC:COMP:STAT? Returns 1 (Compression is enabled)
Notes	The compressed trace is generated only for data stored in trace memory TRC1. Once a trace has been acquired (for TRC1), a new compressed trace is automatically generated each time the configuration of the COMPress subsystem is changed. It allows reuse of the acquired trace to generate multiple compressed traces.
See Also	:CALCulate:COMPress:STATe? :INITiate[:IMMediate] :INITiate:CONTInuous :TRACe[:DATA]:X:STARt[:WAVelength]? :TRACe[:DATA]:X:STOP[:WAVelength]? :TRACe[:DATA][:Y][:WAVelength]? :TRACe:FEED:CONTrol

:CALCulate[1..n]:COMPRESS:STATe?

Description	This query indicates if data generation for the compressed trace has been enabled or not. At *RST, this value is set to off (disabled).
Syntax	:CALCulate[1..n]:COMPRESS:STATe?
Parameter(s)	None
Response Syntax	<State>
Response(s)	<i>State:</i> The response data syntax for <State> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <State> response corresponds to the state of the compressed trace generation. 0: compressed trace generation is disabled. 1: compressed trace generation is enabled.
Example(s)	CALC:COMP:STAT ON CALC:COMP:STAT? Returns 1 (Compression is enabled)
See Also	:CALCulate:COMPRESS:STATe :TRACe[:DATA]:X:START[:WAVelength]? :TRACe[:DATA]:X:STOP[:WAVelength]? :TRACe[:DATA][:Y][:WAVelength]?

:CALCulate[1..n]:DFB:CENTer[1 2]:RelativeLEVel	
Description	This command sets the center amplitude for the distributed feedback laser source analysis. The center amplitude is the relative power (X dB) from the peak toward the bottom, which defines the spectral range for center of mass computing.
Syntax	At *RST, Center2 value is set to 20.0 dB. :CALCulate[1..n]:DFB:CENTer[1 2]:RelativeLEVel <wsp> <PowerLevel[<wsp>DB W/W PCT]> MAXimum MINimum DEFault
Parameter(s)	<i>PowerLevel:</i> The program data syntax for <PowerLevel> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> elements are: DB W/W PCT. The <PowerLevel> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

**:CALCulate[1..n]:DFB:CENTer[1|2]:
RelativeLEVel**

DEfault allows the instrument to select a value for the <PowerLevel> parameter.

The <PowerLevel> parameter corresponds to a valid amplitude value.

The
CALCulate[1..n]:DFB:CENTer2:RelativeLEVel?
MIN and
CALCulate[1..n]:DFB:CENTer2:RelativeLEVel?
MAX queries can be used to determine the valid
center amplitude range.

Example(s)

CALC:DFB:CEN2:RLEV 18.0 DB
CALC:DFB:CEN2:RLEV? Returns:
1.800000E+001

Notes

Only Center2 amplitude can be changed.

See Also

:CALCulate[1..n]:DFB:CENTer[1|2]:RelativeLEVel
?
:CALCulate[1..n]:DFB:DATA:CENTer[1|2]:FREQU
ency?
:CALCulate[1..n]:DFB:DATA:CENTer[1|2][:WAVEl
ength]?
:CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:CENTer[1 2]:RelativeLEVel?	
Description	This query returns the center amplitude for the distributed feedback laser source analysis. The center amplitude is the relative power (X dB) from the peak toward the bottom, which defines the spectral range for center of mass computing.
Syntax	At *RST, Center2 value is set to 20.0 dB. :CALCulate[1..n]:DFB:CENTer[1 2]:RelativeLEVel? [<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<PowerLevel>

:CALCulate[1..n]:DFB:CENTer[1|2]: RelativeLEVel?

Response(s)	<i>PowerLevel:</i> The response data syntax for <PowerLevel> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <PowerLevel> response corresponds to either the current or the MINimum/MAXimum center amplitude value.
Example(s)	CALC:DFB:CENt2:RLEV 20.0 DB CALC:DFB:CENt2:RLEV? Returns: 2.000000E+001
Notes	Only Center2 amplitude can be queried.
See Also	:CALCulate[1..n]:DFB:CENTer[1 2]:RelativeLEVel :CALCulate[1..n]:DFB:DATA:CENTer[1 2]:FREQuency? :CALCulate[1..n]:DFB:DATA:CENTer[1 2][:WAVelength]?

:CALCulate[1..n]:DFB:DATA: BANDwidth[1 2] BWIDth[1 2]: FREQuency?	
Description	This query returns the computed distributed feedback laser source analysis result for the peak (main mode) frequency bandwidth. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:BANDwidth[1 2] BWIDth[1 2]:FREQuency?
Parameter(s)	None
Response Syntax	<Bandwidth>
Response(s)	<i>Bandwidth:</i> The response data syntax for <Bandwidth> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Bandwidth> response corresponds to the bandwidth in hertz.

**:CALCulate[1..n]:DFB:DATA:
BANDwidth[1|2]|BWIDth[1|2]:
FREQuency?**

Example(s)	CALC:DFB:STAT ON <Do measurement> CALC:DFB:DATA:BAND1:FREQ? Returns 5.700000E+009 CALC:DFB:DATA:BAND2:FREQ? Returns 1.330000E+010
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:DFB:DATA:BWIDth[1 2] BAND width[1 2][:WAVelength]? :CALCulate[1..n]:DFB:DATA:BWIDth[1 2] BAND width[1 2]:RelativeLEVel? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA: BANDwidth[1 2] BWIDth[1 2] [:WAVelength]?	
Description	This query returns the computed distributed feedback laser source analysis result for the peak (main mode) wavelength bandwidth. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:BANDwidth[1 2] BWIDth[1 2][:WAVelength]?
Parameter(s)	None
Response Syntax	<Bandwidth>
Response(s)	<i>Bandwidth:</i> The response data syntax for <Bandwidth> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Bandwidth> response corresponds to the bandwidth in meters.

**:CALCulate[1..n]:DFB:DATA:
BANDwidth[1 | 2] | BWIDth[1 | 2]
[:WAVelength]?**

Example(s)	CALC:DFB:STAT ON <Do measurement> CALC:DFB:DATA:BAND1:WAV? Returns 3.000000E-011 CALC:DFB:DATA:BAND2? Returns 5.400000E-011
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:DFB:DATA:BWIDth[1 2] BAND width[1 2]:FREQuency? :CALCulate[1..n]:DFB:DATA:BWIDth[1 2] BAND width[1 2]:RelativeLEVel? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA: BANDwidth[1 2] BWIDth[1 2]: RelativeLEVel?	
Description	This query returns the bandwidth position for distributed feedback laser source analysis. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:BANDwidth[1 2] BWIDth[1 2]:RelativeLEVel?
Parameter(s)	None
Response Syntax	<PowerLevel>
Response(s)	<i>PowerLevel:</i> The response data syntax for <PowerLevel> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <PowerLevel> response corresponds to the bandwidth position.
Example(s)	CALC:DFB:STAT ON <Do measurement> UNIT:RAT DB CALC:DFB:DATA:BAND2:RLEV? Returns 2.000000E+001
See Also	:CALCulate[1..n]:DFB:DATA:BWIDth[1 2] BANDwidth[1 2]:WAVelength? :CALCulate[1..n]:DFB:DATA:BWIDth[1 2] BANDwidth[1 2]:FREQuency? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA:CENTer:FREQUency?

Description	This query returns the computed distributed feedback laser source analysis result for the peak (main mode) center of mass frequency. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:CENTer:FREQUency?
Parameter(s)	None
Response Syntax	<Center>
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the center of mass in hertz.
Example(s)	CALC:DFB:STAT ON <Do measurement> CALC:DFB:DATA:CENT:FREQ? Returns 2.120000E+014
See Also	:CALCulate[1..n]:DFB:DATA:CENTer[:WAVelengt h]? :CALCulate[1..n]:DFB:DATA:PPOWer? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA:CENTer[:WAVelength]?	
Description	This query returns the computed distributed feedback laser source analysis result for the peak (main mode) center of mass wavelength. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:CENTer[:WAVelength]?
Parameter(s)	None
Response Syntax	<Center>
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the center of mass in meters.
Example(s)	CALC:DFB:STAT ON <Do measurement> CALC:DFB:DATA:CENT? Returns 1.401500E-006
See Also	:CALCulate[1..n]:DFB:DATA:CENTer:FREQuency? :CALCulate[1..n]:DFB:DATA:PPOWer? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA: CenterOFFset:FREQUency?

Description	This query returns the computed distributed feedback laser source analysis result for the peak center frequency offset (spectral position of the main mode minus the mean of the spectral position of the first adjacent left- and right- side modes).
	At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:CenterOFFset:FREQUency?
Parameter(s)	None
Response Syntax	<Offset>
Response(s)	<i>Offset:</i> The response data syntax for <Offset> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Offset> response corresponds to the center offset in hertz.

:CALCulate[1..n]:DFB:DATA:CenterOFFset:FREQuency?	
Example(s)	CALC:DFB:STAT ON <Do measurement> CALC:DFB:DATA:COFF:FREQ? Returns 5.700000E+009
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:DFB:DATA:CENTer:FREQuency? :CALCulate[1..n]:DFB:DATA:CenterOFFset[:WAV elength]? :CALCulate[1..n]:DFB:STATe

**:CALCulate[1..n]:DFB:DATA:
CenterOFFset[:WAVelength]?**

Description	This query returns the computed distributed feedback laser source analysis result for the peak center wavelength offset (spectral position of the main mode minus the mean of the spectral position of the first adjacent left- and right- side modes).
Syntax	At *RST, this value is not available. :CALCulate[1..n]:DFB:DATA:CenterOFFset[:WAVelength]?
Parameter(s)	None
Response Syntax	<Offset>
Response(s)	<i>Offset:</i> The response data syntax for <Offset> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Offset> response corresponds to the center offset in meters.

:CALCulate[1..n]:DFB:DATA:CenterOFFset[:WAVelength]?	
Example(s)	CALC:DFB:STAT ON <Do measurement> CALC:DFB:DATA:COFF? Returns -3.000000E-011
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:DFB:DATA:CENTer[:WAVelengt h]? :CALCulate[1..n]:DFB:DATA:CenterOFFset:FREQ uency? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA:FPMS: FREQuency?

Description	This query returns the computed distributed feedback laser source analysis result for the average frequency spacing between adjacent Fabry-Perot modes. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:FPMS:FREQuency?
Parameter(s)	None
Response Syntax	<Spacing>
Response(s)	<i>Spacing:</i> The response data syntax for <Spacing> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Spacing> response corresponds to the mode spacing in hertz.
Example(s)	CALC:DFB:STAT ON <Do measurement> CALC:DFB:DATA:FPMS:FREQ? Returns 5.700000E+009
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:DFB:DATA:FPMS[:WAVelength] ? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA:FPMS[:WAVelength]?	
Description	This query returns the computed distributed feedback laser source analysis result for the average wavelength spacing between adjacent Fabry-Perot modes. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:FPMS[:WAVelength]?
Parameter(s)	None
Response Syntax	<Spacing>
Response(s)	<i>Spacing:</i> The response data syntax for <Spacing> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Spacing> response corresponds to the mode spacing in meters.
Example(s)	CALC:DFB:STAT ON <Do measurement> CALC:DFB:DATA:FPMS? Returns 1.123000E-09
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:DFB:DATA:FPMS:FREQuency? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA:PPOWER?

Description	This query returns the computed distributed feedback laser source analysis result for the peak (main mode) power. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:PPOWER?
Parameter(s)	None
Response Syntax	<Power>
Response(s)	<i>Power:</i> The response data syntax for <Power> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Power> response corresponds to the peak power.
Example(s)	<pre>CALC:DFB:STAT ON <Do measurement> UNIT:POW DBM CALC:DFB:DATA:PPOW? Returns 2.340000E+000</pre>
See Also	<pre>:CALCulate[1..n]:DFB:DATA:CENTer[:WAVelengt h]? :CALCulate[1..n]:DFB:DATA:CENTer:FREQuency? :CALCulate[1..n]:DFB:STATe</pre>

:CALCulate[1..n]:DFB:DATA:SBAND|STOPband:LEFT:FREQUENCY?

Description	This query returns the computed distributed feedback laser analysis result for the left stopband frequency. The left stopband is the spectral position difference between the main mode and the closest side mode on the left.
Syntax	At *RST, this value is not available. :CALCulate[1..n]:DFB:DATA:SBAND STOPband:LEFT:FREQUENCY?
Parameter(s)	None
Response Syntax	<StopBand>
Response(s)	<i>StopBand:</i> The response data syntax for <StopBand> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <StopBand> response corresponds to the stop band in hertz.

:CALCulate[1..n]:DFB:DATA:SBAND STOPband:LEFT:FREQuency?	
Example(s)	CALC:DFB:STAT ON <Do measurement> CALC:DFB:DATA:SBAN:LEFT:FREQ? Returns 1.330000E+010
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:DFB:DATA:SBAND STOPband:LEFT[:WAVelength]? :CALCulate[1..n]:DFB:DATA:SBAND STOPband:RIGHT:FREQuency? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA:SBAND STOPband:LEFT[:WAVelength]?	
Description	This query returns the computed distributed feedback laser source analysis result for the left stopband wavelength. The left stopband is the spectral position difference between the main mode and the closest side mode on the left.
Syntax	At *RST, this value is not available. :CALCulate[1..n]:DFB:DATA:SBAND STOPband:LEFT[:WAVelength]?
Parameter(s)	None
Response Syntax	<StopBand>
Response(s)	<i>StopBand:</i> The response data syntax for <StopBand> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <StopBand> response corresponds to the stop band in meters.

:CALCulate[1..n]:DFB:DATA:SBAND STOPband:LEFT[:WAVelength]?	
Example(s)	CALC:DFB:STAT ON <Do measurement> CALC:DFB:DATA:SBAN:LEFT? Returns 5.400000E-011
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:DFB:DATA:SBAND STOPband:LEFT:FREQuency? :CALCulate[1..n]:DFB:DATA:SBAND STOPband:RIGHT[:WAVelength]? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA:SBAND STOPband:RIGHT:FREQUENCY?	
Description	This query returns the computed distributed feedback laser source analysis result for the right stopband frequency. The right stopband is the spectral position difference between the main mode and the closest side mode on the right.
Syntax	At *RST, this value is not available. :CALCulate[1..n]:DFB:DATA:SBAND STOPband:RIGHT:FREQUENCY?
Parameter(s)	None
Response Syntax	<StopBand>
Response(s)	<i>StopBand:</i> The response data syntax for <StopBand> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <StopBand> response corresponds to the stop band in hertz.

:CALCulate[1..n]:DFB:DATA:SBAND STOPband:RIGHT:FREQuency?	
Example(s)	CALC:DFB:STAT ON <Do measurement> CALC:DFB:DATA:SBAN:RIGH:FREQ? Returns 1.330000E+010
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:DFB:DATA:SBAND STOPband:LEFT:FREQuency? :CALCulate[1..n]:DFB:DATA:SBAND STOPband:RIGHT[:WAVelength]? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA:SBAND STOPband:RIGHT[:WAVelength]?	
Description	This query returns the computed distributed feedback laser source analysis result for the right stopband wavelength. The right stopband is the spectral position difference between the main mode and the closest side mode on the right.
Syntax	At *RST, this value is not available. :CALCulate[1..n]:DFB:DATA:SBAND STOPband:RIGHT[:WAVelength]?
Parameter(s)	None
Response Syntax	<StopBand>
Response(s)	<i>StopBand:</i> The response data syntax for <StopBand> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <StopBand> response corresponds to the stop band in meters.

**:CALCulate[1..n]:DFB:DATA:
SBANd|STOPband:RIGHT[:WAVelength]?**

Example(s)	CALC:DFB:STAT ON <Do measurement> CALC:DFB:DATA:SBAN:RIGH? Returns 5.400000E-011
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:DFB:DATA:SBANd STOPband:LE FT[:WAVelength]? :CALCulate[1..n]:DFB:DATA:SBANd STOPband:R IGHt:FREQuency? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA:SMSR:LEFT?	
Description	This query returns the computed distributed feedback laser source analysis result for the left side-mode supression ratio. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:SMSR:LEFT?
Parameter(s)	None
Response Syntax	<Ratio>
Response(s)	<i>Ratio:</i> The response data syntax for <Ratio> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Ratio> response corresponds to the side-mode supression ratio.
Example(s)	CALC:DFB:STAT ON <Do measurement> UNIT:RAT DB CALC:DFB:DATA:SMSR:LEFT? Returns 3.18000E+000
See Also	:CALCulate[1..n]:DFB:DATA:SMSR:LEFT:POSition[:WAVelength]? :CALCulate[1..n]:DFB:DATA:SMSR:LEFT:POSition:FREQuency? :CALCulate[1..n]:DFB:DATA:SMSR:RIGHT? :CALCulate[1..n]:DFB:DATA:SMSR:WORSt? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA:SMSR:LEFT:POSition:FREQuency?

Description	This query returns the computed distributed feedback laser source analysis result for center of mass frequency of the left side-mode suppression ratio. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:SMSR:LEFT:POSition:FREQuency?
Parameter(s)	None
Response Syntax	<Position>
Response(s)	<i>Position:</i> The response data syntax for <Position> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Position> response corresponds to the center of mass in hertz.

:CALCulate[1..n]:DFB:DATA:SMSR:LEFT:POSition:FREQuency?	
Example(s)	CALC:DFB:STAT ON <Do measurement> CALC:DFB:DATA:SMSR:LEFT:POS:FREQ? Returns 1.944500E+014
See Also	:CALCulate[1..n]:DFB:DATA:SMSR:LEFT? :CALCulate[1..n]:DFB:DATA:SMSR:LEFT:POSition[:WAVelength]? :CALCulate[1..n]:DFB:DATA:SMSR:RIGHT:POSition:FREQuency? :CALCulate[1..n]:DFB:DATA:SMSR:WORSt:POSition:FREQuency? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA:SMSR:LEFT:POSition[:WAVelength]?

Description	This query returns the computed distributed feedback laser source analysis result for center of mass wavelength of the left side-mode suppression ratio. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:SMSR:LEFT:POSition[:WAVelength]?
Parameter(s)	None
Response Syntax	<Position>
Response(s)	<i>Position:</i> The response data syntax for <Position> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Position> response corresponds to the center of mass in meters.

:CALCulate[1..n]:DFB:DATA:SMSR:LEFT:POSition[:WAVelength]?	
Example(s)	CALC:DFB:STAT ON <Do measurement> CALC:DFB:DATA:SMSR:LEFT:POS? Returns 1.529123E-006
See Also	:CALCulate[1..n]:DFB:DATA:SMSR:LEFT? :CALCulate[1..n]:DFB:DATA:SMSR:LEFT:POSition :FREQuency? :CALCulate[1..n]:DFB:DATA:SMSR:RIGHT:POSition[:WAVelength]? :CALCulate[1..n]:DFB:DATA:SMSR:WORSt:POSition[:WAVelength]? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA:SMSR:RIGHT?

Description	This query returns the computed distributed feedback laser source analysis result for the right side-mode supression ratio. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:SMSR:RIGHT?
Parameter(s)	None
Response Syntax	<Ratio>
Response(s)	<i>Ratio:</i> The response data syntax for <Ratio> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Ratio> response corresponds to the side-mode supression ratio.
Example(s)	CALC:DFB:STAT ON <Do measurement> UNIT:RAT DB CALC:DFB:DATA:SMSR:RIGHT? Returns 1.42500E+001
See Also	:CALCulate[1..n]:DFB:DATA:SMSR:LEFT? :CALCulate[1..n]:DFB:DATA:SMSR:RIGHT:POSition[:WAVelength]? :CALCulate[1..n]:DFB:DATA:SMSR:RIGHT:POSition:FREQuency? :CALCulate[1..n]:DFB:DATA:SMSR:WORSt? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA:SMSR:RIGHT:POSition:FREQuency?	
Description	This query returns the computed distributed feedback laser source analysis result for center of mass frequency of the right side-mode suppression ratio. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:SMSR:RIGHT:POSition:FREQuency?
Parameter(s)	None
Response Syntax	<Position>
Response(s)	<i>Position:</i> The response data syntax for <Position> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Position> response corresponds to the center of mass in hertz.

**:CALCulate[1..n]:DFB:DATA:SMSR:
RIGHT:POSition:FREQuency?**

Example(s)	CALC:DFB:STAT ON <Do measurement> CALC:DFB:DATA:SMSR:RIGH:POS:FREQ? Returns 1.944500E+014
See Also	:CALCulate[1..n]:DFB:DATA:SMSR:LEFT:POSition: FREQuency? :CALCulate[1..n]:DFB:DATA:SMSR:RIGHT? :CALCulate[1..n]:DFB:DATA:SMSR:RIGHT:POSitio n[:WAVelength]? :CALCulate[1..n]:DFB:DATA:SMSR:WORSt:POSiti on:FREQuency? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA:SMSR:RIGHT:POSition[:WAVelength]?	
Description	This query returns the computed distributed feedback laser source analysis result for center of mass wavelength of the right side-mode suppression ratio. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:SMSR:RIGHT:POSition[:WAVelength]?
Parameter(s)	None
Response Syntax	<Position>
Response(s)	<i>Position:</i> The response data syntax for <Position> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Position> response corresponds to the center of mass in meters.

**:CALCulate[1..n]:DFB:DATA:SMSR:
RIGHT:POSition[:WAVelength]?**

Example(s)	CALC:DFB:STAT ON <Do measurement> CALC:DFB:DATA:SMSR:RIGHT:POS? Returns 1.529123E-006
See Also	:CALCulate[1..n]:DFB:DATA:SMSR:LEFT:POSition [:WAVelength]? :CALCulate[1..n]:DFB:DATA:SMSR:RIGHT? :CALCulate[1..n]:DFB:DATA:SMSR:RIGHT:POSition:FREQuency? :CALCulate[1..n]:DFB:DATA:SMSR:WORSt:POSition[:WAVelength]? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA:SMSR:WORSt?	
Description	This query returns the computed distributed feedback laser source analysis result for the worst case side-mode supression ratio. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:SMSR:WORSt?
Parameter(s)	None
Response Syntax	<Ratio>
Response(s)	<i>Ratio:</i> The response data syntax for <Ratio> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Ratio> response corresponds to the side-mode supression ratio.
Example(s)	CALC:DFB:STAT ON <Do measurement> UNIT:RAT DB CALC:DFB:DATA:SMSR:WORS? Returns 2.61000E+000
See Also	:CALCulate[1..n]:DFB:DATA:SMSR:LEFT? :CALCulate[1..n]:DFB:DATA:SMSR:RIGHT? :CALCulate[1..n]:DFB:DATA:SMSR:WORSt:POSiti on:FREQuency? :CALCulate[1..n]:DFB:DATA:SMSR:WORSt:POSiti on[:WAVelength]? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA:SMSR:WORSt:POSition:FREQuency?

Description	This query returns the computed distributed feedback laser source analysis result for center of mass frequency of the worst case side-mode suppression ratio. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:SMSR:WORSt:POSition:FREQuency?
Parameter(s)	None
Response Syntax	<Position>
Response(s)	<i>Position:</i> The response data syntax for <Position> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Position> response corresponds to the center of mass in hertz.

:CALCulate[1..n]:DFB:DATA:SMSR:WORSt:POSition:FREQuency?	
Example(s)	CALC:DFB:STAT ON <Do measurement> CALC:DFB:DATA:SMSR:WORS:POS:FREQ? Returns 1.944500E+014
See Also	:CALCulate[1..n]:DFB:DATA:SMSR:LEFT:POSition:FREQuency? :CALCulate[1..n]:DFB:DATA:SMSR:RIGHT:POSition:FREQuency? :CALCulate[1..n]:DFB:DATA:SMSR:WORSt? :CALCulate[1..n]:DFB:DATA:SMSR:WORSt:POSition[:WAVelength]? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:DATA:SMSR:WORSt:POSition[:WAVelength]?

Description	This query returns the computed distributed feedback laser source analysis result for center of mass wavelength of the worst case side-mode suppression ratio. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:SMSR:WORSt:POSition[:WAVelength]?
Parameter(s)	None
Response Syntax	<Position>
Response(s)	<i>Position:</i> The response data syntax for <Position> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Position> response corresponds to the center of mass in meters.

:CALCulate[1..n]:DFB:DATA:SMSR:WORSt:POSition[:WAVelength]?	
Example(s)	CALC:DFB:STAT ON <Do measurement> CALC:DFB:DATA:SMSR:WORS:POS? Returns 1.529123E-006
See Also	:CALCulate[1..n]:DFB:DATA:SMSR:LEFT:POSition[:WAVelength]? :CALCulate[1..n]:DFB:DATA:SMSR:RIGHT:POSition[:WAVelength]? :CALCulate[1..n]:DFB:DATA:SMSR:WORSt? :CALCulate[1..n]:DFB:DATA:SMSR:WORSt:POSition:FREQuency? :CALCulate[1..n]:DFB:STATe

:CALCulate[1..n]:DFB:STATe

Description	This command controls the activation of the distributed feedback laser source analysis. Once enabled, the distributed feedback laser source analysis will be automatically performed following a trace acquisition. In order to be usable by the distributed feedback laser source analysis, the acquired data shall be stored in trace memory TRC1. At *RST, this value is set to off (disabled).
Syntax	:CALCulate[1..n]:DFB:STATe<wsp><State>
Parameter(s)	<i>State:</i> The program data syntax for <State> is defined as a <Boolean Program Data> element. The <State> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0. The <State> parameter corresponds to the new state of the distributed feedback laser source analysis. 0 or OFF: distributed feedback laser source analysis is disabled. 1 or ON: distributed feedback laser source analysis is enabled.

:CALCulate[1..n]:DFB:STATe	
Example(s)	CALC:DFB:STAT ON CALC:DFB:STAT? Returns 1 (DFB analysis enabled)
Notes	Distributed feedback laser source analysis is available only if software option "Adv" is active. Distributed feedback laser source analysis cannot be disabled: The OFF (0) value is valid for queries only. Only one analysis mode is active at a time. Enabling distributed feedback laser source analysis automatically disables all other analysis modes.
See Also	:CALCulate[1..n][:WDM]:STATe :CALCulate[1..n]:DFB:STATe? :CALCulate[1..n]:FP:STATe :CALCulate[1..n]:ST:STATe :INITiate[:IMMediate] :INITiate:CONTInuous :TRACe:FEED:CONTrol

:CALCulate[1..n]:DFB:STATe?

Description	This query indicates if the distributed feedback laser source analysis has been enabled or not. At *RST, this value is set to off (disabled).
Syntax	:CALCulate[1..n]:DFB:STATe?
Parameter(s)	None
Response Syntax	<State>
Response(s)	<i>State:</i> The response data syntax for <State> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <State> response corresponds to the state of the distributed feedback laser source analysis. 0: distributed feedback laser source analysis is enabled. 1: distributed feedback laser source analysis is disabled.
Example(s)	CALC:DFB:STAT? Returns 0 if application mode is not DFB source CALC:DFB:STAT ON CALC:DFB:STAT? Returns 1 (DFB laser source analysis enabled)
See Also	:CALCulate[1..n][:WDM]:STATe? :CALCulate[1..n]:DFB:STATe :CALCulate[1..n]:FP:STATe? :CALCulate[1..n]:ST:STATe?

:CALCulate[1..n]:EDFa:CHANnel:AUTO

Description	This command controls the state of the default channel setup for EDFA analysis (enabled or disabled). At *RST, the state of the default channel is set to on (enabled).
Syntax	:CALCulate[1..n]:EDFa:CHANnel:AUTO:<wsp><Auto>
Parameter(s)	<i>Auto:</i> The program data syntax for <Auto> is defined as a <Boolean Program Data> element. The <Auto> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0. The <Auto> parameter corresponds to the new state of the default channel. 0 or OFF: disables the default channel. 1 or ON: enables the default channel.
Example(s)	CALC:EDF:CHAN:AUTO ON CALC:EDF:CHAN:AUTO? Returns: 1 (default channel is enabled)
See Also	:CALCulate[1..n]:EDFa:CHANnel:AUTO? :CALCulate[1..n]:EDFa:CHANnel:CATalog? :CALCulate[1..n]:EDFa:CHANnel[:DEFine] :CALCulate[1..n]:EDFa:DATA:CHANnel:CATalog? :CALCulate[1..n][:WDM]:CHANnel:AUTO

:CALCulate[1..n]:EDFa:CHANnel:AUTO?

Description	This query indicates if the default channel setup for EDFA analysis has been enabled or not. At *RST, the state of the default channel is set to on (enabled).
Syntax	:CALCulate[1..n]:EDFa:CHANnel:AUTO?
Parameter(s)	None
Response Syntax	<Auto>
Response(s)	<i>Auto:</i> The response data syntax for <Auto> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Auto> response corresponds to the state of the default channel. 0: the default channel is disabled. 1: the default channel is enabled.
Example(s)	CALC:EDF:CHAN:AUTO OFF CALC:EDF:CHAN:AUTO? Returns: 0 (default channel is disabled)
See Also	:CALCulate[1..n]:EDFa:CHANnel:AUTO :CALCulate[1..n][:WDM]:CHANnel:AUTO?

:CALCulate[1..n]:EDFa:CHANnel:AUTO:CENTer:ITUGrid	
Description	This command controls the activation of the snap center on ITU grid feature for the default channel setup of the EDFA analysis. At *RST, snap center on ITU grid is set to off (disabled).
Syntax	:CALCulate[1..n]:EDFa:CHANnel:AUTO:CENTer:ITUGrid<wsp><Auto>
Parameter(s)	<i>Auto:</i> The program data syntax for <Auto> is defined as a <Boolean Program Data> element. The <Auto> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0. The <Auto> parameter corresponds to the new state of the snap center on ITU grid feature. 0 or OFF: disables default channel snap center on ITU grid feature. 1 or ON: enables default channel snap center on ITU grid feature. Snap default channel center on ITU grid feature enables the state.

**:CALCulate[1..n]:EDFa:CHANnel:AUTO:
CENTer:ITUGrid**

Example(s)	CALC:EDF:CHAN:AUTO:WIDT:FREQ 100.0 GHZ CALC:EDF:CHAN:AUTO:CENT:ITUG ON CALC:EDF:CHAN:AUTO:CENT:ITUG? Returns: 1 (snap ITU grid enabled) CALC:EDF:CHAN:AUTO:WIDT 40.0 GHZ CALC:EDF:CHAN:AUTO:CENT:ITUG? Returns: 0 (snap ITU grid disabled)
Notes	Snap center on ITU grid may be enabled only if the default channel width is set to 25.0 GHz, 50.0 GHz, 100.0 GHz, 200.0 GHz or 20.0 nm.
See Also	:CALCulate[1..n]:EDFa:CHANnel:AUTO :CALCulate[1..n]:EDFa:CHANnel:AUTO:CENTER:ITUGrid? :CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTHh :CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTHh:FREQuency :CALCulate[1..n][:WDM]:CHANnel:AUTO:CENTER:ITUGrid

:CALCulate[1..n]:EDFa:CHANnel:AUTO:CENTer:ITUGrid?	
Description	This query indicates if the snap center on ITU grid feature for the default channel setup of the EDFA analysis has been enabled or not. At *RST, snap center on ITU grid is set to off (disabled).
Syntax	:CALCulate[1..n]:EDFa:CHANnel:AUTO:CENTer:ITUGrid?
Parameter(s)	None
Response Syntax	<Auto>
Response(s)	<i>Auto:</i> The response data syntax for <Auto> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Auto> response corresponds to the state of the snap center on ITU grid feature. 0: snap center on ITU grid is disabled. 1: snap center on ITU grid is enabled.
Example(s)	CALC:EDF:CHAN:AUTO:CENT:ITUG OFF CALC:EDF:CHAN:AUTO:CENT:ITUG? Returns: 0 (snap ITU grid disabled)
See Also	:CALCulate[1..n]:EDFa:CHANnel:AUTO :CALCulate[1..n]:EDFa:CHANnel:AUTO:CENTer:ITUGrid :CALCulate[1..n][:WDM]:CHANnel:AUTO:CENTer:ITUGrid?

:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH:FREQuency

Description	This command sets the frequency width of the default channel setup for EDFA analysis. At *RST, the default channel width is set to 50.0 GHz.
Syntax	:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH:FREQuency<wsp><Width[<wsp>HZ]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Width:</i> The program data syntax for <Width> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Width> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH:FREQuency

DEfault allows the instrument to select a value for the <Width> parameter.

The <Width> parameter corresponds to a valid channel width in hertz.

The
CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH:FR
EQuency? MIN and
CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH:FR
EQuency? MAX queries can be used to
determine the valid channel frequency width.

Example(s)

CALC:EDF:CHAN:AUTO:WIDT:FREQ 25.0 GHZ
CALC:EDF:CHAN:AUTO:WIDT:FREQ? Returns
2.500000E+010

Notes

Automatically sets the default channel snap center on ITU grid feature to off if the channel width is not 25.0 GHz, 50.0 GHz, 100.0 GHz or 200.0 GHz.

See Also

:CALCulate[1..n]:EDFa:CHANnel:AUTO
:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH[:
WAVelength]
:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH:F
REQuency?
:CALCulate[1..n]:EDFa:CHANnel:WIDTH:FREQue
ncy
:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH
:FREQuency

:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH:FREQUENCY?

Description	This query returns the frequency width of the default channel setup for EDFA analysis. At *RST, the default channel width is set to 50.0 GHz.
Syntax	:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH:FREQUENCY? [<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Width>

:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH:FREQuency?	
Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to either the current or the MINimum/MAXimum channel frequency width in hertz.
Example(s)	CALC:EDF:CHAN:AUTO:WIDT:FREQ 75.0 GHZ CALC:EDF:CHAN:AUTO:WIDT:FREQ? Returns 7.500000E+010
See Also	:CALCulate[1..n]:EDFa:CHANnel:AUTO :CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH[:WAVelength]? :CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH:FREQuency :CALCulate[1..n]:EDFa:CHANnel:WIDTH:FREQue ncy? :CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH:FREQuency

:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH[:WAVelength]

Description	This command sets the wavelength width of the default channel setup for EDFA analysis. At *RST, the default channel width is set to 50.0 GHz.
Syntax	:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH[:WAVelength]<wsp><Width[<wsp>M]> MAXimum MINimum DEFault
Parameter(s)	<i>Width:</i> The program data syntax for <Width> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Width> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH[:WAVelength]

DEfault allows the instrument to select a value for the <Width> parameter.

The <Width> parameter corresponds to a valid channel width in meters.

The
CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH[:WAVelength]? MIN and
CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH[:WAVelength]? MAX queries can be used to determine the valid channel wavelength width.

Example(s)

CALC:EDF:CHAN:AUTO:WIDT:WAV 12.5 NM
CALC:EDF:CHAN:AUTO:WIDT:WAV? Returns 1.250000E-008

Notes

Automatically sets the default channel snap center on ITU grid feature to off if the channel width is not 20.0 nm.

See Also

:CALCulate[1..n]:EDFa:CHANnel:AUTO
:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH:FREQuency
:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH[:WAVelength]?
:CALCulate[1..n]:EDFa:CHANnel:WIDTH[:WAVElength]
:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH[:WAVelength]

:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH[:WAVelength]?	
Description	This query returns the wavelength width of the default channel setup for EDFA analysis. At *RST, the default channel width is set to 50.0 GHz.
Syntax	:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTH[:WAVelength]?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Width>

:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTh[:WAVelength]?	
Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to either the current or the MINimum/MAXimum channel wavelength width in meters.
Example(s)	CALC:EDF:CHAN:AUTO:WIDT:WAV DEF CALC:EDF:CHAN:AUTO:WIDT:WAV? Returns 2.000000E-008
See Also	:CALCulate[1..n]:EDFa:CHANnel:AUTO :CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTh:FREQuency? :CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTh[:WAVelength] :CALCulate[1..n]:EDFa:CHANnel:WIDTh[:WAVElength]? :CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTh[:WAVelength]?

:CALCulate[1..n]:EDFa:CHANnel: CATalog?

Description	This query returns a comma-separated list of strings which contains the names of all of the user-defined channels for the EDFA analysis. At *RST, a single null string is returned: channel list is empty.
Syntax	:CALCulate[1..n]:EDFa:CHANnel:CATalog?
Parameter(s)	None
Response Syntax	<Catalog>
Response(s)	<i>Catalog:</i> The response data syntax for <Catalog> is defined as a <STRING RESPONSE DATA> element. The <Catalog> response corresponds to the list of defined channel names. If no channel names are defined, a single null string is returned.
Example(s)	CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:CAT? Returns "" (empty channel list) CALC:EDF:CHAN:DEF "C_1530", 1530.000 NM CALC:EDF:CHAN:DEF "C_1550", 1550.000 NM

:CALCulate[1..n]:EDFa:CHANnel:CATalog?	
	CALC:EDF:CHAN:DEF "C_1570", 1570.000 NM CALC:EDF:CHAN:CAT? Returns "C_1530,C_1550,C_1570"
Notes	The channel list is sorted into ascending order according to the channel center wavelength.
See Also	:CALCulate[1..n]:EDFa:CHANnel:COUNT? :CALCulate[1..n]:EDFa:CHANnel[:DEFine] :CALCulate[1..n]:EDFa:DATA:CHANnel:CATalog? :CALCulate[1..n][:WDM]:CHANnel:CATalog?

**:CALCulate[1..n]:EDFa:CHANnel:
COUNT?**

Description	This query returns the number of user-defined channels for the EDFA analysis. At *RST, the number of channels is 0.
Syntax	:CALCulate[1..n]:EDFa:CHANnel:COUNT?
Parameter(s)	None
Response Syntax	<Count>
Response(s)	<i>Count:</i> The response data syntax for <Count> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Count> response corresponds to the number of items in the list of user-defined channels.
Example(s)	CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "C_1530", 1530.000 NM CALC:EDF:CHAN:DEF "C_1570", 1570.000 NM CALC:EDF:CHAN:COUN? Returns 2
See Also	:CALCulate[1..n]:EDFa:CHANnel:CATalog? :CALCulate[1..n]:EDFa:CHANnel[:DEFine] :CALCulate[1..n]:EDFa:CHANnel:DELeTe[:NAME] :CALCulate[1..n]:EDFa:CHANnel:DELeTe:ALL :CALCulate[1..n]:EDFa:DATA:CHANnel:COUNT? :CALCulate[1..n][:WDM]:CHANnel:COUNT?

:CALCulate[1..n]:EDFa:CHANnel[:DEFine]	
Description	This command allocates and initializes a channel setup for the EDFA analysis. *RST has no effect on this command.
Syntax	:CALCulate[1..n]:EDFa:CHANnel[:DEFine] <wsp> <Name>,<Define[<wsp>M HZ]> MAXimum MINimum
Parameter(s)	➤ <i>Name:</i> The program data syntax for <Name> is defined as a <STRING PROGRAM DATA> element. The <Name> parameter corresponds to the name of the channel setup to create. The channel name cannot be empty. Each channel name must be unique: it is not possible to define two channels with the same name. ➤ <i>Define:</i> The program data syntax for <Define> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> elements are: M HZ. The <Define> special forms MINimum and MAXimum are accepted on input.

:CALCulate[1..n]:EDFa:CHANnel [:DEFine]

MINimum allows to set the instrument to the smallest supported value.

MAXimum allows to set the instrument to the greatest supported value.

The <Define> parameter corresponds to a valid channel center value.

The CALCulate[1..n]:EDFa:CHANnel:CENter? MIN and
CALCulate[1..n]:EDFa:CHANnel:CENter? MAX queries can be used to determine the valid center range.

Example(s)

```
CALC:EDF:CHAN:DEL:ALL
CALC:EDF:CHAN:DEF "ITU_22",192.1750 THZ
CALC:EDF:CHAN:SEL "ITU_22"
CALC:EDF:CHAN:WIDT:FREQ 200.0 GHZ
CALC:EDF:CHAN:DEF "CWDM_14",1490.000 NM
```

```
CALC:EDF:CHAN:SEL "CWDM_14"
CALC:EDF:CHAN:WIDT 10.0 NM
CALC:EDF:CHAN:CAT? Returns
"CWDM_14,ITU_22"
```

:CALCulate[1..n]:EDFa:CHANnel[:DEFine]	
Notes	Analysis parameters of newly created channels are always set to their respective default values. The channel list is sorted into ascending order according to the channel center wavelength.
See Also	:CALCulate[1..n]:EDFa:CHANnel:CATalog? :CALCulate[1..n]:EDFa:CHANnel[:DEFine]? :CALCulate[1..n]:EDFa:CHANnel:DELeTe[:NAME] :CALCulate[1..n]:EDFa:CHANnel:DELeTe:ALL :CALCulate[1..n]:EDFa:CHANnel:SELeCt :CALCulate[1..n][:WDM]:CHANnel[:DEFine]? :UNIT[1..n]:SPECTrum

:CALCulate[1..n]:EDFa:CHANnel[:DEFine]?	
Description	This query requests the instrument to return the definition of the specified channel setup for the EDFA analysis. *RST has no effect on this command.
Syntax	:CALCulate[1..n]:EDFa:CHANnel[:DEFine]?<wsp><Name>
Parameter(s)	<i>Name:</i> The program data syntax for <Name> is defined as a <STRING PROGRAM DATA> element. The <Name> parameter corresponds to the name of the requested channel setup definition.
Response Syntax	<Define>

:CALCulate[1..n]:EDFa:CHANnel[:DEFine]?	
Response(s)	<i>Define:</i> The response data syntax for <Define> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Define> response corresponds to the channel center for the specified <Name>.
Example(s)	CALC:EDF:CHAN:DEF "ITU_1490",1490.000 NM UNIT:SPEC M CALC:EDF:CHAN:DEF? "ITU_1490" Returns 1.490000E-006 UNIT:SPEC HZ CALC:EDF:CHAN? "ITU_1490" Returns 2.012030E+014
See Also	:CALCulate[1..n]:EDFa:CHANnel:CATalog? :CALCulate[1..n]:EDFa:CHANnel[:DEFine] :CALCulate[1..n]:EDFa:CHANnel:DELeTe[:NAME] :CALCulate[1..n]:EDFa:CHANnel:DELeTe:ALL :CALCulate[1..n][:WDM]:CHANnel[:DEFine]? :UNIT[1..n]:SPEctrum

:CALCulate[1..n]:EDFa:CHANnel: DELeTe[:NAME]

Description	This command causes the specified channel setup to be deleted from the channel list of the EDFA analysis. This command is an action and has no associated *RST condition or query form.
Syntax	<pre>:CALCulate[1..n]:EDFa:CHANnel:DELeTe[:NAME] <wsp> <Name></pre>
Parameter(s)	<i>Name:</i> The program data syntax for <Name> is defined as a <STRING PROGRAM DATA> element. The <Name> parameter corresponds to the name of the channel setup to delete. The channel name cannot be empty.
Example(s)	<pre>CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "C1",1510.000 NM CALC:EDF:CHAN:DEF "C2",1520.000 NM CALC:EDF:CHAN:CAT? Returns "C1,C2" CALC:EDF:CHAN:DEL:NAME "C1"</pre>

:CALCulate[1..n]:EDFa:CHANnel:DELeTe[:NAME]	
	CALC:EDF:CHAN:CAT? Returns "C2"
Notes	If a channel with the specified <Name> does not exists, no error is generated.
See Also	:CALCulate[1..n]:EDFa:CHANnel:CATalog? :CALCulate[1..n]:EDFa:CHANnel[:DEFine] :CALCulate[1..n]:EDFa:CHANnel:DELeTe:ALL :CALCulate[1..n][:WDM]:CHANnel:DELeTe[:NAME]

:CALCulate[1..n]:EDFa:CHANnel: DELeTe:ALL

Description	This command causes all channels setups to be deleted from the channel list of the EDFA analysis. This command is an action and has no associated *RST condition or query form.
Syntax	:CALCulate[1..n]:EDFa:CHANnel:DELeTe:ALL
Parameter(s)	None
Example(s)	CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:CAT? Returns "" (channel setup list empty) CALC:EDF:CHAN:DEF "C3",1530.000 NM CALC:EDF:CHAN:DEF "C4",1540.000 NM CALC:EDF:CHAN:CAT? Returns "C3,C4" (two channels in the list) CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:CAT? Returns ""
See Also	:CALCulate[1..n]:EDFa:CHANnel:CATalog? :CALCulate[1..n]:EDFa:CHANnel[:DEFine] :CALCulate[1..n]:EDFa:CHANnel:DELeTe[:NAME] :CALCulate[1..n][:WDM]:CHANnel:DELeTe:ALL

:CALCulate[1..n]:EDFa:CHANnel: CENTER:FREQuency

Description	This command sets the nominal center frequency for the selected channel setup of the EDFA analysis. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:CHANnel:CENTER:FREQuency<wsp><Center[<wsp>HZ]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Center:</i> The program data syntax for <Center> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Center> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:EDFa:CHANnel: CENTer:FREQuency

DEFault allows the instrument to select a value for the <Center> parameter.

The <Center> parameter corresponds to a valid channel center frequency in hertz.

The
CALCulate[1..n]:EDFa:CHANnel:CENTer:FREQuency? MIN and
CALCulate[1..n]:EDFa:CHANnel:CENTer:FREQuency? MAX queries can be used to determine the valid channel center frequency range.

Example(s)

```
CALC:EDF:CHAN:DEF "ITU_22",192.1750 THZ
CALC:EDF:CHAN:SEL "ITU_22"
CALC:EDF:CHAN:CENt:FREQ? Returns
1.921750E+014
CALC:EDF:CHAN:CENt:FREQ 193.4145 THZ
```

```
CALC:EDF:CHAN:CENt:FREQ? Returns
1.934145E+014
```

See Also

```
:CALCulate[1..n]:EDFa:CHANnel[:DEFine]
:CALCulate[1..n]:EDFa:CHANnel:CENTer:FREQuency?
:CALCulate[1..n]:EDFa:CHANnel:CENTer[:WAVElength]
:CALCulate[1..n]:EDFa:CHANnel:SElect
:CALCulate[1..n][:WDM]:CHANnel:CENTer:FREQuency
```

:CALCulate[1..n]:EDFa:CHANnel: CENTER:FREQUENCY?	
Description	This query returns the nominal center frequency for the selected channel setup of the EDFA analysis. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:CHANnel:CENTER:FREQUENCY? [<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Center>

**:CALCulate[1..n]:EDFa:CHANnel:
CENTer:FREQuency?**

Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to either the current or the MINimum/MAXimum channel center frequency in hertz.
Example(s)	CALC:EDF:CHAN:DEF "ITU_22",192.1750 THZ CALC:EDF:CHAN:SEL "ITU_22" CALC:EDF:CHAN:CENTER:FREQ? Returns 1.921750E+014
See Also	:CALCulate[1..n]:EDFa:CHANnel[:DEFine] :CALCulate[1..n]:EDFa:CHANnel:CENTER:FREQuency :CALCulate[1..n]:EDFa:CHANnel:CENTER[:WAVelength]? :CALCulate[1..n]:EDFa:CHANnel:SElect :CALCulate[1..n][:WDM]:CHANnel:CENTER:FREQuency?

:CALCulate[1..n]:EDFa:CHANnel:CENTer[:WAVelength]	
Description	This command sets the nominal center wavelength for the selected channel setup of the EDFA analysis. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:CHANnel:CENTer[:WAVelength]<wsp><Center[<wsp>M]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Center:</i> The program data syntax for <Center> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Center> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:EDFa:CHANnel: CENTer[:WAVelength]

DEFault allows the instrument to select a value for the <Center> parameter.

The <Center> parameter corresponds to a valid channel center wavelength in meters.

The
CALCulate[1..n]:EDFa:CHANnel:CENTer[:WAVe
length]? MIN and
CALCulate[1..n]:EDFa:CHANnel:CENTer[:WAVe
length]? MAX queries can be used to determine
the valid channel center wavelength range.

Example(s)

```
CALC:EDF:CHAN:DEF "CWDM_7",1450.0 NM
CALC:EDF:CHAN:SEL "CWDM_7"
CALC:EDF:CHAN:CENt:WAV? Returns
1.45000E-006
CALC:EDF:CHAN:CENt:WAV 1445.0 NM
CALC:EDF:CHAN:CENt:WAV? Returns
1.44500E-006
```

See Also

```
:CALCulate[1..n]:EDFa:CHANnel[:DEFine]
:CALCulate[1..n]:EDFa:CHANnel:CENTer[:WAVe  
length]?
:CALCulate[1..n]:EDFa:CHANnel:CENTer:FREQue  
ncy
:CALCulate[1..n]:EDFa:CHANnel:SELect
:CALCulate[1..n][:WDM]:CHANnel:CENTer[:WAV  
elength]
```

:CALCulate[1..n]:EDFa:CHANnel:CENTer[:WAVelength]?	
Description	This query returns the nominal center wavelength for the selected channel setup of the EDFA analysis. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:CHANnel:CENTer[:WAVelength]?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Center>

**:CALCulate[1..n]:EDFa:CHANnel:
CENTer[:WAVelength]?**

Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to either the current or the MINimum/MAXimum channel center wavelength in meters.
Example(s)	CALC:EDF:CHAN:DEF "CWDM_7",1450.0 NM CALC:EDF:CHAN:SEL "CWDM_7" CALC:EDF:CHAN:CENt:WAV? Returns 1.45000E-006
See Also	:CALCulate[1..n]:EDFa:CHANnel[:DEFine] :CALCulate[1..n]:EDFa:CHANnel:CENt[:WAVel ength] :CALCulate[1..n]:EDFa:CHANnel:CENt:FREQue ncy? :CALCulate[1..n]:EDFa:CHANnel:SELect :CALCulate[1..n][:WDM]:CHANnel:CENt[:WAV elength]?

:CALCulate[1..n]:EDFa:CHANnel:WIDTh:FREQuency	
Description	This command sets the frequency width for the selected channel setup of the EDFA analysis. At *RST, this value is not available. At CALCulate[1..n]:EDFa:CHANnel[:DEFine], this value is set to 50.0 GHz.
Syntax	:CALCulate[1..n]:EDFa:CHANnel:WIDTh:FREQuency<wsp><Width[<wsp>HZ]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Width:</i> The program data syntax for <Width> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Width> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:EDFa:CHANnel:WIDTh:FREQuency

DEFault allows the instrument to select a value for the <Width> parameter.

The <Width> parameter corresponds to a valid channel width in hertz.

The
 CALCulate[1..n]:EDFa:CHANnel:WIDTh:FREQuency? MIN and
 CALCulate[1..n]:EDFa:CHANnel:WIDTh:FREQuency? MAX queries can be used to determine the
 valid channel frequency width.

Example(s)

CALC:EDF:CHAN:DEF "ITU_22",192.1750 THZ
 CALC:EDF:CHAN:SEL "ITU_22"
 CALC:EDF:CHAN:WIDT:FREQ 200.0 GHZ
 CALC:EDF:CHAN:WIDT:FREQ? Returns
 2.000000E+011

See Also

:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTh:FREQuency
 :CALCulate[1..n]:EDFa:CHANnel:WIDTh[:WAVElength]
 :CALCulate[1..n]:EDFa:CHANnel:WIDTh:FREQuency?
 :CALCulate[1..n]:EDFa:CHANnel:SElect
 :CALCulate[1..n][:WDM]:CHANnel:WIDTh:FREQuency

:CALCulate[1..n]:EDFa:CHANnel:WIDTh:FREQuency?	
Description	This query returns the frequency width for the selected channel setup of the EDFA analysis. At *RST, this value is not available. At CALCulate[1..n]:EDFa:CHANnel[:DEFine], this value is set to 50.0 GHz.
Syntax	:CALCulate[1..n]:EDFa:CHANnel:WIDTh:FREQuency? [<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Width>

**:CALCulate[1..n]:EDFa:CHANnel:WIDTh:
FREQuency?**

Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to either the current or the MINimum/MAXimum channel frequency width in hertz.
Example(s)	CALC:EDF:CHAN:DEF "C_23",195.0 THZ CALC:EDF:CHAN:SEL "C_23" CALC:EDF:CHAN:WIDT:FREQ DEF CALC:EDF:CHAN:WIDT:FREQ? Returns 5.000000E+010
See Also	:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTh:F REQuency :CALCulate[1..n]:EDFa:CHANnel:WIDTh[:WAVele ngth] :CALCulate[1..n]:EDFa:CHANnel:WIDTh:FREQue ncy :CALCulate[1..n]:EDFa:CHANnel:SElect :CALCulate[1..n][:WDM]:CHANnel:WIDTh:FREQ uency?

:CALCulate[1..n]:EDFa:CHANnel:WIDTH[:WAVelength]	
Description	This command sets the wavelength width for the selected channel setup of the EDFA analysis. At *RST, this value is not available. At CALCulate[1..n]:EDFa:CHANnel[:DEFine], this value is set to 50.0 GHz.
Syntax	:CALCulate[1..n]:EDFa:CHANnel:WIDTH[:WAVelength] <wsp> <Width[<wsp> M] > MAXimum MINimum DEFault
Parameter(s)	<i>Width:</i> The program data syntax for <Width> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Width> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

**:CALCulate[1..n]:EDFa:CHANnel:
WIDTh[:WAVelength]**

DEFAult allows the instrument to select a value for the <Width> parameter.

The <Width> parameter corresponds to a valid channel width in meters.

The
CALCulate[1..n]:EDFa:CHANnel:WIDTh[:WAVElength]? MIN and
CALCulate[1..n]:EDFa:CHANnel:WIDTh[:WAVElength]? MAX queries can be used to determine the valid channel wavelength width.

Example(s)

CALC:EDF:CHAN:DEF "CWDM_3",1410.0 NM
CALC:EDF:CHAN:SEL "CWDM_3"
CALC:EDF:CHAN:WIDT:WAV 10.0 NM
CALC:EDF:CHAN:WIDT:WAV? Returns
1.000000E-008

See Also

:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTh[:
WAVelength]
:CALCulate[1..n]:EDFa:CHANnel:WIDTh:FREQue
ncy
:CALCulate[1..n]:EDFa:CHANnel:WIDTh[:WAVEle
ngth]?
:CALCulate[1..n]:EDFa:CHANnel:SElect
:CALCulate[1..n][:WDM]:CHANnel:WIDTh[:WAV
elength]

:CALCulate[1..n]:EDFa:CHANnel:WIDTH[:WAVElength]?	
Description	This query returns the wavelength width for the selected channel setup of the EDFA analysis. At *RST, this value is not available. At CALCulate[1..n]:EDFa:CHANnel[:DEFine], this value is set to 50.0 GHz.
Syntax	:CALCulate[1..n]:EDFa:CHANnel:WIDTH[:WAVElength]?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Width>

**:CALCulate[1..n]:EDFa:CHANnel:
WIDTh[:WAVelength]?**

Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to either the current or the MINimum/MAXimum channel wavelength width in meters.
Example(s)	CALC:EDF:CHAN:DEF "CWDM_5",1430.0 NM CALC:EDF:CHAN:SEL "CWDM_5" CALC:EDF:CHAN:WIDT:WAV DEF CALC:EDF:CHAN:WIDT:WAV? Returns 2.000000E-008
See Also	:CALCulate[1..n]:EDFa:CHANnel:AUTO:WIDTh[: WAVelength] :CALCulate[1..n]:EDFa:CHANnel:WIDTh:FREQue ncy :CALCulate[1..n]:EDFa:CHANnel:WIDTh[:WAVEle ngth] :CALCulate[1..n]:EDFa:CHANnel:SElect :CALCulate[1..n][:WDM]:CHANnel:WIDTh[:WAV elength]?

:CALCulate[1..n]:EDFa:CHANnel:NSElect	
Description	This command sets the one-based index for the selected channel setup of the EDFA analysis. At *RST, there is no selection: index is set to 0.
Syntax	:CALCulate[1..n]:EDFa:CHANnel:NSElect<wsp><Select> MAXimum MINimum
Parameter(s)	<i>Select:</i> The program data syntax for <Select> is defined as a <numeric_value> element. The <Select> special forms MINimum and MAXimum are accepted on input.

**:CALCulate[1..n]:EDFa:CHANnel:
NSElect**

MINimum allows to set the instrument to the smallest supported value.
 MAXimum allows to set the instrument to the greatest supported value.

The <Select> parameter corresponds to a valid channel setup index to select. The channel index cannot be zero.

The CALCulate[1..n]:EDFa:CHANnel:COUNT? query can be used to determine valid index range.

Example(s)

CALC:EDF:CHAN:DEL:ALL
 CALC:EDF:CHAN:DEF "C_001",1525.000 NM
 CALC:EDF:CHAN:NSEL 1
 CALC:EDF:CHAN:SEL? Returns "C_001"

See Also

:CALCulate[1..n]:EDFa:CHANnel:COUNT?
 :CALCulate[1..n]:EDFa:CHANnel[:DEFine]
 :CALCulate[1..n]:EDFa:CHANnel:NSElect?
 :CALCulate[1..n]:EDFa:CHANnel:SElect
 :CALCulate[1..n]:EDFa:DATA:CHANnel:NSElect
 :CALCulate[1..n][:WDM]:CHANnel:NSElect

:CALCulate[1..n]:EDFa:CHANnel:NSElect?	
Description	This query returns the one-based index of the selected channel setup of the EDFA analysis. At *RST, there is no selection: index is set to 0.
Syntax	:CALCulate[1..n]:EDFa:CHANnel:NSElect?
Parameter(s)	None
Response Syntax	<Select>
Response(s)	Select: The response data syntax for <Select> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Select> response corresponds to the index of the selected channel setup. Zero is returned if no channel has been selected.
Example(s)	CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "ITU_1550",1550.000 NM CALC:EDF:CHAN:SEL "ITU_1550" CALC:EDF:CHAN:NSEL? Returns 1 CALC:EDF:CHAN:DELeTe:NAME "ITU_1550" CALC:EDF:CHAN:NSEL? Returns 0 (no selection)
See Also	:CALCulate[1..n]:EDFa:CHANnel[:DEFine] :CALCulate[1..n]:EDFa:CHANnel:NSElect :CALCulate[1..n]:EDFa:CHANnel:SElect? :CALCulate[1..n]:EDFa:DATA:CHANnel:NSElect :CALCulate[1..n][:WDM]:CHANnel:NSElect?

:CALCulate[1..n]:EDFa:CHANnel: SElect

Description	This command sets the name of the selected channel setup for the EDFA analysis. At *RST, there is no selection: a single null string is returned.
Syntax	<pre>:CALCulate[1..n]:EDFa:CHANnel:SElect<wsp> <Select></pre>
Parameter(s)	<i>Select:</i> The program data syntax for <Select> is defined as a <STRING PROGRAM DATA> element. The <Select> parameter corresponds to the name of the channel setup to select. The channel name cannot be empty.
Example(s)	<pre>CALC:EDF:CHAN:DEF "C_001",1525.000 NM CALC:EDF:CHAN:SEL "C_001" CALC:EDF:CHAN:SEL? Returns "C_001"</pre>
See Also	<pre>:CALCulate[1..n]:EDFa:CHANnel:CATalog? :CALCulate[1..n]:EDFa:CHANnel[:DEFine] :CALCulate[1..n]:EDFa:CHANnel:SElect? :CALCulate[1..n]:EDFa:CHANnel:NSElect :CALCulate[1..n]:EDFa:DATA:CHANnel:SElect :CALCulate[1..n][:WDM]:CHANnel:SElect</pre>

:CALCulate[1..n]:EDFa:CHANnel:SElect?	
Description	This query returns the name of the selected channel setup for the EDFA analysis. At *RST, there is no selection: a single null string is returned.
Syntax	:CALCulate[1..n]:EDFa:CHANnel:SElect?
Parameter(s)	None
Response Syntax	<Select>
Response(s)	<i>Select:</i> The response data syntax for <Select> is defined as a <STRING RESPONSE DATA> element. The <Select> response corresponds to the name of the selected channel setup. A single null string is returned if no channel has been selected.
Example(s)	CALC:EDF:CHAN:DEF "ITU_1550",1550.000 NM CALC:EDF:CHAN:SEL "ITU_1550" CALC:EDF:CHAN:SEL? Returns "ITU_1550" CALC:EDF:CHAN:DELeTe:NAME "ITU_1550" CALC:EDF:CHAN:SEL? Returns "" (no selection)
See Also	:CALCulate[1..n]:EDFa:CHANnel:CATalog? :CALCulate[1..n]:EDFa:CHANnel[:DEFine] :CALCulate[1..n]:EDFa:CHANnel:SElect :CALCulate[1..n]:EDFa:CHANnel:NSElect? :CALCulate[1..n]:EDFa:DATA:CHANnel:SElect :CALCulate[1..n][:WDM]:CHANnel:SElect?

:CALCulate[1..n]:EDFa:DATA:CHANnel: ASEPower?

Description	This query returns the EDFA analysis result corresponding to the amplified spontaneous emission (ASE) power for the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:ASEPower?
Parameter(s)	None
Response Syntax	<Power>
Response(s)	<i>Power:</i> The response data syntax for <Power> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Power> response corresponds to the computed ASE power level.
Example(s)	<pre>CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "ITU_019", 229.7860 THZ <Do measurement> CALC:EDF:DATA:CHAN:SEL "ITU_019" UNIT:POW DBM CALC:EDF:DATA:CHAN:ASEP? Returns -2.843000E+001</pre>
See Also	<pre>:CALCulate[1..n]:EDFa:DATA:CHANnel:SElect :CALCulate[1..n]:EDFa:DATA:CHANnel:SSEPower?</pre>

:CALCulate[1..n]:EDFa:DATA:CHANnel:CATalog?	
Description	This query returns a comma-separated list of strings which contains the name of each channel result for the EDFA analysis. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:CATalog?
Parameter(s)	None
Response Syntax	<Catalog>
Response(s)	<i>Catalog:</i> The response data syntax for <Catalog> is defined as a <STRING RESPONSE DATA> element. The <Catalog> response corresponds to the list of channel result names. The <Catalog> contains the names for all user defined channels as well as new channels automatically created based on the default channel. If the channel results list is empty, a single null string is returned.
Example(s)	CALC:EDF:CHAN:AUTO ON CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "C_1530", 1530.000 NM CALC:EDF:CHAN:DEF "C_1550", 1550.000 NM CALC:EDF:CHAN:DEF "C_1570", 1570.000 NM

**:CALCulate[1..n]:EDFa:DATA:CHANnel:
CATalog?**

CALC:EDF:CHAN:CAT? Returns
"C_1530,C_1550,C_1570"
<Do measurement>
CALC:EDF:DATA:CHAN:CAT? Returns
"C_001,C_1530,C_1550,C_002,C_1570"

Notes The channel results list is sorted into ascending order according to the channel center wavelength.

See Also :CALCulate[1..n]:EDFa:CHANnel:AUTO
:CALCulate[1..n]:EDFa:CHANnel[:DEFine]
:CALCulate[1..n]:EDFa:CHANnel:CATalog?
:CALCulate[1..n]:EDFa:DATA:CHANnel:COUNT?
:CALCulate[1..n][:WDM]:DATA:CHANnel:CATalog?

:CALCulate[1..n]:EDFa:DATA:CHANnel: CENTer:FREQuency?	
Description	This query returns the nominal center frequency used for the EDFA analysis of the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:CENTer:F REQuency?
Parameter(s)	None
Response Syntax	<Center>

**:CALCulate[1..n]:EDFa:DATA:CHANnel:
CENTer:FREQuency?**

Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the nominal channel center frequency in hertz.
Example(s)	CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "ITU_32", 212.0000 THZ <Do measurement> CALC:EDF:DATA:CHAN:SEL "ITU_32" CALC:EDF:DATA:CHAN:CENT:FREQ? Returns 2.120000E+014
See Also	:CALCulate[1..n]:EDFa:CHANnel[:DEFine] :CALCulate[1..n]:EDFa:DATA:CHANnel:CENTer[: WAVelength]? :CALCulate[1..n]:EDFa:DATA:CHANnel:CenterMA Ss:FREQuency? :CALCulate[1..n]:EDFa:DATA:CHANnel:SElect :CALCulate[1..n][:WDM]:DATA:CHANnel:CENTer :FREQuency?

:CALCulate[1..n]:EDFa:DATA:CHANnel: CENTer[:WAVelength]?	
Description	This query returns the nominal center wavelength used for the EDFA analysis of the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:CENTer[:WAVelength]?
Parameter(s)	None
Response Syntax	<Center>

**:CALCulate[1..n]:EDFa:DATA:CHANnel:
CENTER[:WAVelength]?**

Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the nominal channel center wavelength in meters.
Example(s)	CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "C_003", 1401.500 NM <Do measurement> CALC:EDF:DATA:CHAN:SEL "C_003" CALC:EDF:DATA:CHAN:CENT:WAV? Returns 1.401500E-006
See Also	:CALCulate[1..n]:EDFa:CHANnel[:DEFine] :CALCulate[1..n]:EDFa:DATA:CHANnel:CenterMA Ss[:WAVelength]? :CALCulate[1..n]:EDFa:DATA:CHANnel:CENTER:F REQuency? :CALCulate[1..n]:EDFa:DATA:CHANnel:SElect :CALCulate[1..n][:WDM]:DATA:CHANnel:CENTER [:WAVelength]?

:CALCulate[1..n]:EDFa:DATA:CHANnel:CenterMASSs:FREQuency?	
Description	This query returns the EDFA analysis result corresponding to the center of mass frequency for the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:CenterMASSs:FREQuency?
Parameter(s)	None
Response Syntax	<Center>
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the computed center of mass frequency in hertz.

:CALCulate[1..n]:EDFa:DATA:CHANnel: CenterMASSs:FREQuency?

Example(s)	CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "ITU_14", 201.9873 THZ <Do measurement> CALC:EDF:DATA:CHAN:SEL "ITU_14" CALC:EDF:DATA:CHAN:CMAS:FREQ? Returns 2.020066E+014
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:EDFa:DATA:CHANnel:CENTer:F REQuency? :CALCulate[1..n]:EDFa:DATA:CHANnel:CenterMA SS[:WAVelength]? :CALCulate[1..n]:EDFa:DATA:CHANnel:SElect :CALCulate[1..n][:WDM]:DATA:CHANnel:Center MASSs:FREQuency?

:CALCulate[1..n]:EDFa:DATA:CHANnel:CenterMASs[:WAVelength]?

Description	This query returns the EDFA analysis result corresponding to the center of mass wavelength for the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:CenterMASs[:WAVelength]?
Parameter(s)	None
Response Syntax	<Center>
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the computed center of mass wavelength in meters.

**:CALCulate[1..n]:EDFa:DATA:CHANnel:
CenterMASS[:WAVelength]?**

Example(s)	CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "C_2", 1287.000 NM <Do measurement> CALC:EDF:DATA:CHAN:SEL "C_2" CALC:EDF:DATA:CHAN:CMAS:WAV? Returns 1.286971E-006
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:EDFa:DATA:CHANnel:CENTer[: WAVelength]? :CALCulate[1..n]:EDFa:DATA:CHANnel:CenterMA SS:FREQuency? :CALCulate[1..n]:EDFa:DATA:CHANnel:SElect :CALCulate[1..n][:WDM]:DATA:CHANnel:Center MASS[:WAVelength]?

:CALCulate[1..n]:EDFa:DATA:CHANnel:COUNT?	
Description	This query returns the number of channel results for the EDFA analysis. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:COUNT?
Parameter(s)	None
Response Syntax	<Count>

**:CALCulate[1..n]:EDFa:DATA:CHANnel:
COUNT?**

Response(s)	<i>Count:</i> The response data syntax for <Count> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Count> response corresponds to the number of items in the list of channel results. The <Count> value is the sum of the number of user-defined channels with the number of new channels automatically created based on the default channel.
Example(s)	CALC:EDF:CHAN:AUTO OFF CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "C_1550", 1550.000 NM CALC:EDF:CHAN:DEF "C_1570", 1570.000 NM <Do measurement> CALC:EDF:DATA:CHAN:COUN? Returns 2
See Also	:CALCulate[1..n]:EDFa:CHANnel:AUTO :CALCulate[1..n]:EDFa:CHANnel:COUNt? :CALCulate[1..n]:EDFa:CHANnel[:DEFine] :CALCulate[1..n]:EDFa:DATA:CHANnel:CATalog? :CALCulate[1..n][:WDM]:DATA:CHANnel:COUNt?

:CALCulate[1..n]:EDFa:DATA:CHANnel:GAIN?	
Description	This query returns the EDFA analysis result corresponding to the gain of the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:GAIN?
Parameter(s)	None
Response Syntax	<Gain>
Response(s)	<i>Gain:</i> The response data syntax for <Gain> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Gain> response corresponds to the computed gain.
Example(s)	CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "ITU_019", 229.7860 THZ <Do measurement> CALC:EDF:DATA:CHAN:SEL "ITU_019" UNIT:RAT DB CALC:EDF:DATA:CHAN:GAIN? Returns 1.454000E+001
See Also	:CALCulate[1..n]:EDFa:DATA:CHANnel:SElect

:CALCulate[1..n]:EDFa:DATA:CHANnel:GMAGain?

Description	This query returns the EDFA analysis result corresponding to the selected channel gain minus the average gain of all channels. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:GMAGain?
Parameter(s)	None
Response Syntax	<Gain>
Response(s)	<i>Gain:</i> The response data syntax for <Gain> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Gain> response corresponds to the delta between the gain of the channel and the average gain for all channels.
Example(s)	<pre>CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "ITU_019", 229.7860 THZ <Do measurement> CALC:EDF:DATA:CHAN:SEL "ITU_019" UNIT:RAT DB CALC:EDF:DATA:CHAN:GMAG? Returns -1.970000E+000</pre>
See Also	:CALCulate[1..n]:EDFa:DATA:CHANnel:SElect

:CALCulate[1..n]:EDFa:DATA:CHANnel:INPut:SIGnalPower?	
Description	This query returns the EDFA analysis result corresponding to the input signal power of the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:INPut:SIGnalPower?
Parameter(s)	None
Response Syntax	<Power>
Response(s)	<i>Power:</i> The response data syntax for <Power> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Power> response corresponds to the computed signal power level.
Example(s)	CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "ITU_019", 229.7860 THZ <Do measurement> CALC:EDF:DATA:CHAN:SEL "ITU_019" UNIT:POW DBM CALC:EDF:DATA:CHAN:INP:SIGP? Returns -7.920000E+000
See Also	:CALCulate[1..n]:EDFa:DATA:CHANnel:OUTPut:SIGnalPower? :CALCulate[1..n]:EDFa:DATA:CHANnel:SElect :CALCulate[1..n][:WDM]:DATA:CHANnel:SIGnalPower?

:CALCulate[1..n]:EDFa:DATA:CHANnel:INPut:TPOWer?	
Description	This query returns the EDFA analysis result corresponding to the input total power of the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:INPut:TPOWer?
Parameter(s)	None
Response Syntax	<Power>
Response(s)	<i>Power:</i> The response data syntax for <Power> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Power> response corresponds to the computed total power.
Example(s)	<pre>CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "ITU_019", 229.7860 THZ <Do measurement> CALC:EDF:DATA:CHAN:SEL "ITU_019" UNIT:POW DBM CALC:EDF:DATA:CHAN:INP:TPOW? Returns -7.710000E+000</pre>
See Also	<pre>:CALCulate[1..n]:EDFa:DATA:CHANnel:OUTPut:TPOWer? :CALCulate[1..n]:EDFa:DATA:CHANnel:SElect</pre>

:CALCulate[1..n]:EDFa:DATA:CHANnel:NFIGure?	
Description	This query returns the EDFA analysis result corresponding to the noise figure of the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:NFIGure?
Parameter(s)	None
Response Syntax	<Noise>
Response(s)	Noise: The response data syntax for <Noise> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Noise> response corresponds to the computed noise figure.
Example(s)	CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "ITU_019", 229.7860 THZ <Do measurement> CALC:EDF:DATA:CHAN:SEL "ITU_019" CALC:EDF:DATA:CHAN:NFIG? Returns 1.371000E+001
See Also	:CALCulate[1..n]:EDFa:DATA:CHANnel:SElect

**:CALCulate[1..n]:EDFa:DATA:CHANnel:
NSElect**

Description	This command sets the one-based index of the selected EDFA channel result. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:NSElect<wsp> <Select> MAXimum MINimum
Parameter(s)	<i>Select:</i> The program data syntax for <Select> is defined as a <numeric_value> element. The <Select> special forms MINimum and MAXimum are accepted on input.

:CALCulate[1..n]:EDFa:DATA:CHANnel: NSElect

MINimum allows to set the instrument to the smallest supported value.

MAXimum allows to set the instrument to the greatest supported value.

The <Select> parameter corresponds to a valid channel result index to select. The channel index cannot be zero.

The
CALCulate[1..n]:EDFa:DATA:CHANnel:COUNT? query can be used to determine valid index range.

Example(s)

```
CALC:EDF:CHAN:DEL:ALL
CALC:EDF:CHAN:DEF "C_007", 1380.000 NM
<Do measurement>
CALC:EDF:DATA:CHAN:NSEL 1
```

See Also

```
:CALCulate[1..n]:EDFa:CHANnel:NSElect
:CALCulate[1..n]:EDFa:DATA:CHANnel:COUNT?
:CALCulate[1..n]:EDFa:DATA:CHANnel:NSElect?
:CALCulate[1..n]:EDFa:DATA:CHANnel:SElect
:CALCulate[1..n][:WDM]:DATA:CHANnel:NSElect
```

:CALCulate[1..n]:EDFa:DATA:CHANnel:NSElect?	
Description	This query returns the one-based index of the selected EDFA channel result. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:NSElect?
Parameter(s)	None
Response Syntax	<Select>
Response(s)	<i>Select:</i> The response data syntax for <Select> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Select> response corresponds to the index of the selected channel result. Zero is returned if no channel has been selected.
Example(s)	CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "C_001", 1300.000 NM <Do measurement> CALC:EDF:DATA:CHAN:NSEL? Returns 0 (no selection) CALC:EDF:DATA:CHAN:NSEL 1 CALC:EDF:DATA:CHAN:NSEL? Returns 1
See Also	:CALCulate[1..n]:EDFa:CHANnel:NSElect? :CALCulate[1..n]:EDFa:DATA:CHANnel:NSElect :CALCulate[1..n]:EDFa:DATA:CHANnel:SElect? :CALCulate[1..n][:WDM]:DATA:CHANnel:NSElect?

:CALCulate[1..n]:EDFa:DATA:CHANnel:OUTPut:SIGnalPower?

Description	This query returns the EDFA analysis result corresponding to the output signal power of the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:OUTPut:SIGnalPower?
Parameter(s)	None
Response Syntax	<Power>
Response(s)	<i>Power:</i> The response data syntax for <Power> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Power> response corresponds to the computed signal power level.
Example(s)	<pre>CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "ITU_019", 229.7860 THZ <Do measurement> CALC:EDF:DATA:CHAN:SEL "ITU_019" UNIT:POW DBM CALC:EDF:DATA:CHAN:OUTP:SIGP? Returns 6.790000E+000</pre>
See Also	<pre>:CALCulate[1..n]:EDFa:DATA:CHANnel:INPut:SIGnalPower? :CALCulate[1..n]:EDFa:DATA:CHANnel:SElect :CALCulate[1..n][:WDM]:DATA:CHANnel:SIGnalPower?</pre>

:CALCulate[1..n]:EDFa:DATA:CHANnel:OUTPut:TPOWer?	
Description	This query returns the EDFA analysis result corresponding to the output total power of the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:OUTPut:TPOWer?
Parameter(s)	None
Response Syntax	<Power>
Response(s)	<i>Power:</i> The response data syntax for <Power> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Power> response corresponds to the computed total power.
Example(s)	<pre>CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "ITU_019", 229.7860 THZ <Do measurement> CALC:EDF:DATA:CHAN:SEL "ITU_019" UNIT:POW DBM CALC:EDF:DATA:CHAN:OUTP:TPOW? Returns 6.930000E+000</pre>
See Also	<pre>:CALCulate[1..n]:EDFa:DATA:CHANnel:INPut:TPOWer? :CALCulate[1..n]:EDFa:DATA:CHANnel:SElect</pre>

:CALCulate[1..n]:EDFa:DATA:CHANnel:SElect	
Description	This command sets the name of the selected EDFA channel result. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:SElect<wsp> <Select>
Parameter(s)	<i>Select:</i> The program data syntax for <Select> is defined as a <STRING PROGRAM DATA> element. The <Select> parameter corresponds to the name of the channel result to select. The channel name cannot be empty.
Example(s)	CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "C_007", 1380.000 NM <Do measurement> CALC:EDF:DATA:CHAN:SEL "C_001"
See Also	:CALCulate[1..n]:EDFa:CHANnel:SElect :CALCulate[1..n]:EDFa:DATA:CHANnel:CATalog? :CALCulate[1..n]:EDFa:DATA:CHANnel:NSElect :CALCulate[1..n]:EDFa:DATA:CHANnel:SElect? :CALCulate[1..n][:WDM]:DATA:CHANnel:SElect

:CALCulate[1..n]:EDFa:DATA:CHANnel:SElect?

Description	This query returns the name of the selected EDFA channel result. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:SElect?
Parameter(s)	None
Response Syntax	<Select>
Response(s)	<i>Select:</i> The response data syntax for <Select> is defined as a <STRING RESPONSE DATA> element.

:CALCulate[1..n]:EDFa:DATA:CHANnel:SElect?

The <Select> response corresponds to the name of the selected channel result. A single null string is returned if no channel has been selected.

Example(s)

```
CALC:EDF:CHAN:DEL:ALL
CALC:EDF:CHAN:DEF "C_001", 1300.000 NM
<Do measurement>
CALC:EDF:DATA:CHAN:SEL? Returns "" (no
selection)
CALC:EDF:DATA:CHAN:SEL "C_001"
CALC:EDF:DATA:CHAN:SEL? Returns "C_001"
```

See Also

```
:CALCulate[1..n]:EDFa:CHANnel:SElect
:CALCulate[1..n]:EDFa:DATA:CHANnel:CATalog?
:CALCulate[1..n]:EDFa:DATA:CHANnel:NSElect?
:CALCulate[1..n]:EDFa:DATA:CHANnel:SElect
:CALCulate[1..n][:WDM]:DATA:CHANnel:SElect?
```

:CALCulate[1..n]:EDFa:DATA:CHANnel: SMPRatio?

Description	This query returns the EDFA analysis result corresponding to the current output power, according to the measured output power (Output Signal Power / (Output Signal Power + PASE)), for the selected channel.
	At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:SMPRatio?
Parameter(s)	None
Response Syntax	<Ratio>

:CALCulate[1..n]:EDFa:DATA:CHANnel:SMPRatio?	
Response(s)	<i>Ratio:</i> The response data syntax for <Ratio> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Ratio> response corresponds to the computed output signal power to measured output power ratio.
Example(s)	CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "ITU_019", 229.7860 THZ <Do measurement> CALC:EDF:DATA:CHAN:SEL "ITU_019" UNIT:RAT PCT CALC:EDF:DATA:CHAN:SMPR? Returns 9.997000E+001
See Also	:CALCulate[1..n]:EDFa:DATA:CHANnel:ASEPower? :CALCulate[1..n]:EDFa:DATA:CHANnel:OUTPut:SI GnalPower? :CALCulate[1..n]:EDFa:DATA:CHANnel:SElect

:CALCulate[1..n]:EDFa:DATA:CHANnel: SSEPower?

Description	This query returns the EDFA analysis result corresponding to the source spontaneous emission (SSE) power for the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:CHANnel:SSEPower?
Parameter(s)	None
Response Syntax	<Power>
Response(s)	<i>Power:</i> The response data syntax for <Power> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Power> response corresponds to the computed SSE power level.
Example(s)	<pre>CALC:EDF:CHAN:DEL:ALL CALC:EDF:CHAN:DEF "ITU_019", 229.7860 THZ <Do measurement> CALC:EDF:DATA:CHAN:SEL "ITU_019" UNIT:POW DBM CALC:EDF:DATA:CHAN:SSEP? Returns -4.916000E+001</pre>
See Also	:CALCulate[1..n]:EDFa:DATA:CHANnel:ASEPower? :CALCulate[1..n]:EDFa:DATA:CHANnel:SElect

:CALCulate[1..n]:EDFa:DATA:GAIN:FLATness?

Description	This query returns the EDFA global analysis result for the gain flatness which corresponds to the difference between the maximum and minimum gain values among the detected channels. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:GAIN:FLATness?
Parameter(s)	None
Response Syntax	<Flatness>
Response(s)	<i>Flatness:</i> The response data syntax for <Flatness> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Flatness> response corresponds to the computed gain flatness.
Example(s)	<Do measurement> UNIT:RAT DB CALC:EDF:DATA:GAIN:FLAT? Returns 3.310000E+000
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:EDFa:DATA:GAIN:MEAN? :CALCulate[1..n]:EDFa:DATA:GAIN:SLOPe:FREQuency? :CALCulate[1..n]:EDFa:DATA:GAIN:SLOPe:[WAVElength]?

:CALCulate[1..n]:EDFa:DATA:GAIN:MEAN?

Description	This query returns the EDFA global analysis result for the average gain, which corresponds to the sum of the gain for all detected channels in the current measurement, divided by the total number of channels. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:GAIN:MEAN?
Parameter(s)	None
Response Syntax	<Mean>
Response(s)	<i>Mean:</i> The response data syntax for <Mean> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Mean> response corresponds to the computed average gain.

:CALCulate[1..n]:EDFa:DATA:GAIN:MEAN?	
Example(s)	<Do measurement> UNIT:RAT DB CALC:EDF:DATA:GAIN:MEAN? Returns 1.654000E+001
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:EDFa:DATA:GAIN:FLATness? :CALCulate[1..n]:EDFa:DATA:GAIN:SLOPe:FREQu ency? :CALCulate[1..n]:EDFa:DATA:GAIN:SLOPe:[WAVE length]?

:CALCulate[1..n]:EDFa:DATA:GAIN:SLOPe: FREQUency?	
Description	This query returns the EDFA global analysis result for the gain slope (tilt) of the linear fit on the gain values of all detected channels, in dB/hz. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:GAIN:SLOPe: FREQUency?
Parameter(s)	None
Response Syntax	<Slope>
Response(s)	<i>Slope:</i> The response data syntax for <Slope> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Slope> response corresponds to the computed gain slope.
Example(s)	<Do measurement> UNIT:RAT DB CALC:EDF:DATA:GAIN:SLOP:FREQ? Returns 3.770000E-012
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:EDFa:DATA:GAIN:FLATness? :CALCulate[1..n]:EDFa:DATA:GAIN:MEAN? :CALCulate[1..n]:EDFa:DATA:GAIN:SLOPe:[WAVE length]?

:CALCulate[1..n]:EDFa:DATA:GAIN:SLOPe[:WAVelength]?	
Description	This query returns the EDFA global analysis result for the gain slope (tilt) of the linear fit on the gain values of all detected channels, in dB/m. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:GAIN:SLOPe[:WAVelength]?
Parameter(s)	None
Response Syntax	<Slope>
Response(s)	<i>Slope:</i> The response data syntax for <Slope> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Slope> response corresponds to the computed gain slope.
Example(s)	<Do measurement> UNIT:RAT DB CALC:EDF:DATA:GAIN:SLOP:WAV? Returns 4.700000E+008
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:EDFa:DATA:GAIN:FLATness? :CALCulate[1..n]:EDFa:DATA:GAIN:MEAN? :CALCulate[1..n]:EDFa:DATA:GAIN:SLOPe:FREQuency?

:CALCulate[1..n]:EDFa:DATA:INPut: SIGnalPower:FLATness?

Description	This query returns the EDFA global analysis result for the input signal power flatness, which corresponds to the difference between the maximum and minimum signal power values of the detected peaks. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:INPut:SIGnalPower:FLATness?
Parameter(s)	None
Response Syntax	<Flatness>
Response(s)	<i>Flatness:</i> The response data syntax for <Flatness> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Flatness> response corresponds to the computed signal power flatness.
Example(s)	<Do measurement> UNIT:RAT DB CALC:EDF:DATA:INP:SIGP:FLAT? Returns 3.664000E+001
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:EDFa:DATA:INPut:SIGnalPower:MEAN? :CALCulate[1..n]:EDFa:DATA:OUTPut:SIGnalPower:FLATness?

:CALCulate[1..n]:EDFa:DATA:INPut:SIGnaPower:MEAN?

Description	This query returns the EDFA global analysis result for the input average signal power, which corresponds to the sum of the signal powers of all the peaks detected in the current acquisition, divided by the total number of peaks. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:INPut:SIGnaPower:MEAN?
Parameter(s)	None
Response Syntax	<Mean>
Response(s)	<i>Mean:</i> The response data syntax for <Mean> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Mean> response corresponds to the computed average signal power.

**:CALCulate[1..n]:EDFa:DATA:INPut:
SIGnaLPower:MEAN?**

Example(s)	<Do measurement> UNIT:POW DBM CALC:EFD:DATA:INP:SIGP:MEAN? Returns -8.590000E+000
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:EDFa:DATA:INPut:SIGnaLPower: FLATness? :CALCulate[1..n]:EDFa:DATA:OUTPut:SIGnaLPower: MEAN?

:CALCulate[1..n]:EDFa:DATA:INPut:TPOWer?	
Description	This query returns the EDFA global analysis result for the input total power, which corresponds to the integrated power of the acquisition window. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:INPut:TPOWer?
Parameter(s)	None
Response Syntax	<Power>
Response(s)	<i>Power:</i> The response data syntax for <Power> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Power> response corresponds to the computed total power of the trace.
Example(s)	<Do measurement> UNIT:POW DBM CALC:EDF:DATA:INP:TPOW? Returns -2.420000E+000
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:EDFa:DATA:OUTPut:TPOWer?

:CALCulate[1..n]:EDFa:DATA:OUTPut: SIGnalPower:FLATness?

Description	This query returns the EDFA global analysis result for the output signal power flatness, which corresponds to the difference between the maximum and minimum signal power values of the detected peaks. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:OUTPut:SIGnalPower:FLATness?
Parameter(s)	None
Response Syntax	<Flatness>
Response(s)	<i>Flatness:</i> The response data syntax for <Flatness> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Flatness> response corresponds to the computed signal power flatness.
Example(s)	<Do measurement> UNIT:RAT DB CALC:EDF:DATA:OUTP:SIGP:FLAT? Returns 3.701000E+001
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:EDFa:DATA:INPut:SIGnalPower:FLATness? :CALCulate[1..n]:EDFa:DATA:OUTPut:SIGnalPower:MEAN?

:CALCulate[1..n]:EDFa:DATA:OUTPut:SIGnaPower:MEAN?	
Description	This query returns the EDFA global analysis result for the output average signal power, which corresponds to the sum of the signal powers of all the peaks detected in the current acquisition, divided by the total number of peaks. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:OUTPut:SIGnaPower:MEAN?
Parameter(s)	None
Response Syntax	<Mean>
Response(s)	Mean: The response data syntax for <Mean> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Mean> response corresponds to the computed average signal power.

**:CALCulate[1..n]:EDFa:DATA:OUTPut:
SIGNALpower:MEAN?**

Example(s)	<Do measurement> UNIT:POW DBM CALC:EDF:DATA:OUTP:SIGP:MEAN? Returns 7.650000E+000
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:EDFa:DATA:INPut:SIGNALpower: MEAN? :CALCulate[1..n]:EDFa:DATA:OUTPut:SIGNALPow er:FLATness?

:CALCulate[1..n]:EDFa:DATA:OUTPut:TPower?

Description	This query returns the EDFA global analysis result for the output total power, which corresponds to the integrated power of the acquisition window. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:EDFa:DATA:OUTPut:TPower?
Parameter(s)	None
Response Syntax	<Power>
Response(s)	<i>Power:</i> The response data syntax for <Power> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Power> response corresponds to the computed total power of the trace.
Example(s)	<Do measurement> UNIT:POW DBM CALC:EDF:DATA:OUTP:TPOW? Returns 1.384000E+001
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:EDFa:DATA:INPut:TPower?

:CALCulate[1..n]:EDFa:OSNR: BANDwidth|BWIDth[:RESolution]

Description	This command sets the custom resolution bandwidth for the OSNR calculation of the EDFA analysis. At *RST, this value is set to 0.100 nm.
Syntax	<pre>:CALCulate[1..n]:EDFa:OSNR:BANDwidth BWIDth[:RESolution] <wsp> <Resolution[<wsp>M]> MAXimum MINimum DEFAULT</pre>
Parameter(s)	<i>Resolution:</i> The program data syntax for <Resolution> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Resolution> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:EDFa:OSNR: BANDwidth | BWIDth[:RESolution]

DEfault allows the instrument to select a value for the <Resolution> parameter.

The <Resolution> parameter corresponds to the custom resolution bandwidth in meters.

The
CALCulate[1..n]:EDFa:OSNR:BANDwidth[RESolu
tion]? MIN and
CALCulate[1..n]:EDFa:OSNR:BANDwidth[RESolu
tion]? MAX queries can be used to determine the
valid resolution bandwidth range.

Example(s)

CALC:EDF:OSNR:BAND:RES:AUTO OFF
CALC:EDF:OSNR:BAND:RES 0.065 NM
CALC:EDF:OSNR:BAND:RES? Returns
6.500000E-011

See Also

:CALCulate[1..n]:EDFa:OSNR:BWIDth | BANDwidth[:RESolution]?
:CALCulate[1..n]:EDFa:OSNR:BWIDth | BANDwidth[:RESolution]:AUTO
:CALCulate[1..n]:EDFa:THReshold
:CALCulate[1..n][:WDM]:OSNR:BWIDth | BANDwidth[:RESolution]

**:CALCulate[1..n]:EDFa:OSNR:
BANDwidth|BWIDth[:RESolution]?**

Description	This query returns a value indicating either the current or the minimum/maximum resolution bandwidth for the OSNR calculation of the EDFA analysis. At *RST, this value is set to 0.100 nm.
Syntax	:CALCulate[1..n]:EDFa:OSNR:BANDwidth BWIDth[:RESolution]?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Resolution>

:CALCulate[1..n]:EDFa:OSNR: BANDwidth BWIDth[:RESolution]?	
Response(s)	<i>Resolution:</i> The response data syntax for <Resolution> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Resolution> response corresponds to either the current or the MINimum/MAXimum resolution bandwidth for OSNR calculation.
Example(s)	CALC:EDF:OSNR:BAND:RES:AUTO OFF CALC:EDF:OSNR:BAND:RES 0.065 NM CALC:EDF:OSNR:BAND:RES? Returns 6.500000E-011
See Also	:CALCulate[1..n]:EDFa:OSNR:BWIDth BANDwidth[:RESolution]:AUTO :CALCulate[1..n]:EDFa:OSNR:BWIDth BANDwidth[:RESolution] :CALCulate[1..n][:WDM]:OSNR:BWIDth BANDwidth[:RESolution]?

:CALCulate[1..n]:EDFa:OSNR: BANDwidth|BWIDth[:RESolution]:AUTO

Description	This command controls the activation of OSNR calculation using auto resolution bandwidth for all channels of the EDFA analysis. At *RST, the auto resolution bandwidth is set to off (disabled).
Syntax	:CALCulate[1..n]:EDFa:OSNR:BANDwidth BWIDth[:RESolution]:AUTO<wsp><Auto>
Parameter(s)	<i>Auto:</i> The program data syntax for <Auto> is defined as a <Boolean Program Data> element. The <Auto> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0.

:CALCulate[1..n]:EDFa:OSNR: BANDwidth|BWIDth[:RESolution]:AUTO

The <Auto> parameter corresponds to the new state of the auto resolution bandwidth for OSNR calculation.

0 or OFF: a custom resolution bandwidth value is used.

1 or ON: the instruments resolution bandwidth is used.

Example(s)

```
CALC:EDF:OSNR:BAND:RES:AUTO ON
CALC:EDF:OSNR:BAND:RES:AUTO? Returns 1
(instrument's RBW enabled)
CALC:EDF:OSNR:BAND:RES 0.100 NM
CALC:EDF:OSNR:BAND:RES:AUTO OFF
CALC:EDF:OSNR:BAND:RES:AUTO? Returns 0
(RBW 0.100 nm enabled)
```

See Also

```
:CALCulate[1..n]:EDFa:OSNR:BWIDth|BANDwidth[:RESolution]
:CALCulate[1..n]:EDFa:OSNR:BWIDth|BANDwidth[:RESolution]:AUTO?
:CALCulate[1..n]:EDFa:THReshold
:CALCulate[1..n][:WDM]:OSNR:BWIDth|BANDwidth[:RESolution]:AUTO?
```

**:CALCulate[1..n]:EDFa:OSNR:
BANDwidth|BWIDth[:RESolution]:AUTO?**

Description	This query returns the activation state of the OSNR calculation using auto resolution bandwidth for all channels of the EDFA analysis. At *RST, the auto resolution bandwidth is set to off (disabled).
Syntax	:CALCulate[1..n]:EDFa:OSNR:BANDwidth BWIDth[:RESolution]:AUTO?
Parameter(s)	None
Response Syntax	<Auto>
Response(s)	<i>Auto:</i> The response data syntax for <Auto> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Auto> response corresponds to the state of the auto resolution bandwidth for OSNR calculation.

:CALCulate[1..n]:EDFa:OSNR: BANDwidth BWIDth[:RESolution]:AUTO?	
	0: a custom resolution bandwidth value is used. 1: the instruments resolution bandwidth is used.
Example(s)	CALC:EDF:OSNR:BAND:RES:AUTO ON CALC:EDF:OSNR:BAND:RES:AUTO? Returns 1 (instrument's RBW enabled)
See Also	:CALCulate[1..n]:EDFa:OSNR:BWIDth BANDwidth[:RESolution] :CALCulate[1..n]:EDFa:OSNR:BWIDth BANDwidth[:RESolution]:AUTO :CALCulate[1..n][:WDM]:OSNR:BWIDth BANDwidth[:RESolution]:AUTO?

:CALCulate[1..n]:EDFa:STATE

Description	This command controls the activation of the Erbium-doped fiber amplifier (EDFA) analysis. Once enabled, the EDFA analysis will be automatically performed following a trace acquisition. In order to be usable by the EDFA analysis, the acquired data shall be stored in trace memory TRC1 and TRC2. TRC1 will contain the input trace, while TRC2 will contain the output trace. At *RST, this value is set to off (disabled).
Syntax	:CALCulate[1..n]:EDFa:STATE<wsp><State>
Parameter(s)	<i>State:</i> The program data syntax for <State> is defined as a <Boolean Program Data> element. The <State> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0. The <State> parameter corresponds to the new state of the EDFA analysis. 0 or OFF: Erbium-doped fiber amplifier analysis is disabled. 1 or ON: Erbium-doped fiber amplifier analysis is enabled.

:CALCulate[1..n]:EDFa:STATe	
Example(s)	CALC:EDF:STAT ON CALC:EDF:STAT? Returns 1 (EDFA analysis enabled)
Notes	EDFAanalysis is available only if software option "Adv" is active. EDFA analysis cannot be disabled: the OFF (0) value is valid for queries only. Only one analysis mode is active at a time. Enabling EDFA analysis automatically disables all other analysis modes.
See Also	:CALCulate[1..n][:WDM]:STATe :CALCulate[1..n]:DFB:STATe :CALCulate[1..n]:EDFa:STATe? :CALCulate[1..n]:FP:STATe :CALCulate[1..n]:ST:STATe :INITiate[:IMMediate] :INITiate:CONTInuous :TRACe:FEED:CONTrol

:CALCulate[1..n]:EDFa:STATe?	
Description	This query indicates if the Erbium-doped fiber amplifier analysis has been enabled or not. At *RST, this value is set to off (disabled).
Syntax	:CALCulate[1..n]:EDFa:STATe?
Parameter(s)	None
Response Syntax	<State>
Response(s)	<i>State:</i> The response data syntax for <State> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <State> response corresponds to the state of the EDFA analysis. 0: EDFA analysis is enabled. 1: EDFA analysis is disabled.
Example(s)	CALC:EDF:STAT? Returns 0 if application mode is not EDFA CALC:EDF:STAT ON CALC:EDF:STAT? Returns 1 (EDFA analysis enabled)
See Also	:CALCulate[1..n][:WDM]:STATe? :CALCulate[1..n]:DFB:STATe? :CALCulate[1..n]:EDFa:STATe :CALCulate[1..n]:FP:STATe? :CALCulate[1..n]:ST:STATe?

:CALCulate[1..n]:EDFa:THReshold	
Description	This command sets the absolute power threshold for the peak detection of the EDFA analysis. At *RST, this value is set to -45.0 dBm.
Syntax	:CALCulate[1..n]:EDFa:THReshold<wsp> <Threshold[<wsp>DBM W]> MAXimum MINimum DEFault
Parameter(s)	<i>Threshold:</i> The program data syntax for <Threshold> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> elements are: DBM W. The <Threshold> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:EDFa:THReshold

DEfault allows the instrument to select a value for the <Threshold> parameter.

The <Threshold> parameter corresponds to the peak detection power level.

The CALCulate[1..n]:EDFa:THReshold? MIN and CALCulate[1..n]:EDFa:THReshold? MAX queries can be used to determine the valid power range.

Example(s)

CALC:EDF:THR -30.00 DBM
UNIT:POW DBM
CALC:EDF:THR? Returns -3.000000E+001

See Also

:CALCulate[1..n]:EDFa:OSNR:BWIDth|BANDwidth[:RESolution]
:CALCulate[1..n]:EDFa:OSNR:BWIDth|BANDwidth[:RESolution]:AUTO
:CALCulate[1..n]:EDFa:THReshold?
:CALCulate[1..n][:WDM]:THReshold

:CALCulate[1..n]:EDFa:THReshold?

Description	This query returns a value indicating either the current or the minimum/maximum absolute power threshold for the peak detection of the EDFA analysis. At *RST, this value is set to -45.0 dBm.
Syntax	:CALCulate[1..n]:EDFa:THReshold?[<wsp>MAXimum MINimum DEFault]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFault. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFault is used to retrieve the instrument's default value.
Response Syntax	<Threshold>

:CALCulate[1..n]:EDFa:THReshold?

Response(s)	<i>Threshold:</i> The response data syntax for <Threshold> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Threshold> response corresponds to either the current or the MINimum/MAXimum peak detection power level value.
Example(s)	CALC:EDF:THR 1.00 UW UNIT:POW W CALC:EDF:THR? Returns 1.000000E-006
See Also	:CALCulate[1..n]:EDFa:THReshold :CALCulate[1..n][:WDM]:THReshold?

:CALCulate[1..n]:FP:DATA:CENTer:FREQUency?	
Description	This query returns the computed Fabry-Perot laser source analysis result for the center-of-mass frequency. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:CENTer:FREQUency?
Parameter(s)	None
Response Syntax	<Center>
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the computed center of mass frequency in hertz.
Example(s)	CALC:FP:STAT ON <Do measurement> CALC:FP:DATA:CENt:FREQ? Returns 1.945600E+014
See Also	:CALCulate[1..n]:FP:DATA:CENTer[:WAVelength] ? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA:CENTer [:WAVelength]?

Description	This query returns the computed Fabry-Perot laser source analysis result for the center-of-mass wavelength. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:CENTer[:WAVelength]?
Parameter(s)	None
Response Syntax	<Center>
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the computed center of mass wavelength in meters.
Example(s)	CALC:FP:STAT ON <Do measurement> CALC:FP:DATA:CEN? Returns 1.401500E-006
See Also	:CALCulate[1..n]:FP:DATA:CENTer:FREQuency? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA: FITWidth[1 2] FWIDth[1 2]: FREQuency?	
Description	This query returns the computed Fabry-Perot laser source analysis result for the spectral frequency width of the Gaussian fit. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:FITWidth[1 2] FWIDth[1 2]:FREQuency?
Parameter(s)	None
Response Syntax	<Width>
Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to the computed frequency width in hertz.

**:CALCulate[1..n]:FP:DATA:
FITWidth[1|2]|FWIDth[1|2]:
FREQuency?**

Example(s)	CALC:FP:STAT ON <Do measurement> CALC:FP:DATA:FITW2:FREQ? Returns 1.330000E+010
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:FP:DATA:FITWidth[1 2] FWIDt h[1 2][:WAVelength]? :CALCulate[1..n]:FP:DATA:FITWidth[1 2] FWIDt h[1 2]:RelativeLEVel? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA:FITWidth[1 2] FWIDth[1 2] [:WAVelength]?	
Description	This query returns the computed Fabry-Perot laser source analysis result for the spectral wavelength width of the Gaussian fit. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:FITWidth[1 2] FWIDth[1 2] [:WAVelength]?
Parameter(s)	None
Response Syntax	<Width>
Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to the computed wavelength width in meters.

**:CALCulate[1..n]:FP:DATA:
FITWidth[1 | 2] | FWIDth[1 | 2]
[:WAVelength]?**

Example(s)	CALC:FP:STAT ON <Do measurement> CALC:FP:DATA:FITW? Returns 4.15300E-009
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:FP:DATA:FITWidth[1 2] FWIDt h[1 2]:FREQuency? :CALCulate[1..n]:FP:DATA:FITWidth[1 2] FWIDt h[1 2]:RelativeLEVel? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA: FITWidth[1 2] FWIDth[1 2]: RelativeLEVel?	
Description	This query indicates the Gaussian fit spectral width position setting used for the Fabry-Perot laser source analysis result. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:FITWidth[1 2] FWIDth[1 2]:RelativeLEVel?
Parameter(s)	None
Response Syntax	<PowerLevel>
Response(s)	<i>PowerLevel:</i> The response data syntax for <PowerLevel> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <PowerLevel> response corresponds to the fit width position.
Example(s)	CALC:FP:STAT ON <Do measurement> UNIT:RAT DB CALC:FP:DATA::FITW2:RLEV? Returns 2.000000E+001
See Also	:CALCulate[1..n]:FP:DATA:FITWidth[1 2] FWIDth[1 2][:WAVelength]? :CALCulate[1..n]:FP:DATA:FITWidth[1 2] FWIDth[1 2]:FREQuency? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA:FWMH:FREQuency?

Description	This query returns the computed Fabry-Perot laser source analysis result for the full width at half-maximum frequency. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:FWMH:FREQuency?
Parameter(s)	None
Response Syntax	<Width>
Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to the computed full width at half-maximum position in hertz.
Example(s)	CALC:FP:STAT ON <Do measurement> CALC:FP:DATA:FWMH:FREQ? Returns 5.700000E+009
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:FP:FWMH[:WAVelength]? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA:FWMH[:WAVelength]?	
Description	This query returns the computed Fabry-Perot laser source analysis result for the full width at half-maximum wavelength. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:FWMH[:WAVelength]?
Parameter(s)	None
Response Syntax	<Width>
Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to the computed full width at half-maximum position in meters.
Example(s)	CALC:FP:STAT ON <Do measurement> CALC:FP:DATA:FWMH? Returns 1.123000E-09
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:FP:DATA:FWMH:FREQuency? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA:GAUSfiterror?

Description	This query returns the computed Fabry-Perot laser source analysis result for the normalized root-mean-square error factor in the Gaussian fit. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:GAUSfiterror?
Parameter(s)	None
Response Syntax	<Error>
Response(s)	<i>Error:</i> The response data syntax for <Error> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Error> response corresponds to the Gaussian fit error factor.
Example(s)	CALC:FP:STAT ON <Do measurement> UNIT:RAT DB CALC:FP:DATA:GAUS? Returns 0.33000E+000
See Also	:CALCulate[1..n]:FP:DATA:FITWidth[1 2] FWIDTH[1 2]:WAVelength? :CALCulate[1..n]:FP:DATA:FITWidth[1 2] FWIDTH[1 2]:FREQuency? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA:MTSM:FREQuency?	
Description	This query returns the computed Fabry-Perot laser source analysis result for the frequency MTSM. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:MTSM:FREQuency?
Parameter(s)	None
Response Syntax	<Width>
Response(s)	Width: The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to the computed frequency MTSM in hertz.
Example(s)	CALC:FP:STAT ON <Do measurement> CALC:FP:DATA:MTSM:FREQ? Returns 1.480000E+010
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:FP:DATA:MTSM[:WAVelength]? :CALCulate[1..n]:FP:DATA:MTSM:RelativeLEVel? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA:MTSM[:WAVelength]?	
Description	This query returns the computed Fabry-Perot laser source analysis result for the wavelength MTSM. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:MTSM[:WAVelength]?
Parameter(s)	None
Response Syntax	<Width>
Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to the computed wavelength MTSM in meters.
Example(s)	CALC:FP:STAT ON <Do measurement> CALC:FP:DATA:MTSM? Returns 5.48700E-009
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:FP:DATA:MTSM:FREQuency? :CALCulate[1..n]:FP:DATA:MTSM:RelativeLEVel? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA:MTSM:RelativeLEVEL?	
Description	This query indicates the MTSM position setting used for the Fabry-Perot laser source analysis result. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:MTSM:RelativeLEVEL?
Parameter(s)	None
Response Syntax	<PowerLevel>
Response(s)	<i>PowerLevel</i>: The response data syntax for <PowerLevel> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <PowerLevel> response corresponds to the MTSM position.
Example(s)	CALC:FP:STAT ON <Do measurement> UNIT:RAT DB CALC:FP:DATA:MTSM:RLEV? Returns 1.000000E+001
See Also	:CALCulate[1..n]:FP:DATA:MTSM[:WAVelength]? :CALCulate[1..n]:FP:DATA:MTSM:FREQuency? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA:MSPAcing:FREQuency?

Description	This query returns the computed Fabry-Perot laser source analysis result for the average frequency spacing between adjacent modes. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:MSPAcing:FREQuency?
Parameter(s)	None
Response Syntax	<Spacing>
Response(s)	<i>Spacing:</i> The response data syntax for <Spacing> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Spacing> response corresponds to the computed mode spacing in hertz.
Example(s)	CALC:FP:STAT ON <Do measurement> CALC:FP:DATA:MSPA:FREQ? Returns 5.700000E+009
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:FP:DATA:MSPAcing[:WAVelength]? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA:MSPacing[:WAVelength]?	
Description	This query returns the computed Fabry-Perot laser source analysis result for the average wavelength spacing between adjacent modes. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:MSPacing[:WAVelength]?
Parameter(s)	None
Response Syntax	<Spacing>
Response(s)	<i>Spacing:</i> The response data syntax for <Spacing> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Spacing> response corresponds to the computed mode spacing in meters.
Example(s)	CALC:FP:STAT ON <Do measurement> CALC:FP:DATA:MSPA? Returns 1.123000E-09
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:FP:DATA:MSPACing:FREQuency? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA:POWer?	
Description	This query returns the computed Fabry-Perot laser source analysis result for the integrated power from the first detected mode to the last detected mode. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:POWer?
Parameter(s)	None
Response Syntax	<Power>
Response(s)	<i>Power:</i> The response data syntax for <Power> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Power> response corresponds to the computed total power.
Example(s)	CALC:FP:STAT ON <Do measurement> UNIT:POW DBM CALC:FP:DATA:POW? Returns -1.199000E+001
See Also	:CALCulate[1..n]:FP:DATA:TPOWer? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA:PEAKmode PMODE:FREQUENCY?	
Description	This query returns the computed Fabry-Perot laser source analysis result for the peak mode frequency. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:PEAKmode PMODE:FREQUENCY?
Parameter(s)	None
Response Syntax	<Position>
Response(s)	<i>Position:</i> The response data syntax for <Position> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Position> response corresponds to the peak mode spectral position in hertz.
Example(s)	CALC:FP:STAT ON <Do measurement> CALC:FP:DATA:PEAK:FREQ? Returns 1.944500E+014
See Also	:CALCulate[1..n]:FP:DATA:PEAKmode PMODE[:WAVelength]? :CALCulate[1..n]:FP:DATA:PEAKmode PMODE:POWER? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA: PEAKmode|PMODE[:WAVelength]?

Description	This query returns the computed Fabry-Perot laser source analysis result for the peak mode wavelength. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:PEAKmode PMODE[:WAVelength]?
Parameter(s)	None
Response Syntax	<Position>
Response(s)	<i>Position:</i> The response data syntax for <Position> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Position> response corresponds to the peak mode spectral position in meters.
Example(s)	CALC:FP:STAT ON <Do measurement> CALC:FP:DATA:PEAK? Returns 1.529123E-006
See Also	:CALCulate[1..n]:FP:DATA:PEAKmode PMODE:FREQuency? :CALCulate[1..n]:FP:DATA:PEAKmode PMODE:POWER? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA:PEAKmode PMODE:POWer?	
Description	This query returns the computed Fabry-Perot laser source analysis result for the peak mode power. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:PEAKmode PMODE:POWer?
Parameter(s)	None
Response Syntax	<Power>
Response(s)	<i>Power:</i> The response data syntax for <Power> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Power> response corresponds to the peak mode power.
Example(s)	CALC:FP:STAT ON <Do measurement> UNIT:POWER DBM CALC:FP:DATA:PEAK:POW? Returns -1.33000E+001
See Also	:CALCulate[1..n]:FP:DATA:PEAKmode PMODE[:WAVelength]? :CALCulate[1..n]:FP:DATA:PEAKmode PMODE:FREQuency? :CALCulate[1..n]:FP:DATA:POWer? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA:RMSWidth:FREQuency?	
Description	This query returns the computed Fabry-Perot laser source analysis result for the root-mean-square spectral frequency width (the second moment of the spectral distribution). At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:RMSWidth:FREQuency?
Parameter(s)	None
Response Syntax	<Width>
Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to the computed RMS width in hertz.
Example(s)	CALC:FP:STAT ON <Do measurement> CALC:FP:DATA:RMSW:FREQ? Returns 5.700000E+009
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:FP:RMSWidth[:WAVelength]? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA:RMSWidth[:WAVelength]?	
Description	This query returns the computed Fabry-Perot laser source analysis result for the root-mean-square spectral wavelength width (the second moment of the spectral distribution). At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:RMSWidth[:WAVelength]?
Parameter(s)	None
Response Syntax	<Width>
Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to the computed RMS width in meters.
Example(s)	CALC:FP:STAT ON <Do measurement> CALC:FP:DATA:RMSW? Returns 1.767000E-09
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:FP:DATA:RMSWidth:FREQuency? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA:TPOWer?

Description	This query returns the computed Fabry-Perot laser source analysis result for the total integrated power of the acquisition window. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:FP:DATA:TPOWer?
Parameter(s)	None
Response Syntax	<Power>
Response(s)	<i>Power:</i> The response data syntax for <Power> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Power> response corresponds to the computed total power.
Example(s)	CALC:FP:STAT ON <Do measurement> UNIT:POW DBM CALC:FP:DATA:TPOW? Returns -1.195000E+001
See Also	:CALCulate[1..n]:FP:DATA:POWer? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:STATe	
Description	This command controls the activation of the Fabry-Perot laser source analysis. Once enabled, the Fabry-Perot laser source analysis will be automatically performed following a trace acquisition. In order to be usable by the Fabry-Perot laser source analysis, the acquired data shall be stored in trace memory TRC1. At *RST, this value is set to off (disabled).
Syntax	:CALCulate[1..n]:FP:STATe<wsp><State>
Parameter(s)	<i>State:</i> The program data syntax for <State> is defined as a <Boolean Program Data> element. The <State> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0. The <State> parameter corresponds to the new state of the Fabry-Perot laser source analysis. 0 or OFF: Fabry-Perot laser source analysis is disabled. 1 or ON: Fabry-Perot laser source analysis is enabled.

:CALCulate[1..n]:FP:STATe

Example(s)	CALC:FP:STAT ON CALC:FP:STAT? Returns 1 (Fabry-Perot laser source analysis enabled)
Notes	Fabry-Perot laser source analysis is available only if software option "Adv" is active. Fabry-Perot laser source analysis cannot be disabled: the OFF (0) value is valid for queries only. Only one analysis mode is active at a time. Enabling Fabry-Perot laser source analysis automatically disables all other analysis modes.
See Also	:CALCulate[1..n][:WDM]:STATe :CALCulate[1..n]:DFB:STATe :CALCulate[1..n]:FP:STATe? :CALCulate[1..n]:ST:STATe :INITiate[:IMMediate] :INITiate:CONTInuous :TRACe:FEED:CONTrol

:CALCulate[1..n]:FP:STATe?	
Description	This query indicates if the Fabry-Perot laser source analysis has been enabled or not. At *RST, this value is set to off (disabled).
Syntax	:CALCulate[1..n]:FP:STATe?
Parameter(s)	None
Response Syntax	<State>
Response(s)	<i>State:</i> The response data syntax for <State> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <State> response corresponds to the state of the Fabry-Perot laser source analysis. 0: Fabry-Perot laser source analysis is enabled. 1: Fabry-Perot laser source analysis is disabled.
Example(s)	CALC:FP:STAT? Returns 0 if application mode is not FP source CALC:FP:STAT ON CALC:FP:STAT? Returns 1 (Fabry-Perot laser source analysis enabled)
See Also	:CALCulate[1..n][:WDM]:STATe? :CALCulate[1..n]:DFB:STATe? :CALCulate[1..n]:FP:STATe :CALCulate[1..n]:ST:STATe?

:CALCulate[1..n]:MARKer[1|2]:AOFF

Description	This command turns all markers off. This command is an event and has no associated *RST condition or query form.
Syntax	:CALCulate[1..n]:MARKer[1 2]:AOFF
Parameter(s)	None
Example(s)	CALC:MARK1:STAT ON CALC:MARK1:STAT? Returns 1 (Marker 1 enabled) CALC:MARK2:STAT ON CALC:MARK2:STAT? Returns 1 (Marker 2 enabled) CALC:MARK:AOFF CALC:MARK1:STAT? Returns 0 (Marker 1 disabled) CALC:MARK2:STAT? Returns 0 (Marker 2 disabled)
Notes	SCPI markers are independant of the user graphical interface markers.
See Also	:CALCulate[1..n]:MARKer[1 2][:STATe] :CALCulate[1..n]:MARKer[1 2][:STATe?]

:CALCulate[1..n]:MARKer[1 2]:FUNCTION	
Description	This command selects the measurement function of a marker. At *RST, this value is set to OFF.
Syntax	:CALCulate[1..n]:MARKer[1 2]:FUNCTION<wsp> IPOWer OFF
Parameter(s)	<i>Function:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: IPOWer OFF. The parameter corresponds to the newly selected measurement function. IPOWer: selects computing of the integrated power between the marker and its reference marker. OFF: turns off marker measurement.

:CALCulate[1..n]:MARKer[1 2]: FUNCTION	
Example(s)	CALC:MARK1:STAT ON CALC:MARK2:STAT ON CALC:MARK2:MODE DELT CALC:MARK2:REF 1 CALC:MARK:FUNC IPOW CALC:MARK:FUNC? Returns IPOW
Notes	Computing of the IPOWer function is possible only if the target marker is configured for delta measurement.
See Also	:CALCulate[1..n]:MARKer[1 2][:STATe] :CALCulate[1..n]:MARKer[1 2]:FUNCTION? :CALCulate[1..n]:MARKer[1 2]:FUNCTION:DATA? :CALCulate[1..n]:MARKer[1 2]:MODE

:CALCulate[1..n]:MARKer[1 2]:FUNCTION?	
Description	This query returns the selected measurement function of a marker. At *RST, this value is set to OFF.
Syntax	:CALCulate[1..n]:MARKer[1 2]:FUNCTION?
Parameter(s)	None
Response Syntax	<Function>
Response(s)	<i>Function:</i> The response data syntax for <Function> is defined as a <CHARACTER RESPONSE DATA> element. The <Function> response corresponds to the selected measurement function. IPOWER: integrated power computing is selected. OFF: marker measurement is disabled.
Example(s)	CALC:MARK2:STAT ON CALC:MARK2:FUNC? Returns OFF
See Also	:CALCulate[1..n]:MARKer[1 2][:STATe] :CALCulate[1..n]:MARKer[1 2]:FUNCTION :CALCulate[1..n]:MARKer[1 2]:FUNCTION:DATA? :CALCulate[1..n]:MARKer[1 2]:MODE

:CALCulate[1..n]:MARKer[1|2]: FUNCTION:DATA?

Description	This query returns the computed result for the active measurement function of a marker. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:MARKer[1 2]:FUNCTION:DATA?
Parameter(s)	None
Response Syntax	<Data>
Response(s)	<i>Data:</i> The response data syntax for <Data> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Data> response corresponds to the computed result for the marker measurement function.
Example(s)	<pre> <Do measurement> CALC:MARK1:STAT ON CALC:MARK2:STAT ON CALC:MARK1:TRAC "TRC1" CALC:MARK2:TRAC "TRC1" CALC:MARK1:X:WAV 1525 NM CALC:MARK2:X:WAV 1550 NM CALC:MARK2:MODE DELT CALC:MARK2:REF 1 CALC:MARK:FUNC IPOW CALC:MARK:FUNC:DATA? Returns -3.306000E+001 </pre>

:CALCulate[1..n]:MARKer[1 2]: FUNction:DATA?	
Notes	Special NAN (not a number) value -2251799813685248 is returned if result could not be computed.
See Also	:CALCulate[1..n]:MARKer[1 2][:STATe] :CALCulate[1..n]:MARKer[1 2]:FUNction :CALCulate[1..n]:MARKer[1 2]:MODE :CALCulate[1..n]:MARKer[1 2]:REFerence :CALCulate[1..n]:MARKer[1 2]:TRACe :CALCulate[1..n]:MARKer[1 2]:X:[Wavelength] :CALCulate[1..n]:MARKer[1 2]:X:Frequency

:CALCulate[1..n]:MARKer[1 | 2]:MODE

Description	This command selects the mode of a marker. At *RST, this value is set to POS.
Syntax	:CALCulate[1..n]:MARKer[1 2]:MODE<wsp>PO Sition DELTA
Parameter(s)	<i>Mode:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: POSition DELTA. The parameter corresponds to the newly selected mode. POSition: selects a marker tied to an absolute trace point. DELTA: selects a range marker. A range marker is linked to another marker. CALCulate:MARKer:REference determines which marker the current marker is referenced to.
Example(s)	CALC:MARK:STAT ON CALC:MARK:MODE DELT
See Also	:CALCulate[1..n]:MARKer[1 2]::STATe] :CALCulate[1..n]:MARKer[1 2]:FUNCTion :CALCulate[1..n]:MARKer[1 2]:MODE? :CALCulate[1..n]:MARKer[1 2]:REference

:CALCulate[1..n]:MARKer[1|2]:MODE?

Description	This query returns the selected mode of a marker. At *RST, this value is set to POS.
Syntax	:CALCulate[1..n]:MARKer[1 2]:MODE?
Parameter(s)	None
Response Syntax	<Mode>
Response(s)	<i>Mode:</i> The response data syntax for <Mode> is defined as a <CHARACTER RESPONSE DATA> element. The <Mode> response corresponds to the selected marker mode. POStion: the marker is tied to an absolute trace point. DELTA: the marker is linked to another marker.
Example(s)	CALC:MARK2:STAT ON CALC:MARK2:MODE? Returns POS
See Also	:CALCulate[1..n]:MARKer[1 2][:STATe] :CALCulate[1..n]:MARKer[1 2]:FUNction :CALCulate[1..n]:MARKer[1 2]:MODE :CALCulate[1..n]:MARKer[1 2]:REFerence

:CALCulate[1..n]:MARKer[1|2]: REFerence

Description

This command sets the one-based index of the reference marker of a marker.

At *RST, there is no selection: this value is set to 0.

Syntax

:CALCulate[1..n]:MARKer[1|2]:REFerence<wsp>
><Reference>|MAXimum|MINimum

Parameter(s)

Reference:

The program data syntax for <Reference> is defined as a <numeric_value> element. The <Reference> special forms MINimum and MAXimum are accepted on input.

MINimum allows to set the instrument to the smallest supported value.

MAXimum allows to set the instrument to the greatest supported value.

The <Reference> parameter corresponds to a valid marker index to select. The marker index cannot be zero.

:CALCulate[1..n]:MARKer[1 2]: REFerence	
Example(s)	CALC:MARK:STAT ON CALC:MARK2:STAT ON CALC:MARK:REF 2
Notes	Currently supported marker indexes are 1 and 2.
See Also	:CALCulate[1..n]:MARKer[1 2][:STATe] :CALCulate[1..n]:MARKer[1 2]:FUNCTion :CALCulate[1..n]:MARKer[1 2]:MODE :CALCulate[1..n]:MARKer[1 2]:REFerence?

:CALCulate[1..n]:MARKer[1 2]:REference?	
Description	This query returns the one-based index of the reference marker of a marker. At *RST, there is no selection: this value is set to 0.
Syntax	:CALCulate[1..n]:MARKer[1 2]:REference?
Parameter(s)	None
Response Syntax	<Reference>
Response(s)	<i>Reference:</i> The response data syntax for <Reference> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Reference> response corresponds to the index of the reference marker. Zero is returned if no reference marker has been selected.
Example(s)	CALC:MARK:STAT ON CALC:MARK2:STAT ON CALC:MARK:REF? Returns 0 (no selection) CALC:MARK:REF 2 CALC:MARK:REF? Returns 2
See Also	:CALCulate[1..n]:MARKer[1 2][:STATe] :CALCulate[1..n]:MARKer[1 2]:FUNCTion :CALCulate[1..n]:MARKer[1 2]:MODE :CALCulate[1..n]:MARKer[1 2]:REference

:CALCulate[1..n]:MARKer[1 2] [:STATe]	
Description	This command controls the activation of the specified marker. At *RST, this value is set to off (disabled) for all markers.
Syntax	:CALCulate[1..n]:MARKer[1 2][:STATe] <wsp> <State>
Parameter(s)	<i>State:</i> The program data syntax for <State> is defined as a <Boolean Program Data> element. The <State> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0. The <State> parameter corresponds to the new state of a marker. 0 or OFF: the specified marker is disabled. 1 or ON: the specified marker is enabled.

:CALCulate[1..n]:MARKer[1|2] [:STATe]

Example(s)	CALC:MARK2 ON CALC:MARK2? Returns 1 (Marker #2 is enabled)
See Also	:CALCulate[1..n][:WDM]:STATe :CALCulate[1..n]:DFB:STATe :CALCulate[1..n]:FP:STATe :CALCulate[1..n]:MARKer[1 2][:STATe]? :CALCulate[1..n]:MARKer[1 2]:AOFF :CALCulate[1..n]:MARKer[1 2]:TRACe :CALCulate[1..n]:ST:STATe :INITiate[:IMMediate] :INITiate:CONTInuous :TRACe:FEED:CONTrol

:CALCulate[1..n]:MARKer[1 2] [:STATe]?	
Description	This query indicates if the specified marker has been enabled or not. At *RST, this value is set to off (disabled) for all markers.
Syntax	:CALCulate[1..n]:MARKer[1 2][:STATe]?
Parameter(s)	None
Response Syntax	<State>
Response(s)	<i>State:</i> The response data syntax for <State> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <State> response corresponds to the state of the specified marker. 0: marker is disabled. 1: marker is enabled.
Example(s)	CALC:MARK:AOff CALC:MARK2:STAT? Returns 0 (Marker #2 is disabled) CALC:MARK2 ON CALC:MARK1? Returns 0 (Marker #1 is disabled) CALC:MARK2? Returns 1 (Marker #2 is enabled)
See Also	:CALCulate[1..n][:WDM]:STATe? :CALCulate[1..n]:DFB:STATe? :CALCulate[1..n]:FP:STATe? :CALCulate[1..n]:MARKer[1 2][:STATe] :CALCulate[1..n]:ST:STATe?

:CALCulate[1..n]:MARKer[1 2]:TRACe	
Description	This command assigns a marker to the specified trace. At *RST, there is no assignment: a single null string is returned.
Syntax	:CALCulate[1..n]:MARKer[1 2]:TRACe<wsp><TraceName>
Parameter(s)	<i>TraceName:</i> The program data syntax for <TraceName> is defined as a <STRING PROGRAM DATA> element. The <TraceName> parameter corresponds to the name of the trace.
Example(s)	<pre>TRAC:FEED:CONT "TRC1", NEXT <Do measurement> CALC:MARK1 ON CALC:MARK1:TRAC "TRC1"</pre>
Notes	Valid trace names are "TRC1" and "TRC2".
See Also	<pre>:CALCulate[1..n]:MARKer[1 2][:STATe] :CALCulate[1..n]:MARKer[1 2]:TRACe? :CALCulate[1..n]:MARKer[1 2]:X:[Wavelength] :CALCulate[1..n]:MARKer[1 2]:X:Frequency :INITiate[:IMMediate] :INITiate:CONTinuous :TRACe:FEED:CONTrol?</pre>

:CALCulate[1..n]:MARKer[1 2]:TRACe?	
Description	This query returns the name of the trace to which a marker is assigned. At *RST, there is no assignment: a single null string is returned.
Syntax	:CALCulate[1..n]:MARKer[1 2]:TRACe?
Parameter(s)	None
Response Syntax	<TraceName>
Response(s)	<i>TraceName:</i> The response data syntax for <TraceName> is defined as a <STRING RESPONSE DATA> element. The <TraceName> response corresponds to the name of the trace.
Example(s)	CALC:MARK2 ON CALC:MARK2:TRAC "TRC1" CALC:MARK2:TRAC? Returns "TRC1"
Notes	Valid trace names are "TRC1" and "TRC2".
See Also	:CALCulate[1..n]:MARKer[1 2][:STATe] :CALCulate[1..n]:MARKer[1 2]:TRACe :CALCulate[1..n]:MARKer[1 2]:X:[Wavelength] :CALCulate[1..n]:MARKer[1 2]:X:Frequency

:CALCulate[1..n]:MARKer[1|2]:X:FREQUENCY

Description

This command sets the absolute frequency position of a marker on its assigned trace. The marker is positioned on the nearest trace point relative to the provided value.

At *RST, this value is not available.

Syntax

:CALCulate[1..n]:MARKer[1|2]:X:FREQUENCY<wsp><Position[<wsp>HZ]>|MAXimum|MINimum|DEFAULT

Parameter(s)

Position:

The program data syntax for <Position> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Position> special forms MINimum, MAXimum and DEFAULT are accepted on input.

MINimum allows to set the instrument to the smallest supported value.

MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:MARKer[1|2]:X:FREQUENCY

Default allows the instrument to select a value for the <Position> parameter.

The <Position> parameter corresponds to a valid frequency in hertz.

The
CALCulate[1..n]:MARKer[1|2]:X:FREQUENCY?
MIN and
CALCulate[1..n]:MARKer[1|2]:X:FREQUENCY?
MAX queries can be used to determine valid
frequency range.

Example(s)

```
TRAC:FEED:CONT "TRC1", NEXT
<Do measurement>
CALC:MARK1 ON
CALC:MARK1:TRAC "TRC1"
CALC:MARK1:X:FREQ? MIN Returns
1.909506E+014
CALC:MARK1:X:FREQ? MAX Returns
2.060429E+014
```

```
CALC:MARK1:X:FREQ 193.9629 THZ
```

Notes

Trace data is available only if a trace analysis was performed.

See Also

```
:CALCulate[1..n]:MARKer[1|2]::STATe]
:CALCulate[1..n]:MARKer[1|2]:TRACe
:CALCulate[1..n]:MARKer[1|2]:X:[Wavelength]
:CALCulate[1..n]:MARKer[1|2]:X:Frequency?
:CALCulate[1..n]:MARKer[1|2]:Y?
```

:CALCulate[1..n]:MARKer[1|2]:X:FREQuency?

Description	This query returns the absolute frequency position of a marker on its assigned trace. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:MARKer[1 2]:X:FREQuency?
Parameter(s)	None
Response Syntax	<Position>
Response(s)	<i>Position:</i> The response data syntax for <Position> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Position> response corresponds to the markers X-axis frequency position expressed in hertz.
Example(s)	CALC:MARK ON CALC:MARK:TRAC "TRC2" CALC:MARK:X:FREQ 192 THZ CALC:MARK:X:FREQ? Returns 1.920001E+014 (Nearest trace point)
Notes	Trace data is available only if a trace analysis was performed.
See Also	:CALCulate[1..n]:MARKer[1 2]::STATe] :CALCulate[1..n]:MARKer[1 2]:TRACe :CALCulate[1..n]:MARKer[1 2]:X:[Wavelength]? :CALCulate[1..n]:MARKer[1 2]:X:Frequency :CALCulate[1..n]:MARKer[1 2]:Y?

:CALCulate[1..n]:MARKer[1 2]:X[:WAVelength]	
Description	This command sets the absolute wavelength position of a marker on its assigned trace. The marker is positionned on the nearest trace point relative to the provided value. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:MARKer[1 2]:X[:WAVelength] <wsp> <Position[<wsp>M] > MAXimum MINimum DEFault
Parameter(s)	<i>Position:</i> The program data syntax for <Position> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Position> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:MARKer[1|2]:X[:WAVelength]

DEfault allows the instrument to select a value for the <Position> parameter.

The <Position> parameter corresponds to a valid wavelength in meters.

The
CALCulate[1..n]:MARKer[1|2]:X[:WAVelength]?
MIN and
CALCulate[1..n]:MARKer[1|2]:X[:WAVelength]?
MAX queries can be used to determine valid
wavelength range.

Example(s)

TRAC:FEED:CONT "TRC1", NEXT
<Do measurement>
CALC:MARK1 ON
CALC:MARK1:TRAC "TRC1"
CALC:MARK1:X? MIN Returns 1.455000E-006
CALC:MARK1:X? MAX Returns 1.570000E-006
CALC:MARK1:X 1545 NM

Notes

Trace data is available only if a trace analysis was performed.

See Also

:CALCulate[1..n]:MARKer[1|2][:STATe]
:CALCulate[1..n]:MARKer[1|2]:TRACe
:CALCulate[1..n]:MARKer[1|2]:X:[Wavelength]?
:CALCulate[1..n]:MARKer[1|2]:X:Frequency
:CALCulate[1..n]:MARKer[1|2]:Y?

:CALCulate[1..n]:MARKer[1 2]:X[:WAVelength]?	
Description	This query returns the absolute wavelength position of a marker on its assigned trace. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:MARKer[1 2]:X[:WAVelength]?
Parameter(s)	None
Response Syntax	<Position>
Response(s)	<i>Position:</i> The response data syntax for <Position> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Position> response corresponds to the markers X-axis wavelength position expressed in meters.
Example(s)	CALC:MARK ON CALC:MARK:TRAC "TRC2" CALC:MARK:X 1525 NM CALC:MARK:X? Returns 1.525002E-006 (Nearest trace point)
Notes	Trace data is available only if a trace analysis was performed.
See Also	:CALCulate[1..n]:MARKer[1 2][:STATe] :CALCulate[1..n]:MARKer[1 2]:TRACe :CALCulate[1..n]:MARKer[1 2]:X[:WAVelength] :CALCulate[1..n]:MARKer[1 2]:X:Frequency? :CALCulate[1..n]:MARKer[1 2]:Y?

:CALCulate[1..n]:MARKer[1|2]:Y?

Description	This query returns the current Y value of a marker on its assigned trace. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:MARKer[1 2]:Y?
Parameter(s)	None
Response Syntax	<Data>
Response(s)	<i>Data:</i> The response data syntax for <Data> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Data> response corresponds to the Y-axis value of the trace at marker current X-axis position. The value unit is determined by the trace definition context. When trace data represents absolute power, returned values are in dBm. When trace data represents relative power, returned values are in dB.

:CALCulate[1..n]:MARKer[1 2]:Y?	
Example(s)	TRAC:FEED:CONT "TRC1", NEXT <Do measurement> CALC:MARK2 ON CALC:MARK2:TRAC "TRC1" CALC:MARK2:X 1525 NM CALC:MARK2:X? 1.525002E-006 CALC:MARK2:Y? Returns -2.968000E+001
Notes	Trace data is available only if a trace analysis was performed.
See Also	:CALCulate[1..n]:MARKer[1 2][:STATe] :CALCulate[1..n]:MARKer[1 2]:TRACe :CALCulate[1..n]:MARKer[1 2]:X:[Wavelength] :CALCulate[1..n]:MARKer[1 2]:X:Frequency :TRACe[:DATA][:Y][:WAVelength]?

:CALCulate[1..n]:ST: BANDwidth[1 2] BWIDth[1 2]: RelativeLEVel	
Description	This command sets the bandwidth position for the spectral transmittance analysis. The bandwidth position is the power level relative to the peak maximum where the signal bandwidth of a channel is computed.
Syntax	At *RST, this value is set to 1.0 dB for bandwidth1 and 3.0 dB for bandwidth2. :CALCulate[1..n]:ST:BANDwidth[1 2] BWIDth[1 2]:RelativeLEVel<wsp><PowerLevel[<wsp>DB W/W PCT]> MAXimum MINimum DEFault
Parameter(s)	<i>PowerLevel:</i> The program data syntax for <PowerLevel> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> elements are: DB W/W PCT. The <PowerLevel> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

	:CALCulate[1..n]:ST: BANDwidth[1 2] BWIDth[1 2]: RelativeLEVel
	DEfault allows the instrument to select a value for the <PowerLevel> parameter. The <PowerLevel> parameter corresponds to a valid bandwidth position value. The CALCulate[1..n]:ST:BANDwidth? MIN and CALCulate[1..n]:ST:BANDwidth? MAX queries can be used to determine valid bandwidth position range.
Example(s)	CALC:ST:BWID2:RLEV 4.5 DB CALC:ST:BWID2:RLEV? Returns: 4.500000E+000
See Also	:CALCulate[1..n]:ST:BWIDth[1 2] BANDwidth[1 2]:RelativeLEVel? :CALCulate[1..n]:ST:DATA:BWIDth[1 2] BANDwidth[1 2]:FREQuency? :CALCulate[1..n]:ST:DATA:BWIDth[1 2] BANDwidth[1 2][:WAVelength]?

:CALCulate[1..n]:ST: BANDwidth[1 2] BWIDth[1 2]: RelativeLEVel?	
Description	This query returns the bandwidth position for the spectral transmittance analysis. At *RST, this value is set to 1.0 dB for bandwidth1 and 3.0 dB for bandwidth2.
Syntax	:CALCulate[1..n]:ST:BANDwidth[1 2] BWIDth[1 2]:RelativeLEVel?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<PowerLevel>

:CALCulate[1..n]:ST: BANDwidth[1 2] BWIDth[1 2]: RelativeLEVel?	
Response(s)	<i>PowerLevel:</i> The response data syntax for <PowerLevel> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <PowerLevel> response corresponds to either the current or the MINimum/MAXimum bandwidth position value.
Example(s)	CALC:ST:BWID2:RLEV 4.5 DB CALC:ST:BWID2:RLEV? Returns: 4.500000E+000
See Also	:CALCulate[1..n]:ST:BWIDth[1 2] BANDwidth[1 2]:RelativeLEVel :CALCulate[1..n]:ST:DATA:BWIDth[1 2] BANDwidth[1 2]:FREQuency? :CALCulate[1..n]:ST:DATA:BWIDth[1 2] BANDwidth[1 2][:WAVelength]?

:CALCulate[1..n]:ST:CHANnel:CENTer: AUTO

Description

This command controls the activation of the automatic channel center definition for spectral transmittance analysis.

When enabled (:AUTO set to ON), the channel center is automatically determined by analysis based on the state of the snap channel on the ITU grid and the configured channel spacing. When disabled, the channel center must be manually set using the :CENTer:FREQuency or :CENTer[:WAVelength] commands.

At *RST, this value is set to on (enabled).

Syntax

:CALCulate[1..n]:ST:CHANnel:CENTer:AUTO<wsp> <Auto>

Parameter(s)

Auto:

The program data syntax for <Auto> is defined as a <Boolean Program Data> element. The <Auto> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0.

:CALCulate[1..n]:ST:CHANnel:CENTer: AUTO

The <Auto> parameter corresponds to the new state of the automatic channel center definition.

0 or OFF: disables automatic channel center definition.

1 or ON: enables automatic channel center definition.

Example(s)

CALC:ST:CHAN:CENt:AUTO ON
CALC:ST:CHAN:CENt:AUTO? Returns: 1 (auto center enabled)

See Also

:CALCulate[1..n]:ST:CHANnel:CENTer:AUTO?
:CALCulate[1..n]:ST:CHANnel:CENTer:FREQuency
:CALCulate[1..n]:ST:CHANnel:CENTer:ITUGrid
:CALCulate[1..n]:ST:CHANnel:CENTer[:WAVElength]

:CALCulate[1..n]:ST:CHANnel:CENTer: AUTO?

Description	This query indicates if automatic channel center definition is enabled for spectral transmittance analysis. At *RST, this value is set to on (enabled).
Syntax	:CALCulate[1..n]:ST:CHANnel:CENTer:AUTO?
Parameter(s)	None
Response Syntax	<Auto>
Response(s)	<i>Auto:</i> The response data syntax for <Auto> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Auto> response corresponds to the state of the automatic channel center definition.

:CALCulate[1..n]:ST:CHANnel:CENTer: AUTO?

0: automatic channel center definition is disabled.

1: automatic channel center definition is enabled.

Example(s)

CALC:ST:CHAN:CENt:AUTO OFF

CALC:ST:CHAN:CENt:AUTO? Returns: 0 (auto center disabled)

See Also

:CALCulate[1..n]:ST:CHANnel:CENTer:AUTO

:CALCulate[1..n]:ST:CHANnel:CENTer:FREQuency?

:CALCulate[1..n]:ST:CHANnel:CENTer:ITUGrid?

:CALCulate[1..n]:ST:CHANnel:CENTer[:WAVElength]?

:CALCulate[1..n]:ST:CHANnel:CENTer: FREQuency

Description	This command sets the nominal center frequency of the channel definition for spectral transmittance analysis. At *RST, default center frequency is set to 193.1000 THz.
Syntax	:CALCulate[1..n]:ST:CHANnel:CENTer:FREQuency<wsp><Center[<wsp>HZ]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Center:</i> The program data syntax for <Center> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Center> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:ST:CHANnel:CENTer: FREQuency

DEfault allows the instrument to select a value for the <Center> parameter.

The <Center> parameter corresponds to a valid channel center frequency in hertz.

The
CALCulate[1..n]:ST:CHANnel:CENTer:FREQuency? MIN and
CALCulate[1..n]:ST:CHANnel:CENTer:FREQuency? MAX queries can be used to determine valid channel center frequency range.

Example(s)

CALC:ST:CHAN:CENt:AUTO OFF
CALC:ST:CHAN:CENt:FREQ 193.4145 THZ
CALC:ST:CHAN:CENt:FREQ? Returns
1.934145E+014

Notes

The configured center value is considered for channel definition only if :AUTO is set to OFF (fixed channel definition).

See Also

:CALCulate[1..n]:ST:CHANnel:CENTer:AUTO
:CALCulate[1..n]:ST:CHANnel:CENTer:FREQuency?
:CALCulate[1..n]:ST:CHANnel:CENTer[:WAVElength]
:CALCulate[1..n]:ST:CHANnel:SPACing:FREQuency
:CALCulate[1..n]:ST:CHANnel:WIDTh:FREQuency

:CALCulate[1..n]:ST:CHANnel:CENTer: FREQuency?

Description	This query returns the nominal center frequency of the channel definition for spectral transmittance analysis. At *RST, default center frequency is set to 193.1000 THz.
Syntax	:CALCulate[1..n]:ST:CHANnel:CENTer:FREQuency? [<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Center>

:CALCulate[1..n]:ST:CHANnel:CENTer:FREQuency?	
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to either the current or the MINimum/MAXimum channel center frequency in hertz.
Example(s)	CALC:ST:CHAN:CENT:FREQ 193.4145 THZ CALC:ST:CHAN:CENT:FREQ? Returns 1.934145E+014
See Also	:CALCulate[1..n]:ST:CHANnel:CENTer:AUTO? :CALCulate[1..n]:ST:CHANnel:CENTer:FREQuency :CALCulate[1..n]:ST:CHANnel:CENTer[:WAVElength]? :CALCulate[1..n]:ST:CHANnel:SPACing:FREQuency? :CALCulate[1..n]:ST:CHANnel:WIDTh:FREQuency?

**:CALCulate[1..n]:ST:CHANnel:CENTer
[:WAVelength]**

Description	This command sets the nominal center wavelength of the channel definition for spectral transmittance analysis. At *RST, this value is set to 193.1000 THz (1552.524 nm).
Syntax	:CALCulate[1..n]:ST:CHANnel:CENTer[:WAVelength] <wsp> <Center[<wsp>M]> MAXimum MINimum DEFault
Parameter(s)	<i>Center:</i> The program data syntax for <Center> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Center> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:ST:CHANnel:CENTer[:WAVelength]

DEfault allows the instrument to select a value for the <Center> parameter.

The <Center> parameter corresponds to a valid channel center wavelength in meters.

The
CALCulate[1..n]:ST:CHANnel:CENTer[:WAVeleng
th]? MIN and
CALCulate[1..n]:ST:CHANnel:CENTer[:WAVeleng
th]? MAX queries can be used to determine valid
channel center wavelength range.

Example(s)

CALC:ST:CHAN:CENT:AUTO OFF
CALC:ST:CHAN:CENT:WAV 1511.0 NM
CALC:ST:CHAN:CENT:WAV? Returns
1.51100E-006

Notes

The configured center value is considered for channel definition only if :AUTO is set to OFF (fixed channel definition).

See Also

:CALCulate[1..n]:ST:CHANnel:CENTer:AUTO
:CALCulate[1..n]:ST:CHANnel:CENTer:FREQuenc
y
:CALCulate[1..n]:ST:CHANnel:CENTer[:WAVElen
gth]?
:CALCulate[1..n]:ST:CHANnel:SPACing[:WAVElen
gth]
:CALCulate[1..n]:ST:CHANnel:WIDTh[:WAVElen
gth]

:CALCulate[1..n]:ST:CHANnel:CENTer[:WAVelength]?	
Description	This query returns the nominal center wavelength of the channel definition for spectral transmittance analysis. At *RST, this value is set to 193.1000 THz (1552.524 nm).
Syntax	:CALCulate[1..n]:ST:CHANnel:CENTer[:WAVelength]?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Center>

:CALCulate[1..n]:ST:CHANnel:CENTer[:WAVelength]?	
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to either the current or the MINimum/MAXimum channel center wavelength in meters.
Example(s)	CALC:ST:CHAN:CENT:WAV 1535.0 NM CALC:ST:CHAN:CENT:WAV? Returns 1.53500E-006
See Also	:CALCulate[1..n]:ST:CHANnel:CENTer:AUTO? :CALCulate[1..n]:ST:CHANnel:CENTer:FREQuency? :CALCulate[1..n]:ST:CHANnel:CENTer[:WAVElength] :CALCulate[1..n]:ST:CHANnel:SPACing[:WAVElength]? :CALCulate[1..n]:ST:CHANnel:WIDTh[:WAVElength]?

:CALCulate[1..n]:ST:CHANnel:CENTer:ITUGrid	
Description	This command controls the activation of the snap center on ITU grid feature in the channel definition of the spectral transmittance analysis. At *RST, this value is set to on (enabled).
Syntax	:CALCulate[1..n]:ST:CHANnel:CENTer:ITUGrid<wsp><Auto>
Parameter(s)	<i>Auto:</i> The program data syntax for <Auto> is defined as a <Boolean Program Data> element. The <Auto> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0. The <Auto> parameter corresponds to the new state of the snap center on the ITU grid. 0 or OFF: disables snap channel center on the ITU grid. The channel will be centered on the max peak (the peak with lowest insertion loss). 1 or ON: enables snap channel center on the ITU grid. Select the nearest ITU channel relative to the lowest insertion loss peak.

:CALCulate[1..n]:ST:CHANnel:CENTer:ITUGrid	
Example(s)	CALC:ST:CHAN:SPAC:FREQ 100.0 GHZ CALC:ST:CHAN:CENT:AUTO ON CALC:ST:CHAN:CENT:ITUG ON CALC:ST:CHAN:CENT:ITUG? Returns: 1 (snap ITU grid enabled)
Notes	Snap center on ITU grid is applied only if the automatic channel center feature is selected (:AUTO is set to ON). Snap center on ITU grid may be enabled only if channel spacing is set to 25.0 GHz, 50.0 GHz, 100.0 GHz, 200.0 GHz or 20.0 nm.
See Also	:CALCulate[1..n]:ST:CHANnel:CENTer:AUTO :CALCulate[1..n]:ST:CHANnel:CENTer:ITUGrid? :CALCulate[1..n]:ST:CHANnel:SPACing:FREQuency :CALCulate[1..n]:ST:CHANnel:SPACing[:WAVElength]

:CALCulate[1..n]:ST:CHANnel:CENTer: ITUGrid?

Description	This query indicates if the snap center on ITU grid feature is enabled in the channel definition of the spectral transmittance analysis. At *RST, this value is set to on (enabled).
Syntax	:CALCulate[1..n]:ST:CHANnel:CENTer:ITUGrid?
Parameter(s)	None
Response Syntax	<Auto>
Response(s)	<i>Auto:</i> The response data syntax for <Auto> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Auto> response corresponds to the state of the snap center on ITU grid feature. 0: snap center on ITU grid is disabled. 1: snap center on ITU grid is enabled.
Example(s)	CALC:ST:CHAN:CENt:ITUG ON CALC:ST:CHAN:CENt:ITUG? Returns: 1 (snap ITU grid enabled)
See Also	:CALCulate[1..n]:ST:CHANnel:CENTer:AUTO? :CALCulate[1..n]:ST:CHANnel:CENTer:ITUGrid :CALCulate[1..n]:ST:CHANnel:SPACing:FREQuency? :CALCulate[1..n]:ST:CHANnel:SPACing[:WAVElength]?

:CALCulate[1..n]:ST:CHANnel:SPACing:FREQuency

Description	This command sets the frequency spacing of the channel definition for spectral transmittance analysis. At *RST, this value is set to 50.0 GHz.
Syntax	:CALCulate[1..n]:ST:CHANnel:SPACing:FREQuency<wsp><Spacing[<wsp>HZ]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Spacing:</i> The program data syntax for <Spacing> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Spacing> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:ST:CHANnel:SPACing:FREQuency

DEFault allows the instrument to select a value for the <Spacing> parameter.

The <Spacing> parameter corresponds to a valid channel spacing in hertz.

The
CALCulate[1..n]:ST:CHANnel:SPACing:FREQuency? MIN and
CALCulate[1..n]:ST:CHANnel:SPACing:FREQuency? MAX queries can be used to determine valid channel spacing frequency range.

Example(s)

CALC:ST:CHAN:SPAC:FREQ 25.0 GHZ
CALC:ST:CHAN:SPAC:FREQ? Returns
2.500000E+010

:CALCulate[1..n]:ST:CHANnel:SPACing:FREQuency	
Notes	If necessary, the channel width will be automatically adjusted to be within valid range when changing channel spacing. Automatically sets the channel snap center on ITU grid feature to off if channel spacing is not 25, 50, 100 or 200 GHz.
See Also	:CALCulate[1..n]:ST:CHANnel:CENTer:ITUGrid :CALCulate[1..n]:ST:CHANnel:CENTer:FREQuency :CALCulate[1..n]:ST:CHANnel:SPACing:FREQuency? :CALCulate[1..n]:ST:CHANnel:SPACing:WAVElength :CALCulate[1..n]:ST:CHANnel:WIDTh:FREQuency

:CALCulate[1..n]:ST:CHANnel:SPACing:FREQuency?

Description	This query returns the frequency spacing of the channel definition for spectral transmittance analysis. At *RST, this value is set to 50.0 GHz.
Syntax	:CALCulate[1..n]:ST:CHANnel:SPACing:FREQuency? [<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Spacing>

:CALCulate[1..n]:ST:CHANnel:SPACing:FREQuency?

Response(s)

Spacing:

The response data syntax for <Spacing> is defined as a <NR3 NUMERIC RESPONSE DATA> element.

The <Spacing> response corresponds to either the current or the MINimum/MAXimum channel frequency spacing in hertz.

Example(s)

CALC:ST:CHAN:SPAC:FREQ 65.0 GHZ
CALC:ST:CHAN:SPAC:FREQ? Returns
6.500000E+010

See Also

:CALCulate[1..n]:ST:CHANnel:CENTer:ITUGrid
:CALCulate[1..n]:ST:CHANnel:CENTer:FREQuency?
:CALCulate[1..n]:ST:CHANnel:SPACing:FREQuency
:CALCulate[1..n]:ST:CHANnel:SPACing[:WAVElength]?
:CALCulate[1..n]:ST:CHANnel:WIDTh:FREQuency?

:CALCulate[1..n]:ST:CHANnel: SPACing[:WAVelength]

Description	This command sets the wavelength spacing of the channel definition for spectral transmittance analysis. At *RST, this value is set to 50.0 GHz (0.4 nm).
Syntax	:CALCulate[1..n]:ST:CHANnel:SPACing[:WAVelength] <wsp> <Spacing[<wsp>M]> MAXimum MINimum DEFault
Parameter(s)	<i>Spacing:</i> The program data syntax for <Spacing> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Spacing> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:ST:CHANnel:SPACing[:WAVelength]

DEfault allows the instrument to select a value for the <Spacing> parameter.

The <Spacing> parameter corresponds to a valid channel spacing in meters.

The
CALCulate[1..n]:ST:CHANnel:SPACing[:WAVelength]? MIN and
CALCulate[1..n]:ST:CHANnel:SPACing[:WAVelength]? MAX queries can be used to determine the valid channel spacing wavelength range.

Example(s)

CALC:ST:CHAN:SPAC 20 NM
CALC:ST:CHAN:SPAC? Returns 2.000000E-008

Notes

If necessary, the channel WIDTHh will be automatically adjusted to be within valid range when changing the channel SPACing.

Automatically sets the channel snap center on ITU grid feature to off if the channel spacing is not 20.0 nm.

See Also

:CALCulate[1..n]:ST:CHANnel:CENTer:ITUGrid
:CALCulate[1..n]:ST:CHANnel:CENTer[:WAVElength]
:CALCulate[1..n]:ST:CHANnel:SPACing:FREQuency
:CALCulate[1..n]:ST:CHANnel:SPACing[:WAVElength]?
:CALCulate[1..n]:ST:CHANnel:WIDTh[:WAVElength]

:CALCulate[1..n]:ST:CHANnel:SPACing[:WAVelength]?	
Description	This query returns the wavelength spacing of the channel definition for spectral transmittance analysis. At *RST, this value is set to 50.0 GHz (0.4 nm).
Syntax	:CALCulate[1..n]:ST:CHANnel:SPACing[:WAVelength]?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Spacing>

:CALCulate[1..n]:ST:CHANnel:SPACing[:WAVElength]?	
Response(s)	<i>Spacing:</i> The response data syntax for <Spacing> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Spacing> response corresponds to either the current or the MINimum/MAXimum channel wavelength spacing in meters.
Example(s)	CALC:ST:CHAN:SPAC 12.5 NM CALC:ST:CHAN:SPAC? Returns 1.250000E-008
See Also	:CALCulate[1..n]:ST:CHANnel:CENTER:ITUGrid? :CALCulate[1..n]:ST:CHANnel:CENTER[:WAVElength]? :CALCulate[1..n]:ST:CHANnel:SPACing:FREQuency? :CALCulate[1..n]:ST:CHANnel:SPACing[:WAVElength] :CALCulate[1..n]:ST:CHANnel:WIDTH[:WAVElength]?

:CALCulate[1..n]:ST:CHANnel:WIDTh:FREQuency

Description	This command sets the frequency width of the channel definition for spectral transmittance analysis. At *RST, this value is set to 25.0 GHz.
Syntax	:CALCulate[1..n]:ST:CHANnel:WIDTh:FREQuency<wsp><Width[<wsp>HZ]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Width:</i> The program data syntax for <Width> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Width> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:ST:CHANnel:WIDTh:FREQuency

DEfault allows the instrument to select a value for the <Width> parameter.

The <Width> parameter corresponds to a valid channel width in hertz.

The
CALCulate[1..n]:ST:CHANnel:WIDTh:FREQuency
? MIN and
CALCulate[1..n]:ST:CHANnel:WIDTh:FREQuency
? MAX queries can be used to determine the valid
channel width frequency range.

Example(s)

CALC:ST:CHAN:SPAC:FREQ 125 GHZ
CALC:ST:CHAN:WIDTh:FREQ 75 GHZ
CALC:ST:CHAN:WIDTh:FREQ? Returns
7.500000E+010

Notes

The channel width may not be greater than the channel spacing.

See Also

:CALCulate[1..n]:ST:CHANnel:CENTer:FREQuency
:CALCulate[1..n]:ST:CHANnel:SPACing:FREQuency
:CALCulate[1..n]:ST:CHANnel:WIDTh:FREQuency?
:CALCulate[1..n]:ST:CHANnel:WIDTh[:WAVElength]

:CALCulate[1..n]:ST:CHANnel:WIDTh:FREQuency?	
Description	This query returns the frequency width of the channel definition for spectral transmittance analysis. At *RST, this value is set to 25.0 GHz.
Syntax	:CALCulate[1..n]:ST:CHANnel:WIDTh:FREQuency? [<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Width>

:CALCulate[1..n]:ST:CHANnel:WIDTH:FREQUENCY?	
Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to either the current or the MINimum/MAXimum channel frequency width in hertz.
Example(s)	CALC:ST:CHAN:WIDT:FREQ 25.0 GHZ CALC:ST:CHAN:WIDT:FREQ? Returns 2.500000E+010
See Also	:CALCulate[1..n]:ST:CHANnel:CENTer:FREQuency? :CALCulate[1..n]:ST:CHANnel:SPACing:FREQuency? :CALCulate[1..n]:ST:CHANnel:WIDTh:FREQuency :CALCulate[1..n]:ST:CHANnel:WIDTh[:WAVElength]?

:CALCulate[1..n]:ST:CHANnel:WIDTH [:WAVelength]

Description	This command sets the wavelength width of the channel definition for spectral transmittance analysis. At *RST, this value is set to 25.0 GHz (0.2 nm).
Syntax	:CALCulate[1..n]:ST:CHANnel:WIDTH[:WAVelength]<wsp><Width[<wsp>M]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Width:</i> The program data syntax for <Width> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Width> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:ST:CHANnel:WIDTh[:WAVelength]

DEfault allows the instrument to select a value for the <Width> parameter.

The <Width> parameter corresponds to a valid channel width in meters.

The
:CALCulate[1..n]:ST:CHANnel:WIDTh[:WAVelength]? MIN and
:CALCulate[1..n]:ST:CHANnel:WIDTh[:WAVelength]? MAX queries can be used to determine the valid channel width wavelength range.

Example(s)

CALC:ST:CHAN:SPAC:WAV 20 NM
CALC:ST:CHAN:WIDT:WAV 12.5 NM
CALC:ST:CHAN:WIDT:WAV? Returns
1.250000E-008

Notes

The channel width may not be greater than the channel spacing.

See Also

:CALCulate[1..n]:ST:CHANnel:CENTer[:WAVElength]
:CALCulate[1..n]:ST:CHANnel:SPACing[:WAVElength]
:CALCulate[1..n]:ST:CHANnel:WIDTh:FREQuency
:CALCulate[1..n]:ST:CHANnel:WIDTh[:WAVElength]?

:CALCulate[1..n]:ST:CHANnel:WIDTH[:WAVelength]?

Description	This query returns the wavelength width of the channel definition for spectral transmittance analysis. At *RST, this value is set to 25.0 GHz (0.2 nm).
Syntax	:CALCulate[1..n]:ST:CHANnel:WIDTH[:WAVelength]?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Width>

:CALCulate[1..n]:ST:CHANnel:WIDTH[:WAVelength]?	
Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to either the current or the MINimum/MAXimum channel wavelength width in meters.
Example(s)	CALC:ST:CHAN:WIDT:WAV 15 NM CALC:ST:CHAN:WIDT:WAV? Returns 1.500000E-008
See Also	:CALCulate[1..n]:ST:CHANnel:CENTer[:WAVElen gth]? :CALCulate[1..n]:ST:CHANnel:SPACing[:WAVElen gth]? :CALCulate[1..n]:ST:CHANnel:WIDTh:FREQuenc y? :CALCulate[1..n]:ST:CHANnel:WIDTh[:WAVEleng th]

:CALCulate[1..n]:ST:DATA:ACISolation?

Description	This query returns the computed spectral transmittance analysis result for adjacent channel isolation. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:ST:DATA:ACISolation?
Parameter(s)	None
Response Syntax	<Isolation>
Response(s)	<i>Isolation:</i> The response data syntax for <Isolation> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Isolation> response corresponds to the computed adjacent channel isolation.
Example(s)	CALC:ST:STAT ON <Do measurement> CALC:ST:DATA:ACH:ACIS? Returns -9.860000E+000

:CALCulate[1..n]:ST:DATA:ACISolation?	
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:ST:CHANnel:SPACing:FREQuen cy :CALCulate[1..n]:ST:CHANnel:SPACing[:WAVElen gth] :CALCulate[1..n]:ST:CHANnel:WIDTh:FREQuenc y :CALCulate[1..n]:ST:CHANnel:WIDTh[:WAVElen gth] :CALCulate[1..n]:ST:DATA:CHANnel:CENTer:FRE Quency? :CALCulate[1..n]:ST:DATA:CHANnel:CENTer[:WA VElength]?

:CALCulate[1..n]:ST:DATA: BANDwidth[1 2] BWIDth[1 2]: FREQuency?	
Description	This query returns the computed spectral transmittance analysis result for the frequency bandwidth. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:ST:DATA:BANDwidth[1 2] BWIDth[1 2]:FREQuency?
Parameter(s)	None
Response Syntax	<Bandwidth>
Response(s)	<i>Bandwidth:</i> The response data syntax for <Bandwidth> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Bandwidth> response corresponds to the computed frequency bandwidth in hertz.

:CALCulate[1..n]:ST:DATA: BANDwidth[1 2] BWIDth[1 2]: FREQuency?	
Example(s)	CALC:ST:STAT ON CALC:ST:BAND2:RLEV 5.0 DB <Do measurement> CALC:ST:DATA:BAND1:FREQ? Returns 5.700000E+009 CALC:ST:DATA:BAND2:FREQ? Returns 1.330000E+010
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:ST:BWIDth[1 2] BANDwidth[1 2]:RelativeLEVel? :CALCulate[1..n]:ST:DATA:BWIDth[1 2] BANDwi dth[1 2][:WAVelength]?

:CALCulate[1..n]:ST:DATA: BANDwidth[1 2] BWIDth[1 2] [:WAVelength]?	
Description	This query returns the computed spectral transmittance analysis result for the wavelength bandwidth. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:ST:DATA:BANDwidth[1 2] BWIDth[1 2][:WAVelength]?
Parameter(s)	None
Response Syntax	<Bandwidth>
Response(s)	<i>Bandwidth:</i> The response data syntax for <Bandwidth> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Bandwidth> response corresponds to the computed wavelength bandwidth in meters.

:CALCulate[1..n]:ST:DATA: BANDwidth[1 2] BWIDth[1 2] [:WAVelength]?	
Example(s)	CALC:ST:STAT ON CALC:ST:BAND1:RLEV 2.0 DB <Do measurement> CALC:ST:DATA:BAND1:WAV? Returns 5.400000E-011
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:ST:BWIDth[1 2] BANDwidth[1 2]:RelativeLEVel? :CALCulate[1..n]:ST:DATA:BWIDth[1 2] BANDwi dth[1 2]:FREQuency?

:CALCulate[1..n]:ST:DATA: CenterOFFset:FREQuency?

Description	This query returns the computed spectral transmittance analysis result for the offset applied to the nominal center frequency. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:ST:DATA:CenterOFFset:FREQuency?
Parameter(s)	None
Response Syntax	<Offset>
Response(s)	<i>Offset:</i> The response data syntax for <Offset> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Offset> response corresponds to the computed center offset in hertz.
Example(s)	CALC:ST:STAT ON <Do measurement> CALC:ST:DATA:COFF:FREQ? Returns 2.300000E+009
See Also	:CALCulate[1..n]:ST:DATA:CenterOFFset[:WAVelength]? :CALCulate[1..n]:ST:DATA:CHANnel:CENTer:FREQuency?

:CALCulate[1..n]:ST:DATA:CenterOFFset[:WAVelength]?	
Description	This query returns the computed spectral transmittance analysis result for the offset applied to the nominal center wavelength. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:ST:DATA:CenterOFFset[:WAVelength]?
Parameter(s)	None
Response Syntax	<Offset>
Response(s)	<i>Offset:</i> The response data syntax for <Offset> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Offset> response corresponds to the computed center offset in meters.
Example(s)	CALC:ST:STAT ON <Do measurement> CALC:ST:DATA:COFF:WAV? Returns 1.900000E-011
See Also	:CALCulate[1..n]:ST:DATA:CenterOFFset:FREQuency? :CALCulate[1..n]:ST:DATA:CHANnel:CENTer[:WAVelength]?

:CALCulate[1..n]:ST:DATA:CHANnel: CENTER:FREQuency?

Description	This query returns the nominal center frequency of the channel definition used for spectral transmittance analysis. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:ST:DATA:CHANnel:CENTER:FREQuency?
Parameter(s)	None
Response Syntax	<Center>
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the nominal channel center frequency in hertz.
Example(s)	CALC:ST:STAT ON <Do measurement> CALC:ST:DATA:CHAN:CENT:FREQ? Returns 2.120000E+014
See Also	:CALCulate[1..n]:ST:CHANnel:CENTER:AUTO? :CALCulate[1..n]:ST:CHANnel:CENTER:FREQuency? :CALCulate[1..n]:ST:CHANnel:CENTER:ITUGrid? :CALCulate[1..n]:ST:DATA:CHANnel:CENTER[:WAVelength]?

:CALCulate[1..n]:ST:DATA:CHANnel: CENTER[:WAVElength]?

Description	This query returns the nominal center wavelength of the channel definition used for spectral transmittance analysis. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:ST:DATA:CHANnel:CENTER[:WAVElength]?
Parameter(s)	None
Response Syntax	<Center>
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the nominal channel center wavelength in meters.
Example(s)	CALC:ST:STAT ON <Do measurement> CALC:ST:DATA:CHAN:CENT:WAV? Returns 1.401500E-006
See Also	:CALCulate[1..n]:ST:CHANnel:CENTER:AUTO? :CALCulate[1..n]:ST:CHANnel:CENTER[:WAVElength]? :CALCulate[1..n]:ST:CHANnel:CENTER:ITUGrid? :CALCulate[1..n]:ST:DATA:CHANnel:CENTER:FREQuency?

:CALCulate[1..n]:ST:DATA:ILOs:MAXimum?

Description	This query returns the computed spectral transmittance analysis result for maximum insertion loss. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:ST:DATA:ILOs:MAXimum?
Parameter(s)	None
Response Syntax	<Loss>
Response(s)	<i>Loss:</i> The response data syntax for <Loss> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Loss> response corresponds to the computed maximum insertion loss.
Example(s)	CALC:ST:STAT ON <Do measurement> CALC:ST:DATA:ILOs:MAX? Returns 3.000000E-011
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:ST:DATA:ILOs:MINimum?

:CALCulate[1..n]:ST:DATA:ILOs:MINimum?	
Description	This query returns the computed spectral transmittance analysis result for minimum insertion loss. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:ST:DATA:ILOs:MINimum?
Parameter(s)	None
Response Syntax	<Loss>
Response(s)	Loss: The response data syntax for <Loss> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Loss> response corresponds to the computed minimum insertion loss.
Example(s)	CALC:ST:STAT ON <Do measurement> CALC:ST:DATA:ILOS:MIN? Returns 3.000000E-011
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:ST:DATA:ILOs:MAXimum?

:CALCulate[1..n]:ST:STATE

Description

This command controls the activation of the spectral transmittance analysis.

Once enabled, the spectral transmittance analysis will be automatically performed following a trace acquisition. In order to be usable by the spectral transmittance analysis, the acquired data shall be stored in memory (TRC1 and TRC2). TRC1 will contain the input trace while TRC2 will contain the output trace.

At *RST, this value is set to off (disabled).

Syntax

:CALCulate[1..n]:ST:STATE<wsp><Auto>

Parameter(s)

Auto:

The program data syntax for <Auto> is defined as a <Boolean Program Data> element. The <Auto> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0.

The <Auto> parameter corresponds to the new state of the spectral transmittance analysis.

0 or OFF: spectral transmittance analysis is disabled.

1 or ON: spectral transmittance analysis is enabled.

:CALCulate[1..n]:ST:STATe	
Example(s)	CALC:ST:STAT ON CALC:ST:STAT? Returns 1 (Spectral transmittance analysis enabled)
Notes	Spectral transmittance analysis is available only if software option "Adv" is active. Spectral transmittance analysis cannot be disabled: The OFF (0) value is valid for queries only. Only one analysis mode is active at a time. Enabling ST analysis automatically disables all other analysis modes. Once spectral transmittance analysis has been performed, the transmittance trace may be retrieved using the TRACe commands with trace name "ST:TRAN".
See Also	:CALCulate[1..n]:DFB:STATe :CALCulate[1..n]:FP:STATe :CALCulate[1..n]:ST:STATe? :CALCulate[1..n][:WDM]:STATe :INITiate[:IMMediate] :INITiate:CONTInuous :TRACe:FEED:CONTrol

:CALCulate[1..n]:ST:STATe?

Description	This query indicates if the spectral transmittance analysis has been enabled or not. At *RST, this value is set to off (disabled).
Syntax	:CALCulate[1..n]:ST:STATe?
Parameter(s)	None
Response Syntax	<Auto>
Response(s)	<i>Auto:</i> The response data syntax for <Auto> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Auto> response corresponds to the state of the spectral transmittance analysis. 0: spectral transmittance analysis is disabled. 1: spectral transmittance analysis is enabled.
Example(s)	CALC:ST:STAT? Returns 0 if application mode is not spectral transmittance CALC:ST:STAT ON CALC:ST:STAT? Returns 1 (spectral transmittance analysis enabled)
See Also	:CALCulate[1..n]:DFB:STATe? :CALCulate[1..n]:FP:STATe? :CALCulate[1..n]:ST:STATe :CALCulate[1..n][:WDM]:STATe?

:CALCulate[1..n]:TX:AWINdow:SPAN[:WAVelength]

Description	This command sets the wavelength width of the analysis window applied to each peak (main mode) detected by the transmitter analysis. At *RST, the width of the analysis window is set to 0.100 nm.
Syntax	:CALCulate[1..n]:TX:AWINdow:SPAN[:WAVelength]<wsp><Span[<wsp>M]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Span:</i> The program data syntax for is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

**:CALCulate[1..n]:TX:AWINdow:SPAN
[:WAVelength]**

DEfault allows the instrument to select a value for the parameter.

The parameter corresponds to a valid width in meters for the analysis window.

The
CALCulate[1..n]:TX:AWINdow:SPAN[:WAVelengt
h]? MIN and
CALCulate[1..n]:TX:AWINdow:SPAN[:WAVelengt
h]? MAX queries can be used to determine valid
width values.

Example(s)

CALC:TX:AWIN:SPAN:WAV 2.0 NM
CALC:TX:AWIN:SPAN:WAV? Returns
2.000000E-009

See Also

:CALCulate[1..n]:TX:AWINdow:SPAN[:WAVeleng
th]?
:CALCulate[1..n]:TX:AWINdow:SPAN:FREQuenc
y

:CALCulate[1..n]:TX:AWINdow:SPAN[:WAVelength]?

Description

This query returns a value indicating either the current or the minimum/maximum wavelength width of the analysis window applied to each peak (main mode) detected by the transmitter analysis.

At *RST, the width of the analysis window is set to 0.100 nm.

Syntax

:CALCulate[1..n]:TX:AWINdow:SPAN[:WAVelength]?[<wsp>MAXimum|MINimum|DEFault]

Parameter(s)

Parameter 1:

The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum|MINimum|DEFault.

MINimum is used to retrieve the instrument's smallest supported value.

MAXimum is used to retrieve the instrument's greatest supported value.

DEFault is used to retrieve the instrument's default value.

Response Syntax

:CALCulate[1..n]:TX:AWINdow:SPAN[:WAVelength]?

Response(s)	<i>Span:</i> The response data syntax for is defined as a <NR3 NUMERIC RESPONSE DATA> element. The response corresponds to either the current or the MINimum/MAXimum wavelength width of the analysis window in meters.
Example(s)	CALC:TX:AWIN:SPAN:WAV 2.0 NM CALC:TX:AWIN:SPAN:WAV? Returns 2.000000E-009
See Also	:CALCulate[1..n]:TX:AWINdow:SPAN[:WAVeleng th] :CALCulate[1..n]:TX:AWINdow:SPAN:FREQuenc y?

:CALCulate[1..n]:TX:AWINdow:SPAN:FREQuency

Description	This command sets the frequency width of the analysis window applied to each peak (main mode) detected by the transmitter analysis. At *RST, the width of the analysis window is set to 0.100 nm.
Syntax	:CALCulate[1..n]:TX:AWINdow:SPAN:FREQuency<wsp><Span[<wsp>HZ]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Span:</i> The program data syntax for is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:TX:AWINdow:SPAN:FREQuency

DEfault allows the instrument to select a value for the parameter.

The parameter corresponds to a valid width in hertz for the analysis window.

The
 CALCulate[1..n]:TX:AWINdow:SPAN:FREQuency
 ? MIN and
 CALCulate[1..n]:TX:AWINdow:SPAN:FREQuency
 ? MAX queries can be used to determine valid
 width values.

Example(s)

CALC:TX:AWIN:SPAN:FREQ 100.0 GHZ
 CALC:TX:AWIN:SPAN:FREQ? Returns
 1.000000E+011

See Also

:CALCulate[1..n]:TX:AWINdow:SPAN:FREQuenc
 y?
 :CALCulate[1..n]:TX:AWINdow:SPAN[:WAVeleng
 th]

:CALCulate[1..n]:TX:AWINdow:SPAN:FREQuency?	
Description	This query returns a value indicating either the current or the minimum/maximum frequency width of the analysis window applied to each peak (main mode) detected by the transmitter analysis. At *RST, the width of the analysis window is set to 0.100 nm.
Syntax	:CALCulate[1..n]:TX:AWINdow:SPAN:FREQuency? [<wsp>MAXimum MINimum DEFault]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFault. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFault is used to retrieve the instrument's default value.
Response Syntax	

**:CALCulate[1..n]:TX:AWINdow:SPAN:
FREQuency?**

Response(s)	<i>Span:</i> The response data syntax for is defined as a <NR3 NUMERIC RESPONSE DATA> element. The response corresponds to either the current or the MINimum/MAXimum frequency width of the analysis window in hertz.
Example(s)	CALC:TX:AWIN:SPAN:FREQ 100.0 GHZ CALC:TX:AWIN:SPAN:FREQ? Returns 1.000000E+011
See Also	:CALCulate[1..n]:TX:AWINdow:SPAN:FREQuency :CALCulate[1..n]:TX:AWINdow:SPAN[:WAVelength]?

:CALCulate[1..n]:TX: BANDwidth[1 2] BWIDth[1 2]: RelativeLEVel	
Description	This command sets the relative position for computing the main mode peak bandwidth for the transmitter analysis. At *RST, this value is set to 3.0 dB for bandwidth1 and 20.0 dB for bandwidth2.
Syntax	:CALCulate[1..n]:TX:BANDwidth[1 2] BWIDth[1 2]:RelativeLEVel<wsp><PowerLevel[<wsp>DB W/W PCT]> MAXimum MINimum DEFault
Parameter(s)	<i>PowerLevel:</i> The program data syntax for <PowerLevel> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> elements are: DB W/W PCT. The <PowerLevel> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:TX: BANDwidth[1|2]|BWIDth[1|2]: RelativeLEVel

DEFault allows the instrument to select a value for the <PowerLevel> parameter.

The <PowerLevel> parameter corresponds to a valid bandwidth position value.

The
 CALCulate[1..n]:TX:BANDwidth:RelativeLEVel?
 MIN and
 CALCulate[1..n]:TX:BANDwidth:RelativeLEVel?
 MAX queries can be used to determine the valid
 bandwidth position range.

Example(s)

UNIT:RAT DB
 CALC:TX:BWID2:RLEV 10.55 DB
 CALC:TX:BWID2:RLEV? Returns: 1.055000E+001

Notes

Bandwidth1 position cannot be changed: it is
 always set at 3.0 dB.

See Also

:CALCulate[1..n]:TX:BWIDth[1|2]|BANDwidth[1
 |2]:RelativeLEVel?
 :CALCulate[1..n]:TX:CENter:RelativeLEVel
 :CALCulate[1..n]:TX:DATA:PEAK:BWIDth<1|2>|
 BANDwidth<1|2>[:WAVelength]?

 :CALCulate[1..n]:TX:DATA:PEAK:BWIDth<1|2>|
 BANDwidth<1|2>:FREQuency?
 :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX: BANDwidth[1 2] BWIDth[1 2]: RelativeLEVel?	
Description	This query returns a value indicating either the current or the minimum/maximum relative position for computing the main mode peak bandwidth for the transmitter analysis. At *RST, this value is set to 3.0 dB for bandwidth1 and 20.0 dB for bandwidth2.
Syntax	:CALCulate[1..n]:TX:BANDwidth[1 2] BWIDth[1 2]:RelativeLEVel? [<wsp> MAXimum MINimum DEFault]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFault. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFault is used to retrieve the instrument's default value.
Response Syntax	<PowerLevel>

:CALCulate[1..n]:TX: BANDwidth[1 2] BWIDth[1 2]: RelativeLEVel?	
Response(s)	<i>PowerLevel:</i> The response data syntax for <PowerLevel> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <PowerLevel> response corresponds to either the current or the MINimum/MAXimum bandwidth position value.
Example(s)	UNIT:RAT DB CALC:TX:BAND2:RLEV 5.00 DB CALC:TX:BWID2:RLEV? Returns: 5.000000E+000 CALC:TX:BWID1:RLEV? Returns: 3.000000E+000
See Also	:CALCulate[1..n]:TX:BWIDth[1 2] BANDwidth[1 2]:RelativeLEVel :CALCulate[1..n]:TX:CENTer:RelativeLEVel? :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:CENTer:RelativeLEVel	
Description	This command sets the relative position for computing the main mode peak center of mass for the transmitter analysis. At *RST, this value is set to 3.0 dB.
Syntax	:CALCulate[1..n]:TX:CENTer:RelativeLEVel<wsp> <PowerLevel[<wsp>DB W/W PCT]> MAXimum MINimum DEFault
Parameter(s)	<i>PowerLevel:</i> The program data syntax for <PowerLevel> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> elements are: DB W/W PCT. The <PowerLevel> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:TX:CENTer:RelativeLEVel

DEfault allows the instrument to select a value for the <PowerLevel> parameter.

The <PowerLevel> parameter corresponds to a valid center position value.

The CALCulate[1..n]:TX:CENTer:RelativeLEVel? MIN and
CALCulate[1..n]:TX:CENTer:RelativeLEVel? MAX queries can be used to determine the valid center position range.

Example(s)

UNIT:RAT DB
CALC:TX:CENt:RLEV 10.00 DB
CALC:TX:CENt:RLEV? Returns: 1.000000E+001

See Also

:CALCulate[1..n]:TX:BWIDth[1|2]|BANDwidth[1|2]:RelativeLEVel
:CALCulate[1..n]:TX:CENTer:RelativeLEVel?
:CALCulate[1..n]:TX:DATA:PEAK:CenterMASS[:WAVelength]?
:CALCulate[1..n]:TX:DATA:PEAK:CenterMASSs:FREQuency?

:CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:CENTer:RelativeLEVel?	
Description	This query returns a value indicating either the current or the minimum/maximum relative position for computing the main mode peak center of mass for the transmitter analysis. At *RST, this value is set to 3.0 dB.
Syntax	:CALCulate[1..n]:TX:CENTer:RelativeLEVel? [<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<PowerLevel>

:CALCulate[1..n]:TX:CENTer:RelativeLEVel?	
Response(s)	<i>PowerLevel:</i> The response data syntax for <PowerLevel> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <PowerLevel> response corresponds to either the current or the MINimum/MAXimum center position value.
Example(s)	UNIT:RAT DB CALC:TX:CENT:RLEV 5.00 DB CALC:TX:CENT:RLEV? Returns: 5.000000E+000
See Also	:CALCulate[1..n]:TX:BWIDth[1 2] BANDwidth[1 2]:RelativeLEVel? :CALCulate[1..n]:TX:CENTer:RelativeLEVel :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:OSNR:FLATness?	
Description	This query returns the computed transmitter analysis result for the flatness of the signal-to-noise ratio. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:OSNR:FLATness?
Parameter(s)	None
Response Syntax	<Flatness>
Response(s)	<i>Flatness:</i> The response data syntax for <Flatness> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Flatness> response corresponds to the computed signal-to-noise ratio flatness.
Example(s)	CALC:TX:STAT ON <Do measurement> UNIT:RAT DB CALC:TX:DATA:OSNR:FLAT? Returns 2.992000E+001
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:TX:DATA:OSNR:MEAN? :CALCulate[1..n]:TX:DATA:SIGnalPower:FLATness? :CALCulate[1..n]:TX:DATA:SIGnalPower:MEAN? :CALCulate[1..n]:TX:DATA:TPOWer? :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:OSNR:MEAN?	
Description	This query returns the computed transmitter analysis result for the mean signal-to-noise ratio. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:OSNR:MEAN?
Parameter(s)	None
Response Syntax	<Mean>
Response(s)	<i>Mean:</i> The response data syntax for <Mean> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Mean> response corresponds to the computed mean signal-to-noise ratio.
Example(s)	CALC:TX:STAT ON <Do measurement> UNIT:RAT DB CALC:TX:DATA:OSNR:MEAN? Returns 4.471000E+001
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:TX:DATA:OSNR:FLATness? :CALCulate[1..n]:TX:DATA:SIGnalPower:FLATness? :CALCulate[1..n]:TX:DATA:SIGnalPower:MEAN? :CALCulate[1..n]:TX:DATA:TPOWer? :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:PEAK:ABLeft[:WAVelength]?	
Description	This query returns the wavelength of the left limit of the analysis band for the selected main mode peak. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:PEAK:ABLeft[:WAVElength]?
Parameter(s)	None
Response Syntax	<Limit>
Response(s)	<i>Limit:</i> The response data syntax for <Limit> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Limit> response corresponds to the band limit in meter.

:CALCulate[1..n]:TX:DATA:PEAK:ABLeft[:WAVelength]?

Example(s)	CALC:TX:STAT ON CALC:TX:AWIN:SPAN:WAV 6.0 NM <Do measurement> CALC:TX:DATA:PEAK:NSEL 1 CALC:TX:DATA:PEAK:CMAS? Returns 1.535882E-006 CALC:TX:DATA:PEAK:ABL? Returns 1.532882E-006 CALC:TX:DATA:PEAK:ABR? Returns 1.538882E-006
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:AWINdow:SPAN[:WAVeleng th] :CALCulate[1..n]:TX:DATA:PEAK:ABL:FREQuenc y? :CALCulate[1..n]:TX:DATA:PEAK:ABR[:WAVelen gth]? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:PEAK:ABLeft:FREQuency?	
Description	This query returns the frequency of the left limit of the analysis band for the selected main mode peak. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:PEAK:ABLeft:FREQuency?
Parameter(s)	None
Response Syntax	<Limit>
Response(s)	<i>Limit:</i> The response data syntax for <Limit> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Limit> response corresponds to the band limit in hertz.

**:CALCulate[1..n]:TX:DATA:PEAK:
ABLeft:FREQuency?**

Example(s)	CALC:TX:STAT ON CALC:TX:AWIN:SPAN:FREQ 0.04 THZ <Do measurement> CALC:TX:DATA:PEAK:NSEL 1 CALC:TX:DATA:PEAK:CMAS:FREQ? Returns 1.964293E+014 CALC:TX:DATA:PEAK:ABL:FREQ? Returns 1.984293E+014 CALC:TX:DATA:PEAK:ABR:FREQ? Returns 1.944293E+014
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:AWINdow:SPAN:FREQuenc y :CALCulate[1..n]:TX:DATA:PEAK:ABL[:WAVeleng th]? :CALCulate[1..n]:TX:DATA:PEAK:ABR:FREQuenc y? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:PEAK:ABRight[:WAVelength]?	
Description	This query returns the wavelength of the right limit of the analysis band for the selected main mode peak. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:PEAK:ABRight[:WAVelength]?
Parameter(s)	None
Response Syntax	<Limit>
Response(s)	<i>Limit:</i> The response data syntax for <Limit> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Limit> response corresponds to the band limit in meter.

:CALCulate[1..n]:TX:DATA:PEAK:ABRight[:WAVelength]?

Example(s)	CALC:TX:STAT ON CALC:TX:AWIN:SPAN:WAV 6.0 NM <Do measurement> CALC:TX:DATA:PEAK:NSEL 1 CALC:TX:DATA:PEAK:CMAS? Returns 1.535882E-006 CALC:TX:DATA:PEAK:ABL? Returns 1.532882E-006 CALC:TX:DATA:PEAK:ABR? Returns 1.538882E-006
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:AWINdow:SPAN[:WAVeleng th] :CALCulate[1..n]:TX:DATA:PEAK:ABL[:WAVelen gth]? :CALCulate[1..n]:TX:DATA:PEAK:ABR:FREQuenc y? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:PEAK:ABRight:FREQuency?	
Description	This query returns the frequency of the right limit of the analysis band for the selected main mode peak. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:PEAK:ABRight:FREQuency?
Parameter(s)	None
Response Syntax	<Limit>
Response(s)	<i>Limit:</i> The response data syntax for <Limit> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Limit> response corresponds to the band limit in hertz.

**:CALCulate[1..n]:TX:DATA:PEAK:
ABRight:FREQuency?**

Example(s)	CALC:TX:STAT ON CALC:TX:AWIN:SPAN:FREQ 0.04 THZ <Do measurement> CALC:TX:DATA:PEAK:NSEL 1 CALC:TX:DATA:PEAK:CMAS:FREQ? Returns 1.964293E+014 CALC:TX:DATA:PEAK:ABL:FREQ? Returns 1.984293E+014 CALC:TX:DATA:PEAK:ABR:FREQ? Returns 1.944293E+014
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:AWINdow:SPAN:FREQuenc y :CALCulate[1..n]:TX:DATA:PEAK:ABL:FREQuenc y? :CALCulate[1..n]:TX:DATA:PEAK:ABR[:WAVeleng th]? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:PEAK: BANDwidth[1 2] BWIDth[1 2] [:WAVelength]?	
Description	This query returns the computed transmitter analysis result for the wavelength bandwidth of the selected main mode peak. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:PEAK:BANDwidth[1 2] BWIDth[1 2][:WAVelength]?
Parameter(s)	None
Response Syntax	<Bandwidth>
Response(s)	<i>Bandwidth:</i> The response data syntax for <Bandwidth> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Bandwidth> response corresponds to the computed wavelength bandwidth in meters.

**:CALCulate[1..n]:TX:DATA:PEAK:
BANDwidth[1 | 2] | BWIDth[1 | 2]
[:WAVelength]?**

Example(s)	CALC:TX:STAT ON CALC:TX:BAND2:RLEV 10.0 DB <Do measurement> CALC:TX:DATA:PEAK:NSEL 2 CALC:TX:DATA:PEAK:BAND1:WAV? Returns 3.000000E-011 CALC:TX:DATA:PEAK:BAND2:WAV? Returns 5.400000E-011
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:DATA:BWIDth[1 2] BANDw idth[1 2]:RelativeLEVel? :CALCulate[1..n]:TX:DATA:PEAK:BWIDth[1 2] B ANDwidth[1 2]:FREQuency? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:PEAK: BANDwidth[1 2] BWIDth[1 2]: FREQuency?	
Description	This query returns the computed transmitter analysis result for the frequency bandwidth of the selected main mode peak. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:PEAK:BANDwidth[1 2] BWIDth[1 2]:FREQuency?
Parameter(s)	None
Response Syntax	<Bandwidth>
Response(s)	<i>Bandwidth:</i> The response data syntax for <Bandwidth> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Bandwidth> response corresponds to the computed frequency bandwidth in hertz.

**:CALCulate[1..n]:TX:DATA:PEAK:
BANDwidth[1|2]|BWIDth[1|2]:
FREQuency?**

Example(s)	CALC:TX:STAT ON CALC:TX:BAND2:RLEV 10.0 DB <Do measurement> CALC:TX:DATA:PEAK:NSEL 2 CALC:TX:DATA:PEAK:BAND1:FREQ? Returns 5.700000E+009 CALC:TX:DATA:PEAK:BAND2:FREQ? Returns 1.330000E+010
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:DATA:BWIDth[1 2] BANDw idth[1 2]:RelativeLEVel? :CALCulate[1..n]:TX:DATA:PEAK:BWIDth[1 2] B ANDwidth[1 2]:[:WAVelength]? :CALCulate[1..n]:TX:DATA:PEAK:NSELect :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:PEAK:CenterMASs[:WAVelength]?

Description	This query returns the computed transmitter analysis result for the center of mass wavelength of the selected main mode peak. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:PEAK:CenterMASs[:WAVelength]?
Parameter(s)	None
Response Syntax	<Center>
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the computed center of mass wavelength in meter.

:CALCulate[1..n]:TX:DATA:PEAK:CenterMASS[:WAVelength]?

Example(s)	CALC:TX:STAT ON CALC:TX:CENT:RLEV -20.00 DB <Do measurement> CALC:TX:DATA:PEAK:NSEL 1 CALC:TX:DATA:PEAK:CMAS? Returns 1.527882E-006
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:CENTer:RelativeLEVel :CALCulate[1..n]:TX:DATA:PEAK:CenterMASS:FR EQuency? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:SMODE:CPEAk[:WAVE length]? :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:PEAK:CenterMASs:FREQuency?

Description	This query returns the computed transmitter analysis result for the center of mass frequency of the selected main mode peak. At *RST, this value is not available.
Syntax	<code>:CALCulate[1..n]:TX:DATA:PEAK:CenterMASs:FREQuency?</code>
Parameter(s)	None
Response Syntax	<code><Center></code>
Response(s)	<i>Center:</i> The response data syntax for <code><Center></code> is defined as a <code><NR3 NUMERIC RESPONSE DATA></code> element. The <code><Center></code> response corresponds to the computed center of mass frequency in hertz.

**:CALCulate[1..n]:TX:DATA:PEAK:CenterMASs:
FREQuency?**

Example(s)	CALC:TX:STAT ON CALC:TX:CENT:RLEV -20.00 DB <Do measurement> CALC:TX:DATA:PEAK:NSEL 1 CALC:TX:DATA:PEAK:CMAS:FREQ? Returns 1.964293E+014
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:CENTer:RelativeLEVel :CALCulate[1..n]:TX:DATA:PEAK:CenterMASs[:W AVelength]? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:SMODE:CPEAk:FREQu ency? :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:PEAK:COFFset[:WAVelength]?	
Description	This query returns the computed transmitter analysis result for the wavelength central offset of the selected main mode peak. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:PEAK:COFFset[:WAVelength]?
Parameter(s)	None
Response Syntax	<Offset>
Response(s)	<i>Offset:</i> The response data syntax for <Offset> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Offset> response corresponds to the computed central offset in meter.

**:CALCulate[1..n]:TX:DATA:PEAK:
COFFset[:WAVelength]?**

Example(s)	CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 9 CALC:TX:DATA:PEAK:COFF? Returns -2.510000E-011
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:PEAK:COFFset:FREQu ency? :CALCulate[1..n]:TX:DATA:SMODE:COFFset[:WA Velength]? :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:PEAK:COFFset:FREQuency?	
Description	This query returns the computed transmitter analysis result for the frequency central offset of the selected main mode peak. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:PEAK:COFFset:FREQuency?
Parameter(s)	None
Response Syntax	<Offset>
Response(s)	<i>Offset:</i> The response data syntax for <Offset> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Offset> response corresponds to the computed central offset in hertz.

:CALCulate[1..n]:TX:DATA:PEAK: COFFset:FREQuency?

Example(s)	CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 3 CALC:TX:DATA:PEAK:COFF:FREQ? Returns 4.900000E+009
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:PEAK:COFFset[:WAVE length]? :CALCulate[1..n]:TX:DATA:SMODE:COFFset:FRE Quency? :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:PEAK:COUNT?	
Description	This query returns the number of main mode peak results for the transmitter analysis. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:PEAK:COUNT?
Parameter(s)	None
Response Syntax	<Count>
Response(s)	<i>Count:</i> The response data syntax for <Count> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Count> response corresponds to the number of items in the list of main mode peak results.
Example(s)	CALC:TX:STAT ON CALC:TX:THR -35.00 DBM <Do measurement> CALC:TX:DATA:PEAK:COUN? Returns 5 CALC:TX:DATA:PEAK:NSEL 5
See Also	:CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:SMODE:COUNT? :CALCulate[1..n]:TX:STATe :CALCulate[1..n]:TX:THReshold

:CALCulate[1..n]:TX:DATA:PEAK:CPEak[:WAVelength]?

Description	This query returns the computed transmitter analysis result for the peak center wavelength of the selected main mode peak. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:PEAK:CPEak[:WAVelength]?
Parameter(s)	None
Response Syntax	<Center>
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the computed peak center wavelength in meter.
Example(s)	CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 1 CALC:TX:DATA:PEAK:CPEA? Returns 1.527882E-006

:CALCulate[1..n]:TX:DATA:PEAK:CPEAK[:WAVelength]?	
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:DATA:PEAK:CenterMASS[: WAVelength]? :CALCulate[1..n]:TX:DATA:PEAK:CPEAK:FREQue ncy? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:SMODE:CPEAK[:WAVE length]? :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:PEAK:CPEAk:FREQuency?

Description	This query returns the computed transmitter analysis result for the peak center frequency of the selected main mode peak. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:PEAK:CPEAk:FREQuency?
Parameter(s)	None
Response Syntax	<Center>
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the computed peak center frequency in hertz.
Example(s)	CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 1 CALC:TX:DATA:PEAK:CPEA:FREQ? Returns 1.964293E+014

:CALCulate[1..n]:TX:DATA:PEAK:CPEAk:FREQuency?	
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:DATA:PEAK:CenterMASSs:FR EQuency? :CALCulate[1..n]:TX:DATA:PEAK:CPEAk[:WAVel ength]? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:SMODE:CPEAk:FREQu ency? :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:PEAK:FPMSpacing[:WAVelength]?

Description	This query returns the computed transmitter analysis result for the average wavelength spacing between adjacent Fabry-Perot modes for the selected main mode peak. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:PEAK:FPMSpacing[:WAVelength]?
Parameter(s)	None
Response Syntax	<Spacing>
Response(s)	<i>Spacing:</i> The response data syntax for <Spacing> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Spacing> response corresponds to the mode spacing in meter.

:CALCulate[1..n]:TX:DATA:PEAK:FPMSpacing[:WAVelength]?	
Example(s)	CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 4 CALC:TX:DATA:PEAK:FPMS? Returns 1.123000E-09
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:DATA:PEAK:FPMSpacing:FR EQuency? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:PEAK:FPMSpacing:FREQUENCY?

Description	This query returns the computed transmitter analysis result for the average frequency spacing between adjacent Fabry-Perot modes for the selected main mode peak. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:PEAK:FPMSpacing:FREQUENCY?
Parameter(s)	None
Response Syntax	<Spacing>
Response(s)	<i>Spacing:</i> The response data syntax for <Spacing> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Spacing> response corresponds to the mode spacing in hertz.

:CALCulate[1..n]:TX:DATA:PEAK:FPMSpacing:FREQuency?	
Example(s)	CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 2 CALC:TX:DATA:PEAK:FPMS:FREQ? Returns 5.700000E+009
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:DATA:PEAK:FPMSpacing[:W AVelength]? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:PEAK: NOISe?

Description	This query returns the computed transmitter analysis result for the noise level of the selected main mode peak. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:PEAK:NOISe?
Parameter(s)	None
Response Syntax	<Noise>
Response(s)	<i>Noise:</i> The response data syntax for <Noise> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Noise> response corresponds to the computed noise level.
Example(s)	CALC:TX:STAT ON CALC:TX:NOIS:TYPE IEC <Do measurement> CALC:TX:DATA:PEAK:NSEL 1 UNIT:POW DBM CALC:TX:DATA:PEAK:NOIS? Returns -5.417000E+001

:CALCulate[1..n]:TX:DATA:PEAK: NOISe?	
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:PEAK:OSNR? :CALCulate[1..n]:TX:DATA:PEAK:SIGnalPower? :CALCulate[1..n]:TX:NOISe:TYPE? :CALCulate[1..n]:TX:OSNR:BWIDth BANDwidth[:RESolution] :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:PEAK: NSElect

Description	This command sets the one-based index of the selected main mode peak result for the transmitter analysis. At *RST, this value is not available.
Syntax	<pre>:CALCulate[1..n]:TX:DATA:PEAK:NSElect<wsp> <Number></pre>
Parameter(s)	<i>Number:</i> The program data syntax for <Number> is defined as a <numeric_value> element. The <Number> parameter corresponds to the one-based index of the main mode peak to select. The CALCulate[1..n]:TX:DATA:PEAK:COUNT? query can be used to determine valid index range.
Example(s)	<pre>CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 2 CALC:TX:DATA:PEAK:NSEL? Returns 2</pre>
See Also	<pre>:CALCulate[1..n]:TX:DATA:PEAK:COUNT? :CALCulate[1..n]:TX:DATA:PEAK:NSElect? :CALCulate[1..n]:TX:DATA:SMODE:NSElect :CALCulate[1..n]:TX:STATe</pre>

:CALCulate[1..n]:TX:DATA:PEAK:NSElect?	
Description	This query returns the one-based index of the selected main mode peak result for the transmitter analysis. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:PEAK:NSElect?
Parameter(s)	None
Response Syntax	<Number>
Response(s)	<i>Number:</i> The response data syntax for <Number> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Number> response corresponds to the index of the selected main mode peak. Zero is returned if no peak has been selected.
Example(s)	CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 2 CALC:TX:DATA:PEAK:NSEL? Returns 2
See Also	:CALCulate[1..n]:TX:DATA:PEAK:COUNt? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:SMODE:NSElect? :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:PEAK:OSNR?

Description	This query returns the computed transmitter analysis result for the signal-to-noise ratio of the selected main mode peak. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:PEAK:OSNR?
Parameter(s)	None
Response Syntax	<Osnr>
Response(s)	<i>Osnr</i>: The response data syntax for <Osnr> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Osnr> response corresponds to the computed signal-to-noise ratio.
Example(s)	<pre> CALC:TX:STAT ON CALC:TX:SIGP:TYPE IPOW CALC:TX:NOIS:TYPE IEC CALC:TX:OSNR:BWID:RES:AUTO ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 3 UNIT:RAT DB CALC:TX:DATA:PEAK:OSNR? Returns 1.955000E+001 </pre>

:CALCulate[1..n]:TX:DATA:PEAK:OSNR?	
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:DATA:PEAK:NOISe? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:PEAK:SIGnalPower? :CALCulate[1..n]:TX:NOISe:TYPE? :CALCulate[1..n]:TX:OSNR:BWIDth BANDwidth[:RESolution] :CALCulate[1..n]:TX:SIGnalPower:TYPE :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:PEAK:PPOWer?	
Description	This query returns the computed transmitter analysis result for the power level of the selected main mode peak. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:PEAK:PPOWer?
Parameter(s)	None
Response Syntax	<Power>
Response(s)	<i>Power:</i> The response data syntax for <Power> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Power> response corresponds to the computed power level.
Example(s)	<pre>CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 2 UNIT:POW DBM CALC:TX:DATA:PEAK:PPOW? Returns -3.580000E+000</pre>
See Also	<pre>:MEMory[1..n]:TABLE:DATA? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:PEAK:SIGnalPower? :CALCulate[1..n]:TX:DATA:SMODE:PPOWer? :CALCulate[1..n]:TX:STATe</pre>

:CALCulate[1..n]:TX:DATA:PEAK: SIGnalPower?

Description	This query returns the computed transmitter analysis result for the signal power of the selected main mode peak. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:PEAK:SIGnalPower?
Parameter(s)	None
Response Syntax	<Power>
Response(s)	<i>Power:</i> The response data syntax for <Power> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Power> response corresponds to the computed signal power.

:CALCulate[1..n]:TX:DATA:PEAK: SIGnalPower?

Example(s)	CALC:TX:STAT ON CALC:TX:SIGP:TYPE IPOW <Do measurement> CALC:TX:DATA:PEAK:NSEL 2 UNIT:POW DBM CALC:TX:DATA:PEAK:SIGP? Returns -3.430000E+000
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:DATA:PEAK:NOISe? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:PEAK:OSNR? :CALCulate[1..n]:TX:DATA:PEAK:PPOWer? :CALCulate[1..n]:TX:SIGnalPower:TYPE :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:SMODE:COFFset[:WAVelength]?	
Description	This query returns the computed transmitter analysis result for the wavelength offset of the center of the selected side-mode. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:SMODE:COFFset[:WAVelength]?
Parameter(s)	None
Response Syntax	<Offset>
Response(s)	<i>Offset:</i> The response data syntax for <Offset> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Offset> response corresponds to the side-mode center offset in meter relative to the peak center.
Example(s)	CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 9 CALC:TX:DATA:SMOD:NSEL:LEFT 3 CALC:TX:DATA:SMOD:COFF? Returns -3.000000E-011

:CALCulate[1..n]:TX:DATA:SMODE:COFFset[:WAVelength]?

Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:SMODE:CPEAk[:WAVE length]? :CALCulate[1..n]:TX:DATA:SMODE:COFFset:FRE Quency? :CALCulate[1..n]:TX:DATA:SMODE:NSElect :CALCulate[1..n]:TX:DATA:SMODE:NSElect:LEFT :CALCulate[1..n]:TX:DATA:SMODE:NSElect:RIG Ht :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:SMODE:COFFset:FREQuency?	
Description	This query returns the computed transmitter analysis result for the frequency offset of the center of the selected side-mode. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:SMODE:COFFset:FREQuency?
Parameter(s)	None
Response Syntax	<Offset>
Response(s)	<i>Offset:</i> The response data syntax for <Offset> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Offset> response corresponds to the side-mode center offset in hertz relative to the peak center.
Example(s)	CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 3 CALC:TX:DATA:SMOD:NSEL:RIGH 1 CALC:TX:DATA:SMOD:COFF:FREQ? Returns 5.700000E+009

**:CALCulate[1..n]:TX:DATA:SMODE:
COFFset:FREQuency?**

Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:SMODE:CPEAk:FREQu ency? :CALCulate[1..n]:TX:DATA:SMODE:COFFset[:WA Velength]? :CALCulate[1..n]:TX:DATA:SMODE:NSElect :CALCulate[1..n]:TX:DATA:SMODE:NSElect:LEFT :CALCulate[1..n]:TX:DATA:SMODE:NSElect:RIG Ht :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:SMODE:COUNT?	
Description	This query returns the number of side-mode results for the transmitter analysis. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:SMODE:COUNT?
Parameter(s)	None
Response Syntax	<Count>
Response(s)	<i>Count:</i> The response data syntax for <Count> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Count> response corresponds to the number of items in the power sorted list of side-mode results. The <Count> value is the total count of left and right side-mode results for the selected peak.

:CALCulate[1..n]:TX:DATA:SMODE:COUNT?

Example(s)	CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 1 CALC:TX:DATA:SMOD:COUN? Returns 6
See Also	:CALCulate[1..n]:TX:DATA:PEAK:COUNT? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:SMODE:NSElect :CALCulate[1..n]:TX:DATA:SMODE:NSElect:LEFT :CALCulate[1..n]:TX:DATA:SMODE:NSElect:RIGHT :CALCulate[1..n]:TX:DATA:SMODE:NUMBER? :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:SMODE:CPEAk[:WAVElength]?	
Description	This query returns the computed transmitter analysis result for the peak center wavelength of the selected side-mode. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:SMODE:CPEAk[:WAVElength]?
Parameter(s)	None
Response Syntax	<Center>
Response(s)	Center: The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the computed peak center wavelength in meter.
Example(s)	CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 2 CALC:TX:DATA:SMOD:NSEL 3 CALC:TX:DATA:SMOD:CPEA:WAV? Returns 1.476971E-006

:CALCulate[1..n]:TX:DATA:SMODE:CPEAk[:WAVelength]?

Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:SMODE:CPEAk:FREQu ency? :CALCulate[1..n]:TX:DATA:SMODE:COFFset[:WA Vlength]? :CALCulate[1..n]:TX:DATA:SMODE:NSElect :CALCulate[1..n]:TX:DATA:SMODE:NSElect:LEFT :CALCulate[1..n]:TX:DATA:SMODE:NSElect:RIG Ht :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:SMODE:CPEAk:FREQuency?

Description	This query returns the computed transmitter analysis result for the peak center frequency of the selected side-mode. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:SMODE:CPEAk:FREQuency?
Parameter(s)	None
Response Syntax	<Center>
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the computed peak center frequency in hertz.
Example(s)	<pre>CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 1 CALC:TX:DATA:SMOD:NSEL 1 CALC:TX:DATA:SMOD:CPEA:FREQ? Returns 2.020066E+014</pre>

:CALCulate[1..n]:TX:DATA:SMODE:
CPEAk:FREQuency?

Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:SMODE:CPEAk[:WAVE length]? :CALCulate[1..n]:TX:DATA:SMODE:COFFset:FRE Quency? :CALCulate[1..n]:TX:DATA:SMODE:NSElect :CALCulate[1..n]:TX:DATA:SMODE:NSElect:LEFT :CALCulate[1..n]:TX:DATA:SMODE:NSElect:RIG Ht :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:SMODE:LOCation?	
Description	This query indicates the location of the selected side-mode result relative to the peak for the transmitter analysis. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:SMODE:LOCation?
Parameter(s)	None
Response Syntax	<Location>
Response(s)	<i>Location:</i> The response data syntax for <Location> is defined as a <CHARACTER RESPONSE DATA> element. The <Location> response corresponds to the location of the side-mode. LEFT: the side-mode is to the left of the peak. Its center wavelength is lower than the peak center wavelength. RIGHT: the side-mode is to the right of the peak. Its center wavelength is greater than the peak center wavelength.

:CALCulate[1..n]:TX:DATA:SMODE:LOCation?

Example(s)	CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 3 CALC:TX:DATA:SMOD:COUN? Returns 6 CALC:TX:DATA:SMOD:NSEL 1 CALC:TX:DATA:SMOD:LOC? Returns "LEFT" CALC:TX:DATA:SMOD:NUMB? Returns 1
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:SMODE:NSElect :CALCulate[1..n]:TX:DATA:SMODE:NSElect:LEFT :CALCulate[1..n]:TX:DATA:SMODE:NSElect:RIG Ht :CALCulate[1..n]:TX:DATA:SMODE:NUMBer? :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:SMODE:NSElect	
Description	This command sets the one-based index of the selected side-mode result from the list of power sorted side-modes for the transmitter analysis. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:SMODE:NSElect<wsp><Number>
Parameter(s)	<i>Number:</i> The program data syntax for <Number> is defined as a <numeric_value> element. The <Number> parameter corresponds to the one-based index of the side-mode to select. The list of side-modes is ordered from the most to the least powerful, which means that index one always represents the side-mode with the worst suppression ratio. The CALCulate[1..n]:TX:DATA:SMODE:COUNt? query can be used to determine valid index range.

:CALCulate[1..n]:TX:DATA:SMODE:NSElect

Example(s)	CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 3 CALC:TX:DATA:SMOD:COUN? Returns 6 CALC:TX:DATA:SMOD:NSEL 1 CALC:TX:DATA:SMOD:LOC? Returns LEFT CALC:TX:DATA:SMOD:NUMB? Returns 1
See Also	:CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:SMODE:COUNt? :CALCulate[1..n]:TX:DATA:SMODE:LOCation? :CALCulate[1..n]:TX:DATA:SMODE:NSElect? :CALCulate[1..n]:TX:DATA:SMODE:NSElect:LEFT :CALCulate[1..n]:TX:DATA:SMODE:NSElect:RIG Ht :CALCulate[1..n]:TX:DATA:SMODE:NUMBer? :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:SMODE:NSElect?	
Description	This query returns the one-based index of the selected side-mode result from the list of power sorted side-modes for the transmitter analysis. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:SMODE:NSElect?
Parameter(s)	None
Response Syntax	<Number>
Response(s)	<i>Number:</i> The response data syntax for <Number> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Number> response corresponds to the one-based index of the selected side-mode result. Zero is returned if no side-mode has been selected.

:CALCulate[1..n]:TX:DATA:SMODE:NSElect?

Example(s)	CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 5 CALC:TX:DATA:SMOD:COUN? Returns 6 CALC:TX:DATA:SMOD:NSEL 3 CALC:TX:DATA:SMOD:NSEL? Returns 3 CALC:TX:DATA:SMOD:LOC? Returns RIGHT CALC:TX:DATA:SMOD:NUMB? Returns 1
See Also	:CALCulate[1..n]:TX:DATA:PEAK:NSElect? :CALCulate[1..n]:TX:DATA:SMODE:COUNt? :CALCulate[1..n]:TX:DATA:SMODE:NSElect :CALCulate[1..n]:TX:DATA:SMODE:NSElect:LEFT :CALCulate[1..n]:TX:DATA:SMODE:NSElect:RIG Ht :CALCulate[1..n]:TX:DATA:SMODE:NUMBer? :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:SMODE:NSElect:LEFT	
Description	This command selects a left side-mode result for the transmitter analysis. This command is an event and has no associated *RST condition or query form.
Syntax	:CALCulate[1..n]:TX:DATA:SMODE:NSElect:LEFT <wsp> <Number>
Parameter(s)	<i>Number:</i> The program data syntax for <Number> is defined as a <numeric_value> element. The <Number> parameter corresponds to the one-based counting number of the left side-mode to select. The <Number> value is one for the left side-mode which is nearest to the peak.
Example(s)	CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 7 CALC:TX:DATA:SMOD:NSEL:LEFT 2 CALC:TX:DATA:SMOD:NSEL? 5 CALC:TX:DATA:SMOD:NUMB? Returns 2
See Also	:CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:SMODE:COUNt? :CALCulate[1..n]:TX:DATA:SMODE:NSElect :CALCulate[1..n]:TX:DATA:SMODE:NSElect:RIG Ht :CALCulate[1..n]:TX:DATA:SMODE:NUMBer? :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:SMODE:NSElect:RIGHT

Description	This command selects a right side-mode result for the transmitter analysis. This command is an event and has no associated *RST condition or query form.
Syntax	:CALCulate[1..n]:TX:DATA:SMODE:NSElect:RIGHT<wsp><Number>
Parameter(s)	<i>Number:</i> The program data syntax for <Number> is defined as a <numeric_value> element. The <Number> parameter corresponds to the one-based counting number of the right side-mode to select. The <Number> value is one for the right side-mode which is nearest to the peak.
Example(s)	<pre>CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 7 CALC:TX:DATA:SMOD:NSEL:RIGHT 2 CALC:TX:DATA:SMOD:NSEL? 3 CALC:TX:DATA:SMOD:NUMB? Returns 2</pre>
See Also	<pre>:CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:SMODE:COUNt? :CALCulate[1..n]:TX:DATA:SMODE:NSElect :CALCulate[1..n]:TX:DATA:SMODE:NSElect:LEFT :CALCulate[1..n]:TX:DATA:SMODE:NUMBer? :CALCulate[1..n]:TX:STATe</pre>

:CALCulate[1..n]:TX:DATA:SMODE:NUMBER?	
Description	This query returns the one-based counting number of the selected side-mode relative to the peak for the transmitter analysis. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:SMODE:NUMBER?
Parameter(s)	None
Response Syntax	<Number>
Response(s)	<i>Number:</i> The response data syntax for <Number> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Number> response corresponds to the one-based counting number. The <Number> value is one for the left and right side-modes which are nearest to the peak.

**:CALCulate[1..n]:TX:DATA:SMODE:
NUMBer?**

Example(s)	CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 5 CALC:TX:DATA:SMOD:NSEL:LEFT 3 CALC:TX:DATA:SMOD:NUMB? Returns 3
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:SMODE:COUNt? :CALCulate[1..n]:TX:DATA:SMODE:LOCation? :CALCulate[1..n]:TX:DATA:SMODE:NSElect :CALCulate[1..n]:TX:DATA:SMODE:NSElect:LEFT :CALCulate[1..n]:TX:DATA:SMODE:NSElect:RIG Ht :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:SMODE:PPOWer?	
Description	This query returns the computed transmitter analysis result for the power level of the selected side-mode. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:SMODE:PPOWer?
Parameter(s)	None
Response Syntax	<Power>
Response(s)	<i>Power:</i> The response data syntax for <Power> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Power> response corresponds to the computed power level.

**:CALCulate[1..n]:TX:DATA:SMODE:
PPOWer?**

Example(s)	CALC:TX:STAT ON <Do measurement> CALC:TX:DATA:PEAK:NSEL 3 CALC:TX:DATA:SMOD:NSEL:RIGH 1 UNIT:POW DBM CALC:TX:DATA:SMOD:PPOW? Returns -3.430000E+000
See Also	:MEMory[1..n]:TABLe:DATA? :CALCulate[1..n]:TX:DATA:PEAK:SIGnalPower? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:SMODE:NSElect :CALCulate[1..n]:TX:DATA:SMODE:NSElect:LEFT :CALCulate[1..n]:TX:DATA:SMODE:NSElect:RIG Ht :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:SMODE:SRATio?	
Description	This query returns the computed transmitter analysis result for the supression ratio of the selected side-mode. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:SMODE:SRATio?
Parameter(s)	None
Response Syntax	<Ratio>
Response(s)	<i>Ratio:</i> The response data syntax for <Ratio> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Ratio> response corresponds to the side-mode supression ratio.
Example(s)	CALC:TX:STAT ON <Do measurement> UNIT:RAT DB CALC:TX:DATA:PEAK:NSEL 1 CALC:TX:DATA:SMOD:NSEL:LEFT 2 CALC:TX:DATA:SMOD:SRAT? Returns 3.18000E+000
See Also	:MEMory[1..n]:TABLE:DATA? :CALCulate[1..n]:TX:DATA:PEAK:NSElect :CALCulate[1..n]:TX:DATA:SMODE:NSElect :CALCulate[1..n]:TX:DATA:SMODE:NSElect:LEFT :CALCulate[1..n]:TX:DATA:SMODE:NSElect:RIG Ht :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:SIGnalPower:FLATness?	
Description	This query returns the computed transmitter analysis result for the signal power flatness. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:SIGnalPower:FLATness?
Parameter(s)	None
Response Syntax	<Flatness>
Response(s)	<i>Flatness:</i> The response data syntax for <Flatness> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Flatness> response corresponds to the computed signal power flatness.
Example(s)	CALC:TX:STAT ON <Do measurement> UNIT:RAT DB CALC:TX:DATA:SIGP:FLAT? Returns 3.118000E+001
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:TX:DATA:OSNR:FLATness? :CALCulate[1..n]:TX:DATA:OSNR:MEAN? :CALCulate[1..n]:TX:DATA:SIGnalPower:MEAN? :CALCulate[1..n]:TX:DATA:TPOWer? :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:SIGnalPower:MEAN?	
Description	This query returns the computed transmitter analysis result for the signal mean power. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:SIGnalPower:MEAN?
Parameter(s)	None
Response Syntax	<Mean>
Response(s)	<i>Mean:</i> The response data syntax for <Mean> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Mean> response corresponds to the computed mean signal power.
Example(s)	CALC:TX:STAT ON <Do measurement> UNIT:POW DBM CALC:TX:DATA:SIGP:MEAN? Returns -8.200000E+000
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:TX:DATA:OSNR:FLATness? :CALCulate[1..n]:TX:DATA:OSNR:MEAN? :CALCulate[1..n]:TX:DATA:SIGnalPower:FLATness? :CALCulate[1..n]:TX:DATA:TPOWer? :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:DATA:TPOWer?	
Description	This query returns the computed transmitter analysis result for the total power of the analyzed trace. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:TX:DATA:TPOWer?
Parameter(s)	None
Response Syntax	<Power>
Response(s)	<i>Power:</i> The response data syntax for <Power> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Power> response corresponds to the computed total power of the trace.
Example(s)	CALC:TX:STAT ON <Do measurement> UNIT:POW DBM CALC:TX:DATA:TPOW? Returns -3.420000E+000
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n]:TX:DATA:OSNR:FLATness? :CALCulate[1..n]:TX:DATA:OSNR:MEAN? :CALCulate[1..n]:TX:DATA:SIGnalPower:FLATness? :CALCulate[1..n]:TX:DATA:SIGnalPower:MEAN? :CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:FILTer:STATe	
Description	This command controls the activation of the trace filter for the transmitter analysis. At *RST, the trace filter is set to on (enabled).
Syntax	:CALCulate[1..n]:TX:FILTer:STATe<wsp><State>
Parameter(s)	<i>State:</i> The program data syntax for <State> is defined as a <Boolean Program Data> element. The <State> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0. The <State> parameter corresponds to the new state of the trace filter. 0 or OFF: filter is disabled. 1 or ON: filter is enabled.
Example(s)	CALC:TX:FILT:STAT ON CALC:TX:FILT:STAT? Returns 1 (Filtering enabled)
See Also	:CALCulate[1..n]:TX:STATe :CALCulate[1..n]:TX:FILTer:STATe? :CALCulate[1..n]:TX:FILTer:WINDow:SPAN

:CALCulate[1..n]:TX:FILTer:STATe?

Description	This query indicates if the trace filter for the transmitter analysis has been enabled or not. At *RST, the trace filter is set to on (enabled).
Syntax	:CALCulate[1..n]:TX:FILTer:STATe?
Parameter(s)	None
Response Syntax	<State>
Response(s)	<i>State:</i> The response data syntax for <State> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <State> response corresponds to the state of the trace filter. 0: filter is enabled. 1: filter is disabled.
Example(s)	CALC:TX:FILT:STAT OFF CALC:TX:FILT:STAT? Returns 0 (Filtering disabled)
See Also	:CALCulate[1..n]:TX:FILTer:STATe :CALCulate[1..n]:TX:FILTer:WINDow:SPAN?

:CALCulate[1..n]:TX:FILTer:WINDow:SPAN

Description	This command sets the wavelength width of the trace filter window for the transmitter analysis. At *RST, this value is set to 0.100 nm.
Syntax	:CALCulate[1..n]:TX:FILTer:WINDow:SPAN<wsp> <Span[<wsp>M]> MAXimum MINimum DEFault
Parameter(s)	<i>Span:</i> The program data syntax for is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:TX:FILTer:WINDow:SPAN

DEfault allows the instrument to select a value for the parameter.

The parameter corresponds to the width of the filter window in meters.

The CALCulate[1..n]:TX:FILTer:WINDow:SPAN? MIN and
CALCulate[1..n]:TX:FILTer:WINDow:SPAN? MAX queries can be used to determine the valid range for the width of the filter window.

Example(s)

CALC:TX:FILT:STAT ON
CALC:TX:FILT:WIND:SPAN 0.125 NM
CALC:TX:FILT:WIND:SPAN? Returns
1.2500000E-010

See Also

:CALCulate[1..n]:TX:FILTer:STATe
:CALCulate[1..n]:TX:FILTer:WINDow:SPAN?

:CALCulate[1..n]:TX:FILTer:WINDow:SPAN?	
Description	This query returns a value indicating either the current or the minimum/maximum wavelength width value of the trace filter window for the transmitter analysis. At *RST, this value is set to 0.100 nm.
Syntax	:CALCulate[1..n]:TX:FILTer:WINDow:SPAN? [<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	

:CALCulate[1..n]:TX:FILTer:WINDow:SPAN?

Response(s)

Span:

The response data syntax for is defined as a <NR3 NUMERIC RESPONSE DATA> element.

The response corresponds to either the current or the MINimum/MAXimum wavelength width value for the filter window.

Example(s)

CALC:TX:FILT:STAT ON
CALC:TX:FILT:WIND:SPAN 0.125 NM
CALC:TX:FILT:WIND:SPAN? Returns
1.2500000E-010

See Also

:CALCulate[1..n]:TX:FILTer:STaTe?
:CALCulate[1..n]:TX:FILTer:WINDow:SPAN

:CALCulate[1..n]:TX:NOISe:DIStance[:WAVelength]

Description

This command sets the wavelength distance from the peak to center of the noise region for the noise measurement of the transmitter analysis.

At *RST, the default noise measurement distance is set to 100.0 GHz.

Syntax

:CALCulate[1..n]:TX:NOISe:DIStance[:WAVelength]<wsp><Distance[<wsp>M]>|MAXimum|MINimum|DEFault

Parameter(s)

Distance:

The program data syntax for <Distance> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Distance> special forms MINimum, MAXimum and DEFault are accepted on input.

MINimum allows to set the instrument to the smallest supported value.

MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:TX:NOISe:DISTance[:WAVelength]

DEFault allows the instrument to select a value for the <Distance> parameter.

The <Distance> parameter corresponds to a valid distance in meters from peak to center of the noise region.

The
CALCulate[1..n]:TX:NOISe:DISTance[:WAVelength]? MIN and
CALCulate[1..n]:TX:NOISe:DISTance[:WAVelength]? MAX queries can be used to determine valid distance values.

Example(s)

```
CALC:TX:NOIS:TYPE POLY5
CALC:TX:NOIS:DIST:WAV 40.0 NM
CALC:TX:NOIS:DIST:WAV? Returns
4.000000E-008
```

See Also

```
:CALCulate[1..n]:TX:NOISe:DISTance:FREQuency
:CALCulate[1..n]:TX:NOISe:DISTance[:WAVelength]?
:CALCulate[1..n]:TX:NOISe:WIDTh[:WAVelength]
:CALCulate[1..n]:TX:NOISe:TYPE
```

:CALCulate[1..n]:TX:NOISe:DISTance[:WAVelength]?

Description

This query returns the wavelength distance from the peak to center of the noise region for the noise measurement of the transmitter analysis.

At *RST, the default noise measurement distance is set to 100.0 GHz.

Syntax

:CALCulate[1..n]:TX:NOISe:DISTance[:WAVelength]?[<wsp>MAXimum|MINimum|DEFault]

Parameter(s)

Parameter 1:

The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum|MINimum|DEFault.

MINimum is used to retrieve the instrument's smallest supported value.

MAXimum is used to retrieve the instrument's greatest supported value.

DEFault is used to retrieve the instrument's default value.

Response Syntax

<Distance>

**:CALCulate[1..n]:TX:NOISe:DISTance
[:WAVelength]?**

Response(s)	<i>Distance:</i> The response data syntax for <Distance> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Distance> response corresponds to either the current or the MINimum/MAXimum noise distance wavelength in meters.
Example(s)	CALC:TX:NOIS:DIST:WAV DEF CALC:TX:NOIS:DIST:WAV? Returns 2.000000E-008
See Also	:CALCulate[1..n]:TX:NOISe:DISTance:FREQuency? :CALCulate[1..n]:TX:NOISe:DISTance[:WAVelength] :CALCulate[1..n]:TX:NOISe:WIDTh[:WAVelength]?

:CALCulate[1..n]:TX:NOISe:DIStance:FREQuency

Description	This command sets the frequency distance from the peak to center of the noise region for the noise measurement of the transmitter analysis. At *RST, the default noise measurement distance is set to 100.0 GHz.
Syntax	:CALCulate[1..n]:TX:NOISe:DIStance:FREQuency<wsp> <Distance[<wsp>HZ]> MAXimum MINimum DEFault
Parameter(s)	<i>Distance:</i> The program data syntax for <Distance> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Distance> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:TX:NOISe:DISTance:FREQuency

DEFault allows the instrument to select a value for the <Distance> parameter.

The <Distance> parameter corresponds to a valid distance in hertz from peak to center of the noise region.

The
CALCulate[1..n]:TX:NOISe:DISTance:FREQuency
? MIN and
CALCulate[1..n]:TX:NOISe:DISTance:FREQuency
? MAX queries can be used to determine valid
distance values.

Example(s)

```
CALC:TX:NOIS:TYPE POLY5
CALC:TX:NOIS:DIST:FREQ 100.0 GHZ
CALC:TX:NOIS:DIST:FREQ? Returns
1.000000E+011
```

See Also

```
:CALCulate[1..n]:TX:NOISe:DISTance[:WAVeleng
th]
:CALCulate[1..n]:TX:NOISe:DISTance:FREQuenc
y?
:CALCulate[1..n]:TX:NOISe:WIDTh:FREQuency
:CALCulate[1..n]:TX:NOISe:TYPE
```

:CALCulate[1..n]:TX:NOISe:DIStance:FREQuency?

Description

This query returns the frequency distance from the peak to center of the noise region for the noise measurement of the transmitter analysis.

At *RST, the default noise measurement distance is set to 100.0 GHz.

Syntax

:CALCulate[1..n]:TX:NOISe:DIStance:FREQuency? [<wsp>MAXimum|MINimum|DEFAULT]

Parameter(s)

Parameter 1:

The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum|MINimum|DEFAULT.

MINimum is used to retrieve the instrument's smallest supported value.

MAXimum is used to retrieve the instrument's greatest supported value.

DEFAULT is used to retrieve the instrument's default value.

Response Syntax

<Distance>

**:CALCulate[1..n]:TX:NOISe:DISTance:
FREQuency?**

Response(s)	<i>Distance:</i> The response data syntax for <Distance> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Distance> response corresponds to either the current or the MINimum/MAXimum noise distance frequency in hertz.
Example(s)	CALC:TX:NOIS:DIST:FREQ 80.0 GHZ CALC:TX:NOIS:DIST:FREQ? Returns 8.000000E+010
See Also	:CALCulate[1..n]:TX:NOISe:DISTance[:WAVeleng th] :CALCulate[1..n]:TX:NOISe:DISTance:FREQuenc y :CALCulate[1..n]:TX:NOISe:WIDTh:FREQuency?

:CALCulate[1..n]:TX:NOISe:TYPE	
Description	This command selects the noise measurement type for the transmitter analysis. At *RST, the noise type is set to IEC.
Syntax	:CALCulate[1..n]:TX:NOISe:TYPE<wsp>IEC GAUSSs POLYnomial5
Parameter(s)	<i>Type:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: IEC GAUSSs POLYnomial5. The parameter corresponds to the newly selected noise type. IEC: selects IEC noise type. GAUSSs: selects gaussian fit noise type. POLYnomial5: selects 5th order polynomial fit noise type.
Example(s)	CALC:TX:NOIS:TYPE IEC CALC:TX:NOIS:TYPE? Returns IEC
See Also	:CALCulate[1..n]:TX:NOISe:DISTance:FREQuency :CALCulate[1..n]:TX:NOISe:DISTance[:WAVelength] :CALCulate[1..n]:TX:NOISe:WIDTh:FREQuency :CALCulate[1..n]:TX:NOISe:WIDTh[:WAVelength] :CALCulate[1..n]:TX:NOISe:TYPE?

:CALCulate[1..n]:TX:NOISe:TYPE?	
Description	This query returns the selected noise measurement type for the transmitter analysis. At *RST, the noise type is set to IEC.
Syntax	:CALCulate[1..n]:TX:NOISe:TYPE?
Parameter(s)	None
Response Syntax	<Type>
Response(s)	<i>Type:</i> The response data syntax for <Type> is defined as a <CHARACTER RESPONSE DATA> element. The <Type> response corresponds to the selected noise type. IEC: the IEC noise type is selected. GAUSS: the gaussian fit noise type is selected. POLYNOMIAL5: the 5th order polynomial fit noise type is selected.
Example(s)	CALC:TX:NOIS:TYPE IEC CALC:TX:NOIS:TYPE? Returns IEC
See Also	:CALCulate[1..n]:TX:NOISe:DISTance:FREQuency? :CALCulate[1..n]:TX:NOISe:DISTance[:WAVelength]? :CALCulate[1..n]:TX:NOISe:WIDTh:FREQuency? :CALCulate[1..n]:TX:NOISe:WIDTh[:WAVelength]? :CALCulate[1..n]:TX:NOISe:TYPE

:CALCulate[1..n]:TX:NOISe:WIDTh[:WAVeLength]	
Description	This command sets the wavelength width of the noise measurement region for the transmitter analysis. At *RST, the width of the noise measurement region is set to 100.0 GHz.
Syntax	:CALCulate[1..n]:TX:NOISe:WIDTh[:WAVeLength] <wsp> <Width[<wsp>M]> MAXimum MINimum DEFault
Parameter(s)	<i>Width:</i> The program data syntax for <Width> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Width> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:TX:NOISe:WIDTh[:WAVelength]

DEFault allows the instrument to select a value for the <Width> parameter.

The <Width> parameter corresponds to a valid width in meters for the noise measurement region.

The
 CALCulate[1..n]:TX:NOISe:WIDTh[:WAVelength]
 ? MIN and
 CALCulate[1..n]:TX:NOISe:WIDTh[:WAVelength]
 ? MAX queries can be used to determine valid
 width values.

Example(s)

CALC:TX:NOIS:TYPE POLY5
 CALC:TX:NOIS:WIDTh:WAV 12.5 NM
 CALC:TX:NOIS:WIDTh:WAV? Returns
 1.250000E-008

See Also

:CALCulate[1..n]:TX:NOISe:WIDTh:FREQuency
 :CALCulate[1..n]:TX:NOISe:WIDTh[:WAVelength]
]?
 :CALCulate[1..n]:TX:NOISe:DISTance[:WAVeleng
 th]
 :CALCulate[1..n]:TX:NOISe:TYPE

:CALCulate[1..n]:TX:NOISe:WIDTh[:WAVeLength]?	
Description	This query returns the wavelength width of the noise measurement region for the transmitter analysis. At *RST, the width of the noise measurement region is set to 100.0 GHz.
Syntax	:CALCulate[1..n]:TX:NOISe:WIDTh[:WAVeLength]?[<wsp>MAXimum MINimum DEFault]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFault. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFault is used to retrieve the instrument's default value.
Response Syntax	<Width>

**:CALCulate[1..n]:TX:NOISe:WIDTh
[:WAVelength]?**

Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to either the current or the MINimum/MAXimum wavelength width of the noise measurement region in meters.
Example(s)	CALC:TX:NOIS:WIDTh:WAV DEF CALC:TX:NOIS:WIDTh:WAV? Returns 2.000000E-008
See Also	:CALCulate[1..n]:TX:NOISe:WIDTh:FREQuency? :CALCulate[1..n]:TX:NOISe:WIDTh[:WAVelength]] :CALCulate[1..n]:TX:NOISe:DISTance[:WAVeleng th]?

:CALCulate[1..n]:TX:NOISe:WIDTh:FREQUency	
Description	This command sets the frequency width of the noise measurement region for the transmitter analysis. At *RST, the width of the noise measurement region is set to 100.0 GHz.
Syntax	:CALCulate[1..n]:TX:NOISe:WIDTh:FREQUency<wsp> <Width[<wsp>HZ]> MAXimum MINimum DEFault
Parameter(s)	<i>Width:</i> The program data syntax for <Width> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Width> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

**:CALCulate[1..n]:TX:NOISe:WIDTh:
FREQuency**

DEFault allows the instrument to select a value for the <Width> parameter.

The <Width> parameter corresponds to a valid width in hertz for the noise measurement region.

The
CALCulate[1..n]:TX:NOISe:WIDTh:FREQuency?
MIN and
CALCulate[1..n]:TX:NOISe:WIDTh:FREQuency?
MAX queries can be used to determine valid
width values.

Example(s)

CALC:TX:NOIS:TYPE POLY5
CALC:TX:NOIS:WIDTh:FREQ 100.0 GHZ
CALC:TX:NOIS:WIDTh:FREQ? Returns
1.000000E+011

See Also

:CALCulate[1..n]:TX:NOISe:WIDTh[:WAVelength
]
:CALCulate[1..n]:TX:NOISe:WIDTh:FREQuency?
:CALCulate[1..n]:TX:NOISe:DISTance:FREQuenc
y
:CALCulate[1..n]:TX:NOISe:TYPE

:CALCulate[1..n]:TX:NOISe:WIDTh:FREQuency?	
Description	This query returns the frequency width of the noise measurement region for the transmitter analysis. At *RST, the width of the noise measurement region is set to 100.0 GHz.
Syntax	:CALCulate[1..n]:TX:NOISe:WIDTh:FREQuency? [<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Width>

**:CALCulate[1..n]:TX:NOISe:WIDTh:
FREQuency?**

Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to either the current or the MINimum/MAXimum frequency width of the noise measurement region in hertz.
Example(s)	CALC:TX:NOIS:WIDTh:FREQ 65.0 GHZ CALC:TX:NOIS:WIDTh:FREQ? Returns 6.500000E+010
See Also	:CALCulate[1..n]:TX:NOISe:WIDTh[:WAVelength]]? :CALCulate[1..n]:TX:NOISe:WIDTh:FREQuency :CALCulate[1..n]:TX:NOISe:DISTance:FREQuenc y?

:CALCulate[1..n]:TX:OSNR: BANDwidth BWIDth[:RESolution]	
Description	This command sets the custom resolution bandwidth value for OSNR calculation in the transmitter analysis. At *RST, this value is set to 0.100 nm.
Syntax	:CALCulate[1..n]:TX:OSNR:BANDwidth BWIDth[:RESolution]<wsp><Resolution[<wsp>M]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Resolution:</i> The program data syntax for <Resolution> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Resolution> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

**:CALCulate[1..n]:TX:OSNR:
BANDwidth|BWIDth[:RESolution]**

DEfault allows the instrument to select a value for the <Resolution> parameter.

The <Resolution> parameter corresponds to the custom resolution bandwidth in meters.

The
CALCulate[1..n]:TX:OSNR:BANDwidth[RESolution]? MIN and
CALCulate[1..n]:TX:OSNR:BANDwidth[RESolution]? MAX queries can be used to determine the valid resolution bandwidth range.

Example(s)

CALC:TX:OSNR:BAND:RES:AUTO OFF
CALC:TX:OSNR:BAND:RES 0.065 NM
CALC:TX:OSNR:BAND:RES? Returns
6.500000E-011

See Also

:CALCulate[1..n]:TX:OSNR:BWIDth|BANDwidth[:RESolution]?
:CALCulate[1..n]:TX:OSNR:BWIDth|BANDwidth[:RESolution]:AUTO

:CALCulate[1..n]:TX:OSNR: BANDwidth BWIDth[:RESolution]?	
Description	This query returns a value indicating either the current or the minimum/maximum resolution bandwidth value for OSNR calculation in the transmitter analysis. At *RST, this value is set to 0.100 nm.
Syntax	:CALCulate[1..n]:TX:OSNR:BANDwidth BWIDth[:RESolution]?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Resolution>

:CALCulate[1..n]:TX:OSNR: BANDwidth BWIDth[:RESolution]?	
Response(s)	<i>Resolution:</i> The response data syntax for <Resolution> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Resolution> response corresponds to either the current or the MINimum/MAXimum resolution bandwidth value for OSNR calculation.
Example(s)	CALC:TX:OSNR:BAND:RES:AUTO OFF CALC:TX:OSNR:BAND:RES 0.065 NM CALC:TX:OSNR:BAND:RES? Returns 6.500000E-011
See Also	:CALCulate[1..n][:WDM]:OSNR:BWIDth BANDwidth[:RESolution]:AUTO? :CALCulate[1..n][:WDM]:OSNR:BWIDth BANDwidth[:RESolution]

:CALCulate[1..n]:TX:OSNR:
BANDwidth|BWIDth[:RESolution]:AUTO

Description	This command controls the activation of the OSNR calculation using the auto resolution bandwidth for the transmitter analysis. At *RST, the auto resolution bandwidth is set to off (disabled).
Syntax	:CALCulate[1..n]:TX:OSNR:BANDwidth BWIDth[:RESolution]:AUTO<wsp><Auto>
Parameter(s)	<i>Auto:</i> The program data syntax for <Auto> is defined as a <Boolean Program Data> element. The <Auto> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0.

**:CALCulate[1..n]:TX:OSNR:
BANDwidth|BWIDth[:RESolution]:AUTO**

The <Auto> parameter corresponds to the new state of the auto resolution bandwidth for OSNR calculation.

0 or OFF: a custom resolution bandwidth value is used.

1 or ON: the instruments resolution bandwidth is used.

Example(s)

CALC:TX:OSNR:BAND:RES:AUTO ON
 CALC:TX:OSNR:BAND:RES:AUTO? Returns 1
 (instrument's RBW enabled)
 CALC:TX:OSNR:BAND:RES 0.100 NM
 CALC:TX:OSNR:BAND:RES:AUTO OFF
 CALC:TX:OSNR:BAND:RES:AUTO? Returns 0
 (RBW 0.100 nm enabled)

See Also

:CALCulate[1..n]:TX:OSNR:BWIDth|BANDwidth[:RESolution]
 :CALCulate[1..n]:TX:OSNR:BWIDth|BANDwidth[:RESolution]:AUTO?

:CALCulate[1..n]:TX:OSNR: BANDwidth BWIDth[:RESolution]:AUTO?	
Description	This query indicates if the OSNR calculation using auto resolution bandwidth has been enabled or not for the transmitter analysis. At *RST, the auto resolution bandwidth is set to off (disabled).
Syntax	:CALCulate[1..n]:TX:OSNR:BANDwidth BWIDth[:RESolution]:AUTO?
Parameter(s)	None
Response Syntax	<Auto>
Response(s)	<i>Auto:</i> The response data syntax for <Auto> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Auto> response corresponds to the state of the auto resolution bandwidth for OSNR calculation. 0: a custom resolution bandwidth value is used. 1: the instruments resolution bandwidth is used.
Example(s)	CALC:TX:OSNR:BAND:RES:AUTO ON CALC:TX:OSNR:BAND:RES:AUTO? Returns 1 (instrument's RBW enabled)
See Also	:CALCulate[1..n]:TX:OSNR:BWIDth BANDwidth[:RESolution]? :CALCulate[1..n]:TX:OSNR:BWIDth BANDwidth[:RESolution]:AUTO

:CALCulate[1..n]:TX:SIGnalPower:TYPE

Description	This command selects the signal power measurement type for the transmitter analysis. At *RST, the signal power type is set to IPOWer (integrated power).
Syntax	:CALCulate[1..n]:TX:SIGnalPower:TYPE<wsp>IPOWer PPOWer
Parameter(s)	<i>Type:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: IPOWer PPOWer. The parameter corresponds to the newly selected signal power type. IPOWer: selects integrated signal power type. PPOWer: selects peak signal power type.
Example(s)	CALC:TX:SIGP:TYPE PPOW CALC:TX:SIGP:TYPE? Returns PPOWER
See Also	:CALCulate[1..n]:TX:SIGnalPower:TYPE?

:CALCulate[1..n]:TX:SIGnalPower:TYPE?	
Description	This query returns the selected signal power measurement type for the transmitter analysis. At *RST, the signal power type is set to IPOWER (integrated power).
Syntax	:CALCulate[1..n]:TX:SIGnalPower:TYPE?
Parameter(s)	None
Response Syntax	<Type>
Response(s)	Type: The response data syntax for <Type> is defined as a <CHARACTER RESPONSE DATA> element. The <Type> response corresponds to the selected signal power type. IPOWER: the integrated signal power type is selected. PPOWER: the peak signal power type is selected.
Example(s)	CALC:TX:SIGP:TYPE IPOW CALC:TX:SIGP:TYPE? Returns IPOWER
See Also	:CALCulate[1..n]:TX:SIGnalPower:TYPE

:CALCulate[1..n]:TX:SIGNALPower:WIDTH[:WAVelength]

Description	This command sets the wavelength width of the signal power integration region for the transmitter analysis. At *RST, the width of the integration region is set to 0.100 nm.
Syntax	:CALCulate[1..n]:TX:SIGNALPower:WIDTH[:WAVelength] <wsp> <Width[<wsp> M] > MAXimum MINimum DEFault
Parameter(s)	<i>Width:</i> The program data syntax for <Width> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Width> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:TX:SIGnalPower:WIDTH[:WAVelength]

DEfault allows the instrument to select a value for the <Width> parameter.

The <Width> parameter corresponds to a valid width in meters for the signal power integration region.

The
CALCulate[1..n]:TX:SIGnalPower:WIDTH[:WAVelength]? MIN and
CALCulate[1..n]:TX:SIGnalPower:WIDTH[:WAVelength]? MAX queries can be used to determine valid width values.

Example(s)

CALC:TX:SIGP:WIDTH:WAV 0.5 NM
CALC:TX:SIGP:WIDTH:WAV? Returns
5.000000E-010

See Also

:CALCulate[1..n]:TX:SIGnalPower:WIDTH[:WAVElength]?
:CALCulate[1..n]:TX:SIGnalPower:WIDTH:FREQuency

:CALCulate[1..n]:TX:SIGnalPower:WIDTH[:WAVElength]?

Description

This query returns the wavelength width of the signal power integration region for the transmitter analysis.

At *RST, the width of the integration region is set to 0.100 nm.

Syntax

:CALCulate[1..n]:TX:SIGnalPower:WIDTH[:WAVElength]?[<wsp> MAXimum | MINimum | DEFault]

Parameter(s)

Parameter 1:

The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum | MINimum | DEFault.

MINimum is used to retrieve the instrument's smallest supported value.

MAXimum is used to retrieve the instrument's greatest supported value.

DEFault is used to retrieve the instrument's default value.

Response Syntax

<Width>

:CALCulate[1..n]:TX:SIGnalPower:WIDTH[:WAVelength]?	
Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to either the current or the MINimum/MAXimum wavelength width of the signal power integration region in meters.
Example(s)	CALC:TX:SIGP:WIDTH:WAV 0.5 NM CALC:TX:SIGP:WIDTH:WAV? Returns 5.000000E-010
See Also	:CALCulate[1..n]:TX:SIGnalPower:WIDTH[:WAVElength] :CALCulate[1..n]:TX:SIGnalPower:WIDTH:FREQuency?

:CALCulate[1..n]:TX:SIGNALPower:WIDTH:FREQuency

Description	This command sets the frequency width of the signal power integration region for the transmitter analysis. At *RST, the width of the integration region is set to 0.100 nm.
Syntax	:CALCulate[1..n]:TX:SIGNALPower:WIDTH:FREQuency<wsp><Width[<wsp>HZ]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Width:</i> The program data syntax for <Width> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Width> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:TX:SIGnalPower: WIDTh:FREQuency

DEfault allows the instrument to select a value for the <Width> parameter.

The <Width> parameter corresponds to a valid width in hertz for the signal power integration region.

The
CALCulate[1..n]:TX:SIGnalPower:WIDTh:FREQuency? MIN and
CALCulate[1..n]:TX:SIGnalPower:WIDTh:FREQuency? MAX queries can be used to determine valid width values.

Example(s)

CALC:TX:SIGP:WIDTh:FREQ 100.0 GHZ
CALC:TX:SIGP:WIDTh:FREQ? Returns
1.000000E+011

See Also

:CALCulate[1..n]:TX:SIGnalPower:WIDTh:FREQuency?
:CALCulate[1..n]:TX:SIGnalPower:WIDTh[:WAVElength]

:CALCulate[1..n]:TX:SIGNALPower:WIDTH:FREQUENCY?

Description	This query returns the frequency width of the signal power integration region for the transmitter analysis. At *RST, the width of the integration region is set to 0.100 nm.
Syntax	:CALCulate[1..n]:TX:SIGNALPower:WIDTH:FREQUENCY? [<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Width>

:CALCulate[1..n]:TX:SIGnalPower:WIDTH:FREQuency?	
Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to either the current or the MINimum/MAXimum frequency width of the signal power integration region in hertz.
Example(s)	CALC:TX:SIGP:WIDTH:FREQ 100.0 GHZ CALC:TX:SIGP:WIDTH:FREQ? Returns 1.000000E+011
See Also	:CALCulate[1..n]:TX:SIGnalPower:WIDTH:FREQuency :CALCulate[1..n]:TX:SIGnalPower:WIDTH[:WAVElength]?

:CALCulate[1..n]:TX:SMSR:MASK [:WAVelength]

Description

This command sets the wavelength width of the exclusion zone for side modes detection for the transmitter analysis.

At *RST, the width of the exclusion zone is set to 0.0 nm.

Syntax

:CALCulate[1..n]:TX:SMSR:MASK[:WAVelength]
 <wsp> <Mask[<wsp>M]> | MAXimum | MINimum | DEFault

Parameter(s)

Mask:

The program data syntax for <Mask> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Mask> special forms MINimum, MAXimum and DEFault are accepted on input.

MINimum allows to set the instrument to the smallest supported value.

MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:TX:SMSR:MASK[:WAVelength]	
	DEfault allows the instrument to select a value for the <Mask> parameter. The <Mask> parameter corresponds to a valid width in meters for the exclusion zone. The CALCulate[1..n]:TX:SMSR:MASK[:WAVelength]? MIN and CALCulate[1..n]:TX:SMSR:MASK[:WAVelength]? MAX queries can be used to determine valid mask values.
Example(s)	CALC:TX:SMSR:MASK 0.1 NM CALC:TX:SMSR:MASK? Returns 1.000000E-010
See Also	:CALCulate[1..n]:TX:SMSR:MASK[:WAVelength]? :CALCulate[1..n]:TX:SMSR:MASK:FREQuency

:CALCulate[1..n]:TX:SMSR:MASK [:WAVelength]?

Description

This query returns the wavelength width of the exclusion zone for side modes detection for the transmitter analysis.

At *RST, the width of the exclusion zone is set to 0.0 nm.

Syntax

:CALCulate[1..n]:TX:SMSR:MASK[:WAVelength]?
 [<wsp> MAXimum | MINimum | DEFault]

Parameter(s)

Parameter 1:

The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are:
 MAXimum | MINimum | DEFault.

MINimum is used to retrieve the instrument's smallest supported value.
 MAXimum is used to retrieve the instrument's greatest supported value.
 DEFault is used to retrieve the instrument's default value.

Response Syntax

<Mask>

:CALCulate[1..n]:TX:SMSR:MASK[:WAVelength]?	
Response(s)	<i>Mask:</i> The response data syntax for <Mask> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Mask> response corresponds to either the current or the MINimum/MAXimum wavelength width of the exclusion zone in meters.
Example(s)	CALC:TX:SMSR:MASK 0.1 NM CALC:TX:SMSR:MASK? Returns 1.000000E-010
See Also	:CALCulate[1..n]:TX:SMSR:MASK[:WAVelength] :CALCulate[1..n]:TX:SMSR:MASK:FREQuency?

:CALCulate[1..n]:TX:SMSR:MASK:FREQuency

Description	This command sets the frequency width of the exclusion zone for side modes detection for the transmitter analysis. At *RST, the width of the exclusion zone is set to 0.0 nm.
Syntax	:CALCulate[1..n]:TX:SMSR:MASK:FREQuency<wsp><Mask[<wsp>HZ]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Mask:</i> The program data syntax for <Mask> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Mask> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:TX:SMSR:MASK:FREQuency	
	DEfault allows the instrument to select a value for the <Mask> parameter. The <Mask> parameter corresponds to a valid width in hertz for the exclusion zone. The CALCulate[1..n]:TX:SMSR:MASK:FREQuency? MIN and CALCulate[1..n]:TX:SMSR:MASK:FREQuency? MAX queries can be used to determine valid mask values.
Example(s)	CALC:TX:SMSR:MASK:FREQ 100.0 GHZ CALC:TX:SMSR:MASK:FREQ? Returns 1.000000E+011
See Also	:CALCulate[1..n]:TX:SMSR:MASK:FREQuency? :CALCulate[1..n]:TX:SMSR:MASK[:WAVelength]

:CALCulate[1..n]:TX:SMSR:MASK:FREQuency?

Description	This query returns the frequency width of the exclusion zone for side modes detection for the transmitter analysis. At *RST, the width of the exclusion zone is set to 0.0 nm.
Syntax	:CALCulate[1..n]:TX:SMSR:MASK:FREQuency?[<wsp>MAXimum MINimum DEFault]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFault. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFault is used to retrieve the instrument's default value.
Response Syntax	<Mask>

:CALCulate[1..n]:TX:SMSR:MASK:FREQuency?	
Response(s)	<i>Mask:</i> The response data syntax for <Mask> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Mask> response corresponds to either the current or the MINimum/MAXimum frequency width of the exclusion zone in hertz.
Example(s)	CALC:TX:SMSR:MASK:FREQ 100.0 GHZ CALC:TX:SMSR:MASK:FREQ? Returns 1.000000E+011
See Also	:CALCulate[1..n]:TX:SMSR:MASK:FREQuency :CALCulate[1..n]:TX:SMSR:MASK[:WAVelength]?

:CALCulate[1..n]:TX:STATe

Description	This command controls the activation of the transmitter analysis. At *RST, transmitter analysis is set to off (disabled).
Syntax	:CALCulate[1..n]:TX:STATe<wsp><State>
Parameter(s)	<i>State:</i> The program data syntax for <State> is defined as a <Boolean Program Data> element. The <State> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0. The <State> parameter corresponds to the new state of the transmitter analysis. 0 or OFF: analysis is disabled. 1 or ON: analysis is enabled.

:CALCulate[1..n]:TX:STATe	
Example(s)	CALC:TX:STAT ON CALC:TX:STAT? Returns 1 (Transmitter analysis enabled)
Notes	Transmitter analysis is available only if software option "Adv" is active. Transmitter analysis cannot be disabled: The OFF (0) value is valid for queries only. Only one analysis mode is active at a time. Enabling transmitter analysis automatically disables all other analysis modes.
See Also	:CALCulate[1..n]:TX:STATe? :INITiate[:IMMediate] :INITiate:CONTInuous :TRACe:FEED:CONTrol

:CALCulate[1..n]:TX:STATe?

Description	This query indicates if the transmitter analysis has been enabled or not. At *RST, transmitter analysis is set to off (disabled).
Syntax	:CALCulate[1..n]:TX:STATe?
Parameter(s)	None
Response Syntax	<State>
Response(s)	<i>State:</i> The response data syntax for <State> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <State> response corresponds to the state of the transmitter analysis. 0: analysis is enabled. 1: analysis is disabled.
Example(s)	CALC:TX:STAT? Returns 0 if application mode is not transmitter CALC:TX:STAT ON CALC:TX:STAT? Returns 1 (Transmitter analysis enabled)
See Also	:CALCulate[1..n]:TX:STATe

:CALCulate[1..n]:TX:THReshold	
Description	This command sets the absolute power threshold for peak detection for the transmitter analysis. At *RST, this value is set to -45.0 dBm.
Syntax	:CALCulate[1..n]:TX:THReshold<wsp><Threshold[<wsp>DBM W]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Threshold:</i> The program data syntax for <Threshold> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> elements are: DBM W. The <Threshold> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n]:TX:THReshold

DEfault allows the instrument to select a value for the <Threshold> parameter.

The <Threshold> parameter corresponds to the peak detection power level.

The CALCulate[1..n]:TX:THReshold? MIN and CALCulate[1..n]:TX:THReshold? MAX queries can be used to determine the valid power range.

Example(s)

```
CALC:TX:THR -35.00 DBM
UNIT:POW DBM
CALC:TX:THR? Returns -3.500000E+001
```

See Also

:CALCulate[1..n]:TX:THReshold?

:CALCulate[1..n]:TX:THReshold?	
Description	This query returns a value indicating either the current or the minimum/maximum absolute power threshold for peak detection for the transmitter analysis. At *RST, this value is set to -45.0 dBm.
Syntax	:CALCulate[1..n]:TX:THReshold?[<wsp>MAXimum MINimum DEFault]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFault. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFault is used to retrieve the instrument's default value.
Response Syntax	<Threshold>

:CALCulate[1..n]:TX:THReshold?

Response(s)

Threshold:

The response data syntax for <Threshold> is defined as a <NR3 NUMERIC RESPONSE DATA> element.

The <Threshold> response corresponds to either the current or the MINimum/MAXimum peak detection power level value.

Example(s)

CALC:TX:THR 1.00 UW
UNIT:POW W
CALC:TX:THR? Returns 1.000000E-006

See Also

:CALCulate[1..n]:TX:THReshold

:CALCulate[1..n][:WDM]: BANDwidth[1 2] BWIDth[1 2]: RelativeLEVel	
Description	This command sets the WDM analysis bandwidth position for all channels to a specific value. The bandwidth position value is the power level relative to peak maximum where the signal bandwidth of a channel is computed. At *RST, this value is set to 3.0 dB for bandwidth1 and 20.0 dB for bandwidth2.
Syntax	:CALCulate[1..n][:WDM]:BANDwidth[1 2] BWIDth[1 2]:RelativeLEVel<wsp><PowerLevel[<wsp>DB W/W PCT]> MAXimum MINimum DEFault
Parameter(s)	<i>PowerLevel:</i> The program data syntax for <PowerLevel> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> elements are: DB W/W PCT. The <PowerLevel> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

**:CALCulate[1..n][:WDM]:
BANDwidth[1 | 2] | BWIDth[1 | 2]:
RelativeLEVel**

DEFault allows the instrument to select a value for the <PowerLevel> parameter.

The <PowerLevel> parameter corresponds to a valid bandwidth position value.

The CALCulate[1..n]:BANDwidth? MIN and CALCulate[1..n]:BANDwidth? MAX queries can be used to determine the valid bandwidth position range.

Example(s)

UNIT:RAT DB
CALC:BWID2:RLEV 10.55 DB
CALC:BWID2:RLEV? Returns: 1.055000E+001
CALC:WDM:BAND2:RLEV DEF
CALC:WDM:BAND2:RLEV? Returns:
2.000000E+001

Notes

Bandwidth1 position cannot be changed: it is always set at 3.0 dB.

See Also

:CALCulate[1..n][:WDM]:BWIDth[1 | 2] | BANDwidth[1 | 2]:RelativeLEVel?
:CALCulate[1..n][:WDM]:OSNR:BWIDth | BANDwidth[:RESolution]
:CALCulate[1..n][:WDM]:OSNR:BWIDth | BANDwidth[:RESolution]:AUTO

:CALCulate[1..n][:WDM]:THReshold

:CALCulate[1..n][:WDM]: BANDwidth[1 2] BWIDth[1 2]: RelativeLEVel?	
Description	This query returns a value indicating either the current or the minimum/maximum channel bandwidth position setting for WDM analysis. At *RST, this value is set to 3.0 dB for bandwidth1 and 20.0 dB for bandwidth2.
Syntax	:CALCulate[1..n][:WDM]:BANDwidth[1 2] BWIDth[1 2]:RelativeLEVel? [<wsp> MAXimum MINimum DEFault]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFault. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFault is used to retrieve the instrument's default value.
Response Syntax	<PowerLevel>

**:CALCulate[1..n][:WDM]:
BANDwidth[1 | 2] | BWIDth[1 | 2]:
RelativeLEVel?**

Response(s)	<i>PowerLevel:</i> The response data syntax for <PowerLevel> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <PowerLevel> response corresponds to either the current or the MINimum/MAXimum bandwidth position value.
Example(s)	UNIT:RAT DB CALC:BAND2:RLEV? MAX Returns: bandwidth2 position maximum valid value. CALC:BAND2:RLEV 5.00 DB CALC:WDM:BWID2:RLEV? Returns: 5.000000E+000 CALC:WDM:BWID1:RLEV? Returns: 3.000000E+000
See Also	:CALCulate[1..n][:WDM]:BWIDth[1 2] BANDwidth[1 2]:RelativeLEVel

:CALCulate[1..n][:WDM]:CHANnel:AUTO	
Description	This command controls the state of the WDM analysis default channel (enabled or disabled). At *RST, the state of the default channel is set to on (enabled).
Syntax	:CALCulate[1..n][:WDM]:CHANnel:AUTO<wsp><Auto>
Parameter(s)	<i>Auto:</i> The program data syntax for <Auto> is defined as a <Boolean Program Data> element. The <Auto> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0. The <Auto> parameter corresponds to the new state of the default channel. 0 or OFF: disables the default channel. 1 or ON: enables the default channel.
Example(s)	CALC:WDM:CHAN:AUTO ON CALC:WDM:CHAN:AUTO? Returns: 1 (default channel is enabled)
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO? :CALCulate[1..n][:WDM]:CHANnel:CATalog? :CALCulate[1..n][:WDM]:CHANnel[:DEFine] :CALCulate[1..n][:WDM]:DATA:CHANnel:CATalog?

:CALCulate[1..n][:WDM]:CHANnel: AUTO?

Description	This query indicates if the WDM analysis default channel has been enabled or not. At *RST, the state of the default channel is set to on (enabled).
Syntax	:CALCulate[1..n][:WDM]:CHANnel:AUTO?
Parameter(s)	None
Response Syntax	<Auto>
Response(s)	<i>Auto:</i> The response data syntax for <Auto> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Auto> response corresponds to the state of the default channel. 0: the default channel is disabled. 1: the default channel is enabled.
Example(s)	CALC:CHAN:AUTO OFF CALC:CHAN:AUTO? Returns: 0 (default channel is disabled)
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO

:CALCulate[1..n][:WDM]:CHANnel:AUTO:
CENTer:ITUGrid

Description	This command controls the activation of the snap center on ITU grid feature for the WDM analysis default channel. At *RST, snap center on ITU grid is set to off (disabled).
Syntax	:CALCulate[1..n][:WDM]:CHANnel:AUTO:CENTer:ITUGrid<wsp><Auto>
Parameter(s)	<i>Auto:</i> The program data syntax for <Auto> is defined as a <Boolean Program Data> element. The <Auto> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0. The <Auto> parameter corresponds to the new state of the snap center on ITU grid feature. 0 or OFF: disables default channel snap center on ITU grid feature. 1 or ON: enables default channel snap center on ITU grid feature. Snap default channel center on ITU grid feature enable state

**:CALCulate[1..n][:WDM]:CHANnel:AUTO:
CENTer:ITUGrid**

Example(s)	CALC:WDM:CHAN:AUTO:WIDT:FREQ 50.0 GHZ CALC:WDM:CHAN:AUTO:CENT:ITUG ON CALC:WDM:CHAN:AUTO:CENT:ITUG? Returns: 1 (snap ITU grid enabled) CALC:CHAN:AUTO:WIDT 10.0 NM CALC:CHAN:AUTO:CENT:ITUG? Returns: 0 (snap ITU grid disabled)
Notes	Snap center on ITU grid may be enabled only if the default channel width is set to 25.0 GHz, 50.0 GHz, 100.0 GHz, 200.0 GHz or 20.0 nm.
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO :CALCulate[1..n][:WDM]:CHANnel:AUTO:CENTer :ITUGrid? :CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTh :CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTh :FREQuency

:CALCulate[1..n][:WDM]:CHANnel:AUTO:
CENTer:ITUGrid?

Description	This query indicates if the snap center on ITU grid feature for WDM analysis default channel has been enabled or not. At *RST, snap center on ITU grid is set to off (disabled).
Syntax	:CALCulate[1..n][:WDM]:CHANnel:AUTO:CENTer:ITUGrid?
Parameter(s)	None
Response Syntax	<Auto>
Response(s)	<i>Auto:</i> The response data syntax for <Auto> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Auto> response corresponds to the state of the snap center on ITU grid feature. 0: snap center on ITU grid is disabled. 1: snap center on ITU grid is enabled.
Example(s)	CALC:CHAN:AUTO:CENT:ITUG OFF CALC:CHAN:AUTO:CENT:ITUG? Returns: 0 (snap ITU grid disabled)
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO :CALCulate[1..n][:WDM]:CHANnel:AUTO:CENTer:ITUGrid

:CALCulate[1..n][:WDM]:CHANnel:AUTO: NOISe:AUTO

Description	This command controls the activation of the i-InBand noise measurement for the WDM analysis default channel. At *RST, auto noise is set to off (disabled).
Syntax	:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: AUTO<wsp><Auto>
Parameter(s)	<i>Auto:</i> The program data syntax for <Auto> is defined as a <Boolean Program Data> element. The <Auto> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0. The <Auto> parameter corresponds to the new state of auto noise measurement. 0 or OFF: disables default channel auto noise measurement. 1 or ON: enables default channel auto noise measurement.

:CALCulate[1..n][:WDM]:CHANnel:AUTO: NOISe:AUTO	
Example(s)	CALC:WDM:CHAN:AUTO:NOIS:AUTO ON CALC:WDM:CHAN:AUTO:NOIS:AUTO? Returns 1 (auto noise enabled)
Notes	Auto noise is available only if software option "InB" is active. Auto noise is computed only if the analysed trace was acquired using the PMMH averaging type.
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:AUTO? :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:TYPE :CALCulate[1..n][:WDM]:CHANnel:NOISe:AUTO :SENSe[1..n]:AVERage:TYPE

:CALCulate[1..n][:WDM]:CHANnel:AUTO: NOISe:AUTO?

Description	This query indicates if the i-InBand auto noise measurement for WDM analysis of the default channel has been enabled or not. At *RST, auto noise measurement is set to off (disabled).
Syntax	:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:AUTO?
Parameter(s)	None
Response Syntax	<Auto>
Response(s)	<i>Auto:</i> The response data syntax for <Auto> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Auto> response corresponds to the state of the auto noise measurement. 0: auto noise measurement is disabled. 1: auto noise measurement is enabled.
Example(s)	CALC:CHAN:AUTO:NOIS:AUTO OFF CALC:CHAN:AUTO:NOIS:AUTO? Returns 0 (auto noise disabled)
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:TYPE :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:AUTO

:CALCulate[1..n][:WDM]:CHANnel:AUTO: NOISe:DISTance:FREQuency

Description	This command sets the frequency distance from peak to center of the noise region for measuring the noise of the WDM analysis default channel. At *RST, the default channel noise measurement distance is set to 100.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: DISTance:FREQuency<wsp><Distance[<wsp> HZ]> MAXimum MINimum DEFault
Parameter(s)	<i>Distance:</i> The program data syntax for <Distance> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Distance> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n][:WDM]:CHANnel:AUTO: NOISe:DISTance:FREQuency

DEfault allows the instrument to select a value for the <Distance> parameter.

The <Distance> parameter corresponds to a valid distance in hertz from peak to center of the noise region.

The
CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: DISTance:FREQuency? MIN and
CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: DISTance:FREQuency? MAX queries can be used to determine valid distance values.

Example(s)

CALC:WDM:CHAN:AUTO:NOIS:TYPE POLY5
CALC:WDM:CHAN:AUTO:NOIS:DIST:FREQ 100.0
GHZ
CALC:WDM:CHAN:AUTO:NOIS:DIST:FREQ?
Returns 1.000000E+011

Notes

Custom noise measurement distance is applied only if the selected noise type is POLYnomial5.

See Also

:CALCulate[1..n][:WDM]:CHANnel:AUTO
:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: DISTance[:WAVelength]
:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: DISTance:FREQuency?

:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: WIDTh:FREQuency
:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: TYPE
:CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTan ce:FREQuency

:CALCulate[1..n][:WDM]:CHANnel:AUTO: NOISe:DIStance:FREQUency?

Description	This query returns the frequency distance from peak to center of the noise region for measuring the noise of the WDM analysis default channel. At *RST, the default channel noise measurement distance is set to 100.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:DIStance:FREQUency?[<wsp>MAXimum MINimum DEFault]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFault. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFault is used to retrieve the instrument's default value.
Response Syntax	<Distance>

:CALCulate[1..n][:WDM]:CHANnel:AUTO: NOISe:DISTance:FREQuency?

Response(s)	<i>Distance:</i> The response data syntax for <Distance> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Distance> response corresponds to either the current or the MINimum/MAXimum noise distance frequency in hertz.
Example(s)	CALC:WDM:CHAN:AUTO:NOIS:DIST:FREQ 80.0 GHZ CALC:WDM:CHAN:AUTO:NOIS:DIST:FREQ? Returns 8.000000E+010
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:DISTance[:WAVelength] :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:DISTance:FREQuency :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:WIDTh:FREQuency? :CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance:FREQuency?

:CALCulate[1..n][:WDM]:CHANnel:AUTO: NOISe:DISTance:WAVeLength

Description	This command sets the wavelength distance from peak to center of the noise region for measuring the noise of the WDM analysis default channel. At *RST, the default channel noise measurement distance is set to 100.0 GHz.
Syntax	<pre>:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: DISTance:WAVeLength<wsp> <Distance[<wsp> >M]> MAXimum MINimum DEFault</pre>
Parameter(s)	<i>Distance:</i> The program data syntax for <Distance> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Distance> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n][:WDM]:CHANnel:AUTO: NOISe:DISTance:WAVelength

DEfault allows the instrument to select a value for the <Distance> parameter.

The <Distance> parameter corresponds to a valid distance in meters from peak to center of the noise region.

The
CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: DISTance[:WAVelength]? MIN and
CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: DISTance[:WAVelength]? MAX queries can be used to determine valid distance values.

Example(s)

CALC:WDM:CHAN:AUTO:NOIS:TYPE POLY5
CALC:WDM:CHAN:AUTO:NOIS:DIST:WAV 40.0
NM
CALC:WDM:CHAN:AUTO:NOIS:DIST:WAV?
Returns 4.000000E-008

Notes

Custom noise measurement distance is applied only if the selected noise type is POLYnomial5.

See Also

:CALCulate[1..n][:WDM]:CHANnel:AUTO
:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: DISTance:FREQuency
:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: DISTance[:WAVelength]?

:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: WIDTh[:WAVelength]
:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: TYPE
:CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTan ce[:WAVelength]

:CALCulate[1..n][:WDM]:CHANnel:AUTO: NOISe:DIStance[:WAVelength]?

Description	This query returns the wavelength distance from peak to center of the noise region for measuring the noise of the WDM analysis default channel. At *RST, the default channel noise measurement distance is set to 100.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:DIStance[:WAVelength]?[<wsp> MAXimum MINimum DEFault]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFault. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFault is used to retrieve the instrument's default value.
Response Syntax	<Distance>

:CALCulate[1..n][:WDM]:CHANnel:AUTO: NOISe:DISTance[:WAVelength]?	
Response(s)	<i>Distance:</i> The response data syntax for <Distance> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Distance> response corresponds to either the current or the MINimum/MAXimum noise distance wavelength in meters.
Example(s)	CALC:WDM:CHAN:AUTO:NOIS:DIST:WAV DEF CALC:WDM:CHAN:AUTO:NOIS:DIST:WAV? Returns 2.000000E-008
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: DISTance:FREQuency :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: DISTance[:WAVelength] :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: WIDTh[:WAVelength]? :CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTan ce[:WAVelength]?

:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:TYPE	
Description	This command selects the noise measurement type for the default channel of the WDM analysis. At *RST, the noise type is set to IEC.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:TYPE<wsp>IEC INBand INBandNarrowfilter POLYnomial5 GAUssian
Parameter(s)	Type: The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: IEC INBand INBandNarrowfilter POLYnomial5 GAUssian. The parameter corresponds to the newly selected noise type. IEC: selects IEC noise type. INBand: selects InBand noise type. INBandNarrowfilter: selects InBand narrow filter noise type. POLYnomial5: selects 5th order polynomial fit noise type. GAUssian: selects Gaussian fit noise type.
Example(s)	CALC:WDM:CHAN:AUTO:NOIS:AUTO OFF CALC:WDM:CHAN:AUTO:NOIS:TYPE IEC CALC:WDM:CHAN:AUTO:NOIS:TYPE? Returns IEC

**:CALCulate[1..n][:WDM]:CHANnel:AUTO:
NOISe:TYPE**

Notes	INBand and INBandNarrowfilter noise types are available only if software option "InB" is active. INBand and INBandNarrowfilter noise types are computed only if the analysed trace was acquired using the PMMH averaging type. If auto noise measurement is active, specific noise type setting has no effect.
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:AUTO :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:DISTance:FREQuency :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:DISTance[:WAVelength] :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:WIDTh:FREQuency :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:WIDTh[:WAVelength] :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:TYPE? :CALCulate[1..n][:WDM]:CHANnel:NOISe:TYPE :SENSe[1..n]:AVERAge:TYPE

:CALCulate[1..n][:WDM]:CHANnel:AUTO:
NOISe:TYPE?

Description	This query returns the selected noise measurement type for the default channel of the WDM analysis. At *RST, the noise type is set to IEC.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:TYPE?
Parameter(s)	None
Response Syntax	<Type>
Response(s)	Type: The response data syntax for <Type> is defined as a <CHARACTER RESPONSE DATA> element. The <Type> response corresponds to the selected noise type. IEC: the IEC noise type is selected. INBAND: the InBand noise type is selected. INBANDNARROWFILTER: the InBand narrow filter noise type is selected. POLYNOMIAL5: the 5th order polynomial fit noise type is selected. GAUSSIAN: the Gaussian fit noise type is selected.

**:CALCulate[1..n][:WDM]:CHANnel:AUTO:
NOISe:TYPE?**

Example(s)	CALC:CHAN:AUTO:NOIS:AUTO OFF CALC:CHAN:AUTO:NOIS:TYPE INB CALC:CHAN:AUTO:NOIS:TYPE? Returns INBAND
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: AUTO :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: DISTance:FREQuency? :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: DISTance[:WAVelength]? :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: WIDTh:FREQuency? :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: WIDTh[:WAVelength]? :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: TYPE :CALCulate[1..n][:WDM]:CHANnel:NOISe:TYPE?

:CALCulate[1..n][:WDM]:CHANnel:AUTO:
NOISe:WIDTh:FREQuency

Description	This command sets the frequency width of the noise measurement region of the WDM analysis default channel. At *RST, the width of the default channel noise measurement region is set to 100.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:WIDTh:FREQuency<wsp> <Width[<wsp>HZ] > MAXimum MINimum DEFault
Parameter(s)	<i>Width:</i> The program data syntax for <Width> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Width> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n][:WDM]:CHANnel:AUTO: NOISe:WIDTh:FREQuency

DEFAult allows the instrument to select a value for the <Width> parameter.

The <Width> parameter corresponds to a valid width in hertz for the noise measurement region.

The
CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: WIDTh:FREQuency? MIN and
CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: WIDTh:FREQuency? MAX queries can be used to determine valid width values.

Example(s)

CALC:WDM:CHAN:AUTO:NOIS:TYPE POLY5
CALC:WDM:CHAN:AUTO:NOIS:WIDTh:FREQ
100.0 GHZ
CALC:WDM:CHAN:AUTO:NOIS:WIDTh:FREQ?
Returns 1.000000E+011

Notes

Custom width for noise measurement region is applied only if the selected noise type is POLYnomial5.

See Also

:CALCulate[1..n][:WDM]:CHANnel:AUTO
:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: WIDTh[:WAVelength]
:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: WIDTh:FREQuency?

:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: DISTance:FREQuency
:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: TYPE
:CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh:FREQuency

**:CALCulate[1..n][:WDM]:CHANnel:AUTO:
NOISe:WIDTh:FREQuency?**

Description	This query returns the frequency width of the noise measurement region of the WDM analysis default channel. At *RST, the width of the default channel noise measurement region is set to 100.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:WIDTh:FREQuency?[<wsp>MAXimum MINimum DEFault]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFault. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFault is used to retrieve the instrument's default value.
Response Syntax	<Width>

:CALCulate[1..n][:WDM]:CHANnel:AUTO: NOISe:WIDTh:FREQuency?

Response(s)

Width:

The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element.

The <Width> response corresponds to either the current or the MINimum/MAXimum frequency width of the noise measurement region in hertz.

Example(s)

CALC:WDM:CHAN:AUTO:NOIS:WIDTh:FREQ
65.0 GHZ
CALC:WDM:CHAN:AUTO:NOIS:WIDTh:FREQ?
Returns 6.500000E+010

See Also

:CALCulate[1..n][:WDM]:CHANnel:AUTO
:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:
WIDTh[:WAVelength]
:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:
WIDTh:FREQuency

:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:
DISTAnce:FREQuency?
:CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDT
h:FREQuency?

:CALCulate[1..n][:WDM]:CHANnel:AUTO:
NOISe:WIDTh[:WAVelength]

Description	This command sets the wavelength width of the noise measurement region of the WDM analysis default channel. At *RST, the width of the default channel noise measurement region is set to 100.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:WIDTh[:WAVelength] <wsp> <Width[<wsp>M]> MAXimum MINimum DEFault
Parameter(s)	<i>Width:</i> The program data syntax for <Width> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Width> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n][:WDM]:CHANnel:AUTO: NOISe:WIDTh[:WAVelength]

DEfault allows the instrument to select a value for the <Width> parameter.

The <Width> parameter corresponds to a valid width in meters for the noise measurement region.

The
CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: WIDTh[:WAVelength]? MIN and
CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: WIDTh[:WAVelength]? MAX queries can be used to determine valid width values.

Example(s)

CALC:WDM:CHAN:AUTO:NOIS:TYPE POLY5
CALC:WDM:CHAN:AUTO:NOIS:WIDTh:WAV 12.5
NM
CALC:WDM:CHAN:AUTO:NOIS:WIDTh:WAV?
Returns 1.250000E-008

**:CALCulate[1..n][:WDM]:CHANnel:AUTO:
NOISe:WIDTh[:WAVelength]**

Notes	Custom width for noise measurement region is applied only if the selected noise type is POLYnomial5.
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: WIDTh:FREQuency :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: WIDTh[:WAVelength]? :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: DISTance[:WAVelength] :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: TYPE :CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDT h[:WAVelength]

:CALCulate[1..n][:WDM]:CHANnel:AUTO: NOISe:WIDTh[:WAVeLength]?	
Description	This query returns the wavelength width of the noise measurement region of the WDM analysis default channel. At *RST, the width of the default channel noise measurement region is set to 100.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:WIDTh[:WAVeLength]?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Width>

:CALCulate[1..n][:WDM]:CHANnel:AUTO:
NOISe:WIDTh[:WAVelength]?

Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to either the current or the MINimum/MAXimum wavelength width of the noise measurement region in meters.
Example(s)	CALC:WDM:CHAN:AUTO:NOIS:WIDTh:WAV DEF CALC:WDM:CHAN:AUTO:NOIS:WIDTh:WAV? Returns 2.000000E-008
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:WIDTh:FREQuency :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:WIDTh[:WAVelength] :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:DISTance[:WAVelength]? :CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh[:WAVelength]?

:CALCulate[1..n][:WDM]:CHANnel:AUTO: SIGnalPower:TYPE

Description	This command selects the signal power measurement type for the default channel of the WDM analysis. At *RST, the signal power type is set to IPOWER (integrated power).
Syntax	:CALCulate[1..n][:WDM]:CHANnel:AUTO:SIGnalPower:TYPE<wsp>IPOWER PPOWER TPOWER
Parameter(s)	<i>Type:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: IPOWER PPOWER TPOWER. The parameter corresponds to the newly selected signal power type. IPOWER: selects integrated signal power type. PPOWER: selects peak signal power type. TPOWER: selects channel total power type.

:CALCulate[1..n][:WDM]:CHANnel:AUTO:SIGnalPower:TYPE	
Example(s)	CALC:WDM:CHAN:AUTO:SIGP:TYPE TPOW CALC:WDM:CHAN:AUTO:SIGP:TYPE? Returns TPOWER
Notes	Noise and OSNR measurements are not computed if the signal power type is set to channel total power (TPOWer).
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO :CALCulate[1..n][:WDM]:CHANnel:AUTO:SIGnal Power:TYPE? :CALCulate[1..n][:WDM]:CHANnel:SIGnalPower: TYPE :CALCulate[1..n][:WDM]:DATA:CHANnel:SIGnalP ower?

**:CALCulate[1..n][:WDM]:CHANnel:AUTO:
SIGNALPower:TYPE?**

Description	This query returns the selected signal power measurement type for the default channel of the WDM analysis. At *RST, the signal power type is set to IPOWER (integrated power).
Syntax	:CALCulate[1..n][:WDM]:CHANnel:AUTO:SIGNALPower:TYPE?
Parameter(s)	None
Response Syntax	<Type>
Response(s)	<i>Type:</i> The response data syntax for <Type> is defined as a <CHARACTER RESPONSE DATA> element. The <Type> response corresponds to the selected signal power type.

**:CALCulate[1..n][:WDM]:CHANnel:AUTO:
SIGnalPower:TYPE?**

IPOWER: the integrated signal power type is selected.
PPOWER: the peak signal power type is selected.
TPOWER: the channel total power type is selected.

Example(s) CALC:CHAN:AUTO:SIGP:TYPE IPOW
 CALC:CHAN:AUTO:SIGP:TYPE? Returns IPOWER

See Also :CALCulate[1..n][:WDM]:CHANnel:AUTO
 :CALCulate[1..n][:WDM]:CHANnel:AUTO:SIGnal
 Power:TYPE
 :CALCulate[1..n][:WDM]:CHANnel:SIGnalPower:
 TYPE
 :CALCulate[1..n][:WDM]:DATA:CHANnel:SIGnalP
 ower?

:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH:FREQUENCY

Description	This command sets the frequency width of the WDM analysis default channel. At *RST, the default channel width is set to 50.0 GHz.
Syntax	<pre>:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH:FREQUENCY<wsp><Width[<wsp>HZ]> MAXimum MINimum DEFAULT</pre>
Parameter(s)	<i>Width:</i> The program data syntax for <Width> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Width> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH:FREQuency

DEfault allows the instrument to select a value for the <Width> parameter.

The <Width> parameter corresponds to a valid channel width in hertz.

The
CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH:FREQuency? MIN and
CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH:FREQuency? MAX queries can be used to determine the valid channel frequency width.

Example(s)

CALC:WDM:CHAN:AUTO:WIDT:FREQ 25.0 GHZ
CALC:WDM:CHAN:AUTO:WIDT:FREQ? Returns 2.500000E+010

Notes

Automatically sets the default channel snap center on ITU grid feature to off if the channel width is not 25.0 GHz, 50.0 GHz, 100.0 GHz or 200.0 GHz.

See Also

:CALCulate[1..n][:WDM]:CHANnel:AUTO
:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH[:WAVelength]
:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH:FREQuency?
:CALCulate[1..n][:WDM]:CHANnel:WIDTH:FREQuency

:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH:FREQUENCY?

Description	This query returns the frequency width of the WDM analysis default channel. At *RST, the default channel width is set to 50.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH:FREQUENCY?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Width>

:CALCulate[1..n][:WDM]:CHANnel:AUTO:
WIDTH:FREQuency?

Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to either the current or the MINimum/MAXimum channel frequency width in hertz.
Example(s)	CALC:CHAN:AUTO:WIDT:FREQ 75.0 GHZ CALC:CHAN:AUTO:WIDT:FREQ? Returns 7.500000E+010
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO :CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH[:WAVelength] :CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH:FREQuency :CALCulate[1..n][:WDM]:CHANnel:WIDTH:FREQuency

:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH[:WAVelength]

Description	This command sets the wavelength width of the WDM analysis default channel. At *RST, the default channel width is set to 50.0 GHz.
Syntax	<pre>:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH[:WAVelength] <wsp> <Width[<wsp>M]> MAXimum MINimum DEFault</pre>
Parameter(s)	<i>Width:</i> The program data syntax for <Width> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Width> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH[:WAVelength]

DEfault allows the instrument to select a value for the <Width> parameter.

The <Width> parameter corresponds to a valid channel width in meters.

The
CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH[:WAVelength]? MIN and
CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH[:WAVelength]? MAX queries can be used to determine the valid channel wavelength width.

Example(s)

CALC:WDM:CHAN:AUTO:WIDT:WAV 12.5 NM
CALC:WDM:CHAN:AUTO:WIDT:WAV? Returns
1.250000E-008

Notes

Automatically sets the default channel snap center on ITU grid feature to off if the channel width is not 20.0 nm.

See Also

:CALCulate[1..n][:WDM]:CHANnel:AUTO
:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH
:FREQuency
:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH[:WAVelength]?
:CALCulate[1..n][:WDM]:CHANnel:WIDTh[:WAVelength]

:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH[:WAVelength]?

Description	This query returns the wavelength width of the WDM analysis default channel. At *RST, the default channel width is set to 50.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH[:WAVelength]?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Width>

:CALCulate[1..n][:WDM]:CHANnel:AUTO:
WIDTh[:WAVelength]?

Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to either the current or the MINimum/MAXimum channel wavelength width in meters.
Example(s)	CALC:CHAN:AUTO:WIDT:WAV DEF CALC:CHAN:AUTO:WIDT:WAV? Returns 2.000000E-008
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO :CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTh :FREQuency :CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTh[:WAVelength] :CALCulate[1..n][:WDM]:CHANnel:WIDTh[:WAVelength]

:CALCulate[1..n][:WDM]:CHANnel:CATalog?

Description	This query returns a comma-separated list of strings which contains the names of all of the user-defined channels for the WDM analysis. At *RST, a single null string is returned: channel list is empty.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:CATalog?
Parameter(s)	None
Response Syntax	<Catalog>
Response(s)	<i>Catalog:</i> The response data syntax for <Catalog> is defined as a <STRING RESPONSE DATA> element. The <Catalog> response corresponds to the list of defined channels names. If no channel names are defined, a single null string is returned.
Example(s)	CALC:WDM:CHAN:DEL:ALL CALC:WDM:CHAN:CAT? Returns "" (empty channel list) CALC:WDM:CHAN:DEF "C_1530", 1530.000 NM CALC:WDM:CHAN:DEF "C_1550", 1550.000 NM

:CALCulate[1..n][:WDM]:CHANnel:CATalog?	
	CALC:WDM:CHAN:DEF "C_1570", 1570.000 NM CALC:WDM:CHAN:CAT? Returns "C_1530,C_1550,C_1570"
Notes	The channel list is sorted into ascending order according to the channel center wavelength.
See Also	:CALCulate[1..n][:WDM]:CHANnel:COUNT? :CALCulate[1..n][:WDM]:CHANnel[:DEFine] :CALCulate[1..n][:WDM]:DATA:CHANnel:CATalog?

:CALCulate[1..n][:WDM]:CHANnel: COUNT?

Description	This query returns the number of user-defined channels for the WDM analysis. At *RST, the number of channels is 0.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:COUNT?
Parameter(s)	None
Response Syntax	<Count>
Response(s)	<i>Count:</i> The response data syntax for <Count> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Count> response corresponds to the number of items in the list of user-defined channels.
Example(s)	CALC:CHAN:DEL:ALL CALC:CHAN:DEF "C_1530", 1530.000 NM CALC:CHAN:DEF "C_1570", 1570.000 NM CALC:CHAN:COUN? Returns 2
See Also	:CALCulate[1..n][:WDM]:CHANnel:CATalog? :CALCulate[1..n][:WDM]:CHANnel[:DEFine] :CALCulate[1..n][:WDM]:CHANnel:DELeTe[:NAME] :CALCulate[1..n][:WDM]:CHANnel:DELeTe:ALL :CALCulate[1..n][:WDM]:DATA:CHANnel:COUNT?

:CALCulate[1..n][:WDM]:CHANnel[:DEFine]	
Description	This command allocates and initializes a new WDM analysis channel setup. *RST has no effect on this command.
Syntax	:CALCulate[1..n][:WDM]:CHANnel[:DEFine]<wsp><Name>,<Define[<wsp>M HZ]> MAXimum MINimum
Parameter(s)	➤ <i>Name:</i> The program data syntax for <Name> is defined as a <STRING PROGRAM DATA> element. The <Name> parameter corresponds to the name of the new channel setup to create. The channel name cannot be empty. Each channel name must be unique: it is not possible to define two channels with the same name. ➤ <i>Define:</i> The program data syntax for <Define> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> elements are: M HZ. The <Define> special forms MINimum and MAXimum are accepted on input.

:CALCulate[1..n][:WDM]:CHANnel [:DEFine]

MINimum allows to set the instrument to the smallest supported value.

MAXimum allows to set the instrument to the greatest supported value.

The <Define> parameter corresponds to a valid channel center value.

The CALCulate[1..n][:WDM]:CHANnel:CENter? MIN and
CALCulate[1..n][:WDM]:CHANnel:CENter? MAX queries can be used to determine the valid center range.

Example(s)

```
CALC:CHAN:DEL:ALL
CALC:CHAN:DEF "ITU_22",192.1750 THZ
CALC:CHAN:SEL "ITU_22"
CALC:CHAN:WIDT:FREQ 200.0 GHZ
CALC:CHAN:SIGP:TYPE PPOW
CALC:CHAN:DEF "CWDM_14",1490.000 NM
```

```
CALC:CHAN:SEL "CWDM_14"
CALC:CHAN:WIDT 10.0 NM
CALC:WDM:CHAN:CAT? Returns
"CWDM_14,ITU_22"
```

:CALCulate[1..n][:WDM]:CHANnel[:DEFine]

Notes	Analysis parameters of newly created channels are always set to their respective default values. The channel list is sorted into ascending order according to the channel center wavelength.
See Also	:CALCulate[1..n][:WDM]:CHANnel:CATalog? :CALCulate[1..n][:WDM]:CHANnel[:DEFine]? :CALCulate[1..n][:WDM]:CHANnel:DELeTe[:NAME] :CALCulate[1..n][:WDM]:CHANnel:DELeTe:ALL :CALCulate[1..n][:WDM]:CHANnel:SELeCt :UNIT[1..n]:SPECTrum

:CALCulate[1..n][:WDM]:CHANnel[:DEFine]?

Description	This query requests the instrument to return the definition of the specified WDM channel analysis setup. *RST has no effect on this command.
Syntax	:CALCulate[1..n][:WDM]:CHANnel[:DEFine]?<wsp><Name>
Parameter(s)	<i>Name:</i> The program data syntax for <Name> is defined as a <STRING PROGRAM DATA> element. The <Name> parameter corresponds to the name of the channel setup definition to request.
Response Syntax	<Define>

:CALCulate[1..n][:WDM]:CHANnel[:DEFine]?	
Response(s)	<i>Define:</i> The response data syntax for <Define> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Define> response corresponds to the channel center for the specified <Name>.
Example(s)	CALC:WDM:CHAN:DEF "ITU_1490",1490.000 NM UNIT:SPEC M CALC:WDM:CHAN:DEF? "ITU_1490" Returns 1.490000E-006 UNIT:SPEC HZ CALC:CHAN? "ITU_1490" Returns 2.012030E+014
See Also	:CALCulate[1..n][:WDM]:CHANnel:CATalog? :CALCulate[1..n][:WDM]:CHANnel[:DEFine] :CALCulate[1..n][:WDM]:CHANnel:DELeTe[:NAME] :CALCulate[1..n][:WDM]:CHANnel:DELeTe:ALL :UNIT[1..n]:SPECTrum

:CALCulate[1..n][:WDM]:CHANnel: DELeTe[:NAME]

Description	This command causes the specified WDM channel analysis setup to be deleted from the channel list. This command is an action and has no associated *RST condition or query form.
Syntax	<code>:CALCulate[1..n][:WDM]:CHANnel:DELeTe[:NAME]<wsp><Name></code>
Parameter(s)	<i>Name:</i> The program data syntax for <Name> is defined as a <STRING PROGRAM DATA> element. The <Name> parameter corresponds to the name of the channel setup to delete. The channel name cannot be empty.
Example(s)	<pre> CALC:WDM:CHAN:DEL:ALL CALC:WDM:CHAN:DEF "C1",1510.000 NM CALC:WDM:CHAN:DEF "C2",1520.000 NM CALC:WDM:CHAN:CAT? Returns "C1,C2" CALC:WDM:CHAN:DEL:NAME "C1" CALC:WDM:CHAN:CAT? Returns "C2" </pre>
Notes	If a channel with the specified <Name> does not exist, no error is generated.
See Also	<pre> :CALCulate[1..n][:WDM]:CHANnel:CATalog? :CALCulate[1..n][:WDM]:CHANnel[:DEFine] :CALCulate[1..n][:WDM]:CHANnel:DELeTe:ALL </pre>

:CALCulate[1..n][:WDM]:CHANnel:DELeTe:ALL	
Description	This command causes all WDM channels analysis setup to be deleted from the channel list. This command is an action and has no associated *RST condition or query form.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:DELeTe:ALL
Parameter(s)	None
Example(s)	CALC:CHAN:DEL:ALL CALC:CHAN:CAT? Returns "" (channel setup list empty) CALC:CHAN:DEF "C3",1530.000 NM CALC:CHAN:DEF "C4",1540.000 NM CALC:CHAN:CAT? Returns "C3,C4" (two channels in the list) CALC:CHAN:DEL:ALL CALC:CHAN:CAT? Returns ""
See Also	:CALCulate[1..n][:WDM]:CHANnel:CATalog? :CALCulate[1..n][:WDM]:CHANnel[:DEFine] :CALCulate[1..n][:WDM]:CHANnel:DELeTe[:NAME]

:CALCulate[1..n][:WDM]:CHANnel: CENTer:FREQuency

Description	This command sets the nominal center frequency of the selected WDM analysis channel. At *RST, this value is not available.
Syntax	<pre>:CALCulate[1..n][:WDM]:CHANnel:CENTer:FREQuency<wsp><Center[<wsp>HZ]> MAXimum MINimum DEFAULT</pre>
Parameter(s)	<i>Center:</i> The program data syntax for <Center> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Center> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n][:WDM]:CHANnel: CENTer:FREQuency

DEfault allows the instrument to select a value for the <Center> parameter.

The <Center> parameter corresponds to a valid channel center frequency in hertz.

The
CALCulate[1..n][:WDM]:CHANnel:CENter:FREQ
uency? MIN and
CALCulate[1..n][:WDM]:CHANnel:CENter:FREQ
uency? MAX queries can be used to determine
the valid channel center frequency range.

Example(s)

```
CALC:WDM:CHAN:DEF "ITU_22",192.1750 THZ
CALC:WDM:CHAN:SEL "ITU_22"
CALC:WDM:CHAN:CEN:FREQ? Returns
1.921750E+014
CALC:WDM:CHAN:CEN:FREQ 193.4145 THZ
```

```
CALC:WDM:CHAN:CEN:FREQ? Returns
1.934145E+014
```

See Also

```
:CALCulate[1..n][:WDM]:CHANnel[:DEFine]
:CALCulate[1..n][:WDM]:CHANnel:CENter:FREQ
uency?
:CALCulate[1..n][:WDM]:CHANnel:CENter[:WAV
Elength]
:CALCulate[1..n][:WDM]:CHANnel:SELect
```

:CALCulate[1..n][:WDM]:CHANnel: CENTER:FREQuency?

Description	This query returns the nominal center frequency of the selected WDM analysis channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:CENTER:FREQuency?[<wsp>MAXimum MINimum DEFault]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFault. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFault is used to retrieve the instrument's default value.
Response Syntax	<Center>

:CALCulate[1..n][:WDM]:CHANnel: CENTer:FREQuecy?	
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to either the current or the MINimum/MAXimum channel center frequency in hertz.
Example(s)	CALC:CHAN:DEF "ITU_22",192.1750 THZ CALC:CHAN:SEL "ITU_22" CALC:CHAN:CENT:FREQ? Returns 1.921750E+014
See Also	:CALCulate[1..n][:WDM]:CHANnel[:DEFine] :CALCulate[1..n][:WDM]:CHANnel:CENTer:FREQ uecy :CALCulate[1..n][:WDM]:CHANnel:CENTer[:WAV elength]? :CALCulate[1..n][:WDM]:CHANnel:SElect

:CALCulate[1..n][:WDM]:CHANnel: CENTer[:WAVelength]

Description	This command sets the nominal center wavelength of the selected WDM analysis channel. At *RST, this value is not available.
Syntax	<pre>:CALCulate[1..n][:WDM]:CHANnel:CENTer[:WAV elength]<wsp><Center[<wsp>M]> MAXimu m MINimum DEFault</pre>
Parameter(s)	<i>Center:</i> The program data syntax for <Center> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Center> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n][:WDM]:CHANnel: CENTer[:WAVelength]

DEfault allows the instrument to select a value for the <Center> parameter.

The <Center> parameter corresponds to a valid channel center wavelength in meters.

The
CALCulate[1..n][:WDM]:CHANnel:CENTer[:WAV
elength]? MIN and
CALCulate[1..n][:WDM]:CHANnel:CENTer[:WAV
elength]? MAX queries can be used to determine
the valid channel center wavelength range.

Example(s)

```
CALC:WDM:CHAN:DEF "CWDM_7",1450.0 NM
CALC:WDM:CHAN:SEL "CWDM_7"
CALC:WDM:CHAN:CEN:WAV? Returns
1.45000E-006
CALC:WDM:CHAN:CEN:WAV 1445.0 NM
CALC:WDM:CHAN:CEN:WAV? Returns
1.44500E-006
```

See Also

```
:CALCulate[1..n][:WDM]:CHANnel[:DEFine]
:CALCulate[1..n][:WDM]:CHANnel:CENTer[:WAV
elength]?
:CALCulate[1..n][:WDM]:CHANnel:CENTer:FREQ
uency
:CALCulate[1..n][:WDM]:CHANnel:SELect
```

:CALCulate[1..n][:WDM]:CHANnel: CENTER[:WAVelength]?

Description	This query returns the nominal center wavelength of the selected WDM analysis channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:CENter[:WAVelength]?[<wsp>MAXimum MINimum DEFault]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFault. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFault is used to retrieve the instrument's default value.
Response Syntax	<Center>

:CALCulate[1..n][:WDM]:CHANnel: CENTer[:WAVelength]?	
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to either the current or the MINimum/MAXimum channel center wavelength in meters.
Example(s)	CALC:CHAN:DEF "CWDM_7",1450.0 NM CALC:CHAN:SEL "CWDM_7" CALC:CHAN:CENT:WAV? Returns 1.45000E-006
See Also	:CALCulate[1..n][:WDM]:CHANnel[:DEFine] :CALCulate[1..n][:WDM]:CHANnel:CENTer[:WAVelength] :CALCulate[1..n][:WDM]:CHANnel:CENTer:FREQ uency? :CALCulate[1..n][:WDM]:CHANnel:SElect

:CALCulate[1..n][:WDM]:CHANnel: WIDTH:FREQuency

Description	This command sets the frequency width of the selected WDM analysis channel. At *RST, this value is not available. At CALCulate[1..n][:WDM]:CHANnel[:DEFine], this value is set to 50.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:WIDTH:FREQuency<wsp><Width[<wsp>HZ]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Width:</i> The program data syntax for <Width> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Width> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n][:WDM]:CHANnel: WIDTH:FREQuency

DEfault allows the instrument to select a value for the <Width> parameter.

The <Width> parameter corresponds to a valid channel width in hertz.

The
CALCulate[1..n][:WDM]:CHANnel:WIDTH:FREQ
uency? MIN and
CALCulate[1..n][:WDM]:CHANnel:WIDTH:FREQ
uency? MAX queries can be used to determine
the valid channel frequency width.

Example(s)

```
CALC:WDM:CHAN:DEF "ITU_22",192.1750 THZ
CALC:WDM:CHAN:SEL "ITU_22"
CALC:WDM:CHAN:WIDT:FREQ 200.0 GHZ
CALC:WDM:CHAN:WIDT:FREQ? Returns
2.000000E+011
```

See Also

```
:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH
:FREQuency
:CALCulate[1..n][:WDM]:CHANnel:WIDTH[:WAV
elength]
:CALCulate[1..n][:WDM]:CHANnel:WIDTH:FREQ
uency?
:CALCulate[1..n][:WDM]:CHANnel:SElect
```

:CALCulate[1..n][:WDM]:CHANnel: WIDTh:FREQuency?

Description	This query returns the frequency width of the selected WDM analysis channel. At *RST, this value is not available. At CALCulate[1..n][:WDM]:CHANnel[:DEFine], this value is set to 50.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:WIDTh:FREQuency?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Width>

:CALCulate[1..n][:WDM]:CHANnel:WIDTH:FREQuency?	
Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to either the current or the MINimum/MAXimum channel frequency width in hertz.
Example(s)	CALC:CHAN:DEF "C_23",195.0 THZ CALC:CHAN:SEL "C_23" CALC:CHAN:WIDT:FREQ DEF CALC:CHAN:WIDT:FREQ? Returns 5.000000E+010
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTh:FREQuency :CALCulate[1..n][:WDM]:CHANnel:WIDTh[:WAVelength] :CALCulate[1..n][:WDM]:CHANnel:WIDTh:FREQuency :CALCulate[1..n][:WDM]:CHANnel:SElect

:CALCulate[1..n][:WDM]:CHANnel: WIDTH[:WAVelength]

Description	This command sets the wavelength width of the selected WDM analysis channel. At *RST, this value is not available. At CALCulate[1..n][:WDM]:CHANnel[:DEFine], this value is set to 50.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:WIDTH[:WAVelength] <wsp> <Width[<wsp> M]> MAXimum MINimum DEFault
Parameter(s)	<i>Width:</i> The program data syntax for <Width> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Width> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n][:WDM]:CHANnel: WIDTh[:WAVelength]

DEFault allows the instrument to select a value for the <Width> parameter.

The <Width> parameter corresponds to a valid channel width in meters.

The
CALCulate[1..n][:WDM]:CHANnel:WIDTh[:WAVElength]? MIN and
CALCulate[1..n][:WDM]:CHANnel:WIDTh[:WAVElength]? MAX queries can be used to determine the valid channel wavelength width.

Example(s)

```
CALC:WDM:CHAN:DEF "CWDM_3",1410.0 NM
CALC:WDM:CHAN:SEL "CWDM_3"
CALC:WDM:CHAN:WIDT:WAV 10.0 NM
CALC:WDM:CHAN:WIDT:WAV? Returns
1.000000E-008
```

See Also

```
:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTh
[:WAVelength]
:CALCulate[1..n][:WDM]:CHANnel:WIDTh:FREQ
uency
:CALCulate[1..n][:WDM]:CHANnel:WIDTh[:WAV
elength]?
:CALCulate[1..n][:WDM]:CHANnel:SElect
```

:CALCulate[1..n][:WDM]:CHANnel:WIDTH[:WAVelength]?	
Description	This query returns the wavelength width of the selected WDM analysis channel. At *RST, this value is not available. At CALCulate[1..n][:WDM]:CHANnel[:DEFine], this value is set to 50.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:WIDTH[:WAVelength]?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Width>

:CALCulate[1..n][:WDM]:CHANnel:WIDTH[:WAVelength]?	
Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to either the current or the MINimum/MAXimum channel wavelength width in meters.
Example(s)	CALC:CHAN:DEF "CWDM_5",1430.0 NM CALC:CHAN:SEL "CWDM_5" CALC:CHAN:WIDT:WAV DEF CALC:CHAN:WIDT:WAV? Returns 2.000000E-008
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTH[:WAVelength] :CALCulate[1..n][:WDM]:CHANnel:WIDTH:FREQuency :CALCulate[1..n][:WDM]:CHANnel:WIDTH[:WAVelength] :CALCulate[1..n][:WDM]:CHANnel:SElect

:CALCulate[1..n][:WDM]:CHANnel: NOISe:AUTO

Description	This command controls the activation of the i-InBand noise measurement for the WDM analysis of the selected channel. At *RST, this value is not available. At CALCulate[1..n][:WDM]:CHANnel[:DEFine], this value is set to off (disabled).
Syntax	:CALCulate[1..n][:WDM]:CHANnel:NOISe:AUTO <wsp> <Auto>
Parameter(s)	<i>Auto:</i> The program data syntax for <Auto> is defined as a <Boolean Program Data> element. The <Auto> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0. The <Auto> parameter corresponds to the new state of auto noise measurement. 0 or OFF: disables selected channel auto noise measurement. 1 or ON: enables selected channel auto noise measurement.

:CALCulate[1..n][:WDM]:CHANnel: NOISe:AUTO	
Example(s)	CALC:WDM:CHAN:DEF "C_001",192.1750 THZ CALC:WDM:CHAN:SEL "C_001" CALC:WDM:CHAN:NOIS:AUTO ON CALC:WDM:CHAN:NOIS:AUTO? Returns 1 (auto noise enabled)
Notes	Auto noise is available only if software option "InB" is active. Auto noise is computed only if the analysed trace was acquired using the PMMH averaging type.
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:AUTO :CALCulate[1..n][:WDM]:CHANnel:NOISe:TYPE :CALCulate[1..n][:WDM]:CHANnel:NOISe:AUTO? :CALCulate[1..n][:WDM]:CHANnel:SElect :SENSe[1..n]:AVERage:TYPE

:CALCulate[1..n][:WDM]:CHANnel: NOISe:AUTO?

Description	This query indicates if the i-InBand auto noise measurement for the WDM analysis of the selected channel has been enabled or not. At *RST, this value is not available. At CALCulate[1..n][:WDM]:CHANnel[:DEFine], this value is set to off (disabled).
Syntax	:CALCulate[1..n][:WDM]:CHANnel:NOISe:AUTO?
Parameter(s)	None
Response Syntax	<Auto>
Response(s)	<i>Auto:</i> The response data syntax for <Auto> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Auto> response corresponds to the state of the auto noise measurement.

:CALCulate[1..n][:WDM]:CHANnel: NOISe:AUTO?	
	0: auto noise measurement is disabled. 1: auto noise measurement is enabled.
Example(s)	CALC:CHAN:DEF "ITU_1550",1550.0 NM CALC:CHAN:SEL "ITU_1550" CALC:CHAN:NOIS:AUTO OFF CALC:CHAN:NOIS:AUTO? Returns 0 (auto noise disabled)
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:AUTO :CALCulate[1..n][:WDM]:CHANnel:NOISe:TYPE :CALCulate[1..n][:WDM]:CHANnel:NOISe:AUTO :CALCulate[1..n][:WDM]:CHANnel:SElect

**:CALCulate[1..n][:WDM]:CHANnel:
NOISe:DISTance:FREQuency**

Description	This command sets the frequency distance from peak to center of the noise region for the noise measurement of the selected WDM analysis channel. At *RST, this value is not available. At CALCulate[1..n][:WDM]:CHANnel[:DEFine], the noise measurement distance is set to 100.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance:FREQuency<wsp><Distance[<wsp>HZ]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Distance:</i> The program data syntax for <Distance> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Distance> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n][:WDM]:CHANnel: NOISe:DISTance:FREQuency

DEfault allows the instrument to select a value for the <Distance> parameter.

The <Distance> parameter corresponds to a valid distance in hertz from peak to center of the noise region.

The
CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance:FREQuency? MIN and
CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance:FREQuency? MAX queries can be used to determine the valid distance values.

Example(s)

```
CALC:WDM:CHAN:DEF "C_23",195.0 THZ
CALC:WDM:CHAN:SEL "C_23"
CALC:WDM:CHAN:NOIS:TYPE POLY5
CALC:WDM:CHAN:NOIS:DIST:FREQ 125.0 GHZ
CALC:WDM:CHAN:NOIS:DIST:FREQ? Returns
1.250000E+011
```

Notes

Custom noise measurement distance is applied only if the selected noise type is POLYnomial5.

See Also

```
:CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance[:WAVelength]
:CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance:FREQuency?
:CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh:FREQuency
```

```
:CALCulate[1..n][:WDM]:CHANnel:NOISe:TYPE
:CALCulate[1..n][:WDM]:CHANnel:SElect
:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:
DISTance:FREQuency
```

:CALCulate[1..n][:WDM]:CHANnel: NOISe:DISTance:FREQUency?

Description	This query returns the frequency distance from peak to center of the noise region for the noise measurement of the selected WDM analysis channel. At *RST, this value is not available. At CALCulate[1..n][:WDM]:CHANnel[:DEFine], the noise measurement distance is set to 100.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance:FREQUency?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Distance>

:CALCulate[1..n][:WDM]:CHANnel: NOISe:DISTance:FREQUency?	
Response(s)	<i>Distance:</i> The response data syntax for <Distance> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Distance> response corresponds to either the current or the MINimum/MAXimum noise distance frequency in hertz.
Example(s)	CALC:CHAN:DEF "ITU_1550",1550.0 NM CALC:CHAN:SEL "ITU_1550" CALC:CHAN:NOIS:DIST:FREQ? Returns 1.000000E+011
See Also	:CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTan ce[:WAVelength]? :CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTan ce:FREQUency :CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDT h:FREQUency :CALCulate[1..n][:WDM]:CHANnel:SElect :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: DISTance:FREQUency?

:CALCulate[1..n][:WDM]:CHANnel: NOISe:DISTance[:WAVelength]

Description	This command sets the wavelength distance from peak to center of the noise region for the noise measurement of the selected WDM analysis channel. At *RST, this value is not available. At CALCulate[1..n][:WDM]:CHANnel[:DEFine], the channel noise measurement distance is set to 100.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance[:WAVelength] <wsp> <Distance[<wsp>M]> MAXimum MINimum DEFault
Parameter(s)	<i>Distance:</i> The program data syntax for <Distance> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Distance> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n][:WDM]:CHANnel: NOISe:DISTance[:WAVelength]

DEfault allows the instrument to select a value for the <Distance> parameter.

The <Distance> parameter corresponds to a valid distance in meters from peak to center of the noise region.

The
CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance[:WAVelength]? MIN and
CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance[:WAVelength]? MAX queries can be used to determine the valid distance values.

Example(s)

```
CALC:WDM:CHAN:DEF "CWDM_3",1410.0 NM
CALC:WDM:CHAN:SEL "CWDM_3"
CALC:WDM:CHAN:NOIS:TYPE POLY5
CALC:WDM:CHAN:NOIS:DIST:WAV 40.0 NM
CALC:WDM:CHAN:NOIS:DIST:WAV? Returns
4.000000E-008
```

Notes

Custom noise measurement distance is applied only if the selected noise type is POLYnomial5.

See Also

```
:CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance:FREQuency
:CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance[:WAVelength]?
:CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh[:WAVelength]
```

```
:CALCulate[1..n][:WDM]:CHANnel:NOISe:TYPE
:CALCulate[1..n][:WDM]:CHANnel:SElect
:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:
DISTance[:WAVelength]
```

**:CALCulate[1..n][:WDM]:CHANnel:
NOISe:DISTance[:WAVelength]?**

Description	This query returns the wavelength distance from peak to center of the noise region for the noise measurement of the selected WDM analysis channel. At *RST, this value is not available. At CALCulate[1..n][:WDM]:CHANnel[:DEFine], the noise measurement distance is set to 100.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance[:WAVelength]?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Distance>

:CALCulate[1..n][:WDM]:CHANnel: NOISe:DISTance[:WAVelength]?	
Response(s)	<i>Distance:</i> The response data syntax for <Distance> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Distance> response corresponds to either the current or the MINimum/MAXimum noise distance wavelength in meters.
Example(s)	CALC:WDM:CHAN:NOIS:DIST:WAV DEF CALC:WDM:CHAN:NOIS:DIST:WAV? Returns 2.000000E-008
See Also	:CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance:FREQuency? :CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance[:WAVelength] :CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh[:WAVelength]? :CALCulate[1..n][:WDM]:CHANnel:SElect :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:DISTance[:WAVelength]?

:CALCulate[1..n][:WDM]:CHANnel: NOISe:TYPE

Description	This command selects the noise measurement type for the WDM analysis of the selected channel. At *RST, this value is not available. At CALCulate[1..n][:WDM]:CHANnel[:DEFine], this value is set to IEC.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:NOISe:TYPE <wsp>IEC INBand INBandNarrowfilter
Parameter(s)	<i>Type:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: IEC INBand INBandNarrowfilter. The parameter corresponds to the newly selected noise type. IEC: selects IEC noise type. INBand: selects InBand noise type. INBandNarrowfilter: selects InBand narrow filter noise type.
Example(s)	<pre>CALC:WDM:CHAN:DEF "C_001", 1290.000 NM CALC:WDM:CHAN:SEL "C_001" CALC:WDM:CHAN:NOIS:AUTO OFF CALC:WDM:CHAN:NOIS:TYPE INBN CALC:WDM:CHAN:NOIS:TYPE? Returns INBANDNARROWFILTER</pre>

:CALCulate[1..n][:WDM]:CHANnel: NOISe:TYPE

Notes

INBand and INBandNarrowfilter noise types are available only if software option "InB" is active.

INBand and INBandNarrowfilter noise types are computed only if the analysed trace was acquired using PMMH averaging type.

If auto noise measurement is active, specific noise type setting has no effect.

See Also

:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:TYPE

:CALCulate[1..n][:WDM]:CHANnel:NOISe:AUTO

:CALCulate[1..n][:WDM]:CHANnel:NOISe:TYPE?

:CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance:FREQUENCY

:CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance[:Wavelength]

:CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTH:FREQUENCY

:CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTH[:Wavelength]

:CALCulate[1..n][:WDM]:CHANnel:SElect

:SENSe[1..n]:AVERage:TYPE

:CALCulate[1..n][:WDM]:CHANnel: NOISe:TYPE?

Description	This query returns the selected WDM analysis noise measurement type for the selected channel. At *RST, this value is not available. At CALCulate[1..n][:WDM]:CHANnel[:DEFine], this value is set to IEC.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:NOISe:TYPE?
Parameter(s)	None
Response Syntax	<Type>
Response(s)	<i>Type:</i> The response data syntax for <Type> is defined as a <CHARACTER RESPONSE DATA> element. The <Type> response corresponds to the selected noise type. IEC: the IEC noise type is selected. INBAND: the InBand noise type is selected. INBANDNARROWFILTER: the InBand narrow filter noise type is selected.

:CALCulate[1..n][:WDM]:CHANnel: NOISe:TYPE?	
Example(s)	CALC:CHAN:DEF "C_001", 1290.000 NM CALC:CHAN:SEL "C_001" CALC:CHAN:NOIS:AUTO OFF CALC:CHAN:NOIS:TYPE IEC CALC:CHAN:NOIS:TYPE? Returns IEC
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe: TYPE :CALCulate[1..n][:WDM]:CHANnel:NOISe:AUTO :CALCulate[1..n][:WDM]:CHANnel:NOISe:TYPE :CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTan ce:FREQuency? :CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTan ce[:WAVelength]? :CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDT h:FREQuency? :CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDT h[:WAVelength]? :CALCulate[1..n][:WDM]:CHANnel:SElect

:CALCulate[1..n][:WDM]:CHANnel: NOISe:WIDTh:FREQuency	
Description	This command sets the frequency width of the noise measurement region of the selected WDM analysis channel. At *RST, this value is not available. At CALCulate[1..n][:WDM]:CHANnel[:DEFine], the width of the noise measurement region is set to 100.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh:FREQuency<wsp><Width[<wsp>HZ]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Width:</i> The program data syntax for <Width> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Width> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n][:WDM]:CHANnel: NOISe:WIDTh:FREQuency

DEfault allows the instrument to select a value for the <Width> parameter.

The <Width> parameter corresponds to a valid width in hertz for the noise measurement region.

The
CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh:FREQuency? MIN and
CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh:FREQuency? MAX queries can be used to determine the valid width values.

Example(s)

```
CALC:WDM:CHAN:DEF "ITU_22",192.1750 THZ
CALC:WDM:CHAN:SEL "ITU_22"
CALC:WDM:CHAN:NOIS:TYPE POLY5
CALC:WDM:CHAN:NOIS:WIDTh:FREQ 75.0 GHZ
CALC:WDM:CHAN:NOIS:WIDTh:FREQ? Returns
7.500000E+010
```

Notes

Custom width for noise measurement region is applied only if the selected noise type is POLYnomial5.

See Also

```
:CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh[:WAVelength]
:CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh:FREQuency?
:CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance:FREQuency
```

```
:CALCulate[1..n][:WDM]:CHANnel:NOISe:TYPE
:CALCulate[1..n][:WDM]:CHANnel:SElect
:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:WIDTh:FREQuency
```

**:CALCulate[1..n][:WDM]:CHANnel:
NOISe:WIDTh:FREQuency?**

Description	This query returns the frequency width of the noise measurement region of the selected WDM analysis channel. At *RST, this value is not available. At CALCulate[1..n][:WDM]:CHANnel[:DEFine], the width of the noise measurement region is set to 100.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh:FREQuency?[<wsp>MAXimum MINimum DEFault]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFault. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFault is used to retrieve the instrument's default value.
Response Syntax	<Width>

:CALCulate[1..n][:WDM]:CHANnel:
NOISe:WIDTh:FREQuency?

Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to either the current or the MINimum/MAXimum frequency width of the noise measurement region in hertz.
Example(s)	CALC:WDM:CHAN:DEF "CWDM_7",1450.0 NM CALC:WDM:CHAN:SEL "CWDM_7" CALC:WDM:CHAN:NOIS:WIDTh:FREQ 65.0 GHZ CALC:WDM:CHAN:NOIS:WIDTh:FREQ? Returns 6.500000E+010
See Also	:CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh[:WAVelength] :CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh:FREQuency :CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTAnce:FREQuency? :CALCulate[1..n][:WDM]:CHANnel:SElect :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:WIDTh:FREQuency?

:CALCulate[1..n][:WDM]:CHANnel: NOISe:WIDTh[:WAVelength]	
Description	This command sets the wavelength width of the noise measurement region of the selected WDM analysis channel. At *RST, this value is not available. At CALCulate[1..n][:WDM]:CHANnel[:DEFine], the width of the noise measurement region is set to 100.0 GHz.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh[:WAVelength]<wsp><Width[<wsp>M]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Width:</i> The program data syntax for <Width> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Width> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n][:WDM]:CHANnel: NOISe:WIDTh[:WAVelength]

DEfault allows the instrument to select a value for the <Width> parameter.

The <Width> parameter corresponds to a valid width in meters for the noise measurement region.

The
CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh[:WAVelength]? MIN and
CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh[:WAVelength]? MAX queries can be used to determine valid width values.

Example(s)

```
CALC:WDM:CHAN:DEF "ITU_22",192.1750 THZ
CALC:WDM:CHAN:SEL "ITU_22"
CALC:WDM:CHAN:NOIS:TYPE POLY5
CALC:WDM:CHAN:NOIS:WIDTh:WAV 12.5 NM
CALC:WDM:CHAN:NOIS:WIDTh:WAV? Returns
1.250000E-008
```

**:CALCulate[1..n][:WDM]:CHANnel:
NOISe:WIDTh[:WAVelength]**

Notes	Custom width for noise measurement region is applied only if the selected noise type is POLYnomial5.
See Also	:CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh:FREQuency :CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh[:WAVelength]? :CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance[:WAVelength] :CALCulate[1..n][:WDM]:CHANnel:NOISe:TYPE :CALCulate[1..n][:WDM]:CHANnel:SElect :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:WIDTh[:WAVelength]

:CALCulate[1..n][:WDM]:CHANnel: NOISe:WIDTh[:WAVelength]?

Description

This query returns the wavelength width of the noise measurement region of the selected WDM analysis channel.

At *RST, this value is not available.

At CALCulate[1..n][:WDM]:CHANnel[:DEFine], the width of the noise measurement region is set to 100.0 GHz.

Syntax

:CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh[:WAVelength]?[<wsp>MAXimum|MINimum|DEFault]

Parameter(s)

Parameter 1:

The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum|MINimum|DEFault.

MINimum is used to retrieve the instrument's smallest supported value.

MAXimum is used to retrieve the instrument's greatest supported value.

DEFault is used to retrieve the instrument's default value.

Response Syntax

<Width>

:CALCulate[1..n][:WDM]:CHANnel: NOISe:WIDTh[:WAVelength]?

Response(s)	<i>Width:</i> The response data syntax for <Width> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Width> response corresponds to either the current or the MINimum/MAXimum wavelength width of the noise measurement region in meters.
Example(s)	CALC:WDM:CHAN:AUTO:NOIS:WIDTh:WAV DEF CALC:WDM:CHAN:AUTO:NOIS:WIDTh:WAV? Returns 2.000000E-008
See Also	:CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh:FREQuency :CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh[:WAVelength] :CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance[:WAVelength]? :CALCulate[1..n][:WDM]:CHANnel:SElect :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:WIDTh[:WAVelength]?

:CALCulate[1..n][:WDM]:CHANnel:NSElect	
Description	This command sets the one-based index of the selected WDM channel analysis setup. At *RST, there is no selection: index is set to 0.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:NSElect<wsp> <Select> MAXimum MINimum
Parameter(s)	<i>Select:</i> The program data syntax for <Select> is defined as a <numeric_value> element. The <Select> special forms MINimum and MAXimum are accepted on input.

:CALCulate[1..n][:WDM]:CHANnel: NSElect

MINimum allows to set the instrument to the smallest supported value.

MAXimum allows to set the instrument to the greatest supported value.

The <Select> parameter corresponds to a valid channel setup index to select. The channel index cannot be zero.

The CALCulate[1..n][:WDM]:CHANnel:COUNT? query can be used to determine valid index range.

Example(s)

```
CALC:WDM:CHAN:DEL:ALL
CALC:WDM:CHAN:DEF "C_001",1525.000 NM
CALC:WDM:CHAN:NSEL 1
CALC:WDM:CHAN:SEL? Returns "C_001"
```

See Also

```
:CALCulate[1..n][:WDM]:CHANnel:COUNT?
:CALCulate[1..n][:WDM]:CHANnel[:DEFine]
:CALCulate[1..n][:WDM]:CHANnel:NSElect?
:CALCulate[1..n][:WDM]:CHANnel:SElect
:CALCulate[1..n][:WDM]:DATA:CHANnel:NSElect
```

:CALCulate[1..n][:WDM]:CHANnel:NSElect?	
Description	This query returns the one-based index of the selected WDM channel analysis setup. At *RST, there is no selection: index is set to 0.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:NSElect?
Parameter(s)	None
Response Syntax	<Select>
Response(s)	Select: The response data syntax for <Select> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Select> response corresponds to the index of the selected channel setup. Zero is returned if no channel has been selected.
Example(s)	CALC:CHAN:DEL:ALL CALC:CHAN:DEF "ITU_1550",1550.000 NM CALC:CHAN:SEL "ITU_1550" CALC:CHAN:NSEL? Returns 1 CALC:CHAN:DELeTe:NAME "ITU_1550" CALC:CHAN:NSEL? Returns 0 (no selection)
See Also	:CALCulate[1..n][:WDM]:CHANnel[:DEFine] :CALCulate[1..n][:WDM]:CHANnel:NSElect :CALCulate[1..n][:WDM]:CHANnel:SElect? :CALCulate[1..n][:WDM]:DATA:CHANnel:NSElect

:CALCulate[1..n][:WDM]:CHANnel:SElect

Description	This command sets the name of the selected WDM channel analysis setup. At *RST, there is no selection: a single null string is returned.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:SElect <wsp> <Select>
Parameter(s)	<i>Select:</i> The program data syntax for <Select> is defined as a <STRING PROGRAM DATA> element. The <Select> parameter corresponds to the name of the channel setup to select. The channel name cannot be empty.
Example(s)	CALC:WDM:CHAN:DEF "C_001",1525.000 NM CALC:WDM:CHAN:SEL "C_001" CALC:WDM:CHAN:SEL? Returns "C_001"
See Also	:CALCulate[1..n][:WDM]:CHANnel:CATalog? :CALCulate[1..n][:WDM]:CHANnel[:DEFine] :CALCulate[1..n][:WDM]:CHANnel:SElect? :CALCulate[1..n][:WDM]:CHANnel:NSElect :CALCulate[1..n][:WDM]:DATA:CHANnel:SElect

:CALCulate[1..n][:WDM]:CHANnel:SElect?	
Description	This query returns the name of the selected WDM channel analysis setup. At *RST, there is no selection: a single null string is returned.
Syntax	:CALCulate[1..n][:WDM]:CHANnel:SElect?
Parameter(s)	None
Response Syntax	<Select>
Response(s)	<i>Select:</i> The response data syntax for <Select> is defined as a <STRING RESPONSE DATA> element. The <Select> response corresponds to the name of the selected channel setup. A single null string is returned if no channel has been selected.
Example(s)	CALC:CHAN:DEF "ITU_1550",1550.000 NM CALC:CHAN:SEL "ITU_1550" CALC:CHAN:SEL? Returns "ITU_1550" CALC:CHAN:DELeTe:NAME "ITU_1550" CALC:CHAN:SEL? Returns "" (no selection)
See Also	:CALCulate[1..n][:WDM]:CHANnel:CATalog? :CALCulate[1..n][:WDM]:CHANnel[:DEFine] :CALCulate[1..n][:WDM]:CHANnel:SElect :CALCulate[1..n][:WDM]:CHANnel:NSElect? :CALCulate[1..n][:WDM]:DATA:CHANnel:SElect

**:CALCulate[1..n][:WDM]:CHANnel:
SIGnalPower:TYPE**

Description	This command selects the signal power measurement type for the WDM analysis of the selected channel. At *RST, this value is not available. At CALCulate[1..n][:WDM]:CHANnel[:DEFine], this value is set to IPOWer (integrated power).
Syntax	:CALCulate[1..n][:WDM]:CHANnel:SIGnalPower:TYPE<wsp>IPOWer PPOWer TPOWer
Parameter(s)	<i>Type:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: IPOWer PPOWer TPOWer. The parameter corresponds to the newly selected signal power type. IPOWer: selects integrated signal power type. PPOWer: selects peak signal power type. TPOWer: selects channel total power type.

:CALCulate[1..n][:WDM]:CHANnel: SIGnalPower:TYPE	
Example(s)	CALC:WDM:CHAN:DEF "ITU_1550", 1550.000 NM CALC:WDM:CHAN:SEL "ITU_1550" CALC:WDM:CHAN:SIGP:TYPE IPOW CALC:WDM:CHAN:SIGP:TYPE? Returns IPOWER
Notes	Noise and OSNR measurements are not computed for the selected channel if the signal power type is set to channel total power (TPOWer).
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO:SIGnal Power:TYPE :CALCulate[1..n][:WDM]:CHANnel:SIGnalPower: TYPE? :CALCulate[1..n][:WDM]:CHANnel:SElect :CALCulate[1..n][:WDM]:DATA:CHANnel:SIGnalP ower?

:CALCulate[1..n][:WDM]:CHANnel: SIGnalPower:TYPE?

Description	This query returns the selected WDM analysis signal power measurement type for the selected channel. At *RST, this value is not available. At CALCulate[1..n][:WDM]:CHANnel[:DEFine], this value is set to IPOWer (integrated power).
Syntax	:CALCulate[1..n][:WDM]:CHANnel:SIGnalPower:TYPE?
Parameter(s)	None
Response Syntax	<Type>
Response(s)	<i>Type:</i> The response data syntax for <Type> is defined as a <CHARACTER RESPONSE DATA> element. The <Type> response corresponds to the selected signal power type.

:CALCulate[1..n][:WDM]:CHANnel: SIGnalPower:TYPE?	
	IPOWER: the integrated signal power type is selected. PPOWER: the peak signal power type is selected. TPOWER: the channel total power type is selected.
Example(s)	CALC:CHAN:DEF "ITU_1550", 1550.000 NM CALC:CHAN:SEL "ITU_1550" CALC:CHAN:SIGP:TYPE PPOW CALC:CHAN:SIGP:TYPE? Returns PPOWER
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO:SIGnal Power:TYPE :CALCulate[1..n][:WDM]:CHANnel:SIGnalPower: TYPE :CALCulate[1..n][:WDM]:CHANnel:SElect :CALCulate[1..n][:WDM]:DATA:CHANnel:SIGnalP ower?

:CALCulate[1..n][:WDM]:DATA:CHANnel: BANDwidth[1 | 2] | BWIDth[1 | 2]: FREQuency?

Description	This query returns the computed WDM analysis result for frequency bandwidth of the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:BANDwidth[1 2] BWIDth[1 2]:FREQuency?
Parameter(s)	None
Response Syntax	<Bandwidth>
Response(s)	<i>Bandwidth:</i> The response data syntax for <Bandwidth> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Bandwidth> response corresponds to the computed frequency bandwidth in hertz.
Example(s)	CALC:CHAN:DEL:ALL CALC:CHAN:DEF "C_5", 190.8291 THZ CALC:BAND2:RLEV 5.0 DB <Do measurement> CALC:DATA:CHAN:SEL "C_5" CALC:DATA:CHAN:BAND1:FREQ? Returns 5.700000E+009 CALC:DATA:CHAN:BAND2:FREQ? Returns 1.330000E+010

**:CALCulate[1..n][:WDM]:DATA:CHANnel:
BANDwidth[1|2]|BWIDth[1|2]:
FREQuency?**

Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n][:WDM]:DATA:CHANnel:BWIDth [1 2] BANDwidth[1 2]:RelativeLEVel? :CALCulate[1..n][:WDM]:DATA:CHANnel:BWIDth [1 2] BANDwidth[1 2]:[:WAVelength]? :CALCulate[1..n][:WDM]:DATA:CHANnel:SElect :CALCulate[1..n][:WDM]:DATA:CHANnel::STATus :QUEStionable:BIT<9 10 11>:CONDition?

:CALCulate[1..n][:WDM]:DATA:CHANnel: BANDwidth[1 2] BWIDth[1 2]: RelativeLEVel?	
Description	This query indicates the bandwidth position setting used for WDM analysis of the selected channel result. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:BANDwidth[1 2] BWIDth[1 2]:RelativeLEVel?
Parameter(s)	None
Response Syntax	<PowerLevel>
Response(s)	<i>PowerLevel:</i> The response data syntax for <PowerLevel> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <PowerLevel> response corresponds to the bandwidth position.
Example(s)	<pre> CALC:CHAN:DEL:ALL CALC:WDM:CHAN:DEF "C_014", 1536.000 NM CALC:WDM:BAND2:RLEV 12.5 DB <Do measurement> UNIT:RAT DB CALC:WDM:DATA:CHAN:SEL "C_014" </pre>

**:CALCulate[1..n][:WDM]:DATA:CHANnel:
BANDwidth[1|2]|BWIDth[1|2]:
RelativeLEVel?**

CALC:WDM:DATA:CHAN:BAND2:RLEV? Returns
1.250000E+001

See Also

:CALCulate[1..n][:WDM]:CHANnel:BWIDth[1|2]
|BANDwidth[1|2]:RelativeLEVel
:CALCulate[1..n][:WDM]:DATA:CHANnel:BWIDth
[1|2]|BANDwidth[1|2]:FREQuency?

:CALCulate[1..n][:WDM]:DATA:CHANnel:BWIDth
[1|2]|BANDwidth[1|2]:[:WAVelength]?
:CALCulate[1..n][:WDM]:DATA:CHANnel:SElect

:CALCulate[1..n][:WDM]:DATA:CHANnel: BANDwidth[1 | 2] | BWIDth[1 | 2] [:WAVelength]?

Description	This query returns the computed WDM analysis result for the wavelength bandwidth of the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:BANDwidth[1 2] BWIDth[1 2][:WAVelength]?
Parameter(s)	None
Response Syntax	<Bandwidth>
Response(s)	<i>Bandwidth:</i> The response data syntax for <Bandwidth> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Bandwidth> response corresponds to the computed wavelength bandwidth in meters.
Example(s)	CALC:CHAN:DEL:ALL CALC:CHAN:DEF "CWDM_16", 1550.000 NM CALC:BAND2:RLEV 10.0 DB <Do measurement> CALC:DATA:CHAN:SEL "CWDM_16" CALC:DATA:CHAN:BAND1:WAV? Returns 3.000000E-011 CALC:DATA:CHAN:BAND2:WAV? Returns 5.400000E-011

**:CALCulate[1..n][:WDM]:DATA:CHANnel:
BANDwidth[1|2]|BWIDth[1|2]
[:WAVelength]?**

Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n][:WDM]:DATA:CHANnel:BWIDth [1 2] BANDwidth[1 2]:RelativeLEVel? :CALCulate[1..n][:WDM]:DATA:CHANnel:BWIDth [1 2] BANDwidth[1 2]:FREQuency? :CALCulate[1..n][:WDM]:DATA:CHANnel:SElect :CALCulate[1..n][:WDM]:DATA:CHANnel::STATus :QUEStionable:BIT<9 10 11>:CONDition?

:CALCulate[1..n][:WDM]:DATA:CHANnel:CATalog?	
Description	This query returns a comma-separated list of strings which contains the names of all WDM analysis channel results. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:CATalog?
Parameter(s)	None
Response Syntax	<Catalog>
Response(s)	<i>Catalog:</i> The response data syntax for <Catalog> is defined as a <STRING RESPONSE DATA> element. The <Catalog> response corresponds to the list of channel result names. The <Catalog> contains the names for all user defined channels as well as new channels automatically created based on the default channel. If the channel results list is empty, a single null string is returned.
Example(s)	<pre> CALC:WDM:CHAN:AUTO ON CALC:WDM:CHAN:DEL:ALL CALC:WDM:CHAN:DEF "C_1530", 1530.000 NM CALC:WDM:CHAN:DEF "C_1550", 1550.000 NM CALC:WDM:CHAN:DEF "C_1570", 1570.000 NM </pre>

:CALCulate[1..n][:WDM]:DATA:CHANnel:CATalog?	
	CALC:WDM:CHAN:CAT? Returns "C_1530,C_1550,C_1570" <Do measurement> CALC:WDM:DATA:CHAN:CAT? Returns "C_001,C_1530,C_1550,C_002,C_1570"
Notes	The channel results list is sorted into ascending order according to the channel center wavelength.
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO :CALCulate[1..n][:WDM]:CHANnel:DEFine] :CALCulate[1..n][:WDM]:CHANnel:CATalog? :CALCulate[1..n][:WDM]:DATA:CHANnel:COUNT?

:CALCulate[1..n][:WDM]:DATA:CHANnel:COUNT?

Description	This query returns the number of WDM analysis channel results. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:COUNT?
Parameter(s)	None
Response Syntax	<Count>

:CALCulate[1..n][:WDM]:DATA:CHANnel:
COUNT?

Response(s)	<i>Count:</i> The response data syntax for <Count> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Count> response corresponds to the number of items in the list of channel results. The <Count> value is the sum of the number of user-defined channels with the number of new channels automatically created based on the default channel.
Example(s)	CALC:WDM:CHAN:AUTO OFF CALC:WDM:CHAN:DEL:ALL CALC:WDM:CHAN:DEF "C_1550", 1550.000 NM CALC:WDM:CHAN:DEF "C_1570", 1570.000 NM <Do measurement> CALC:WDM:DATA:CHAN:COUN? Returns 2
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO :CALCulate[1..n][:WDM]:CHANnel:COUNT? :CALCulate[1..n][:WDM]:CHANnel[:DEFine] :CALCulate[1..n][:WDM]:DATA:CHANnel:CATalog?

:CALCulate[1..n][:WDM]:DATA:CHANnel: CENTer:FREQuency?

Description	This query indicates the nominal center frequency used for the WDM analysis of the selected channel result. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:CENTer:FREQuency?
Parameter(s)	None
Response Syntax	<Center>
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the nominal channel center frequency in hertz.

**:CALCulate[1..n][:WDM]:DATA:CHANnel:
CENTer:FREQuency?**

Example(s)	CALC:CHAN:DEL:ALL CALC:CHAN:DEF "ITU_32", 212.0000 THZ <Do measurement> CALC:DATA:CHAN:SEL "ITU_32" CALC:DATA:CHAN:CENt:FREQ? Returns 2.120000E+014
See Also	:CALCulate[1..n][:WDM]:CHANnel[:DEFine] :CALCulate[1..n][:WDM]:DATA:CHANnel:Center MASS:FREQuency? :CALCulate[1..n][:WDM]:DATA:CHANnel:Center PEAK:FREQuency? :CALCulate[1..n][:WDM]:DATA:CHANnel:CENter [:WAVElength]? :CALCulate[1..n][:WDM]:DATA:CHANnel:SELect

:CALCulate[1..n][:WDM]:DATA:CHANnel: CENTer[:WAVelength]?

Description	This query indicates the nominal center wavelength used for the WDM analysis of the selected channel result. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:CENTer[:WAVelength]?
Parameter(s)	None
Response Syntax	<Center>
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the nominal channel center wavelength in meters.

**:CALCulate[1..n][:WDM]:DATA:CHANnel:
CENTer[:WAVelength]?**

Example(s)	CALC:WDM:CHAN:DEL:ALL CALC:WDM:CHAN:DEF "C_003", 1401.500 NM <Do measurement> CALC:WDM:DATA:CHAN:SEL "C_003" CALC:WDM:DATA:CHAN:CENT:WAV? Returns 1.401500E-006
See Also	:CALCulate[1..n][:WDM]:CHANnel[:DEFine] :CALCulate[1..n][:WDM]:DATA:CHANnel:Center MASS[:WAVelength]? :CALCulate[1..n][:WDM]:DATA:CHANnel:Center PEAK[:WAVelength]? :CALCulate[1..n][:WDM]:DATA:CHANnel:CENTer :FREQuency? :CALCulate[1..n][:WDM]:DATA:CHANnel:SElect

**:CALCulate[1..n][:WDM]:DATA:CHANnel:
CenterMASs:FREQuency?**

Description	This query returns the computed WDM analysis result for the center of mass frequency of the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:CenterMASs:FREQuency?
Parameter(s)	None
Response Syntax	<Center>
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the computed center of mass frequency in hertz.
Example(s)	CALC:CHAN:DEL:ALL CALC:CHAN:DEF "ITU_14", 201.9873 THZ <Do measurement> CALC:DATA:CHAN:SEL "ITU_14" CALC:DATA:CHAN:CMAS:FREQ? Returns 2.020066E+014

:CALCulate[1..n][:WDM]:DATA:CHANnel:
CenterMASS:FREQuency?

Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n][:WDM]:DATA:CHANnel:CENter :FREQuency? :CALCulate[1..n][:WDM]:DATA:CHANnel:Center PEAk:FREQuency? :CALCulate[1..n][:WDM]:DATA:CHANnel:Center MASS[:WAVElength]? :CALCulate[1..n][:WDM]:DATA:CHANnel:SElect :CALCulate[1..n][:WDM]:DATA:CHANnel::STATus :QUESTionable:BIT<9 10 11>:CONDition?

**:CALCulate[1..n][:WDM]:DATA:CHANnel:
CenterMASS[:WAVelength]?**

Description	This query returns the computed WDM analysis result for the center of mass wavelength of the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:CenterMASS[:WAVelength]?
Parameter(s)	None
Response Syntax	<Center>
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the computed center of mass wavelength in meters.
Example(s)	CALC:WDM:CHAN:DEL:ALL CALC:WDM:CHAN:DEF "C_2", 1287.000 NM <Do measurement> CALC:WDM:DATA:CHAN:SEL "C_2" CALC:WDM:DATA:CHAN:CMAS:WAV? Returns 1.286971E-006

:CALCulate[1..n][:WDM]:DATA:CHANnel:
CenterMASS[:WAVelength]?

Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n][:WDM]:DATA:CHANnel:CENter [:WAVelength]? :CALCulate[1..n][:WDM]:DATA:CHANnel:Center PEAK[:WAVelength]? :CALCulate[1..n][:WDM]:DATA:CHANnel:Center MASS:FREQuency? :CALCulate[1..n][:WDM]:DATA:CHANnel:SElect :CALCulate[1..n][:WDM]:DATA:CHANnel::STATus :QUEStionable:BIT<9 10 11>:CONDition?

:CALCulate[1..n][:WDM]:DATA:CHANnel: CenterPEAK:FREQuency?

Description	This query returns the computed WDM analysis result for the peak center frequency of the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:CenterPEAK:FREQuency?
Parameter(s)	None
Response Syntax	<Center>
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the computed peak center frequency in hertz.
Example(s)	<pre>CALC:CHAN:DEL:ALL CALC:CHAN:DEF "ITU_08", 196.4327 THZ <Do measurement> CALC:DATA:CHAN:SEL "ITU_08" CALC:DATA:CHAN:CPEA:FREQ? Returns 1.964293E+014</pre>

**:CALCulate[1..n][:WDM]:DATA:CHANnel:
CenterPEAK:FREQuency?**

Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n][:WDM]:DATA:CHANnel:CENTer :FREQuency? :CALCulate[1..n][:WDM]:DATA:CHANnel:Center MASSs:FREQuency? :CALCulate[1..n][:WDM]:DATA:CHANnel:Center PEAK[:WAVelength]? :CALCulate[1..n][:WDM]:DATA:CHANnel:SElect :CALCulate[1..n][:WDM]:DATA:CHANnel::STATus :QUESTionable:BIT<9 10 11>:CONDition?

:CALCulate[1..n][:WDM]:DATA:CHANnel: CenterPEAk[:WAVelength]?

Description	This query returns the computed WDM analysis result for the peak center wavelength of the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:CenterPEAk[:WAVelength]?
Parameter(s)	None
Response Syntax	<Center>
Response(s)	<i>Center:</i> The response data syntax for <Center> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Center> response corresponds to the computed peak center wavelength in meters.
Example(s)	CALC:CHAN:DEL:ALL CALC:CHAN:DEF "CWDM_05", 1529.000 NM <Do measurement> CALC:DATA:CHAN:SEL "CWDM_05" CALC:DATA:CHAN:CPEA:WAV? Returns 1.529568E-006

**:CALCulate[1..n][:WDM]:DATA:CHANnel:
CenterPEAk[:WAVelength]?**

Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n][:WDM]:DATA:CHANnel:CENter [:WAVelength]? :CALCulate[1..n][:WDM]:DATA:CHANnel:Center MASS[:WAVelength]? :CALCulate[1..n][:WDM]:DATA:CHANnel:Center PEAk:FREQuency? :CALCulate[1..n][:WDM]:DATA:CHANnel:SElect :CALCulate[1..n][:WDM]:DATA:CHANnel::STATus :QUEStionable:BIT<9 10 11>:CONDition?

:CALCulate[1..n][:WDM]:DATA:CHANnel:ENBW?

Description	This query returns the equivalent noise bandwidth of the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:ENBW?
Parameter(s)	None
Response Syntax	<ENBW>
Response(s)	<i>ENBW:</i> The response data syntax for <ENBW> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <ENBW> response corresponds to the computed equivalent noise bandwidth of the channel. The returned value is expressed in meters.
Example(s)	<pre>CALC:CHAN:DEL:ALL CALC:CHAN:DEF "CWDM_03", 1615.000 NM CALC:CHAN:SEL "CWDM_03" CALC:CHAN:SIGP:TYPE IPOW CALC:CHAN:NOIS:AUTO OFF CALC:CHAN:NOIS:TYPE IEC <Do measurement></pre>

:CALCulate[1..n][:WDM]:DATA:CHANnel:ENBW?	
	CALC:DATA:CHAN:SEL "CWDM_03" CALC:DATA:CHAN:ENBW? Returns 6.1937000E-011
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n][:WDM]:DATA:CHANnel:SElect :TRACe:BANDwidth BWIDth:RESolution?

:CALCulate[1..n][:WDM]:DATA:CHANnel: NOISe?

Description	This query returns the computed WDM analysis result for the noise power level of the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:NOISe?
Parameter(s)	None
Response Syntax	<Noise>
Response(s)	<i>Noise:</i> The response data syntax for <Noise> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Noise> response corresponds to the computed noise power level.
Example(s)	<pre>CALC:CHAN:DEL:ALL CALC:CHAN:DEF "CWDM_03", 1615.000 NM CALC:CHAN:SEL "CWDM_03" CALC:CHAN:SIGP:TYPE IPOW CALC:CHAN:NOIS:AUTO OFF CALC:CHAN:NOIS:TYPE IEC <Do measurement></pre>

:CALCulate[1..n][:WDM]:DATA:CHANnel: NOISe?	
	CALC:DATA:CHAN:SEL "CWDM_03" UNIT:POW DBM CALC:DATA:CHAN:NOIS? Returns -5.417000E+001
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n][:WDM]:DATA:CHANnel:NOISe: AUTO? :CALCulate[1..n][:WDM]:DATA:CHANnel:NOISe: TYPE? :CALCulate[1..n][:WDM]:DATA:CHANnel:SElect :CALCulate[1..n][:WDM]:DATA:CHANnel::STATus :QUESTionable:BIT<9 10 11>:CONDition?

:CALCulate[1..n][:WDM]:DATA:CHANnel: NOISe:AUTO?

Description	This query indicates if the selected WDM channel result was computed using an i-InBand auto noise measurement. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:NOISe:AUTO?
Parameter(s)	None
Response Syntax	<Auto>
Response(s)	<i>Auto:</i> The response data syntax for <Auto> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Auto> response corresponds to the state of the auto noise measurement. 0: auto noise measurement is disabled. 1: auto noise measurement is enabled.

:CALCulate[1..n][:WDM]:DATA:CHANnel: NOISe:AUTO?

Example(s)

```
CALC:WDM:CHAN:DEL:ALL
CALC:WDM:CHAN:DEF "C_001", 1528.000 NM
CALC:WDM:CHAN:SEL "C_001"
CALC:WDM:CHAN:NOIS:AUTO OFF
<Do measurement>
CALC:WDM:DATA:CHAN:SEL "C_001"
```

```
CALC:WDM:DATA:CHAN:NOIS:AUTO? Returns 0
(auto noise disabled)
```

See Also

```
:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:
AUTO
:CALCulate[1..n][:WDM]:CHANnel:NOISe:AUTO
:CALCulate[1..n][:WDM]:DATA:CHANnel:NOISe?
:CALCulate[1..n][:WDM]:DATA:CHANnel:NOISe:
TYPE?
:CALCulate[1..n][:WDM]:DATA:CHANnel:SElect
```

:CALCulate[1..n][:WDM]:DATA:CHANnel: NOISe:TYPE?

Description	This query indicates the noise measurement type used for the WDM analysis of the selected channel result. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:NOISe:TYPE?
Parameter(s)	None
Response Syntax	<Type>
Response(s)	<i>Type:</i> The response data syntax for <Type> is defined as a <CHARACTER RESPONSE DATA> element. The <Type> response corresponds to the selected noise type. IEC: the IEC noise type is selected.

:CALCulate[1..n][:WDM]:DATA:CHANnel: NOISe:TYPE?

INBAND: the InBand noise type is selected.
 INBANDNARROWFILTER: the InBand narrow
 filter noise type is selected.
 POLYNOMIAL5: the 5th order polynomial fit noise
 type is selected.

Example(s)

```
CALC:WDM:CHAN:DEL:ALL
CALC:WDM:CHAN:DEF "ITU_011", 201.4670 THZ
CALC:WDM:CHAN:SEL "ITU_011"
CALC:WDM:CHAN:NOIS:AUTO ON
<Do measurement>
CALC:WDM:DATA:CHAN:SEL "ITU_011"
CALC:WDM:DATA:CHAN:NOIS:TYPE? Returns
INBAND or INBANDNARROWFILTER
```

See Also

```
:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:
TYPE
:CALCulate[1..n][:WDM]:CHANnel:NOISe:TYPE
:CALCulate[1..n][:WDM]:DATA:CHANnel:NOISe?
:CALCulate[1..n][:WDM]:DATA:CHANnel:NOISe:
AUTO?
:CALCulate[1..n][:WDM]:DATA:CHANnel:SElect
```


:CALCulate[1..n][:WDM]:DATA:CHANnel:OSNR?

Description	This query returns the computed WDM analysis result for the signal-to-noise ratio of the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:OSNR?
Parameter(s)	None
Response Syntax	<Osnr>
Response(s)	<i>Osnr</i>: The response data syntax for <Osnr> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Osnr> response corresponds to the computed signal-to-noise ratio.
Example(s)	<pre>CALC:CHAN:DEL:ALL CALC:CHAN:DEF "ITU_017", 203.8950 THZ CALC:CHAN:SEL "ITU_017" CALC:CHAN:SIGP:TYPE IPOW CALC:CHAN:NOIS:AUTO OFF CALC:CHAN:NOIS:TYPE IEC <Do measurement></pre>

:CALCulate[1..n][:WDM]:DATA:CHANnel:OSNR?	
	CALC:DATA:CHAN:SEL "ITU_017" UNIT:RAT DB CALC:DATA:CHAN:OSNR? Returns 1.955000E+001
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n][:WDM]:DATA:CHANnel:NOISe? :CALCulate[1..n][:WDM]:DATA:CHANnel:SElect :CALCulate[1..n][:WDM]:DATA:CHANnel:SIGnalP ower? :CALCulate[1..n][:WDM]:DATA:CHANnel::STATus :QUEStionable:BIT<9 10 11>:CONDition?

:CALCulate[1..n][:WDM]:DATA:CHANnel: NSElect

Description	This command sets the one-based index of the selected WDM channel result. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:NSElect<wsp> <Select> MAXimum MINimum
Parameter(s)	<i>Select:</i> The program data syntax for <Select> is defined as a <numeric_value> element. The <Select> special forms MINimum and MAXimum are accepted on input.

:CALCulate[1..n][:WDM]:DATA:CHANnel: NSElect

MINimum allows to set the instrument to the smallest supported value.

MAXimum allows to set the instrument to the greatest supported value.

The <Select> parameter corresponds to a valid channel result index to select. The channel index cannot be zero.

The
:CALCulate[1..n][:WDM]:DATA:CHANnel:COUNT? query can be used to determine valid index range.

Example(s)

```
CALC:WDM:CHAN:DEL:ALL
CALC:WDM:CHAN:DEF "C_007", 1380.000 NM
<Do measurement>
CALC:WDM:DATA:CHAN:NSEL 1
```

See Also

```
:CALCulate[1..n][:WDM]:CHANnel:NSElect
:CALCulate[1..n][:WDM]:DATA:CHANnel:COUNT?
:CALCulate[1..n][:WDM]:DATA:CHANnel:NSElect?
:CALCulate[1..n][:WDM]:DATA:CHANnel:SElect
```

:CALCulate[1..n][:WDM]:DATA:CHANnel: NSElect?

Description	This query returns the one-based index of the selected WDM channel result. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:NSElect?
Parameter(s)	None
Response Syntax	<Select>
Response(s)	<i>Select:</i> The response data syntax for <Select> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Select> response corresponds to the index of the selected channel result. Zero is returned if no channel has been selected.
Example(s)	CALC:WDM:CHAN:DEL:ALL CALC:WDM:CHAN:DEF "C_001", 1300.000 NM <Do measurement> CALC:WDM:DATA:CHAN:NSEL? Returns 0 (no selection) CALC:WDM:DATA:CHAN:NSEL 1 CALC:WDM:DATA:CHAN:NSEL? Returns 1
See Also	:CALCulate[1..n][:WDM]:CHANnel:NSElect? :CALCulate[1..n][:WDM]:DATA:CHANnel:NSElect :CALCulate[1..n][:WDM]:DATA:CHANnel:SElect?

:CALCulate[1..n][:WDM]:DATA:CHANnel:SElect	
Description	This command sets the name of the selected WDM channel result. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:SElect <wsp> <Select>
Parameter(s)	Select: The program data syntax for <Select> is defined as a <STRING PROGRAM DATA> element. The <Select> parameter corresponds to the name of the channel result to select. The channel name cannot be empty.
Example(s)	CALC:WDM:CHAN:DEL:ALL CALC:WDM:CHAN:DEF "C_007", 1380.000 NM <Do measurement> CALC:WDM:DATA:CHAN:SEL "C_001"
See Also	:CALCulate[1..n][:WDM]:CHANnel:SElect :CALCulate[1..n][:WDM]:DATA:CHANnel:CATalog? :CALCulate[1..n][:WDM]:DATA:CHANnel:NSElect :CALCulate[1..n][:WDM]:DATA:CHANnel:SElect?

:CALCulate[1..n][:WDM]:DATA:CHANnel:SElect?

Description	This query returns the name of the selected WDM channel result. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:SElect?
Parameter(s)	None
Response Syntax	<Select>
Response(s)	<i>Select:</i> The response data syntax for <Select> is defined as a <STRING RESPONSE DATA> element.

:CALCulate[1..n][:WDM]:DATA:CHANnel:SElect?

The <Select> response corresponds to the name of the selected channel result. A single null string is returned if no channel has been selected.

Example(s)

```
CALC:WDM:CHAN:DEL:ALL
CALC:WDM:CHAN:DEF "C_001", 1300.000 NM
<Do measurement>
CALC:WDM:DATA:CHAN:SEL? Returns "" (no
selection)
CALC:WDM:DATA:CHAN:SEL "C_001"
CALC:WDM:DATA:CHAN:SEL? Returns "C_001"
```

See Also

```
:CALCulate[1..n][:WDM]:CHANnel:SElect
:CALCulate[1..n][:WDM]:DATA:CHANnel:CATalog?
:CALCulate[1..n][:WDM]:DATA:CHANnel:NSElect?
:CALCulate[1..n][:WDM]:DATA:CHANnel:SElect
```

:CALCulate[1..n][:WDM]:DATA:CHANnel: SIGNALpower?

Description	This query returns the computed WDM analysis result for the signal power level of the selected channel. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:SIGNALpower?
Parameter(s)	None
Response Syntax	<Signal>

:CALCulate[1..n][:WDM]:DATA:CHANnel:
SIGnalPower?

Response(s)	<i>Signal:</i> The response data syntax for <Signal> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Signal> response corresponds to the computed signal power level.
Example(s)	CALC:CHAN:DEL:ALL CALC:CHAN:DEF "ITU_019", 229.7860 THZ CALC:CHAN:SEL "ITU_019" CALC:CHAN:SIGP:TYPE TPOW <Do measurement> CALC:DATA:CHAN:SEL "ITU_019" UNIT:POW DBM CALC:DATA:CHAN:SIGP? Returns -3.430000E+000
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO:SIGnal Power:TYPE :CALCulate[1..n][:WDM]:CHANnel:SIGnalPower: TYPE :CALCulate[1..n][:WDM]:DATA:CHANnel:SIGnalP ower:TYPE? :CALCulate[1..n][:WDM]:DATA:CHANnel:SElect :CALCulate[1..n][:WDM]:DATA:CHANnel::STATus :QUESTionable:BIT<9 10 11>:CONDition?

:CALCulate[1..n][:WDM]:DATA:CHANnel: SIGnalPower:TYPE?

Description	This query indicates the signal power measurement type used for the WDM analysis of the selected channel result. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:SIGnalPower:TYPE?
Parameter(s)	None
Response Syntax	<Type>
Response(s)	<i>Type:</i> The response data syntax for <Type> is defined as a <CHARACTER RESPONSE DATA> element. The <Type> response corresponds to the selected signal power type.

:CALCulate[1..n][:WDM]:DATA:CHANnel: SIGnalPower:TYPE?

IPOWER: the integrated signal power type is selected.
 PPOWER: the peak signal power type is selected.
 TPOWER: the channel total power type is selected.

Example(s)

```
CALC:CHAN:DEL:ALL
CALC:CHAN:DEF "ITU_011", 192.5520 THZ
CALC:CHAN:SEL "ITU_011"
CALC:CHAN:SIGP:TYPE PPOW
<Do measurement>
CALC:DATA:CHAN:SEL "ITU_011"
CALC:DATA:CHAN:SIGP:TYPE? Returns
PPOWER
```

See Also

```
:CALCulate[1..n][:WDM]:CHANnel:AUTO:SIGnal
Power:TYPE
:CALCulate[1..n][:WDM]:CHANnel:SIGnalPower:
TYPE
:CALCulate[1..n][:WDM]:DATA:CHANnel:SElect
:CALCulate[1..n][:WDM]:DATA:CHANnel:SIGnalP
ower?
```

**:CALCulate[1..n][:WDM]:DATA:CHANnel:
STATus:QUESTionable:BIT
<9|10|11>:CONDition?**

Description	This query returns the state of a specific bit from the questionable status of the selected WDM channel result. The <9 10 11> indicates for which bit the information must be retrieved. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:CHANnel:STATus:QUESTionable:BIT <9 10 11>:CONDition?
Parameter(s)	None
Response Syntax	<Condition>
Response(s)	<i>Condition:</i> The response data syntax for <Condition> is defined as a <NR1 NUMERIC RESPONSE DATA> element.

:CALCulate[1..n][:WDM]:DATA:CHANnel: STATus:QUESTionable:BIT <9|10|11>:CONDition?

The <Condition> response corresponds to the current questionable condition of the selected channel result. The meaning of the response depends on the value returned for the specified bit.

BIT9: When the value is 1, channel signal saturation occurred during the acquisition.

BIT10: When the value is 1, no signal was detected inside the channel.

BIT11: When the value is 1, signal discrimination inside the channel was insufficient for InBand noise measurement.

Example(s)

```
CALC:WDM:CHAN:DEL:ALL
CALC:WDM:CHAN:DEF "CWDM_06", 1400.000
NM
<Do measurement>
CALC:WDM:DATA:CHAN:SEL "CWDM_06"
CALC:WDM:DATA:CHAN:STAT:QUES:BIT10:COND?
```

See Also

:CALCulate[1..n][:WDM]:DATA:CHANnel:SElect

:CALCulate[1..n][:WDM]:DATA:OSNR:FLATness?

Description	This query returns the computed WDM analysis global result for signal-to-noise ratio flatness. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:OSNR:FLATness?
Parameter(s)	None
Response Syntax	<Flatness>
Response(s)	<i>Flatness:</i> The response data syntax for <Flatness> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Flatness> response corresponds to the computed signal-to-noise ratio flatness.
Example(s)	<Do measurement> UNIT:RAT DB CALC:DATA:OSNR:FLAT? Returns 2.992000E+001
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n][:WDM]:DATA:OSNR:MEAN? :CALCulate[1..n][:WDM]:DATA:SIGnalPower:FLATness? :CALCulate[1..n][:WDM]:DATA:SIGnalPower:MEAN? :CALCulate[1..n][:WDM]:DATA:TPOWER?

:CALCulate[1..n][:WDM]:DATA:OSNR:MEAN?	
Description	This query returns the computed WDM analysis global result for the mean signal-to-noise ratio. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:OSNR:MEAN?
Parameter(s)	None
Response Syntax	<Mean>
Response(s)	<i>Mean:</i> The response data syntax for <Mean> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Mean> response corresponds to the computed mean signal-to-noise ratio.
Example(s)	<Do measurement> UNIT:RAT DB CALC:WDM:DATA:OSNR:MEAN? Returns 4.471000E+001
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n][:WDM]:DATA:OSNR:FLATness? :CALCulate[1..n][:WDM]:DATA:SIGnalPower:FLATness? :CALCulate[1..n][:WDM]:DATA:SIGnalPower:MEAN? :CALCulate[1..n][:WDM]:DATA:TPOWER?

:CALCulate[1..n][:WDM]:DATA:SIGnalPower:FLATness?	
Description	This query returns the computed WDM analysis global result for the signal power flatness. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:SIGnalPower:FLATness?
Parameter(s)	None
Response Syntax	<Flatness>
Response(s)	<i>Flatness:</i> The response data syntax for <Flatness> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Flatness> response corresponds to the computed signal power flatness.
Example(s)	<Do measurement> UNIT:RAT DB CALC:DATA:SIGP:FLAT? Returns 3.118000E+001
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n][:WDM]:DATA:OSNR:FLATness? :CALCulate[1..n][:WDM]:DATA:OSNR:MEAN? :CALCulate[1..n][:WDM]:DATA:SIGnalPower:MEAN? :CALCulate[1..n][:WDM]:DATA:TPOWER?

:CALCulate[1..n][:WDM]:DATA:SIGnalPower:MEAN?	
Description	This query returns the computed WDM analysis global result for the signal mean power. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:SIGnalPower:MEAN?
Parameter(s)	None
Response Syntax	<Mean>
Response(s)	<i>Mean:</i> The response data syntax for <Mean> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Mean> response corresponds to the computed mean signal power.
Example(s)	<Do measurement> UNIT:POW DBM CALC:WDM:DATA:SIGP:MEAN? Returns -8.200000E+000
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n][:WDM]:DATA:OSNR:FLATness? :CALCulate[1..n][:WDM]:DATA:OSNR:MEAN? :CALCulate[1..n][:WDM]:DATA:SIGnalPower:FLATness? :CALCulate[1..n][:WDM]:DATA:TPOWER?

:CALCulate[1..n][:WDM]:DATA:TPOWer?	
Description	This query returns the computed WDM analysis global result for the analyzed trace total power. At *RST, this value is not available.
Syntax	:CALCulate[1..n][:WDM]:DATA:TPOWer?
Parameter(s)	None
Response Syntax	<Power>
Response(s)	<i>Power:</i> The response data syntax for <Power> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Power> response corresponds to the computed total power of the trace.
Example(s)	<Do measurement> UNIT:POW DBM CALC:DATA:TPOW? Returns -3.420000E+000
Notes	Special NAN (not a number) value -2251799813685248 is returned if analysis result could not be computed.
See Also	:CALCulate[1..n][:WDM]:DATA:OSNR:FLATness? :CALCulate[1..n][:WDM]:DATA:OSNR:MEAN? :CALCulate[1..n][:WDM]:DATA:SIGnalPower:FLATness? :CALCulate[1..n][:WDM]:DATA:SIGnalPower:MEAN?

:CALCulate[1..n][:WDM]:OSNR: BANDwidth BWIDth[:RESolution]	
Description	This command sets the custom resolution bandwidth value for the WDM analysis OSNR calculation. At *RST, this value is set to 0.100 nm.
Syntax	:CALCulate[1..n][:WDM]:OSNR:BANDwidth BWIDth[:RESolution]<wsp><Resolution[<wsp>M]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Resolution:</i> The program data syntax for <Resolution> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Resolution> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

**:CALCulate[1..n][:WDM]:OSNR:
BANDwidth|BWIDth[:RESolution]**

DEfault allows the instrument to select a value for the <Resolution> parameter.

The <Resolution> parameter corresponds to the custom resolution bandwidth in meters.

The
CALCulate[1..n][:WDM]:OSNR:BANDwidth[RESolution]? MIN and
CALCulate[1..n][:WDM]:OSNR:BANDwidth[RESolution]? MAX queries can be used to determine the valid resolution bandwidth range.

Example(s)

CALC:WDM:OSNR:BAND:RES:AUTO OFF
CALC:WDM:OSNR:BAND:RES 0.065 NM
CALC:WDM:OSNR:BAND:RES? Returns
6.500000E-011

See Also

:CALCulate[1..n][:WDM]:BWIDth[1|2]|BANDwidth[1|2]:RelativeLEVel
:CALCulate[1..n][:WDM]:OSNR:BWIDth|BANDwidth[:RESolution]?
:CALCulate[1..n][:WDM]:OSNR:BWIDth|BANDwidth[:RESolution]:AUTO
:CALCulate[1..n][:WDM]:THReshold

:CALCulate[1..n][:WDM]:OSNR: BANDwidth BWIDth[:RESolution]?	
Description	This query returns a value indicating either the current or the minimum/maximum resolution bandwidth value for the WDM analysis OSNR calculation. At *RST, this value is set to 0.100 nm.
Syntax	:CALCulate[1..n][:WDM]:OSNR:BANDwidth BWIDth[:RESolution]?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Resolution>

**:CALCulate[1..n][:WDM]:OSNR:
BANDwidth|BWIDth[:RESolution]?**

Response(s)	<i>Resolution:</i> The response data syntax for <Resolution> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Resolution> response corresponds to either the current or the MINimum/MAXimum resolution bandwidth value for OSNR calculation.
Example(s)	CALC:WDM:OSNR:BAND:RES:AUTO OFF CALC:WDM:OSNR:BAND:RES 0.065 NM CALC:WDM:OSNR:BAND:RES? Returns 6.500000E-011
See Also	:CALCulate[1..n][:WDM]:OSNR:BWIDth BANDwidth[:RESolution]:AUTO :CALCulate[1..n][:WDM]:OSNR:BWIDth BANDwidth[:RESolution]

**:CALCulate[1..n][:WDM]:OSNR:
BANDwidth|BWIDth[:RESolution]:AUTO**

Description	This command controls the activation of the WDM analysis OSNR calculation using the auto resolution bandwidth for all channels. At *RST, the auto resolution bandwidth is set to off (disabled).
Syntax	:CALCulate[1..n][:WDM]:OSNR:BANDwidth BWIDth[:RESolution]:AUTO<wsp> <Auto>
Parameter(s)	<i>Auto:</i> The program data syntax for <Auto> is defined as a <Boolean Program Data> element. The <Auto> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0.

:CALCulate[1..n][:WDM]:OSNR: BANDwidth|BWIDth[:RESolution]:AUTO

The <Auto> parameter corresponds to the new state of the auto resolution bandwidth for OSNR calculation.

0 or OFF: a custom resolution bandwidth value is used.

1 or ON: the instruments resolution bandwidth is used.

Example(s)

```
CALC:WDM:OSNR:BAND:RES:AUTO ON
CALC:WDM:OSNR:BAND:RES:AUTO? Returns 1
(instrument's RBW enabled)
CALC:WDM:OSNR:BAND:RES 0.100 NM
CALC:WDM:OSNR:BAND:RES:AUTO OFF
CALC:WDM:OSNR:BAND:RES:AUTO? Returns 0
(RBW 0.100 nm enabled)
```

See Also

```
:CALCulate[1..n][:WDM]:BWIDth[1|2]|BANDwidth[1|2]:RelativeLEVel
:CALCulate[1..n][:WDM]:OSNR:BWIDth|BANDwidth[:RESolution]
:CALCulate[1..n][:WDM]:OSNR:BWIDth|BANDwidth[:RESolution]:AUTO?
:CALCulate[1..n][:WDM]:THReshold
```

:CALCulate[1..n][:WDM]:OSNR: BANDwidth BWIDth[:RESolution]:AUTO?	
Description	This query indicates if the WDM analysis OSNR calculation using auto resolution bandwidth has been enabled or not for all channels. At *RST, the auto resolution bandwidth is set to off (disabled).
Syntax	:CALCulate[1..n][:WDM]:OSNR:BANDwidth BWIDth[:RESolution]:AUTO?
Parameter(s)	None
Response Syntax	<Auto>
Response(s)	<i>Auto:</i> The response data syntax for <Auto> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Auto> response corresponds to the state of the auto resolution bandwidth for OSNR calculation. 0: a custom resolution bandwidth value is used. 1: the instruments resolution bandwidth is used.
Example(s)	CALC:OSNR:BAND:RES:AUTO ON CALC:OSNR:BAND:RES:AUTO? Returns 1 (instrument's RBW enabled)
See Also	:CALCulate[1..n][:WDM]:OSNR:BWIDth BANDwidth[:RESolution] :CALCulate[1..n][:WDM]:OSNR:BWIDth BANDwidth[:RESolution]:AUTO

:CALCulate[1..n][:WDM]:STATe	
Description	This command controls the activation of the WDM analysis. At *RST, WDM analysis is set to on (enabled).
Syntax	:CALCulate[1..n][:WDM]:STATe<wsp><State>
Parameter(s)	<i>State:</i> The program data syntax for <State> is defined as a <Boolean Program Data> element. The <State> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0. The <State> parameter corresponds to the new state of the WDM analysis. 0 or OFF: WDM analysis is disabled. 1 or ON: WDM analysis is enabled.

:CALCulate[1..n][:WDM]:STATe	
Example(s)	CALC:WDM:STAT ON CALC:WDM:STAT? Returns 1 (WDM analysis enabled)
Notes	WDM analysis cannot be disabled: The OFF (0) value is valid for queries only. It is possible to query acquired trace data only if the active measurement analysis mode is WDM.
See Also	:CALCulate[1..n]:DFB:STATe :CALCulate[1..n]:DFB:STATe? :CALCulate[1..n]:FP:STATe :CALCulate[1..n]:FP:STATe? :CALCulate[1..n][:WDM]:STATe? :INITiate[:IMMediate] :INITiate:CONTInuous :TRACe:FEED:CONTrol

:CALCulate[1..n][:WDM]:STATe?	
Description	This query indicates if the WDM analysis has been enabled or not. At *RST, WDM analysis is set to on (enabled).
Syntax	:CALCulate[1..n][:WDM]:STATe?
Parameter(s)	None
Response Syntax	<State>
Response(s)	<i>State:</i> The response data syntax for <State> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <State> response corresponds to the state of the WDM analysis. 0: WDM analysis is enabled. 1: WDM analysis is disabled.
Example(s)	CALC:STAT? Returns 0 if application mode is not WDM CALC:STAT ON CALC:STAT? Returns 1 (WDM analysis enabled)
See Also	:CALCulate[1..n]:DFB:STATe :CALCulate[1..n]:FP:STATe :CALCulate[1..n][:WDM]:STATe

:CALCulate[1..n][:WDM]:THReshold

Description	This command sets the WDM analysis absolute power threshold for peak detection. At *RST, this value is set to -45.0 dBm.
Syntax	:CALCulate[1..n][:WDM]:THReshold<wsp><Threshold[<wsp>DBM W]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Threshold:</i> The program data syntax for <Threshold> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> elements are: DBM W. The <Threshold> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:CALCulate[1..n][:WDM]:THReshold

DEfault allows the instrument to select a value for the <Threshold> parameter.

The <Threshold> parameter corresponds to the peak detection power level.

The CALCulate[1..n][:WDM]:THReshold? MIN and CALCulate[1..n][:WDM]:THReshold? MAX queries can be used to determine the valid power range.

Example(s)

CALC:WDM:THR -30.00 DBM
UNIT:POW DBM
CALC:WDM:THR? Returns -3.000000E+001

See Also

:CALCulate[1..n][:WDM]:BWIDth[1|2]|BANDwidth[1|2]:RelativeLEVel
:CALCulate[1..n][:WDM]:OSNR:BWIDth|BANDwidth[:RESolution]
:CALCulate[1..n][:WDM]:OSNR:BWIDth|BANDwidth[:RESolution]:AUTO
:CALCulate[1..n][:WDM]:THReshold?

:CALCulate[1..n][:WDM]:THReshold?	
Description	This query returns a value indicating either the current or the minimum/maximum WDM analysis absolute power threshold for peak detection. At *RST, this value is set to -45.0 dBm.
Syntax	:CALCulate[1..n][:WDM]:THReshold?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Threshold>

:CALCulate[1..n][:WDM]:THReshold?

Response(s)	<i>Threshold:</i> The response data syntax for <Threshold> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Threshold> response corresponds to either the current or the MINimum/MAXimum peak detection power level value.
Example(s)	CALC:THR 1.00 UW UNIT:POW W CALC:THR? Returns 1.000000E-006
See Also	:CALCulate[1..n][:WDM]:THReshold

:CALibration[1..n]:DATE?	
Description	This query returns the date of the most recent factory calibration. This command has no associated *RST condition.
Syntax	:CALibration[1..n]:DATE?
Parameter(s)	None
Response Syntax	<Date>
Response(s)	<i>Date:</i> The response data syntax for <Date> is defined as a <STRING RESPONSE DATA> element. The <Date> response corresponds to the date of the most recent factory calibration. Date format is yyyy,mm,dd where: yyyy: is the year. mm: is the month in the range 1 to 12. dd: is the day in the range 1 to 31.
Example(s)	CAL:DATE? Returns "2011,05,27"
See Also	:CALibration:POWER:DATE? :CALibration:WAVElength:DATE?

:CALibration[1..n]:POWer:DATE?

Description	This query returns the date of the most recent power calibration made by the user. This command has no associated *RST condition.
Syntax	:CALibration[1..n]:POWer:DATE?
Parameter(s)	None
Response Syntax	<Date>
Response(s)	<i>Date:</i> The response data syntax for <Date> is defined as a <STRING RESPONSE DATA> element. The <Date> response corresponds to the date of the most recent user power calibration. The date format is yyyy,mm,dd, where: yyyy: is the year. mm: is the month in the range 1 to 12. dd: is the day in the range 1 to 31.
Example(s)	CAL:POW:DATE? Returns "2011,07,15"
See Also	:CALibration:DATE? :CALibration:WAVelength:DATE?

:CALibration[1..n]:WAVelength:DATE?

Description	This query returns the date of the most recent wavelength calibration made by the user. This command has no associated *RST condition.
Syntax	:CALibration[1..n]:WAVelength:DATE?
Parameter(s)	None
Response Syntax	<Date>
Response(s)	<i>Date:</i> The response data syntax for <Date> is defined as a <STRING RESPONSE DATA> element. The <Date> response corresponds to the date of the most recent user wavelength calibration. The date format is yyyy,mm,dd, where: yyyy: is the year. mm: is the month in the range 1 to 12. dd: is the day in the range 1 to 31.
Example(s)	CAL:WAV:DATE? Returns "2011,12,08"
See Also	:CALibration:DATE? :CALibration:POWER:DATE?

:CALibration[1..n]:ZERO[:AUTO]	
Description	This command sets whether or not the instrument should perform an auto zero calibration (nulling) at device-dependent intervals without user intervention. At *RST, the auto zero calibration is set to on (enabled).
Syntax	:CALibration[1..n]:ZERO[:AUTO] <wsp> <Auto> ON OFF ONCE
Parameter(s)	<i>Auto:</i> The program data syntax for <Auto> is defined as a <Boolean Program Data> <CHARACTER PROGRAM DATA> element. The <Auto> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0. The parameter corresponds to the new state of the auto zero calibration. 0 or OFF: disables the auto zero calibration. 1 or ON: enables the auto zero calibration. ONCE: launches a one-time zero calibration. This parameter has no effect on current ON/OFF state of auto zero calibration.

:CALibration[1..n]:ZERO[:AUTO]	
Example(s)	STAT? Must return READY CAL:ZERO:AUTO ONCE STAT:OPER:BIT9:COND? Keep resending this query as long as the operation is not complete (returned value is not 0). CAL:ZERO:AUTO? Returns 1 (auto zero still enabled)
Notes	The zero calibration operation takes up to 5 seconds to complete. Auto zero calibration cannot be disabled: the OFF (0) value is valid for queries only.
See Also	:CALibration:ZERO:AUTO? :STATus? :STATus:OPERation:BIT[8 9]:CONDition?

:CALibration[1..n]:ZERO[:AUTO]?	
Description	This query indicates whether or not the instrument performs an auto zero calibration (nulling) at device-dependent intervals without user intervention. At *RST, the auto zero calibration is set to on (enabled).
Syntax	:CALibration[1..n]:ZERO[:AUTO]?
Parameter(s)	None
Response Syntax	<Auto>
Response(s)	<i>Auto:</i> The response data syntax for <Auto> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Auto> response corresponds to the state of the auto zero calibration. 0: auto zero is disabled. 1: auto zero is enabled.
Example(s)	CAL:ZERO? Returns 1 (auto zero enabled)
See Also	:CALibration:ZERO:AUTO

:IDN[1..n]?	
Description	This query returns the unique identification of the instrument. This command has no associated *RST condition.
Syntax	:IDN[1..n]?
Parameter(s)	None
Response Syntax	<Identification>
Response(s)	<i>Identification:</i> The response data syntax for <Identification> is defined as a <STRING RESPONSE DATA> element. The <Identification> response corresponds to the list of instrument identification information organized into five fields separated by commas. The field definition are as follows: Field 1: the manufacturer Field 2: the instrument model Field 3: the instrument serial number Field 4: the instrument firmware version Field 5: the installed OSA software product version. Version fields are formatted #.#.#.#.
Example(s)	IDN? Returns "EXFO Inc.,FTBx-5245-P-EI,1007895,4.2.0.0,6.1.17256.2"
See Also	:SNUMber?

:INITiate:CONTinuous

Description	This command is used to select whether the trigger system is continuously initiated or not. The trigger system is used to control trace acquisition. At *RST, this value is set to off (disabled).
Syntax	:INITiate:CONTinuous<wsp><Continuous>
Parameter(s)	<i>Continuous:</i> The program data syntax for <Continuous> is defined as a <Boolean Program Data> element. The <Continuous> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0. The <Continuous> parameter corresponds to the new state of the trigger system continuous cycle. 0 or OFF: disables the continuous cycle: the trigger system returns to idle. 1 or ON: enables the continuous cycle. With <Continuous> set to OFF, the trigger system remain in idle state until <Continuous> is set to ON or the INITiate:IMMediate command is received. With <Continuous> set to ON, the trigger system leaves the idle state and continue cycling until <Continuous> is set to OFF or the ABORt command is received.

:INITiate:CONTinuous

When <Continuous> is set to OFF, the current trigger cycle is completed before returning to the idle state; the current acquisition continues until it is finished.

Example(s)

```
CALC:WDM:CHAN:DEL:ALL
CALC:WDM:CHAN:AUTO ON
CALC:WDM:CHAN:AUTO:NOIS:AUTO OFF
CALC:WDM:CHAN:AUTO:NOIS:TYPE IEC
CALC:WDM:STATe ON
TRACe:FEED:CONTrol "TRC1", ALW
SENS:AVER:STAT OFF
```

:INITiate:CONTinuous

```
SENS:WAV:STAR 1525.000 NM
SENS:WAV:STOP 1570.000 NM
TRIG:SEQ:SOUR IMM
STAT? Poll until returned state is READY
INIT:CONT ON
INIT:CONT? Returns 1 (trigger system
continuously initiated)
...
INIT:CONT OFF
STAT:OPER:BIT8:COND? Poll until returned state
is 0
```

Notes

The trigger system leaves IDLE state to perform acquisition only if the instrument is in READY status.

Trace averaging is not supported by the trigger system when continuously initiated.

Continuous acquisition does not support InBand noise analysis: the acquired trace is always analysed using IEC noise measurement.

See Also

```
:ABORt
:CALCulate[1..n][:WDM]:STATe
:INITiate[:IMMediate]
:INITiate:CONTinuous?
:SENSe[1..n]:AVERage:STATe
:STATus?
:STATus:OPERation:BIT<8|9>:CONDition?
:TRACe:FEED:CONTrol
:TRIGger[1..n][:SEQUence]:SOURce
```

:INITiate:CONTInuous?	
Description	This query indicates if the trigger system is continuously initiated or not. At *RST, this value is set to off (disabled).
Syntax	:INITiate:CONTInuous?
Parameter(s)	None
Response Syntax	<Continuous>
Response(s)	<i>Continuous:</i> The response data syntax for <Continuous> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Continuous> response corresponds to the state of the trigger system continuous cycle. 0: the continuous cycle is disabled. 1: the continuous cycle is enabled.
Example(s)	INIT:CONT ON INIT:CONT? Returns 1 (trigger system continuously initiated)
Notes	An acquisition may still be in progress even if INIT:CONT? returns 0. The command STAT:OPER:BIT8:COND? shall be used to test acquisition completion.
See Also	:INITiate[:IMMediate] :INITiate:CONTInuous :STATus? :STATus:OPERation:BIT<8 9>:CONDition?

:INITiate[:IMMediate]

Description	This command completes one full trigger system cycle, returning to IDLE on completion. This command is an event and has no associated *RST condition or query form.
Syntax	:INITiate[:IMMediate]
Parameter(s)	None
Example(s)	CALC:WDM:CHAN:DEL:ALL CALC:WDM:CHAN:AUTO ON CALC:WDM:CHAN:AUTO:NOIS:AUTO OFF CALC:WDM:CHAN:AUTO:NOIS:TYPE IEC CALC:WDM:STATe ON TRACe:FEED:CONTRol "TRC1", ALW SENS:AVER:STAT ON SENS:AVER:TYPE SCAL

SCPI Command Reference

Product-Specific Commands—Description

:INITiate[:IMMediate]

SENS:AVER:COUN 8
SENS:WAV:STAR 1525.000 NM
SENS:WAV:STOP 1570.000 NM
TRIG:SEQ:SOUR IMM
STAT? Poll until returned state is READY
INIT:IMM
STAT:OPER:BIT8:COND? Poll until returned state is 0

Notes

The trigger system leaves IDLE state to perform acquisition only if the instrument is in READY status.

This command is used to start single, averaging, InBand or i-InBand acquisitions.

See Also

:ABORt
:CALCulate[1..n][:WDM]:STATe
:INITiate:CONTInuous
:SENSe[1..n]:AVERage:STATe?
:STATus?
:STATus:OPERation:BIT<8|9>:CONDition?
:TRACe:FEED:CONTrol
:TRIGger[1..n][:SEQuence]:SOURce

:MEMory:TABLE:DATA?	
Description	This query returns the channel results in a "row-column" format for the specified table. The list of columns is specified using the :MEMory:TABLE:DEFine command. The number of rows is available using the :MEMory:TABLE:POINt? command.
Syntax	This query has no associated *RST condition. :MEMory:TABLE:DATA? <wsp> <TableName>
Parameter(s)	<i>TableName:</i> The program data syntax for <TableName> is defined as a <STRING PROGRAM DATA> element. The <TableName> parameter corresponds to the name of the table to select.
Response Syntax	<Table>
Response(s)	<i>Table:</i> The response data syntax for <Table> is defined as a <DEFINITE LENGTH ARBITRARY BLOCK RESPONSE DATA> element. The <Table> response contains an array of channel results. Each string line corresponds to a row in the table. Each row is composed of column where the entries are specified in the :MEMory:TABLE:DEFine command. The column order is preserved. Unrecognized column definitions will produce empty results.

:MEMory:TABLE:DATA?	
Example(s)	<Do measurement> MEM:TABL:SEL "WDM:CHANNEL" MEM:TABL:DEF "NAME,CMAS:WAV" MEM:TABL:POIN? "WDM:CHANNEL" returns 2 MEM:TABLE:DATA? "WDM:CHANNEL" returns #248"C_001,1.55236113E-006","C_002,1.55672735 7E-006"
Notes	The only valid table name is "WDM:Channel". Table data is available only if a trace analysis was performed.
See Also	:MEMory:TABLE:DEFine :MEMory:TABLE:POINT?

:MEMory:TABLE:DEFine	
Description	This command sets the column content and order for the table response. The table to define must first be selected using the :MEMory:TABLE:SElect command. At *RST, this value is set to as empty column list for every table.
Syntax	:MEMory:TABLE:DEFine<wsp><ColumnName>
Parameter(s)	<i>ColumnName:</i> The program data syntax for <ColumnName> is defined as a <STRING PROGRAM DATA> element. The <ColumnName> contains a comma-separated list of the name of the columns to include in the table. The column order is preserved. Unrecognized column definition will produce an empty result. Duplicates are allowed. The possible entries in this list are any of the following elements: BAND1:FREQ, BAND1:RLEV, BAND1:WAV, BAND2:FREQ, BAND2:RLEV, BAND2:WAV, BWID1:FREQ, BWID1:RLEV, BWID1:WAV, BWID2:FREQ, BWID2:RLEV, BWID2:WAV, CENT:FREQ, CENT:WAV, CMAS:FREQ, CMAS:WAV, CPEA:FREQ, CPEA:WAV, ENBW, NAME, NOIS, NOIS:TYPE, OSNR, SIGP, SIGP:TYPE, STAT:QUES:BIT9:COND, STAT:QUES:BIT10:COND,STAT:QUES:BIT11:COND, WIDT:FREQ or WIDT:WAV. Consult the :CALCulate:WDM:DATA:CHANnel command tree to get a description of the return value for the previous elements. Only the short form is accepted.

:MEMory:TABLE:DEFine	
Example(s)	<Do measurement> MEM:TABL:SEL "WDM:CHANNEL" MEM:TABL:DEF "NAME,CMAS:WAV" MEM:TABL:POIN? "WDM:CHANNEL" returns 2 MEM:TABL:DATA? "WDM:CHANNEL" returns #248"C_001,1.55236113E-006","C_002,1.556727357 E-006"
Notes	The only valid table name is "WDM:Channel".
See Also	:MEMory:TABLE:DATA? :MEMory:TABLE:DEFine? :MEMory:TABLE:SElect

:MEMory:TABLE:DEFine?	
Description	This query returns the column content and order for the specified table. The table to get the definition from must first be selected using the :MEMory:TABLE:SElect command. This query has no associated *RST condition.
Syntax	:MEMory:TABLE:DEFine?
Parameter(s)	None
Response Syntax	<ColumnName>
Response(s)	<i>ColumnName:</i> The response data syntax for <ColumnName> is defined as a <STRING RESPONSE DATA> element. The <ColumnName> contains a comma-separated list of the name of the column currently defined for the selected table. The column order is preserved.
Example(s)	MEM:TABL:SEL "WDM:CHANNEL" MEM:TABL:DEF "NAME,CMAS:WAV" MEM:TABL:DEF? returns "NAME,CMAS:WAV"
Notes	The only valid table name is "WDM:Channel".
See Also	:MEMory:TABLE:DATA? :MEMory:TABLE:DEFine :MEMory:TABLE:SElect

:MEMory:TABLE:POINT?	
Description	This query returns the number of rows in the table. This query has no associated *RST condition.
Syntax	:MEMory:TABLE:POINT?<wsp><TableName>
Parameter(s)	<i>TableName:</i> The program data syntax for <TableName> is defined as a <STRING PROGRAM DATA> element. The <TableName> parameter corresponds to the name of the table to select.
Response Syntax	<Point>
Response(s)	<i>Point:</i> The response data syntax for <Point> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Point> response corresponds to the number of rows in the specified table.
Example(s)	<Do measurement> MEM:TABL:SEL "WDM:CHANNEL" MEM:TABL:DEF "NAME,CMAS:WAV" MEM:TABL:POIN? "WDM:CHANNEL" returns 6
Notes	The only valid table name is "WDM:Channel".
See Also	:CALCulate[1..n][:WDM]:DATA:CHANnel:COUNt? :MEMory:TABLE:DATA?

:MEMory:TABLE:SElect

Description	This command selects the table to define. At *RST, there is no selection: a single null string is returned.
Syntax	:MEMory:TABLE:SElect<wsp> <TableName>
Parameter(s)	<i>TableName:</i> The program data syntax for <TableName> is defined as a <STRING PROGRAM DATA> element. The <TableName> parameter corresponds to the name of the table to select.
Example(s)	<pre><Do measurement> MEM:TABL:SEL "WDM:CHANNEL" MEM:TABL:DEF "NAME,CMAS:WAV" MEM:TABL:POIN? "WDM:CHANNEL" returns 2 MEM:TABL:DATA? "WDM:CHANNEL" returns #248"C_001,1.55236113E-006","C_002,1.55672735 7E-006"</pre>
Notes	The only valid table name is "WDM:Channel".
See Also	<pre>:MEMory:TABLE:DEFine :MEMory:TABLE:DEFine? :MEMory:TABLE:SElect?</pre>

:MEMory:TABLE:SElect?	
Description	This query returns the name of the currently selected table. At *RST, there is no selection: a single null string is returned.
Syntax	:MEMory:TABLE:SElect?
Parameter(s)	None
Response Syntax	<TableName>
Response(s)	<i>TableName:</i> The response data syntax for <TableName> is defined as a <STRING RESPONSE DATA> element. The <TableName> response corresponds to the name of the currently selected table.
Example(s)	MEM:TABL:SEL "WDM:CHANNEL" MEM:TABL:DEF "NAME,CMAS:WAV" MEM:TABL:SEL? returns "WDM:CHANNEL"
Notes	The only valid table name is "WDM:Channel".
See Also	:MEMory:TABLE:DEFine :MEMory:TABLE:DEFine? :MEMory:TABLE:SElect

:MMEMory:STORe:MEASurement[:WDM]

Description	This command transfers the current WDM measurement results and analysed trace from the instrument's internal memory to mass storage memory at the specified location. This command is an event and does not have a query form or a *RST condition.
Syntax	:MMEMory:STORe:MEASurement[:WDM] <wsp> <FileName>
Parameter(s)	<i>FileName:</i> The program data syntax for <FileName> is defined as a <STRING PROGRAM DATA> element. The <FileName> parameter is a quoted string containing the name of the file used to store measurement data. If the destination folder name is not specified in the <FileName> parameter, then the default user file folder is used. The WDM file extension is appended if the file extension is not specified or is invalid for the measurement type.

:MMEMory:STORe:MEASurement[:WDM]	
Example(s)	CALC:WDM:STATe ON <Do measurement> MMEM:STOR:MEAS:WDM "C:\OSA\TestResults_8.osawdm"
Notes	If a file with the specified <FileName> already exists, the instrument does not generate an error and the file is overwritten. It is possible to store a WDM measurement only after performing a WDM analysis (see CALC:WDM).
See Also	:CALCulate[1..n][:WDM]:STATe :INITiate[:IMMediate] :INITiate:CONTInuous? :MMEMory:STORe:MEASurement:DFB :MMEMory:STORe:MEASurement:FP :MMEMory:STORe:MEASurement:ST

:MMEMory:STORe:MEASurement:DFB

Description	This command transfers the current DFB measurement results and analysed trace from the instrument's internal memory to mass storage memory at the specified location. This command is an event and does not have a query form or a *RST condition.
Syntax	:MMEMory:STORe:MEASurement:DFB<wsp><FileName>
Parameter(s)	<i>FileName:</i> The program data syntax for <FileName> is defined as a <STRING PROGRAM DATA> element. The <FileName> parameter is a quoted string containing the name of the file used to store measurement data. If the destination folder name is not specified in the <FileName> parameter, then the default user file folder is used. The DFB file extension is appended if the file extension is not specified or is invalid for the measurement type.

:MMEMory:STORe:MEASurement:DFB	
Example(s)	CALC:DFB:STATe ON <Do measurement> MMEM:STOR:MEAS:DFB "C:\OSA\TestResults_4.osadfb"
Notes	If a file with the specified <FileName> already exists, the instrument does not generate an error and the file is overwritten. It is possible to store a DFB measurement only after performing a DFB analysis (see CALC:DFB).
See Also	:CALCulate[1..n]:DFB:STATe :INITiate[:IMMediate] :INITiate:CONTInuous? :MMEMory:STORe:MEASurement[:WDM] :MMEMory:STORe:MEASurement:FP :MMEMory:STORe:MEASurement:ST

:MMEMory:STORe:MEASurement:EDFa

Description	This command transfers the current EDFa measurement results and analyzed traces from the instrument's internal memory to mass storage memory at the specified location. This command is an event and does not have a query form or a *RST condition.
Syntax	:MMEMory:STORe:MEASurement:EDFa<wsp><FileName>
Parameter(s)	<i>FileName:</i> The program data syntax for <FileName> is defined as a <STRING PROGRAM DATA> element. The <FileName> parameter is a quoted string containing the name of the file used to store measurement data. If the destination folder name is not specified in the <FileName> parameter, then the default user file folder is used. The EDFa file extension is appended if the file extension is not specified or is invalid for the measurement type.

:MMEMory:STORe:MEASurement:EDFa	
Example(s)	CALC:EDF:STATe ON <Do measurement> MMEM:STOR:MEAS:EDF "C:\OSA\TestResults_14.osaedfa"
Notes	If a file with the specified <FileName> already exists, the instrument does not generate an error and the file is overwritten. It is possible to store an EDFA measurement only after performing an EDFA analysis (see CALC:EDF).
See Also	:CALCulate[1..n]:EDFa:STATe :INITiate[:IMMediate] :INITiate:CONTInuous? :MMEMory:STORe:MEASurement[:WDM] :MMEMory:STORe:MEASurement:DFB :MMEMory:STORe:MEASurement:FP

:MMEMory:STORe:MEASurement:FP

Description	This command transfers the current FP measurement results and analysed trace from the instrument's internal memory to mass storage memory at the specified location. This command is an event and does not have a query form or a *RST condition.
Syntax	:MMEMory:STORe:MEASurement:FP<wsp><FileName>
Parameter(s)	<i>FileName:</i> The program data syntax for <FileName> is defined as a <STRING PROGRAM DATA> element. The <FileName> parameter is a quoted string containing the name of the file used to store the measurement data. If the destination folder name is not specified in the <FileName> parameter, then the default user file folder is used. The FP file extension is appended if the file extension is not specified or is invalid for the measurement type.

:MMEMory:STORe:MEASurement:FP	
Example(s)	CALC:FP:STATe ON <Do measurement> MMEM:STOR:MEAS:FP "C:\OSA\TestResults_5.osafp"
Notes	If a file with the specified <FileName> already exists, the instrument does not generate an error and the file is overwritten. It is possible to store an FP measurement only after performing an FP analysis (see CALC:FP).
See Also	:CALCulate[1..n]:FP:STATe :INITiate[:IMMediate] :INITiate:CONTInuous? :MMEMory:STORe:MEASurement[:WDM] :MMEMory:STORe:MEASurement:DFB :MMEMory:STORe:MEASurement:ST

:MMEMory:STORe:MEASurement:ST

Description	This command transfers the current spectral transmittance measurement results and analysed traces from the instrument's internal memory to mass storage memory at the specified location. This command is an event and does not have a query form or a *RST condition.
Syntax	:MMEMory:STORe:MEASurement:ST<wsp><FileName>
Parameter(s)	<i>FileName:</i> The program data syntax for <FileName> is defined as a <STRING PROGRAM DATA> element. The <FileName> parameter is a quoted string containing the name of the file used to store measurement data. If the destination folder name is not specified in the <FileName> parameter, then the default user file folder is used. The Spectral transmittance file extension is appended if the file extension is not specified or is invalid for the measurement type.

:MMEMory:STORe:MEASurement:ST

Example(s)	CALC:ST:STATe ON <Do measurement> MMEM:STOR:MEAS:ST "C:\OSA\TestResults_6.osast"
Notes	If a file with the specified <FileName> already exists, the instrument does not generate an error and the file is overwritten. It is possible to store a ST measurement only after performing a ST analysis (see CALC:ST).
See Also	:CALCulate[1..n]:ST:STATe :INITiate[:IMMediate] :INITiate:CONTInuous? :MMEMory:STORe:MEASurement[:WDM] :MMEMory:STORe:MEASurement:DFB :MMEMory:STORe:MEASurement:FP

:MMEMory:STORe:MEASurement:TX

Description	This command transfers the current transmitter measurement results and analysed trace from the internal memory of the instrument to the mass storage memory at the specified location. This command is an event and does not have a query form or a *RST condition.
Syntax	
Parameter(s)	<i>FileName:</i>
Example(s)	CALC:TX:STATe ON <Do measurement> MMEM:STOR:MEAS:TX "C:\OSA\TestResults_7.osatx"
Notes	If a file with the specified <FileName> already exists, the instrument does not generate an error and the file is overwritten. It is possible to store a transmitter measurement only after performing a transmitter analysis (see CALC:TX).
See Also	:CALCulate[1..n]:TX:STATe :INITiate[:IMMediate] :INITiate:CONTinuous?

:SENSe[1..n]:AVERage:COUNT	
Description	This command sets the number of acquired traces to combine for averaging to a specific value. At *RST, the averaging count is set to 8.
Syntax	:SENSe[1..n]:AVERage:COUNT<wsp><Count> MAXimum MINimum DEFault
Parameter(s)	<i>Count:</i> The program data syntax for <Count> is defined as a <numeric_value> element. The <Count> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value. DEFault allows the instrument to select a value for the <Count> parameter. The <Count> parameter corresponds to a valid averaging count value. The SENSe[1..n]:AVERage:COUNT? MIN and SENSe[1..n]:AVERage:COUNT? MAX queries can be used to determine valid count range.

:SENSe[1..n]:AVERage:COUNT

Example(s)	SENS:AVER:STAT ON SENS:AVER:TYPE SCAL SENS:AVER:COUN? MIN Returns 2 SENS:AVER:COUN? MAX Returns 9999 SENS:AVER:COUN 20 SENS:AVER:COUN? Returns 20
Notes	If the averaging type is set to PMMH and auto noise measurement is active, then specific averaging count setting has no effect. It is automatically determined by the instrument.
See Also	:INITiate[:IMMediate] :INITiate:CONTinuous :SENSe[1..n]:AVERage:STATe :SENSe[1..n]:AVERage:TYPE :SENSe[1..n]:AVERage:COUNt?

:SENSe[1..n]:AVERage:COUNT?	
Description	This query returns a value indicating either the current or the minimum/maximum number of acquired traces to combine for averaging. At *RST, the averaging count is set to 8.
Syntax	:SENSe[1..n]:AVERage:COUNT?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Count>

:SENSe[1..n]:AVERage:COUNT?

Response(s)

Count:

The response data syntax for <Count> is defined as a <NR1 NUMERIC RESPONSE DATA> element.

The <Count> response corresponds to either the current or the MINimum/MAXimum averaging count value.

Example(s)

SENS:AVER:COUN 100
SENS:AVER:COUN? Returns 100

See Also

:SENSe[1..n]:AVERage:STATe
:SENSe[1..n]:AVERage:TYPE
:SENSe[1..n]:AVERage:COUNT

:SENSe[1..n]:AVERAge:STATe	
Description	This command controls the activation of the acquired trace averaging. At *RST, the averaging is set to off (disabled).
Syntax	:SENSe[1..n]:AVERAge:STATe<wsp><State>
Parameter(s)	<i>State:</i> The program data syntax for <State> is defined as a <Boolean Program Data> element. The <State> special forms ON and OFF are accepted on input for increased readability. ON corresponds to 1 and OFF corresponds to 0. The <State> parameter corresponds to the new state of trace averaging. 0 or OFF: disables averaging. 1 or ON: enables averaging.
Example(s)	SENS:AVER:STAT OFF SENS:AVER:STAT? Returns 0 (averaging is disabled)
Notes	Trace averaging is not supported by the trigger system when continuously initiated (INIT:CONT ON).
See Also	:INITiate[:IMMediate] :INITiate:CONTInuous :SENSe[1..n]:AVERAge:COUNt :SENSe[1..n]:AVERAge:TYPE :SENSe[1..n]:AVERAge:STATe?

:SENSe[1..n]:AVERage:STATe?

Description	This query indicates if acquired trace averaging has been enabled or not. At *RST, the averaging is set to off (disabled).
Syntax	:SENSe[1..n]:AVERage:STATe?
Parameter(s)	None
Response Syntax	<State>
Response(s)	<i>State:</i> The response data syntax for <State> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <State> response corresponds to the activation state of trace averaging. 0: trace averaging is disabled. 1: trace averaging is enabled.
Example(s)	SENS:AVER:STAT ON SENS:AVER:STAT? Returns 1 (averaging is enabled)
See Also	:SENSe[1..n]:AVERage:COUNT :SENSe[1..n]:AVERage:TYPE :SENSe[1..n]:AVERage:STATe

:SENSe[1..n]:AVERage:TYPE	
Description	This command selects the acquired trace averaging type. At *RST, the averaging is set to SCALar.
Syntax	:SENSe[1..n]:AVERage:TYPE<wsp>SCALar PolarizationMinMaxHold
Parameter(s)	Type: The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: SCALar PolarizationMinMaxHold. The parameter corresponds to the newly selected trace averaging type. SCALar: selects the scalar averaging type. PolarizationMinMaxHold: selects the averaging type for the InBand noise measurement.
Example(s)	SENS:AVER:TYPE SCAL SENS:AVER:TYPE? Returns SCALAR

:SENSe[1..n]:AVERage:TYPE

Notes	The PMMH averaging type is available only if software option "InB" is active.
See Also	:CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:AUTO :CALCulate[1..n][:WDM]:CHANnel:AUTO:NOISe:TYPE :CALCulate[1..n][:WDM]:CHANnel:NOISe:AUTO :CALCulate[1..n][:WDM]:CHANnel:NOISe:TYPE :INITiate[:IMMediate] :INITiate:CONTinuous :SENSe[1..n]:AVERage:COUNt :SENSe[1..n]:AVERage:STATe :SENSe[1..n]:AVERage:TYPE?

:SENSe[1..n]:AVERAge:TYPE?	
Description	This query returns the selected averaging type for trace acquisition. At *RST, averaging is set to SCALar.
Syntax	:SENSe[1..n]:AVERAge:TYPE?
Parameter(s)	None
Response Syntax	<Type>
Response(s)	Type: The response data syntax for <Type> is defined as a <CHARACTER RESPONSE DATA> element. The <Type> response corresponds to the selected averaging type. SCALAR: the scalar averaging type is selected. POLARIZATIONMINMAXHOLD: the averaging type for InBand noise measurement is selected.
Example(s)	SENS:AVER:TYPE PMMH SENS:AVER:TYPE? POLARIZATIONMINMAXHOLD
See Also	:SENSe[1..n]:AVERAge:COUNT :SENSe[1..n]:AVERAge:TYPE :SENSe[1..n]:AVERAge:STATe

:SENSe[1..n]:CORRection:OFFSet [:MAGNitude]

Description	This command sets the power offset that is added to every point measured by the instrument. At *RST, this value is set to 0.0 dB.
Syntax	<pre>:SENSe[1..n]:CORRection:OFFSet[:MAGNitude] <wsp> <Offset[<wsp>DB W/W PCT]> MAXi mum MINimum DEFAult</pre>
Parameter(s)	<i>Offset:</i> The program data syntax for <Offset> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> elements are: DB W/W PCT. The <Offset> special forms MINimum, MAXimum and DEFAult are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:SENSe[1..n]:CORRection:OFFSet[:MAGNitude]	
	DEfault allows the instrument to select a value for the <Offset> parameter. The <Offset> parameter corresponds to a valid power offset value. The SENSe[1..n]:CORRection:OFFSet[:MAGNitude]? MIN and SENSe[1..n]:CORRection:OFFSet[:MAGNitude]? MAX queries can be used to determine the valid power offset range.
Example(s)	SENS:CORR:OFFS:MAGN 0.5 DB UNIT:RAT DB SENS:CORR:OFFS:MAGN? Returns 5.000000E-001
See Also	:SENSe[1..n]:WAVelength:OFFSet :SENSe[1..n]:CORRection:OFFSet[:MAGNitude]?

:SENSe[1..n]:CORRection:OFFSet[:MAGNitude]?	
Description	This query returns a value indicating either the current or the minimum/maximum power offset. At *RST, this value is set to 0.0 dB.
Syntax	:SENSe[1..n]:CORRection:OFFSet[:MAGNitude]?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Offset>

:SENSe[1..n]:CORRection:OFFSet[:MAGNitude]?	
Response(s)	<i>Offset:</i> The response data syntax for <Offset> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Offset> response corresponds to either the current or the MINimum/MAXimum instrument power offset.
Example(s)	SENS:CORR:OFFS:MAGN 0.5 DB UNIT:RAT DB SENS:CORR:OFFS:MAGN? Returns 5.000000E-001
See Also	:SENSe[1..n]:WAVelength:OFFSet :SENSe[1..n]:CORRection:OFFSet[:MAGNitude]

:SENSe[1..n]:FREQuency:STARt	
Description	This command sets the instrument sweep start frequency. At *RST, this value is set to 190.9506 THz.
Syntax	:SENSe[1..n]:FREQuency:STARt<wsp> <Start[<wsp>HZ]> MAXimum MINimum DEFault
Parameter(s)	<i>Start:</i> The program data syntax for <Start> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Start> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value. DEFault allows the instrument to select a value for the <Start> parameter. The <Start> parameter corresponds to a valid sweep start frequency value. The SENSe[1..n]:FREQuency:STARt? MIN and SENSe[1..n]:FREQuency:STARt? MAX queries can be used to determine the valid sweep start frequency range.

:SENSe[1..n]:FREQuency:STARt	
Example(s)	SENS:FREQ:STAR 197.5 THZ SENS:FREQ:STAR? Returns 1.975000E+014
Notes	The minimum instrument sweep range is 5.0 nm. If necessary, the STOP frequency will be automatically adjusted in accordance with the minimum sweep range when changing the STARt frequency.
See Also	:SENSe[1..n]:FREQuency:STOP :SENSe[1..n]:FREQuency:STARt? :SENSe[1..n][:WAVelength]:OFFSet :SENSe[1..n][:WAVelength]:STARt

:SENSe[1..n]:FREQuency:STARt?	
Description	This query returns a value indicating either the current or the minimum/maximum instrument sweep start frequency. At *RST, this value is set to 190.9506 THz.
Syntax	:SENSe[1..n]:FREQuency:STARt?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Start>

:SENSe[1..n]:FREQuency:STARt?	
Response(s)	<i>Start:</i> The response data syntax for <Start> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Start> response corresponds to either the current or the MINimum/MAXimum instrument sweep start frequency.
Example(s)	SENS:FREQ:STAR 197.5 THZ SENS:FREQ:STAR? Returns 1.975000E+014
See Also	:SENSe[1..n]:FREQuency:STOP :SENSe[1..n]:FREQuency:STARt :SENSe[1..n][:WAVelength]:OFFSet :SENSe[1..n][:WAVelength]:STARt?

:SENSe[1..n]:FREQuency:STOP	
Description	This command sets the instrument sweep stop frequency. At *RST, this value is set to 196.5852 THz.
Syntax	:SENSe[1..n]:FREQuency:STOP<wsp><Stop[<wsp>HZ]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Stop:</i> The program data syntax for <Stop> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is HZ. The <Stop> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value. DEFAULT allows the instrument to select a value for the <Stop> parameter. The <Stop> parameter corresponds to a valid sweep stop frequency value. The SENSE[1..n]:FREQuency:STOP? MIN and SENSE[1..n]:FREQuency:STOP? MAX queries can be used to determine the valid sweep stop frequency range.

:SENSe[1..n]:FREQuency:STOP	
Example(s)	SENS:FREQ:STOP 220.0 THZ SENS:FREQ:STOP? Returns 2.200000E+014
Notes	The minimum instrument sweep range is 5.0 nm. If necessary, the START frequency will be automatically adjusted in accordance with the minimum sweep range when changing the STOP frequency.
See Also	:SENSe[1..n]:FREQuency:START :SENSe[1..n]:FREQuency:STOP? :SENSe[1..n][:WAVelength]:OFFSet :SENSe[1..n][:WAVelength]:STOP

:SENSe[1..n]:FREQuency:STOP?	
Description	This query returns a value indicating either the current or the minimum/maximum instrument sweep stop frequency. At *RST, this value is set to 196.5852 THz.
Syntax	:SENSe[1..n]:FREQuency:STOP?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Stop>

:SENSe[1..n]:FREQuency:STOP?	
Response(s)	<i>Stop:</i> The response data syntax for <Stop> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Stop> response corresponds to either the current or the MINimum/MAXimum instrument sweep stop frequency.
Example(s)	SENS:FREQ:STOP 220.0 THZ SENS:FREQ:STOP? Returns 2.200000E+014
See Also	:SENSe[1..n]:FREQuency:START :SENSe[1..n]:FREQuency:STOP :SENSe[1..n][:WAVelength]:OFFSet :SENSe[1..n][:WAVelength]:STOP?

:SENSe[1..n][:WAVelength]:OFFSet

Description	This command sets the wavelength offset that is added to every point measured by the instrument. At *RST, this value is set to 0.0 nm.
Syntax	:SENSe[1..n][:WAVelength]:OFFSet<wsp><Offset[<wsp>M]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Offset:</i> The program data syntax for <Offset> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Offset> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value.

:SENSe[1..n][:WAVelength]:OFFSet

DEfault allows the instrument to select a value for the <Offset> parameter.

The <Offset> parameter corresponds to a valid wavelength offset value.

The SENSE[1..n][:WAVelength]:OFFSet? MIN and SENSE[1..n][:WAVelength]:OFFSet? MAX queries can be used to determine the valid wavelength offset range.

Example(s)

SENS:WAV:OFFS 0.01 NM
SENS:WAV:OFFS? Returns 1.000000E-011

See Also

:SENSe[1..n]:CORRection:OFFSet[:MAGNitude]
:SENSe[1..n][:WAVelength]:OFFSet?

:SENSe[1..n][:WAVelength]:OFFSet?	
Description	This query returns a value indicating either the current or the minimum/maximum instrument wavelength offset. At *RST, this value is set to 0.0 nm.
Syntax	:SENSe[1..n][:WAVelength]:OFFSet?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Offset>

:SENSe[1..n][:WAVelength]:OFFSet?

Response(s)

Offset:

The response data syntax for <Offset> is defined as a <NR3 NUMERIC RESPONSE DATA> element.

The <Offset> response corresponds to either the current or the MINimum/MAXimum instrument wavelength offset.

Example(s)

SENS:WAV:OFFS 0.01 NM
SENS:WAV:OFFS? Returns 1.000000E-011

See Also

:SENSe[1..n]:CORRection:OFFSet[:MAGNitude]
:SENSe[1..n][:WAVelength]:OFFSet

:SENSe[1..n][:WAVelength]:START

Description	This command sets the instrument sweep stop wavelength. At *RST, this value is set to 1525.0 nm.
Syntax	:SENSe[1..n][:WAVelength]:START<wsp><Start[<wsp>M]> MAXimum MINimum DEFAULT
Parameter(s)	<i>Start:</i> The program data syntax for <Start> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Start> special forms MINimum, MAXimum and DEFAULT are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value. DEFAULT allows the instrument to select a value for the <Start> parameter. The <Start> parameter corresponds to a valid sweep start wavelength value. The SENSe[1..n][:WAVelength]:START? MIN and SENSe[1..n][:WAVelength]:START? MAX queries can be used to determine the valid sweep start wavelength range.

:SENSe[1..n][:WAVelength]:START	
Example(s)	SENS:WAV:STAR 1460.0 NM SENS:WAV:STAR? Returns 1.46000E-006
Notes	The minimum instrument sweep range is 5.0 nm. If necessary, the STOP wavelength will be automatically adjusted in accordance with minimum sweep range when changing the START wavelength.
See Also	:SENSe[1..n][:WAVelength]:OFFSet :SENSe[1..n][:WAVelength]:STOP :SENSe[1..n][:WAVelength]:START? :SENSe[1..n]:FREQuency:START

:SENSe[1..n][:WAVelength]:START?	
Description	This query returns a value indicating either the current or the minimum/maximum instrument sweep start wavelength. At *RST, this value is set to 1525.0 nm.
Syntax	:SENSe[1..n][:WAVelength]:START?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Start>

:SENSe[1..n][:WAVelength]:START?	
Response(s)	<i>Start:</i> The response data syntax for <Start> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Start> response corresponds to either the current or the MINimum/MAXimum instrument sweep start wavelength.
Example(s)	SENS:STAR 1460.0 NM SENS:STAR? Returns 1.46000E-006
See Also	:SENSe[1..n][:WAVelength]:OFFSet :SENSe[1..n][:WAVelength]:STOP :SENSe[1..n][:WAVelength]:START :SENSe[1..n]:FREQuency:START?

:SENSe[1..n][:WAVelength]:STOP	
Description	This command sets the instrument sweep stop wavelength. At *RST, this value is set to 1570.0 nm.
Syntax	:SENSe[1..n][:WAVelength]:STOP <wsp> <Stop[<wsp> M] > MAXimum MINimum DEFault
Parameter(s)	<i>Stop:</i> The program data syntax for <Stop> is defined as a <numeric_value> element followed by an optional <SUFFIX PROGRAM DATA> element. The allowed <SUFFIX PROGRAM DATA> element is M. The <Stop> special forms MINimum, MAXimum and DEFault are accepted on input. MINimum allows to set the instrument to the smallest supported value. MAXimum allows to set the instrument to the greatest supported value. DEFault allows the instrument to select a value for the <Stop> parameter. The <Stop> parameter corresponds to a valid sweep stop wavelength value. The SENSe[1..n][:WAVelength]:STOP? MIN and SENSe[1..n][:WAVelength]:STOP? MAX queries can be used to determine the valid sweep stop wavelength range.

:SENSe[1..n][:WAVelength]:STOP	
Example(s)	SENS:WAV:STOP 1525.0 NM SENS:WAV:STOP? Returns 1.525000E-006
Notes	The minimum instrument sweep range is 5.0 nm. If necessary, the START wavelength will be automatically adjusted in accordance with the minimum sweep range when changing the STOP wavelength.
See Also	:SENSe[1..n][:WAVelength]:OFFSet :SENSe[1..n][:WAVelength]:START :SENSe[1..n][:WAVelength]:STOP? :SENSe[1..n]:FREQuency:STOP

:SENSe[1..n][:WAVelength]:STOP?	
Description	This query returns a value indicating either the current or the minimum/maximum instrument sweep stop wavelength. At *RST, this value is set to 1570.0 nm.
Syntax	:SENSe[1..n][:WAVelength]:STOP?[<wsp>MAXimum MINimum DEFAULT]
Parameter(s)	<i>Parameter 1:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: MAXimum MINimum DEFAULT. MINimum is used to retrieve the instrument's smallest supported value. MAXimum is used to retrieve the instrument's greatest supported value. DEFAULT is used to retrieve the instrument's default value.
Response Syntax	<Stop>

:SENSe[1..n][:WAVelength]:STOP?	
Response(s)	<i>Stop:</i> The response data syntax for <Stop> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Stop> response corresponds to either the current or the MINimum/MAXimum instrument sweep stop wavelength.
Example(s)	SENS:STOP 1525.0 NM SENS:STOP? Returns 1.525000E-006
See Also	:SENSe[1..n][:WAVelength]:OFFSet :SENSe[1..n][:WAVelength]:START :SENSe[1..n][:WAVelength]:STOP :SENSe[1..n]:FREQuency:STOP?

:SNUMber?

Description	This query returns the serial number of the instrument. This command has no associated *RST condition.
Syntax	:SNUMber?
Parameter(s)	None
Response Syntax	<SerialNumber>
Response(s)	<i>SerialNumber:</i> The response data syntax for <SerialNumber> is defined as a <STRING RESPONSE DATA> element. The <SerialNumber> response represents a string containing the serial number of the instrument.
Example(s)	SNUM? Returns "123456-AB"
See Also	:IDN?

:STATus?	
Description	This query returns a value indicating the global status of the instrument. This command has no associated *RST condition.
Syntax	:STATus?
Parameter(s)	None
Response Syntax	<Status>
Response(s)	<i>Status:</i> The response data syntax for <Status> is defined as a <CHARACTER RESPONSE DATA> element. The <Status> response represents the instrument state, where: UNINITIALIZED means the instrument has not been initialized yet. INITINPROGRESS means the instruments initialization is in progress. READY means the instrument is ready. BUSY means the instrument is busy. DISCONNECTED means the instrument is disconnected. DEFECTIVE means the instrument is defective.
Example(s)	STAT?
See Also	:CALibration:ZERO:AUTO? :INITiate[:IMMediate] :INITiate:CONTInuous? :STATus:OPERation:BIT<8 9>:CONDition?

:STATus:OPERation:BIT<8 9>:CONDition?	
Description	This query returns the state of a specific bit in the OPERation register set. The < At *RST, the value is 0.
Syntax	:STATus:OPERation:BIT<8 9>:CONDition?
Parameter(s)	None
Response Syntax	<Condition>
Response(s)	<i>Condition:</i> The response data syntax for <Condition> is defined as a <NR1 NUMERIC RESPONSE DATA> element.

:STATus:OPERation:BIT<8|9>: CONDition?

The <Condition> response represents the current operation condition of the instrument. The meaning of the response depends on the value returned for the specified bit.

BIT8: When the returned value is 1, the instrument is performing a measurement (trigger system INITiated).

BIT9: When the returned value is 1, the instrument is performing an offset nulling and/or a wavelength referencing (CALibration:ZERO:AUTO?).

Example(s)

STAT? Must return READY
CAL:ZERO:AUTO ONCE
STAT:OPER:BIT9:COND? Keep resending this query as long as the operation is not complete (returned value is not 0).

See Also

:CALibration:ZERO:AUTO?
:INITiate[:IMMediate]
:INITiate:CONTinuous?
:STATus?

:TRACe:BANDwidth|BWIDth:RESolution?

Description	This query returns the resolution bandwidth of the wavelength range for the specified trace. This query has no associated *RST condition.
Syntax	:TRACe:BANDwidth BWIDth:RESolution?<wsp> <TraceName>
Parameter(s)	<i>TraceName:</i> The program data syntax for <TraceName> is defined as a <STRING PROGRAM DATA> element. The <TraceName> parameter corresponds to the name of the trace to select.
Response Syntax	<Resolution>
Response(s)	<i>Resolution:</i> The response data syntax for <Resolution> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Resolution> response corresponds to the resolution bandwidth of the current wavelength range of the trace expressed in meters.

:TRACe:BANDwidth BWIDth:RESolution?	
Example(s)	TRAC:FEED:CONT "TRC1", NEXT <Do measurement> TRAC:BAND:RES? "TRC1" Returns 6.2015E-011
Notes	Valid trace names are "TRC1" and "TRC2". Trace data is available only if a trace analysis was performed.
See Also	:CALCulate[1..n][:WDM]:DATA:CHANnel:ENBW? :TRACe[:DATA]:X:STArT[:WAVelength]? :TRACe[:DATA]:X:STOP[:WAVelength]?

:TRACe[:DATA]:X:STARt[:WAVElength]?

Description	This query returns the X magnitude of the first point for the specified trace. This query has no associated *RST condition.
Syntax	:TRACe[:DATA]:X:STARt[:WAVElength]?<wsp> <TraceName>
Parameter(s)	<i>TraceName:</i> The program data syntax for <TraceName> is defined as a <STRING PROGRAM DATA> element. The <TraceName> parameter corresponds to the name of the trace to select.
Response Syntax	<Start>
Response(s)	<i>Start:</i> The response data syntax for <Start> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Start> response corresponds to the X-axis wavelength of the first point of the trace expressed in meters.
Example(s)	TRAC:FEED:CONT "TRC1", NEXT <Do measurement> TRAC:DATA:X:STAR? "TRC1" Returns 1.525002E-006

:TRACe[:DATA]:X:STARt[:WAVElength]?

Notes	Valid trace names are "TRC1", "TRC2", "FP:GFIT" and "ST:TRAN". "FP:GFIT" is available only when performing Fabry-Perot laser source analysis. "TRC2" and "ST:TRAN" are available only when performing spectral transmittance analysis. Trace data is available only if a trace analysis was performed.
See Also	:TRACe[:DATA]:X:STOP[:WAVElength]? :TRACe[:DATA][:Y][:WAVElength]? :TRACe:FEED:CONTrol? :TRACe:POINts?

:TRACe[:DATA]:X:STOP[:WAVElength]?	
Description	This query returns the X magnitude of the last point for the specified trace. This query has no associated *RST condition.
Syntax	:TRACe[:DATA]:X:STOP[:WAVElength]?<wsp><TraceName>
Parameter(s)	<i>TraceName:</i> The program data syntax for <TraceName> is defined as a <STRING PROGRAM DATA> element. The <TraceName> parameter corresponds to the name of the trace to select.
Response Syntax	<Stop>
Response(s)	<i>Stop:</i> The response data syntax for <Stop> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Stop> response corresponds to the X-axis wavelength of the last point of the trace expressed in meters.
Example(s)	TRAC:FEED:CONT "TRC1", NEXT <Do measurement> TRAC:DATA:X:STOP? "TRC1" Returns 1.570006E-006

:TRACe[:DATA]:X:STOP[:WAVElength]?	
Notes	Valid trace names are "TRC1", "TRC2", "FP:GFIT" and "ST:TRAN". "FP:GFIT" is available only when performing Fabry-Perot laser source analysis. "TRC2" and "ST:TRAN" are available only when performing spectral transmittance analysis. Trace data is available only if a trace analysis was performed.
See Also	:TRACe[:DATA]:X:START[:WAVElength]? :TRACe[:DATA][:Y][:WAVElength]? :TRACe:FEED:CONTrol? :TRACe:POINts?

:TRACe[:DATA][:Y][:WAVElength]?

Description	This query returns all the point Y magnitude for the specified trace, according to the format determined by commands in the FORMat subsystem. This query has no associated *RST condition.
Syntax	:TRACe[:DATA][:Y][:WAVElength]?<wsp><TraceName>
Parameter(s)	<i>TraceName:</i> The program data syntax for <TraceName> is defined as a <STRING PROGRAM DATA> element. The <TraceName> parameter corresponds to the name of the trace to select.
Response Syntax	<Data>
Response(s)	<i>Data:</i> The response data syntax for <Data> is defined as a <DEFINITE LENGTH ARBITRARY BLOCK RESPONSE DATA> element.

:TRACe[:DATA][:Y][:WAVeLength]?

The <Data> response corresponds to the Y-axis values vector of the trace. The returned values are evenly spaced relative to the X-axis expressed in meters.

The X-axis wavelength interval between each Y value is determined as follow:

interval = (stop - start) / (count - 1) where:

start = TRACe[:DATA]:X:START[:WAVeLength]?

stop = TRACe[:DATA]:X:STOP[:WAVeLength]?

count = TRACe:POINts?

The points unit is determined by the trace definition context. When the trace data represents absolute power, returned values are in dBm. When the trace data represents relative power, returned values are in dB.

Example(s)

```
TRAC:FEED:CONT "TRC1", NEXT
<Do measurement>
FORMat:DATA ASC
TRAC:DATA? "TRC1" Returns
-5.246202E+001,-5.246195E+001,-5.246181E+001
,...
FORMat:DATA PACK
TRAC:DATA? "TRC1" Returns binary data
```

:TRACe[:DATA][:Y][:WAVElength]?

Notes	Valid trace names are "TRC1", "TRC2", "FP:GFIT" and "ST:TRAN". "FP:GFIT" is available only when performing Fabry-Perot laser source analysis. "TRC2" and "ST:TRAN" are available only when performing spectral transmittance analysis. Trace data is available only if trace analysis was performed. The platform global FORMat:DATA PACK command may be used to set trace data transfer in compressed binary format. At *RST, ASCii is selected as the default data format type.
See Also	:TRACe[:DATA]:X:START[:WAVElength]? :TRACe[:DATA]:X:STOP[:WAVElength]? :TRACe:FEED:CONTrol? :TRACe:POINts?

:TRACe:FEED:CONTRol	
Description	This command sets how often the specified trace accepts new data. At *RST, this value is set to ALWays for "TRC1" and to NEVer for all others traces.
Syntax	:TRACe:FEED:CONTRol<wsp><TraceName>[,ALWays NEXT NEVer
Parameter(s)	➤ <i>TraceName:</i> The program data syntax for <TraceName> is defined as a <STRING PROGRAM DATA> element. The <TraceName> parameter corresponds to the name of the trace to select. ➤ <i>Control:</i> The program data syntax for the second parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: ALWays NEXT NEVer. This parameter corresponds to the newly selected trace feed control mode. ALWays: the specified trace is updated whenever new data is available. Existing data automatically updates the trace.

:TRACe:FEED:CONTRol

NEXT: is a one-shot feed. The specified trace will wait for new data, such as a new acquisition, and ignores any existing data. CONTRol switches to NEVER once trace data has been updated.
NEVer: the specified trace is never updated.

Example(s)

TRAC:FEED:CONT "TRC1", ALW
TRAC:FEED:CONT? "TRC1" Returns ALWAYS

Notes

Valid trace names are "TRC1" and "TRC2".

See Also

:INITiate[:IMMediate]
:INITiate:CONTInuous
:TRACe:FEED:CONTRol?

:TRACe:FEED:CONTRol?	
Description	This query returns how often the specified trace accepts new data. At *RST, this value is set to ALWays for "TRC1" and to NEVer for all others traces.
Syntax	:TRACe:FEED:CONTRol?<wsp><TraceName>
Parameter(s)	<i>TraceName</i>: The program data syntax for <TraceName> is defined as a <STRING PROGRAM DATA> element. The <TraceName> parameter corresponds to the name of the trace to select.
Response Syntax	<Control>
Response(s)	<i>Control</i>: The response data syntax for <Control> is defined as a <CHARACTER RESPONSE DATA> element. The <Control> response corresponds to the selected trace feed control mode. ALWAYS: the specified trace is updated whenever data is available. NEXT: the specified trace is waiting for new data to get updated once. NEVer: the specified trace is never updated.

:TRACe:FEED:CONTRol?

Example(s)	TRAC:FEED:CONT "TRC1", NEXT TRAC:FEED:CONT? "TRC1" Returns NEXT or NEVER
Notes	Valid trace names are "TRC1" and "TRC2".
See Also	:INITiate[:IMMediate] :INITiate:CONTInuous :TRACe:FEED:CONTRol

:TRACe:POINts?	
Description	This query returns the number of measurement data points in the specified trace. This command has no associated *RST condition.
Syntax	:TRACe:POINts?<wsp><TraceName>
Parameter(s)	<i>TraceName:</i> The program data syntax for <TraceName> is defined as a <STRING PROGRAM DATA> element. The <TraceName> parameter corresponds to the name of the trace to select.
Response Syntax	<Points>
Response(s)	<i>Points:</i> The response data syntax for <Points> is defined as a <NR1 NUMERIC RESPONSE DATA> element. The <Points> response corresponds to the number of points in the specified trace.
Example(s)	TRAC:POIN? "TRC1" Returns 8000

:TRACe:POINts?	
Notes	Valid trace names are "TRC1", "TRC2", "FP:GFIT" and "ST:TRAN". "FP:GFIT" is available only when performing Fabry-Perot laser source analysis. "TRC2" and "ST:TRAN" are available only when performing spectral transmittance analysis. Trace data is available only if a trace analysis was performed.
See Also	:TRACe[:DATA]:X:START[:WAVElength]? :TRACe[:DATA]:X:STOP[:WAVElength]? :TRACe[:DATA][:Y][:WAVElength]?

:TRIGger[1..n][:SEQuence]:SOURce	
Description	This command selects the source for the trigger system event detector. At *RST, the source is set to IMMEDIATE.
Syntax	:TRIGger[1..n][:SEQuence]:SOURce<wsp>IMMEDIATE TIMer
Parameter(s)	Source: The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: IMMEDIATE TIMer. The parameter corresponds to the newly selected trigger event source. IMMEDIATE: No waiting for an event to occur. TIMer: The source signal comes from a periodic timer.
Example(s)	TRIG:SEQ:SOUR IMM TRIG:SEQ:SOUR? Returns IMMEDIATE
Notes	The TIMer trigger event source is valid for queries only. It is used internally during a drift acquisition.
See Also	:INITiate[:IMMEDIATE] :INITiate:CONTinuous :TRIGger[1..n][:SEQuence]:SOURce?

:TRIGger[1..n][:SEquence]:SOURce?

Description	This query returns the selected the source for the trigger system event detector. At *RST, the source is set to IMMEDIATE.
Syntax	:TRIGger[1..n][:SEquence]:SOURce?
Parameter(s)	None
Response Syntax	<Source>
Response(s)	<i>Source:</i> The response data syntax for <Source> is defined as a <CHARACTER RESPONSE DATA> element. The <Source> response corresponds to the selected trigger event source. IMMEDIATE: No waiting for an event occurs. TIMer: The source signal comes from a periodic timer.
Example(s)	TRIG:SOUR IMM TRIG:SOUR? Returns IMMEDIATE
See Also	:INITiate[:IMMEDIATE] :INITiate:CONTinuous :TRIGger[1..n][:SEquence]:SOURce

:UNIT[1..n]:POWer	
Description	This command selects a default unit for commands which program absolute power. At *RST, default absolute power unit is set to DBM.
Syntax	:UNIT[1..n]:POWer<wsp>DBM W
Parameter(s)	<i>Unit:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: DBM W. The parameter corresponds to the newly selected default absolute power unit. DBM: selects dBm as the power unit. W: selects watt as the power unit.

:UNIT[1..n]:POWER	
Example(s)	CALC:WDM:THR -30.00 DBM UNIT:POW DBM UNIT:POW? Returns DBM CALC:WDM:THR? Returns -3.000000E+001 UNIT:POW W UNIT:POW? Returns W CALC:WDM:THR? Returns 1.000000E-006
Notes	Changing the default relative power unit (UNIT:RATio) also sets the default absolute power unit to the corresponding setting.
See Also	:UNIT[1..n]:POWER? :UNIT[1..n]:RATio :UNIT[1..n]:SPECTrum

:UNIT[1..n]:POWer?	
Description	This query returns the selected default unit for commands which program absolute power. At *RST, default absolute power unit is set to DBM.
Syntax	:UNIT[1..n]:POWer?
Parameter(s)	None
Response Syntax	<Unit>
Response(s)	<i>Unit:</i> The response data syntax for <Unit> is defined as a <CHARACTER RESPONSE DATA> element. The response corresponds to the selected default absolute power unit. DBM: the dBm power unit is selected. W: the watt power unit is selected.
Example(s)	UNIT:POW DBM UNIT:POW? Returns DBM
See Also	:UNIT[1..n]:POWer :UNIT[1..n]:RATio :UNIT[1..n]:SPEctrum

:UNIT[1..n]:RATio	
Description	This command selects a default unit for commands which program relative power. At *RST, default relative power unit is set to DB.
Syntax	:UNIT[1..n]:RATio<wsp>DB W/W PCT
Parameter(s)	<i>Unit:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: DB W/W PCT. The parameter corresponds to the newly selected default relative power unit. DB: selects dB as the power unit. W/W: selects watt as the ratio power unit. PCT: selects percent as the power unit
Example(s)	UNIT:POW W UNIT:POW? Returns W UNIT:RAT DB UNIT:RAT? Returns DB UNIT:POW? Returns DBM
Notes	Changing the default relative power unit also sets the default absolute power unit (UNIT:POWer) to the corresponding setting.
See Also	:UNIT[1..n]:POWer :UNIT[1..n]:SPECTrum :UNIT[1..n]:RATio?

:UNIT[1..n]:RATio?	
Description	This query returns the selected default unit for commands which program relative power. At *RST, default relative power unit is set to DB.
Syntax	:UNIT[1..n]:RATio?
Parameter(s)	None
Response Syntax	<Unit>
Response(s)	<i>Unit:</i> The response data syntax for <Unit> is defined as a <CHARACTER RESPONSE DATA> element. The response corresponds to the selected default relative power unit. DB: the dB power unit is selected. W/W: the watt ratio power unit is selected. %: the percent power unit is selected.
Example(s)	UNIT:RAT W/W UNIT:RAT? Returns W/W
See Also	:UNIT[1..n]:POWer :UNIT[1..n]:SPECtrum :UNIT[1..n]:RATio

:UNIT[1..n]:SPECtrum	
Description	This command selects a default unit for commands which program spectrum. At *RST, default spectrum unit is set to M (meter).
Syntax	:UNIT[1..n]:SPECtrum<wsp>M HZ
Parameter(s)	<i>Unit:</i> The program data syntax for the first parameter is defined as a <CHARACTER PROGRAM DATA> element. The allowed <CHARACTER PROGRAM DATA> elements for this parameter are: M HZ. The parameter corresponds to the newly selected default spectrum unit. M: selects meter as the unit. HZ: selects hertz as the unit.
Example(s)	UNIT:SPEC M UNIT:SPEC? Returns M
See Also	:UNIT[1..n]:POWEr :UNIT[1..n]:RATio :UNIT[1..n]:SPECtrum?

:UNIT[1..n]:SPECtrum?	
Description	This query returns the selected default unit for commands which program spectrum. At *RST, default spectrum unit is set to M (meter).
Syntax	:UNIT[1..n]:SPECtrum?
Parameter(s)	None
Response Syntax	<Unit>
Response(s)	<i>Unit:</i> The response data syntax for <Unit> is defined as a <CHARACTER RESPONSE DATA> element. The response corresponds to the selected default spectrum unit. M: the meter unit is selected. HZ: the hertz unit is selected.
Example(s)	UNIT:SPEC HZ UNIT:SPEC? Returns HZ
See Also	:UNIT[1..n]:POWer :UNIT[1..n]:RATio :UNIT[1..n]:SPECtrum

Examples on Using the SCPI Commands

Here are a few examples on using the SCPI commands sequences. The left column of the table indicates the command and its position in the sequence, and the right indicates relevant comments about it.

When the command is in bold characters, it is specific to the example; the other commands are there to ensure that the sequence is performed smoothly.

Click on the links below to go directly to the corresponding example:

- *Creating a Channel List Based on the Default Channel (WDM)* on page 1083
- *Creating a Channel List Based on Specific Channels (WDM)* on page 1084
- *Configuring Analysis Setup Based on Specific Channel Definition* on page 1085
- *Configuring Analysis Setup Based on Auto Channel Definition Centered on the Lowest Insertion Loss Peak* on page 1086
- *Configuring Analysis Setup Based on Auto Channel Definition Centered on DWDM ITU Grid* on page 1087
- *Configuring Analysis Setup Based on Auto Channel Definition Centered on CWDM ITU Grid* on page 1087
- *Configuring the Analysis Setup for the Next Acquisition Sequence (WDM)* on page 1088
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SCPI Command Reference

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Creating a Channel List Based on the Default Channel (WDM)

Command Sequence	Comments
CALC:WDM:CHAN:DEL:ALL	Clear current channel list.
CALC:WDM:CHAN:AUTO ON	Activate default channel.
<Add commands to set default channel parameters>	See <i>Modifying Default Channel Analysis Parameters (WDM)</i> on page 1101.

Creating a Channel List Based on Specific Channels (WDM)

Command Sequence	Comments
CALC:WDM:CHAN:AUTO OFF	Disable default channel.
CALC:WDM:CHAN:DEL:ALL	Clear current channel list.
CALC:WDM:CHAN:DEF "CWDM_1470",1470.0 NM	Add a new channel named "CWDM_1470" with nominal central wavelength at 1470.0 nm. All others parameters for this new channel are set to their default values.
CALC:WDM:CHAN:SEL "CWDM_1470"	Select channel "CWDM_1470".
<Add commands to modify channel parameters>	See <i>Modifying Selected Channel Analysis Parameters (WDM)</i> on page 1102.
CALC:WDM:CHAN:DEF "CWDM_1530",1530.0 NM	Add a new channel named "CWDM_1530" with a nominal central wavelength at 1530.0 nm. All others parameters for this new channel are set to their default value.
CALC:WDM:CHAN:SEL "CWDM_1530"	Select channel "CWDM_1530".
<Add commands to modify channel parameters>	See <i>Modifying Selected Channel Analysis Parameters (WDM)</i> on page 1102.
CALC:WDM:CHAN:DEF "CWDM_1550",1550.0 NM	Add a new channel named "CWDM_1550" with a nominal central wavelength at 1550.0 nm. All others parameters for this new channel are set to their default value.
CALC:WDM:CHAN:SEL "CWDM_1550"	Select channel "CWDM_1550".
<Add commands to modify channel parameters>	See <i>Modifying Selected Channel Analysis Parameters (WDM)</i> on page 1102.

Configuring Analysis Setup Based on Specific Channel Definition

Command Sequence	Comments
CALC:ST:CHAN:CENT 1550.0 NM	Set channel center wavelength. (Use CALC:ST:CHAN:CENT:FREQ command to set center frequency.)
CALC:ST:CHAN:SPAC 10.0 NM	Set channel wavelength spacing. (Use CALC:ST:CHAN:SPAC:FREQ command to set frequency spacing.)
CALC:ST:CHAN:WIDT 5.0 NM	Set channel wavelength width. (Use CALC:ST:CHAN:WIDT:FREQ command to set frequency width.)
CALC:ST:CHAN:CENT:AUTO OFF	Disable automatic channel center definition.
CALC:ST:BAND1:RLEV 1.5 DB	Set first position for channel bandwidth computing.
CALC:ST:BAND2:RLEV 3.5 DB	Set second position for channel bandwidth computing.

Configuring Analysis Setup Based on Auto Channel Definition Centered on the Lowest Insertion Loss Peak

Command Sequence	Comments
CALC:ST:CHAN:SPAC:FREQ 37.5 GHZ	Set channel frequency spacing. (Use CALC:ST:CHAN:SPAC command to set wavelength spacing.)
CALC:ST:CHAN:WIDT:FREQ 30.0 GHZ	Set channel frequency width. (Use CALC:ST:CHAN:WIDT command to set wavelength width.)
CALC:ST:CHAN:CENT:AUTO ON	Enable automatic channel center definition.
CALC:ST:BAND1:RLEV 1.5 DB	Set first position for channel bandwidth computing.
CALC:ST:BAND2:RLEV 3.5 DB	Set second position for channel bandwidth computing.

Configuring Analysis Setup Based on Auto Channel Definition Centered on DWDM ITU Grid

Command Sequence	Comments
CALC:ST:CHAN:SPAC:FREQ 50.0 GHZ	Set channel frequency spacing. Valid spacing: 25, 50, 100 or 200 GHz.
CALC:ST:CHAN:WIDT:FREQ 25.0 GHZ	Set channel frequency width.
CALC:ST:CHAN:CENT:ITUG ON	Enable "snap" center on nearest ITU channel. (Will automatically set CALC:ST:CHAN:CENT:AUTO to ON)
CALC:ST:BAND1:RLEV 1.5 DB	Set first position for channel bandwidth computing.
CALC:ST:BAND2:RLEV 3.5 DB	Set second position for channel bandwidth computing.

Configuring Analysis Setup Based on Auto Channel Definition Centered on CWDM ITU Grid

Command Sequence	Comments
CALC:ST:CHAN:SPAC 20.0 NM	Set channel wavelength spacing. Valid spacing: 20 nm.
CALC:ST:CHAN:WIDT 10.0 NM	Set channel wavelength width.
CALC:ST:CHAN:CENT:ITUG ON	Enable "snap" center on nearest ITU channel. (Will automatically set CALC:ST:CHAN:CENT:AUTO to ON)
CALC:ST:BAND1:RLEV 1.5 DB	Set first position for channel bandwidth computing.
CALC:ST:BAND2:RLEV 3.5 DB	Set second position for channel bandwidth computing.

Configuring the Analysis Setup for the Next Acquisition Sequence (WDM)

Command Sequence	Comments
CALC:WDM:STAT ON	Activate WDM analysis.
TRAC:FEED:CONT "TRC1", ALW	Set trace data refresh mode to ALWays. When a new sensed trace is available, it is automatically transferred in the WDM calculate block for analysis.
<Add commands to set global parameters>	See <i>Modifying Global Analysis Parameters (WDM)</i> on page 1100.
<Add commands to configure channel list>	See <i>Creating a Channel List Based on the Default Channel (WDM)</i> on page 1083 and <i>Creating a Channel List Based on Specific Channels (WDM)</i> on page 1084.

Configuring the Compressed Trace Generation

Command Sequence	Comments
CALC:COMP:POIN 501	Set the number of samples for the compressed trace.
CALC:COMP:CENT 1550 NM	Set the center wavelength of the sub-trace representing the zone of interest on the trace to compress.
CALC:COMP:SPAN 1.0 NM	Set the wavelength span of the sub-trace representing the zone of interest on the trace to compress.
CALC:COMP:STAT ON	Activate data generation for the compressed trace.

Modifying Global Analysis Parameters (DFB)

Command Sequence	Comments
CALC:DFB:CENT2:RLEV 20.0 DB	Set the user-defined center amplitude (x dB position) for computing of center of mass #2.

Performing an Offset Nulling and Wavelength Referencing

Command Sequence	Comments
STAT?	Test instrument state is idle. Poll STAT? until the returned state is READY.
CAL:ZERO:AUTO ONCE	Start nulling and referencing. Note: <i>this command will take up to 5 seconds to complete.</i>
STAT:OPER:BIT9:COND?	Wait for the nulling to be completed. Poll bit 9 until the returned value is 0.

Performing a Single Acquisition

Command Sequence	Comments
<Add commands to configure analysis parameters>	See <i>Modifying Default Channel Analysis Parameters (WDM)</i> on page 1101.
SENS:CORR:OFFS:MAGN 5.0 DB	Set power offset.
SENS:WAV:OFFS 0.065 NM	Set wavelength offset.
SENS:WAV:STAR 1525.000 NM	Set sweep wavelength range: 1525.000 nm to 1570.000 nm.
SENS:WAV:STOP 1570.000 NM	
SENS:AVER:STAT OFF	Disable trace averaging.
TRIG:SEQ:SOUR IMM	Set sweep trigger event source to immediate.
STAT?	Test instrument state is idle. Poll STAT? until the returned state is READY.
INIT:IMM	Start sweep acquisition.
STAT:OPER:BIT8:COND?	Wait for the acquisition to be completed. Poll bit 8 until the returned value is 0.
<Add commands to retrieve analysis results>	See <i>Retrieving Analysis Results</i> on page 1103.

Performing an Averaging Acquisition

Command Sequence	Comments
<Add commands to configure analysis parameters>	See <i>Modifying Default Channel Analysis Parameters (WDM)</i> on page 1101.
SENS:CORR:OFFS:MAGN 5.0 DB	Set power offset.
SENS:WAV:OFFS 0.0 NM	Disable wavelength offset.
SENS:WAV:STAR MIN	Set sweep full spectral range using wavelength commands.
SENS:WAV:STOP MAX	
SENS:AVER:STAT ON	Enable trace averaging.
SENS:AVER:TYPE SCAL	Select SCALAR averaging type.
SENS:AVER:COUN 8	Set the number of sweep to average at 8.
TRIG:SEQ:SOUR IMM	Set sweep trigger event source to immediate.
STAT?	Test instrument state is idle. Poll STAT? until the returned state is READY.
INIT:IMM	Start sweep acquisition.
STAT:OPER:BIT8:COND?	Wait for the acquisition to be completed. Poll bit 8 until the returned value is 0.
<Add commands to retrieve analysis results>	See <i>Retrieving Analysis Results</i> on page 1103.

Performing an Averaging Acquisition for InBand Noise Analysis

Command Sequence	Comments
<Add commands to configure analysis parameters>	See <i>Modifying Default Channel Analysis Parameters (WDM)</i> on page 1101.
SENS:CORR:OFFS:MAGN 0.0 DB	Disable power offset.
SENS:WAV:OFFS -0.127 NM	Set wavelength offset.
SENS:WAV:STAR 1525.000 NM	Set sweep spectral range: 1525.000 nm to 1570.000 nm.
SENS:WAV:STOP 1570.000 NM	
SENS:AVER:STAT ON	Enable trace averaging.
SENS:AVER:TYPE PMMH	Select specific trace averaging for InBand noise measurement.
SENS:AVER:COUN 300	Set the number of sweep to average at 300.
TRIG:SEQ:SOUR IMM	Set sweep trigger event source to immediate.
STAT?	Test instrument state is idle. Poll STAT? until the returned state is READY.
INIT:IMM	Start sweep acquisition.
STAT:OPER:BIT8:COND?	Wait for the acquisition to be completed. Poll bit 8 until the returned value is 0.
<Add commands to retrieve analysis results>	See <i>Retrieving Analysis Results</i> on page 1103.

Performing a Continuous Acquisition

Command Sequence	Comments
<Add commands to configure analysis parameters>	See <i>Modifying Default Channel Analysis Parameters (WDM)</i> on page 1101.
SENS:CORR:OFFS:MAGN 0.0 DB	Disable power offset.
SENS:WAV:OFFS 0.0 NM	Disable wavelength offset.
SENS:FREQ:STAR 190.9506 THZ	Set sweep frequency range.
SENS:FREQ:STOP 196.5852 THZ	
SENS:AVER:STAT OFF	Disable trace averaging.
TRIG:SEQ:SOUR IMM	Set sweep trigger event source to immediate.
STAT?	Test instrument state is idle. Poll STAT? until the returned state is READY.
INIT:CONT ON	Start sweep acquisition loop.
...	
INIT:CONT OFF	Stop sweep acquisition loop.
STAT:OPER:BIT8:COND?	Wait for the acquisition to be completed. Poll bit 8 until the returned value is 0.
<Add commands to retrieve analysis results>	See <i>Retrieving Analysis Results</i> on page 1103.

SCPI Command Reference

Examples on Using the SCPI Commands

Performing an *i*-InBand Acquisition (WDM)

Command Sequence	Comments
<Add commands to configure WDM analysis parameters>	See <i>Configuring the Analysis Setup for the Next Acquisition Sequence (WDM)</i> on page 1088.
CALC:WDM:CHAN:AUTO:NOIS:AUTO ON	Optional: if the default channel is active, then set auto noise to enabled.
CALC:WDM:CHAN:SEL "C_001"	
CALC:WDM:CHAN:NOIS:AUTO ON	Set the selected channel auto noise to enabled.
CALC:WDM:CHAN:SEL "C_002"	
CALC:WDM:CHAN:NOIS:AUTO ON	Set the selected channel auto noise to enabled.
CALC:WDM:CHAN:SEL "C_003"	
CALC:WDM:CHAN:NOIS:AUTO ON	Set the selected channel auto noise to enabled.
SENS:CORR:OFFS:MAGN 0.0 DB	Disable power offset.
SENS:WAV:OFFS 0.0 NM	Disable spectral offset.
SENS:WAV:STAR 1525.000 NM	Set sweep spectral range: 1525.000 nm to 1570.000 nm.
SENS:WAV:STOP 1570.000 NM	
SENS:AVER:STAT ON	Enable trace averaging.
SENS:AVER:TYPE PMMH	Select the averaging type for InBand noise measurement. The number of scans for averaging will be automatically determined.
TRIG:SEQ:SOUR IMM	Set the sweep trigger event source to immediate.
STAT?	Test instrument state is idle. Poll STAT? until the returned state is READY.
INIT:IMM	Start sweep acquisition.

Command Sequence	Comments
STAT:OPER:BIT8:COND?	Wait for the acquisition to be completed. Poll bit 8 until the returned value is 0.
<Add commands to retrieve analysis results>	See <i>Retrieving Analysis Results (WDM)</i> on page 1105.

Performing a Custom InBand Acquisition (WDM)

Command Sequence	Comments
<Add commands to configure Wdm analysis parameters>	See <i>Configuring the Analysis Setup for the Next Acquisition Sequence (WDM)</i> on page 1088.
CALC:WDM:CHAN:AUTO:NOIS:AUTO OFF	Optional: if the default channel is active then set auto noise to disabled.
CALC:WDM:CHAN:AUTO:NOIS:TYPE INB	Optional: if the default channel is active then set the specific InBand noise measurement type.
CALC:WDM:CHAN:SEL "C_001"	
CALC:WDM:CHAN:NOIS:AUTO OFF	Set the selected channel auto noise to disabled.
CALC:WDM:CHAN:NOIS:TYPE INB	Set the selected channel specific InBand noise measurement type.
CALC:WDM:CHAN:SEL "C_002"	
CALC:WDM:CHAN:NOIS:AUTO OFF	Set the selected channel auto noise to disabled.
CALC:WDM:CHAN:NOIS:TYPE INBN	Set selected channel specific InBand noise measurement type
CALC:WDM:CHAN:SEL "C_003"	
CALC:WDM:CHAN:NOIS:AUTO OFF	Set the selected channel auto noise to disabled.

SCPI Command Reference

Examples on Using the SCPI Commands

Command Sequence	Comments
CALC:WDM:CHAN:NOIS:TYPE INBN	Set the selected channel specific InBand noise measurement type.
SENS:CORR:OFFS:MAGN 0.0 DB	Disable the power offset.
SENS:WAV:OFFS 0.0 NM	Disable the spectral offset.
SENS:WAV:STAR 1525.000 NM	Set sweep spectral range: 1525.000 nm to 1570.000 nm.
SENS:WAV:STOP 1570.000 NM	
SENS:AVER:STAT ON	Enable trace averaging.
SENS:AVER:TYPE PMMH	Select the averaging type for InBand noise measurement.
SENS:AVER:COUN 300	Set the number of sweeps to average.
TRIG:SEQ:SOUR IMM	Set the sweep trigger event source to immediate.
STAT?	Test instrument state is idle. Poll STAT? until the returned state is READY.
INIT:IMM	Start sweep acquisition.
STAT:OPER:BIT8:COND?	Wait for acquisition to be completed. Poll bit 8 until the returned value is 0.
<Add commands to retrieve analysis results>	See <i>Retrieving Analysis Results (WDM)</i> on page 1105.

Performing a Continuous Acquisition with Synchronized Intermediate Results Query (WDM)

Command Sequence	Comments
<Add commands to configure Wdm analysis parameters>	See <i>Configuring the Analysis Setup for the Next Acquisition Sequence (WDM)</i> on page 1088.
TRAC:FEED:CONT "TRC1", NEXT	Disable continuous refresh of WDM analysis active trace; set feed control for "one-shot" refresh.
SENS:CORR:OFFS:MAGN 0.0 DB	Disable power offset.
SENS:WAV:OFFS 0.0 NM	Disable wavelength offset.
SENS:FREQ:STAR 190.9506 THZ	Set sweep frequency range.
SENS:FREQ:STOP 196.5852 THZ	
SENS:AVER:STAT OFF	Enable trace averaging.
TRIG:SEQ:SOUR IMM	Set sweep trigger event source to immediate.
STAT?	Test instrument state is idle. Poll STAT? until the returned state is READY.
INIT:CONT ON	Start sweep acquisition loop.
TRAC:FEED:CONT? "TRC1"	Wait for the first trace refresh to be done. Poll WDM analysis trace feed until the returned value is NEVER.
<Add commands to retrieve analysis results>	See <i>Retrieving Analysis Results (WDM)</i> on page 1105.
TRAC:FEED:CONT "TRC1", NEXT	Reactivate WDM analysis trace feed control for another "one-shot" refresh.
TRAC:FEED:CONT? "TRC1"	Wait for trace refresh done. Poll trace feed until the returned value is NEVER.
<Add commands to retrieve analysis results>	See <i>Retrieving Analysis Results (WDM)</i> on page 1105.

SCPI Command Reference

Examples on Using the SCPI Commands

Command Sequence	Comments
TRAC:FEED:CONT "TRC1", NEXT	Reactivate WDM analysis trace feed control for another "one-shot" refresh.
TRAC:FEED:CONT? "TRC1"	Wait for trace refresh to be done. Poll trace feed until the returned value is NEVER.
<Add commands to retrieve analysis results>	See <i>Retrieving Analysis Results (WDM)</i> on page 1105.
...	Continue intermediate results queries as necessary.
TRAC:FEED:CONT "TRC1", ALW	Ready to stop acquisition, set the WDM analysis trace feed to ALWays to make sure that the last acquired trace is analyzed and updated results are available once the acquisition loop is completed.
INIT:CONT OFF	Stop sweep acquisition loop.
STAT:OPER:BIT8:COND?	Wait for the measurement to be completed. Poll bit 8 until the returned value is 0.
<Add commands to retrieve analysis results>	See <i>Retrieving Analysis Results (WDM)</i> on page 1105.

Performing Dual Trace Acquisition

Command Sequence	Comments
CALC:ST:STAT ON	Activate spectral transmittance analysis.
TRAC:FEED:CONT "TRC1", ALW	Set the data refresh mode of trace 1 to ALWays. When a new sensed trace is available, it is automatically transferred into the input trace of the spectral transmittance block for analysis.
TRAC:FEED:CONT "TRC2", NEV	Set the data refresh mode of trace 2 to NEVER. Disable the spectral transmittance block output trace refresh.
<Add commands to configure analysis parameters and perform input trace acquisition>	Refer to the following command examples in your OSA user documentation: <i>Performing a Single Acquisition</i>, <i>Performing an Averaging Acquisition</i> or <i>Performing a Continuous Acquisition</i>. See also <i>Configuring Analysis Setup Based on Specific Channel Definition</i> on page 1085, <i>Configuring Analysis Setup Based on Auto Channel Definition Centered on the Lowest Insertion Loss Peak</i> on page 1086, <i>Configuring Analysis Setup Based on Auto Channel Definition Centered on DWDM ITU Grid</i> on page 1087 or <i>Configuring Analysis Setup Based on Auto Channel Definition Centered on CWDM ITU Grid</i> on page 1087. Note: Analysis results will be retrieved only after performing an output trace acquisition.
TRAC:FEED:CONT "TRC1", NEV	Set the data refresh mode of trace 1 to NEVER. Disable the spectral transmittance block input trace refresh.

SCPI Command Reference

Examples on Using the SCPI Commands

Command Sequence	Comments
TRAC:FEED:CONT "TRC2", ALW	Set the data refresh mode of trace 2 to ALWays. When a new sensed trace is available, it is automatically transferred into the output trace of the spectral transmittance block for analysis.
<Add commands to perform output trace acquisition and query results>	Refer to the following command examples in your OSA user documentation: <i>Performing a Single Acquisition</i> , <i>Performing an Averaging Acquisition</i> or <i>Performing a Continuous Acquisition</i> . See also <i>Retrieving Analysis Results</i> on page 1103.

Modifying Global Analysis Parameters (WDM)

Command Sequence	Comments
CALC:WDM:THR -45.00 DBM	Set channel peak detection level.
CALC:WDM:OSNR:BAND:RES:AUTO OFF	Select between the instrument's native or custom resolution bandwidth for OSNR computing.
CALC:WDM:OSNR:BAND:RES 0.100 NM	Set the custom resolution bandwidth for OSNR.
CALC:WDM:BAND2:RLEV 20.0 DB	Set the user defined bandwidth position for all channels.

Modifying Default Channel Analysis Parameters (WDM)

Command Sequence	Comments
CALC:WDM:CHAN:AUTO:WIDT:FREQ 50.0 GHZ	Set channel width.
CALC:WDM:CHAN:AUTO:CENT:ITUG ON	Optional: enable "snap ITU grid" for channel width of: 25, 50, 100 or 200 GHz or 20 nm.
CALC:WDM:CHAN:AUTO:SIGP:TYPE IPOW	Set channel signal power type.
CALC:WDM:CHAN:AUTO:NOIS:AUTO OFF	Select between auto (i-InBand) and custom noise measurement.
CALC:WDM:CHAN:AUTO:NOIS:TYPE POLY5	Select the noise type for custom noise measurement.
CALC:WDM:CHAN:AUTO:NOIS:DIST:FREQ 100.0 GHZ	Set custom OSNR distance for 5th order polynomial fit noise measurement. Note: No need to send this command for IEC, INBand or INBandNarrowfilter noise types.
CALC:WDM:CHAN:AUTO:NOIS:WIDT:FREQ 65.0 GHZ	Set custom noise region for 5th order polynomial fit noise measurement. Note: No need to send this command for IEC, INBand or INBandNarrowfilter noise types.

Modifying Selected Channel Analysis Parameters (WDM)

Command Sequence	Comments
CALC:WDM:CHAN:CENT:WAV 1490.0 NM	Set channel center wavelength.
CALC:WDM:CHAN:WIDT:WAV 0.8 NM	Set channel width.
CALC:WDM:CHAN:SIGP:TYPE IPOW	Set channel signal power type.
CALC:WDM:CHAN:NOIS:AUTO OFF	Select between auto (<i>i</i> -InBand) and custom noise measurement.
CALC:WDM:CHAN:NOIS:TYPE POLY5	Select the noise type for custom noise measurement.
CALC:WDM:CHAN:AUTO:NOIS:DIST:WAV 0.55 NM	Set custom OSNR distance for 5th order polynomial fit noise measurement. Note: No need to send this command for IEC, INBand or INBandNarrowfilter noise types.
CALC:WDM:CHAN:AUTO:NOIS:WIDT:WAV 0.3 NM	Set custom noise region for 5th order polynomial fit noise measurement. Note: No need to send this command for IEC, INBand or INBandNarrowfilter noise types.

Retrieving Analysis Results

Command Sequence	Comments
UNIT:RAT DB	Set the default unit for relative power values queries.
<Add commands to query analyzed input trace data using trace name "TRC1">	Refer to the following command example in your OSA user documentation: <i>Retrieving Analyzed Trace Data</i> .
<Add commands to query analyzed output trace data using trace name "TRC2">	Refer to the following command example in your OSA user documentation: <i>Retrieving Analyzed Trace Data</i> .
<Add commands to query transmittance trace data using trace name "ST:TRAN">	Refer to the following command example in your OSA user documentation: <i>Retrieving Analyzed Trace Data</i> .
CALC:ST:DATA:CHAN:CENT?	Optional: Query analyzed channel nominal center wavelength. (Use CALC:ST:DATA:CHAN:CENT:FREQ? command to get center frequency.)
CALC:ST:DATA:COFF?	Query computed wavelength offset applied to channel nominal center. (Use CALC:ST:DATA:COFF:FREQ? command to get frequency offset.)
CALC:ST:DATA:BAND1?	Query computed channel wavelength bandwidth at position 1. (Use CALC:ST:DATA:BAND1:FREQ? command to get frequency bandwidth.)
CALC:ST:DATA:BAND2?	Query computed channel wavelength bandwidth at position 2. (Use CALC:ST:DATA:BAND2:FREQ? command to get frequency bandwidth.)
CALC:ST:DATA:ILOS:MIN?	Query computed minimum insertion loss.

SCPI Command Reference

Examples on Using the SCPI Commands

Command Sequence	Comments
CALC:ST:DATA:ILOS:MAX?	Query computed maximum insertion loss.
CALC:ST:DATA:ACIS?	Query computed adjacent channel isolation.

Retrieving Analysis Results (DFB)

Command Sequence	Comments
<Optional: Add commands to query analyzed trace data using trace name "TRC1">	Query the full data of the acquired trace. Refer to the following command example in your OSA user documentation: <i>Retrieving Analyzed Trace Data</i> .
<Optional: Add commands to generate a compressed trace from the acquired trace>	Refer to <i>Configuring Compressed Trace generation</i> .
<Optional: Add commands to query the compressed trace>	Refer to <i>Retrieving Compressed Trace Data</i> .
CALC:DFB:DATA:BAND?	Query the computed bandwidth of the peak at 3.0 dB.
CALC:DFB:DATA:BAND2?	Query the computed bandwidth of the peak at 20.0 dB.
CALC:DFB:DATA:CENT?	Query the computed center of mass of the peak.
CALC:DFB:DATA:CENT2?	Query the computed center of mass of the peak at the specified X dB position.
CALC:DFB:DATA:COFF?	Query the computed center wavelength offset of the peak.
CALC:DFB:DATA:FPMS?	Query the computed average wavelength spacing between adjacent Fabry-Perot modes.
CALC:DFB:DATA:PPOW?	Query the computed peak power.

Command Sequence	Comments
CALC:DFB:DATA:SBAN:LEFT?	Query the computed left stopband.
CALC:DFB:DATA:SBAN:RIGHT?	Query the computed right stopband.
CALC:DFB:DATA:SMSR:LEFT?	Query the computed left side-mode suppression ratio.
CALC:DFB:DATA:SMSR:LEFT:POS?	Query the computed center of mass wavelength of the left side-mode suppression ratio.
CALC:DFB:DATA:SMSR:RIGHT?	Query the computed right side-mode suppression ratio.
CALC:DFB:DATA:SMSR:RIGHT:POS?	Query the computed center of mass wavelength of the right side-mode suppression ratio.
CALC:DFB:DATA:SMSR:WORS?	Query the worst case side-mode suppression ratio.
CALC:DFB:DATA:SMSR:WORS:POS?	Query the computed center of mass wavelength for the worst case side-mode suppression ratio.

Retrieving Analysis Results (WDM)

Command Sequence	Comments
UNIT:POW DBM	Set the default unit for absolute power value queries.
UNIT:RAT DB	Set the default unit for relative power value queries.
UNIT:SPEC M	Set the default unit for spectrum value queries.
<Add commands to query analyzed trace data>	See <i>Retrieving Analyzed Trace Data (WDM)</i> on page 1107.

SCPI Command Reference

Examples on Using the SCPI Commands

Command Sequence	Comments
<Add commands to query global results>	See <i>Retrieving Global Results (WDM)</i> on page 1107.
CALC:WDM:DATA:CHAN:CAT? or CALC:WDM:DATA:CHAN:COUN?	Optional: Query channel results identifier list or channel count. Necessary only when querying results for channels automatically created based on the default channel. Note: <i>It is also possible to query the full channel results table. See Retrieving Channel Results Table (WDM) on page 1107.</i>
CALC:WDM:DATA:CHAN:SEL "C_001" or CALC:WDM:DATA:CHAN:NSEL 1	Select first channel result to process using specific channel identifier or one-based channel result index.
<Add commands to query channel results>	See <i>Retrieving Selected Channel Results (WDM)</i> on page 1108.
CALC:WDM:DATA:CHAN:SEL "C_002" or CALC:WDM:DATA:CHAN:NSEL 2	Select the next channel result to process using specific channel identifier or one-based channel result index.
<Add commands to query channel results>	See <i>Retrieving Selected Channel Results (WDM)</i> on page 1108.
...	...
CALC:WDM:DATA:CHAN:SEL "C_010" or CALC:WDM:DATA:CHAN:NSEL 10	Select the last channel result to process using specific channel identifier or one-based channel result index.
<Add commands to query channel results>	See <i>Retrieving Selected Channel Results (WDM)</i> on page 1108.

Retrieving Analyzed Trace Data (WDM)

Command Sequence	Comments
TRAC:POIN? "TRC1"	Query the number of points in the trace.
TRAC:DATA:Y:WAV? "TRC1"	Query the trace power sample vector.
TRAC:DATA:X:STAR:WAV? "TRC1"	Query the minimum wavelength of the trace.
TRAC:DATA:X:STOP:WAV? "TRC1"	Query the maximum wavelength of the trace.

Retrieving Channel Results Table (WDM)

Command Sequence	Comments
MEM:TABL:SEL "WDM:CHANNEL"	Select the WDM analysis channel results table to define.
MEM:TABL:DEF "NAME,CMAS:WAV"	Set the list of channel results (columns) to be returned.
MEM:TABL:POIN? "WDM:CHANNEL"	Optional: Query the number of channel results (rows) in the table.
MEM:TABL:DATA? "WDM:CHANNEL"	Query the WDM analysis channel results table.

Retrieving Global Results (WDM)

Command Sequence	Comments
CALC:WDM:DATA:SIGP:MEAN?	Query the computed average signal power.
CALC:WDM:DATA:SIGP:FLAT?	Query the computed signal power flatness.
CALC:WDM:DATA:OSNR:MEAN?	Query the computed average OSNR.
CALC:WDM:DATA:OSNR:FLAT?	Query the computed OSNR flatness.
CALC:WDM:DATA:TPOW?	Query the computed trace total power.

Retrieving Selected Channel Results (WDM)

Command Sequence	Comments
CALC:WDM:DATA:CHAN:STAT:QUES:BIT9:COND?	Check for channel signal saturation.
CALC:WDM:DATA:CHAN:STAT:QUES:BIT10:COND?	Check if the channel was detected; signal is present.
CALC:WDM:DATA:CHAN:STAT:QUES:BIT11:COND?	Optional: for InBand noise measurement, check if there is sufficient discrimination for OSNR calculation.
CALC:WDM:DATA:CHAN:CENT:WAV?	Optional: Query configured channel center wavelength.
CALC:WDM:DATA:CHAN:CMAS:WAV?	Query computed channel center of mass wavelength.
CALC:WDM:DATA:CHAN:CPEA:WAV?	Query computed channel peak center wavelength.
CALC:WDM:DATA:CHAN:SIGP:TYPE?	Optional: Query computed signal power type.
CALC:WDM:DATA:CHAN:SIGP?	Query computed channel signal power.
CALC:WDM:DATA:CHAN:NOIS:AUTO?	Optional: Query auto noise (<i>i</i> -InBand) active.
CALC:WDM:DATA:CHAN:NOIS:TYPE?	Optional: Query computed noise measurement type.
CALC:WDM:DATA:CHAN:NOIS?	Query computed channel noise level.
CALC:WDM:DATA:CHAN:OSNR?	Query computed channel signal to noise ratio.
CALC:WDM:DATA:CHAN:BAND1:RLEV?	Optional: Query bandwidth position 1.
CALC:WDM:DATA:CHAN:BAND1:WAV?	Query computed channel bandwidth at position 1.
CALC:WDM:DATA:CHAN:BAND2:RLEV?	Optional: Query bandwidth position 2.
CALC:WDM:DATA:CHAN:BAND2:WAV?	Query computed channel bandwidth at position 2.

Retrieving Compressed Trace Data

Command Sequence	Comments
TRAC:POIN? "COMP:TRC"	Query the number of points in the trace.
TRAC:DATA:Y:WAV? "COMP:TRC"	Query the trace power sample vector.
TRAC:DATA:X:STAR:WAV? "COMP:TRC"	Query the minimum wavelength of the trace.
TRAC:DATA:X:STOP:WAV? "COMP:TRC"	Query the maximum wavelength of the trace.

Cancelling the Current Acquisition Sequence

Command Sequence	Comments
SENS:AVER:STAT ON	
SENS:AVER:TYPE SCAL	
SENS:AVER:COUN 500	
TRIG:SEQ:SOUR IMM	
STAT?	
INIT:IMM	Start averaging acquisition.
ABOR	Stop acquisition.

B *Formulas Used with Your Optical Spectrum Analyzer*

The following formulas are used in the various tests available with your OSA module.

EDFA Noise Figure Calculation

The EDFA noise figure is calculated using the following equation:

$$\text{EDFA noise figure} = \frac{P_{\text{ASE}} - GP_{\text{SSE}}}{Gh\nu B} + \frac{1}{G}$$

Where

P_{ASE} is the power of the spontaneous emission amplified by the EDFA,

P_{SSE} is the power of the spontaneous emission of the source,

G is the gain at this channel's wavelength,

h is Plank's constant ($6,6256 \times 10^{-34} \text{ J} \cdot \text{s}$),

ν is the frequency of the channel, and

B is the noise equivalent bandwidth, as calibrated at this channel's wavelength.

Central Wavelength Calculation (Spectral Transmittance)

The central wavelength is calculated using the following equation:

$$\lambda_c = \frac{\lambda_R + \lambda_L}{2}$$

Where

λ_c is the central wavelength,

λ_R is the wavelength on the right at which the power is 3 dB below the power at the nominal wavelength, and

λ_L is the wavelength on the left at which the power is 3 dB below the power at the nominal wavelength.

Bandwidth Calculation (Spectral Transmittance)

Bandwidth is calculated using the following equation:

$$b = 2 * \text{Min}\{(\lambda_N - \lambda_{\text{XdBLeft}}), (\lambda_{\text{XdBRight}} - \lambda_N)\}$$

Where

b is the bandwidth at X dB,

λ_N is the nominal wavelength,

λ_{XdBLeft} is the wavelength on the left at which the power is X dB below the power at the nominal wavelength.

$\lambda_{\text{XdBRight}}$ is the wavelength on the right at which the power is X dB below the power at the nominal wavelength.

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NAMES AND CONTENTS OF THE TOXIC OR HAZARDOUS SUBSTANCES OR ELEMENTS
CONTAINED IN THIS EXFO PRODUCT
包含在本 EXFO 产品中的有毒有害物质或元素的名称及含量

Part Name 部件名称	Lead 铅 (Pb)	Mercury 汞 (Hg)	Cadmium 镉 (Cd)	Hexavalent Chromium 六价铬 (Cr(VI))	Polybrominated biphenyls 多溴联苯 (PBB)	Polybrominated diphenyl ethers 多溴二苯醚 (PBDE)
Enclosure 外壳	O	O	O	O	O	O
Electronic and electrical sub-assembly 电子和电气组件	X	O	X	O	X	X
Optical sub-assembly ^a 光学组件 ^a	X	O	O	O	O	O
Mechanical sub-assembly ^a 机械组件 ^a	O	O	O	O	O	O

注:

This table is prepared in accordance with the provisions of SJ/T 11364.

本表依据 SJ/T 11364 的规定编制。

O: Indicates that said hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

O: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 标准规定的限量要求以下。

X: indicates that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572. Due to the limitations in current technologies, parts with the “X” mark cannot eliminate hazardous substances.

X: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 标准规定的限量要求。

标记“X”的部件，皆因全球技术发展水平限制而无法实现有害物质的替代。

a. If applicable.

如果适用。

MARKING REQUIREMENTS
标注要求

Product 产品	Environmental protection use period (years) 环境保护使用期限（年）	Logo 标志
This EXFO product 本 EXFO 产品	10	
Battery ^a 电池	5	

a. If applicable.
如果适用。

P/N: 15.0.1.3

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