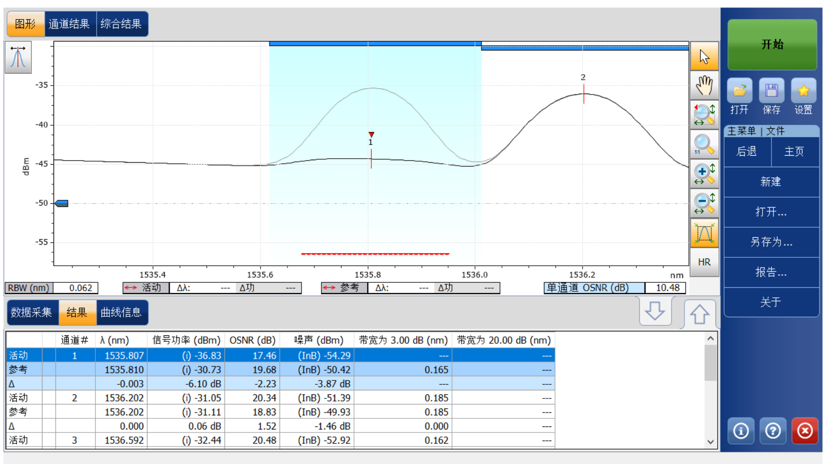
光谱分析仪



www.EXFO.com
Telecom Test and Measurement

EXPERTISE REACHING OUT

EXFO 在北大西洋公约组织 (NATO) 内的商业和政府实体 (CAGE) 代码为 0L8C3。

本手册中包含的信息如有更改，恕不另行通知。

商标

EXFO 的商标已经认定。但是，无论此类标识出现与否均不影响任何商标的合法地位。

测量单位

本手册中所使用的测量单位符合 SI 标准与惯例。

专利

本产品的一项或多项功能受以下一项或多项专利或专利申请保护：美国专利 8,373,852 ；美国专利 6,636,306 及其在其他国家 / 地区正在申请和获批的等同专利；美国专利 8,358,930 及其在其他国家 / 地区正在申请和获批的等同专利；美国专利 8,787,753 ；美国专利 8,364,034 及其在其他国家 / 地区正在申请和获批的等同专利；美国专利 9,438,336 及其在其他国家 / 地区正在申请和 / 或获批的等同专利；美国专利 9,112,604 及其在其他国家 / 地区正在申请和 / 或获批的等同专利；美国专利 9,596,027 ；专利申请 US 2014/0086574 A1 ；专利申请 US 2016/0127074 A1 及其在其他国家 / 地区正在申请和 / 或获批的等同专利；美国外观专利 D737,429 和 D798,171。

版本号：14.0.1.1

目录

合格证书信息

北美法规声明

本设备已通过加拿大和美国认证机构的认证。它已根据在加拿大和美国使用所适用的北美产品安全标准进行评估。

电子测试与测量设备豁免美国 FCC 规定第 15 部分 B 分部分以及加拿大 ICES-003 规定的符合性认证。但是， EXFO Inc. 会努力确保符合适用的标准。

通过这些标准设置限制的目的在于，当在商业环境中操作设备时，可以对有害干扰进行合理的防护。此设备会产生、使用和辐射射频能量。如果未遵循用户指南进行安装和使用，可能会对无线电通讯造成干扰。在住宅区使用此设备可能会产生有害干扰，这种情况下需要用户自费解决干扰问题。

用户若未经厂商明确批准擅自改动本设备，将失去操作本设备的授权。

CE 符合性声明

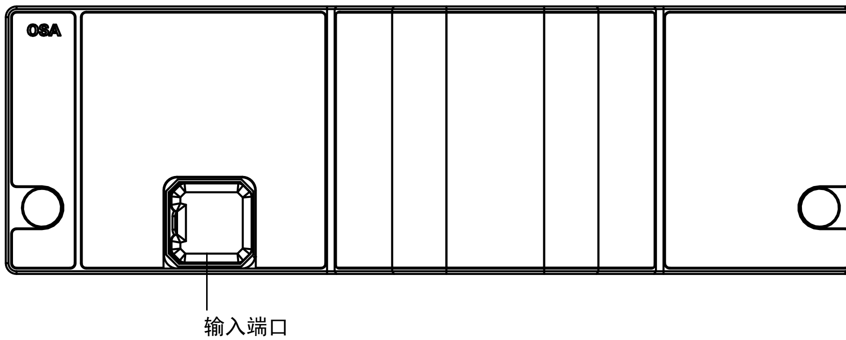
警告：本设备属于 A 级产品。在居住环境中，本产品可能会造成无线电干扰，因此用户可能需要采取适当措施。

可通过以下网址查看完整的欧盟符合性声明：www.exfo.com/zh/library。

1 光谱分析仪简介

光谱分析仪（OSA) 是专门用于测量光功率 （波长或频率的函数）和光信噪比（OSNR) 的仪器。

您的 OSA 可以为 CWDM/DWDM 网络组件的测试和制造、网络验证和试运行提供频谱信息，提供 ROADM 和 40 Gbps 信号和网络的带内光信噪比（OSNR)，还可以提供 40 G/100 G/200 G 相干网的偏振复用 OSNR。



光谱分析仪支持本地控制或使用 SCPI 命令进行的远程控制。

您也可以使用 EXFO 网站 (www.exfo.com) 上提供的 IVI 驱动程序。这些驱动程序有专门的文档帮助您在应用程序中使用它们。

型号

OSA 有以下型号：

型号	说明	平台
FTBx-5245	小型专业级 DWDM OSA，用于在现场高效试运行、维护和诊断 DWDM 组件和链路，适用范围从 25 GHz 间隔网络到稀疏波分复用 (CWDM) 网络。它可以为新调制方案按波长的函数测量功率，如不归零 (NRZ)、双二进制码。这些调制方案线条宽度较大且经常显示多个波峰。通过深入分析，能够确保正确识别和测量每家运营商的信号。此外，它还可以根据 IEC 61280-2-9 和 IEC 61282-12 标准测量 OSNR。	FTB-2 FTB-2 Pro FTB-4 Pro LTB-8
FTBx-5245-HPW	FTBx-5245 的高功率型号版本。	
FTBx-5245-P	配备偏振控制器的型号。它是配备了完整硬件的专业级 OSA，只是不带计算带内 /i-InBand OSNR 的软件。您可使用软件密钥升级本型号，使其能进行带内 /i-InBand/ 偏振复用 OSNR 测量。	
FTBx-5245-P-HPW	FTBx-5245-P 的高功率型号版本	
FTBx-5255	高分辨率型号，配备偏振控制器，用于带内和偏振复用测试，光学性能更强。用于进行精准的光谱测量。	
FTBx-5255-HPW	FTBx-5255-P 的高功率型号版本	
FTB-5235	入门级 OSA，它非常适合各种现场应用，包括 DWDM 和 CWDM 网络的试运行和故障诊断。您的模块支持 WDM 和漂移测试模式。	FTB-1v2 FTB-1v2 Pro

典型应用

您可以将 OSA 用于完成以下任务：

- 描述 O 到 U 波段光谱内的通道特性
- 测试激光光源的光谱纯度和功率分布
- 测试光学设备的传输特性
- 诊断并监测 CWDM 信号或 DWDM 信号的关键参数，检测系统的稳定性
- 描述所有通道间隔的特性，从 25 GHz 间隔的 DWDM 到 CWDM （5255：从 12.5 GHz 间隔起）
- 测试高速网络 （超过 40 Gbps）
- 测量 OSNR，特别是在通道内 （带内或偏振复用 OSNR）

可选软件包

应用程序提供了可选软件包。

选件名称	说明
高级 (Adv)	高级选件提供以下测试模式： ➤ 漂移：通过基于时间的 WDM 分析进行信号监测。 ➤ ST：描述光学元件 （如滤光片）的光谱透过率。 ➤ EDFA：描述掺铒光纤放大器 (EDFA) 的性能。 ➤ DFB：描述 DFB 激光光源的特性。 ➤ FP：描述法布里 · 珀罗激光光源的特性。
带内 (InB)	带内选件可用于执行带内噪声测量，是适用于 ROADM 网络中 10 G 信号以及 40 G 非相干信号的正确 OSNR 方法。
WDM Investigator (Inv)	该选件可启用 WDM Investigator 模式的测量诊断。 激活该选件后，可执行以下功能： ➤ 通过 WDM Investigator 的仪表盘对各通道测量结果中的噪声源进行定量分析 ➤ 对在线非相干信号的 PMD 脉冲展宽进行定量分析 **注意：** WDM Investigator (Inv) 选件需与带内 (InB) 选件一同使用。要使用 Inv 软件选件，必须先启用 InB 选件。
试运行 (Com)	试运行选件可以每次将一条通道与一条启用 （或打开）了所有通道的曲线进行比较，以单独测试各通道。该选件可让您使用单通道 OSNR 工具。
服务中偏振复用 (INSPM)	如果模块包含试运行软件选件，您可以添加该选件，用于在现网上执行非侵入式服务中偏振复用分析 （该选件仅适用于 FTBx-5255 模块）。

后处理应用程序

后处理应用程序是应用程序的离线版本，可在未联网的计算机上使用。该离线版本提供模块应用程序的大部分功能，但不能执行数据采集。

技术规格

要获得本产品的技术规格，请访问 EXFO 网站 www.exfo.com。

约定

使用本手册中所述的产品前，应了解以下约定：

警告
指示潜在的危险状况，如果不加以避免，可能会导致死亡或严重的人身伤害。必须在了解并且符合操作条件的情况下，才能进行操作。

注意
指示潜在的危险状况，如果不加以避免，可能会导致轻微或中度的损害。必须在了解并且符合操作条件的情况下，才能进行操作。

注意
指示潜在的危险状况，如果不加以避免，可能会导致器件损坏。必须在了解并且符合操作条件的情况下，才能进行操作。

重要提示
指关于此产品不可忽视的各种信息。

2 安全信息

警告

请勿在光源开启时安装或端接光纤。切勿直视在线光纤，并确保您的眼睛始终受到保护。

警告

如果不按照此处指定的控制、调节方法和步骤进行操作和维护，可能导致危险的辐射暴露或破坏设备提供的保护措施。

警告

如果不按照制造商的规定使用设备，设备可能无法提供预期的保护。

警告

请仅使用 EXFO 认可的设备专用配件。有关设备可用的配件完整列表，请参阅其技术规格或联系 EXFO。

重要提示

如果您在设备上看到 ⚠ 标志，请务必参照用户文档中的操作指引。使用产品前，确认理解并满足要求的条件。

重要提示

如果设备带有 标志，表示设备配有激光器光源，或设备可与配有激光器光源的仪器一起使用。这些仪器包括但不限于模块和外部光学设备。

重要提示

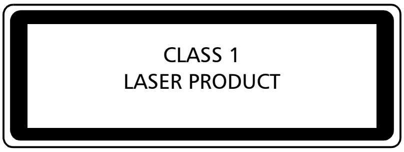
本文档还包含产品的其他安全指引，请根据所执行的操作查阅。对于安全指引适用的情况，请务必仔细阅读相关指引。

激光安全信息

> **注意**
>
> 以下标志表示设备配有激光光源：。

您的仪器属于 1 级激光产品，符合 IEC 60825-1: 2007 和 21 CFR 1040.10 标准，与 2007 年 6 月 24 日发布的有关激光器的第 50 号通知的偏差除外。它还符合 IEC 60825-1: 2014 标准。光输出端口可能会有激光辐射。

以下标签指示产品包含 1 级光源：



电气安全信息

有关设备级别的详细信息，请参阅平台的用户文档。

对于 5235 和 5245 模块，最大输入功率是 ⎓ 4 W， 5255 模块是 6 W。

3 准备 OSA 进行测试

重要提示

为获得最佳的测试结果，至少要在开始测试前预留两个小时供 OSA 预热。

清洁和连接光纤

重要提示

为确保得到最大功率并避免产生错误读数：

➤ 在将光纤端面插入端口前，请务必按下述方法检查光纤端面，以确保它们清洁。EXFO 不对因使用错误的光纤清洁或操作方式而导致的损坏或误差负责。

➤ 请确保光纤跳线带有合适的连接器。连接不匹配的连接器将损坏插芯。

若要将光缆连接到端口：

1. 使用光纤检测探头检查光纤。如果光纤洁净，将其插入端口。如果光纤不洁，按下述方法清洁。

2. 按以下操作清洁光纤端面：

2a. 使用蘸有光学清洁液的不起毛棉签轻轻擦拭光纤端面。

2b. 使用干燥的棉签对连接器进行完全干燥。

2c. 肉眼检查光纤端面，确保其洁净。

3. 小心地将连接器对准端口，防止光纤端面碰到端口外部或与其他表面发生摩擦。

如果连接器带有锁扣，请确保它完全插入端口的对应凹槽。

4. 将连接器推入，使光缆固定到位，并确保充分接触。

如果连接器带有螺纹套管，请将连接器拧到牢牢固定光纤。请勿拧得过紧，否则会损坏光纤和端口。

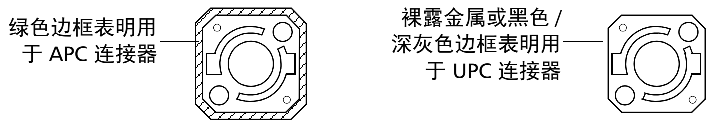
注意： 如果光缆未锁定和 / 或连接到位，将会出现严重的损耗和反射。

EXFO 使用符合 EIA-455-21A 标准的优质连接器。

为确保连接器保持洁净、完好， EXFO 强烈建议先使用光纤检测探头检查后再连接。否则，可能导致连接器永久损坏且测量准确度下降。

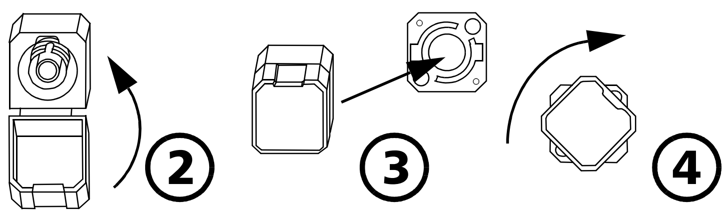
安装 EXFO 通用接口 (EUI)

有角度 (APC) 或无角度 (UPC) 抛光的连接器可使用 EUI 固定底座。底座周围边框的类型表明该底座用于哪种连接器。



若要将 EUI 连接器适配器安装到 EUI 底座上：

1. 握住 EUI 连接器适配器，使防尘盖向下打开。



2. 盖上防尘盖，以便能更稳地握住连接器适配器。
3. 将连接器适配器插入底座。
4. 将连接器适配器紧紧按在底座上，同时顺时针转动，将其锁定。

选择测试模式

您的模块提供下列模式测试 DWDM 系统：

➤ WDM：此模式可分析光链路。默认选定 WDM 测试模式。

➤ 漂移：此模式可在一定时间内监测光链路。

➤ DFB：此模式可描述 DFB 激光光源的特性。

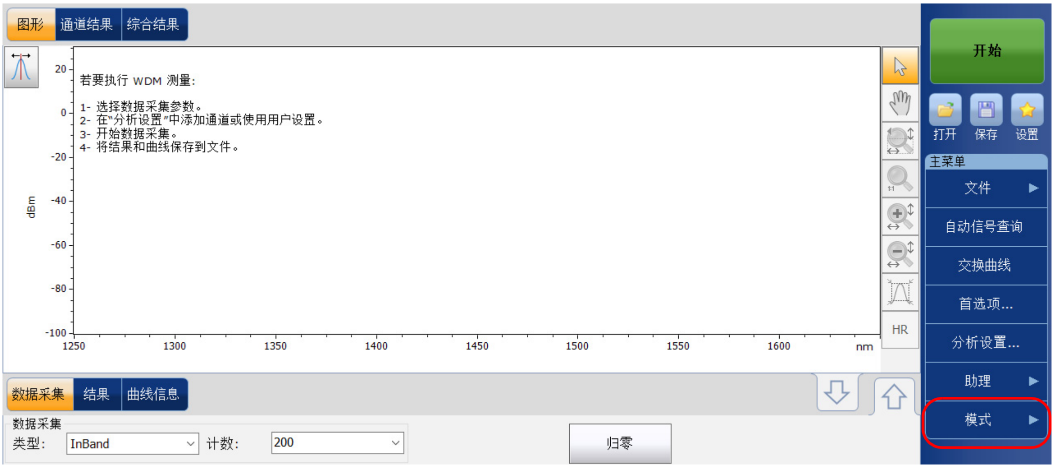
➤ 法布里 · 珀罗 (FP)：此模式可描述法布里 · 珀罗 (FP) 激光光源的特性。

➤ 光谱透过率：此模式可描述光学元件 （如滤光片）的光谱透过率。

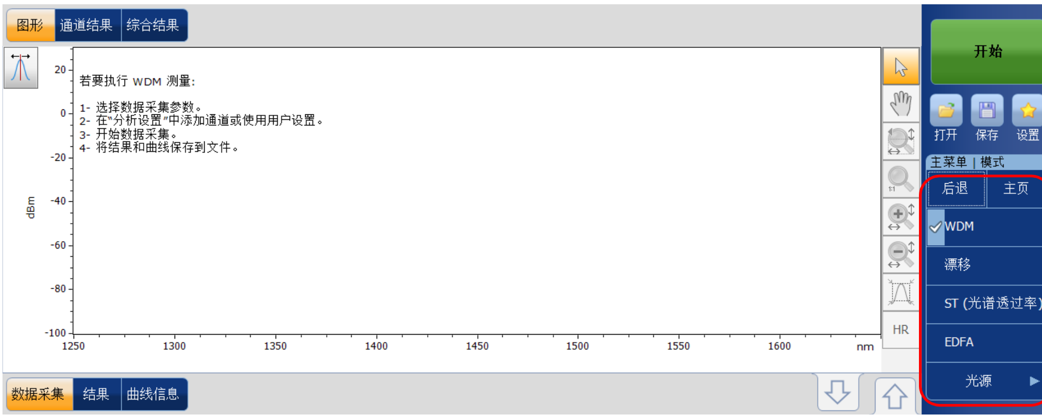
➤ EDFA：在现场部署的系统中， OSA 可描述掺铒光纤放大器 (EDFA) 的性能 （窄带测量假定的传输条件）。

若要选择测试模式：

1. 在 “主菜单”中，按 “模式”。



2. 选择所需的测试模式。 DFB 和 FP 光源位于 “光源” 项下。



选择模式后，选定的模式前会出现 ，主窗口中的所有选项卡和主菜单中的选项也会发生相应变化。

您必须对选定的测试模式进行配置。有关配置测试模式的具体操作指引，请参阅相关章节。

曲线打开时切换模式

如果在曲线打开时切换测试模式且测试模式兼容，该曲线将会在新选定的模式下加载并用当前分析设置分析。

WDM、光谱透过率和 EDFA 测试模式之间可轻松相互切换。下表说明了曲线类型间的互换关系。例如， WDM 模式下的活动曲线成为 EDFA 模式下的输出曲线，反之亦然。

WDM	ST	EDFA
活动曲线	输出曲线	输出曲线
参考曲线	输入曲线	输入曲线

电偏移归零

偏移归零过程提供零功率参考测量值，从而消除因检测器产生的电偏移和暗电流的影响。

温度和湿度的变化会影响电路和光学检测器的性能。因此， EXFO 建议每当环境条件改变时就执行电偏移归零。

所有测试模式都可执行电偏移归零。并且， OSA 应用程序每次启动都会自动执行电偏移归零，之后会定时执行归零操作。

归零会消耗更多还是更少的时间取决于正在使用的平台和模块。在 FTBx-5255 模块上执行至少 100 条曲线的带内测量且发现温度有明显变化时会自动执行归零。

注意： 应用程序的离线版本不支持偏移归零功能

若要执行偏移归零:

1. 在主窗口中，选择 “数据采集”选项卡。

2. 断开所有输入信号以获得最高准确度。

3. 按“归零”。

状态栏会显示正在归零。

注意： 归零过程中，有些功能无法使用，如“开始”按钮和“自动信号查询”按钮。

执行用户校准

校准模块有助于获得更准确的结果。在测量结果的准确性至关重要或 OSA 受到意外严重的撞击或震动的情况下，模块校准尤为重要。要达到最大准确度，您可执行波长校准或功率校准。 OSA 可让您修改并读取用户校准值、恢复到出厂校准值以及加载并保存修改后的用户校准文件。用户配置文件 (*.txt) 包含波长和功率的参考值和修改后的值。

在任意测试模式下都可执行用户校准。根据第 14 页 “选择测试模式”所述选择测试模式，然后根据以下步骤执行用户校准。

注意： 在所有测试模式下执行用户校准的步骤都是相同的。本文档仅以 WDM 模式为例描述此步骤。

重要提示

为获得最佳的测试结果，至少要在执行用户校准前预留两个小时供 OSA 预热。

重要提示

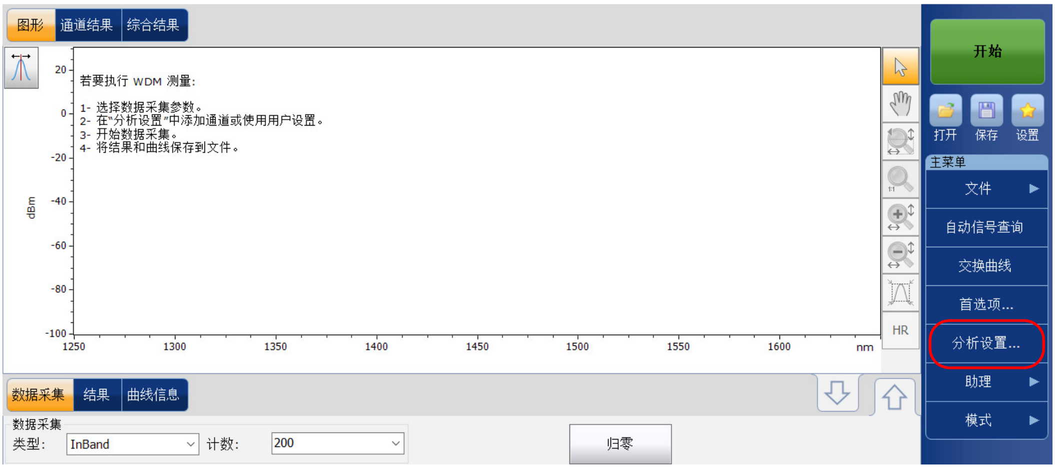
进行新校准测量前，必须清除修正系数列表。如果执行校准测量时模块内有用户修正系数，这些修正系数会影响测量，使校准结果不可用。

注意： 若要保留修正系数以备将来使用，请将它以其他名称保存在文件夹中。

注意： 应用程序的离线版本不支持用户校准功能。

若要执行用户校准：

1. 让设备预热。
2. 在 “主菜单” 中，按 “分析设置”。



3. 选择 “校准” 选项卡。

注意： 在应用程序中不能直接修改功率或波长值。必须先在文本文件中修改用户校准值，然后再加载到应用程序中。

4. 如果系统中有用户修正系数，请按 “从模块中清除用户修正系数”，然后确认选择。

5. 在选定的测试模式下执行测量。

6. 将测量结果保存为 .txt 文件，格式如下：

   ➤ 第一列为参考波长，单位为 nm。

   ➤ 第二列为模块读取的波长，单位为 nm。

   ➤ 第三列为参考功率，单位为 dBm。

   ➤ 第四列为模块读取的功率，单位为 dBm。

注意： 列之间用英文分号 (;) 隔开。最多可包括 100 个校准点。

以下为测量文件示例：

1310.154; 1310.167; -1.34; -1.55

1490.000; 1490.000; 1.09; 1.15

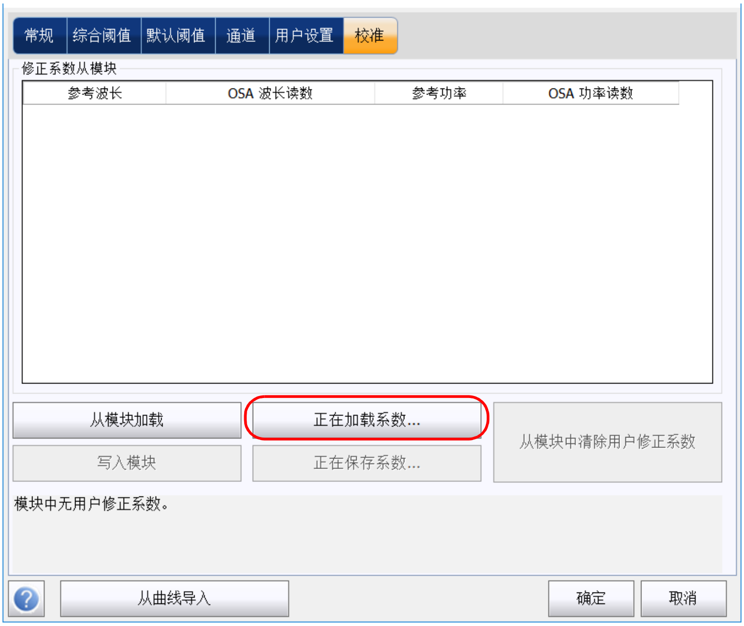
1551.334; 1551.298; -5.20; -5.45

1625.401; 1625.448; 0.00; 0.00

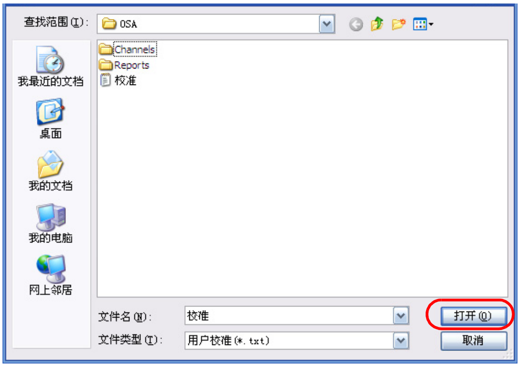
注意： 小数点为圆点 (.)。该格式不受区域设置影响。

7. 将 .txt 文件保存到您选择的位置。

8. 返回设备的 “校准”选项卡，按 “正在加载系数”载入文件。



9. 选择修改后的用户校准文件，然后按 “打开”。



这些校准值将会替换“分析设置”窗口中“校准”选项卡下的修正系数列表。

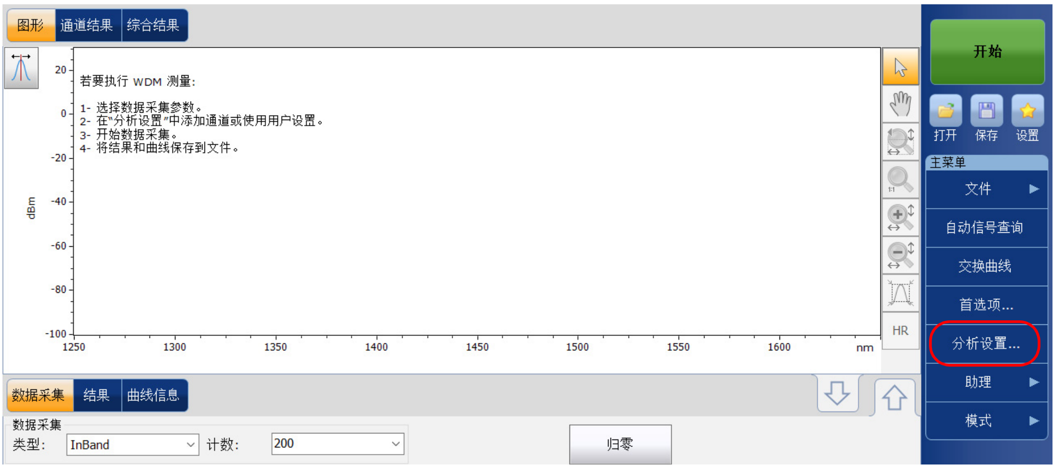
10. 按 “写入模块” 将修改后的校准值应用到模块。

11. 要确认修改后的校准值已正确应用到模块，按 “从模块加载”。

注意： 按 “确定” 或 “取消” 按钮不会影响校准页面或模块内的修正系数。

若要保存用户校准：

1. 在“主菜单”中，按“分析设置”。



2. 选择 “校准” 选项卡。


常规
综合阈值
默认阈值
通道
用户设置
校准
修正系数从文件
参考波长
OSA 波长读数
参考功率
OSA 功率读数
1310.154 nm
1310.167 nm
-1.34 dBm
-1.55 dBm
1490.000 nm
1490.000 nm
1.09 dBm
1.15 dBm
1551.334 nm
1551.298 nm
-5.20 dBm
-5.45 dBm
1625.401 nm
1625.448 nm
0.00 dBm
0.00 dBm
从模块加载
正在加载系数...
从模块中清除用户修正系数
写入模块
正在保存系数...
从曲线导入
确定
取消

3. 按“正在保存系数”保存修改后的用户校准值。

使用自动命名功能

定义文件自动命名格式可让应用程序自动按顺序为曲线快速命名。自定义的名称在用 “另存为”选项保存文件时显示。您可以选择要在文件名中包含的字段以及这些字段的显示顺序。

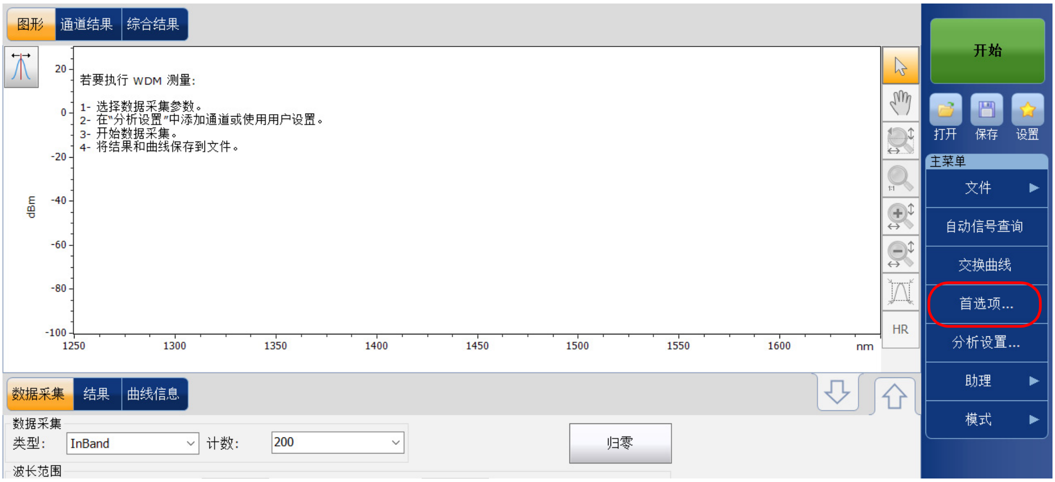
在保存当前数据采集时，应用程序会建议使用 “链路标识”作为文件名。链路参数是文件名中链路标识的前缀和后缀。

注意： 应用程序的离线版本不支持自动命名功能。

注意： 自动命名功能适用于所有测试模式，下面以 WDM 测试模式为例进行说明。

若要自定义文件名：

1. 在 “主菜单”中，按 “首选项”。



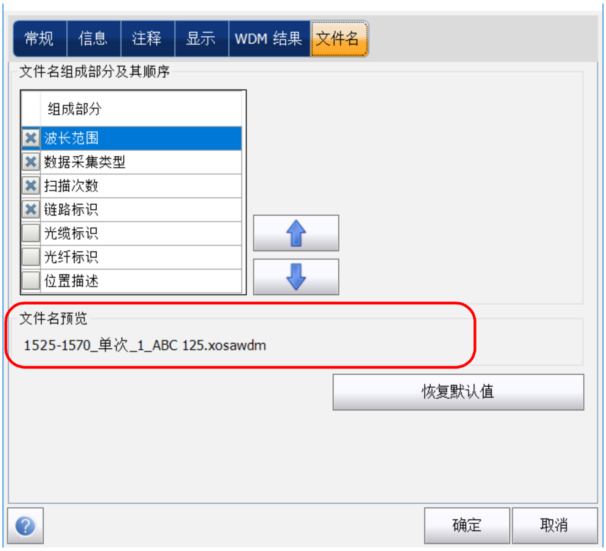
2. 选择 “文件名” 选项卡。

3. 从提供的选项中选择文件名中要包含的参数：

- 波长 / 频率范围：当前数据采集的波长 / 频率范围。
- 数据采集类型：当前数据采集的类型。
- 扫描次数：“数据采集” 选项卡中当前的扫描次数。
- 链路标识：“首选项” 窗口中 “信息” 选项卡下配置的链路标识前缀。
- 光缆标识：“首选项” 窗口中 “常规” 选项卡下配置的光缆标识前缀。
- 光纤标识：“首选项” 窗口中 “常规” 选项卡下配置的光纤标识前缀。
- 位置描述：“首选项” 窗口中 “信息” 选项卡下提供的位置描述。

4. 按向上或向下箭头更改各字段在文件名中的显示顺序。

根据所做的选择，“文件名预览”下方会显示文件名的示例。各字段值之间用下划线 (_) 分隔。



5. 按 “确定”保存更改并关闭窗口，或按 “取消”退出而不保存。

按 “恢复默认值”删除全部更改并应用默认设置。

4 设置 WDM 测试模式

在执行 WDM 模式的光谱分析前，您必须按照本章说明为测试应用程序设置相关参数。

设置 WDM 测试参数前，请按第 14 页 “选择测试模式”所述选择 WDM 测试模式。

➤ 首选项为图和表中显示的结果以及任务信息和相关注释。这些注释随各个文件一起保存。

➤ 分析参数包含通道列表的详细信息、通过 / 未通过阈值，还可以选择噪声和功率的计算方法。

➤ 数据采集参数包含要执行的测量类型和波长范围。

有关详细信息，请参阅第 36 页“设置首选项”、第 55 页“设置 WDM 分析参数”和第 80 页 “设置数据采集参数”。

您可根据测试需要通过多种方式设置您的设备。

➤ 首选方式利用完整的分析设置参数并填写所有表格中的信息。有关详细内容，请参阅第 55 页 “设置 WDM 分析参数”。此设置将用于下一次数据采集。

➤ 最简便的方式是使用 “自动信号查询”按钮，尤其是当操作员事先无法事先确定输入模块中的是什么时。按下 “自动信号查询”按钮后，仪器会根据自动确定的最佳设置进行测量和分析。此设置将用于下一次扫描。有关详细内容，请参阅第 255 页 “使用自动信号查询功能”。

➤ 最高效的方式是使用一个常用配置上传预定义的数据采集和分析配置。现场操作人员只需按下  按钮，选择适当的配置，然后按 “开始”。例如，预定义的配置可以类似 “32 条通道 DWDM 50GHz”、“Toronto-Montreal CWDM”或 “供应商 ABC DWDM ROADM 40Gb”。有关详细内容，请参阅第 264 页 “管理用户设置”。

➤ 您还可以导入当前曲线的设置。此方法会获取当前曲线的数据和通道信息并将其应用于相应的选项卡。有关详细信息，请参阅第 55 页 “设置 WDM 分析参数”。

设置首选项

“首选项”窗口可让您设置曲线的常规信息和注释，设置显示参数并自定义 WDM 结果表。

注意： 离线模式下只能使用 “显示”和 “WDM 结果”选项卡。

设置曲线信息

曲线信息包括待完成任务的描述、光缆标识、任务标识以及被测对象的相关信息。

若要输入常规信息：

1. 在 “主菜单”中，按 “首选项”。

2. 选择 “常规” 选项卡。

3. 根据需要设置常规参数。

4. 按 “确定” 保存更改并关闭窗口，或按 “取消” 退出而不保存。

按 “清除” 清除 “常规” 选项卡中所做的全部修改。

若要输入链路和位置信息：

1. 在“主菜单”中，按“首选项”。

2. 选择“信息”选项卡。

3. 在 “系统和链路信息” 下，根据需要设置下列参数：

➤ 链路标识前缀：链路标识的前缀值。您可输入任何数字字母值。

➤ 起始值：链路标识的后缀递增的起始值。

如果选中 “自动递增” 选项，每次保存新文件时该值就会递增。

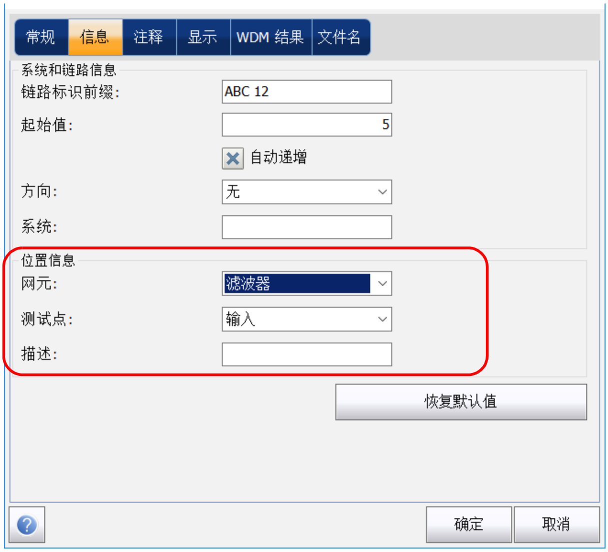
重要提示

如果不选中 “自动递增” 选项，保存曲线文件时您必须手动更改文件名，否则应用程序会覆盖之前保存的文件。

➤ 方向：链路的方向。

➤ 系统：被测系统的相关信息。

4. 在“位置信息”下，根据需要设置下列参数：



➤ 网元：设置网元的类型。

➤ 测试点：在链路上执行测试的位置。

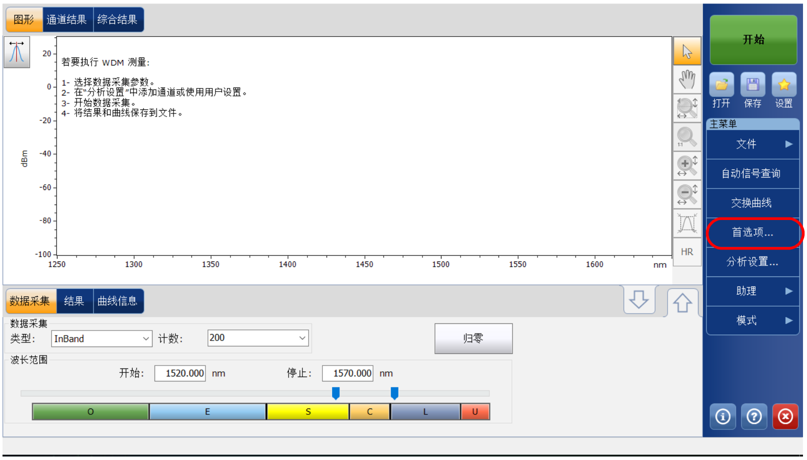
➤ 描述：根据需要输入位置的描述。

5. 按“确定”保存更改并关闭窗口，或按“取消”退出而不保存。

按“恢复默认值”删除全部更改并应用默认值。

若要输入注释：

1. 在“主菜单”中，按“首选项”。



2. 选择 “注释” 选项卡。

3. 输入当前曲线的注释。
4. 按 “确定” 保存更改并关闭窗口，或按 “取消” 退出而不保存。

按 “清除” 清除 “注释” 选项卡中所做的全部修改。

设置显示参数

此应用程序可让您设置数据采集曲线的显示参数。您可设置曲线和结果表中的光谱单位。还可以选择在曲线波峰上显示的标志。

若要设置显示参数：

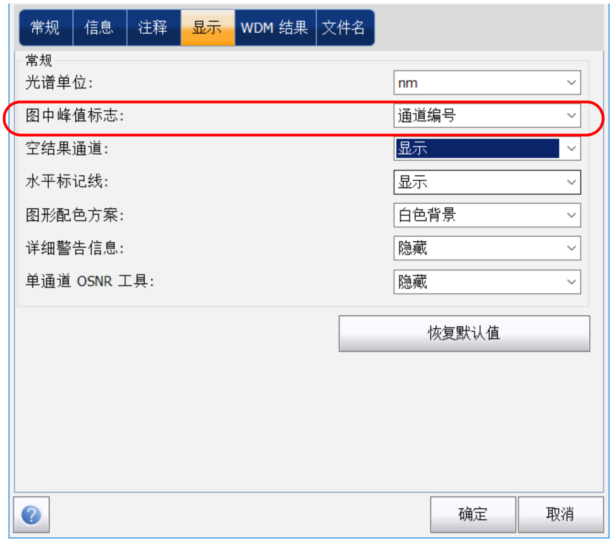
1. 在 “主菜单” 中，按 “首选项”。

2. 选择 “显示” 选项卡。

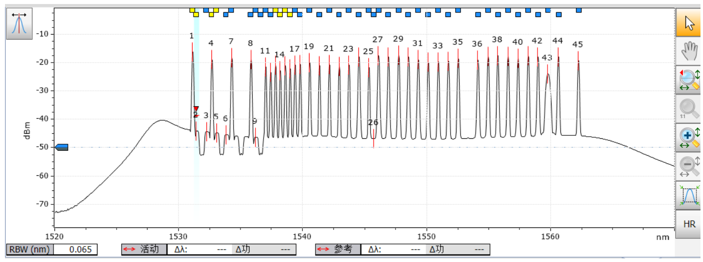

常规
信息
注释
显示
WDM 结果
文件名
常规
光谱单位:
nm
图中峰值标志:
通道编号
空结果通道:
显示
水平标记线:
显示
图形配色方案:
白色背景
详细警告信息:
隐藏
单通道 OSNR 工具:
隐藏
恢复默认值
确定
取消

3. 选择要使用的光谱单位：nm 或 THz。

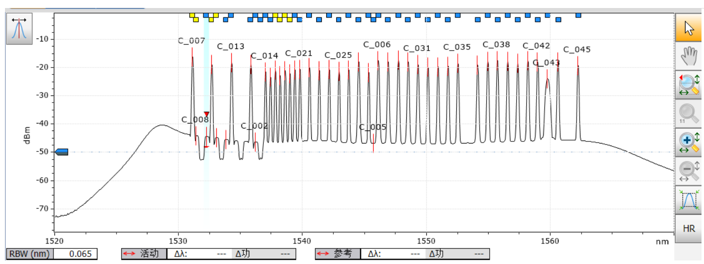
4. 选择在图中峰值上显示的标签，如通道名称、通道编号或无。



注意： 通道名称和通道编号不能同时显示。

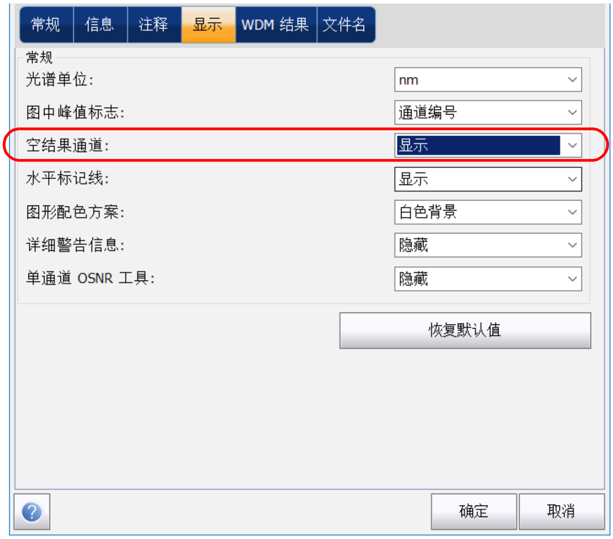


通道编号



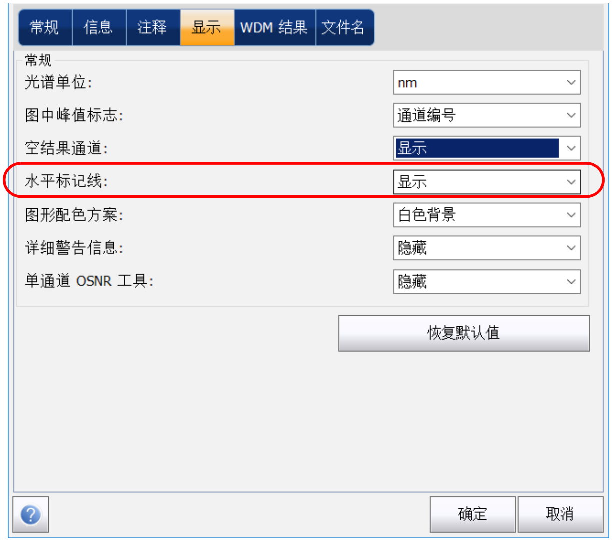
设置的通道名称

5. 选择在 “结果”选项卡的通道列表中是否显示空通道。



注意： 如果选择 “显示”，当前屏幕和报告文件中会显示空通道。

6. 选择是否显示水平标记线。



7. 选择图形的背景配色方案。

8. 选择是否显示 “结果” 选项卡中的详细警告信息。

9. 选择是否在主窗口中显示单通道 OSNR 工具。若选择显示此工具，会在将曲线加载为参考曲线时显示。

10. 按 “确定” 保存更改并关闭窗口，或按 “取消” 退出而不保存。

按 “恢复默认值” 删除全部更改并应用默认值。

自定义 WDM 结果表

您可以选择要在“结果”选项卡中显示的 WDM 测试结果。

若要自定义结果表：

1. 在“主菜单”中，按“首选项”。

2. 选择 “WDM 结果”选项卡。

3. 从可用的选项中选择您要在 “结果”选项卡中显示的参数：

➤ 名称：通道的名称。

➤ λ （中心波长 / 频率）：表示该通道中波峰的光谱质心。

➤ 信号功率：表示选定通道的信号功率 （除去噪声）。

➤ OSNR：表示光信噪比，是 “信号功率”（按当前方法计算，单位为 dBm）与 “噪声”（按当前方法计算，单位为 dBm）的比值。

➤ 噪声：表示选定通道的噪声功率。噪声类型显示在测量值前 （IEC、拟合、 Inb、 Inb nf、 IECi、 CCSA 或 Pmx）。

➤ 3.00 dB 处带宽：通过在峰值的 50% 线性功率处或距离峰值 -3 dB 处测量信号宽度得到的带宽。

➤ x dB 处带宽：通过在距离峰值 x dB 处测量信号宽度得到的带宽。

➤ Δλ/f：该通道峰值的光谱质心的偏移度。

➤ λ/f 峰值：该通道的光谱峰值。

➤ Δλ/f 峰值：该通道光谱峰值的偏移度。

4. 按向上或向下箭头更改各项在 “结果”选项卡中的显示顺序。

5. 按 “确定”保存更改并关闭窗口，或按 “取消”退出而不保存。

按 “恢复默认值”删除全部更改并应用默认值。

设置 WDM 分析参数

本节描述此应用程序的各种分析设置，特别是通道列表和通道设置。您可以设置默认通道参数、通道列表、综合阈值、默认通道阈值，管理常用配置和执行用户校准。

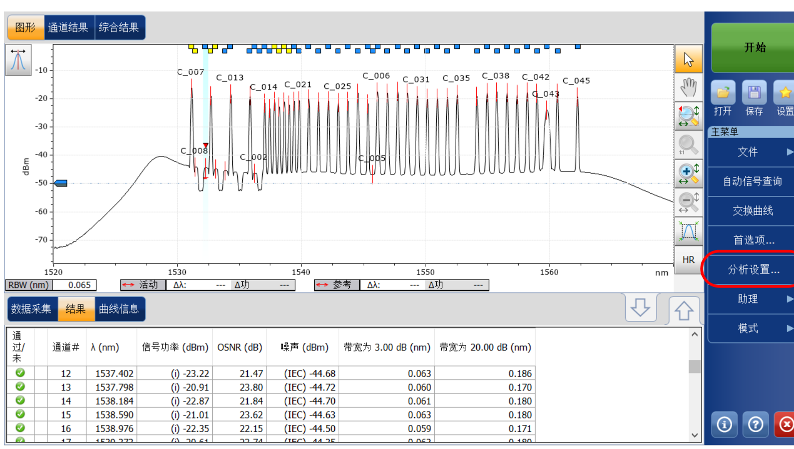
注意： 修改分析设置参数并确认后，新设置将立即生效。此时，当前曲线会被重新分析，分析设置参数将在之后的数据采集中应用于综合结果和通道结果。

您可以单独设置每个参数，也可以导入当前曲线的参数。

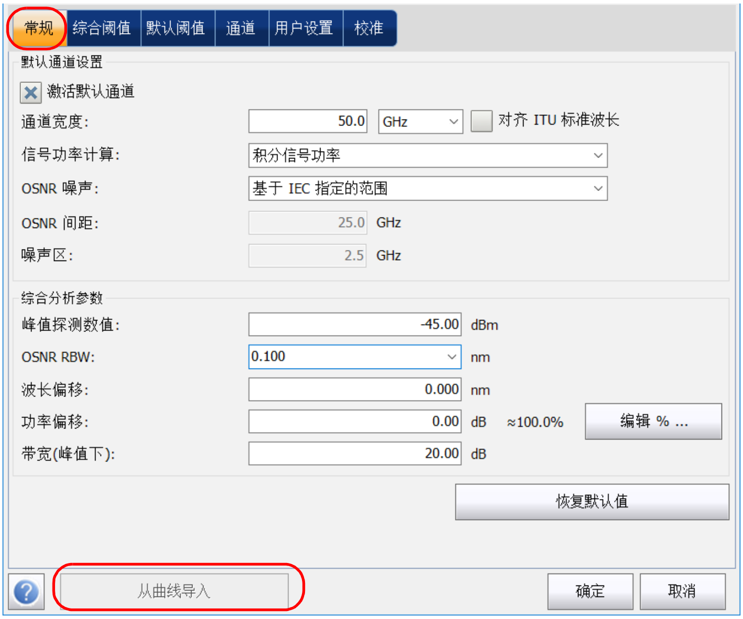
若要导入当前曲线的参数：

1. 确保当前屏幕上显示了一条曲线。

2. 在 “主菜单”中，按 “分析设置”。



3. 在任一选项卡中，按 “从曲线导入”。



4. 按 “确定” 确认修改。

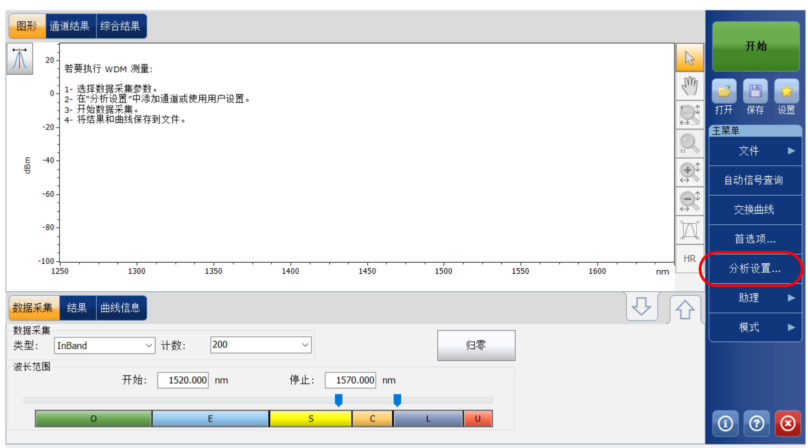
设置常规参数

WDM 数据采集的常规分析参数影响应用程序对采集结果的计算。对任意参数所做的修改会影响之后的所有曲线，也可以在重新分析活动曲线将其应用到活动曲线。

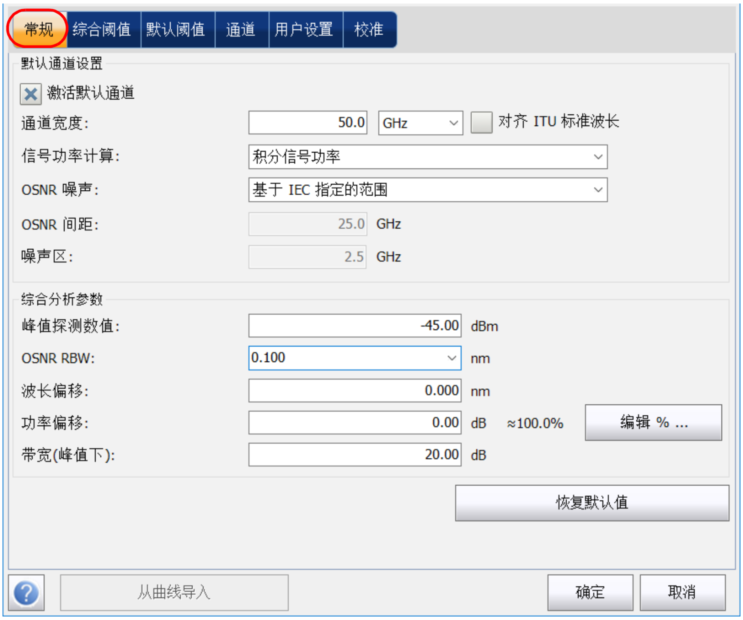
> **重要提示**
>
> 您可以在 “常规”选项卡中设置默认通道参数。在数据采集过程中，如果发现任何通道列表未定义的通道，应用程序将使用默认通道参数进行分析。

若要设置常规参数：

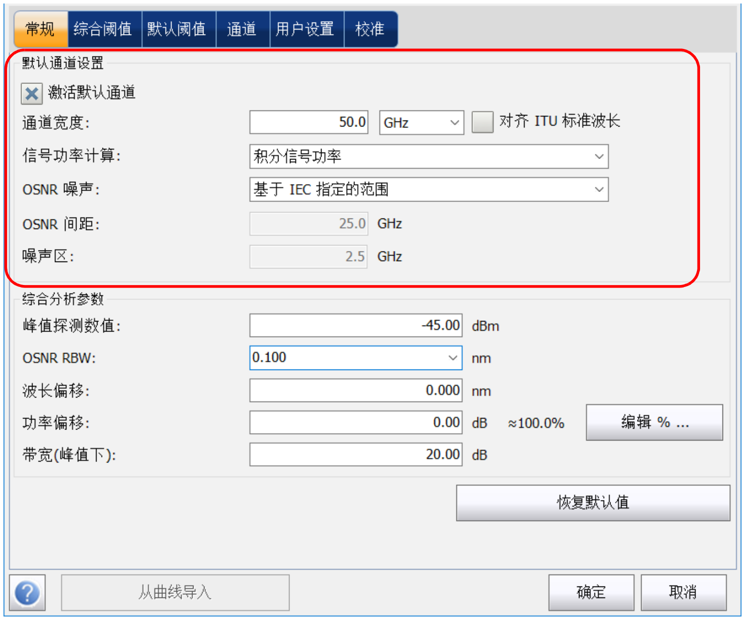
1. 在 “主菜单”中，按 “分析设置”。



2. 选择 “常规” 选项卡。


常规
综合阈值
默认阈值
通道
用户设置
校准
默认通道设置
激活默认通道
通道宽度:
50.0
GHz
对齐 ITU 标准波长
信号功率计算:
积分信号功率
OSNR 噪声:
基于 IEC 指定的范围
OSNR 间距:
25.0
GHz
噪声区:
2.5
GHz
综合分析参数
峰值探测数值:
-45.00
dBm
OSNR RBW:
0.100
nm
波长偏移:
0.000
nm
功率偏移:
0.00
dB
≈100.0%
编辑 % ...
带宽(峰值下):
20.00
dB
恢复默认值
从曲线导入
确定
取消

3. 在“默认通道设置”下，根据需要设置下列参数：



➤ 取消选中“激活默认通道”选项以使用当前设置的通道列表进行分析。这样可以省去检测整个光谱范围内的峰值，缩短了分析时间。应用程序将不分析指定通道列表外的峰值。

➤ 通道宽度（GHz 或 nm）：表示该通道中要计算功率值的范围。

对于默认通道，设置为通道范围的通道宽度应小于或等于通道间距（通道间距在创建通道列表时设置）。如果通道宽度大于通道间距，可能会导致在两条不同的通道上只发现一个波峰且对此波峰执行了两次分析并显示两个分析结果，也可能会在同一通道上发现两个波峰并视之为一个多波峰信号。如果出现这种情况，您可以用标记线找出相邻通道的间距或通道宽度。

- 对齐 ITU 标准波长：选中此项后，应用程序会将检测到的所有波峰都置于最近的 ITU 通道。 ITU 光栅基于选定的通道宽度。
- 信号功率计算：表示信号功率值的计算方法。

  积分信号功率：指此通道的通道范围内的功率值之和减去此范围内的噪声估算功率。在某些情况下，例如有线电视信号、高频调制信号或固有线宽近似于或大于 OSA 分辨率带宽的信号，这种计算方法可得到较准确的真实信号功率估算值。

  峰值信号功率：指通道内的最大功率值。注意：由于此峰值信号功率是减去估算噪声后的结果，因此，它与光谱上测得的峰值功率略有误差。

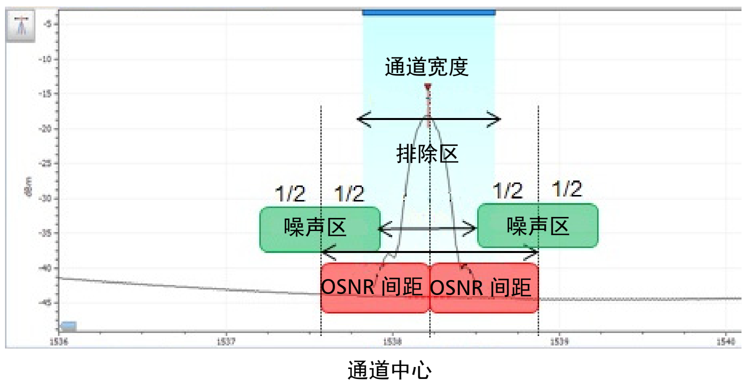
  总通道功率：指通道内积分信号功率和噪声功率之和。如果 “信号功率计算”设置为 “总通道功率”，则不计算 OSNR。
- OSNR 噪声：表示选用哪种方法计算 OSNR 值。

  基于 IEC 指定的范围 (IEC)：IEC 法使用在信号两端测得的噪声的插值来估算噪声功率。从中心波长到噪声估算位置的距离通过 “OSNR 间距”指定。

  带内 (InB)：带内法使用一系列偏振态不同的扫描结果计算峰值 （带内）下的噪声功率。

  带内窄带滤波器 (InB nf)：带内窄带滤波器法对窄带滤波噪声进行附加处理，提供准确的 OSNR 值。这是因为使用窄带滤波器后，波峰下的噪声功率不一致，而 OSNR 值根据选定的处理宽度计算。

➤ 五次多项式拟合 (Fit)：指五次多项式拟合法，可通过计算噪声曲线得出信噪比。 OSA 会用五次多项式拟合描绘近似的噪声曲线。拟合区和排除区决定拟合结果。只有拟合区中的点才用于计算五次多项式拟合。如果选择五次多项式拟合法，必须使用 OSNR 间距和噪声区字段来设置测试的拟合区和排除区。排除区通过 OSNR 间距间接获取。

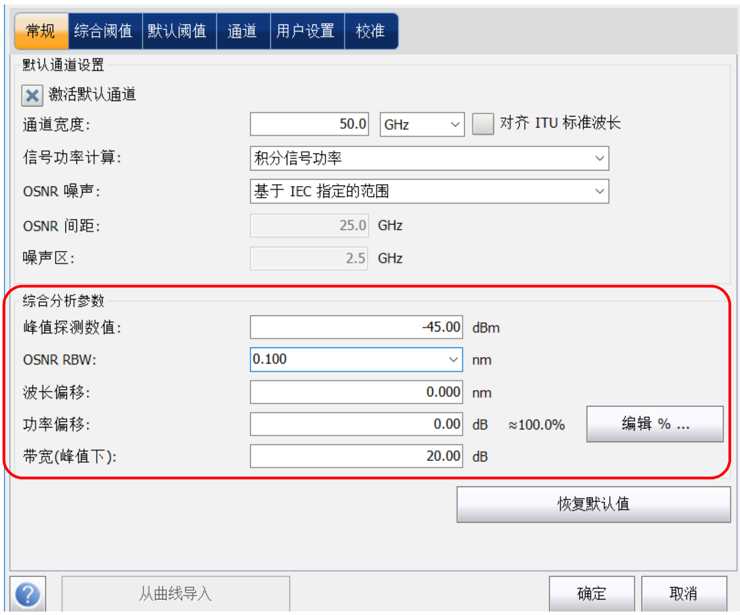


➤ OSNR 间距 （GHz 或 nm）：除非选择了五次多项式拟合法，否则程序会自动将 OSNR 间距设置为通道边缘，即从中心波长到通道宽度的一半。

如果选择了五次多项式拟合法，OSNR 间距是从通道波峰到拟合区中心的距离。此时，它与通道宽度无关。

➤ 噪声区：即拟合区，指应用多项式拟合的区域。 OSNR 间距的中心有两个完全相同的噪声区。

4. 在“综合分析参数”下，根据需要设置下列参数：



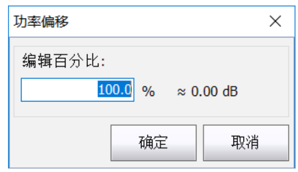
➤ 峰值探测数值 (dBm)：即峰值检测电平，表示可将波峰视为信号的最低功率电平。

➤ OSNR RBW (nm)：表示选定 OSNR 计算方法的分辨率带宽。此参数通常设置为 0.1 nm，使多台 OSA 的有效分辨率不同时，也能进行对比。仪器的 RBW 值显示在图形的下方。本参数对数据采集无实际影响，只是用作以标准方式计算 OSNR 值的标准化因子。

➤ 波长偏移 (nm)：表示应用到波长的偏移值。使用此参数不会改变 EXFO 的校准结果，只是方便您根据需要临时修正相关参数，例如，在需要超常规使用模块的情况下。此参数的单位不能为 THz。如果应用了偏移，图形下方会显示 (λ ⟷)。

- 功率偏移 (dB)：表示应用到功率的偏移值。使用此参数不会改变 EXFO 的校准结果，只是方便您根据需要计算相关参数，例如，在需要超常规使用模块的情况下。如果应用了偏移，图形下方会显示（P ↔）。

  若要将功率偏移改为以百分数表示，按“编辑 %”按钮。

  在“编辑百分比”中输入的百分数会自动转换为 dB 值。

- 带宽（峰值下）(dB)：设置与通道波峰的功率相关的要使用的功率电平，用于计算第二个带宽。

5. 按“确定”保存更改并关闭窗口，或按“取消”退出而不保存。

按“恢复默认值”删除全部更改并应用默认值。

设置综合阈值

对综合阈值所做的修改会影响之后的所有曲线，也可以在重新分析活动曲线时将这些修改应用到活动曲线。

应用程序可让您通过单个控件激活或停用阈值功能。全局启用阈值功能后，应用程序会根据各种设置 （综合结果、通道结果）来显示各个结果的通过 / 未通过状态。此外，“综合结果”选项卡还会显示综合通过 / 未通过状态 （请参阅第 285 页 ““综合结果”选项卡”）。

如果全局禁用了阈值功能，则应用程序不显示各个结果的通过 / 未通过状态，“综合结果”选项卡也不会显示综合通过 / 未通过状态。结果表不显示 “通过 / 未通过”列。

根据测试类型，您可通过多种方式设置通过 / 未通过阈值界限。

阈值界限	定义
无	不设置阈值界限。结果中不显示通过 / 未通过状态的判定结果。
仅最小值	仅将最小值设置为阈值界限。如果值大于或等于设定的最小阈值，则判定 “通过 / 未通过” 状态为 “通过”（用绿色表示）。如果值小于设定的最小阈值，则判定为 “未通过”（用红色表示）。
仅最大值	仅将最大值设置为阈值界限。如果值小于或等于设定的最大阈值，则判定 “通过 / 未通过” 状态为 “通过”（用绿色表示）。如果值大于设定的最大阈值，则判定为 “未通过”（用红色表示）。
最小值和最大值	将最小值和最大值设置为阈值界限。如果值不小于最小阈值且不大于最大阈值，则判定 “通过 / 未通过” 状态为 “通过”（用绿色表示）。如果值超出设定的最小阈值或最大阈值，则判定为 “未通过”（用红色表示）。
使用默认值	如果使用此界限，则在 “分析设置” 选项卡中设置的默认通道的阈值将应用到当前通道。
最大偏差	将偏差值设置为阈值界限。如果值小于或等于设定的偏差阈值，则判定 “通过 / 未通过” 状态为 “通过”（用绿色表示）。如果值大于设定的偏差阈值，则判定 “通过 / 未通过” 状态为 “未通过”（用红色表示）。

若要设置综合阈值：

1. 在 “主菜单” 中，按 “分析设置”。

2. 选择 “综合阈值” 选项卡。

3. 选中 “激活所有阈值” 选项，手动设置综合阈值。如果不选中此选项，所有阈值都会停用，应用程序不显示各个结果的通过 / 未通过状态，“综合结果” 选项卡也不会显示综合通过 / 未通过状态。

4. 按照如下说明在框中输入值：

➤ 平均信号功率 (dBm)：表示当前数据采集中检测到的所有波峰的信号功率之和除以总波峰数。

➤ 信号功率平坦度 (dB)：表示检测到的波峰中最大信号功率和最小信号功率之差，单位为 dB。

➤ 平均 OSNR (dB)：表示当前数据采集中检测到的波峰的 OSNR 之和除以总波峰数。

➤ OSNR 平坦度 (dB)：表示检测到的波峰的最大 OSNR 与最小 OSNR 之差，单位为 dB。

➤ 空通道数：表示通道列表中空通道的数量。

5. 按 “确定”保存更改并关闭窗口，或按 “取消”退出而不保存。

按 “恢复默认值”删除全部更改并应用默认值。

设置默认阈值

在数据采集或重新分析过程中，如果发现任何通道列表未定义的通道，应用程序将应用默认阈值到这些通道。

注意： 只有在 “综合阈值”选项卡中选中 “激活所有阈值”选项时，应用程序才会启用默认阈值设置。有关详细信息，请参阅第 64 页 “设置综合阈值”。

根据测试类型，您可通过多种方式设置通过 / 未通过阈值界限。

阈值界限	定义
无	不设置阈值界限。结果中不显示通过 / 未通过状态的判定结果。
仅最小值	仅将最小值设置为阈值界限。如果值大于或等于设定的最小阈值，则判定 “通过 / 未通过”状态为 “通过”（用绿色表示）。如果值小于设定的最小阈值，则判定为 “未通过”（用红色表示）。
仅最大值	仅将最大值设置为阈值界限。如果值小于或等于设定的最大阈值，则判定 “通过 / 未通过”状态为 “通过”（用绿色表示）。如果值大于设定的最大阈值，则判定为 “未通过”（用红色表示）。
最小值和最大值	将最小值和最大值设置为阈值界限。如果值不小于最小阈值且不大于最大阈值，则判定 “通过 / 未通过”状态为 “通过”（用绿色表示）。如果值超出设定的最小阈值或最大阈值，则判定为 “未通过”（用红色表示）。
最大偏差	将偏差值设置为阈值界限。如果值小于或等于设定的偏差阈值，则判定 “通过 / 未通过”状态为 “通过”（用绿色表示）。如果值大于设定的偏差阈值，则判定 “通过 / 未通过”状态为 “未通过”（用红色表示）。

若要设置默认阈值：

1. 在“主菜单”中，按“分析设置”。

2. 选择 “默认阈值” 选项卡。

3. 按照如下说明在框中输入值：

➤ 波长 / 频率 (nm/GHz)：表示通道的中心波长 / 频率。

➤ 信号功率 (dBm)：表示默认通道的信号功率 （除去噪声）。

➤ 噪声 (dBm)：表示选定通道的噪声功率。

➤ OSNR (dB)：表示光信噪比，通过 “信号功率”（按当前方法计算，单位为 dBm）减去 “噪声”（按当前方法计算，单位为 dBm）的差计算。

4. 按 “确定” 保存更改并关闭窗口，或按 “取消” 退出而不保存。

按 “恢复默认值” 删除全部更改并应用默认值。

管理通道

测试 DWDM 系统包括描述链路中的多路信号。此应用程序可让您使用通道编辑器设置通道或使用当前数据快速生成通道。您还可以快速创建等间距通道列表。创建的通道列表可根据需要进行修改。您可更改一条或多条通道的分析参数。

创建通道列表时有些通道可能会重叠。通道宽度的单位为 nm 时，如果两条通道共用的频率范围超过约 1.2 GHz，则这两条通道重叠。

若要添加通道列表：

1. 在“主菜单”中，按“分析设置”。

2. 选择 “通道”选项卡。

3. 默认情况下，通道列表中没有数据。按 “添加通道”。

4. 按照如下说明在框中输入值：

- 起始范围 （nm 或 THz）：表示通道列表的起始范围。
- 停止范围 （nm 或 THz）：表示通道列表的结束范围。
- 通道中心波长 / 频率：表示该通道中波峰的光谱质心。

注意： 如果使用自定义的通道中心波长，则应用程序将以起始范围为中心创建第一条通道，然后根据通道间距和通道宽度创建列表。

- 通道间距 （nm 或 GHz）：表示通道之间的距离。通道间距值将根据在 “通道中心波长” 中选择的值确定。只有当 “通道中心波长” 设置为自定义时，“通道间距” 框才可编辑。
- 通道宽度 （nm 或 GHz）：表示该通道中要计算功率值的范围。积分功率根据通道宽度计算。
- 名称前缀：表示要给通道名称添加的前缀。

- 起始值：设置通道列表中通道名的递增起始值。
- 递增值：表示通道列表中通道名的递增值。

5. 按 “确定”返回 “通道”选项卡，此时其中列出了添加的通道。

注意： 添加新通道后，“使用默认值”的阈值界限设置将应用到通道参数。

注意： 如果存在重叠的通道，应用程序会显示提示消息，但仍可对重叠的通道进行分析。如果添加了重复的通道，应用程序会显示询问消息，确认是否用重复的通道覆盖现有通道。

6. 按 “确定”保存更改并关闭窗口，或按 “取消”退出而不保存。

注意： 如果添加的通道超过 1000 条，应用程序会显示提示消息。此时，必须删除通道列表中多余的通道才能退出 “分析设置”窗口。您可根据需要手动删除通道。

若要编辑特定通道的参数：

1. 在“主菜单”中，按“分析设置”。

2. 选择 “通道”选项卡。

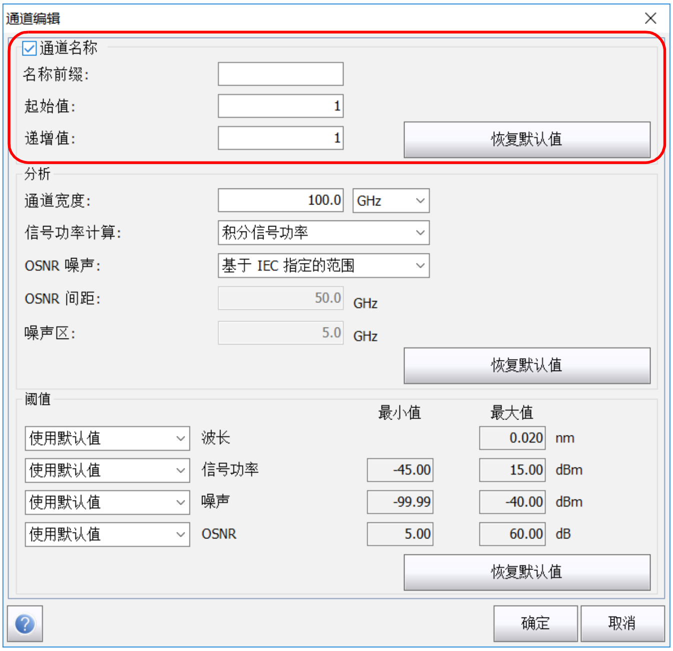
3. 在通道列表中，选择一条或多条要修改的通道。

如果要将所做的更改应用到所有通道，按 “全选”。您可以逐条选择所需通道，也可以一次性选择全部通道。按 “取消全选”可以取消选择所有通道。如果要删除选定的通道，按 “删除”。

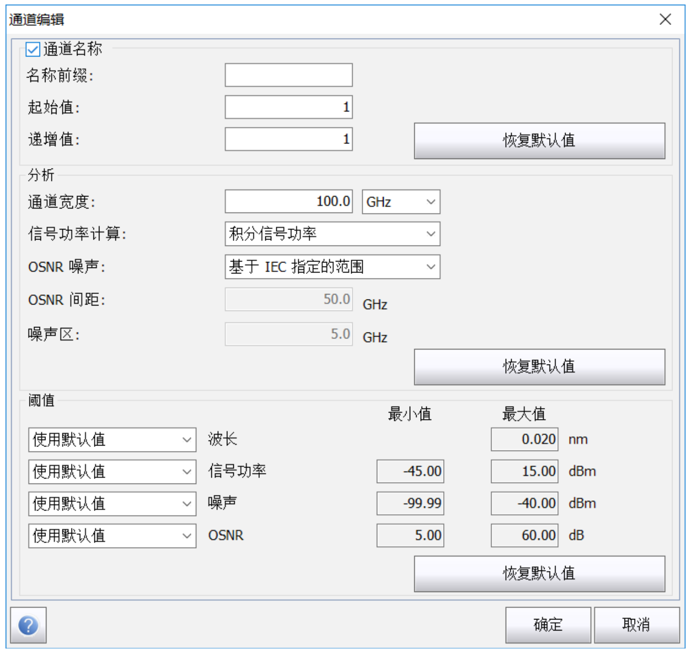
4. 按“编辑选择”。


常规
综合阈值
默认阈值
通道
用户设置
校准
名称
λ (nm)
通道宽度
信号功率
OSNR 噪声
信号功率最小值 (dBm)
C_007 1531.115 50.0 GHz 积分信号功率 基于 IEC 指定的范围 -45.00
C_008 1531.435 50.0 GHz 积分信号功率 基于 IEC 指定的范围 -45.00
C_009 1532.245 50.0 GHz 积分信号功率 基于 IEC 指定的范围 -45.00
C_010 1532.665 50.0 GHz 积分信号功率 基于 IEC 指定的范围 -45.00
C_011 1533.035 50.0 GHz 积分信号功率 基于 IEC 指定的范围 -45.00
C_012 1533.820 50.0 GHz 积分信号功率 基于 IEC 指定的范围 -45.00
C_013 1534.260 50.0 GHz 积分信号功率 基于 IEC 指定的范围 -45.00
C_001 1535.810 50.0 GHz 积分信号功率 InBand -45.00
C_002 1536.205 50.0 GHz 积分信号功率 InBand -45.00
C_003 1536.600 50.0 GHz 积分信号功率 InBand -45.00
C_014 1537.000 50.0 GHz 积分信号功率 基于 IEC 指定的范围 -45.00
C_015 1537.400 50.0 GHz 积分信号功率 基于 IEC 指定的范围 -45.00
C_016 1537.800 50.0 GHz 积分信号功率 基于 IEC 指定的范围 -45.00
C_017 1538.185 50.0 GHz 积分信号功率 基于 IEC 指定的范围 -45.00
C_018 1538.590 50.0 GHz 积分信号功率 基于 IEC 指定的范围 -45.00
全选
取消全选
删除
编辑选择...
添加通道...
从曲线导入
确定
取消

5. 如果要对通道进行命名，请启用相应的选件。然后输入要使用的名称前缀。如果已选择多个通道并希望通道名称能自动递增，请输入递增起始值，然后输入每个新通道的递增值。



6. 根据需要修改参数设置。有关参数设置的详细信息，请参阅第 57 页 “设置常规参数”和第 68 页 “设置默认阈值”。如果某个参数设置为空，则保留修改前的值。



7. 按 “确定”返回 “通道”选项卡，此时其中包含修改后的参数值。

8. 按 “确定”保存更改并关闭窗口，或按 “取消”退出而不保存。

设置数据采集参数

测试前，您必须设置数据采集类型和参数。

WDM 模式下有五种数据采集类型：

➤ 单次：进行一次光谱测量。应用程序根据这次测量显示结果。

➤ 平均：根据您输入的扫描次数进行光谱测量。每次数据采集后会显示曲线，并和之前的曲线一起取平均值。

➤ 实时：连续执行光谱测量，直到用户按 “停止”。此模式不计算光谱测量结果的平均值。每次数据采集完成后，图形和结果会实时刷新。

➤ 带内：带内数据采集在各种偏振条件下执行一系列扫描，以便能计算带内 OSNR。

➤ i-InBand：i-InBand 可进行自适应的智能带内 OSNR 计算。它考虑不同偏振条件下的多次扫描 （最多 500 次），为每条通道上的被测信号确定最佳的带内分析参数。对于这种数据采集类型，您不需进行复杂的参数设置选择 （带内或带内窄带滤波器以及扫描次数都是自动确定的），特别是当您面对复杂的系统配置时。

注意： 仅当模块支持带内和 i-InBand 选件且购买了相应的 InB 软件选件时，才能使用带内和 i-InBand 选件。

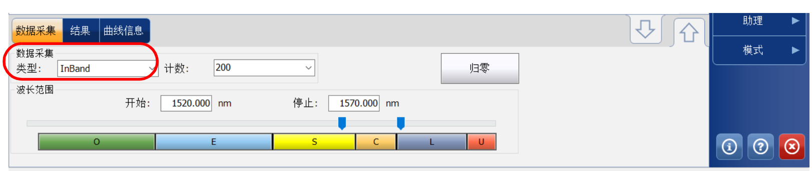
测量光谱前，您必须选择要使用的波长或频率范围。您可对整个光谱、光谱波段或自定义的范围进行扫描。

注意： 波长或频率范围越窄，数据采集越快。

若要设置 “数据采集”选项卡中的参数：

1. 在主窗口中，选择 “数据采集”选项卡。

2. 选择数据采集类型。



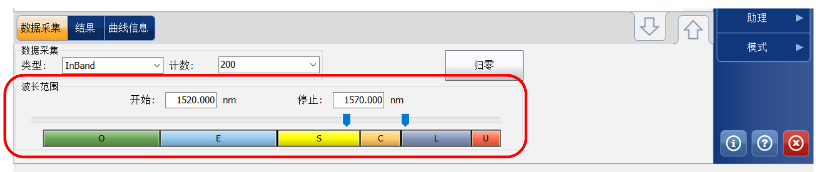
3. 如果选择了 “平均” 类型的数据采集，还要输入扫描次数。

如果您要执行带内数据采集，输入设备要执行的扫描次数或选择预先设置的扫描次数。

注意： 如果正在执行单次数据采集、实时数据采集或 i-InBand 数据采集，则不能修改扫描次数。

注意： 在 i-InBand 模式下，扫描次数值始终设为 500。

4. 选择数据采集的波长范围。



要选择波长范围，您可以输入 “开始” 值和 “停止” 值，也可以使用光谱波段图上方的两个滑块。

要使用两个滑块来选择波长范围，可以移动左边或右边的滑块，也可以直接单击任一光谱波段。

注意： 您可选择多个相邻的光谱波段，例如， S+C。

各光谱波段的覆盖范围如下：

➤ O 波段 （原始波长）：1255 至 1365 nm

➤ E 波段 （扩展波长）：1355 至 1465 nm

➤ S 波段 （短波长）：1455 至 1535 nm

➤ C 波段 （常见的 “铒窗口”）：1525 至 1570 nm

➤ L 波段 （长波长）：1560 至 1630 nm

➤ U 波长 （超长波长）：1620 至 1650 nm。

使用试运行助理

如果您已购买试运行 (Com) 选件，则可以使用助理功能计算相干通道的 OSNR。

助理功能可让您选择一个所有通道均打开或活动的测量文件，并将这些通道与其他有一条通道关闭、其余通道打开的测量文件进行比较。

试运行助理根据以下两条标准自动测量 40 G/100 G 相干信号的 OSNR：China Communications Standards Association (CCSA) YD/T 2147-2010 和 IEC recommendation 61282-10。

中国 CCSA YD/T 2147-2010 标准建议的偏振复用 OSNR 计算方法如下：

$$\text{偏振复用 OSNR} = 10\log_{10}((P-N)/(n/2))$$

其中，对于 50 GHz 的通道：

➤ P：0.4 nm 通道带宽上的积分功率 （信号 + 噪声）

➤ N：0.4 nm 带宽上的积分功率 （噪声）

➤ n：0.2 nm 带宽内的积分功率 （噪声），然后在 0.1 nm 内标准化

IEC 61282-12 标准尚未进入最终批准阶段，因此，其计算方法可能与本文提供的方法略有差异。其计算方法如下：

OSNR (dB) = 10log (R) 且

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

其中：

- $s(\lambda)$：按时间平均的信号功率谱密度，不包括 ASE，单位为 W/nm。
- $\rho(\lambda)$：ASE 功率谱密度，不受偏振影响，单位为 W/nm。
- B_r：参考带宽，单位为 nm（除非另有说明，否则通常为 0.1 nm）；从 λ_1 至 λ_2 的综合范围包括总信号频谱，单位为 nm。

注意： 为得到有效的结果，所有通道均打开的曲线或者所有有一条通道关闭的曲线必须取自同一模块，且此模块必须激活了试运行选件。

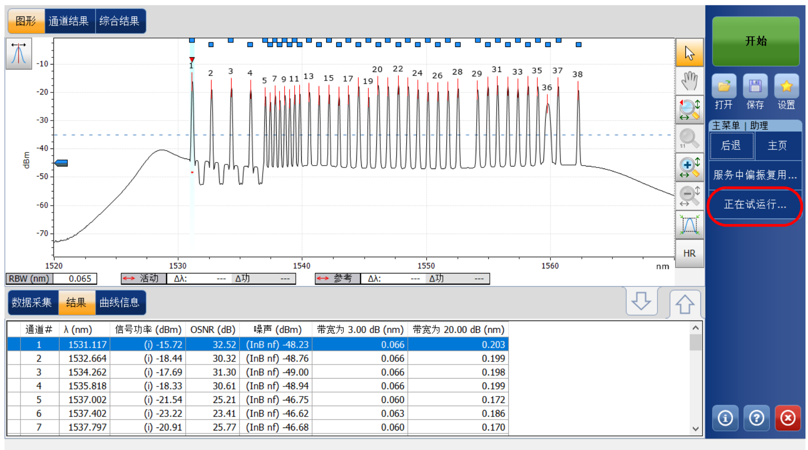
注意： 显示的设备和空通道信息来自您在应用程序上设置的用户首选项参数。

重要提示

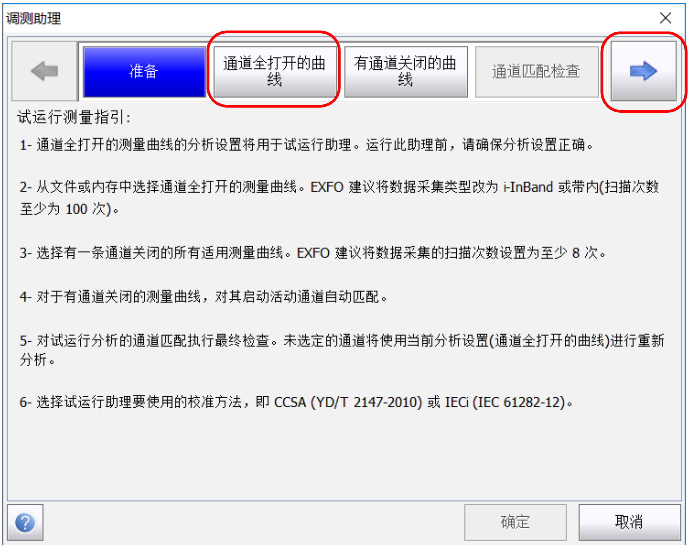
在使用试运行助理执行 OSNR 测量时，必须确保已关闭通道的噪声功率为实际的 ASE 噪声功率。例如，为补偿曲线测量中关闭通道的损耗，ROADM 的均衡功能可能会更改噪声功率。

若要使用试运行助理：

1. 检查所有通道均打开的曲线的分析参数。这是后续操作所用的主要测量曲线。
2. 在主窗口中，选择 “助理”，然后选择 “正在试运行”。



3. 按向右箭头按钮或 “通道全打开的曲线” 按钮继续。



4. 选择一条所有通道均打开的曲线。可以选择内存中的曲线 （必须是活动曲线，不能选择参考曲线）， 也可以选择已保存的曲线。选定测量文件后， 窗口底部会显示此测量是否与试运行功能兼容。

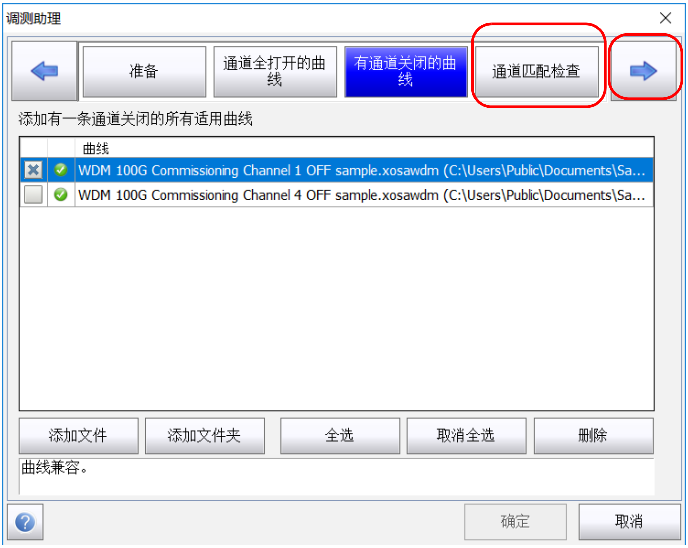
注意： 为采集曲线， EXFO 建议将数据采集设置为 i-InBand 或带内 （扫描次数至少为 100 次）类型。

5. 选择完毕后，按向右箭头按钮或“有通道关闭的曲线”。

6. 使用窗口底部的按钮选择所有适用的有一条通道关闭的测量曲线（文件）。曲线前面会显示测量文件是否兼容的图标。

注意： EXFO 建议将数据采集设置为至少扫描 8 次。

选定曲线后，按向右箭头按钮或“通道匹配检查”。

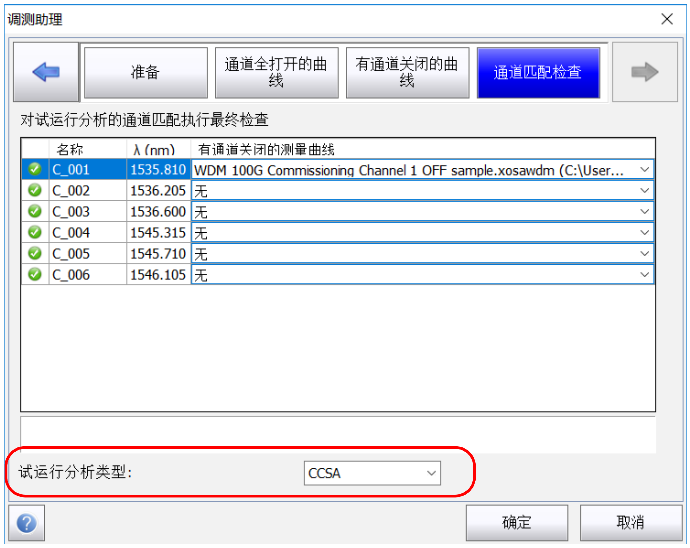


7. 如果通道可以自动与曲线关联且关联曲线唯一时，列表中会出现相应的测量文件。如果存在不能与任何曲线匹配的通道，则这些通道会设为“无”。

如果存在可以与多个测量文件对应的通道，则需要从下拉列表中选择要用于试运行测试的测量文件。

注意： 在此过程中，您可以返回助理选择或修改曲线。但是，如果更改了曲线，“通道匹配检查”页面的匹配关系不会自动更新。您必须手动匹配 （关联）通道，更改后或新的测量文件。

8. 选择要执行噪声计算的分析类型 （CCSA 或 IECi，详见第 83 页）。



9. 在所有通道匹配完成 （或标记为 “无” 进行排除）后，按 “确定” 完成分析步骤并关闭助理窗口。

应用程序会在 “结果” 表和 “通道结果” 选项卡中显示结果。分析类型会显示在括号中。未选定的通道会根据其当前设置 （所有通道均打开的曲线）重新分析。

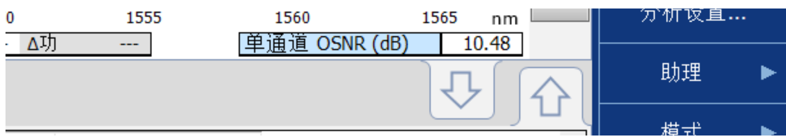
注意： 要保存试运行助理获取的结果，必须先保存测量曲线。

在单条通道上测量 OSNR

使用第 83 页 “使用试运行助理”中所述的计算方法和原理，可在 “图形”选项卡中查看单条通道的 OSNR 值。

若要查看一条通道的 OSNR 值：

1. 确保已在显示首选项中激活单通道 OSNR 工具 （有关详细信息，请参阅第 43 页 “设置显示参数”）。
2. 打开要进行比较的两条曲线。其中一条曲线的通道必须全部打开，另一条曲线必须有一条通道关闭。
3. 选择要查看值的通道。该通道将会显示在图形底部。

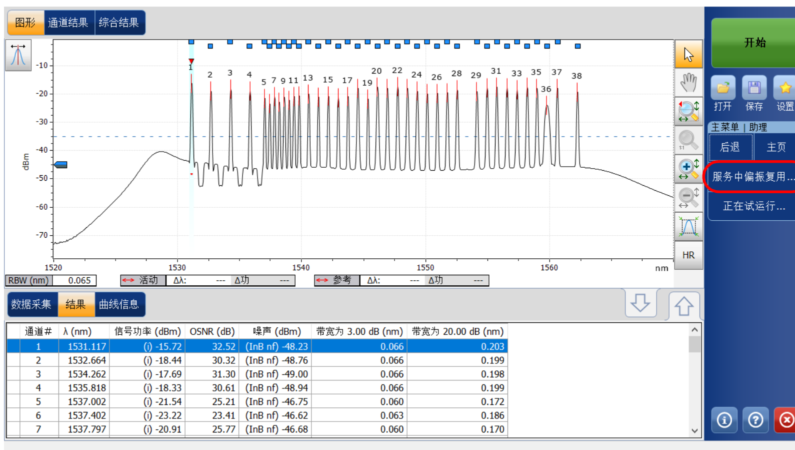


使用服务中偏振复用测量助理

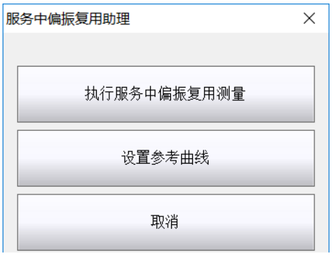
如果您购买了 INSPM 选件，可利用助理执行服务中偏振复用测量。在部署新链路时，才能使用试运行助理执行这项测量；而服务中偏振复用测量助理则让您可在活动链路上执行这项测量。

若要使用服务中偏振复用测量助理：

1. 在主窗口中，选择“助理”，然后选择“服务中偏振复用”。



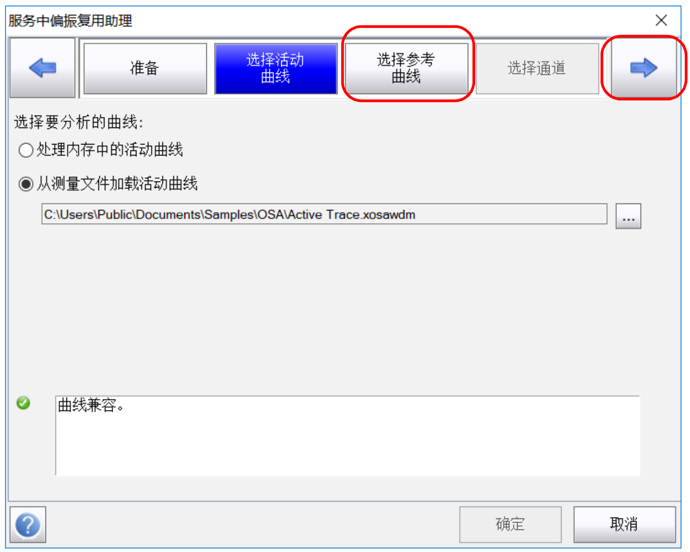
2. 选择 “执行服务中偏振复用测量”。



3. 按向右箭头按钮或 “选择活动曲线” 继续。

4. 选择要用作活动曲线的 WDM 测量 （将在该曲线上执行 OSNR 偏振复用测量）。可以选择内存中的曲线，也可以选择已保存的曲线。选定测量文件后，窗口底部会显示此测量是否兼容。

5. 选择完毕后，按向右箭头按钮或 “选择参考曲线”。



6. 选择要用作参考曲线的测量。选定测量文件后，窗口底部会显示此测量是否兼容。

7. 选定参考曲线后，按向右箭头按钮或 “选择通道”。

8. 选择用于测量服务中偏振复用 OSNR 的通道。您可以逐一选择通道，也可以使用 “全选”按钮选择列表中的所有通道。

注意： 可用通道列表仅显示可用于偏振复用分析的通道。若要显示某条通道，参考曲线中必须已配置该通道的参考 OSNR 值，且该通道的偏振复用信号必须显示在活动曲线上。

9. 按 “确定”关闭助理并执行测量。结果显示在屏幕上。

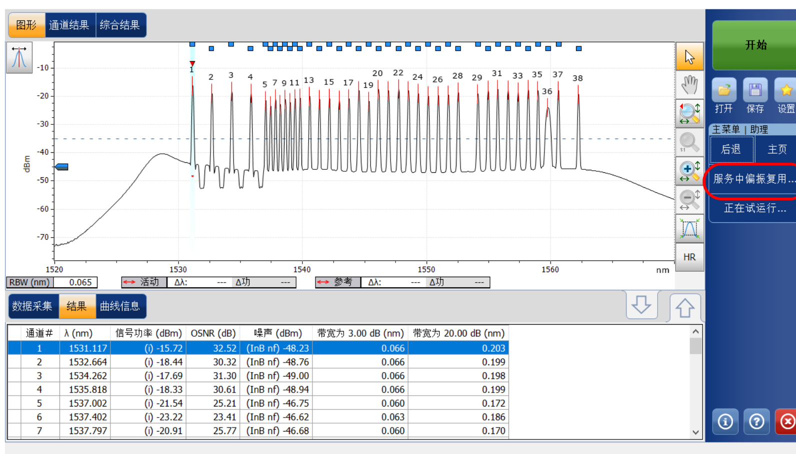
使用偏振复用参考曲线编辑助理

要使 WDM 测量能够作为参考用于服务中偏振复用分析，您需要设置所需通道的 OSNR 值。 OSNR 值可来自当前在内存中的测量，也可来自您选择的另一测量。

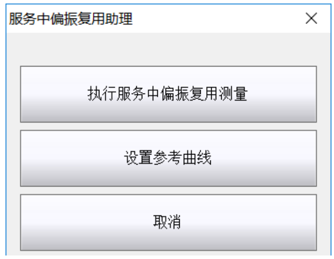
用于偏振复用分析的参考测量文件，无论是当前在内存中的文件还是您选择的文件，都必须包含能够被分析的通道的参考 OSNR 值。助理功能将会帮助您建立这样的文件，以便之后能够使用服务中偏振复用助理。这些值将会从测得的 OSNR 值中提取出来，也可以手动输入。生成的文件与原始文件相同，但前者还包含每条通道的参考 OSNR 值信息。

若要使用偏振复用参考曲线编辑助理：

1. 在主窗口中，选择 “助理”，然后选择 “服务中偏振复用”。



2. 选择“设置参考曲线”。



3. 按向右箭头按钮或“选择参考曲线”继续。

注意： 如果想要在设置完当前参考曲线后立即设置另一条参考曲线，请选择窗口底部的选项。

4. 选择要用作参考曲线的 WDM 测量。可以选择内存中的曲线，也可以选择已保存的曲线。选定测量文件后，窗口底部会显示此测量是否兼容。

5. 选定曲线后，按向右箭头按钮或“编辑 OSNR 值”。

6. 设置参考 OSNR 值。可如下操作：

   ➤ 选择各个独立单元格，在每个单元格中输入一个 OSNR 值。

   ➤ 选择多条通道，并按 “编辑选择” 编辑多个 OSNR 值。

   ➤ 选择多条通道，并按 “导入 OSNR 值” 从测量曲线导入 IEC、 IECi、CCSA 或偏振复用 OSNR 值。

注意： 曲线导入功能的可用性取决于测得 OSNR 值的类型。

注意： 如果要清除参考 OSNR 值，选择通道，然后按 “清除选择” 并确认选择。

7. 或者，您可以编辑噪声值，这样 OSNR 值会相应地更新。可如下操作：

- ➤ 选择各个独立单元格，在每个单元格中输入一个噪声值。
- ➤ 输入已知的噪声值，然后按“插入噪声值”插入噪声值。编辑了噪声值的单元格之间的所有空单元格会自动填充插入的噪声值。

注意： 在范围内的所有通道都来自同一发射位置并且沿同一路径传输的情况下，这种插入方法才有效。

8. 完成编辑噪声值之后，按“保存”并使用您自行选择的名称和位置保存文件。

保存文件后助理会关闭，除非您选择了创建另一个参考文件；在后一种情况下，会返回到第 4 步。

使用比较模式

使用比较模式可加载两个测量文件 （一个作为活动曲线，另一个作为参考曲线）进行比较。选中 “导入曲线配置”可加载这两个文件的曲线配置。注意：在比较模式下加载测量文件不会引发分析。

在 WDM 模式下，您可以使用参考曲线来比较通道结果。应用程序会使用参考文件的数据进行比较。只要在应用程序中打开参考曲线，这种比较就有效。如果要退出比较模式，只需按照第 257 页 “管理测量文件”中所述清除曲线。

如果要将相同的分析设置应用到两条曲线，请按照第 55 页 “设置 WDM 分析参数”中所述更改这两条曲线，然后选择 “确定”应用所做的更改。

5 设置漂移测试模式

在执行漂移模式的光谱分析前，您必须按照本章说明设置测试应用程序的相关参数。

设置漂移测试参数前，请按第 14 页 “选择测试模式” 所述选择漂移测试模式。

- 首选项为图和表中显示的结果以及任务信息和相关注释。这些注释随各个文件一起保存。
- 分析参数包含通道列表的详细信息、通过 / 未通过阈值，还可以选择噪声和功率的计算方法。
- 数据采集参数包含要执行的测量类型和波长范围。

有关详细信息，请参阅第 104 页“设置首选项”、第 120 页“设置漂移分析参数”和第 143 页 “设置数据采集参数”。

您可根据测试需要通过多种方式设置您的设备。

- 首选方式利用完整的分析设置参数并填写所有表格中的信息。有关详细内容，请参阅第 120 页 “设置漂移分析参数”。此设置将用于下一次数据采集。
- 最简便的方式是使用 “自动信号查询” 按钮，尤其是当操作员事先无法事先确定输入模块中的是什么时。按下 “自动信号查询” 按钮后，仪器会根据自动确定的最佳设置进行测量和分析。此设置将用于下一次扫描。有关详细内容，请参阅第 255 页 “使用自动信号查询功能”。
- 最高效的方式是上传预定义的数据采集和分析配置，然后选择一个常用配置。现场操作人员只需按下 按钮，选择适当的配置，然后按 “开始”。例如，预定义的配置可以类似 “32 条通道 DWDM 50GHz”、“Toronto-Montreal CWDM” 或 “供应商 ABC DWDM ROADM 40Gb”。有关详细内容，请参阅第 264 页 “管理用户设置”。
- 您还可以导入当前曲线的设置。此方法会获取当前曲线的数据和通道信息并将其应用于相应的选项卡。有关详细信息，请参阅第 120 页 “设置漂移分析参数”。

设置首选项

“首选项”窗口可让您设置曲线的常规信息和注释，设置显示参数并自定义漂移结果表。

注意： 离线模式下只能使用 “显示”和 “漂移结果”选项卡。

设置曲线信息

曲线信息包括待完成任务的描述、光缆标识、任务标识以及被测对象的相关信息。

若要输入常规信息：

1. 在 “主菜单”中，按 “首选项”。

2. 选择 “常规” 选项卡。

3. 根据需要设置常规参数。

4. 按 “确定” 保存更改并关闭窗口，或按 “取消” 退出而不保存。

按 “清除” 清除 “常规” 选项卡中所做的全部修改。

若要输入链路和位置信息：

1. 在 “主菜单” 中，按 “首选项”。

2. 选择 “信息” 选项卡。

3. 在“系统和链路信息”下，根据需要设置下列参数：

➤ 链路标识前缀：链路标识的前缀值。您可输入任何数字字母值。

➤ 起始值：链路标识的后缀递增的起始值。

如果选中“自动递增”选项，每次保存新文件时该值就会递增。

重要提示

如果不选中“自动递增”选项，保存曲线文件时您必须手动更改文件名，否则应用程序会覆盖之前保存的文件。

➤ 方向：链路的方向。

➤ 系统：被测系统的相关信息。

4. 在“位置信息”下，根据需要设置下列参数：

➤ 网元：设置网元的类型。

➤ 测试点：在链路上执行测试的位置。

➤ 描述：根据需要输入位置的描述。

5. 按“确定”保存更改并关闭窗口，或按“取消”退出而不保存。

按“恢复默认值”删除全部更改并应用默认值。

若要输入注释：

1. 在“主菜单”中，按“首选项”。

2. 选择 “注释” 选项卡。

3. 输入当前曲线的注释。
4. 按 “确定” 保存更改并关闭窗口，或按 “取消” 退出而不保存。

按 “清除” 清除 “注释” 选项卡中所做的全部修改。

设置显示参数

此应用程序可让您设置数据采集曲线的显示参数。您可设置曲线和结果表中的光谱单位。还可以选择在曲线波峰上显示的标志。

若要设置显示参数：

1. 在“主菜单”中，按“首选项”。

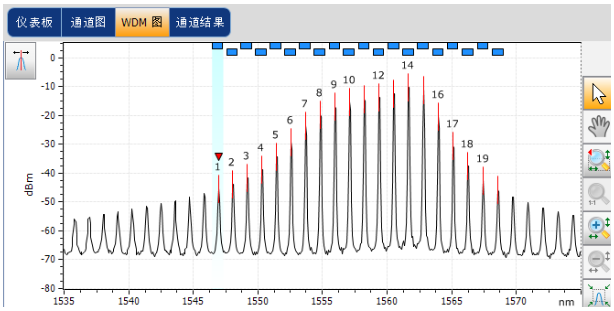
2. 选择“显示”选项卡。


常规
信息
注释
显示
漂移结果
文件名
常规
光谱单位:
nm
图中峰值标志:
通道编号
空结果通道:
隐藏
水平标记线:
显示
图形配色方案:
白色背景
恢复默认值
确定
取消

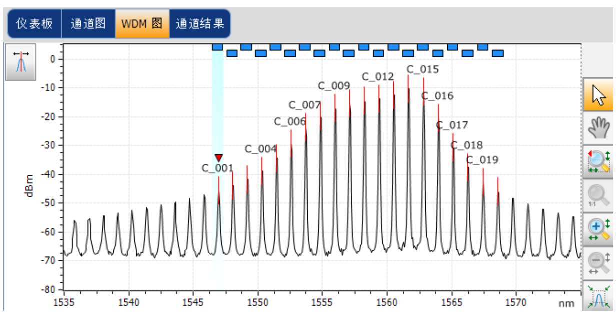
3. 选择要使用的光谱单位：nm 或 THz。

4. 选择在图中峰值上显示的标签，如通道名称、通道编号或无。

注意： 通道名称和通道编号不能同时显示。



通道编号



设置的通道名称

5. 选择是否显示在“仪表板”、“通道图”、“通道结果”和“通道历史”选项卡的通道列表中的空通道。

6. 选择是否显示水平标记线。

7. 选择图形的背景配色方案。

8. 按“确定”保存更改并关闭窗口，或按“取消”退出而不保存。

按“恢复默认值”删除全部更改并应用默认值。

自定义漂移结果表

您可以选择要在 “结果”选项卡中显示的漂移测试结果。

若要自定义结果表：

1. 在 “主菜单”中，按 “首选项”。

2. 选择 “漂移结果”选项卡。

3. 从可用的选项中选择您要在 “通道图”选项卡中显示的参数：
   - ➤ 中心波长 / 频率：表示该通道中波峰的光谱质心。
   - ➤ 信号功率：表示选定通道的信号功率 （除去噪声）。
   - ➤ OSNR：表示光信噪比，是 “信号功率”（按当前方法计算，单位为 dBm）与 “噪声”（按当前方法计算，单位为 dBm）的比值。
4. 按 “确定”保存更改并关闭窗口，或按 “取消”退出而不保存。

按 “恢复默认值”删除全部更改并应用默认值。

设置漂移分析参数

本节描述此应用程序的各种分析设置，特别是通道列表和通道设置。这些设置将应用于后续的数据采集。您可以设置通道列表、综合阈值、默认通道阈值、通道参数，管理常用配置和执行用户校准。

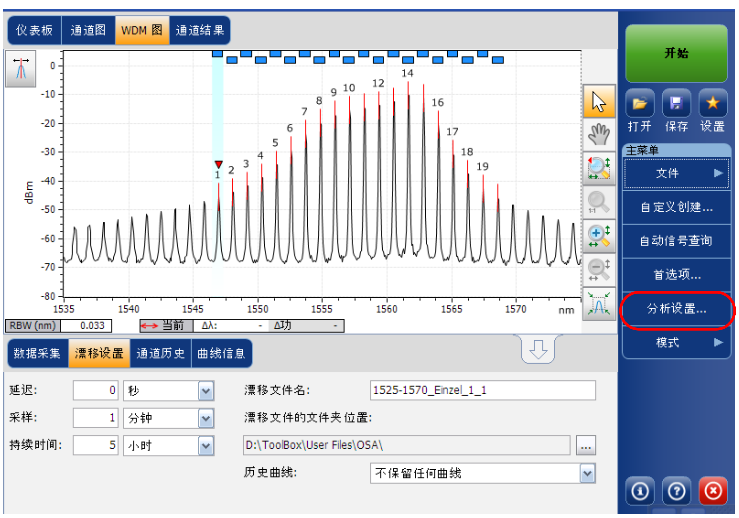
注意： 从下一次数据采集起，分析配置参数将应用于综合结果和通道结果。

您可以单独设置每个参数，也可以导入当前曲线的参数。

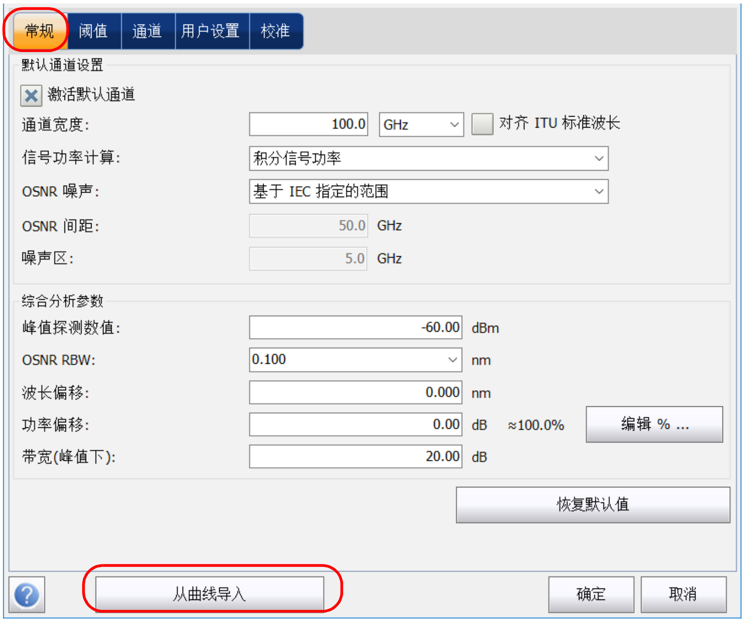
若要导入当前曲线的参数：

1. 确保当前屏幕上显示了一条曲线。

2. 在 “主菜单” 中，按 “分析设置”。



3. 在任一选项卡中，按 “从曲线导入”。



4. 按 “确定” 确认修改。

设置常规参数

漂移数据采集的常规分析参数影响采集结果的计算方法。这些计算在数据采集完成后进行。如果修改这些设置，它们将会应用到下一次数据采集。

> **重要提示**
>
> 您可以在 “常规”选项卡中设置默认通道参数。在数据采集过程中，如果发现任何通道列表未定义的通道，应用程序将使用默认通道参数进行分析。

若要设置常规参数：

1. 在 “主菜单”中，按 “分析设置”。

2. 选择“常规”选项卡。


常规
阈值
通道
用户设置
校准
默认通道设置
激活默认通道
通道宽度:
100.0
GHz
对齐 ITU 标准波长
信号功率计算:
积分信号功率
OSNR 噪声:
基于 IEC 指定的范围
OSNR 间距:
50.0
GHz
噪声区:
5.0
GHz
综合分析参数
峰值探测数值:
-60.00
dBm
OSNR RBW:
0.100
nm
波长偏移:
0.000
nm
功率偏移:
0.00
dB
≈100.0%
编辑 % ...
带宽(峰值下):
20.00
dB
恢复默认值
从曲线导入
确定
取消

3. 在“默认通道设置”下，根据需要设置下列参数：

➤ 取消选中“激活默认通道”选项以使用当前指定的通道进行分析。这样可以省去检测整个光谱范围内的峰值，缩短了分析时间。应用程序将不分析指定通道列表外的峰值。

➤ 通道宽度（GHz 或 nm）：表示该通道中要计算功率值的范围。

对于默认通道，设置为通道范围的通道宽度应小于或等于通道间距（通道间距在创建通道列表时设置）。如果通道宽度大于通道间距，可能会导致在两条不同的通道上只发现一个波峰且对此波峰执行了两次分析并显示两个分析结果，也可能会在同一通道上发现两个波峰并视之为一个多波峰信号。如果出现这种情况，您可以用标记线找出相邻通道的间距或通道宽度。

➤ 对齐 ITU 标准波长：选中此项后，应用程序会将检测到的所有波峰都置于最近的 ITU 通道。 ITU 光栅基于选定的通道宽度。

➤ 信号功率计算：表示信号功率值的计算方法。

积分信号功率：指此通道的通道范围内的功率值之和减去此范围内的噪声估算功率。在某些情况下，例如有线电视信号、高频调制信号或固有线宽近似于或大于 OSA 分辨率带宽的信号，这种计算方法可得到较准确的真实信号功率估算值。

峰值信号功率：指通道内的最大功率值。注意：由于此峰值信号功率是减去估算噪声后的结果，因此，它与光谱上测得的峰值功率略有误差。

总通道功率：指通道内积分信号功率和噪声功率之和。

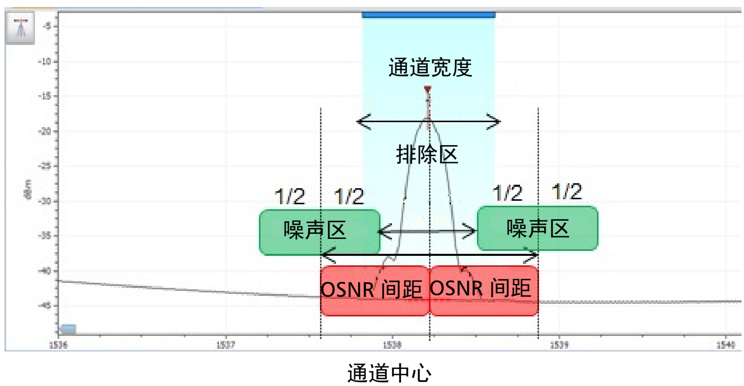
➤ OSNR 噪声：表示选用哪种方法计算 OSNR 值。

基于 IEC 指定的范围 (IEC)：IEC 法使用在信号两端测得的噪声的插值来估算噪声功率。从中心波长到噪声估算位置的距离通过“OSNR 间距”指定。

带内 (InB)：带内法使用一系列偏振态不同的扫描结果计算峰值 （带内）下的噪声功率。

带内窄带滤波器 (InB nf)：带内窄带滤波器法对窄带滤波噪声进行附加处理，提供准确的 OSNR 值。这是因为使用窄带滤波器后，波峰下的噪声功率不一致，而 OSNR 值根据选定的处理宽度计算。

五次多项式拟合 (Fit)：指五次多项式拟合法，可通过计算噪声曲线得出信噪比。 OSA 会用五次多项式拟合描绘近似的噪声曲线。拟合区和排除区决定拟合结果。只有拟合区中的点才用于计算五次多项式拟合。如果选择五次多项式拟合法，必须使用 OSNR 间距和噪声区字段来设置测试的拟合区和排除区。排除区通过 OSNR 间距间接获取。



➤ OSNR 间距 （GHz 或 nm）：除非选择了五次多项式拟合法，否则程序会自动将 OSNR 间距设置为通道边缘，即从中心波长到通道宽度的一半。

如果选择了五次多项式拟合法，OSNR 间距是从通道波峰到拟合区中心的距离。此时，它与通道宽度无关。

➤ 噪声区：即拟合区，指应用多项式拟合的区域。 OSNR 间距的中心有两个完全相同的噪声区。

4. 在“综合分析参数”下，根据需要设置下列参数：

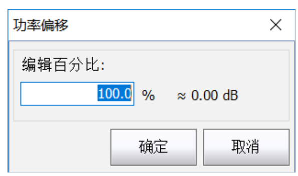
➤ 峰值探测数值 (dBm)：即峰值检测电平，表示可将波峰视为信号的最低功率电平。

➤ OSNR RBW (nm)：表示选定 OSNR 计算方法的分辨率带宽。此参数通常设置为 0.1 nm，使多台 OSA 的有效分辨率不同时，也能进行对比。仪器的 RBW 值显示在图形的下方。本参数对数据采集无实际影响，只是用作以标准方式计算 OSNR 值的标准化因子。

➤ 波长偏移 (nm)：表示应用到波长的偏移值。使用此参数不会改变 EXFO 的校准结果，只是方便您根据需要临时修正相关参数，例如，在需要超常规使用模块的情况下。此参数的单位不能为 THz。如果应用了偏移，图形下方会显示 (λ ↔)。

➤ 功率偏移 (dB)：表示应用到功率的偏移值。使用此参数不会改变 EXFO 的校准结果，只是方便您根据需要计算相关参数，例如，在需要超常规使用模块的情况下。如果应用了偏移，图形下方会显示 (P ↔)。

若要将功率偏移改为以百分数表示，按 “编辑 %”按钮。



在 “编辑百分比”中输入的百分数会自动转换为 dB 值。

➤ 带宽 （峰值下） (dB)：设置计算带宽所使用的功率电平 （相对于通道峰值功率）。

5. 按 “确定”保存更改并关闭窗口，或按 “取消”退出而不保存。

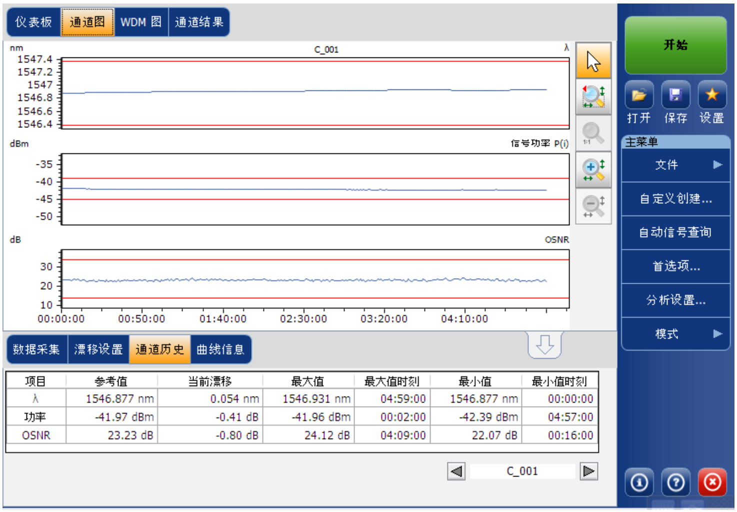
按 “恢复默认值”删除全部更改并应用默认值。

设置默认的通道阈值

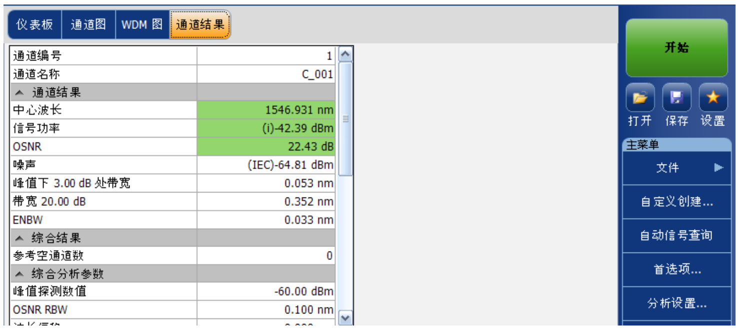
在下一次数据采集过程中，如果发现任何通道列表未定义的通道，应用程序将应用默认阈值。这些阈值还会应用于通道结果。

应用程序可让您通过单个控件激活或停用阈值功能。全局启用阈值功能后，应用程序会根据各种设置来显示各个结果的通过 / 未通过状态。

如果全局禁用了阈值功能，则 “通道图” 和 “通道历史” 选项卡在显示结果时不显示通过 / 未通过状态。



全局禁用阈值功能时，“通道结果”选项卡中的结果也不显示通过 / 未通过状态。



根据测试类型，您可通过多种方式设置通过 / 未通过阈值界限。

阈值界限	定义
无	不设置阈值界限。结果中不显示通过 / 未通过状态的判定结果。
仅最小值	仅将最小值设置为阈值界限。如果值大于或等于设定的最小阈值，则判定 “通过 / 未通过” 状态为 “通过”（用绿色表示）。如果值小于设定的最小阈值，则判定为 “未通过”（用红色表示）。
仅最大值	仅将最大值设置为阈值界限。如果值小于或等于设定的最大阈值，则判定 “通过 / 未通过” 状态为 “通过”（用绿色表示）。如果值大于设定的最大阈值，则判定为 “未通过”（用红色表示）。
最小值和最大值	将最小值和最大值设置为阈值界限。如果值不小于最小阈值且不大于最大阈值，则判定 “通过 / 未通过” 状态为 “通过”（用绿色表示）。如果值超出设定的最小阈值或最大阈值，则判定为 “未通过”（用红色表示）。
最大偏差	将偏差值设置为阈值界限。如果值小于或等于设定的偏差阈值，则判定 “通过 / 未通过” 状态为 “通过”（用绿色表示）。如果值大于设定的偏差阈值，则判定 “通过 / 未通过” 状态为 “未通过”（用红色表示）。

若要指定默认的通道阈值：

1. 在"主菜单"中，按"分析设置"。

2. 选择 “阈值” 选项卡。


常规
阈值
通道
用户设置
校准
激活所有阈值
默认通道
最小值
最大值
最大偏差
波长
± 0.500 nm
最大偏差
信号功率
± 3.00 dB
最大偏差
OSNR
± 10.00 dB
恢复默认值
从曲线导入
确定
取消

3. 选中 “激活所有阈值” 选项，手动设置通道阈值。如果不选中此选项，所有阈值都会停用，“通道图”、“通道历史” 和 “通道结果” 选项卡在显示结果时不显示通过 / 未通过状态。

4. 按照如下说明在框中输入值：

➤ 波长 / 频率 (nm/GHz)：表示通道的中心波长 / 频率。

➤ 信号功率 (dBm)：表示选定通道的信号功率 （除去噪声）。

➤ OSNR (dB)：表示光信噪比，是 “信号功率”（按当前方法计算，单位为 dBm）与 “噪声”（按当前方法计算，单位为 dBm）的比值。

5. 按 “确定” 保存更改并关闭窗口，或按 “取消” 退出而不保存。

按 “恢复默认值” 删除全部更改并应用默认值。

管理通道

测试 DWDM 系统包括描述链路中的多路信号。此应用程序可让您使用通道编辑器设置通道或使用当前数据快速生成通道。您还可以快速创建等间距通道列表。创建的通道列表可根据需要进行修改。您可更改一条或多条通道的分析参数。

创建通道列表时有些通道可能会重叠。通道宽度的单位为 nm 时，如果两条通道共用的频率范围超过约 1.2 GHz，则这两条通道重叠。

若要添加通道列表：

1. 在 “主菜单” 中，按 “分析设置”。

2. 选择 “通道” 选项卡。

3. 默认情况下，通道列表中没有数据。按 “添加通道”。

4. 按照如下说明在框中输入值：

- ➤ 起始范围 （nm 或 THz）：表示通道列表的起始范围。
- ➤ 停止范围 （nm 或 THz）：表示通道列表的结束范围。
- ➤ 通道中心波长 / 频率：表示该通道中波峰的光谱质心。

注意： 如果使用自定义的通道中心波长，则应用程序将以起始范围为中心创建第一条通道，然后根据通道间距和通道宽度创建列表。

- 通道间距 （nm 或 GHz）：表示通道之间的距离。通道间距值将根据在 “通道中心波长” 中选择的值确定。只有当 “通道中心波长” 设置为自定义时，“通道间距” 框才可编辑。
- 通道宽度 （nm 或 GHz）：表示该通道中要计算功率值的范围。积分功率根据通道宽度计算。
- 名称前缀：表示要给通道名称添加的前缀。
- 起始值：表示通道列表中通道名的递增起始值。
- 递增值：表示通道列表中通道名的递增值。

5. 按 “确定” 返回 “通道” 选项卡，此时其中列出了添加的通道。

注意： 添加新通道后，“使用默认值” 的阈值界限设置将应用到通道参数。

注意： 如果存在重叠的通道，应用程序会显示提示消息，但仍可对重叠的通道进行分析。如果添加了重复的通道，应用程序会显示询问消息，确认是否用重复的通道覆盖现有通道。

6. 按 “确定” 保存更改并关闭窗口，或按 “取消” 退出而不保存。

注意： 如果添加的通道超过 1000 条，应用程序会显示提示消息。此时，必须删除通道列表中多余的通道才能退出 “分析设置” 窗口。您可根据需要手动删除通道。

若要编辑特定通道的参数：

1. 在“主菜单”中，按“分析设置”。

2. 选择 “通道” 选项卡。

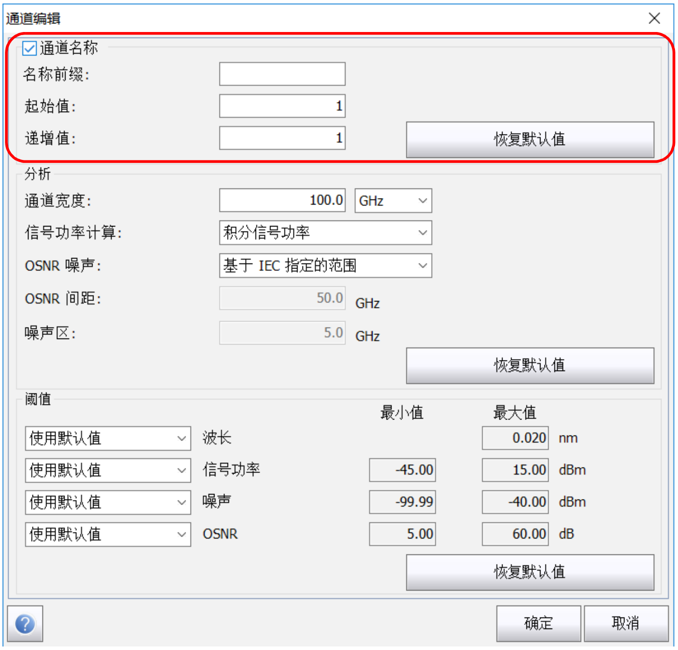

常规
阈值
通道
用户设置
校准
名称
λ (nm)
通道宽度
信号功率
OSNR 噪声
信号功率最小值 (dBm)
信号功率最大值 (d
C_001 1546.877 100.0 GHz 积分信号功率 基于 IEC 指定的范围 -44.96
C_002 1547.989 100.0 GHz 积分信号功率 基于 IEC 指定的范围 -43.75
C_003 1549.109 100.0 GHz 积分信号功率 基于 IEC 指定的范围 -41.88
C_004 1550.243 100.0 GHz 积分信号功率 基于 IEC 指定的范围 -39.14
C_005 1551.367 100.0 GHz 积分信号功率 基于 IEC 指定的范围 -34.99
C_006 1552.487 100.0 GHz 积分信号功率 基于 IEC 指定的范围 -29.93
C_007 1553.619 100.0 GHz 积分信号功率 基于 IEC 指定的范围 -24.53
C_008 1554.761 100.0 GHz 积分信号功率 基于 IEC 指定的范围 -21.77
C_009 1555.893 100.0 GHz 积分信号功率 基于 IEC 指定的范围 -19.15
C_010 1557.017 100.0 GHz 积分信号功率 基于 IEC 指定的范围 -17.78
C_011 1558.157 100.0 GHz 积分信号功率 基于 IEC 指定的范围 -16.56
C_012 1559.309 100.0 GHz 积分信号功率 基于 IEC 指定的范围 -15.73
C_013 1560.445 100.0 GHz 积分信号功率 基于 IEC 指定的范围 -14.54
C_014 1561.581 100.0 GHz 积分信号功率 基于 IEC 指定的范围 -12.82
C_015 1562.733 100.0 GHz 积分信号功率 基于 IEC 指定的范围 -14.97
全选
取消全选
删除
编辑选择...
添加通道...
从曲线导入
确定
取消

3. 在通道列表中，选择一条或多条要修改的通道。

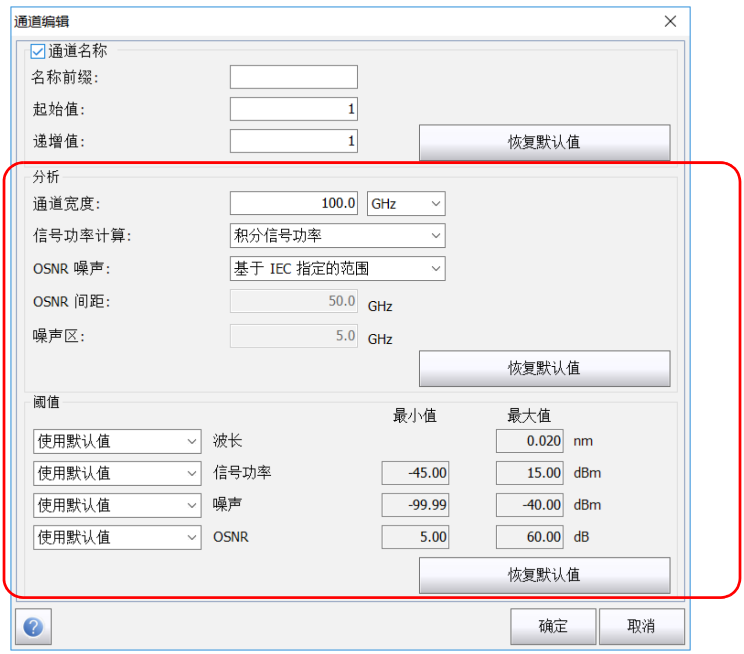
如果要将所做的更改应用到所有通道，按 “全选”。您可以逐条选择所需通道，也可以一次性选择全部通道。按 “取消全选”可以取消选择所有通道。如果要删除选定的通道，按 “删除”。

4. 按 “编辑选择”。

5. 如果要对通道进行命名，请启用相应的选件。然后输入要使用的名称前缀。如果已选择多个通道并希望通道名称能自动递增，请输入递增起始值，然后输入每个新通道的递增值。



6. 根据需要修改参数设置。有关参数设置的详细信息，请参阅第 134 页“管理通道”。如果某个参数设置为空，则保留修改前的值。请正确修改各参数设置。



7. 按“确定”返回“通道”选项卡，此时其中包含修改后的参数值。

8. 按“确定”保存更改并关闭窗口，或按“取消”退出而不保存。

设置数据采集参数

测试前，您必须在 “数据采集”选项卡中设置数据采集类型和参数，并在“漂移设置”选项卡中设置其他参数。

在漂移模式下，数据采集类型有三种：单次、平均和带内。

- ➤ 单次：进行一次光谱测量。应用程序根据这次测量显示结果。
- ➤ 平均：根据您输入的扫描次数进行光谱测量。每次数据采集后会显示曲线，并和之前的曲线一起取平均值。
- ➤ 带内：带内数据采集在各种偏振条件下执行一系列扫描，以便能计算带内 OSNR。

注意： 只有模块支持时 “带内”选项才可用。

测量光谱前，您必须选择要使用的波长或频率范围。您可对整个光谱、光谱波段或自定义的范围进行扫描。

注意： 波长或频率范围越窄，数据采集越快。

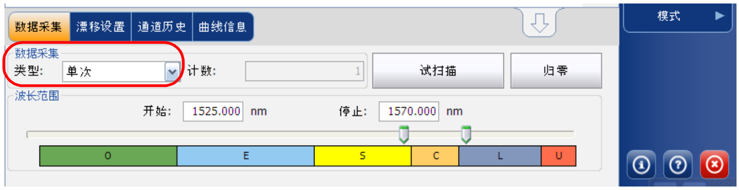
您可以配置漂移测量的延迟、采样和持续时间，还可以配置漂移文件名并指定文件的保存位置。

设置漂移测量时，此应用程序可让您进行一次试扫描。

若要设置 “数据采集”选项卡中的参数：

1. 在主窗口中，选择 “数据采集”选项卡。

2. 选择数据采集类型。

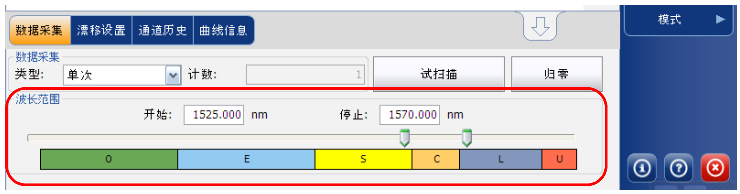


3. 如果选择了 “平均”类型的数据采集，还要输入扫描次数。

   如果您要执行带内数据采集，输入设备要执行的扫描次数或选择预先设置的扫描次数。

注意： 如果执行单次扫描，扫描次数无法修改。

4. 选择数据采集的波长范围。



要选择波长范围，您可以输入 “开始” 值和 “停止” 值，也可以使用光谱波段图上方的两个滑块。

要使用两个滑块来选择波长范围，可以移动左边或右边的滑块，也可以直接单击任一光谱波段。

注意： 您可选择多个相邻的光谱波段，例如， S+C。

各光谱波段的覆盖范围如下：

➤ O 波段 （原始波长）： 1255 至 1365 nm

➤ E 波段 （扩展波长）： 1355 至 1465 nm

➤ S 波段 （短波长）： 1455 至 1535 nm

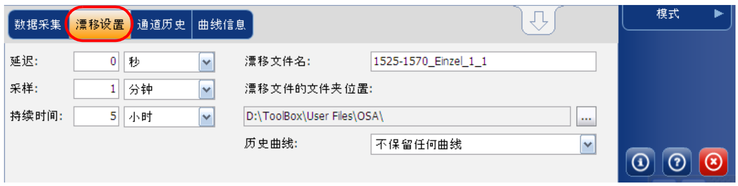
➤ C 波段 （常见的 “铒窗口”）： 1525 至 1570 nm

➤ L 波段 （长波长）： 1560 至 1630 nm

➤ U 波长 （超长波长）： 1620 至 1650 nm。

若要设置 “漂移设置”选项卡中的参数：

1. 在主窗口中，选择 “漂移设置”选项卡。



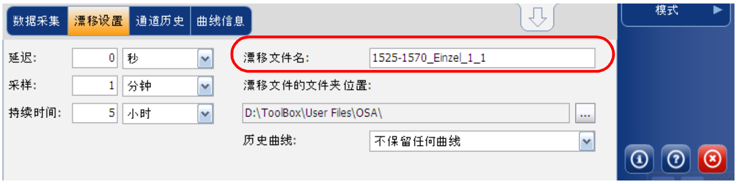
2. 在执行漂移测量的第一次数据采集前，选择延迟单位并输入数值。应用程序会等待相应的时间再开始执行第一次数据采集。

3. 选择采样单位并输入数值，配置漂移测量中两次数据采集之间开始时间的间隔时间。

4. 选择持续时间的单位并输入时长，配置漂移测量的总时间。

5. 输入保存漂移文件时使用的漂移文件名。

注意： 离线模式下不能使用该功能。



6. 选择保存漂移文件的位置。

7. 选择是否保留子文件夹中的历史曲线，可以保留所有曲线、只保留重要曲线或不保留任何曲线。每条历史曲线保存为一个 *.osawdm 文件。

重要事件是指：

➤ 给定通道的某个值超出阈值 （从通过变为未通过）。

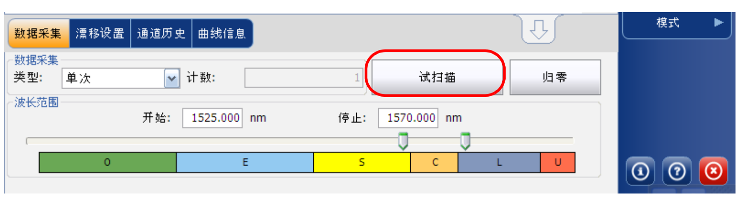
➤ 给定通道没有信号功率。

这些历史曲线的文件保存在专用文件夹中，文件夹与相应的漂移测量文件同名。

注意： 每条通道最多可有 3 条重要曲线。

注意： 离线模式下不能使用该选项。

8. 返回 “数据采集”选项卡测试设置的参数。按 “试扫描”执行试验性数据采集。



在试验性数据采集执行过程中，“开始”按钮不可用。状态栏会显示数据采集正在进行。

试扫描使用设置的分析参数执行。数据采集完成后，“WDM 图”和 “通道结果”选项卡会显示最终的数据采集。“通道历史”选项卡应将结果显示为仅 0:00 可用。漂移模式的其他选项卡 （“仪表板”、“通道图”）应为空。

创建自定义漂移测量

您可将现有 WDM 测量用作参考来创建漂移测量。选定的通道和阈值可从参考测量的分析设置导入。

自定义漂移测量特别适合离线处理不同时间的数据并比较结果变化。

您添加的 WDM 测量必须符合特定标准才能导入到自定义测量中。下表描述了这些兼容标准。

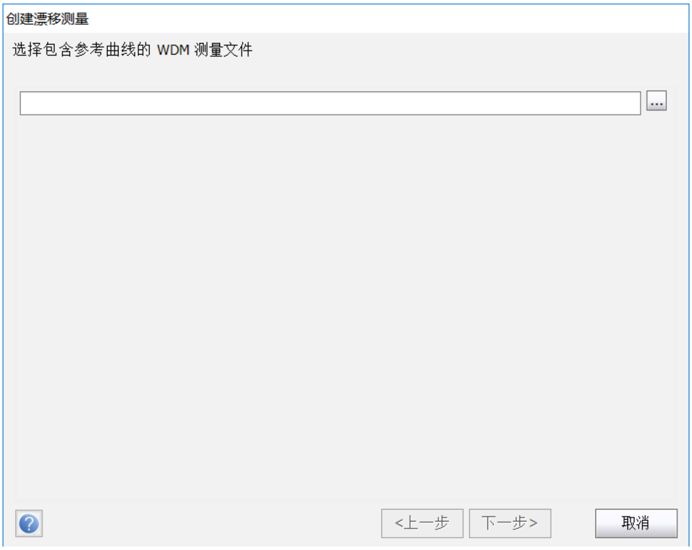
注意： 自定义测量将自动拒绝不兼容的文件。

标准	测试	兼容性状态
数据采集类型	目标 WDM 测量的数据采集类型与漂移参考曲线的数据采集类型不同	兼容，有警告
数据采集的扫描次数	目标 WDM 测量的数据采集的扫描次数与漂移参考曲线的数据采集的扫描次数不同。	兼容，有警告
频谱范围	➤ 目标 WDM 测量的频谱范围与漂移参考曲线的频谱范围仅部分重叠。 ➤ 目标 WDM 测量的频谱范围与漂移参考曲线的频谱范围无重叠。	➤ 兼容，有警告 ➤ 不兼容
数据采集开始时间	➤ 目标 WDM 测量的数据采集开始时间与另一 WDM 测量（包括漂移参考曲线）的数据采集时间相同。 ➤ 目标 WDM 测量的数据采集开始时间在另一 WDM 测量（包括漂移参考曲线）的数据采集时间范围内。	➤ 兼容，有警告 ➤ 不兼容
校准类型（用户 / 出厂）	目标 WDM 测量仪器的校准类型与漂移参考曲线仪器的校准类型不同。	兼容，有警告

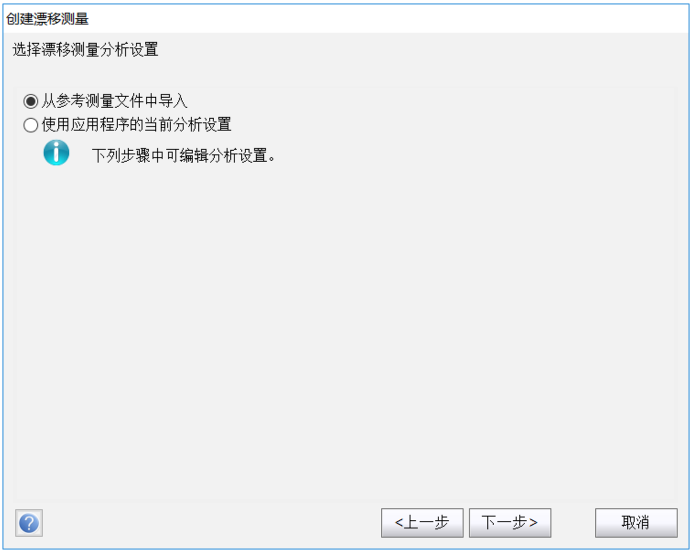
标准	测试	兼容性状态
校准日期	目标 WDM 测量仪器的校准日期与漂移参考曲线仪器的校准日期不同	兼容，有警告
仪器型号	目标 WDM 测量仪器的型号与漂移参考曲线仪器的型号不同	兼容，有警告
仪器序列号	目标 WDM 测量仪器的序列号与漂移参考曲线仪器的序列号不同	兼容，有警告
仪器的 RBW	目标 WDM 测量仪器的 RBW 与漂移参考曲线仪器的 RBW 不同	兼容，有警告
功率偏移	目标 WDM 测量的功率偏移与漂移参考曲线的功率偏移不同	兼容，有警告
波长偏移	目标 WDM 测量的波长偏移与漂移参考曲线的波长偏移不同	兼容，有警告
噪声偏移	目标 WDM 测量采集的曲线数据不支持配置的噪声测量分析参数。（该标准适用于 IEC 带内噪声测量采集的数据）	兼容，有警告

若要创建自定义漂移测量:

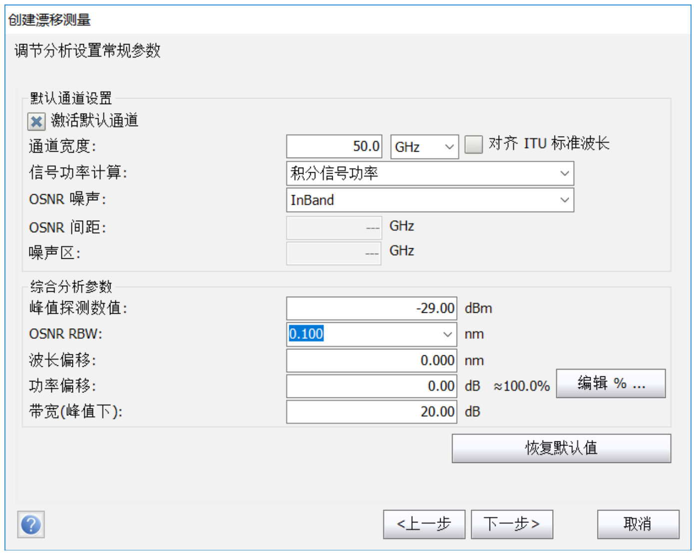
1. 如果尚未进入“漂移”测量模式，先选择此模式。
2. 在主窗口中，按“自定义创建”。
3. 选择要用于创建测量的参考曲线，然后单击“下一步”。



4. 选择是否从选定的参考文件导入分析设置或使用应用程序当前的设置，然后单击 “下一步”。

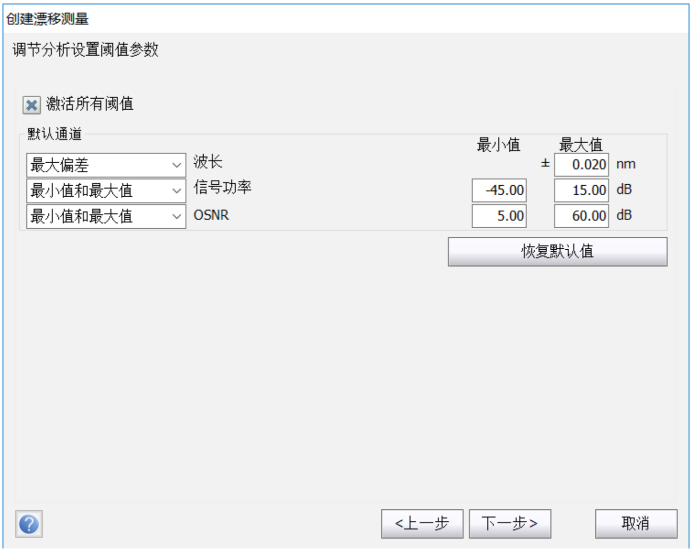


5. 输入测量的总体详情或检查分析设置是否已导入。有关各项参数的详细信息，请参阅第 122 页 “设置常规参数”。



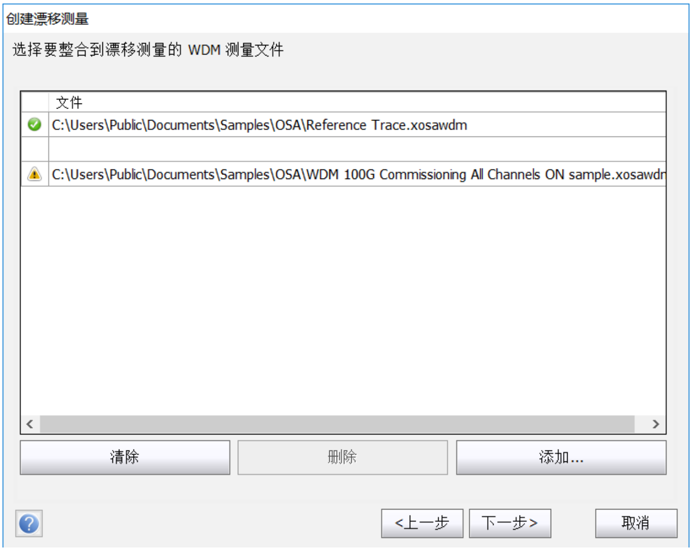
6. 单击 “下一步”。

7. 根据需要调整测量的阈值设置。有关各项的详细信息，请参阅第 129 页 “设置默认的通道阈值”。完成后，单击 “下一步”。

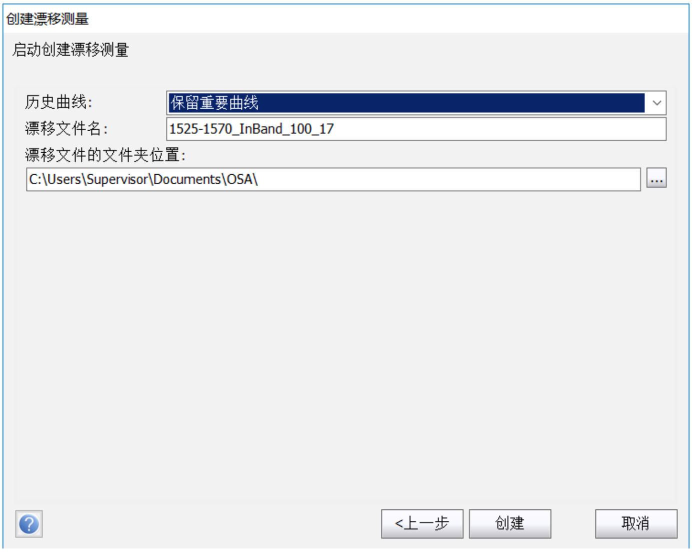


8. 选择漂移测量要使用的通道。有关各项的详细信息，请参阅第 134 页“管理通道”。完成后，单击 “下一步”。

9. 添加一个或多个测量文件，然后单击 “下一步”。



10. 开始测量前，还可以选择如何处理历史曲线，可以保留所有曲线、仅保留重要曲线或不保留任何曲线，并设置漂移文件名和文件保存位置。



11. 准备就绪后，单击“创建”。

完成以上操作后，您可以浏览创建的漂移结果。

6 设置 DFB 模式

在 DFB 模式下进行光谱分析前，您必须按照本章所述设置 OSA 模块和测试应用程序的相关参数。

设置 DFB 测试参数前，请按第 14 页“选择测试模式”所述选择 DFB 测试模式。

➤ 首选项为图和表中显示的结果以及任务信息和相关注释。这些注释随各个文件一起保存。

➤ 数据采集参数包含要执行的测量类型和波长范围。

有关详细信息，请参阅第 160 页“设置首选项”和第 171 页“设置数据采集参数”。

设置首选项

“首选项”窗口可让您设置曲线的常规信息和注释，并设置显示参数。

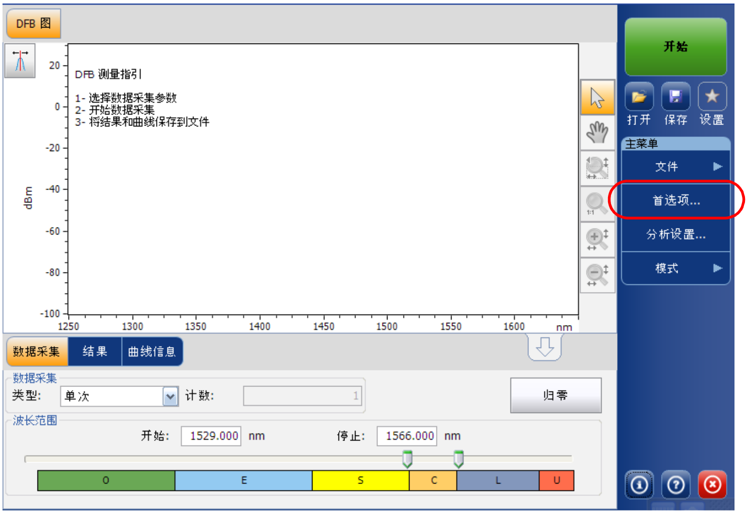
注意： 在离线模式下，仅 “显示”选项卡可用。

设置曲线信息

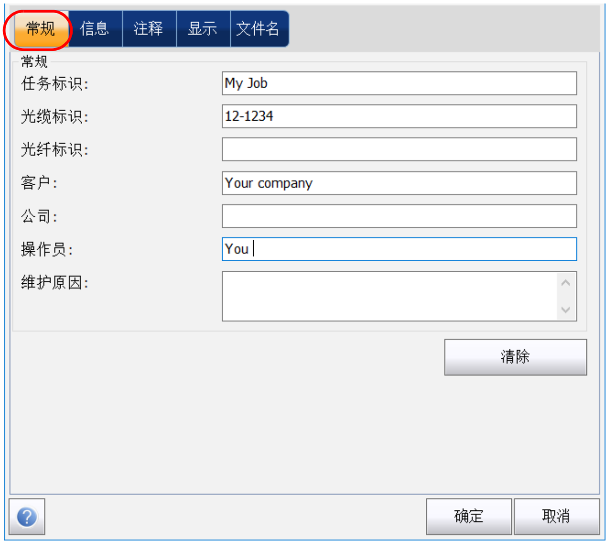
曲线信息包括待完成任务的描述、光缆标识、任务标识以及被测对象的相关信息。

若要输入常规信息：

1. 在 “主菜单”中，按 “首选项”。



2. 选择 “常规” 选项卡。



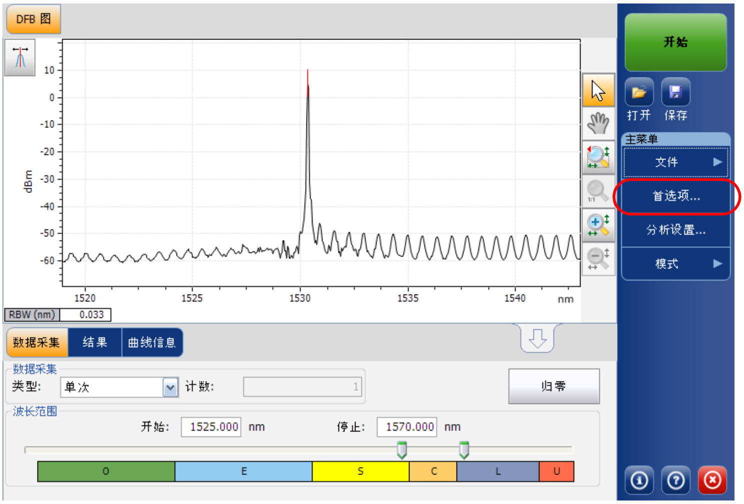
3. 根据需要设置常规参数。

4. 按 “确定” 保存更改并关闭窗口，或按 “取消” 退出而不保存。

按 “清除” 清除 “常规” 选项卡中所做的全部修改。

若要输入链路和位置信息：

1. 在 “主菜单” 中，按 “首选项”。



2. 选择 “信息” 选项卡。

3. 在 “系统和链路信息”下，根据需要设置下列参数：

➤ 链路标识前缀：链路标识的前缀值。您可输入任何数字字母值。

➤ 起始值：链路标识的后缀递增的起始值。

如果选中 “自动递增”选项，每次保存新文件时该值就会递增。

重要提示

如果不选中 “自动递增”选项，保存曲线文件时您必须手动更改文件名，否则应用程序会覆盖之前保存的文件。

➤ 方向：链路的方向。

➤ 系统：被测系统的相关信息。

4. 在 “位置信息”下，根据需要设置下列参数：

➤ 网元：设置网元类型。

➤ 测试点：链路上执行测试的地方。

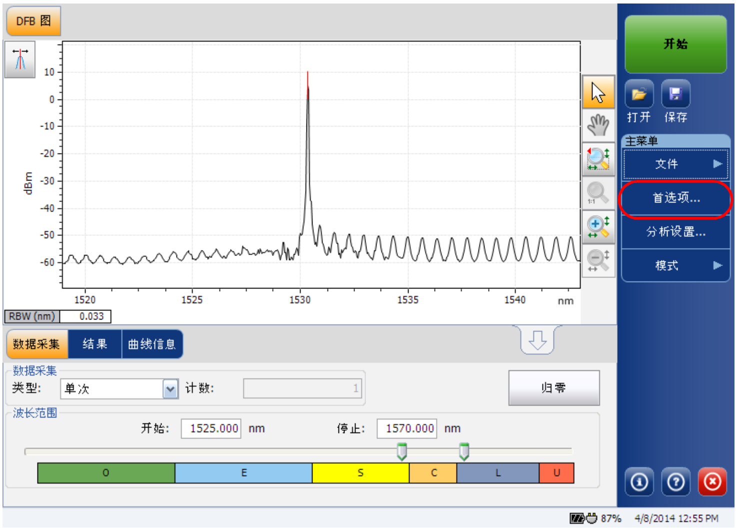
➤ 描述：根据需要输入位置的描述。

5. 按 “确定”保存更改并关闭窗口，或按 “取消”退出而不保存。

按 “恢复默认值”删除全部更改并应用默认值。

若要输入注释：

1. 在 “主菜单” 中，按 “首选项”。



2. 选择 “注释” 选项卡。

3. 输入当前曲线的注释。

4. 按 “确定” 保存更改并关闭窗口，或按 “取消” 退出而不保存。

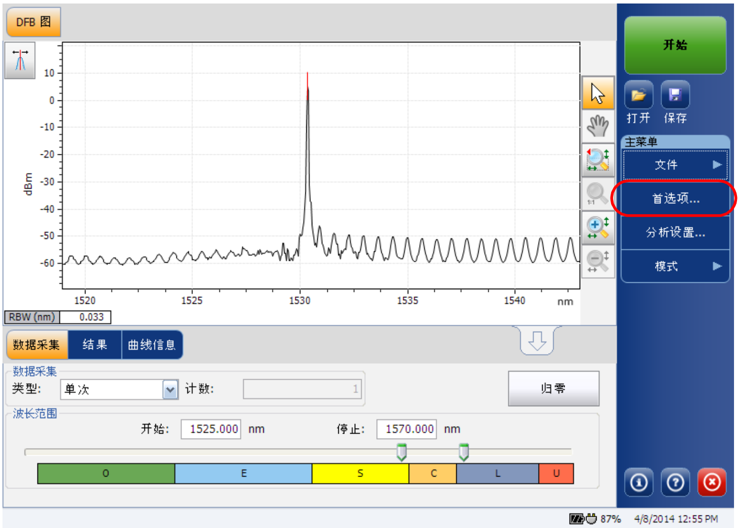
按 “清除” 清除 “注释” 选项卡中所做的全部修改。

设置显示参数

此应用程序可让您设置数据采集曲线的显示参数。您可设置曲线和结果表中的光谱单位。

若要设置显示参数：

1. 在 “主菜单” 中，按 “首选项”。



2. 选择“显示”选项卡。

3. 选择要使用的光谱单位：nm 或 THz。

4. 选择是否显示水平标记线。

5. 选择图形的背景配色方案。

6. 按“确定”保存更改并关闭窗口，或按“取消”退出而不保存。

按“恢复默认值”删除全部更改并应用默认值。

设置数据采集参数

测试前，您必须设置数据采集类型和参数。

DFB 模式的数据采集类型有三种：

➤ 单次：进行一次光谱测量。应用程序根据这次测量显示结果。

➤ 平均：根据您输入的扫描次数进行光谱测量。每次数据采集后会显示曲线，并和之前的曲线一起取平均值。

➤ 实时：连续执行光谱测量，直到用户按 “停止”。此模式不计算光谱测量结果的平均值。每次数据采集完成后，图形和结果会实时刷新。

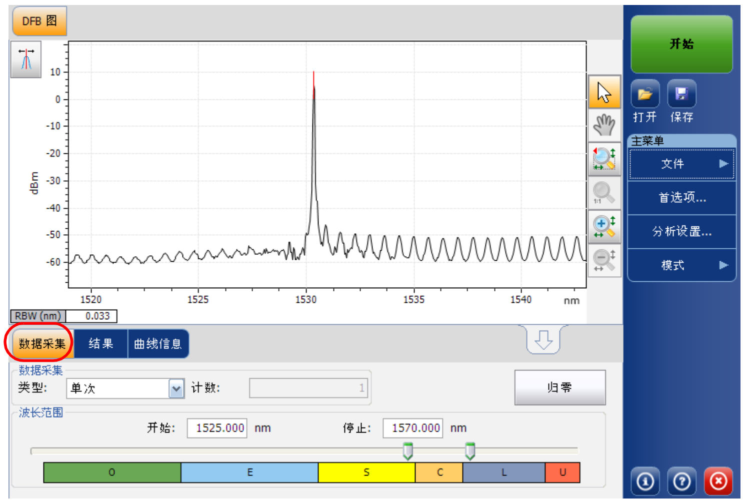
测量光谱前，您必须选择要使用的波长或频率范围。您可对整个光谱、光谱波段或自定义的范围进行扫描。

注意： 波长或频率范围越窄，数据采集越快。

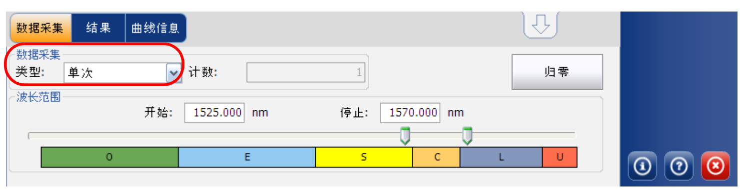
注意： 离线模式下 “数据采集”选项卡不可用。

若要设置 “数据采集”选项卡中的参数：

1. 在主窗口中，选择 “数据采集”选项卡。



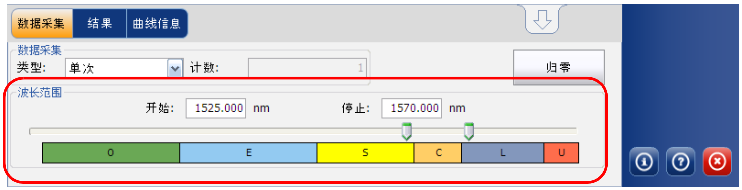
2. 选择数据采集类型。



3. 如果选择了 “平均”类型的数据采集，还要输入扫描次数。

注意： 如果执行单次扫描或实时扫描，扫描次数无法修改。

4. 选择数据采集的波长范围。



要选择波长范围，您可以输入 “开始” 值和 “停止” 值，也可以使用光谱波段图上方的两个滑块。

要使用两个滑块来选择波长范围，可以移动左边或右边的滑块，也可以直接单击任一光谱波段。

注意： 您可选择多个相邻的光谱波段，例如， S+C。

各光谱波段的覆盖范围如下：

➤ O 波段 （原始波长）： 1255 至 1365 nm

➤ E 波段 （扩展波长）： 1355 至 1465 nm

➤ S 波段 （短波长）： 1455 至 1535 nm

➤ C 波段 （常见的 “铒窗口”）： 1525 至 1570 nm

➤ L 波段 （长波长）： 1560 至 1630 nm

➤ U 波长 （超长波长）： 1620 至 1650 nm。

7 设置 FP 模式

在 FP 模式下进行光谱分析前，您必须按照本章所述设置 OSA 模块和测试应用程序的相关参数。

设置 FP 测试参数前，请按第 14 页 “选择测试模式”所述选择 FP 测试模式。

- 首选项为图和表中显示的结果以及任务信息和相关注释。这些注释随各个文件一起保存。
- 数据采集参数设置要执行的测量和波长范围。

有关详细信息，请参阅第 176 页 “设置首选项”和第 187 页 “设置数据采集参数”。

设置首选项

“首选项”窗口可让您设置曲线的常规信息和注释，并设置显示参数。

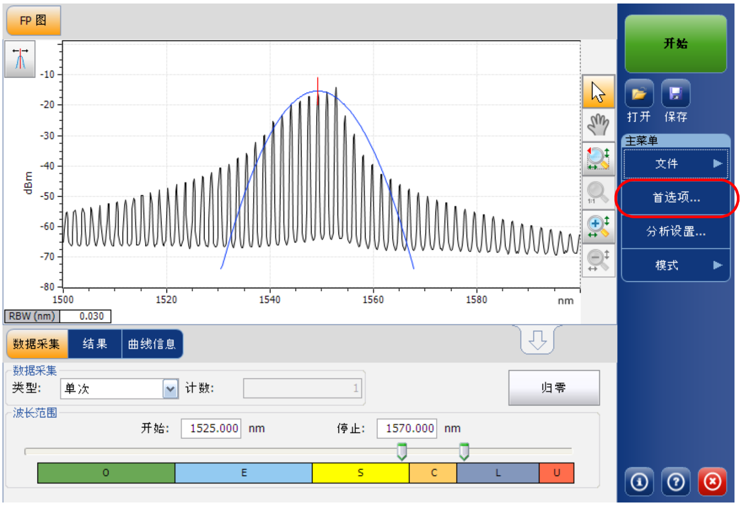
注意： 在离线模式下，仅 “显示”选项卡可用。

设置曲线信息

曲线信息包括待完成任务的描述、光缆标识、任务标识以及被测对象的相关信息。

若要输入常规信息：

1. 在 “主菜单”中，按 “首选项”。



2. 选择“常规”选项卡。

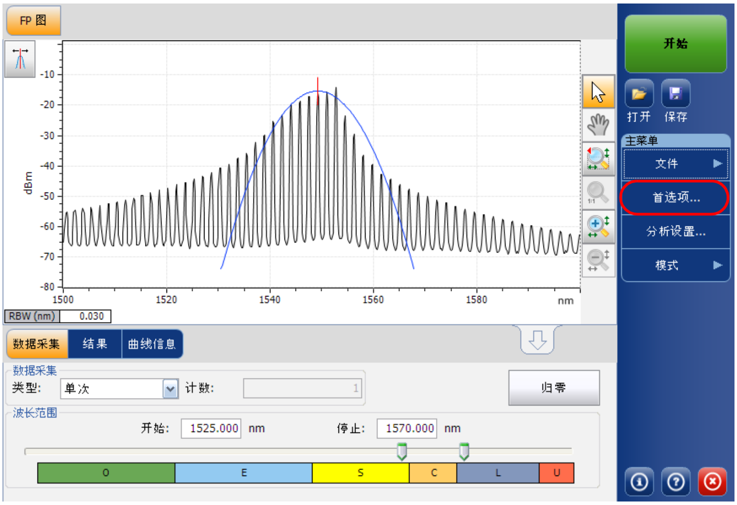
3. 根据需要设置常规参数。

4. 按“确定”保存更改并关闭窗口，或按“取消”退出而不保存。

按“清除”清除“常规”选项卡中所做的全部修改。

若要输入链路和位置信息：

1. 在 “主菜单” 中，按 “首选项”。



2. 选择 “信息” 选项卡。

3. 在 “系统和链路信息”下，根据需要设置下列参数：

➤ 链路标识前缀：链路标识的前缀值。您可输入任何数字字母值。

➤ 起始值：链路标识的后缀递增的起始值。

如果选中 “自动递增”选项，每次保存新文件时该值就会递增。

重要提示

如果不选中 “自动递增”选项，保存曲线文件时您必须手动更改文件名，否则应用程序会覆盖之前保存的文件。

➤ 方向：链路的方向。

➤ 系统：被测系统的相关信息。

4. 在 “位置信息”下，根据需要设置下列参数：

➤ 网元：设置网元类型。

➤ 测试点：链路上执行测试的地方。

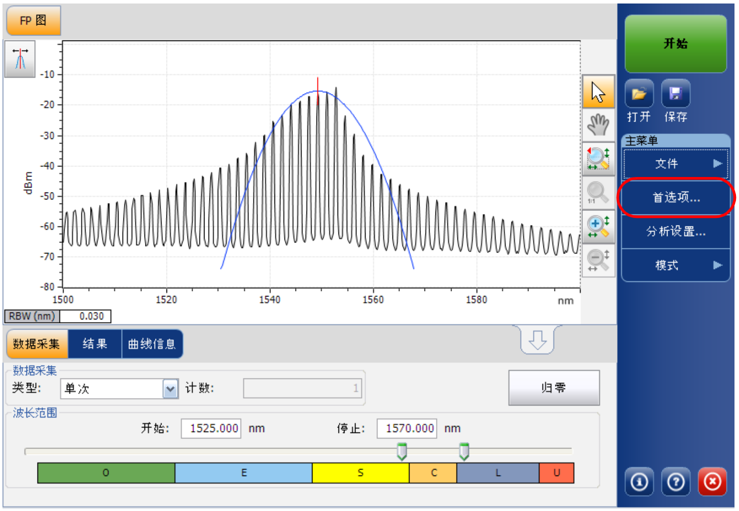
➤ 描述：根据需要输入位置的描述。

5. 按 “确定”保存更改并关闭窗口，或按 “取消”退出而不保存。

按 “恢复默认值”删除全部更改并应用默认值。

若要输入注释：

1. 在 “主菜单” 中，按 “首选项”。



2. 选择 “注释” 选项卡。

3. 输入当前曲线的注释。

4. 按 “确定” 保存更改并关闭窗口，或按 “取消” 退出而不保存。

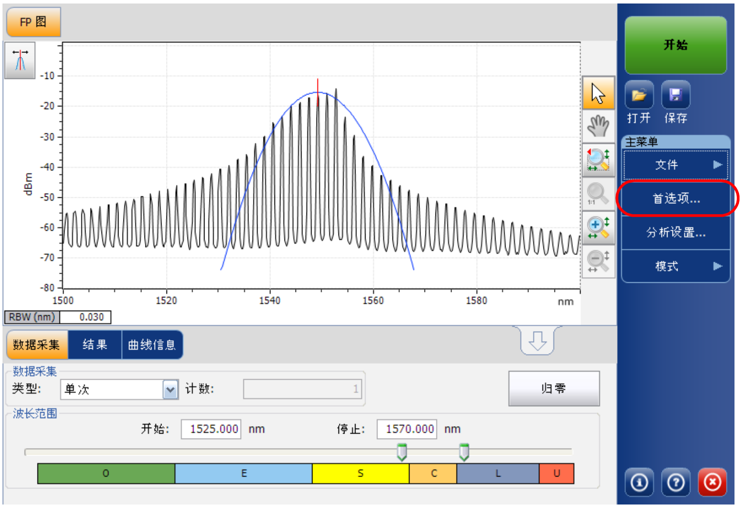
按 “清除” 清除 “注释” 选项卡中所做的全部修改。

设置显示参数

此应用程序可让您设置数据采集曲线的显示参数。您可设置曲线和结果表中的光谱单位。

若要设置显示参数：

1. 在 “主菜单” 中，按 “首选项”。



2. 选择“显示”选项卡。

3. 选择要使用的光谱单位：nm 或 THz。

4. 选择是否显示水平标记线。

5. 选择图形的背景配色方案。

6. 按 “确定”保存更改并关闭窗口，或按 “取消”退出而不保存。

按 “恢复默认值”删除全部更改并应用默认值。

设置数据采集参数

测试前，您必须设置数据采集类型和参数。

FP 模式的数据采集类型有三种：

➤ 单次：进行一次光谱测量。应用程序根据这次测量显示结果。

➤ 平均：根据您输入的扫描次数进行光谱测量。每次数据采集后会显示曲线，并和之前的曲线一起取平均值。

➤ 实时：连续执行光谱测量，直到用户按 “停止”。此模式不计算光谱测量结果的平均值。每次数据采集完成后，图形和结果会实时刷新。

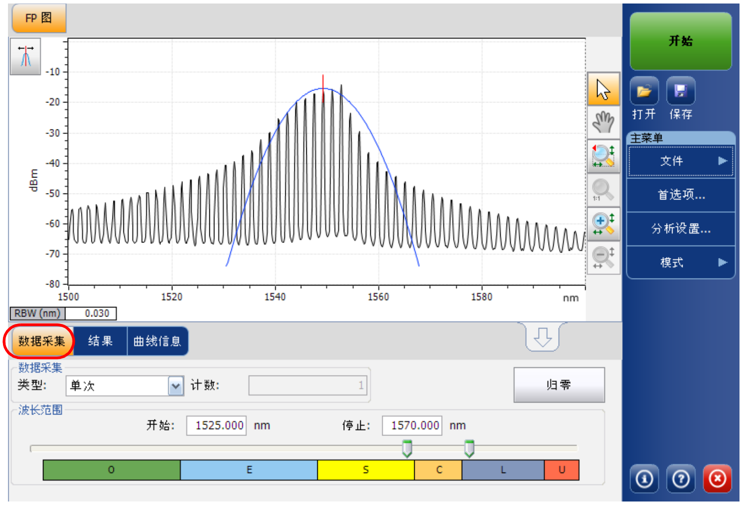
测量光谱前，您必须选择要使用的波长或频率范围。您可对整个光谱、光谱波段或自定义的范围进行扫描。

注意： 波长或频率范围越窄，数据采集越快。

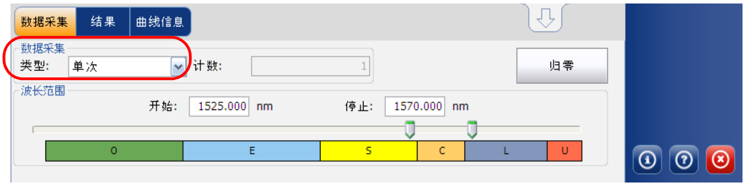
注意： 离线模式下 “数据采集”选项卡不可用。

若要设置 “数据采集”选项卡中的参数：

1. 在主窗口中，选择 “数据采集”选项卡。



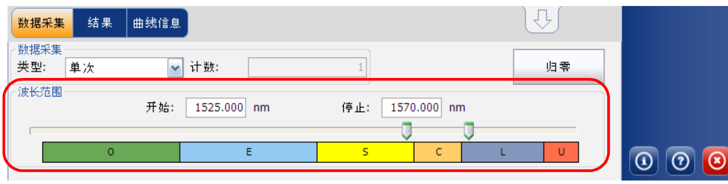
2. 选择数据采集类型。



3. 如果选择了 “平均”类型的数据采集，还要输入扫描次数。

注意： 如果执行单次扫描或实时扫描，扫描次数无法修改。

4. 选择数据采集的波长范围。



要选择波长范围，您可以输入 “开始”值和 “停止”值，也可以使用光谱波段图上方的两个滑块。

要使用两个滑块来选择波长范围，可以移动左边或右边的滑块，也可以直接单击任一光谱波段。

注意： 您可选择多个相邻的光谱波段，例如， S+C。

各光谱波段的覆盖范围如下：

➤ O 波段 （原始波长）： 1255 至 1365 nm

➤ E 波段 （扩展波长）： 1355 至 1465 nm

➤ S 波段 （短波长）： 1455 至 1535 nm

➤ C 波段 （常见的 “铒窗口”）： 1525 至 1570 nm

➤ L 波段 （长波长）： 1560 至 1630 nm

➤ U 波长 （超长波长）： 1620 至 1650 nm。

8 设置光谱透过率模式

在光谱透过率模式下进行光谱分析前，您必须按照本章所述设置 OSA 模块和测试应用程序的相关参数。

设置测试参数前，请按第 14 页 “选择测试模式”所述选择光谱透过率测试模式。

- 首选项为图和表中显示的结果以及任务信息和相关注释。这些注释随各个文件一起保存。
- 分析参数包括通道详情、名义波长或频率、输入偏移值和输出偏移值。
- 数据采集参数包含要执行的测量类型和波长范围。

有关详细信息，请参阅第 192 页 “设置首选项”、第 203 页 “设置光谱透过率分析参数”和第 210 页 “设置数据采集参数”。

设置首选项

“首选项”窗口可让您设置曲线的常规信息和注释，并设置显示参数。

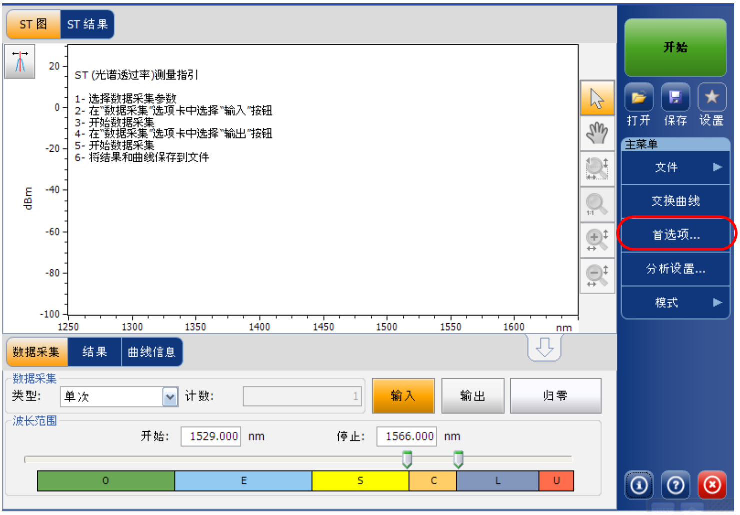
注意： 在离线模式下，仅 “显示”选项卡可用。

设置曲线信息

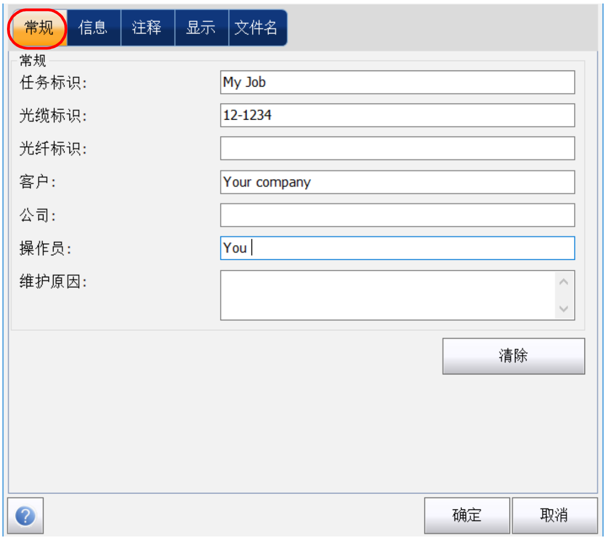
曲线信息包括待完成任务的描述、光缆标识、任务标识以及被测对象的相关信息。

若要输入常规信息：

1. 在 “主菜单”中，按 “首选项”。



2. 选择“常规”选项卡。



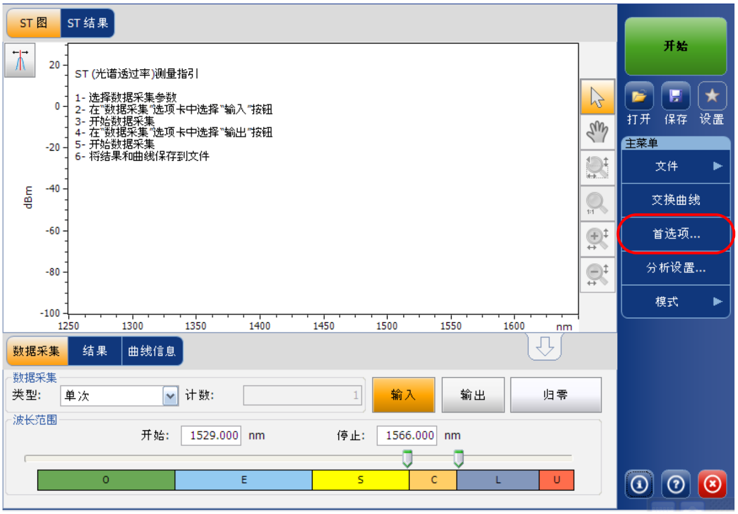
3. 根据需要设置常规参数。

4. 按“确定”保存更改并关闭窗口，或按“取消”退出而不保存。

按“清除”清除“常规”选项卡中所做的全部修改。

若要输入链路和位置信息：

1. 在 “主菜单” 中，按 “首选项”。



2. 选择 “信息” 选项卡。

3. 在 “系统和链路信息” 下，根据需要设置下列参数：

   ➤ 链路标识前缀：链路标识的前缀值。您可输入任何数字字母值。

   ➤ 起始值：链路标识的后缀递增的起始值。

   如果选中 “自动递增” 选项，每次保存新文件时该值就会递增。

重要提示

如果不选中 “自动递增”选项，保存曲线文件时您必须手动更改文件名，否则应用程序会覆盖之前保存的文件。

   ➤ 方向：链路的方向。

   ➤ 系统：被测系统的信息。

4. 在 “位置信息” 下，根据需要设置下列参数：

   ➤ 网元：网元类型。

   ➤ 测试点：链路上执行测试的地方。

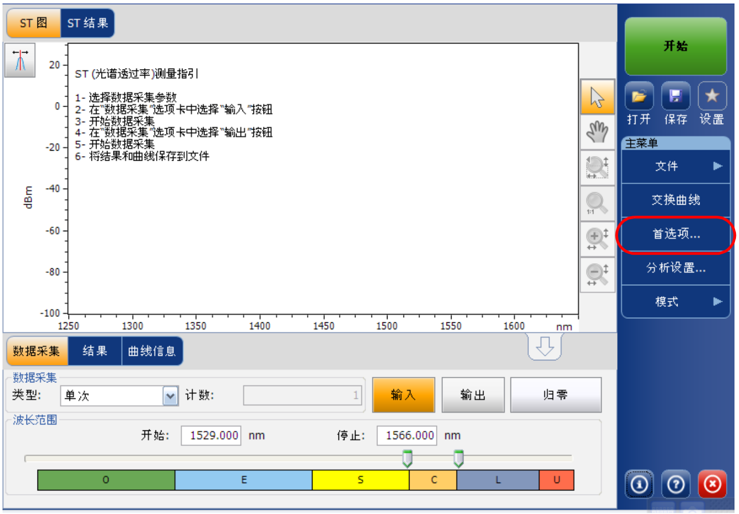
   ➤ 描述：位置描述 （需要时）。

5. 按 “确定” 保存更改并关闭窗口，或按 “取消” 退出而不保存。

按 “恢复默认值” 删除全部更改并应用默认值。

若要输入注释：

1. 在“主菜单”中，按“首选项”。



2. 选择 “注释”选项卡。

3. 输入当前曲线的注释。
4. 按 “确定”保存更改并关闭窗口，或按 “取消”退出而不保存。

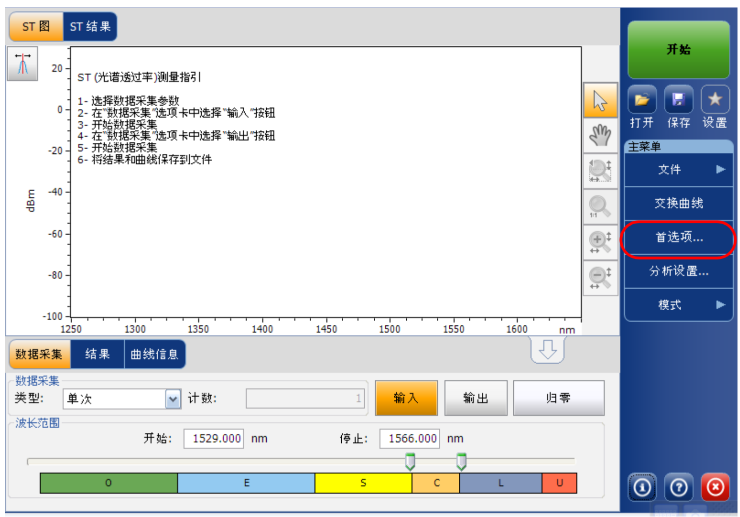
按 “清除”清除 “注释”选项卡中所做的全部修改。

设置显示参数

此应用程序可让您设置数据采集曲线的显示参数。您可设置曲线和结果表中的光谱单位。

若要设置显示参数:

1. 在 “主菜单” 中，按 “首选项”。



2. 选择 “显示” 选项卡。

3. 选择要使用的光谱单位：nm 或 THz。

4. 选择是否显示水平标记线。

5. 选择图形的背景配色方案。

6. 按 “确定” 保存更改并关闭窗口，或按 “取消” 退出而不保存。

按 “恢复默认值” 删除全部更改并应用默认值。

设置光谱透过率分析参数

本节描述应用程序的各种分析设置。这些设置将应用于后续的数据采集 / 重新分析。

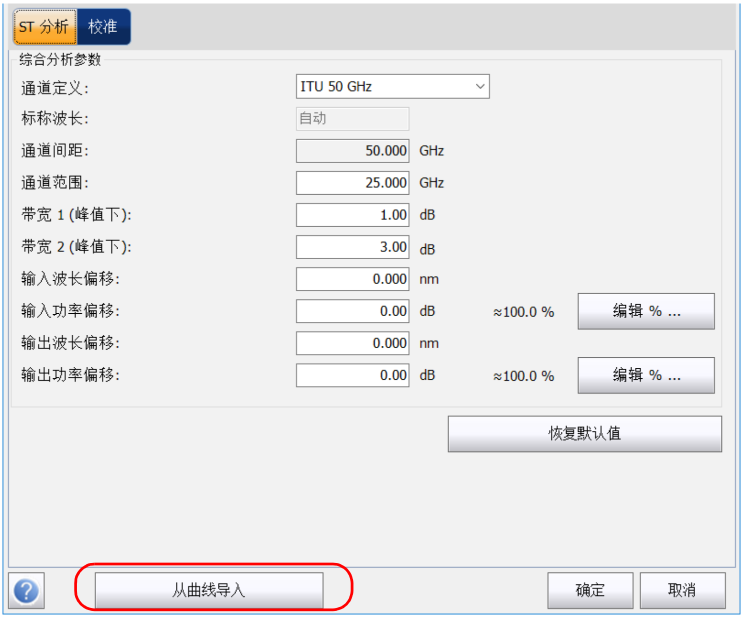
注意： 修改分析设置参数并确认后，新设置将立即生效。此时，当前曲线会被重新分析，分析设置参数将在之后的数据采集中应用于综合结果和通道结果。

您可以单独设置每个参数，也可以导入当前曲线的参数。

若要导入当前曲线的参数：

1. 确保当前屏幕上显示了一条曲线。
2. 在 “主菜单” 中，按 “分析设置”。

3. 在任一选项卡中，按 “从曲线导入”。



4. 按 “确定” 确认修改。

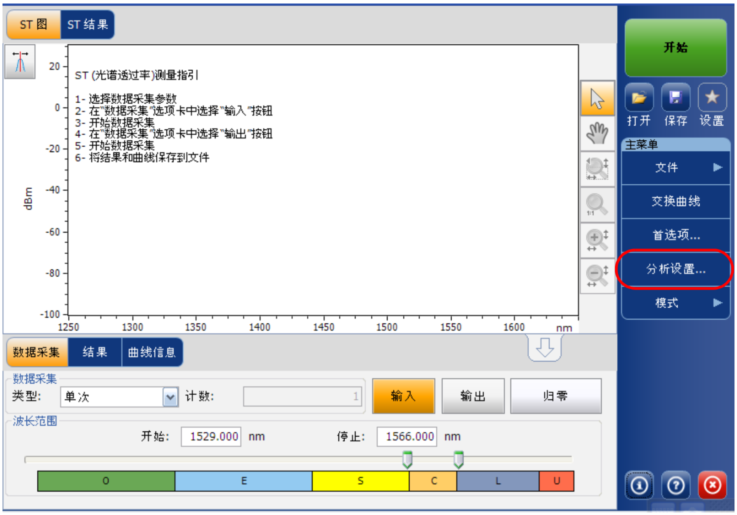
设定 ST 分析设置

光谱透过率数据采集的综合分析参数影响结果的计算方法。

注意： 修改分析设置参数并确认后，新设置将立即生效。此时，当前曲线会被重新分析，分析设置参数将在之后的数据采集中应用于 ST 结果。

若要设定 ST 分析参数：

1. 在“主菜单”中，按“分析设置”。



2. 选择 “ST 分析” 选项卡。


ST 分析
校准
综合分析参数
通道定义:
ITU 50 GHz
标称波长:
自动
通道间距:
50.000
GHz
通道范围:
25.000
GHz
带宽 1 (峰值下):
1.00
dB
带宽 2 (峰值下):
3.00
dB
输入波长偏移:
0.000
nm
输入功率偏移:
0.00
dB
≈100.0 %
编辑 % ...
输出波长偏移:
0.000
nm
输出功率偏移:
0.00
dB
≈100.0 %
编辑 % ...
恢复默认值
从曲线导入
确定
取消

3. 在“综合分析参数”下，根据需要设置下列参数：

➤ 通道定义：表示考虑通道中此界限内的功率值。

以最大峰值为中心：通道以插入损耗最低的波峰为中心。

ITU 标准波长：从插入损耗最低的波峰处选择最接近的 ITU 通道。

CWDM：从插入损耗最低的波峰处选择最接近的 CWDM 通道。

自定义：通道以用户指定值为中心。

➤ 额定波长或频率 （nm 或 THz）：表示一个代表通道中心波长 (nm) 或频率 (THz) 的值。只有将 “通道定义”中选定为 “自定义”时，此栏才可编辑。

➤ 通道距离 （GHz 或 nm）：表示通道之间的距离。通道间距值会根据通道定义选项中的选择而定。只有当 “通道中心波长”设置为自定义时，“通道间距”框才可编辑。

➤ 通道范围 （GHz 或 nm）：表示考虑通道中此界限内的功率值。积分功率根据通道宽度计算。

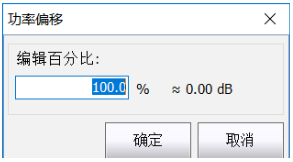
➤ 带宽 1 （峰值下） (dB)：设置计算带宽所使用的功率电平 （相对于通道峰值功率）。

➤ 带宽 2 （峰值下） (dB)：设置计算带宽所使用的功率电平 （相对于通道峰值功率）。

➤ 输入波长偏移 (nm)：表示应用到输入波长的偏移值。使用此参数不会改变 EXFO 的校准结果，只是方便您根据需要临时修正相关参数，例如，在需要超常规使用模块的情况下。此参数的单位不能为 THz。如果应用了偏移，图形下方会显示 (λ ↔)。

➤ 输入功率偏移 (dB)：表示应用到输入功率的偏移值。使用此参数不会改变 EXFO 的校准结果，只是方便您根据需要计算相关参数，例如，在需要超常规使用模块的情况下。如果应用了偏移，图形下方会显示 (P ↔)。

若要将功率偏移值改为以百分数表示，按 “编辑 %”。

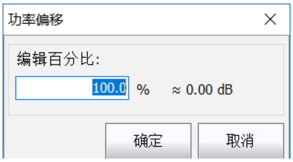


“编辑百分比”中输入的百分比值将会转换为相应的 dB 值。

➤ 输出波长偏移 (nm)：表示应用到输出波长的偏移值。使用此参数不会改变 EXFO 的校准结果，只是方便您根据需要临时修正相关参数，例如，在需要超常规使用模块的情况下。此参数的单位不能为 THz。如果应用了偏移，图形下方会显示 (λ ↔)。

➤ 输出功率偏移 (dB)：表示应用到输出功率的偏移值。使用此参数不会改变 EXFO 的校准结果，只是方便您根据需要计算相关参数，例如，在需要超常规使用模块的情况下。如果应用了偏移，图形下方会显示 (P ↔)。

若要将功率偏移值改为以百分数表示，按 “编辑 %”。



“编辑百分比”中输入的百分比值将会转换为相应的 dB 值。

4. 按 “确定”保存更改并关闭窗口，或按 “取消”退出而不保存。

按 “恢复默认值”删除全部更改并应用默认值。

设置数据采集参数

测试前，您必须设置数据采集类型和参数。

在光谱透过率模式下，数据采集类型有三种：单次、平均和实时。

➤ 单次：进行一次光谱测量。应用程序根据这次测量显示结果。

➤ 平均：根据您输入的扫描次数进行光谱测量。每次数据采集后会显示曲线，并和之前的曲线一起取平均值。

➤ 实时：连续执行光谱测量，直到用户按 “停止”。此模式不计算光谱测量结果的平均值。每次数据采集完成后，图形和结果会实时刷新。

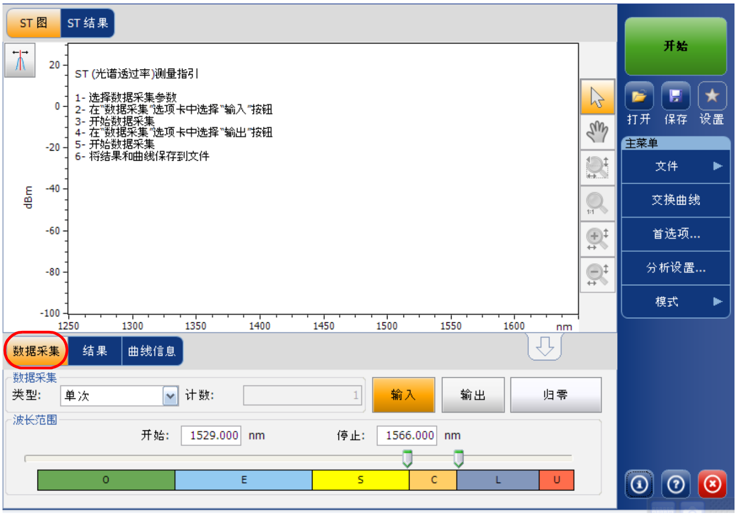
测量光谱前，您必须选择要使用的波长或频率范围。您可对整个光谱、光谱波段或自定义的范围进行扫描。

注意： 波长或频率范围越窄，数据采集越快。

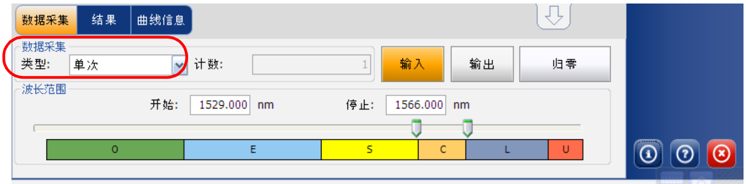
注意： 离线模式下 “数据采集”选项卡不可用。

若要设置 "数据采集" 选项卡中的参数：

1. 在主窗口中，选择 "数据采集" 选项卡。



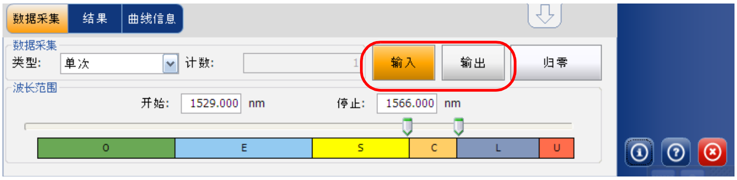
2. 选择数据采集类型。



3. 如果选择了 “平均” 类型的数据采集，还要输入扫描次数。

注意： 如果执行单次扫描或实时扫描，扫描次数无法修改。

4. 按 “输入” 或 “输出” 指定保存下次数据采集的位置。



5. 选择数据采集的波长范围。

要选择波长范围，您可以输入 “开始” 值和 “停止” 值，也可以使用光谱波段图上方的两个滑块。

要使用两个滑块来选择波长范围，可以移动左边或右边的滑块，也可以直接单击任一光谱波段。

注意： 您可选择多个相邻的光谱波段，例如， S+C。

各光谱波段的覆盖范围如下：

- ➤ O 波段 （原始波长）：1255 至 1365 nm
- ➤ E 波段 （扩展波长）：1355 至 1465 nm
- ➤ S 波段 （短波长）：1455 至 1535 nm
- ➤ C 波段 （常见的 “铒窗口”）：1525 至 1570 nm
- ➤ L 波段 （长波长）：1560 至 1630 nm
- ➤ U 波长 （超长波长）：1620 至 1650 nm。

9 设置 EDFA 测试模式

在 EDFA 模式下进行光谱分析前，您必须按照本章所述设置 OSA 模块和测试应用程序的相关参数。

设置 EDFA 测试参数前，请按第 14 页 “选择测试模式” 所述选择 EDFA 测试模式。

➤ 首选项为图和表中显示的结果以及任务信息和相关注释。这些注释随各个文件一起保存。

➤ 分析参数包括通道列表的详细信息，可让您配置综合分析参数。

➤ 数据采集参数包含要执行的测量类型和波长范围。

有关详细信息，请参阅第 216 页 “设置首选项”、第 232 页 “设置 EDFA 分析参数” 和第 248 页 “设置数据采集参数”。

您可根据测试需要通过多种方式设置您的设备。

➤ 首选方式利用完整的分析设置参数并填写所有表格中的信息。有关详细内容，请参阅第 232 页 “设置 EDFA 分析参数”。此设置将用于下一次数据采集。

➤ 最高效的方式是上传预定义的数据采集和分析配置，然后选择一个常用配置。现场操作人员只需按下  按钮，选择适当的配置，然后按 “开始”。例如，预定义的配置可以类似 “32 条通道 DWDM 50GHz”、“Toronto-Montreal CWDM” 或 “供应商 ABC DWDM ROADM 40Gb”。有关详细内容，请参阅第 264 页 “管理用户设置”。

➤ 您还可以导入当前曲线的设置。此方法会获取当前曲线的数据和通道信息并将其应用于相应的选项卡。有关详细信息，请参阅第 232 页 “设置 EDFA 分析参数”。

设置首选项

“首选项”窗口可让您设置曲线的常规信息和注释，设置显示参数并自定义 EDFA 结果表。

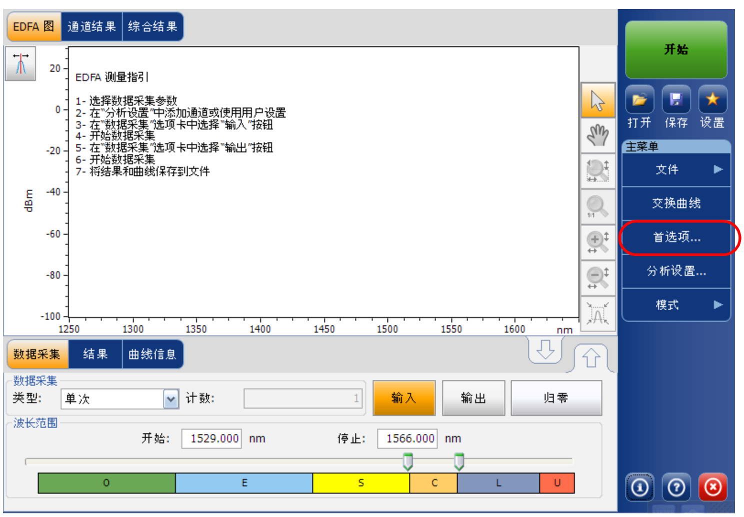
注意： 离线模式下只能使用 “显示”和 “EDFA 结果”选项卡。

设置曲线信息

曲线信息包括待完成任务的描述、光缆标识、任务标识以及被测对象的相关信息。

若要输入常规信息：

1. 在 “主菜单”中，按 “首选项”。



2. 选择 “常规” 选项卡。

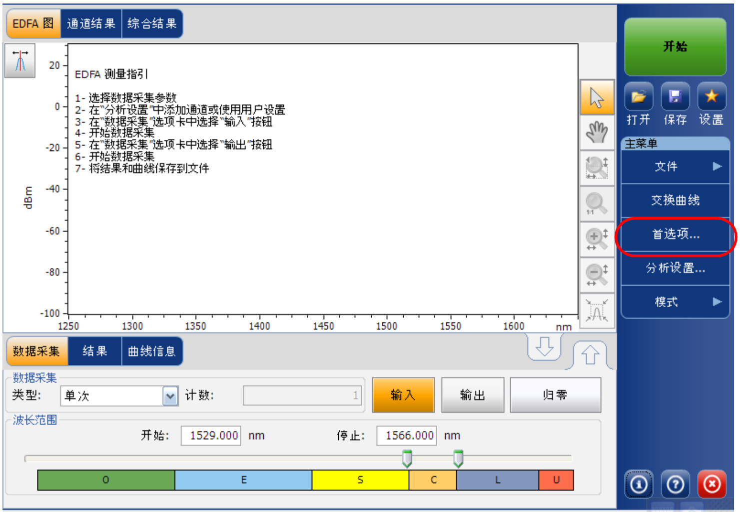
3. 根据需要设置常规参数。

4. 按 “确定” 保存更改并关闭窗口，或按 “取消” 退出而不保存。

按 “清除” 清除 “常规” 选项卡中所做的全部修改。

若要输入链路和位置信息：

1. 在 “主菜单” 中，按 “首选项”。



2. 选择 “信息” 选项卡。

3. 在 “系统和链路信息” 下，根据需要设置下列参数：

   ➤ 链路标识前缀：链路标识的前缀值。您可输入任何数字字母值。

   ➤ 起始值：链路标识的后缀递增的起始值。

   如果选中 “自动递增” 选项，每次保存新文件时该值就会递增。

重要提示

如果未选定 “自动递增” 选项，保存曲线文件时您必须手动更改文件名；否则，每次保存新曲线时应用程序都会覆盖上一次保存的文件。

   ➤ 方向：链路的方向。

   ➤ 系统：被测系统的相关信息。

4. 在 “位置信息” 下，根据需要设置下列参数：

   ➤ 网元：设置网元类型。

   ➤ 测试点：链路上执行测试的地方

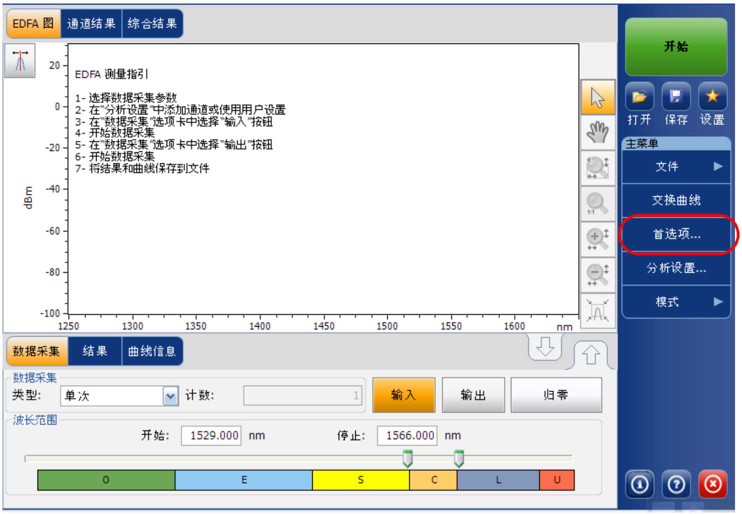
   ➤ 描述：根据需要输入位置的描述。

5. 按 “确定” 保存更改并关闭窗口，或按 “取消” 退出而不保存。

按 “恢复默认值” 删除全部更改并应用默认值。

若要输入注释:

1. 在“主菜单”中，按“首选项”。



2. 选择 “注释”选项卡。

3. 输入当前曲线的注释。

4. 按 “确定”保存更改并关闭窗口，或按 “取消”退出而不保存。

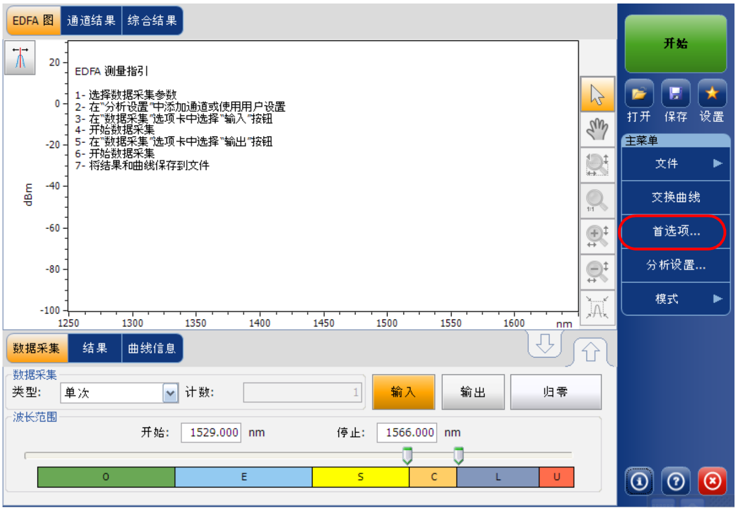
按 “清除”清除 “注释”选项卡中所做的全部修改。

设置显示参数

此应用程序可让您设置数据采集曲线的显示参数。您可设置曲线和结果表中的光谱单位。还可以选择在曲线波峰上显示的标志。

若要设置显示参数：

1. 在“主菜单”中，按“首选项”。



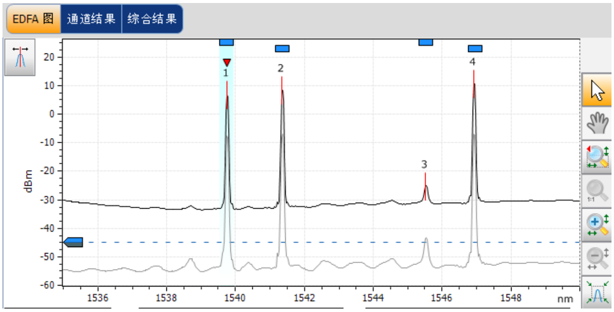
2. 选择“显示”选项卡。


常规
信息
注释
显示
EDFA 结果
文件名
常规
光谱单位:
nm
图中峰值标志:
通道编号
空结果通道:
隐藏
水平标记线:
显示
图形配色方案:
白色背景
恢复默认值
确定
取消

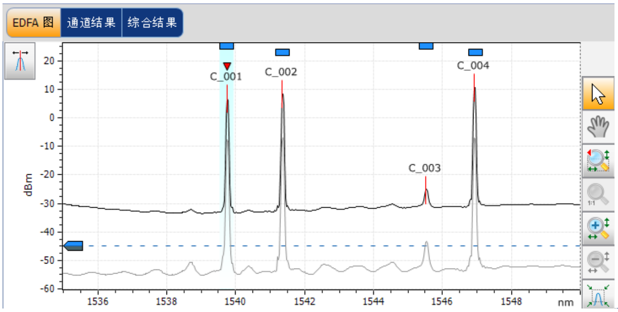
3. 选择要使用的光谱单位：nm 或 THz。

4. 选择在图中峰值上显示的标签，如通道名称、通道编号或无。

注意： 通道名称和通道编号不能同时显示。



通道编号



设置的通道名称

5. 选择是否要在 “结果” 选项卡中显示通道列表中的空通道。

6. 选择是否显示水平标记线。

7. 选择图形的背景配色方案。

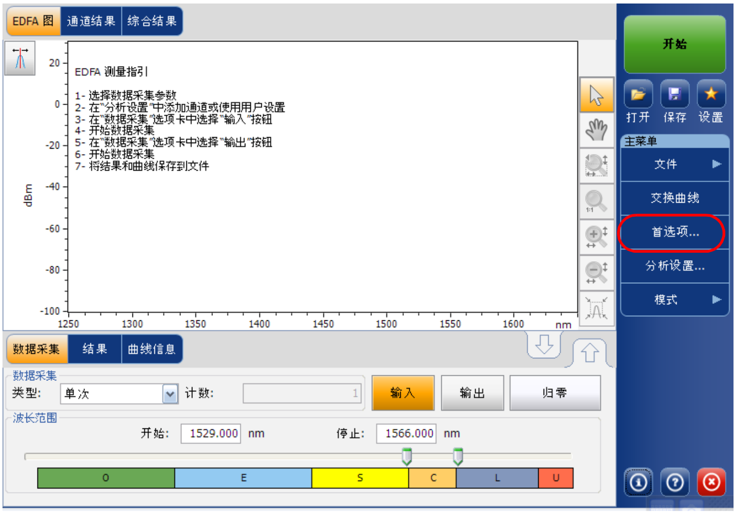
8. 按 “确定”保存更改并关闭窗口，或按 “取消”退出而不保存。按 “恢复默认值”删除全部更改并应用默认值。

自定义 EDFA 结果表

您可以选择要在 “结果”选项卡中显示的 EDFA 测试结果。

若要自定义结果表：

1. 在 “主菜单”中，按 “首选项”。



2. 选择 “EDFA 结果”选项卡。

3. 从可用的选项中选择您要在 “结果”选项卡中显示的参数：

- 名称：通道的名称。
- 中心波长 / 频率：表示该通道中波峰的光谱质心。
- 输入信号功率：表示选定通道的输入信号功率 （除去噪声）。
- 输出信号功率：表示选定通道的输出信号功率 （除去噪声）。
- S%：表示当前输出功率与测得的输出功率之比 （输出信号功率 / [输出信号功率 + PASE]）。
- PASE：表示 EDFA 放大的自发辐射功率。
- PSSE：表示光源的自发辐射功率。
- 增益：表示选定通道的增益 （输出信号功率 - 输入信号功率）。
- 噪声系数：表示选定通道上测得的 EDFA 噪声系数。
- 增益 - 平均增益：表示选定的通道增益减去所有通道增益的平均值。

4. 按向上或向下箭头更改各项在 “结果” 选项卡中的显示顺序。
5. 按 “确定” 保存更改并关闭窗口，或按 “取消” 退出而不保存。

按 “恢复默认值” 删除全部更改并应用默认值。

设置 EDFA 分析参数

本节描述此应用程序的各种分析设置，特别是通道列表和通道设置。您可设置通道列表、通道参数、管理常用配置以及执行用户校准。

注意： 修改分析设置参数并确认后，新设置将立即生效。此时，当前曲线会被重新分析，分析设置参数将在之后的数据采集中应用于综合结果和通道结果。

您可以单独设置每个参数，也可以导入当前曲线的参数。

若要导入当前曲线的参数：

1. 确保当前屏幕上显示了一条曲线。
2. 在 “主菜单” 中，按 “分析设置”。

3. 在任一选项卡中，按 “从曲线导入”。

4. 按 “确定”确认修改。

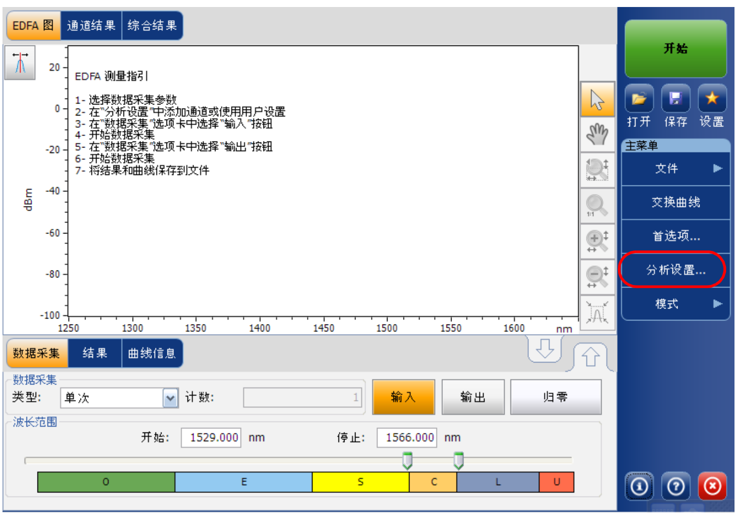
设置常规参数

EDFA 数据采集的常规分析参数决定应用程序对采集结果的计算方法。对任意参数所做的修改会影响之后的所有曲线，也可以在重新分析活动曲线将其应用到活动曲线。

> **重要提示**
>
> 您可以在 “常规”选项卡中设置默认通道参数。在数据采集过程中，如果发现任何通道列表未定义的通道，应用程序将使用默认通道参数进行分析。

若要设置常规参数：

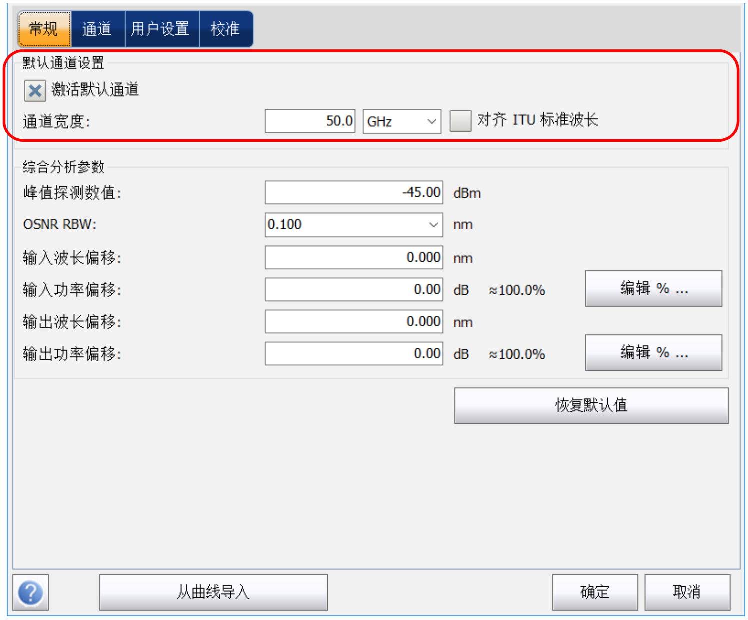
1. 在 “主菜单” 中，按 “分析设置”。



2. 选择 “常规” 选项卡。


常规
通道
用户设置
校准
默认通道设置
激活默认通道
通道宽度:
50.0
GHz
对齐 ITU 标准波长
综合分析参数
峰值探测数值:
-45.00
dBm
OSNR RBW:
0.100
nm
输入波长偏移:
0.000
nm
输入功率偏移:
0.00
dB
≈100.0%
编辑 % ...
输出波长偏移:
0.000
nm
输出功率偏移:
0.00
dB
≈100.0%
编辑 % ...
恢复默认值
从曲线导入
确定
取消

3. 在 “默认通道设置”下，根据需要设置下列参数：



➤ 取消选中 “激活默认通道”选项以使用当前指定的通道进行分析。这样可以省去检测整个光谱范围内的峰值，缩短了分析时间。应用程序将不分析指定通道列表外的峰值。

➤ 通道宽度 （GHz 或 nm）：表示该通道中要计算功率值的范围。

对于默认通道，设置为通道范围的通道宽度应小于或等于通道间距（通道间距在创建通道列表时设置）。如果通道宽度大于通道间距，可能会导致在两条不同的通道上只发现一个波峰且对此波峰执行了两次分析并显示两个分析结果，也可能会在同一通道上发现两个波峰并视之为一个多波峰信号。如果出现这种情况，您可以用标记线找出相邻通道的间距或通道宽度。

➤ 对齐 ITU 标准波长：选中此项后，应用程序会将检测到的所有波峰都置于最近的 ITU 通道。 ITU 光栅基于选定的通道宽度。

4. 在“综合分析参数”下，根据需要设置下列参数：

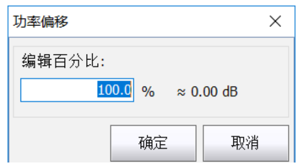
➤ 峰值检测电平 (dBm)：表示可视为信号的波峰的最低功率电平。

➤ OSNR RBW (nm)：表示选定 OSNR 计算方法的分辨率带宽。此参数通常设置为 0.1 nm，使多台 OSA 的有效分辨率不同时，也能进行对比。仪器的 RBW 值显示在图形的下方。本参数对数据采集无实际影响，只是用作以标准方式计算 OSNR 值的标准化因子。

➤ 输入波长偏移 (nm)：表示应用到输入波长的偏移值。使用此参数不会改变 EXFO 的校准结果，只是方便您根据需要临时修正相关参数，例如，在需要超常规使用模块的情况下。此参数的单位不能为 THz。如果应用了偏移，图形下方会显示 (λ ↔)。

- 输入功率偏移 (dB)：表示应用到输入功率的偏移值。使用此参数不会改变 EXFO 的校准结果，只是方便您根据需要计算相关参数，例如，在需要超常规使用模块的情况下。如果应用了偏移，图形下方会显示 (P)。

  若要将功率偏移值改为以百分数表示，按 “编辑 %”。

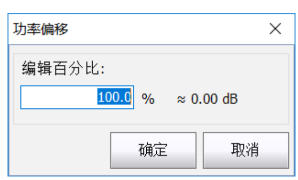
  

  在 “编辑百分比” 中输入的百分数会自动转换为 dB 值。

- 输出波长偏移 (nm)：表示应用到输出波长的偏移值。使用此参数不会改变 EXFO 的校准结果，只是方便您根据需要临时修正相关参数，例如，在需要超常规使用模块的情况下。此参数的单位不能为 THz。如果应用了偏移，图形下方会显示 (λ)。

- 输出功率偏移 (dB)：表示应用到输出功率的偏移值。使用此参数不会改变 EXFO 的校准结果，只是方便您根据需要计算相关参数，例如，在需要超常规使用模块的情况下。如果应用了偏移，图形下方会显示 (P)。

  若要将功率偏移值改为以百分数表示，按 “编辑 %”。

  在 “编辑百分比” 中输入的百分数会自动转换为 dB 值。

5. 按 “确定” 保存更改并关闭窗口，或按 “取消” 退出而不保存。

按 “恢复默认值” 删除全部更改并应用默认值。

管理通道

测试 DWDM 系统包括描述链路中的多路信号。此应用程序可让您使用通道编辑器设置通道或使用当前数据快速生成通道。您还可以快速创建等间距通道列表。创建的通道列表可根据需要进行修改。您可更改一条或多条通道的分析参数。

创建通道列表时有些通道可能会重叠。通道宽度用 nm 表示时，如果两个通道共有频率范围超过 1.2 GHz 则视为重叠。

若要添加通道列表：

1. 在“主菜单”中，按“分析设置”。

2. 选择 “通道” 选项卡。


常规
通道
用户设置
校准
名称
λ (nm)
通道宽度
C_001
1539.747
50.0 GHz
C_002
1541.353
50.0 GHz
C_003
1545.503
50.0 GHz
C_004
1546.926
50.0 GHz
全选
取消全选
删除
编辑选择...
添加通道...
从曲线导入
确定
取消

3. 默认情况下，通道列表中没有数据。按 “添加通道”。

4. 按照如下说明在框中输入值：

- 起始范围 （nm 或 THz）：表示通道列表的起始范围。
- 停止范围 （nm 或 THz）：表示通道列表的结束范围。
- 通道中心波长 / 频率：表示该通道中波峰的光谱质心。

注意： 如果使用自定义的通道中心波长，则应用程序将以起始范围为中心创建第一条通道，然后根据通道间距和通道宽度创建列表。

- 通道间距 （nm 或 GHz）：表示通道之间的距离。通道间距值将根据在 “通道中心波长” 中选择的值确定。只有当 “通道中心波长” 设置为自定义时，“通道间距” 框才可编辑。
- 通道宽度 （nm 或 GHz）：表示该通道中要计算功率值的范围。积分功率根据通道宽度计算。

- ➤ 名称前缀：表示要给通道名称添加的前缀。
- ➤ 起始值：设置通道列表中通道名的递增起始值。
- ➤ 递增值：表示通道列表中通道名的递增值。

5. 按“确定”返回“通道”选项卡，此时其中列出了添加的通道。

注意： 添加新通道后，“使用默认值”的阈值界限设置将应用到通道参数。

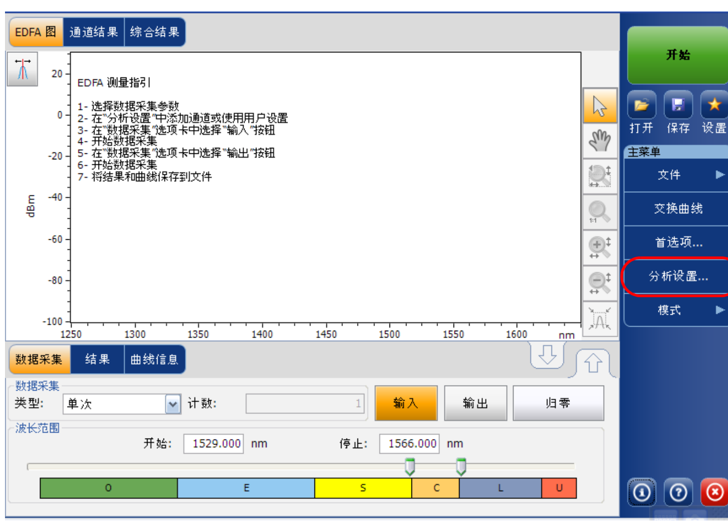
注意： 如果存在重叠的通道，应用程序会显示提示消息，但仍可对重叠的通道进行分析。如果添加了重复的通道，应用程序会显示询问消息，确认是否用重复的通道覆盖现有通道。

6. 按“确定”保存更改并关闭窗口，或按“取消”退出而不保存。

注意： 如果添加的通道超过 1000 条，应用程序会显示提示消息。此时，必须删除通道列表中多余的通道才能退出“分析设置”窗口。您可根据需要手动删除通道。

若要编辑特定通道的参数：

1. 在“主菜单”中，按“分析设置”。



2. 选择 “通道” 选项卡。

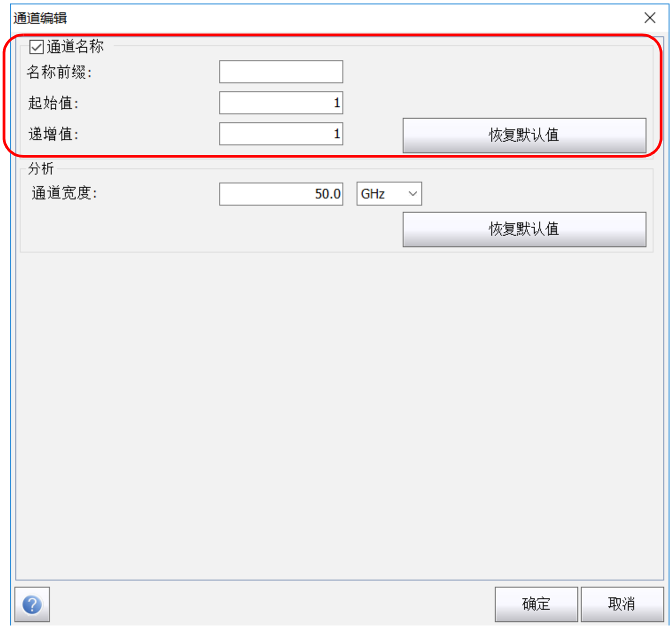

常规
通道
用户设置
校准
名称
λ (nm)
通道宽度
C_001
1539.747
50.0 GHz
C_002
1541.353
50.0 GHz
C_003
1545.503
50.0 GHz
C_004
1546.926
50.0 GHz
全选
取消全选
删除
编辑选择...
添加通道...
从曲线导入
确定
取消

3. 在通道列表中，选择一条或多条要修改的通道。

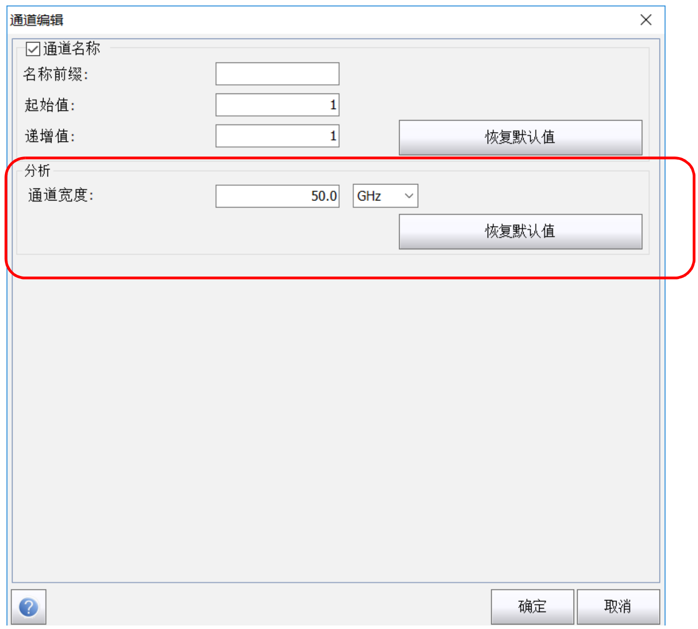
如果要将所做的更改应用到所有通道，按 “全选”。您可以逐条选择所需通道，也可以一次性选择全部通道。按 “取消全选”可以取消选择所有通道。如果要删除选定的通道，按 “删除”。

4. 按 “编辑选择”。

5. 如果要对通道进行命名，请启用相应的选件。然后输入要使用的名称前缀。如果已选择多个通道并希望通道名称能自动递增，请输入递增起始值，然后输入每个新通道的递增值。



6. 根据需要修改参数设置。有关参数设置的详细信息，请参阅第 239 页“管理通道”。如果某个参数设置为空，则保留修改前的值。



7. 按“确定”返回“通道”选项卡，此时其中包含修改后的参数值。

8. 按“确定”保存更改并关闭窗口，或按“取消”退出而不保存。

设置数据采集参数

测试前，您必须设置数据采集类型和参数。

在 EDFA 模式下，数据采集类型有三种：单次、平均和实时。

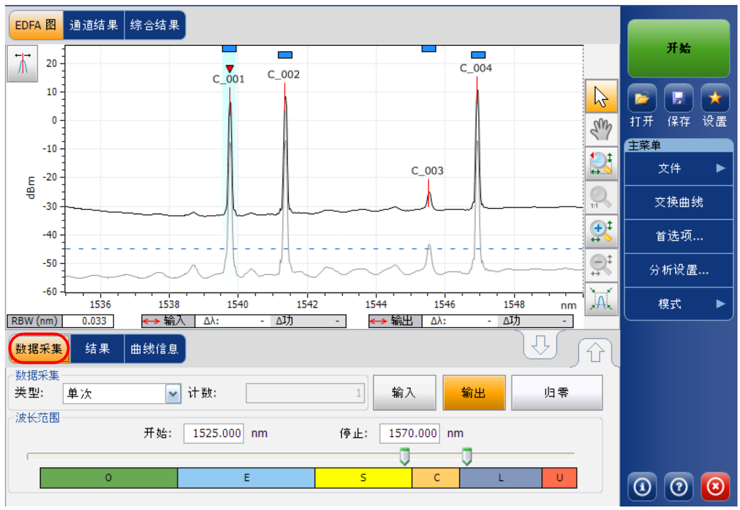
- 单次：进行一次光谱测量。应用程序根据这次测量显示结果。
- 平均：根据您输入的扫描次数进行光谱测量。每次数据采集后会显示曲线，并和之前的曲线一起取平均值。
- 实时：连续执行光谱测量，直到用户按 “停止”。此模式不计算光谱测量结果的平均值。每次数据采集完成后，图形和结果会实时刷新。

测量光谱前，您必须选择要使用的波长或频率范围。您可对整个光谱、光谱波段或自定义的范围进行扫描。

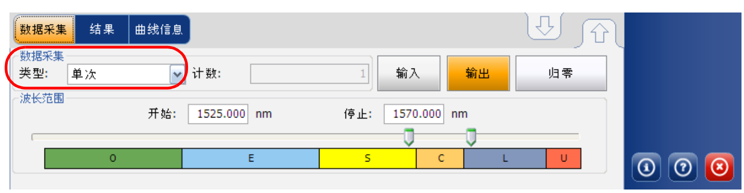
注意： 波长或频率范围越窄，数据采集越快。

若要设置 “数据采集”选项卡中的参数：

1. 在主窗口中，选择 “数据采集”选项卡。



2. 选择数据采集类型。

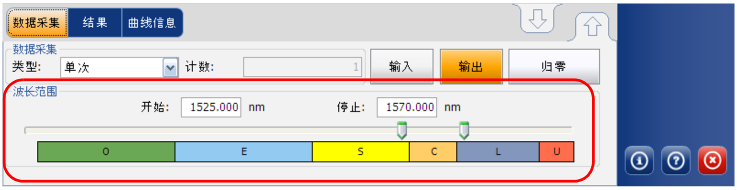


3. 如果选择了 “平均” 类型的数据采集，还要输入扫描次数。

注意： 如果执行单次扫描或实时扫描，扫描次数无法修改。

4. 按 “输入” 或 “输出” 指定保存下次数据采集的位置。

5. 选择数据采集的波长范围。



要选择波长范围，您可以输入 “开始” 值和 “停止” 值，也可以使用光谱波段图上方的两个滑块。

要使用两个滑块来选择波长范围，可以移动左边或右边的滑块，也可以直接单击任一光谱波段。

注意： 您可选择多个相邻的光谱波段，例如， S+C。

各光谱波段的覆盖范围如下：

➤ O 波段 （原始波长）：1255 至 1365 nm
➤ E 波段 （扩展波长）：1355 至 1465 nm
➤ S 波段 （短波长）：1455 至 1535 nm
➤ C 波段 （常见的 “铒窗口”）：1525 至 1570 nm
➤ L 波段 （长波长）：1560 至 1630 nm
➤ U 波长 （超长波长）：1620 至 1650 nm。

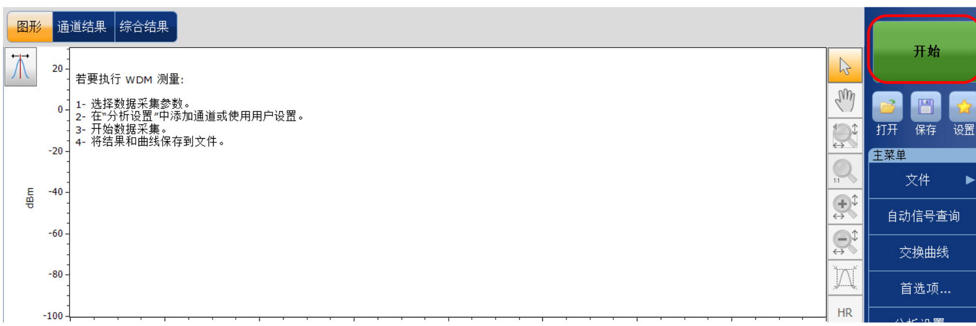
10 开始测量

开始测量前，您必须选择并配置测试模式。有关选择测试模式的操作指引，请参阅第 14 页 “选择测试模式”。有关各测试模式的配置指引，请参阅相关章节。

注意： 离线模式下不能启动测量。

若要启动测量：

在主窗口中，按 “开始”。该按钮将变为 “停止”按钮。



状态栏会显示数据采集正在进行。

数据采集完成后，应用程序会显示曲线图、结果数据和曲线信息，如果启用了通过 / 未通过判定，还会显示通过 / 未通过状态。

11 管理文件和测试配置

使用自动信号查询功能

自动信号查询功能可让您启动测量过程，使应用程序能根据模块在输入端口检测到的信号自动创建分析设置 （扫描范围、通道列表、分析参数等）。

注意： 自动信号查询功能仅在 WDM 和漂移测试模式下可用。

测量会先执行一次全范围扫描 （1250 nm 至 1650 nm），以判断信号的频谱范围。然后，测量会执行第二次扫描，通过定位输入信号的各波峰来创建分析参数。

在自动信号查询过程结束后，对于检测到的通道，应用程序会显示结果和图形，并自动将新发现的分析参数应用到分析设置。

注意： 如果第一次扫描时未检测到信号，则图形显示全范围扫描结果，自动信号查询过程结束。应用程序中的分析参数不变。

请根据以下说明创建自动信号查询功能的分析参数：

➤ 数据采集的频谱范围从第一次检测到的信号波峰之前 5 nm 到最后一次检测到信号波峰之后 5 nm （此二者分别为频谱范围的界限）。

➤ 通道列表根据检测到的信号波峰创建。默认设置将应用到所有通道参数。

➤ 各通道的中心波长与 ITU 标准波长一致 （DWDM 为 200 GHz、100 GHz、 50 GHz 或 25 GHz）。

➤ 通道宽度根据重叠标准确定，如果两条通道的重叠范围超过 0.001 nm 或 0.001 GHz，则将其宽度改为更小值。如果两条宽度为 25 GHz 通道仍然重叠，则不减小其宽度。应用程序将其视为多波峰信号 （类似于最近的 10 Gb/s 或 40 Gb/s 调制格式），并将通道宽度设置为 50 GHz。

注意： 使用自动信号查询功能的限制之一是必须基于 ITU 标准波长创建通道。所有检测到的波峰都必须与 ITU 通道相对应，通道宽度和通道间距根据其中一类 ITU 标准波长（25 GHz、50 GHz、 100 GHz 或 200 GHz）计算并拟合。如果通道不以 ITU 标准波长为基础，结果可能会有误。在此情况下，您可使用默认通道定义或创建新通道列表。

若要启动自动设置测量：

注意： 离线模式下不能启动自动设置测量。

在“主菜单”中，按“自动信号查询”。“开始”按钮变为“停止”按钮，自动信号查询开始第一次扫描。

注意： 如果屏幕上已有一条活动曲线且被修改过，应用程序会提示您保存该曲线。所有参考曲线将被清除。

状态栏会显示自动信号查询功能正在进行数据采集。

自动设置测量完成后，您可以开始使用新检测到的参数。只需按“开始”即可用新发现的设置再执行一次测量。

管理测量文件

该应用程序可让您管理所有测试模式的测量文件。您可以保存文件以备参考、打开文件继续进行测试或删除文件释放设备空间。

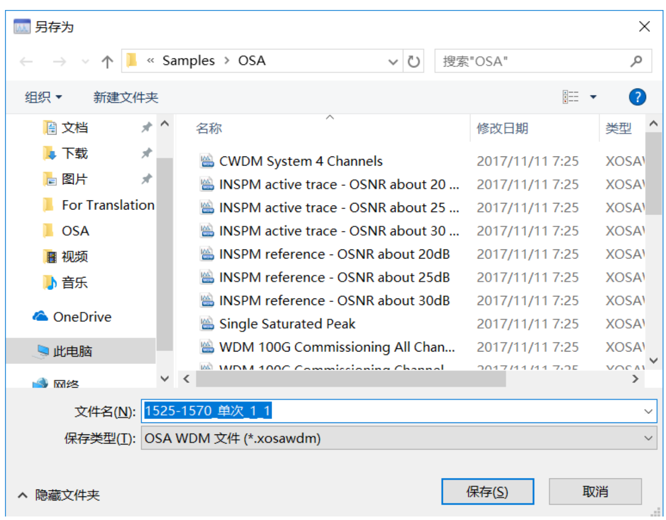
注意： 为了特殊的测试需要，您还可从一种测试模式中打开另一种测试模式的文件，例如在 EDFA 测试模式中打开 WDM 曲线。有关详细信息，请参阅第 261 页 “打开其他测试模式下的文件”。

若要保存文件：

1. 在 “主菜单” 中，按 “文件”，然后按 “另存为”。

   或

   在主窗口中，按 。



2. 根据需要更改位置和文件名。

3. 要保存曲线，按 “保存”，否则按 “取消” 退出窗口。

注意： 现有曲线被覆盖后将无法恢复。

注意： 参考曲线不能保存。

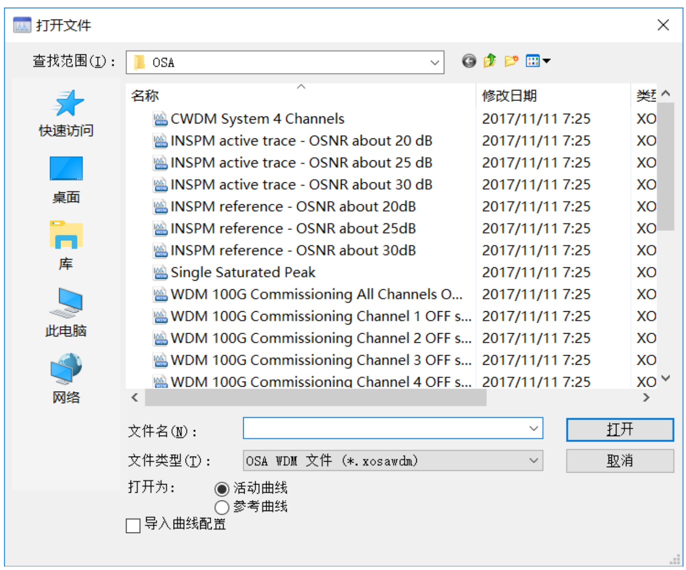
若要打开文件:

1. 在 “主菜单” 中，按 “文件”，然后按 “打开”。

   或

   在主窗口中，按  。

2. 如果已采集 （但未保存）曲线，将出现提示窗口，询问您是否要保存当前曲线。要保存曲线，按 “是”。保存曲线后，即可打开一条新曲线。要显示新曲线而不保存之前采集的曲线，按 “否”。要返回之前的窗口，按 “取消”。



3. 滚动列表，选择要打开的曲线。

4. 选择要加载文件的曲线类型：

   ➤ 在 WDM 模式下，有两种选择：活动曲线和参考曲线。

   ➤ 在光谱透过率和 EDFA 模式下打开 OSA WDM 文件后，有两种选择：输入曲线和输出曲线。

注意： 漂移、 DFB 和 FB 模式下无此选项。

在 WDM、漂移、 EDFA 或 ST 模式下，您可以选择打开文件时，是否同时导入曲线配置并覆盖当前分析设置和数据采集条件。要成功导入配置，必须使用正确的文件类型。

5. 按 “打开”打开文件。“图形”选项卡中出现曲线。主窗口中的所有值也会根据此文件更新。

若要清除文件：

1. 在 “主菜单” 中，按 “文件”。
2. 按 “新建”。

3. 如果已采集 （但未保存）曲线，将出现提示窗口，询问您是否要保存当前曲线。要保存曲线，按 “是”。保存曲线后，您就可让出空间给新曲线。要创建新曲线而不保存之前采集的曲线，按 “否”。要返回之前的窗口，按 “取消”。

注意： 在 WDM 模式下，此时所有参考曲线都将被清除。

打开其他测试模式下的文件

有时，您需要在其他测试模式下打开特定测试模式的文件。根据文件类型和您选择的模式，设备将会有不同的反应。

在 WDM 模式下打开其他测试模式文件

您的应用程序可让您在 WDM 模式下打开各种类型的文件。

加载光谱透射率文件 (.osast) 时，应用程序会使用当前 WDM 分析设置重新分析新导入的数据。

加载 EDFA (.osaedfa) 文件时，应用程序会根据获取的通道列表和默认通道设置创建临时设置，并使用当前 WDM 分析设置填充空白参数，然后重新分析新导入的数据。

加载光谱透射率文件或 EDFA 文件时，应用程序按以下规则导入曲线：

➤ 如果文件中的是输入曲线，则将其作为 WDM 参考曲线导入。

➤ 如果文件中的是输出曲线，则将其作为 WDM 活动曲线导入。

在 DFB 模式下打开其他测试模式文件

应用程序可让您在 DFB 模式下打开 WDM 文件类型。

在 DFB 模式下加载 WDM (.xosawdm 或 .osawdm) 文件时，应用程序会使用 DFB “分析设置”重新分析新导入的数据并从选定的曲线导入下列数据：

➤ 原始曲线数据

➤ 曲线信息

➤ 曲线标识

在 FP 模式下打开其他测试模式文件

应用程序可让您在 FP 模式下打开 WDM 文件类型。

在 FP 模式下加载 WDM (.xosawdm 或 .osawdm) 文件时，应用程序会使用 FP “分析设置”重新分析新导入的数据并从选定的曲线导入下列数据：

➤ 原始曲线数据

➤ 曲线信息

➤ 曲线标识

在 ST 模式下打开其他测试模式文件

应用程序可让您在光谱透过率模式下打开 WDM 文件类型。

当在 ST 模式下加载 WDM (.xosawdm 或 .osawdm) 文件时，应用程序的操作与请求新数据采集的操作相同。也就是说，加载 WDM 文件后，应用程序不会更改对当前测量所做的修改。

加载 WDM 文件前，应用程序可让您选择要将 WDM 文件导入到哪条曲线。根据需要，选择 "输入曲线" 或 "输出曲线"。选定文件后，应用程序会从其中导入下列数据。

➤ 原始曲线数据

➤ 曲线信息

➤ 曲线标识

在 EDFA 模式下打开其他测试模式文件

应用程序可让您在 EDFA 模式下打开 WDM 文件类型。

当在 ST 模式下加载 WDM (.xosawdm 或 .osawdm) 文件时，应用程序的操作与请求新数据采集的操作相同。也就是说，加载 WDM 文件后，应用程序不会更改对当前测量所做的修改。

加载 WDM 文件前，应用程序可让您选择要将 WDM 文件导入到哪条曲线。根据需要，选择 "输入曲线" 或 "输出曲线"。选定文件后，应用程序会从其中导入下列数据。

➤ 原始曲线数据

➤ 曲线信息

➤ 曲线标识

管理用户设置

用户设置是包含 “分析设置” 和 “数据采集” 选项卡中所有参数的配置文件。如果您经常使用相同的设置，您可将它们保存为用户设置，然后在以后执行数据采集时调用。

注意： WDM、漂移和 EDFA 测试模式下可使用 “用户设置” 功能。

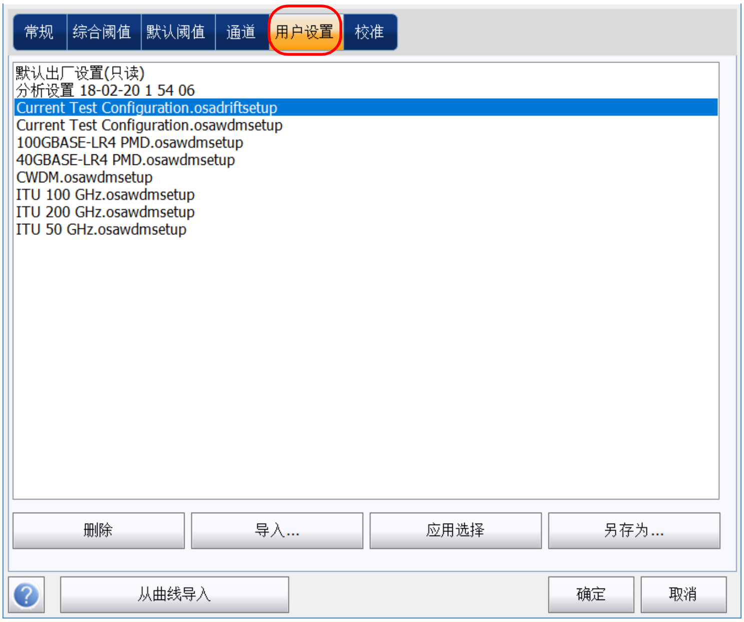
若要加载测试配置：

1. 在 “主菜单” 中，按 “分析设置”。

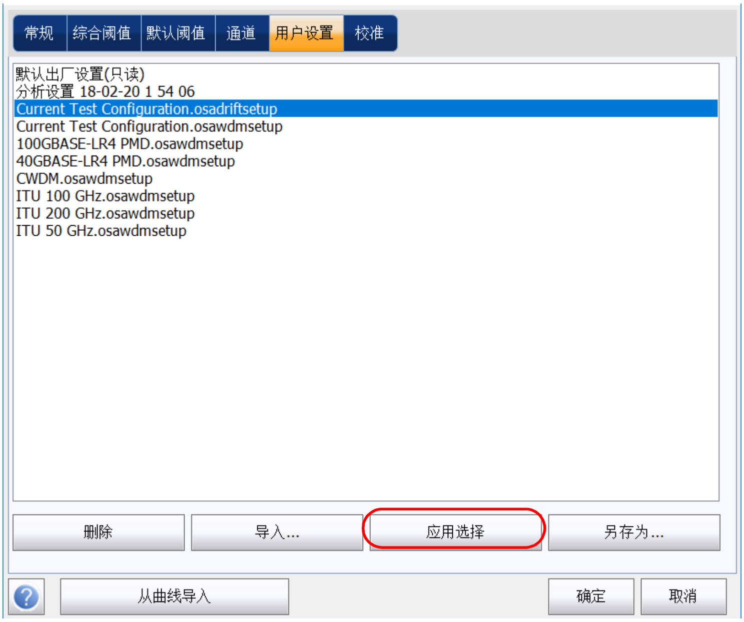
或

在主窗口中，按 。

2. 选择“用户设置”选项卡。


常规
综合阈值
默认阈值
通道
用户设置
校准
默认出厂设置(只读)
分析设置 18-02-20 1 54 06
Current Test Configuration.osadriftsetup
Current Test Configuration.osawdmsetup
100GBASE-LR4 PMD.osawdmsetup
40GBASE-LR4 PMD.osawdmsetup
CWDM.osawdmsetup
ITU 100 GHz.osawdmsetup
ITU 200 GHz.osawdmsetup
ITU 50 GHz.osawdmsetup
删除
导入...
应用选择
另存为...
从曲线导入
确定
取消

3. 要将用户设置文件中的设置应用到当前分析设置，从用户设置列表中选择一个文件，然后按 “应用选择”。只有在用户设置列表中选定文件后，此按钮才可用。然后，文件中的内容会加载到此窗口中的其他选项卡。



4. 按 “确定”使用加载的配置并关闭窗口，或按 “取消”退出而不保存。

注意： 如果已存在测量文件，按 “确定”后，应用程序会自动开始重新分析过程。

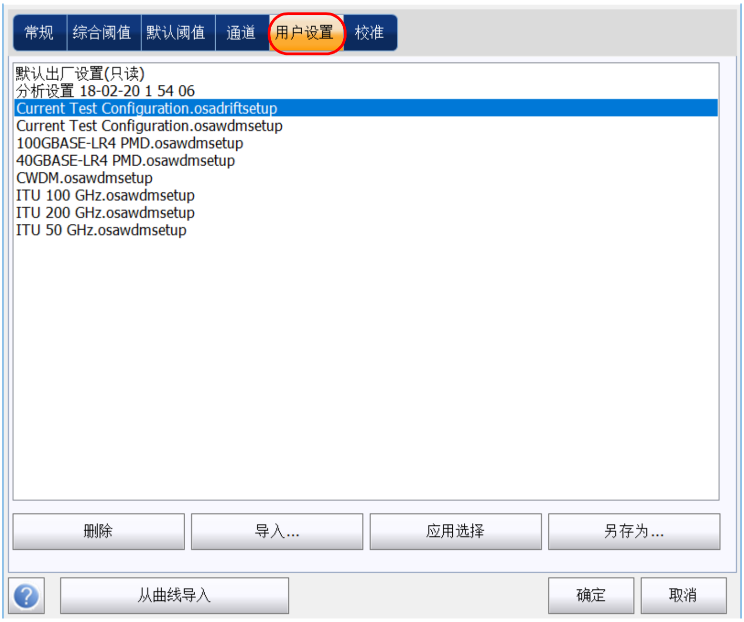
若要保存测试配置：

1. 在“主菜单”中，按“分析设置”。

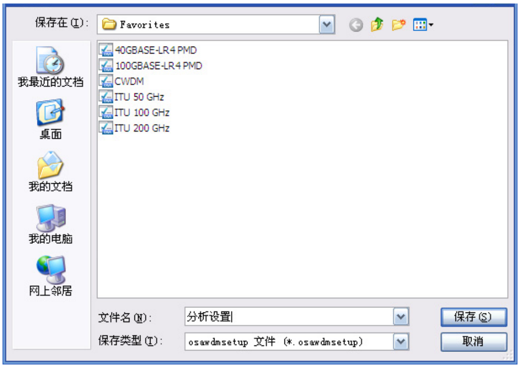
或

在主窗口中，按 。

2. 选择 “用户设置” 选项卡。



3. 要将分析设置保存到文件中，按 “另存为”。文件默认保存到 Favorites 文件夹。除非要将文件复制到 U 盘等外部存储设备，否则，必须使用此文件夹。



4. 在 “另存为” 窗口中，输入文件名并按 “保存”。文件会添加到 “分析设置” 窗口中 “用户设置” 选项卡的列表内。

5. 按 “保存” 保存配置并关闭窗口，或按 “取消” 退出而不保存。

若要导入测试配置：

1. 在 “主菜单” 中，按 “分析设置”。

或

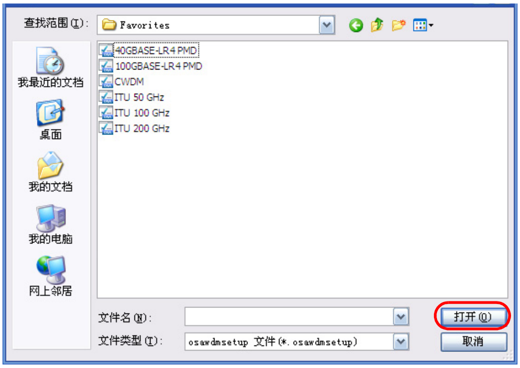
在主窗口中，按 。

2. 选择 “用户设置” 选项卡。


常规
综合阈值
默认阈值
通道
用户设置
校准
默认出厂设置(只读)
分析设置 18-02-20 1 54 06
Current Test Configuration.osadriftsetup
Current Test Configuration.osawdmsetup
100GBASE-LR4 PMD.osawdmsetup
40GBASE-LR4 PMD.osawdmsetup
CWDM.osawdmsetup
ITU 100 GHz.osawdmsetup
ITU 200 GHz.osawdmsetup
ITU 50 GHz.osawdmsetup
删除
导入...
应用选择
另存为...
从曲线导入
确定
取消

3. 按“导入”导入一个文件中的分析设置。

4. 在“导入”窗口中，选择要导入的文件并按“打开”。文件会添加到“分析设置”窗口中“用户设置”选项卡的列表内。



5. 按“确定”加载配置并关闭窗口，或按“取消”退出而不保存。

注意： 要加载新导入的测试配置，在用户设置列表中选择它，然后按“应用选择”。

若要删除测试配置：

1. 在“主菜单”中，按“分析设置”。

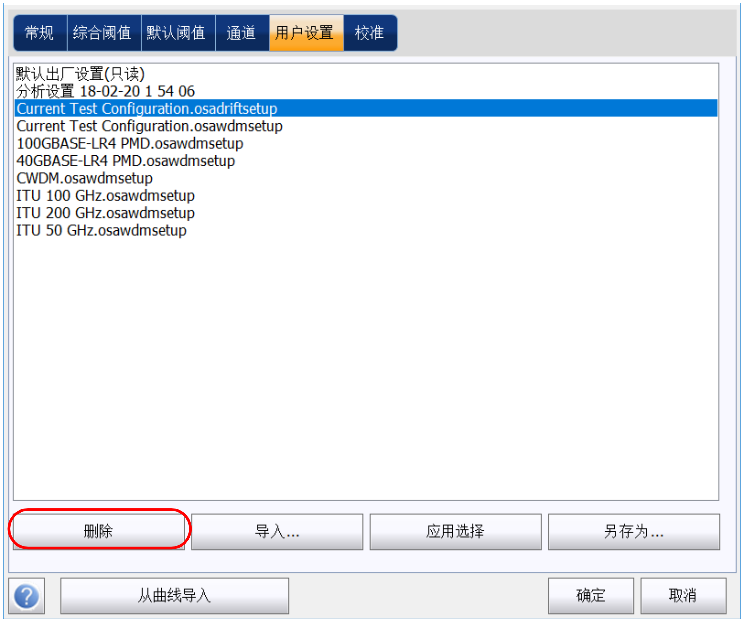
或

在主窗口中，按 。

2. 选择 “用户设置” 选项卡。


常规
综合阈值
默认阈值
通道
用户设置
校准
默认出厂设置(只读)
分析设置 18-02-20 1 54 06
Current Test Configuration.osadriftsetup
Current Test Configuration.osawdmsetup
100GBASE-LR4 PMD.osawdmsetup
40GBASE-LR4 PMD.osawdmsetup
CWDM.osawdmsetup
ITU 100 GHz.osawdmsetup
ITU 200 GHz.osawdmsetup
ITU 50 GHz.osawdmsetup
删除
导入...
应用选择
另存为...
从曲线导入
确定
取消

3. 在用户设置列表中选择要删除的配置文件，然后按 “删除”。按 “是” 确认。



导入当前曲线的配置

在 WDM、漂移、 EDFA 和 ST 模式下，您可以从当前屏幕上的测量文件导入分析和通道配置。有关详细信息，请参阅相关测试模式章节。

使用还原点

修改分析设置并按 “确定”即可创建还原点。此功能可以将参数值恢复到测试配置被更改之前的设置。

一个工作会话中最多可保留三个还原点。如果启动了新会话或更改了测试模式，则这些还原点全部会被删除。

12 管理结果

每种测试模式都有自己的结果选项卡，您可查看所有被测通道的曲线详细信息、通道结果和综合结果。

您可在曲线上使用缩放选项，配置标记线查看特定波长的功率以及查看曲线信息。

对于所有测试模式，您还可管理曲线文件和生成报告。

注意： 功率结果带有星号标志 (*) 表示检测器已饱和。检测器上的光功率过高时就会饱和，返回值很可能有误。

管理 WDM 测试结果

该应用程序可让您查看和管理 WDM 测试结果。您可查看数据采集图、单条通道的结果、综合结果和曲线信息。

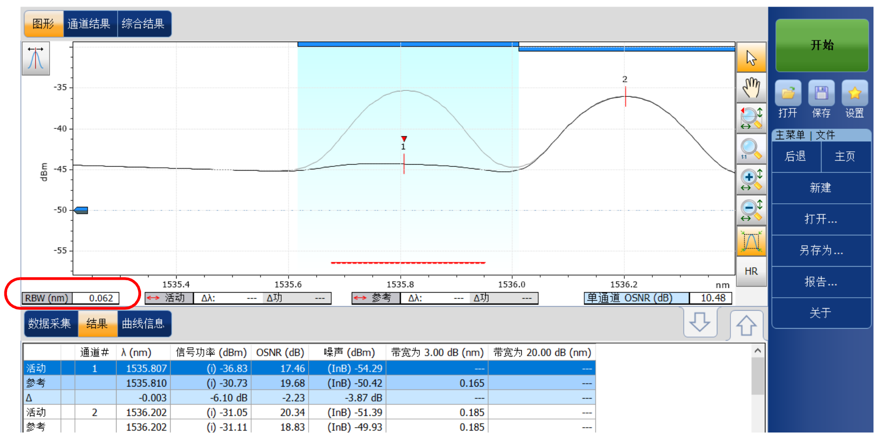
“图形”选项卡

“图形”选项卡可让您查看活动曲线和参考曲线的光谱。下图表示光功率与波长或频率的关系。

进行数据采集后 （有关如何执行测试的详细信息，请参阅第 253 页 “开始测量”），“图形”选项卡中显示活动曲线和沿下列轴的信息：

➤ X 轴：波长 (nm) 或频率 (THz)。

➤ Y 轴：光功率 (dBm)，按 OSA 的光分辨率带宽 (RBW) 测量。此参考 RBW 显示在图形底部。



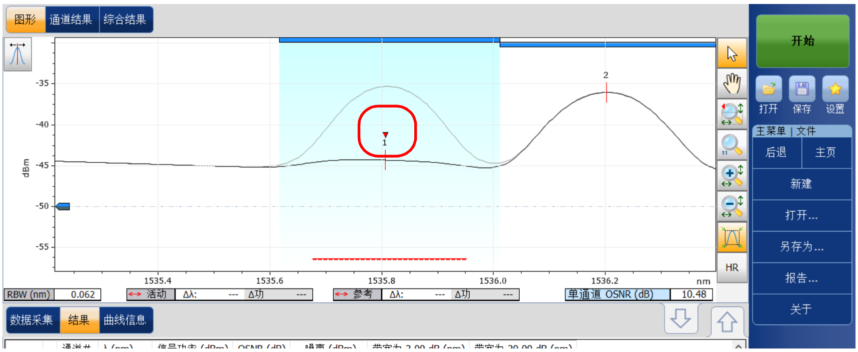
如果当前的活动曲线已保存，标题栏会显示其文件名。

图形会显示应用程序检测到的所有通道的峰值指示，即在峰值上方显示一条红色竖线指示峰值的位置。

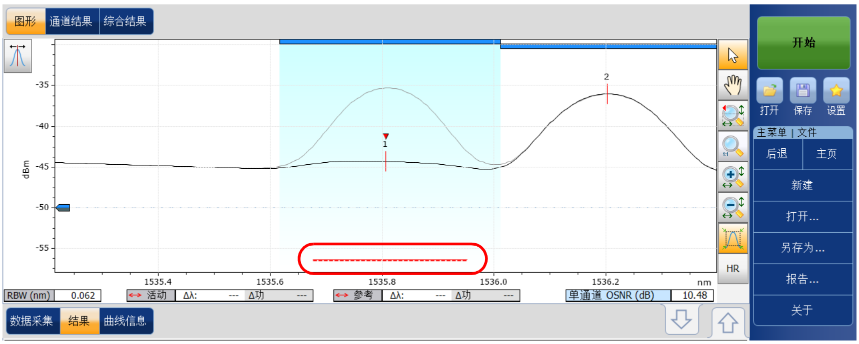
如果通道未与其他通道重叠，其上方会显示蓝色横条 (▬)。如果通道与另一通道重叠，该横条将为黄色 (▬)。

选定峰值指示，即红色的小倒三角（▼）会在当前选定通道的峰值顶部指向下方。在图形区域中单击所需通道的峰值范围，即可更改选定的峰值。在图形中选择的峰值会同步到下方“结果”选项卡中选择的通道。如果更改了图形中选择的峰值，“结果”选项卡中选择的通道也会相应更改；反之亦然。

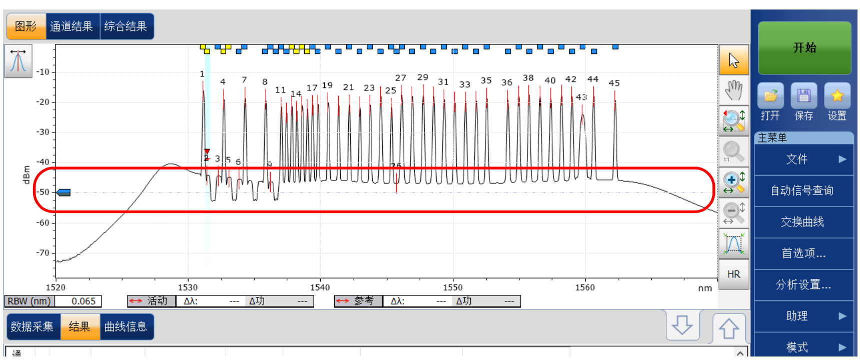
注意： 以上同步情况仅适用于在列表中的通道上检测到信号的情况。如果选择的通道上没有信号，则图形中不会选定任何峰值。



选定峰值下方的虚线指示通道的噪声电平。噪声电平指示线的宽度根据当前的 “OSNR 噪声” 设置确定。“OSNR 噪声” 的选项从宽到窄包括：IEC、InB、 InB nf、偏振复用和拟合。

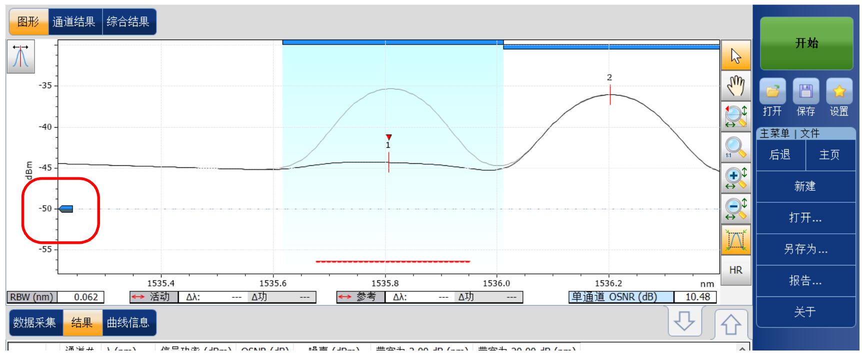


横穿整个光谱宽度的虚线指示峰值检测电平。这条虚线对应波峰可视为有效信号的最低电平。



在选定 “结果”选项卡时，图形会显示峰值检测电平光标。这个光标在 Y 轴上的位置根据应用程序的峰值检测电平综合分析参数确定。

您可以通过移动光标来更改当前测量的峰值检测电平。每次光标移动后，应用程序会使用其分析设置重新分析曲线。



注意： 如果在图形下方选择了其他选项卡而非 “结果” 选项卡，则图形不显示光标，但仍显示峰值检测电平指示线。

注意： 如果图形中有参考曲线，则参考曲线显示为灰色。

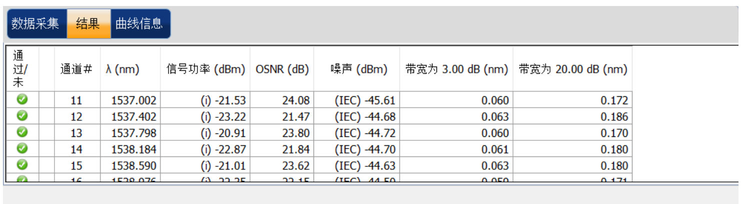
注意： 有关更多详细信息，请参阅第 323 页 “管理标记线” 和第 321 页 “使用缩放控制”。

“结果”选项卡

“结果”选项卡根据活动曲线和参考曲线显示各通道，并显示两个结果间的变化值。应用程序仅分析扫描范围内的通道结果。该选项卡还根据阈值显示通过（ ）/ 未通过（ ）判定结果；如果某个参数判定为未通过，则其值显示为红色。

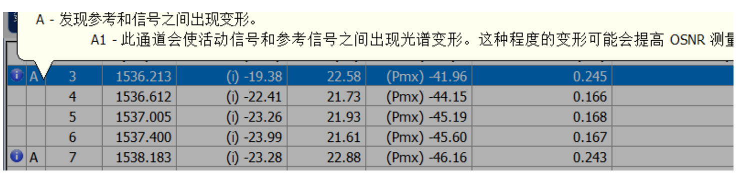
若要查看结果：

在主窗口中，选择“结果”选项卡。



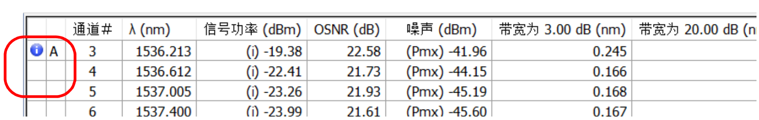
通过/未	通道#	λ (nm)	信号功率 (dBm)	OSNR (dB)	噪声 (dBm)	带宽为 3.00 dB (nm)	带宽为 20.00 dB (nm)
	11	1537.002	(i) -21.53	24.08	(IEC) -45.61	0.060	0.172
	12	1537.402	(i) -23.22	21.47	(IEC) -44.68	0.063	0.186
	13	1537.798	(i) -20.91	23.80	(IEC) -44.72	0.060	0.170
	14	1538.184	(i) -22.87	21.84	(IEC) -44.70	0.061	0.180
	15	1538.590	(i) -21.01	23.62	(IEC) -44.63	0.063	0.180

如果通道存在问题，会显示通知图标；按该图标将会以工具提示的形式显示相关信息。



	A	3	1536.213	(i) -19.38	22.58	(Pmx) -41.96	0.245
		4	1536.612	(i) -22.41	21.73	(Pmx) -44.15	0.166
		5	1537.005	(i) -23.26	21.93	(Pmx) -45.19	0.168
		6	1537.400	(i) -23.99	21.61	(Pmx) -45.60	0.167
	A	7	1538.183	(i) -23.28	22.88	(Pmx) -46.16	0.243

如果您在显示参数中启用了“详细警告”列，可以看到与问题对应的字母。



		通道#	λ (nm)	信号功率 (dBm)	OSNR (dB)	噪声 (dBm)	带宽为 3.00 dB (nm)	带宽为 20.00 dB (n
	A	3	1536.213	(i) -19.38	22.58	(Pmx) -41.96	0.245	
		4	1536.612	(i) -22.41	21.73	(Pmx) -44.15	0.166	
		5	1537.005	(i) -23.26	21.93	(Pmx) -45.19	0.168	
		6	1537.400	(i) -23.99	21.61	(Pmx) -45.60	0.167	

注意： 有关如何筛选显示的通道结果的详细信息，请参阅第 43 页“设置显示参数”。

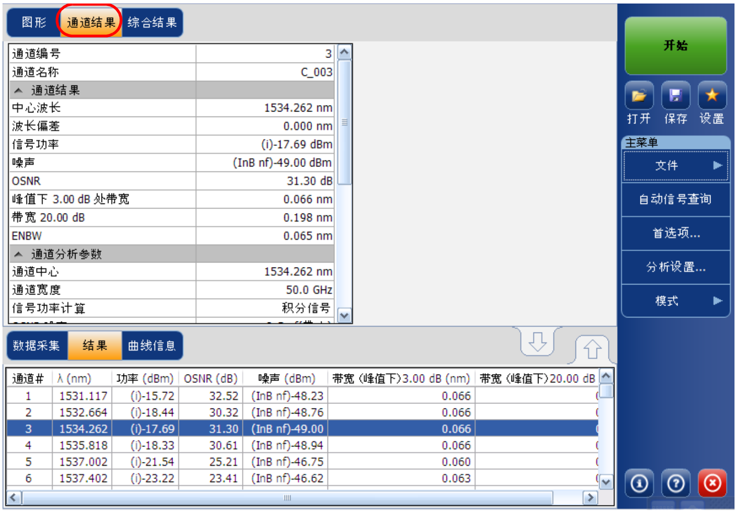
有关各结果类型的详细信息，请参阅第 53 页“自定义 WDM 结果表”。

“通道结果”选项卡

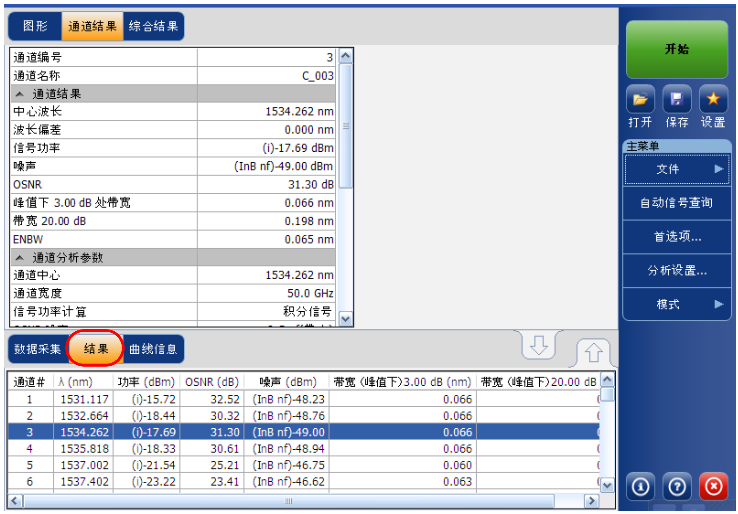
“通道结果”选项卡可让您查看选定通道参数的完整测量信息。该选项卡还显示阈值通过 / 未通过判定结果。对于任何判定为未通过的参数，其值显示为红色。对于判定为通过的参数，其值显示为绿色。

若要查看通道结果：

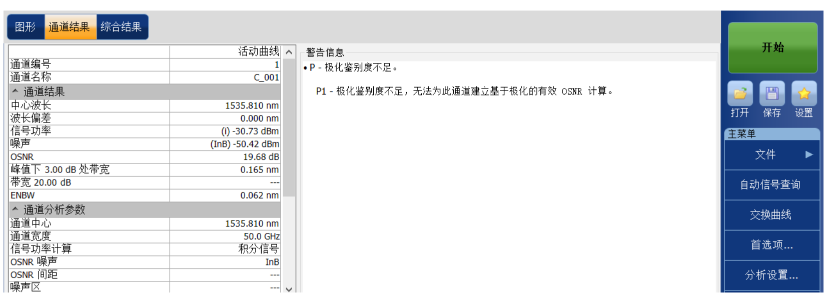
1. 在主窗口中，选择“通道结果”选项卡。



2. 在“结果”选项卡中选择一行，查看该通道的结果。



如果有与该通道相关的警告，可在选项卡右侧查看详细信息。



注意： 有关各结果类型的详细信息，请参阅第 53 页“自定义 WDM 结果表”和第 57 页“设置常规参数”。

注意： 波长 / 频率偏差是通道的中心波长 / 频率与被测信号的中心波长 / 频率之差。

“综合结果”选项卡

“综合结果”选项卡可让您查看当前测量的综合结果。该选项卡还显示阈值通过 / 未通过判定结果。对于任何判定为未通过的参数，其值显示为红色。对于判定为通过的参数，其值显示为绿色。

若要查看综合结果：

在主窗口中，选择“综合结果”选项卡。

出现所有通道的综合结果和分析参数。有关各项结果的详细信息，请参阅第 64 页“设置综合阈值”和第 57 页“设置常规参数”。

此外，如果在“分析设置”窗口的“综合结果阈值”选项卡中启用了阈值功能，还可以查看综合通过 / 未通过状态。如果启用了阈值，“通过 / 未通过状态”区域会根据综合结果显示“通过”或“未通过”状态；如果禁用了阈值，则显示“未激活的”。

“WDM Investigator”选项卡

“WDM Investigator”选项卡显示的信息可让您开展大范围网络故障预防和维护。通过 “WDM Investigator”仪表板， OSA 可以逐条通道查找各类缺陷，反映 WDM 网络状况。此外，“WDM Investigator”仪表板还会提供通道特征的相关信息。

注意： 如果测量文件含有诊断结果，则在保存文件时会同时保存诊断结果。保存的诊断结果可以使用 OSA 应用程序查看（无需 WDM Investigator (Inv) 选件也可查看保存的文件）。在离线应用程序上也可以查看这些信息。

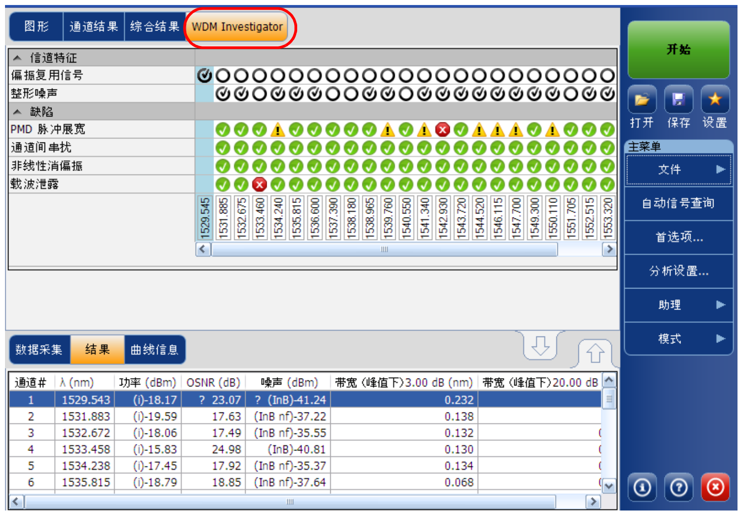
在下列条件均满足的情况下，应用程序仅对活动曲线显示通道诊断结果和“WDM Investigator”选项卡：

➤ 待分析的测量是在激活了 WDM Investigator (Inv) 选件的 OSA 模块上执行的。

➤ 只对使用 i-InBand 噪声法分析了 OSNR 的通道计算诊断结果。

若要查看 “WDM Investigator”选项卡上的诊断结果：

在主窗口中，选择 “WDM Investigator”选项卡。



如果在 “WDM Investigator”选项卡中修改了选定的通道，“结果”选项卡中选定的行也会移动至相应通道的分析结果。

“WDM Investigator”选项卡中的诊断结果分为两类：通道特征 （信息型结果）和缺陷 （定性结果）。通道特征和缺陷均有助于查明影响通道的确切问题，缩短了测试时间，防止今后出现问题。

通道特征有两类：

➤ 偏振复用信号：该类通道特征判断信号是否经过偏振复用。偏振复用信号在 i-InBand 数据采集结束时显示为非偏振化 （最低偏振消光）。

注意： 如果是偏振复用信号，则应用程序不再进行诊断。

注意： 仅提供偏振信号的诊断信息。

➤ 整形噪声：如果对 ASE 噪声进行过滤，使影响中心峰值的噪声功率高于任一通道边缘的噪声功率，则此参数通常表示链路上存在滤波器 /ROADM。

通道特征的诊断信息可分为四个级别。

符号	含义
	不存在
	存在
	待定
没有符号 （空白）	未分析 （空通道）

缺陷诊断检查是否存在各类缺陷，并评估缺陷的严重程度。缺陷类型有四种：

➤ PMD 脉冲展宽：此缺陷显示通道上是否存在偏振模色散 (PMD)。如果信号路径上存在 PMD，根据注入信号的偏振轴，此信号可能受脉冲展宽影响，导致与偏振相关的光谱变形。通过分析这些变形，可以判断测量期间信号的偏振脉拓宽情况。

➤ 通道间串扰：在密集填充的通道方案中，相邻通道可能有一部分频谱延伸到了给定信号的通带范围内且这一部分不能忽略不计。

➤ 非线性消偏振：多通道系统 （10 G 和 40 G）中，功率快速变化，可能导致光纤折射率产生与局部偏振相关的变化。在某些情况下，这可能会导致通道间非线性效果 （如交叉相位调制），以致相邻通道发生部分消偏振。

➤ 载波泄漏：在相位调制传输中，载波 (CW) 由外部调制器进行调制，这些调制器通常与偏振相关。如果载波源的偏振轴与调制器不完全一致，载波信号的一部分会未经调制即在路径上传输。如果存在残留的载波信号，在使用高级偏振分析功能提供诊断信息时，此情况可能会被检测为载波泄漏。

表示诊断结果的符号相同，适用于所有缺陷种类。应用程序会根据下表所示的严重程度在窗口底部的状态栏上显示综合诊断结果。在所有被测通道中，状态最严重的通道优先级最高。

缺陷诊断结果可分为五种状态。下表中的符号按严重程度从高到低排序。

符号	含义
	危险
	警告
	待定
	正常
没有符号 （空白）	未分析 （空通道）

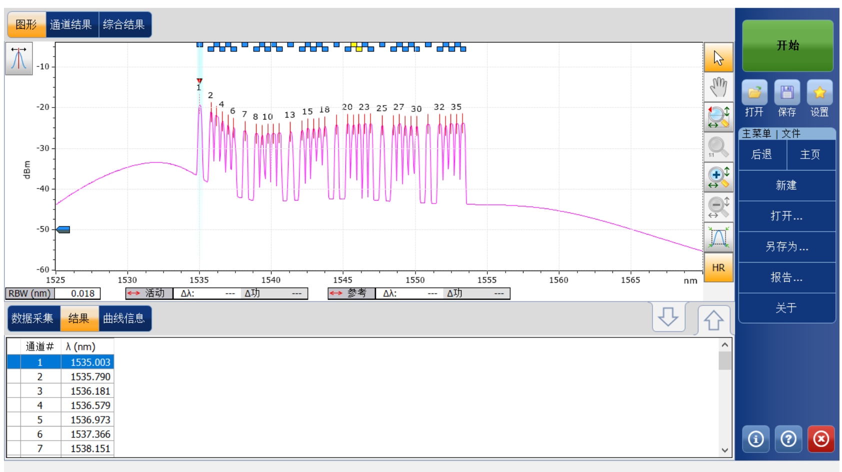
查看曲线的高分辨率带宽版本 （仅限 FTBx-5255 型号）

在 WDM 模式下可查看已加载曲线的高分辨率带宽版本。这种查看模式在结果选项卡中提供较少的详细信息，但允许您使用标记线执行手动测量。

若要查看曲线的高分辨率版本：

1. 打开所需的曲线。高分辨率模式适用于活动曲线和参考曲线。

2. 在 “图形”选项卡中，选择 “HR”。活动曲线会变成洋红色，参考曲线会变成橙色，表示它们现正处于高分辨率模式。 RBW 值也会改变，表示更高的分辨率。



3. 根据需要使用标记线执行测量。

您可以将组成高分辨率活动曲线的点导出为 .txt 格式的报告，前提是这些点至少已显示一次。有关创建报告的详细信息，请参阅第 331 页 “生成报告”。

注意： 如果您同时打开参考曲线和活动曲线，但只有一条曲线兼容高分辨率模式，则启用高分辨率查看器只会显示那条兼容的曲线。切换回正常查看模式后，另一条不兼容的曲线会再次显示。

注意： 如果您尝试在不兼容高分辨率模式的曲线上使用高分辨率模式，应用程序会提示该模式不可用并说明可能的原因。

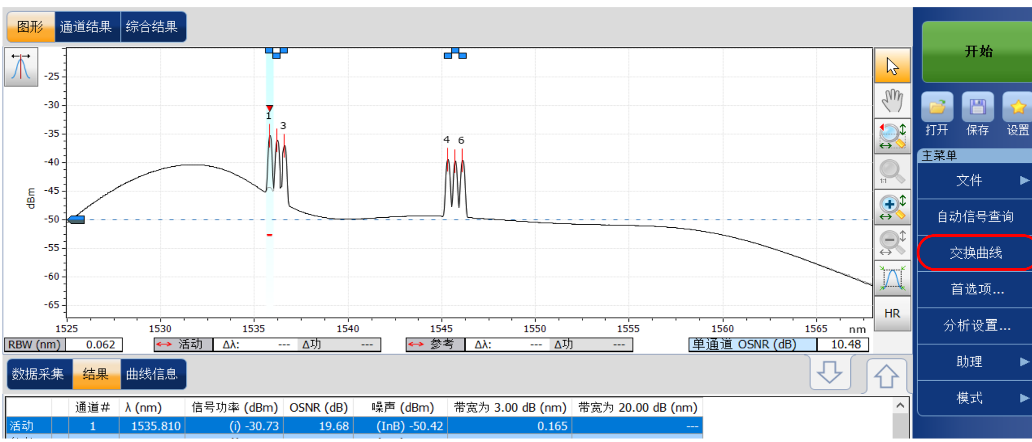
交换 WDM 曲线

交换曲线功能可让您交换 WDM 活动曲线和参考曲线。使用此功能后，活动曲线和参考曲线互换。应用程序会重新计算内存中曲线结果的比较变化值。

注意： 如果应用程序中没有曲线，则交换曲线功能不可用。

若要交换 WDM 曲线：

在 “主菜单” 中，按 “交换曲线”。

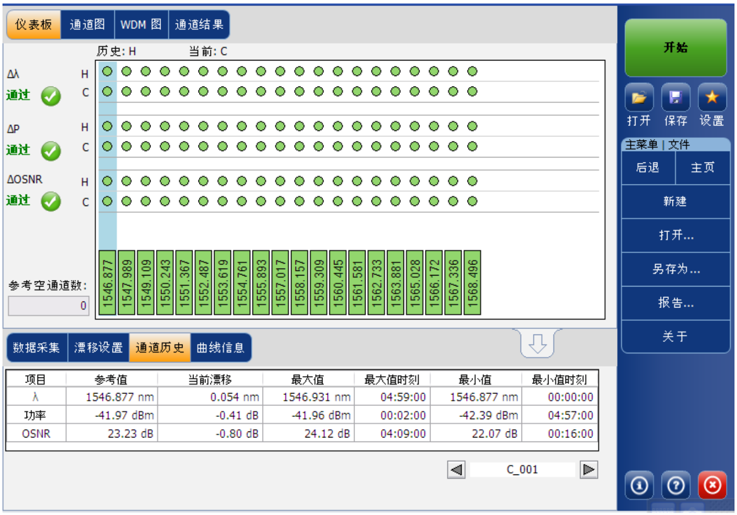


管理漂移测试结果

该应用程序可让您查看和管理漂移测试结果。您可查看漂移数据采集的仪表板、通道图和 WDM 图、单个通道的通道历史结果以及曲线的相关信息。

“仪表板”选项卡

通过仪表板可以一目了然地查看漂移测量中各被测通道的各种参数的通过 / 未通过状态。没有测量值时，仪表板为空。



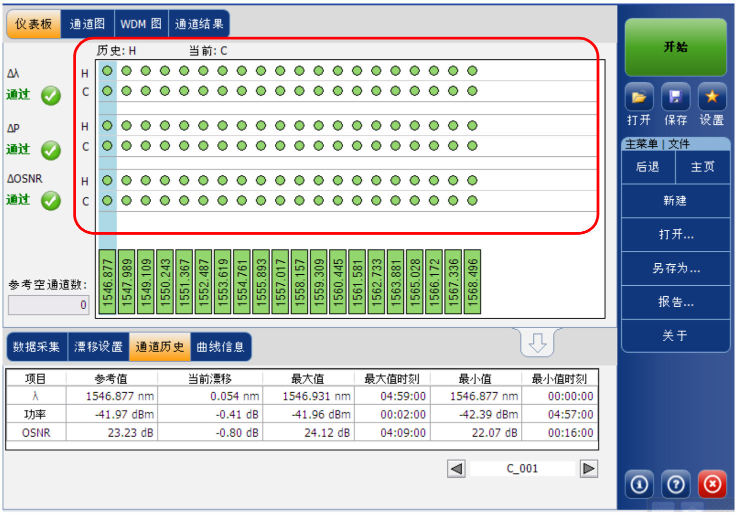
您可直接从仪表板或 “通道历史”选项卡中选择通道。对于每个通道，仪表板显示下列各参数的通过 / 未通过状态：

➤ 中心波长 / 频率

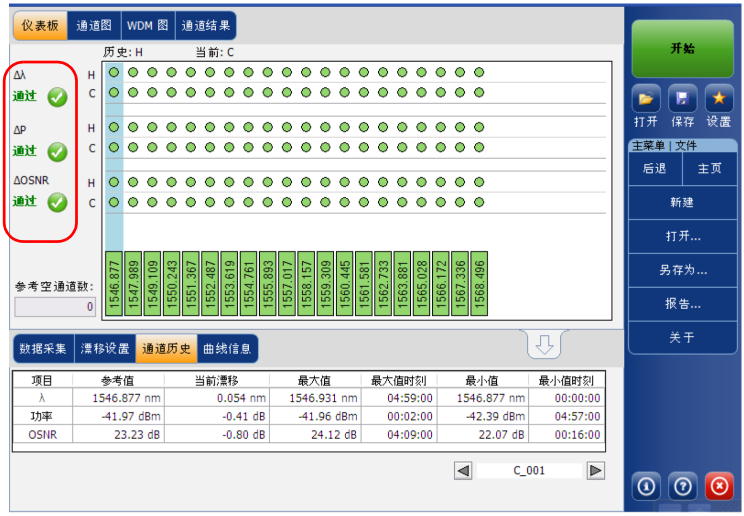
➤ 信号功率

➤ OSNR

当前通过 / 未通过状态 （上一次完成的数据采集）和历史通过 / 未通过状态都显示在仪表板中。只要过去或当前的数据采集中出现了一次未通过，历史通过 / 未通过状态就应设为未通过。

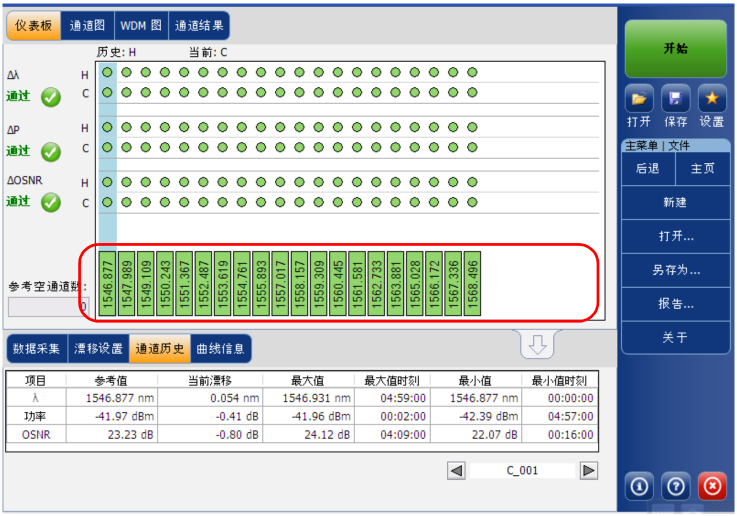


仪表板显示每个参数的综合状态 （所有通道）。如果至少有一个通道的给定参数有一次历史状态为未通过，综合状态就设为未通过；否则就设为通过。



项目	参考值	当前漂移	最大值	最大值时刻	最小值	最小值时刻
λ	1546.877 nm	0.054 nm	1546.931 nm	04:59:00	1546.877 nm	00:00:00
功率	-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

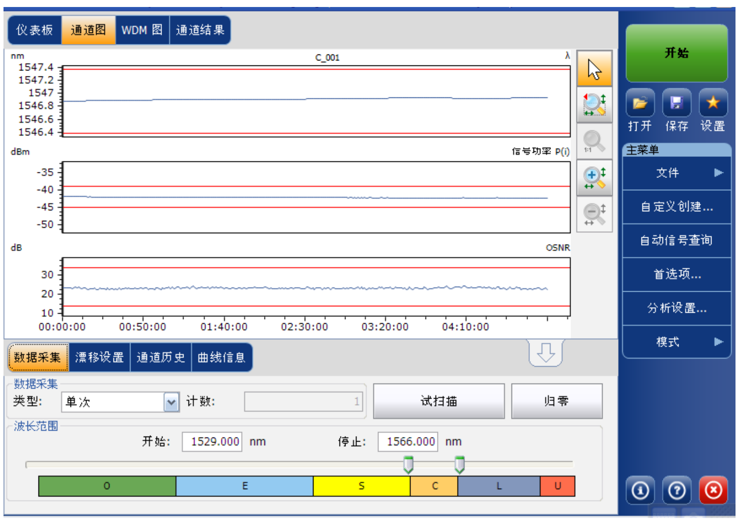
仪表板显示给定通道的通道状态 （所有参数）。如果给定通道有一个参数的历史状态为未通过，此通道状态就设为未通过；否则就设为通过。



“通道图”选项卡

对于选定通道，“通道图”选项卡显示三幅不同的图。您可在 “首选项” 窗口的 “漂移结果” 选项卡中选择要显示哪幅图。这三幅图分别是下列参数的 X-Y 轴坐标图：

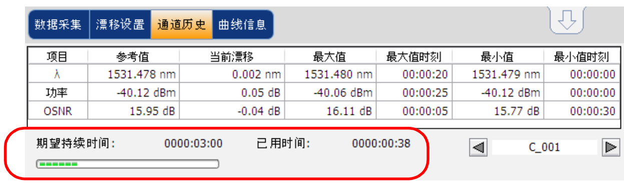
- 通道光谱位置 （波长或频率质心）对时间
- 通道信号功率对时间
- 通道 OSNR 对时间



“通道历史”选项卡

通道历史表显示活动曲线的通道结果。只有选定通道的结果才会显示。结果表中还会显示通过 / 未通过状态阈值判定结果。对于任何判定为未通过的参数，其值显示为红色。

数据采集进行时，应用程序在状态栏中显示测量进度。“已用时间”和测量停止时的 “期望持续时间”显示在 “通道历史”选项卡中。



项目	参考值	当前漂移	最大值	最大值时刻	最小值	最小值时刻
λ	1531.478 nm	0.002 nm	1531.480 nm	00:00:20	1531.479 nm	00:00:00
功率	-40.12 dBm	0.05 dB	-40.06 dBm	00:00:25	-40.12 dBm	00:00:00
OSNR	15.95 dB	-0.04 dB	16.11 dB	00:00:05	15.77 dB	00:00:30

若要查看通道历史结果：

在主窗口中，选择 “通道历史”选项卡。

项目	参考值	当前漂移	最大值	最大值时刻	最小值	最小值时刻
λ	1546.877 nm	0.054 nm	1546.931 nm	04:59:00	1546.877 nm	00:00:00
功率	-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

与选定通道相关的下列参数结果显示在 “通道历史”表中：

- ➤ 通道的光谱位置 （波长或频率质心）对时间 （nm 或 THz）
- ➤ 通道的信号功率对时间 (dBM)
- ➤ 通道 OSNR 对时间 (dB)

对于以上各参数，显示下列结果：

➤ 参考值：表示初始数据采集中获得的当前漂移的通道参考值。

➤ 当前漂移值：表示当前漂移值，即从通道参考值中获取的针对漂移的最新数据采集的当前偏差。

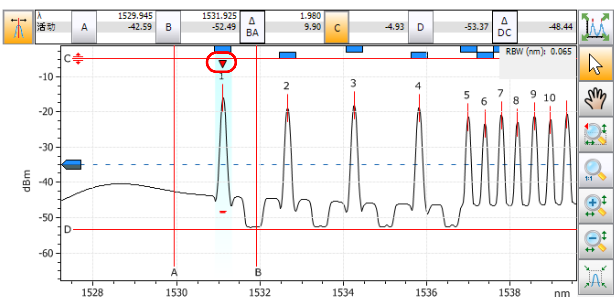
➤ 最大值：表示漂移中达到的最大值。

➤ 最大值时刻：表示通道处于最大值的漂移时刻。显示的时间是相对于漂移测量开始时间的。

➤ 最小值：表示漂移中达到的最小值。

➤ 最小值时刻：表示通道处于最小值的漂移时刻。显示的时间是相对于漂移测量开始时间的。

当您在 “通道历史”选项卡中选定一个通道时，“WDM 图”选项卡中会有一个红色小标志 (▼) 向下指向波峰。红色标记会相应移动，指示图中与选定通道对应的波峰。



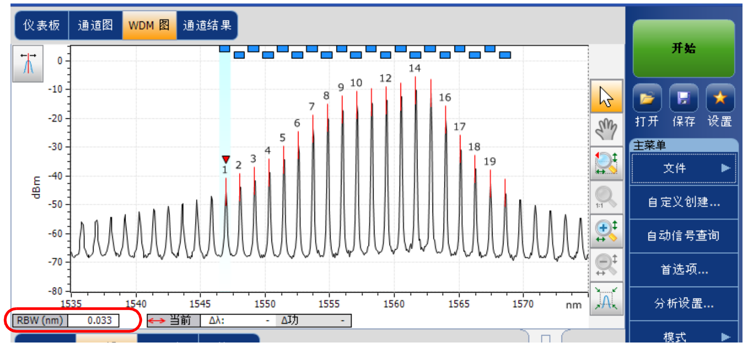
“WDM 图”选项卡

“WDM 图”选项卡可让您查看漂移测量中最后一次 WDM 数据采集所得活动曲线的光谱。下图表示光功率与波长或频率的关系。

进行数据采集后 （有关如何执行测试的详细信息，请参阅第 253 页 “开始测量”），“图形”选项卡中显示活动曲线和沿下列轴的信息：

➤ X 轴：波长 (nm) 或频率 (THz)。

➤ Y 轴：光功率 (dBm)，按 OSA 的光分辨率带宽 (RBW) 测量。此参考 RBW 显示在图形底部。



图形会显示应用程序检测到的所有通道的峰值指示，即在峰值上方显示一条红色竖线指示峰值的位置。

如果通道未与其他通道重叠，其上方会显示蓝色横条 ( )。如果通道与另一通道重叠，该横条将为黄色 ( )。

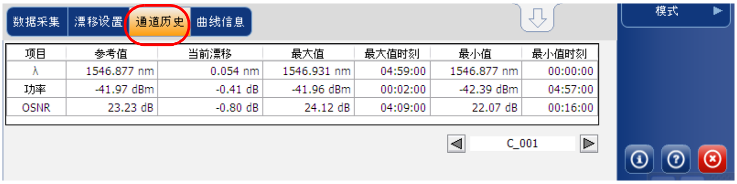
“通道结果”选项卡

在 “通道历史”选项卡中选定一个通道时，“通道结果”选项卡中会显示选定通道上测得的完整参数信息。阈值的通过 / 未通过判定结果也显示在 “通道结果”选项卡中。对于任何判定为未通过的参数，其值显示为红色。对于判定为通过的参数，其值显示为绿色。

若要查看通道结果：

1. 在主窗口中，选择 “通道结果”选项卡。

2. 从 “通道历史”选项卡中选择一个通道查看选定通道的通道结果。



注意： 有关每项的详细信息，请参阅第 53 页 “自定义 WDM 结果表”和第 57 页 “设置常规参数”。

管理 DFB 测试结果

该应用程序可让您查看和管理 DFB 测试结果。您可查看 DFB 激光光源的图形和结果。

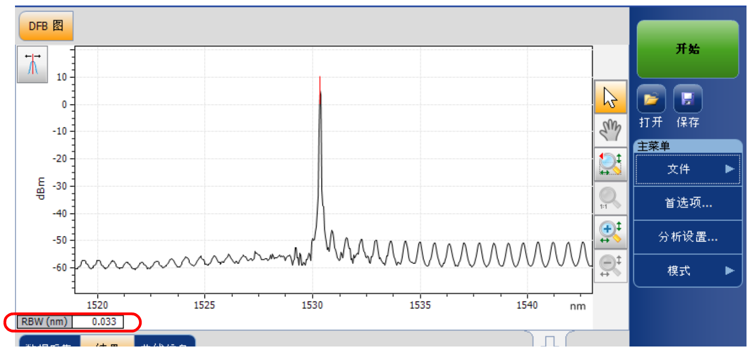
“DFB 图”选项卡

“DFB 图”选项卡可让您查看 DFB 激光光源的光谱。下图表示光功率与波长或频率的关系。

进行数据采集后（有关如何执行测试的详细信息，请参阅第 253 页“开始测量”），“图形”选项卡中显示活动曲线和沿下列轴的信息：

➤ X 轴：波长 (nm) 或频率 (THz)。

➤ Y 轴：光功率 (dBm)，按 OSA 的光分辨率带宽 (RBW) 测量。此参考 RBW 显示在图形底部。



如果当前曲线已保存，状态栏会显示其文件名。

“结果”选项卡

您可在 “结果”选项卡中查看对 DFB 激光光源的分析。

若要查看结果：

在主窗口中，选择 “结果”选项卡。

“结果”表中显示与 DFB 测量相关的下列信息：

- 中心波长 / 频率：波峰的光谱质心。
- 峰值功率 (dBm)：峰值信号功率。
- 3.00 dB 处带宽：表示在信号上取峰值线性功率 50% 或峰值下 3 dB 处的宽度测得的带宽。
- 20.00 dB 处带宽：表示在信号上取峰值线性功率 1% 或峰值下 20 dB 处的宽度测得的带宽。
- 左 SMSR：表示左边模抑制比 (SMSR)。它是主模和左侧边模强度的最大值间的功率差。
- 右 SMSR：表示右边模抑制比 (SMSR)。它是主模和右侧边模强度的最大值间的功率差。
- 最差 SMSR：表示主模和功率最高的边模之间的功率差。
- 最差 SMSR 位置：最差 SMSR 的频谱位置。
- 左阻带：表示主模和左侧最近的边模之间的光谱位置差。
- 右阻带：表示主模和右侧最近的边模之间的光谱位置差。

➤ 中心偏移：表示主模的光谱位置减去相邻的第一个左边模和右边模的均值。

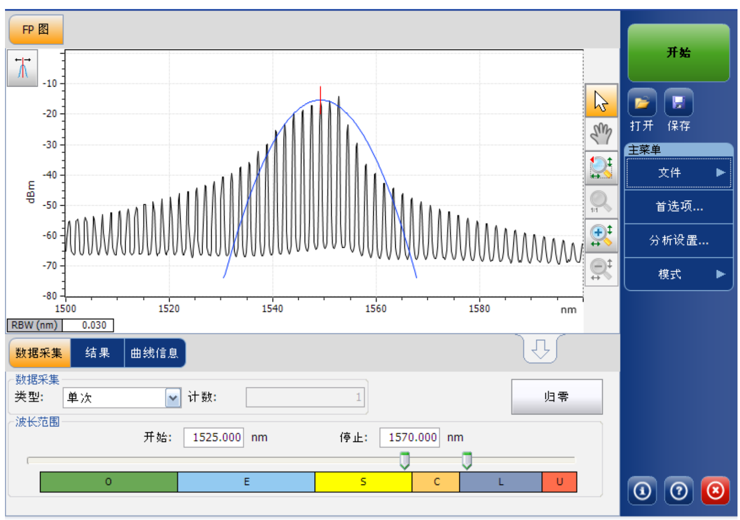
➤ 法布里 · 珀罗模式间隔：表示 DFB 的相邻法布里 · 珀罗模式的预计平均光谱间隔。

管理 FP 测试结果

该应用程序可让您查看和管理 FP 测试结果。您可查看您 FP 激光光源的图形和结果。

“FP 图”选项卡

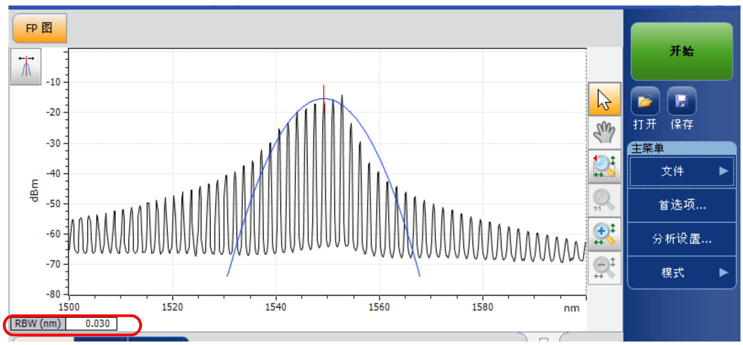
“FP 图”选项卡可让您查看 FP 激光光源的光谱。下图表示光功率与波长或频率的关系。



进行数据采集后 （有关如何执行测试的详细信息，请参阅第 253 页 “开始测量”），“图形”选项卡中显示活动曲线和沿下列轴的信息：

➤ X 轴：波长 (nm) 或频率 (THz)。

➤ Y 轴：光功率 (dBm)，按 OSA 的光分辨率带宽 (RBW) 测量。此参考 RBW 显示在图形底部。



如果当前曲线已保存，状态栏会显示其文件名。

“结果”选项卡

您可在 “结果”选项卡中查看对 FP 激光光源的分析。

若要查看结果：

在主窗口中，选择 “结果”选项卡。

“结果”表中显示与 FP 测量相关的下列信息：

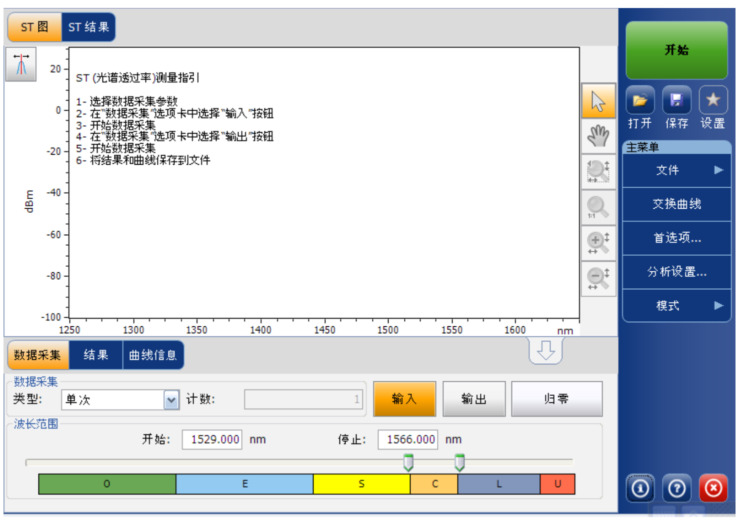
- 中心波长 / 频率：波峰的光谱质心。
- RMS 宽度：表示光谱分布的第二个位置。
- FWHM：表示最大值一半位置的完整宽度。
- 高斯拟合误差因子：表示高斯拟合中的归一 RMS 误差因子。
- 总功率 (dBm)：表示数据采集窗口的积分功率。
- 功率 （检测到的模式） (dBm)：表示从第一个模式的起点到最后一个模式的终点的积分功率。
- 峰值模式功率 (dBm)：表示法布里 · 珀罗激光器峰值模式的功率。
- 峰值模式波长 / 频率：表示法布里 · 珀罗激光器峰值模式的波长 / 频率。
- 10.00 dB 处的 MTSM：表示峰值功率模式与上一个幅值为峰值模式幅值十分之一 （低 10 dB）的模式之间的最大波长差。
- 3.00 dB 处拟合宽度：表示峰值下 3 dB 处的高斯拟合光谱宽度。
- 20.00 dB 处拟合宽度：表示峰值下 20 dB 处的高斯拟合光谱宽度。
- 模式间隔：表示 FP 的相邻法布里 · 珀罗模式的预计平均光谱间隔。

管理光谱透过率测试结果

该应用程序可让您查看和管理光谱透过率测试结果。您可查看数据采集图、单条通道的结果、综合结果和曲线信息。

“ST 图”选项卡

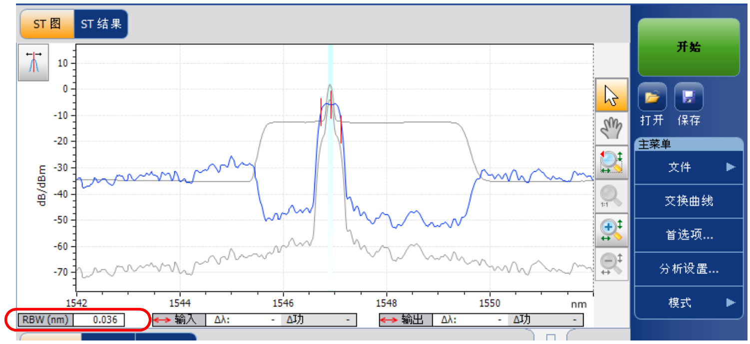
“ST 图”选项卡可让您查看输入曲线、输出曲线和计算所得 ST 曲线的光谱。下图表示光功率与波长或频率的关系。



进行数据采集后（有关如何执行测试的详细信息，请参阅第 253 页 “开始测量”），“图形”选项卡中显示活动曲线和沿下列轴的信息：

➤ X 轴：波长 (nm) 或频率 (THz)。

➤ Y 轴：光功率 (dBm)，按 OSA 的光分辨率带宽 (RBW) 测量。此参考 RBW 显示在图形底部。



如果当前曲线已保存，状态栏会显示其文件名。

“结果”选项卡

结果表显示活动曲线的光谱透过率结果。只显示扫描范围内的通道的结果。

若要查看结果：

在主窗口中，选择“结果”选项卡。

显示下列与通道相关的结果：

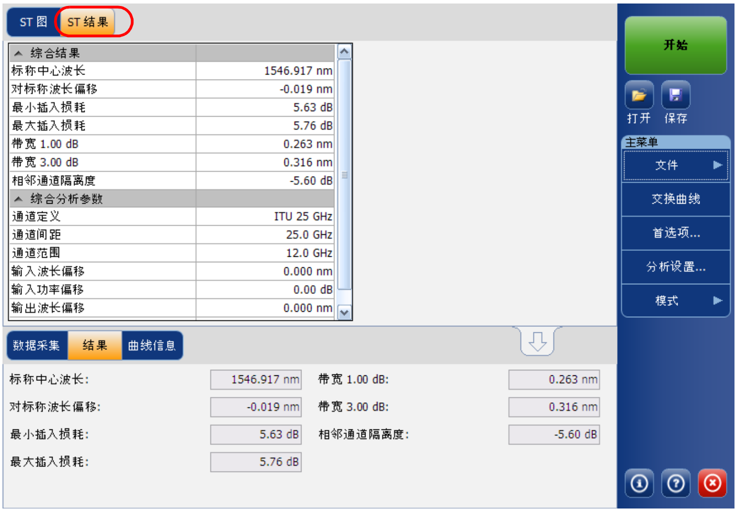
- 额定中心波长或频率：表示一个代表通道中心波长 (nm) 或频率 (THz) 的值。
- 额定波长或频率的偏移：应用于额定波长 (nm) 或频率 (THz) 的偏移值。
- 最小插入损耗：表示参考功率电平和测得功率电平间的最小差值 (dB)。
- 最大插入损耗：表示参考功率电平和测得功率电平间的最大差值 (dB)。
- x dB 处带宽：表示在信号上取峰值下 x dB 处的宽度测得的带宽。
- y dB 处带宽：表示在信号上取峰值下 y dB 处的宽度测得的带宽。
- 相邻通道隔离度 (dB)：表示额定波长左右侧通道间距上所得的隔离度 (dB)。保留左右隔离度中的最差值。

“ST 结果”选项卡

“ST 结果”选项卡显示有关光谱透过率参数和综合分析参数的完整信息。

若要查看 ST 结果：

在主窗口中，选择 “ST 结果”选项卡。



注意： 有关每项的详细信息，请参阅第 310 页 ““结果”选项卡”和第 205 页 “设定 ST 分析设置”。

交换光谱透过率曲线

交换曲线功能可让您交换光谱透过率输入曲线和输出曲线。使用此功能后，输入曲线和输出曲线互换。所有结果都重新计算。

注意： 如果应用程序中没有曲线，则交换曲线功能不可用。

若要交换光谱透过率曲线：

在“主菜单”中，按“交换曲线”。

管理 EDFA 测试结果

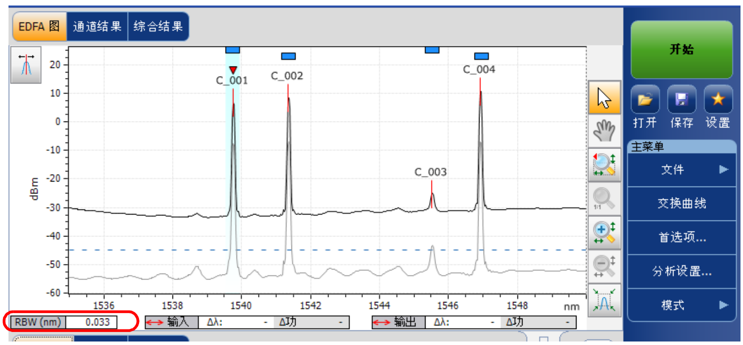
该应用程序可让您查看和管理 EDFA 测试结果。您可查看数据采集图、单条通道的结果、综合结果和曲线信息。

“EDFA 图”选项卡

“EDFA 图”选项卡可让您查看输入曲线和输出曲线的光谱。下图表示光功率与波长或频率的关系。

进行数据采集后 （有关如何执行测试的详细信息，请参阅第 253 页 “开始测量”）“EDFA 图”选项卡中选项卡中显示曲线和沿下列轴的信息：

- X 轴：波长 (nm) 或频率 (THz)
- Y 轴：光功率 (dBm)，按 OSA 的光分辨率带宽 (RBW) 测量。此参考 RBW 显示在图形中。



如果当前曲线已保存，状态栏会显示其文件名。

图形会显示应用程序检测到的所有通道的峰值指示，即在峰值上方显示一条红色竖线指示峰值的位置。

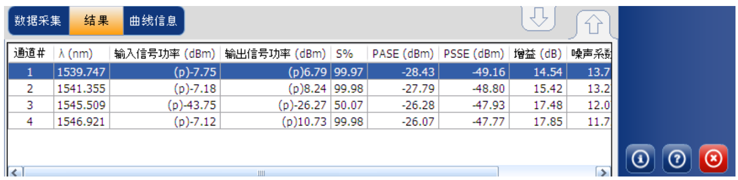
如果通道未与其他通道重叠，其上方会显示蓝色横条 ()。如果通道与另一通道重叠，该横条将为黄色 ()。

“结果”选项卡

结果表显示输入曲线和输出曲线的通道结果。只显示扫描范围内的通道的结果。

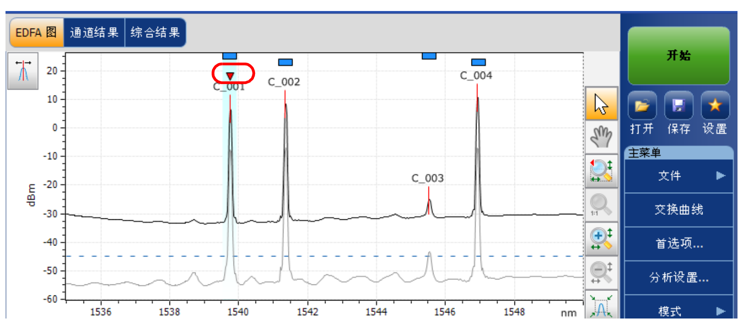
若要查看结果：

在主窗口中，选择“结果”选项卡。



有关每项的详细信息，请参阅第 230 页“自定义 EDFA 结果表”。

当您在“结果”选项卡中选定一个通道时，“EDFA 图”选项卡中会有一个红色小标志（▼）向下指向波峰。红色标记会相应移动，指示图中与选定通道对应的波峰。



“通道结果”选项卡

在 “结果”选项卡选中一行时，“通道结果”选项卡会显示选定通道上测得的完整参数信息。

若要查看通道结果：

1. 在主窗口中，选择 “通道结果”选项卡。

2. 从 “结果”选项卡中选择一行，查看选定通道的通道结果。

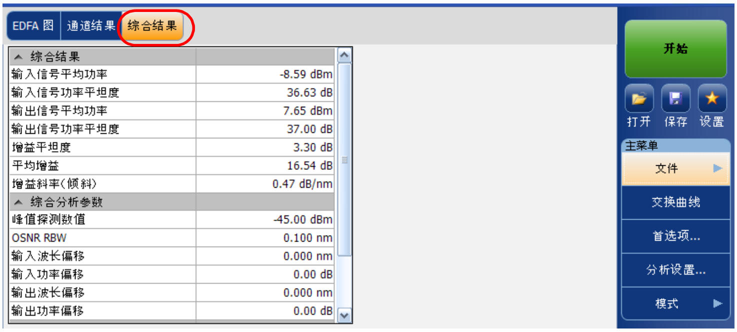
有关各项的详细信息，请参阅第 230 页 “自定义 EDFA 结果表”。

“综合结果”选项卡

“综合结果”选项卡可让您查看当前测量的综合结果。

若要查看综合结果：

在主窗口中，选择 “综合结果”选项卡。



所有通道的下列参数的结果将会显示：

- 输入平均信号功率：表示当前数据采集中检测到的所有波峰的信号功率之和除以总波峰数。
- 输入信号功率平坦度：表示检测到的波峰中最大信号功率和最小信号功率之差，单位 dB。
- 输出平均信号功率：表示当前数据采集中检测到的所有波峰的信号功率之和除以总波峰数。
- 输出信号功率平坦度：表示检测到的波峰中最大信号功率和最小信号功率之差，单位 dB。
- 增益平坦度：表示检测到的通道上最高增益和最低增益值之差 (dB)。
- 平均增益：表示当前测量中检测到的所有通道增益之和除以总通道数。
- 增益斜率：表示检测到的通道增益值线性拟合的斜率。

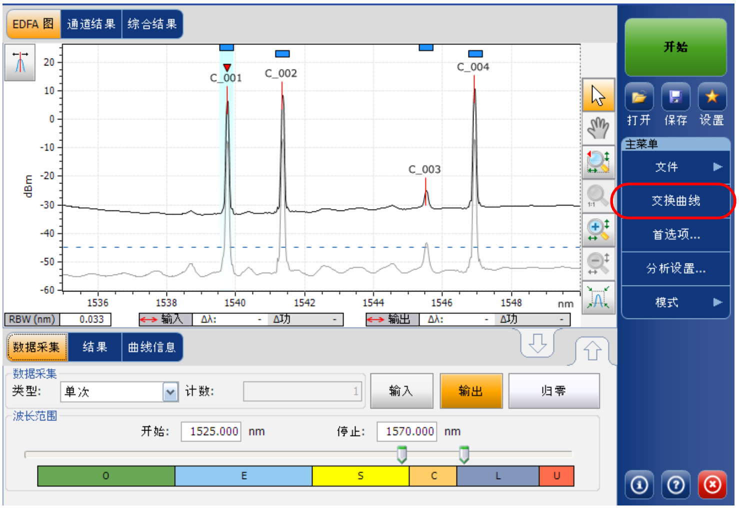
交换 EDFA 曲线

交换曲线功能可让您交换 EDFA 输入曲线和输出曲线。使用此功能后，输入曲线和输出曲线互换。所有结果都重新计算。

注意： 如果应用程序中没有曲线，则交换曲线功能不可用。

若要交换 EDFA 曲线：

在 “主菜单” 中，按 “交换曲线”。

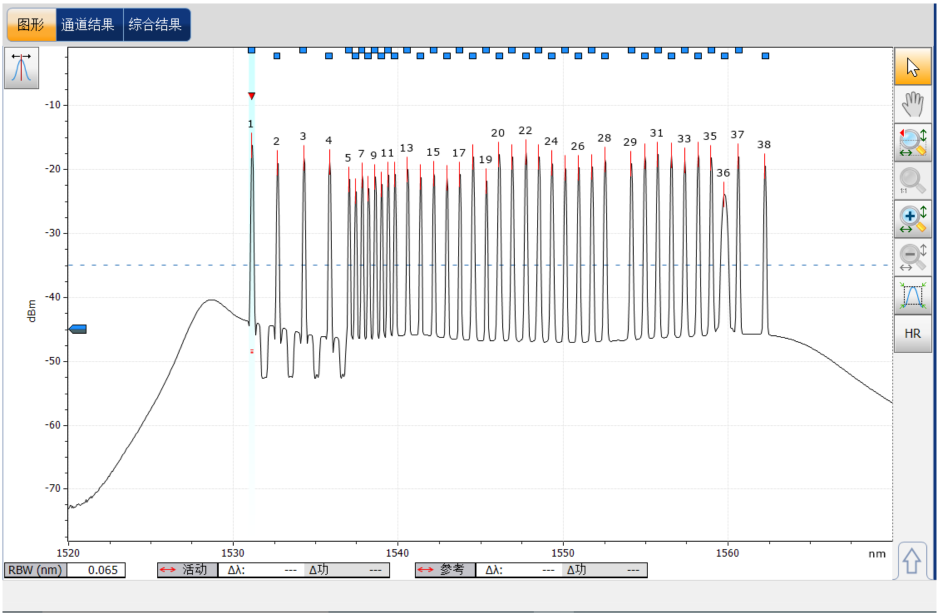


调整显示大小

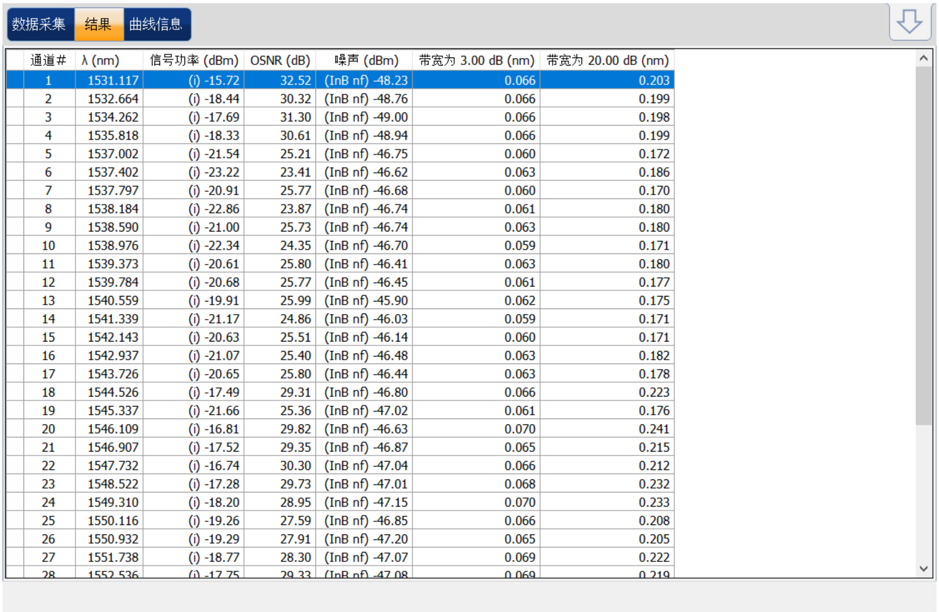
应用程序可让您切换主窗口的视图。您可更改上下选项卡的视图，从正常视图变为 100% 显示上面的选项卡或 100% 显示下面的选项卡。

若要调节显示大小：

若要 100% 显示上面的选项卡，按 。



若要 100% 显示下面的选项卡，按 。



通道 #	λ (nm)	信号功率 (dBm)	OSNR (dB)	噪声 (dBm)	带宽为 3.00 dB (nm)	带宽为 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
8	1538.184	(i) -22.86	23.87	(InB nf) -46.74	0.061	0.180
9	1538.590	(i) -21.00	25.73	(InB nf) -46.74	0.063	0.180
10	1538.976	(i) -22.34	24.35	(InB nf) -46.70	0.059	0.171
11	1539.373	(i) -20.61	25.80	(InB nf) -46.41	0.063	0.180
12	1539.784	(i) -20.68	25.77	(InB nf) -46.45	0.061	0.177
13	1540.559	(i) -19.91	25.99	(InB nf) -45.90	0.062	0.175
14	1541.339	(i) -21.17	24.86	(InB nf) -46.03	0.059	0.171
15	1542.143	(i) -20.63	25.51	(InB nf) -46.14	0.060	0.171
16	1542.937	(i) -21.07	25.40	(InB nf) -46.48	0.063	0.182
17	1543.726	(i) -20.65	25.80	(InB nf) -46.44	0.063	0.178
18	1544.526	(i) -17.49	29.31	(InB nf) -46.80	0.066	0.223
19	1545.337	(i) -21.66	25.36	(InB nf) -47.02	0.061	0.176
20	1546.109	(i) -16.81	29.82	(InB nf) -46.63	0.070	0.241
21	1546.907	(i) -17.52	29.35	(InB nf) -46.87	0.065	0.215
22	1547.732	(i) -16.74	30.30	(InB nf) -47.04	0.066	0.212
23	1548.522	(i) -17.28	29.73	(InB nf) -47.01	0.068	0.232
24	1549.310	(i) -18.20	28.95	(InB nf) -47.15	0.070	0.233
25	1550.116	(i) -19.26	27.59	(InB nf) -46.85	0.066	0.208
26	1550.932	(i) -19.29	27.91	(InB nf) -47.20	0.065	0.205
27	1551.738	(i) -18.77	28.30	(InB nf) -47.07	0.069	0.222
28	1552.536	(i) -17.75	29.33	(InB nf) -47.08	0.069	0.219

使用缩放控制

使用缩放控制可更改曲线的显示比例。

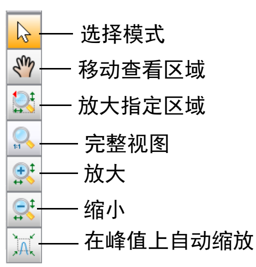
您可以使用相应的按钮放大或缩小图形或者让应用程序自动调节结果表中当前选定波峰的缩放比例。

您可快速放大或缩小选定的波峰。

缩放的图形也可以恢复为原始大小。

应用程序提供了自动缩放波峰功能。如果激活此功能，当您按峰值结果网格中某一行时，图形会放大，选项卡中显示的波峰占据图形背景的 33%。该选项在默认情况下是停用的。

注意： 显示标记线时，无法选择图上的通道。



注意： 您只能用  按钮移动标记线。

若要查看图形的特定部分：

➤ 您可按 并用手写笔或手指拖动图形，确定显示的图形部分。

➤ 您还可按 按钮并设置缩放区域放大指定的区域，并用手写笔或手指确定缩放区域（显示的虚线矩形框可帮助确定区域）。释放手写笔后，应用程序会自动放大图形。

➤ 您还可分别按 或 按钮缩放显示图形的中心部分：应用程序会自动按 50% 和 100% 调节缩放。

若要自动放大选定的波峰：

在图形或结果表中选择波峰并按 。

若要恢复完整图形视图：

按 。

管理标记线

您可使用标记线执行手动测量和直接在曲线上进行验证。所有测试模式都有两条水平标记线和两条竖直标记线。竖直标记线指示它所在位置的波长或频率在曲线上的功率电平，水平标记线指示其所在位置的功率电平。您可用竖直标记线测量曲线上任何点的实际功率和波长值。

注意： 只有在相关测试模式的 “首选项” 选项卡中激活后才会显示水平标记线。

每条标记线用一个字母标识。A 和 B 标识竖直标记线， C 和 D 标识水平标记线。

应用程序可让您固定标记线的间距。激活此功能后，当移动任一标记线时，两条标记线都以同样的速度移动相同的距离。

“标记线”工具栏中的标记线 A 和 B 作为启用选择的切换按钮。标记线被激活时，按钮变为橙色。“图形”选项卡中选定的标记线底部显示双箭头，表示这条标记线可以移动。

这时，如果您按 “图形”选项卡中的另一条标记线，选择就会切换到此标记线。但是，如果您在 “标记线”工具栏中选择另一条标记线，则两条标记线都会被选定且二者间的距离将会锁定。

注意： 如果在水平标记线活动时选择竖直标记线，选择将会切换，反之亦然。

注意： 如果缩放或平移图形，标记线会留在原来位置。

您还可使用自动标记线定位将标记线置于特定通道波峰上。位置根据以下默认规则设置在结果网格中：

➤ A：设置在峰值波长“λ 波峰 (nm)”或频率“*f* 波峰 (Thz)”处。

➤ B：设置在低于峰值最大功率 3 dB 处对应的波长 / 频率处（未减去噪声的信号功率“p”）。

➤ C：设置在峰值功率（λ 波峰）处。

➤ D：设置在标记线 3 dB 以下处。

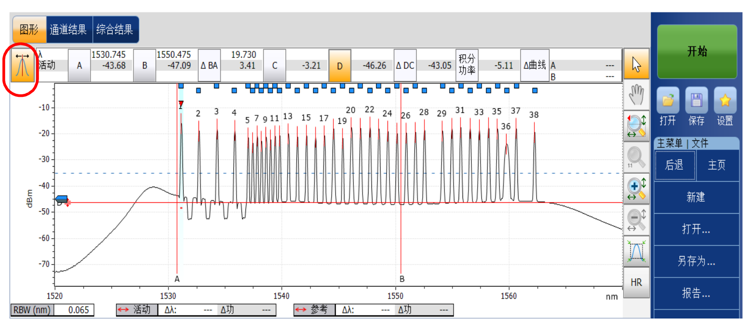
如果移动其中一条标记线，这些新设置将保留到下次使用自动标记线，直到您重置它们或选择另一缩放功能。

如果您选择的通道不显示信号，标记线将保留在原来位置。

在 WDM 和漂移模式中，标记线置于活动曲线上。在 EDFA 测试中，标记线位于输出曲线上。

若要显示标记线工具栏：

按视图左上角的  按钮。

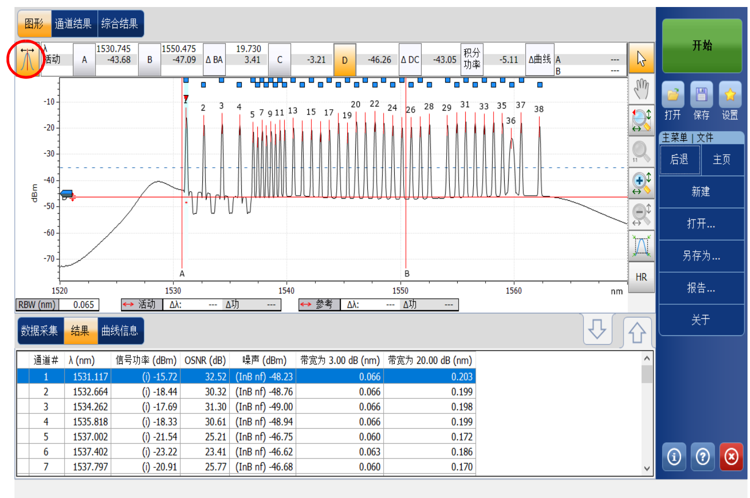


若要显示自动标记线：

按 按钮。焦点将位于 “结果”选项卡中当前选定的通道上。

若要手动输入标记线位置值：

1. 如果尚未显示，按视图左上角的 按钮显示标记线工具栏。



2. 要设置标记线，在相应框中输入准确值或在屏幕上拖动标记线。

图中出现标记线 A 和 B，下列值显示在 “标记线”工具栏中。

➤ 两条标记线所在波长位置对应的功率值 （对于 WDM 模式，显示活动曲线和参考曲线值；对于光谱透过率和 EDFA 模式，显示输入曲线值和输出曲线值）。

➤ 标记线 (A-B) 之间的波长 / 频率差

➤ 标记线之间的功率差，单位为 dB

➤ 标记线之间的积分功率，单位为 dBm

➤ 对于 WDM、光谱透过率和 EDFA 模式，为两条标记线的曲线之间的功率差 （活动曲线减去参考曲线或输入曲线减去输出曲线），单位为 dB。

图中出现标记线 C 和 D，标记线 (C-D) 之间的功率差也显示在 “标记线”工具栏中。

您还可直接在 “图形”选项卡上移动标记线。在显示区域中将标记线拖动到所需的区域。您会看到 “标记线”工具栏中相应框的值随标记线的位置变化。如果要为标记线设置准确值，只需在框中输入该值。

注意： 在 “图形”选项卡中使用缩放工具后，您必须停用缩放才能再次移动标记线。按缩放工具选择中的箭头可停用缩放功能。

注意： 标记线 A 和 B 不能交叉。如果两条标记线交叉，它们会同时移动。

管理曲线信息

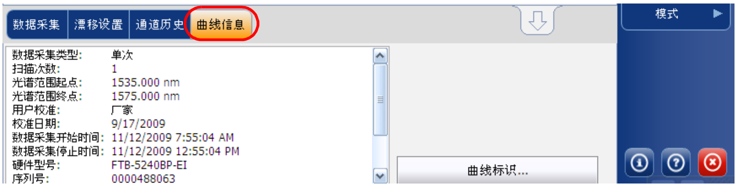
采集曲线之后，可能需要查看数据采集的详细信息。“曲线信息”选项卡显示数据采集参数和条件的相关信息。您还可以编辑所测光纤和任务的相关信息或添加注释。此信息随曲线一起保存。

注意： 活动曲线和参考曲线都会显示 “曲线信息”，但您只能编辑活动曲线的信息。

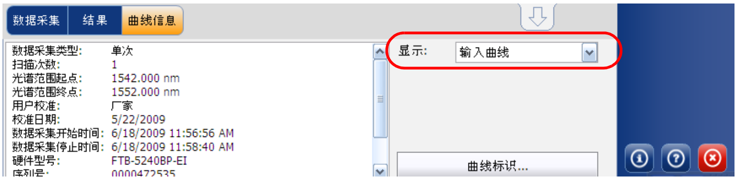
注意： 若要将 “曲线标识”窗口中的设置应用到 “首选项”选项卡，选择 “用作模板”选项，然后按 “确定”。

若要查看曲线信息参数：

1. 在主窗口中，选择 “曲线信息”选项卡。

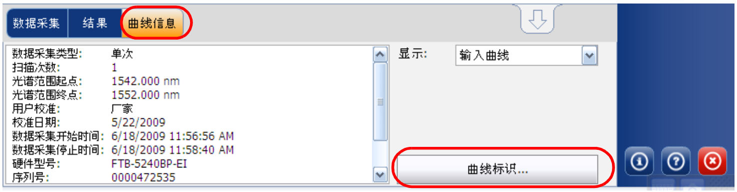


2. 对于一些测试类型 （有参考曲线时的 WDM, 光谱透过率、 EDFA），选择您要查看的曲线。



若要编辑常规信息：

1. 在主窗口中，选择“曲线信息”选项卡。
2. 按“曲线标识”。



注意： WDM 参考曲线没有曲线标识。

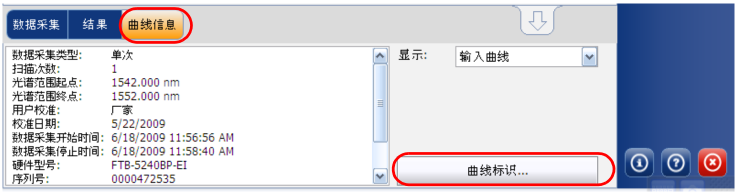
3. 选择“常规”选项卡。

4. 根据需要编辑常规信息。
5. 按“确定”保存更改并关闭窗口，或按“取消”退出而不保存。

按“清除”清除“常规”选项卡中所做的全部修改。

若要编辑曲线信息：

1. 在主窗口中，选择 “曲线信息” 选项卡。
2. 按 “曲线标识”。



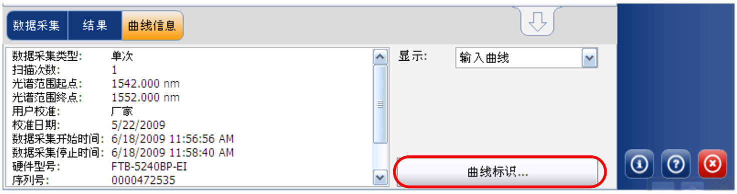
3. 选择 “信息” 选项卡。

4. 根据需要编辑信息。
5. 按 “确定” 保存更改并关闭窗口，或按 “取消” 退出而不保存。

按 “恢复默认值” 删除全部更改并应用默认值。

若要编辑注释：

1. 在主窗口中，选择“曲线信息”选项卡。
2. 按“曲线标识”。



3. 选择“注释”选项卡。

4. 在“注释”窗口中编辑当前曲线的注释。
5. 按“确定”保存更改并关闭窗口，或按“取消”退出而不保存。

按“清除”清除“注释”选项卡中所做的全部修改。

生成报告

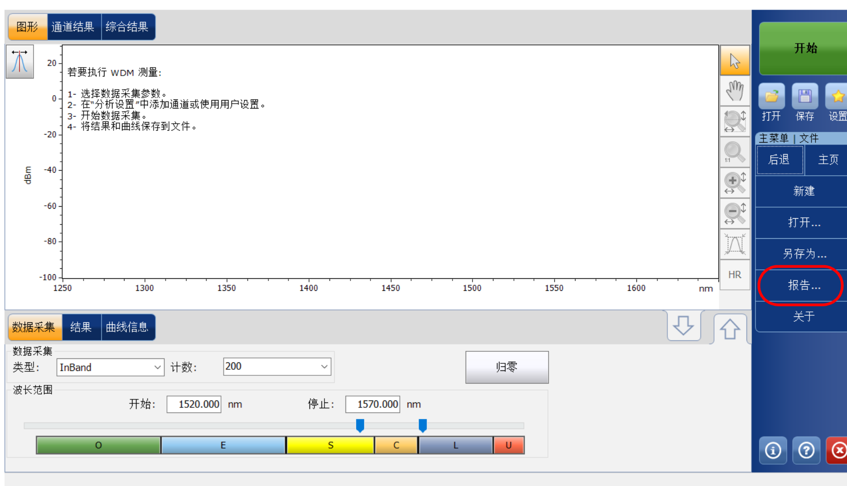
完成数据采集后，您可生成当前数据采集的报告并按照所用测试模式支持的文件类型将其保存为 .html、 .PDF 或 .txt 格式。报告文件中包括曲线信息、数据采集条件、其他结果以及每种测试模式特有的详细信息。

注意： 报告文件包含屏幕上显示的空通道。

注意： 只有 WDM 模式和漂移模式能生成 .txt 格式的报告。

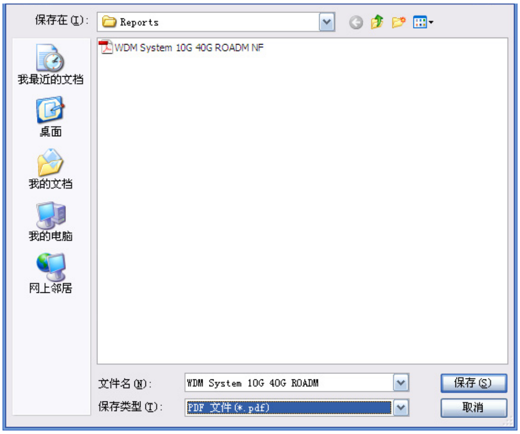
若要生成报告：

1. 在 “主菜单” 中，按 “文件”。
2. 按 “报告”。



3. 在 “另存为” 窗口中，输入文件名。

4. 在“保存类型”列表中，选择报告格式。



5. 按“保存”。报告将被添加到“报告”文件夹。您可根据需要更改保存报告的位置。

13 维护

若要确保设备长期正常运行：

➤ 使用前始终检查光纤连接器，如有必要，则对其进行清洁。

➤ 避免设备沾染灰尘。

➤ 用略微蘸水的抹布清洁设备外壳和前面板。

➤ 将设备在室温下存放于清洁干燥处。避免阳光直接照射设备。

➤ 避免湿度过高或显著的温度变化。

➤ 避免不必要的撞击和振动。

➤ 如果设备中溅入或进入任何液体，请立即关闭电源，断开所有外部电源，取出电池并让设备完全干燥。

警告

如果不按照此处指定的控制、调节方法和步骤进行操作和维护，可能导致危险的辐射暴露或破坏设备提供的保护措施。

清洁 EUI 连接器

定期清洁 EUI 连接器将有助于保持最佳性能。无需拆卸设备。

重要提示

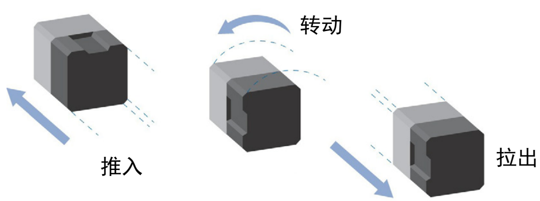
如果内部连接器损坏，则必须打开模块外壳并重新校准模块。

警告

光源开启时直视光纤连接器会对眼睛造成永久性伤害。 EXFO 强烈建议清洁前关闭设备。

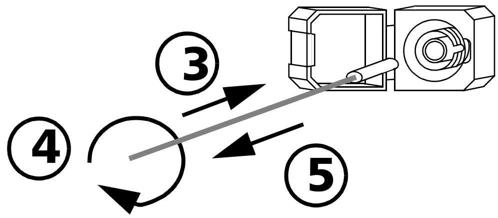
若要清洁 EUI 连接器：

1. 从仪器上取下 EUI 连接器，露出连接器底座和插芯。



2. 仅用 2.5 mm 吸头蘸取一滴光学清洁液。

3. 轻轻将清洁棒插入 EUI 适配器，直到从另一端伸出为止 （顺时针方向缓慢转动有助于清洁）。



4. 轻轻转动清洁棒一整圈，然后边抽出边继续转动。

5. 用一根干燥的清洁棒重复第 3 至 4 步。

注意： 确保不要触摸清洁棒软头。

6. 按以下步骤清洁连接器端口内的插芯：

6a. 在不起毛的清洁布上滴一滴光纤产品专用清洁剂。

重要提示

避免瓶口和清洁布接触，使表面快速干燥。

6b. 轻轻擦拭连接器和插芯。

6c. 用一块干燥不起毛的清洁布轻轻擦拭同一表面，确保连接器和插芯完全干燥。

6d. 用光纤检测探头 （例如， EXFO 的 FIP）检验连接器端面。

7. 将 EUI 装回仪器 （推入并顺时针转动）。

8. 清洁棒和清洁布使用一次后丢弃。

重新校准设备

EXFO 制造和服务中心根据 ISO/IEC 17025 标准 （检测和校准实验室能力的通用要求）进行校准。该标准规定校准文档不得包含校准间隔时间，再次校准的日期应由用户根据仪器的使用情况确定。

校准的有效期取决于操作条件。例如，可以根据使用强度、环境条件和设备维护状况以及程序的具体要求延长或缩短校准的有效期。在确定本款 EXFO 设备的校准间隔时间时，必须综合考虑以上所有因素。

在正常使用的情况下，光谱分析仪 的建议校准间隔时间为：一年。

对于新交付的设备， EXFO 测定本产品从校准到发货，中间储存长达六个月都不会影响性能 （EXFO 政策 PL-03）。

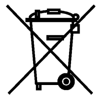
为方便客户跟进设备的校准，EXFO 提供了符合 ISO/IEC 17025 校准的特殊标签，注明设备的校准日期，并留有填写到期日的位置。除非您已根据自己的经验和要求确定了校准间隔时间，否则， EXFO 建议您根据以下等式确定下次校准日期：

下次校准日期 = 初次使用日期 （若距上次校准日期不足六个月）+ 建议校准间隔时间 （一年）

为确保您的设备符合公布的技术规格，请在 EXFO 服务中心或根据所使用的产品，在任一经 EXFO 认证的服务中心进行校准。 EXFO 所做的校准均遵循国家计量研究院的标准。

注意： 您可能已购买包含校准服务的 FlexCare 计划。有关如何联系服务中心和如何确定您的服务计划是否符合要求的详细信息，请参见本用户文档的 “服务和维修”一节。

回收和处理



产品上的标志提示您应当根据当地条例之规定，正确回收或处理产品（包括电气和电子配件）。请勿将其丢弃到普通垃圾箱内。

有关完整的回收 / 处理信息，请访问 EXFO 网站 www.exfo.com/recycle。

14 故障排除

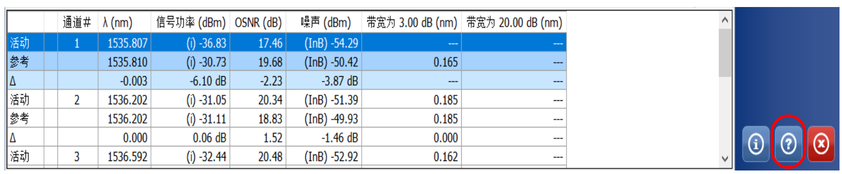
获取联机帮助

可随时获取与上下文相关的交互式帮助，用来指导您使用应用程序。

注意： 还可以在设备上获取可打印的 PDF 版本的 光谱分析仪 用户指南。

若要访问联机帮助：

可在应用程序上的任意位置按下 ? 按钮获取关于当前可用功能的帮助。



	通道#	λ (nm)	信号功率 (dBm)	OSNR (dB)	噪声 (dBm)	带宽为 3.00 dB (nm)	带宽为 20.00 dB (nm)
活动	1	1535.807	(i) -36.83	17.46	(InB) -54.29	---	---
參考		1535.810	(i) -30.73	19.68	(InB) -50.42	0.165	---
Δ		-0.003	-6.10 dB	-2.23	-3.87 dB	---	---
活动	2	1536.202	(i) -31.05	20.34	(InB) -51.39	0.185	---
參考		1536.202	(i) -31.11	18.83	(InB) -49.93	0.185	---
Δ		0.000	0.06 dB	1.52	-1.46 dB	0.000	---
活动	3	1536.592	(i) -32.44	20.48	(InB) -52.92	0.162	---

联系技术支持部

要获得本产品的售后服务或技术支持，请拨打下列任一号码与 EXFO 联系。技术支持部的工作时间为星期一至星期五，上午 8:00 至下午 7:00 （北美东部时间）。

技术支持部
400 Godin Avenue
Quebec (Quebec) G1M 2K2
CANADA

1 866 683-0155 （美国和加拿大）
电话：1 418 683-5498
传真：1 418 683-9224
support@exfo.com

有关技术支持的详细信息和其他全球支持中心的列表，请访问 EXFO 网站 www.exfo.com。

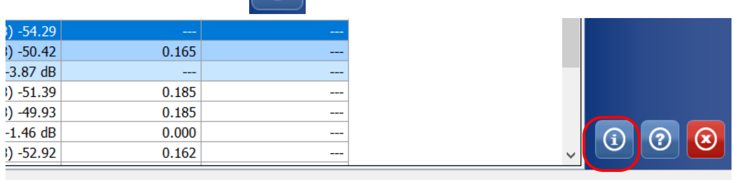
若您对本用户文档有任何意见或建议，欢迎您随时反馈至 customer.feedback.manual@exfo.com。

为加快问题的处理过程，请将产品名称、序列号等信息 （见产品识别标签），以及问题描述准备好后放在手边。

您可能还需要提供软件和模块的版本号。这些信息和技术支持联系方式可以在 “关于” 窗口中查看。

若要查看此产品的相关信息：

在 “主菜单” 中，按 。



运输

运输设备时，应将温度维持在规格中所述的范围内。如果操作不当，可能会在运输过程中损坏设备。建议遵循以下步骤，以尽量降低损坏设备的可能性：

➤ 运输时使用原包装材料包装设备。

➤ 避免湿度过高或温差过大。

➤ 避免阳光直接照射设备。

➤ 避免不必要的撞击和振动。

重要提示

请将以上信息放在手边，它含有本产品的重要详细信息。

注意

➤ 请务必使用 GP-10-102 手提箱运输模块。EXFO 不建议将您的模块放在平台和 / 或非专用包装箱内进行运输。

➤ 运输模块时请轻拿轻放。

➤ 请严格遵守以上操作指南。由于运输过程中粗鲁搬运导致模块损坏的，不在 EXFO 的保修范围内。

15 保修

一般信息

EXFO Inc. (EXFO) 保证从发货之日起一年内对设备的材料和工艺缺陷实行保修。同时，在正常使用的情况下， EXFO 保证本设备符合适用的规格。

在保修期内， EXFO 将有权自行决定对于任何缺陷产品进行维修、更换或退款，如果设备需要维修或者原始校准有误， EXFO 亦会免费检验和调整产品。如果设备在保修期内被送回校准验证，但是发现其符合所有已公布的规格， EXFO 将收取标准校准费用。

重要提示

如果发生以下情形，保修将失效：

➤ 设备由未授权人员或非 EXFO 技术人员篡改、维修或使用。

➤ 保修标签被撕掉。

➤ 非本指南所指定的机箱螺丝被卸下。

➤ 未按本指南说明打开机箱。

➤ 设备序列号已被修改、擦除或磨损。

➤ 本设备曾被不当使用、疏忽或意外损坏。

本保修声明将取代以往所有其他明确表述、暗示或法定的保修声明，包括但不限于对于适销性以及是否适合特定用途的暗示保修声明。在任何情况下， EXFO 对特别损失、附带损失或衍生性损失概不负责。

责任

EXFO 不对因使用产品造成的损失负责，不对本产品所连接的任何其他设备的性能失效负责，亦不对本产品所属的任何系统的运行故障负责。

EXFO 不对因使用不当或未经授权擅自修改本设备、配件及软件所造成的损失负责。

免责

EXFO 保留随时更改其任一款产品设计或结构的权利，且不承担对用户所购买设备进行更改的责任。各种附件，包括但不限于 EXFO 产品中使用的保险丝、指示灯、电池和通用接口 (EUI) 等，不在此保修范围之内。

如果发生以下情形，保修将会失效：使用或安装不当、正常磨损和破裂、意外事故、违规操作、疏忽、失火、水淹、闪电或其他自然灾害、产品以外的原因或超出 EXFO 控制范围的其他原因。

重要提示

若产品携带的光接口因使用不当或清洁方式不当而损坏， EXFO 更换此光接口将收取费用。

合格证书

EXFO 保证本设备出厂装运时符合其公布的规格。

服务和维修

EXFO 承诺：自购买之日起，对本设备提供五年的产品服务及维修。

若要发送任何设备进行技术服务或维修：

1. 请致电 EXFO 的授权服务中心 （请参阅 第 346 页 “EXFO 全球服务中心”）。服务人员将确定您的设备是否需要售后服务、维修或校准。
2. 如果设备必须退回 EXFO 或授权服务中心，服务人员将签发返修货物授权 (RMA) 编号并提供返修地址。
3. 在发送返修设备之前，请尽量备份您的数据。
4. 请使用原包装材料包装设备。请务必附上一份说明或报告，详细注明故障以及发现故障的条件。
5. 将设备 （预付运费）送回服务人员提供的地址。请务必在货单上注明 RMA 编号。 EXFO 将拒收并退回任何没有注明 RMA 编号的包裹。

注意： 返修的设备经测试之后，如果发现完全符合各种技术指标，则会收取测试设置费。

修复之后，我们会将设备寄回并附上一份维修报告。如果设备不在保修范围内，用户应支付维修报告上所注明的费用。如果在保修期内， EXFO 将支付设备的返程运费。运输保险费由用户承担。

例行重新校准不包括在任何保修计划内。由于基本保修或延长保修不包括校准 / 验证，因此您可选择购买一定时间的 FlexCare 校准 / 验证服务包。请与授权服务中心联系 （请参阅第 346 页 “EXFO 全球服务中心”）。

EXFO 全球服务中心

如果您购买的产品需要维修，请联系最近的授权服务中心。

EXFO 总部服务中心 400 Godin Avenue Quebec (Quebec) G1M 2K2 CANADA	1 866 683-0155 （美国和加拿大） 电话：1 418 683-5498 传真：1 418 683-9224 support@exfo.com
EXFO 欧洲服务中心 Winchester House, School Lane Chandlers Ford, Hampshire S053 4DG ENGLAND	电话：+44 2380 246800 传真：+44 2380 246801 support.europe@exfo.com
爱斯福电讯设备 （深圳）有限公司 中国深圳市 宝安区福海街道 新田大道 71-3 号 福宁高新产业园 C 座 3 楼， 邮编 518103	电话：+86 (755) 2955 3100 传真：+86 (755) 2955 3101 support.asia@exfo.com

要查找您附近由 EXFO 合作伙伴运营的认证服务中心网络，请访问 EXFO 官方网站查看服务合作伙伴的完整列表：
http://www.exfo.com/support/services/instrument-services/exfo-service-centers。

A SCPI 命令参考

此附录显示有关 光谱分析仪 随附命令和查询的详细信息。

重要提示

由于平台上可安装许多仪器，因此您必须明确指定要远程控制的仪器。

必须在发送到仪器的每条命令或查询前添加下列助记符：

LINStrument<LogicalInstrumentPos>:

其中， <LogicalInstrumentPos> 对应仪器的标识号。

➤ 对于可与 IQS-600 平台结合使用的仪器：

IQS 控制器或扩展设备标识号 （例如， 001）

XXXY

仪器插槽编号 （0 至 9）

有关修改设备标识的信息，请参阅平台用户指南。

➤ 对于可与 FTB-500 平台结合使用的仪器：

FTB-500 背板标识号

1Y

仪器插槽编号：
四插槽背板：0 至 3 ；
八插槽背板：0 至 7

➤ 对于可与其他平台结合使用的仪器：

使用远程控制配置工具 （可从系统设置访问）中设定的 LINS 值。有关修改 LINS 值的信息，请参阅平台用户指南。

Quick Reference Command Tree

Command								Parameter(s)
ABORt								
CALCulate [1..n]	DFB	DATA	BANDwidth[1|2]|BWIDth[1|2]	FREQuency?				
				[WAVelength]?				
				RelativeLEVel?				
			CENTer	FREQuency?				
				[WAVelength]?				
			CenterOFFset	FREQuency?				
				[WAVelength]?				
			FPMS	FREQuency?				
				[WAVelength]?				
			PPOWer?					
			SBANd|STOPband	LEFT	FREQuency?			
					[WAVelength]?			
				RIGHt	FREQuency?			
					[WAVelength]?			
			SMSR	LEFT?				
				LEFT	POSition	FREQuency?		
					POSition	[WAVelength]?		
				RIGHt?				
				RIGHt	POSition	FREQuency?		
					POSition	[WAVelength]?		
				WORSt?				

Command								Parameter(s)
				WORSt	POSition	FREQuency?		
					POSition	[WAVelength]?		
		STATe						<State>
		STATe?						
	FP	DATA	CENTer	FREQuency?				
				[WAVelength]?				
			FITWidth[1|2] |FWIDth[1|2]	FREQuency?				
				[WAVelength]?				
				RelativeLEVel?				
			FWHM	FREQuency?				
				[WAVelength]?				
			GAUSfiterror?					
			MTSM	FREQuency?				
				[WAVelength]?				
				RelativeLEVel?				
			MSPAcing	FREQuency?				
				[WAVelength]?				
			POWer?					
			PEAKmode|P MODe	FREQuency?				
				[WAVelength]?				
				POWer?				
			RMSWidth	FREQuency?				
				[WAVelength]?				
			TPOWer?					

Command								Parameter(s)
		STATe						<State>
		STATe?						
	MARKer [1|2]	AOFF						
		FUNCtion						IPOWer|OFF
		FUNCtion?						
		FUNCtion	DATA?					
		MODe						POSition|DELTa
		MODe?						
		REFerence						<Reference>|MAXimum|MINimum
		REFerence?						
		[STATe]						<State>
		[STATe]?						
		TRACe						<TraceName>
		TRACe?						
		X	FREQuency					<Position[<wsp>HZ]>|MAXimum|MINimum|DEFault
			FREQuency?					
			[WAVelength]					<Position[<wsp>M]>|MAXimum|MINimum|DEFault
			[WAVelength]?					
		Y?						
	ST	BANDwidth [1|2]|BWIDth[1|2]	RelativeLEVel					<PowerLevel[<wsp>DB|W/W|PCT]>|MAXimum|MINimum|DEFault

Command								Parameter(s)
			RelativeLEVel?					[MAXimum|MINimum|DEFault]
		CHANnel	CENTer	AUTO				<Auto>
				AUTO?				
				FREQuency				<Center[<wsp>HZ]>|MAXimum|MINimum|DEFault
				FREQuency?				[MAXimum|MINimum|DEFault]
				[WAVelength]				<Center[<wsp>M]>|MAXimum|MINimum|DEFault
				[WAVelength]?				[MAXimum|MINimum|DEFault]
				ITUGrid				<Auto>
				ITUGrid?				
			SPACing	FREQuency				<Spacing[<wsp>HZ]>|MAXimum|MINimum|DEFault
				FREQuency?				[MAXimum|MINimum|DEFault]
				[WAVelength]				<Spacing[<wsp>M]>|MAXimum|MINimum|DEFault
				[WAVelength]?				[MAXimum|MINimum|DEFault]
			WIDTh	FREQuency				<Width[<wsp>HZ]>|MAXimum|MINimum|DEFault
				FREQuency?				[MAXimum|MINimum|DEFault]
				[WAVelength]				<Width[<wsp>M]>|MAXimum|MINimum|DEFault
				[WAVelength]?				[MAXimum|MINimum|DEFault]

Command								Parameter(s)
		DATA	ACISolation?					
			BANDwidth[1|2]|BWIDth[1|2]	FREQuency?				
				[WAVelength]?				
			CenterOFFset	FREQuency?				
				[WAVelength]?				
			CHANnel	CENTer	FREQuency?			
					[WAVelength]?			
			ILOSs	MAXimum?				
				MINimum?				
		STATe						<Auto>
		STATe?						
	[WDM]	BANDwidth[1|2]|BWIDth[1|2]	RelativeLEVel					<PowerLevel[<wsp>DB|W/W|PCT]>|MAXimum|MINimum|DEFault
			RelativeLEVel?					[MAXimum|MINimum|DEFault]
		CHANnel	AUTO					<Auto>
			AUTO?					
			AUTO	CENTer	ITUGrid			<Auto>
					ITUGrid?			
				NOISe	AUTO			<Auto>
					AUTO?			
					DISTance	FREQuency		<Distance[<wsp>HZ]>|MAXimum|MINimum|DEFault
					DISTance	FREQuency		[MAXimum|MINimum|DEFault]

<table>
<tr><th colspan="8">Command</th><th>Parameter(s)</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>DISTance</td><td>WAVelength</td><td></td><td><Distance[<wsp>M]>|MAXimum|MINimum|DEFault</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>DISTance?</td><td>[WAVelength]?</td><td></td><td>[MAXimum|MINimum|DEFault]</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>WIDTh</td><td>FREQuency</td><td></td><td><Width[<wsp>HZ]>|MAXimum|MINimum|DEFault</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>WIDTh</td><td>FREQuency?</td><td></td><td>[MAXimum|MINimum|DEFault]</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>WIDTh</td><td>[WAVelength]</td><td></td><td><Width[<wsp>M]>|MAXimum|MINimum|DEFault</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>WIDTh</td><td>[WAVelength]?</td><td></td><td>[MAXimum|MINimum|DEFault]</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>TYPE</td><td></td><td></td><td>IEC|INBand|INBandNarrowfilter|POLYnomial5</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>TYPE?</td><td></td><td></td><td></td></tr>
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Command								Parameter(s)
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					FREQuency?			[MAXimum|MINimum|DEFault]
					[WAVelength]			<Width[<wsp>M]>|MAXimum|MINimum|DEFault
					[WAVelength]?			[MAXimum|MINimum|DEFault]
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				TYPE?				
			NSELect					<Select>|MAXimum|MINimum
			NSELect?					
			SELect					<Select>
			SELect?					
			SIGnalPower	TYPE				IPOWer|PPOWer|TPOWer
				TYPE?				
		DATA	CHANnel	BANDwidth[1|2]|BWIDth[1|2]	FREQuency?			
					RelativeLEVel?			
					[WAVelength]?			
				CATalog?				
				COUNt?				
				CENTer	FREQuency?			
					[WAVelength]?			
				CenterMASs	FREQuency?			

Command								Parameter(s)
					[WAVelength]?			
				CenterPEAk	FREQuency?			
					[WAVelength]?			
				ENBW?				
				NOISe?				
				NOISe	AUTO?			
					TYPE?			
				OSNR?				
				NSELect				<Select>|MAXimum|MINimum
				NSELect?				
				SELect				<Select>
				SELect?				
				SIGnalPower?				
				SIGnalPower	TYPE?			
				STATus	QUEStionable	BIT <9|10|11>	CONDition?	
			OSNR	FLATness?				
				MEAN?				
			SIGnalPower	FLATness?				
				MEAN?				
			TPOWer?					
		OSNR	BANDwidth|BWIDth	[RESolution]				<Resolution[<wsp>M]>|MAXimum|MINimum|DEFault
				[RESolution]?				[MAXimum|MINimum|DEFault]

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					AUTO?			
		STATe						<State>
		STATe?						
		THReshold						<Threshold[<wsp>DBM|W]>|MAXimum|MINimum|DEFault
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CALibration[1..n]	DATE?							
	POWer	DATE?						
	WAVelength	DATE?						
	ZERO	[AUTO]						<Auto>|ON|OFF|ONCE
		[AUTO]?						
IDN[1..n]?								
INITiate	CONTinuous							<Continuous>
	CONTinuous?							
	[IMMediate]							
MEMory	TABLe	DATA?						<TableName>
		DEFine						<ColumnName>
		DEFine?						
		SELect						<TableName>
		SELect?						
		POINt?						<TableName>

Command								Parameter(s)
MMEMory	STORe	MEASurement	[WDM]					<FileName>
			DFB					<FileName>
			FP					<FileName>
			ST					<FileName>
SENSe[1..n]	AVERage	COUNt						<Count>|MAXimum|MINimum|DEFault
		COUNt?						[MAXimum|MINimum|DEFault]
		STATe						<State>
		STATe?						
		TYPE						SCALar|PolarizationMinMaxHold
		TYPE?						
	CORRection	OFFSet	[MAGNitude]					<Offset[<wsp>DB|W/W|PCT]>|MAXimum|MINimum|DEFault
			[MAGNitude]?					[MAXimum|MINimum|DEFault]
	FREQuency	STARt						<Start[<wsp>HZ]>|MAXimum|MINimum|DEFault
		STARt?						[MAXimum|MINimum|DEFault]
		STOP						<Stop[<wsp>HZ]>|MAXimum|MINimum|DEFault
		STOP?						[MAXimum|MINimum|DEFault]
	[WAVelength]	OFFSet						<Offset[<wsp>M]>|MAXimum|MINimum|DEFault

Command								Parameter(s)
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		STARt						<Start[<wsp>M]>|MAXimum|MINimum|DEFault
		STARt?						[MAXimum|MINimum|DEFault]
		STOP						<Stop[<wsp>M]>|MAXimum|MINimum|DEFault
		STOP?						[MAXimum|MINimum|DEFault]
SNUMber?								
STATus?								
STATus	OPERation	BIT<8|9>	CONDition?					
TRACe	BANDwidth|BWIDth	RESolution?						<TraceName>
	[DATA]	X	STARt	[WAVElength]?				<TraceName>
			STOP	[WAVElength]?				<TraceName>
		[Y]	[WAVElength]?					<TraceName>
	FEED	CONTrol						<TraceName>,ALWays|NEXT|NEVer
		CONTrol?						<TraceName>
	POINts?							<TraceName>
TRIGger[1..n]	[SEQuence]	SOURce						IMMediate|TIMer
		SOURce?						
UNIT[1..n]	POWer							DBM|W
	POWer?							

Command								Parameter(s)
	RATio							DB|W/W|PCT
	RATio?							
	SPECtrum							M|HZ
	SPECtrum?							

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]: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)	Bandwidth: The response data syntax for <Bandwidth> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Bandwidth> response corresponds to the bandwidth in hertz.
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]|BANDwidth[1|2][:WAVelength]? :CALCulate[1..n]:DFB:DATA:BWIDth[1|2]|BANDwidth[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)	Bandwidth: The response data syntax for <Bandwidth> is defined as a <NR3 NUMERIC RESPONSE DATA> element. The <Bandwidth> response corresponds to the bandwidth in meters.
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]|BANDwidth[1|2]:FREQuency? :CALCulate[1..n]:DFB:DATA:BWIDth[1|2]|BANDwidth[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)	PowerLevel: 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)	Center: 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[:WAVelength]? :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[:WAVelengt h]?
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 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)	Offset: 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.
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[:WAVelength]? :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). At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:CenterOFFset[:WAVelength]?
Parameter(s)	None
Response Syntax	<Offset>
Response(s)	Offset: 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.
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[:WAVelength]? :CALCulate[1..n]:DFB:DATA:CenterOFFset:FREQuency? :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)	Spacing: 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)	Spacing: 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)	Power: 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)	CALC:DFB:STAT ON <Do measurement> UNIT:POW DBM CALC:DFB:DATA:PPOW? Returns 2.340000E+000
See Also	:CALCulate[1..n]:DFB:DATA:CENTer[:WAVelength]? :CALCulate[1..n]:DFB:DATA:CENTer:FREQuency? :CALCulate[1..n]:DFB:STATe

: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. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:SBANd|STOPband:LEFT:FREQuency?
Parameter(s)	None
Response Syntax	<StopBand>
Response(s)	StopBand: 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. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:SBANd|STOPband:LEFT[:WAVelength]?
Parameter(s)	None
Response Syntax	<StopBand>
Response(s)	StopBand: 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. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:SBANd|STOPband:RIGHt:FREQuency?
Parameter(s)	None
Response Syntax	<StopBand>
Response(s)	StopBand: 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. At *RST, this value is not available.
Syntax	:CALCulate[1..n]:DFB:DATA:SBANd|STOPband:RIGHt[:WAVelength]?
Parameter(s)	None
Response Syntax	<StopBand>
Response(s)	StopBand: 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:LEFT[:WAVelength]? :CALCulate[1..n]:DFB:DATA:SBANd|STOPband:RIGHt: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)	Ratio: 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)	Position: 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.
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)

Position:

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.

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)	Ratio: 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:RIGH? 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)	Position: 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.
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:POSition[:WAVelength]? :CALCulate[1..n]:DFB:DATA:SMSR:WORSt:POSition: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)	Position: 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.
Example(s)	CALC:DFB:STAT ON <Do measurement> CALC:DFB:DATA:SMSR:RIGH: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)	Ratio: 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:POSition :FREQuency? :CALCulate[1..n]:DFB:DATA:SMSR:WORSt:POSition [: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)

Position:

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.

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)	Position: 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.
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)	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 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)	State: 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]: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)	Center: 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)	Center: 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:CENT? 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)	Width: 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.
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]|FWIDth[1|2][:WAVelength]? :CALCulate[1..n]:FP:DATA:FITWidth[1|2]|FWIDth[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)	Width: 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.
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]|FWIDth [1|2]:FREQuency? :CALCulate[1..n]:FP:DATA:FITWidth[1|2]|FWIDth [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)	PowerLevel: 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:FWHM: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:FWHM: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 full width at half-maximum position in hertz.
Example(s)	CALC:FP:STAT ON <Do measurement> CALC:FP:DATA:FWHM: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:FWHM[:WAVelength]? :CALCulate[1..n]:FP:STATe

:CALCulate[1..n]:FP:DATA:FWHM [: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:FWHM[:WAVelength]?
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 full width at half-maximum position in meters.
Example(s)	CALC:FP:STAT ON <Do measurement> CALC:FP:DATA:FWHM? 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:FWHM: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)	Error: 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)	Width: 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)	PowerLevel: 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)	Spacing: 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)	Spacing: 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)	Power: 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)	Position: 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)	Position: 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)	Power: 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)	Width: 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)	Width: 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)	Power: 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)	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 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)	State: 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)	Function: 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)	Function: 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)	Data: 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)	<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

: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>POSition|DELTa
Parameter(s)	Mode: 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)	Mode: The response data syntax for <Mode> is defined as a <CHARACTER RESPONSE DATA> element. The <Mode> response corresponds to the selected marker mode. POSition: 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.
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)	Reference: 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)	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 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)	State: 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)	TraceName: 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)	TRAC:FEED:CONT "TRC1", NEXT <Do measurement> CALC:MARK1 ON CALC:MARK1:TRAC "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 :INITiate[:IMMediate] :INITiate:CONTinuous :TRACe:FEED:CONTrol?

: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)	TraceName: 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 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: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)	Position: 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)	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 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)	Position: 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)	Data: 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.

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><PowerLevel[<wsp>DB|W/W|PCT]>|MAXimum|MINimum|DEFault

Parameter(s)

PowerLevel:

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)	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	<PowerLevel>

:CALCulate[1..n]:ST:BANDwidth[1|2]|BWIDth[1|2]:RelativeLEVel?

Response(s)	PowerLevel: 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)	Auto: 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. 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)	Center: 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)	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	<Center>

:CALCulate[1..n]:ST:CHANnel:CENTer:FREQuency?

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 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)	Center: 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[:WAVelength]? MIN and CALCulate[1..n]:ST:CHANnel:CENTer[:WAVelength]? 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: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[: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)	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	<Center>

:CALCulate[1..n]:ST:CHANnel: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 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)

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 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)	Auto: 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)

Spacing:

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

Notes

If necessary, the channel width will be automatically ajusted 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)	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	<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)

Spacing:

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 WIDTh will be automatically ajusted 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)	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	<Spacing>

:CALCulate[1..n]:ST:CHANnel:SPACing[:WAVelength]?

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 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)

Width:

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:WIDT: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)	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]:ST:CHANnel: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 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)	Width: 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)	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]:ST:CHANnel:WIDTh[:WAVelength]?

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 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[: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: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)	Isolation: 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
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:FREQuency :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:DATA:CHANnel:CENTer:FREQuency? :CALCulate[1..n]:ST:DATA:CHANnel:CENTer[:WAVElength]?

: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)	Bandwidth: 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]|BANDwidth[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)	Bandwidth: 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: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]|BANDwidth[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)	Offset: 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)	Offset: 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:FREQu ency?
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 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[:WAVE length]?

: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)	Center: 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:ILOSs: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:ILOSs:MAXimum?
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 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:ILOSs:MINimum?

:CALCulate[1..n]:ST:DATA:ILOSs: 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:ILOSs: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:ILOSs: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 willl 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)	Auto: 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][: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)

PowerLevel:

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)	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	<PowerLevel>

:CALCulate[1..n][:WDM]:BANDwidth[1|2]|BWIDth[1|2]:RelativeLEVel?

Response(s)	PowerLevel: 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 diabled). At *RST, the state of the default channel is set to on (enabled).
Syntax	:CALCulate[1..n][:WDM]:CHANnel: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. 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)	Auto: 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)	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 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)	Auto: 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)	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 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)	Auto: 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)	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 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:DISTance: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)	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][:WDM]:CHANnel:AUTO:NOISe:DISTance:FREQuency?

Response(s)	Distance: 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	:CALCulate[1..n][:WDM]:CHANnel:AUTO: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][: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:DISTance[: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)	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][:WDM]:CHANnel:AUTO:NOISe:DISTance[:WAVelength]?

Response(s)	Distance: 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:DISTance[:WAVelength]?

: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)	Width: 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)	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: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:WIDTh: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)

Width:

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

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:WIDTh[: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)	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:AUTO:NOISe:WIDTh[:WAVelength]?

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 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: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
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. 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.
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.

: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: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:SIGnal Power:TYPE<wsp>IPOWer|PPOWer|TPOWer
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: 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:SIGnalPower:TYPE? :CALCulate[1..n][:WDM]:CHANnel:SIGnalPower:TYPE :CALCulate[1..n][:WDM]:DATA:CHANnel:SIGnalPower?

: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)	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. 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:SIGnalPower: TYPE :CALCulate[1..n][:WDM]:CHANNel:SIGnalPower:TYPE :CALCulate[1..n][:WDM]:DATA:CHANNel:SIGnalPower?

: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	:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTh:FREQuency<wsp><Width[<wsp>HZ]>|MAXimum|MINimum|DEFault
Parameter(s)	Width: 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)	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:AUTO: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 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	:CALCulate[1..n][:WDM]:CHANnel:AUTO:WIDTh[:WAVelength]<wsp><Width[<wsp>M]>|MAXimum|MINimum|DEFault
Parameter(s)	Width: 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)	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:AUTO:WIDTh[:WAVelength]?

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 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)	Catalog: 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 te 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)	Count: 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)

➤ Name:

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.

➤ Define:

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><Nam e>
Parameter(s)	Name: 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>
Response(s)	Define: 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

:CALCulate[1..n][:WDM]:CHANnel:DELete[:NAME] <wsp><Name>

Parameter(s)

Name:

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)

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"

Notes

If a channel with the specified <Name> does not exists, no error is generated.

See Also

:CALCulate[1..n][:WDM]:CHANnel:CATalog?
:CALCulate[1..n][:WDM]:CHANnel[:DEFine]
:CALCulate[1..n][:WDM]:CHANnel:DELete:ALL

: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	:CALCulate[1..n][:WDM]:CHANnel:CENTer:FREQuency<wsp><Center[<wsp>HZ]>|MAXimum|MINimum|DEFault
Parameter(s)	Center: 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:FREQuency? MIN and CALCulate[1..n][:WDM]:CHANnel:CENTer:FREQuency? 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:CENT:FREQ? Returns 1.921750E+014
CALC:WDM:CHAN:CENT:FREQ 193.4145 THZ

CALC:WDM:CHAN:CENT:FREQ? Returns 1.934145E+014

See Also

:CALCulate[1..n][:WDM]:CHANnel[:DEFine]
:CALCulate[1..n][:WDM]:CHANnel:CENTer:FREQuency?
:CALCulate[1..n][:WDM]:CHANnel:CENTer[:WAVElength]
: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)	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	<Center>

:CALCulate[1..n][:WDM]:CHANnel:CENTer:FREQuency?

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 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:FREQuency :CALCulate[1..n][:WDM]:CHANnel:CENTer[:WAVelength]? :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	:CALCulate[1..n][:WDM]:CHANnel:CENTer[:WAVelength]<wsp><Center[<wsp>M]>|MAXimum|MINimum|DEFault
Parameter(s)	Center: 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[:WAVelength]? MIN and CALCulate[1..n][:WDM]:CHANnel:CENTer[:WAVelength]? 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:CENT:WAV? Returns 1.45000E-006
CALC:WDM:CHAN:CENT:WAV 1445.0 NM
CALC:WDM:CHAN:CENT:WAV? Returns 1.44500E-006

See Also

:CALCulate[1..n][:WDM]:CHANnel[:DEFine]
:CALCulate[1..n][:WDM]:CHANnel:CENTer[:WAVelength]?
:CALCulate[1..n][:WDM]:CHANnel:CENTer:FREQuency
: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)	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	<Center>

:CALCulate[1..n][:WDM]:CHANnel: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 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:FREQuency? :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)

Width:

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:FREQuency? MIN and CALCulate[1..n][:WDM]:CHANnel:WIDTh:FREQuency? 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[:WAVelength] :CALCulate[1..n][:WDM]:CHANnel:WIDTh:FREQuency? :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)	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: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 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)	Width: 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:FREQuency :CALCulate[1..n][:WDM]:CHANnel:WIDTh[:WAVelength]? :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)	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:WIDTh[:WAVelength]?

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 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)	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 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)	Auto: 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)	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 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)	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][:WDM]:CHANnel:NOISe:DISTance:FREQuency?

Response(s)	Distance: 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:DISTance[:WAVelength]? :CALCulate[1..n][:WDM]:CHANnel:NOISe:DISTance:FREQuency :CALCulate[1..n][:WDM]:CHANnel:NOISe:WIDTh: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)	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][: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)	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][:WDM]:CHANnel:NOISe:DISTance[:WAVelength]?

Response(s)	Distance: 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: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)

Width:

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)	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: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: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)	Width: 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

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)	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 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: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)	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. 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)	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

: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)	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.

: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: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

: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)	Select: 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)	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 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)	Select: 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)	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: 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:SIGnalPower:TYPE :CALCulate[1..n][:WDM]:CHANnel:SIGnalPower:TYPE? :CALCulate[1..n][:WDM]:CHANnel:SELect :CALCulate[1..n][:WDM]:DATA:CHANnel:SIGnalPower?

: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)	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.

: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:SIGnalPower:TYPE :CALCulate[1..n][:WDM]:CHANnel:SIGnalPower:TYPE :CALCulate[1..n][:WDM]:CHANnel:SELect :CALCulate[1..n][:WDM]:DATA:CHANnel:SIGnalPower?

: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)	Bandwidth: 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)	PowerLevel: 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: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"

: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)	Bandwidth: 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)	Catalog: 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: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

: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>
Response(s)	Count: 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)	Center: 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:CenterMASs:FREQuency? :CALCulate[1..n][:WDM]:DATA:CHANnel:CenterPEAk: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)	Center: 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:Center MASs:FREQuency?
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 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:CenterPEAk:FREQuency? :CALCulate[1..n][:WDM]:DATA:CHANnel:CenterMASs[:WAVeength]? :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)	Center: 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:CenterPEAk[:WAVelength]? :CALCulate[1..n][:WDM]:DATA:CHANnel:CenterMASs: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)	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 frequency in hertz.
Example(s)	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

: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:CenterMASs:FREQuency? :CALCulate[1..n][:WDM]:DATA:CHANnel:CenterPEAk[: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)	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 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:CenterMASs[:WAVelength]? :CALCulate[1..n][:WDM]:DATA:CHANnel:CenterPEAk: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)	ENBW: 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)	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>

: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)	Noise: 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)	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>

: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)	Auto: 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)	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.

: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)	Osnr: 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)	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>

: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:SIGnalPower? :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)	Select: 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)	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 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)	Select: 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 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>
Response(s)	Signal: 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:SIGnalPower:TYPE :CALCulate[1..n][:WDM]:CHANnel:SIGnalPower:TYPE :CALCulate[1..n][:WDM]:DATA:CHANnel:SIGnalPower: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)	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. 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:SIGnalPower:TYPE :CALCulate[1..n][:WDM]:CHANnel:SIGnalPower:TYPE :CALCulate[1..n][:WDM]:DATA:CHANnel:SELect :CALCulate[1..n][:WDM]:DATA:CHANnel:SIGnalPower?

: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)	Condition: 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)	Flatness: 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)	Mean: 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)	Flatness: 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)	Mean: 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)	Power: 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)	Resolution: 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)	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	<Resolution>

:CALCulate[1..n][:WDM]:OSNR:BANDwidth|BWIDth[:RESolution]?

Response(s)	Resolution: 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)

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][: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)	Auto: 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)	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 WDM analysis. 0 or OFF: WDM analysis is disabled. 1 or ON: WDM analysis is enabled.
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)	State: 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)	Threshold: 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)	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	<Threshold>

:CALCulate[1..n][:WDM]: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: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)	Date: 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)	Date: 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)	Date: 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)	Auto: 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 effet 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)	Auto: 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)	Identification: 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)	Continuous: 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)	Continuous: 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

: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. This query has no associated *RST condition.
Syntax	:MEMory:TABLe:DATA?<wsp><TableName>
Parameter(s)	TableName: 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)	Table: 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:TABL: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)	ColumnName: 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_002,1.556727357E-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)	ColumnName: 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: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)	TableName: 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)	<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_002,1.556727357E-006"
Notes	The only valid table name is "WDM:Channel".
See Also	:MEMory:TABLe:DEFine :MEMory:TABLe:DEFine? :MEMory:TABLe:SELect?

: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)	TableName: 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

: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)	TableName: 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)	Point: 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?

: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)	FileName: 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)	FileName: 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: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)	FileName: 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)	FileName: 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

: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)	Count: 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)	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	<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)	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 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)	State: 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	:SENSe[1..n]:CORRection:OFFSet[:MAGNitude]<wsp><Offset[<wsp>DB|W/W|PCT]>|MAXimum|MINimum|DEFault
Parameter(s)	Offset: 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)	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	<Offset>

:SENSe[1..n]:CORRection:OFFSet[:MAGNitude]?

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 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)	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 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 ajusted 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)	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	<Start>

:SENSe[1..n]:FREQuency:STARt?

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 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)	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 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 ajusted 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)	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	<Stop>

:SENSe[1..n]:FREQuency:STOP?

Response(s)	Stop: 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)	Offset: 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)	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	<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)	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. 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 ajusted 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)	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	<Start>

:SENSe[1..n][:WAVelength]:STARt?

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 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)	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. 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 ajusted 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)	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	<Stop>

:SENSe[1..n][:WAVelength]:STOP?

Response(s)	Stop: 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)	SerialNumber: 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)	Status: 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)	Condition: 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)	TraceName: 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)	Resolution: 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)	TraceName: 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)	Start: 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)	TraceName: 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)	Stop: 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><Trace Name>
Parameter(s)	TraceName: 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)	Data: 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)	➤ TraceName: 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. ➤ Control: 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 acquistion, 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)	TraceName: 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)	Control: 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)	TraceName: 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)	Points: 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)	Source: 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)	Unit: 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)	Unit: 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)	Unit: 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)	Unit: 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)	Unit: 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)	Unit: 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)

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 Modifying Default Channel Analysis Parameters (WDM) on page 751.

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 Modifying Selected Channel Analysis Parameters (WDM) on page 752.
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 Modifying Selected Channel Analysis Parameters (WDM) on page 752.
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 Modifying Selected Channel Analysis Parameters (WDM) on page 752.

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 Modifying Global Analysis Parameters (WDM) on page 750.
<Add commands to configure channel list>	See Creating a Channel List Based on the Default Channel (WDM) on page 734 and Creating a Channel List Based on Specific Channels (WDM) on page 735.

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:** this command will take up to 5 seconds to complete.
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 Modifying Default Channel Analysis Parameters (WDM) on page 751.
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 Retrieving Analysis Results on page 753.

Performing an Averaging Acquisition

Command Sequence	Comments
<Add commands to configure analysis parameters>	See Modifying Default Channel Analysis Parameters (WDM) on page 751.
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 Retrieving Analysis Results on page 753.

Performing an Averaging Acquisition for InBand Noise Analysis

Command Sequence	Comments
<Add commands to configure analysis parameters>	See Modifying Default Channel Analysis Parameters (WDM) on page 751.
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 Retrieving Analysis Results on page 753.

Performing a Continuous Acquisition

Command Sequence	Comments
<Add commands to configure analysis parameters>	See Modifying Default Channel Analysis Parameters (WDM) on page 751.
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 Retrieving Analysis Results on page 753.

Performing an i-InBand Acquisition (WDM)

Command Sequence	Comments
<Add commands to configure WDM analysis parameters>	See Configuring the Analysis Setup for the Next Acquisition Sequence (WDM) on page 739.
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 Retrieving Analysis Results (WDM) on page 754.

Performing a Custom InBand Acquisition (WDM)

Command Sequence	Comments
<Add commands to configure Wdm analysis parameters>	See Configuring the Analysis Setup for the Next Acquisition Sequence (WDM) on page 739.
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.

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 Retrieving Analysis Results (WDM) on page 754.

Performing a Continuous Acquisition with Synchronized Intermediate Results Query (WDM)

Command Sequence	Comments
<Add commands to configure Wdm analysis parameters>	See Configuring the Analysis Setup for the Next Acquisition Sequence (WDM) on page 739.
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 Retrieving Analysis Results (WDM) on page 754.
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 Retrieving Analysis Results (WDM) on page 754.

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 Retrieving Analysis Results (WDM) on page 754.
...	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 Retrieving Analysis Results (WDM) on page 754.

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: Performing a Single Acquisition, Performing an Averaging Acquisition or Performing a Continuous Acquisition. See also Configuring Analysis Setup Based on Specific Channel Definition on page 736, Configuring Analysis Setup Based on Auto Channel Definition Centered on the Lowest Insertion Loss Peak on page 737, Configuring Analysis Setup Based on Auto Channel Definition Centered on DWDM ITU Grid on page 738 or Configuring Analysis Setup Based on Auto Channel Definition Centered on CWDM ITU Grid on page 738. **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.

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: Performing a Single Acquisition, Performing an Averaging Acquisition or Performing a Continuous Acquisition. See also Retrieving Analysis Results on page 753.

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-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: Retrieving Analyzed Trace Data.
<Add commands to query analyzed output trace data using trace name "TRC2">	Refer to the following command example in your OSA user documentation: Retrieving Analyzed Trace Data.
<Add commands to query transmittance trace data using trace name "ST:TRAN">	Refer to the following command example in your OSA user documentation: Retrieving Analyzed Trace Data.
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.

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 (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 Retrieving Analyzed Trace Data (WDM) on page 755.
<Add commands to query global results>	See Retrieving Global Results (WDM) on page 756.
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:** It is also possible to query the full channel results table. See Retrieving Channel Results Table (WDM) on page 756.
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 Retrieving Selected Channel Results (WDM) on page 757.

Command Sequence	Comments
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 Retrieving Selected Channel Results (WDM) on page 757.
...	...
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 Retrieving Selected Channel Results (WDM) on page 757.

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-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.

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 光谱分析仪使用的公式

您的 OSA 模块在执行测试时会用到下列公式。

计算 EDFA 噪声系数

计算 EDFA 噪声系数的方程式如下：

$$\text{EDFA 噪声系数} = \frac{P_{ASE} - GP_{SSE}}{Gh\nu B} + \frac{1}{G}$$

其中：

P_{ASE}：EDFA 放大后的自发辐射功率，

P_{SSE}：光源的自发辐射功率，

G：此通道波长上的增益，

h：普朗克常量（$6,6256 \times 10^{-34}$ J · s），

ν：通道的频率，

B：在此通道波长上校准的噪声等效带宽。

计算中心波长（光谱透过率）

计算中心波长的方程式如下：

$$a = \frac{\lambda_R + \lambda_L}{2}$$

其中：

a：中心波长，

λ_R：右侧比标称波长的功率低 3 dB 处的波长，

λ_L：左侧比标称波长的功率低 3 dB 处的波长。

计算带宽 （光谱透过率）

计算带宽的方程式如下：

$$b = 2*\mathrm{Min}\{(\lambda_N - \lambda_{XdBLeft}), (\lambda_{XdBRight} - \lambda_N)\}$$

其中：

b：峰值功率下 X dB 处的带宽，

λ_N：标称波长，

$\lambda_{XdBLeft}$：左侧比标称波长的功率低 X dB 处的波长。

$\lambda_{XdbRight}$：右侧比标称波长的功率低 X dB 处的波长。

索引

J

K

L

M

N

P

Q

W

X

Y

Z

CHINESE REGULATION ON RESTRICTION OF HAZARDOUS SUBSTANCES (RoHS)
中国关于有害物质限制的规定

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

Note:
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。

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