OV350-CWDM OSA

CWDM Optical Spectrum Analyzer

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Section 1 Safety

Prior to using the quick start guide or operating the equipment in any way, it is highly suggested the user reads all safety information.

This product has been designed and tested in accordance with the Manufacturer's safety standards, and has been supplied in a safe condition.

Personal Safety

Personnel should always be aware when working with fiber optic test equipment that active fibers may be present and therefore invisible infrared optical energy may be present.

Never look directly into the end of a connected fiber optic cable or fiber optic adapter of test equipment, to do so could expose the user to laser radiation and could result in sever personal injury.

To Prevent Fire or Shock Hazard

- Batteries are not field replaceable, equipment must be returned to the factory for battery replacement
- Do not use the charger without the batteries installed
- Do not expose the battery charger to rain or excessive moisture
- Do not use the AC adapter when there are signs of damage to the enclosure or cord
- Ensure that you are using the correct charger for the local line voltage

To Prevent Connector Damage

Fiber-optic connectors are easily contaminated or damaged. The connections to the OV350-CWDM OSA meter is a physical contact type of connection and dirty or damaged connectors may impair the instruments capabilities at minimum and at worst result in the need to return this equipment to the factory for expensive repairs. Prior to making any connection to the unit, ensure that all proper cleaning procedures have been followed.

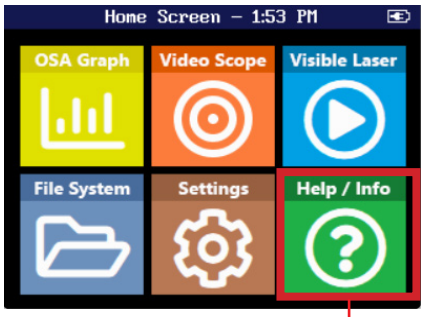
The OV350-CWDM OSA is shipped with angled polished fiber optic connectors as appropriate per industry standards. Ensure the proper connector is used to interface with the unit. It is suggested a reference patch cord be used between the tester and the cable under test, to minimize multiple connections and disconnections and to ensure proper testing practices while using the OV350-CWDM OSA.

Section 2 Quick Start Guide

Power Up

Press the button to power on the CWDM OSA, The home screen will be displayed.

The home screen offers direct access to the CWDM Optical Spectrum Analyzer and Video Scope Modules. The Visible Laser is operated directly from the home screen, simply touch the Visible Laser icon and toggle through CW, modulated and off. File management icon opens file management screen to manipulate and transfer files saved in the OSA and the Video Scope. The settings icon opens the settings page to set date and time and pass/fail parameters on the OSA. The Help icon offers the user a link to FIS, manuals, PC application software, equipment upgrades and training online.



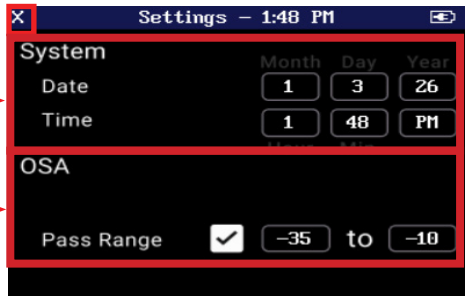
Link to FIS manuals, upgrades and training online.

Setting Screen

Select the Settings icon to open the settings screen.

Date and Time Settings

OSA Pass/Fail Settings



Setup

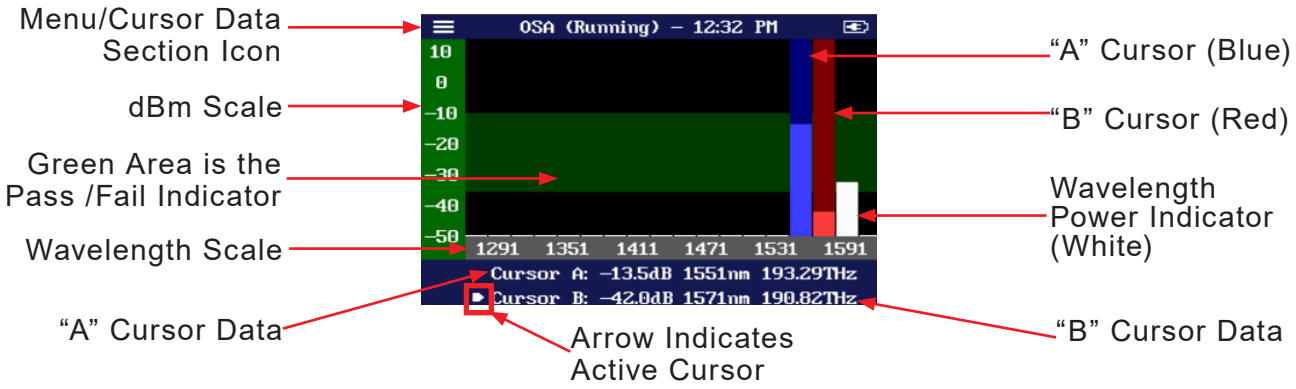
Follow the steps below for initial setup and periodic adjustments

- From the Home screen, select the Settings icon to enter the settings screen.
- Set the date and time by long touching each date and time field to cycle through available settings. This data will be used for time stamps on saved video scope and OSA files.
- To Set the pass/fail scale on the OSA, touch and hold each value until the desired value is indicated. Use the check box to turn the pass fail indicator on or off while in the test screen.

Section 2 Quick Start Guide

CWDM OSA Operation Screen

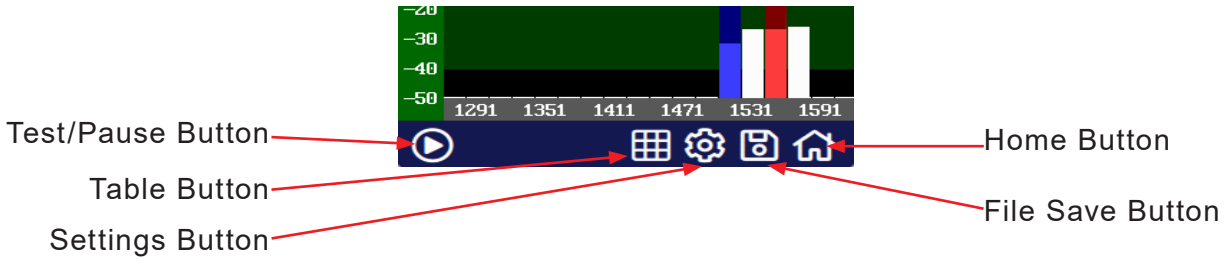
CWDM OSA Settings Buttons and Indicators



Menu/Cursor Data Selection	Select the Menu icon to toggle between the menu icons and the "A" and "B" cursor data at the bottom of the screen.
dBm Scale	The dB Scale displays from +10 to -50 dBm in 10 db increments. To see accurate reading of the power, use the "A" and "B" cursor information at the bottom of the screen.
Pass/Fail Indicator Area	If turned on in the settings screen, the green shaded are in the display indicates the power levels that are considered passing,
Wavelength Scale	The CWDM Scale is from 1271nm to 1611nm in 20nm steps. Not all the steps are indicated on the screen, move the "A" and "B" cursor to a data bar to see the actual wavelength.
A and B Cursors	The "A" cursor is Blue and the "B" cursor is red. When they overlay a wavelength power indicator bar, the power bar will be shaded with the appropriate color. When indicated by the active cursor selector, the active cursor can snap to a location or be dragged to a location.
Wavelength Power Indicators	These are the white bars on the display. (shaded appropriately when selected by the "A" or "B") The exact wavelength, power and THz level of the selected bar will be displayed in the cursor data at the bottom of the screen.
"A" and "B" Cursor Data	Actual data for each wavelength when selected by a cursor.
Active Cursor Selector	The arrow immediately to the left of the cursor data is a toggle and will switch between making the "A" cursor or the "B" cursor the active cursor.

Section 2 Quick Start Guide

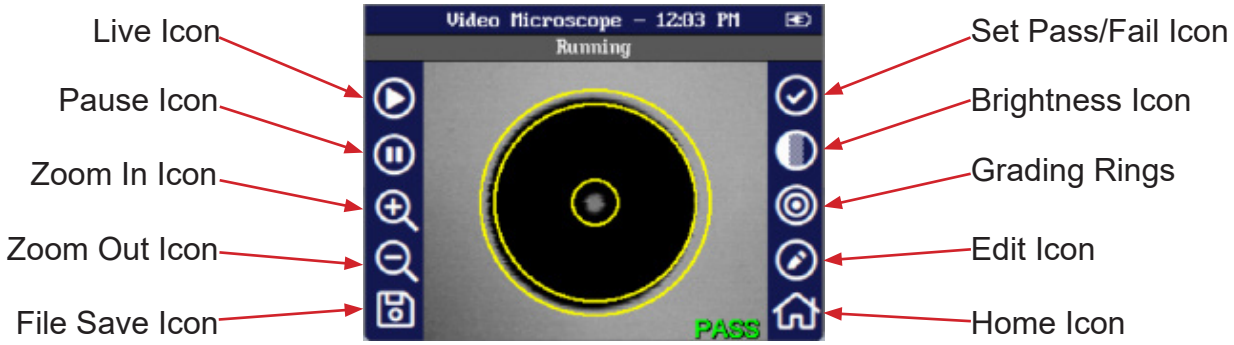
CWDM OSA Icon Menu



Test/Pause Button	This button starts and stops a test.
Table Button	When selected, this button opens the table view. While the table view is open, the button is replaced by a graph button, which is used to return to the graph view.
Settings Button	Use this button to access the settings screen to set date and time and the pass/fail power levels, or turn the pass/fail screen indicator on or off.
File Save Button	When selected, touching this button will save a test and open the file naming screen. Enter a file name and select the green check make to save the file.
Home Button	Select this to return to the home screen.

Video Microscope

Video Microscope Icons



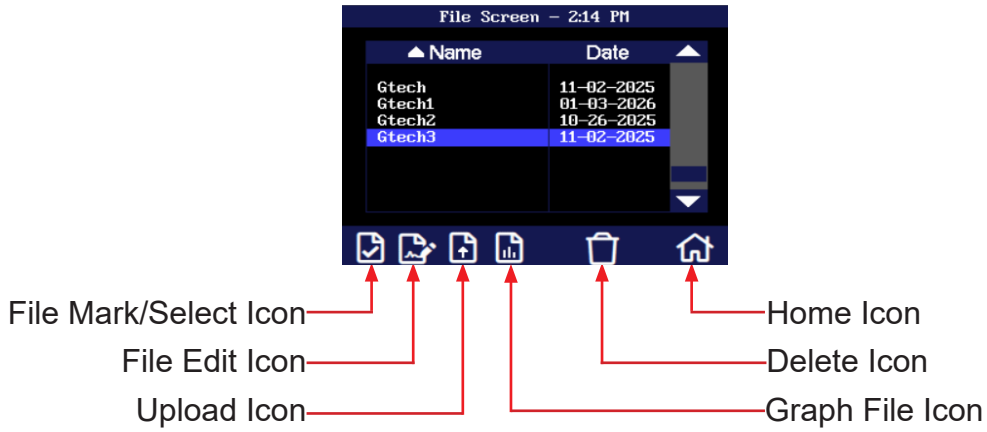
Video Scope Icon Function

Live Icon	Selecting the live icon turns on live or running mode. This is a real time reading of the connector face.
Pause	To freeze an image inspection, select the Pause icon. While in auto of the auto/pass/fail mode, pressing pause will also grade the connector end face and display calculated pass or fail.
Zoom In	Selecting Zoom In increases the image to 250x
Zoom Out	Selecting Zoom Out returns the image to 125X
Save Icon	Selecting the Save Icon opens the file save/naming screen with QWERTY keyboard

Pass/Fail	Selecting the set pass/fail icon while in the live mode will toggle through fail, pass and auto grading markers (Auto will be accomplished by the unit when entering the pause mode.)
Brightness	Selecting the brightness icon will cycle through the brightness levels available.
Grading Rings	Selecting this icon will toggle the grading rings off and on. These pass/fail grading rings are used to assist with manually grading a connector. The rings represent 25um, 120um, 130um and 250um.
Edit Icon	This is used to mark the points of contamination and is accomplished in the paused mode. Available markers will be displayed at the top of the screen. Pick up the marker by using the stylus and touching the contamination sample size that is required. Touch the image where the marker is to be placed. The marker may be fine-tuned with the stylus to cover the contamination point. Once positioned properly, touch the statement “Place marker on image then touch here” to lock marker in place. Repeat this as necessary to mark all the points that need to be indicated for the pass/fail status. At this point the image should be saved as the marks are removed upon returning to live mode.
Home Icon	Select the home icon to return to the home screen.

File Management

File Management Screen/Icons



Icon Function/Use

Mark/Select	Selecting this will mark the highlighted file for uploading or deleting.
File Edit	When selected the highlighted file will open in with the QWERTY keyboard for editing.
Upload Icon	Selecting this will upload marked and highlighted files to the computer through Fiber Instrument Sales Connect Software.
Delete Icon	This is a non-recoverable delete key, once selected the marked and highlighted files are erased immediately.
Home Icon	Select the home icon to return to the home screen
Graph File Icon	Indicates the graph files are being viewed, when selected it is replaced by a scope file icon to indicate the scope files are then being displayed.

Section 3 Introduction

The Fiber Instrument Sales OV350-CWDM-OSA supports the 18 channels of the CWDM infrastructure. These are wavelengths from 1271 to 1611 in 20nm increments and display channels in both wavelength and THz. It's power range is +10 to -50dBm. There is an option to set a pass fail range that can be viewed as a shaded green area on the display for a quick indication of pass or fail of each channel. There is also an option to display the data in table format. A built-in Video Inspection Probe option is included to ensure proper cleanliness of connector end faces. The video scope test results may be saved for future reference and may be downloaded to a file or be viewed on a computer. A VFL is also included for quick fiber continuity testing.

Section 4 Preparation For Use

4.1 Inspection

Before shipment, this instrument was inspected and found to be in perfect working order and free of defects.

The shipping carton contains the following:

1. OV350-CWDM Optical Spectrum Analyzer
2. USB 5V, 3.4A charger
3. USB C cable
4. 2 Stylus
5. Quick Reference Guide

4.2 Identification and Configuration

Each instrument's model/part number, serial number and date of manufacture are indicated on a label located on the back of the unit. The instrument's history is filed at the factory by model/part number and serial number.

4.3 Power Requirements

The OV350-CWDM OSA Cable Test Set is equipped with a 8000mAh Li-Poly battery. It is also supplied with a 100-240V USB power adapter with 5VDC, 3.4A output. A fully charged Li-Poly battery will typically enable approximately 10 hrs. of use and require approximately 4 hours of recharging.

Warning

To Prevent Fire or Shock Hazard:

- Batteries are not field replaceable, equipment must be returned to the factory for battery replacement
- Do not use the charger without the batteries installed
- Do not expose the battery charger to rain or excessive moisture
- Do not use the AC adapter when there are signs of damage to the enclosure or cord
- Ensure that you are using the correct charger for the local line voltage

Failure to follow these caution statements may void the warranty of this equipment.

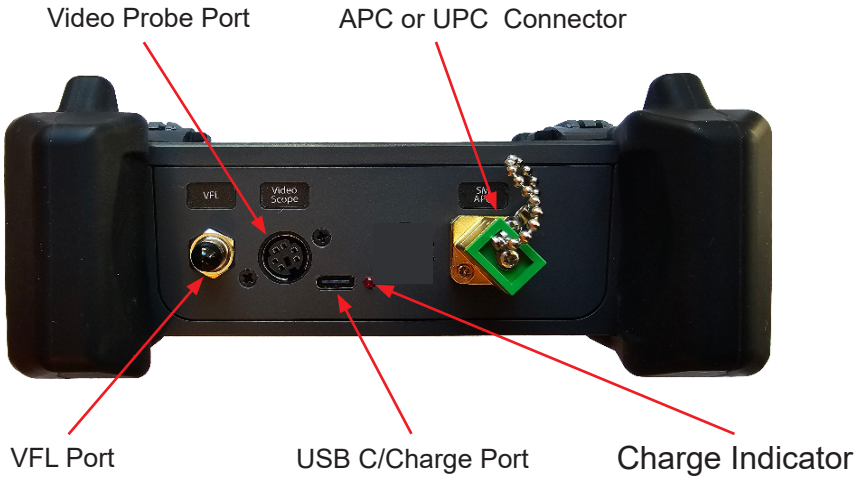
Section 5 Physical Description

The OV350-CWDM OSA is packaged in a rugged housing which is further protected with a rubberized boot. Although the front panel is weather resistant, care must be taken to avoid liquids and contaminants around the fragile optical and electrical connectors, and the glass display. Use a mild cleaning agent and damp soft cloth to clean the panels and the outside case. See the maintenance section for notes to clean the optical connector. NEVER open the instrument for cleaning. Return to the factory for servicing if necessary.

OV350-CWDM OSA Cable Tester

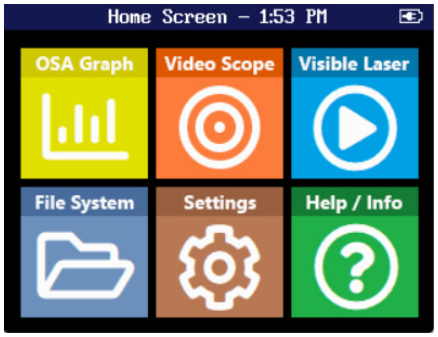
Front Panel

Top Plate



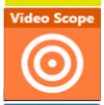
Section 6 User Interface

6.1 Home Screen



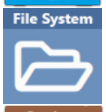
Home Page Icons

Select the OSA Icon to enter the CWDM OSA module.



Select this icon to enter the video scope module.

The visible laser is operated directly from the home screen, simply touch the Visible Laser icon and toggle through CW, modulated and off.



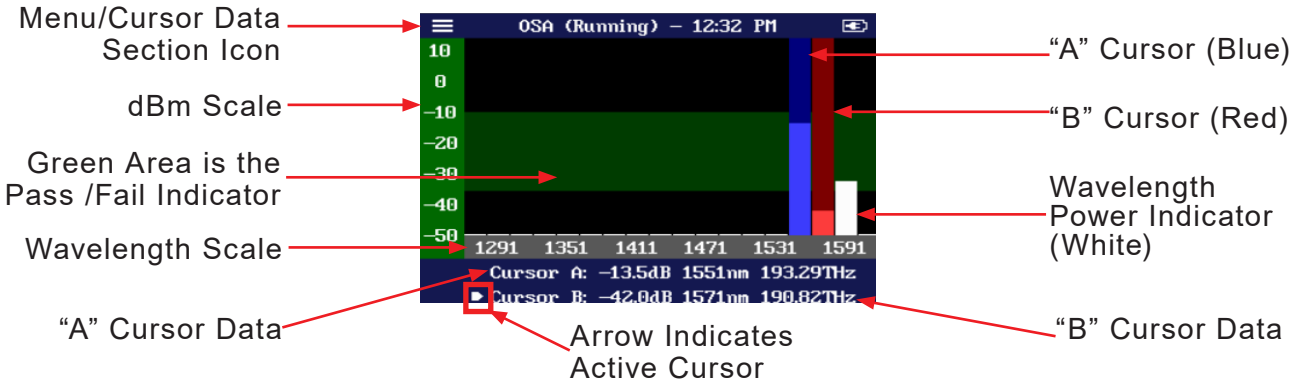
File management icon opens file management module

Settings icon opens the settings page to allow setting the real-time clock and pass/fail settings for CWDM testing

The Help icon offers the user a link to Fiber Instrument Sales manuals and training online.

6.2 CWDM OSA Operation Screens

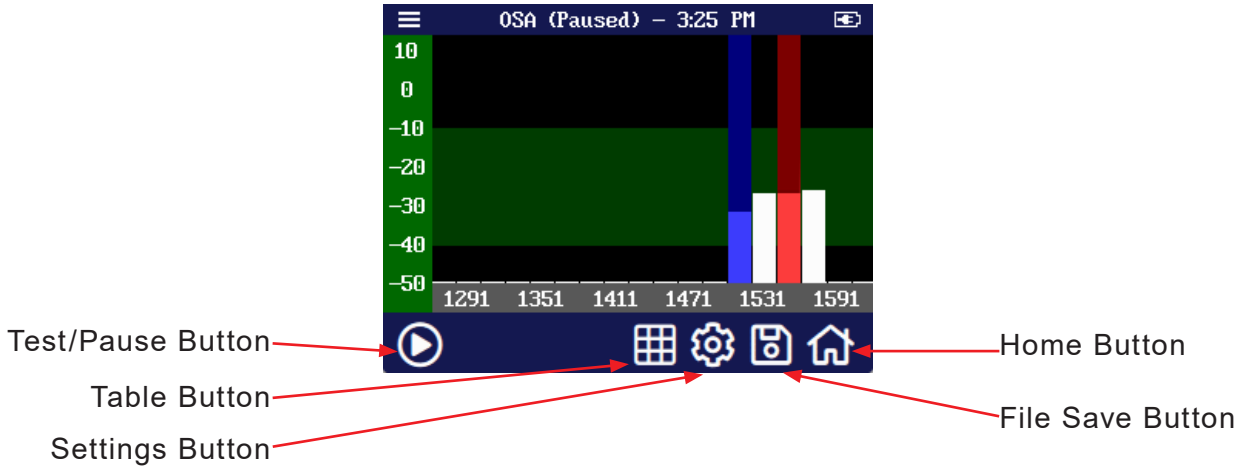
CWDM OSA Operation Screen with Cursor Data Displayed



Section 6 User Interface

Menu/Cursor Data Selection	Select the Menu icon to toggle between the menu icons and the “A” and “B” cursor data at the bottom of the screen.
dBm Scale	The dBm Scale displays from +10 to -50 dBm in 10 db increments. To see accurate reading of the power, use the “A” and “B” cursor information at the bottom of the screen.
Pass/Fail Indicator Area	If turned on in the settings screen, the green shaded are in the display indicates the power levels that are considered passing,
Wavelength Scale	The CWDM Scale is from 1271nm to 1611nm in 20nm steps. Not all the steps are indicated on the screen, use the “A” and ”B” cursor to see the actual wavelength.
A and B Cursors	The “A” cursor is Blue and the “B” cursor is red. When they overlay a wavelength power indicator the power bar will be shaded with the appropriate color. When indicated by the active cursor selector, the active cursor can snap to a location or be dragged to a location.
Wavelength Power Indicators	These are the white bars on the display. (shaded appropriately when selected by the “A” or “B”) The exact wavelength, power and THz level of the selected bar will be displayed in the cursor data at the bottom of the screen.
“A” and “B” Cursor Data	Actual data for each wavelength when selected by a cursor.
Active Cursor Selector	The arrow immediately to the left of the cursor data is a toggle and will switch between making the “A” cursor or the “B” cursor the active cursor.

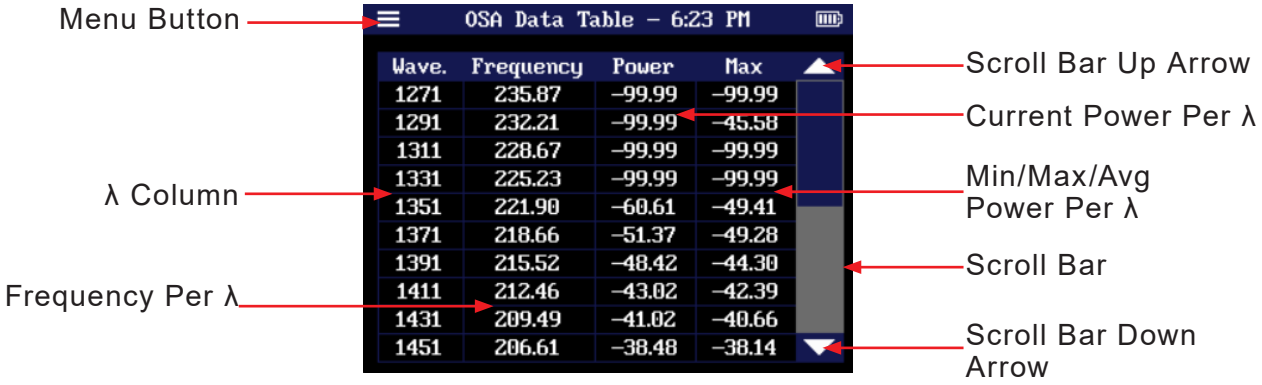
CWDM OSA Operation Screen with Menu Open



Section 6 User Interface

Test/Pause Button	This button starts and stops a test.
Table Button	When selected, this button opens the table view. While the table view is open, the button is replaced by a graph button, which is used to return to the graph view.
Settings Button	Use this button to access the settings screen to set date and time and the pass/fail power levels, or turn the pass/fail screen indicator on or off.
File Save Button	When selected, touching this button will save a test and open the file naming screen. Enter a file name and select the green check mark to save the file.
Home Button	Select this to return to the home screen.

CWDM OSA Table Display



Menu Button	This button opens the at the bottom of the display as with the operation screen, but with the Table icon being replaced by the Graph icon
λ Column	Displays all 18 Channel wavelengths (Scroll to see off screen wavelengths)
Frequency Column	Displays the frequency associated with each wavelength.
Power Column	Displays the current power or the power at the time the test was saved.
Min/Max/Avg Column	Displays the minimum, maximum or average power reached by a channel during the current test.
Scroll Bar	Used to bring off screen wavelengths into view.
Up/Down Scroll Arrows	Use up or down arrows accordingly to move the scroll bar.

Section 7 Operation

7.1 Start-up

Press and hold the power button for one second to start the OV350-CWDM OSA. There is no warm up period with this unit, it is ready to test immediately upon startup.

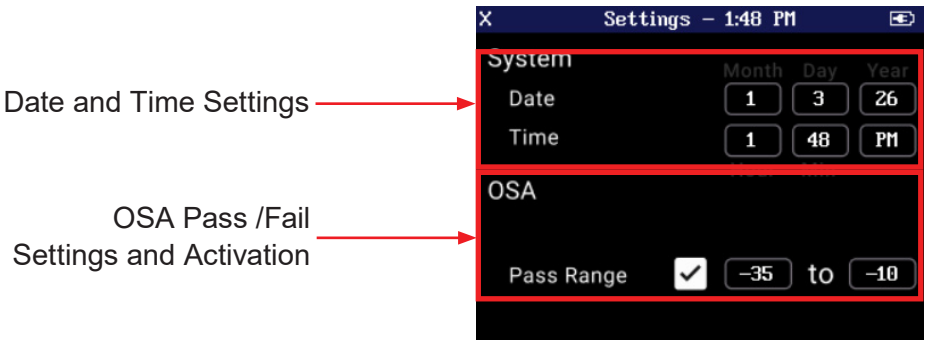
Note: Make sure to always practice proper cleaning procedures on all fiber optic connectors and equipment during use.

7.2 Settings Screens

The setting screens is accessible from the home screen and the menu bar. The setting screen allows the user to set a real-time clock for saved files and to set the pass/fail window on the OSA screen.

Select the Settings icon to open the settings screen.

Settings Screen



Set Date and Time

To ensure proper date and time stamps on saved files, set date and time to the local time zone.

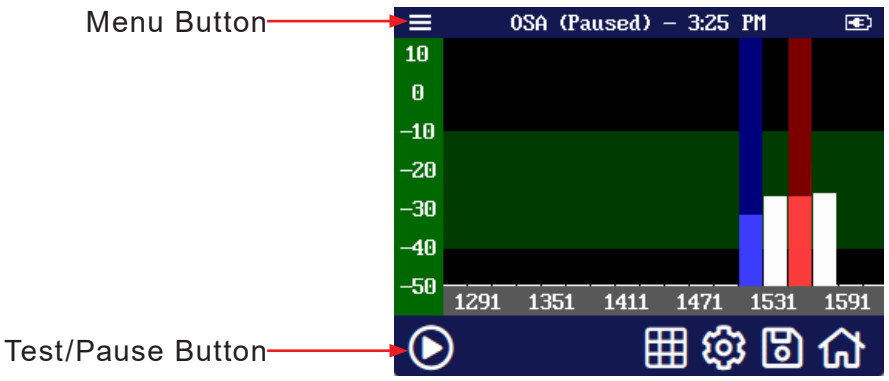
To set the date and time, long hold the date and time fields to scroll through available numbers until the proper information is displayed.

Set Pass/Fail

To set the pass/fail indication zone, long hold the values until the desired setting is reached. Use the check box to activate the zone or deactivate the zone on the main operation screen.

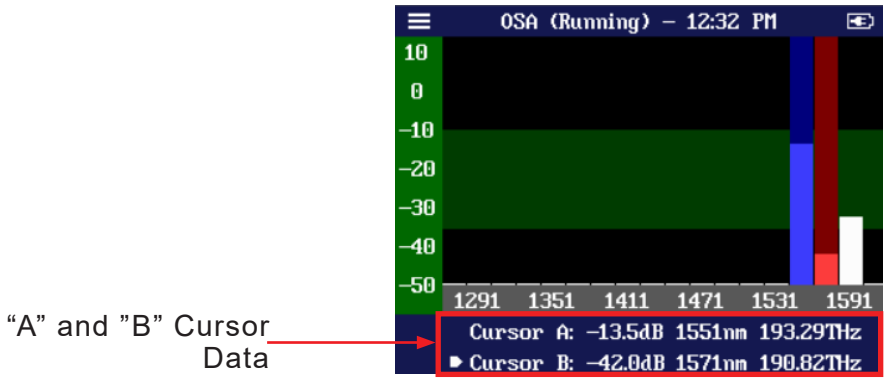
Section 7 Operation

7.3 CWDM OSA Testing



Connect the fiber/channel to be tested to the test port of the CWDM OSA.

While on the operation screen with the menu open, touch the Test/Pause button. While in test mode or with the test paused, after acquiring the scan, touch the Menu button to open the “A” and “B” cursor data at the bottom of the display.



Use a stylus to select an active cursor by touching the desired line of data, if not already selected. Touch anywhere on the display to snap the cursor to that location or hold and drag the cursor to the desired location.

Note: Cursors will push each other to accommodate movement.

To Save a scan, to open the table view or to start a new scan, touch the Menu button, this will open the menu view. Start a new scan with the Test/Pause button, select the table icon to open the table display or select the file icon to save a scan.

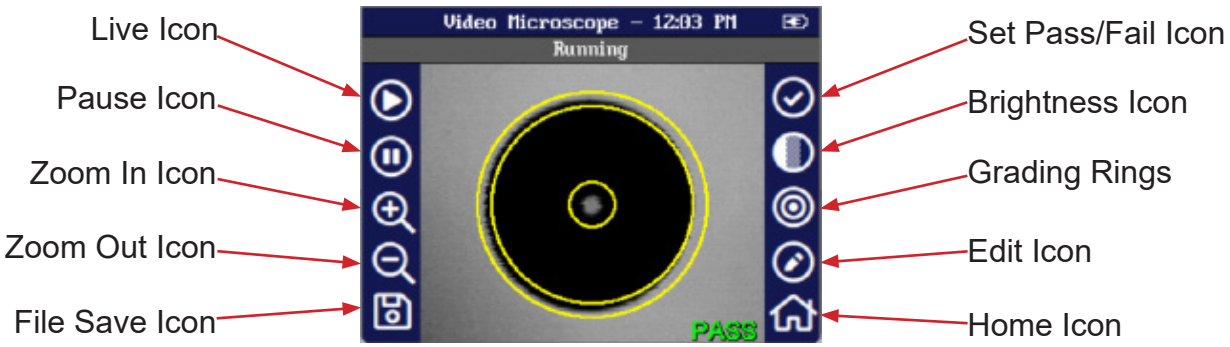
Note: When a scan is saved, the table view may be generated from the saved file.

Section 8 Video Scope Operation

8.1 Video Scope User Interface

Select Video Scope icon from the home screen.

Video Scope Screen



Video Scope Icon Function

	Live	Selecting the live icon turns on live or running mode
	Pause	Selecting pause freezes an image in position and focus level for inspection, also runs auto pass/fail when set to auto.
	Zoom In	Toggles image to 250x
	Zoom Out	Toggles image to 125x
	File Save	Selecting this icon opens file save to the QWERTY keyboard
	Set Pass/Fail	Sets pass, fail and auto grading markers
	Brightness	Selecting the brightness icon will cycle through the brightness levels available
	Grading Rings	Selecting this icon will toggle the grading rings off and on
	Edit	This is used to mark the points of contamination on image
	Home	Returns to the home screen

Section 8 Video Scope Operation

8.2 Video Probe Operation

To operate the video scope, touch the Scope icon on the Home Screen. If a probe is not connected already, connect the Video Probe to the video probe port on the top of the unit.

Video Probe Tips

There are a number of video probe tips available. To remove a tip from the Probe, grasp the probe tip and unscrew the tip retention nut from the tip. Pull the tip straight up from the probe. To place a tip on the probe, ensure the lens is clean, slide the tip on to the end of the probe and tighten the tip retention nut. Do not overtighten the retention nut.

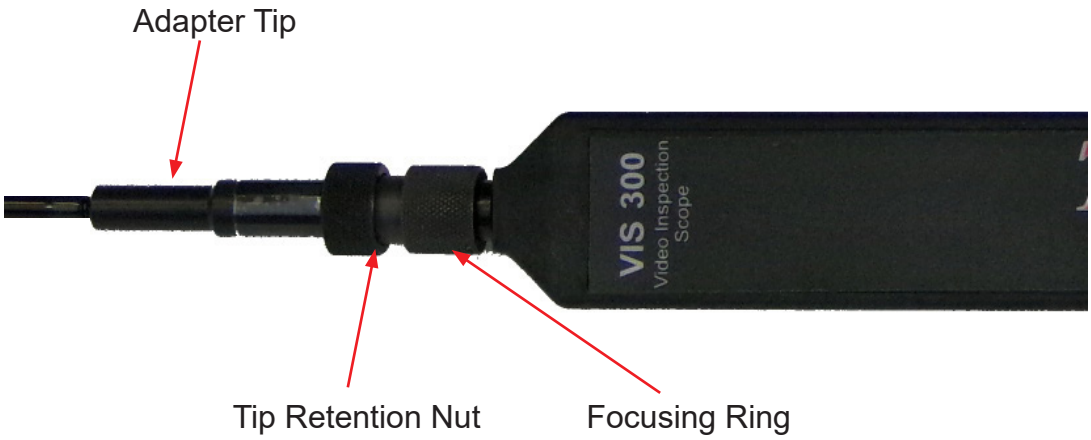


Fig 11.1

Viewing/Focusing a Connector

With the video scope turned on and the video probe plugged into the unit, insert a connector in to the tip or insert the panel adapter tip into the appropriate port. The scope must be in the live scanning (“Running” noted at the top of the display) mode to make focus adjustments. Use the focus ring to get the connector image as sharp as possible. When using panel adapters it is possible to turn the body of the probe while the adapter is inserted into the panel to make focus adjustments.

NOTE:

To auto center the image, touch the center of the connector core image and the connector will move as close as possible to the center of the display.

Section 8 Video Scope Operation

8.3 Video Scope Operation

Live / Pause
The scope starts up in live (Running) mode. To pause or freeze the image, select the Pause icon. Live is a real time viewing of the connector end face. Most features are available in live mode, however editing (marking contamination) is not.

Zoom In - Zoom Out
Select the Zoom In icon to increase the magnification to 250x. Selecting the Zoom-Out icon will return the image to 125x.

File Save
Selecting the File Save Icon opens the file save/naming screen with QWERTY keyboard. Enter the file name as desired, upon starting the unit, the default file name is “Default”. This will be the case every time the unit is powered on. Once a file is saved, the default file name is the previous saved name. There is a limit of 15 characters to file names. Once the file name is entered, select the Save (check mark) button. To back out without saving, select the Cancel (X) button

Pass/Fail Icon
Use the pass/fail icon to mark the connector image in live mode (running). Selecting the icon will cycle through fail, pass and auto. If set to auto, this allows the smart grading system to evaluate the connector. To start the auto pass fail process, with the image as close to centered as possible, select the Pause icon. The video scope will attempt to auto center then run the test and display a pass or fail label.

Note: If the connector shows all red or the test fails to complete, maneuver the probe tip to allow for centering of the image and retry the test.

Brightness
Touch the Brightness icon to cycle the brightness levels for best image quality. The brightness could affect the auto analysis.

Grading Rings
Turn on and off the grading rings when in live (running) mode. by selecting the Grading Rings Icon. These are use to indicate the IEC61300-3-35 grading zones. These pass/fail grading rings are used to assist with manually grading a connector. The rings represent 25um, 120um, 130um and 250um. Use Pass/Fail Criteria Tables on the following page to help grade the connector end face. 2, 3, 5 and 10 micron contaminant examples are displayed when the edit icon is active.

Edit (marking contamination points)
To mark the points of contamination the unit must be in paused mode. Pick up the contamination marker by using the stylus and touching the contamination sample size that is required. Touch the image to place the marker. The marker may be fine-tuned with the stylus to cover the contamination point on the image to be marked. Once the marker is positioned properly, touch the area just above the image that states “Place marker, touch here to apply” to lock the marker in place. Repeat this as necessary to mark all the points that need to be indicated for the pass/fail status. At this point the image should be saved, the markers will be cleared with the next scan.

8.4 Pass/Fail Criteria Tables

Fiber End Face Criteria Table

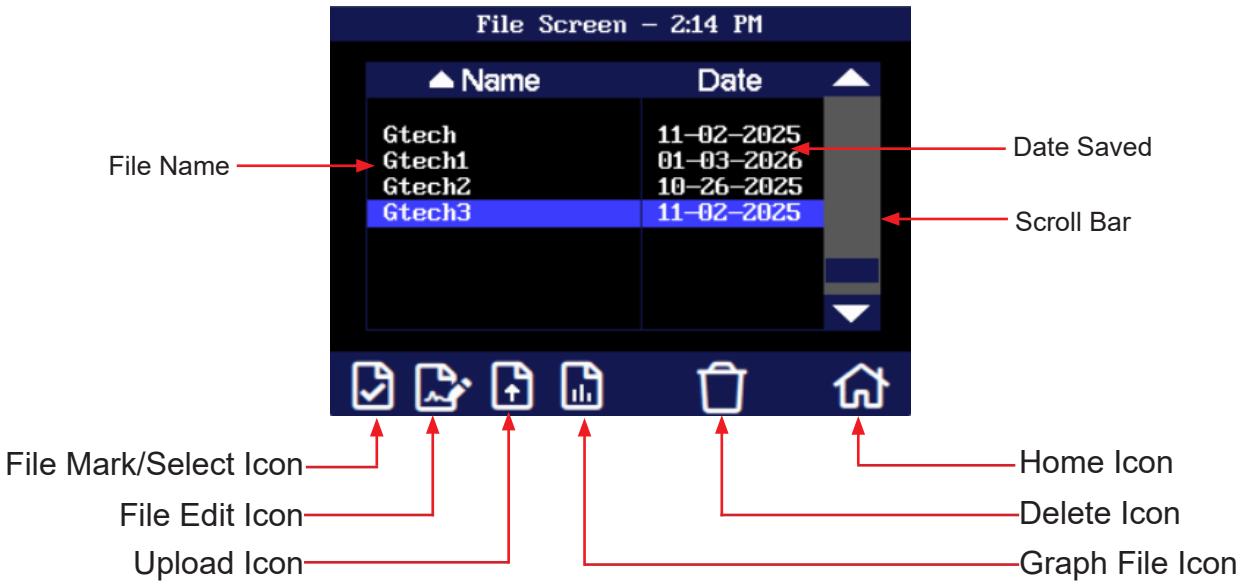
Zone	Description	Diameter	Allowable Scratches (Width)	Allowable Defects (Diameter)
A	Critical Zone	0µm to 25µm	None	None
B	Cladding Zone	25µm to 120µm	No limit ≤ 3µm None > 3µm	No Limit < 2µm 5 from 2µm to 5µm None > 5µm
C	Adhesive Zone	120µm to 130µm	No limit	No limit
D	Contact Zone	130µm to 250µm	No limit	None ≥ 10 µm

Section 9 File Management

File Management is accessed through the home screen menu. The File button in the Scope screen opens the file save screen.

9.1 File Management Screen

Main File Management Screen



File Management Menu Icons

	File Select	Marks a file for an action/operation
	File Edit	Opens a file name to be edited
	Upload	Uploads marked files to Fiber Instrument Sales Connect software
	Graph	Indicates graph files are being displayed, when selected It will be replaced by a Scope File icon to indicated scope files are being displayed
	Delete	Deletes marked files
	Home	Returns to the home screen

Section 9 File Management

9.2 QWERTY File Naming Screen

9.3 File Management Operations

File Selection

Select a File to View

Touch above or below the center highlighted line of the file list or use the scroll bar to move a file into that highlighted position and touch the file name to open and view file.

File Select (Selecting Multiple Files)

Multiple files may be uploaded (copied) to a computer, or deleted at a time. To mark the files for these operations, highlight a file to be included in the operation and touch the File Select icon. The highlighted filename will now be displayed in yellow and the next file will be in the highlighted position. Continue selecting files by touching the select icon. To skip files simply move down the file list until the next file to be marked is highlighted and touch File Select again. The file select is a toggle and to unmark a file, place it in the highlighted position and touch File Select again and it will be unmarked. Once the files are selected touch the icon for the delete or upload functions.

Note: If files have been marked for batch processing, only the marked files are process not the highlighted file as in single file processing. (The last file in a list may be marked when in the highlighted position) If only one file is to be process, having it in the highlighted position will be sufficient.

Section 9 File Management

File Edit
With a file highlighted, select the File Edit icon and the file will be opened in the QWERTY keyboard screen. Make file name changes as necessary and select Save.

Upload Files
The upload files icon is used to send files to the computer for use with the Fiber Instrument Sales Connect software suite. One or more files may be uploaded at a time. Use the mark (select) feature to select multiple file or have the file to be uploaded in the highlighted position. With OV350-CWDM-OSA Cable Test Set connected to the computer with the USB cable, and the Fiber Instrument Sales Connect software running touch the upload icon and the files will transfer to the selected folder on the computer.

Graph or Scope Files
When the graph files are being displayed, the graph file icon will be active, when selected, the scope files will be shown and the scope file icon will be active.

Delete Files
To delete a single file, with the file name in the highlighted position, touch the delete icon. To delete a group of files, mark all files to be processed and press the delete icon.

Note: Once the delete icon is selected, files are immediately deleted and they can not be recalled.

Exit
Select the Home icon to return to the home screen.

Section 10 Visual Fault LOSAtor

10.1 VFL Safety

Caution

This Visual Fault Locator is classified as a Class II laser system and must be used with all commensurate safety precautions. Never view the light emanating from the fiber directly. Place a white piece of paper at the end of the fiber and look for the presence of a red spot on the paper.

10.2 VFL Description

The Visual Fault Locator emits visible (red) light at the 650 nm wavelength. Its intended function is to allow an operator to identify the exact location of a break, micro bend, or other discontinuity in a fiber optic cable. As the radiation is visible, light emanating from a break or micro bend enables the user to locate the exact position of a fault even at very short distances that would not be detectable by conventional means such as an Optical Time Domain Reflectometer, (OTDR). It is also useful for identifying a particular fiber in a cable by exciting the fiber to be located with visible radiation.

10.3 VFL Operation

The Visual Fault Locator is accessed from the home screen.

Connect the fiber to be tested to the 2.5mm universal connector port. The source may be used in one of its two modes, modulated or continuous. In the modulated mode the laser is turned on and off at a 2 Hz rate. This mode is helpful in permitting the user to identify the source radiation in the presence of high levels of ambient light. It also aids in conserving battery life.
The usable range for fault location depends on many factors, the type of fiber, the type of cable, the overall loss. To activate the VFL, tap the VFL icon to cycle through the available states of off, continuous and modulated. An active laser symbol is displayed next to the battery indicator, steady illumination for CW mode and flashing indicator for modulated mode.

Section 11 Maintenance

11.1 Battery Replacement

The battery of the OV350-CWDM OSA Cable Tester is not field replaceable, please call the factory for an RMA to replace the battery.

Warning

To Prevent Fire or Shock Hazard:

- Batteries are not field replaceable, equipment must be returned to the factory for battery replacement
- Do not use the charger without the batteries installed
- Do not expose the battery charger to rain or excessive moisture
- Do not use the AC adapter when there are signs of damage to the enclosure or cord
- Ensure that you are using the correct charger for the local line voltage

11.2 Calibration and Verification

Periodic verification of the OV350-CWDM OSA Cable Tester is recommended to ensure that your instrument remains within specification. Although not imperative, we recommend a calibration and verification once a year to make certain the instrument is functioning properly and performing to its rated specifications. Consult the factory for service.

Section 12 Specifications

CWDM SPECIFICATIONS

Wavelength Range	18 Channel 1271-1611nm or 8 Channel 1471-1611nm
Channel Spacing	20nm
Channel Pass Band	±6.5nm
Channel Power Range	+10dBm to -50dBm
Absolute Accuracy	±1 dB
Max Composite Power	+23dBm
PDL	±0.2dB
Adjacent Channel Isolation	30dB
Measurement Time	< 1/2 Second
Readout Resolution	0.01dB
Return Loss	>40dB
Optical Interface	SC/APC (FC/APC adapters optional)
Graphical Display	Bar graph

UNIT SPECIFICATIONS

Display	4 in Color TFT
Dimensions	5.25” L x 6.125” W x 2.5” H / (133mm L x 156mm W x 64mm H)
Weight	1.5 lbs (0.7 kg)
Battery	Li-pol, 10hr typ.
Power Requirement	USB 5V, 2A
Operating Temperature	-10°C to 40°C
Storage Temperature	-20°C to 60°C
Accessories Included	5V, 3.4A USB Wall Charge with USB cable, 2 stylus, FIS Connect PC Software, manual

VFL SPECIFICATIONS

Emitter Type	Laser
Wavelength	650nm ± 5nm
Laser Safety Class	Class II FDA21 CFR1040.10 & 1040.11 IEC 825-1: 1993
Connector Type	2.5mm Universal
Output Power	1mW Max.

Section 13 Trouble Shooting / Warranty / Repair

Symptom	Possible Cause	Solution
LCD dark	Power not on	Press ON/OFF key
	Batteries require recharging	Recharge batteries
LCD white	Power cycled too quickly	Turn off wait 10 seconds – turn on
Instrument locked Up	Unexpected Operational Mode	Turn off (hold ON/OFF button in for 1 second) wait 10 seconds – then depress On/Off to turn the unit on.
Low or no power being displayed	Defective cord or dirty connector	Replace or clean cord
	mismatch in connector Polish	Examine connector ends for damage. Use UPC Connectors ONLY!
USB hookup to PC not functioning properly	USB connection fault between unit and PC	Turn unit off, reset FIS Connect software, turn unit back on and wait up to 30 seconds
	PC drivers not set properly	Un-install & re-install Fiber Instrument Sales Connect software and drivers

Section 14 Warranty and Repair

14.1 Warranty Information

This product, including all mechanical, electrical, and optical parts and assemblies are unconditionally warranted to be free of defects in workmanship and material for a period of Two (2) years from the date of delivery.

This warranty does not apply to expendable parts such as batteries or optical panel connectors, nor to any instrument or component which has been subjected to misuse, alteration, or fiber connector damage. It is the customer's responsibility to understand all the instructions and specifications prior to operating this instrument. This warranty does not extend to any loss or damage consequent to the failure of the warranted product.

14.2 Repair Information

If repair is required, simply call the factory for return instructions and a return authorization number (RMA).

Section 15 Version Control

Through a program of continuous improvement, we upgrade the features and performance of the instrument in an on going process. The instrument firmware version is accessible at power on, in the bottom right-hand corner of the display. The version changes and approximate release dates are as follows.

OV350-CWDM-OSA

V1.0.0.0 – Original Release

NOTES

NOTES

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