



# **FTE-8100-CWDM Channel Analyzer**

## **Users Guide**

**Revision A**  
**1/2017**

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## Section 1 Using This Manual

This Manual contains information for the FTE-8100-CWDM Channel Analyzer. This equipment is touch screen capable and also has a hard keypad for operation. Note that there are a few operations that are only accessible with touch screen operation.

This user's guide is written primarily using the touch screen operation with occasional mention of the hard key equivalents

There are warnings, cautions and notes as described below displayed throughout this manual. Please follow all warnings and cautions for your safety and the protection of the equipment.

### **Warning**

A warning alerts to situations that could cause personal injury.

### **Caution**

A caution alerts to situations that may cause damage to the equipment or produce poor testing conditions resulting in inaccurate test results.

### **Note**

A special annotation that will assist the user with operational features.

## Section 2 Safety

Section 3 of this manual is a quick start guide. 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.

Below are warnings that must be followed by the user to ensure safe operation and to maintain the product in a safe condition. Failure to follow these safety warnings, can result in damage to the instrument or harm to the user.

### **Warning**

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

### **Warning**

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 severe personal injury.

### **Warning**

To Prevent Fire or Shock Hazard:

- Do not install battery types other than those specified by the manufacturer
- 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
- Do not use any other charger than the one provided with this instrument.

## Section 2 Safety

Failure to follow these cautions may damage the equipment and void the warranty.

### **Caution**

Fiber-optic connectors are easily contaminated or damaged. The connection to the FTE-8100-CWDM 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 the FTE-8100-CWDM to the factory for expensive repairs. Prior to making any connection to the unit, ensure that all proper cleaning procedures have been followed.


Use UPC Finish Connectors Only!

### **Caution**


The FTE-8100-CWDM is designed for maximum power of +5 dBm per channel and a maximum composite power of +23dBm.

## Section 3 Quick Start Guide






### Quick Start Guide

Press  to turn on the FTE-8100-CWDM

### Menu

To enter menu, either press the  button or use the stylus to pull the menu up from the bottom of the screen.

Available icons:

-  Help displays an on board explanation of features, functions and operations.
-  Bar graph, touching this icon returns the user to the bar graph.
-  File icon, touching this icon will bring the user to the file management menu.
-  Settings icon, touching this icon brings the user to the OSA and general settings menus.
-  Scope icon, this will open the video scope feature.

### Note

Most features of the FTE-8100-CWDM are accessible with either the touch screen or the hard buttons on the keypad. This quick start will primarily focus on the touch screen.

### Caution

Fiber-optic connectors are easily contaminated or damaged. The connection to the FTE-8100-CWDM is a physical contact type of connection and dirty or damaged connectors may impair the instrument's capabilities at minimum and at worst result in the need to return the FTE-8100-CWDM to the factory for expensive repairs. Prior to making any connection to the unit, ensure that all proper cleaning procedures have been followed.

Use UPC Finish Connectors Only!



## Section 3 Quick Start Guide

### **Caution**

The FTE-8100-CWDM is designed for maximum power of +5 dBm per channel and a maximum composite power of +23dBm.

Attached the fiber to be tested to the optical port.

### **Scan**

Touch the scan indicator or the scan button on the keypad to start the scan.

To stop a scan, touch the scan indicator or press the scan button again.

### **Cursor Movement/Selection:**

To move the cursors touch the screen and the active cursor will snap to that location and moving the stylus up or down on the display will drag the cursor as desired.

To change the active cursor, touch the red or blue cursor points on the right side of the display. The one outlined in black is the active cursor. (A/B button on the keypad)

**Please review the remainder of this user's guide for full instructions on  
using the FTE-8100-CWDM Channel Analyzer**

## Section 4 Introduction

The Terahertz Technologies Inc., FTE-8100-CWDM Channel Analyzer offers full featured analysis of CWDM systems in a hand held portable package. CWDM optical levels in CWDM Network, wavelengths 1271nm to 1611nm, may be measured with a resolution of 0.01 dB resolution from -50 to +5 dBm. This unit has super fast acquisition time of two scans per second. There is a pass/fail feature to assist with quick evaluation of the scan on the 4 inch color TFT Display. The FTE-8100-CWDM is designed with solid state optics and no fragile or moving parts to keep the unit field friendly. There is storage for up to 1000 tests and the test may be viewed and printed with the included CertSoft software for fast and easy reporting. These units are housed in a rugged enclosure with robust protective boot, are designed to withstand the rigors of field use and are extremely user friendly.

## Section 5 Preparation For Use

### 5.1 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. Channel Analyzer, with protective boot and Li-ion battery installed
2. Universal AC/DC charger with interchangeable mains
3. USB cable
4. CD with CertSoft software and user's manual
5. Set of interchangeable adapters, SC and FC

### 5.2 Identification and Configuration

The 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. The unit's serial number is also located on the top plate just above the USB Port.

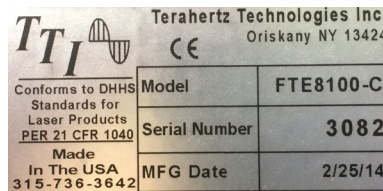


Fig 5.1

### 5.4 Power Requirements

The FTE-8100-CWDM is equipped with a 100-240V-0.4A input and 15V, 1.28A, center positive output universal AC/DC battery charger. This charger is supplied with interchangeable mains for US, Great Britain, Europe and Australia. The unit is shipped with factory installed Li-ion batter installed. Depending on usage, fully charged battery pack will typically enable approximately 12 hrs. of use. Fully discharged batteries require approx. 2 hours to charge. Batteries ar not field replaceable and therefore the unit is to be returned to the factory for battery replaement.

#### **Warning**

To Prevent Fire or Shock Hazard:

- Do not install battery types other than those specified by the manufacturer
- 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
- Do not use any other charger than the one provided with this instrument.

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

## Section 6 Physical Description

The Channel Analyzer 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 up 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.

### Front Panel



Fig 6.1

### Top Plate

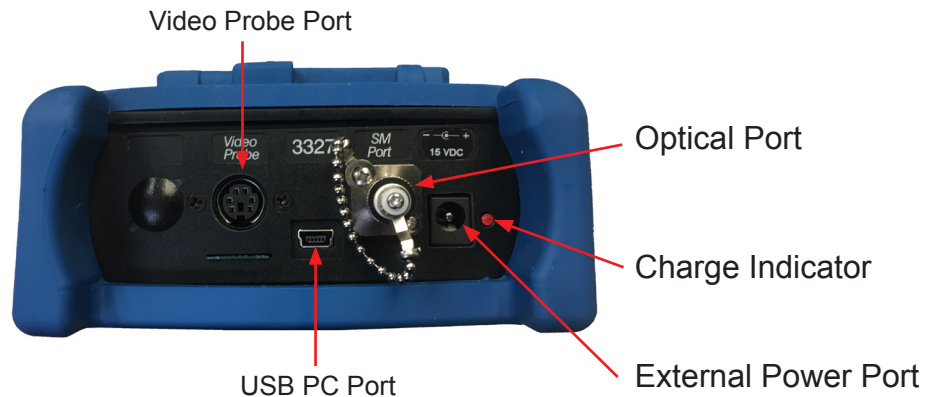


Fig 6.2

### 7.1 Keypad



Power button turns the unit On and Off.  
(Hold for 1 second)



Scan button starts or stops a scan.



Not active



Toggles between "A" and "B" as the active cursors.



Toggles the menu open and closed on the bottom of the display



Not active



Active in the menu mode. Used to make selections of highlighted items.



LRUD (Left-Right-Up-Down) buttons to are used to move the active cursor in scan mode and move through menu selections in menu mode.

Keypad

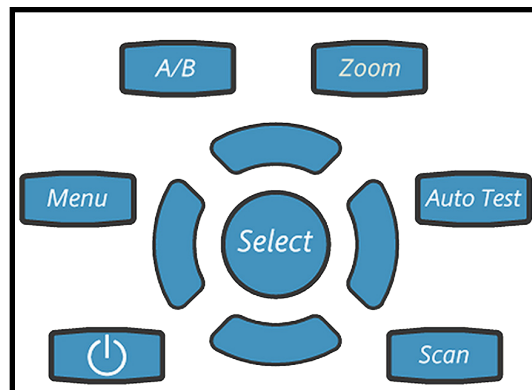


Fig 7.1

## Section 7 User Interface

### 7.2 Graph Display

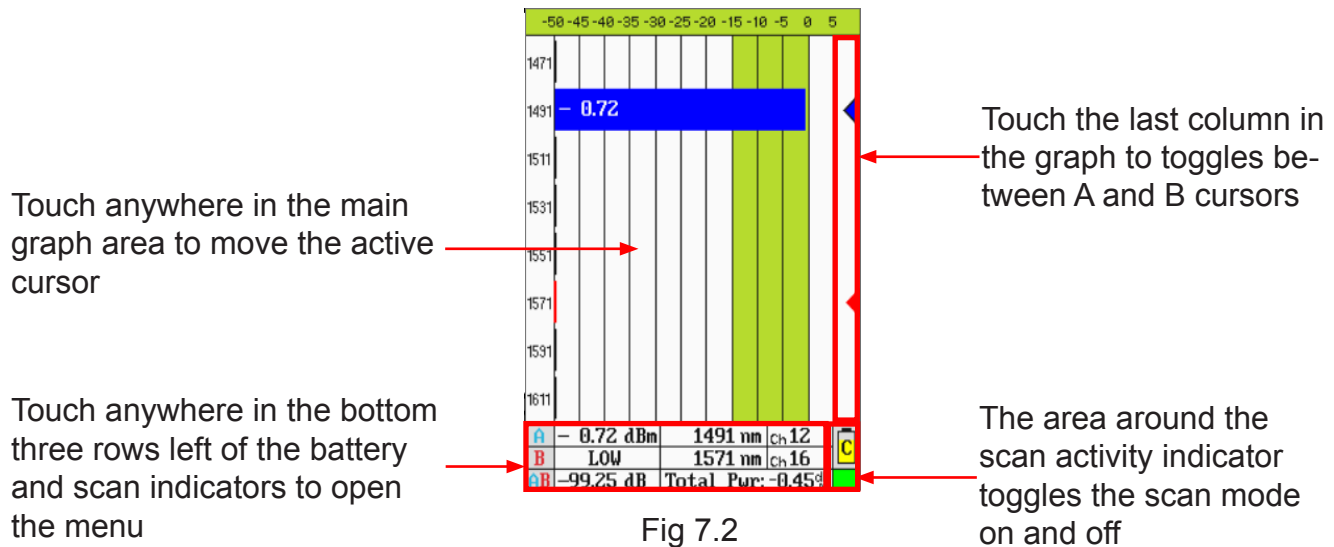


Fig 7.2

### 7.3 Menu

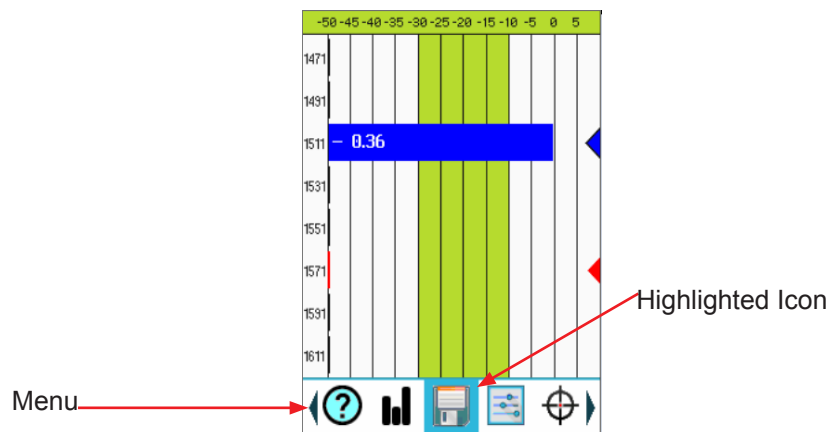


Fig 7.3






## Section 7 User Interface

Movement between screens and functions is accomplished through a set of icons located in a menu that is accessed by touching the bottom of the display or pressing menu button. To remove the menu from the bottom of the display, either select an icon, touch the display above the menu or press the menu button.

To use the Menu, touch to the left or right of the highlighted icon in the center to move the icons left or right. The left and right key pad buttons may also be used to move the icons. With the desired icon highlighted, touch it or press the select button.

### Icon Descriptions

Below is a list of the icons found in the menu with a brief description of each.

	Help	Help displays an on board explanation of features, functions and operations.
	Bar Graph View	Touching this icon returns the user to the bar graph.
	File Mgt.	File icon, touching this icon will brings the user to the file management menu.
	Settings	Settings icon, touching this icon brings the user to the OSA and general settings menus.
	Scope	Scope icon, this will opens the video scope feature.

## Section 8 Setting Test Parameters

### Note

The directional buttons and the select button are not operational in the settings screen.

### 8.1 Parameters Setting Screen

The View, Measure and Brightness settings are toggles and when touched, will switch between options. The Pass Range setting requires the user to enter a range for the dB Scale.

### Note

The value in black is the current value, touching anywhere in the parameter box will change values.

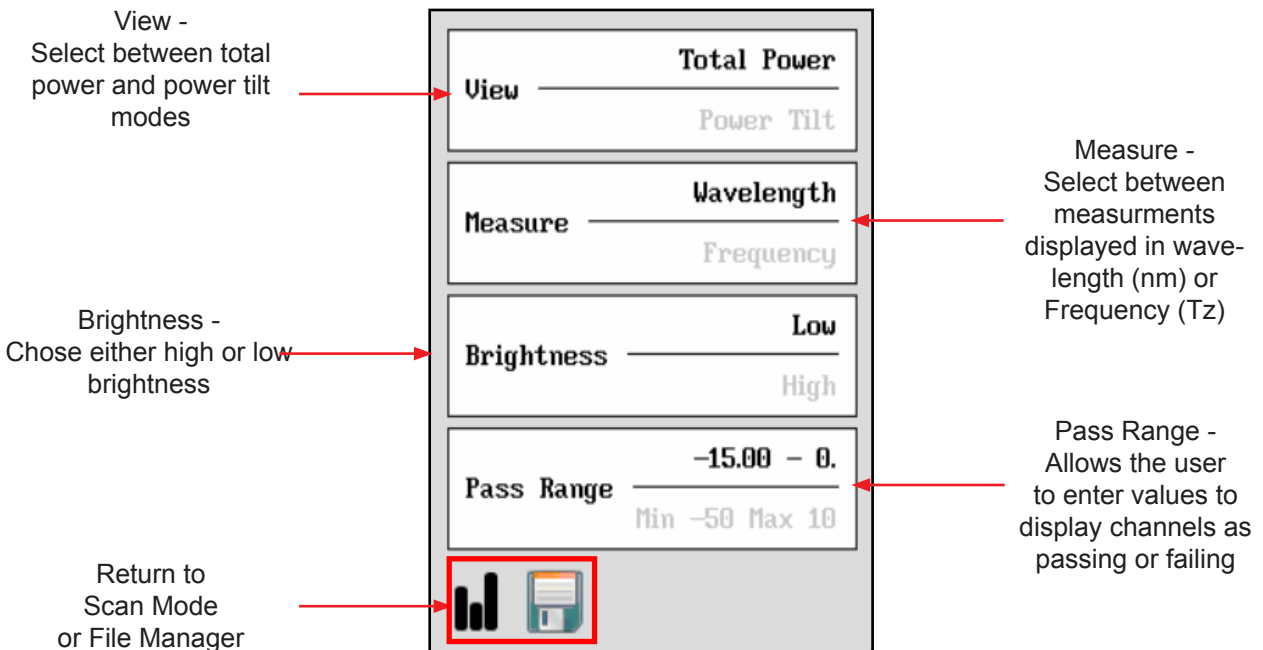


Fig 8.1



## 8.2 Setting Parameters

### View Setting

There are two power settings that may be displayed for the scan. Total Power and Power Tilt, to select either of these settings, simply touch the View setting box on the setting screen to toggle between the options. The black value is the active value.

#### Total Power

Total power is the power being introduced to the fiber. This value is shown in the bottom right cell of the display.

#### Power Tilt

Power Tilt, is displayed as a linear regression line overlaid on the graph and as a numeric indicator in the bottom right of the display. This reading only factors in the channels that are greater than the minimum power level of the scale. This can be used to assist with balancing the power of CWDM system. The flatter (more level) the line, or the closer to zero the power tilt number the more balanced the power between channels.

### Measure

Depending on the system, channels may be listed in wavelength or frequency. The channel may be displayed in wavelength (nm) or frequency (Tz) in the test data section at the bottom of the display. To change these settings, pull up the menu and touch the settings icon. Touch the Measure setting to toggle between the two options.

### Brightness

Depending on working conditions, a lower level of light may be best for optimal viewing of this equipment. Use this brightness setting to toggle between low and high settings. To set the brightness level, enter the settings screen by bringing up the menu and touching the settings icon. Touch the brightness section to toggle between the two settings.

### Pass Range

For a quick indication of passing channels, the pass range may be set to highlight the power level on the display for a passing channel. Set this range so that channels meeting the passing criteria, fall into the green shaded area of the dBm scale. To set the pass range, enter the settings screen by bringing up the menu and touching the settings icon. Touch Pass Range section of the page.

When touched, there will be displayed a message to “Enter Minimum Power” and then the display will switch to the on screen QWERTY and the user can enter the desired value for the minimum passing value. Once entered touch Save and the message “Enter Maximum Power” will be displayed and then switch again to the on screen QWERTY. Enter the maximum pass/fail value and select save.

## 9.1 Start-up

Press and hold the power button for one second to start the FTE-8100-CWDM.

## 9.2 Connecting Fiber

It is suggested that a test cable be used between the fiber under test and the FTE-8100-CWDM. This reference fiber should be approximately on meter in length and have minimal loss. The reference cable should be only be removed from the unit when necessary. Limiting removal and termination of connectors to the unit will extend the live span of the connector eliminating down time and costly repairs. Only UPC connectors are to be connected to the FTE-8100-CWDM.

### **Caution**

Fiber-optic connectors are easily contaminated or damaged. The connection to the FTE-8100-CWDM 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 the FTE-8100-CWDM to the factory for expensive repairs. Prior to making any connection to the unit, ensure that all proper cleaning procedures have been followed.

Use UPC Finish Connectors Only!

### **Caution**

The FTE-8100-CWDM is designed for maximum power of +5 dBm per channel and a maximum composite power of +23dBm.

## 9.3 Taking Scans

### Scanning

Once all the parameters have been set, the scan button may be press or the scan indicator may be used on the touch screen to start a scan. Pressing the scan button or touching the scan indicator a second time will stop the scan.

### Using Stored Configurations

Test configurations are stored in the file management screen. To use a stored configurations, pull up the menu and select the file management icon. Touch the Config tab and from the file list, highlight the desired configuration and press select on the keypad or touch the configuration name while highlighted. Scans will now use the established parameters from the active configuration.

## 9.4 Viewing Scans

### Graph Display

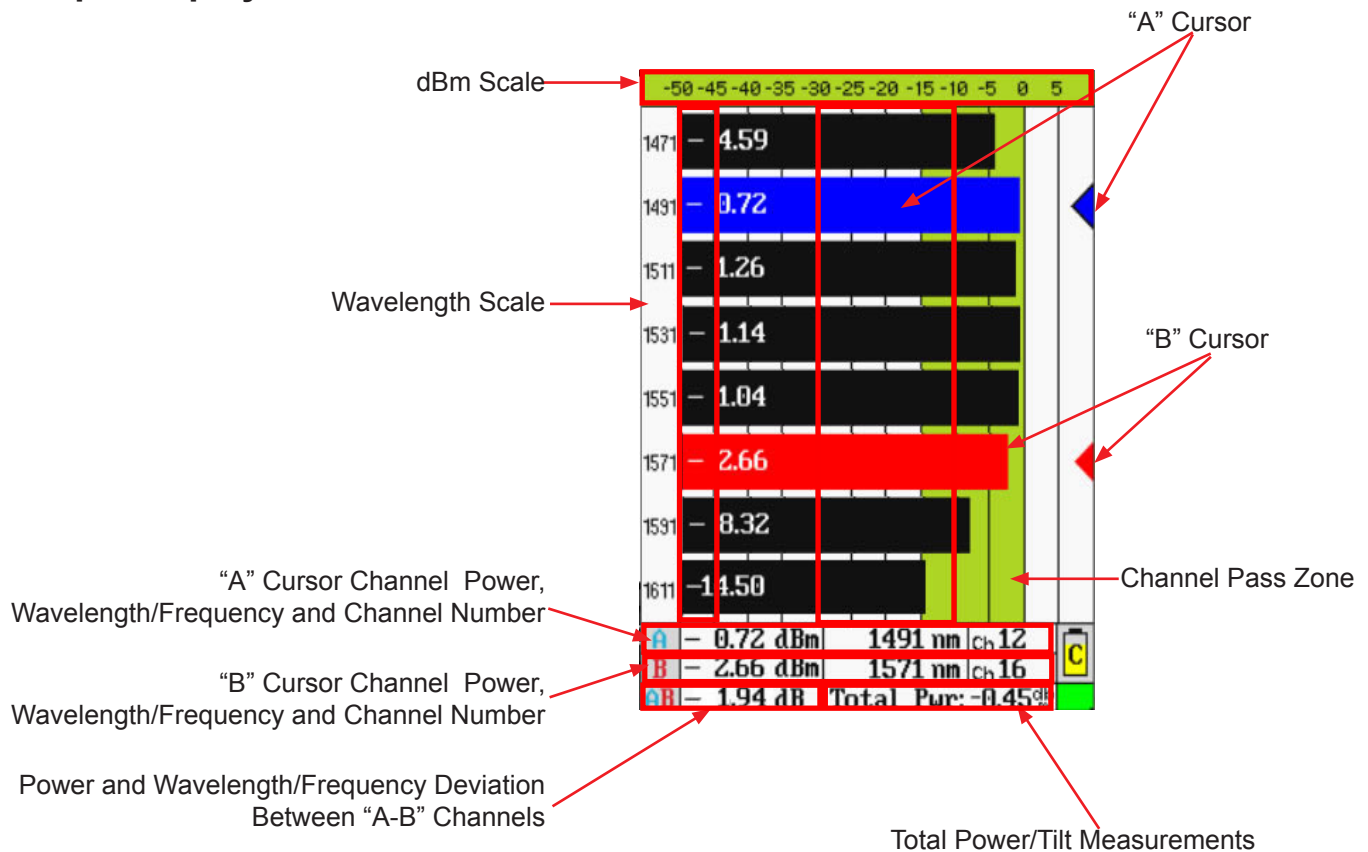


Fig 9.1

### Graph Information

#### dBm Scale

The dBm scale at the top of the display indicates -50 to +5 dBm.

#### Channel Scale

The channel scale displays the wavelength of the channels in the CWDM network. This scale will display the available channel/wavelengths of the configured unit. The full scale for an 18 channel unit is 1271-1611.

## Section 9 Operation

### Channel Pass Zone

This green highlighted area of the display assist with quick evaluation of channels for pass/fail state. Set this scale with the pass range setting on the settings screen.

### Cursor Data Information

Channel power, wavelength/frequency and the channel numbers for selected channels are displayed in the data section at the bottom of the display.

### “A” to “B” Cursor Relational Data

The bottom row of the data section indicates the deviation of power between the “A” and “B” cursors.

### Total Power/Tilt Measurements

The total power or tilt information is displayed in the bottom right most cell of the OSA's measurement table and graph screen.

## 9.5 Cursor Operation

The “A” and “B” cursors may be moved with the touch screen or the up and down buttons on the keypad.

### **Set Active Cursor**

The cursor to be moved must be set as the active cursor. This is indicated with a black outline around the cursor point on the right side of the display. To set the active cursor, touch the desired cursor point with the stylus or press the A/B button on the keypad to toggle between the cursors.

### **Cursor Movement**

To move a cursor, touch anywhere between the channel number column and the cursor point column and the active cursor will snap to the channel selected. To slide the cursor up and down on the display, touch the display and slide the stylus up and down to drag the cursor to the desired position/channel number. The up and down buttons on the keypad will move the cursors as well.

## Section 10 File Management

File Management is accessed through the menu. To open the file management screen, bring up the menu, highlight the file management icon and press select on the keypad or touch the file icon on the display.

### 10.1 File Management Display

#### Main File Management Screen

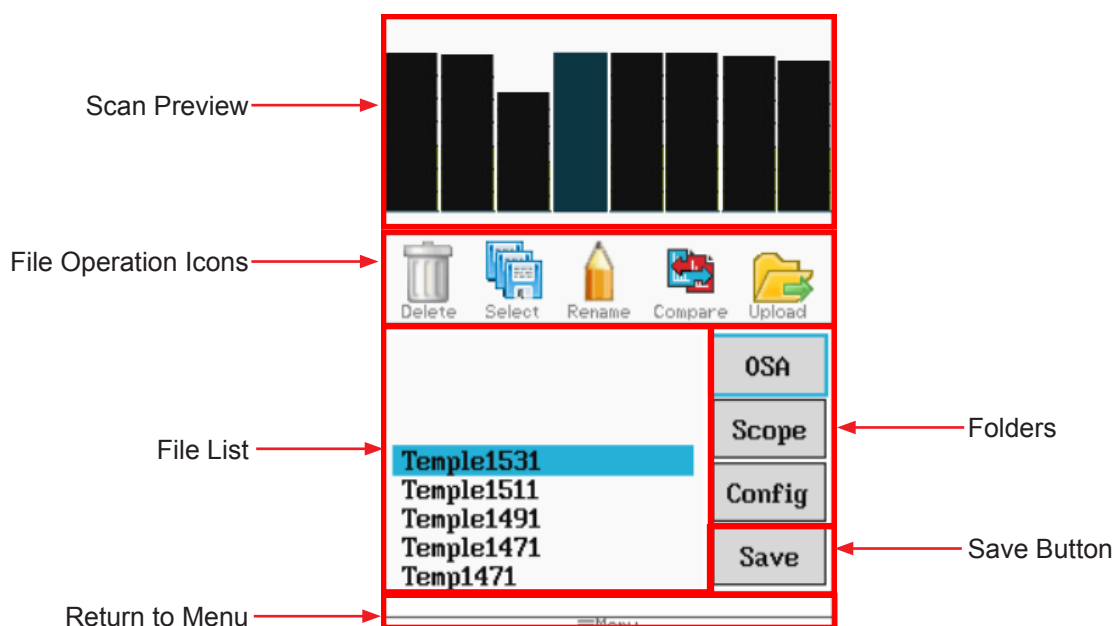
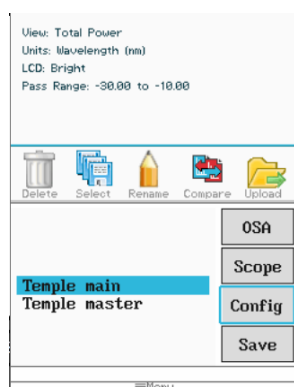
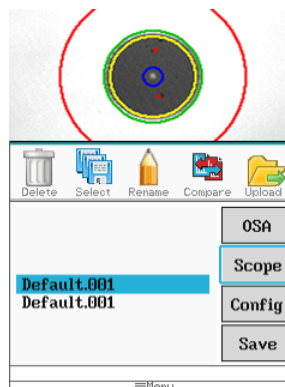


Fig 10.1

#### Configuration and Scope Folder Displays



Configuration Folder Open with Configuration Preview at the Top of the Display



Scope Folder Open with Scope Image Preview at the Top of the Display

Fig 10.2

### 10.2 Saving files

#### Saving Channel Analyzer Files

To save a scan, open file management, ensure the OSA tab is highlighted and touch save. The file naming screen with the onboard keyboard will be displayed. The name of the last file saved during a session will be the default name and anytime the unit is powered on the default name reverts to “default” Use the onboard QWERTY keyboard to name the file and touch save.

#### Saving Scope Files

From within the file management screen, ensure the scope tab is highlighted and touch save. When the onboard QWERTY is displayed, enter the file name and touch save.

#### Saving Configurations

At any time the current parameters may be save as a testing configuration. To create a set of parameters, use the settings screen and set the testing parameters to the desired values. Open the file management screen, highlight the Config tab and touch save. Name the configuration as required and touch save.

### 10.3 File Operations

#### Marking Files For Batch Operations

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 mark (select on some units) icon. The highlighted filename will now be displayed in red and the next file will be in the highlighted position. Continue marking (selecting) files by touching the mark (select) icon. To skip files simply move down the file list until the next file to be marked is highlighted and touch mark (select) again. The mark (select) is a toggle and to unmark a file, place it in the highlighted position and touch mark (select) again and it will be unmarked. Once the files are marked (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)

## Section 10 File Management

### 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 (select the files as noted in batch processing and touch the delete icon.

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

### Rename Files

To rename a file, position the file to the highlighted position and touch the rename icon. Use the QWERTY keyboard to name the file as desired and touch save.

### Compare Files

The compare files feature is used to simply overlay one scan to another. The primary scan is the first scan on the graph. This scan will determine the parameters and the data listed will be that of the primary scan. The primary scan is displayed in black and the secondary scan is displayed in pink.

New scans that have just be acquired but not saved may be used as the primary scan. Once the scan has been acquired, open file management, with OSA tab highlighted, highlight the file to be used as the secondary file and touch the compare icon. If the View is set to total power the scans are just in comparison mode with the primary scan information.

### Upload Files

The upload files icon is used to send files to the computer for use with the CertSoft 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 the channel analyzer connected to the computer with the USB cable, and the CertSoft software running touch the upload icon and the files will transfer to the selected folder on the computer.

Note: config files cannot be transferred to the CertSoft software.

## Section 11 Video Scope Operation

To operate the video scope, bring up the menu, highlight the scope icon and touch it on the touch screen or press select.

### 11.1 Video Scope Display

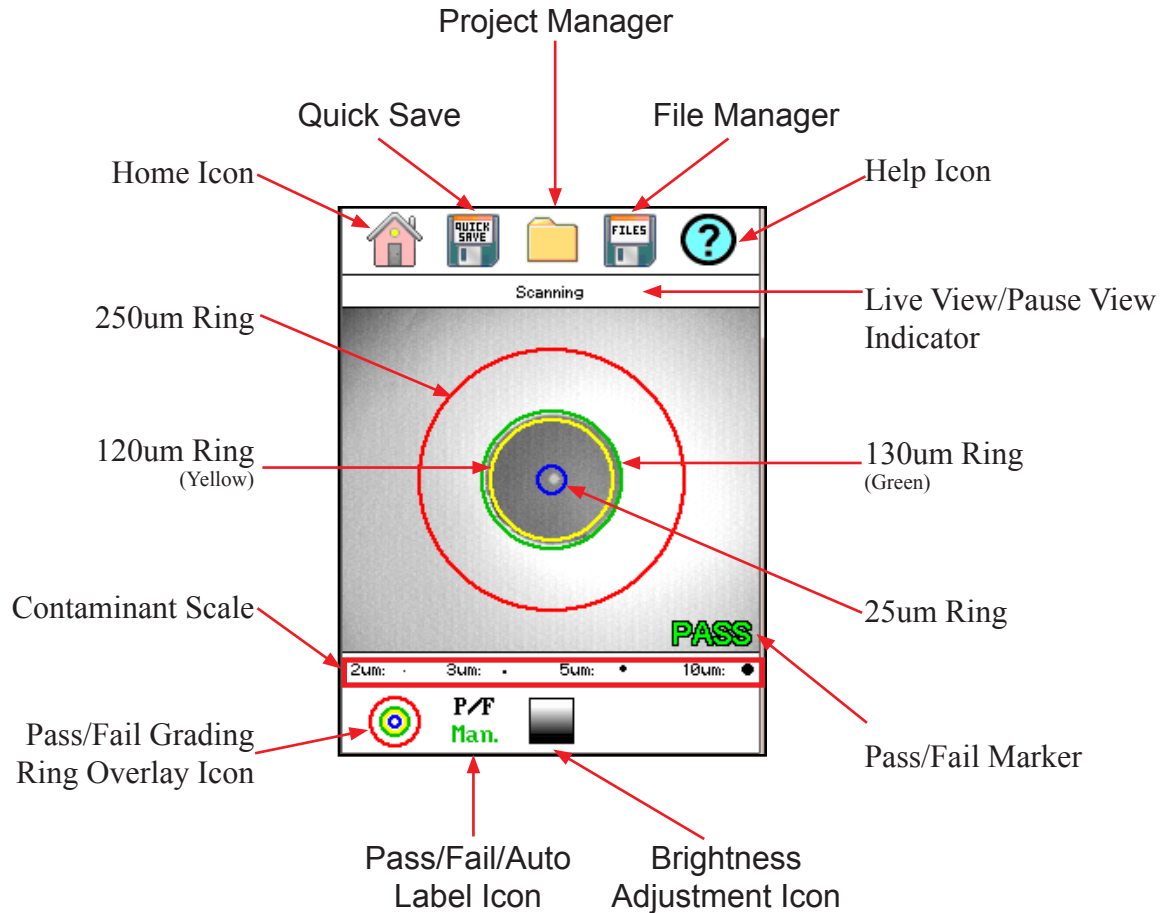


Fig 11.1

#### Note

Many functions on the video scope are operable by both the touch screen and the keypad.

### 11.2 Video Scope File/help Menu

The Icons at the top of the display are home, quick save, quick load, file management and Help.

#### Home

Press the menu button, use the left and right buttons to highlight the home icon and press select or touch the home icon on the touch screen to return to the home Screen.



**Quick Save**

Press the menu button, use the left or right buttons to highlight the quick save icon and press the select button or touch the quick save icon to store a file image of the scope screen to the next location.

**Quick Load**

Press the menu button, use the left or right buttons to highlight the quick load icon and press the select or touch the quick load icon on the touch screen to load the next stored scope image.

**File Management**

To open file management, press the menu button, use the left or right buttons to highlight the file management (Folder) icon and press the select button or touch the file manager icon on the touch screen. This will open the standard file management screen as described in Section 10 of this User's guide. Please refer to this section for information on file processing.

**Help**

Press the menu button, use the left and right buttons to highlight the help icon and press select or touch the help icon on the touch screen to view the help information.

**11.3 Video Scope Operation Menu**

The following functions are only available for use when the video scope is in live scan mode. There are two modes in the video scope, menu mode and live mode. The menu button toggles between the two modes. Touching one of the icons will also open the menu mode. When in menu mode there will be a highlight around one of the icons on the top or the bottom of the display.

**Note**

Touching icons on the video scope screen will put the unit into menu mode and activate or toggle the function. To exit menu mode it is necessary to use the menu button on the keypad.

**Grading Rings Icon**

Used to turn on and off the rings that indicate the IEC61300-3-35 grading zones.

By entering the menu mode with the menu button, use the LRUD buttons to highlight the pass/fail grading rings overlay icon and press the select button or touch the icon. Exit the menu mode and use the LRUD buttons to center the image in the rings. Use the appropriate table from Section 11.5 to grade the connector end face. 2, 3, 5 and 10 micron contaminant examples are displayed just below the connect image on the video scope display.

**Pass/Fail Label Icon**

Used to cycle through pass, fail or no grading (off) of the pass/fail/auto indicator. To set the pass/fail indicator, press the menu button, use the left or right buttons to highlight the pass/fail icon and press select to cycle through the pass/fail states, or touch the icon.

### **Brightness Icon**

Press the menu button, use the left and right buttons to highlight the brightness icon, or touch the brightness icon to allow adjustment to the brightness level. Use the up and down buttons to adjust the brightness level of the display or cycle through the brightness levels by pressing the select button.

## **11.4 Video Scope Operation**

To operate the video scope, bring up the menu, highlight the scope icon and press select, or touch the scope icon on the touch screen. If a probe is not connected already, connect the VIS300 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 focusing ring and back the tip retention nut down and 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.

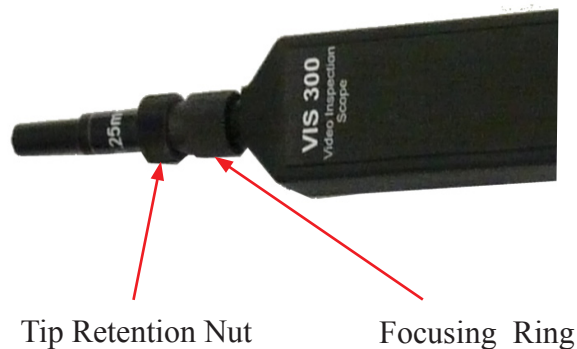


Fig 11.2

### **Viewing/Focusing a Connector**

With the video scope turned on and the video probe plugged into the unit, insert a connector into universal tip or insert the panel adapter tip into the appropriate port. Use the focus ring to get the connector image as sharp as possible.

### **NOTE:**

To make position adjustments with the LRUD buttons, the unit must NOT be in menu mode. Menu mode is evident when there is a light blue box positioned around one of the icons. When the touch screen is used to roughly center the connector image, the menu mode is automatically turned off.

**Centering a Connector Image**

Once the image is stable and focused, use the stylus to touch the approximate center of the connector to snap the image near the center of the display and the center of the grading rings. Use the LRUD buttons to fine tune the image to the center of the display.

**Pausing Image Scan**

To freeze an image in position and focus level for inspection, press the scan button. This will pause the image at the current position and focus level. Simply press the scan button again to set the operational mode back to live mode for focus and position adjustments

**Grading Rings**

Turn on or off the grading rings by pressing menu and using the left or right buttons to highlight the grading ring icon and press select or touch the icon on the touch screen to toggle the rings on and off.

**Pass/Fail**

Using the pass/fail criteria tables on the next page, determine if the connector passes the IEC61300-3-35 standard. There is a guide to contamination size located at the bottom of the image. To mark a connector as Pass or Fail, enter the menu mode, highlight the Pass/Fail Label icon and press select to cycle through pass, fail, or no grading. The touch screen may also be used to cycle through these settings. Once the pass fail status has been marked, the scan may be paused with the scan button and the points of contamination that caused a failure may be marked on the image.

**Marking Points of Contamination**

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 below 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 with the quick save icon to record the information.

**NOTE:**

Marking the points of contamination should be done last, just before saving the image. Once the unit is returned to live mode the markers are removed.

**Exiting Video Scope Operation**

Enter the menu mode, use the left or right buttons to highlight the Home icon and press select or touch the home icon directly on the touch screen.

**Note**

The majority of function and features in the Video Scope are operable with the touch screen. It is not necessary to enter the menu mode when using the touch screen. The menu mode needs to be entered when the focus of the LRUD buttons needs to be taken off the positioning feature and moved to the icon cursor.

## Section 11 Video Scope Operation

### 11.5 Pass/Fail Criteria Tables

**Fiber End Face Criteria Table for Angled PC Polished Connectors**

Zone	Description	Diameter	Allowable Scratches (Width)	Allowable Defects (Diameter)
A	Critical Zone	0 $\mu$ m to 25 $\mu$ m	$\leq 4\mu$ m	None
B	Cladding Zone	25 $\mu$ m to 120 $\mu$ m	No limit	No Limit < 2 $\mu$ m 5 from 2 $\mu$ m to 5 $\mu$ m None > 5 $\mu$ m
C	Adhesive Zone	120 $\mu$ m to 130 $\mu$ m	No limit	No limit
D	Contact Zone	130 $\mu$ m to 250 $\mu$ m	No limit	None $\geq 10 \mu$ m

**Fiber End Face Criteria Table for Ultra PC Polished Connectors**

Zone	Description	Diameter	Allowable Scratches (Width)	Allowable Defects (Diameter)
A	Critical Zone	0 $\mu$ m to 25 $\mu$ m	None	None
B	Cladding Zone	25 $\mu$ m to 120 $\mu$ m	No limit $\leq 3\mu$ m None > 3 $\mu$ m	No Limit < 2 $\mu$ m 5 from 2 $\mu$ m to 5 $\mu$ m None > 5 $\mu$ m
C	Adhesive Zone	120 $\mu$ m to 130 $\mu$ m	No limit	No limit
D	Contact Zone	130 $\mu$ m to 250 $\mu$ m	No limit	None $\geq 10 \mu$ m

**Fiber End Face Criteria Table for SM PC Polished Conn. (Single Mode Fiber, RL  $\geq 26$  dB)**

Zone	Description	Diameter	Allowable Scratches (Width)	Allowable Defects (Diameter)
A	Critical Zone	0 $\mu$ m to 25 $\mu$ m	$2 \leq 3\mu$ m None > 3 $\mu$ m	$2 \leq 3\mu$ m None > 3 $\mu$ m
B	Cladding Zone	25 $\mu$ m to 120 $\mu$ m	No limit $\leq 3\mu$ m None > 3 $\mu$ m	No Limit < 2 $\mu$ m 5 from 2 $\mu$ m to 5 $\mu$ m None > 5 $\mu$ m
C	Adhesive Zone	120 $\mu$ m to 130 $\mu$ m	No limit	No limit
D	Contact Zone	130 $\mu$ m to 250 $\mu$ m	No limit	None $\geq 10 \mu$ m

## Section 12 Maintenance

### 12.1 Battery Replacement

The unit is shipped factory installed Li-ion battery installed. Depending on usage, fully charged battery pack will typically enable approximately 12 hrs. of use. Fully discharged batteries require approx. 2 hours. to charge. Batteries are not field replaceable and therefore the unit is to be returned to the factory for battery replacement.

#### **Warning**

To Prevent Fire or Shock Hazard:

- Do not install battery types other than those specified by the manufacturer
- 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
- Do not use any other charger than the one provided with this instrument.

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

#### **Note**

For maintenance, batteries require a monthly recharge.

### 12.2 Calibration and Verification

Periodic verification of the OSR-80 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.

### 12.3 Adapter Replacement

The FTE8100-CWDM is supplied with two easily interchangeable adapters, SC/FC. To change the adapter, remove the two screws that hold the adapter in place, pull the adapter straight up from ferrule. It is suggested that you clean the exposed ferrule with appropriate cleanser and lint free wipe anytime you replace the ferrule.

#### **Note**

In order to maintain a low loss fiber connection, care should be taken to adequately clean the ferrule of any connector to be connected to the OSA. In the event that the port needs to be cleaned, first step is to be certain the instrument is off. We suggest the use of isopropyl alcohol and foam swabs specifically designed for cleaning connectors accepting 2.5mm ferrules.

#### **Note**

When replacing the adapter with one that does not have a chained protective cap, use the small screw in place of the larger screw that retains the end of the chain to the adapter base.

## Section 13 Specifications

<b>FTE-8100-CWDM Specifications</b>	
Wavelength Range	18 Channel 1271-1611nm 8 Channel 1471-1611nm
Channel Spacing	20nm
Channel Pass Band	±6.5nm
Channel Power Range	+5dBm 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	Universal UPC (FC/SC)
Graphical Display	Bar Graph and Table View
Display	4 in Color TFT
Dimensions	7.62" L x 3.88" W x 1.56" H (194mm L x 99mm W x 40mm H)
Weight	1.6 lbs
Battery	Rechargeable Li-Ion - 12 hours operating time
Power	100-240 universal US, GB, EU, AU Mains
Environmental	Operation -10°C to 50°C
Accessories Included	Universal power supply with mains for US, UK, CE and AU. interchangeable FC and SC adapters, certsoft reporting software suite, USB cable, manual on CD and rubber boot

Specifications are subject to change without notice

## 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 one (1) year 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    Trouble Shooting Guide

Symptom	Possible Cause	Solution
LCD dark	Power not on	Press ON/OFF key
	Batteries require recharging	Recharge batteries
	Batteries are missing, in backwards or need replacement	Check polarity, replace batteries, or contact factory for servicing
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 again button to turn the unit on.
Activity indicator does not change to standby or active mode	Power cycled too quickly	Turn off wait 10 seconds – turn on
Low or no power being displayed	Defective cord or dirty connector	Replace or clean cord
	Fiber Output port requires cleaning	Clean and inspect port
	Angle polish mated with UPC polish	Examine connector ends for damage. Use UPC Connectors ONLY!
USB hookup to PC not functioning properly	USB baud rate not set properly or too quick for computer	Set port baud rate properly or decrease Baud rate in instrument and certification software
	PC drivers not set properly	Un-install & re-install certification software and drivers



## Section 16    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 “turn-on” on the bottom right-hand corner of the display. The version changes and approximate release dates are as follows.

FTE-8100-CWDM

V1.0.0.1 – 1/2017 - Original release - Requires version 1.5.4.2 software