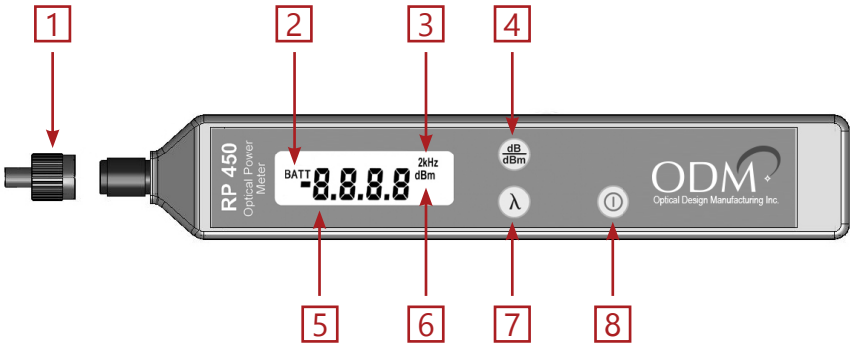


# TTK 210 Live Fiber ID Test Kit

## User Manual and Troubleshooting Guide

The TTK 210 Test Kit is designed to allow the premise technician to obtain multiple fiber test measurements in one kit. Included in the kit are the RP 450-02 Optical Power Meter and LFI 110 Live Fiber Identifier Accessory. This guide will serve as a brief overview of the functions of this kit.

### RP 450-02 Device Overview



1. **Connector Adapter - Interchangeable**

The RP 450 comes with a 2.5mm universal adapter. See page 4 of this document for additional adapter options.

2. **Low Battery Indicator**

"BATT" will appear on the LCD when the CR2 3V battery needs to be replaced.

3. **2kHz Tone Indicator**

The RP 450 will beep and show "2kHz" on the LCD when a 2kHz modulated signal is recognized.

4. **dB/dBm Button**

Press this button to toggle between dB and dBm modes. Hold this button down when in dBm mode to set a reference on the RP 450.

5. **LCD Screen**

This screen displays the measured value, currently-selected wavelength, and status indicators.

6. **Measurement Mode Indicator - dB/dBm**

dB is a loss measurement. dBm is an absolute power measurement.

7. **Wavelength Button**

Press to switch the RP 450 between the 850, 1300, 1310, 1490, 1550, 1611, and 1625 wavelengths.

8. **Power Button**

Press this button once to turn the RP 450 on. Press once again to turn the RP 450 off. The RP 450 is set to turn off after 5 minutes. For continuous usage, press and hold the power button for 3 seconds when powering on.

# LFI 110 Device Overview



To use the LFI 110 accessory with the RP 450-02, remove the adapter on the RP 450-02 power meter and slide the two units together until they snap firmly in place (see pictures above). To separate the units, grasp the LFI 110 firmly with the thumb and forefinger and pull the device away from the power meter.

## 1 - Check Core Power of Fiber with LFI

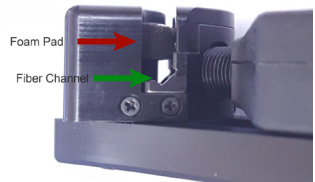
The LFI 110 utilizes a macro-bend technique to induce a small amount of loss into the fiber. This macro bend will not damage the fiber, nor place excessive loss onto a fiber actively transmitting data. This technique allows technicians to measure the core power of a fiber without having to remove the fiber from the patch panel.

The fiber should be fed into the channel on the LFI 110 (in the correct direction; see diagram below) and then the trigger on the LFI should be depressed. This will introduce a macro bend which allows a small amount of light to “leak” from the fiber into the sensitive detector on the RP 450 power meter.

Please note that the RP 450 should be in dBm mode with the correct wavelength selected to measure correct core power values. The measured signal value will be approximately 30dB less than the actual core value. For example, in the diagram below, the measured core power value is -44.80 dBm. This equates to an actual core power value of -14.80dBm.

Feed Fiber Into LFI Channel:  
Blue Arrow Indicates  
Direction of Optical Signal

Depress Trigger  
on Back of Unit to Obtain  
Core Power Measurement



### NOTE:

Fiber cables should be placed in the **fiber channel** of the LFI. The foam pad blocks light from entering the LFI head, and does not provide the appropriate bending function.

## 2 - Active Channel Indication

If unsure whether the fiber under test has an active optical signal being transmitted, the TTK 210 kit can be used to check for active channel activity.

The LFI 110/RP 450 combination provides active channel power when the RP 450 power meter displays an absolute power measurement in dBm. If there is no optical power being transmitted on the fiber or if the measured power level is below the measurement range of the power meter, the RP 450 will display (--.--). This "no signal" indication will also be present when the LFI 110 trigger is fully depressed without a fiber inserted.

## 3 - 2kHz "Tone" Identification

The RP 450 power meter includes a built-in 2kHz audible and visual alarm. The 2kHz "tone" signal is generated by a light source capable of modulating the laser at 2kHz. All dual and single laser sources manufactured by ODM include this 2kHz feature.

This feature allows technicians to place a modulated 2kHz signal on a fiber at either end of the network and look for the signal at any intermediate splice enclosure or patch panel. When the LFI 110 is fully engaged on a fiber with a 2kHz tone present, the RP 450 power meter will provide an audible beep and a visual indication that the "tone" is present.

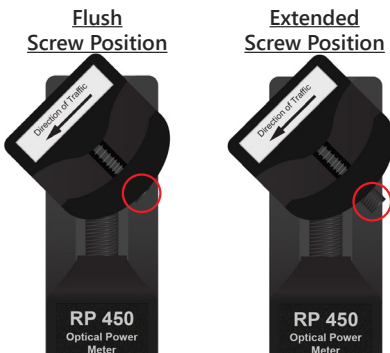
## 4 - Determining Signal Direction

If the signal direction is unknown, the LFI 110/RP 450 combination can be used to verify the correct direction. This process involves simply checking the core power of the fiber by inserting it into the channel on the LFI and recording the measured power. Then, reverse the direction of the fiber in the LFI channel and record that power measurement. Whichever direction indicates a higher power measurement is the correct signal direction.

For example, if two measurements of -45dBm and -39dBm were taken on the same fiber after switching the direction, it would be clear that the direction associated with the -39dBm measurement would be the correct signal direction.

## 5 - Adjustment Screw

The LFI 110 uses an internal spring to limit the bend placed on fiber cables when testing. This spring can be adjusted by the small screw at the base of the identifier head (see diagram below). The default position of this screw will provide maximum functionality on most fiber types. For smaller non-jacketed fibers (250 micron coated fiber), the screw can be backed out of the head slightly to provide more fine-tuned bends in the fiber. The bend radius of the LFI 110 components will never allow any fiber to be bent to a point where more than 3.0dB of loss is introduced, regardless of the screw position.



Recommended Adjustment Screw Positions		
Fiber Jacket	Screw Position	Induced Loss
3mm	Flush with Head	<1.25dB
2mm	Flush with Head	<1.00dB
900µm	1mm Extended	<1.00dB
250µm (coated)	2mm Extended	<2.00dB

# Device Specifications

RP 450 Specifications	
Wavelength Range	850nm to 1625nm
Measurement Range	RP 450-02: +6 to -60dBm RP 450-04: +23 to -45dBm
Resolution	0.01dB
Absolute Accuracy	+/- 0.25dB
Detector Type	RP 450-02: Germanium RP 450-04: Filtered InGaAs
Optical Interface	Universal 2.5mm (Other adapters available)
Tone Identification	2kHz Incoming Signal - Audible Alert
Power On	Push Button ON, Auto-off
Dimensions	6.1x.94x.75 in. (15.5x2.38x1.90cm)
Weight	3.0 oz (8.5g)

LFI 110 Specifications	
Network Configuration	Single Mode Long Haul, CO to CO or FTTx
Core Power Measurement Range (with RP 460-02)	+23 to -30dBm
Induced Loss (SMF 28)	<1.5dB@1550nm
Absolute Core Power Accuracy (SMF28e)	+/- 2dB within measurement range
Tone Identification	2kHz incoming signal, Audible alert
Measurement Storage	Available when used with RP 460
Dimensions	4.0x1.5x1.5 in. (10x1.25x1.25cm)
Weight	2.0 oz (6g)

# Power Meter Accessories

Power Meter Adapters	
Part Number	Description
AC 021	1.25 mm Adapter
AC 026	SC Adapter
AC 027	ST Adapter
AC 028	FC Adapter
AC 029	LC Adapter

Patch Cord Accessories	
Part Number	Description
AC 500	SM SC-LC - 1m simplex
AC 505	SM SC-ASC - 1m simplex
AC 501	SM SC-SC - 1m simplex
AC 502	SM LC-LC - 1m simplex
AC 600	SC-SC simplex bulkhead

# Contact ODM Support

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