

Instructor Corner

Troubleshooting Tip for Bend Insensitive Fiber

By Larry Wheeler, Training and Logistics Manager, Light Brigade

Before troubleshooting a standard single-mode fiber link, a technician will typically use an optical fiber identifier (OFI) to determine if a fiber is carrying live traffic or is out of service. An OFI works by clamping onto the buffered or jacketed fiber and then bending the fiber to extract a small amount of light. The extracted light is monitored to determine if it is a dark fiber, a fiber-identifying test tone, or carrying live traffic (and in which direction). It eliminates the need to access the fiber at a connection or splice point, removing the risk of service interruption on a live network. This process has worked for years and many field techs have an OFI in their tool kit.

Over the last few years, however, deployment of bend insensitive (BI) fibers has increased significantly. These fibers are designed to allow less light to leak out in tight bending conditions. This made it tough to use standard OFIs to detect live links since the amount of light escaping when bending has been greatly reduced.

Light Brigade recently received a new fiber identifier specifically designed to work with G.657 BI fibers. The AFL OFI-BI was tested by a couple of our experienced instructors here at our main training facility. We found it to be the only OFI so far that can detect a signal on several BI fibers/cables we had in-house. And it still works with standard fibers! See results in the photos below.



Tested on Fujikura G.652D SM fiber with blue 900-µm buffer in a 2-mm yellow PVC jacket



Tested on G.657B bend insensitive OFS SM fiber with blue 900-µm buffer and 2-mm blue PVC jacket

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In addition, this OFI supported other standard single-mode and multi-mode fiber types and up to a 3-mm jacket without requiring reconfiguration. We also thought the design was comfortable to hold and the positive stop on the clamping trigger made this easy and consistent to use. Needless to say, this is a great find for field techs today.

Light Brigade is always looking to keep up with new and improved tools of the trade. If you have a product that you think others in the fiber optics field would find useful, please let us know or send us something to look at. We are always happy to take a look and to keep everyone “in the know”.

Did You Know...

There is More Fiber in More Homes?

The increased pace of FTTH deployments that began in 2011 is still going strong. According to RVA, LLC, 2015 marked the second biggest year of FTTH expansion in the technology's history. Three million new homes were passed, a growth of 13%. Currently, 26 million homes have been passed and marketed in the United States, which now boasts nearly 20% of the world's fiber connections.

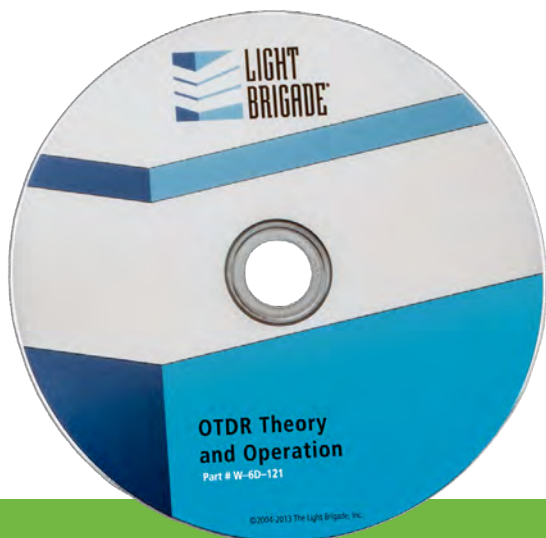
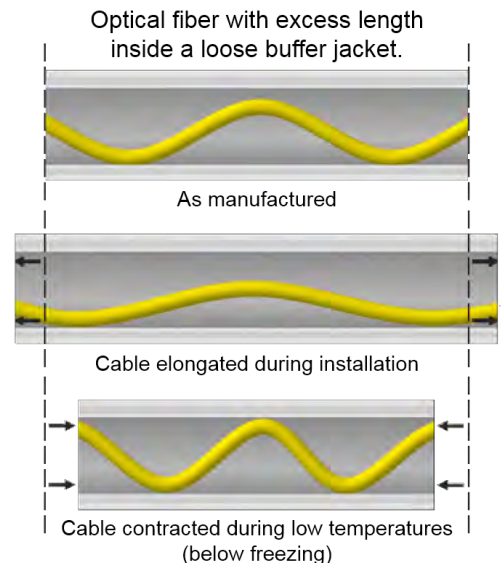
Training Spotlight

Here's a 'Good to Know' Fiber Optic Cable Fact

To ensure continued performance, most cables are designed and manufactured with excess fiber inside the cable jacket. This excess fiber is more resistant to stretching, bending, and pulling effects during installation and is able to expand or contract in reaction to temperature changes.

It is important to keep this excess fiber in mind when troubleshooting fiber links with an OTDR. An OTDR reports the overall link length and the locations of splices, connectors, bends, etc. This distance measured on the fiber under test will be a bit different than the actual cable length. In a long cable run, the difference between the outer jacket length and the fiber length can be significant. This must be accounted for when you are trying to pinpoint the location of a problem!

Excerpted from [Light Brigade's Advanced Hands-on training course](#)



Staff Development Training on DVD

OTDR Theory and Operation Training

The OTDR is the most common tool used for troubleshooting fiber optic links in the field. Since it is able to characterize an entire fiber link from one end, it allows a technician to be deployed to the field alone. The OTDR can produce a 'trace' of the entire length of fiber, identifying excessive bends, connector losses, splice issues and/or breaks in a link.

The *OTDR Theory and Operation* DVD shows how an OTDR functions, and demonstrates how it is used for acceptance testing, splice monitoring, span testing, and measuring optical return loss.

This offer is valid until March 31, 2016

Get this DVD for a special price of \$99 when you order online with coupon code NEWS.

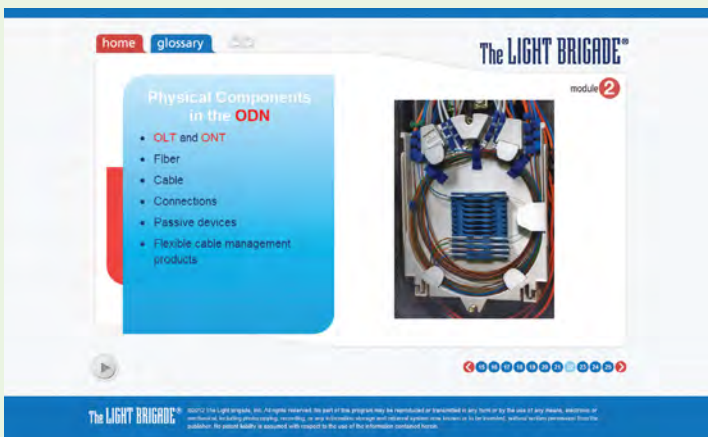
[Click here for more information and to order.](#)

Training Tidbits

Fiber Optic Safety Tip

Visual Fault Locators

Because visual fault locators (VFLs) emit a visible frequency of red laser light (generally 620-670 nm), there is a false assumption that they are safe to look at without eye protection. Nothing could be further from the truth! The only classification of laser considered safe during normal operation is a Class 1 laser. VFLs are available with safety designations of Class 2 (1mW), unaided viewing of a beam can be hazardous if viewed through optical instruments, or Class 3 (5mW), direct viewing and specular reflections can cause eye injury. Never look into a VFL without proper eye protection.



Online Training Sale

Certified Fiber to the Home Professional Online Training Course

Save over \$200!

Analysts predict continued growth in the number of Fiber to the Home (FTTH) roll-outs worldwide. Get the training you need to get ahead in the FTTH market.

Light Brigade’s Certified Fiber to the Home Professional (CFHP) online training course covers everything from system components to business issues. It provides a broad base of knowledge of FTTH architectures, network design, deployment technology, and operational skills. Students grasp key concepts at their own pace and learn the material through a combination of proven instructional methods and interactions. The course culminates in a practice exam to help one prepare for the FTTH Council’s CFHP certification test.

Take this online course for just \$295, nearly half off the regular \$500 registration fee until April 30!

[Click here for more information or to register.](#)

Upcoming Classes

Click on Location to Register

Fiber Optics 1-2-3

Frankfort, KY	February 23-26
Anchorage, AK	March 1-4
Colorado Springs, CO	March 1-4
Richmond, VA	March 1-4
San Juan, PR	March 1-4
Orlando, FL	March 8-11
Newark, NJ	March 8-11
Edmonton, AB	March 15-18
Las Vegas, NV	March 20-23
Kansas City, MO	March 29 - April 1
State College, PA	March 29 - April 1
Albany, NY	April 5-8
Savannah, GA	April 5-8
Seattle, WA	April 5-8
Burbank, CA	April 12-15
Lansing, MI	April 12-15
Washington DC	April 12-15
Geneva, IL	April 19-22
Albuquerque, NM	April 26-29
Minneapolis, MN	May 3-6
Nashville, TN	May 3-6
San Juan, PR	May 3-6
Anaheim, CA	May 10-13
Topeka, KS	May 10-13
Baton Rouge, LA	May 17-20
Honolulu, HI	May 17-20
Raleigh, NC	May 23-26
Spokane, WA	May 23-26

Advanced Hands-on Training

Anchorage, AK	March 15-18
Houston, TX	April 19-22

Emergency Restoration

Spartanburg, SC	March 8-10
Seattle, WA	April 19-21

FTTx for Installers and Technicians

Salt Lake City, UT	March 15-18
Sacramento, CA	March 21-24
Seattle, WA	April 12-15
Miami, FL	May 17-20

FTTx OSP Design

Minneapolis, MN	February 23-25
Salt Lake City, UT	March 29-31
Miami, FL	April 19-21
Atlanta, GA	May 24-26

Certified Fiber to the Home Professional (CFHP)

Spartanburg, SC	March 22-23
Austin, TX	April 4-5
Austin, TX	May 24-25

Fiber Optics for Oil & Gas

Mobile, AL	April 26-29
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Fiber Optics for Utilities

Level 1 Technician	
Memphis, TN	March 8-10
Hartford, CT	April 26-28
Spartanburg, SC	May 10-12
Level 2 Designer	
Memphis, TN	March 11
Hartford, CT	April 29
Spartanburg, SC	May 13

Fiber Optics for ITS, Traffic, Fire Alarm, and Communication Systems

Technician Level I	
Houston, TX	February 22-23
Daytona Beach, FL	March 14-15
Peoria, AZ	April 25-26
Seattle, WA	May 16-17
Field Technician Level II	
Houston, TX	February 24-25
Daytona Beach, FL	March 16-17
Peoria, AZ	April 27-28
Seattle, WA	May 18-19
Design Technician Level II	
Daytona Beach, FL	March 18
Mesa, AZ	April 29
Seattle, WA	May 20

To view schedule of 2016 training dates and locations, click here and download the 2016 training catalog.

Upcoming Events

Click on any Event for more Information

Trade Shows	Dates	Location	Booth Number
ITE/IMSA Annual Joint Conference and Vendor Exhibition	February 8	Seatac, WA	24
CalCom Showcase	February 23-25	Sacramento, CA	254
ITA Showcase Northwest	March 2-3	Portland, OR	
IWCE	March 23-24	Las Vegas, NV	

• Training Class: Fiber Optics 1-2-3, March 20-23

OFC 2016	March 20-24	Anaheim, CA	2641
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- Short Course (SC185): Hands-on Polishing, Inspection, and Testing of Connectors, March 21, 1:30-5:30pm
- Short Course (SC409): Safety in Fiber Optics: From Components to Systems, March 21, 9:00am-12:00pm
- Presentation: Understanding Reflectance, March 23, 4:00-5:00pm
- Presentation: Understanding Optical Signal-to-Noise Ratio, March 24, 4:00-5:00pm

Broadband Communities Summit Conference	April 5-7	Austin, TX	
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- Training Class: Certified Fiber to the Home Professional, April 4-5

Webinars	Dates	Location
The Evolution of FTTx Systems	March 16	Hosted by Lightwave and co-sponsored by UTC