

# Optical Fiber Cable–Fault Location Detection Procedure

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## Abstract

This document describes the guideline for locating the fault in optical fiber cable after installation or during maintenance of the cable.

## Keywords

Fault location, OTDR, cable sheath



## General

This document describes the guideline for locating the fault in optical fiber cable after installation or during maintenance of the cable.

Optical fiber cables are manufactured with excess fiber length in buffer tubes to avoid change in optical characteristic of fiber by any external force during installation. Precise value for this excess fiber length is not available. It varies with the type of cable design. Hence finding out fault location in OFC is a challenging job. This document helps in finding out the most accurate sheath distance where fault has occurred in the cable.

The method is suitable for all types of optical fiber cables and is independent of index of refraction (IOR) used by OTDR, but it has to be kept constant once the process has started.

## Equipments Required

1. Optical Time Domain Reflect meter
2. (OTDR). Road meter
3. Dummy fiber Spool of known length.
4. Fusion Splicing machine

## OTDR Setting:

To find out optical distance of fault point, the OTDR has to be set for the following properties:

### 1.Index of Refraction

For accurate length measurement of Sterlite Optical fiber, set following group indices of refraction

	1310 nm	1550 nm
Single mode fiber	1.4670	1.4675

### 2.Pulse width

Use short or medium pulse width depending on cable route length. For longer cable systems, the shortest possible pulse width allowing smoothest OTDR trace should be used.

### 3.Vertical & Horizontal Scale

Use the minimum dB/division & kilometer/division that can maintain the desired trace on the OTDR display.

### 4.Dummy Fiber /Pigtail

Use a dummy fiber, which is long enough to encompass the OTDR initial reflection (dead zone). For single mode fiber, use length of more than 300 meters of dummy fiber.

### 5.Cursor

Place the first cursor "A" in the beginning of the trace to be measured and ensure that it is on the linear portion of trace and not within the splice or connector reflection. Place another cursor "B" as close as possible to the fiber fault reflection and ensure that it is on the linear portion of the trace and not within the fault reflection.





