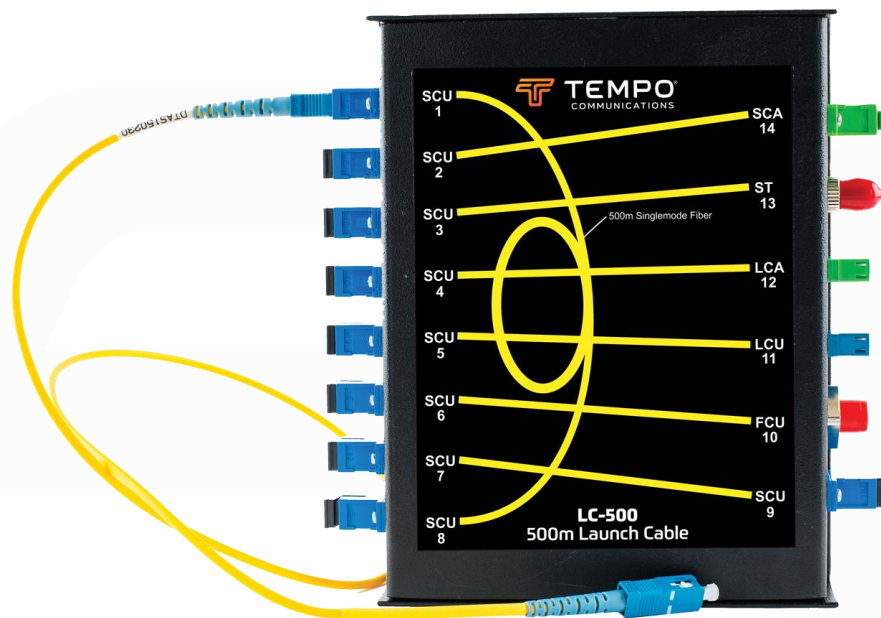


Application Note

Use of the LC-500 Launch Cable

When long fibers are being measured, the deadzone of the OTDR becomes longer because a wider pulse width is used to launch more light into the fiber. The increased amount of light allows the OTDR to probe longer fibers and links that may have loss events such as bad connectors or splitters.

If a launch cable is not used the longer deadzone of the OTDR can overlap and mask events at the beginning of the fiber under test.



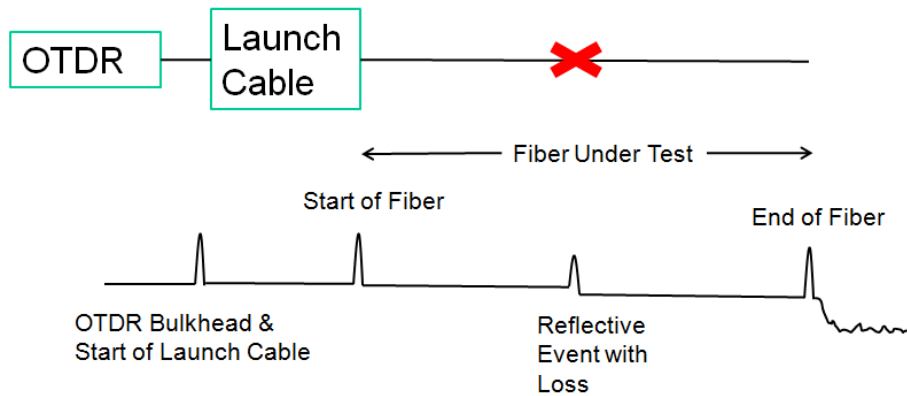
The LC-500 is universal; all common connections are accommodated so that interface to any outside plant termination can be made to interface to the OTDR. A hybrid cable can be used as the one meter patch cord to the OTDR. Please refer to the application note on the benefits of using a one meter patch cord with an OTDR.

The Tempo Communications LC-500 launch cable can be used for two purposes.

1. Troubleshoot the input connector and the initial fiber span that may be masked by the deadzone of an OTDR.
2. Characterize input and output connectors and the entire fiber link.

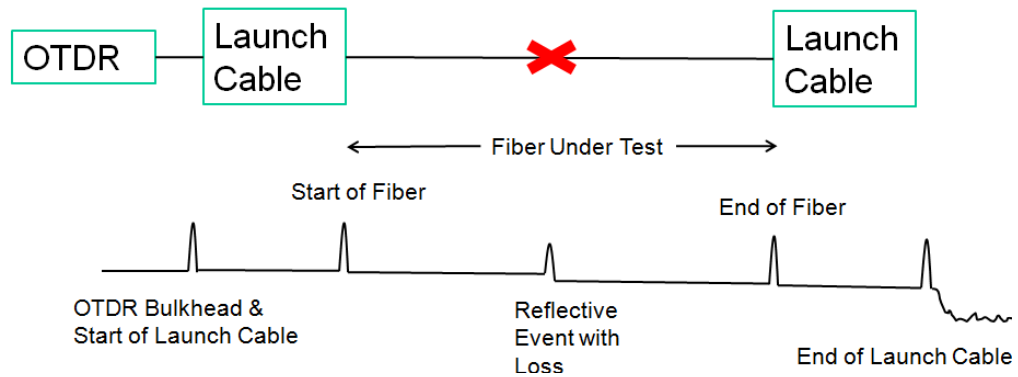
Troubleshooting Fiber Links

During trouble shooting the technician will need a launch cable connected between the OTDR and the fiber under test. This will allow the technician to view the condition of the input connector of the fiber under test and the portion of the fiber span that may be masked by the increased deadzone of the OTDR when wider pulses are used to measure long fibers. In this case only one launch cable will be required.



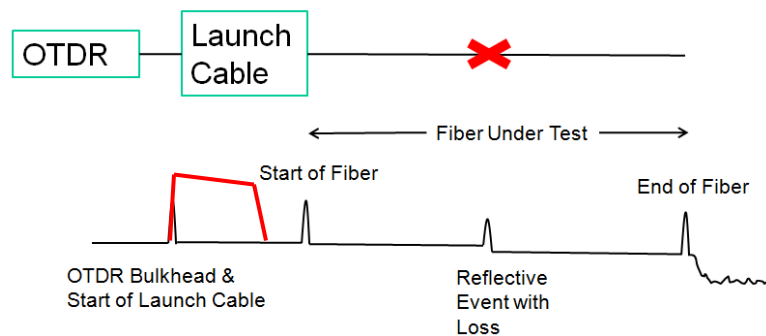
Characterize new Fiber Links

Characterize the input and output connectors and the portion of the fiber span that may be masked by the increased deadzone of the OTDR when wider pulses are used to measure long fibers. In this case two launch cables are employed.



Wide Pulse Width Results in a Longer Deadzone

The wide red pulse represents the pulse width of the OTDR (long deadzone). The input connector of the fiber under test can be seen and measured. Without the LC-500 launch cable, this connector reflection/loss would not be measurable.



The deadzone of an OTDR is specified at the shortest pulse width. The IEC specification is a pulse width of 5ns while measuring an event of -45dBm reflectivity. More reflective events will cause a longer deadzone. It is imperative that all connectors are cleaned and inspected so as to avoid contaminated and or damaged connectors that will be more reflective and cause a longer deadzone.

Determine the Length of Launch Cable

The LC-500 can be used for fiber links up to 40km long. This is true if there are no losses such as bad connectors or splitters. So the real determining factor is really the pulse width. The table below is a general guideline.

Pulse Width (ns)	Launch Cable Length (m)
5	500
10	500
30	500
100	500
300	500
1,000	1,000
2,000	1,000
10,000	2,000
20,000	2,000

Summary

- Wider pulse widths enable the OTDR to measure longer fibers and fiber networks with higher losses and therefore have a longer deadzone. Longer deadzones require a longer launch cable.
- The example of the LC-500 also pertains to the conventional launch cables such as the LC500, LC1000 and LC2000.

