Troubleshooting OTDR Testing

Technical Bulletin

Overview

Based on several case studies, ARIA has identified some key steps that are critical for successfully OTDR testing ARIA patch/splice panels after splicing.

Never assume that the connector endface of a test cable or launch box is clean. Inspect it with a 400x scope, clean it, and re-inspect it again.

This document will describe the key steps which primarily have to do with cleaning during the testing process.

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Required Tools

- 2.5mm Mini Foam Tip Swab (Part Number: FOP10020)
- CLETOP reel-type dry cleaning tool (ARIA Part Number: CLRSL)
- 2.5mm US Conec IBC Brand Cleaning Tool (ARIA Part Number: 9392)
- 99% Isopropyl Alcohol
- Lint Free Wipes
- Senko 200x/400x Fiber Optic Microscope (Probe) (Part Number: SCK-VM2000-01)

  Notes:
  1) Ensure you are in possession of a compatible computer or mobile device if required by the inspection hardware.
  2) Ensure utilization of the proper tip adapter designed for the connector type and polish type being inspected.
- ARIA launch box/cable with 1 km of fiber (Launch Box with SC/UPC Connectors - ARIA Part Number: LB-SCU-SCU)

The Most Common Testing Problems

The most common testing problem is related to the mating of a contaminated/dirty/scratched launch cable connector or the connector of the test jumper to the ARIA pigtail connector (the connector plugged into the rear of the bulkhead).

ARIA goes to great lengths to ensure its patch/splice panels ship with very high quality connector endfaces. This means the endface will have no dirt, visible scratches, or pits when viewed at 400x magnification. ARIA saves a digital image of every loaded connector endface to confirm it is clean prior to shipping.

Launch cable connectors get scratched and pitted over time, and will become unusable. The quality of the endface of this connector is the single most important factor in successful testing. The more these connectors are properly cleaned, the longer they will last. It is important to get these connectors replaced or repolished on a regular basis. ARIA can assist in this effort.

102 Wright Brothers Ave
Livermore, CA 94551
www.ariatech.com

Phone (925) 447-7500
Fax (925) 447-7511
sales@ariatech.com

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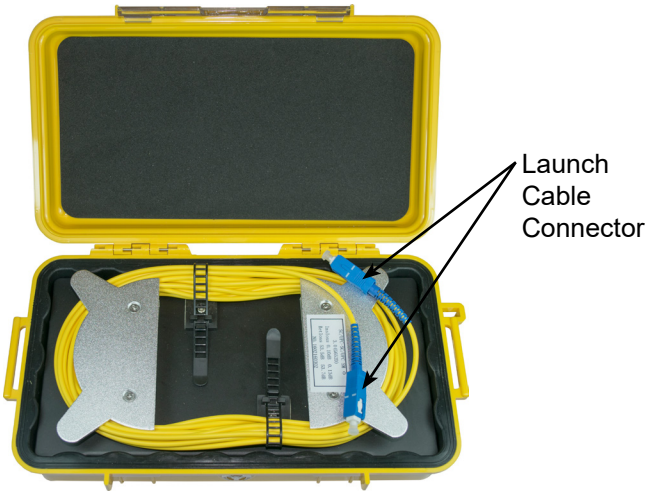
The Most Common Testing Problems (Continued)

Poor Endface Quality of the OTDR Launch Cable Connector

- The endface of this connector must be clean and always free of scratches and pits.
- This connector gets mated many times and will easily become dirty, scratched, and pitted over multiple matings.
- A dirty/scratched launch cable connector endface will damage the pigtail connectors in the patch panel by creating scratches, pits, and/or transferring dirt to a clean well-polished pigtail connector in the port being tested.
- The OTDR launch cable connector endface deteriorates with use and should be replaced after 300 matings.



The Tester/Splicer Does Not Know Whether the Endface Quality Is Good or Bad

- To know if the launch cable connector endface is clean, the tester must have an inspection scope.
- Wiping the endface of a connector does not ensure it is clean.
- It is common to wipe the endface, look at it in a scope and see that it is still dirty.
- It is often necessary to clean an endface several times before it becomes clean. You can only know for sure by looking at the endface with a scope.
- Inspection scopes are a must and are not optional.

Improper Procedures

- Do not use alcohol that is less than 99% pure.
- Do not use compressed air.
- Do not assume any connector endface is clean even if it is new and fresh out of the package. You must look at the connector endface with a microscope (probe).
- Do not push dust caps all the way onto connectors. They will contaminate the endface.

Having a clean launch cable connector, and knowing it is clean by using a scope, eliminates the majority of OTDR testing problems ARIA has seen over several years.

However, if poor loss values are seen after cleaning as described above, the next step is to clean the pigtail connector and the bulkhead mating sleeve holding the two connectors together. Although the ARIA pigtail connectors are very clean from the factory, they still can become dirty once the protective cap is removed.

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Cleaning Procedure

Inspection

As a rule, before mating a fiber optic connector, it should be inspected with a 400x magnification fiber optic microscope (probe) to view the endface of the connector for contaminants (oil or dirt) or damage (scratches and pits). If contamination is present, clean following the steps below:

Cleaning the Launch Cable or Test Cable Connector

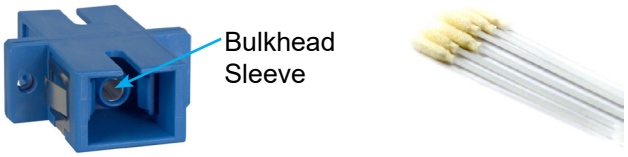
This can be done using pre-moistened alcohol wipes, using dry lint free cleaning wipes and 99% pure isopropyl alcohol, or using a dry connector cleaning tool like an all in one click type cleaner or the CLETOP reel-type dry cleaning tool shown here.

Using medium pressure (do not apply excess pressure), wipe the surface endface of the connector in a straight motion one time in one spot then rotate the connector in your fingers 180 degrees and wipe the surface endface of the connector one more time in another spot.

If a wet cloth is used, follow up with a dry cloth using the same motion to absorb any excess alcohol residue.

Cleaning the Sleeve Inside the Bulkhead

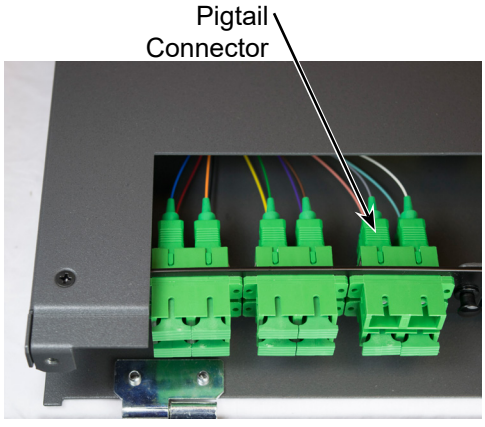
Carefully remove the ARIA pigtail connector from the bulkhead and using an alcohol-moistened (do not saturate) swab like the 2.5mm Mini Foam Tip Swab (Part Number: FOP10020), insert the swab into the bulkhead and pull it straight out without twisting.



Follow up with a dry swab to absorb any excess alcohol.

Cleaning the ARIA Pigtail Connector

Clean the sides of the ferrule and the endface of the ferrule with an alcohol-moistened (do not saturate) 2.5mm Mini Foam Tip Swab (Part Number: FOP10020).



Follow up by cleaning the endface of the connector with a click type 2.5mm US Conec IBC Brand Cleaning Tool.

Carefully and gently re-insert the connector back into the bulkhead and ensure a firm connection.

Contact ARIA If You Are Experiencing Problems. We Will Be Glad to Assist!

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