



Loopback Testing

Testing Loopbacks using OptoTest equipment

Background

A loopback is an optical component that routes fiber optic lines from port(s) of a connector to other ports of that connector.

- These can have additional attenuation induced.

Used for BER testing

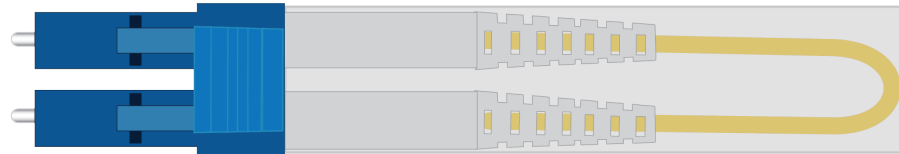
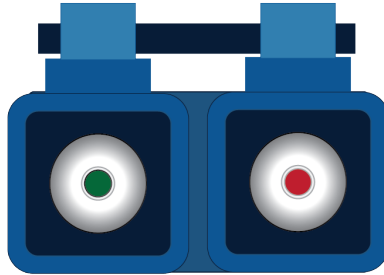
- Routes transmit ports back to receive ports.
- With additional attenuation it can simulate a worst-case link loss for stress testing transceivers

Used for OTDR testing of links

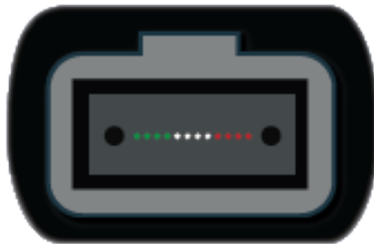
- Terminates a long transmit link to a long receive link and allows the technician to diagnose both links without needing to connect OTDR to opposite side of receive link.

Structure

Duplex LC

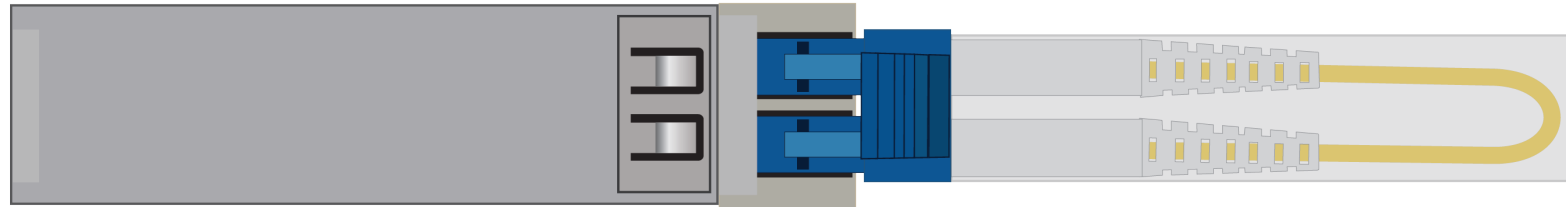


MTP® Loopback (4ch)

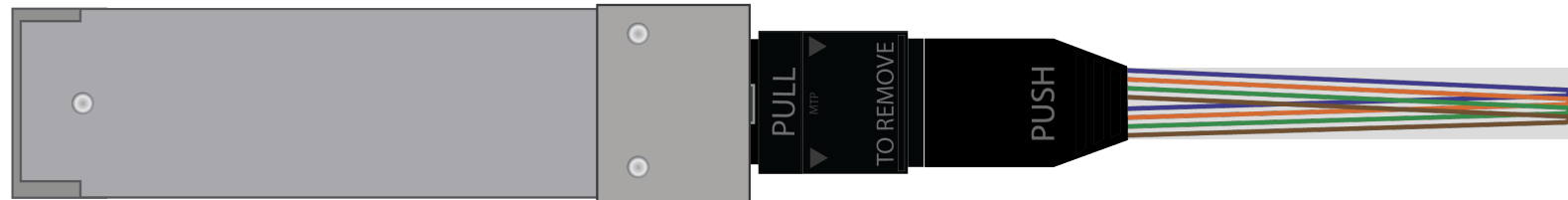


Transceiver testing

Duplex LC



MTP



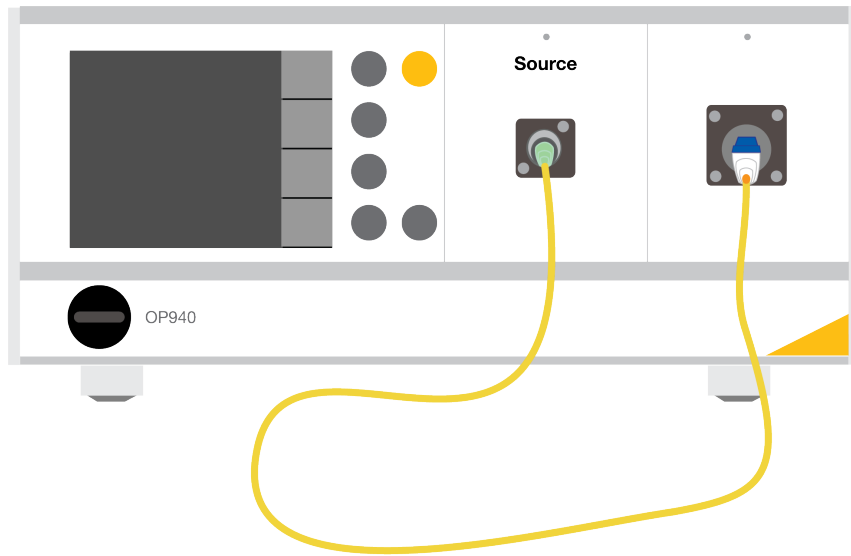
Testing Loopbacks

Equipment needed

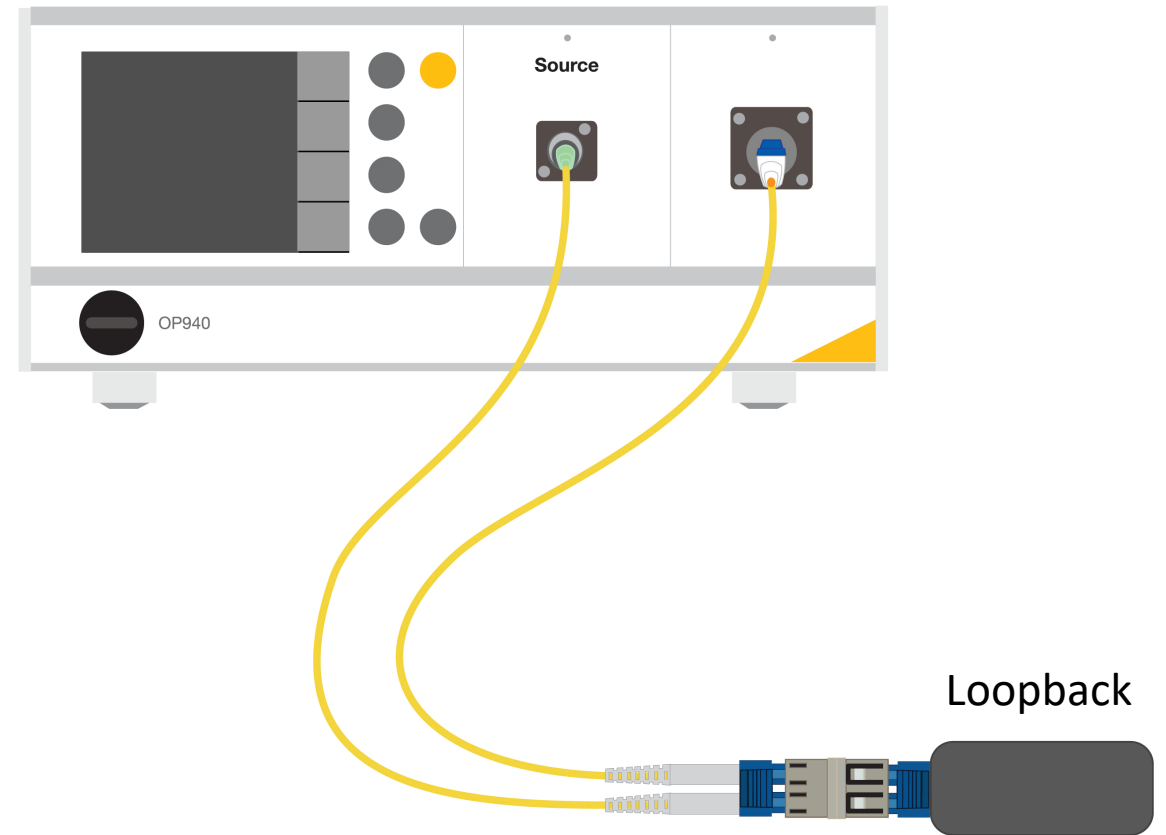
- **IL system (light source and power meter)**
 - RL if necessary.
 - Channel count at least equivalent to number of links of the loopback
 - Duplex LC has one link (simplex system fine)
 - MTP loopback (8 ports populated) has 4 links
 - For highest accuracy MTP requires large area detector
- **Typically link loss is tested**
 - Both connectors and the fiber
- **For MTP a fanout is needed as well as a return MTP ideally.**
 - Use a fanout with the channels populated according to loopback
 - Launch cord with MTP connectors fanned into MTP connector.

Testing Loopbacks (LC)

Reference Setup



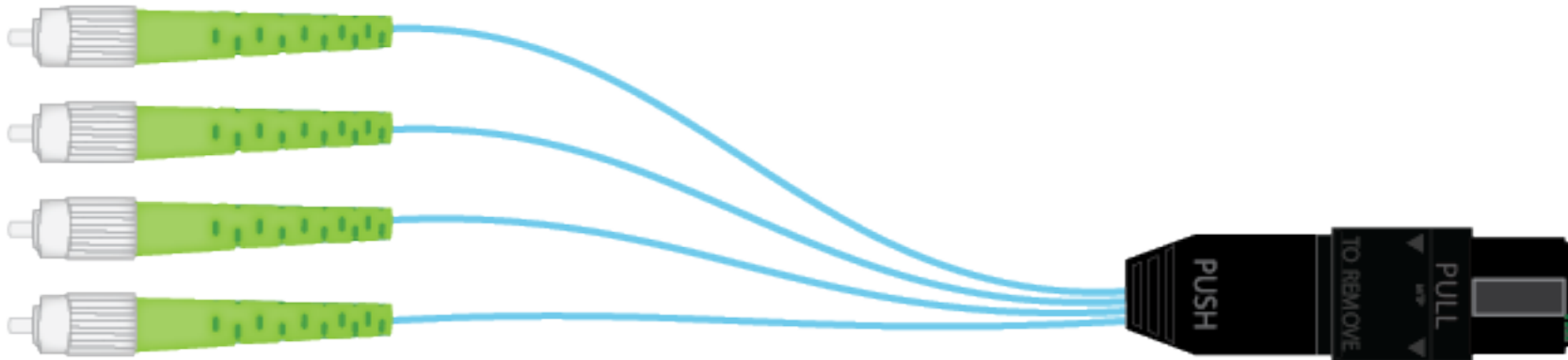
Measurement Setup



Testing Loopbacks (MTP)

Cable setup

- **Equipment cord**
 - Connects from the source to the launch cord

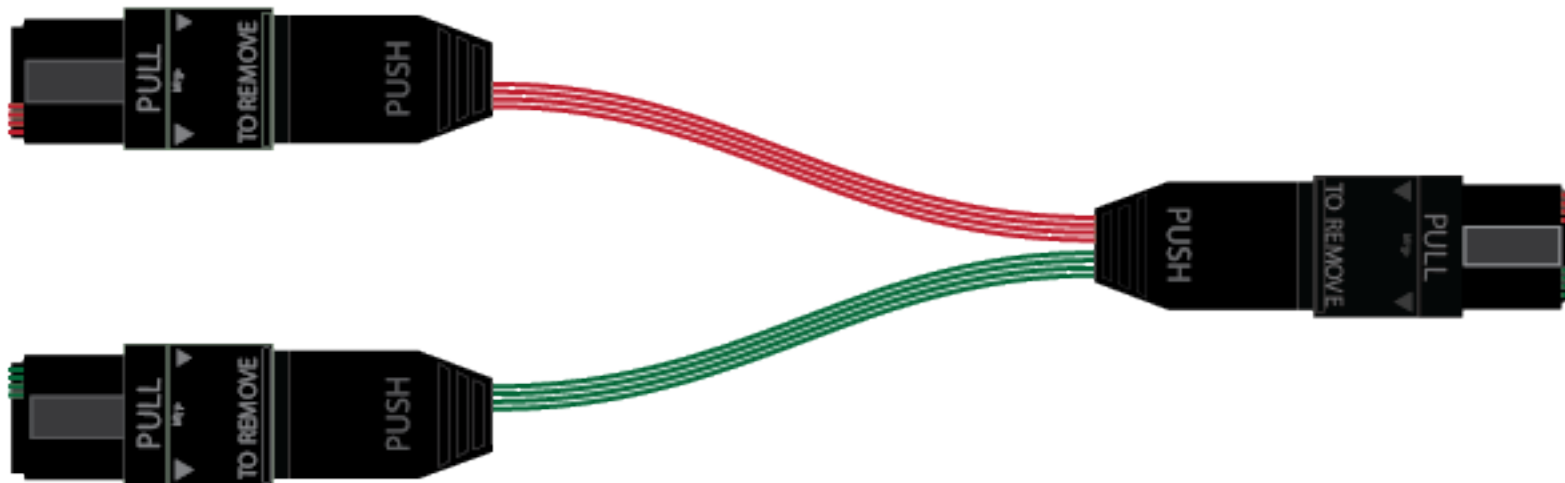


4 Fiber fanout (Only Ch1 to Ch4)

Testing Loopbacks (MTP)

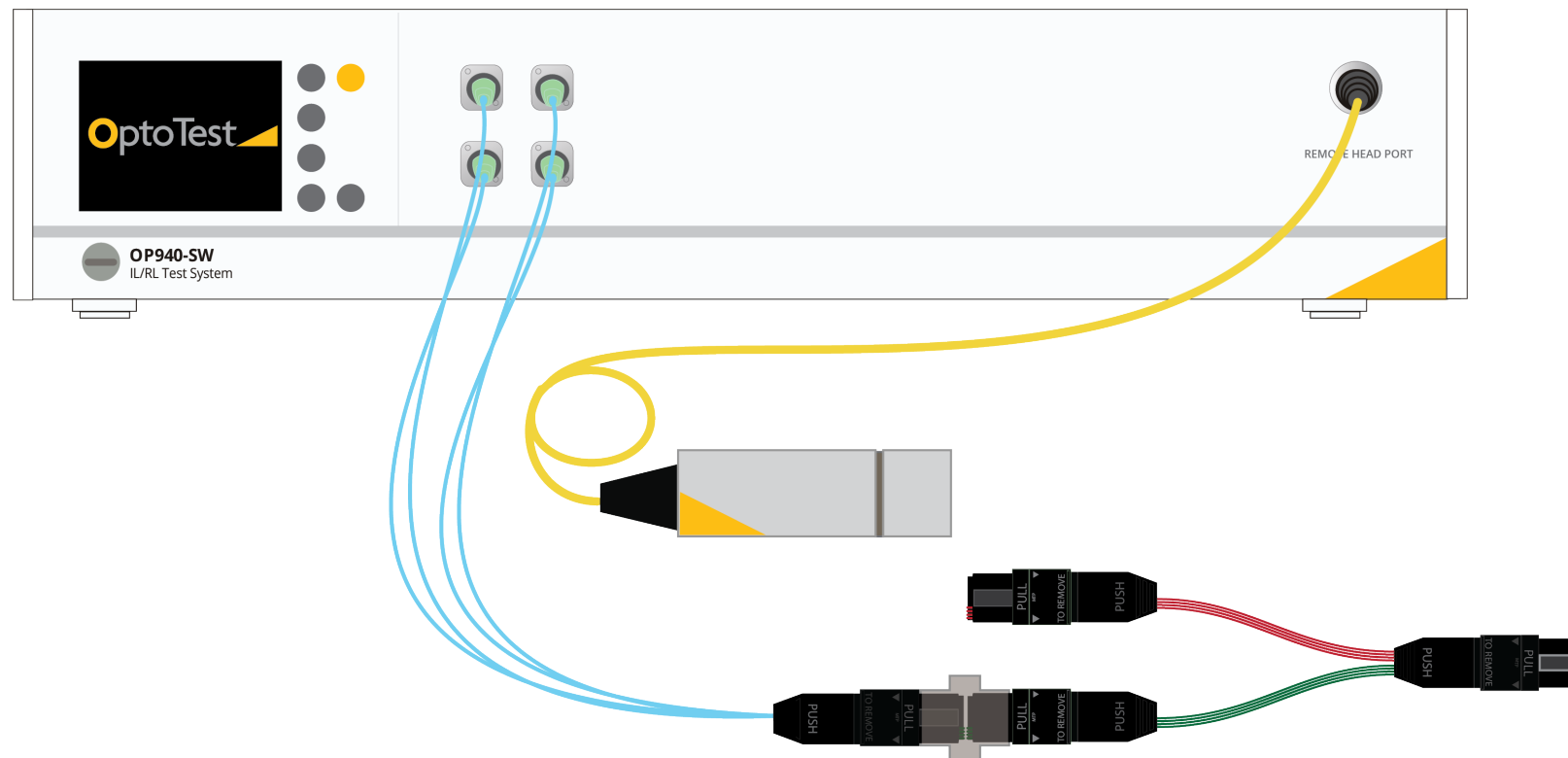
Cable Setup (Cont)

- Launch/Return cord



Testing Loopbacks (MTP)

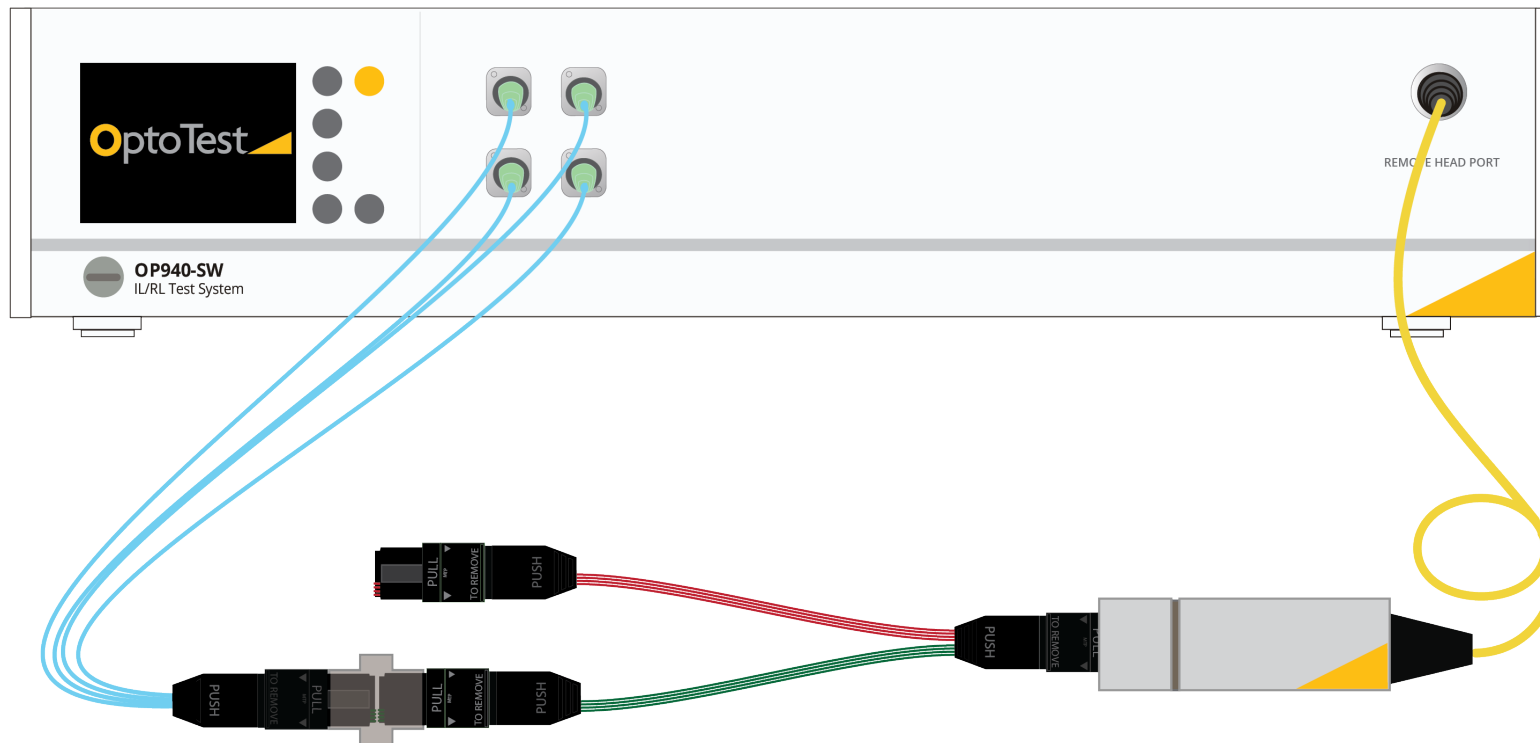
Equipment setup



Type A Adapter
Key-up/Key-down

Testing Loopbacks (MTP)

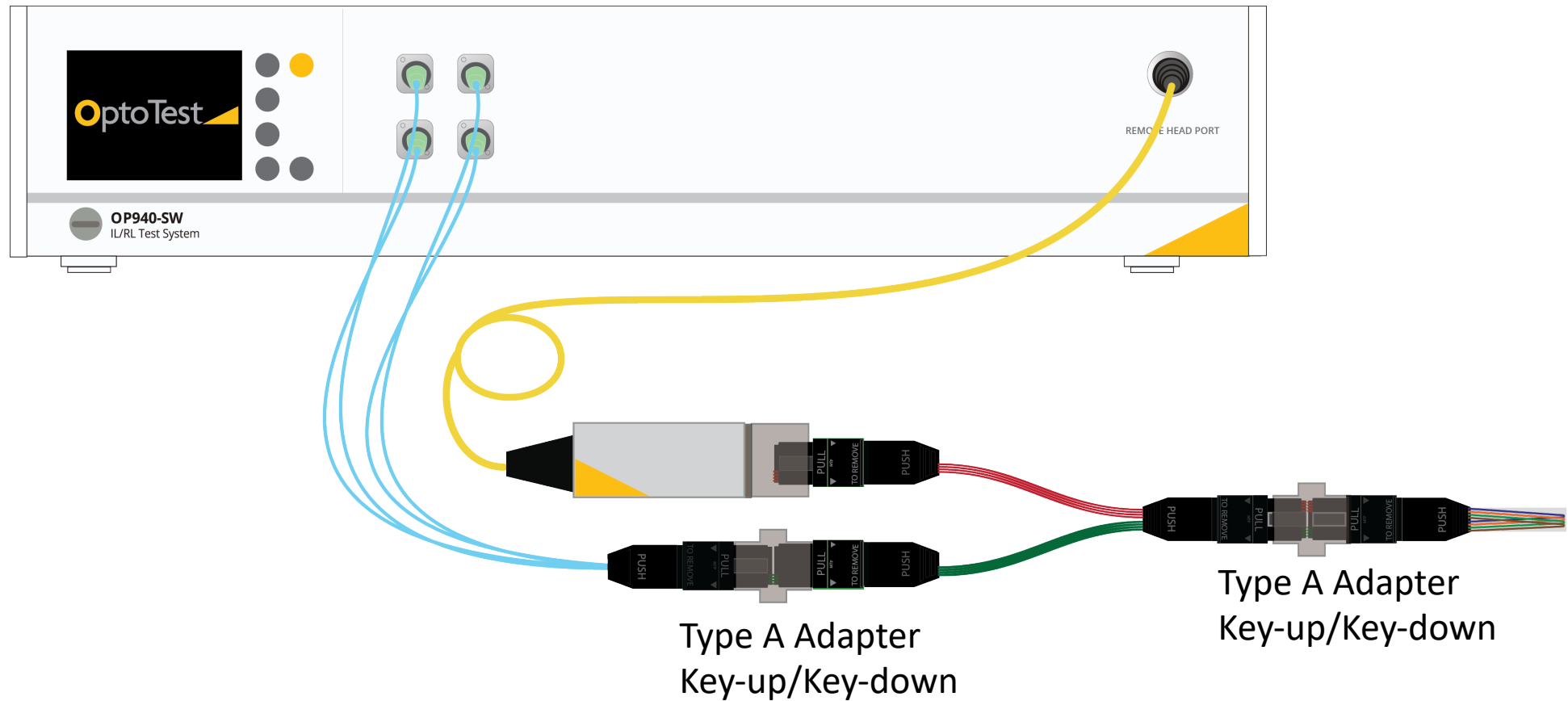
Referencing



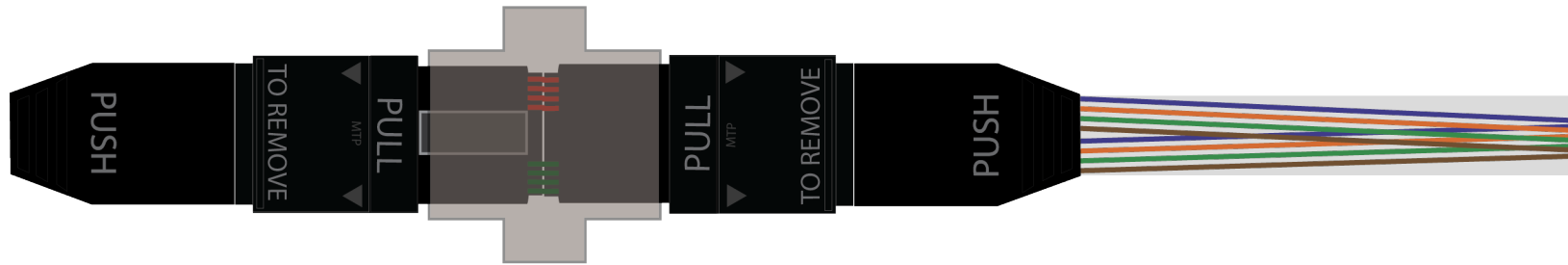
Type A Adapter
Key-up/Key-down

Testing Loopbacks (MTP)

Measurement



Measurement Results



Insertion loss

- This will be a combination of both connectors and whatever loss inside the loopback.

Return Loss

- Depending on length of fiber inside the loop back, this could be a combination of both interfaces.



www.OptoTest.com

1.805.987.1700