

AN-111

Measuring Insertion Loss / Return Loss on Hybrid Cables (OP930D)

Overview

Testing hybrid cables poses certain difficulties due to the ends having unlike connector types. Typically hybrid bulkheads/adapters are required (SC-FC, ST-FC, etc.) and many times they solve the problem with minor issues. However, in some circumstances hybrid bulkheads will not suffice.

When testing SC-LC cables, such an instance arises. SC-LC bulkheads have high loss and poor repeatability and as such, they should not be used in the testing process. Using an **OP930D** with two source ports and detector ports will resolve this issue.

Referencing

Reference Return Loss and Insertion Loss for Each Source Port

Prior to any referencing or testing, attach a 2.5 mm OPM adapter to detector ① and 1.25 mm OPM adapter to detector ②.

Connect the SC reference cable (FC/APC-SC/PC) to channel ① using the APC endface. Similarly, connect the LC reference cable (FC/APC-LC/PC) to channel ②. With the PC endfaces disconnected, reference return loss.

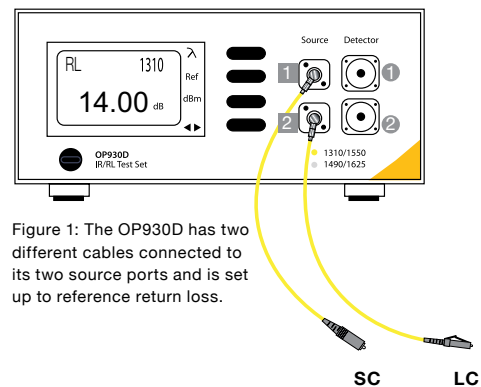


Figure 1: The OP930D has two different cables connected to its two source ports and is set up to reference return loss.

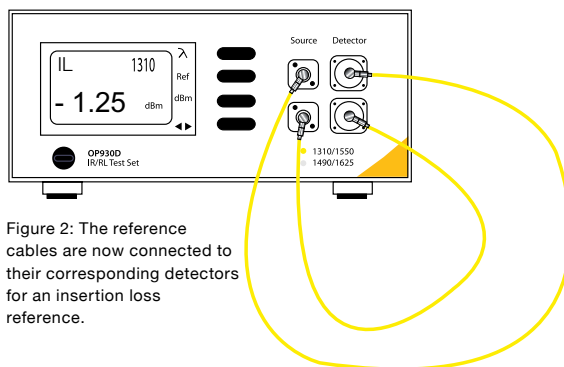


Figure 2: The reference cables are now connected to their corresponding detectors for an insertion loss reference.

Now attach the PC endfaces of both reference cables to their respective detector ports. You are now able to reference insertion loss.

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Testing the DUT

Change the 2.5 mm adapter on detector port ① with the 1.25 mm adapter (previously on detector port ②)

Connect the SC end of the DUT to the reference cable on channel ①

Input the LC side of the DUT into detector port ① to make measurements.

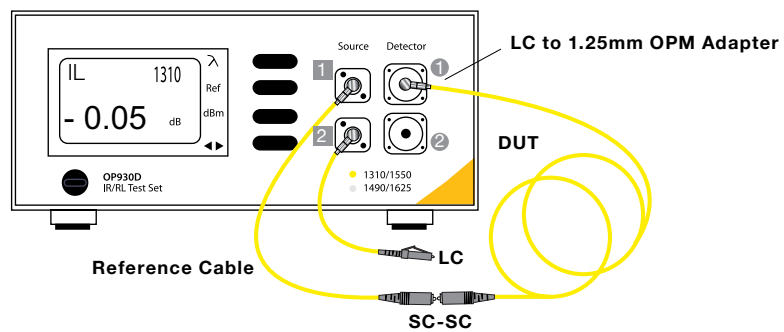


Figure 3: When testing the SC side of the DUT, connect the DUT to the reference cable on channel 1 and then to the top detector using a 1.25mm adapter.

To test the LC side of the DUT, connect the LC end to the reference cable on channel ②. Attach the 2.5 mm adapter on detector port ② and connect the SC end of the DUT into detector port ②.

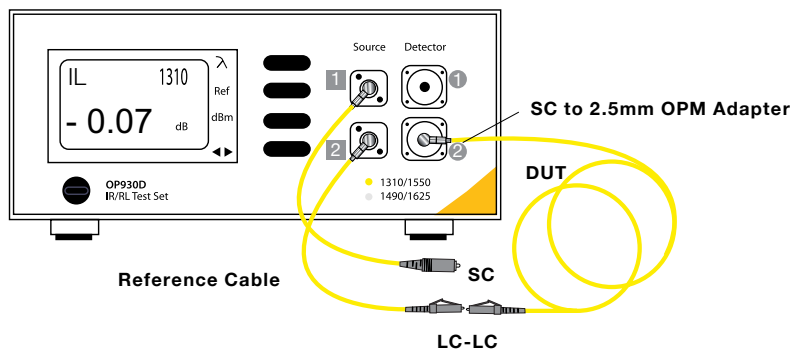


Figure 4: When testing the LC side of the DUT, connect the DUT to the reference cable on channel 2 and then to the top detector using a 2.5mm adapter.

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