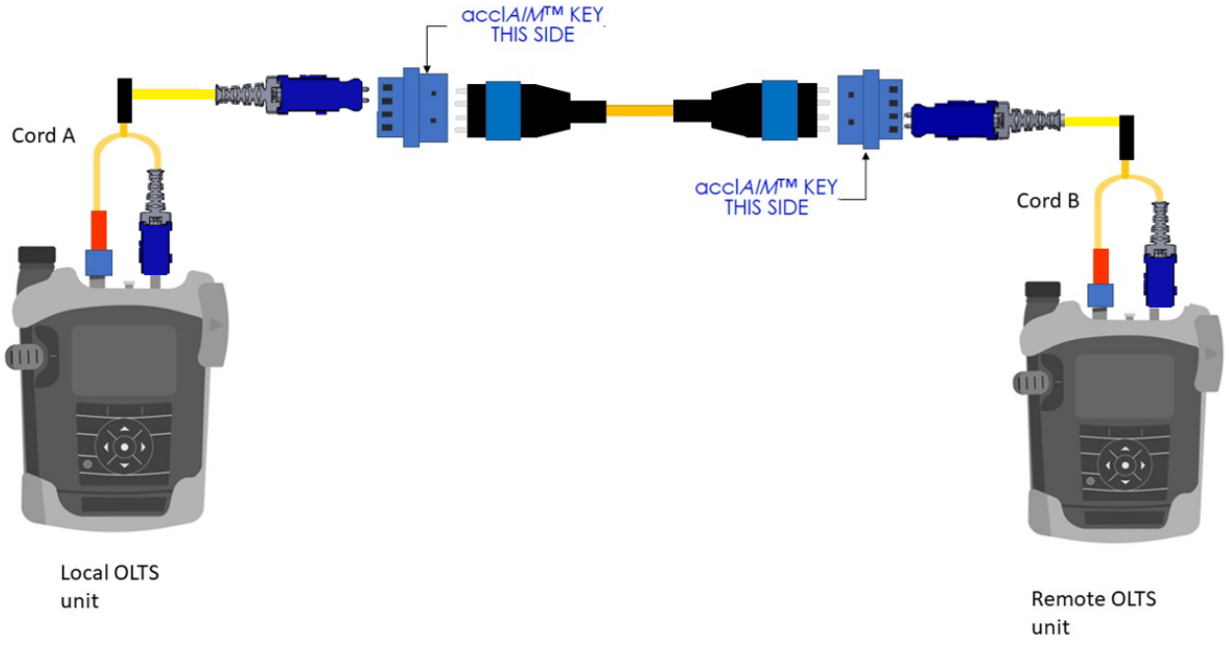


Available Video

A video that walks through the procedure described in this document is available at:

Legrand acclAIM™/VSFF one jumper tester solution

VSFF Connectors

The increasing demand for data to support streaming media and the increased usage of mobile broadband communications has resulted in dramatic advances in network switching infrastructure over the past 10 years. As a result, the VSFF connectors were created. The VSFF are very small form-factor duplex connectors utilizing LC ferrule technology. They are capable of doubling the density in a transceiver, switch, or patch panel as compared to LC. There are three VSFF connectors defined in the transceiver hardware specifications: CS, SN, and MDC. This document deals specifically with the SN connector, though other VSFF connectors can be tested similarly.

Testing and Inspection

It's very important to choose the correct tester, ensure the tester has been properly maintained and calibrated, as well as employ the proper setup for the tester. Failure to follow the guidance in this document can result in substandard performance of the cable plant and denial of warranty coverage.

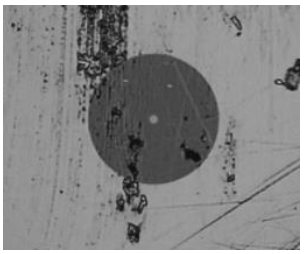
Before you Begin:

All connectors should be properly cleaned using an approved cleaning device. Refer to Appendix for recommended cleaning procedures. All connectors should be viewed with an inspection probe or patch cord microscope, preferably with pass/fail analysis in accordance with IEC 61300-3-35, low resolution method or better. The LC, FC, and/or SC connectors should be inspected prior to plugging them into any ports on the tester or into any couplers. All ferrules of SN and accl*AIM*™ connectors should be inspected either prior to plugging them into couplers or through the coupler after insertion (if an adapter/tip is available for the inspection probe that supports inspection of SN or accl*AIM*™ connectors inside the coupler). If no inspection is possible, take special care in the cleaning process. Only test reference cords (TRC) that are clean and free of defects should be used. Always clean connectors each time you are reconnecting to a new connector. TRCs should be left free of excessive bends or pinching during deployment.

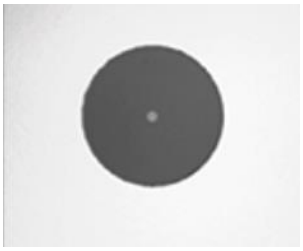
Cleaning Note: MDC cleaners are available from Senko under PN SCK-DC-SN. Although they include a guide cap for cleaning connector plugs, it is recommended to reserve the use of the SN cleaner to cleaning of pairs of ferrules in already-installed accl*AIM*™ connectors through a coupler if and only if they fail inspection. The OPTIPOP® connector reel cleaner is recommended for all other cleaning.

Inspection Note: All ferrules of SN and accl*AIM*™ connectors are 1.25mm ferrules and should be compatible with available universal 1.25mm ferrule adapters/tips for an inspection probe or patch cord microscope.

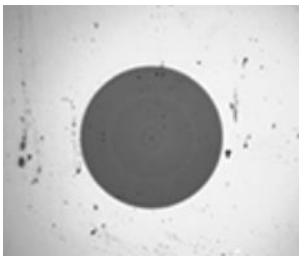
Tip: SN to SN couplers are available from Legrand under PN SN-TEST-ADPT-D and are included in S1J-TEST-KIT-OS2 and S1J-TEST-KIT-OM4 test kits (see Appendix). These couplers are dual-channel, so if an adapter/tip is available for the inspection probe that supports inspection of SN connectors inside the coupler, two SN connectors can be inspected side by side through the coupler.



Clean Again/Replace Cord

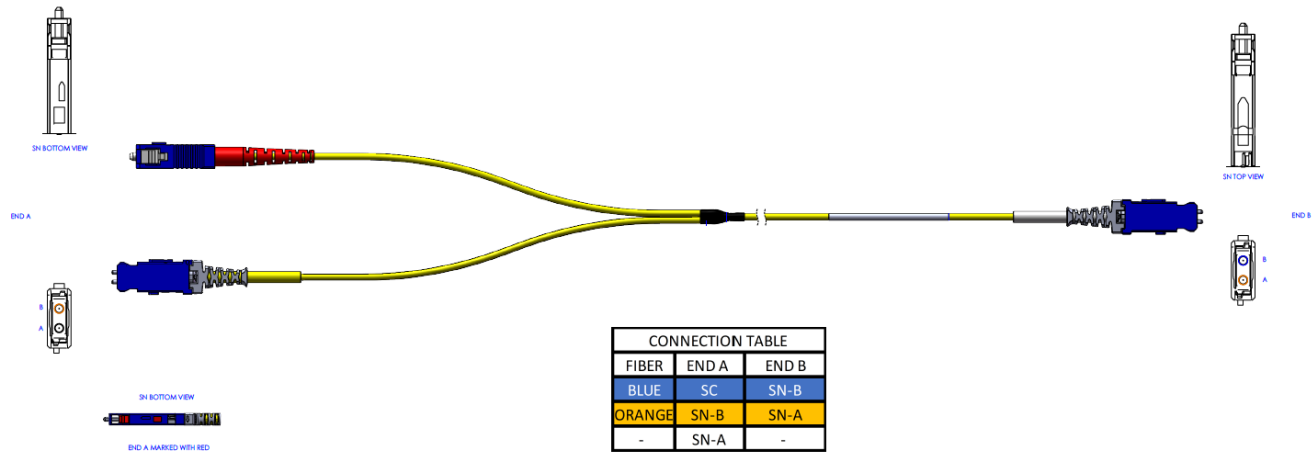


Acceptable



Clean Again

Note: Test reference cords (TRC) may vary depending on the manufacturer of the cords and/or tester. This document assumes the transmit side of each end of the tester is SC and the receive side is fitted with the SN adaptor so an SC to SN test reference cord is used. You can see the polarity and characteristics of our reference cord in Figure 1.



CONNECTION TABLE		
FIBER	END A	END B
BLUE	SC	SN-B
ORANGE	SN-B	SN-A
-	SN-A	-

Figure 1

Additionally, the exact process to reference the unit may vary. Please consult the tester manufacturer for guidance. For purposes of this diagram cords A and B are the same cord in each figure even though the drawn lengths differ. If your tester uses a transmit connector other than SC, the simplex end of the TRC will need to change accordingly. **See Appendix for available, supplemental Legrand Test Kits and Test Reference Cords.**

Step 1: Connect the SC TRC connector (Cord A and Cord B) to the local and remote OLTS units directly as shown in Figure 1a.

Then proceed to connect the far end SN from the remote unit and plug it into the receiver of the local unit (Cord B). Now we are going to connect the far end SN of the Cord A and connect it to the receiver of the remote unit. As shown in Figure 1b.

Local and Remote units will typically beep to indicate that the units are connected to each other. A purple icon in the upper right may display. You can set the reference pressing the icon or you can go to the main menu and set the reference from there. **After this step, if the SC connector is ever removed from the transmit side (Local OLTS unit) of the tester, then the referencing process must be started over from step 1.**

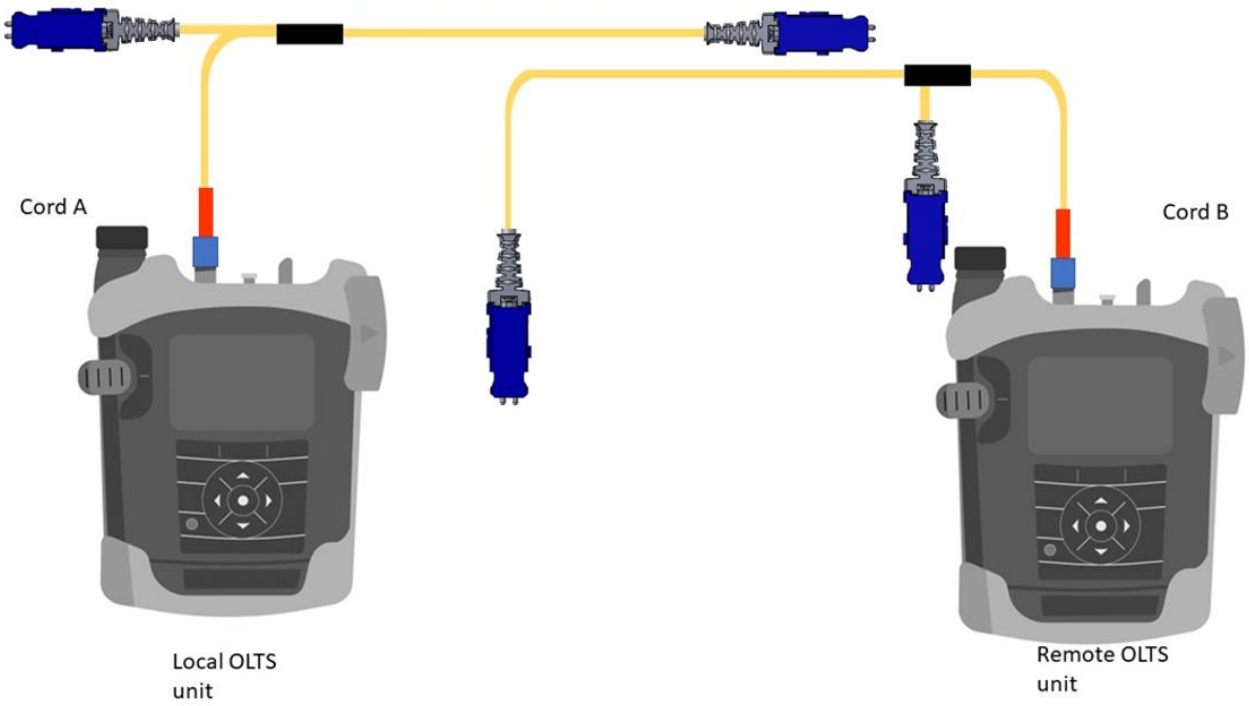


Figure 1a

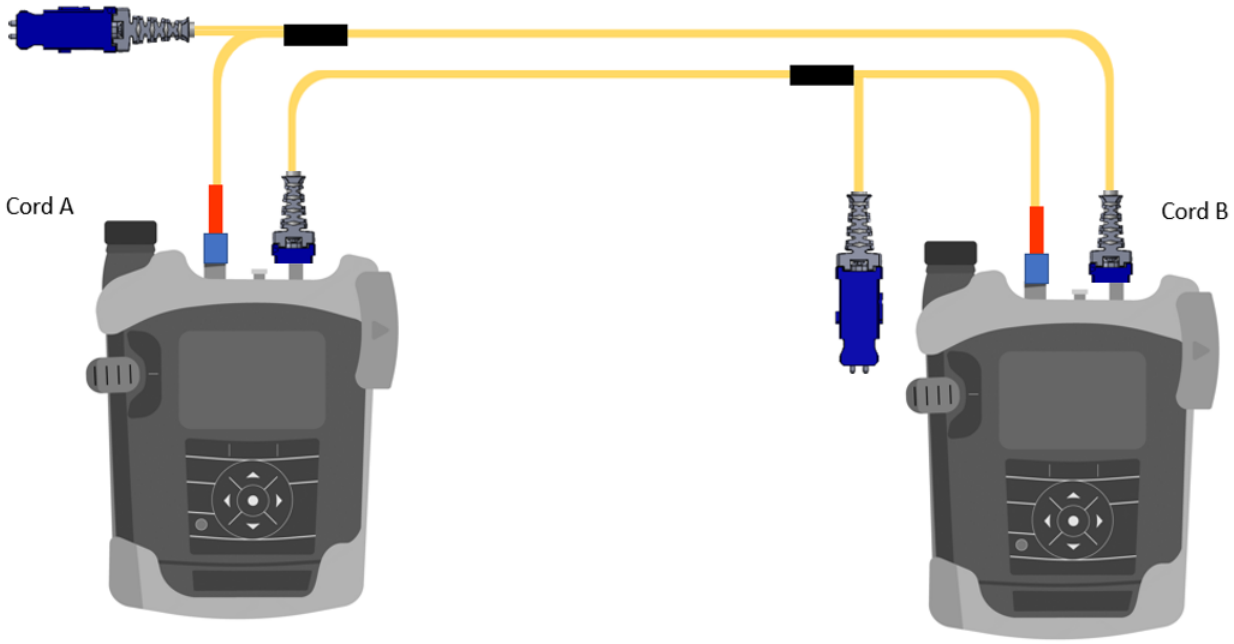


Figure 1b

Step 2: Disconnect the receive side (SN) from both the main and remote units as shown in Figure 2a.

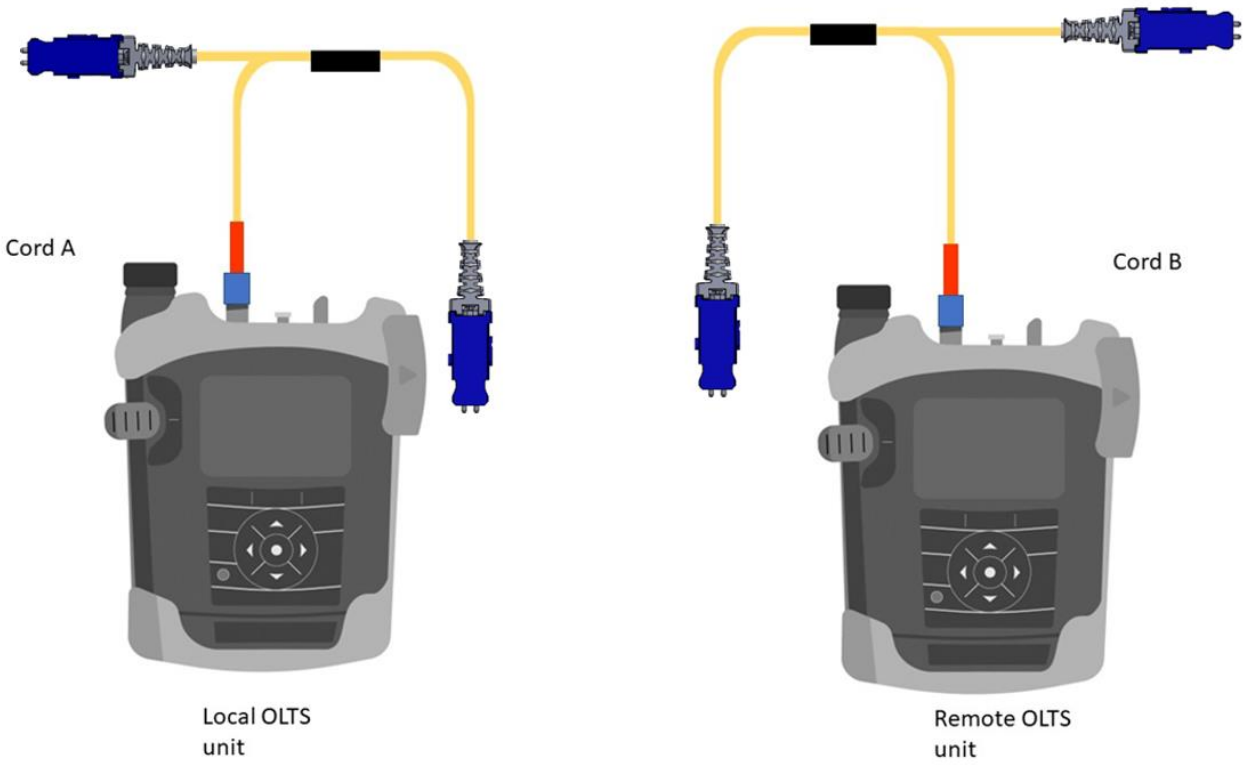


Figure 2a

Perform a polarity reversal on **only one** SN far end Breakout to achieve the correct polarity (A to B polarity). In this example we are going to do a polarity reversal on Cord B. Reconnect the units as shown in Figure 2b connecting both SN far ends of Cord A and Cord B using an SN coupler.

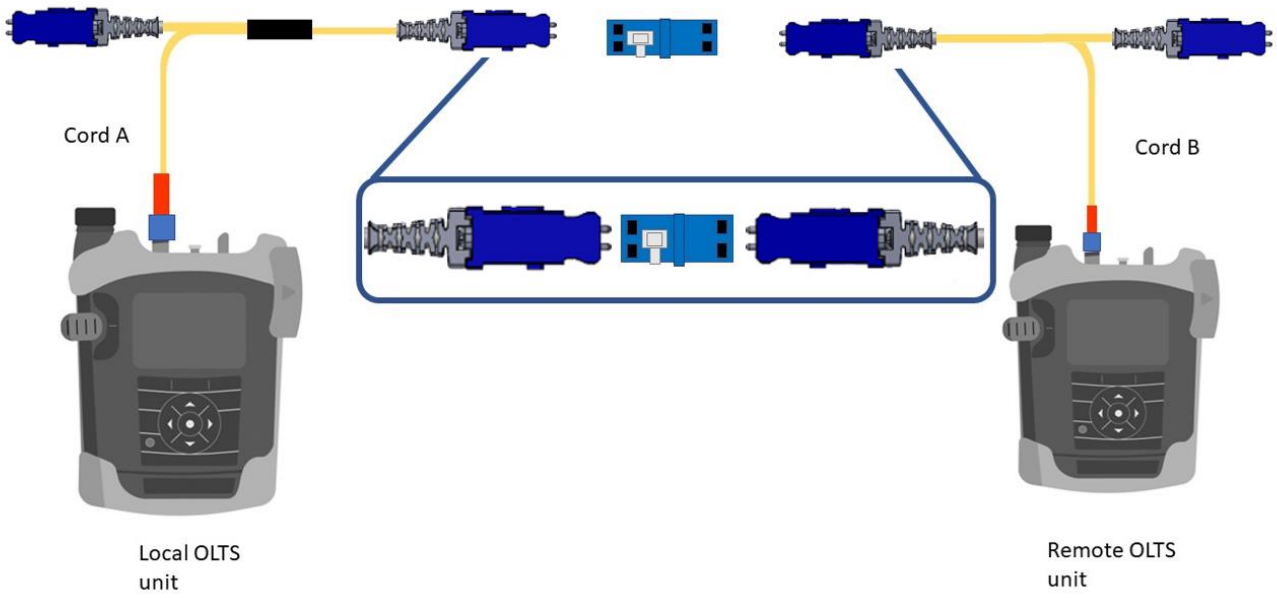


Figure 2b

Finally, proceed to perform a Reference Verification to ensure that our reference was set correctly. To do this, connect the near SN of Cord A and Cord B to the receiver of the local and remote unit, as shown in Figure 2c. Once the units are connected press the Auto Test button that appears on the screen of either the local or remote unit.

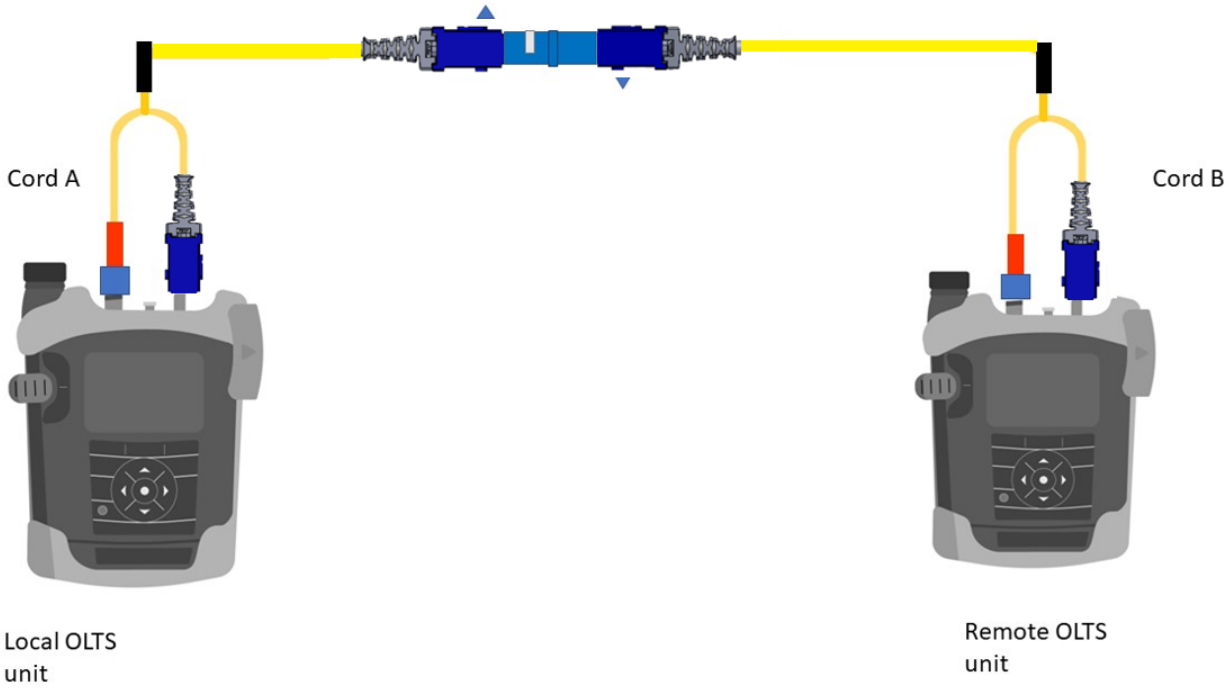


Figure 2c

Result should be 0.15 dB* or less for multimode fiber and 0.25 dB* or less for single-mode fiber. A low loss value is required to ensure that the test cords are in good condition and that reference was successfully set. After setting reference we can test our accl*AIM*™ (DUT).

**0.15 dB for multimode fiber and 0.25 dB for single-mode are suggested pass/fail limits. If the cabling standard or application standard that you are testing to requires a lower limit for test cord-to-test cord loss allowance (e.g., 0.10 dB for multimode fiber and 0.20 dB for single-mode), that limit should be applied.*

.

Step 3: Proceed to disconnect the far end SNs from the coupler. Reverse the polarity of Cord B to achieve the correct polarity (Type C polarity). Connect each SN to the accl*AIM*™ coupler. Connect the accl*AIM*™ to the coupler accl*AIM*™ coupler as well. Be mindful to set the SN in the same fiber on each side, as shown in Figure 3. Once everything is connected you can press the Auto Test button that appears on the screen, to test our DUT.

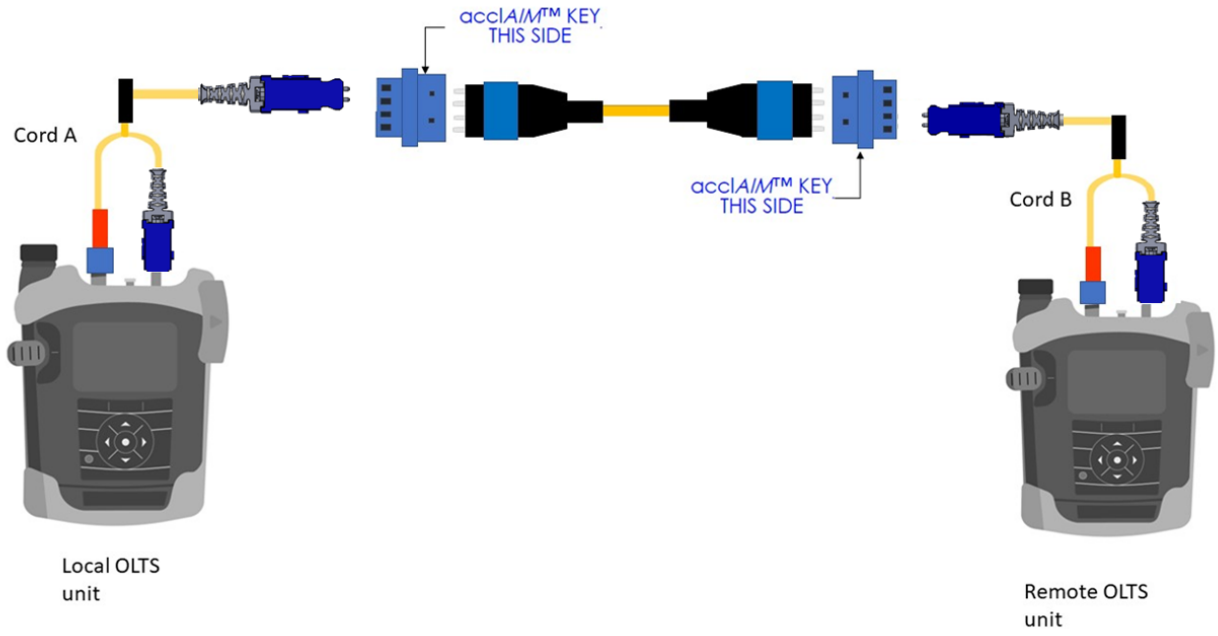


Figure 3

When testing, please consider the following:

- If the SC connector is removed from the transmit port, the unit ***must*** be re-referenced (step 1).
- If the unit is powered down, perform the TRC verification step as shown in step 4 and ensure the values are 0.15 dB or less for multimode fiber and 0.25 dB or less for single-mode.
- At least once per every 300 tests, perform the TRC verification step shown in step 4 and ensure the values are still 0.15 dB or less for multimode fiber and 0.25 dB or less for single-mode.
- It is a critical step to get the loss in the TRC verification in step 3 as low as possible before performing the last reference step (0.15 dB or less for multimode fiber and 0.25 dB or less for single-mode). Take special care during this step to ensure there are no sharp bends and the connectors are as clean as possible.

- If a negative loss is observed in this step, plug the test jumper directly into the detector and test. If this test value is substantially negative (less than -0.02dB), then re-perform the reference in step 2 and TRC verification in step 3. If the negative losses persist, perform the entire referencing process from step 1 again. For low-loss installed cabling, especially on shorter cabling, it is nevertheless possible for slight negative losses to persist in the final measurement due to various sources of measurement uncertainty.

- Consult with the tester manufacturer for more specific guidance.

See Legrand's approved tester list for specific warranty requirements if applying for the applications assurance warranty.

APPENDIX

Available Legrand Test Kits and Test Reference Cords

Legrand accl*AIM* / SN Test Kits

Part Number	Description
Single-mode OS2: S1J-TEST-KIT-OS2 *Contents:*	
SCSN-SN-TRC-OS2	SC-MDC OS2 – MDC Test reference cord OS2 (2x)
SN-TEST-ADPT-D	MDC dual-channel blue feedthrough adapter
71602042	Legrand accl*AIM*/SN Field Testing, Cleaning, & Inspection Reference

Multimode OM4 Kit: S1J-TEST-KIT-OM4 *Contents:*	
FCSN-SN-TRC-OM4	FC-MDC OM4 – SN Test reference cord OM4 (2x)
SN-TEST-ADPT-D	Aqua dual-channel blue feedthrough adapter
71602042	Legrand accl*AIM*/SN Field Testing, Cleaning, & Inspection Reference

Additional Legrand Test Reference Cords

Part Number	Description
L4-3035N2QY11002M	SC-LC Simplex, OS2 2-meter Test Reference Cord
L4-3535N2QY11002M	LC-LC Simplex, OS2 2-meter Test Reference Cord
L4-0101N2EA11002M	LC-LC Simplex, OM4 2-meter Test Reference Cord

All components are available for individual sale or as replacement.

Note: All OM4 cords are appropriate for use with OM3 / OM4 / OM5 cabling

Introductory Cleaning Instructions

Senko One-Click Duplex SN Cleaner | OPTIPOP® Fiber Optic Cassette Cleaning Tool

Safety Precautions

- Though our device is deemed safe, improper usage or handling can still inflict injury to others.
- One-Click Duplex SN Cleaner is designed to clean SN connectors. Neither Senko nor Legrand are liable for damage caused in attempt to apply this device to other applications.
- OPTIPOP® Fiber Optic Cassette Cleaning Tool is designed for multiple connector types. Neither US Conec nor Legrand are liable for damage caused in attempts to apply this device to other applications.
- Review all tool / device instructions provided by Senko before use.

1. Notes on Usage

- *Although the One-Click Duplex SN Cleaner includes a guide cap for cleaning connector plugs, it is recommended to reserve the use of this cleaner to cleaning of pairs of ferrules in installed acclAIM connectors through a coupler if and only if they fail inspection during preparation for testing of the installed cable plant.*
- Do not attempt to disassemble as this can cause damage to the device and void the warranty.
- Do not re-use cleaning cloth as this will eliminate its cleaning ability and void warranty.
- Do not touch the cleaning cloth as this will cause contamination.
- Do not pull the cleaning cloth, use only the device body.
- Do not use this cleaner when the cloth is empty, as this can cause damage to the connector.

Cleaning Tools

Legrand P/N	Senko P/N	NTT -AT P/N	Description
-	SCK-DC-SN	-	One-Click Duplex SN Cleaner
-	6338	ATC -RE-01	OPTIPOP® Fiber Optic Cassette Cleaning Tool (Single Slot - No Label)

Cleaning Instructions

For One-Click Duplex SN Cleaner to the user manual:
https://www.senko.com/product/one-click-duplex-sn-end-face-cleaner-2/

For OPTIPOP® Fiber Optic Cassette Cleaning Tool refer to special instructions located on the next page

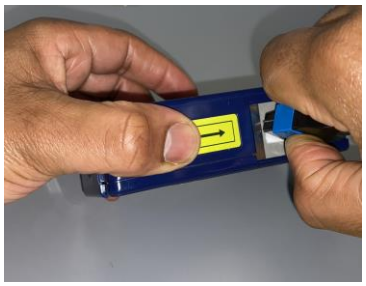
How to Clean Infinium accl*AIM* and MDC Connectors

Step 1:
Open the shutter by gripping the lever. The shutter will open and a new section of cleaning tape will be available.

Step 2:
Depress the ferrules flat onto the cleaning tape using the same pressure as a writing pen, ensuring all ferrules are in contact with the tape. For accl*AIM* connectors, rotate the connector to a 15°angle. Move the connector from left to right. Ensure all ferrules travel in a non-overlapping path.

SN Connector

Step 3:
Release the lever to close shutter



accl*AIM* Connector

Caution!

- Only use OPTIPOP® R refills manufactured by NTT-Advanced Technology. Failure to use NTT- Advanced Technology manufactured replacement refills may void the warranty.
- DO NOT reuse cleaning tape as this may cause cross contamination and cause permanent damage.
- A new refill is needed when the lever becomes difficult to depress.
- Do not leave the cassette in temperatures exceeding 60°C/140°F for extended periods.
- OPTIPOP® R cassettes are warranted for manufacturer and material defects only. Abusive, neglect or use for unintended purposes are not covered in the warranty.