Field-testing procedure

Summary

Optical fibre cabling sub-system

16/04/2025 - V 6.0

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1. Introduction

1.1. About this document

This document provides a summary of our complete testing procedure. Please follow all the requirements outlined in the full and detailed procedure available here.

1.2. International Standards for fibre testing in customer premises

This document specifies the procedure for field-testing the transmission performance of AGINODE installed optical fibres links in premises.

Testing against ISO/IEC 14763-3:2024 ED3 is now mandated for Aginode warranty certification.

1.3. Summary of the updated AGINODE testing procedure

Aginode will accept testing performed according to the following rules

- Test equipment
  - LSPM (Light Source & Power Meter)
  - OTDR (Optical Time Domain Reflectometer)
- Direction of measurement
  - LSPM: Uni-directional measurement
  - **OTDR: Bi-directional measurement required**
- LSPM test method
  - Loss test limits are as per ISO/IEC 14763-3:2024 ED3, using 'reference grade' test cords
  - Attenuation shall **only** be measured using the one-cord reference method

The 2-cord and the 3-cord reference method (LSPM testing) are not supported by Aginode.

The visual inspection of the polished end faces of the connectors for dirt and dust must be done prior to perform any test.

Aginode OF inspection and cleaning guide can be downloaded here

1.4. Additional information

Should you need additional information or have any question regarding OF testing or the content of this document you can send an email to didier.willems@aginode.net.

2. LSPM testing - general information

2.1. Acceptable link loss calculation

The measured value of attenuation of a FO link should not exceed the sum of allowable attenuation of each component of the link.

Those components are the

- Cable
- Connector terminations
- Splices (if any)

The specifications within the ISO 11801 Standard are representative of the following formulas

Link loss (dB) = Cable loss + Connectors loss + Splices loss

Cable loss (dB) = Cable length (km) **X** Loss coefficient (dB/km) ***

Connector loss (dB) = number of connector pairs **X** connector loss (dB) ****

Splice loss = number of splices **X** splice loss (dB) ***

***: from chapter 2.3 – Common attenuation limits*

****: from chapter 2.4 and 2.5 – Connector attenuation limits*

The **Cable length** shall be optically measured or calculated using cable sheath length markings. (refer also to Chapter 8.6)

2.2. Common limits

Figures for fibre and splices are the same for both 11801 and 14763-3 Standards.

Attenuation criteria for the fibres

Optical Fibre type	Loss/km		
	850 nm	1310 nm	1550 nm
	(in dB)		
Multimode 50 µm (OM3, OM4, OM5)	3.5	1.5	NA
Singlemode (OS2)	NA	0.4	0.4

Attenuation criteria for the splices

Optical Fibre type	Splice Loss
	(in dB)
Multimode 50 µm (OM3, OM4, OM5)	0.3
Singlemode (OS2)	0.3

2.3. Connector loss limits according to ISO 14763-3:2024

Reference grade test cords shall be used.

Note: These test cords are supplied by the tester manufacturer of the testing tool.

Important Notes

- ***The use of standard grade cord (including Aginode cords) as test cords is not accepted.***

During the initial setup of the tester **ISO 14763-3:2024** shall be selected as the Standard to be considered to perform the analysis of the test results.

Different insertion loss limit values must be used depending on the quality of the two mated connectors.

Attenuation criteria for the connectors (ISO 14763-3:2024)

Mode	Connector type	Test limits	
		Reference connector to reference connector	Reference connector to standard grade connector
Multimode	SC/LC	0.10 dB	0.45 dB
	MPO 12 & 16	0.15 dB	0.45 dB
Singlemode	SC/LC	0.20 dB	0.70 dB
	MPO 12 & 16	0.35 dB	0.70 dB

Test cords are terminated with 'reference quality' connectors (plugs) whereas connectors (plugs) in the link under test have less tight performance characteristics

➔ **The loss limit is set to**

- **0.45 dB for MM connectors**
- **0.7 dB for SM connector**

For all types of connectors single fibre an multi fibre

2.4. Insertion Loss of MTP/LC modules

A specific rule has to be applied when testing MTP/LC module: the total loss of one cassette has to be lower than

- **0.45 dB for MM MTP/LC modules**
- **0.7 dB for SM MTP/LC modules**

These limits are valid

- for the whole module (MTP connector + LC connector)
- for testing performed with reference test cords

When testing MTP Aginode OF links connected to MTP/LC modules

- always set the tester to test against ISO 14763-3:2024 limits
- Set the number of connectors to 2 and the number of splices to 0

  ➔ This will set the loss limit to

  - 0.9 dB (2x 0.45) + the loss of the fibre (MM modules)
  - 1.4 dB (2x 0.70) + the loss of the fibre (SM modules)

Note

MTP is a registered trademark of US Conec and therefore identifies a specific brand of the MPO-style connector.
The MTP connector is a high performance MPO connector engineered for better mechanical and optical performance.
Most MPO Aginode products are equipped with MTP® connectors to ensure enhanced performance.

2.5. Insertion Loss testing methodologies

2.5.1. The "One-Cord" Reference method

Derived from IEC 61280-4-1 and IEC 61280-4-2, the following method has been adapted specifically in support of ISO/IEC 11801-1 for attenuation measurements with an LSPM

Important Note

OF links and the LSPM tester have matching connectors or if the tester is equipped with interchangeable adaptor (SC, LC)

Example: Fluke CertiFiber Pro Multimode OLTS Modules (DSX-5000/8000)

Aginode require working with this type of LSPM Test equipment.

2.5.2. "Two-Cord" and 'Three cord" Reference methods

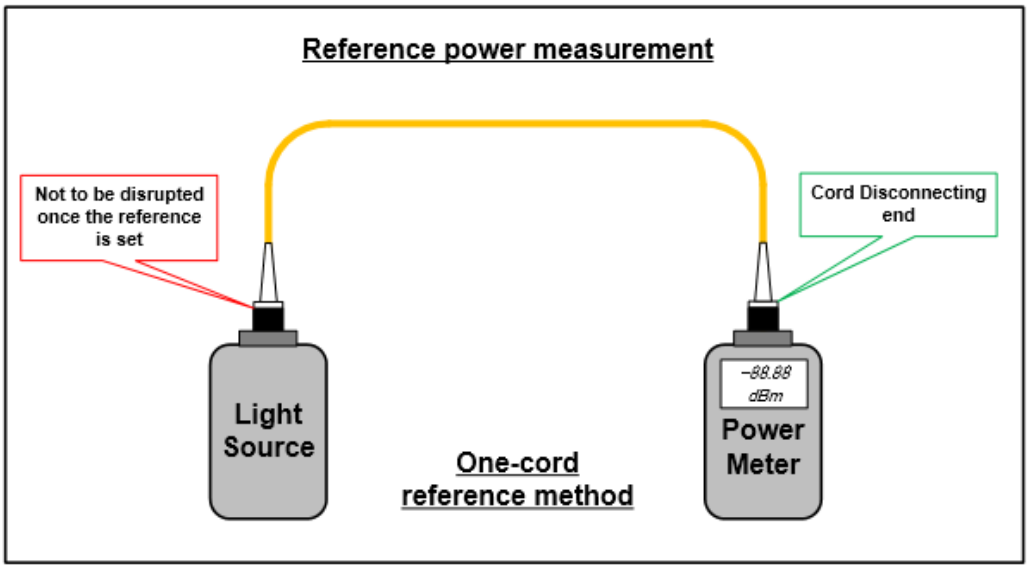
The two-cord and the three-cord methods are not compliant with ISO14763-3 and not supported by AGINODE because the results obtained are liable to be less accurate.

3. LSPM testing procedures

3.1. "One-Cord" Reference method - Single fibre measurement

This procedure must be used when fibres have to be tested one at a time.

Step 1: Reference – P1 measurement



- Clean all fibre connections
  - Dirt is harmful to connector and causes loss, which affect measurements
  - Always cover the connectors with a protection cap when not in use

Aginode OF inspection and cleaning guide can be downloaded here

- During the setup of the test tool
  - select the Standard to be applied (ISO14763-3:2024)
  - set the number of connectors and of splices
  - Set the refractive index of the fibre (See 4.2)
  - Set the method (one-cord reference)
- Power Meter: Select the dBm range (if needed)
- Source: Select the wavelength (if needed)
  - 850 nm and 1300 nm for multimode loss test set
  - 1310 nm and 1550 nm for singlemode loss test set
- For both wavelengths, measure the power at the power meter
- These values (**P1$_{\lambda 1}$ & P1$_{\lambda 2}$** - reference test) shall be automatically recorded by the Tester:

- These are now your two reference power levels for your loss measurements in the next work session

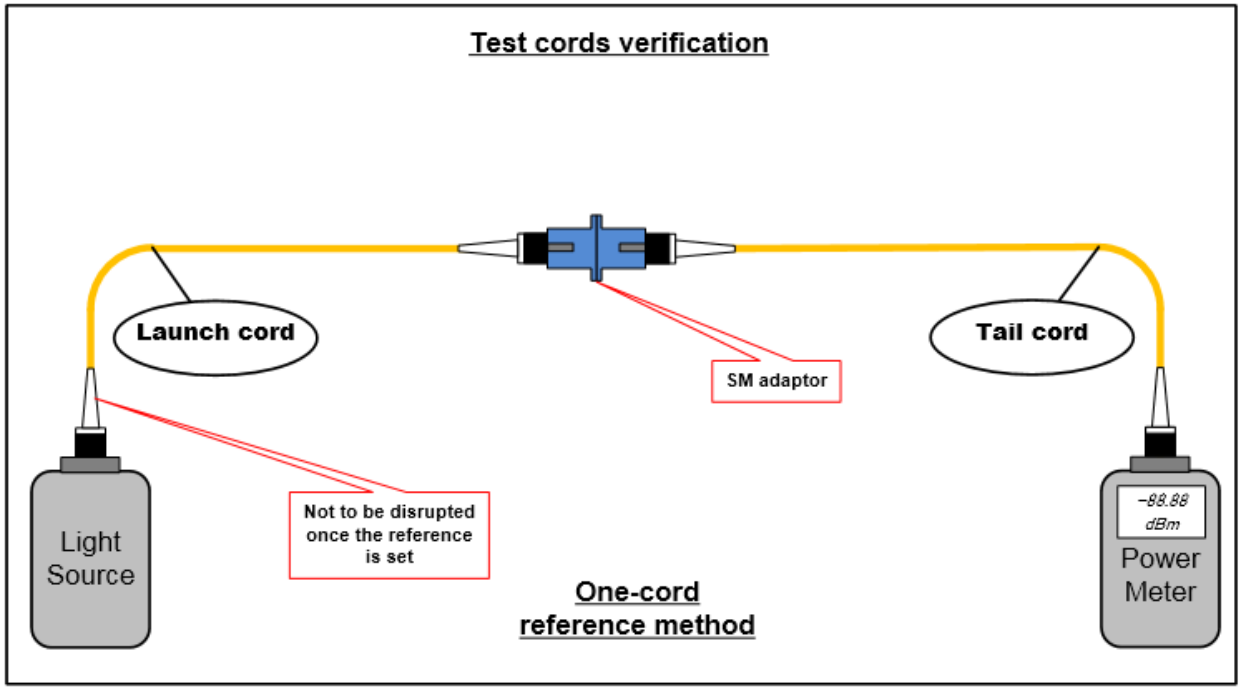
Important Note

The power meter connections, the link connectors and the launch cord free-end connectors shall match. If not, it will not be possible to use to this method.

Aginode require to only use test equipment with inter-changeable adapter (LC or SC) to always enable the use of the One-cord reference method

Step 2: Control – Test cords verification

Prior to starting link testing the two cords (launch and receive/tail) need to be connected together and tested in order to demonstrate the quality of the cords and the correct measurement of the reference.



A singlemode adaptor shall be selected to connect the two cords together.

This control has to be performed every time the reference is re-established (several times a day).

Each test cord measurement performed during the testing of the fibre sub-system of the cabling shall be recorded.

The result should be

- < 0.15 dB when using MM reference grade cords
- < 0.25 dB when using SM reference grade cords

If these values are not obtained, redo the inspection and cleaning procedure for all the connectors on the two cords and re-establish the reference.

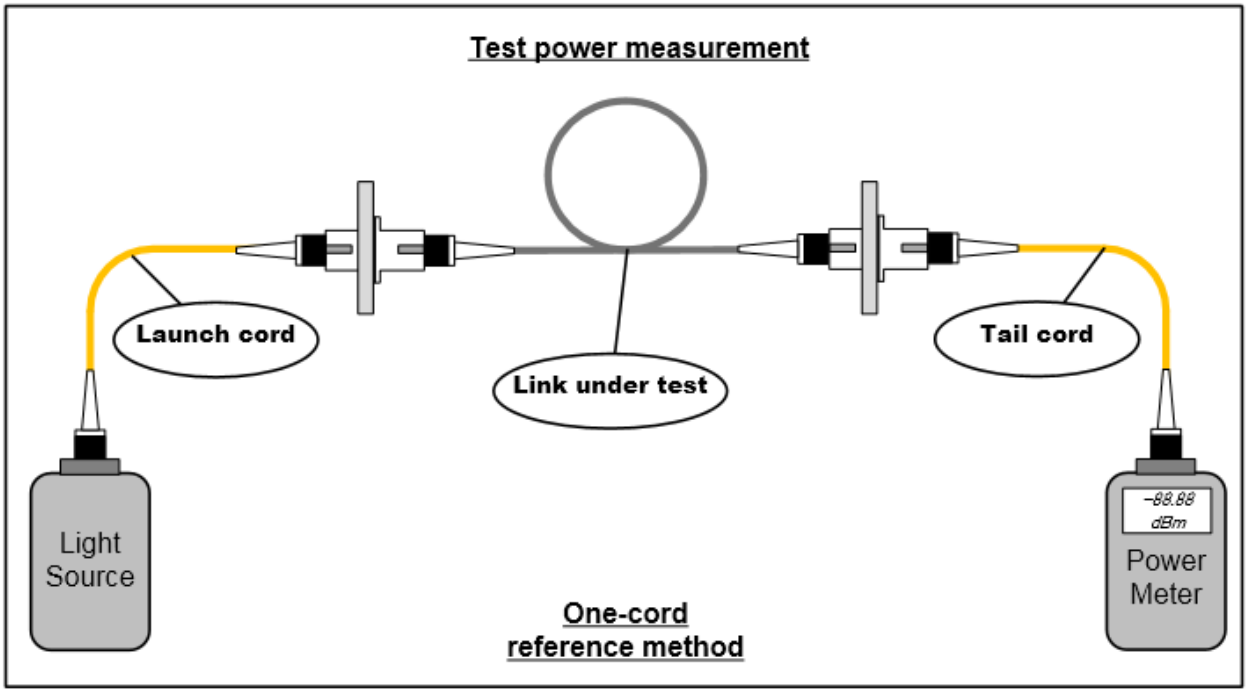
0.0 dB loss is acceptable but negative loss results (gain) are not acceptable.

Failed tests shall not be recorded.

Important Note

Test results submitted without these test cord measurements or with failed measurements cannot be accepted for warranty certification.

Step 3: Test – P2 measurement

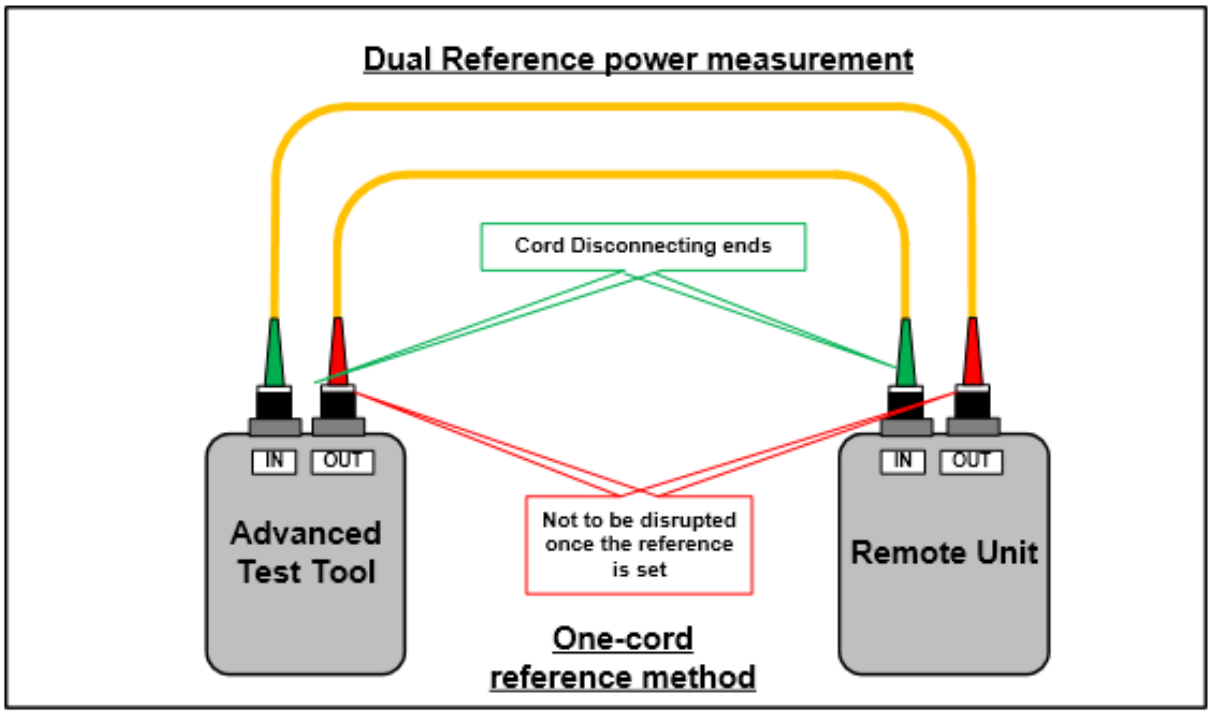


- Move the remote unit to the far end of the link
- Clean all free end connectors
- Connect the free ends of the cords to the terminations of the link on both sides
- Perform the test – run the autotest
- Check the result:
  - Pass: check the loss and margin for discrepancies
  - Fail: see troubleshooting chapter 7
- Save the test results
- Repeat from step 3 for all the fibre pairs of the link

3.2. "One-Cord" Reference method - Dual fibre measurement

This procedure must be used when testing with dual optical loss certification tools. Using a dual-fibre loss test set, fibres are tested two at a time.

Step 1: Reference – P1 measurement



- Clean all fibre connections
  - Dirt is harmful to connector and causes loss, which affect measurements
  - Always cover the connectors with a protection cap when not in use

Aginode OF inspection and cleaning guide can be downloaded here

- During the setup of the test tool
  - select the Standard to be applied (ISO14763-3:2024)
  - set the number of connectors and of splices
  - Set the refractive index of the fibre (See 4.2)
  - Set the method (one-cord reference)
- Power Meter: Select the dBm range (if needed)
- Source: Select the wavelength (if needed)
  - 850 nm and 1300 nm for multimode loss test set
  - 1310 nm and 1550 nm for singlemode loss test set

- For both wavelengths, measure the power at the power meter
- These values (**P1$_{\lambda 1}$ & P1$_{\lambda 2}$** - reference test) shall be automatically recorded by the Tester:
  - These are now your two reference power levels for your loss measurements in the next work session

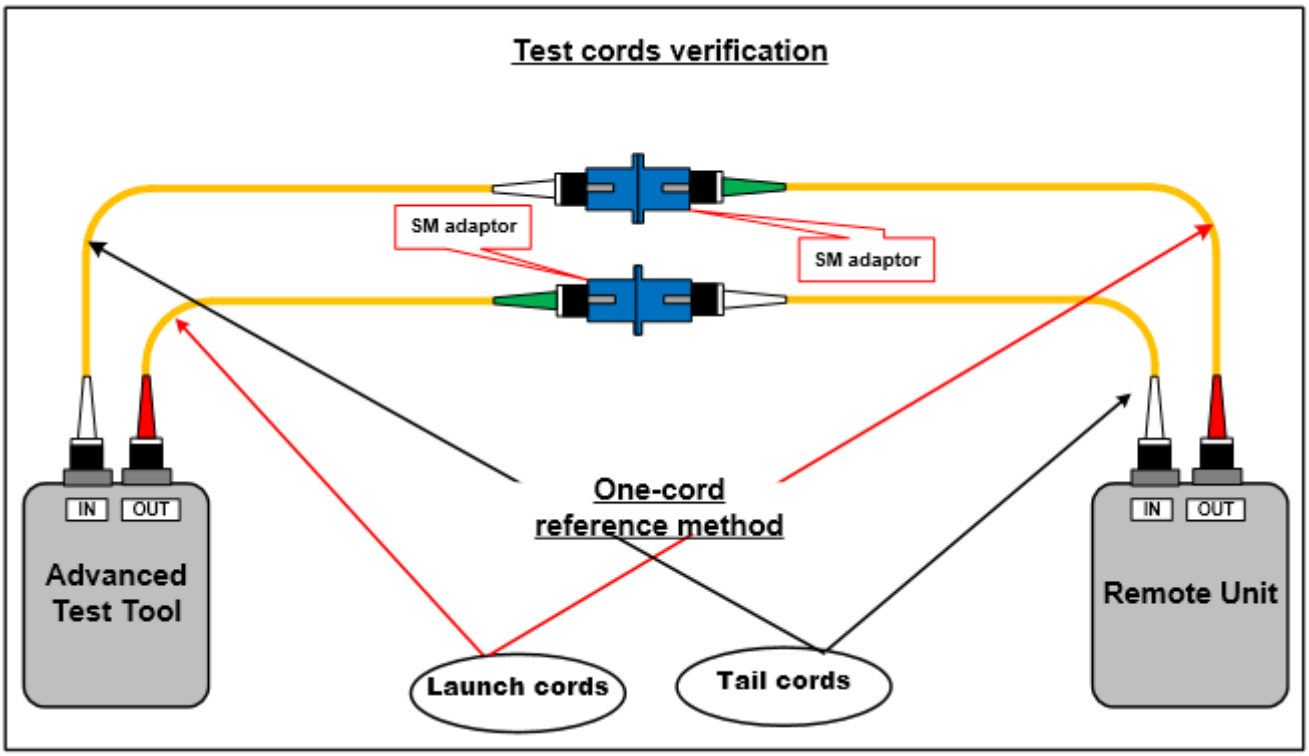
Important Note

The power meter connections, the link connectors and the launch cord free-end connectors shall match. If not, it will not be possible to use to this method.

Aginode require to only use test equipment with inter-changeable adapter to always enable the use of the One-cord reference method

Step 2: Control – Test cords verification

Prior to starting link testing the two cords (launch and receive) need to be connected together and tested in order to demonstrate the quality of the cords and the correct measurement of the reference.



A singlemode adaptor shall be selected to connect the two cords together.

This control must be performed every time the reference is re-established (several times a day).

Each test cord measurement performed during the testing of the fibre sub-system of the cabling shall be recorded.

The result should be

- < 0.15 dB when using MM reference grade cords
- < 0.25 dB when using SM reference grade cords

If these values are not obtained, redo the inspection and cleaning procedure for all the connectors on the two cords and re-establish the reference.

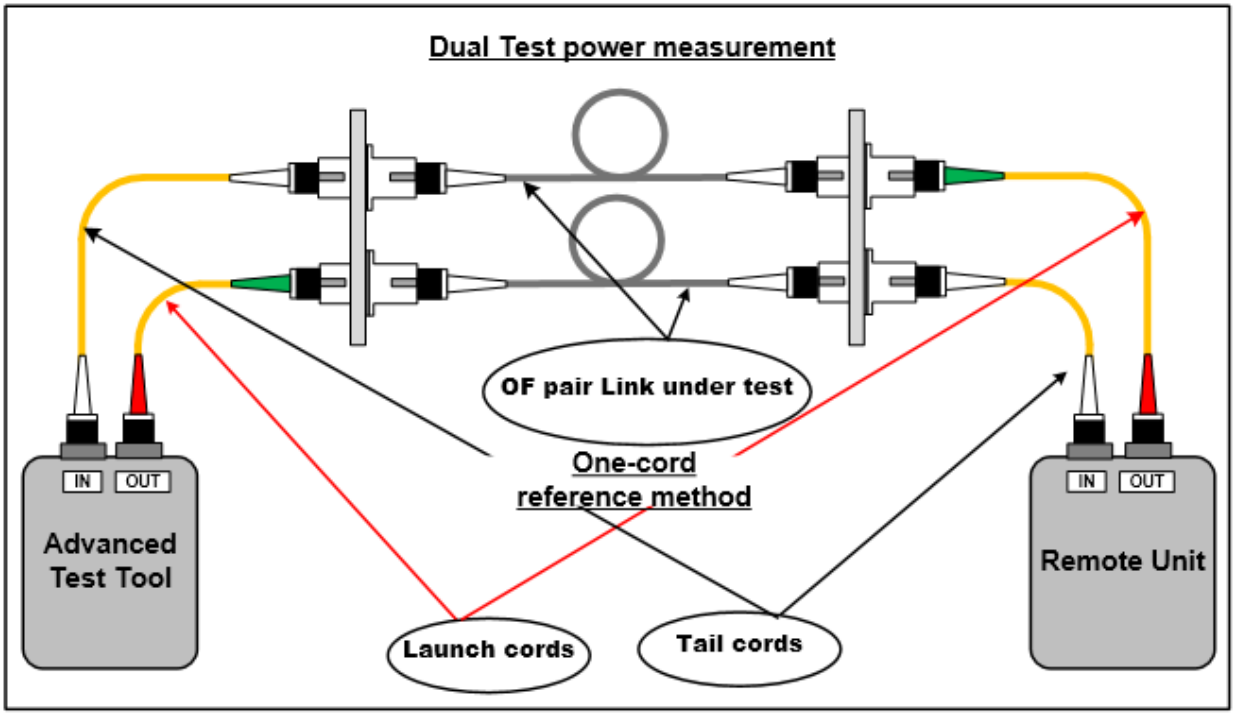
0.0 dB loss is acceptable but negative loss results (gain) are not acceptable.

Failed tests shall not be recorded.

Important Note

Test results submitted without these test cord measurements or with failed measurements cannot be accepted for warranty certification.

Step 3: Test – P2 measurement



- Move the remote unit to the far end of the link
- Clean all free end connectors
- Connect the free ends of the cords to the terminations of the link on both sides
- Perform the test – run the autotest
- If you have to swap the fibre during the autotest procedure, the swap shall be done on the patch panel side (on both sides of the link).

  Do not disconnect the launching cords from the output ends (sources) of the testers.
- Check the result:

- Pass: check the loss and margin for discrepancies
- Fail: see troubleshooting chapter 7

➢ Save the test results

➢ Repeat from step 3 for all the fibre pairs of the link

3.3. LSPM testing of MTP links terminated with MTP/LC cassettes

Note: In this section, the assumption is made that the reader has an understanding of basic test principles and procedures. If any doubt please refer to previous sections of the guide.

To test MTP links terminated with MTP/LC cassettes, just use the same methods as for legacy LC to LC links (see chapters 3.1 & 3.2).

Loss limit (also see chapter 2.3)

The total loss of one cassette has to be lower than

- **0.45 dB for MM connectors**
- **0.7 dB for SM connector**

These limits are valid

➢ for the whole cassette (MTP connector + LC or SC connector)

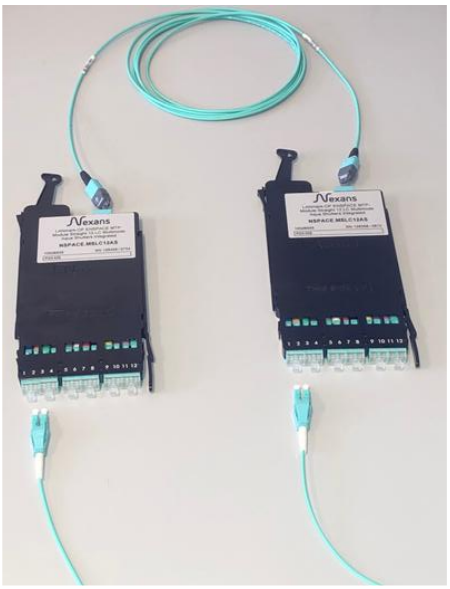
When testing MTP Aginode OF links

➢ always set the tester to test against ISO 14763-3:2024 limits

➢ Set the number of connectors to 2 and the number of splices to 0 for MM and SM cassettes

➔ **This will set the loss limit to**

- 0.9 dB (2x 0.45) + the loss of the fibre (MM modules)
- 1.4 dB (2x 0.70) + the loss of the fibre (SM modules)



3.4. LSPM testing of MTP trunks

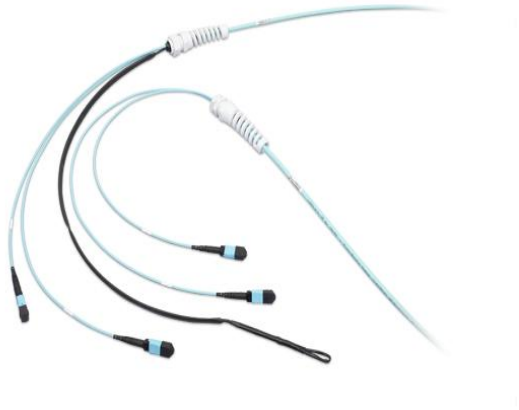
Note: In this section, the assumption is made that the reader has an understanding of basic test principles and procedures. If any doubt please refer to previous sections of the guide.

Important note: Testing of MTP trunks is a complex operation. We strongly advise you to read the chapter 3. 4 and contact us to further discuss the matter before proceeding.

There are various ways of testing OF links terminated on MTP connectors.

Only one device from Softing equipped with MPO connectors is accepted by Aginode to perform loss measurement of MPO/MTP trunks (See on page 8 of the main document).

However, it is also possible to test these trunks using LSPM testers equipped with LC adapters.



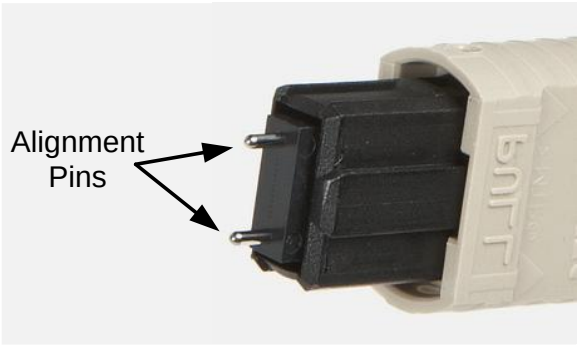
MTP trunk

Important Note

- ***Dirt is harmful to connector and causes loss, which affect measurements.***
- ***Always cover the connectors with a protection cap when not in use.***

Aginode OF inspection and cleaning guide can be downloaded here

MPO connectors are available in a male version (with pins) or a female version (without pins). The pins ensure the alignment of the fibres.



Pinned MPO connector connector

Unpinned MPO

Obviously it is necessary to always use one male connector and one female connector to establish a connection.

Never connect two females or two male connectors together. The performances will be dramatically affected. This can also damage the male connectors.

As a consequence testing of MPO trunks requires careful preparation in order to ensure that the different connections needed during the procedure are always correctly achieved.

3.5. MTP PRO test cords

MTP PRO Aginode patch cords terminated with MTP PRO connectors shall be used as test cords.

- **N125.7GGA2 - LANmark-OF Patch Cord Female MTP PRO OM4 LSZH 2m Aqua**
- **N125.7GGV2 - LANmark-OF Patch Cord Female MTP PRO OM4 LSZH 2m Violet**
- **N125.4GGY2 - LANmark-OF Patch Cord Female MTP PRO OS2 LSZH 2m Aqua**

The MTP PRO advanced fibre connector allows to easily change polarity and gender on site.

For making the gender and polarity changes a tool is needed.

- **N890.160 - LANmark-OF MTP PRO Toolbox**

Important Note

- ***Some MPO Multimode test heads only test at one wavelength (850nm)***
- ***The two and three-cord reference methods are not supported by Aginode to test MTP trunks***

3.6. "One-cord" Reference method using standard (LC) OF tester

This method is the one recommended by Aginode.

To test MTP trunks, the one-cord reference method can also be implemented using the procedure described in chapters 3.1 and 3.2.

In addition to the components required to perform LC link tests, the procedure to test MTP links requires the use of two MPO/MTP LC fibre assemblies.

The gender of the MTP connector on the assemblies (male or female) has to match the connector gender on the MTP link to test.

As Aginode MTP trunks are male, female MTP/LC assemblies are to be used.

Should you need to test MTP trunks equipped with female MTP connectors please contact us (See chapter 1.5).

The use of MTP/LC Aginode assemblies is highly recommended.

LANmark-OF Pre-Term Female MTP – Simplex LC/PC Fan-out 100cm 12XOM4 1m Violet

P/N: N129.700V

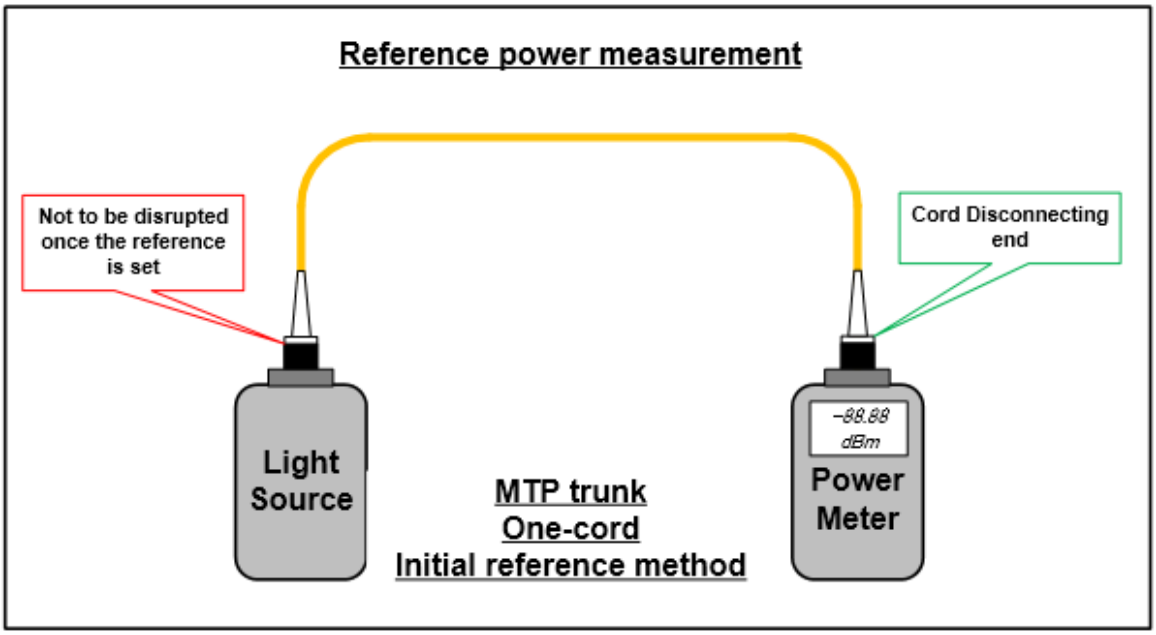
LANmark-OF Pre-Term Female MTP/APC – Simplex LC/PC Fan-out 100cm 12XSM 1m Yellow

P/N: N129.400

This procedure has to be used when fibres have to be tested one at a time.

The same principle is applicable using a dual-fibre loss test set (also see chapter 3.2).

Step 1: Initial (LC) Reference



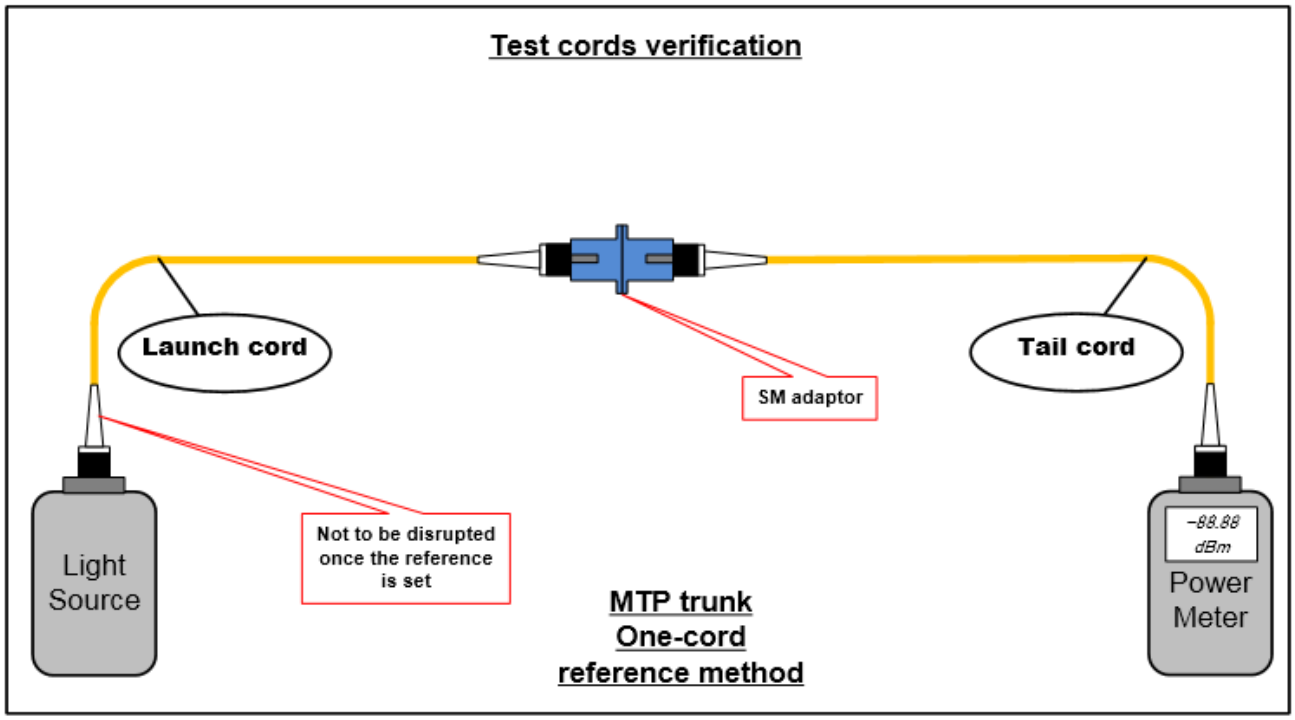
- Clean all fibre connections
  - Dirt is harmful to connector and causes loss, which affect measurements.
  - Always cover the connectors with a protection cap when not in use.

Aginode OF inspection and cleaning guide can be downloaded here

- The use of LC test cords terminated with reference grade connectors is required
- During the setup of the test tool
  - select the Standard/limit to be applied: ISO 14763-3 (as for MTP/LC cassette testing – see chapter 3.3)
  - set the number of connectors to '2' and the number of splices to '0' for MM and SM trunks
  - Set the refractive index of the fibre
  - Set the method: One-cord reference
- Measure and record the initial reference at both wavelengths (set the reference)

Step 2: Control – Test cords verification

Prior to starting link testing the two LC reference cords (launch and receive) need to be connected together and tested in order to demonstrate the quality of the cords and the correct measurement of the initial reference.



A singlemode adaptor shall be selected to connect the two cords together.

This control has to be performed every time the reference is re-established (several times a day).

Each test cord measurement performed during the testing of the fibre sub-system of the cabling shall be recorded.

The result should be

- < 0.15 dB when using MM reference grade cords
- < 0.25 dB when using SM reference grade cords

If these values are not obtained, redo the inspection and cleaning procedure for all the connectors on the two cords and re-establish the reference.

0.0 dB loss is acceptable but negative loss results (gain) are not acceptable.

Failed tests shall not be recorded.

Important Note

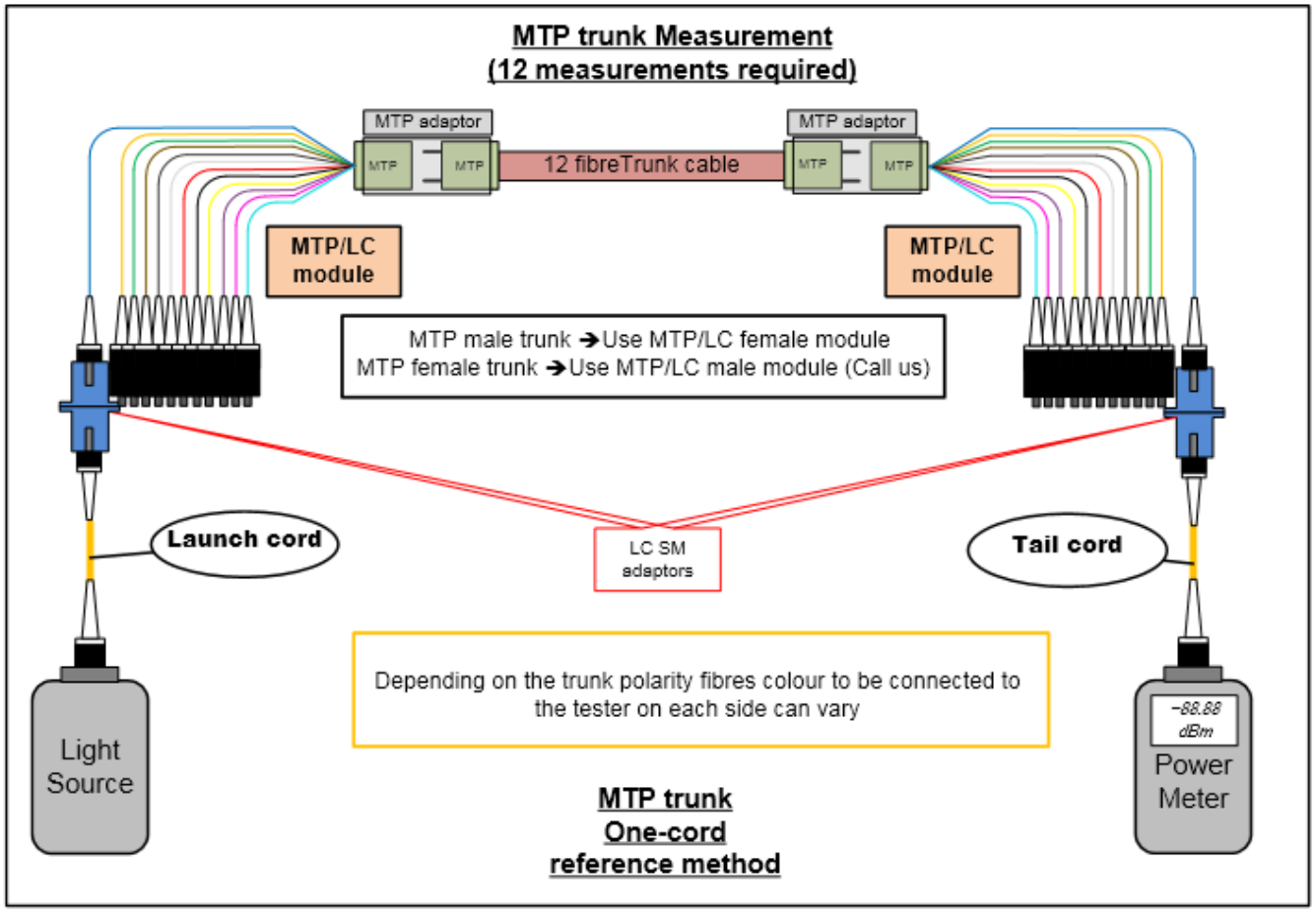
Test results submitted without related test cord measurements or with failed measurements cannot be accepted for warranty certification.

Step 3: Test measurement of the MTP trunk

Clean all connectors.

Attach the two MTP/LC assemblies either side of the MTP link under test.

Note: The MTP/LC assemblies will have to be connected to the MTP link under test using two MTP adaptors and a second LC SM adaptor has to be added to connect the tail cord.



Loss limit

The loss limits are the same than for the test of MTP links terminated with MTP/LC cassettes (see chapter 3.4).

When testing MTP Aginode OF trunks

- always set the tester to test against ISO 14763-3:2024 limits
- Set the number of connectors to 2 and the number of splices to 0 for MM and SM links

  ➔ This will set the loss limit to
  - 0.9 dB (2x 0.45) + the loss of the fibre (MM modules)
  - 1.4 dB (2x 0.70) + the loss of the fibre (SM modules)

12 measurements will be required for every MTP link.

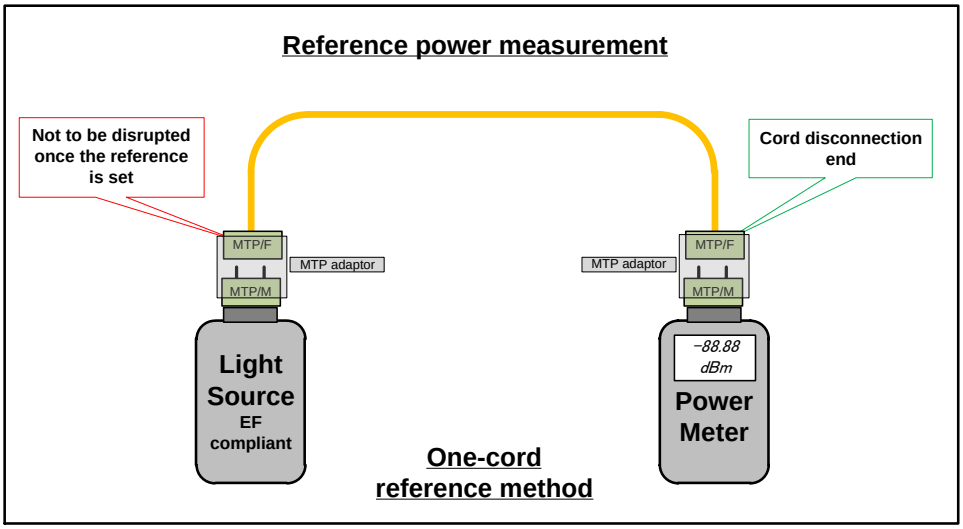
Notes

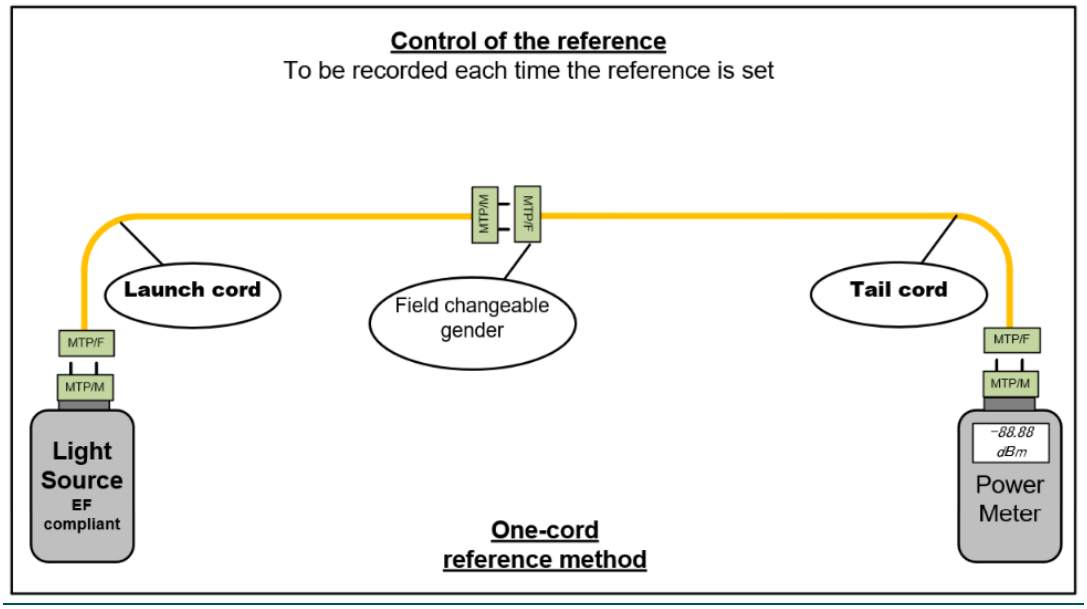
- *Only 6 measurements needed if a dual-fibre loss test set is used (i.e. Fluke DSX)*
- *Depending on the polarity of the MTP trunk, fibres colour to be connected to the tester on each side can vary e.g. Port 1 TX side maybe in position 12 RX side.*

3.7. "One-cord" Reference method using MPO tester

The three following drawings show the one-cord reference procedure applied to the test of a trunk terminated on male connectors (Standard Aginode trunk).

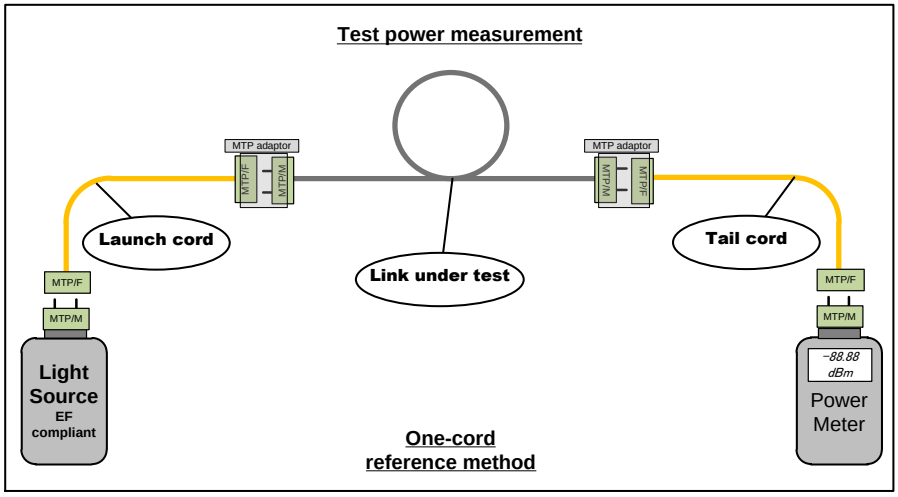
This method is accepted but is not mandatory due to the lack of MPO testing capable devices currently available on the market.





The result should be

- < 0.20 dB when using MM reference grade cords
- < 0.40 dB when using SM reference grade cords



Important Notes

1. ***This method (without any change of gender of the connector of the cords) can only be used if the MPO connectors on the power meter head has the same gender as the connectors on the link under test. It is generally the case as the power meters are most of the time equipped with male MPO connectors as the standard Aginode trunks are.***
2. ***The reference power measurement is to be done with a female/female cord. To test a trunk with female MPO connectors the gender of the MTP PRO connector on one end of the launch and tail cords to be connected to the trunk would need to be changed from female to male to perform the test.***
3. ***Test cord verification (test of the two test cords connected together to check cord performance) require the gender of the connector of one of the cords to be changed and changed back to perform the test on a male/male link.***

Loss limit

When testing MTP Aginode OF trunks

- always set the tester to test against ISO 14763-3:2024 limits
- Set the number of connectors to 2 and the number of splices to 0 for MM and SM links

  ➔ **This will set the loss limit to**
  - 0.9 dB (2x 0.45) + the loss of the fibre (MM modules)
  - 1.4 dB (2x 0.70) + the loss of the fibre (SM modules)

4. OTDR testing procedures

The test procedure described below is compliant with **ISO/IEC 14763-3 : 2024**

The use of a tail (or receiving) cord is required in order to obtain the full attenuation characteristic of the link under test, including the fibre loss and the loss of both connectors.

Important Note

Moreover, if the far end pigtail is defective or connected on the wrong adaptor of the patch panel (polarity error), this problem will not be detected.

AGINODE will not accept OTDR measurements performed without tail cords.

4.1. Direction of measurement

AGINODE mandates bidirectional measurement (testing in both directions).

With bidirectional measurement the insertion loss value is achieved by calculating the mean of the two results.

The resulting mean trace calculated from the two measurements by the OTDR software, has to be provided together with the bidirectional measurement (3 traces at both wavelengths for each OF link) – the value of the mean trace must obviously meet the required Aginode loss limit.

Important Note

When conducting such bidirectional measurement the launch and tail cords shall remain on the same side of the link. Only the OTDR shall be moved to the far end.

If the launch and tail cords are swapped over, the calculation of the loss mean value will not be correct because the two connectors forming the connection will be different in both measurements.

Moreover, the software would not be able to calculate the mean trace if the length of the launch and tail cords are different (mated connectors events would be seen at different length locations on the two measurements).

4.2. Materials needed

To test optical fibre links using OTDR equipment, you will need the following items:

- Dual wavelength fibre-optic OTDR

Wavelengths: 850 & 1300 nm for MM fibres / 1310 & 1550 nm for SM fibres

- Launch and tail fibre cords (SC, LC …) and fibre types (MM, SM) compatible with the OF subsystem to be tested.

  These cords shall be maintained in good order and regularly tested.
  The test cords for OTDR testing shall be longer than the attenuation dead zone of the OTDR

The following settings are required.

	MM Fibre link length < 300m	**MM Fibre link length > 300m**	**SM Fibre link length < 500m**	**SM Fibre link length > 500m**
Launch and Tail cord length	50 – 150 m	50 – 300 m	200 - 500 m	500 – 1000 m
Maximum Pulse width	3 or 5 ns	10 ns	10 ns	20 ns
Range	1000 m	2000 – 3000 m	2000 m	3000 – 5000 m

Launch and tail cords shall be terminated with reference grade connectors.

As for LSPM testing, the limits to be applied is:

- ISO 14763-3:2024 using launch and tail cords terminated on reference grade connectors

- Mating adaptors for connectors (couplers)
- Lint free cleaning wipes and pure isopropyl alcohol or specialised OF cleaning fluid.
  Dust in the air can be as big as the core of a SM fibre and big enough to cause high loss in MM fibre.

Important Note

Always clean connectors before testing or patching

Aginode OF inspection and cleaning guide can be downloaded here

- A fibre scope (VFL)
  This tool will be useful to inspect the connectors and for trouble-shooting
- AGINODE OF Complementary Warranty Application Data Form.
  To be filled in if the OTDR doesn't provide "Pass-Fail" analysis features

The above-mentioned document can be downloaded from our website:

Warranty section of our library

Index of refraction of LANmark-OF fibres				
Optical Fibre type	**850 nm**	**1300 nm**	**1310 nm**	**1550 nm**
Multimode 50 µm (OM3, OM4, OM5)	1,482	1,477	NA	NA
Singlemode (OS2)	NA	NA	1,466	1,467

4.3. Testing

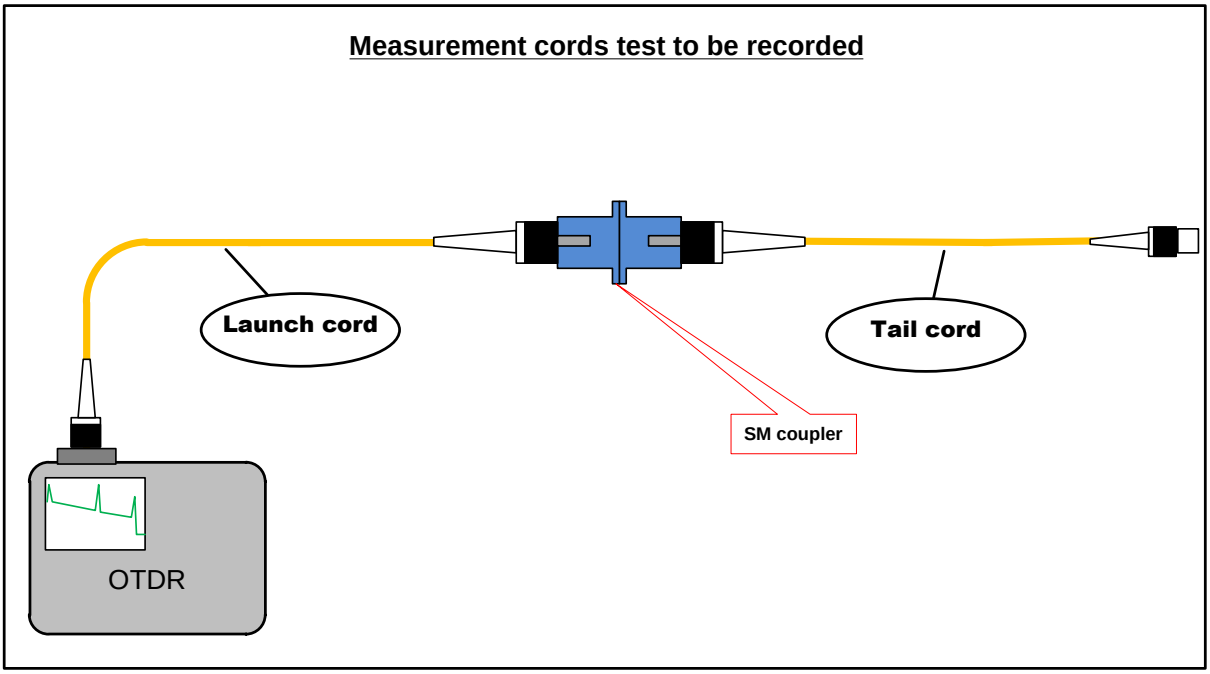
Clean all fibre connections

- Dirt is harmful to connector and causes loss, which affect measurements.
- Always cover the connectors with a protection cap when not in use.

Aginode OF inspection and cleaning guide can be downloaded here

Step 1: Control – Test cords verification

Prior to beginning testing any links Aginode request to first test the two cords (launch and tail) connected together in order to demonstrate the good quality of the cords and the correct measurement of the reference.



A singlemode adaptor shall be selected to connect the two cords together.

The result should be

- < 0.15 dB when using MM reference grade cords

- < 0.25 dB when using SM reference grade cords

If these values are not obtained, redo the inspection and cleaning procedure for all the connectors on the two cords and re-establish the reference.

0.0 dB loss is acceptable.

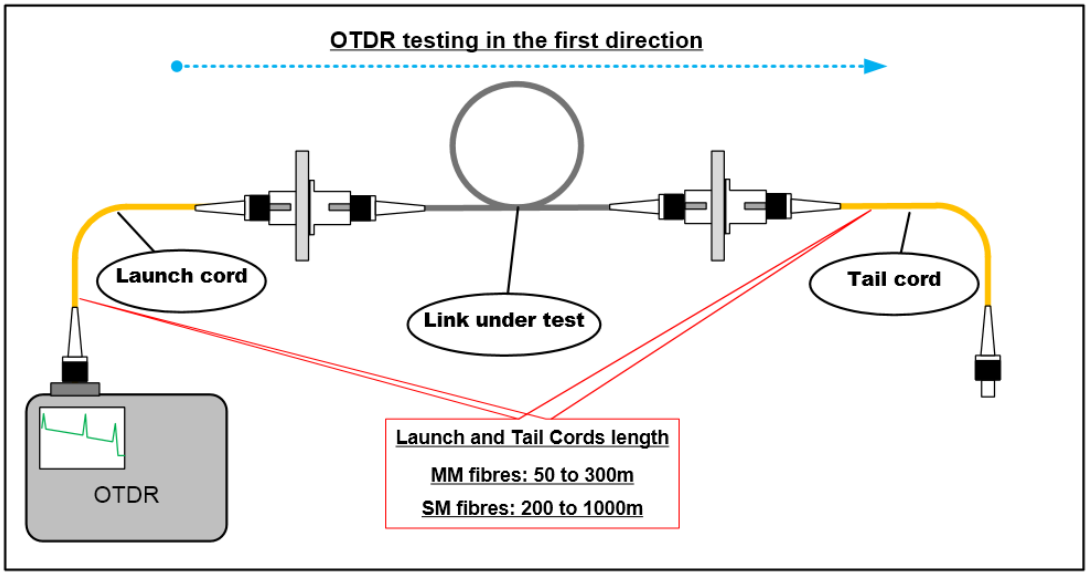
Failed tests shall not be recorded.

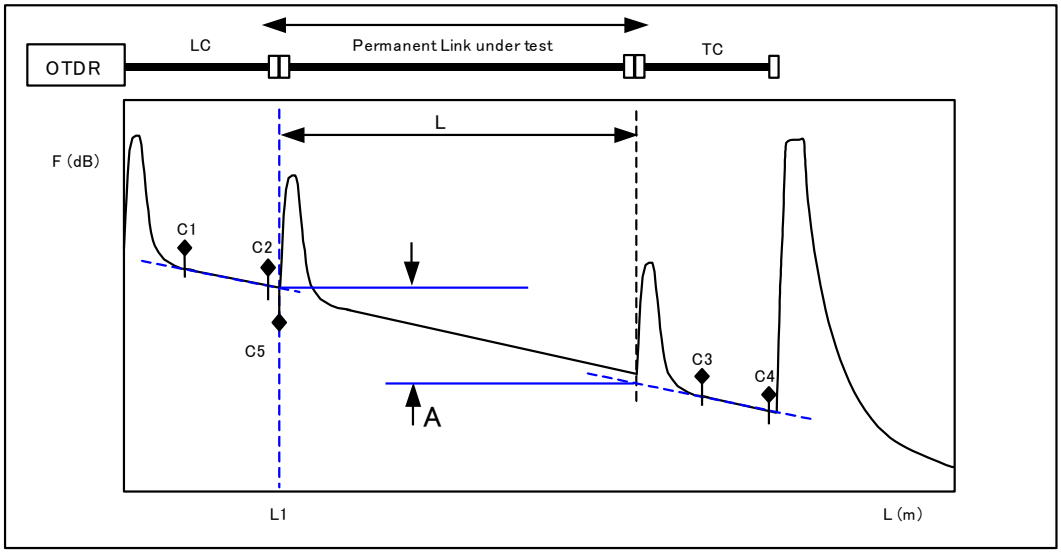
Test results submitted either without related test cord measurements or with failed measurements cannot be accepted.

Step 2: Control – link test in the first direction

The launch cord shall be connected between the OTDR and the cabling link under test.

The tail cord shall be connected to the remote end of the cabling under test.





The attenuation or loss of the installed cabling includes two connections and the fibre loss.

The drawing shows correct placing of cursors on OTDR traces for link insertion loss measurement.

Wherever possible the more accurate 5 cursor method is to be used as this gives results that have no dependence on pulse width, dead zones etc.

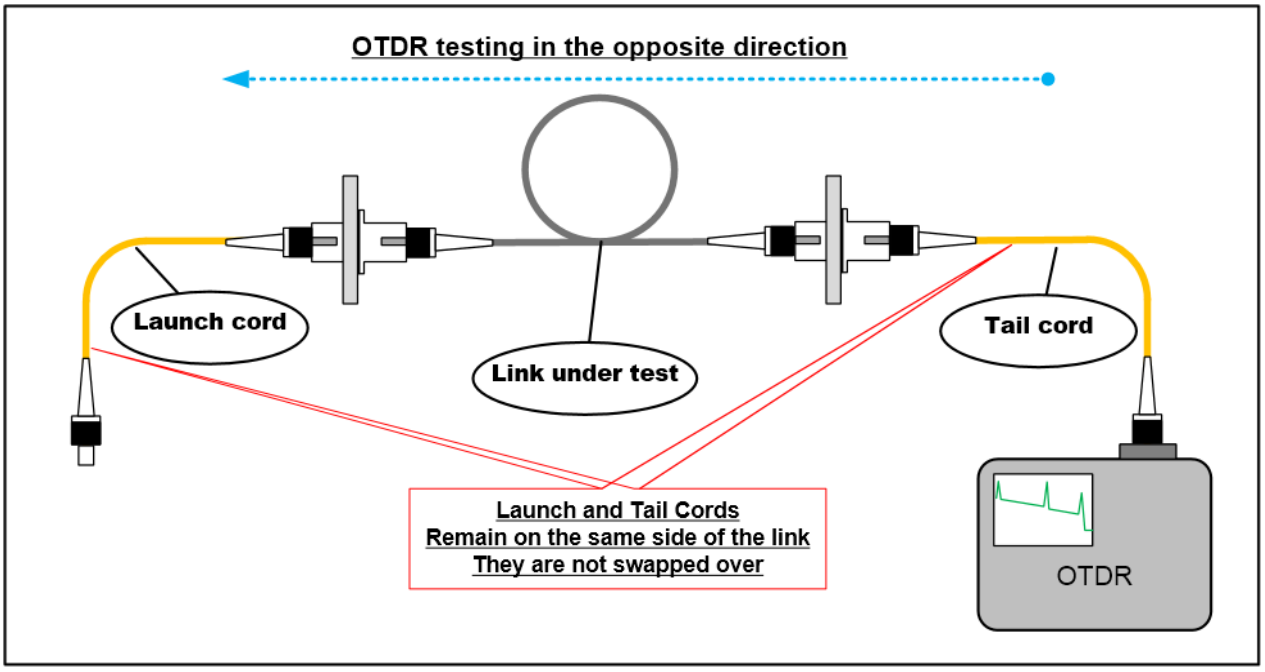
Note that the vertical scale has been expanded to make the precise cursor positioning and resultant loss measurements clearer (this is good measurement practice).

For examples of acceptable and wrong OTDR measurements, please see 8.3

Step 3: Control – link test in the opposite direction

Move the OTDR to the far end of the link and test the link in the other direction.

Note: Moving the OTDR tester on the other far end can also be done after the first testing sequence of all the fibres in the first direction.



Important Note

When conducting such bidirectional measurement the launch and tail cords shall remain on the same side of the link. Only the OTDR shall be moved to the far end.

If the launch and tail cords are swapped over, the calculation of the loss mean value will not be correct because the two connectors forming the connection will be different in both measurements.

Moreover, the software would not be able to calculate the mean trace if the length of the launch and tail cords are different (mated connectors events would be seen at different length locations on the two measurements).

Step 4: Post-treatment of the test results

The resulting mean trace shall be calculated from the two measurements by the OTDR software.

This mean trace has to be provided together with the bidirectional measurement (3 traces at both wavelengths for each OF link) – the value of the mean trace must obviously meet the required Aginode loss limit.

Depending on the OTDR you are working with

- the mean trace can be automatically produced by the OTDR
- the mean trace calculation can have to be performed using the PC software provided together with your OTDR
- The loss of every component of the link (Fibre / connection on both ends) can have to be calculated by the operator using the PC software provided together with your OTDR. In this case the mean values shall be manually calculated

The AGINODE OF Complementary Warranty Application Data Form shall be filled in if the OTDR doesn't provide "Pass-Fail" analysis features (See chapter 8.2 of the main document).

Disclaimer

This document is a guideline only. International and local procedures and safety Standards must be observed and followed at all times.

Aginode will not be held liable for any damage or injury to personnel, equipment or business directly or indirectly as a result of using this document in part or in whole.

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