

## Insertion Loss Measurement Procedure

### One Cord Reference, MMF

#### TIA 568.3-D

To achieve consistent results, clean all connectors, through-connects and adapters associated with the test prior to and during measurement.

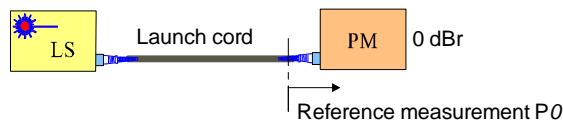
Ensure the source has warmed up before commencing measurements.

- When necessary, fit correctly sized mandrel to source end of launch cord.  
e.g. Kingfisher OPT701 mandrels.

Fibre cladding	3 mm jacketed mm /(inch)
Fibre core	
50 $\mu\text{m}$	22 (0.87)
62.5 $\mu\text{m}$	17 (0.67)

**Table 1, Mandrel diameters for 3 mm launch cord:**  
*Clause 7.3.1 refers to requirements of TIA 526-7*

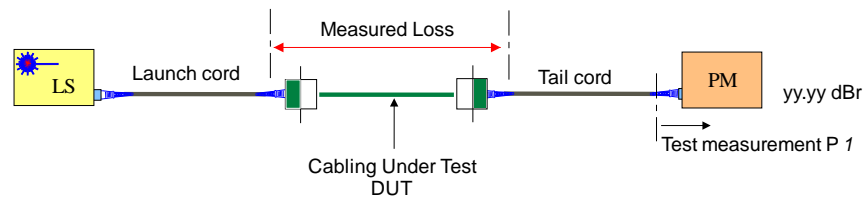
- Connect launch cord to meter and set the reference.  
For clarity mandrels are not shown.



**Figure 1, One cord reference**

- Disconnect launch cord from meter and connect to one end of the cabling under test (CUT / DUT).

Using a second test cord, connect the meter to the other end of the DUT.



**Figure 2, One cord measure**

- Read the insertion loss directly in dBr.
- Standard based pass/ fail calculations as shown over the page can be applied to the result. Testing may be required in one or both directions.

## TIA Cabling Specifications 568.3-D

For installations tested in accordance with TIA specifications, the following maximum MMF limits apply to the various cable plant components.

Item	Specification
Connector loss Ref-Std	0.3 dB
Connector loss Std-Std	0.75 dB
Splice loss	0.3 dB
850 nm 50 μm	3.0 dB/km
1300 nm 50 μm	1.5 dB/km

**Table 2, TIA 568.3-D cable plant specification:**  
*Clauses 4.2 & 7.3.4*

## Pass / Fail formula

The American TIA pass-fail standard uses a standard Telco type formula.

Where One cord referencing is specified:

Maximum IL = Length Loss + splice loss + 2 end connector losses + other connector losses

### MMF

**Formulas require checking**

#### Reference (Ref) grade test cords

*Maximum IL at 850 nm = 3.0L + 0.3N + 0.6 + 0.75(C-2)*

*Maximum IL at 1300 nm = 1.5L + 0.3N + 0.6 + 0.75(C-2)*

#### Standard (Std) grade test cords

*Maximum IL at 850 nm = 3.0L + 0.3N + 1.5 + 0.75(C-2)*

*Maximum IL at 1300 nm = 1.5L + 0.3N + 1.5 + 0.75(C-2)*

Where:-

L = Cable length in Km,

N = number of splices and

C = number of connectors.

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