

## Insertion Loss Measurement Procedure

### 2-way tester - One Cord Reference. SMF

#### 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.

1. If testing to TIA-568.3-D, fit correctly sized air coil to source end of launch cord.

Minimum of 1 single air-coiled turn or mandrel wrap of  
30 mm / 1.2 inch diameter.

**Table 1, Air Coil specification for TIA-568.3-D: Annex E, Clause E.5.1.4.2**

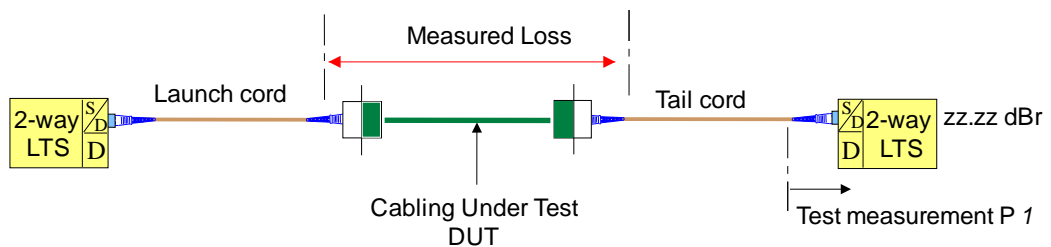
2. Connect a test cord to each 2-way Loss Test Set (LTS) and set the reference on both instruments. For clarity mandrels are not shown.



**Figure 1, One cord reference**

3. Disconnect test cord from the meter side of an instrument and connect to the cabling under test (CUT / DUT).

Similarly, connect the other instrument's test cord, to the other end of the DUT.



**Figure 2, One cord measure**

4. Read the insertion loss directly in dBr.
5. 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 (Bi-directional).

## TIA Cabling Specifications 568.3-D

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

Item	Specification
Connector loss Ref-Std	0.5 dB
Connector loss Std-Std	0.75 dB
Splice loss	0.3 dB
OS2, Outside plant 1310 / 1550 nm	0.4 dB/km
OS1, Indoor – Outdoor plant 1310 / 1550 nm	0.5 dB/km
Inside plant 1310 / 1550 nm	1.0 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 + End Connector Loss + Other Connector Losses

#### **SMF** *Formulae require checking*

##### **Reference (Ref) grade test cords**

OS2, Outside plant:  $Maximum\ IL\ at\ 1310\ / \ 1550\ nm = 0.4L + 0.3N + 1 + 0.75(C-2)$

OS1, Indoor – Outdoor plant:  $Maximum\ IL\ at\ 1310\ / \ 1550\ nm = 0.5L + 0.3N + 1 + 0.75(C-2)$

Inside plant:  $Maximum\ IL\ at\ 1310\ / \ 1550\ nm = 1.0L + 0.3N + 1 + 0.75(C-2)$

##### **Standard (Std) grade test cords**

OS2, Outside plant:  $Maximum\ IL\ at\ 1310\ / \ 1550\ nm = 0.4L + 0.3N + 1.5 + 0.75(C-2)$

OS1, Indoor – Outdoor plant:  $Maximum\ IL\ at\ 1310\ / \ 1550\ nm = 0.5L + 0.3N + 1.5 + 0.75(C-2)$

Inside plant:  $Maximum\ IL\ at\ 1310\ / \ 1550\ nm = 1.0L + 0.3N + 1.5 + 0.75(C-2)$

Where:-

L = Cable length in Km,

N = number of splices and

C = number of connectors.

The contents of this publication are subject to change without notice. All efforts have been made, to ensure the accuracy of this publication. Notwithstanding, Kingfisher International Limited does not assume responsibility for any errors nor for any consequences arising from any errors in this publication.