

VTI Services Technical Bulletin (TB)

Fibre Launch Requirements for MMF and SMF Testing

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Applicability

The following applies only to telecommunication cabling installations in Australia and New Zealand seeking performance conformance of optical fibre links and channels to AS/NZS 11801.1 and AS 11801.x series or ISO/IEC 11801.x series.

Summary

It is a normative requirement to meet a specific launch condition at the output of the interface connector on the launch test cord when testing optical fibre cabling systems.

For multimode installations, 62.5 μm and 50 μm cores, the requirement is to meet a specified launch modal distribution, commonly called Encircled Flux.

Encircled Flux requirements can be met by any one of the following:-

- Mode condition cords that produce compliant Encircled Flux conditions at the output of the launch cord.
- A mated light source and mode condition launch cord that produces compliant Encircled Flux conditions at the output of the launch cord.
- Light source that is Encircled Flux compliant at its output and that is coupled with a specific test cord type that ensures encircled flux compliance at the output of the launch cord.

Note 1:-The validation of compliance should be supported by the manufacturer's claim of the tester or the mode conditioner cord that encircled flux conditions will be met at the output end of the launch cord.

Note 2:-Encircle Flux launch condition for multimode testing was introduced in 2012.

For singlemode launch test cords, the launch condition can be achieved by one of the following:-

- A source that produces launch condition at the output of the test cord (most common)
- Use of a minimum of two air-coils 35 mm to 50 mm diameter in the launch cord
- A mandrel 35 mm to 50 mm diameter to hold at least 2 coils in the launch cord

This Technical Bulletin states the specific standard's requirements for multimode fibre (MMF) and singlemode fibre (SMF) launch cords used in light source and power meter (LSPM) and Optical Time Domain Reflectometer (OTDR) testing.

Conformance requirements

The implementation and performance of optical fibre cabling channels shall meet the requirements of Clause 6 in the AS 11801.x series and in normative Annex A2 of AS/NZS 11801.1.

Test methods to assess conformance with optical fibre channel and link requirements of AS/NZS 11801.1 are specified in AS/NZS 14763.3 – Testing of Optical Fibre Cabling. Additional requirements for Australia and New Zealand, information and explanation are available in Appendix ZZ of AS/NZS 14763.3



MMF Launch - Encircled Flux

The MMF launch cord for LSPM and OTDR shall maintain the specified Launched Modal Distribution (LMD). This is commonly called the Encircled Flux requirement for multimode testing.

The LMD at the point of connection to the cabling under test shall meet the requirements in Annex A of AS/NZS 14763.3. The required LMD shall be achieved using the appropriate light source or by incorporating a mode conditioning device within the launch cord. (AS/NZS 14763.3 Clause 6.4)

SMF Launch

The SMF launch cord for LSPM and OTDR shall maintain the specified launch condition.

The provision of a single-mode launch condition requires that launch cords contain a minimum of two single air-coiled turns or mandrel wraps of 35 mm to 50 mm in diameter; however, this is usually provided within the test instrument and it is then not necessary to have additional coils. (AS/NZS 14763.3 Clause 6.5)

Reference Connectors

For LSPM and OTDR testing, both launch and tail test cords for MMF and SMF shall have Reference Connectors at the interface to the fibre under test.

The launch and tail test cords shall be terminated at the other end with one or more reference connectors compatible with the interface to the installed cabling. (AS/NZS 14763.3 Clause 6.5)