

CERTECH’s Quality Plan

Optical Fibre Cable Testing Using Light Source and Power Meter

This quality plan has been prepared by VTI Services for, or on behalf of, the installation contractor and CERTECH in accordance with AS/NZS 14763.2 for installation/s that are intended to be covered by CERTECH’s installation specifications.

The following requirements apply to testing of installed optical fibre cabling using Light Source and Power Meter (LSPM), primarily for: -

- conformance and acceptance of initial installations, and/or
- upgrade to existing installations and/or
- acceptance of maintenance and repair activities.

Applicable standards are: -

1. AS/NZS 11801.1 Generic cabling for customer premises – Part 1: General requirements
2. AS 11801.2 Generic cabling for customer premises – Part 2: Office premises
3. AS 11801.3 Generic cabling for customer premises – Part 3: Industrial premises
4. AS 11801.4 Generic cabling for customer premises – Part 4: Single tenant homes
5. AS 11801.5 Generic cabling for customer premises – Part 5: Data centres
6. AS 11801.6 Generic cabling for customer premises – Part 6: Distributed building services
7. AS/NZS 14763.3 Implementation and operation of customer premises cabling – Part 3: Testing of optical fibre cabling

Link includes a permanent link and consists of a cable and a single (mated) connector at both ends.

The version of any undated referenced standards within this document is that which is current at the date of the project document.

Testing – General

Standards	<p>AS/NZS 11801.1 Generic cabling for customer premises – Part 1: General requirements</p> <p>AS/NZS 14763.2 Implementation and operation of customer premises cabling, part 2: Planning and installation</p> <p>AS/NZS 14763.3 Implementation and operation of customer premises cabling – Part 3: Testing of optical fibre cabling</p>
Test Configuration	<p>Link</p> <p>Permanent Link</p>
Optical Fibre Cabling Type	<p>OM3</p> <p>OM4</p> <p>OM5</p> <p>OS1a</p> <p>OS2</p>
Test methodology	AS/NZS 14763.3
Test Equipment	AS/NZS 14763.3
Direction of test	Two directions per core

Wavelength	MM 850 nm and 1300 nm SM 1310 nm and 1550 nm
Tester Calibration	Equipment in calibration at time of test.

Testing – Light Source and Power Meter (LSPM)

Reference Method	One-test-cord method- (preferred) Enhanced Three-test-cord method (optional)
Test equipment LSPM	Suitable for the type of fibre and connectors being tested and provides optical attenuation, length and/or propagation delay
MM Launch conditions	Encircle Flux modal conditions in accordance with AS/NZS 14763.3 Annex A, achieved by: - <ul style="list-style-type: none"> - Conditioner device in launch test cord, or - Documented tester manufacturer's claim, or - Compliance Statement from tester manufacturer
SM Launch Conditions	According to AS/NZS 14763.3 Clause 6.5, is by: <ul style="list-style-type: none"> - Documented tester manufacturer's claim or - Compliance Statement from tester manufacturer
Result Assessment	Highest loss result for each wavelength (No averaging)

Acceptance Requirements for Optical Fibre Link Attenuation

The attenuation acceptance requirements for optical fibre links shall be calculated, based on Table 1, the optical loss/attention allowance for each component and cable utilised for the creation of the link.

Tests To Be Carried Out

Sample Size

100% of all fibre cores shall be tested

Transmission

Basic verification: -AS/NZS 14763.2

- Polarity

Basic Test Group: - Transmission requirements – AS/NZS 14763.2

- Attenuation in dB (Non-Average for LSPM)
- Propagation delay in nanoseconds (not a pass/fail criterion unless specified)
- Length in meters (not a pass/fail criterion unless specified)

Test Result Analysis

For a PASS, the LSPM test result shall: -

1. not exceed the Loss Budget, calculated from the sum of all the components under test, and
2. not exceed the Loss Budget for the user applications, if specified.

Handling of Apparent Gains

Apparent gains greater than 0.09 dB are deemed unacceptable.

Handling of Marginal Pass Results

The marginal pass results are deemed acceptable.

Handling of Fail and Marginal Fail Results

All Fail and Marginal Fail results are unacceptable.

Handling of Unacceptable Results or Activities

All unacceptable results and/or activities shall be repaired and/or replaced and re-tested until such time as they PASS all applied testing.

Documentation of Test Results

All optical fibre test results for each tested core of an optical fibre cable shall include as a minimum: -

- a) Test equipment
 1. Type and manufacturer
 2. Serial number and calibration status
 3. Level and software version
- b) Details of cabling interface adaptors (type, reference number, manufacturer)
- c) Details of cabling under test
- d) Date and time of test
- e) Any relevant environmental conditions
- f) Tester operators' names. Not the tester or installer company name.
- g) Measured result of each parameter
- h) Required result of each parameter for a PASS

Details of cabling includes: -

- a) Optical fibre type.
- b) Cable ID (Identification).
- c) Core ID (Identification).
- d) Interface connector type at both ends of the link.
- e) Splices associated with interface connectors.
- f) MPO/MTP cassette associated with the interface connector.
- g) Embedded MPO/MTP cassette (not associated with interface connectors).
- h) Embedded splices (not associated with interface connectors).
- i) Embedded connectors (not associated with interface connectors).
- j) Test Results
 - 1. Attenuation Loss dB
 - 2. Length m
 - 3. Propagation Delay ns (length x 5 ns)

Additional Specified Requirements

Visual Inspection of fibre end-faces

When testing for transmission requirements, visual inspection of each fibre end-face shall be conducted in accordance with AS/NZS 14763.3 Annex B.

Independent test result verification

All optical fibre results shall be independently verified by an approved NATA inspection body as compliant to the standards and requirements specified within this quality plan.

Any report that achieves a partial compliance or a non-compliance status shall be deemed non-compliant. CERTECH's NATA approved inspection body is VTI Services.

The cost of this service is to be borne by the CERTECH.

A copy of the NATA Report is to be provided to the Specifier and Installer on creation.

Handling of anomalies

Test results containing non-specified or incorrect requirements shall be deemed as acceptable or unacceptable for the following elements: -

Item	Unacceptable	Acceptable	Conditions
Non-specified Test Standard i.e. TIA	X		Recertify and assess against Australian standards
Non-specified Cable Type i.e. OS1a, OS2	X		

Handling of non-compliant NATA reports

All elements that result in a partial or non-compliant status shall be repaired and/or replaced and retested with the test data resubmitted to the NATA inspection body until a NATA Statement of Compliance and associated report is issued by the NATA inspection Body.

This Quality Plan has been approved by the Specifier: -

Representative Name: Thomas Boer

Signature: 

Date: Tuesday the 26th of July, 2022 (26/07/22)