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# INTERNATIONAL STANDARD



Information technology – Implementation and operation of customer premises  
cabling –  
Part 3: Testing of optical fibre cabling

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# INFORMATION TECHNOLOGY – IMPLEMENTATION AND OPERATION OF CUSTOMER PREMISES CABLING –

## Part 3: Testing of optical fibre cabling

### FOREWORD

- 1) ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.
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ISO/IEC 14763-3 has been prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology. It is an International Standard.

This third edition cancels and replaces the second edition published in 2014 and Amendment 1:2018. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) removal of plastic fibre testing;
- b) addition of testing of MPO cabling;
- c) restructuring of the content;
- d) addition of end-to-end link LSPM testing;
- e) addition of MPTL LSPM testing;
- f) addition of measurement uncertainty for all measurement methods;

- g) introduction of normative inspection for cleanliness to align with the ISO/IEC 11801 series;
- h) testing will support SM ranges up to 10 km;
- i) introduction of new test limits for connector attenuation against reference connector;
- j) introduction of description of reference connectors;
- k) introduction of recommended cleaning methods.

The text of this International Standard is based on the following documents:

Draft	Report on voting
JTC1-SC25/3214/FDIS	JTC1-SC25/3239/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

A list of all parts in the ISO/IEC 14763 series, published under the general title *Information technology – Implementation and operation of customer premises cabling*, can be found on the IEC website.

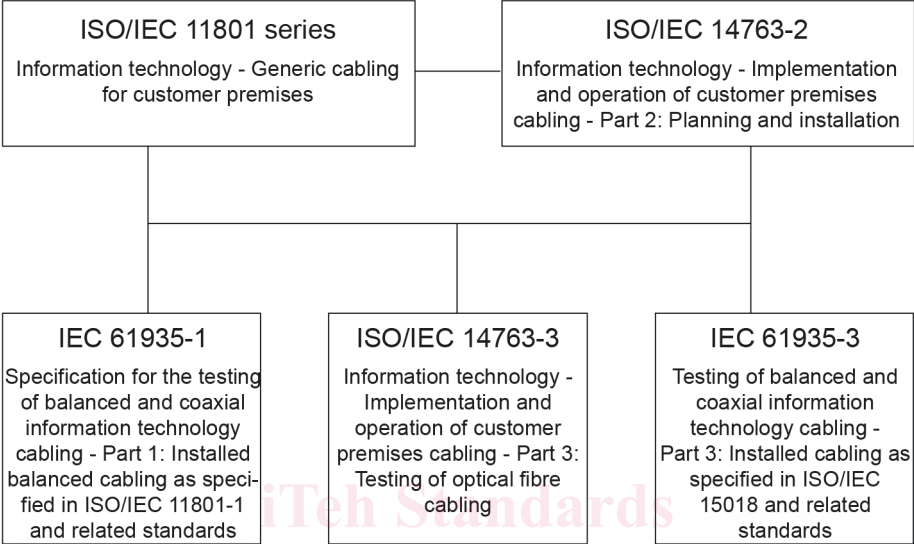
This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs) and [www.iso.org/directives](http://www.iso.org/directives).

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### INTRODUCTION

This document has been prepared in support of the International Standard series ISO/IEC 11801.

Figure 1 shows the inter-relationship between the ISO/IEC 11801 series and other International Standards and for cabling systems with related standards.



**Figure 1 – Relationship of related International Standards**

This document details the inspection and test procedures for optical fibre cabling designed in accordance with premises cabling standards including the ISO/IEC 11801 series and installed in accordance with the requirements and recommendations of ISO/IEC 14763-2.

Users of this document should be familiar with relevant premises cabling standards and ISO/IEC 14763-2.

The quality plan for each installation will define the acceptance tests and sampling levels selected for that installation. Requirements and recommendations for the development of a quality plan are given in ISO/IEC 14763-2.

# INFORMATION TECHNOLOGY – IMPLEMENTATION AND OPERATION OF CUSTOMER PREMISES CABLING –

## Part 3: Testing of optical fibre cabling

### 1 Scope

This part of ISO/IEC 14763 specifies systems and methods for the inspection and testing of installed optical fibre cabling designed in accordance with premises cabling standards including the ISO/IEC 11801 series. The test methods refer to existing standards-based procedures where they exist.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 11801-1, *Information technology – Generic cabling for customer premises – Part 1: General requirements* (<https://standards.iteh.ai/>)

ISO/IEC 14763-2, *Information technology – Implementation and operation of customer premises cabling – Part 2: Planning and installation*

IEC 60050-731, *International Electrotechnical Vocabulary – Part 731: Optical fibre communication* (available at <http://www.electropedia.org/>)

IEC 60825-2, *Safety of laser products – Part 2: Safety of optical fibre communication systems (OFCSs)*

IEC 61280-1-3, *Fibre optic communication subsystem test procedures – Part 1-3: General communication subsystems – Measurement of central wavelength, spectral width and additional spectral characteristics*

IEC 61280-1-4, *Fibre optic communication subsystem test procedures – Part 1-4: General communication subsystems – Light source encircled flux measurement method*

IEC 61280-4-1, *Fibre-optic communication subsystem test procedures – Part 4-1: Installed cabling plant – Multimode attenuation measurement*

IEC 61280-4-5, *Fibre-optic communication subsystem test procedures – Part 4-5: Installed cabling plant – Attenuation measurement of MPO terminated fibre optic cabling plant using test equipment with MPO interfaces*

IEC 61300-3-35, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-35: Examinations and measurements – Visual inspection of fibre optic connectors and fibre-stub transceivers*

IEC 61300-3-42, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-42: Examinations and measurements – Attenuation of single mode alignment sleeves and or adaptors with resilient alignment sleeves*

IEC 61315, *Calibration of fibre-optic power meters*

IEC 61746-1, *Calibration of optical time-domain reflectometers (OTDR) – Part 1: OTDR for single mode fibres*

IEC 61746-2, *Calibration of optical time-domain reflectometers (OTDR) – Part 2: OTDR for multimode fibres*

IEC 61755-2-4, *Fibre optic interconnecting devices and passive components – Connector optical interfaces – Part 2-4: Connection parameters of non-dispersion shifted single-mode physically contacting fibres – Non-angled for reference connection applications*

IEC 61755-2-5, *Fibre optic interconnecting devices and passive components – Connector optical interfaces – Part 2-5: Connection parameters of non-dispersion shifted single-mode physically contacting fibres – Angled for reference connection applications*

IEC 61755-3-1, *Fibre optic connector optical interfaces – Part 3-1: Optical interface, 2,5 mm and 1,25 mm diameter cylindrical full zirconia PC ferrule, single mode fibre*

IEC 61755-3-2, *Fibre optic connector optical interfaces – Part 3-2: Optical interface, 2,5 mm and 1,25 mm diameter cylindrical full zirconia ferrules for 8 degrees angled-PC single mode fibres*

IEC 61755-3-31, *Fibre optic interconnecting devices and passive components – Connector optical interfaces – Part 3-31: Connector parameters of non-dispersion shifted single mode physically contacting fibres – Angled polyphenylene sulphide rectangular ferrules*

IEC 62614-1, *Fibre optics – Multimode launch conditions – Part 1: Launch condition requirements for measuring multimode attenuation*

IEC PAS 63267-3-31, *Fibre optic interconnecting devices and passive components – Fibre optic connector optical interfaces – Part 3-31: End face geometry – Flat PC PPS rectangular ferrule multimode fibres*

### **3 Terms, definitions, abbreviated terms and symbols**

#### **3.1 Terms and definitions**

For the purposes of this document, the terms and definitions given in ISO/IEC 11801-1, IEC 60050-731 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

##### **3.1.1**

##### **adaptor**

device that enables interconnection between terminated optical fibre cables

### **3.1.2 attenuation**

*A*

reduction in optical power induced by transmission through a medium such as optical fibre, given as  $A = -10 \log (P_{\text{out}}/P_{\text{in}})$ , where  $P_{\text{in}}$  and  $P_{\text{out}}$  are the power, typically measured in mW, into and out of the cabling

Note 1 to entry: The values of *A* are in decibel (dB)

### **3.1.3 attenuation dead zone**

<reflective or non-reflective event> region on an OTDR after the event where the displaced trace deviates from the undisturbed backscatter trace by more than a given vertical distance  $\Delta F$

Note 1 to entry:  $\Delta F$  is commonly accepted to be a value of 0,5 dB

[SOURCE: IEC 61746-1:2009, and IEC 61746-2:2010, 3.3, modified – The note has been changed and Figure 1 has not been included.]

### **3.1.4 bi-directional measurement**

technique consisting of two measurements of the same optical fibre, made by launching light into opposite ends of that fibre

### **3.1.5 cable sheath**

covering over the optical fibre or conductor assembly that can include one or more metallic members, strength members or jackets

Note 1 to entry: Sometimes simply referred to as "sheath".

### **3.1.6 connection**

mated device including terminations connecting two cables or cable elements

### **3.1.7 encircled flux**

fraction of cumulative near-field power to the total output power as a function of radial distance from the optical centre of the core

### **3.1.8 fail result**

measured value which fails to meet the specified requirement and where the absolute value of the difference between the measured value and the specified requirement is greater than the stated measurement uncertainty

### **3.1.9 launch test cord**

cable assembly used to connect from a light source to the cabling under test or as part of a test reference measurement

### **3.1.10 light source and power meter**

test system consisting of a light source (LS), power meter (PM) and associated test cords used to measure the attenuation of installed cable plant